TEST REPORT

Report Number: 14932130-E1V4

Applicant	:	WiTricity Corporation 57 Water Street Watertown, MA, 02472 US
Model	:	GWA1100
FCC ID	:	2BFEF-WWA1101
EUT Description	:	Charging Pad
Test Standard(s)	:	FCC CFR 47 PART 18 SUBPART C FCC CFR 47 PART 15 SUBPART C

Date Of Issue:
2025-05-21

Prepared by:
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CERT #0751.05

REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2025-02-18	Initial Issue	---
V2	2025-04-30	Section 5.5, 7.1, 8 Updated	Henry Lau
V3	2025-05-07	Section 7, 9 Updated, added section 7.1	Henry Lau
V4	2025-05-21	Section 5.1 and 5.4 Updated	Henry Lau

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	WiTricity Corporation 57 Water Street Watertown, MA, 02472 US
EUT DESCRIPTION:	Charging Pad
MODEL NUMBER:	GWA1100
BRAND:	WiTricity
SERIAL NUMBER:	GWA11001023252000300, GWA11001023285001100
SAMPLE RECEIPT DATE:	2023-10-20
DATE TESTED:	2023-12-07 to 2024-05-22

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC CFR 47 PART 18 SUBPART C	Complies
FCC CFR 47 PART 15 SUBPART C	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document.

Approved & Released For
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2. TEST METHODOLOGY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for correctly integrating customer-provided data with measurements performed by UL Verification Services Inc.

The tests documented in this report were performed in accordance with
FCC / OST MP-5, “FCC Methods of Measurements of Radio Noise Emissions from Industrial, Scientific, and Medical Equipment”
KDB 680106 D01 v04
FCC CFR 47 Part 2
FCC CFR 47 Part 15
FCC CFR 47 Part 18
ANSI 63.30-2021
ANSI 63.10-2020

3. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, Certificate Number #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☐	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
☐	Building 3: 843 Auburn Court, Fremont, CA 94538, USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA			
☐	Building 5: 47670 Kato Rd, Fremont, CA 94538, USA			

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4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

4.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U_{Lab}
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.84 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB

Uncertainty figures are valid to a confidence level of 95%.

4.4. SAMPLE CALCULATION

RADIATED EMISSIONS
Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS
Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

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5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION, OPERATING FREQUENCY AND POWER

The EUT is a charging pad using a coil that produces a magnetic field in the reactive near-field that is only coupled to a receiving magnetic coil designed to be interoperable at a frequency of 85 kHz. The coupled coil does not produce intentional far-field RF energy (i.e., the far-field energy of the charging pad is well below one billionth of the transferred energy); however, the charging pad is capable of transferring up to ~10.5 kW of power to a coupled Receiver. The device is powered via a Wall Box (240 V / 46 Amps). The EUT also contains a FOD / LOD (Foreign Object Detection / Living Object Detection) System Short Range Device (SRD) operating at 3 MHz & 4.4 MHz.

This report documents test results of the Wireless Power Transfer portion(Part 18) and the FOD 3MHz & 4.4 MHz portion(Part 15C).

5.2. DESCRIPTION OF AVAILABLE ANTENNAS/COILS

The antenna gain(s) and type, as provided by the manufacturer, are as follows:

The EUT includes a charging pad that contains a coil that produces a magnetic field that is used to couple energy in the reactive near-field. The frequency of operation of that coil is fixed to 85 kHz.

The EUT includes an array of near-field coils / electrically very small loop antennas that are fixed in the EUT and operate at 3 MHz. These electrically small loop antennas do not have appreciable far-field gain due to their near-field nature.

5.3. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was:

WEVSE: 677
PPC: 0.8.8
MODS: 3.5.2

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5.4. WORST-CASE CONFIGURATION AND MODE

The EUT is a charging pad powered by a wall box.

The EUT is intended to be used in one orientation only therefore testing was performed in this orientation.

The antennas are active for all the charging mode testing.

Configuration	Mode	Description
1	Standby mode	EUT is powered by Wallbox connected to 240V 60Hz with a 6m cable as worst case. Wireless Power Transfer ISM portion is in standby mode with FOD SRD(Foreign object detective) at 3MHz & 4.4MHz active. Wallbox is connected to the VA(vehicle assembly) via WLAN.
2	Charging mode	EUT is powered by Wallbox connected to 240V 60Hz with a short cable (up to 2.5m) cable. Wireless Power Transfer ISM portion is in charging mode with FOD SRD(Foreign object detection) at 3MHz & 4.4MHz active. Wallbox is connected to the VA via WLAN. Two output levels at 360V and 480V for the support VA chosen for worst-case conditions.
3	Charging mode	EUT is powered by Wallbox connected to 240V 60Hz with a long cable (up to 9m) cable. Wireless Power Transfer ISM portion is in charging mode with FOD SRD(Foreign object detection) at 3MHz & 4.4 MHz active. Wallbox is connected to the VA via WLAN. Two output levels at 360V and 480V for the support VA chosen for worst-case conditions.

Above tests represents the worst case conditions.

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5.5. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID/ DoC**
Wallbox	WiTricity	WWA1101	WWA1101-10232520001000	DoC
Vehicle Assembly(VA)*	WiTricity	VA-R1	23033000021	DoC
Articial mains network (AMN)	EMCShop	HVSB800A	00136-00122	DoC
Load	Chroma	63212A-1200-480	514554	DoC

I/O CABLES (RF RADIATED/AC POWER LINE TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	AC	AC	1.5	Powers Wallbox
2	DC/Data	1	DC	DC	2.5m – 9m	Powers EUT
3	DC	2	DC	DC	1 – 20m	VA to Load
4	AC	1	AC	AC		Power Load

TEST SETUP- RADIATED TEST/AC POWER LINE TEST

The EUT is powered by Wall Box via cable. The EUT is lifted 15cm from the ground plane by using 3 styrofoam blocks and directly centered on the turntable. The distance between the foam and the bottom of the VA is 17cm.

*The mimic plate is a steel mimic plate of 1.5 m x 1.5 m to represent the smallest electric passenger vehicle imaginable with such a WPT system. The vehicle assembly is centered in the mimic plate with its typical mounting hardware. The mimic plate represents the absolute worst case for the vehicle assembly would ensure that any vehicle that uses the system would be much larger than this. The VA(vehicle assembly) is 39 x 39 cm and placed in the center of the mimic plate at a distance of 56 cm from edge the mimic plate to the edge of the VA.

For standby mode, VA, mimic plate, AMN and load were removed.

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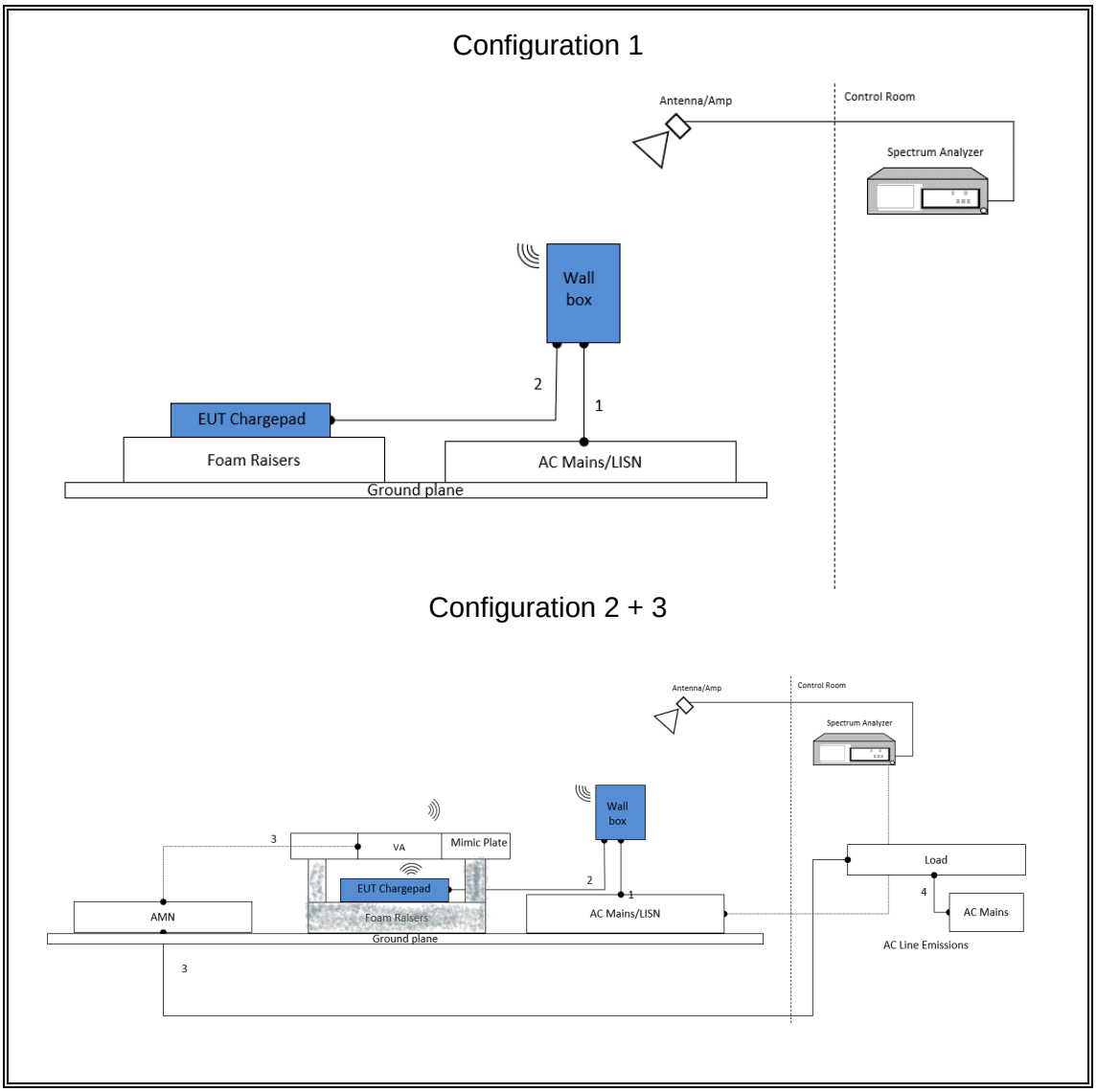
SETUP DIAGRAM



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6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Tested 2024-12-8 to 2024-12-12				
EMI Test Receiver	Rohde & Schwarz	ESW44	225683	2024-02-29
Amplifier, 9kHZ-3GHz , 32dB gain 16dBm P1dB	Fairview Microwave	SLNA-030-32-30-SMA	197485	2024-05-31
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO-METRICS	EM-6872	170015	2024-07-31
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO-METRICS	EM-6871	170013	2024-07-31
Tested 2024-05-21 to 2024-05-22				
EMI Test Receiver	Rohde & Schwarz	ESW44	225683	2025-02-28
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB1	80813	2024-05-31
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	170650	2024-05-31
Amplifier, 9kHZ-3GHz , 32dB gain 16dBm P1dB	Fairview Microwave	SLNA-030-32-30-SMA	197485	2024-05-31
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO-METRICS	EM-6872	170015	2024-07-31
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO-METRICS	EM-6871	170013	2024-07-31
AC Line Conducted				
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**
LISN	Fischer Custom Communications, Inc	FCC-LISN-50/250-25-2-01-480V	175764	2025-01-31
LISN	SOLAR ELECTRONICS	21847-50-TS-100-N	175761	2025-01-31
Transient Limiter	TE	TBFL1	207956	2024-08-31
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Rev 9.5, 19 May, 2023	
AC Line Conducted Software	UL	UL EMC	Rev 9.5, 19 May, 2023	

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7. RADIATED EMISSIONS

LIMIT

§18.301 Operating frequencies

The EUT operates at 85 KHz.

§18.305 Field Strength Limits
(b) The field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (µV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any non-ISM frequency	Below 500 500 or more	15 15 × SQRT(power/500)	300 [1]300

[1]Field strength may not exceed 10µV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.

The RF Power generated by the equipment is below 500 W therefore the field strength limit is 15uV/m at 300 m, equivalent to 23.52 dBuV/m and -27.978 dBuA/m at 300 m.

FCC §15.209 Limit

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

FCC §15.223 Limit

The field strength of any emission within the band 1.705-10.0 MHz shall not exceed 100 microvolts/meter at a distance of 30 meters. However, if the bandwidth of the emission is less than 10% of the center frequency, the field strength shall not exceed 15 microvolts/meter or (the bandwidth of the device in kHz) divided by (the center frequency of the device in MHz) microvolts/meter at a distance of 30 meters, whichever is the higher level. For the purposes of this section, bandwidth is determined at the points 6 dB down from the modulated carrier. The emission limits in this paragraph are based on measurement instrumentation employing an average detector. The provisions in § 15.35(b) for limiting peak emissions apply.

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The field strength of emissions outside of the band 1.705-10.0 MHz shall not exceed the general radiated emission limits in § 15.209.

Note: For 1.705-10Mhz, the worst case limit of 15 microvolts/meter was applied.

TEST PROCEDURE

The EUT is placed as floor standing equipment on the turn table for measurements below 1GHz. The frequency range was investigated from 9 kHz to 1GHz.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements in the 30-1000MHz range, 9kHz for peak and/or quasi-peak detection measurements in the 0.15-30MHz range and 200Hz for peak and/or quasi-peak detection measurements in the 9 to 150kHz range. Peak detection is used unless otherwise noted as quasi-peak or average (9-90kHz and 110-490kHz).

For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only. Blue color trace on plots: Parallel orientation. Green color trace on plots: Perpendicular orientation. For a loop antenna, the antenna height shall be set at around 2 meters.

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

For below 30MHz testing, based on KDB 414788, Clause 2, for Part 18 equipment, Section 2.1 of FCC Measurement Procedure MP-5 also permits the use of test sites other than an open-field test site only if it can be shown that the results obtained at such a location are correlated with those made at an open-field test site.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

NOTE: The limits in FCC 47 CFR, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table), using the free space impedance of 377 Ohms. For example, the measurement at frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to Y – 51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-Gen Table 6 limit as it has 15.209(a) limit.

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Distance Correction Factor

Based on FCC 18.305, note 2. Testing for compliance with these limits may be made at closer distances, provided a sufficient number of measurements are taken to plot the radiation pattern, to determine the major lobes of radiation, and to determine the expected field strength level at 30, 300, or 1600 meters. Alternatively, if measurements are made at only one closer fixed distance, then the permissible field strength limits shall be adjusted using 1/d as an attenuation factor.

For Part 18, 9 KHz to 30 MHz, the limits are extrapolated to 10m using ANSI 63.30 9.3.2.2.

$$EC = \left(\frac{d_1}{d_2}\right)^2 \frac{\sqrt{1+\left(\frac{c}{2\pi f d_2}\right)^2}}{\sqrt{1+\left(\frac{c}{2\pi f d_1}\right)^2}} \qquad \text{for } f \le \frac{3c}{8d_1} \qquad (1)$$

$$EC = \frac{c d_1}{\pi f (d_2)^2} \frac{\sqrt{1+\left(\frac{c}{2\pi f d_2}\right)^2}}{\sqrt{\left[1-\left(\frac{c}{2\pi f d_1}\right)^2\right]^2+\left(\frac{c}{2\pi f d_1}\right)^2}} \qquad \text{for } \frac{3c}{8d_1} < f \le \frac{3c}{8d_2} \qquad (2)$$

$$EC = \frac{d_1}{d_2} \frac{\sqrt{\left[1-\left(\frac{c}{2\pi f d_2}\right)^2\right]^2+\left(\frac{c}{2\pi f d_2}\right)^2}}{\sqrt{\left[1-\left(\frac{c}{2\pi f d_1}\right)^2\right]^2+\left(\frac{c}{2\pi f d_1}\right)^2}} \qquad \text{for } f > \frac{3c}{8d_2} \qquad (3)$$

where

f	Frequency, in hertz
c	Speed of light in vacuum (approximately 300 000 km/s), in meters/second
d_1	Limit distance, in meters
d_2	Measurement distance, in meters ($d_2 < d_1$)

The extrapolation factor, in decibels, can be obtained as follows:

$$N(dB) = 20\log_{10}\left[EC(linear)\right] \qquad (4)$$

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7.1. Extrapolation Calculation

Part 18, 9 kHz – 30MHz

WPT FCC Part 18 Limits (Non-ISM Frequency, Consumer)			
Limit @ 300 m	15.00 µV/m	23.52 dBµV/m	**-27.98 dBµA/m**

ANSI C63.30 (McNulty) Limit extrapolation			
Frequency (MHz)	**10 m EF (300m to 10m linear)**	**300m to 10m factor (dB)**	**10 m Limit (dBµA/m)**
0.009 MHz	26956.98	88.61	60.64 dBµA/m
0.02 MHz	26789.54	88.56	60.58 dBµA/m
0.03 MHz	26533.28	88.48	60.50 dBµA/m
0.04 MHz	26186.57	88.36	60.38 dBµA/m
0.05 MHz	25760.17	88.22	60.24 dBµA/m
0.06 MHz	25266.31	88.05	60.07 dBµA/m
0.07 MHz	24717.77	87.86	59.88 dBµA/m
0.08 MHz	24127.25	87.65	59.67 dBµA/m
0.09 MHz	23506.66	87.42	59.45 dBµA/m
0.1 MHz	22866.81	87.18	59.21 dBµA/m
0.2 MHz	16827.02	84.52	56.54 dBµA/m
0.3 MHz	12678.50	82.06	54.08 dBµA/m
0.375 MHz	10580.93	80.49	52.51 dBµA/m
0.4 MHz	9214.80	79.29	51.31 dBµA/m
0.5 MHz	5770.24	75.22	47.25 dBµA/m
0.6 MHz	3961.17	71.96	43.98 dBµA/m
0.7 MHz	2893.15	69.23	41.25 dBµA/m
0.8 MHz	2209.44	66.89	38.91 dBµA/m
0.9 MHz	1745.06	64.84	36.86 dBµA/m
1.0 MHz	1415.09	63.02	35.04 dBµA/m
2.0 MHz	371.92	51.41	23.43 dBµA/m
3.0 MHz	179.74	45.09	17.11 dBµA/m
4.0 MHz	111.61	40.95	12.98 dBµA/m
5.0 MHz	79.26	37.98	10.00 dBµA/m
6.0 MHz	61.04	35.71	7.73 dBµA/m
7.0 MHz	49.55	33.90	5.92 dBµA/m
8.0 MHz	41.71	32.41	4.43 dBµA/m
9.0 MHz	36.04	31.14	3.16 dBµA/m
10.0 MHz	31.75	30.03	2.06 dBµA/m
11.0 MHz	28.39	29.06	1.09 dBµA/m
11.25 MHz	27.67	28.84	0.86 dBµA/m
12.0 MHz	27.93	28.92	0.94 dBµA/m
13.0 MHz	28.20	29.00	1.03 dBµA/m
14.0 MHz	28.42	29.07	1.09 dBµA/m
15.0 MHz	28.60	29.13	1.15 dBµA/m
16.0 MHz	28.76	29.18	1.20 dBµA/m
17.0 MHz	28.89	29.22	1.24 dBµA/m
18.0 MHz	29.00	29.25	1.27 dBµA/m
19.0 MHz	29.10	29.28	1.30 dBµA/m
20.0 MHz	29.18	29.30	1.32 dBµA/m
21.0 MHz	29.26	29.32	1.35 dBµA/m
22.0 MHz	29.32	29.34	1.37 dBµA/m
23.0 MHz	29.38	29.36	1.38 dBµA/m
24.0 MHz	29.42	29.37	1.40 dBµA/m
25.0 MHz	29.47	29.39	1.41 dBµA/m
26.0 MHz	29.51	29.40	1.42 dBµA/m
27.0 MHz	29.54	29.41	1.43 dBµA/m
28.0 MHz	29.57	29.42	1.44 dBµA/m
29.0 MHz	29.60	29.43	1.45 dBµA/m
30.0 MHz	29.63	29.43	1.46 dBµA/m

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Part 15, 9 kHz – 30MHz

- Distance factor from 300m to 3m = 40log (3/300) = -80dB
- Distance factor from 30m to 3m = 40log (3/30) = -40dB

RESULTS

For Part 18 Test results, the raw reading is taken as dBuV and converted to dBuA/m through the appropriate antenna factor.

The FCC Part 18 limits used are the limits specified for consumer equipment operating on a non-ISM frequency of 15uV/m (23.52 dBuV/m) at 300m. The limit has been converted from dBuV/m to dBuA/m (-27.98 dBuA/m) and then extrapolated to a 10m distance using the McNulty formula referenced in ANSI C63.30. A table showing the extrapolation factors is provided in Section 7.1.

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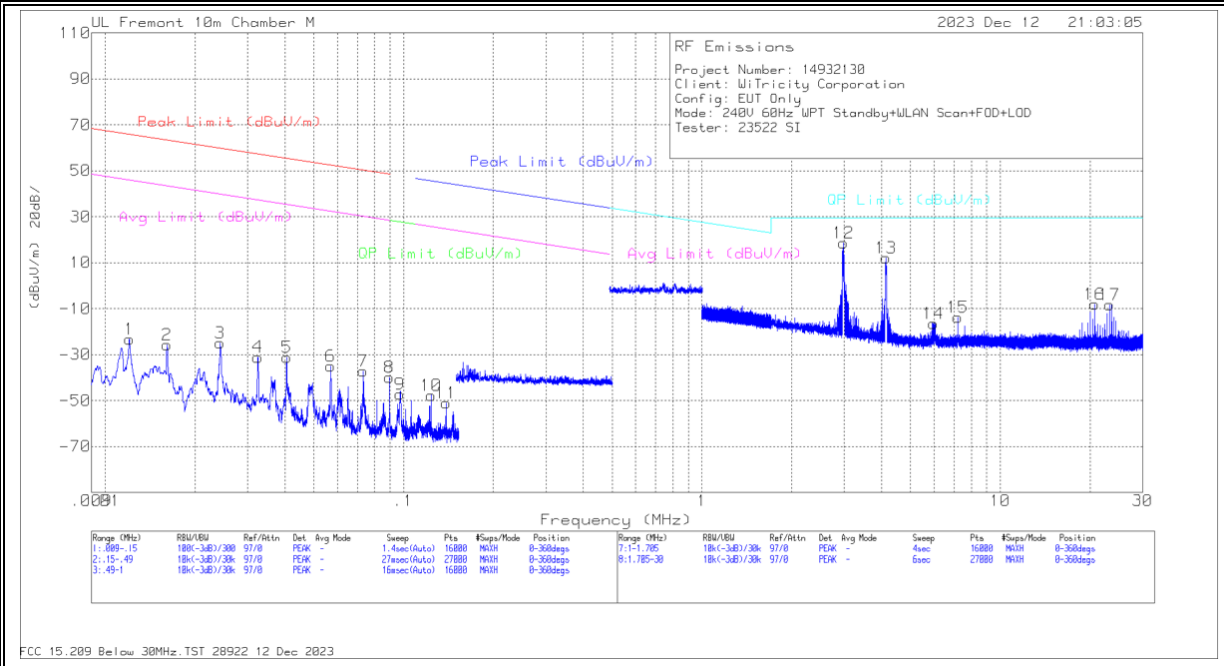
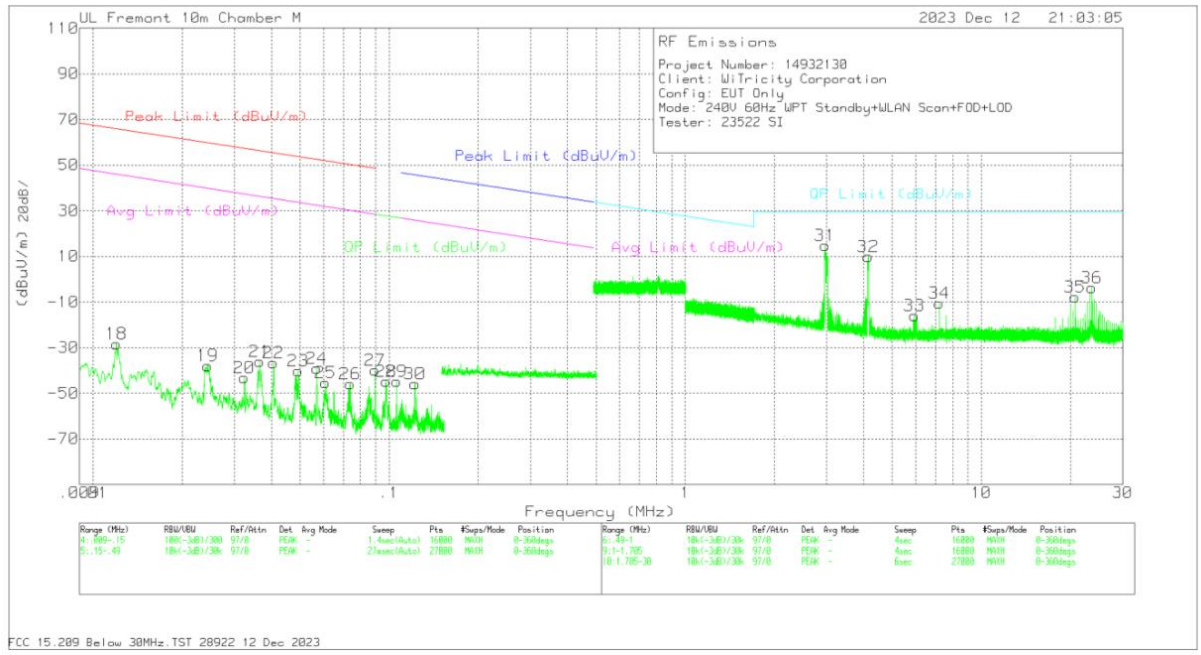
7.2. SPURIOUS EMISSIONS 9 kHz TO 30 MHz

7.2.1. CONFIGURATION 1 Part 15 Limit





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DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna 170013 dB/m	Cables (dB)	Distance Correction 3m to 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	QP Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Face
1	.012	26.15	Pk	60.1	-29.5	-80	-23.25	65.97	-89.22	-	-	-	-	0-360	On
2	.0161	24.46	Pk	59.6	-29.8	-80	-25.74	63.43	-89.17	-	-	-	-	0-360	On
3	.0243	26.48	Pk	58.6	-30.1	-80	-25.02	59.87	-84.89	-	-	-	-	0-360	On
4	.0325	21.27	Pk	57.9	-30.2	-80	-31.03	57.35	-88.38	-	-	-	-	0-360	On
5	.0406	21.66	Pk	57.3	-30.2	-80	-31.24	55.4	-86.64	-	-	-	-	0-360	On
6	.057	18.55	Pk	56.6	-30.2	-80	-35.05	52.47	-87.52	-	-	-	-	0-360	On
7	.0733	17.16	Pk	56	-30.4	-80	-37.24	50.28	-87.52	-	-	-	-	0-360	On
8	.0897	14.63	Pk	55.9	-30.3	-80	-39.77	48.53	-88.3	-	-	-	-	0-360	On
9	.0972	7.34	Pk	55.8	-30.4	-80	-47.26	-	-	27.85	-75.11	-	-	0-360	On
10	.1237	6.56	Pk	55.9	-30.3	-80	-47.84	45.78	-93.62	-	-	25.78	-73.62	0-360	On
11	.1388	3.18	Pk	56	-30.2	-80	-51.02	44.78	-95.8	-	-	24.78	-75.8	0-360	On
18	.012	21.09	Pk	60.1	-29.5	-80	-28.31	66.01	-94.32	-	-	-	-	0-360	Off
19	.0244	13.66	Pk	58.6	-30.1	-80	-37.84	59.83	-97.67	-	-	-	-	0-360	Off
20	.0325	9.28	Pk	57.9	-30.2	-80	-43.02	57.36	-100.38	-	-	-	-	0-360	Off
21	.0365	16.63	Pk	57.6	-30.2	-80	-35.97	56.33	-92.3	-	-	-	-	0-360	Off
22	.0407	16.36	Pk	57.3	-30.2	-80	-36.54	55.4	-91.94	-	-	-	-	0-360	Off
23	.0494	12.82	Pk	57.2	-30.1	-80	-40.08	53.72	-93.8	-	-	-	-	0-360	Off
24	.057	14.47	Pk	56.6	-30.2	-80	-39.13	52.47	-91.6	-	-	-	-	0-360	Off
25	.0611	8.5	Pk	56.3	-30.2	-80	-45.4	51.87	-97.27	-	-	-	-	0-360	Off
26	.0738	8.47	Pk	56	-30.4	-80	-45.93	50.23	-96.16	-	-	-	-	0-360	Off
27	.0897	14.56	Pk	55.9	-30.3	-80	-39.84	48.53	-88.37	-	-	-	-	0-360	Off
28	.0976	9.87	Pk	55.8	-30.4	-80	-44.73	-	-	27.82	-72.55	-	-	0-360	Off
29	.106	9.68	Pk	55.8	-30.3	-80	-44.82	-	-	27.11	-71.93	-	-	0-360	Off
30	.1223	8.54	Pk	55.9	-30.3	-80	-45.86	45.88	-91.74	-	-	25.88	-71.74	0-360	Off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna 170015 dB/m	Cables (dB)	Dist Corr 30m	Corrected Reading (dBuV/m)	15.209 QP Limit (dBuV/m)	Margin (dB)	15.223 Peak Limit (dBuV/m)	Margin (dB)	15.223 Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Face
12	2.9773	50.19	Pk	38.8	-30.4	-40	18.59	29.5	-10.91	43.52	-24.93	23.52	-4.93	0-360	On
13	4.1427	45.2	Pk	37.1	-30.2	-40	12.1	29.5	-17.4	43.52	-31.42	23.52	-11.42	0-360	On
14	5.9641	18.15	Pk	35.3	-29.9	-40	-16.45	29.5	-45.95	43.52	-59.97	23.52	-39.97	0-360	On
15	7.1965	21.32	Pk	34.8	-29.8	-40	-13.68	29.5	-43.18	43.52	-57.2	23.52	-37.2	0-360	On
16	20.6906	27.78	Pk	34.3	-30	-40	-7.92	29.5	-37.42	-	-	-	-	0-360	On
17	23.2016	27.4	Pk	33.8	-29.6	-40	-8.4	29.5	-37.9	-	-	-	-	0-360	On
31	2.9647	46.42	Pk	38.8	-30.4	-40	14.82	29.5	-14.68	43.52	-28.7	23.52	-8.7	0-360	Off
32	4.1468	43.11	Pk	37.1	-30.2	-40	10.01	29.5	-19.49	43.52	-33.51	23.52	-13.51	0-360	Off
33	5.9347	18.71	Pk	35.3	-29.9	-40	-15.89	29.5	-45.39	43.52	-59.41	23.52	-39.41	0-360	Off
34	7.1986	24.4	Pk	34.8	-29.8	-40	-10.6	29.5	-40.1	43.52	-54.12	23.52	-34.12	0-360	Off
35	20.6749	27.81	Pk	34.3	-29.9	-40	-7.79	29.5	-37.29	-	-	-	-	0-360	Off
36	23.5998	32.44	Pk	33.7	-29.8	-40	-3.66	29.5	-33.16	-	-	-	-	0-360	Off

Pk - Peak detector

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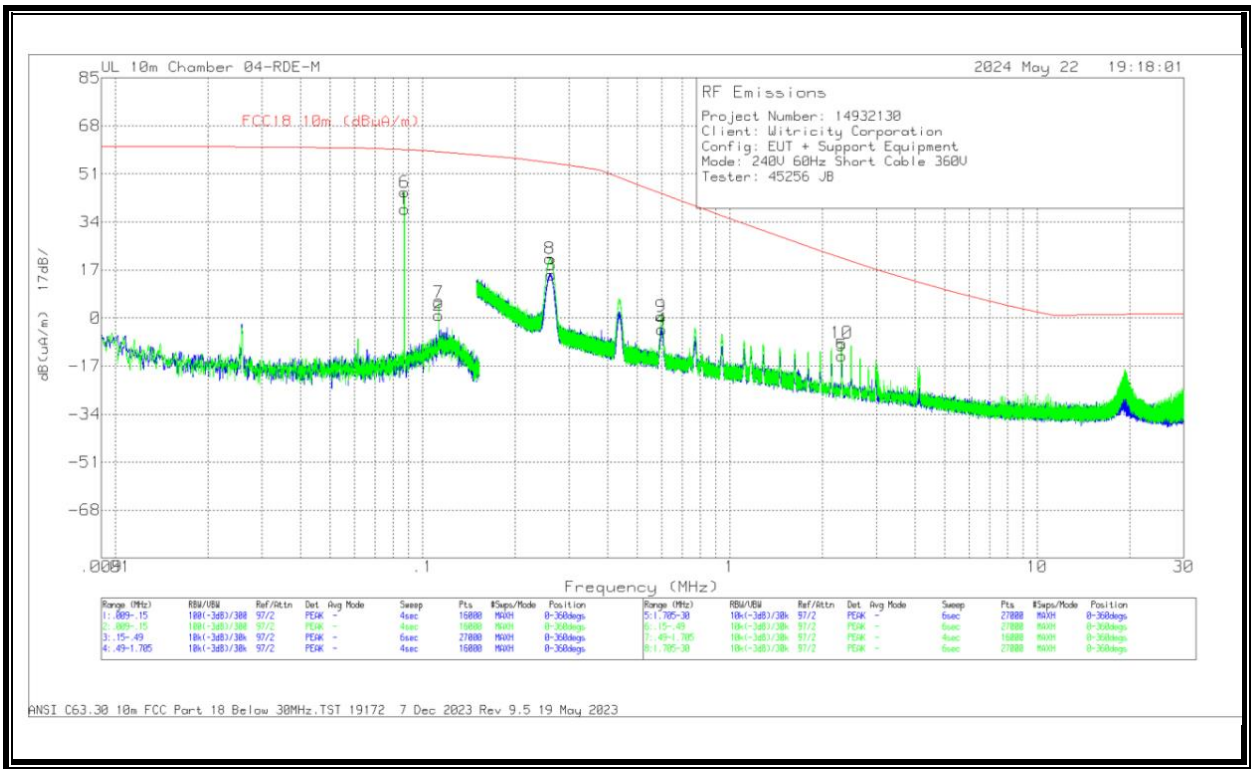
7.2.2. CONFIGURATION 2 Part 18 Limit

360V VA Output



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DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna H(ACF dB/m)	Cbl dB	Corrected Reading dB(uA/m)	FCC18 10m (dBuA/m)	Margin (dB)	Azimuth (Degs)	Face
1	.0872	69.94	Pk	4.2	-35.5	38.64	59.51	-20.87	0-360	Face On
2	.1127	32.26	Pk	4.1	-35.5	.86	58.75	-57.89	0-360	Face On
6	.0872	75.87	Pk	4.2	-35.5	44.57	59.51	-14.94	0-360	Face Off
7	.1127	36.92	Pk	4.1	-35.5	5.52	58.75	-53.23	0-360	Face Off
3	.2616	44.66	Pk	6	-35.3	15.36	54.91	-39.55	0-360	Face On
4	.601	32.13	Pk	-1	-35.1	-3.97	43.95	-47.92	0-360	Face On
5	2.3097	31.74	Pk	-10.9	-34.2	-13.36	21.19	-34.55	0-360	Face On
8	.2598	50.25	Pk	6.1	-35.3	21.05	54.96	-33.91	0-360	Face Off
9	.5966	36.61	Pk	-.9	-35.1	.61	44.08	-43.47	0-360	Face Off
10	2.3097	36.36	Pk	-10.9	-34.2	-8.74	21.19	-29.93	0-360	Face Off

Pk - Peak detector
Marker 1 and 6 are the WPT fundamental signal.
dBuA/m conversion factor of -51.5 is included in the ACF

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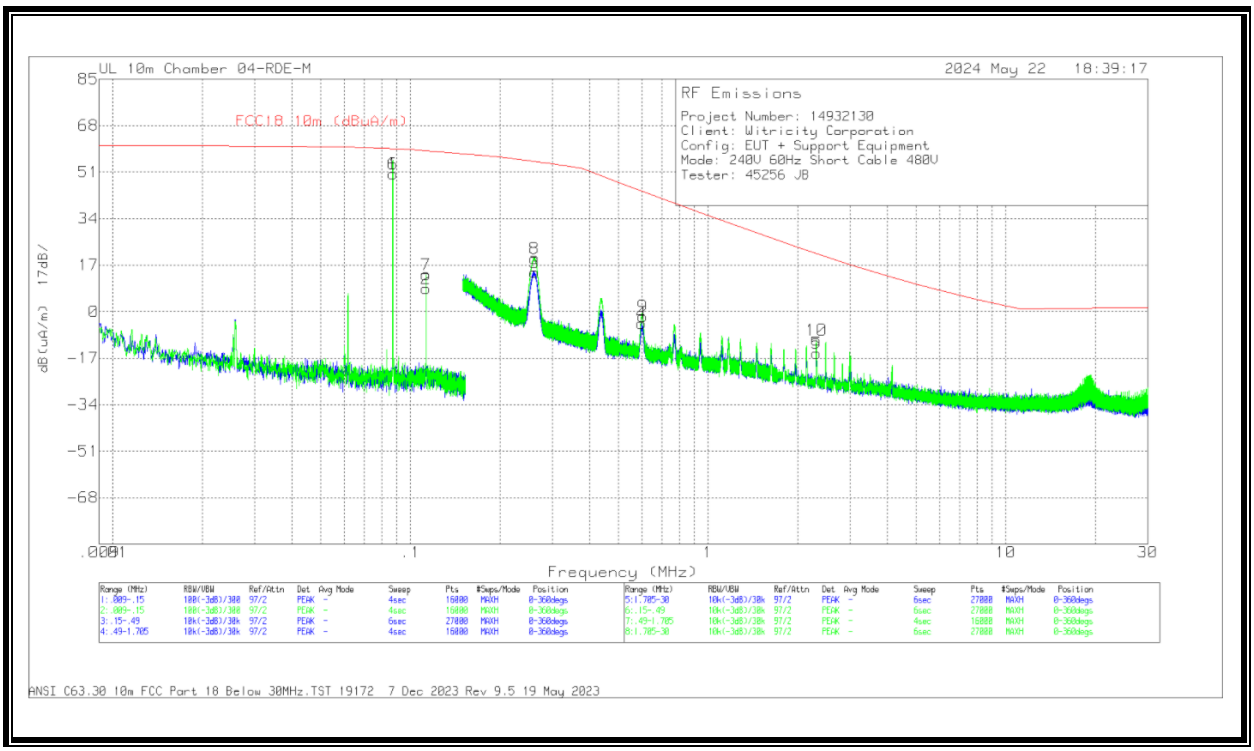
480V VA Output



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DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna H(ACF dB/m)	Cbl dB	Corrected Reading dB(uA/m)	FCC18 10m (dBuA/m)	Margin (dB)	Azimuth (Degs)	Face
1	.0872	81.66	Pk	4.2	-35.5	50.36	59.51	-9.15	0-360	Face On
2	.1127	39.78	Pk	4.1	-35.5	8.38	58.75	-50.37	0-360	Face On
6	.0872	81.76	Pk	4.2	-35.5	50.46	59.51	-9.05	0-360	Face Off
7	.1127	44.99	Pk	4.1	-35.5	13.59	58.75	-45.16	0-360	Face Off
3	.2604	43.58	Pk	6.1	-35.3	14.38	54.94	-40.56	0-360	Face On
4	.597	31.75	Pk	-.9	-35.1	-4.25	44.07	-48.32	0-360	Face On
5	2.3087	29.9	Pk	-10.9	-34.2	-15.2	21.2	-36.4	0-360	Face On
8	.2608	48.67	Pk	6.1	-35.3	19.47	54.93	-35.46	0-360	Face Off
9	.6022	34.27	Pk	-1	-35.1	-1.83	43.91	-45.74	0-360	Face Off
10	2.3087	34.71	Pk	-10.9	-34.2	-10.39	21.2	-31.59	0-360	Face Off

Pk - Peak detector

Marker 1 and 6 are the WPT fundamental signal.
dBuA/m conversion factor of -51.5 is included in the ACF

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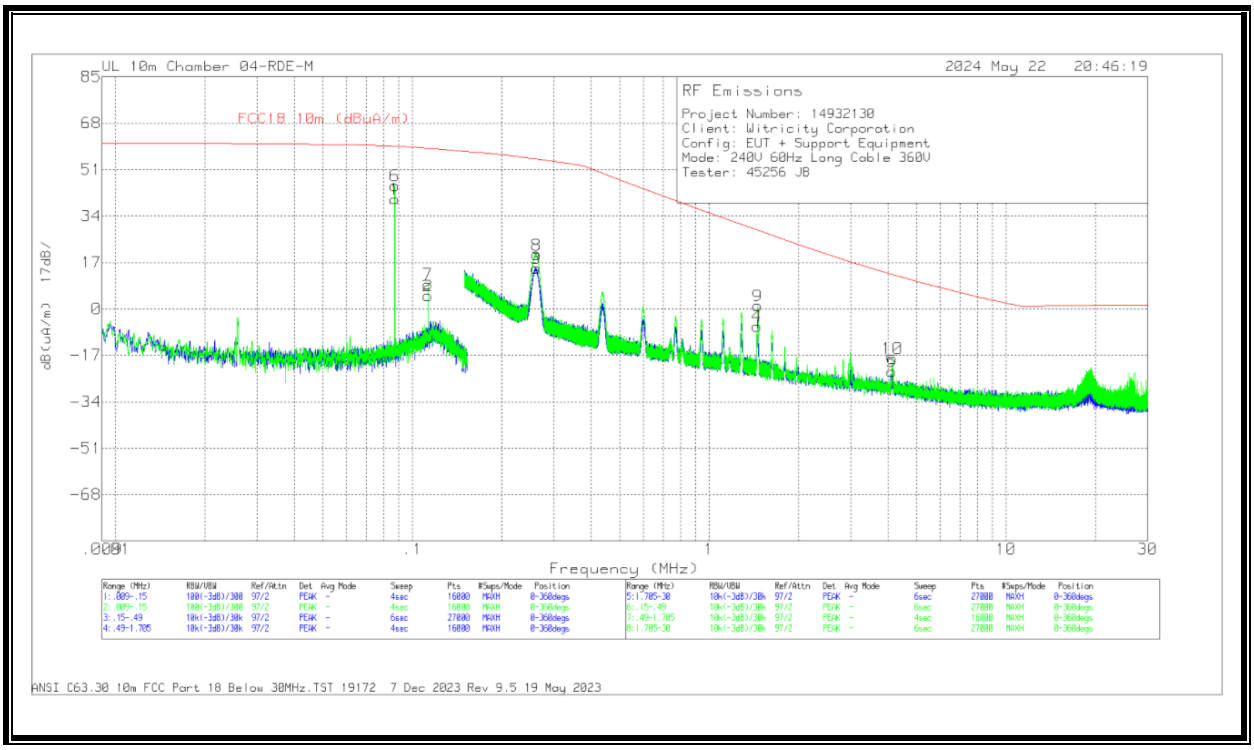
7.2.3. CONFIGURATION 3 Part 18 Limit

360V VA Output



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DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna H(ACF dB/m)	Cbl dB	Corrected Reading dB(uA/m)	FCC18 10m (dBuA/m)	Margin (dB)	Azimuth (Degs)	Face
1	.0872	71.54	Pk	4.2	-35.5	40.24	59.51	-19.27	0-360	Face On
2	.1127	36.15	Pk	4.1	-35.5	4.75	58.75	-54	0-360	Face On
6	.0872	76.52	Pk	4.2	-35.5	45.22	59.51	-14.29	0-360	Face Off
7	.1127	40.44	Pk	4.1	-35.5	9.04	58.75	-49.71	0-360	Face Off
3	.2608	44.06	Pk	6.1	-35.3	14.86	54.93	-40.07	0-360	Face On
4	1.4506	35.5	Pk	-7.2	-34.6	-6.3	28.81	-35.11	0-360	Face On
5	4.1248	25.61	Pk	-14.5	-34.1	-22.99	12.57	-35.56	0-360	Face On
8	.2621	49.06	Pk	6	-35.3	19.76	54.9	-35.14	0-360	Face Off
9	1.4552	42.99	Pk	-7.3	-34.6	1.09	28.76	-27.67	0-360	Face Off
10	4.1458	30.56	Pk	-14.5	-34.2	-18.14	12.5	-30.64	0-360	Face Off

Pk - Peak detector

Marker 1 and 6 are the WPT fundamental signal.
dBuA/m conversion factor of -51.5 is included in the ACF

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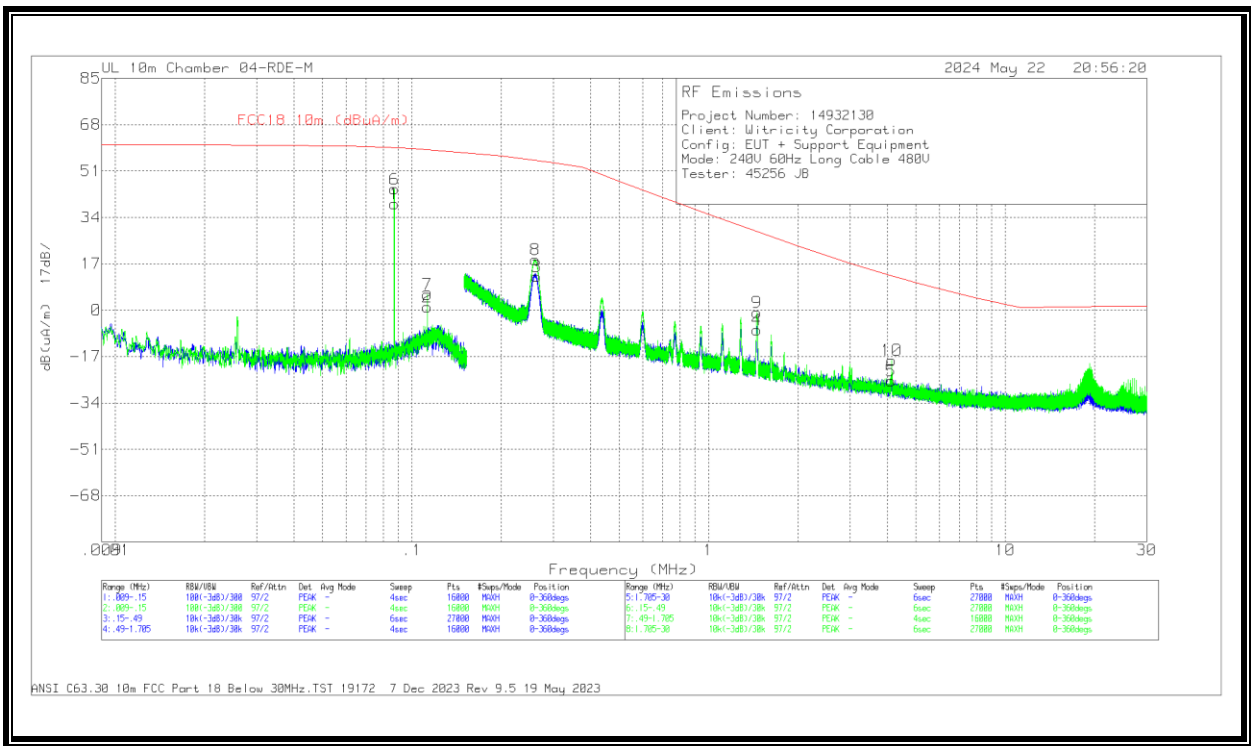
480V VA Output



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DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna H(ACF dB/m)	Cbl dB	Corrected Reading dB(uA/m)	FCC18 10m (dBuA/m)	Margin (dB)	Azimuth (Degs)	Face
1	.0872	70.24	Pk	4.2	-35.5	38.94	59.51	-20.57	0-360	Face On
2	.1127	32.6	Pk	4.1	-35.5	1.2	58.75	-57.55	0-360	Face On
6	.0872	75.66	Pk	4.2	-35.5	44.36	59.51	-15.15	0-360	Face Off
7	.1127	37.09	Pk	4.1	-35.5	5.69	58.75	-53.06	0-360	Face Off
3	.2633	41.61	Pk	6	-35.3	12.31	54.87	-42.56	0-360	Face On
4	1.4589	34.75	Pk	-7.3	-34.6	-7.15	28.71	-35.86	0-360	Face On
5	4.1217	22.71	Pk	-14.5	-34.1	-25.89	12.58	-38.47	0-360	Face On
8	.2606	47.69	Pk	6.1	-35.3	18.49	54.94	-36.45	0-360	Face Off
9	1.4544	40.91	Pk	-7.2	-34.6	-.89	28.76	-29.65	0-360	Face Off
10	4.1437	30.39	Pk	-14.5	-34.2	-18.31	12.51	-30.82	0-360	Face Off

Marker 1 and 6 are the WPT fundamental signal.
dBuA/m conversion factor of -51.5 is included in the ACF

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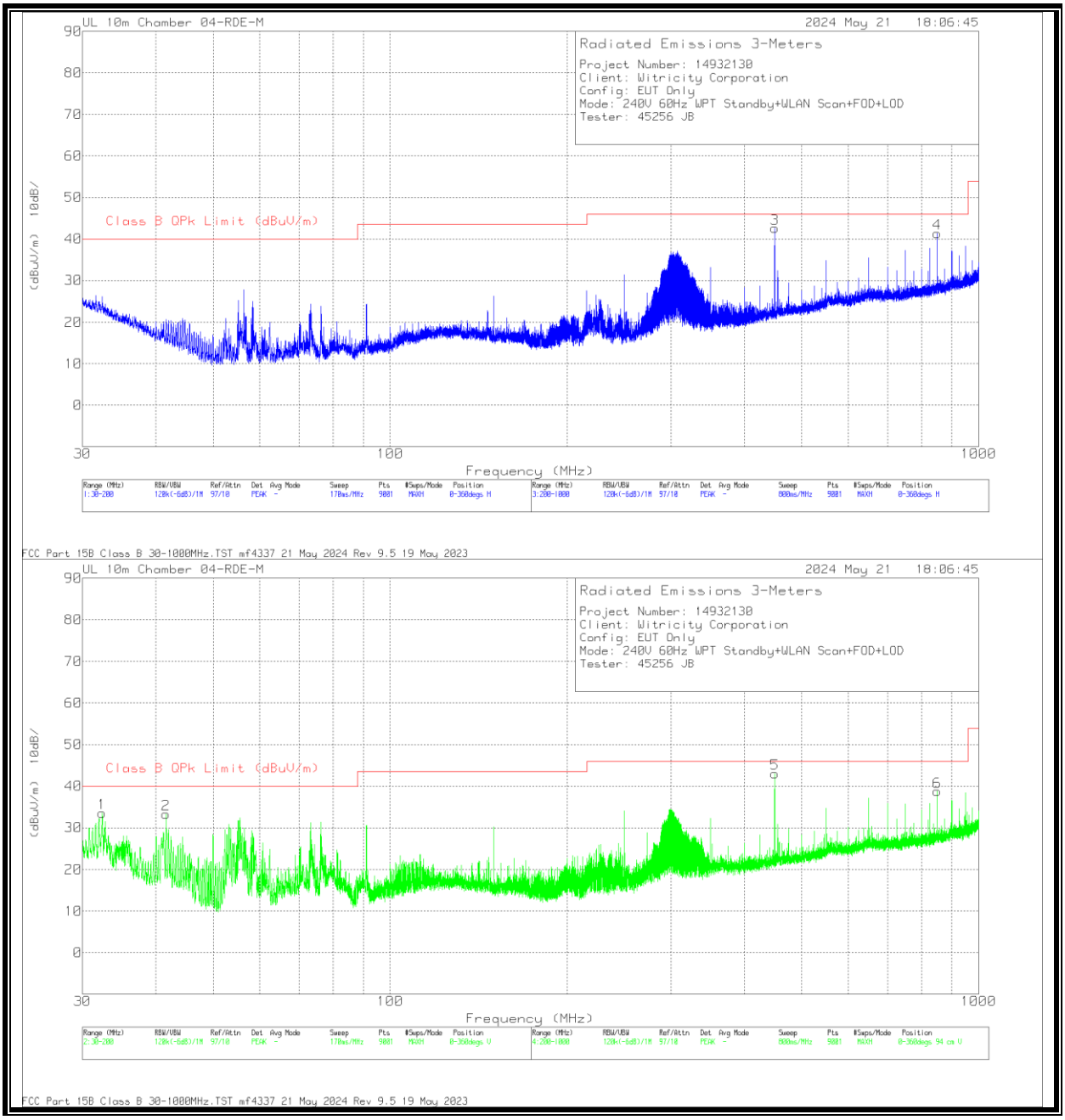
7.3. SPURIOUS EMISSIONS 30 MHz TO 1 GHz

7.3.1. CONFIGURATION 1 Part 15 Limit



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DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80813 ACF (dB/m)	Cbl (dB)	Corrected Reading (dBuV/m)	Class B QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	32.4178	37.61	Pk	25.5	-29.5	33.61	40	-6.39	0-360	94	V
2	41.5979	44.31	Pk	18.6	-29.6	33.31	40	-6.69	0-360	94	V
3	449.994	48	Qp	22.7	-28.1	42.6	46.02	-3.42	158	191	H
4	849.991	41.77	Qp	27.6	-26.6	42.77	46.02	-3.25	241	102	H
5	449.997	49.98	Qp	22.7	-28.1	44.58	46.02	-1.44	107	231	V
6	850.045	37.75	Pk	27.6	-26.6	38.75	46.02	-7.27	0-360	199	V

Pk - Peak detector
Qp - Quasi-Peak detector

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8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

§ 18.307 For the following equipment, when 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 shall not exceed the limits in the following table. Compliance with the provisions of this paragraph shall be based on the measurements of the radio frequency voltage between each power line and ground at the power terminal using a 50 µH/50 ohms line impedance stabilization network (LISN).

§ 18.307 (b) All other Part 18 consumer devices:

§15.207 (a)

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

Tested in accordance with ANSI C63.10 & ANSI 63.30

RESULTS

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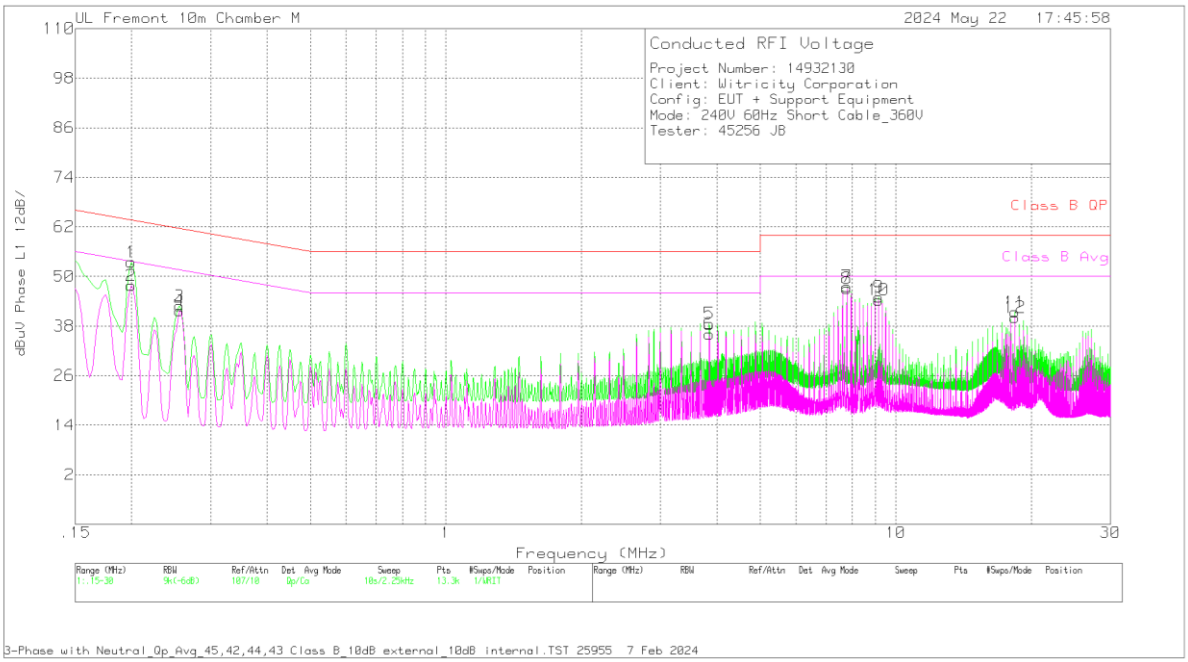
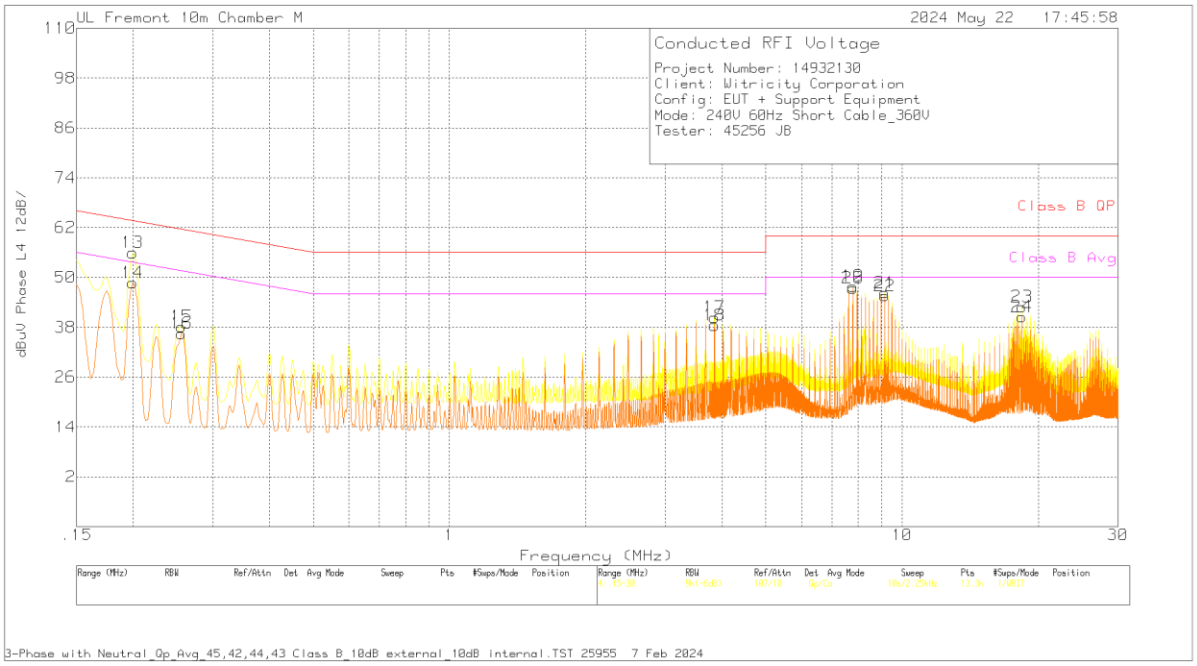
8.1. 240 V 60Hz Single Phase

8.1.1. CONFIGURATION 2 360V VA Output

RESULTS





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WORST EMISSIONS

Range 1: Phase L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175763 LISN	Limiter 207956_plus_10dBpad	Cable (dB)	Corrected Reading dBuV	Class B Avg	Avg Margin (dB)	Class B QP	QP Margin (dB)
2	.1995	28.18	Ca	.2	19.4	0	47.78	53.63	-5.85	-	-
4	.2558	22.23	Ca	.1	19.4	0	41.73	51.57	-9.84	-	-
6	3.849	16.55	Ca	0	19.4	.1	36.05	46	-9.95	-	-
8	7.7843	27.72	Ca	0	19.3	.1	47.12	50	-2.88	-	-
10	9.1523	24.91	Ca	0	19.3	.1	44.31	50	-5.69	-	-
12	18.3998	20.29	Ca	.1	19.4	.3	40.09	50	-9.91	-	-
1	.1995	33.86	Qp	.2	19.4	0	53.46	-	-	63.63	-10.17
3	.2558	23.36	Qp	.1	19.4	0	42.86	-	-	61.57	-18.71
5	3.849	19.08	Qp	0	19.4	.1	38.58	-	-	56	-17.42
7	7.7843	28.14	Qp	0	19.3	.1	47.54	-	-	60	-12.46
9	9.1523	25.62	Qp	0	19.3	.1	45.02	-	-	60	-14.98
11	18.3998	21.57	Qp	.1	19.4	.3	41.37	-	-	60	-18.63

Range 4: Phase L4 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175761 LISN	Limiter 207956_plus_10dBpad	Cable (dB)	Corrected Reading dBuV	Class B Avg	Avg Margin (dB)	Class B QP	QP Margin (dB)
14	.1995	29.12	Ca	.2	19.4	0	48.72	53.63	-4.91	-	-
16	.2558	17.03	Ca	.1	19.4	0	36.53	51.57	-15.04	-	-
18	3.849	19	Ca	0	19.4	.1	38.5	46	-7.5	-	-
20	7.7843	28.04	Ca	0	19.3	.1	47.44	50	-2.56	-	-
22	9.1523	26.17	Ca	0	19.3	.1	45.57	50	-4.43	-	-
24	18.3998	20.74	Ca	.1	19.4	.3	40.54	50	-9.46	-	-
13	.1995	36.37	Qp	.2	19.4	0	55.97	-	-	63.63	-7.66
15	.2558	18.68	Qp	.1	19.4	0	38.18	-	-	61.57	-23.39
17	3.849	20.9	Qp	0	19.4	.1	40.4	-	-	56	-15.6
19	7.7843	28.44	Qp	0	19.3	.1	47.84	-	-	60	-12.16
21	9.1523	26.89	Qp	0	19.3	.1	46.29	-	-	60	-13.71
23	18.3998	23.14	Qp	.1	19.4	.3	42.94	-	-	60	-17.06

Qp - Quasi-Peak detector
Ca - CISPR average detection

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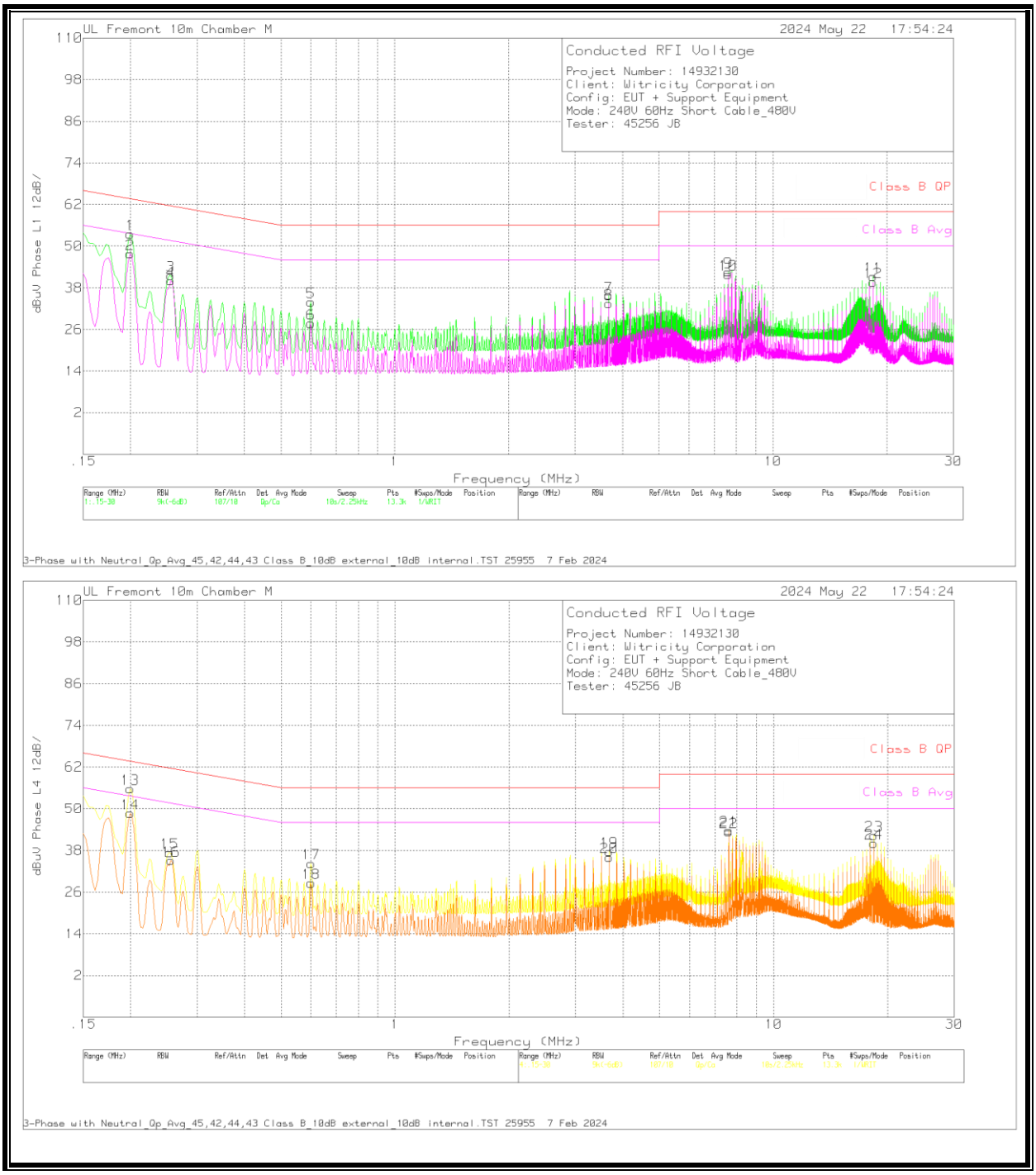
8.1.2. CONFIGURATION 2 480V VA Output

RESULTS



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WORST EMISSIONS

Range 1: Phase L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175763 LISN	Limiter 207956_plus_10dBpad	Cable (dB)	Corrected Reading dBuV	Class B Avg	Avg Margin (dB)	Class B QP	QP Margin (dB)
2	.1995	28.2	Ca	.2	19.4	0	47.8	53.63	-5.83	-	-
4	.2558	20.51	Ca	.1	19.4	0	40.01	51.57	-11.56	-	-
6	.6	8.35	Ca	0	19.3	.1	27.75	46	-18.25	-	-
8	3.678	14.01	Ca	0	19.4	.1	33.51	46	-12.49	-	-
10	7.6133	22.5	Ca	0	19.3	.1	41.9	50	-8.1	-	-
12	18.3998	19.88	Ca	.1	19.4	.3	39.68	50	-10.32	-	-
1	.1995	33.95	Qp	.2	19.4	0	53.55	-	-	63.63	-10.08
3	.2558	22.09	Qp	.1	19.4	0	41.59	-	-	61.57	-19.98
5	.6	14.54	Qp	0	19.3	.1	33.94	-	-	56	-22.06
7	3.678	16.2	Qp	0	19.4	.1	35.7	-	-	56	-20.3
9	7.6133	23.23	Qp	0	19.3	.1	42.63	-	-	60	-17.37
11	18.3998	21.5	Qp	.1	19.4	.3	41.3	-	-	60	-18.7

Range 4: Phase L4 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175761 LISN	Limiter 207956_plus_10dBpad	Cable (dB)	Corrected Reading dBuV	CISPR 32 Class B Avg	Avg Margin (dB)	Class B QP	QP Margin (dB)
14	.1995	29.11	Ca	.2	19.4	0	48.71	53.63	-4.92	-	-
16	.2558	15.62	Ca	.1	19.4	0	35.12	51.57	-16.45	-	-
18	.6	9.23	Ca	0	19.3	.1	28.63	46	-17.37	-	-
20	3.678	16.58	Ca	0	19.4	.1	36.08	46	-9.92	-	-
22	7.6133	23.91	Ca	0	19.3	.1	43.31	50	-6.69	-	-
24	18.3998	20.29	Ca	.1	19.4	.3	40.09	50	-9.91	-	-
13	.1995	36.15	Qp	.2	19.4	0	55.75	-	-	63.63	-7.88
15	.2535	17.93	Qp	.1	19.4	0	37.43	-	-	61.64	-24.21
17	.6	14.89	Qp	0	19.3	.1	34.29	-	-	56	-21.71
19	3.678	18.21	Qp	0	19.4	.1	37.71	-	-	56	-18.29
21	7.6133	24.39	Qp	0	19.3	.1	43.79	-	-	60	-16.21
23	18.3998	22.51	Qp	.1	19.4	.3	42.31	-	-	60	-17.69

Qp - Quasi-Peak detector
Ca - CISPR average detection

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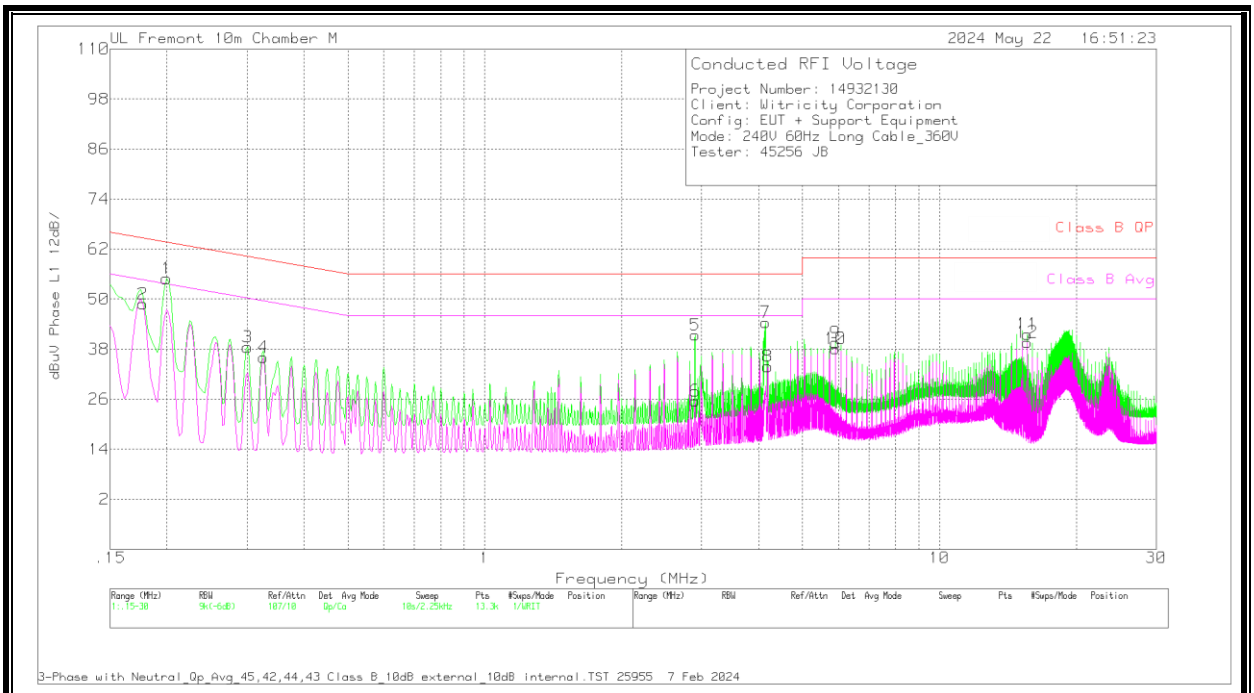
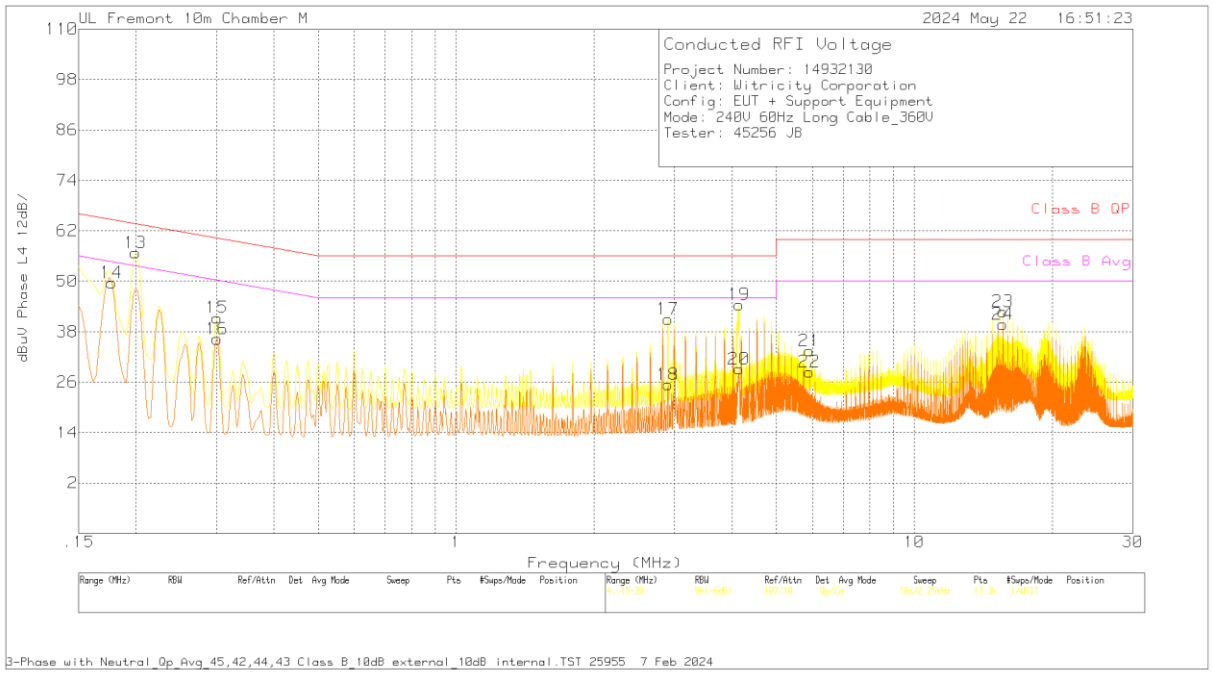
8.1.3. CONFIGURATION 3 360V VA Output

RESULTS





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WORST EMISSIONS

Range 1: Phase L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175763 LISN	Limiter 207956_plus_10dBpad	Cable (dB)	Corrected Reading dBuV	Class B Avg	Avg Margin (dB)	Class B QP	QP Margin (dB)
2	.177	29.23	Ca	.2	19.4	0	48.83	54.63	-5.8	-	-
4	.3255	16.54	Ca	.1	19.4	0	36.04	49.57	-13.53	-	-
6	2.8995	6.18	Ca	0	19.3	.1	25.58	46	-20.42	-	-
8	4.191	14.36	Ca	0	19.4	.1	33.86	46	-12.14	-	-
10	5.9033	18.61	Ca	0	19.4	.1	38.11	50	-11.89	-	-
12	15.6008	20.03	Ca	.1	19.3	.2	39.63	50	-10.37	-	-
1	.1995	35.34	Qp	.2	19.4	0	54.94	-	-	63.63	-8.69
3	.3008	18.99	Qp	.1	19.4	0	38.49	-	-	60.22	-21.73
5	2.8995	21.99	Qp	0	19.3	.1	41.39	-	-	56	-14.61
7	4.1438	24.92	Qp	0	19.4	.1	44.42	-	-	56	-11.58
9	5.9033	20.04	Qp	0	19.4	.1	39.54	-	-	60	-20.46
11	15.6008	21.97	Qp	.1	19.3	.2	41.57	-	-	60	-18.43

Range 4: Phase L4 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175761 LISN	Limiter 207956_plus_10dBpad	Cable (dB)	Corrected Reading dBuV	Class B Avg	Avg Margin (dB)	Class B QP	QP Margin (dB)
14	.177	30.04	Ca	.2	19.4	0	49.64	54.63	-4.99	-	-
16	.3008	16.77	Ca	.1	19.4	0	36.27	50.22	-13.95	-	-
18	2.8995	6.01	Ca	0	19.3	.1	25.41	46	-20.59	-	-
20	4.1438	9.64	Ca	0	19.4	.1	29.14	46	-16.86	-	-
22	5.901	8.94	Ca	0	19.4	.1	28.44	50	-21.56	-	-
24	15.6008	20.16	Ca	.1	19.3	.2	39.76	50	-10.24	-	-
13	.1995	37.15	Qp	.2	19.4	0	56.75	-	-	63.63	-6.88
15	.3008	21.81	Qp	.1	19.4	0	41.31	-	-	60.22	-18.91
17	2.8995	21.58	Qp	0	19.3	.1	40.98	-	-	56	-15.02
19	4.1438	24.94	Qp	0	19.4	.1	44.44	-	-	56	-11.56
21	5.901	13.96	Qp	0	19.4	.1	33.46	-	-	60	-26.54
23	15.6008	23.15	Qp	.1	19.3	.2	42.75	-	-	60	-17.25

Qp - Quasi-Peak detector
Ca - CISPR average detection

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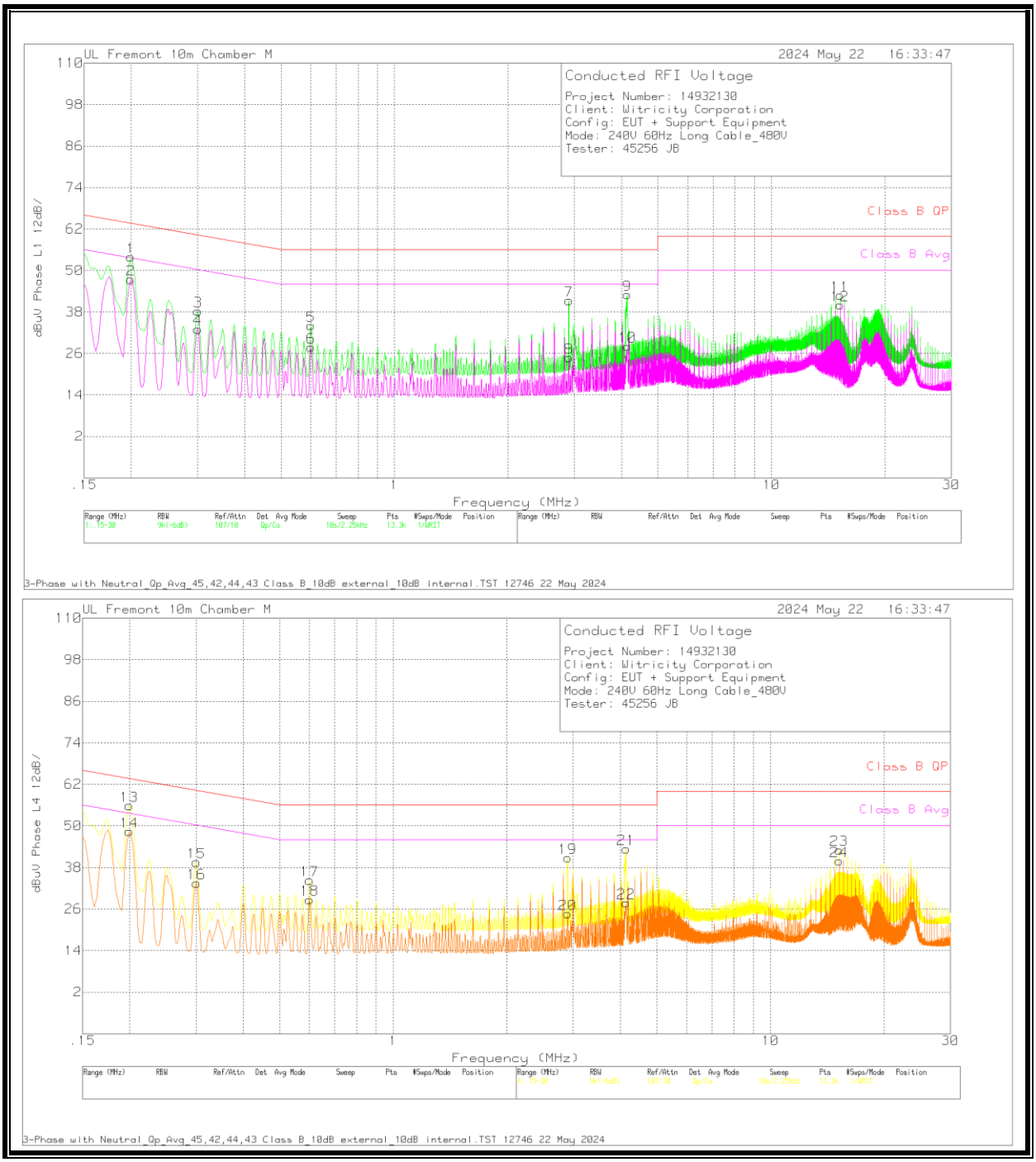
8.1.4. CONFIGURATION 3 480V VA Output

LINE 1 RESULTS



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WORST EMISSIONS

Range 1: Phase L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175763 LISN	Limiter 207956_plus_10dBpad	Cable (dB)	Corrected Reading dBuV	Class B Avg	Avg Margin (dB)	Class B QP	QP Margin (dB)
2	.1995	27.85	Ca	.2	19.4	0	47.45	53.63	-6.18	-	-
4	.3008	13.57	Ca	.1	19.4	0	33.07	50.22	-17.15	-	-
6	.6	8.45	Ca	0	19.3	.1	27.85	46	-18.15	-	-
8	2.8995	5.42	Ca	0	19.3	.1	24.82	46	-21.18	-	-
10	4.1438	8.6	Ca	0	19.4	.1	28.1	46	-17.9	-	-
12	15.2003	20.42	Ca	.1	19.3	.2	40.02	50	-9.98	-	-
1	.1995	34.33	Qp	.2	19.4	0	53.93	-	-	63.63	-9.7
3	.3008	18.79	Qp	.1	19.4	0	38.29	-	-	60.22	-21.93
5	.6	14.65	Qp	0	19.3	.1	34.05	-	-	56	-21.95
7	2.8995	21.94	Qp	0	19.3	.1	41.34	-	-	56	-14.66
9	4.1415	23.5	Qp	0	19.4	.1	43	-	-	56	-13
11	15.2003	23.25	Qp	.1	19.3	.2	42.85	-	-	60	-17.15

Range 4: Phase L4 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	175761 LISN	Limiter 207956_plus_10dBpad	Cable (dB)	Corrected Reading dBuV	Class B Avg	Avg Margin (dB)	Class B QP	QP Margin (dB)
14	.1995	28.82	Ca	.2	19.4	0	48.42	53.63	-5.21	-	-
16	.3008	14.02	Ca	.1	19.4	0	33.52	50.22	-16.7	-	-
18	.6	9.35	Ca	0	19.3	.1	28.75	46	-17.25	-	-
20	2.8995	5.22	Ca	0	19.3	.1	24.62	46	-21.38	-	-
22	4.1415	8.3	Ca	0	19.4	.1	27.8	46	-18.2	-	-
24	15.2003	20.26	Ca	.1	19.3	.2	39.86	50	-10.14	-	-
13	.1995	36.29	Qp	.2	19.4	0	55.89	-	-	63.63	-7.74
15	.3008	20.05	Qp	.1	19.4	0	39.55	-	-	60.22	-20.67
17	.6	14.92	Qp	0	19.3	.1	34.32	-	-	56	-21.68
19	2.8995	21.4	Qp	0	19.3	.1	40.8	-	-	56	-15.2
21	4.1415	23.89	Qp	0	19.4	.1	43.39	-	-	56	-12.61
23	15.2003	23.51	Qp	.1	19.3	.2	43.11	-	-	60	-16.89

Qp - Quasi-Peak detector
Ca - CISPR average detection

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9. SETUP PHOTOS

Refer to 14932130 EP1 for setup photos.

END OF REPORT

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