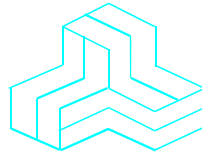


# ENGINEERING TEST REPORT



**Small Form Factor Repeater  
Model: SFFR6UL2  
FCC ID: 2ADAKSFFR6UL2**

*Applicant:*

**Etherstack Inc.**  
1115 Broadway, Suite 1276  
New York, NY, 10010  
USA

***Tested in Accordance With***

**Federal Communications Commission (FCC)  
47 CFR, Parts 2, 22, 74, 80 and 90 (Subpart I)**

**UltraTech's File No.: 21ETSI028\_FCC90**

This Test report is Issued under the Authority of  
Tri M. Luu  
Vice President of Engineering  
UltraTech Group of Labs

Date: February 23, 2022

Report Prepared by: Dan Huynh

Tested by: Hung Trinh

Issued Date: February 23, 2022

Test Dates:  
November 8, 10, 12, 13, 26 & 29, 2021  
February 23, 2022

- *The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.*
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## UltraTech

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1309



CA0001-2049



AT-1945



SL2-IN-E-1119R



Korea KCC-RRR

CA0001

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## EXHIBIT 1. INTRODUCTION

### 1.1. SCOPE

<b>Reference:</b>	FCC Parts 2, 22, 74, 80 and 90 (Subpart I)
<b>Title:</b>	Code of Federal Regulations (CFR), Title 47 Telecommunication – Parts 2, 22, 74, 80 and 90 (Subpart I)
<b>Purpose of Test:</b>	Class II Permissive Change Certification Authorization to address the following new product variants:  Configuration 1: Single external RF port and internal duplexer Configuration 2: Two external RF ports and no internal duplexer Configuration 3: Two external RF ports and an internal duplexer
<b>Test Procedures:</b>	<ul style="list-style-type: none"><li>• ANSI C63.26-2015</li><li>• ANSI C63.4</li></ul>

### 1.2. RELATED SUBMITTAL(S)/GRANT(S)

None.

### 1.3. NORMATIVE REFERENCES

Publication	Year	Title
FCC CFR Parts 0-19, 20-69, 70-79 & 80-End	2021	Code of Federal Regulations, Title 47 – Telecommunication
ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio- Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI/TIA-603-E	2016	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI C63.26	2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

**EXHIBIT 2. PERFORMANCE ASSESSMENT**

**2.1. CLIENT INFORMATION**

<b>Applicant</b>	
<b>Name:</b>	Etherstack Inc.
<b>Address:</b>	1115 Broadway, Suite 1276 New York, NY 10010 USA
<b>Contact Person:</b>	Doug Chapman Phone #: +1 917 661 4110 Fax #: +1 212 255 3610 Email Address: dougc@etherstack.com

<b>Manufacturer</b>	
<b>Name:</b>	Etherstack Inc.
<b>Address:</b>	1115 Broadway, Suite 1276 New York, NY 10010 USA
<b>Contact Person:</b>	Doug Chapman Phone #: +1 917 661 4110 Fax #: +1 212 255 3610 Email Address: dougc@etherstack.com

**2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION**

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

<b>Brand Name:</b>	Etherstack Inc.
<b>Product Name:</b>	Small Form Factor Repeater
<b>Model Name or Number:</b>	SFFR6UL2
<b>Serial Number:</b>	Test Sample
<b>Type of Equipment:</b>	Licensed Non-Broadcast Station Transmitter
<b>Power Supply Requirement:</b>	12 VDC nominal / 120 VAC
<b>Transmitting/Receiving Antenna Type:</b>	Non-Integral
<b>Primary User Functions of EUT:</b>	Repeater

**2.3. EUT’S TECHNICAL SPECIFICATIONS**

<b>Transmitter</b>	
<b>Equipment Type:</b>	Mobile
<b>Intended Operating Environment:</b>	Commercial, industrial or business environment
<b>Power Supply Requirement:</b>	12 VDC nominal / 120 VAC
<b>RF Output Power Rating:</b>	28 W
<b>Operating Frequency Range:</b>	380 - 406.0 MHz, 406.1 - 470 MHz
<b>RF Output Impedance:</b>	50 Ω
<b>Channel Spacing:</b>	12.5 kHz and 25 kHz
<b>Modulation Employed:</b>	FM / C4FM
<b>Emission Designator:</b>	For Parts 22, 74, 80 and 90: 8K10F1E, 8K10F1D, 8K10F1W, 8K10F7E, 8K10F7D, 8K10F7W, 11K0F3E  For Parts 22, 74 and 80: 16K0F3E
<b>Antenna Connector Type:</b>	N type

**2.4. LIST OF EUT’S PORTS**

<b>Port Number</b>	<b>EUT’s Port Description</b>	<b>Number of Identical Ports</b>	<b>Connector Type</b>	<b>Cable Type (Shielded/Non-shielded)</b>
1	AC Power Connector	1	09-4223-00-04	1.5 m 3 conductor/ SJT non shielded
2	DC Power Connector	1	PT02E-8-4P	10 A flex pair, 2m non shielded
3	Ethernet Connector External	1	RJ45	Cat5e/Cat6 2m
4	Tx.Rx Antenna Connector	1	N-Type	50 Ohm Coax (i.e RG58)
5	Rx Antenna Connector (2 port only)	1	N-Type	50 Ohm Coax (i.e RG58)
6	Ethernet Connector Control Module	1	RJ45	Cat5e/Cat6 2m
7	Accessory Connector - Audio/Control	1 (shared)	Shared 14 pin PL-500SM-N SERIES	Multi core cable. 1M
8	Accessory Connector Service	1 (shared)	Shared 14 pin PL-500SM-N SERIES	Multi core cable 1M

## 2.5. ANCILLARY EQUIPMENT

The EUT was tested while connected to the following representative configuration of ancillary equipment necessary to exercise the ports during tests:

Ancillary Equipment # 1	
Description:	Breakout Box
Brand name:	Etherstack
Model Name or Number:	N/A
Connected to EUT's Port:	Accessory Connector

**EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS**

**3.1. CLIMATE TEST CONDITIONS**

The climate conditions of the test environment are as follows:

Temperature:	21°C - 24°C
Humidity:	45% to 58%
Pressure:	102 kPa
Power input source:	12 VDC nominal / 120 VAC

**3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS**

<b>Operating Modes:</b>	The transmitter was operated in a continuous transmission mode with the carrier modulated as specified in the Test Data.
<b>Special Test Software:</b>	N/A
<b>Special Hardware Used:</b>	N/A
<b>Transmitter Test Antenna:</b>	The EUT is tested with the transmitter antenna port terminated to a 50 Ω Load.

<b>Transmitter Test Signals</b>	
<b>Frequency Band(s):</b>	380 – 406.0 MHz, 406.1 - 470 MHz
<b>Test Frequency(ies):</b>	406.1000 MHz, 418.0125 MHz, 429.9875 MHz, 450.1025 MHz, 459.9875 MHz and 469.9875 MHz
<b>Transmitter Wanted Output Test Signals:</b>	
<ul style="list-style-type: none"> <li>• Transmitter Power (measured maximum output power):</li> <li>• Normal Test Modulation:</li> <li>• Modulating signal source:</li> </ul>	<p>44.19 dBm (26.24 W)</p> <p>FM / C4FM</p> <p>External</p>

**EXHIBIT 4. SUMMARY OF TEST RESULTS**

**4.1. LOCATION OF TESTS**

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with ANAB File No.: AT-1945.

**4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS**

FCC Section(s)	Test Requirements	Applicability (Yes/No)
2.1046, 22.565, 74.461, 80.215 & 90.205	RF Power Output	Yes
2.1047(a), 80.213(e) & 90.242(b)(8)	Modulation Characteristics - Audio Frequency Response	N/A
2.1047(b), 74.463, 80.213 & 90.210	Modulation Characteristics - Modulation Limiting	N/A
2.1049, 74.462, 80.211(f), 90.209 & 90.210	Occupied Bandwidth and Emission Limitations/Masks	N/A
2.1051, 2.1057, 22.359(a), 80.211(f)(3), & 90.210	Spurious Emissions at Antenna Terminals	N/A
2.1051, 2.1057, 22.359(a), 80.211(f)(3), & 90.210	Field Strength of Spurious Radiation	Yes
2.1055, 22.355, 74.464 80.209(a)(7) & 90.213	Frequency Stability	N/A
90.214	Transient Frequency Behavior	N/A
1.1307, 1.1310 & 2.1091	Radiofrequency Radiation Exposure Evaluation	Yes*

\* Refer to original filing MPE test report.

**4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES**

None.

**4.4. DEVIATION OF STANDARD TEST PROCEDURES**

None.

**ULTRATECH GROUP OF LABS**

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4  
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 February 23, 2022

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)



**EXHIBIT 5. TEST DATA**

**5.1. RF POWER OUTPUT [§§ 2.1046, 22.565, 74.461, 80.215 & 90.205]**

**5.1.1. Limits**

§ 22.565(a) *Maximum ERP.* The effective radiated power (ERP) of base and fixed transmitters must not exceed the applicable limits in this paragraph under any circumstances.

Frequency range (MHz)	Maximum ERP (watts)
152-153	1400
157-159	150
454-455	3500
459-460	150

§ 74.461(b) The authorized transmitter power for a remote pickup broadcast station shall be limited to that necessary for satisfactory service and, in any event, shall not be greater than 100 watts, except that a station to be operated aboard an aircraft shall normally be limited to a maximum authorized power of 15 watts. Specific authorization to operate stations on board aircraft with an output power exceeding 15 watts will be issued only upon an adequate engineering showing of need, and of the procedures that will be taken to avoid harmful interference to other licensees.

§ 80.215(l) For operational fixed stations using frequencies in the 72-76 MHz band and for other classes of stations operating above 162.025 MHz, the transmitter power must be specified in the station authorization.

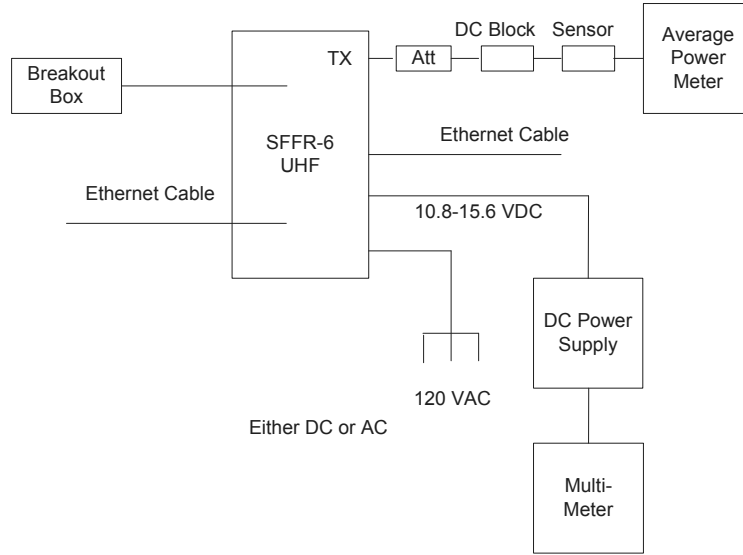
§ 90.205 (h) **450-470 MHz.** (1) The maximum allowable station effective radiated power (ERP) is dependent upon the station's antenna HAAT and required service area and will be authorized in accordance with table 2.

**5.1.2. Method of Measurements**

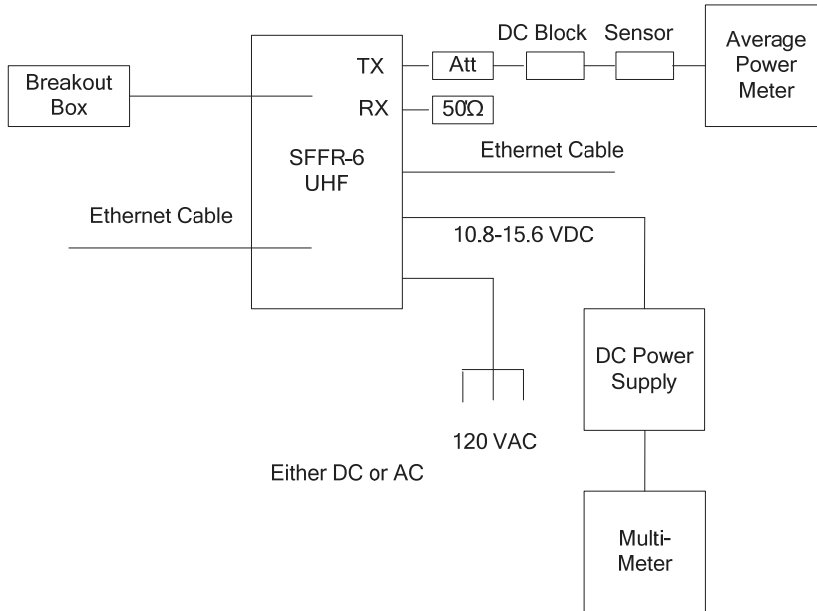
ANSI C63.26 Section 5.2.

5.1.3. Test Arrangement

Test Configuration 1



Test Configuration 2 or 3



5.1.4. Test Data

5.1.4.1. Test Configuration 1: Single External RF Port and Internal Duplexer

Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
DC Power 12 VDC	Narrowband	Low	406.1000	31.12	1.29
			418.0125	30.26	1.06
			429.9875	30.53	1.13
			450.1025	30.83	1.21
			459.9875	30.71	1.18
			469.9875	30.38	1.09
		High	406.1000	42.85	19.28
			418.0125	42.05	16.03
			429.9875	42.39	17.34
			450.1025	42.62	18.28
			459.9875	42.53	17.91
			469.9875	42.18	16.52
	Wideband	Low	406.1000	31.11	1.29
			418.0125	30.94	1.24
			429.9875	30.58	1.14
			450.1025	30.84	1.21
			459.9875	30.68	1.17
			469.9875	30.44	1.11
		High	406.1000	42.83	19.19
			418.0125	42.18	16.52
			429.9875	42.38	17.30
			450.1025	42.68	18.54
			459.9875	42.46	17.62
			469.9875	42.31	17.02

Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
DC Power 12 VDC	P25 C4FM	Low	406.1000	31.11	1.29
			418.0125	30.30	1.07
			429.9875	30.54	1.13
			450.1025	30.81	1.21
			459.9875	30.70	1.17
			469.9875	30.39	1.09
		High	406.1000	42.85	19.28
			418.0125	42.10	16.22
			429.9875	42.38	17.30
			450.1025	42.64	18.37
			459.9875	42.49	17.74
			469.9875	42.25	16.79

Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
AC Power 120 VAC	Narrowband	Low	406.1000	31.14	1.30
			418.0125	30.23	1.05
			429.9875	30.68	1.17
			450.1025	30.81	1.21
			459.9875	30.68	1.17
			469.9875	30.64	1.16
		High	406.1000	42.84	19.23
			418.0125	42.05	16.03
			429.9875	42.49	17.74
			450.1025	42.59	18.16
			459.9875	42.44	17.54
			469.9875	42.50	17.78
	Wideband	Low	406.1000	31.11	1.29
			418.0125	30.24	1.06
			429.9875	30.61	1.15
			450.1025	30.86	1.22
			459.9875	30.66	1.16
			469.9875	30.56	1.14
		High	406.1000	42.83	19.19
			418.0125	42.06	16.07
			429.9875	42.43	17.50
			450.1025	42.63	18.32
			459.9875	42.47	17.66
			469.9875	42.37	17.26

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Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
AC Power 120 VAC	P25 C4FM	Low	406.1000	31.15	1.30
			418.0125	30.25	1.06
			429.9875	30.61	1.15
			450.1025	30.82	1.21
			459.9875	30.70	1.17
			469.9875	30.65	1.16
		High	406.1000	42.83	19.19
			418.0125	42.05	16.03
			429.9875	42.38	17.30
			450.1025	42.63	18.32
			459.9875	42.47	17.66
			469.9875	42.42	17.46

5.1.4.2. Test Configuration 2: Two External RF Ports and No Internal Duplexer

Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
DC Power 12 VDC	Narrowband	Low	406.1000	32.21	1.66
			418.0125	32.22	1.67
			429.9875	32.29	1.69
			450.1025	32.14	1.64
			459.9875	32.22	1.67
			469.9875	32.17	1.65
		High	406.1000	44.13	25.88
			418.0125	44.04	25.35
			429.9875	44.09	25.64
			450.1025	44.08	25.59
			459.9875	44.09	25.64
			469.9875	43.97	24.95
	Wideband	Low	406.1000	32.26	1.68
			418.0125	32.22	1.67
			429.9875	32.26	1.68
			450.1025	32.23	1.67
			459.9875	32.24	1.67
			469.9875	32.25	1.68
		High	406.1000	44.12	25.82
			418.0125	44.06	25.47
			429.9875	44.09	25.64
			450.1025	44.04	25.35
			459.9875	44.05	25.41
			469.9875	44.11	25.76

Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
DC Power 12 VDC	P25 C4FM	Low	406.1000	32.19	1.66
			418.0125	32.15	1.64
			429.9875	32.26	1.68
			450.1025	32.12	1.63
			459.9875	32.30	1.70
			469.9875	32.26	1.68
		High	406.1000	44.06	25.47
			418.0125	43.99	25.06
			429.9875	44.08	25.59
			450.1025	44.05	25.41
			459.9875	44.03	25.29
			469.9875	44.08	25.59



Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
AC Power 120 VAC	Narrowband	Low	406.1000	32.37	1.73
			418.0125	32.33	1.71
			429.9875	32.23	1.67
			450.1025	32.14	1.64
			459.9875	32.14	1.64
			469.9875	32.14	1.64
		High	406.1000	44.19	26.24
			418.0125	44.12	25.82
			429.9875	44.03	25.29
			450.1025	43.96	24.89
			459.9875	43.95	24.83
			469.9875	43.98	25.00
	Wideband	Low	406.1000	32.25	1.68
			418.0125	32.14	1.64
			429.9875	32.24	1.67
			450.1025	32.16	1.64
			459.9875	32.20	1.66
			469.9875	32.18	1.65
		High	406.1000	44.07	25.53
			418.0125	44.01	25.18
			429.9875	44.09	25.64
			450.1025	44.01	25.18
			459.9875	44.03	25.29
			469.9875	44.02	25.23

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Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
AC Power 120 VAC	P25 C4FM	Low	406.1000	32.19	1.66
			418.0125	32.13	1.63
			429.9875	32.18	1.65
			450.1025	32.14	1.64
			459.9875	32.17	1.65
			469.9875	32.15	1.64
		High	406.1000	44.03	25.29
			418.0125	43.95	24.83
			429.9875	44.03	25.29
			450.1025	43.98	25.00
			459.9875	43.99	25.06
			469.9875	44.00	25.12

5.1.4.3. Test Configuration 3: Two External RF Ports and an Internal Duplexer

Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
DC Power 12 VDC	Narrowband	Low	406.1000	30.79	1.20
			418.0125	30.31	1.07
			429.9875	30.65	1.16
			450.1025	30.86	1.22
			459.9875	30.82	1.21
			469.9875	30.40	1.10
		High	406.1000	42.36	17.22
			418.0125	42.17	16.48
			429.9875	42.54	17.95
			450.1025	42.74	18.79
			459.9875	42.65	18.41
			469.9875	42.28	16.90
	Wideband	Low	406.1000	30.52	1.13
			418.0125	30.35	1.08
			429.9875	30.68	1.17
			450.1025	30.86	1.22
			459.9875	30.74	1.19
			469.9875	30.46	1.11
		High	406.1000	42.34	17.14
			418.0125	42.24	16.75
			429.9875	42.54	17.95
			450.1025	42.75	18.84
			459.9875	42.62	18.28
			469.9875	42.34	17.14

Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
DC Power 12 VDC	P25 C4FM	Low	406.1000	30.76	1.19
			418.0125	30.34	1.08
			429.9875	30.61	1.15
			450.1025	30.86	1.22
			459.9875	30.76	1.19
			469.9875	30.41	1.10
		High	406.1000	42.37	17.26
			418.0125	42.26	16.83
			429.9875	42.54	17.95
			450.1025	42.73	18.75
			459.9875	42.62	18.28
			469.9875	42.34	17.14

Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
AC Power 120 VAC	Narrowband	Low	406.1000	30.39	1.09
			418.0125	30.28	1.07
			429.9875	30.68	1.17
			450.1025	30.83	1.21
			459.9875	30.79	1.20
			469.9875	30.43	1.10
		High	406.1000	42.35	17.18
			418.0125	42.20	16.60
			429.9875	42.55	17.99
			450.1025	42.76	18.88
			459.9875	42.68	18.54
			469.9875	42.30	16.98
	Wideband	Low	406.1000	29.78	0.95
			418.0125	30.38	1.09
			429.9875	30.50	1.12
			450.1025	30.84	1.21
			459.9875	30.82	1.21
			469.9875	30.40	1.10
		High	406.1000	42.31	17.02
			418.0125	42.25	16.79
			429.9875	42.54	17.95
			450.1025	42.72	18.71
			459.9875	42.69	18.58
			469.9875	42.30	16.98

**ULTRATECH GROUP OF LABS**

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File #: 21ETSI028\_FCC90

February 23, 2022

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

Power Source	Operating Mode	Power Level Setting	Frequency (MHz)	Measured Output Power	
				(dBm)	(W)
AC Power 120 VAC	P25 C4FM	Low	406.1000	30.38	1.09
			418.0125	30.38	1.09
			429.9875	30.69	1.17
			450.1025	30.82	1.21
			459.9875	30.84	1.21
			469.9875	30.36	1.09
		High	406.1000	42.19	16.56
			418.0125	42.28	16.90
			429.9875	42.55	17.99
			450.1025	42.70	18.62
			459.9875	42.68	18.54
			469.9875	42.31	17.02

## 5.2. TRANSMITTER SPURIOUS/HARMONIC RADIATED EMISSIONS [§§ 2.1053, 22.359, 74.462, 80.211 & 90.210]

### 5.2.1. Limits

The emissions must be attenuated according to the following.

**§22.359(a)** Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

**§22.462(c)(3)** On any frequency removed from the assigned frequency by more than 250 percent on the authorized bandwidth; at least  $43 + 10 \log_{10}$  (mean output power, in watts) dB.

**§74.462(c)(3)** On any frequency removed from the assigned frequency by more than 250 percent on the authorized bandwidth; at least  $43 + 10 \log_{10}$  (mean output power, in watts) dB

**§80.211(f)(3)** On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least  $43 + 10 \log_{10}$  (mean power in watts) dB.

#### **§90.210**

Emission Mask B.

§90.210(b)(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least  $43 + 10 \log(P)$  dB.

Emission Mask D

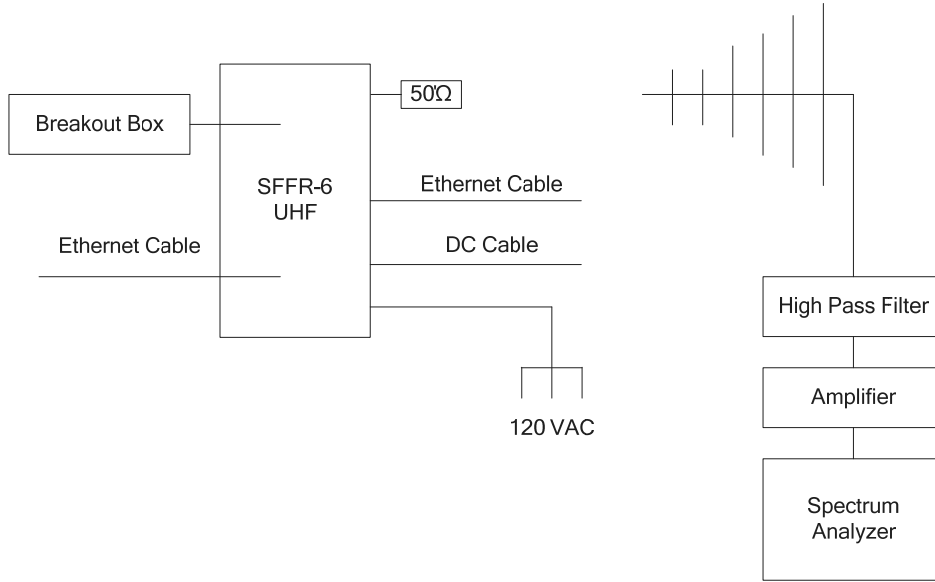
§90.210 (d) (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 12.5 kHz: At least  $50 + 10 \log(P)$  dB or 70 dB, whichever is the lesser attenuation.

### 5.2.2. Method of Measurements

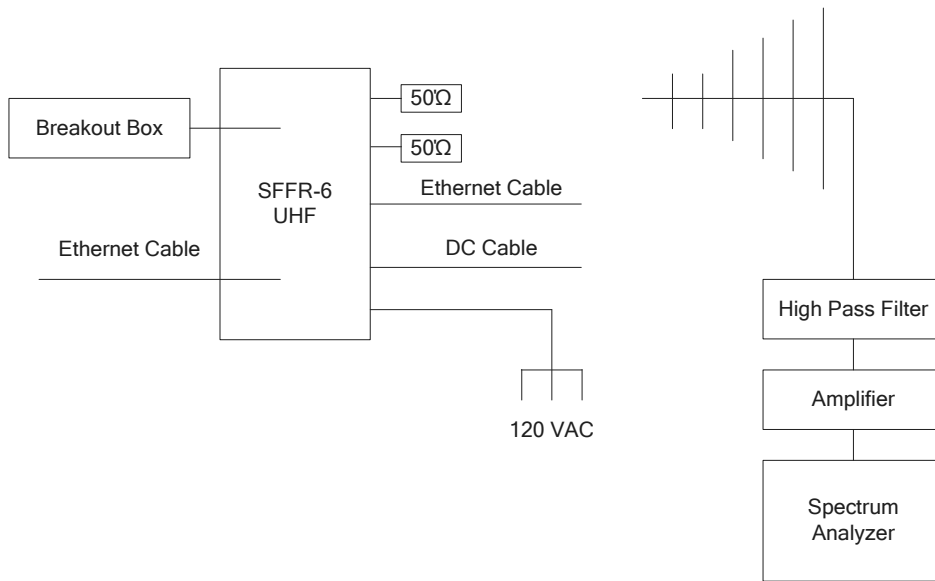
ANSI C63.26 Section 5.5.

5.2.3. Test Arrangement

Test Configuration 1



Test Configuration 2 or 3





5.2.4. Test Data

Remarks:

- The emissions were scanned from 30 MHz to 10<sup>th</sup> harmonic; all spurious emissions that are in excess of 20dB below the specified limit shall be recorded.
- Exploratory tests performed to determined worst-case test configurations, the following test results at high power setting and powered by 120 VAC represent the worst-case.
- The more stringent limit will be applied for compliance.

5.2.4.1. Test Configuration 1: Single External RF Port and Internal Duplexer

<b>Carrier Frequency:</b>		406.1000 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		418.0125 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		429.9875 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		450.1025 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b> 459.9875 MHz								
<b>Power Setting:</b> High								
<b>Limit:</b> -20 dBm								
Frequency (MHz)	E-Field (dB $\mu$ V/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b> 469.9875 MHz								
<b>Power Setting:</b> High								
<b>Limit:</b> -20 dBm								
Frequency (MHz)	E-Field (dB $\mu$ V/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

**5.2.4.2. Test Configuration 2: Two External RF Ports and No Internal Duplexer**

<b>Carrier Frequency:</b>		406.1000 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		418.0125 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		429.9875 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		450.1025 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		459.9875 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		469.9875 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dB $\mu$ V/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

**5.2.4.3. Test Configuration 3: Two External RF Ports and an Internal Duplexer**

<b>Carrier Frequency:</b>		406.1000 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		418.0125 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		429.9875 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		450.1025 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		459.9875 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

<b>Carrier Frequency:</b>		469.9875 MHz						
<b>Power Setting:</b>		High						
<b>Limit:</b>		-20 dBm						
Frequency (MHz)	E-Field (dB $\mu$ V/m)	EMI Detector (Peak/QP/Avg)	Antenna Polarization (V/H)	Power from Signal Gen. (dBm)	Subs. Ant. Gain (dBd/dBi)	ERP/EIRP (dBm)	Limit (dBm)	Margin (dB)
Spurious emissions are more than 20 dB below the applicable limit.								

**EXHIBIT 6. TEST EQUIPMENT LIST**

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal. Due Date
Power Meter	Hewlett Packard	436A	2016A07747	100 kHz sensor dependant	22 Oct 2022
Power Sensor	Hewlett Packard	8482A	US37295944	100 kHz – 18 GHz	06 Aug 2022
Attenuator (30dB)	Weinschel	48-30-34	BM5354	DC – 18 GHz	See Note 1
DC Block	Hewlett Packard	11742A	12460	0.045 – 26.5 GHz	See Note 1
DC Power Supply	Dr. Meter	HY5020E	013141252	0 – 50V 20A	See Note 1
Multi-meter	Fluke	8842A	5436283	20 mV – 1 kV	03 Aug 2023
EMI Receiver	Rohde & Schwarz	ESU40	100037	20 Hz – 40 GHz	22 Sep 2022
RF Amplifier	Com-Power	PAM-0118A	551052	0.5 – 18 GHz	11 Sep 2022
Biconilog	EMCO	3142C	34792	26 - 2000 MHz	16 May 2022
Horn Antenna	EMCO	3155	5955	1 – 18 GHz	12 Oct 2022
High Pass Filter	Mini Circuits	SHP-800	15542	Cut off 800 MHz	See Note 1
Note 1: Internal Verification/Calibration Check.					

## EXHIBIT 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of CISPR 16-4-2 @ IEC:2003 and JCGM 100:2008 (GUM 1995) – Guide to the Expression of Uncertainty in Measurement.

Test Description		Expanded Uncertainty, K=2 for 95% Confidence Level
Conducted Power		$\pm 0.62$ dB
Radiated Spurious Emissions	30 MHz – 1 GHz	$\pm 4.20$ dB
	1 – 18 GHz	$\pm 2.70$ dB