



CERTIFICATION TEST REPORT

Report Number. : 13571607-E14V2

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

Model : A2482 (Parent Model, Full Test)
A2635, A2631, A2633, A2634 (Variant Models)

FCC ID : BCG-E3997A (Parent Model)
BCG-E4032A, BCG-E3999A, BCG-E4031A (Variant Models)

IC : 579C-E3997A (Parent Model)
579C-E4032A, 579C-E3999A, 579C-E4031A (Variant Models)

EUT Description : Smartphone

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-216 ISSUE 2
ISED RSS-GEN ISSUE 5 + A1 + A2

Date of Issue:

July 16, 2021

Prepared by:

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	6/30/2021	Initial Issue	Frank Ibrahim
V2	7/16/2015	Address TCB's Question on section 5.2 and 5.3 changed Class B group2 to limit ICES-001	Chin Pang

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: Smartphone

MODEL: A2482 (Parent Model)
A2635, A2631, A2633, A2634 (Variant Models)

BRAND: APPLE

FCC ID: BCG-E3997A (PARENT MODEL)
BCG-E4032A, BCG-E3999A, BCG-E4031A (VARIANT MODELS)

IC ID: 579C-E3997A (PARENT MODEL)
579C-E4032A, 579C-E3999A, 579C-E4031A (VARIANT MODELS)

SERIAL NUMBER: G92VQTVTK6

SAMPLE RECEIPT DATE: May 26, 2021

DATE TESTED: MAY 27, 2021 – JUNE 09, 2021

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Complies
ISED RSS-216 Issue 2	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 A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:



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Staff Engineer
Consumer Technology Division
UL Verification Services Inc.

Prepared By:



Douglas Pavicich
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 type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538	US0104	2324B	208313

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	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 Apple iPhone is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G, CDMA, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS and NFC. All models support at least one UICC based SIM. The second SIM is either an UICC based p-SIM (physical SIM) or e-SIM (electronic SIM). The device supports a built-in inductive charging transmitter and receiver. The rechargeable battery is not user accessible.

Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

The Model and FCC/IC ID covered by this report includes:

Parent Model: A2482, FCC ID: BCG-E3997A, IC ID: 579C-E3997A

Variant Models: A2635; FCC ID: BCG-E4032A, IC ID: 579C-E4032A
 A2631; FCC ID: BCG-E3999A, IC ID: 579C-E3999A
 A2633; FCC ID: BCG-E4031A, IC ID: 579C-E4031A
 A2634; FCC ID: BCG-E4032A, IC ID: 579C-E4032A

5.2. MAXIMUM E-FIELD and H-FIELD

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)
		360	Standby Operating

5.3. WORST-CASE CONFIGURATION AND MODE

The EUT is a smartphone which connected to the AC/DC adapter via USB-C cable, and the inductive charging coil to charge WPT accessories (Load). For the entire radiated emissions test, the EUT was investigated on the following configuration during the test: 1. At its natural orientation with EUT set at center location on Load, 2. At its natural orientation with EUT including a case set at center location on load. The worst case was natural orientation with EUT including a case set at center location on load.

Mode	Descriptions
Standby	EUT with Case powered by AC/DC adapter
Operating	EUT with Case and Load powered by AC/DC adapter

For below 30MHz & 1GHz tests EUT was connected to AC power adapter as the worst case, For AC line conducted emission, test was investigated with AC power adapter.

The EUT was tested on standby and operation modes. During operational mode, EUT was tested with load.

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.

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT & PERIPHERALS

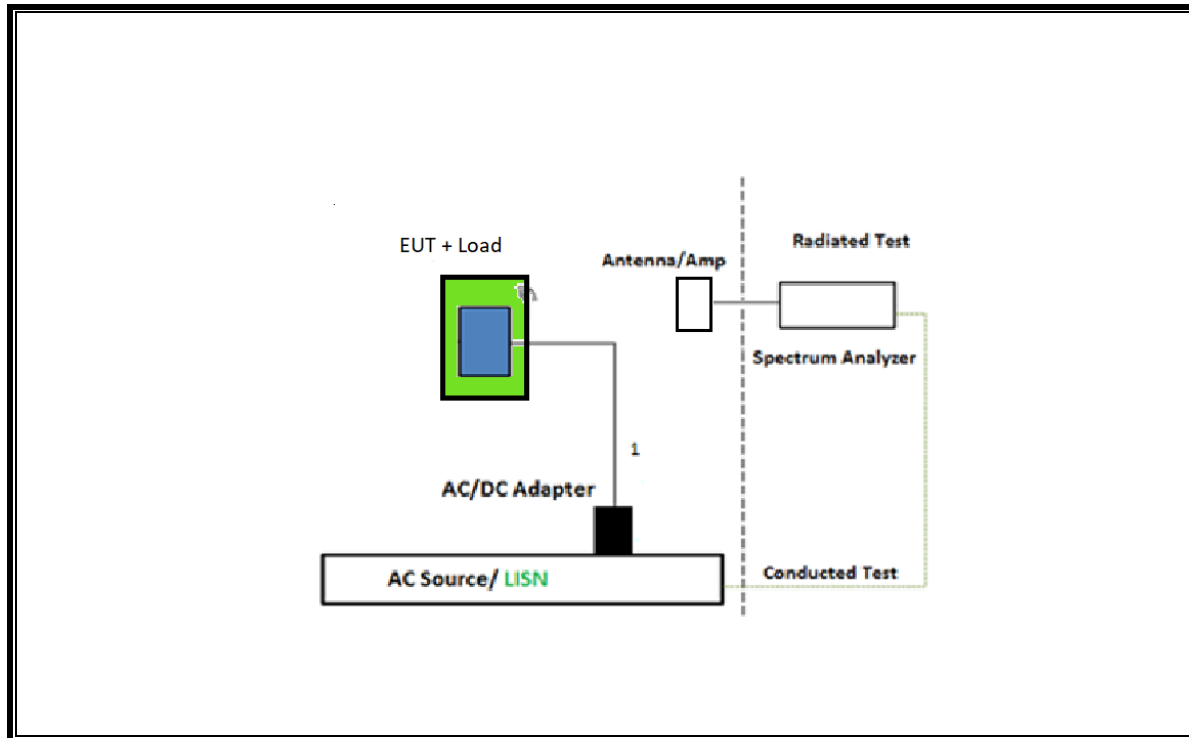
SUPPORT EQUIPMENT & PERIPHERALS LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC/DC adapter	Apple	A2305	C4H748200RXH80MAY	DoC
WPT Accessory (Load)	Apple	A2384	DNDF66EN0NLJ	BCGA2384
WPT Accessory	Apple	Silicon Case	C03241PE0MACDKZ0133	DoC

I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC	1	USBC	Un-shielded	1	5W Power Supply

TEST SETUP

OPERATING MODE PHONE WITH LOAD



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Antenna, Active Loop 9KHz to 30MHz	ETS-Lindgren	6502	T757	11/12/2021	11/12/2020
Antenna, Active Loop 9KHz to 30MHz	ETS-Lindgren	6502	T1616	12/02/2021	12/02/2020
Antenna, Broadband Hybrid, 30MHz to 2000MHz w/4dB	Sunol Sciences Crop.	JB1	T130	08/04/2021	08/04/2020
Amplifier, 9kHz to 1GHz, 32dB	Sonoma Instrument	310N	T834	07/14/2021	07/14/2020
Sniffer Probes	Electro Metrics	EM-6992	N/A	N/A	N/A
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A-544	T1210	01/26/2022	01/26/2021

AC Line Conducted					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	T1436	02/19/2022	02/19/2021
Power Cable, Line Conducted Emissions	UL	PR1	T861	10/27/2021	10/27/2020
LISN for Conducted Emissions	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01	PRE0186446	01/20/2022	01/20/2021
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC	Ver 9.5, April 14, 2021		
Conducted Software	UL	UL EMC	2021.4.21		

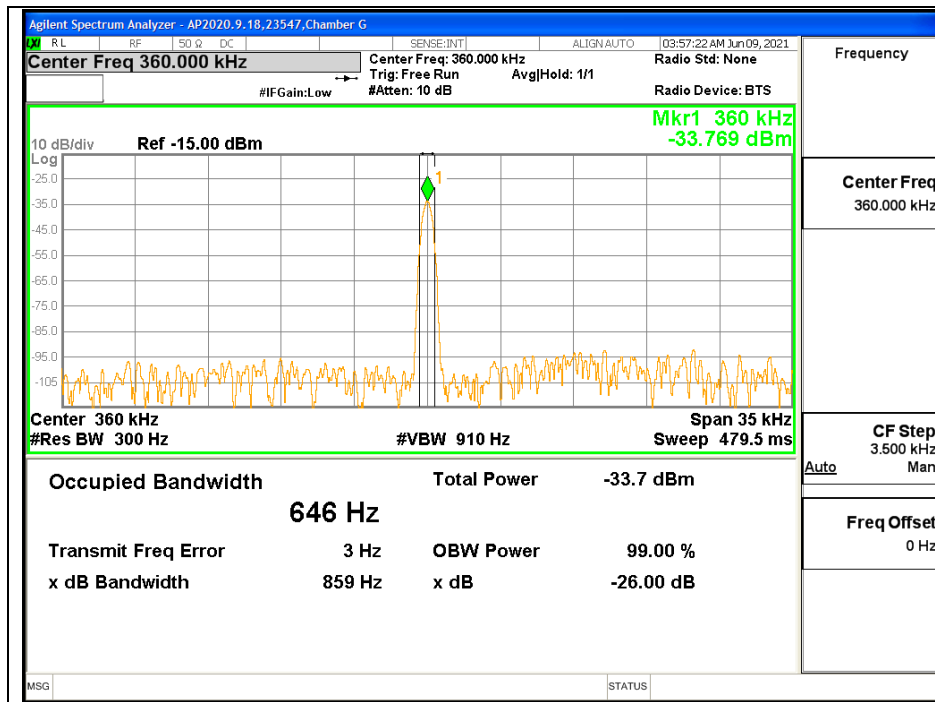
7. OCCUPIED BANDWIDTH

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.

RESULTS



8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.209 (a)

ICES-001 Section 3.3.4, 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 (dB μ A/m)
0.009 – 0.07	69
0.07 – 0.15	69 to 39 *
0.15 – 30	39 to 7 *

* The limit level in dB μ A/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 *		FAR *
	10 m measurement distance Quasi-peak (dB μ V/m)	3 m measurement distance Quasi-peak (dB μ V/m)	3 m measurement distance Quasi-peak (dB μ V/m)
30 – 230	30	40	42 to 35**
230 – 1000	37	47	42

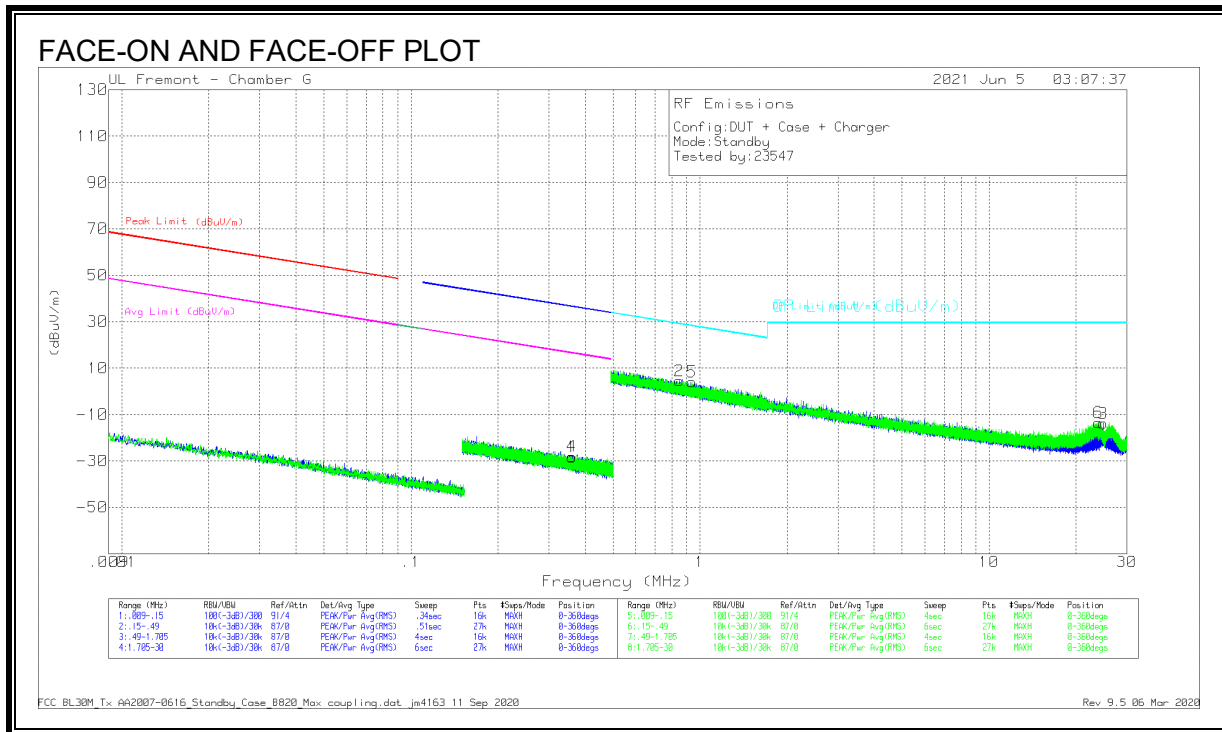
Note: The more stringent limit applies at the transition frequency.
 * OATS = open-area test site, SAC = semi-anechoic chamber, FAR = fully-anechoic room (see CSA CISPR 11:19).
 ** The limit level in dB μ V/m decreases linearly with the logarithm of frequency.

RESULTS

8.2. Standby

8.2.1. FCC TX FUNDAMENTAL & SPURIOUS EMISSIONS (9 kHz - 30 MHz)

Standby



DATA

Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
1	.35996	39.83	Pk	11.8	.1	-80	-28.27	36.48	-64.75	16.48	-44.75	0-360	Face On
4	.36039	40.09	Pk	11.8	.1	-80	-28.01	36.47	-64.48	16.47	-44.48	0-360	Face Off

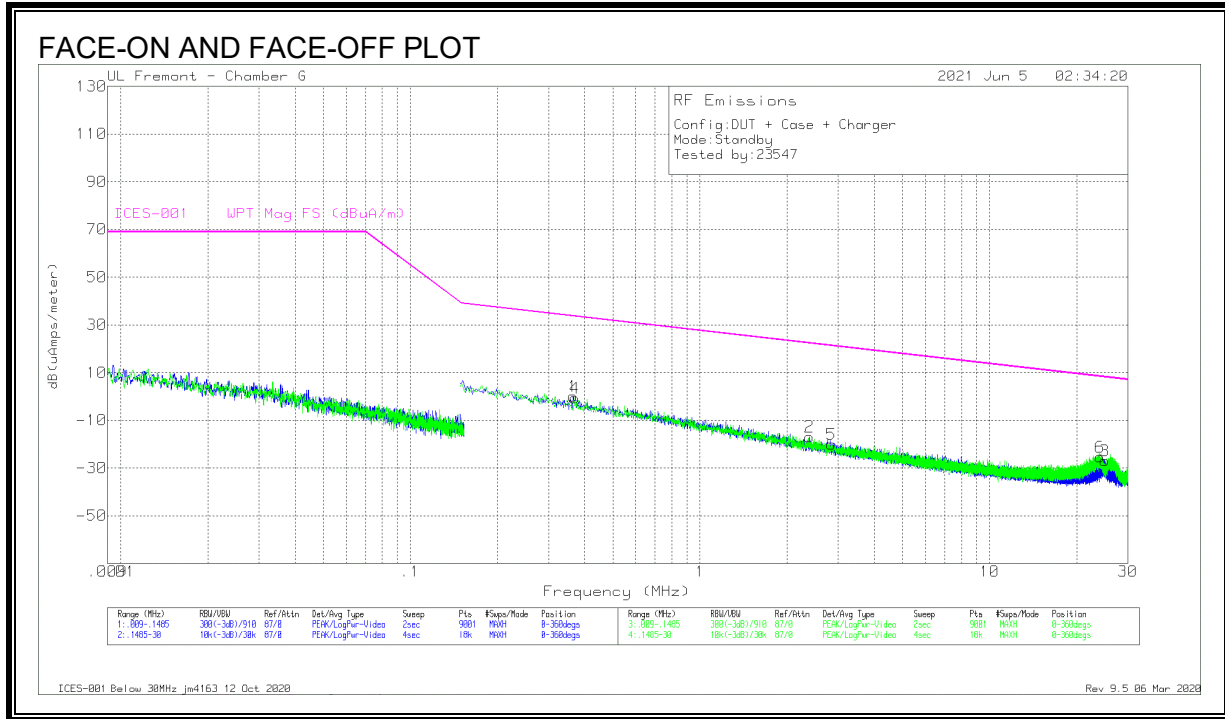
PK - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr 30m	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
2	.84705	32.85	Pk	11.6	.1	-40	4.55	29.06	-24.51	0-360	Face On
5	.93855	32.39	Pk	11.6	.1	-40	4.09	28.17	-24.08	0-360	Face Off
6	23.93203	16.79	Pk	9	.8	-40	-13.41	29.5	-42.91	0-360	Face Off
3	24.8417	16.64	Pk	8.8	.8	-40	-13.76	29.5	-43.26	0-360	Face On

PK - Peak detector

8.2.2. IC/ ICES-001 TX FUNDAMENTAL & SPURIOUS EMISSIONS (9 kHz - 30 MHz)

Standby



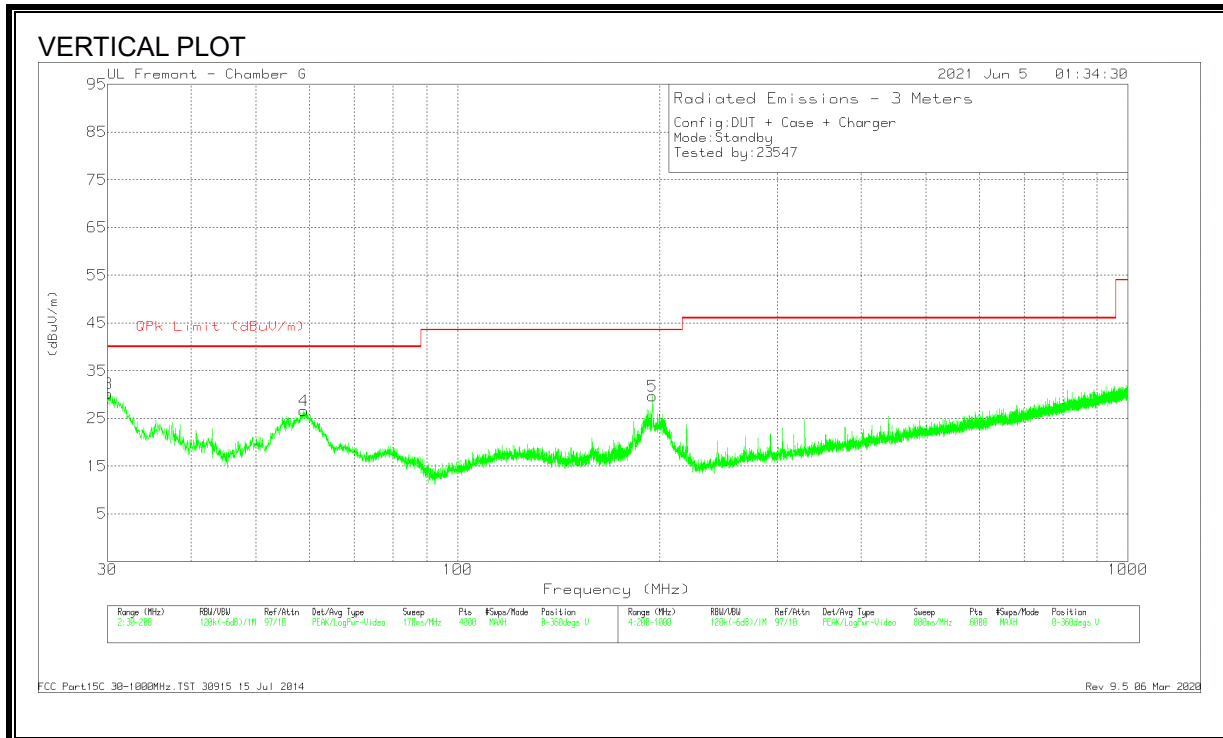
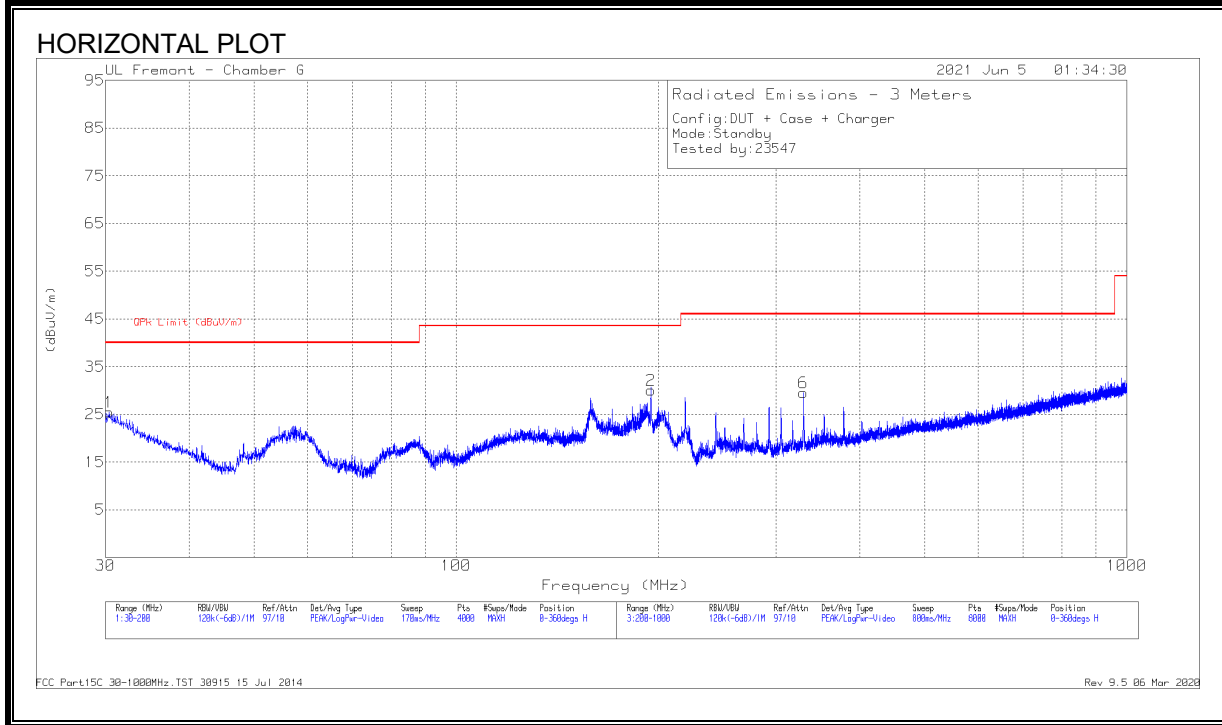
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Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Corrected Reading dB(uAmps/meter)	ICES-001 G2 WPT Mag FS (dBuA/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
1	.3592	34.54	Qp	-40.2	.1	-5.56	34.39	-39.95	138	Face On
4	.3597	34.08	Qp	-40.2	.1	-6.02	34.07	-40.09	171	Face Off
2	2.39457	16.2	Qp	-40.1	.2	-23.7	22.27	-45.97	160	Face On
5	2.85644	14.48	Qp	-40.1	.2	-25.42	21.2	-46.62	8	Face Off
6	24.0765	11.03	Qp	-41.9	.8	-30.07	8.33	-38.4	33	Face Off
3	24.9512	9.96	Qp	-42.1	.8	-31.34	8.11	-39.45	325	Face On

Qp - Quasi-Peak detector

8.2.3. FCC TX SPURIOUS EMISSION (30 - 1000 MHz)

Standby



DATA**Radiated Emissions**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AFT130 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 329.5538	35.27	Qp	20.5	-28.9	26.87	46.02	-19.15	73	100	H
3	30.1546	28.65	Qp	27.8	-31.3	25.15	40	-14.85	96	116	V
1	31.614	23.81	Qp	26.7	-31.3	19.21	40	-20.79	356	159	H
4	59.013	40.51	Qp	13.4	-31	22.91	40	-17.09	1	103	V
2	195.2023	42.01	Qp	18.4	-29.8	30.61	43.52	-12.91	325	155	H
	195.2935	47.58	Pk	18.5	-29.8	36.28	43.52	-7.24	325	155	H
5	195.2307	38.31	Qp	18.4	-29.8	26.91	43.52	-16.61	205	120	V

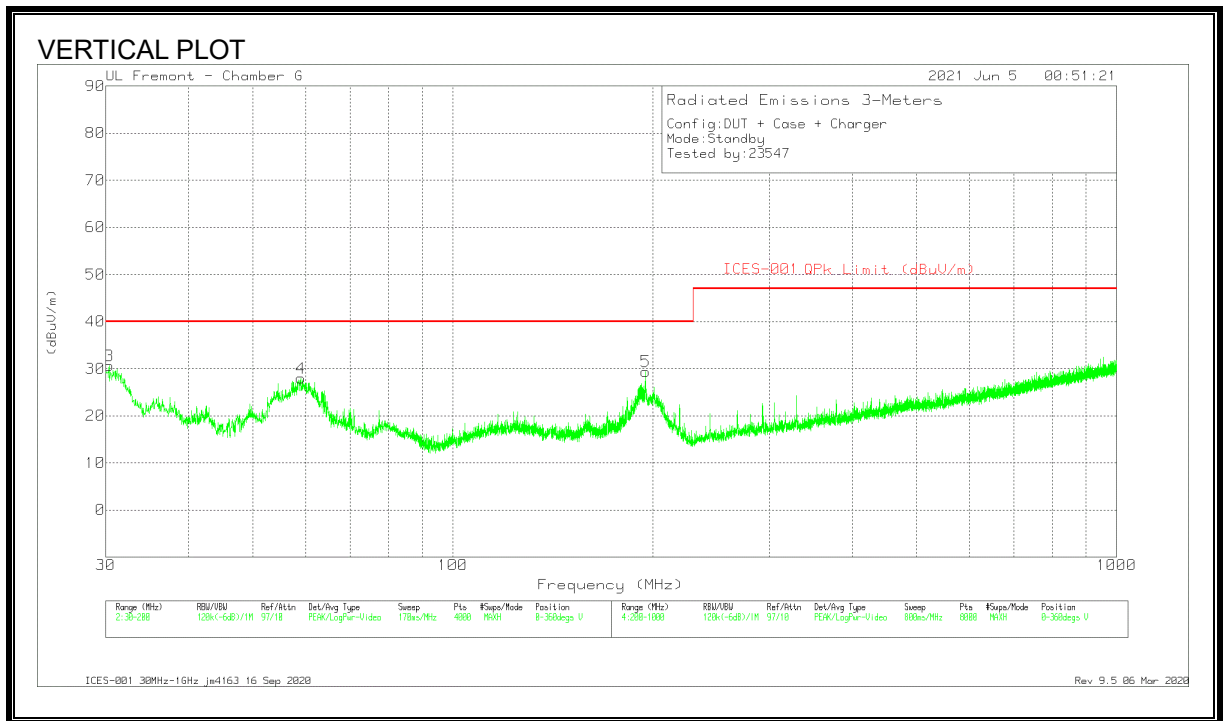
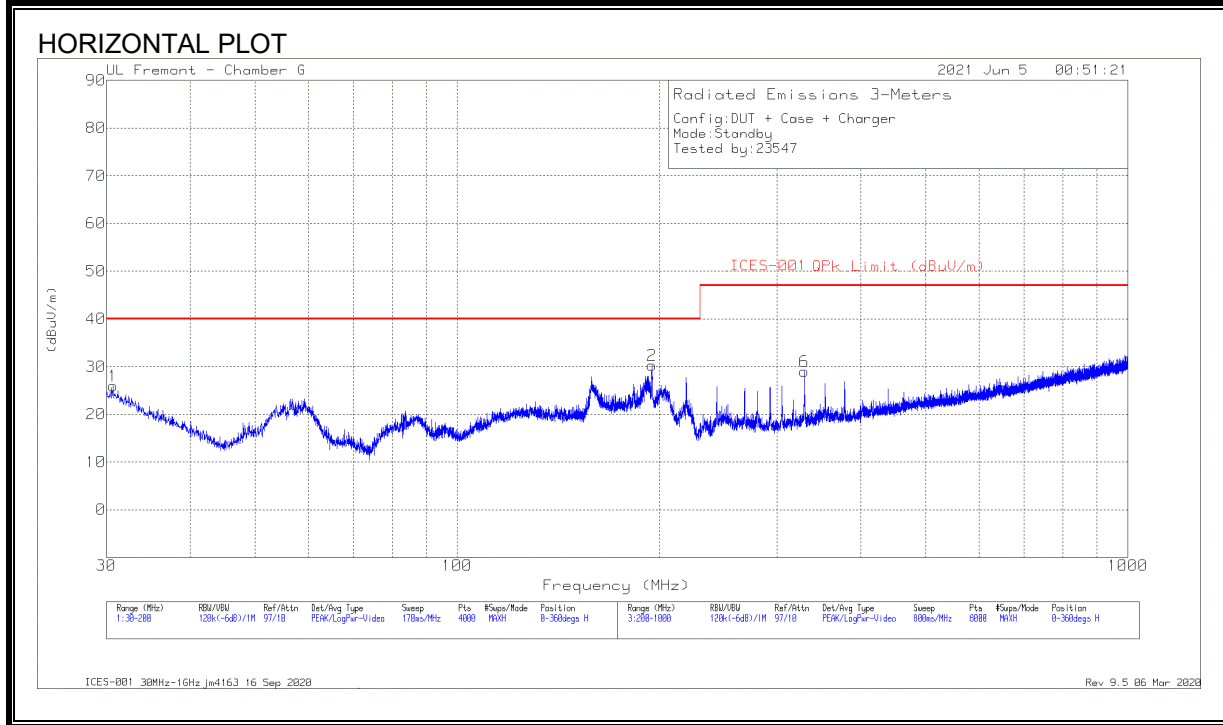
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

Qp - Quasi-Peak detector

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

Standby



DATA**Radiated Emissions**

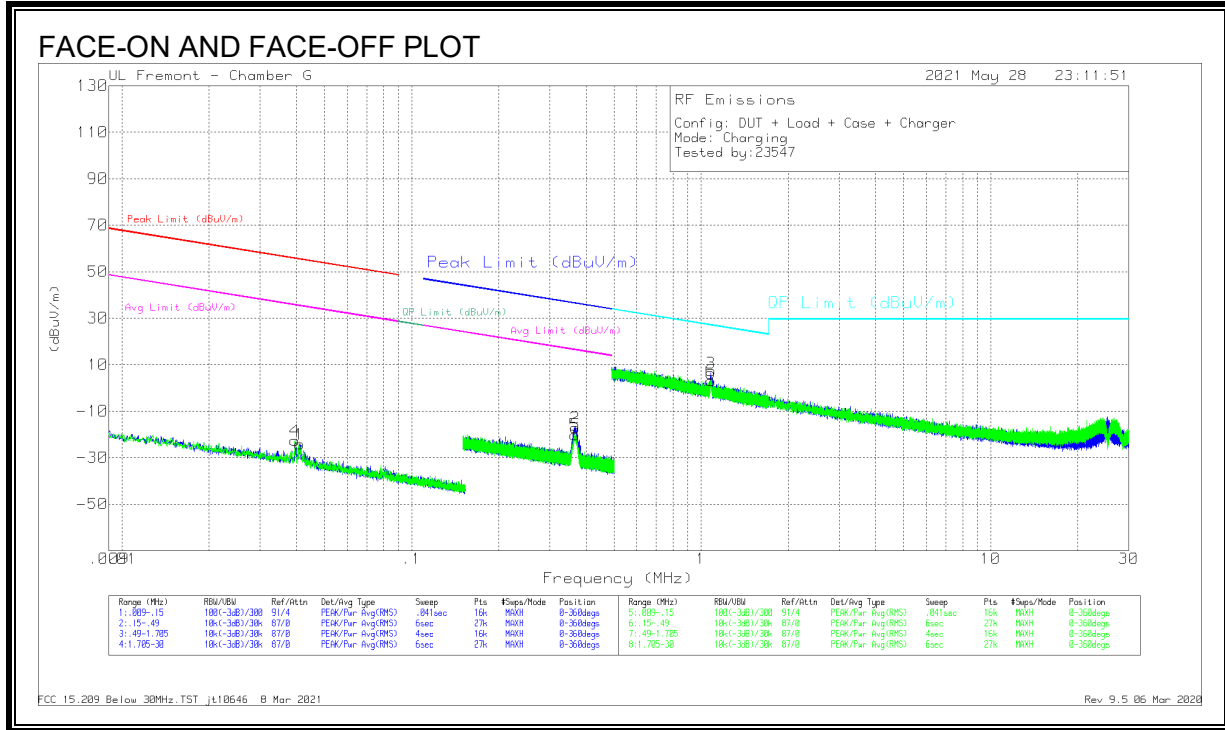
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AFT130 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	ICES-001 QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.657	24.75	Qp	27.4	-31.3	20.85	40	-19.15	310	320	H
3	31.209	29.27	Qp	27	-31.3	24.97	40	-15.03	304	118	V
4	59.0015	39.45	Qp	13.4	-31	21.85	40	-18.15	78	103	V
5	195.0412	37.15	Qp	18.4	-29.8	25.75	40	-14.25	68	105	V
2	195.2272	41.44	Qp	18.4	-29.8	30.04	40	-9.96	327	132	H
6	329.4148	34.63	Qp	20.5	-28.9	26.23	47	-20.77	289	115	H

Qp - Quasi-Peak detector

8.3.EUT With Load

8.3.1. FCC TX FUNDAMENTAL & SPURIOUS EMISSIONS (9 kHz - 30 MHz)

OPERATING WITH LOAD



DATA

Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
4	.02539	31.89	Av	14.5	.1	-80	-33.51	-	-	39.49	-73	190	Face Off
	.02599	41.92	Pk	14.5	.1	-80	-23.48	59.29	-82.77	-	-	190	
1	.03889	40.1	Av	13.4	.1	-80	-26.4	-	-	35.79	-62.19	36	Face On
	.03892	46.22	Pk	13.4	.1	-80	-20.28	55.78	-76.06	-	-	36	
2	.35996	51.73	Pk	10.9	.1	-80	-17.27	36.48	-53.75	-	-	218	Face On
	.36022	49.74	Av	10.9	.1	-80	-19.26	-	-	16.48	-35.74	218	
5	.36019	48.6	Pk	10.9	.1	-80	-20.4	36.48	-56.88	-	-	334	Face Off
	.3601	45.8	Av	10.9	.1	-80	-23.2	-	-	16.48	-39.68	334	

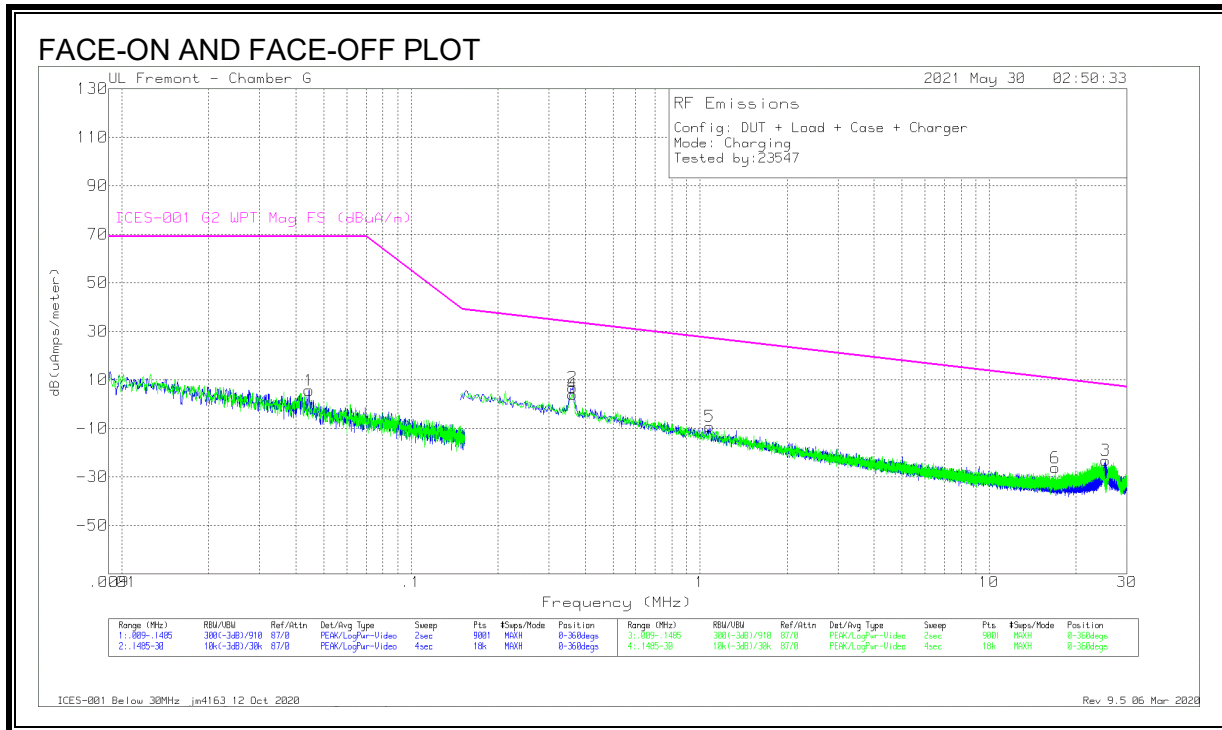
Pk - Peak detector
Av - Average detection

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 30m	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
6	1.07945	29.58	Qp	10.8	.2	-40	.58	26.96	-26.38	344	Face Off
3	1.07981	32.43	Qp	10.8	.2	-40	3.43	26.96	-23.53	256	Face On

Qp - Quasi-Peak detector

8.3.2. IC/ ICES-001 TX FUNDAMENTAL & SPURIOUS EMISSIONS (9 kHz - 30 MHz)

OPERATING WITH LOAD



DATA

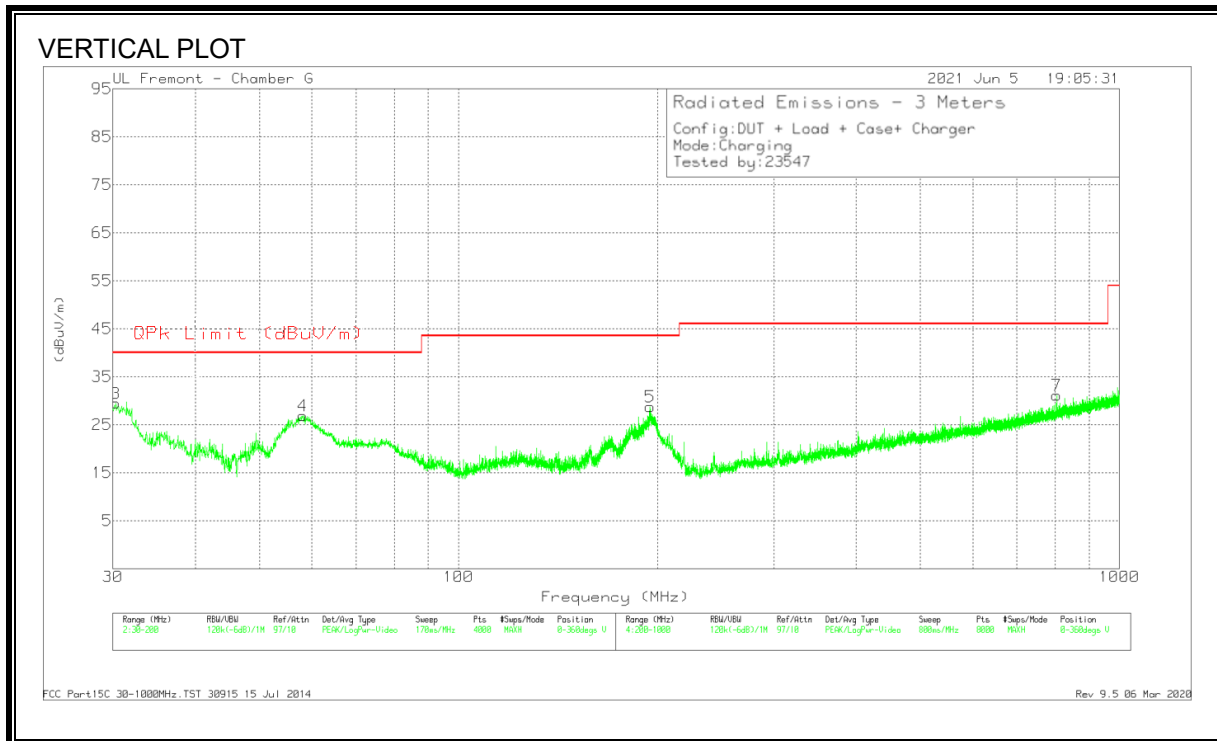
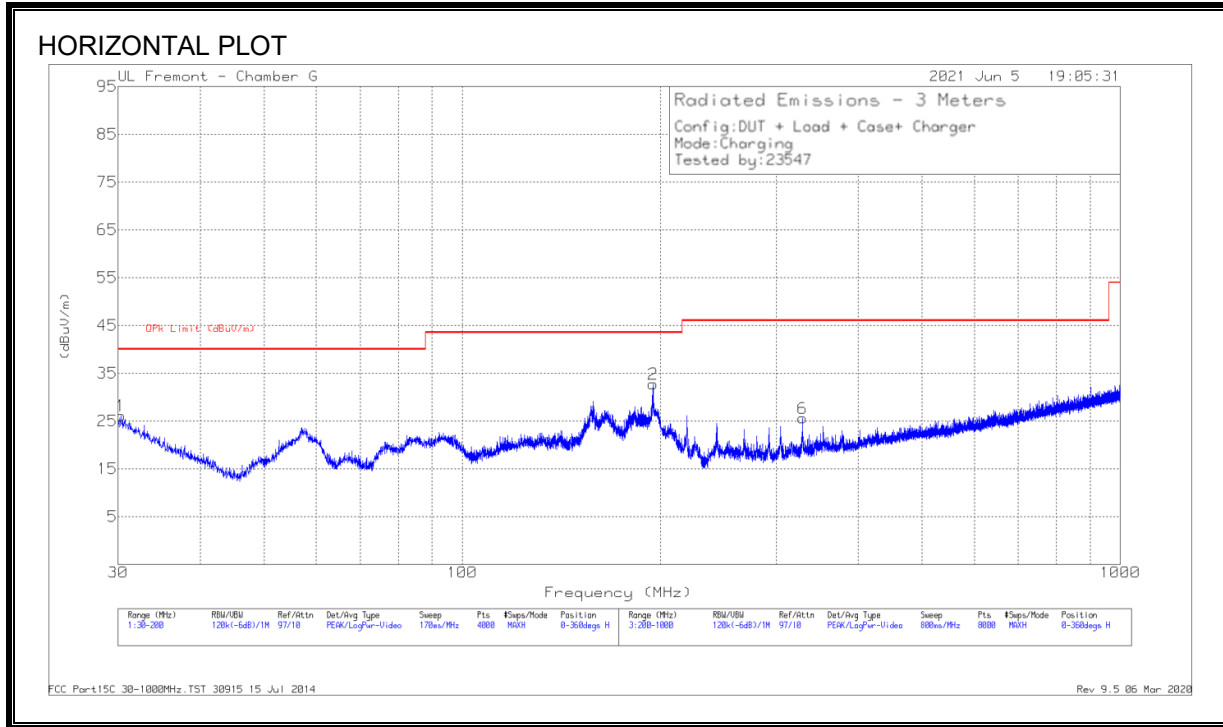
Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Corrected Reading dB(uAmps/meter)	ICES-001 G2 WPT Mag FS (dBuA/m)	Margin (dB)	Azimuth (Degs)	Antenna Orientation
1	.03909	41.65	Qp	-38	.1	3.75	69	-65.25	32	Face On
4	.36038	42.94	Qp	-40.6	.1	2.44	33.71	-31.27	8	Face Off
2	.36077	46.7	Qp	-40.6	.1	6.2	33.7	-27.5	301	Face On
5	1.08178	27.02	Qp	-40.2	.2	-12.98	27.07	-40.05	22	Face Off
6	16.9612	4.93	Qp	-41.1	.6	-35.57	10.44	-46.01	340	Face Off
3	25.3708	12.68	Qp	-42.3	.8	-28.82	8.01	-36.83	316	Face On

Qp - Quasi-Peak detector

8.3.3. FCC TX SPURIOUS EMISSION (30 - 1000 MHz)

OPERATING WITH LOAD



DATA**Radiated Emissions**

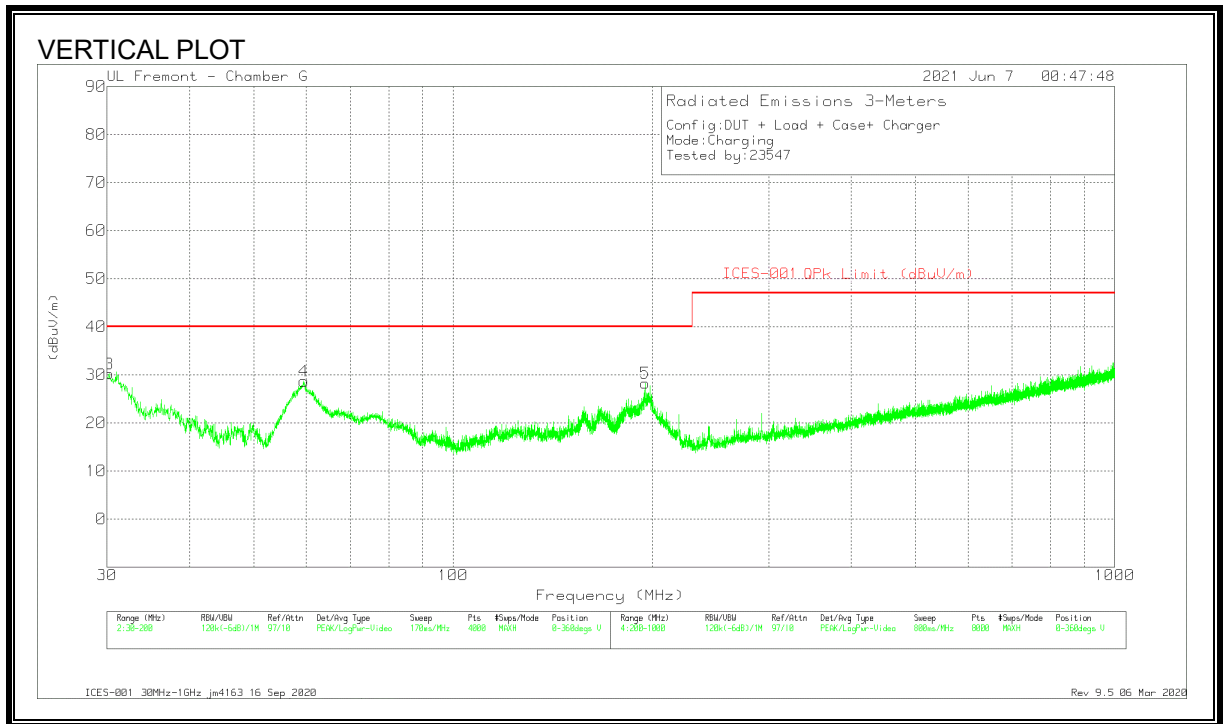
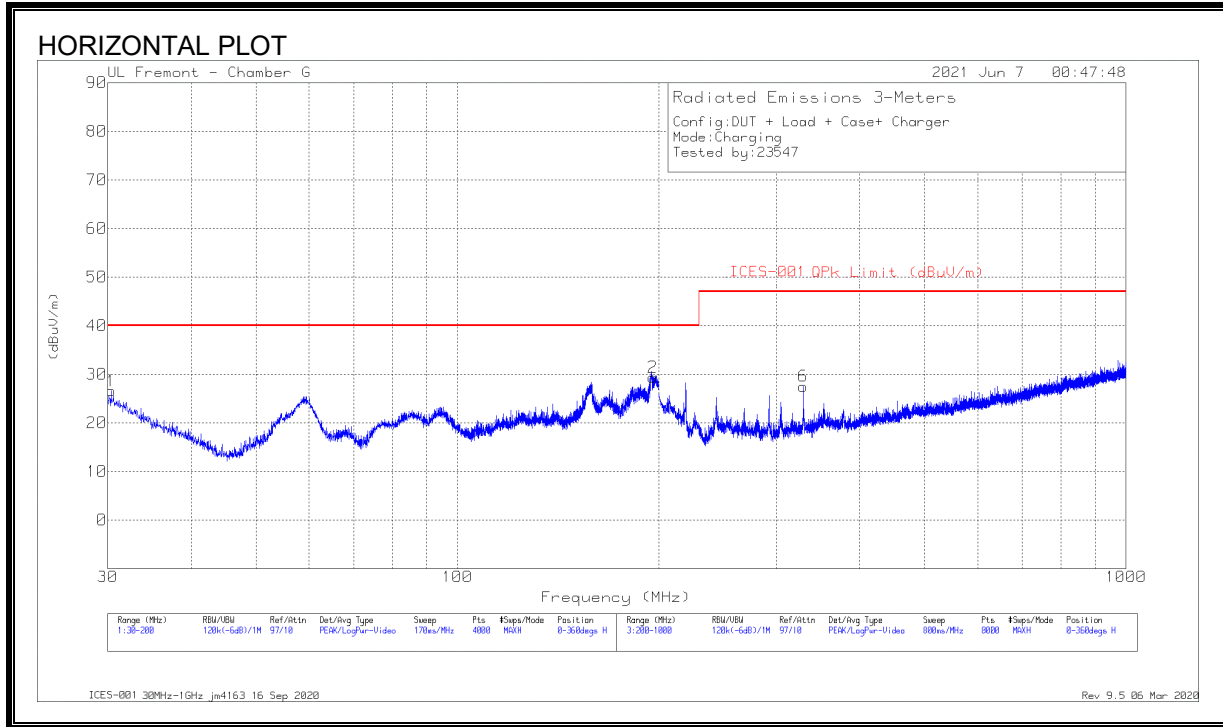
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AFT130 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 329.2468	32.33	Qp	20.5	-28.9	23.93	46.02	-22.09	87	102	H
1	30.5567	24.91	Qp	27.5	-31.3	21.11	40	-18.89	293	326	H
3	31.4165	29.03	Qp	26.8	-31.3	24.53	40	-15.47	223	106	V
4	59.0438	41.39	Qp	13.4	-31	23.79	40	-16.21	9	116	V
5	195.0187	36.76	Qp	18.4	-29.8	25.36	43.52	-18.16	133	100	V
2	195.0932	40.27	Qp	18.4	-29.8	28.87	43.52	-14.65	324	112	H
7	804.2295	22.56	Qp	27.9	-27.1	23.36	46.02	-22.66	201	350	V

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

Qp - Quasi-Peak detector

8.3.4. IC/ ICES-001 TX SPURIOUS EMISSION (30 - 1000 MHz)

OPERATING WITH LOAD



DATA**Radiated Emissions**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AFT130 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	ClassB Grp2 QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	30.2095	30.1	Qp	27.7	-31.3	26.5	40	-13.5	163	105	V
1	30.5387	25.09	Qp	27.5	-31.3	21.29	40	-18.71	307	260	H
4	59.6831	41.26	Qp	13.5	-31	23.76	40	-16.24	351	228	V
4	195.0272	36.37	Qp	18.4	-29.8	24.97	40	-15.03	246	100	V
2	195.1376	47.31	Pk	18.4	-29.8	35.91	40	-4.09	322	169	H
	195.218	40.85	Qp	18.4	-29.8	29.45	40	-10.55	322	169	H
6	329.2988	32.94	Qp	20.5	-28.9	24.54	47	-22.46	90	100	H

Pk - Peak detector

Qp - Quasi-Peak detector

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	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 (dB μ V)	Appliances rated 100 V, without an earth connection Average (dB μ V)	All other appliances Quasi-peak (dB μ V)	All other appliances Average (dB μ V)
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 dB μ V 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.

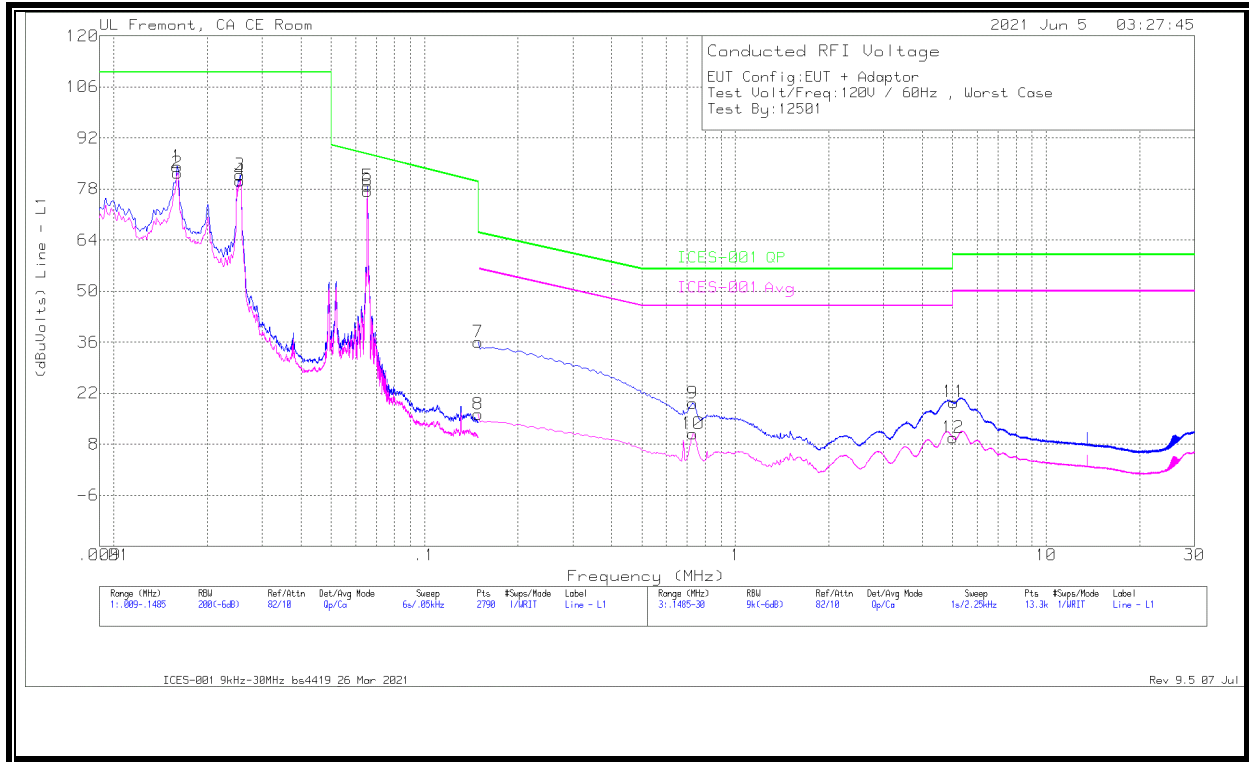
RESULTS

Note: The limits on the plots from 150kHz – 30MHz cover both ICES-001 and FCC Part 15.207.

9.1. Standby

9.1.1. STANDBY MODE POWERED BY AC/DC ADAPTER

LINE 1 RESULTS



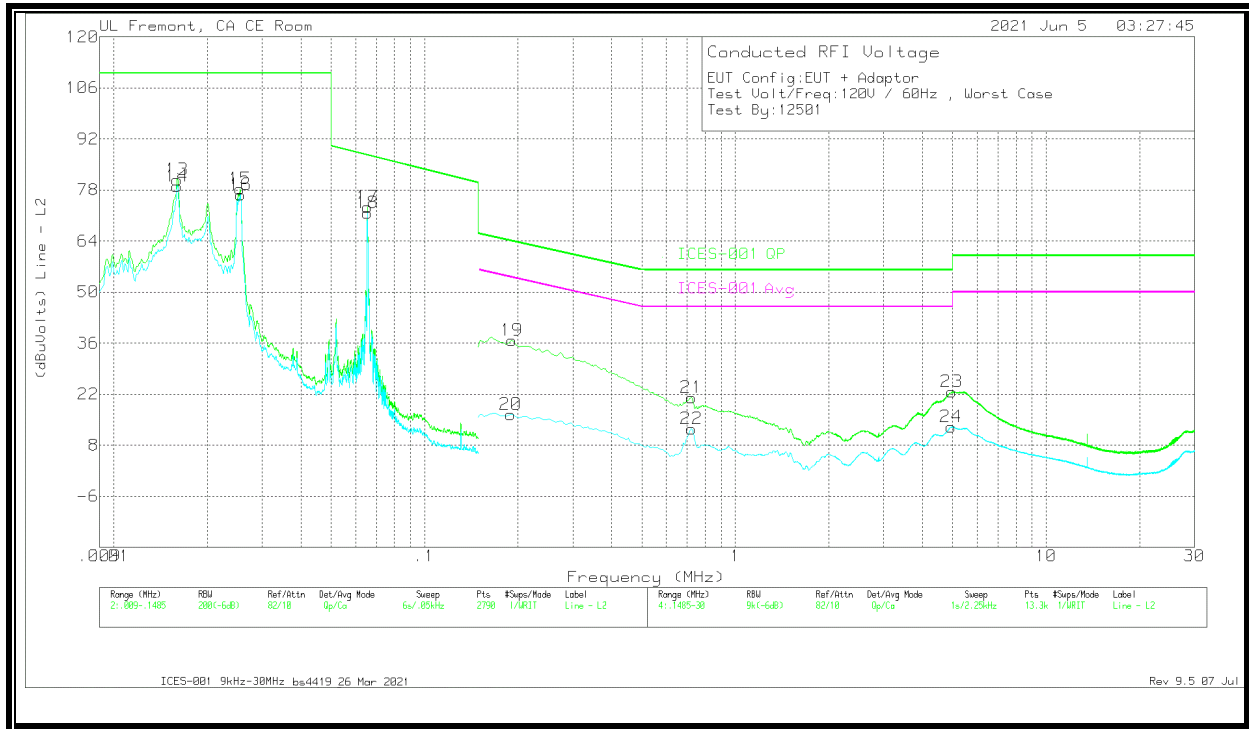
WORST EMISSIONS

Range 1: Line - L1 .009 - .1485MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186 446 LISN09(IL L1)_r	LC Cables C1&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading (dBuVolts)	ICES-001 QP	Margin (dB)	ICES-001 Avg	Margin (dB)	
1	.016	69.47	Qp	2.4	0	12.3	84.17	110	-25.83	-	-	
2	.01605	67.8	Ca	2.3	0	12.3	82.4	-	-	-	-	
3	.0255	68.83	Qp	1.1	0	12	81.93	110	-28.07	-	-	
4	.02553	67.23	Ca	1.1	0	12	80.33	-	-	-	-	
5	.0655	67.91	Qp	.2	0	10.8	78.91	87.52	-8.61	-	-	
6	.06555	66.5	Ca	.2	0	10.8	77.5	-	-	-	-	

Range 3: Line - L1 .1485 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186 446 LISN09(IL L1)_r	LC Cables C1&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading (dBuVolts)	ICES-001 QP	Margin (dB)	ICES-001 Avg	Margin (dB)	
7	.1485	26.55	Qp	.1	0	9.4	36.05	66	-29.95	-	-	
8	.1485	6.76	Ca	.1	0	9.4	16.26	-	-	-	-	
9	.729	10.02	Qp	0	0	9.3	19.32	56	-36.68	-	-	
10	.73125	1.57	Ca	0	0	9.3	10.87	-	-	46	-35.13	
11	5.0445	10.12	Qp	0	.1	9.3	19.52	60	-40.48	-	-	
12	5.01975	.34	Ca	0	.1	9.3	9.74	-	-	50	-40.26	

Qp - Quasi-Peak detector
 Ca - Average detection

Line 2 Results



WORST EMISSIONS

Range 2: Line - L2 .009 - .1485MHz											
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 QP	Margin (dB)	ICES-001 Avg	Margin (dB)
13	.016	66.1	Qp	2.4	0	12.3	80.8	110	-29.2	-	-
14	.016	64.29	Ca	2.4	0	12.3	78.99	-	-	-	-
15	.0255	65.17	Qp	1.1	0	12	78.27	110	-31.73	-	-
16	.02555	63.56	Ca	1.1	0	12	76.66	-	-	-	-
17	.0655	62.32	Qp	.2	0	10.8	73.32	87.52	-14.2	-	-
18	.0655	60.68	Ca	.2	0	10.8	71.68	-	-	-	-

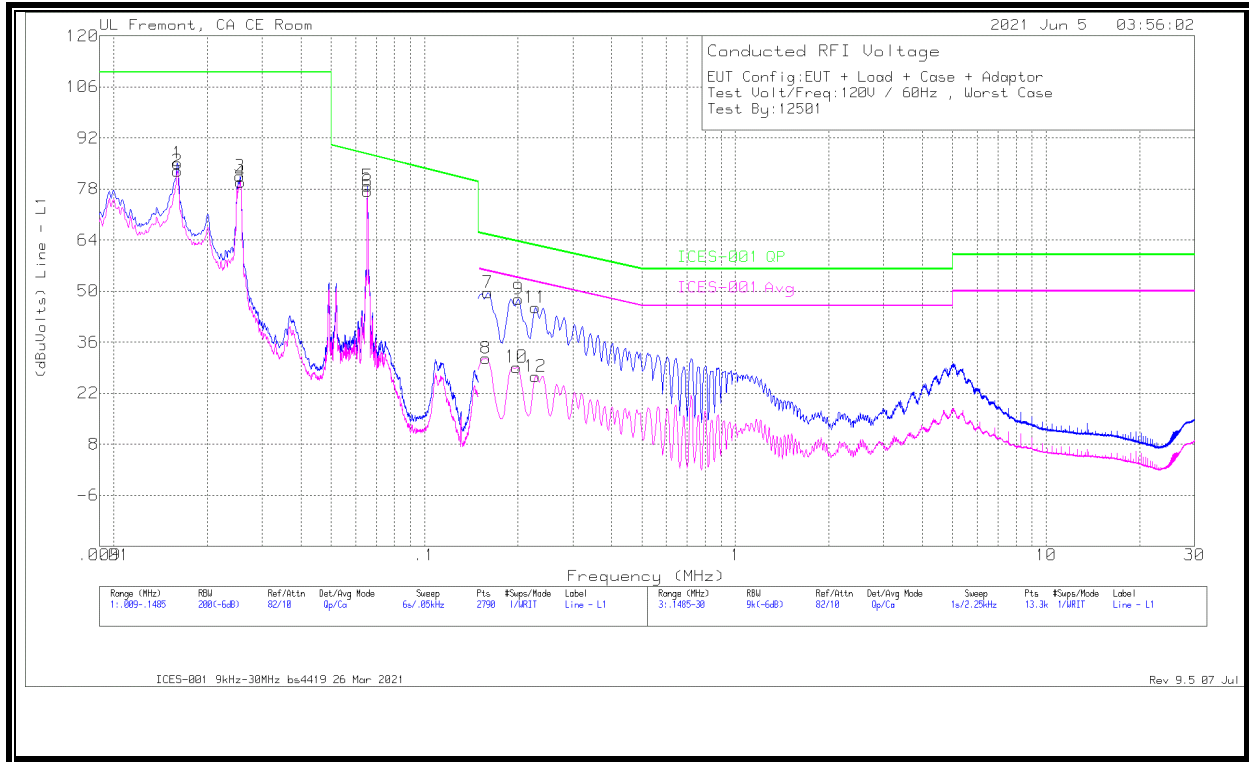
Range 4: Line - L2 .1485 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 LISN10(IL L2) r	LC Cables C2&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading (dBuVolts)	ICES-001 QP	Margin (dB)	ICES-001 Avg	Margin (dB)
19	.19125	27.45	Qp	0	0	9.3	36.75	63.92	-27.17	-	-
20	.189	7.06	Ca	0	0	9.4	16.46	-	-	54.08	-37.62
21	.72113	11.68	Qp	0	0	9.3	20.98	56	-35.02	-	-
22	.72225	3.14	Ca	0	0	9.3	12.44	-	-	46	-33.56
23	4.96575	13.22	Qp	0	.1	9.3	22.62	56	-33.38	-	-
24	4.94438	3.58	Ca	0	.1	9.3	12.98	-	-	46	-33.02

Qp - Quasi-Peak detector
 Ca - Average detection

9.2. EUT With Load

9.2.1. OPERATING MODE WITH LOAD POWERED BY AC/DC ADAPTER

LINE 1 RESULTS

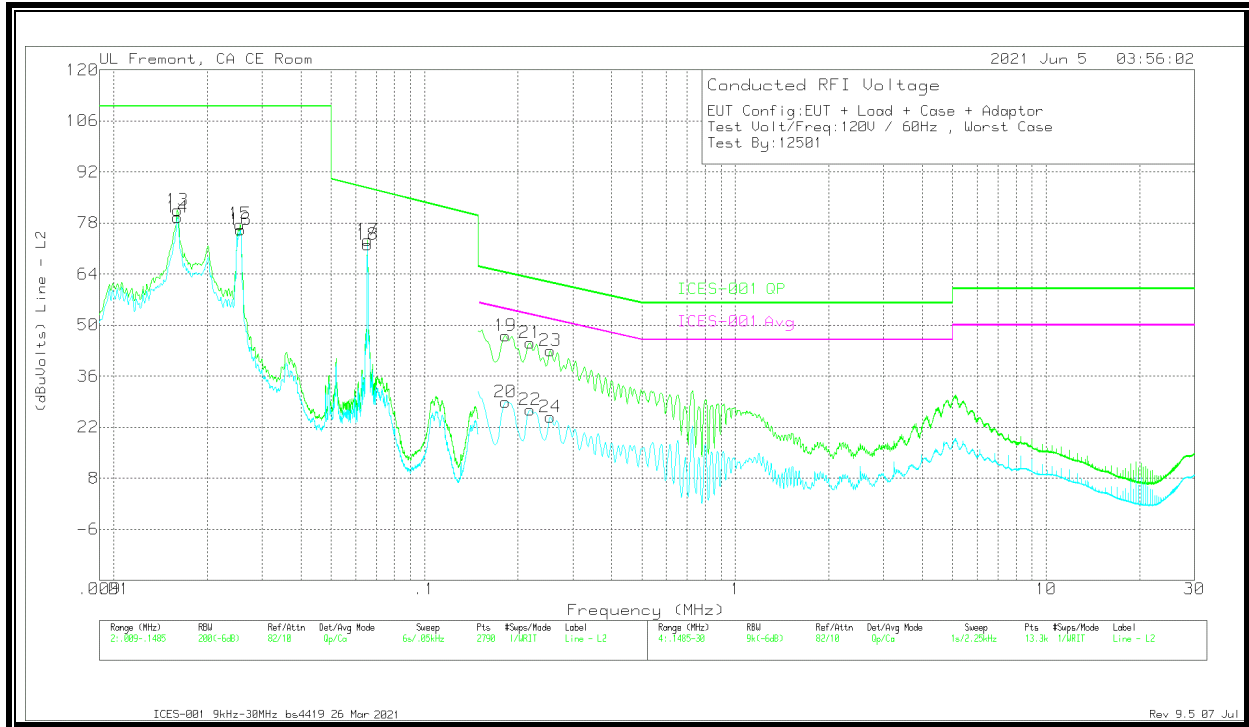


WORST EMISSIONS

Range 1: Line - L1 .1485MHz											
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 QP	Margin (dB)	ICES-001 Avg	Margin (dB)
1	.01605	70.52	Qp	2.3	0	12.3	85.12	110	-24.88	-	-
2	.01605	68.32	Ca	2.3	0	12.3	82.92	-	-	-	-
3	.0255	68.37	Qp	1.1	0	12	81.47	110	-28.53	-	-
4	.02555	66.85	Ca	1.1	0	12	79.95	-	-	-	-
5	.0655	67.9	Qp	.2	0	10.8	78.9	87.52	-8.62	-	-
6	.06555	66.48	Ca	.2	0	10.8	77.48	-	-	-	-
Range 3: Line - L1 .1485 - 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 QP	Margin (dB)	ICES-001 Avg	Margin (dB)
7	.15975	40.03	Qp	.1	0	9.4	49.53	65.4	-15.87	-	-
8	.1575	22.09	Ca	.1	0	9.4	31.59	-	-	55.59	-24
9	.20025	38.43	Qp	0	0	9.3	47.73	63.54	-15.81	-	-
10	.198	19.85	Ca	0	0	9.3	29.15	-	-	53.69	-24.54
11	.22725	36.22	Qp	0	0	9.3	45.52	62.5	-16.98	-	-
12	.22725	17.31	Ca	0	0	9.3	26.61	-	-	52.55	-25.94

Qp - Quasi-Peak detector
 Ca - Average detection

LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line - L2 .009 - .1485MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 LISN10(IL L2)_r	LC Cables C2&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading (dBuVolts)	ICES-001 QP	Margin (dB)	ICES-001 Avg	Margin (dB)
13	.01605	66.89	Qp	2.3	0	12.3	81.49	110	-28.51	-	-
14	.01605	65.03	Ca	2.3	0	12.3	79.63	-	-	-	-
15	.0255	64.58	Qp	1.1	0	12	77.68	110	-32.32	-	-
16	.02555	63.11	Ca	1.1	0	12	76.21	-	-	-	-
17	.0655	62.26	Qp	.2	0	10.8	73.26	87.52	-14.26	-	-
18	.06555	61.03	Ca	.2	0	10.8	72.03	-	-	-	-

Range 4: Line - L2 .1485 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 LISN10(IL L2)_r	LC Cables C2&C3 dB	TekBox Limiter TBFL1 Model 207	Corrected Reading (dBuVolts)	ICES-001 QP	Margin (dB)	ICES-001 Avg	Margin (dB)
19	.18225	37.68	Qp	0	0	9.4	47.08	64.31	-17.23	-	-
20	.18225	19.53	Ca	0	0	9.4	28.93	-	-	54.38	-25.45
21	.21825	35.88	Qp	0	0	9.3	45.18	62.83	-17.65	-	-
22	.21825	17.47	Ca	0	0	9.3	26.77	-	-	52.89	-26.12
23	.25425	33.72	Qp	0	0	9.3	43.02	61.57	-18.55	-	-
24	.25425	15.47	Ca	0	0	9.3	24.77	-	-	51.62	-26.85

Qp - Quasi-Peak detector
 Ca - Average detection

10. SETUP PHOTOS

Please refer to 13571607-EP1V1 for setup photos

END OF TEST REPORT