Ottlite Technologies Inc.

TEST REPORT

SCOPE OF WORK
FCC TESTING–HZ-X16C, HZ-X8C, HZ-X21C

REPORT NUMBER
241220025SZN-001

ISSUE DATE	**[REVISED DATE]**
21 January 2025	[----------]

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TEST REPORT

Intertek Report No.: 241220025SZN-001

Ottlite Technologies Inc.

Application
For
Certification

FCC ID: 2AI7B-1-HZ-X16C

LED table lamp with Wireless Charging

Model: HZ-X16C, HZ-X8C, HZ-X21C

Brand name: OttLite

Transmitter

Report No.: 241220025SZN-001

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-23]

Prepared and Checked by:

Tony Tang
Engineer

Approved by:

Johnny Wang
Project Engineer
Date: 21 January 2025

MEASUREMENT/TECHNICAL REPORT

This report concerns (check one) Original Grant ___X___ Class II Change _____

Equipment Type: DCD - Part 15 Low Power Transmitter Below 1705 kHz

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No ___X_____

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No ___X___

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-23] Edition] provision.

Report prepared by:

Tony Tang
Intertek Testing Services Shenzhen Ltd. Longhua Branch
101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen.
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Table of Contents

1.0 Summary of Test Results

Applicant: Ottlite Technologies Inc.
Applicant Address: 1715 N Westshore Blvd, Suite 950, Tampa, FL 33607,USA

Manufacturer: Ottlite Technologies Inc.
Manufacturer Address: 1715 N Westshore Blvd, Suite 950, Tampa, FL 33607,USA

Model: HZ-X16C, HZ-X8C, HZ-X21C

FCC ID: 2AI7B-1-HZ-X16C

TEST ITEM	REFERENCE	RESULTS
Power Line Conducted Emissions	15.207	Pass
Transmitter Radiated Emissions	15.209	Pass
Antenna Requirement	15.203	Pass (See Notes)
20dB bandwidth	15.215(c)	Pass

Note:
1. The EUT uses an Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a LED table lamp with Wireless Charging with wireless charger function which operating at 111-205 kHz. The EUT is powered by DC 12V, 2A from adapter, the output of the wireless charger is 5W for mobile phones area, please refer to the user's manual.

Antenna Type: Integral Antenna(embedded coil antenna)

Model: HZ-X8C, HZ-X21C Wireless charging hardware and circuit are the same as model: HZ-X16C. The difference between them is that the main control circuit, LED circuit and appearance are different. All models were tested and this report only shows the worst case.

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

2.2 Related Submittal(s) Grants

This is an application for certification of the LED table lamp with Wireless Charging with wireless charging function portion.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst-case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are Intertek **Testing Services Shenzhen Ltd. Longhua Branch** and located at 101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen. This test facility and site measurement data have been fully placed on file with File Number: CN1188.

3.0 System Test Configuration

3.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.10 (2013).

The EUT was powered by an adapter with 100-240V/60Hz input during the test. The test system was pre-scanning tested based on the consideration of following EUT operation mode. and 145.6kHz was the worst case frequency. Only the worst-case data was shown in this report.

Pertest mode	Description
Mode 1	Standby mode
Mode 2	Mobile phone is charging at 1% battery power
Mode 3	Mobile phone is charging at 50% battery power
Mode 4	Mobile phone is charging at 99% battery power

For maximizing emissions below 30 MHz, the EUT was rotated through 360°, the bottom of the loop antenna was placed 1 meter above the ground, and the antenna polarization was changed. For maximizing emission at and above 30 MHz, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data report in Section 4.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a plastic stand if necessary and placed on the styrene turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

3.2 EUT Exercising Software

N/A

3.3 Special Accessories

There are no special accessories necessary for compliance of this product.

3.4 Equipment Modification

Any modifications installed previous to testing by Ottlite Technologies Inc**.** will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Longhua Branch.

3.5 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Measurement Uncertainty	Uncertainty
Channel Bandwidth	±3.46%
Radiated emission (Up to 1GHz)	±4.8dB
AC Conducted emission	±3.2 dB
Temperature	±1°C
Humidity	±5%

3.6 Support Equipment List and Description

This product was tested in the following configuration:

Description	Manufacturer	Detail
Mobile Phone	Samsung (Provided by Intertek)	S7
Adapter	(Provided by applicant)	Model: TY1200200A1mn Input: 100-240V~, 50/60Hz, 0.8A Output: DC 12.0V/2.0A

4.0 Measurement Results

4.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$FS = RA + AF + CF - AG + PD + AV$

where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB/m
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB
AV = Average Factor in –dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$FS = RA + AF + CF - AG + PD + AV$

Example

Assume a receiver reading of 62.0dBμV is obtained. The antenna factor of 7.4dB and cable factor of 1.6dB is added. The amplifier gain of 29dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0dB, and the resultant average factor was –10dB. The net field strength for comparison to the appropriate emission limit is 32dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0dBμV
AF = 7.4 dB/m
CF = 1.6dB
AG = 29.0dB
PD = 0dB

AV = –10dB

$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32dB\mu V/m$

Level in μV/m = Common Antilogarithm [(32dBμV/m)/20] = 39.8μV/m

4.2 Radiated Emission Configuration Photograph

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

4.3 Radiated Spurious Emission

Worst Case Radiated Spurious Emission
at
36.062500MHz

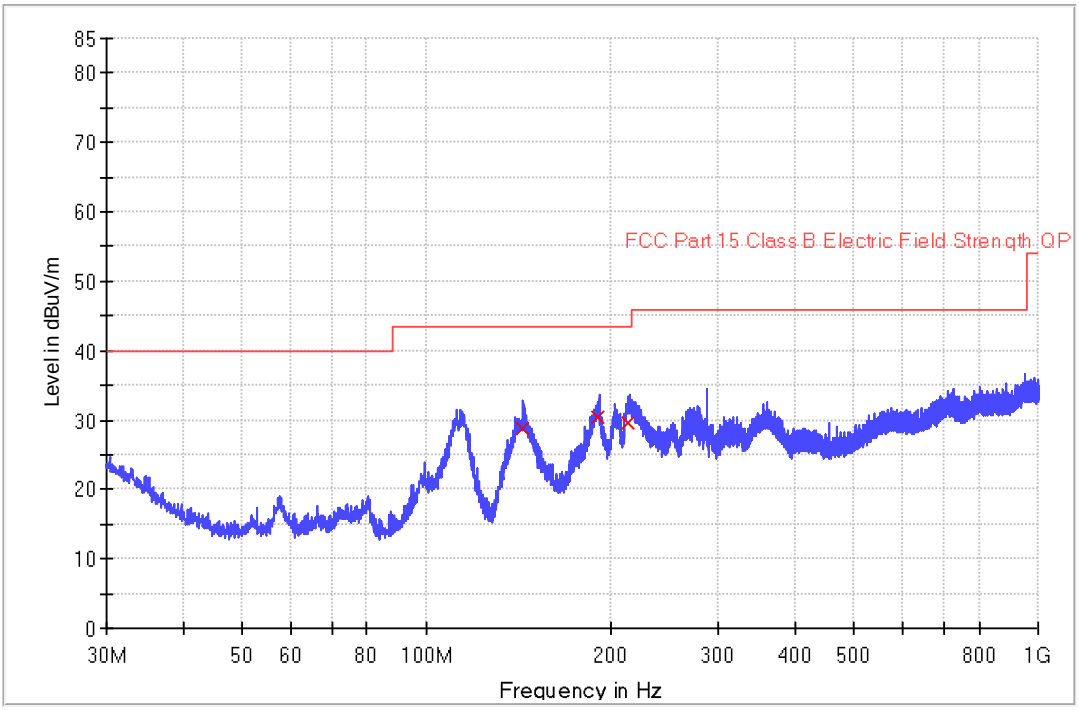
Judgement: Passed by 6.3dB margin

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

Applicant: Ottlite Technologies Inc.
Date of Test: 28 December 2024 Model: HZ-X16C
Worst Case Operating Mode: Mode 2
Test Voltage: AC 120V, 60Hz

Radiated Emissions (30MHz – 1000MHz)

ANT Polarity: Horizontal



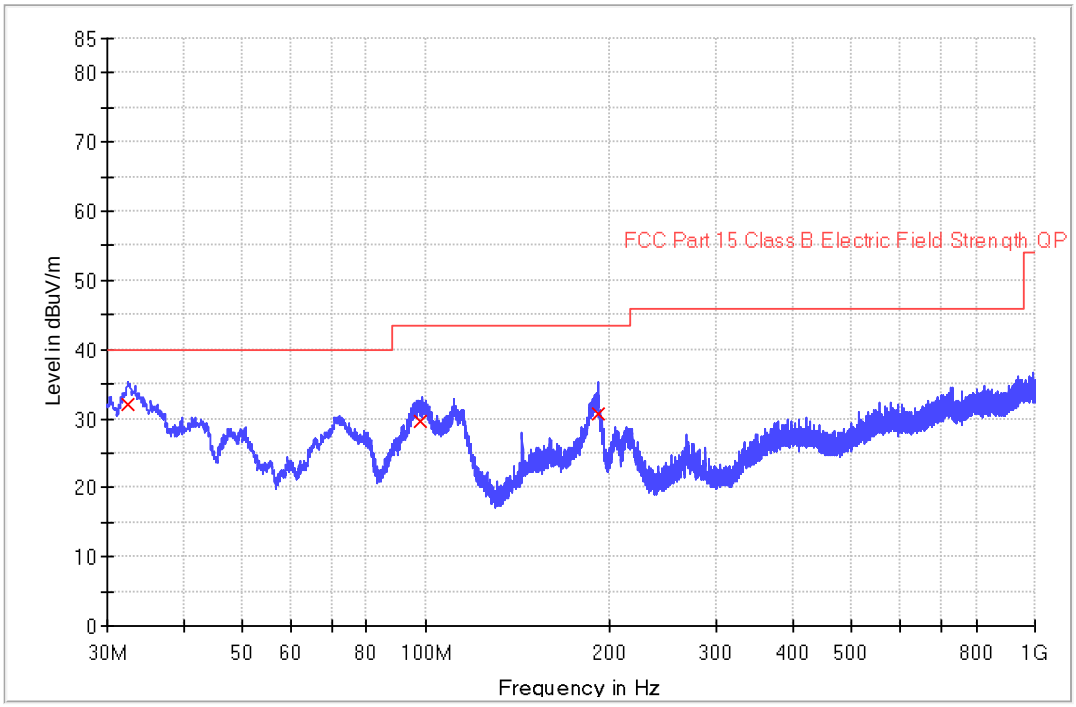
Limit and Margin

Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
144.039667	28.8	1000.0	120.000	H	15.7	14.7	43.5
191.119333	30.3	1000.0	120.000	H	16.8	13.2	43.5
213.588667	29.5	1000.0	120.000	H	17.4	14.0	43.5

Remark:
1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin (dB) = Limit Line(dBµV/m) – Level (dBµV/m)

Applicant: Ottlite Technologies Inc.
Date of Test: 28 December 2024 Model: HZ-X16C
Worst Case Operating Mode: Mode 2
Test Voltage: AC 120V, 60Hz

ANT Polarity: Vertical



Limit and Margin

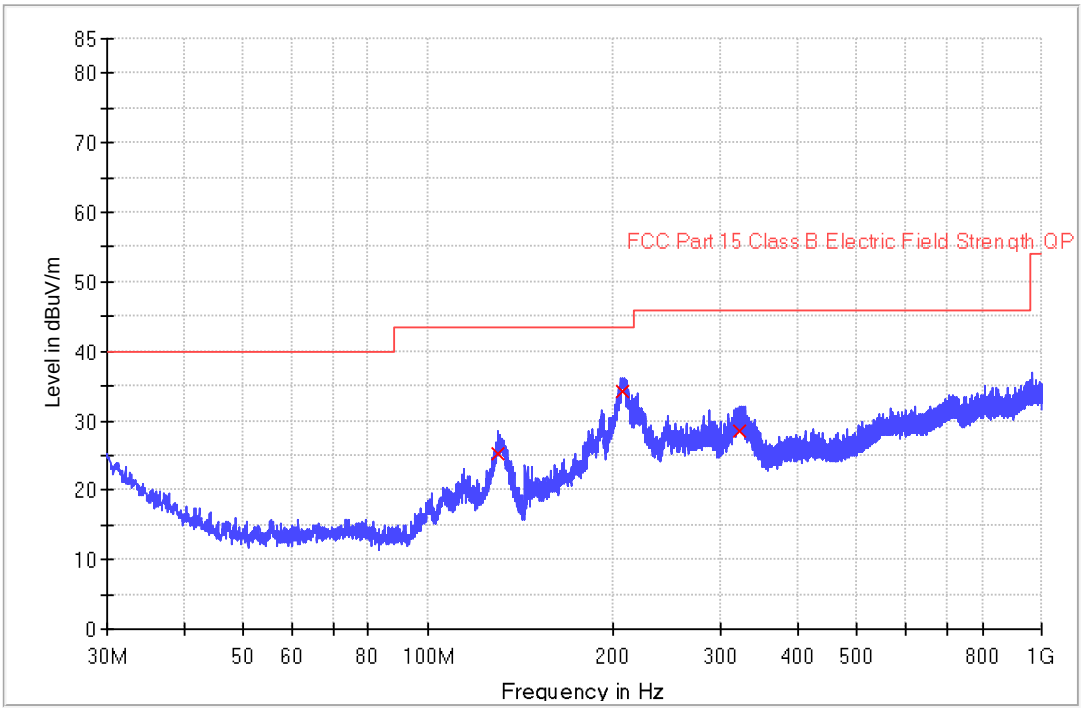
Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
32.360333	32.1	1000.0	120.000	V	21.7	7.9	40.0
97.997000	29.7	1000.0	120.000	V	14.5	13.8	43.5
191.990000	30.6	1000.0	120.000	V	16.8	12.9	43.5

Remark:
1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin (dB) = Limit Line(dBµV/m) – Level (dBµV/m)

Applicant: Ottlite Technologies Inc.
Date of Test: 07 January 2025 Model: HZ-X8C
Worst Case Operating Mode: Mode 2
Test Voltage: AC 120V, 60Hz

Radiated Emissions (30MHz – 1000MHz)

ANT Polarity: Horizontal



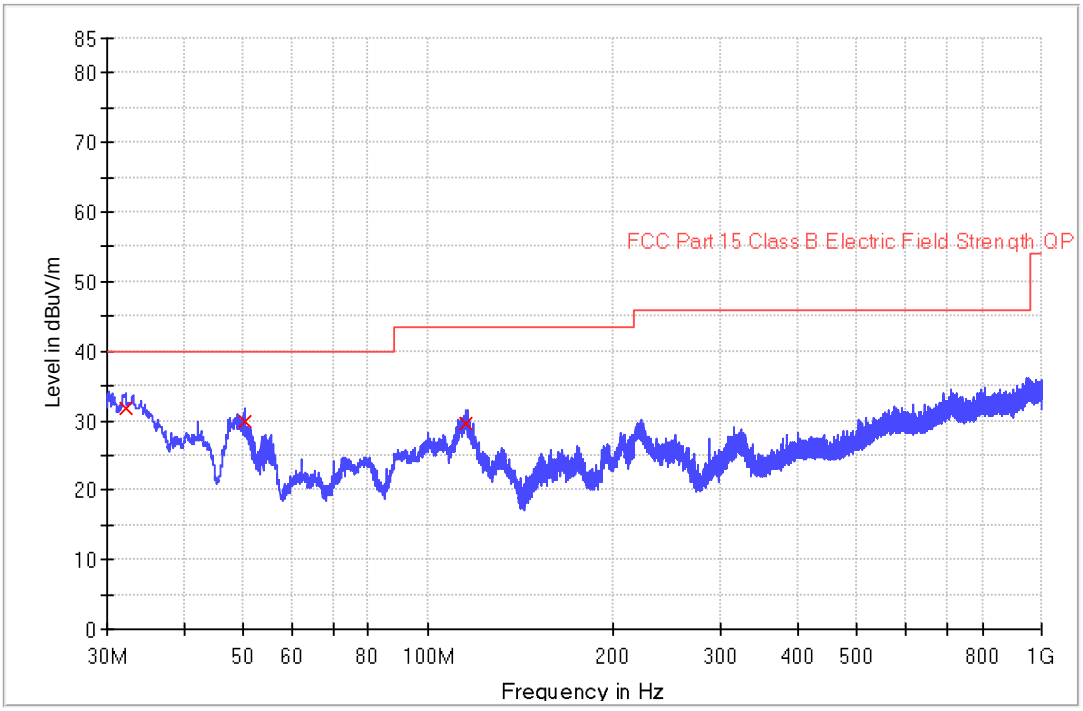
Limit and Margin

Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
130.071667	25.2	1000.0	120.000	H	14.6	18.3	43.5
207.057333	34.3	1000.0	120.000	H	17.3	9.2	43.5
322.034667	28.5	1000.0	120.000	H	21.4	17.5	46.0

Remark:
1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin (dB) = Limit Line(dBµV/m) – Level (dBµV/m)

Applicant: Ottlite Technologies Inc.
Date of Test: 07 January 2025 Model: HZ-X8C
Worst Case Operating Mode: Mode 2
Test Voltage: AC 120V, 60Hz

ANT Polarity: Vertical



Limit and Margin

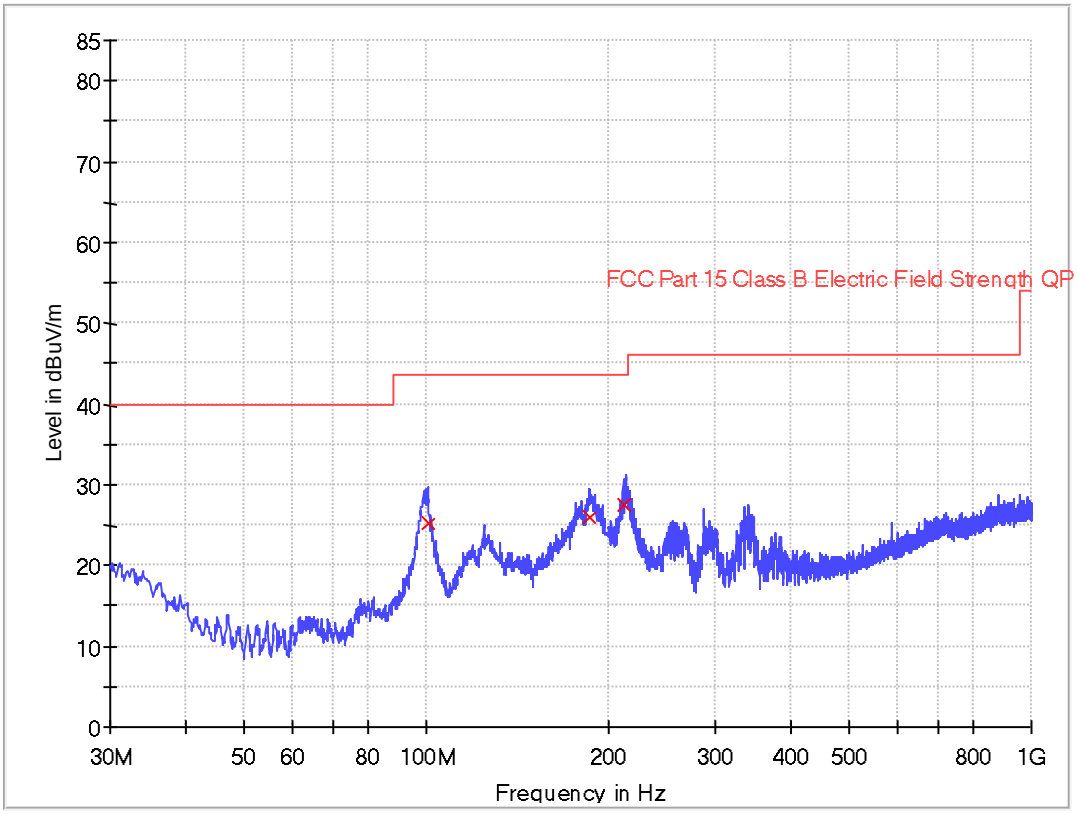
Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
32.134000	31.7	1000.0	120.000	V	21.9	8.3	40.0
50.176000	29.8	1000.0	120.000	V	12.8	10.2	40.0
115.554000	29.7	1000.0	120.000	V	14.6	13.8	43.5

Remark:
1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin (dB) = Limit Line(dBµV/m) – Level (dBµV/m)

Applicant: Ottlite Technologies Inc.
Date of Test: 09 January 2025 Model: HZ-X21C
Worst Case Operating Mode: Mode 2
Test Voltage: AC 120V, 60Hz

Radiated Emissions (30MHz – 1000MHz)

ANT Polarity: Horizontal



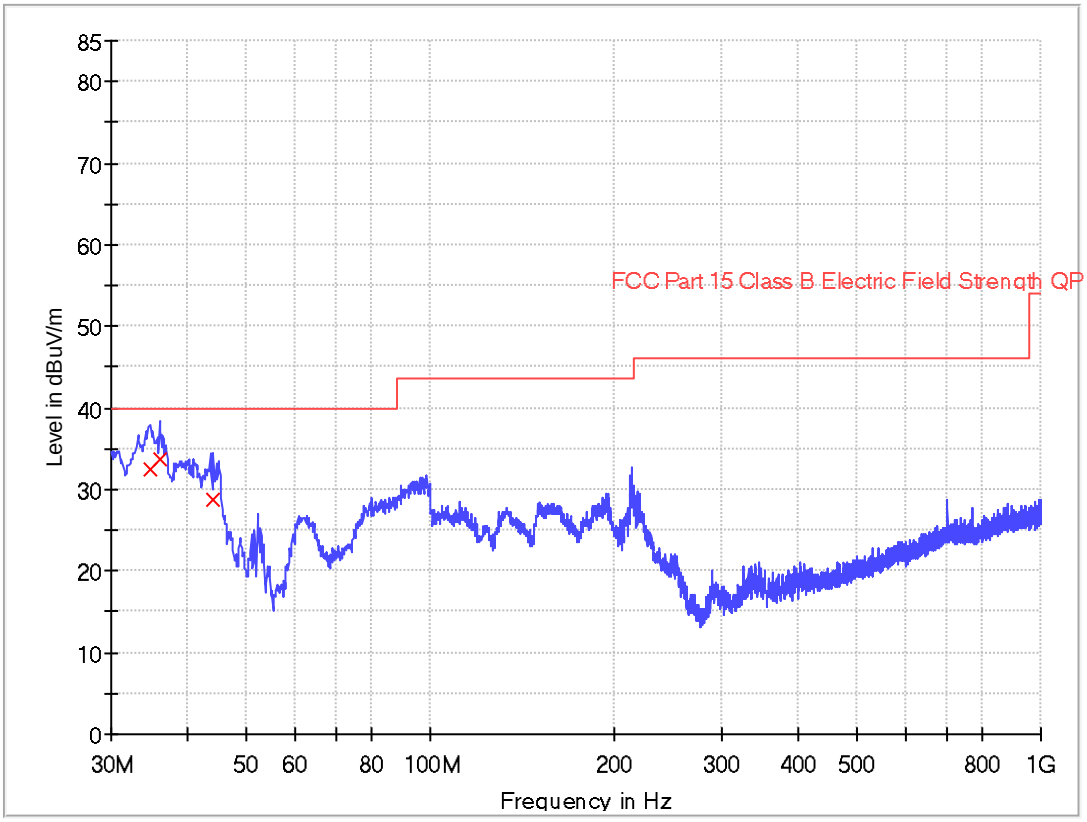
Limit and Margin

Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
100.325000	25.4	1000.0	120.000	H	9.3	18.1	43.5
185.563750	26.0	1000.0	120.000	H	11.4	17.5	43.5
211.511250	27.5	1000.0	120.000	H	11.8	16.0	43.5

Remark:
1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin (dB) = Limit Line(dBµV/m) – Level (dBµV/m)

Applicant: Ottlite Technologies Inc.
Date of Test: 09 January 2025 Model: HZ-X21C
Worst Case Operating Mode: Mode 2
Test Voltage: AC 120V, 60Hz

ANT Polarity: Vertical



Limit and Margin

Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
34.728750	32.4	1000.0	120.000	V	15.5	7.6	40.0
36.062500	33.7	1000.0	120.000	V	14.9	6.3	40.0
44.065000	28.7	1000.0	120.000	V	10.7	11.3	40.0

Remark:
1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin (dB) = Limit Line(dBµV/m) – Level (dBµV/m)

Applicant: Ottlite Technologies Inc.
Date of Test: 28 December 2024
Worst Case Operating Mode: Mode 2
Test Voltage: AC 120V, 60Hz

Model: HZ-X16C, HZ-X8C, HZ-X21C
Worst Case Model: HZ-X16C

Fundamental & Spurious Emission Below 30MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Distance Factor (-dB)	Calulated at 300m (dBµV/m)	Limit at 300m (dBµV/m)	Margin (dB)
Horizontal	0.1456	56.6	0.0	17.2	73.8	80.0	-6.2	24.3	-30.5
Horizontal	0.4359	29.2	0.0	16.4	45.6	80.0	-34.4	14.8	-49.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Distance Factor (-dB)	Calulated at 30m (dBµV/m)	Limit at 30m (dBµV/m)	Margin (dB)
Horizontal	0.5801	25.8	0.0	16.1	41.9	40.0	1.9	32.3	-30.4
Horizontal	0.7255	24.0	0.0	15.8	39.8	40.0	-0.2	30.4	-30.6

Notes:

1. The specified limits of frequency band 9~90 KHz, 110~490 KHz are in average and measurements are made with peak detectors. Quasi-Peak detector is used for other frequency bands.

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Loop antenna is used for the emission under 30MHz.

5. Horizontal and Vertical polarization were tested and only the worst case data is shown.

6. We tested all models, only the worst case data is shown.

4.4 Conducted Emission Configuration Photograph

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: conducted photos.pdf.

4.5 Conducted Emission

Worst Case Conducted Configuration
at
0.186000MHz

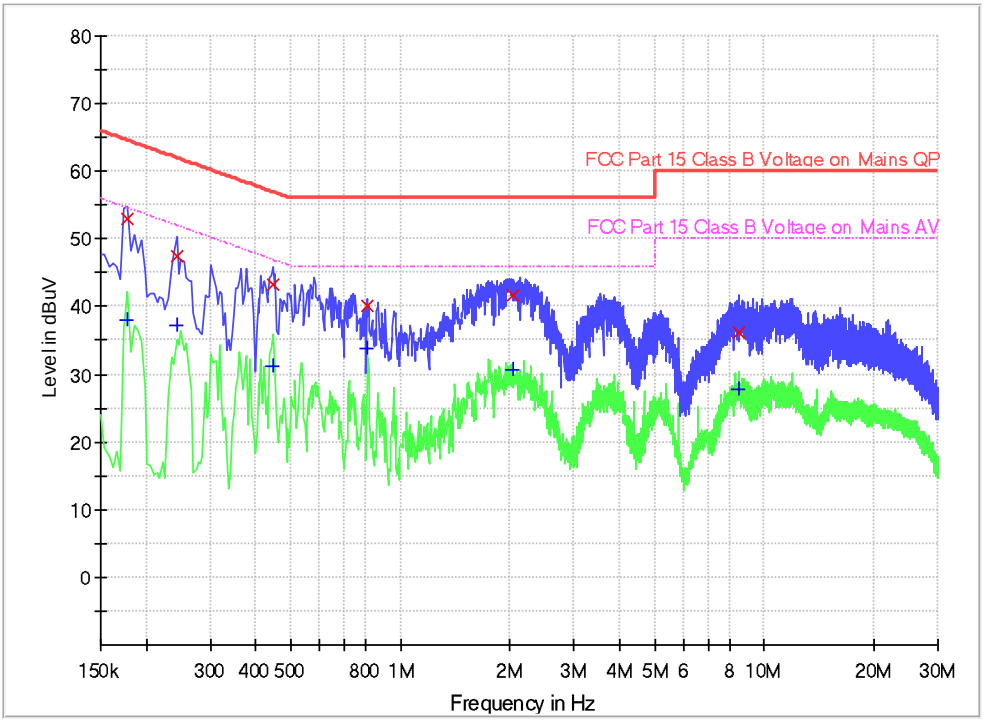
Judgement: Passed by 4.1dB margin

Applicant: Ottlite Technologies Inc.
Date of Test: 25 December 2024
Model: HZ-X16C
Worst Case Operating Mode: Mode 2
Phase: Live
Test Voltage: AC 120V, 60Hz

Graphic / Data Table

Conducted Emissions

Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.178000	53.1	9.000	L1	9.6	11.5	64.6
0.242000	47.6	9.000	L1	9.6	14.4	62.0
0.446000	43.3	9.000	L1	9.6	13.6	56.9
0.814000	40.0	9.000	L1	9.6	16.0	56.0
2.050000	41.8	9.000	L1	9.7	14.2	56.0
8.526000	36.2	9.000	L1	9.9	23.8	60.0

Limit and Margin AV

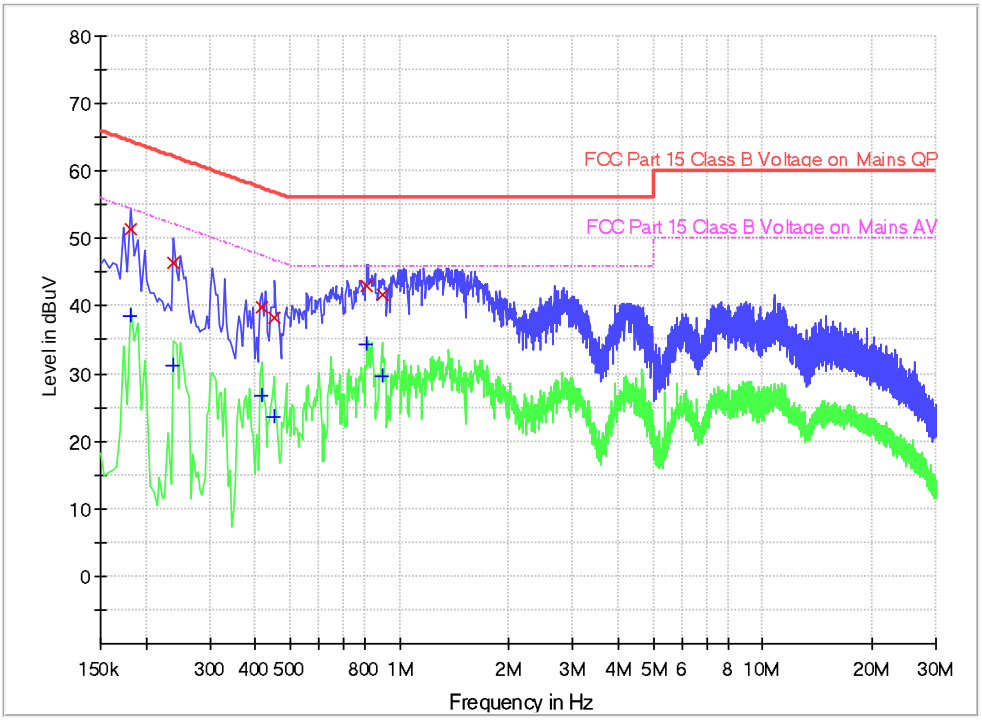
Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.178000	38.0	9.000	L1	9.6	16.6	54.6
0.242000	37.1	9.000	L1	9.6	14.9	52.0
0.446000	31.3	9.000	L1	9.6	15.6	46.9
0.814000	33.8	9.000	L1	9.6	12.2	46.0
2.050000	30.7	9.000	L1	9.7	15.3	46.0
8.526000	27.7	9.000	L1	9.9	22.3	50.0

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBµV) – Quasi Peak/Average (dBµV)

Applicant: Ottlite Technologies Inc.
Date of Test: 25 December 2024
Worst Case Operating Mode: Mode 2
Test Voltage: AC 120V, 60Hz

Model: HZ-X16C
Phase: Neutral

Graphic / Data Table
Conducted Emissions
Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.182000	51.3	9.000	N	9.6	13.1	64.4
0.238000	46.4	9.000	N	9.6	15.8	62.2
0.418000	39.8	9.000	N	9.6	17.7	57.5
0.454000	38.4	9.000	N	9.6	18.4	56.8
0.814000	43.0	9.000	N	9.6	13.0	56.0
0.894000	41.8	9.000	N	9.6	14.2	56.0

Limit and Margin AV

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	38.5	9.000	N	9.6	15.9	54.4
0.238000	31.1	9.000	N	9.6	21.1	52.2
0.418000	26.7	9.000	N	9.6	20.8	47.5
0.454000	23.7	9.000	N	9.6	23.1	46.8
0.814000	34.2	9.000	N	9.6	11.8	46.0
0.894000	29.6	9.000	N	9.6	16.4	46.0

Remark:

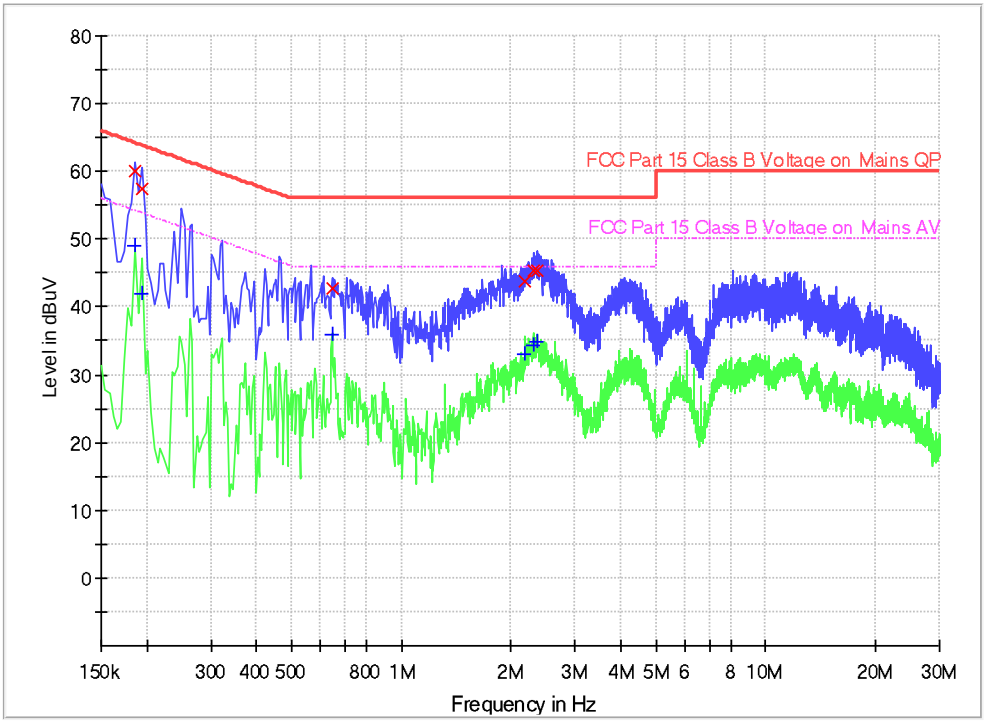
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBµV) – Quasi Peak/Average (dBµV)

Applicant: Ottlite Technologies Inc.
Date of Test: 09 January 2025
Model: HZ-X8C
Worst Case Operating Mode: Mode 2
Phase: Live
Test Voltage: AC 120V, 60Hz

Graphic / Data Table

Conducted Emissions

Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.186000	60.1	9.000	L1	9.6	4.1	64.2
0.194000	57.4	9.000	L1	9.6	6.5	63.9
0.646000	42.7	9.000	L1	9.6	13.3	56.0
2.178000	43.8	9.000	L1	9.7	12.2	56.0
2.298000	45.5	9.000	L1	9.7	10.5	56.0
2.362000	45.3	9.000	L1	9.7	10.7	56.0

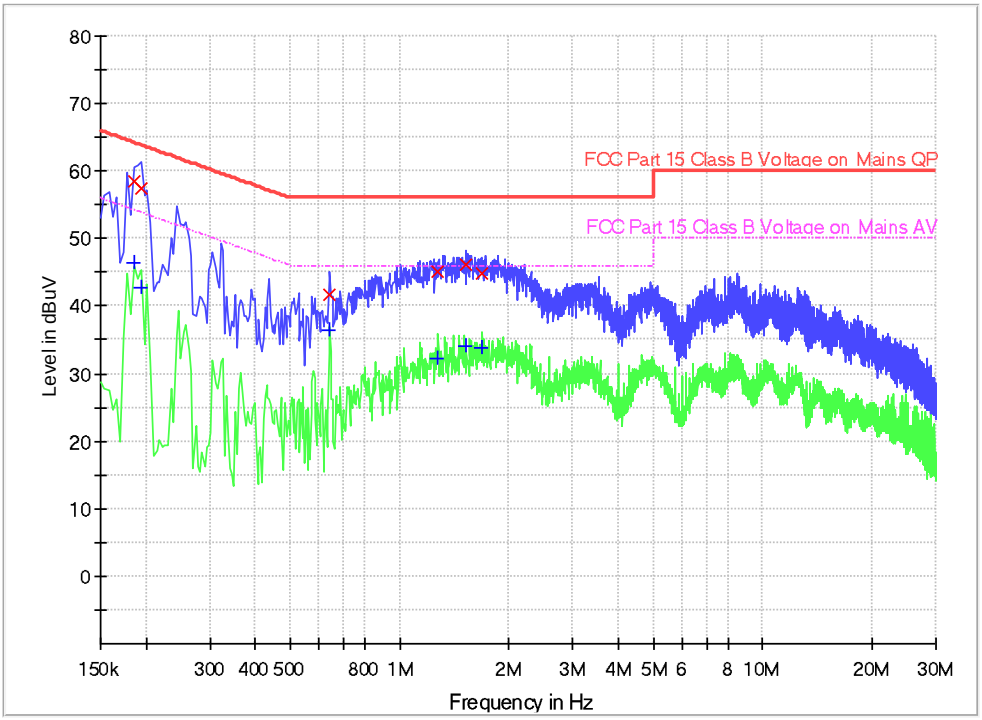
Limit and Margin AV

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186000	49.1	9.000	L1	9.6	5.1	54.2
0.194000	41.9	9.000	L1	9.6	12.0	53.9
0.646000	36.0	9.000	L1	9.6	10.0	46.0
2.178000	32.9	9.000	L1	9.7	13.1	46.0
2.298000	34.3	9.000	L1	9.7	11.7	46.0
2.362000	34.8	9.000	L1	9.7	11.2	46.0

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBµV) – Quasi Peak/Average (dBµV)

Applicant: Ottlite Technologies Inc.
Date of Test: 09 January 2025
Model: HZ-X8C
Worst Case Operating Mode: Mode 2
Phase: Neutral
Test Voltage: AC 120V, 60Hz

Graphic / Data Table
Conducted Emissions
Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.186000	58.5	9.000	N	9.6	5.7	64.2
0.194000	57.4	9.000	N	9.6	6.5	63.9
0.642000	41.8	9.000	N	9.6	14.2	56.0
1.278000	45.2	9.000	N	9.6	10.8	56.0
1.530000	46.1	9.000	N	9.6	9.9	56.0
1.690000	44.9	9.000	N	9.7	11.1	56.0

Limit and Margin AV

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186000	46.3	9.000	N	9.6	7.9	54.2
0.194000	42.9	9.000	N	9.6	11.0	53.9
0.642000	36.4	9.000	N	9.6	9.6	46.0
1.278000	32.2	9.000	N	9.6	13.8	46.0
1.530000	34.0	9.000	N	9.6	12.0	46.0
1.690000	33.7	9.000	N	9.7	12.3	46.0

Remark:

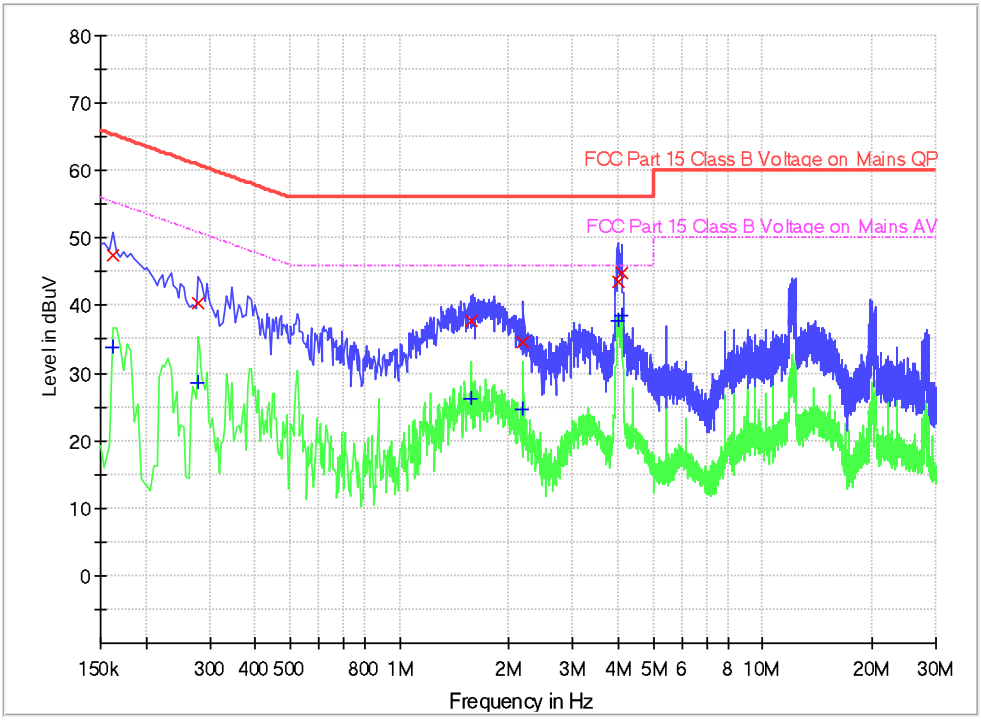
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBµV) – Quasi Peak/Average (dBµV)

Applicant: Ottlite Technologies Inc.
Date of Test: 07 January 2025
Model: HZ-X21C
Worst Case Operating Mode: Mode 2
Phase: Live
Test Voltage: AC 120V, 60Hz

Graphic / Data Table

Conducted Emissions

Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.162000	47.5	9.000	L1	9.6	17.9	65.4
0.278000	40.5	9.000	L1	9.6	20.4	60.9
1.570000	37.8	9.000	L1	9.7	18.2	56.0
2.190000	34.7	9.000	L1	9.7	21.3	56.0
3.986000	43.4	9.000	L1	9.7	12.6	56.0
4.078000	44.8	9.000	L1	9.7	11.2	56.0

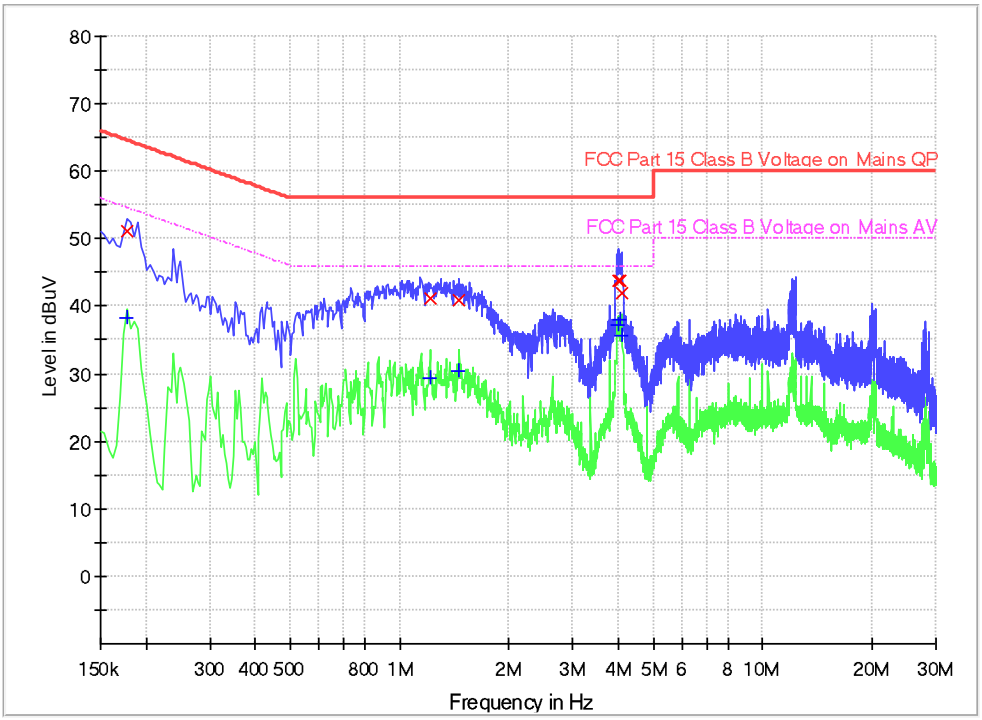
Limit and Margin AV

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.162000	33.8	9.000	L1	9.6	21.6	55.4
0.278000	28.6	9.000	L1	9.6	22.3	50.9
1.570000	26.1	9.000	L1	9.7	19.9	46.0
2.190000	24.7	9.000	L1	9.7	21.3	46.0
3.986000	37.8	9.000	L1	9.7	8.2	46.0
4.078000	38.7	9.000	L1	9.7	7.3	46.0

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBµV) – Quasi Peak/Average (dBµV)

Applicant: Ottlite Technologies Inc.
Date of Test: 07 January 2025
Model: HZ-X21C
Worst Case Operating Mode: Mode 2
Phase: Neutral
Test Voltage: AC 120V, 60Hz

Graphic / Data Table
Conducted Emissions
Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.178000	51.0	9.000	N	9.6	13.6	64.6
1.218000	41.2	9.000	N	9.6	14.8	56.0
1.458000	41.0	9.000	N	9.6	15.0	56.0
4.002000	43.9	9.000	N	9.7	12.1	56.0
4.034000	43.9	9.000	N	9.7	12.1	56.0
4.106000	41.9	9.000	N	9.7	14.1	56.0

Limit and Margin AV

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.178000	38.2	9.000	N	9.6	16.4	54.6
1.218000	29.3	9.000	N	9.6	16.7	46.0
1.458000	30.5	9.000	N	9.6	15.5	46.0
4.002000	37.3	9.000	N	9.7	8.7	46.0
4.034000	38.0	9.000	N	9.7	8.0	46.0
4.106000	35.6	9.000	N	9.7	10.4	46.0

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBµV) – Quasi Peak/Average (dBµV)

5.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.pdf & internal photos.pdf.

6.0 Product Labeling

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf.

7.0 Technical Specifications

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.

8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

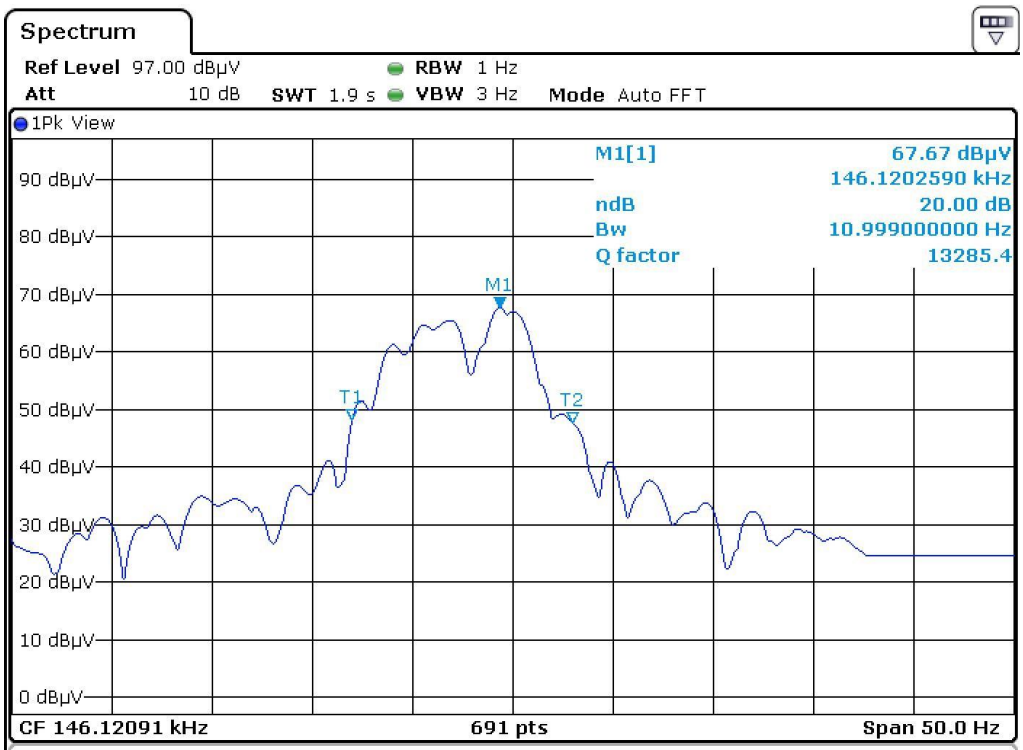
This manual will be provided to the end-user with each unit sold/leased in the United States.

9.0 Miscellaneous Information

This miscellaneous information includes 20dB bandwidth and emission measuring procedure.

9.1 20dB bandwidth

Pursuant to FCC part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered. The test plots are reported as below.



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	146.120259 kHz	67.67 dBµV	ndB down	10.999 Hz
T1		1	146.112878 kHz	48.25 dBµV	ndB	20.00 dB
T2		1	146.123877 kHz	47.61 dBµV	Q factor	13285

9.2 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.10 - 2013.

The transmitting equipment under test (EUT) is placed on a styrene turntable which is four feet in diameter and approximately 0.8 meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Average detector is used for 9–90 KHz, 110–490 KHz and Quasi-Peak detector is used for other frequency band. The IF bandwidth used for measurement of radiated signal strength was 10 KHz for emission below 30 MHz and 120 KHz for emission from 30 MHz to 1000 MHz.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz up to the 1GHz. For line-conducted emissions, the range scanned is 150kHz to 30MHz.

9.2 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.10 - 2013.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

10.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ056-07	Signal Analyzer	R&S	FSV40	101214	2024-12-05	2025-12-05
SZ185-03	EMI Receiver	R&S	ESR7	101975	2024-04-23	2025-04-23
SZ061-13	Biconilog Antenna	ETS	3142E	00217919	2022-07-13	2025-07-13
SZ188-05	Anechoic Chamber	ETS	FACT 3-2.0	CT001880-Q1391	2021-05-25	2026-05-25
SZ062-40	RF Cable	Talent Microwave	A50-3.5M3.5M-4.5M	22012932	2024-09-30	2025-09-30
SZ062-41	RF Cable	Talent Microwave	A50-3.5M3.5M-8M	22012931	2024-09-30	2025-09-30
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	2024-05-05	2027-05-05
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	2024-07-09	2025-07-09
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	2024-04-23	2025-04-23
SZ188-03	Shielding Room	ETS	RFD-100	4100	2022-12-20	2025-12-20
SZ062-16	RF Cable	HUBER+SUHNER	CBL2-BN-1m	110127-2231000	2024-07-10	2025-07-10

**********End of Report**********