



CERTIFICATION TEST REPORT

Report Number. : 13881229-E1V2

Applicant : APPLE, INC.
ONE APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A.

Model : A2652

FCC ID : BCGA2652

IC : 579C-A2652

EUT Description : MAGNETIC CHARGING CABLE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-216 ISSUE 2

Date Of Issue:

August 12, 2021

Prepared by:

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	8/11/2021	Initial Issue	Chin Pang
V2	8/12/2021	Address TCB's Questions on Page 17	Chin Pang

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE, INC.
ONE APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A.

EUT DESCRIPTION: MAGNETIC CHARGING CABLE

MODEL: A2652

SERIAL NUMBER: DLC1053002414D1U

DATE TESTED: JUNE 17, 2021 TO June 29, 2021

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Complies
ISED RSS-216 Issue 2, Annex B	Complies
ISED RSS-GEN Issue 5 + A1 + A2	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. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:



Chin Pang
Senior Engineer
Consumer Technology Division
UL Verification Services Inc.

Prepared By:



Douglas Pavich
Test Engineer
Consumer Technology Division
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:

- FCC CFR 47 Part 2
- FCC CFR 47 Part 15
- ANSI C63.10-2013
- KDB 414788 D01 Radiated Test Site v01r01
- RSS-GEN Issue 5 + A1 + A2
- RSS-216 Issue 2

3. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #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
<input type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, CA 94538	US0104	2324A	208313
<input checked="" type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538	US0104	22541	208313
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538	US0104	2324B	208313

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. 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)
 $36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

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.
 $36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
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	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a magnetic charging cable which has a single inductive charging coil to charge Apple Watch. The charging frequency is 326.5 kHz, and the maximum power consumption is 5W in charging status.

5.2. MAXIMUM OUTPUT POWER

The transmitter has maximum peak radiated electric and magnetic field strength as follows:

Fundamental Frequency (KHz)	Mode	E field (300m distance) FCC (dBuV/m)	H field (3m distance) IC (dBuA/m)
326.5	Standby (Config 1)	-20.37	4.08
326.5	Operating (Config 2)	-23.27	5.66

5.3. SOFTWARE AND FIRMWARE

The firmware version installed in the EUT during testing was 1.3.7

5.4. WORST-CASE CONFIGURATION AND MODE

The EUT is a single frequency magnetic charger enclosed in a plastic case. For the entire radiated emissions test, the EUT was investigated on the following configuration during the test at its natural orientation.

Config	Mode	Descriptions
1	Standby	EUT Alone powered by AC/DC adapter
2	Operating	EUT and Watch powered by AC/DC adapter

AC power line conducted emissions were also investigated on the following configurations.

Config	Mode	Descriptions
1	Standby	EUT Alone powered by AC/DC adapter
2	Operating	EUT and Watch powered by AC/DC adapter

For below 30MHz & 1GHz tests EUT was connected to AC power adapter as the worst case, the worst-case configuration reported was tested with EUT only. For AC line conducted emission, test was investigated with AC power adapter and with laptop.

The EUT was tested as standby and operation modes. During operational mode, EUT was tested with two different sizes of watches, small and big of having similar mechanical structure.

For all radiated emissions tests, both small and big watches were investigated and no significant different in reading was found between both watches; the big watch was chosen to test as the worst case condition since it has max load overall, hence all final data for operational mode represents EUT with the big watch. During the charging process, the watch actively indicates the status of the charging process. Device being charged was at a state of 20 – 50% charged.

For below 30MHz testing, investigation was done on three antenna orientations: RX antenna Face-on, Face-off and horizontal (parallel to ground). The worst-case configurations were determined on RX antenna Face-on and Face-off; therefore, all final tests were performed using these two orientations.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 300 m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788 D01.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT & PERIPHERALS

SUPPORT EQUIPMENT & PERIPHERALS LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC/DC adapter	Apple	A2305	C4H0313063ZPF4FAZ	N/A
Watch	Apple	A2354	G99D308AQ128	N/A

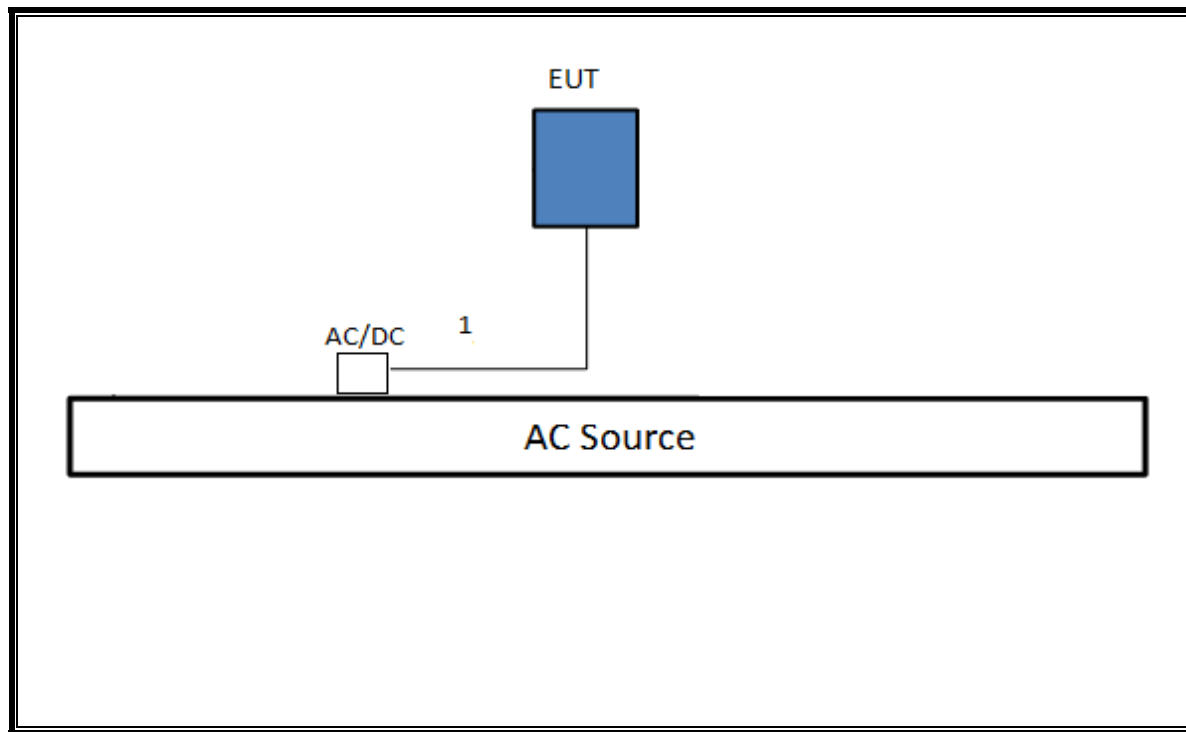
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC	1	USB-C	Un-shielded	1	20W Power Supply

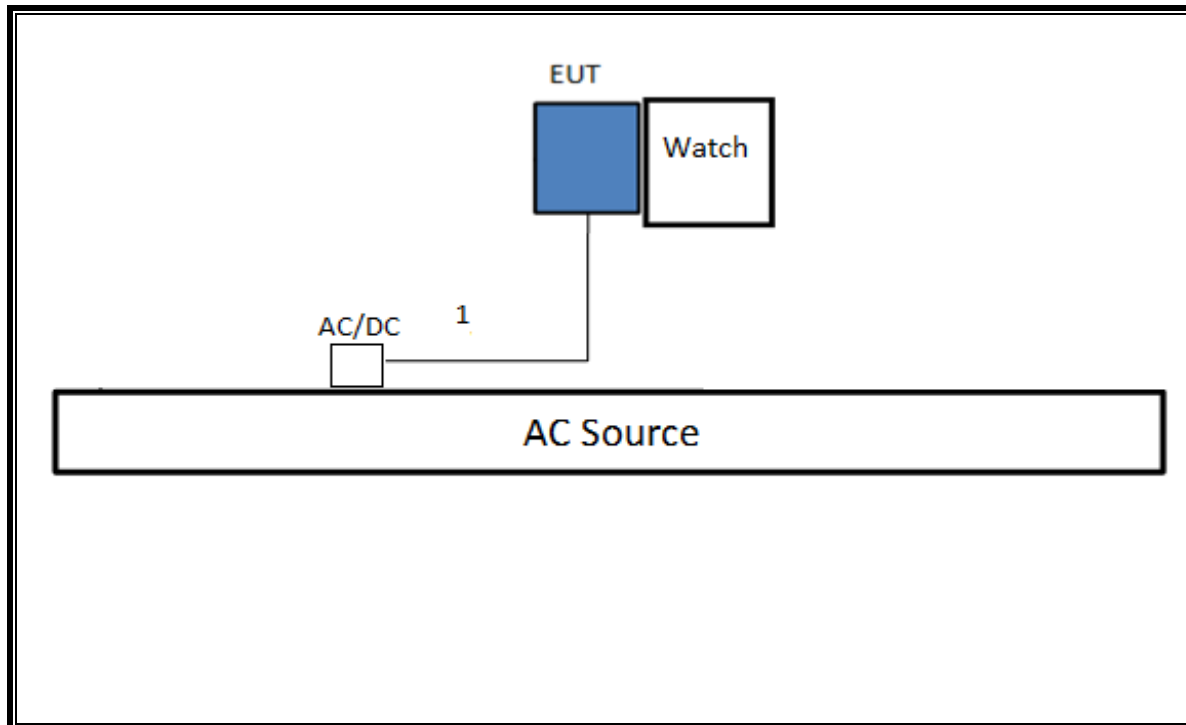
TEST SETUP

Please see the following configurations for the test setups. Configurations 1 and 2 indicate that the EUT is directly connected to an AC/DC adapter via USB cable.

CONFIGURATION 1: STANDBY MODE



CONFIGURATION 2: OPERATING MODE WITH WATCH



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	ID Num	Cal Due
Antenna, Active Loop 9KHz to 30MHz	ETS-Lindgren	6502	T1616	12/02/2021
*Antenna, Broadband Hybrid, 30MHz to 2000MHz w/4dB	Sunol Sciences Crop.	JB3	T185	06/26/2021
Amplifier, 10kHz to 1GHz, 32dB	Sonoma Instrument	310N	T835	01/27/2022
Sniffer Probes	Electro Metrics	EM-6992	N/A	N/A
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A-544	T1113	12/17/2021

AC Line Conducted				
EMI Test Receiver 9KHz-7GHz	Rohde & Schwarz	ESCI7	T1436	02/19/2022
Power Cable, Line Conducted Emissions	UL	PR1	T861	10/27/2021
LISN for Conducted Emissions CISPR-16	Fischer	50/250-25-2-01	T1310	01/20/2022
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, March 06, 2020	
Conducted Software	UL	UL EMC	Ver 17.0, September 18, 2020	
AC Line Conducted Software	UL	UL EMC	Ver 9.5, July 07, 2020	

Note: *Testing is completed before equipment expiration date

7. OCCUPIED BANDWIDTH

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 300Hz. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

Note: Because the measured signal is CW-like, adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

Note that when the EUT was in standby mode the only signal that comes out from the EUT was the intentional charging signal of 326.5kHz. On the other hand, when the EUT was in operational mode there were two signals. One of the intentional charging signal of 326.5kHz and the other one the control signal of 340kHz that controls the communication/charging status between EUT and the client device-the watch.

EUT SETUP

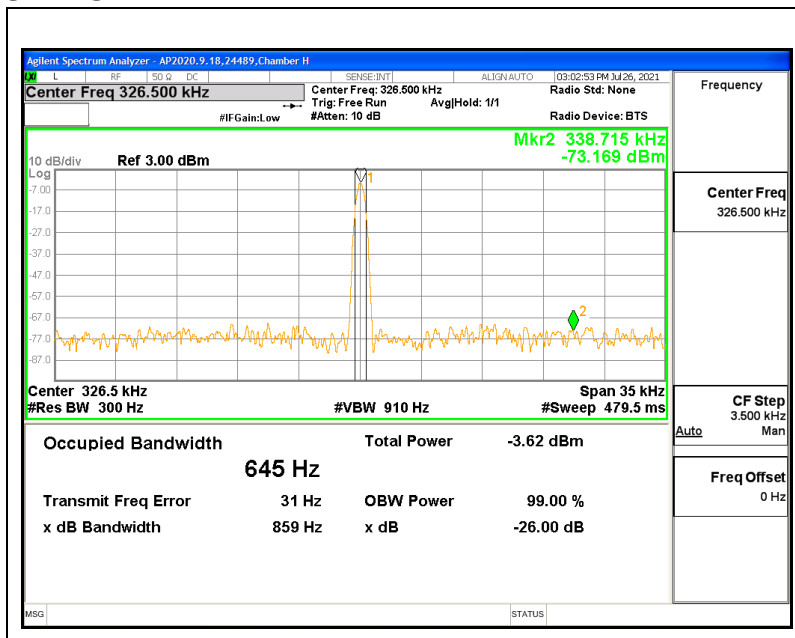
Configuration 1: Charger in standby mode, transmitting low duty cycle CW signal at 326.5kHz test.

Configuration 2: Charger in pairing mode with FSK modulation (-0/+15 kHz) which occurs over a very short period of time as soon as the watch is placed on the charger.

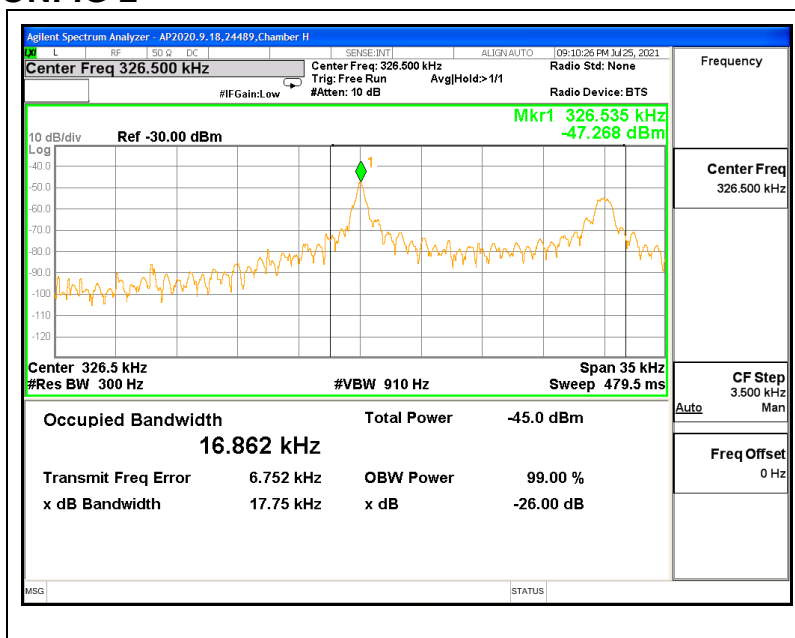
Configuration 3: Charger in charging mode with CW signal and duty cycle varied to control charge level via load modulation from watch.

RESULTS

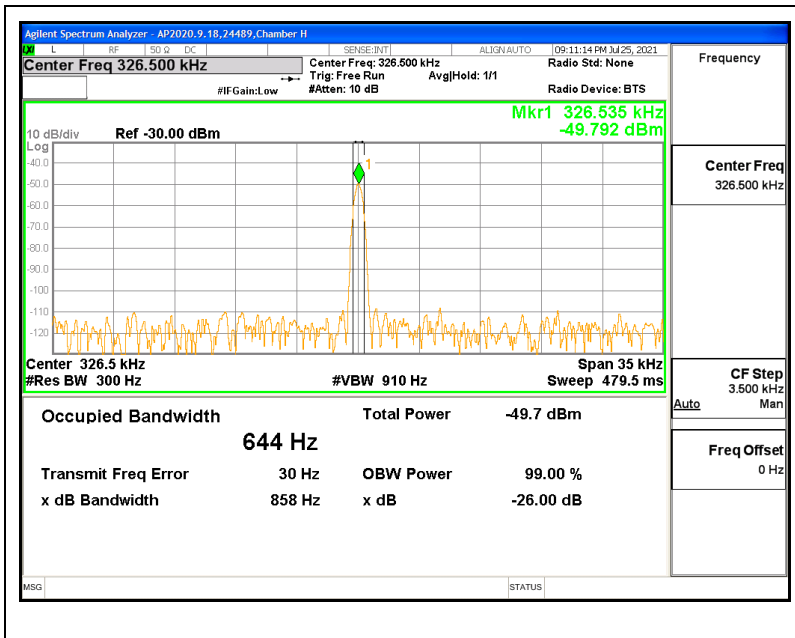
7.1. CONFIG 1



7.2. CONFIG 2



7.3. CONFIG 3



8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.209 (a)

ICES-001 Section 6.2, IC RSS-216 6.2.2, and IC RSS-GEN Sections 8.9 and 8.10.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (m)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100	3
88 to 216	150	3
216 to 960	200	3
Above 960 MHz	500	3
Note: The lower limit shall apply at the transition frequency.		

ICES-001 Issue 5 Table 2 & Table 4:

Table 2: Magnetic field strength radiated emission limits for induction cooking appliances

Frequency range (MHz)	Quasi-peak, at 3 m distance (dBμA/m)
0.009 – 0.07	69
0.07 – 0.15	69 to 39 *
0.15 – 30	39 to 7 *
* The limit level in dBμA/m decreases linearly with the logarithm of frequency.	

Table 4: Electric field strength radiated emission limits for induction cooking appliances

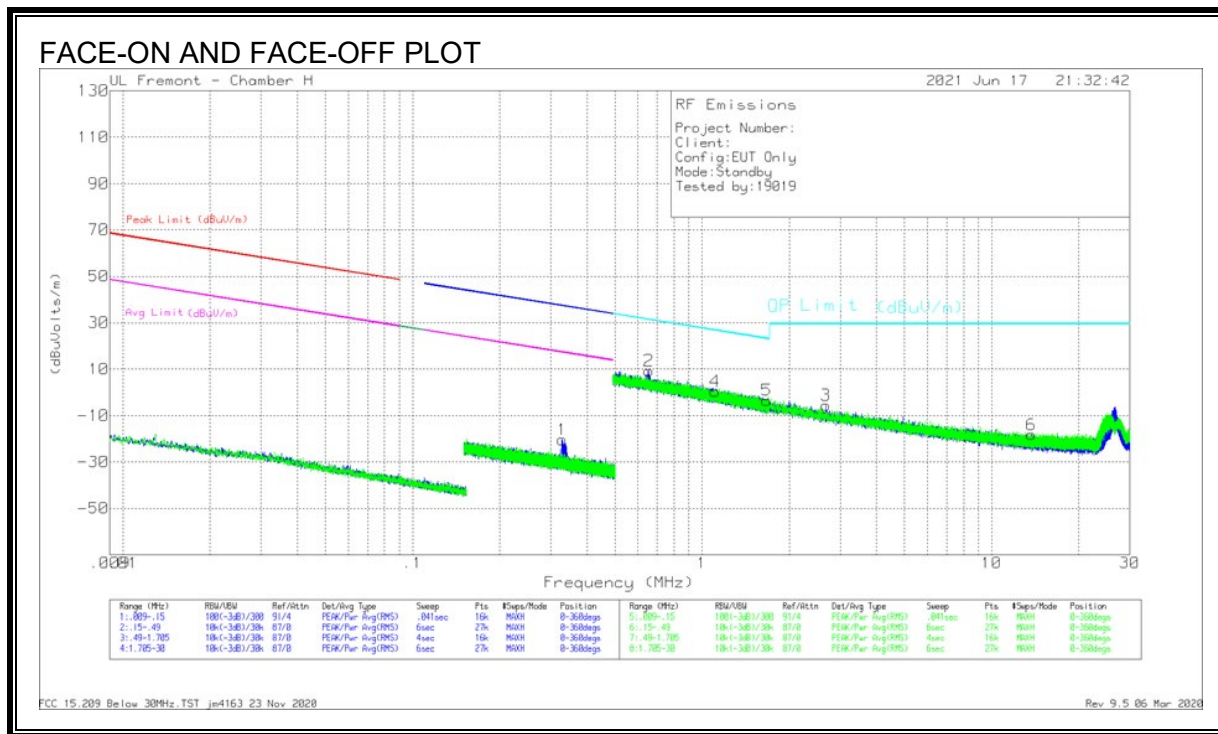
Frequency range (MHz)	OATS or SAC * 10 m measurement distance Quasi-peak (dBμV/m)	OATS or SAC * 3 m measurement distance Quasi-peak (dBμV/m)	FAR * 3 m measurement distance Quasi-peak (dBμV/m)
30 – 230	30	40	42 to 35 **
230 – 1000	37	47	42
Note: The more stringent limit applies at the transition frequency. * OATS = open-area test site, SAC = semi-anechoic chamber, FAR = fully-anechoic room (see CSA CISPR 11:19). ** The limit level in dBμV/m decreases linearly with the logarithm of frequency.			

RESULTS

8.2. Plastic Housing WITH 1M CABLE

8.2.1. FCC TX FUNDAMENTAL AND SPURIOUS EMISSIONS FROM 9 kHz TO 30 MHz

STANDBY CONFIGURATION



DATA

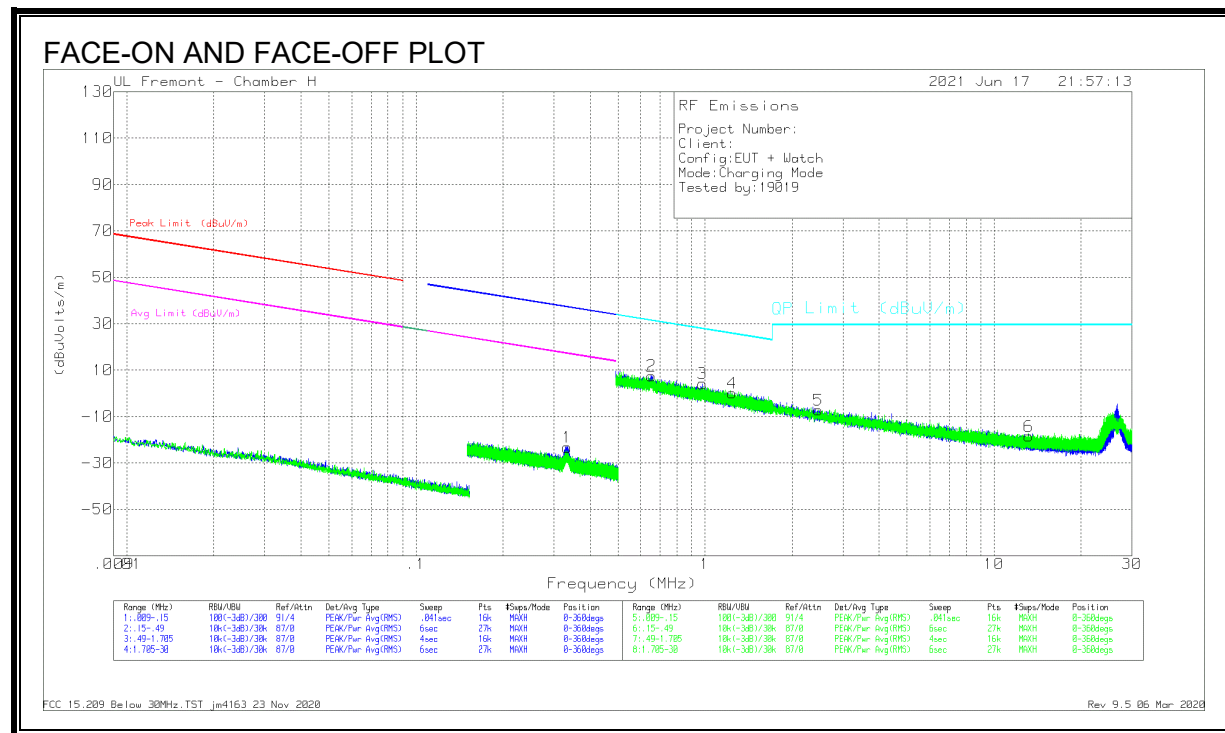
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuVolts/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
1	.32863	48.23	Pk	11.3	.1	-80	-20.37	37.28	-57.65	17.28	-37.65	0-360	Face-On

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
2	.65462	37.95	Pk	11.3	.1	-40	9.35	31.29	-21.94	0-360	Face-On
4	1.10834	28.71	Pk	11.5	.2	-40	.41	26.73	-26.32	0-360	Face-Off
5	1.6718	25.01	Pk	11.4	.2	-40	-3.39	23.17	-26.56	0-360	Face-Off
3	2.67964	22.88	Pk	11.4	.2	-40	-5.52	29.5	-35.02	0-360	Face-On
6	13.68469	10.59	Pk	10.7	.5	-40	-18.21	29.5	-47.71	0-360	Face-Off

Pk - Peak detector

OPERATING WITH WATCH



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuVolts/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
1	.33357	45.33	Pk	11.3	.1	-80	-23.27	37.15	-60.42	17.15	-40.42	0-360	Face-On

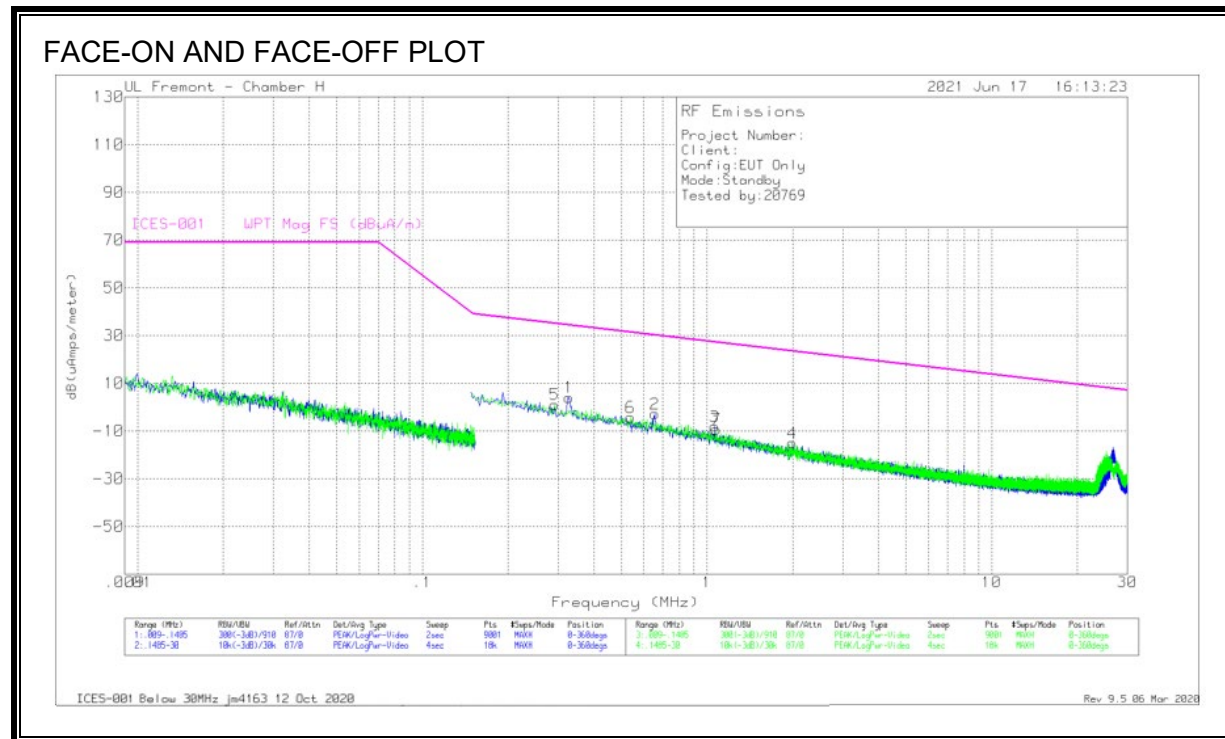
Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
2	.6531	36.11	Pk	11.3	.1	-40	7.51	31.31	-23.8	0-360	Face-On
3	.97944	32.61	Pk	11.5	.1	-40	4.21	27.8	-23.59	0-360	Face-On
4	1.24187	28.39	Pk	11.5	.2	-40	.09	25.75	-25.66	0-360	Face-Off
5	2.4627	21.19	Pk	11.4	.2	-40	-7.21	29.5	-36.71	0-360	Face-Off
6	13.2047	10.24	Pk	10.8	.5	-40	-18.46	29.5	-47.96	0-360	Face-Off

Pk - Peak detector

8.2.2. IC / ICES-001 TX FUNDAMENTAL AND SPURIOUS EMISSIONS FROM 9 kHz TO 30 MHz

STANDBY CONFIGURATION

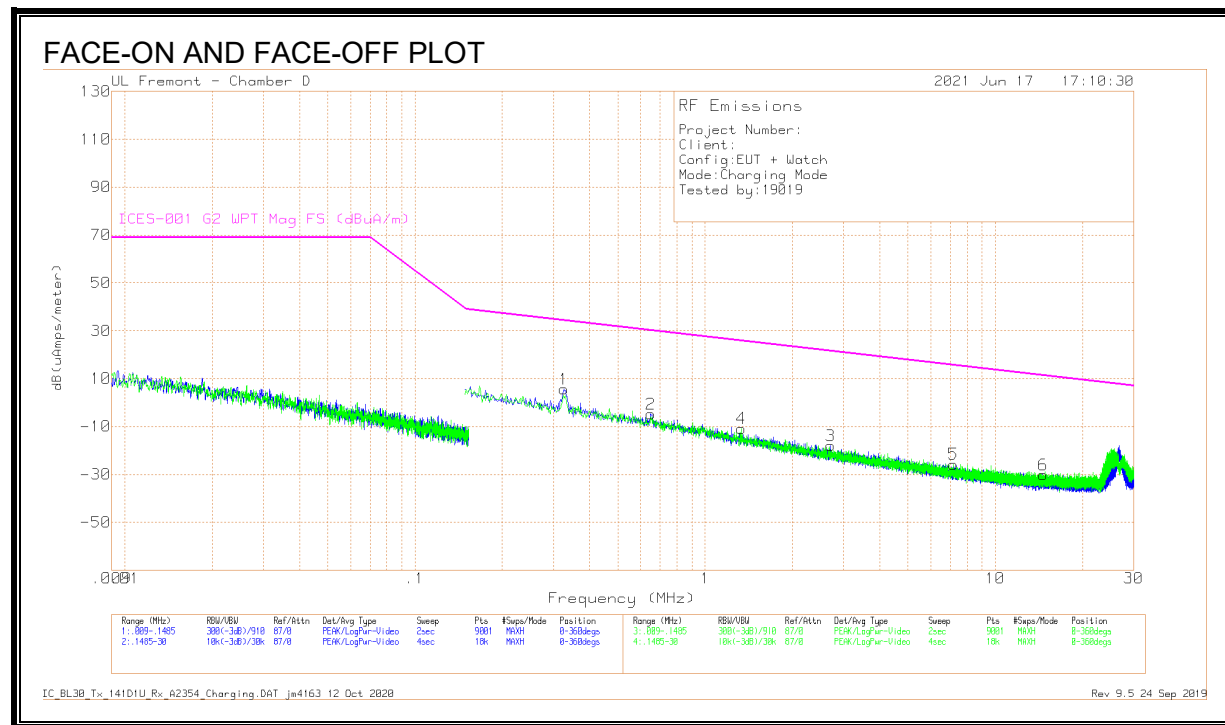


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Corrected Reading dB(uAmps/meter)	ICES-001 WPT Mag FS (dBuA/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
5	.29109	41.19	Pk	-40.2	.1	1.09	35	-33.91	0-360	Face-Off
1	.32756	44.18	Pk	-40.2	.1	4.08	34.28	-30.2	0-360	Face-On
6	.53813	35.94	Pk	-40.3	.1	-4.26	31.28	-35.54	0-360	Face-Off
2	.65585	37.18	Pk	-40.1	.1	-2.82	30.09	-32.91	0-360	Face-On
3	1.06537	31.84	Pk	-40	.1	-8.06	27.16	-35.22	0-360	Face-On
7	1.07698	30.71	Pk	-40	.1	-9.19	27.09	-36.28	0-360	Face-On
4	1.99717	24.81	Pk	-40.1	.2	-15.09	23.36	-38.45	0-360	Face-On

Pk - Peak detector

OPERATING WITH WATCH



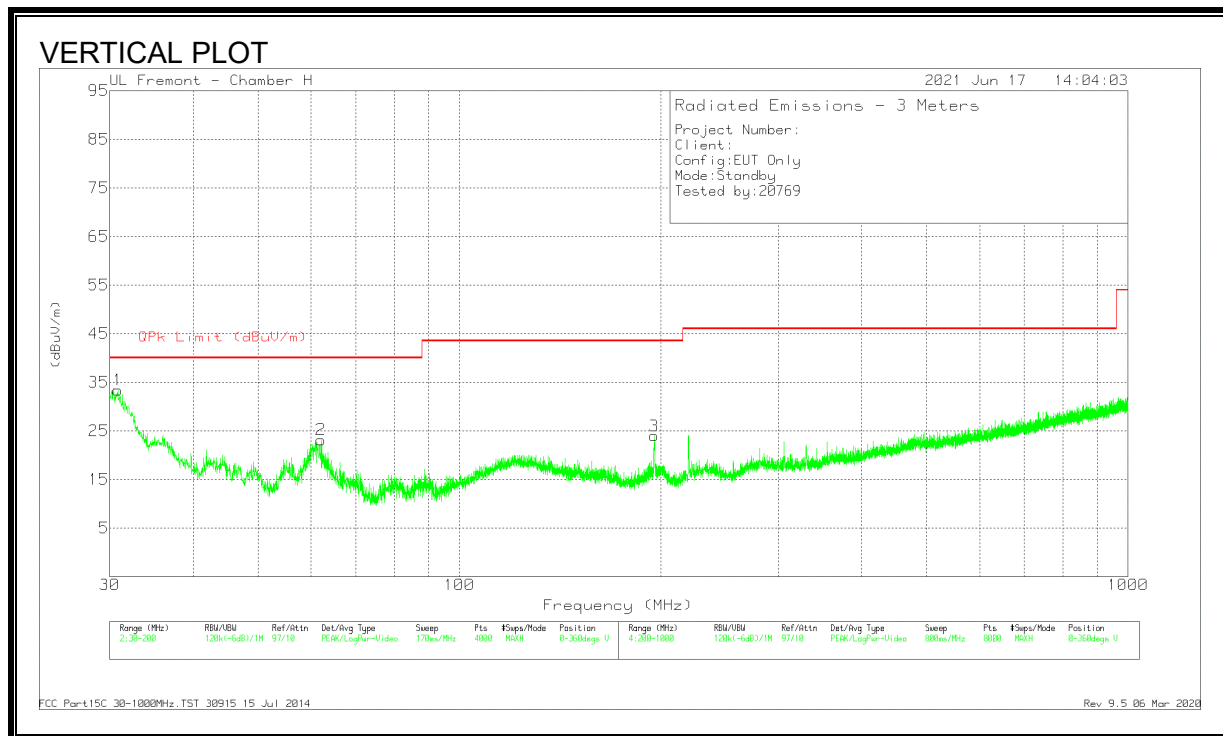
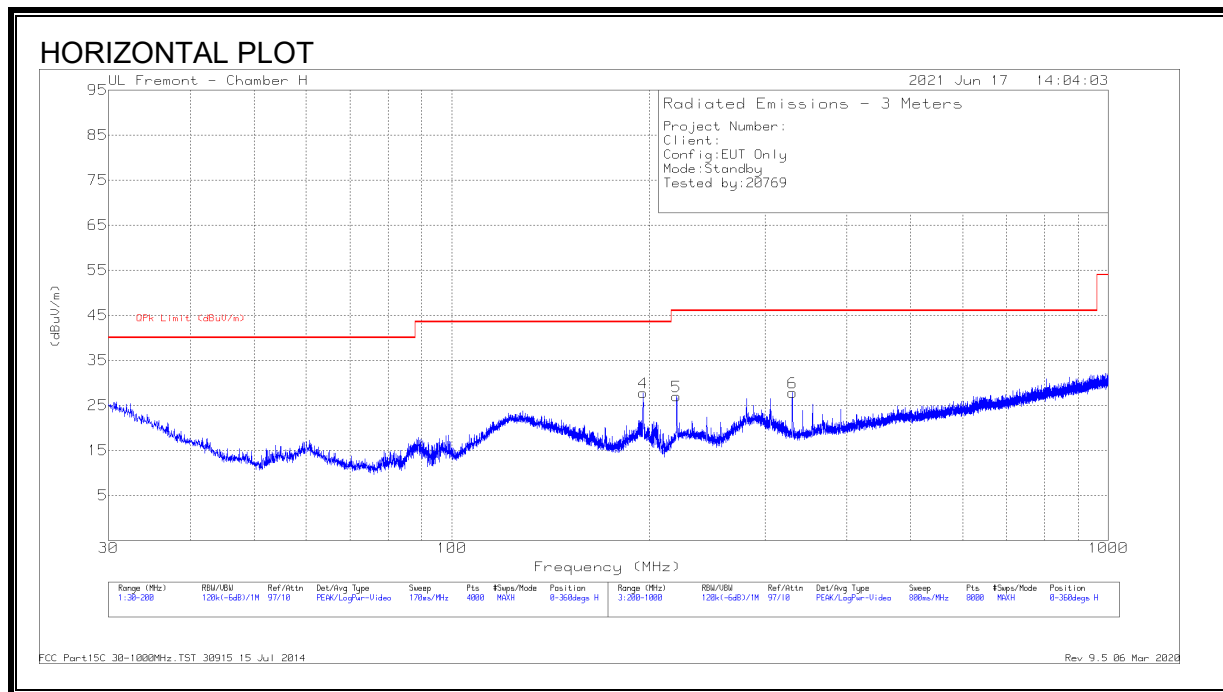
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Corrected Reading dB(uAmps/meter)	ICES-001 WPT Mag FS (dBuA/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
1	.32591	45.76	Pk	-40.2	.1	5.66	34.31	-28.65	0-360	Face On
2	.65087	35.23	Pk	-40.1	.1	-4.77	30.14	-34.91	0-360	Face On
4	1.33065	29.09	Pk	-40	.2	-10.71	25.82	-36.53	0-360	Face Off
3	2.70679	21.88	Pk	-40.1	.2	-18.02	21.53	-39.55	0-360	Face On
5	7.18174	14.32	Pk	-40.4	.4	-25.68	15.63	-41.31	0-360	Face Off
6	14.64771	10.19	Pk	-40.8	.6	-30.01	11.33	-41.34	0-360	Face Off

Pk - Peak detector

8.2.3. FCC TX SPURIOUS EMISSION 30 TO 1000 MHz

STANDBY CONFIGURATION



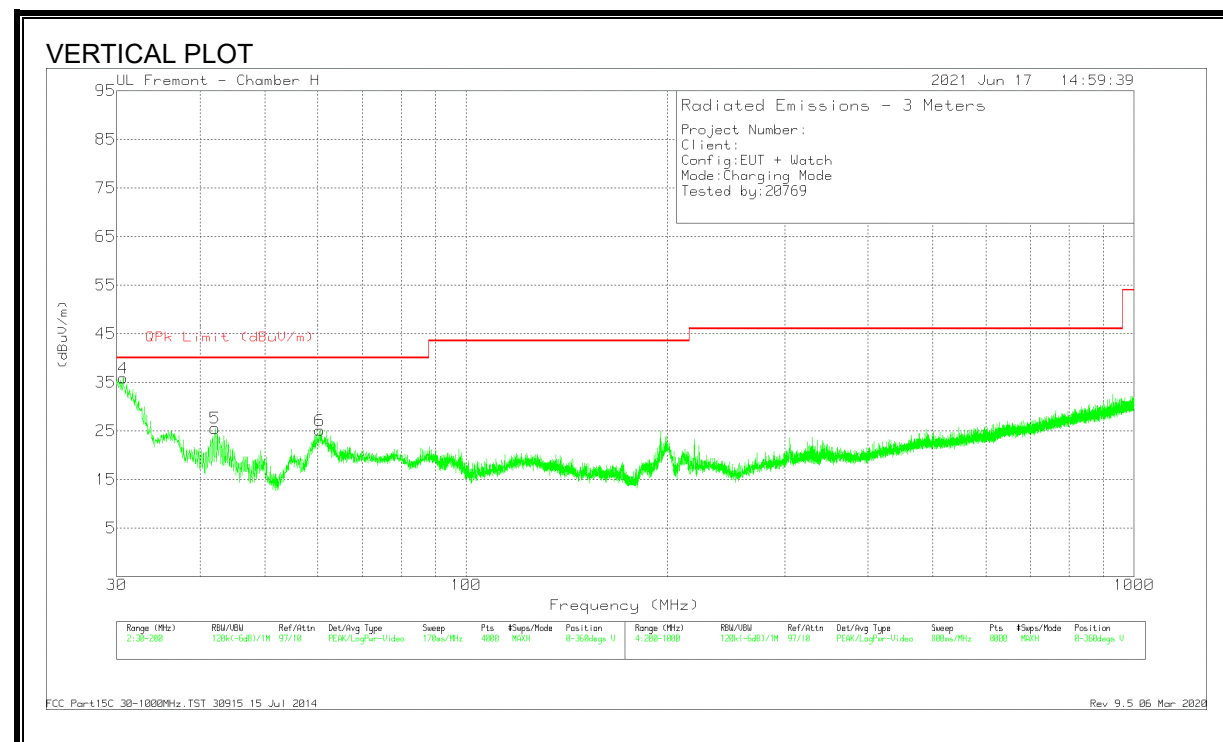
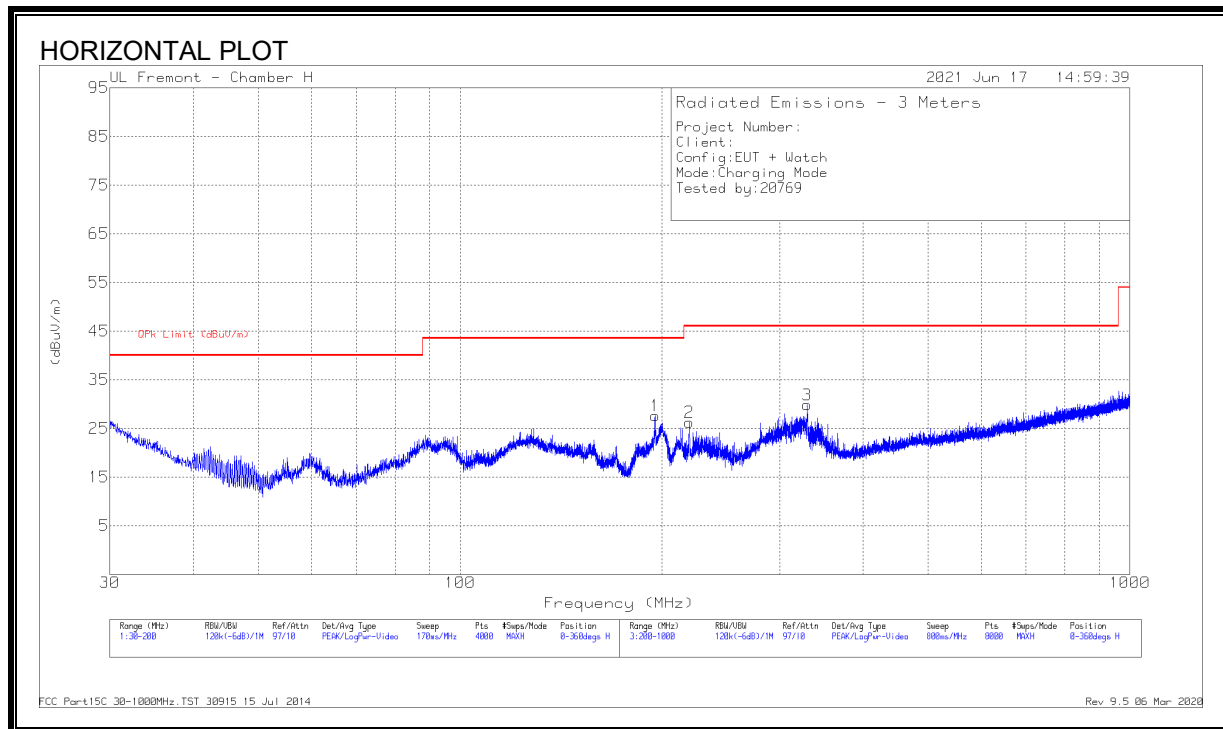
DATA

Markers	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T185 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 330.1364	35.95	Qp	20.5	-29.3	27.15	46.02	-18.87	326	100	H
1	30.1018	32.44	Qp	28	-31.4	29.04	40	-10.96	32	106	V
2	61.6696	34.48	Qp	13.6	-31	17.08	40	-22.92	288	109	V
3	195.5886	34.46	Qp	18.3	-29.9	22.86	43.52	-20.66	326	103	V
4	195.692	38.18	Qp	18.3	-29.9	26.58	43.52	-16.94	9	187	H
5	220.1562	39.53	Qp	17.4	-29.9	27.03	46.02	-18.99	14	139	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Qp - Quasi-Peak detector

OPERATING WITH WATCH



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T185 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 329.7785	37.63	Qp	20.5	-29.3	28.83	46.02	-17.19	322	101	H
4	30.3567	34.24	Qp	27.9	-31.4	30.74	40	-9.26	111	105	V
5	42.4612	33.41	Qp	18.6	-31.2	20.81	40	-19.19	80	111	V
6	60.5147	37.65	Qp	13.5	-31	20.15	40	-19.85	273	119	V
1	195.3304	38.65	Qp	18.3	-30	26.95	43.52	-16.57	3	158	H
2	219.8834	38.86	Qp	17.4	-29.9	26.36	46.02	-19.66	26	155	H

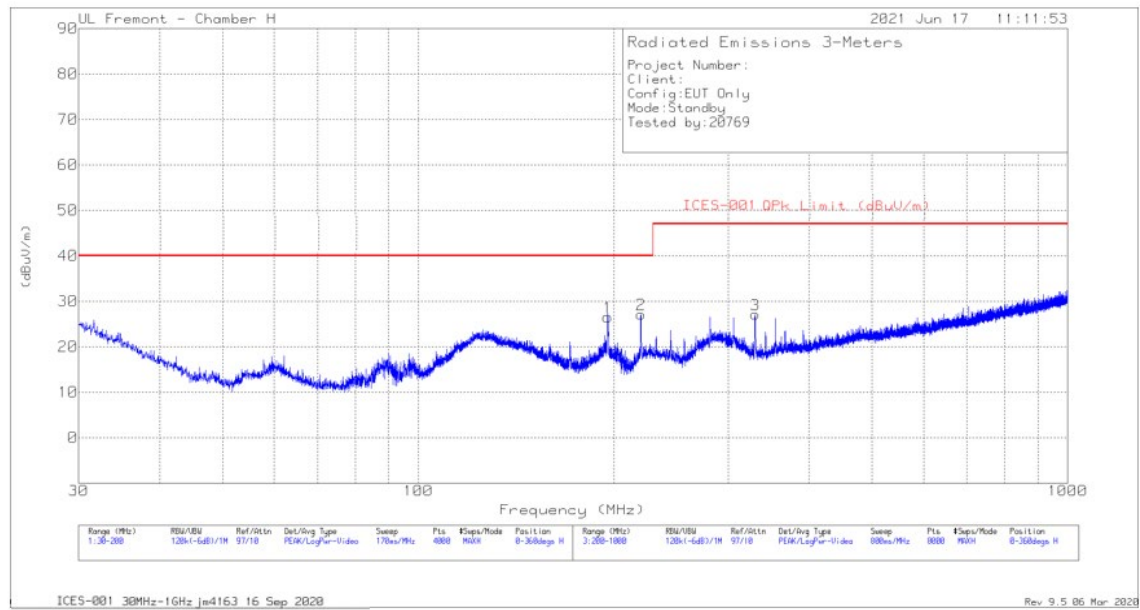
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Qp - Quasi-Peak detector

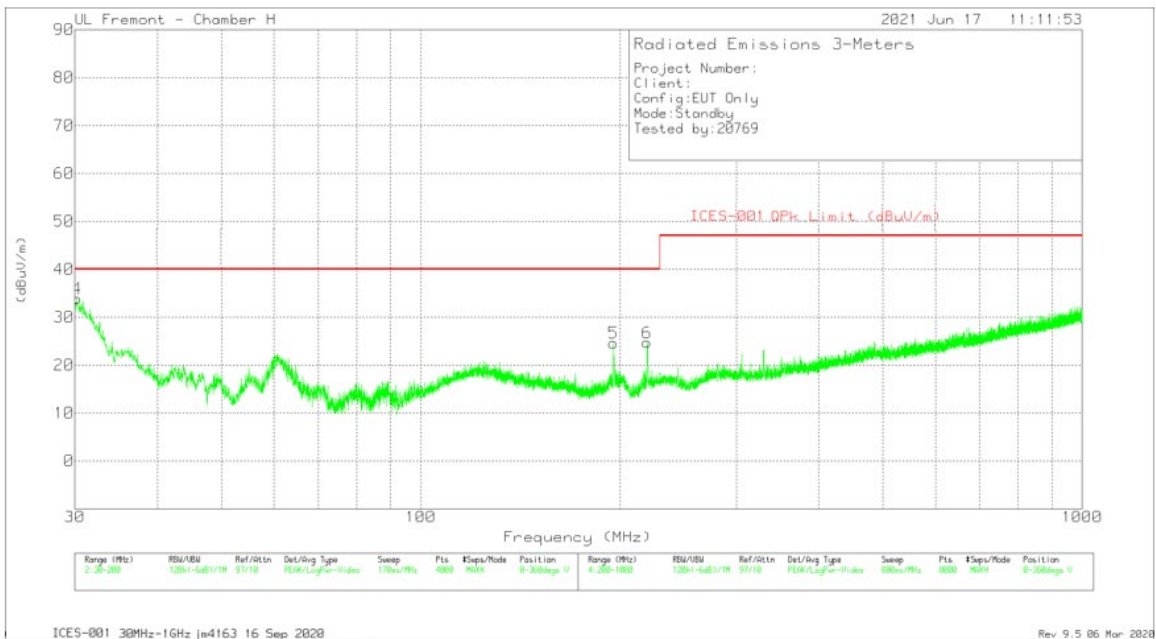
8.2.4. IC / ICES-001 TX SPURIOUS EMISSION 30 TO 1000 MHz

STANDBY CONFIGURATION

HORIZONTAL PLOT



VERTICAL PLOT

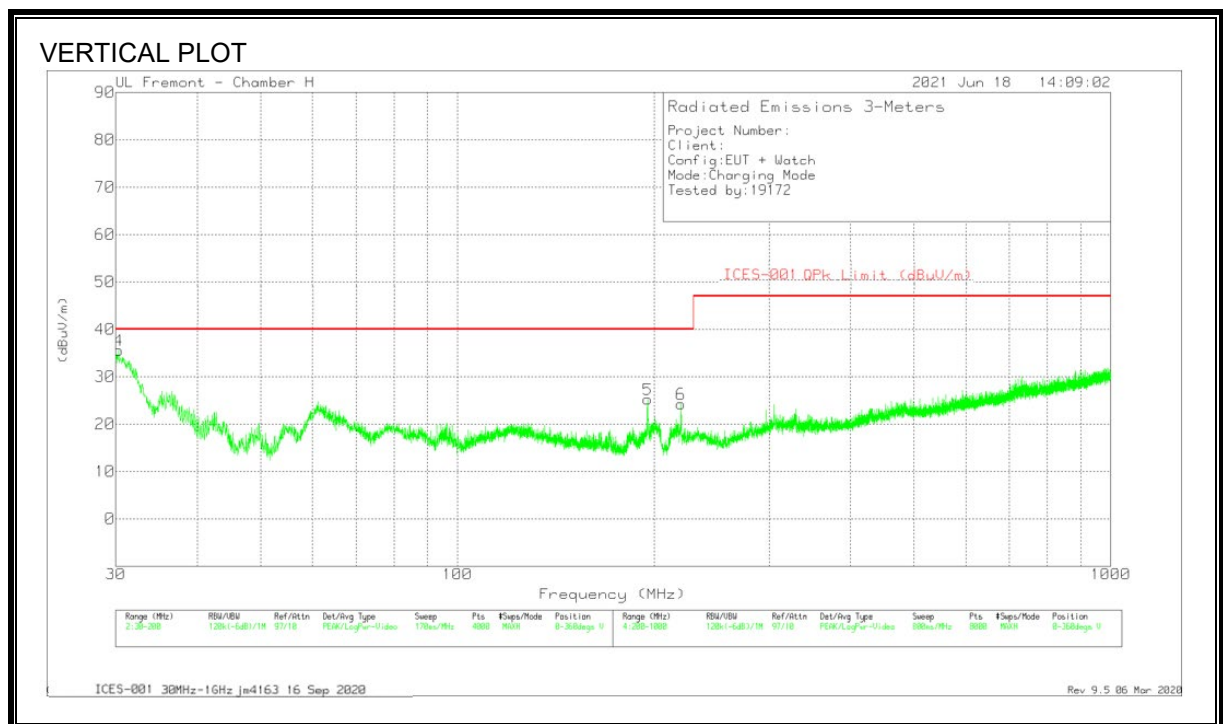
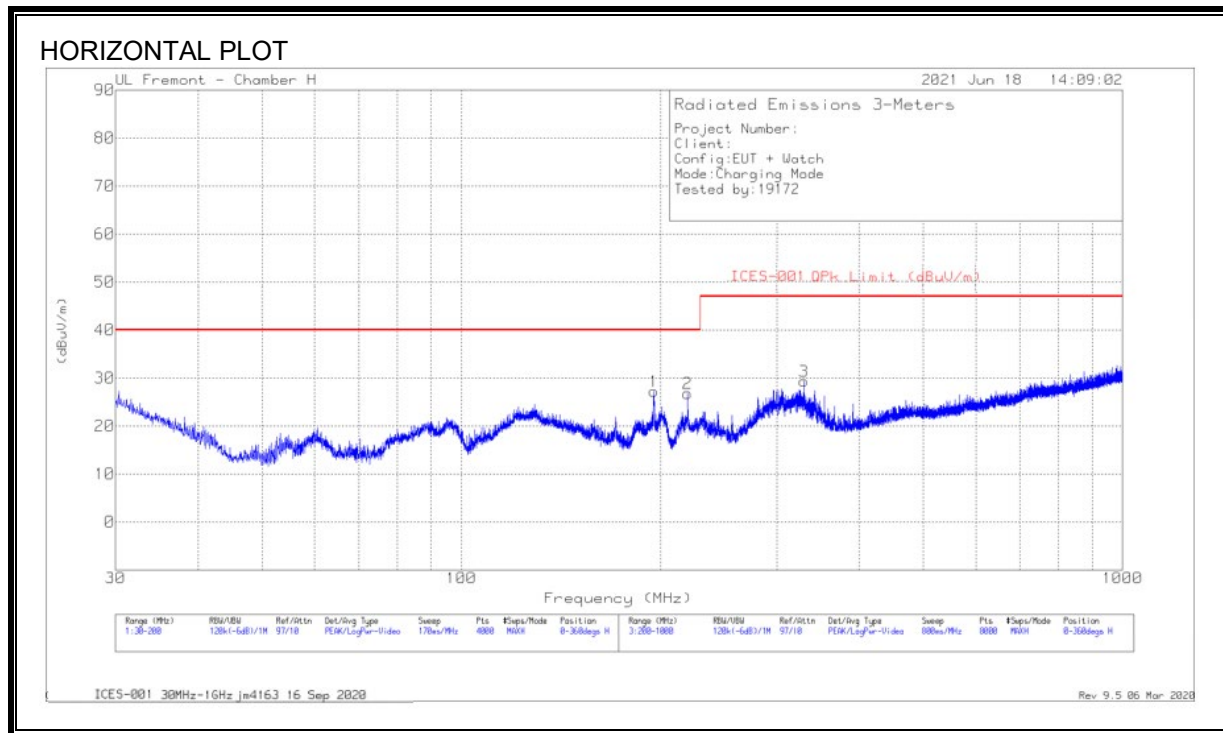


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T185 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Class B QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	30.519	32.62	Qp	27.7	-31.4	28.92	40	-11.08	96	101	V
1	195.5707	35.17	Qp	18.3	-29.9	23.57	40	-16.43	194	199	H
5	195.6925	34.91	Qp	18.3	-29.9	23.31	40	-16.69	325	101	V
2	220.0684	39.08	Qp	17.4	-29.9	26.58	40	-13.42	14	117	H
6	220.0717	36.34	Qp	17.4	-29.9	23.84	40	-16.16	153	141	V
3	330.2328	34.81	Qp	20.5	-29.3	26.01	47	-20.99	332	107	H

Qp - Quasi-Peak detector

OPERATING WITH WATCH



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T185 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Class B QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	30.3425	34.19	Qp	27.9	-31.4	30.69	40	-9.31	113	100	V
1	195.3461	38.11	Qp	18.3	-30	26.41	40	-13.59	360	171	H
5	195.4034	34.68	Qp	18.3	-30	22.98	40	-17.02	333	124	V
2	219.8834	39.16	Qp	17.4	-29.9	26.66	40	-13.34	14	140	H
6	219.9874	35.45	Qp	17.4	-29.9	22.95	40	-17.05	154	157	V
3	329.7785	38.31	Qp	20.5	-29.3	29.51	47	-17.49	329	102	H

Qp - Quasi-Peak detector

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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.

ICES-001 Issue 5 Table 1:

Table 1: Conducted emission limits for induction cooking appliances (AC mains terminals)

Frequency range (MHz)	Appliances rated 100 V, without an earth connection Quasi-peak (dBµV)	Appliances rated 100 V, without an earth connection Average (dBµV)	All other appliances Quasi-peak (dBµV)	All other appliances Average (dBµV)
0.009 – 0.05	122	—	110	—
0.05 – 0.15	102 to 92 *	—	90 to 80 *	—
0.15 – 0.5	72 to 62 *	62 to 52 *	66 to 56 *	56 to 46 *
0.5 – 5	56	46	56	46
5 – 30	60	50	60	50
Note: The more stringent limit applies at transition frequencies. * The limit level in dBµV decreases linearly with the logarithm of frequency.				

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

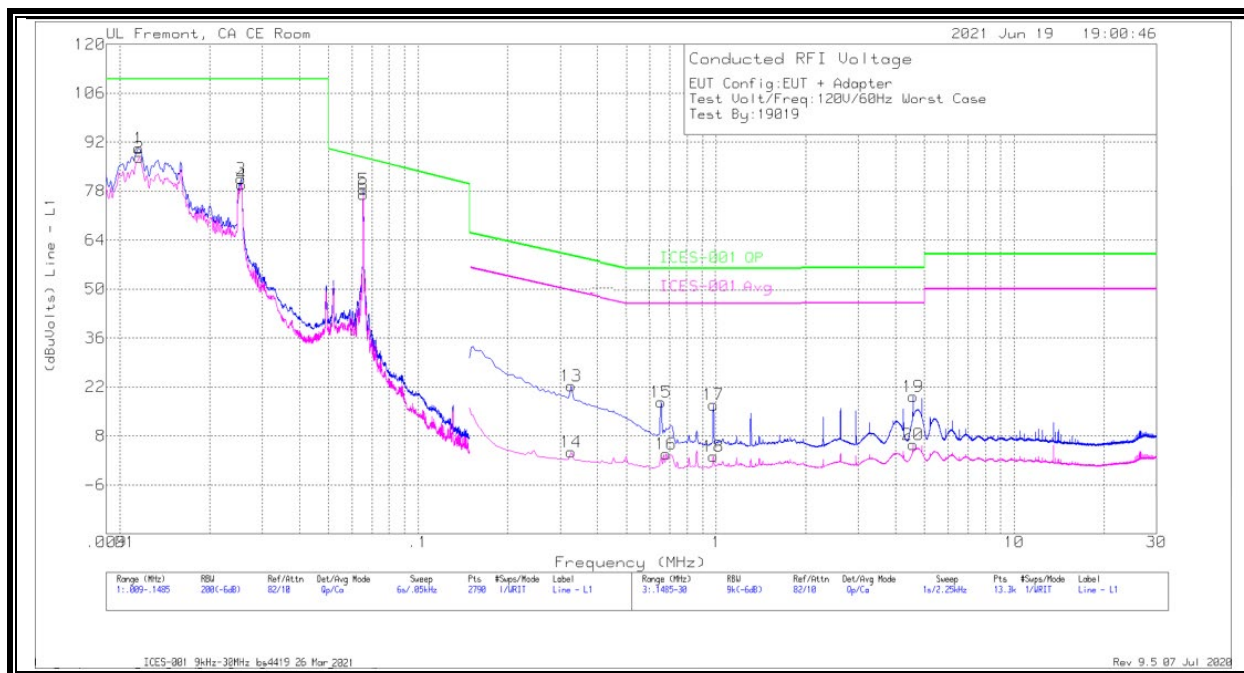
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

9.1. Plastic Housing WITH 1M CABLE

9.1.1. STANDBY MODE POWERED BY AC/DC ADAPTER

LINE 1 RESULTS



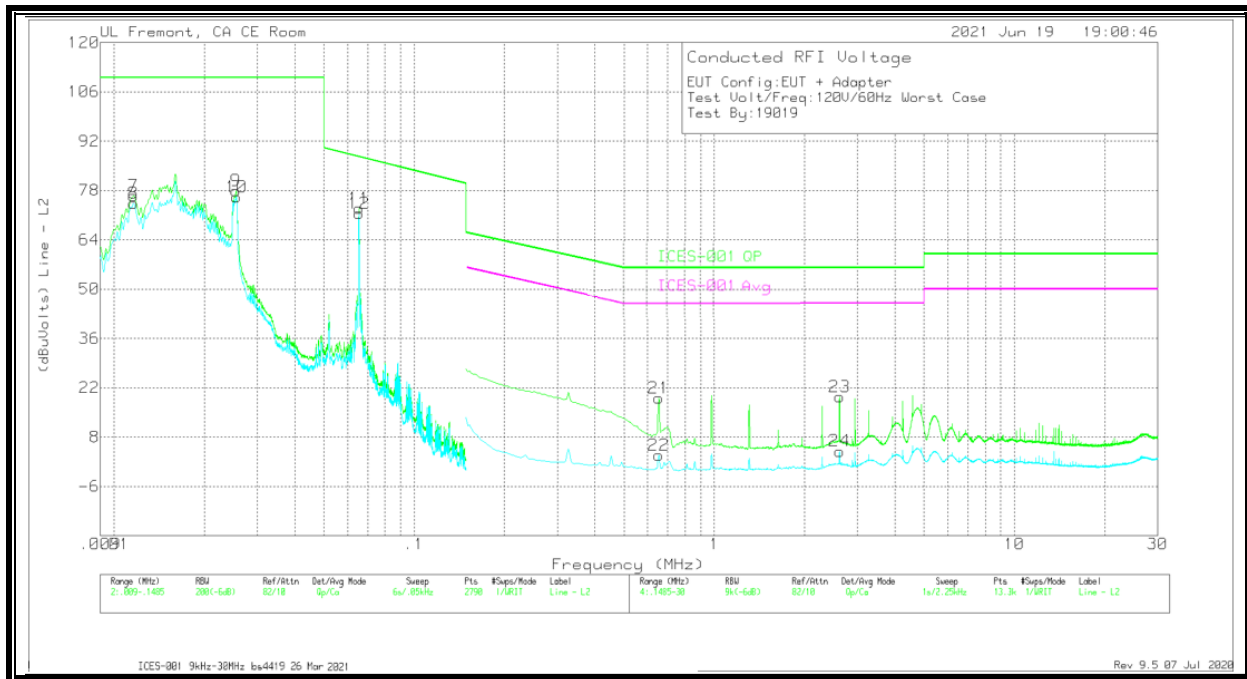
WORST EMISSIONS

Range 1: Line - L1 .009 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 LISN09(IL L1) r	LC Cables C1&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading (dBuV)	ICES-001 Class QP	Margin (dB)	ICES-001 Class B Avg	Margin (dB)
1	.01155	74.01	Qp	3.8	0	12.4	90.21	110	-19.79	-	-
2	.0116	71.41	Ca	3.7	0	12.4	87.51	-	-	-	-
3	.0255	68.48	Qp	1.1	0	12	81.58	110	-28.42	-	-
4	.02555	66.78	Ca	1.1	0	12	79.88	-	-	-	-
5	.0655	67.54	Qp	.2	0	10.8	78.54	87.52	-8.98	-	-
6	.06555	66.01	Ca	.2	0	10.8	77.01	-	-	-	-
13	.32625	13	Qp	0	0	9.3	22.3	59.52	-37.22	-	-
14	.32625	-5.94	Ca	0	0	9.3	3.36	-	-	49.55	-46.19
15	.6525	8.27	Qp	0	0	9.3	17.57	56	-38.43	-	-
16	.6795	-6.41	Ca	0	0	9.3	2.89	-	-	46	-43.11
17	.97875	7.45	Qp	0	.1	9.3	16.85	56	-39.15	-	-
18	.97875	-7.23	Ca	0	.1	9.3	2.17	-	-	46	-43.83
19	4.572	9.91	Qp	0	.1	9.3	19.31	56	-36.69	-	-
20	4.572	-3.92	Ca	0	.1	9.3	5.48	-	-	46	-40.52

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



WORST EMISSIONS

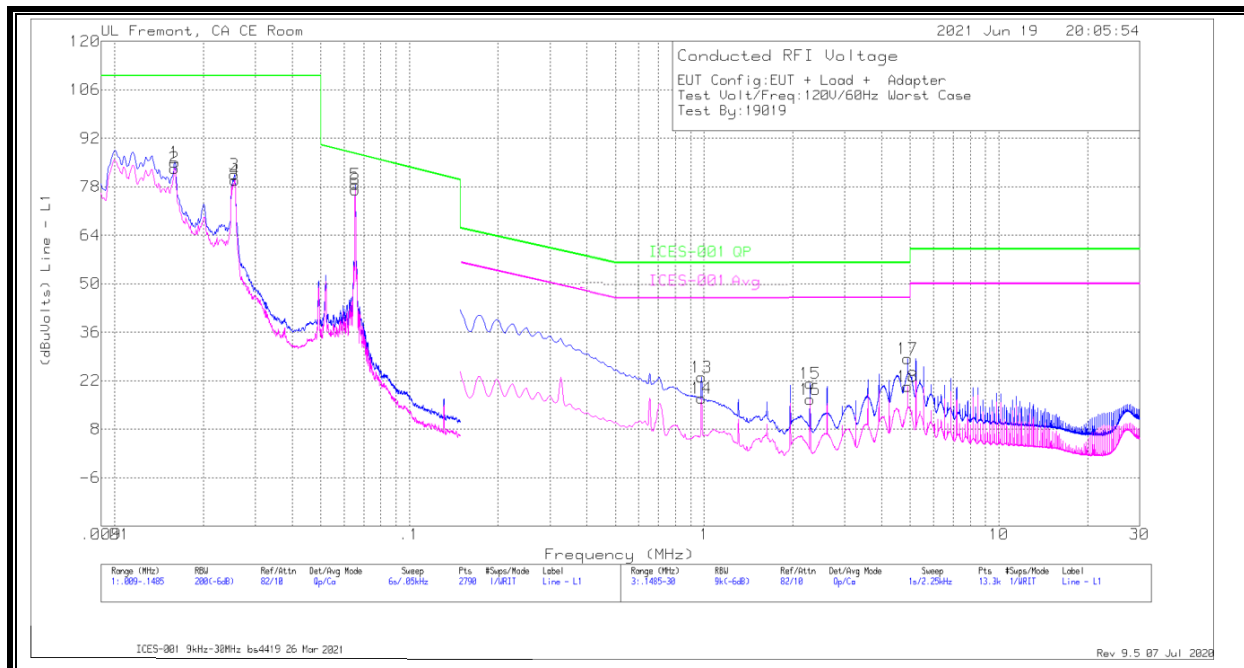
Range 2: Line - L2 .009 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 LISN10(IL L2) r	LC Cables C2&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading (dBuVolts)	ICES-001 Class QP	Margin (dB)	ICES-001 Class B Avg	Margin (dB)
7	.01163	60.42	Qp	3.7	0	12.4	76.52	110	-33.48	-	-
8	.0116	58.13	Ca	3.8	0	12.4	74.33	-	-	-	-
9	.0255	64.77	Qp	1.1	0	12	77.87	110	-32.13	-	-
10	.02555	63.09	Ca	1.1	0	12	76.19	-	-	-	-
11	.0655	61.97	Qp	.2	0	10.8	72.97	87.52	-14.55	-	-
12	.0655	60.6	Ca	.2	0	10.8	71.6	-	-	-	-
21	.6525	9.75	Qp	0	0	9.3	19.05	56	-36.95	-	-
22	.6525	-6.38	Ca	0	0	9.3	2.92	-	-	46	-43.08
23	2.61225	10.07	Qp	0	.1	9.3	19.47	56	-36.53	-	-
24	2.61225	-5.4	Ca	0	.1	9.3	4	-	-	46	-42

Qp - Quasi-Peak detector

Ca - CISPR average detection

9.1.2. OPERATING MODE WITH WATCH POWERED BY AC/DC ADAPTER

LINE 1 RESULTS



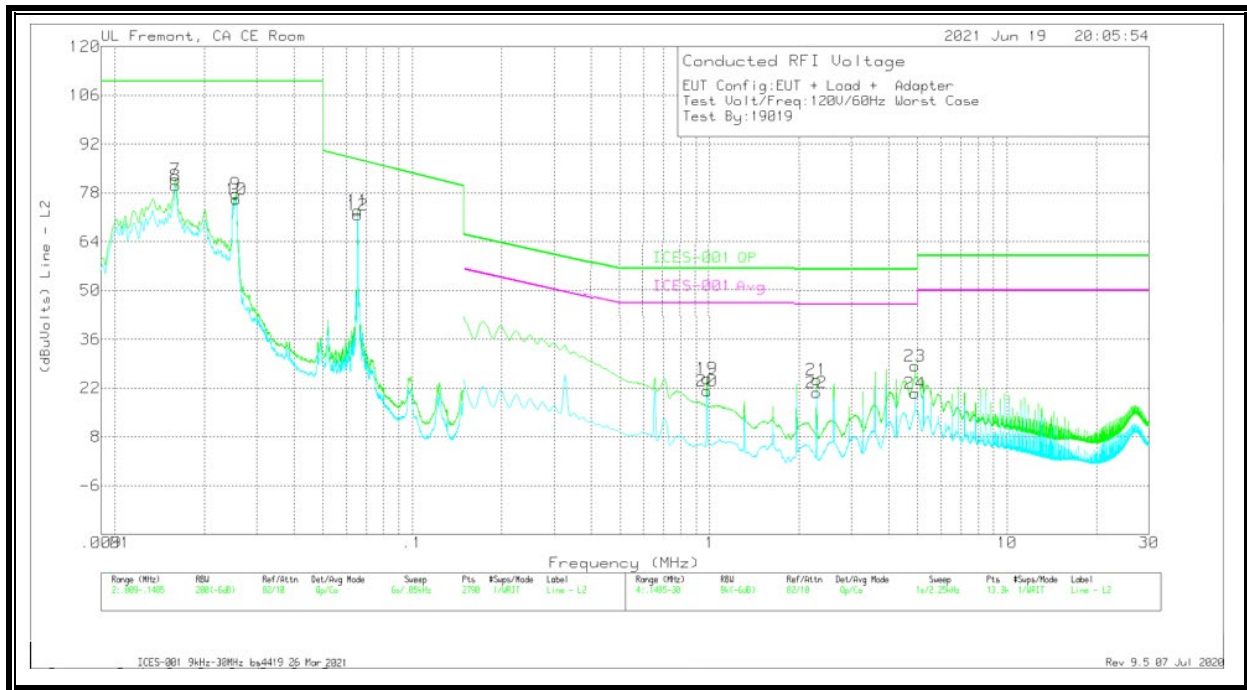
WORST EMISSIONS Range 1: Line - L1 .009 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 LISN09(IL L1) r	LC Cables C1&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading (dBuVolts)	ICES-001 Class QP	Margin (dB)	ICES-001 Class B Avg	Margin (dB)
1	.016	70.4	Qp	2.4	0	12.3	85.1	110	-24.9	-	-
2	.01595	68.69	Ca	2.4	0	12.3	83.39	-	-	-	-
3	.0255	68.41	Qp	1.1	0	12	81.51	110	-28.49	-	-
4	.02555	66.84	Ca	1.1	0	12	79.94	-	-	-	-
5	.0655	67.65	Qp	.2	0	10.8	78.65	87.52	-8.87	-	-
6	.06555	66.15	Ca	.2	0	10.8	77.15	-	-	-	-
13	.97875	13.55	Qp	0	.1	9.3	22.95	56	-33.05	-	-
14	.97875	7.58	Ca	0	.1	9.3	16.98	-	-	46	-29.02
15	2.286	11.81	Qp	0	.1	9.3	21.21	56	-34.79	-	-
16	2.286	7.24	Ca	0	.1	9.3	16.64	-	-	46	-29.36
17	4.89825	19.03	Qp	0	.1	9.3	28.43	56	-27.57	-	-
18	4.89825	10.98	Ca	0	.1	9.3	20.38	-	-	46	-25.62

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



WOST EMISSIONS

Range 2: Line - L2 .009 - 30Hz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 LISN10(IL L2) r	LC Cables C2&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading (dBuVolts)	ICES-001 Class QP	Margin (dB)	ICES-001 Class B Avg	Margin (dB)
7	.016	67.18	Qp	2.4	0	12.3	81.88	110	-28.12	-	-
8	.016	65.31	Ca	2.4	0	12.3	80.01	-	-	-	-
9	.0255	64.59	Qp	1.1	0	12	77.69	110	-32.31	-	-
10	.02555	63.02	Ca	1.1	0	12	76.12	-	-	-	-
11	.0655	62.02	Qp	.2	0	10.8	73.02	87.52	-14.5	-	-
12	.06555	60.63	Ca	.2	0	10.8	71.63	-	-	-	-
19	.97875	15.3	Qp	0	.1	9.3	24.7	56	-31.3	-	-
20	.97875	11.78	Ca	0	.1	9.3	21.18	-	-	46	-24.82
21	2.286	14.95	Qp	0	.1	9.3	24.35	56	-31.65	-	-
22	2.286	11.35	Ca	0	.1	9.3	20.75	-	-	46	-25.25
23	4.89825	18.88	Qp	0	.1	9.3	28.28	56	-27.72	-	-
24	4.89825	11.04	Ca	0	.1	9.3	20.44	-	-	46	-25.56

Qp - Quasi-Peak detector

Ca - CISPR average detection

10. SETUP PHOTO

Please refer to 13881229-EP1V1 for setup photos

END OF TEST REPORT