



26 dB Bandwidth - High Channel, QPSK, Port 3

Intertek

01:22:20 PM 03/29/2023



01:24:33 PM 03/29/2023





26 dB Bandwidth - Low Channel, 16QAM, Port 1

Intertek

05:02:52 PM 03/29/2023





05:05:55 PM 03/29/2023





26 dB Bandwidth - Low Channel, 16QAM, Port 3

Intertek

05:09:16 PM 03/29/2023





05:12:04 PM 03/29/2023









08:22:42 PM 03/29/2023

Client: CommScope Technologies, LLC - Model: n77 C Band

Non-Specific Radio Report Shell Rev. October 2022

Intertek









08:26:20 PM 03/29/2023

26 dB Bandwidth - Mid Channel, 16QAM, Port 3





26 dB Bandwidth - High Channel, 16QAM, Port 1

Intertek

02:00:30 PM 03/29/2023





01:57:53 PM 03/29/2023



26 dB Bandwidth - High Channel, 16QAM, Port 3

Intertek

01:53:43 PM 03/29/2023





01:50:23 PM 03/29/2023





26 dB Bandwidth - Low Channel, 64QAM, Port 1

Intertek

06:23:15 PM 03/29/2023





06:25:26 PM 03/29/2023





26 dB Bandwidth - Low Channel, 64QAM, Port 3

Intertek

06:27:20 PM 03/29/2023





06:30:00 PM 03/29/2023





Intertek





08:48:49 PM 03/29/2023





Intertek





08:52:11 PM 03/29/2023

Non-Specific Radio Report Shell Rev. October 2022 Client: CommScope Technologies, LLC – Model: n77 C Band





26 dB Bandwidth - High Channel, 64QAM, Port 1

Intertek

02:31:45 PM 03/29/2023





02:35:49 PM 03/29/2023





26 dB Bandwidth - High Channel, 64QAM, Port 3

Intertek

02:38:53 PM 03/29/2023





02:41:29 PM 03/29/2023





26 dB Bandwidth - Low Channel, 256QAM, Port 1

Intertek

07:04:12 PM 03/29/2023





07:08:02 PM 03/29/2023





26 dB Bandwidth - Low Channel, 256QAM, Port 3

Intertek

07:10:53 PM 03/29/2023





07:14:42 PM 03/29/2023





26 dB Bandwidth - Mid Channel, 256QAM, Port 1

Intertek

09:13:07 PM 03/29/2023





09:15:07 PM 03/29/2023





Intertek

26 dB Bandwidth - Mid Channel, 256QAM, Port 4



09:17:27 PM 03/29/2023





26 dB Bandwidth - High Channel, 256QAM, Port 1

Intertek

03:04:13 PM 03/29/2023





03:07:10 PM 03/29/2023





26 dB Bandwidth - High Channel, 256QAM, Port 3

Intertek

03:10:49 PM 03/29/2023





03:13:18 PM 03/29/2023

	Product Standard: FCC Title 47 CFR Part 27			Limit applied: S	See Report	Section 8.2			
Test Date	Test Dersonnel/			Supervising				Atmospheric	Data
	Initials	Supervising Engineer/Initials	Voltage	Mode	Temp	Relative	Atmospheric		
	Initials	Engineer/ milliais	vollage	voltage	Voltage		C°	Humidity %	Pressure mbar
03/29/2023	Kouma Sinn 43	Vathana Ven	48V POE	Transmitting	23	21	1012		

Deviations, Additions, or Exclusions: None

9 Frequency Stability

9.1 Method

Tests are performed in accordance with ANSI C63.26:2015.

9.2 Limits

FCC Title 47 Part 27.54 Frequency stability. The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

9.3 Test Site

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

9.4 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV009	weather station	Davis Instruments	6351 Vantage VUE	DAV009	03/27/2023	03/27/2024
CEN001	DC-40GHz attenuator 20dB	cblhf201-5-2	C411-20	CEN001	02/28/2023	02/28/2024
ROS005-1	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/18/2022	11/18/2023
	Freezing Rain\Icing\Temp\Humidity\ -73deg C to		CTH-(FR)64-6-6-			
SAF1153'	+190deg C, 95% humidity, Ice Freezing Rain	Cincinnati Sub-Zero	SC/AC	12-CT15628	12/02/2022	12/02/2023
None	2m Mini SMA Cable	See Below	None	None	See below	See below
None	RF Switch Controller (DC-18 GHz)	Mini-Circuits	RC-2SP4T-A18	02202230028	See below	See below

Notes: The 2m Mini SMA cable and RF Switch Controller were provided by the manufacturer with the total as follows: Low Frequency, 3720 MHz, -15.09 dB; Mid frequency, 3840 MHz, -15.14 dB; High Frequency, 3960 MHz, -15.25 dB.

Software Utilized:

Name	Manufacturer	Version
None	N/A	N/A

9.5 Results:

The sample tested was found to Comply.

9.6 Setup Photographs:

Confidential – Photos not included in this report.

9.7 Plots/Data:

Frequency Stability Over Temperature Variations Mod: QPSK, BW: 40 MHz, Antenna Port: 1, Low Ch. 3720 MHz

Frequency stability over temperature

Modulation: QPSK, Bandwidth: 40 MHz, Antenna Port: 1 , Low Ch. 3720MHz

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM
(Deg. C)	(GHz)	(GHz)		
-30	3.7010599	-9E-07	-2.43174E-07	0.00
-20	3.7010647	-5.7E-06	-1.5401E-06	-0.02
-10	3.7010599	-9E-07	-2.43174E-07	0.00
0	3.7010583	-7E-07	-1.89135E-07	0.00
10	3.7010645	5.5E-06	1.48606E-06	0.01
20	3.701059	0	0	0.00
30	3.7009609	-9.81E-05	-2.65059E-05	-0.27
40	3.7010604	1.4E-06	3.7827E-07	0.00
50	3.7010703	1.13E-05	3.05318E-06	0.03

Low Edge of Occupied Bandwidth

Temperature	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM
(Deg. C)	(GHz)	(GHz)		
-30	3.7390396	-1.9E-06	-5.08152E-07	-0.01
-20	3.7390325	5.2E-06	1.39073E-06	0.01
-10	3.7390477	-1E-05	-2.67448E-06	-0.03
0	3.7390246	-1.31E-05	-3.50358E-06	-0.04
10	3.7390282	-9.5E-06	-2.54076E-06	-0.03
20	3.7390377	0	0	0.00
30	3.7391599	0.0001222	3.26822E-05	0.33
40	3.7390417	4E-06	1.06979E-06	0.01
50	3.7391088	7.11E-05	1.90156E-05	0.19

Frequency Stability Over Temperature Variations Mod: QPSK, BW: 40 MHz, Antenna Port: 1, Mid Ch. 3840 MHz

Frequency stability over temperature

Modulation: QPSK, Bandwidth: 40 MHz, Antenna Port: 1, Mid Ch. 3840 MHz

Low Edge of Occupied Bandwidth

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM
(Deg. C)	(GHz)	(GHz)		
-30	3.82106	6E-07	1.57024E-07	0.00
-20	3.8210611	-5E-07	-1.30854E-07	0.00
-10	3.8210594	1.2E-06	3.14049E-07	0.00
0	3.8210574	-3.2E-06	-8.37464E-07	-0.01
10	3.8210581	-2.5E-06	-6.54269E-07	-0.01
20	3.8210606	0	0	0.00
30	3.8210644	3.8E-06	9.94488E-07	0.01
40	3.821063	2.4E-06	6.28098E-07	0.01
50	3.821037	-2.36E-05	-6.1763E-06	-0.06

Temperature	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM
(Deg. C)	(GHz)	(GHz)		
-30	3.8590182	2.06E-05	5.33812E-06	0.05
-20	3.859021	1.78E-05	4.61255E-06	0.05
-10	3.8590223	1.65E-05	4.27568E-06	0.04
0	3.8590264	-1.24E-05	-3.21324E-06	-0.03
10	3.8590274	-1.14E-05	-2.9541E-06	-0.03
20	3.8590388	0	0	0.00
30	3.8590365	-2.3E-06	-5.96003E-07	-0.01
40	3.8590308	-8E-06	-2.07306E-06	-0.02
50	3.8591001	6.13E-05	1.58848E-05	0.16

Frequency Stability Over Temperature Variations Mod: QPSK, BW: 40 MHz, Antenna Port: 1, High Ch. 3960 MHz

Frequency stability over temperature

Modulation: QPSK, Bandwidth: 40 MHz, Antenna Port: 1, High Ch. 3960 MHz

Low Edge of Occupied Bandwidth

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM
(Deg. C)	(GHz)	(GHz)		
-30	3.9410476	4.6E-06	1.1672E-06	0.01
-20	3.941048	4.2E-06	1.06571E-06	0.01
-10	3.9410302	2.2E-05	5.58227E-06	0.06
0	3.9410521	-1E-07	-2.53739E-08	0.00
10	3.9410558	3.6E-06	9.13462E-07	0.01
20	3.9410522	0	0	0.00
30	3.9410496	-2.6E-06	-6.59722E-07	-0.01
40	3.9410583	6.1E-06	1.54781E-06	0.02
50	3.9410501	-2.1E-06	-5.32853E-07	-0.01

Temperature	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM
(Deg. C)	(GHz)	(GHz)		
-30	3.9790152	2.71E-05	6.81068E-06	0.07
-20	3.9790163	2.6E-05	6.53424E-06	0.07
-10	3.9790457	-3.4E-06	-8.54477E-07	-0.01
0	3.9790306	-1.17E-05	-2.94041E-06	-0.03
10	3.9790251	-1.72E-05	-4.32265E-06	-0.04
20	3.9790423	0	0	0.00
30	3.9790349	-7.4E-06	-1.85974E-06	-0.02
40	3.9790256	-1.67E-05	-4.19699E-06	-0.04
50	3.9790864	4.41E-05	1.10831E-05	0.11

Frequency Stability Over Voltage Variations Modulation: QPSK, Bandwidth: 40 MHz, Antenna Port: 1, Low Ch. 3720 MHz

Lower Edge	of Occup	pied Bandwidth
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Voltage	Low Edge	v Edge Deviat	Low Edge (%)	PPM
(VDC)	(GHz)	(GHz)		
44	3.7010605	3.8E-06	1.02673E-06	0.01
48	3.7010567	0	0	0.00
57	3.7010625	5.8E-06	1.56712E-06	0.02

Upper Edge of Occupied Bandwidth

Voltage	Upper Edge	er Edge Devia	Upper Edge (%)	PPM
(VDC)	(GHz)	(GHz)		
44	3.7390381	2.5E-06	6.68622E-07	0.01
48	3.7390356	0	0	0.00
57	3.7390464	1.08E-05	2.88845E-06	0.03

Frequency Stability Over Voltage Variations Modulation: QPSK, Bandwidth: 40 MHz, Antenna Port: 1, Mid Ch. 3840 MHz

Lower Edge of Occupied Bandwidth

Voltage	Low Edge	Edge Devia	Low Edge (%)	PPM
(VDC)	(GHz)	(GHz)		
44	3.820576	-0.000491	-0.000128393	-1.28
48	3.8210666	0	0	0.00
57	3.8210587	-7.9E-06	-2.06749E-06	-0.02

Voltage	Upper Edger Edge Devi		Upper Edge (%)	PPM
(VDC)	(GHz)	(GHz)		
44	3.8590329	-8.3E-06	-2.15079E-06	-0.02
48	3.8590412	0	0	0.00
57	3.859031	-1.02E-05	-2.64314E-06	-0.03

Frequency Stability Over Voltage Variations Modulation: QPSK, Bandwidth: 40 MHz, Antenna Port: 1, High Ch. 3960 MHz

Lower Edge of Occupied Bandwidth

Voltage	Low Edge	Edge Devia	Low Edge (%)	PPM
(VDC)	(GHz)	(GHz)		-
44	3.9410551	-2.7E-06	-6.85095E-07	-0.01
48	3.9410578	0	0	0.00
57	3.9410376	-2.02E-05	-5.12553E-06	-0.05

Voltage	Upper Edge	er Edge Devi	Upper Edge (%)	PPM
(VDC)	(GHz)	(GHz)		
44	3.9790278	9.1E-06	2.287E-06	0.02
48	3.9790187	0	0	0.00
57	3.9790411	2.24E-05	5.62953E-06	0.06



Frequency Stability – Low Channel, QPSK, Port 1 (-30 °C)

Intertek

12:36:50 PM 03/31/2023





12:17:44 PM 03/31/2023



Frequency Stability – Low Channel, QPSK, Port 1 (-10°C)

Intertek

11:33:21 AM 03/31/2023





11:14:08 AM 03/31/2023



Frequency Stability – Low Channel, QPSK, Port 1 (10°C)

Intertek

09:27:13 AM 03/31/2023





02:36:56 PM 03/30/2023



Frequency Stability – Low Channel, QPSK, Port 1 (30°C)

Intertek

01:34:57 PM 03/31/2023





01:48:35 PM 03/31/2023



Frequency Stability – Low Channel, QPSK, Port 1 (50°C)

Intertek

02:29:17 PM 03/31/2023



Frequency Stability – Mid Channel, QPSK, Port 1 (-30 °C)

Intertek

12:45:59 PM 03/31/2023





12:10:31 PM 03/31/2023

¢\$

Setup

8-0 GHz s MHz ms -dBm ¥ dBm m¥

kHz µs Hz ns dB µ¥ dB...n¥

Preset

2023-03-31 11:06:18

Span 81.3 MHz

37.969 040 018 MHz

Measuring...

3.840041917 GHz 41.917485175 kHz

Print



Frequency Stability – Mid Channel, QPSK, Port 1 (-10°C)

Intertek

11:41:36 AM 03/31/2023

10 dBm

0 dBn

-10 dB

-20 d

-40, di -50 dBr

-60 dBr -70 dBr

TV

M1

Τ1

CF 3.84 GHz

2 Marker Table



8.13 MHz

Occ Bw

Occ Bw Centroid

Occ Bw Fred Offset

Function

Frequency Stability – Mid Channel, QPSK, Port 1 (0°C)

11:06:19 AM 03/31/2023

Ref Tr

3.84 GHz

3.821 057 4 GHz 3.859 026 4 GHz

1001 pts

17.11 dBm

14.79 dBm 15.45 dBm



Frequency Stability – Mid Channel, QPSK, Port 1 (10°C)

Intertek

09:35:52 AM 03/31/2023



MultiView 📑 Spectrum	× Spectrum 2	× Spectrum 3	3 🗙		•
Ref Level 19.89 dBm Offse	t 15.14 dB 🗢 RBW 500 kHz				
Att 10 dB SWT	1.01 m s 🗢 VBW 2 MHz 🕅	Iode Auto Sweep			
TRG:EXT1 TDF "CEN001_02-28-	24"				o t Dia Maria
1 Occupied Bandwidth	T1 pro mon		monum	T2	M1[1] 17.03 dBm
				Λ	3 840 000 0 GHz
10 dBm				~	
0 dBm					
-10 dBm					
00 daw	ան ննա՝			mult	WAM AN
-20 UBm	MLPU I				and the second s
-30 dBm/	1102				
22 ad M. Mr. M. M. W. W. M. M.					
-40xdBm					
-50 dBm					
-60 dBm					
-70 dBm					
CE 3 84 CHz	1001 p		8 13 MHz /		Spap 81 3 MHz
2 Marker Table 2 1001 pts 0.10 Mirt2 3part 01.3 Mirt2					
Type Ref Trc	X-Value	Y-Value	Function	F	unction Result
M1 1	3.84 GHz	17.03 dBm	Doc Bw	37.97	78 231 954 MHz
T2 1	3.821 060 6 GHz 3.859 038 8 GHz	14.40 aBm C 15.42 dBm C	лсс вж centroid Осс Вж Frea Offset		3.840.049.674 GHz 49.673.746.497 kHz
Tempera	ture deviation from self alignment	. Consider 0.2 dB additio	nal level uncertainty.	Measuring	2023-03-30

02:47:05 PM 03/30/2023

Frequency Stability – Mid Channel, QPSK, Port 1 (30°C)

أ∕♦

Auto Set

Sweep

Trigger

Meas Config

Input / Output

Peak Search

Marke

Redo

Mode

8-0 GHz s MHz ms -dBm ¥ dBm m¥

kHz µs Hz ns dB µ¥ dB.. n¥

2023-03-31

Lines

Marker

Marker Function

Undo

Setup

and the stand the stand

Span 81.3 MHz

37.967 802 15 MHz

3.840 046 876 GHz 46.875 697 588 kHz Measuring...

40.0

Month Martine



Intertek

01:28:09 PM 03/31/2023

🗕 Att

10 dBm-

0 dBm

-10 dBr

-20 d

-30

40 dBr -50 dBr

-60 dBr

-70 dBm

Type

M1 T1

CF 3.84 GHz

2 Marker Tabl



8.13 MHz/

Occ Bw Occ Bw Centroid

).2 dB additional level (

Function

Frequency Stability – Mid Channel, QPSK, Port 1 (40°C)

01:55:37 PM 03/31/2023

Ref Tr

Manufananan

3.84 GHz

3.821 063 GHz .859 030 8 GHz

1001 pts

17.38 dBm

14.43 dBm

a 1114

1,11


Frequency Stability – Mid Channel, QPSK, Port 1 (50°C)

Intertek

02:22:02 PM 03/31/2023



Frequency Stability – High Channel, QPSK, Port 1 (-30 °C)

Intertek

12:53:25 PM 03/31/2023





12:03:01 PM 03/31/2023



Frequency Stability – High Channel, QPSK, Port 1 (-10°C)

Intertek

11:49:05 AM 03/31/2023





10:57:14 AM 03/31/2023



Frequency Stability – High Channel, QPSK, Port 1 (10°C)

Intertek

10:32:10 AM 03/31/2023





02:55:02 PM 03/30/2023



Frequency Stability – High Channel, QPSK, Port 1 (30°C)

Intertek

01:17:03 PM 03/31/2023





02:03:01 PM 03/31/2023



Frequency Stability – High Channel, QPSK, Port 1 (50°C)

Intertek

02:16:24 PM 03/31/2023



01:42:01 PM 04/05/2023



MultiView 📑	Spectrum	× Spectru	um 2 🗙	Spectrum 3	× Spectru	um 4	×		•
Ref Level 1	9.89 dBm Offse	t 15.14 dB 🖷 P	BW 500 kHz	-					
Att	10 dB SWT	1.01 ms 🖷 V	BW 2 MHz	Mode Auto Sweep					
Occupied B	andwidth	24							●1Pk Max
0 d0m			\sum		n m	a starten and the second		M1[1] 3	17.65 dBr 840 000 0 GH
dBm									
10 dBm	, uhs	Mart					ليسرير	madrama	
20 dBm	141							الممر .	and a superior
	Marman								
to-dom									
50 dBm									
50 dBm									
70 dBm									
F 3.84 GHz			1001	pts	8.	13 MHz/		:	Span 81.3 MH
Marker Tak	ef Trc	X-Value		Y-Value		Function		Function R	esult
M1 T1 T2	1 1	3.84 (3.821 057 6	GHz GHz	17.65 dBm 15.01 dBm	Occ Bw Occ Bw Cer	ntroid	3	7.975 273 9 3.840 04 45 2324	95 MHz 5232 GHz 96 47 kHz

01:51:43 PM 04/05/2023





Frequency Stability – High Channel, QPSK, Port 1 (44VDC)

Intertek

01:59:05 PM 04/05/2023



Frequency Stability - Low Channel, QPSK, Port 1 (48VDC)

Intertek

02:18:40 PM 04/05/2023





02:14:24 PM 04/05/2023





Frequency Stability – High Channel, QPSK, Port 1 (48VDC)

Intertek

02:10:00 PM 04/05/2023



Frequency Stability – Low Channel, QPSK, Port 1 (57VDC)

Intertek

02:27:26 PM 04/05/2023



02:31:55 PM 04/05/2023





Frequency Stability – High Channel, QPSK, Port 1 (57VDC)

Intertek

02:33:32 PM 04/05/2023

	Product Standard: F	CC Part 27		Limit applied: See Report Section 9.2				
Test Date	Test Bersennel/	Supervising	loout			Atmospheric	Data	
	Initials	Engineer/ Initials	Voltage	Mode	Temp C°	Relative Humidity %	Atmospheric Pressure mbar	
03/31/2023	Kouma Sinn	Vathana Ven	48V POE	Transmitting	N/A	N/A	N/A	
04/05/2023	Kouma Sinn	Vathana Ven	48V POE	Transmitting	23	24	1009	

Deviations, Additions, or Exclusions: None

10 Band Edges

10.1 Method

Tests are performed in accordance with ANSI C63.26:2015.

10.2 Limits

FCC Part 27.53(I)(1) For base station operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (I)(1) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

10.3 Test Site

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

10.4 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV009'	weather station	Davis Instruments	6351 Vantage VUE	DAV009	03/27/2023	03/27/2024
CEN001'	DC-40GHz attenuator 20dB	cblhf201-5-2	C411-20	CEN001	02/28/2023	02/28/2024
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/18/2022	11/18/2023
None	2m Mini SMA Cable	See Below	None	None	See below	See below
None	RF Switch Controller (DC-18 GHz)	Mini-Circuits	RC-2SP4T-A18	02202230028	See below	See below

Notes: The 2m Mini SMA cable and RF Switch Controller were provided by the manufacturer with the total as follows: Low Frequency, 3720 MHz, -15.09 dB; Mid frequency, 3840 MHz, -15.14dB; High Frequency, 3960 MHz, -15.25 dB.

Software Utilized:

Name	Manufacturer	Version
None	N/A	N/A

10.5 Results:

The sample tested was found to Comply.

10.6 Setup Photograph:

Confidential – Photos not included in this report.

10.7 Plots/Data:

Lower Band Edge, QPSK, Port 1 X X Spe..m 2 X Spectrum 4 X Spectrum 5 X Spectrum 7 MultiView X Spectrum 3 X Spectrum 6 × Spectrum Ref Level 25.09 dBm Offset 15.09 dB • RBW 500 kHz Att 10 dB SWT 1.01 ms VBW 2 MHz Mode Auto Sweep TRG:EXT1 TDF "CEN001_02-28-24" Count 100/100 1 Frequency S weep 1Rm Avg M1[1] 7.45 dB 20 dBm 731 800 0 GH; 10 dBm 0 dBn -10 dBm -20 dBm 30 d ahadh 40 dB nwrh al la factoria -50 dBm -60 dBm -70 dBm Span 65.8 MHz CF 3.698 9 GHz 1001 pts 6.58 MHz/ 05:48:53 PM 03/29/2023



MultiView 🗧	Spectrum	Spem 2	X Spectrum 3	Spectrum 4	×	Spectrum	5 X	Spectrum 6	X Spectrum 7	× ·
Ref Leve	l 25.09 dBm	Offset 15.09 d	3 • RBW 500 kHz	_					_	
Att	10 dB	SWT 1.01 m	s 🖷 VBW 2 MHz I	Mode Auto Sweep						Count 100/100
TRG:EXT1 T	TDF "CEN001_	02-28-24"								O 1 Rm Avra
Tricquen	cy on cep								M1	[1] 7.60 dBm
20 dBm										3 731 800 0 GHz
10 dBm										M
					ſ	m		many		And the
0 dBm							200	000	and public	- mit
-10 dBm										
FCC27_LE										
-20 dBm										
-20 dBm										
So abiii										
-40 dBm	annandulle	www.	4 martine martine and the second		M					
-50 dBm										
-60 dBm										
-70 d8m-										
-ro ubm										
CF 3.6989	GHz		1001 p	ts		6.	58 MHz/			Span 65.8 MHz
	~							Measur	ing	2023-03-29 17:49:40

05:49:41 PM 03/29/2023







Lower Band Edge, QPSK, Port 3

05:50:05 PM 03/29/2023





05:50:26 PM 03/29/2023







09:36:07 PM 03/29/2023











09:36:27 PM 03/29/2023







05:53:14 PM 03/29/2023



										I
Multi¥iew <mark>-</mark> Spectrum	×s	pem 2	Spectrum 3	X Spectrum 4	×	Spectrum	s 🗙 sp	ectrum 6	Spectrum 7	× -
Ref Level 25.09	dBm Offset	t 15.09 dB 🖷 R	BW 500 kHz							
 Att 10 TRG:EXT1 TDF "CEN 	0 dB SWT 4001 02-28-2	1.01 ms 🖶 V 24"	BW 2 MHz N	1ode Auto Sweep					C	Count 100/100
1 Frequency Swee	ер									o1Rm Avg
20 dBm									M1[1]	7.67 dBm
10 dBm										<u>tm</u>
					6	m	a share a shar	and the second s	And the second s	
0 dBm										
-10 dBm										
-20 UBM										
-20 d8m										
-40 dBm										
MMMMM	m.M.M.Mura	Munner	nonnon	monthe	_N					
-50 dBm										
-60 dBm										
-70 dBm										
CF 3.698 9 GHz			1001 pt	IS		6.	58 MHz/			5pan 65.8 MHz
~								Measuring		2023-03-29 17:54:04

05:54:04 PM 03/29/2023





Lower Band Edge, 16QAM, Port 3

05:54:28 PM 03/29/2023





05:54:48 PM 03/29/2023







09:38:36 PM 03/29/2023



















Lower Band Edge, 64QAM, Port 1

06:36:54 PM 03/29/2023





06:37:28 PM 03/29/2023





06:37:48 PM 03/29/2023





06:38:31 PM 03/29/2023

























¢\$) MultiView Spectrum X Spectrum 4 × Spectrum 5 × Spectrum 6 × Spectrum 7 X Spe..m 2 X Spectrum 3 × Ref Level 25.09 dBm Offset 15.09 dB • RBW 500 kHz ● Att 10 dB SWT 1.01 ms ● VBW 2 MHz Mode Auto Sweep TRG:EXT1 TDF "CEN001_02-28-24" Count 100/100 o1Rm Avg 1 Frequency Sweep M1[1] -25.02 dBn 20 dBm 679390 GHz 10 dBr 0 dBn -10 dBm CC27_LE -20 dBr -30 M MM W. A.A. -50 dBn -60 dBm -70 dBm 1001 pts 6.58 MHz/ Span 65.8 MHz CF 3.698 9 GHz Measuring...
Measuring...

Lower Band Edge, 256QAM, Port 1

07:22:22 PM 03/29/2023









Multi¥iew	Spect	7um 🗙	Spem 2	×	Spectrum 3	X Spectrum 4		× Spectrum	5 X	Spectrum 6	×	Spectrum 7	x -
Ref Lev	/el 25.	09 dBm Of	fset 15.09 (ib 🖷 RBV	V 500 kHz						_		
• Att		10 dB SV	VT 1.01 n	ns 🗢 VBV	V 2 MHz N	Node Auto Sweep						C	Count 100/100
1 Freque	ncy Sv	CENUU1_U2- weep	28-24"										o 1Rm Avg
												M1[1]	-25.67 dBm
20 dBm												3	6679390 GHz
10 dBm													
								mont	man	man marken	m have		mmun
0 dBm								1					
								1					
-10 dBm													
FCC27_LE													
-20 dBm-													
Ϋ́ Υ													
-30 dBm—													
-40 dBm	M.	<u>tu and ti</u>					IJ						
1 NMM	Andrew	MM holled and	AM MALLAN	martin	and the start of								
-50 dBm-													
-60 dBm													
-70 dBm													
					1001	<u> </u>						L	
CF 3.698	9 GHz	2			1001 p	ts		6.	58 MHz/			ET O	5pan 65.8 MHz
		~								Measu	iring	REF	19:23:13

Lower Band Edge, 256QAM, Port 3

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07:23:38 PM 03/29/2023





















	Product Standard: FCC Title 47 CFR Part 27				Limit applied: See Report Section 10.2				
Test Date	Date Test Demonsel/		Input		Atmospheric Data				
		Engineer/Initials	Voltage	Mode	Temp	Relative	Atmospheric		
	millais		voltage		C°	Humidity %	Pressure mbar		
03/29/2023	Kouma Sinn	Vathana Ven	48V POE	Transmitting	23	21	1012		

Deviations, Additions, or Exclusions: None

11 Antenna Port Conducted and Radiated Spurious Emissions

11.1 Method

Tests are performed in accordance with ANSI C63.4: 2014 and ANSI C63.26:2015.

11.2 Limits

FCC Part 27.53(I)(1) (1) For base station operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed –13 dBm/MHz. Compliance with this paragraph (I)(1) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

11.3 Test Site

Antenna Port Conducted Emissions Site:

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

Radiated Emissions Site:

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	5.0 dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	4.6 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.9 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.1 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	4.7 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	4.7 dB	5.5 dB

Measurement Uncertainty

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

 $\begin{array}{ll} FS = RA + AF + CF - AG \\ Where & FS = Field Strength in dB\mu V/m \\ RA = Receiver Amplitude (including preamplifier) in dB\mu V \\ CF = Cable Attenuation Factor in dB \\ AF = Antenna Factor in dB \\ AG = Amplifier Gain in dB \end{array}$

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

 $\label{eq:result} \begin{array}{l} {\sf RA} = 52.0 \ d{\sf B}\mu{\sf V} \\ {\sf AF} = \ 7.4 \ d{\sf B}/{\sf m} \\ {\sf CF} = \ 1.6 \ d{\sf B} \\ {\sf AG} = 29.0 \ d{\sf B} \\ {\sf FS} = 32 \ d{\sf B}\mu{\sf V}/{\sf m} \end{array}$

To convert from $dB\mu V$ to μV or mV the following was used:

 $UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$ $NF = \text{Net Reading in } dB\mu\text{V}$

Example:

FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0 $UF = 10^{(32 \ dB\mu V / 20)} = 39.8 \ \mu V/m$

Alternately, when BAT-EMC Emission Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". The "Correction" includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the "Level" column.

11.4 Test Equipment Used:

Test equipment used for antenna port conducted

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV009	weather station	Davis Instruments	6351 Vantage VUE	DAV009	03/27/2023	03/27/2024
CEN001	DC-40GHz attenuator 20dB	cblhf201-5-2	C411-20	CEN001	02/28/2023	02/28/2024
ROS005-1	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/18/2022	11/18/2023
None	2m Mini SMA Cable	See Below	None	None	See below	See below
None	RF Switch Controller (DC-18 GHz)	Mini-Circuits	RC-2SP4T-A18	02202230028	See below	See below

Notes: The 2m Mini SMA cable and RF Switch Controller were provided by the manufacturer with the total as follows: Low Frequency, 3720 MHz, -15.09 dB; Mid frequency, 3840 MHz, -15.14 dB; High Frequency, 3960 MHz, -15.25 dB.

Software Utilized:

Name	Manufacturer	Version
None	N/A	N/A

Test equipment used for radiated emissions from 9 kHz-30 MHz

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
ETS002'	1-18GHz DRG Horn Antenna	ETS Lindgren	3117	00143260	09/27/2022	09/27/2023
IW006'	DC-18GHz cable 8.4m long	Insulated Wire	2800-NPS	IW006	07/14/2022	07/14/2023
DAV006'	Weather Station	Davis	6250	MS191218071	02/21/2022	02/21/2024
IW002'	2 meter Armored cable	Insulated Wire	2800-NPS	002	10/11/2022	10/11/2023
IW002'	2 meter Armored cable	Insulated Wire	2800-NPS	002	10/11/2022	10/11/2023
145-414'	Cable 145-414	Huber + Suhner	3m Track A cable	145-414	07/09/2021	07/09/2022
145108'	EMI Test Receiver (20Hz - 40GHz)	Rohde & Schwarz	ESIB40	100209	06/23/2022	06/23/2023
ETS003'	9kHz-30MHz Active Loop Antenna	ETS Lindgren	6502	00143396	09/06/2022	09/06/2023

Software Utilized:

Name	Manufacturer	Version	
BAT-EMC	NEXIO	3.18.0.16	

Test equipment used for radiated emissions from 30-1000 MHz

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	06/16/2022	06/16/2023
145-408'	10m Chamber - 3m Track B In-floor Cable	Huber + Suhner	sucoflex 106-11000mm	001	07/14/2022	07/14/2023
PRE11'	50dB gain pre-amp	Pasternack	PRE11	PRE11	09/20/2022	09/20/2023
HS002'	DC-18GHz cable 1.5M long	Huber & Suhner	SucoFlex 106A	HS002	07/17/2022	07/17/2023
145-406'	10m Track A In-floor Cable #1	Huber + Suhner	sucoflex 160-19220mm	001	07/14/2022	07/14/2023
IW001'	2 meter cable	Insulated Wire	2801-NPS	001	07/14/2022	07/14/2023
145108'	EMI Test Receiver (20Hz - 40GHz)	Rohde & Schwarz	ESIB40	100209	06/23/2022	06/23/2023
DAV006'	Weather Station	Davis	6250	MS191218071	02/21/2022	02/21/2024

Software Utilized:

Name	Manufacturer	Version		
BAT-EMC	NEXIO	3.18.0.16		

Test equipment used for radiated emissions from 1-18 GHz

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
ETS002'	1-18GHz DRG Horn Antenna	ETS Lindgren	3117	00143260	09/27/2022	09/27/2023
IW006'	DC-18GHz cable 8.4m long	Insulated Wire	2800-NPS	IW006	07/14/2022	07/14/2023
PRE12'	Pre-amplifier	Com Power	PAM-118A	18040117	12/17/2022	12/17/2023
IW002'	2 meter Armored cable	Insulated Wire	2800-NPS	002	10/11/2022	10/11/2023
IW002'	2 meter Armored cable	Insulated Wire	2800-NPS	002	10/11/2022	10/11/2023
145-414'	Cable 145-414	Huber + Suhner	3m Track A cable	145-414	07/09/2021	07/09/2022
145108'	EMI Test Receiver (20Hz - 40GHz)	Rohde & Schwarz	ESIB40	100209	06/23/2022	06/23/2023
DAV006'	Weather Station	Davis	6250	MS191218071	02/21/2022	02/21/2024

Software Utilized:

Name	Manufacturer	Version		
BAT-EMC	NEXIO	3.18.0.16		

Test equipment used for radiated emissions from 18-40 GHz

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
PRE9'	100MHz-40GHz Preamp	MITEQ	NSP4000-NFG	1260417	09/23/2022	09/23/2023
CBLHF2012-5M-2'	5m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252676002	02/25/2023	02/25/2024
CBLHF2012-2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/18/2023	02/18/2024
REA006'	18GHz High Pass Filter	Reactel, Inc	7HS-18G/40G K11	(06)1	04/28/2022	04/28/2023
145108'	EMI Test Receiver (20Hz - 40GHz)	Rohde & Schwarz	ESIB40	100209	06/23/2022	06/23/2023
ETS004'	18-40GHZ horn antenna	ets004	3116C	00218579	02/23/2023	02/23/2024
DAV006'	Weather Station	Davis	6250	MS191218071	02/21/2022	02/21/2024

Software Utilized:

Name	Manufacturer	Version
EMI Boxborough.xls	Intertek	08/27/2010

11.5 Results:

The sample tested was found to Comply.

11.6 Setup Photographs:

Confidential – Photos not included in this report.
11.7 Plots/Data:

Antenna Port 1 Conducted Emissions – Low Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

se teur								Carachana Z	×
Multiview	spectrum	spem 2	spectrum 3	Spectrum 4	Spectrum 5	s spe	Accounts Accounts	spectrum /	<u>^</u>
Ref Leve Att TRG:EXT1 1	10 dB SWT 10 dB SWT TDF "CEN001 02-28	et 15.09 dB ■ R 160 ms ● V -24"	BWF1MHz BWF3MHz Mo	de Auto Sweep				с	ount 100/100
1 Frequen	cy Sweep	_							●1Rm Avg
								M1[1]	-41.44 dBm
20 dBm-									539.0 MHz
10 dBm									
0 dBm									
10 10									
-10 dBm	H1 -13.000 d	Bm							
-20 dBm									
-30 dBm									
M1						1			m
	n hand in C		han .	1			hand		
/		μ							
-50 dBm		1							
-60 dBm									
-70 d8m-									
-ro ubm									
CF 20.000	004 5 GHz		1001 pt	s	. 4	.0 GHz/	•	Span 39	9.9999991 GHz
							Measuring		2023-03-29

Antenna Port 2 Conducted Emissions - Low Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

							 Image: A start of the start of
MultiView Spectrum	Spem 2 Spectrum 3	× Spectrum 4	× Spectrum 5	× sp	ectrum 6	Spectrum 7	× ·
Ref Level 25.09 dBm Offse	et 15.09 dB • RBW 1 MHz						
TRG:EXT1 TDF "CEN001_02-28	-24"	ie Auto Sweep					ount 100/100
1 Frequency Sweep						M1[1]	• 1Rm Avg
20 dBm						(ALL)	539.0 MHz
10 dBm							
0 dBm							
10 40-1							
-10 dBm- H1 -13.000 d	Bm						
-20 dBm							
Lo dom							
-30 dBm							
0 dBm			~	Ann	+		
Aman	hand	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
-50 dBm					-		
-60 dBm							
-70 dBm							
CF 20.000 004 5 GHz	1001 pt	5	4	.0 GHz/	1	Span 39	9.9999991 GHz
~					Measuring		2023-03-29 18:01:32

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Antenna Port 3 Conducted Emissions – Low Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

Intertek

Multi¥iew Spo	ectrum X	Spem 2	Spectrum 3	X Spectrum 4	× Spectrum 5	i 🗙 Spe	ectrum 6	Spectrum 7	x -
Ref Level 25	5.09 dBm Offse	t 15.09 dB 🖷 RE	3W 1 MHz						
 Att TRG:EXT1_TDE 	10 dB SWT "CEN001 02-28-	160 ms 🖷 VE 24"	SW 3 MHz Mod	de Auto Sweep				С	ount 100/100
1 Frequency	Sweep						_		●1Rm Avg
								M1[1]	-41,48 dBm
20 dBm									539.0 MHz
10 dBm									
0 dBm									
-10 dBm-	H1 -13 000 dB	m							
-20 dBm									
-30 dBm									
00 00.0									
M1						A		· · · · ·	m
-40 dBm				A		- Ann	+	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Man	grow	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		- unit					
-50 dBm									
-60 dBm									
-70 dBm									
CF 20.000 004	45 GHz	1	1001 pt	s	4	.0 GHz/	1	Span 39	9.999 991 GHz
	~					,	Measuring	EXTO	2023-03-29
							loosaningin	REF	18:02:39

Antenna Port 4 Conducted Emissions - Low Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

								
Multi¥iew Spectrum	Spem 2	X Spectrum 3	X Spectrum 4	× Spectrum	5 X Sp	ectrum 6	Spectrum 7	× ·
Ref Level 25.09 dBn Att 10 di	n Offset 15.09 dB B SWT 160 ms	■RBW 1 MHz ■VBW 3 MHz Moo	de Auto Sweep				с	ount 100/100
TRG:EXT1 TDF "CEN00	1_02-28-24"							O 1 Pm Ava
Thequency Sweep							M1[1]	-41.45 dBm
20 dBm								539.0 MHz
10 dBm								
0 dBm								
-10 dBm	-13.000 dBm							
-20 dBm								
20 dbm								
-50 060								
-40 dBm	~~ ~~~~		~~~~~		han			
-50 dBm								
-60 dBm								
-70 dBm								
CF 20.000 004 5 GHz	I	1001 pt	s	4	 1.0 GHz/	1	Span 39	9.9999991 GHz
					,	Measuring		2023-03-29
								10:03:47

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Antenna Port 1 Conducted Emissions - Mid Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

Intertek

Ref Level 25.14 dBm Offset 15.1	4 dB 🖷 RBW 1 MHz	_		_	_		
Att 10 dB SWT 160 G:EXT1 TDF "CENOO1 02-28-24"	oms●VBW/3MHz Moo	de Auto Sweep				C	ount 100/10
Frequency Sweep							O1Rm Av
						M1[1]	-41.40 dE
uBm-							539.0 N
asm							
10 m							
15 m							
0 dem							
H1 -12.950 dBm							
0 d9m							
o dbin							
0 dBm							
1 0 dBm						~~~~	$\sim\sim\sim$
min min		hannet	~~~~~		~~~~~		
0 dBm							
0 dBm							
0 dBm							
20.000.004.5 GHz			4	.0 GHz/		Snan 30),999,991 G

Antenna Port 2 Conducted Emissions - Mid Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

MultiView Spe	ctrum 🗙	Spem 2	Spectrum 3	X Spectrum 4	× Spectrum 5	5 × 5	pectrum 6 🗙	Spectrum 7	x -
Ref Level 25	.14 dBm Offse	t 15.14 dB 🖷 RI	3W 1 MHz						
• Att	10 dB SWT	160 ms 🗢 VE	3W 3 MHz Moo	le Auto Sweep				С	ount 100/100
1 Frequency S	weep	-24"							• 1Rm Avg
								M1[1]	-41.37 dBm
20 dBm									539.0 MHz
10 dBm									
0 dBm									
-10 dBm	H1 -12 950 df	3m							
	112.000 0								
-20 dBm									
-30 dBm									
									~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
-40 dBm				~		Ann	+		
m	for a company of	hann	~~~~~	· · · · · · · · · · · · · · · · · · ·		1			
-50 dBm									
-60 dBm									
-70 dBm									
CE 20,000,004			1001 pt					(man 2)	000.001.001-
CF 20.000 004			1001 pt	ə	4		Moasuring	span 39	.9999991 GHZ
							measuring	REF	20:34:46

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Antenna Port 3 Conducted Emissions - Mid Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

Intertek

Multi¥iew <mark>-</mark> Sp	ectrum 🗙	Spem 2	Spectrum 3	X Spectrum 4	× Spectrum 5	5 <b>X</b> Sp	ectrum 6 🗙	Spectrum 7	× ·
Ref Level 2	5.14 dBm Offse	t 15.14 dB 🖷	RBW 1 MHz	_	_				
Att	10 dB SWT	160 ms 🖷	VBW 3 MHz Mo	ode Auto Sweep				C	ount 100/100
I Frequency	Sweep	24							o1Rm Avg
								M1[1]	-41.41 dBm
20 dBm									539.0 MHz
10 dBm									
0 dBm									
-10 dBm	H1 -12 950 df	3m							
-20 dBm									
-30 dBm									
M1						-1		L ~~~	m
- 00 dBm		1	~~~~	h _~~	hanna	Julia			
/hour L	/p und	$\mu$							
-50 dBm									
-60 dBm									
-70 d8m									
ro upm									
CF 20.000 00	4 5 GHz		1001 p	ts	. 4	.0 GHz/		Span 3	9.999 991 GHz
							Measuring	EXT	2023-03-29

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Antenna Port 4 Conducted Emissions - Mid Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

Multi¥iew Spee	ctrum X	Spem 2	Spectrum 3	X Spectrum 4	× Spectrum 5	. <b>x</b> :	Spectrum 6	Spectrum 7	× ·
Ref Level 25	.14 dBm Offse	et 15.14 dB 🖷 RI	3W 1 MHz	_			_		_
🖷 Att	10 dB SWT	160 ms 🖷 VI	3W 3 MHz Mo	de Auto Sweep				c	ount 100/100
TRG:EXT1 TDF	"CEN001_02-28	-24"							O I Pro Ava
I requercy s	меер							M1[1]	-41.40 dBm
20 dBm									539.0 MHz
10 dBm									
0 dBm									
10 d0m									
-10 0800-	H1 -12.950 d	Bm							
-20 dBm									
-30 dBm									
0 dBm					~	An			
hand	mm	han	~~~~~~	human	for here				
-50 dBm									
-60 d0m									
00 ubm									
-70 dBm									
CF 20.000 004	5 GHz	1	1001 pt	s	4	.0 GHz/		Span 3	9.9999991 GHz
	-						Measuring		2023-03-29
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Antenna Port 1 Conducted Emissions - High Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

Intertek

									<u> </u>
Multi¥iew <mark>-</mark> Spectrum	n 🗙 s	ipem 2 🗙	Spectrum 3	X Spectrum 4	× Spectrum 5	5 X Sp	actrum 6	Spectrum 7	×
Ref Level 25.25 Att :: TRG:EXT1 TDF "CE	dBm Offset 10 dB SWT N001 02-28-2	t 15.25 dB • R 160 ms • V 24"	BW 1 MHz BW 3 MHz Mo	de Auto Sweep				С	ount 100/100
1 Frequency Swe	еер								●1Rm Avg
								M1[1]	-41.28 dBm
20 dBm									539.0 MHz
10 dBm									
0 dBm									
-10 dBm									
	-H1 -13.000 dB	m							
-20 dBm									
-30 dBm									
M1 -∳0 dBm					~			for the second s	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Amp	Jun ~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m ~ m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
-50 dBm									
-60 dBm									
70 40									
-70 UBM									
CF 20.000 004 5	GHz		1001 pt	s	4	.0 GHz/		Span 3	9.9999991 GHz
							Measuring		2023-03-29 14:10:30

02:10:30 PM 03/29/2023

Antenna Port 2 Conducted Emissions - High Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

Nutrier       Spectrum									
RefLevel 25.25 dB • 0ffset 15.25 dB • RBW 1 MHz       Count 100/100         Trequency Sweep       Offset 15.25 dB • RBW 1 MHz         Offset 15.25 dB • RBW 1 MHz       Mode Auto Sweep         Trequency Sweep       Offset 15.25 dB • RBW 1 MHz         Offset 15.25 dB • RBW 1 MHz       Mode Auto Sweep         Trequency Sweep       Offset 43.24 dBm         20 dbm       0       M1[1]       -41.24 dBm       539.0 MHz         10 dbm       0       0       M1[1]       -41.24 dBm       539.0 MHz         10 dbm       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0 <td>Multi¥iew Spectrum</td> <td>Spem 2</td> <td>X Spectrum 3</td> <td>X Spectrum 4</td> <td>× Spectrum 5</td> <td>5 🗙 56</td> <td>pectrum 6 X</td> <td>Spectrum 7</td> <td>× -</td>	Multi¥iew Spectrum	Spem 2	X Spectrum 3	X Spectrum 4	× Spectrum 5	5 🗙 56	pectrum 6 X	Spectrum 7	× -
At       10 db       SWT       160 ms       VBW 3 MHz       Mode Auto Sweep       Count 100/100         TRG:EXT1 TDF"CEN001_02-28-24"       01Rm Avg       01Rm Avg </td <td>Ref Level 25.25 dB</td> <td>m Offset 15.25</td> <td>dB 🖷 RBW 1 MHz</td> <td>—</td> <td></td> <td></td> <td></td> <td>_</td> <td></td>	Ref Level 25.25 dB	m Offset 15.25	dB 🖷 RBW 1 MHz	—				_	
TRG:EX11 TDF "CENOD_02-28-24"       OIPm Avg         I Frequency Sweep       M1[1]       ~41.24 dBm         20 dBm       M1[1]       ~41.24 dBm         10 dBm       M1[1]       ~41.24 dBm         0 dBm       M1[1]       M1[1]         -10 dBm       M1[1]       M1[1]         -20 dBm       M1[1]       M1[1]         -30 dBm       M1[1]       M1[1]         -30 dBm       M1[1]       M1[1]         -40 dBm       M1[1]       M1[1]         -30 dBm       M1[1]       M1[1]         -30 dBm       M1[1]       M1[1]         -30 dBm       M1[1]       M1[1]         -30 dBm       M1[1]       M1[1]         -40 dBm       M1[1]       M1[1]         -50 dBm       M1[1]       M1[1]         -60 dBm       M1[1]       M1[1]         -70 dBm       M1[1]       M1[1]         -70 dBm       M1[1]       M1[1]         -70 dBm       M1[1]       M1	• Att 10 c	B SWT 160 r	ms 🖷 VBW 3 MHz 🛛 Mo	de Auto Sweep				с	ount 100/100
20 dBm       M1[1]       -41.24 dBm         10 dBm       539.0 MHz         0 dBm       10 dBm         -10 dBm       10 dBm         -20 dBm       10 dBm         -30 dBm       10 dBm         -30 dBm       10 dBm         -30 dBm       10 dBm         -50 dBm       10 dBm         -50 dBm       10 dBm         -50 dBm       10 dBm         -60 dBm       10 dBm         -70 dBm       1001 pts         4.0 GHz/       Span 39.999 991 GHz         Yearsing       2023-03-29	TRG:EXT1 TDF "CENOO 1 Erequency Sweep	01_02-28-24"							o 1Rm Ava
20 dBm								M1[1]	-41.24 dBm
10 dBm       Image: Constraint of the second o	20 dBm								539.0 MHz
10 dbm									
0 dBm + 11 - 13.000 dBm + 11 -	10 dBm								
0 dbm       Image: state s									
-10 dbm +1 - 13.000 dbm + 1 - 13.000 dbm	0 dBm								
-10 dBm +1 - 13.000 dBm									
-20 dBm       -13.000 dBm       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10       -10	-10 dBm								
-20 dBm	H1	-13.000 dBm							
-20 dam -30 dam -30 dam -30 dam -40 dam -50 dam -50 dam -60 dam -60 dam -60 dam -60 dam -60 dam -70									
-30 dBm -30 dBm -40 dBm -50 dBm -50 dBm -50 dBm -60 dBm -70	-20 dBm								
-30 dBm M1 +0 dBm -50 dBm -60 dBm -70 dBm -70 dBm CF 20.000 0045 GHz 1001 pts 4.0 GHz/ Span 39.999 991 GHz 2023-03-29 Measuring 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 2023-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-29 203-03-2									
M1	-30 dBm								
-50 dBm     -50 dBm     -50 dBm       -50 dBm     -60 dBm     -60 dBm       -70 dBm     -70 dBm     -70 dBm       CF 20.000 004 5 GHz     1001 pts     4.0 GHz/       Span 39.999 991 GHz     2023-03-29       Weasuring     2023-03-29									~~~~~~
-50 dBm -60 dBm -70 dBm -7	-+0 dBm	~ 1		~		- Ann			
-50 dBm - 60 dBm - 70	Manut	m Them	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	- Comment		Γ			
-60 dBm -70 dBm -70 dBm CF 20.000 004 5 GHz 1001 pts 4.0 GHz/ Span 39.999 991 GHz 2023-03-29 Measuring Measuring	-50 dBm								
-60 dBm- -70 dBm- CF 20.000 0045 GHz 1001 pts 4.0 GHz/ Span 39.999 991 GHz Measuring 1011 pts 4.0 GHz/ Span 39.999 991 GHz 2023-03-29 Measuring 1011 pts 2023-03-29									
-70 dBm −70 dBm CF 20.000 0045 GHz 1001 pts 4.0 GHz/ Span 39.999 991 GHz CF 20.000 0045 GHz 1001 pts 4.0 GHz/ Span 39.999 991 GHz Measuring ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	-60 dBm								
-70 dBm CF 20.000 0045 GHz 1001 pts 4.0 GHz/ Span 39.999 991 GHz Measuring 1111229 2023-03-29 Measuring									
CF 20.000 0045 GHz         1001 pts         4.0 GHz/         Span 39.999 991 GHz           Measuring	70 40								
CF 20.000 004 5 GHz 1001 pts 4.0 GHz/ Span 39.999 991 GHz Measuring 111112 2023-03-29	-70 UBM								
- Measuring Measuring	CF 20.000 004 5 GH	z	1001 pt	s	4	.0 GHz/		Span 39	9.9999991 GHz
							<ul> <li>Measuring</li> </ul>	EXT REF	2023-03-29 14:12:29

02:12:30 PM 03/29/2023

Antenna Port 3 Conducted Emissions - High Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

Intertek

									<u> </u>
Multi¥iew Spe	ctrum X	Spem 2	Spectrum 3	X Spectrum 4	× Spectrum 5	5 X Spe	ctrum 6	Spectrum 7	×
Ref Level 25 Att TRG:EXT1 TDF	5.25 dBm Offse 10 dB SWT "CEN001_02-28-	t 15.25 dB • R 160 ms • V 24"	BW 1 MHz BW 3 MHz Mo	de Auto Sweep				С	ount 100/100
1 Frequency S	Sweep	1	1	T					o1Rm Avg
20. d8m								M1[1]	-41.30 dBm
20 UBM									539.0 MHz
10 dBm									
0 dBm									
10.10									
-10 dBm	H1 -13.000 dB	m							
-20 dBm									
-30 dBm									
M1						1		· ~ ~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
-•0 dBm	$\sim$			n		- Ann			
America		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		······					
-50 dBm									
-60 d8m									
55 dbm									
-70 dBm			1				+		
CF 20.000 004	15 GHz	1	1001 pt	s	4	L 0 GHz/	1	Span 39	9.9999991 GHz
	-					,	Measuring		
							measaring	REF	14:14:01

02:14:02 PM 03/29/2023

Antenna Port 4 Conducted Emissions - High Ch, 16QAM (Worst-case Output Power), 9 kHz-40 GHz

							- 📀
MultiView 🍨 Spectrum 🗙 Spe	m 2 X Spectrum 3	× Spectrum 4	× Spectrum 5	× Spec	trum 6 🗙	Spectrum 7	× -
Ref Level 25.25 dBm Offset 1	.5.25 dB • RBW 1 MHz						_
Att 10 dB SWT     TROUDUL 00 00 04	160 ms 🗢 VBW 3 MHz 🛛 Moo	le Auto Sweep				C	ount 100/100
1 Frequency Sweep							●1Rm Avg
						M1[1]	-41.27 dBm
20 dBm							539.0 MHz
10 dBm							
0 dBm							
-10 dBm							
-20 dBm							
-30 dBm							
							~~
-#0 dBm		~	~			~~~~~~	*~~~~~
Man promo -	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						
-50 dBm							
-60 dBm							
-70 dBm							
	1001			0.011.(			000001011
CF 20.000 004 5 GHz	1001 pt	6	4.	U GHZ/		Span 39	.99999991 GHz
V				~	measuring	REF	14:15:04

02:15:05 PM 03/29/2023

Radiated Emissions From 9 kHz-30 MHz, Transmit at Low Channel, 16QAM Modulation (Worst-case Output Power)

## Test Information:

Date and Time	4/6/2023 4:42:56 PM
Client and Project Number	Commscope_G105382536
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	32 %
Atmospheric Pressure	1007 mB
Comments	RE 9kHz-30MHz Loop antenna, Electric Field, 3M Location (FCC Part 27), Tx Low
	CH_16QAM Worst-case output power

#### Graph:



**<u>Results:</u>** No emissions were detected.

Radiated Emissions From 9 kHz-30 MHz, Transmit at Mid Channel, 16QAM Modulation (Worst-case Output Power)

#### Test Information:

Date and Time	4/6/2023 7:02:57 PM
Client and Project Number	Commscope_G105382536
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	32 %
Atmospheric Pressure	1007 mB
Comments	RE 9kHz-30MHz Loop antenna, Electric Field, 3M Location (FCC Part 27)_Tx Mid
	CH 16QAM Worst-case output power

#### Graph:



Results: No emissions were detected.

Radiated Emissions From 9 kHz-30 MHz, Transmit at High Channel, 16QAM Modulation (Worst-case Output Power)

#### Test Information:

Date and Time	4/6/2023 9:53:45 PM
Client and Project Number	Commscope_G105382536
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	32 %
Atmospheric Pressure	1007 mB
Comments	RE 9kHz-30MHz Loop antenna, Electric Field, 3M Location (FCC Part 27)_Tx High
	CH 16QAM Worst-case output power

#### Graph:



Results: No emissions were detected.

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Report Number:	105382536BOX-001
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Radiated Emissions From 30 MHz-1000 MHz, Transmit at Low Channel, 16QAM Modulation (Worst-case Output Power)

#### Test Information:

Date and Time	4/7/2023 4:44:59 PM
Client and Project Number	Commscope_G105382536
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	25 %
Atmospheric Pressure	1012 mB
Comments	RE 30-1000MHz_POE_Tx Low CH_16QAM_Worst-case output power

#### Graph:



#### Results:

#### Peak (PASS) (6)

Frequency	Level	Limit	Margin	Azimuth	Height	Pol.	RBW	Correction
(MHz)	(dBµV/m)	(dBµV/m)	(dB)	(°)	(m)		(Hz)	(dB)
50	50.48	82.16	-31.68	232.00	1.49	Vertical	120k	-25.07
70	40.09	82.16	-41.07	5.00	2.11	Vertical	120k	-24.75
110	37.66	82.16	-44.50	192.00	2.29	Vertical	120k	-19.91
170	33.40	82.16	-48.76	161.00	1.53	Vertical	120k	-20.28
250	30.24	82.16	-51.92	198.00	1.00	Vertical	120k	-20.17
335.7473684	37.21	82.16	-44.95	229.00	3.28	Horizontal	120k	-17.32

	Intertek	
Report Number: 105382536BOX-001		Issued: 04/18/2023

Radiated Emissions From 30 MHz-1000 MHz, Transmit at Mid Channel, 16QAM Modulation (Worst-case Output Power)

## Test Information:

Date and Time	4/7/2023 5:31:23 PM
Client and Project Number	Commscope_G105382536
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	25 %
Atmospheric Pressure	1012 mB
Comments	RE 30-1000MHz_POE_Tx Mid CH_16QAM_Worst-case output power

#### Graph:



### Results:

#### Peak (PASS) (6)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW (Hz)	Correction (dB)
50	50.77	82.16	-31.39	185.00	2.11	Vertical	120k	-25.07
70	35.87	82.16	-46.29	249.00	2.15	Vertical	120k	-24.75
110	36.29	82.16	-45.87	189.00	2.08	Vertical	120k	-19.91
170	33.52	82.16	-48.64	254.00	3.62	Horizontal	120k	-20.28
210	35.27	82.16	-46.89	234.00	1.00	Vertical	120k	-21.48
335.9157895	36.78	82.16	-45.38	213.00	2.27	Horizontal	120k	-17.32

	I	n	te	er	te	k
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Report Number: '	105382536BOX-001
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Radiated Emissions From 30 MHz-1000 MHz, Transmit at High Channel, 16QAM Modulation (Worst-case Output Power)

#### Test Information:

Date and Time	4/7/2023 6:08:54 PM
Client and Project Number	Commscope_G105382536
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	25 %
Atmospheric Pressure	1012 mB
Comments	RE 30-1000MHz_POE_Tx High CH_16QAM_Worst-case output power

#### Graph:



#### Results:

Peak (PASS) (8)

Frequency	Level	Limit	Margin	Azimuth	Height	Pol.	RBW	RBW	Correction
(MHz)	(dBµV/m)	(dBµV/m)	(dB)	(°)	(m)				(dB)
50	50.86	82.16	-31.30	173.00	1.68	Vertical	120000.00	120k	-25.07
70	38.32	82.16	-43.84	359.00	2.37	Vertical	120000.00	120k	-24.75
90	34.72	82.16	-47.44	25.00	1.27	Vertical	120000.00	120k	-24.99
110	35.27	82.16	-46.89	164.00	2.24	Vertical	120000.00	120k	-19.91
170	29.04	82.16	-53.12	250.00	3.53	Horizontal	120000.00	120k	-20.28
210	30.79	82.16	-51.37	239.00	1.00	Vertical	120000.00	120k	-21.48
335.0526316	36.46	82.16	-45.70	223.00	3.09	Horizontal	120000.00	120k	-17.32
844.8	37.31	82.16	-44.85	45.00	1.00	Horizontal	120000.00	120k	-6.50

Radiated Emissions From 1-40 GHz, Transmit at Low Channel, 16QAM Modulation (Worst-case Output Power)

## Test Information:

Date and Time	4/12/2023 6:22:33 PM
Client and Project Number	CommScope
Engineer	Kouma Sinn
Temperature	23 C
Humidity	25 %
Atmospheric Pressure	997 mbar
Comments	Scan 1: RE 1-18 GHz POE Tx Low CH 16QAM Worst-case output power

#### Graph:



#### Results:

#### Peak (PASS) (8)

Frequency	Level	Limit	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Correction
(MHz)	(dBµV/m)	(dBµV/m)						(dB)
1000	49.02	82.16	-33.14	208.00	1.81	Vertical	1M	-9.44
1100	44.81	82.16	-37.36	162.00	1.51	Horizontal	1M	-9.34
1600	43.46	82.18	-38.72	163.00	1.00	Horizontal	1M	-8.46
2500	46.19	82.19	-36.00	40.00	1.00	Vertical	1M	-3.80
3200	53.12	82.20	-29.08	161.00	1.27	Horizontal	1M	6.67
7438.421053	45.16	82.23	-37.07	87.00	1.85	Vertical	1M	3.74
11158.15789	48.43	82.24	-33.82	26.00	1.27	Horizontal	1M	9.14
14878.94737	52.71	82.25	-29.55	26.00	3.79	Horizontal	1M	14.43

#### Average (PASS) (8)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Azimuth (°)	Height (m)	Pol.	RBW	Correction (dB)
1000	47.39		208.00	1.81	Vertical	1M	-9.44
1100	41.21		162.00	1.51	Horizontal	1M	-9.34
1600	33.40		163.00	1.00	Horizontal	1M	-8.46
2500	40.77		40.00	1.00	Vertical	1M	-3.80
3200	44.21		161.00	1.27	Horizontal	1M	6.67
7438.421053	34.11		87.00	1.85	Vertical	1M	3.74
11158.15789	37.03		26.00	1.27	Horizontal	1M	9.14
14878.94737	40.01		26.00	3.79	Horizontal	1M	14.43

Notes: The highest peak on the plot is the fundamental frequency at 3720 MHz. Manual scan was performed around the EUT at a distance of 10 cm with no emission was detected above instrument noise floor.

Radiated Emissions From 1-40 GHz, Transmit at Mid Channel, 16QAM Modulation (Worst-case Output Power)

## Test Information:

Date and Time	4/12/2023 7:02:22 PM
Client and Project Number	CommScope
Engineer	Kouma Sinn
Temperature	23 C
Humidity	25 %
Atmospheric Pressure	997 mbar
Comments	Scan 2: RE 1-18 GHz POE Tx Mid CH 16QAM Worst-case output power

#### Graph:



#### Results:

#### Peak (PASS) (7)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Correction (dB)
1000	50.09	82.16	-32.07	210.00	1.74	Vertical	1M	-9.44
1100	41.67	82.16	-40.49	15.00	1.41	Vertical	1M	-9.34
2250	41.75	82.19	-40.44	15.00	1.27	Vertical	1M	-5.12
3200	53.26	82.20	-28.94	293.00	1.51	Horizontal	1M	6.67
7682.368421	45.56	82.23	-36.67	207.00	2.52	Vertical	1M	4.28
11515	49.12	82.24	-33.12	144.00	3.29	Vertical	1M	9.62
15357.89474	52.51	82.25	-29.74	341.00	2.28	Vertical	1M	14.62

#### Average (PASS) (7)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Azimuth (°)	Height (m)	Pol.	RBW	Correction (dB)
1000	49.09		210.00	1.74	Vertical	1M	-9.44
1100	37.14		15.00	1.41	Vertical	1M	-9.34
2250	36.45		15.00	1.27	Vertical	1M	-5.12
3200	43.68		293.00	1.51	Horizontal	1M	6.67
7682.368421	34.56		207.00	2.52	Vertical	1M	4.28
11515	37.40		144.00	3.29	Vertical	1M	9.62
15357.89474	40.49		341.00	2.28	Vertical	1M	14.62

Notes: The highest peak on the plot is the fundamental frequency at 3840 MHz. Manual scan was performed around the EUT at a distance of 10 cm with no emission was detected above instrument noise floor.

Radiated Emissions From 1-40 GHz, Transmit at High Channel, 16QAM Modulation (Worst-case Output Power)

## Test Information:

Date and Time	4/12/2023 7:56:43 PM
Client and Project Number	CommScope
Engineer	Kouma Sinn
Temperature	23 C
Humidity	25 %
Atmospheric Pressure	997 mbar
Comments	Scan 3: RE 30-1000MHz POE Tx High CH 16QAM Worst-case output power

#### Graph:



#### Results:

#### Peak (PASS) (7)

Frequency	Level	Limit	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Correction
(MHZ)	(dBµV/m)	(dBµV/m)						(dB)
1000	50.36	82.16	-31.80	207.00	1.74	Vertical	1M	-9.44
1100	42.88	82.16	-39.29	136.00	1.38	Horizontal	1M	-9.34
2480.526316	39.34	82.19	-42.85	285.00	1.44	Vertical	1M	-4.04
3200	53.26	82.20	-28.94	150.00	1.98	Horizontal	1M	6.67
7921.578947	44.78	82.23	-37.45	0.00	2.32	Vertical	1M	4.68
11881.05263	50.09	82.25	-32.15	313.00	3.86	Vertical	1M	10.07
15838.94737	52.66	82.26	-29.60	139.00	1.04	Vertical	1M	15.27

#### Average (PASS) (7)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Azimuth (°)	Height (m)	Pol.	RBW	Correction (dB)
1000	49.53		207.00	1.74	Vertical	1M	-9.44
1100	38.84		136.00	1.38	Horizontal	1M	-9.34
2480.526316	26.96		285.00	1.44	Vertical	1M	-4.04
3200	42.86		150.00	1.98	Horizontal	1M	6.67
7921.578947	34.41		0.00	2.32	Vertical	1M	4.68
11881.05263	37.04		313.00	3.86	Vertical	1M	10.07
15838.94737	41.43		139.00	1.04	Vertical	1M	15.27

Notes: The highest peak on the plot is the fundamental frequency at 3720 MHz. Manual scan was performed around the EUT at a distance of 10 cm with no emission was detected above instrument noise floor.

	Product Standard: FCC Title 47 CFR Part 27			Limit applied: See Section 11.2				
Test Date	Tost Parsonnal/				Atmospheric Data			
	Initials	Engineer/ Initials	Voltage	Mode	Temp C°	Relative Humidity %	Atmospheric Pressure mbar	
03/29/2023	Kouma Sinn 495	Vathana Ven	POE	Transmitting	23	21	1012	
04/06/2023	Vathana Ven	Kouma Sinn 43	POE	Transmitting	24	32	1007	
04/07/2023	Vathana Ven	Kouma Sinn 493	POE	Transmitting	24	25	1012	
04/12/2023	Kouma Sinn	Vathana Ven	POE	Transmitting	23	25	997	

Deviations, Additions, or Exclusions: None

## 12 AC Mains Conducted Emissions

## 12.1 Method

Tests are performed in accordance with FCC Part 15 Subpart B: 04/2023 and ANSI C63.4:2014.

## TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

## Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
AC Line Conducted			2 440
Emissions	150 KHZ - 30 MHZ	1.2 0B	3.40B
Telco Port Emissions AC Line Conducted	150 kHz - 30 MHz	2.8 dB	5.0dB
Emissions	9 kHz - 150 MHz	2.2 dB	3.4 dB

As shown in the table above our conducted emissions  $U_{lab}$  is less than the corresponding  $U_{CISPR}$  reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

## **Sample Calculations**

The following is how net line-conducted readings were determined:

 $\begin{array}{l} NF = RF + LF + CF + AF \\ Where \quad NF = Net \ Reading \ in \ dB\mu V \\ RF = Reading \ from \ receiver \ in \ dB\mu V \\ LF = LISN \ or \ ISN \ Correction \ Factor \ in \ dB \\ CF = Cable \ Correction \ Factor \ in \ dB \\ AF = Attenuator \ Loss \ Factor \ in \ dB \\ \end{array}$ 

To convert from  $dB\mu V$  to  $\mu V$  or mV the following was used:

 $UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$  $NF = \text{Net Reading in } dB\mu\text{V}$ 

## Example:

$$\label{eq:NF} \begin{split} \mathsf{NF} &= \mathsf{RF} + \mathsf{LF} + \mathsf{CF} + \mathsf{AF} = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \ dB\mu V \\ \mathsf{UF} &= 10^{(49.1 \ dB\mu V \ / \ 20)} = 285.1 \ \mu V/m \end{split}$$

When BAT-EMC Emission Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". The "Correction" includes LISN Factor, Attenuator, and Cable Loss. These are already accounted for in the "Level" column.

## 12.2 Limits

FCC Part 15.107 (b) – For a Class A digital device that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the Table below.

Everyoney of emission (MULT)	Conducted limit (dBµV)			
Frequency of emission (MHZ)	Quasi-peak	Average		
0.15-0.5	79	66		
0.5-30	73	60		

## 12.3 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV009'	weather station	Davis Instruments	6351 Vantage VUE	DAV009	03/27/2023	03/27/2024
ROS002'	9kHz to 3GHz EMI Test Receiver	Rohde & Schwartz	ESCI 1166.5950K03	100067	06/30/2022	06/30/2023
WEI26'	Attenuator 20dB 2 Watts	Weinschel	WA18-20	1001015N0010004	06/07/2022	06/07/2023
CBLBNC2012-3'	50 Ohm Coaxial Cable	Pomona	RG58C/U	CBLBNC2012-3	04/27/2022	04/27/2023
LISN35'	LISN 50uH/250uH 50ohm	Com Power	LI-215A	191960	06/14/2022	06/14/2023

#### Software Utilized:

Name	Manufacturer	Version
Setup_BAT-EMC	Nexio	2022.0.27.0

## 12.4 Results:

The sample tested was found to Comply.

## 12.5 Setup Photographs:

Confidential – Photos not included in this report.

## 12.6 Plots/Data:

#### Test Information:

Date and Time	4/13/2023 7:02:44 PM
Client and Project Number	CommScope
Engineer	Kouma Sinn
Temperature	23 deg C
Humidity	33 %
Atmospheric Pressure	1008 mbars
Comments	CommScope, 120VAC 60Hz, Tx at Mid Channel (16QAM-Worst-case Output
	Power), Single Phase Under 15 Amp 150kHz to 30 MHz ESCI

#### Graph:



#### **Results:**

QuasiPeak(Pass) (8)								
Frequency (MHz)	QP Level (dBµV)	QP Limit (dBuV)	QP Margin (dB)	Line	RBW	Meas.Time	Correction (dB)	
0.15068	67.37	79.00	-11.63	Neutral	9k	0.01	20.26	
0.15506	66.35	79.00	-12.65	Phase 1	9k	0.01	19.82	
0.15946	64.20	79.00	-14.80	Neutral	9k	0.01	20.20	
0.17028	59.06	79.00	-19.94	Phase 1	9k	0.01	19.82	
0.17798	54.28	79.00	-24.72	Neutral	9k	0.01	20.10	
0.19046	47.85	79.00	-31.15	Phase 1	9k	0.01	19.82	
0.21038	42.30	79.00	-36.70	Neutral	9k	0.01	19.97	
0.43104	39.59	79.00	-39.41	Neutral	9k	0.01	19.96	

Average(Pass) (8)										
Frequency	AVG Level	AVG Limit	AVG Margin	Line	RBW	Meas.Time	Correction			
(MHz)	(dBµV)	(dBuV)	(dB)				(dB)			
0.15068	51.01	66.00	-14.99	Neutral	9k	0.01	20.26			
0.15506	52.01	66.00	-13.99	Phase 1	9k	0.01	19.82			
0.15946	51.54	66.00	-14.46	Neutral	9k	0.01	20.20			
0.17028	46.96	66.00	-19.04	Phase 1	9k	0.01	19.82			
0.17798	41.12	66.00	-24.88	Neutral	9k	0.01	20.10			
0.19046	33.61	66.00	-32.39	Phase 1	9k	0.01	19.82			
0.21038	29.70	66.00	-36.30	Neutral	9k	0.01	19.97			
0.43104	34.69	66.00	-31.31	Neutral	9k	0.01	19.96			

Product Standard: FCC Part 15 Subpart B Class A Limit applied: See Report Section 12.2

		Pretest Verification w/ signal generator: Yes					
Test Date	Test Dersonnel/	Supervising	Input			Atmospheric	Data
	Initials	Engineer/Initials	Voltage	Mode	Temp	Relative	Atmospheric
	iniudis	Engineer/ milliais	voltage		C°	Humidity %	Pressure mbar
04/13/2023	Kouma Sinn 493	Vathana Ven	120VAC 60Hz	Transmitting	23	33	1008

Deviations, Additions, or Exclusions: None

# 13 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	04/18/2023	105382536BOX-001	KPS LPS	VFV	Original Issue