Compliance Testing, LLC
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Test Report

Prepared for: Etherstack

Model: SFFR6V2

Description: Small Form Factor Repeater

Serial Number: 17050006

FCC ID: 2ADAKSFFR6V2

To

FCC Part 1.1310

Date of Issue: April 11, 2019

On the behalf of the applicant:	**Etherstack Inc.** **1115 Broadway** **Suite 1276** **New York, NY 10010**
Attention of:	**Doug Chapman, V.P. Business Development N.A.** **Ph: (917)661-4110** **Email: doug.chapman@etherstack.com**

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Project No: p1780009

Greg Corbin
Project Test Engineer

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	October 16, 2017	Greg Corbin	Original Document
2.0	December 17, 2017	Greg Corbin	Updated model and EUT description, updated antenna gain
3.0	June 8, 2018	Greg Corbin	Updated FCC ID and revised MPE calculation with higher output power
4.0	October 2, 2018	Greg Corbin	Revised MPE calculation due to higher gain antenna provided by manufacturer
5.0	October 22, 2018	Greg Corbin	Updated antenna description on page 4
6.0	April 4, 2019	Greg Corbin	Updated MPE calculations to reflect higher power listed on the grant
7.0	April 8, 2019	Greg Corbin	Updated MPE calculations to reflect rated power including tune-up tolerances

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The tests results contained within this test report all fall within our scope of accreditation, unless below

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Testing Certificate Number: **2152.01**

FCC Site Reg. #349717

IC Site Reg. #2044A-2

Non-accredited tests contained in this report:

N/A

EUT Description
Model: SFFR6V2
Description: Small Form Factor Repeater
Firmware: 2.04.000
Software: N/A
Serial Number: 17060006
Additional Information:
The EUT is a VHF small form factor tactical repeater operating from 136 – 174 MHz per table 1 below.

The EUT is AC or DC powered, with 2 battery packs for battery power.

The highest gain antenna specified by the manufacturer is a 5/8 wave omnidirectional antenna with 5.15 dBi gain.

Worst case RF exposure calculations were calculated using the highest gain antenna and the highest output power which is the rated output power listed on the grant plus tune-up tolerances of +/- 0.29 dB.

Table 1 - Frequency Allocation

Frequency Range (136 – 174 MHz)							
Rule Part	**Frequency Range (MHz)**	**Sub-Bands (MHz)**				**Extended Frequency (MHz)**	
FCC Part 90	150.8 – 173.4	150.8 – 156.2475	157.1875 – 161.575	161.775 – 161.9625	162.0375 – 173.4	136 – 150.8	173.4 - 174
FCC Part 22	150.8 – 161.775	150.8 – 152.885		157.45 – 161.775		N/A	N/A
FCC Part 74	150.885 – 173.2	152.8625 - 153.3575	160.860 - 161.400	161.625 - 161.775	166.25 , 170.15	Per the attestation letter, any frequency within the frequency range that is not listed in the sub-band section	
FCC Part 80	154 – 162.02375	154 – 161.625		161.775 – 162.0375		N/A	N/A
RSS 119	138 - 174	138 – 144	148 – 148.9	150.05 - 174		N/A	N/A

This is a mobile device used in **Uncontrolled** Exposure environment.

Limits Uncontrolled Exposure 47 CFR 1.1310 Table 1, (B)		
	0.3-1.234 MHz:	Limit [mW/cm²] = 100
	1.34-30 MHz:	Limit [mW/cm²] = (180/f²)
	30-300 MHz:	Limit [mW/cm²] = 0.2
	300-1500 MHz:	Limit [mW/cm²] = f/1500
	1500-100,000 MHz	Limit [mW/cm²] = 1.0

Test Data

Test Frequency, MHz	173.3875
Power, Conducted, mW (P)	29936
Antenna Gain Isotropic	5.15 dBi
Antenna Gain Numeric (G)	3.27
Antenna Type	5/8 wave omnidirectional
Distance (R)	20 cm

$S = \frac{P * G}{4\pi r^2}$
Power Density (S) mw/cm²
19.475

Power Density (S) = 19.475 mw/cm²
Limit =(from above table) = 0.2 mw/cm²

The power density at 19.475 mw/cm2 is over the 0.2 mw/cm2 limit.

The Minimum Safe Distance was calculated below.

Minimum Safe Distance Evaluation

This is a mobile device used in Uncontrolled Exposure environment.

Test Data

Test Frequency, MHz	173.3875
Power, Conducted, mW (P)	29936
Antenna Gain Isotropic	5.15 dBi
Antenna Gain Numeric (G)	3.27
Antenna Type	5/8 wave omnidirectional
Limit (L)	0.2 mW/cm2

R=√(PG/4πL)			
Distance (R) cm	Power mW (P)	Numeric Gain (G)	Limit (L)
197.41	29936	3.27	0.2

The minimum safe distance is 197.41 cm for a 5.15 dBi gain antenna.

END OF TEST REPORT