

TEST REPORT

Applicant: Elsight

Address of Applicant: 3, Ariel Sharon Blvd. Or-Yehuda, Israel 6036707

Manufacturer: Elsight

Address of Manufacturer: 3, Ariel Sharon Blvd. Or-Yehuda, Israel 6036707

Equipment Under Test (EUT)

Product Name: Elsight Halo

Model No.: Halo HNF4W

FCC ID: 2AWEB-HALOHNF4W

Contains FCC ID: RI7LE910CXNF
TFB-1004

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: May 27, 2020

Date of Test: May 27, 2020-June 08, 2020

Date of report issued: June 08, 2020

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo

Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.



2 Version

Version No.	Date	Description
00	June 08, 2020	Original

Prepared By:



Date:

June 08, 2020

Project Engineer

Check By:



Reviewer

Date:

June 08, 2020

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4 Test Summary

Test Item	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission	FCC Part15.107	ANSI C63.4	Class B	PASS
Radiated Emissions #	FCC Part15.109	ANSI C63.4	Class B	PASS

Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. # Refer to FCC Part 15.33 (b)(1) conditional testing procedure :

The highest frequency generated or used in the EUT	Test frequency range of Radiated emission
<108MHz	30MHz ~ 1GHz
108MHz ~ 500MHz	30MHz ~ 2GHz
500MHz ~ 1GHz	30MHz ~ 5GHz
>1GHz	30MHz ~ 5th harmonic of the highest frequency or 40 GHz, whichever is lower.

Note: the EUT Internal clock frequency above 108MHz.

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	Elsight Halo
Model No.:	Halo HNF4W
Power supply:	DC 9-30V

5.2 Test mode and Test voltage

Test mode:	
LAN mode	Keep the EUT in ping IP mode.
Test voltage:	
DC 9V	

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
Apple	PC	A1278	C1MN99ERDTY3
MEILI	DC POWER SUPPLY	MCH-305A	011121168

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations: • FCC —Registration No.: 381383 Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383. • IC —Registration No.: 9079A The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A • NVLAP (LAB CODE:600179-0) Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.7 Test Location

The test was performed at:
Global United Technology Services Co., Ltd. Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102 Tel: 0755-27798480 Fax: 0755-27798960

6 Test Instruments list

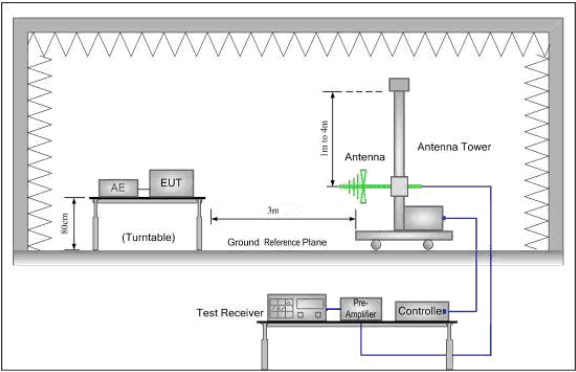
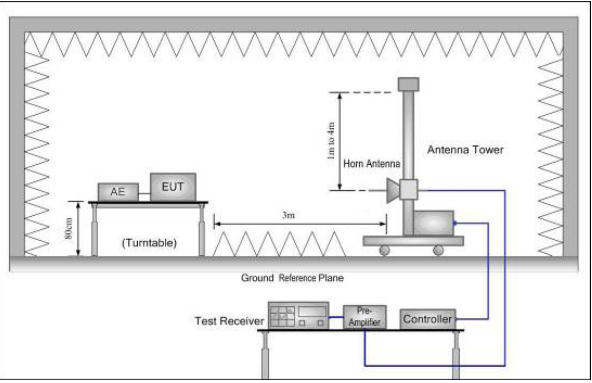
Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventor y No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 26 2019	June. 25 2020
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 26 2019	June. 25 2020
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 26 2019	June. 25 2020
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 26 2019	June. 25 2020
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 26 2019	June. 25 2020
9	Coaxial Cable	GTS	N/A	GTS211	June. 26 2019	June. 25 2020
10	Coaxial cable	GTS	N/A	GTS210	June. 26 2019	June. 25 2020
11	Coaxial Cable	GTS	N/A	GTS212	June. 26 2019	June. 25 2020
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 26 2019	June. 25 2020
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 26 2019	June. 25 2020
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 26 2019	June. 25 2020
15	Band filter	Amindeon	82346	GTS219	June. 26 2019	June. 25 2020
16	Power Meter	Anritsu	ML2495A	GTS540	June. 26 2019	June. 25 2020
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 26 2019	June. 25 2020
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 26 2019	June. 25 2020
19	Splitter	Agilent	11636B	GTS237	June. 26 2019	June. 25 2020
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 26 2019	June. 25 2020
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 19 2019	Oct. 18 2020
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 19 2019	Oct. 18 2020
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 19 2019	Oct. 18 2020
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 26 2019	June. 25 2020

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 26 2019	June. 25 2020
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 26 2019	June. 25 2020
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	June. 26 2019	June. 25 2020
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 26 2019	June. 25 2020
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 26 2019	June. 25 2020
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 26 2019	June. 25 2020

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 26 2019	June. 25 2020
2	Barometer	ChangChun	DYM3	GTS255	June. 26 2019	June. 25 2020

7 Test Results and Measurement Data

7.1 Radiated Emission

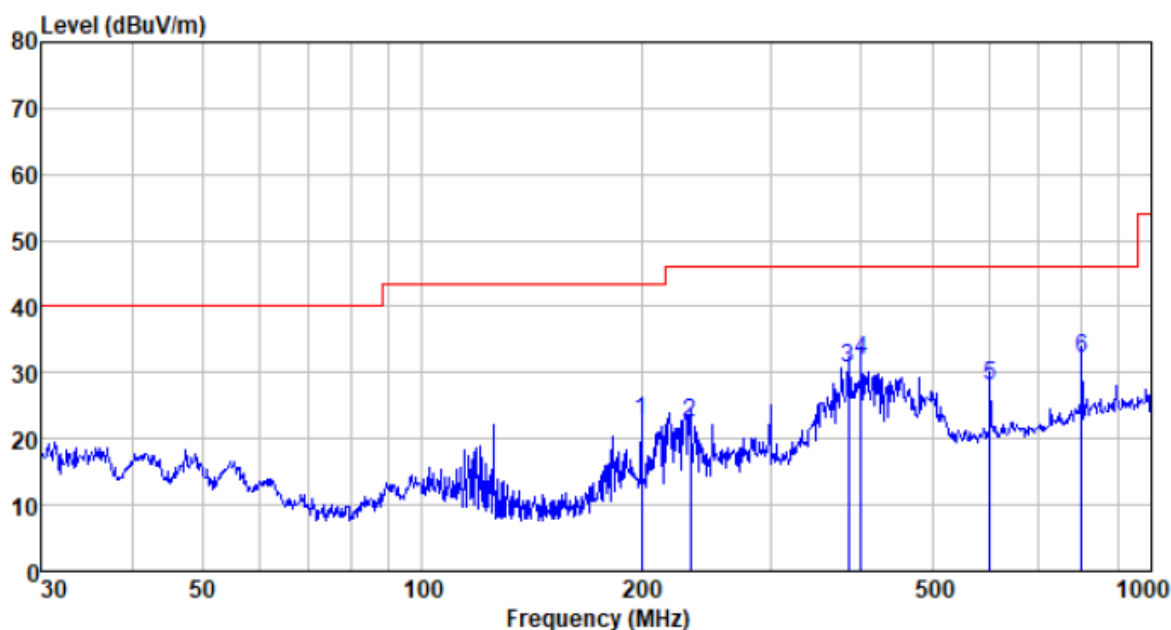
Test Requirement:	FCC Part15 B Section 15.109			
Test Method:	ANSI C63.4:2014			
Test Frequency Range:	30MHz to 6000MHz			
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)			
Receiver setup:	Frequency	Detector	RBW	VBW
	30MHz-1GHz	Quasi-peak	120kHz	300kHz
	Above 1GHz	Peak	1MHz	3MHz
Limit:	Frequency			Remark
	30MHz-88MHz			Quasi-peak Value
	88MHz-216MHz			Quasi-peak Value
	216MHz-960MHz			Quasi-peak Value
	960MHz-1GHz			Quasi-peak Value
	Above 1GHz			Average Value
Test setup:	Limit (dBuV/m @3m)			Remark
	40.00			Quasi-peak Value
Test setup:	43.50			Quasi-peak Value
	46.00			Quasi-peak Value
Test setup:	54.00			Quasi-peak Value
	54.00			Average Value
Test setup:	74.00			Peak Value
	74.00			Peak Value
Test setup:	For radiated emissions from 30MHz to1GHz			
				
Test setup:	For radiated emissions above 1GHz			
				
Test environment:	Temp.:	25 °C	Humid.:	52%
	Press.:	1 012mbar		

Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details only show the worst case.
Test results:	Pass

Measurement Data

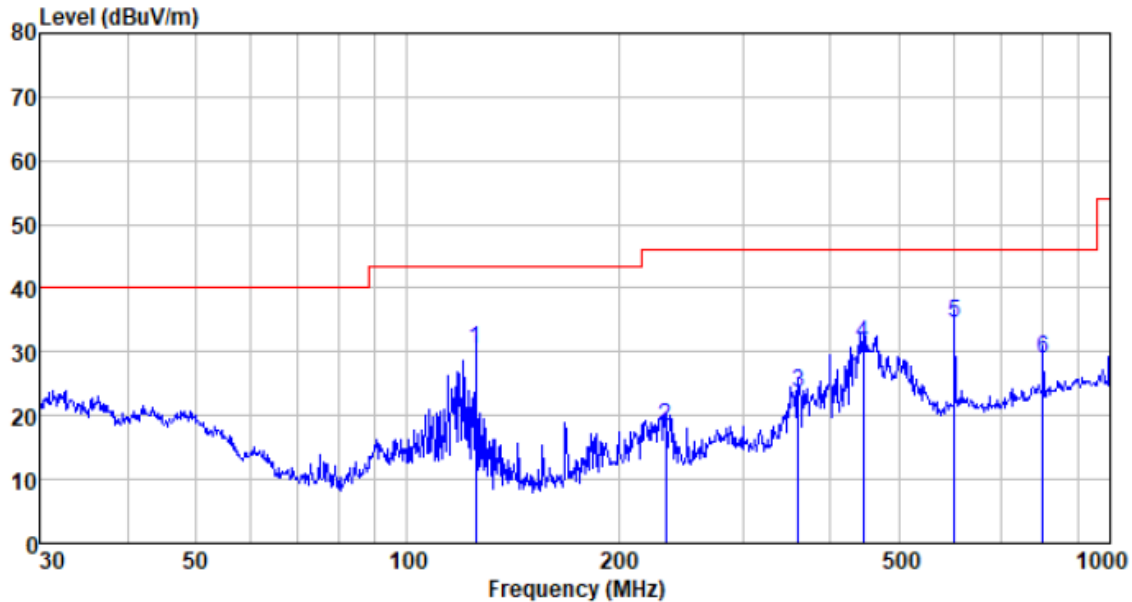
Below 1GHz

Test mode:	LAN mode	Antenna Polarity:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
199.986	47.90	10.40	1.84	37.33	22.81	43.50	-20.69	QP
233.349	46.28	11.60	2.04	37.36	22.56	46.00	-23.44	QP
383.932	50.25	15.08	2.78	37.51	30.60	46.00	-15.40	QP
400.432	51.22	15.34	2.85	37.52	31.89	46.00	-14.11	QP
601.427	42.32	19.50	3.73	37.54	28.01	46.00	-17.99	QP
801.786	43.85	21.40	4.46	37.62	32.09	46.00	-13.91	QP

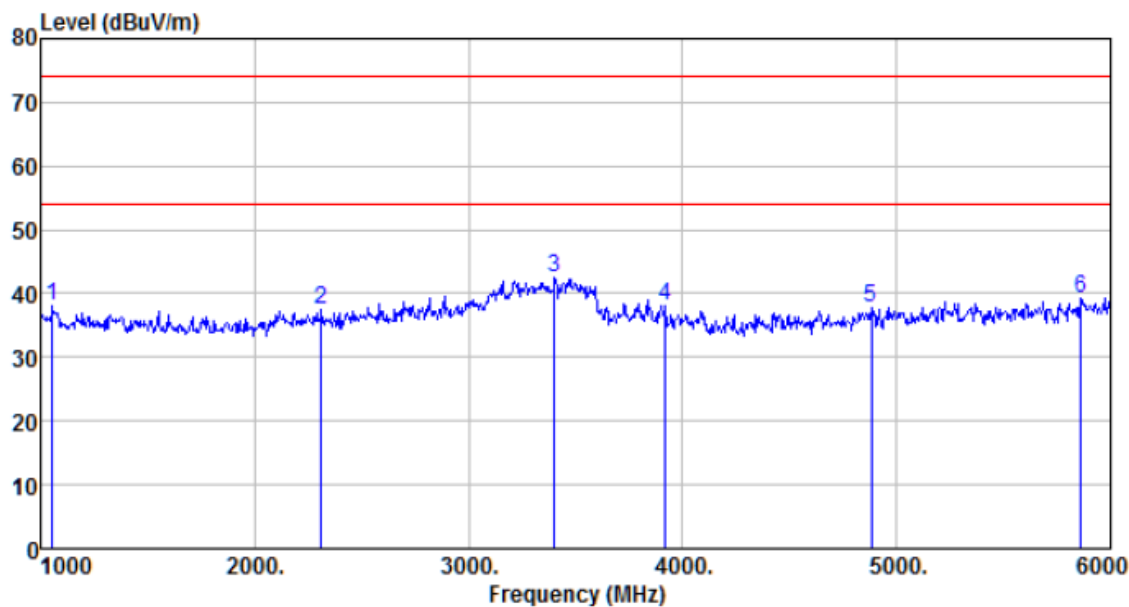
Test mode:	LAN mode	Antenna Polarity:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamplifier factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
125.007	57.05	8.81	1.40	36.92	30.34	43.50	-13.16	QP
233.349	42.10	11.60	2.04	37.36	18.38	46.00	-27.62	QP
360.448	43.74	14.70	2.67	37.48	23.63	46.00	-22.37	QP
444.851	49.37	16.28	3.07	37.52	31.20	46.00	-14.80	QP
601.427	48.85	19.50	3.73	37.54	34.54	46.00	-11.46	QP
801.786	40.65	21.40	4.46	37.62	28.89	46.00	-17.11	QP

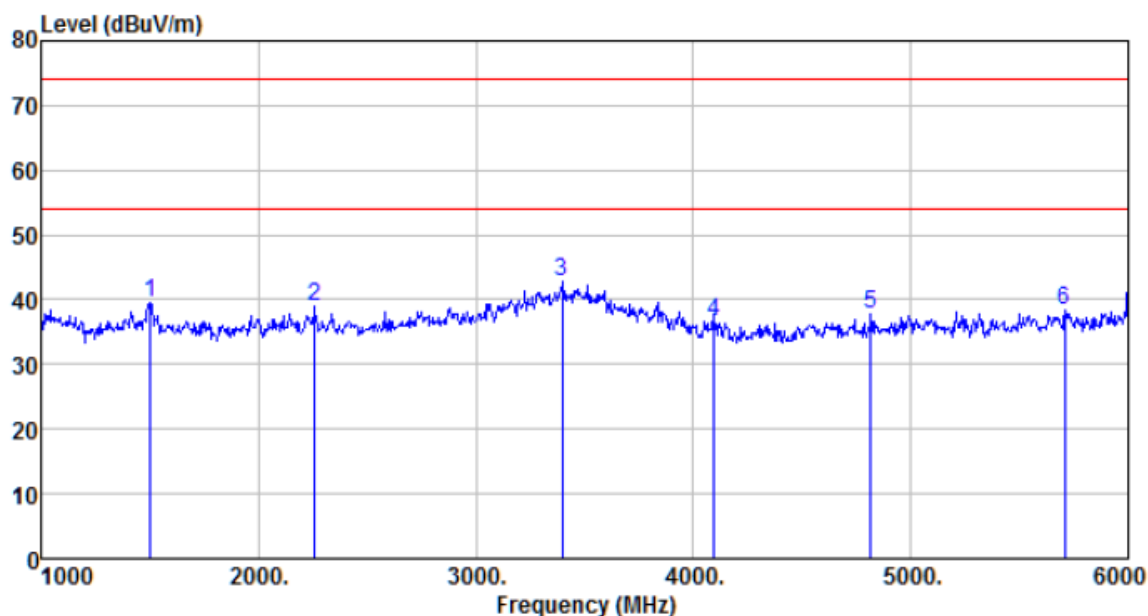
Above 1GHz

Test mode:	LAN mode	Antenna Polarity:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
1055.000	41.81	24.63	4.34	32.84	37.94	74.00	-36.06	Peak
2310.000	38.34	27.91	5.30	34.11	37.44	74.00	-36.56	Peak
3400.000	40.07	28.60	6.76	32.87	42.56	74.00	-31.44	Peak
3920.000	33.08	29.54	7.73	32.27	38.08	74.00	-35.92	Peak
4880.000	29.46	31.85	8.66	32.12	37.85	74.00	-36.15	Peak
5860.000	28.64	32.72	10.02	32.21	39.17	74.00	-34.83	Peak

Test mode:	LAN mode	Antenna Polarity:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
1505.000	43.14	25.21	4.68	33.62	39.41	74.00	-34.59	Peak
2260.000	40.02	28.01	5.25	34.17	39.11	74.00	-34.89	Peak
3395.000	40.32	28.60	6.76	32.87	42.81	74.00	-31.19	Peak
4095.000	30.70	29.89	7.96	32.07	36.48	74.00	-37.52	Peak
4815.000	29.36	31.79	8.61	32.09	37.67	74.00	-36.33	Peak
5710.000	28.27	32.50	9.81	32.30	38.28	74.00	-35.72	Peak

Note:

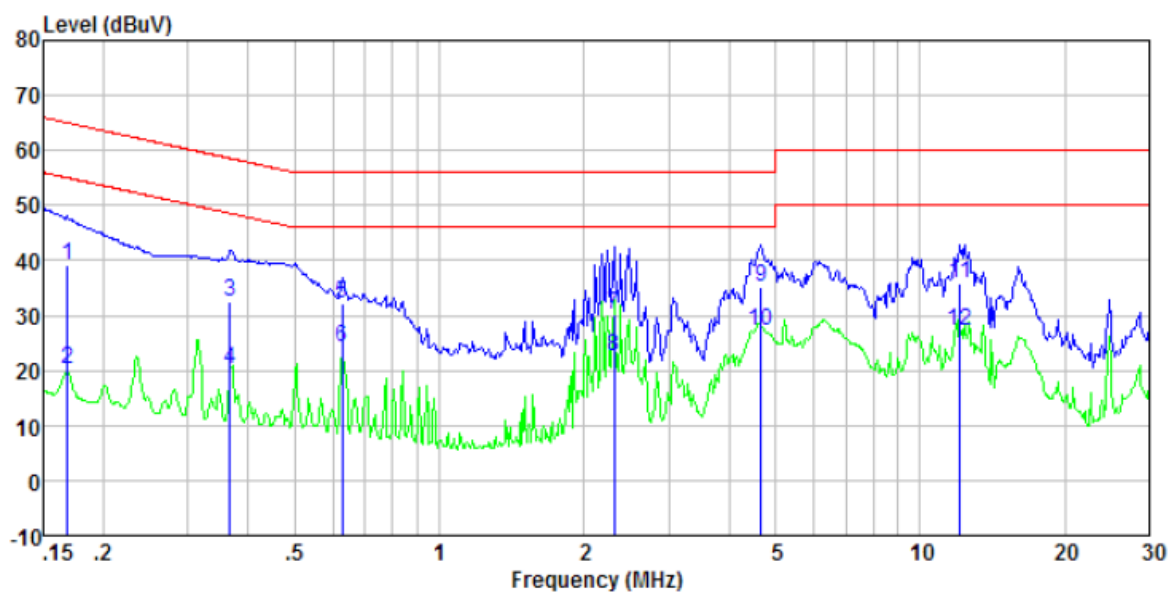
- The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
- Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

7.2 Conducted Emissions

Test Requirement:	FCC Part15 B Section 15.107																
Test Method:	ANSI C63.4:2014																
Test Frequency Range:	150kHz to 30MHz																
Class / Severity:	Class B																
Receiver setup:	RBW=9kHz, VBW=30kHz																
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>0.5-30</td><td>60</td><td>50</td></tr></table>			Frequency range (MHz)	Limit (dBμV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	0.5-30	60	50
Frequency range (MHz)	Limit (dBμV)																
	Quasi-peak	Average															
0.15-0.5	66 to 56*	56 to 46*															
0.5-5	56	46															
0.5-30	60	50															
Test setup:	Reference Plane <i>Remark: E.U.T.: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</i>																
Test environment:	Temp.: 25 °C	Humid.: 52%	Press.: 1 012mbar														
Test Instruments:	Refer to section 6 for details																
Test mode:	Refer to section 5.2 for details,																
Test results:	Pass																

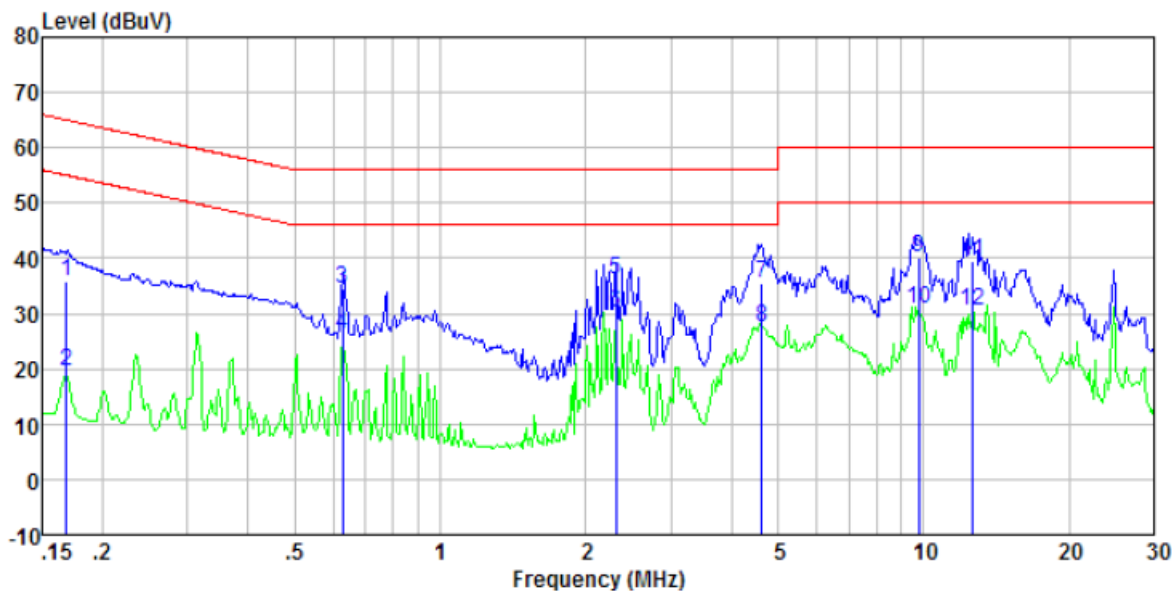
Measurement Data

Test mode:	LAN mode	Phase Polarity:	Line
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Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.17	18.68	20.40	0.09	39.17	65.03	-25.86	QP
0.17	-0.36	20.40	0.09	20.13	55.03	-34.90	Average
0.37	12.04	20.37	0.10	32.51	58.56	-26.05	QP
0.37	-0.13	20.37	0.10	20.34	48.56	-28.22	Average
0.63	11.85	20.28	0.12	32.25	56.00	-23.75	QP
0.63	3.83	20.28	0.12	24.23	46.00	-21.77	Average
2.31	9.91	20.20	0.18	30.29	56.00	-25.71	QP
2.31	2.28	20.20	0.18	22.66	46.00	-23.34	Average
4.67	14.94	20.20	0.17	35.31	56.00	-20.69	QP
4.67	6.76	20.20	0.17	27.13	46.00	-18.87	Average
12.12	15.48	20.20	0.20	35.88	60.00	-24.12	QP
12.12	6.64	20.20	0.20	27.04	50.00	-22.96	Average

Test mode:	LAN mode	Phase Polarity:	Neutral
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Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.17	15.30	20.40	0.09	35.79	65.03	-29.24	QP
0.17	-1.07	20.40	0.09	19.42	55.03	-35.61	Average
0.63	14.03	20.28	0.12	34.43	56.00	-21.57	QP
0.63	5.79	20.28	0.12	26.19	46.00	-19.81	Average
2.31	15.82	20.20	0.18	36.20	56.00	-19.80	QP
2.31	9.85	20.20	0.18	30.23	46.00	-15.77	Average
4.62	15.00	20.20	0.17	35.37	56.00	-20.63	QP
4.62	7.17	20.20	0.17	27.54	46.00	-18.46	Average
9.76	19.60	20.20	0.20	40.00	60.00	-20.00	QP
9.76	10.51	20.20	0.20	30.91	50.00	-19.09	Average
12.65	19.12	20.20	0.21	39.53	60.00	-20.47	QP
12.65	10.09	20.20	0.21	30.50	50.00	-19.50	Average

Notes:

- The following Quasi-Peak and Average measurements were performed on the EUT:
- Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

-----End-----