

TEST REPORT

Report Number. : 14709275-E1V2

Applicant : BELKIN INTERNATIONAL, INC.
555 S. AVIATION BLVD., SUITE 180
EL SEGUNDO, CA 90245, USA

Model : WIZ019

FCC ID : K7SWIZ019

EUT Description : BoostCharge™ Pro 2-in-1 Wireless Charging Pad with
MagSafe

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
2023-04-28

Prepared by:
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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2023-04-20	Initial Issue	---
V2	2023-04-28	Corrected Section 5.3 software version	Tina Chu

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: BELKIN INTERNATIONAL, INC.
555 S. AVIATION BLVD., SUITE 180
EL SEGUNDO, CA 90245, USA

EUT DESCRIPTION: BoostCharge™ Pro 2-in-1 Wireless Charging Pad with MagSafe

MODEL NUMBER: WIZ019

BRAND: belkin

SERIAL NUMBER: PPPVMM3D00245(#2)

SAMPLE RECEIPT DATE: 2023-03-15

DATE TESTED: 2023-03-27 TO 2023-03-31

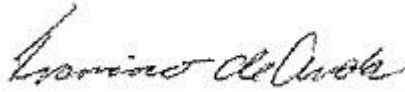
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Complies

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
UL Verification Services Inc. By:



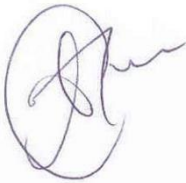
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2. TEST METHODOLOGY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

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

ANSI C63.10-2013

FCC CFR 47 Part 2

FCC CFR 47 Part 15

KDB 414788 D01 Radiated Test Site v01r01

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
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA			

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}
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	2.75%
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 (E-field)	2.84 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz (H-field)	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Time Domain Measurements	3.39%
Temperature	0.57°C
Humidity	3.39%

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a 2-in-1 MagSafe wireless charging pad with two separate induction coils that are able to charge two client devices at the same time.

The first coil is used for charging a MagSafe iPhone at 360kHz (15W max), a legacy iPhone at 127.7kHz (7.5W max), and an AirPods case at 127.7kHz (1W max). The second coil is used to charge a legacy iPhone/AirPods Pro case at 111kHz to 148kHz (5W max). The EUT is powered through a USB-C to USB-Cable that is connected to a USB-C AC/DC adapter.

The EUT is sold with a 25W single port USB PD Type-C Power Supply.

5.2. MAXIMUM E-FIELD STRENGTH

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

Fundamental Frequency (kHz)	E field (300m distance) FCC (dBuV/m)
360 (MagSafe phone 15W)	-22.79
127.7 (Legacy iPhone 7.5W)	-20.84
127.7 (AirPods Pro Case 1W)	-8.76
111 to 148 (Legacy iPhone 5W)	-2.81
111 to 148 (AirPods Pro Case 1W)	-3.12

5.3. SOFTWARE AND FIRMWARE

The firmware version installed in the EUT during testing was:
360kHz/127.7kHz: V2.67 and 111kHz to 148kHz: V0.3

5.4. WORST-CASE CONFIGURATION

Testing for MagSafe phone is based on direct contact with no shifts in position due to the embedded magnet in the charger pads.

Legacy phone does not have an embedded magnet, is placed at the maximum power position during the testing.

Even though New AirPods Pro Case has embedded magnet, it is not strong enough to be attached to the charging pad, it is placed at the maximum power position during the testing.

For the entire radiated emissions test, the EUT was tested in desktop mode in the following configurations. The client devices were charging between 20% to 50% state of charge.

Radiated spurious emission 30MHz to 1GHz and AC conducted emissions were performed on Configuration 1, 7 at EUT minimum and maximum load as worst-case.

The following configurations were tested:

Config	Descriptions	Frequency	Client and worst-case orientation
1	EUT is powered by AC/DC adapter.	111-148kHz	No WPT client used.
2	EUT is powered by AC/DC adapter. Direct contact during charging/operating between the EUT & WPT Client(s).	360kHz (15W)	Coil 1: MagSafe Phone. 0 degrees when the lighting connector facing USB cable
3		127.7kHz (7.5W)	Coil 1: Legacy Phone. 270 degrees when the lighting connector is 90 degrees away from USB cable to the left.
4		127.7kHz (1W)	Coil 1: AirPods Pro Case: lighting connector 90 degree away from USB cable to the right
5		111-148kHz (5W)	Coil 2: Legacy Phone. 0 degrees when the lighting connector facing USB cable
6		111-148kHz (1W)	Coil 2: AirPods Pro Case: lighting connector 180 degree away from USB cable
7		360kHz (15W) + 111-148kHz (5W)	Coil 1: MagSafe Phone. 0 degrees when the lighting connector facing USB cable Coil 2: Legacy Phone. 0 degrees when the lighting connector facing USB cable

6. TEST AND MEASUREMENT EQUIPMENT

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

RADIATED EMISSIONS TEST EQUIPMENT LIST					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO METRICS	EM-6871	170014	2023-07-19	2022-07-19
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO METRICS	EM-6872	170015	2023-07-28	2022-07-28
Antenna, Broadband Hybrid, 30MHz to 2GHz	Sunol Sciences Corp.	JB1	80813	2023-06-08	2022-06-08
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	191429	2024-02-29	2023-02-28
Amplifier, 10KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310N	171202	2023-04-24	2022-04-24
AC MAINS LINE CONDUCTED EMISSIONS TEST EQUIPMENT LIST					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
LISN	Fischer Custom Communications, Inc`	FCC-LISN-50/250-25-2-01-480V	175765	2024-01-31	2023-01-31
EMI TEST RECEIVER	Rohde & Schwarz	ESR	171646	2024-02-29	2023-02-29
Transient Limiter	TE	TBFL1	207996	2023-07-15	2022-07-15
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC	Rev 2022-10-25, 2023-03-03		
AC Line Conducted Software	UL	UL EMC	Rev 9.5 2023-01-09		

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.

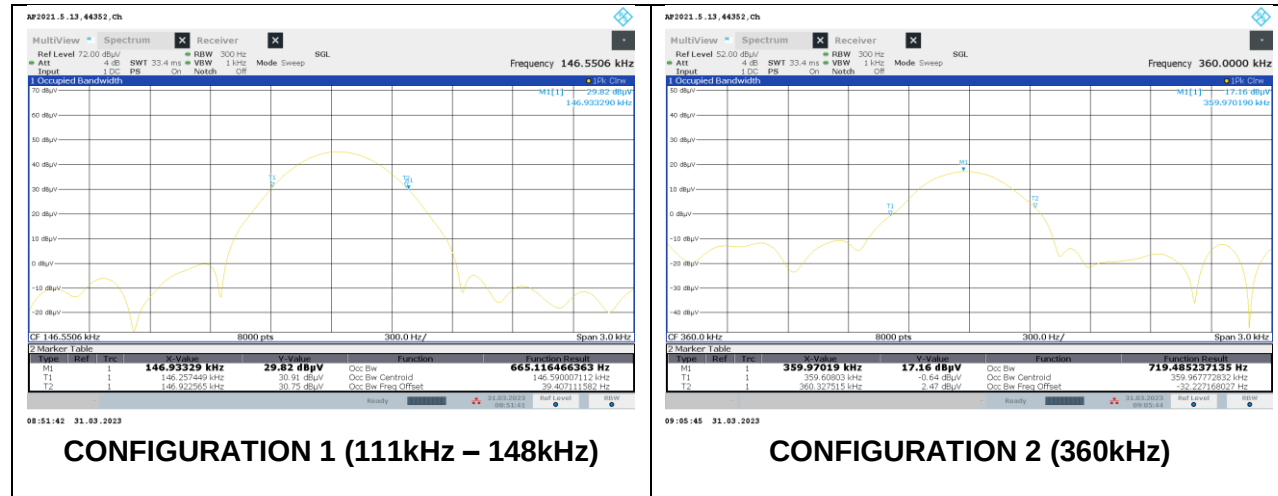
Note: Because the measured signal is CW-like, adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

RESULTS

Test Engineer:	23522 SI
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Configuration	Frequency (kHz)	99% Bandwidth (Hz)
1	146.93	665.116
2	360	719.485
3	127.7	662.339
4	127.7	669.722
5	124.9	669.389
6	149.7	664.332

Configuration 1, 1st coil: N/A due to no intended radiator





CONFIGURATION 3 (127.7kHz)



CONFIGURATION 4 (127.7kHz)



CONFIGURATION 5 (111kHz – 148kHz)



CONFIGURATION 6 (111kHz – 148kHz)

8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMIT

FCC §15.209 (a)

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.		

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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. Peak detection is used unless otherwise noted as quasi-peak.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

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.

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

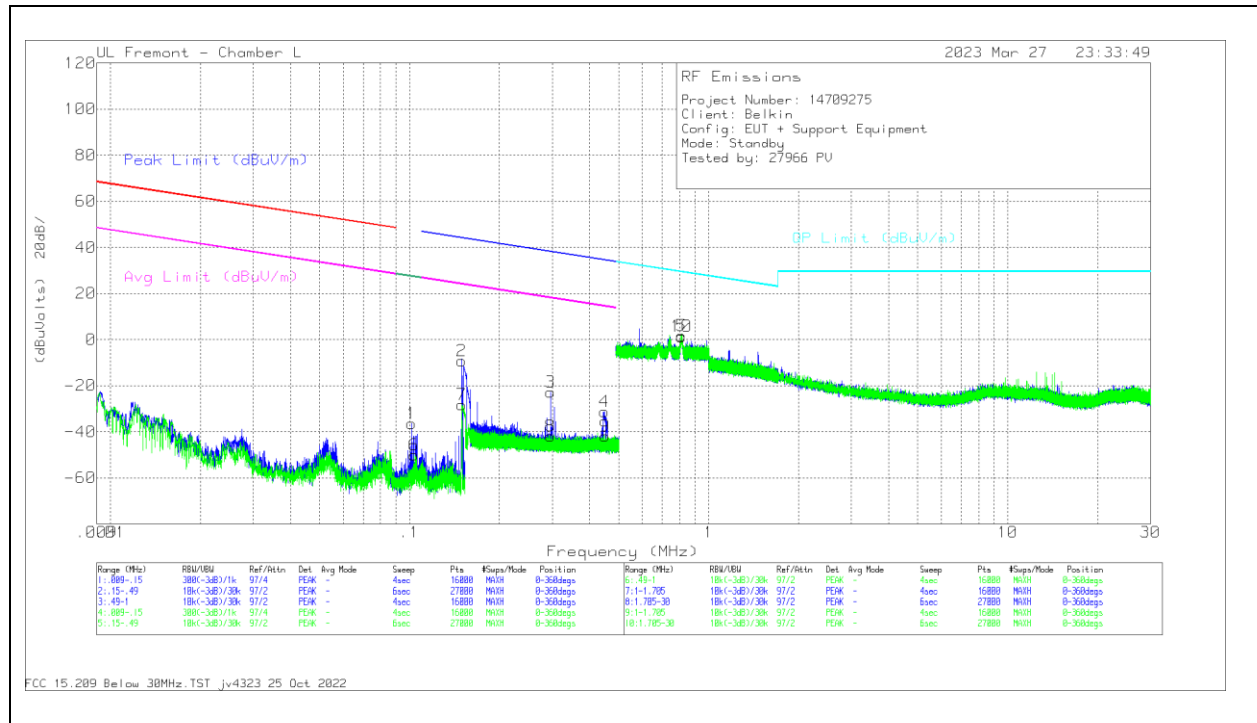
Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

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

RESULTS

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

8.2.1. CONFIGURATION 1: WPT ON STANDBY



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Cbl (dB)	Dist Cor 30m	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.1015	20.21	Pk	55.5	-32	-80	-36.29	27.48	-63.77	-	-	-	-	0-360
2	.1496	47.03	Pk	55.8	-32	-80	-9.17	-	-	44.12	-53.29	24.12	-33.29	0-360
3	.2968	33.14	Pk	56	-32	-80	-22.86	-	-	38.16	-61.02	18.16	-41.02	0-360
4	.4484	24.8	Pk	56	-32	-80	-31.2	-	-	34.57	-65.77	14.57	-45.77	0-360
6	.1038	6.49	Pk	55.5	-32	-80	-50.01	27.3	-77.31	-	-	-	-	0-360
7	.1495	27.95	Pk	55.8	-32	-80	-28.25	-	-	44.13	-72.38	24.13	-52.38	0-360
8	.2962	14.18	Pk	56	-32	-80	-41.82	-	-	38.18	-80	18.18	-60	0-360
9	.4508	14.08	Pk	56	-31.9	-80	-41.82	-	-	34.53	-76.35	14.53	-56.35	0-360

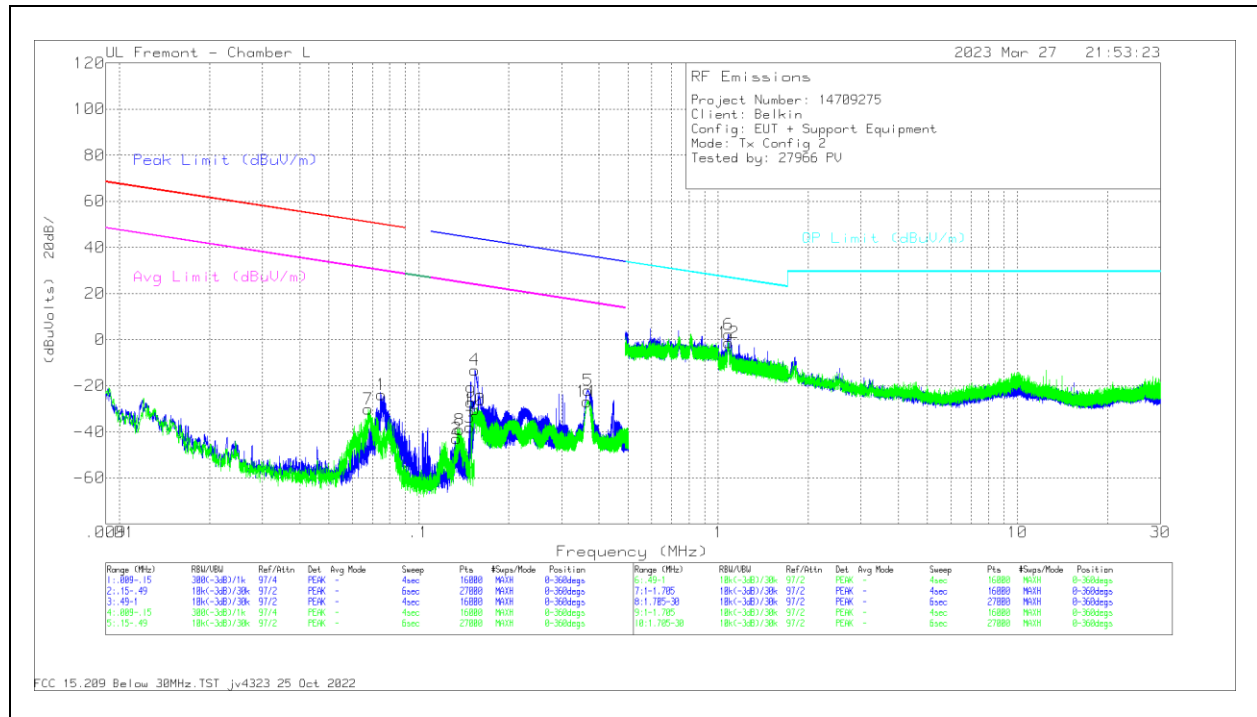
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Cbl (dB)	Dist Cor 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
5	.8104	17.37	Pk	56.1	-31.9	-40	1.57	29.44	-27.87	0-360
10	.8111	17.09	Pk	56.1	-31.9	-40	1.29	29.43	-28.14	0-360

Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Cbl (dB)	Dist Cor 30m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.1466	50.35	Pk	55.7	-32	-80	-5.95	44.3	-50.25	24.3	-30.25	189
	.1466	31.93	Pk	55.7	-32	-80	-24.37	44.3	-68.67	24.3	-48.67	105

Pk - Peak detector

8.2.2. CONFIGURATION 2: OPERATING MODE WITH iPhone (360kHz)



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.0749	32.41	Pk	55.7	-32	-80	-23.89	50.1	-73.99	30.1	-53.99	0-360
2	.1337	13.28	Pk	55.7	-32	-80	-43.02	45.1	-88.12	25.1	-68.12	0-360
3	.1479	18.39	Pk	55.7	-32	-80	-37.91	44.22	-82.13	24.22	-62.13	0-360
4	.1539	43.06	Pk	55.8	-32	-80	-13.14	43.88	-57.02	23.88	-37.02	0-360
5	.3678	33.98	Pk	56	-32	-80	-22.02	36.3	-58.32	16.3	-38.32	0-360
7	.0676	25.98	Pk	55.9	-32	-80	-30.12	50.98	-81.1	30.98	-61.1	0-360
8	.1369	17.13	Pk	55.7	-32	-80	-39.17	44.9	-84.07	24.9	-64.07	0-360
9	.1495	28.99	Pk	55.8	-32	-80	-27.21	44.13	-71.34	24.13	-51.34	0-360
10	.1539	25.66	Pk	55.8	-32	-80	-30.54	43.88	-74.42	23.88	-54.42	0-360
11	.3652	29.05	Pk	56	-32	-80	-26.95	36.36	-63.31	16.36	-43.31	0-360

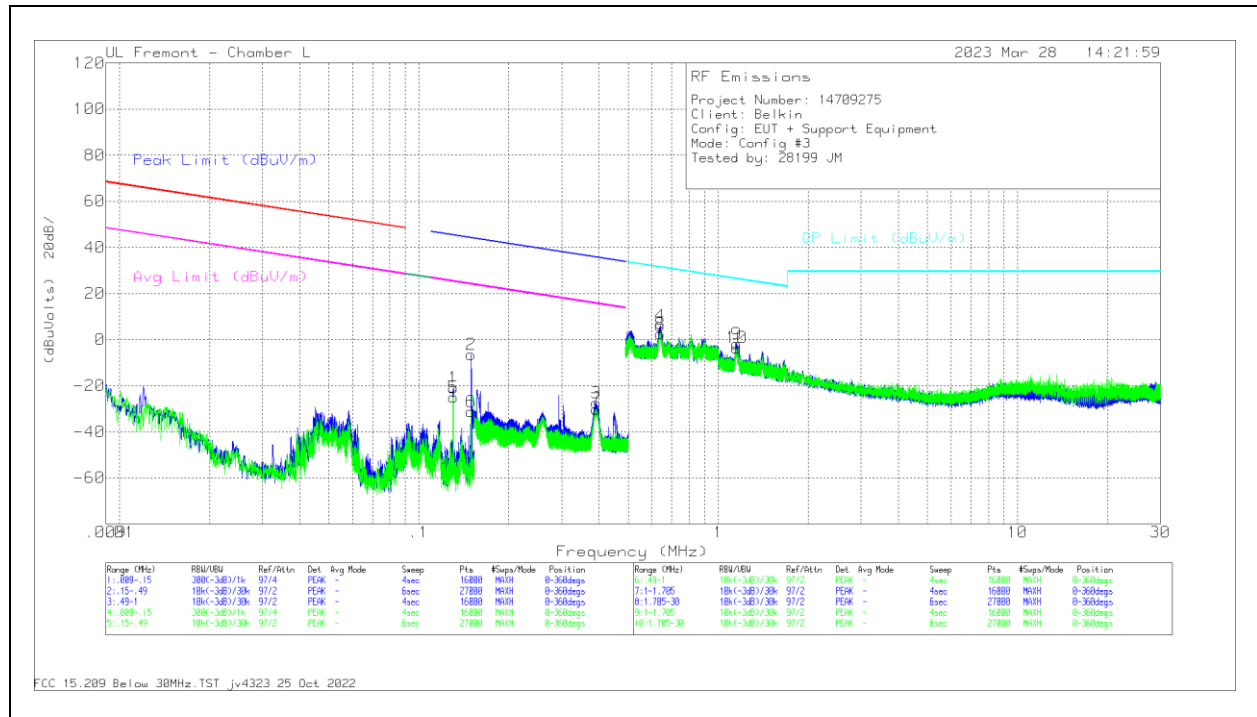
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
6	1.081	27.73	Pk	46.4	-31.9	-40	2.23	26.95	-24.72	0-360
12	1.081	24.29	Pk	46.4	-31.9	-40	-1.21	26.95	-28.16	0-360

Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
4	.15	49.84	Pk	55.8	-32	-80	-6.36	44.1	-50.46	24.1	-30.46	180
5	.3599	33.21	Pk	56	-32	-80	-22.79	36.48	-59.27	16.48	-39.27	1
10	.15	32.33	Pk	55.8	-32	-80	-23.87	44.05	-67.92	24.05	-47.92	249
11	.3597	29.83	Pk	56	-32	-80	-26.17	36.49	-62.66	16.49	-42.66	274

Pk - Peak detector

8.2.3. CONFIGURATION 3: OPERATING MODE WITH iPhone (127.7kHz)



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Ctrl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.1303	35.43	Pk	55.6	-32	-80	-20.97	45.33	-66.3	25.33	-46.3	0-360
2	.1495	49.63	Pk	55.8	-32	-80	-6.57	44.13	-50.7	24.13	-30.7	0-360
3	.3913	28.57	Pk	56	-32	-80	-27.43	35.76	-63.19	15.76	-43.19	0-360
5	.1303	31.41	Pk	55.6	-32	-80	-24.99	45.33	-70.32	25.33	-50.32	0-360
6	.1495	25.05	Pk	55.8	-32	-80	-31.15	44.13	-75.28	24.13	-55.28	0-360
7	.3921	25.9	Pk	56	-32	-80	-30.1	35.74	-65.84	15.74	-45.84	0-360

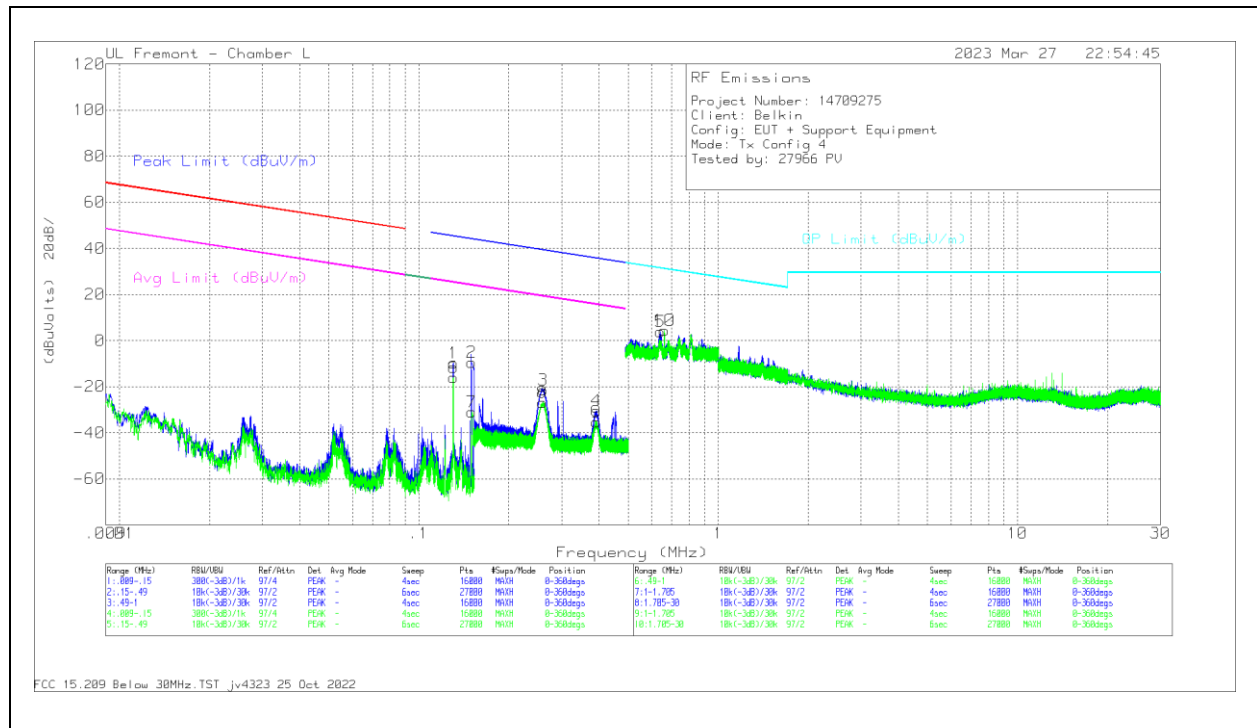
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Ctrl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
4	.6397	21.82	Pk	56.1	-31.9	-40	6.02	31.49	-25.47	0-360
8	.641	18.36	Pk	56.1	-31.9	-40	2.56	31.47	-28.91	0-360
9	1.1509	24.14	Pk	46	-31.9	-40	-1.76	26.4	-28.16	0-360
10	1.1508	22.29	Pk	46	-31.9	-40	-3.61	26.4	-30.01	0-360

Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Ctrl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.1278	35.56	Pk	55.6	-32	-80	-20.84	45.5	-66.34	25.5	-46.34	29
2	.1466	50.33	Pk	55.7	-32	-80	-5.97	44.3	-50.27	24.3	-30.27	177
5	.1278	32.05	Pk	55.6	-32	-80	-24.35	45.5	-69.85	25.5	-49.85	118
6	.1466	35.63	Pk	55.7	-32	-80	-20.67	44.3	-64.97	24.3	-44.97	92

Pk - Peak detector

8.2.4. CONFIGURATION 4: OPERATING MODE WITH AirPods Pro Case (127.7kHz)



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Ampl/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	1303	46.72	Pk	55.6	-32	-80	-9.68	45.33	-55.01	25.33	-35.01	0-360
2	1501	46.65	Pk	55.8	-32	-80	-9.55	44.1	-53.65	24.1	-33.65	0-360
3	2598	34.52	Pk	56	-32	-80	-21.48	39.32	-60.8	19.32	-40.8	0-360
4	3918	25.68	Pk	56	-32	-80	-30.32	35.75	-66.07	15.75	-46.07	0-360
6	1303	40.5	Pk	55.6	-32	-80	-15.9	45.33	-61.23	25.33	-41.23	0-360
7	1505	25.17	Pk	55.8	-32	-80	-31.03	44.07	-75.1	24.07	-55.1	0-360
8	2592	29.17	Pk	56	-32	-80	-26.83	39.34	-66.17	19.34	-46.17	0-360
9	.392	20.58	Pk	56	-32	-80	-35.42	35.74	-71.16	15.74	-51.16	0-360

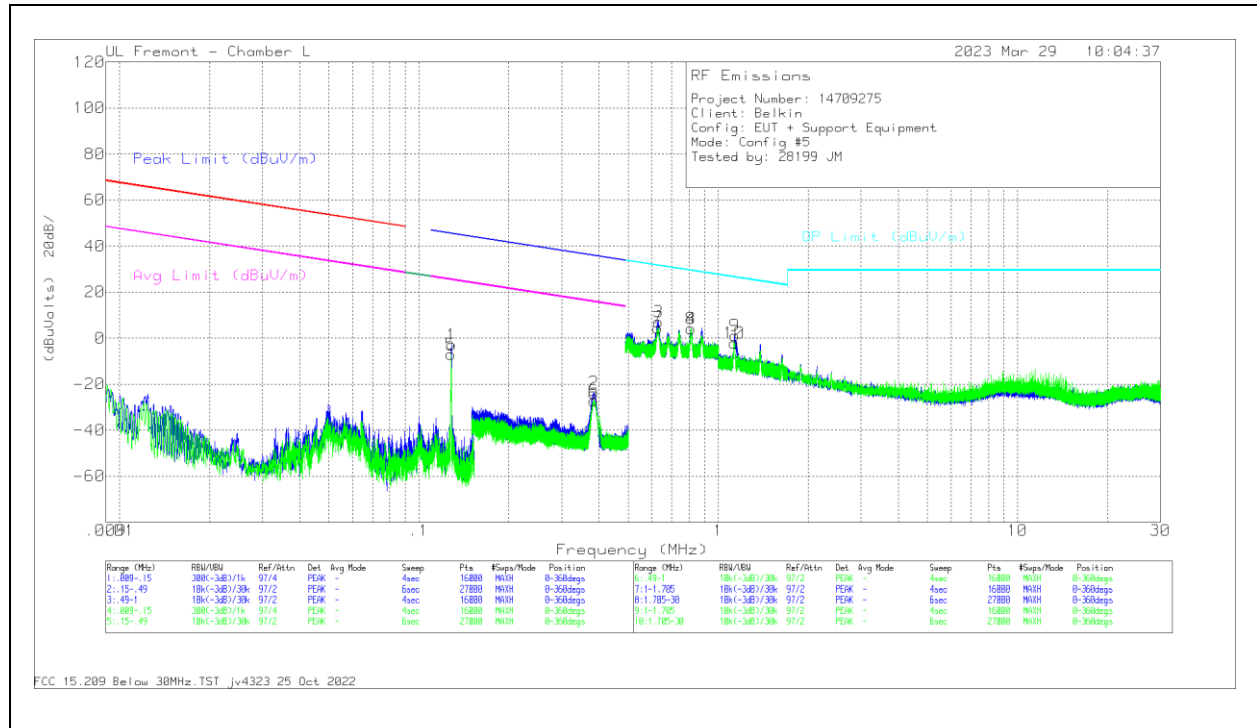
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Ampl/Cbl (dB)	Dist Corr 30m (dB) 48Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
5	.6413	19.56	Pk	56.1	-31.9	-40	3.76	31.47	-27.71	0-360
10	.6609	20.17	Pk	56.1	-31.9	-40	4.37	31.21	-26.84	0-360

Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Ampl/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.1278	47.64	Pk	55.6	-32	-80	-8.76	45.5	-54.26	25.5	-34.26	278
2	.15	47.17	Pk	55.8	-32	-80	-9.03	44.1	-53.13	24.1	-33.13	212
6	.1278	41.61	Pk	55.6	-32	-80	-14.79	45.5	-60.29	25.5	-40.29	22
7	.1502	29.05	Pk	55.8	-32	-80	-27.15	44.09	-71.24	24.09	-51.24	266

Pk - Peak detector

8.2.5. CONFIGURATION 5: OPERATING MODE WITH iPhone (111-148kHz)



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.1284	53.37	Pk	55.6	-32	-80	-3.03	45.45	-48.48	25.45	-28.48	0-360
2	.3849	32.24	Pk	56	-32	-80	-23.76	35.9	-59.66	15.9	-39.66	0-360
5	.1282	49.27	Pk	55.6	-32	-80	-7.13	45.47	-52.6	25.47	-32.6	0-360
6	.385	28.88	Pk	56	-32	-80	-27.12	35.9	-63.02	15.9	-43.02	0-360

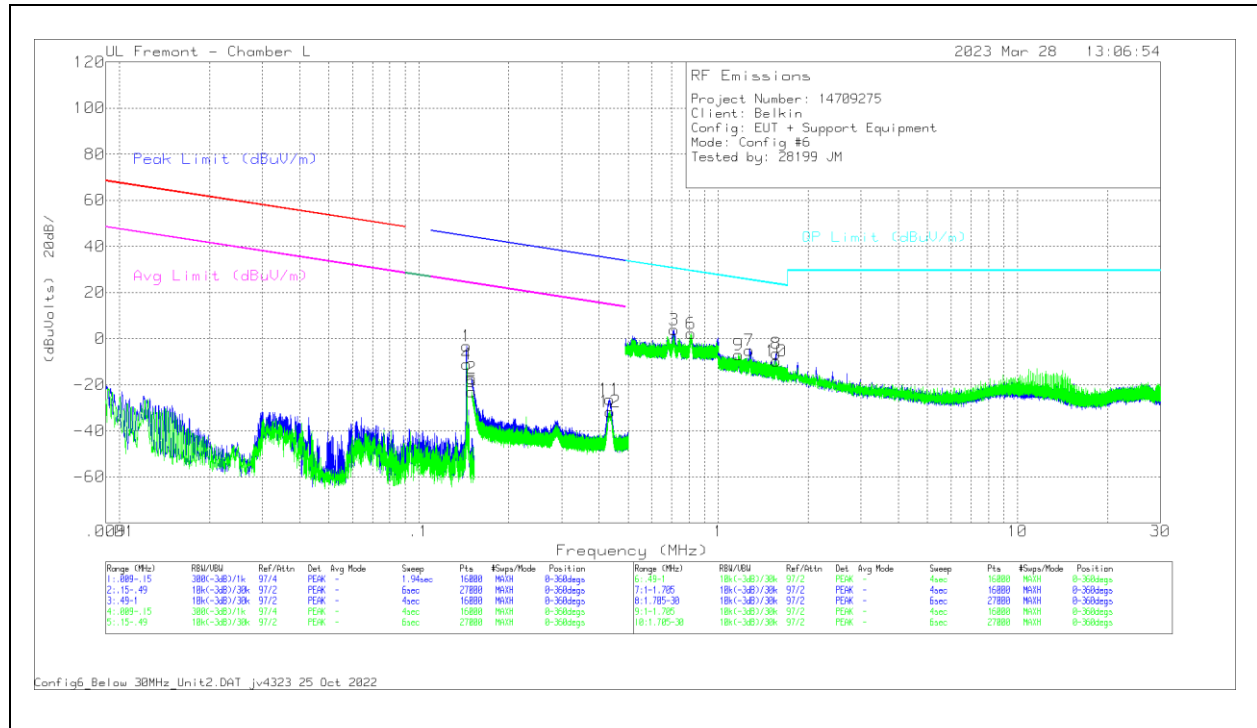
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Cbl (dB)	Dist Corr 30m (dB)	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.63	22.89	Pk	56.1	-31.9	-40	7.09	31.62	-24.53	0-360
4	.813	19.92	Pk	56.1	-31.9	-40	4.12	29.41	-25.29	0-360
7	.6297	20.18	Pk	56.1	-31.9	-40	4.38	31.63	-27.25	0-360
8	.8117	19.87	Pk	56.1	-31.9	-40	4.07	29.43	-25.36	0-360
9	1.1358	26.94	Pk	46.1	-31.9	-40	1.14	26.52	-25.38	0-360
10	1.1304	23.63	Pk	46.1	-31.9	-40	-2.17	26.56	-28.73	0-360

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	Amp/Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
.1257	53.59	Pk	55.6	-32	-80	-2.81	45.64	-48.45	25.64	-28.45	62
.1257	49.64	Pk	55.6	-32	-80	-6.76	45.64	-52.4	25.64	-32.4	145

Pk - Peak detector

8.2.6. CONFIGURATION 6: OPERATING MODE WITH AirPods Pro Case (111-148kHz)



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	AmpCM (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.1442	53.14	Pk	55.7	-32	-80	-3.16	44.44	-47.6	24.44	-27.6	0-360
2	.1502	38.99	Pk	55.8	-32	-80	-17.21	44.09	-61.3	24.09	-41.3	0-360
11	.4344	29.57	Pk	56	-32	-80	-26.43	34.85	-61.28	14.85	-41.28	0-360
4	.1446	45.28	Pk	55.7	-32	-80	-11.02	44.42	-55.44	24.42	-35.44	0-360
5	.1504	33.11	Pk	55.8	-32	-80	-23.09	44.08	-67.17	24.08	-47.17	0-360
12	.4354	24.35	Pk	56	-32	-80	-31.65	34.83	-66.48	14.83	-46.48	0-360

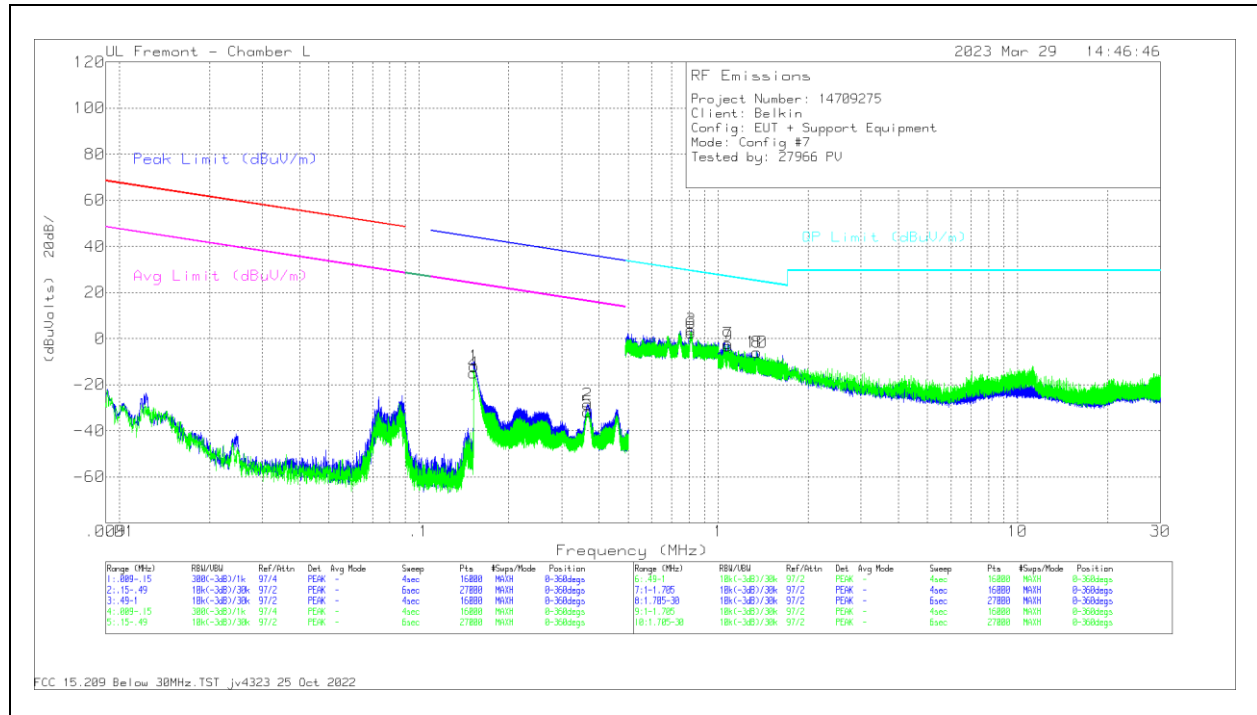
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	AmpCM (dB)	Dist Corr 300m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.7106	19.75	Pk	56.1	-31.9	-40	3.95	30.58	-26.63	0-360
6	.8105	17.94	Pk	56.1	-31.9	-40	2.14	29.44	-27.3	0-360
7	1.2728	21.61	Pk	45.3	-31.9	-40	-4.99	25.53	-30.52	0-360
8	1.5616	21.55	Pk	43.8	-31.9	-40	-6.55	23.76	-30.31	0-360
9	1.1721	18.89	Pk	45.9	-31.9	-40	-7.11	26.25	-33.36	0-360
10	1.5608	18.39	Pk	43.8	-31.9	-40	-9.71	23.77	-33.48	0-360

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	AmpCM (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
.1418	53.18	Pk	55.7	-32	-80	-3.12	44.59	-47.71	24.59	-27.71	217
.1418	46.34	Pk	55.7	-32	-80	-9.96	44.59	-54.55	24.59	-34.55	133

PK - Peak detector

8.2.7. CONFIGURATION 7: OPERATING MODE WITH iPhone (360kHz) + iPhone (111-148kHz)



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	AmplCbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.153	44.22	Pk	55.8	-32	-80	-11.98	43.93	-55.91	23.93	-35.91	0-360
2	.3665	27.39	Pk	56	-32	-80	-28.61	36.33	-64.94	16.33	-44.94	0-360
4	.1525	41.21	Pk	55.8	-32	-80	-14.99	43.96	-58.95	23.96	-38.95	0-360
5	.3662	24.33	Pk	56	-32	-80	-31.67	36.33	-68	16.33	-48	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	AmplCbl (dB)	Dist Corr 300m (dB) 4/Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.8124	19.76	Pk	56.1	-31.9	-40	3.96	29.42	-25.46	0-360
6	.8126	18.4	Pk	56.1	-31.9	-40	2.6	29.42	-26.82	0-360
7	1.0782	23.5	Pk	46.4	-31.9	-40	-2	26.97	-28.97	0-360
8	1.3483	20.96	Pk	44.9	-31.9	-40	-6.04	25.03	-31.07	0-360
9	1.0804	22.3	Pk	46.4	-31.9	-40	-3.2	26.95	-30.15	0-360
10	1.344	20.85	Pk	45	-31.9	-40	-6.05	25.06	-31.11	0-360

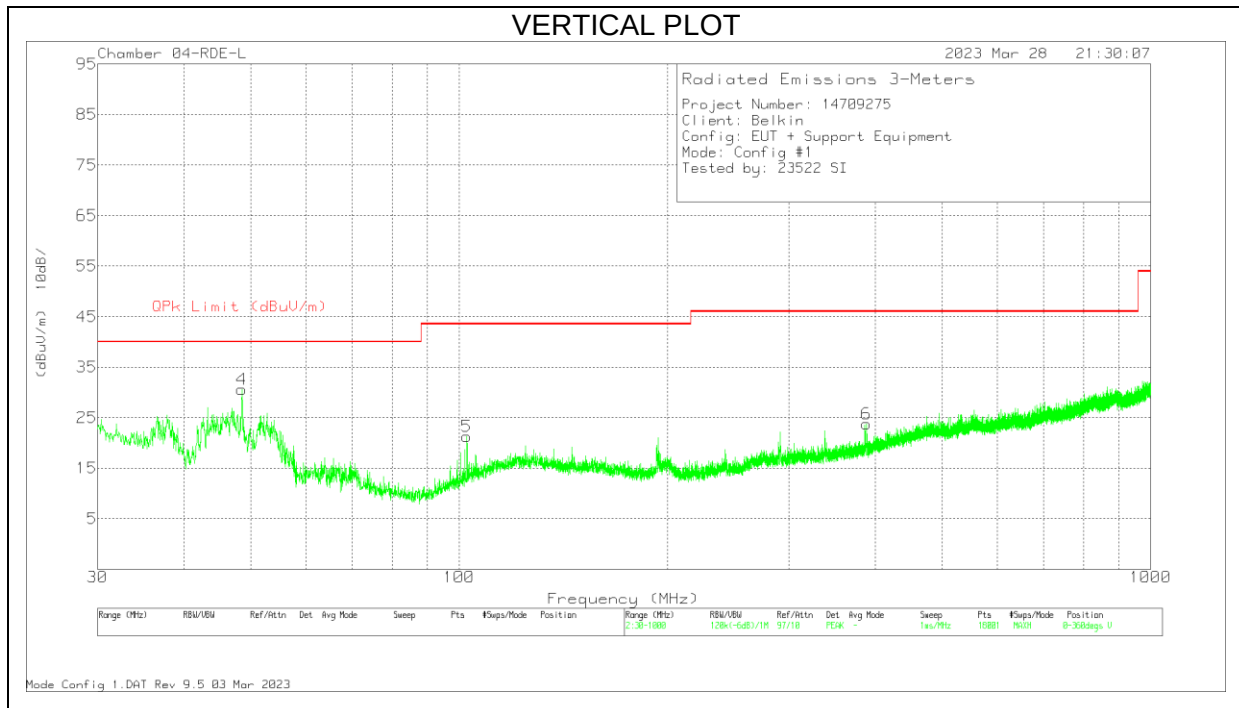
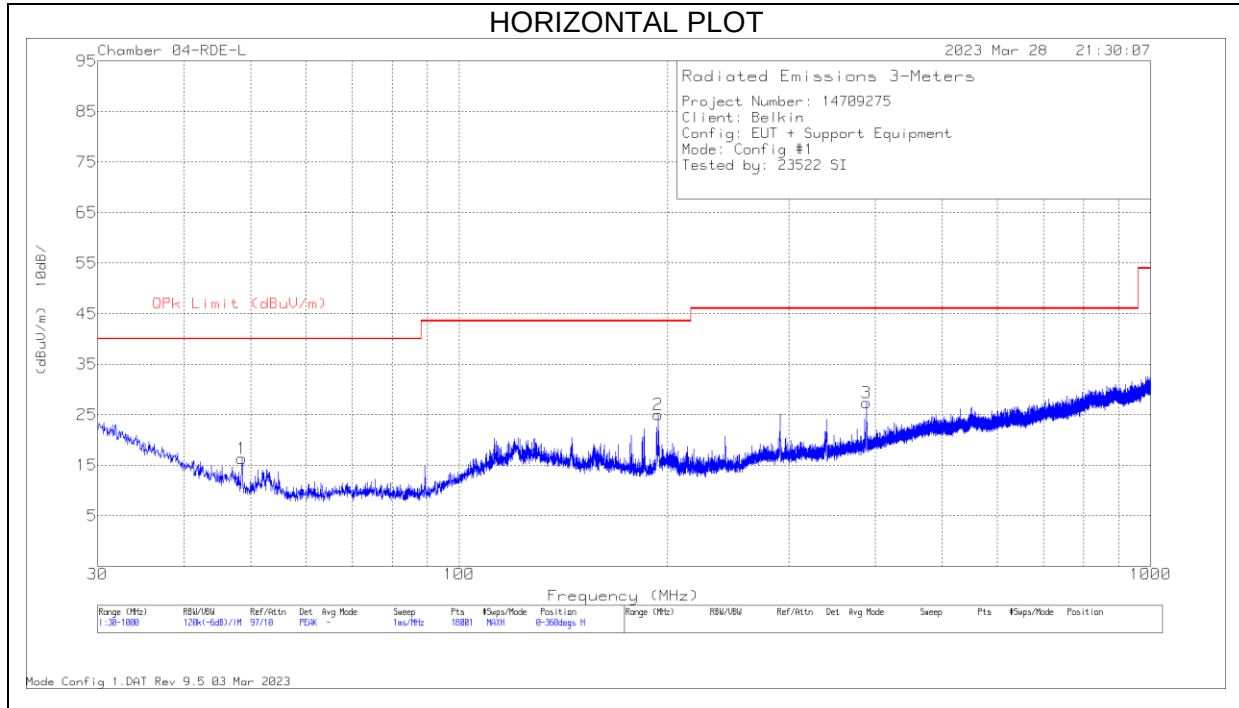
Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF)	AmplCbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.1497	52.02	Pk	55.8	-32	-80	-4.18	44.12	-48.3	24.12	-28.3	63
2	.3606	29.53	Pk	56	-32	-80	-26.47	36.47	-62.94	16.47	-42.94	341
4	.1497	48.11	Pk	55.8	-32	-80	-8.09	44.12	-52.21	24.12	-32.21	151
5	.3603	27.03	Pk	56	-32	-80	-28.97	36.47	-65.44	16.47	-45.44	239

Pk - Peak detector

8.3. FCC TX SPURIOUS EMISSION 30 TO 1000 MHz

8.3.1. CONFIGURATION 1: WPT ON STANDBY



DATA

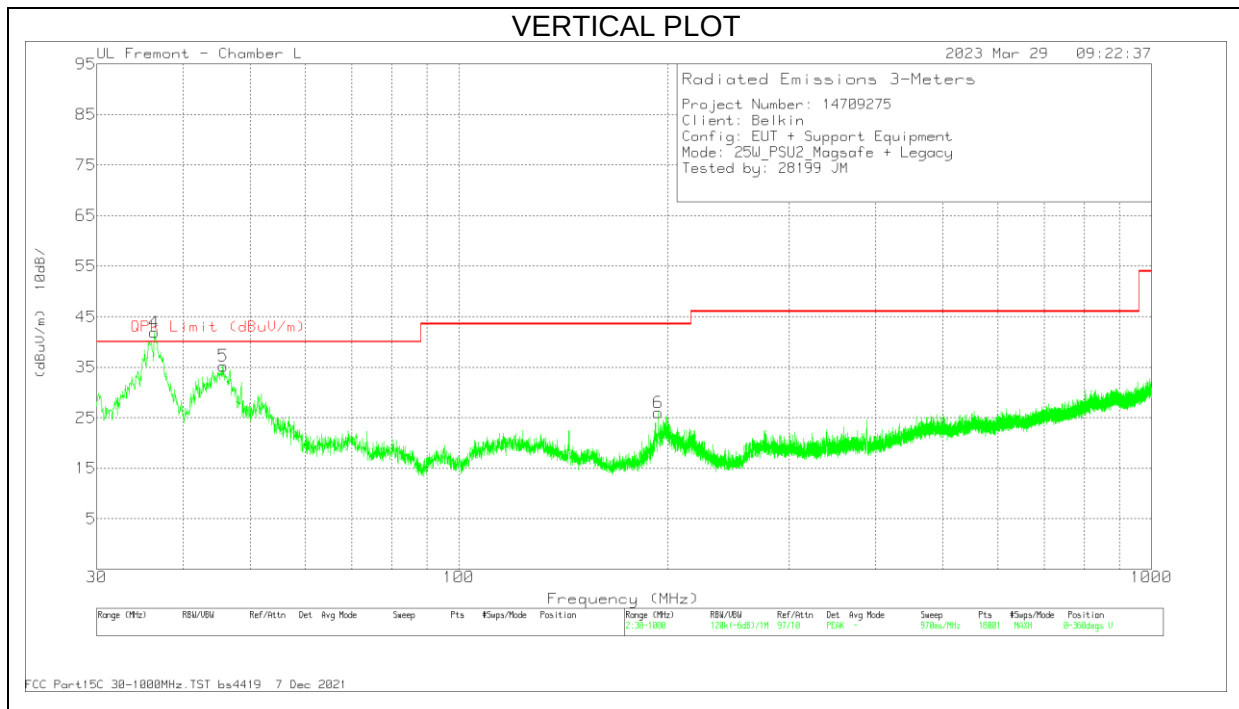
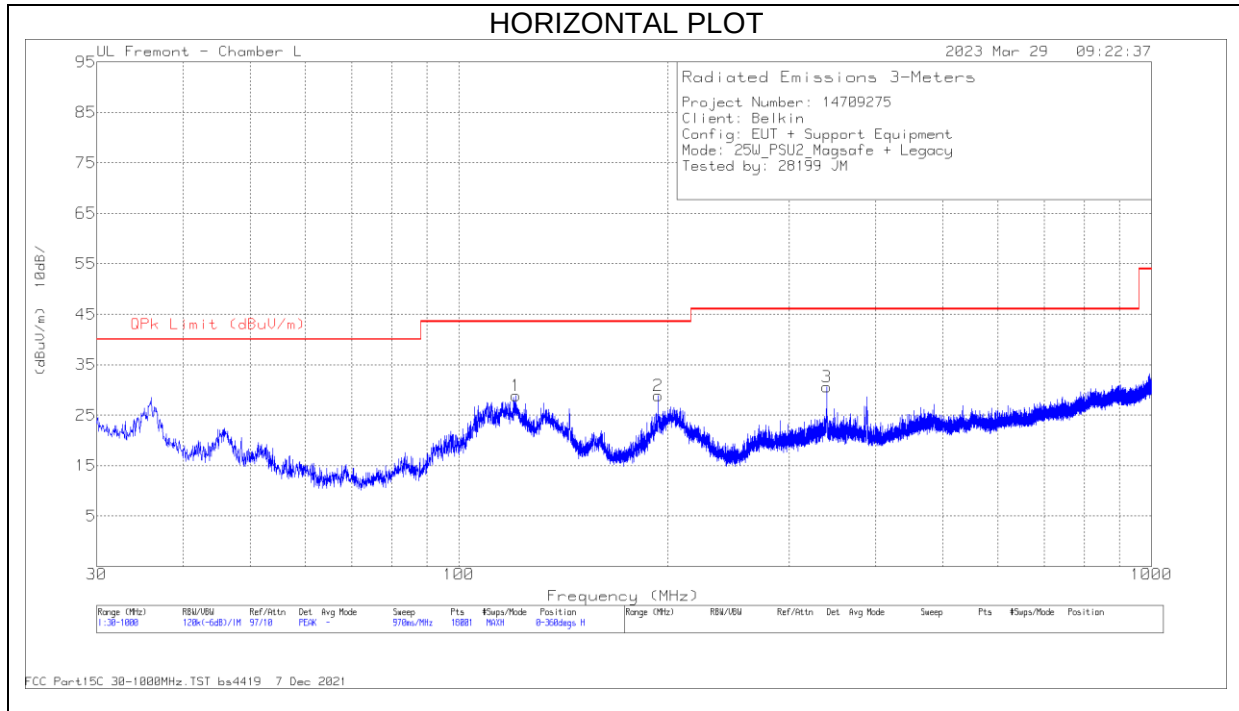
Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80813 ACF (dB)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	48.4839	33.03	Pk	14.4	-31.1	16.33	40	-23.67	0-360	401	H
2	194.146	36.99	Pk	18	-30	24.99	43.52	-18.53	0-360	98	H
3	388.254	35.46	Pk	21.1	-29.2	27.36	46.02	-18.66	0-360	98	H
4	48.5241	48.8	Pk	14.4	-31.1	32.1	40	-7.9	85	102	V
	48.5241	44.9	Qp	14.4	-31.1	28.2	40	-11.8	85	102	V
5	102.642	34.96	Pk	17	-30.7	21.26	43.52	-22.26	0-360	98	V
6	388.524	31.81	Pk	21.1	-29.1	23.81	46.02	-22.21	0-360	98	V

Pk - Peak detector

Qp - Quasi-Peak detector

8.3.2. CONFIGURATION 7: OPERATING MODE WITH OPERATING MODE WITH iPhone (360kHz) + iPhone (111-148kHz)



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80813 ACF (dB)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	120.911	39.38	Pk	20	-30.5	28.88	43.52	-14.64	0-360	300	H
2	194.038	40.87	Pk	18	-30	28.87	43.52	-14.65	0-360	104	H
3	339.646	39.75	Pk	20	-29.2	30.55	46.02	-15.47	0-360	104	H
4	36.305	50.65	Pk	22.5	-31.3	41.85	40	1.85	0-360	98	V
5	45.6817	50.65	Pk	15.8	-31.2	35.25	40	-4.75	0-360	98	V
6	194.038	38.05	Pk	18	-30	26.05	43.52	-17.47	0-360	200	V

Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80813 ACF (dB)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	36.3422	48.63	Pk	22.5	-31.3	39.83	40	-.17	344	114	V
	36.4083	43.99	Qp	22.4	-31.3	35.09	40	-4.91	344	114	V
5	45.9724	51.23	Pk	15.6	-31.2	35.63	40	-4.37	49	100	V
	45.8434	47.08	Qp	15.7	-31.2	31.58	40	-8.42	49	100	V

Pk - Peak detector

Qp - Quasi-Peak detector

9. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

FCC §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.

ICES-001 Issue 5 Table 1

Table 1: Conducted emission limits for induction cooking appliances (AC mains terminals)				
Frequency range (MHz)	Appliances rated 120 V, without an earth connection	Appliances rated 120 V, without an earth connection	All other appliances	All other appliances
	Quasi-peak (dBµV)	Average (dBµV)	Quasi-peak (dBµV)	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.

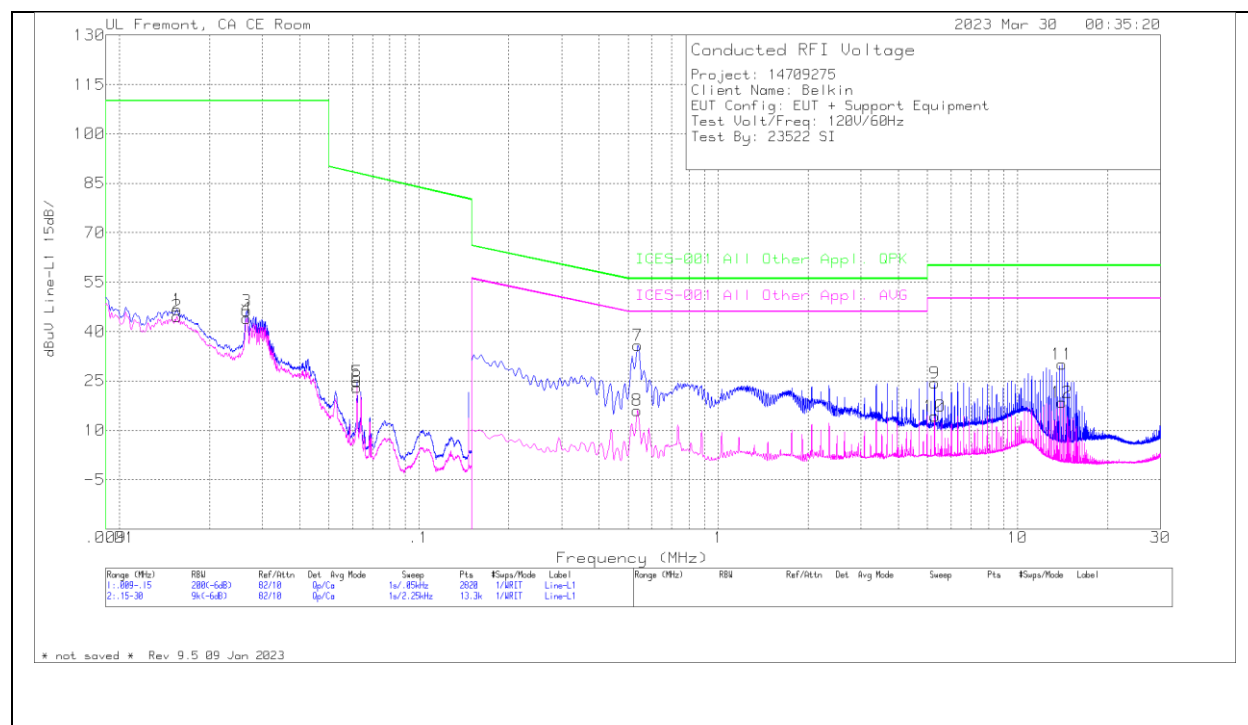
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

Testing range from 9kHz to 30MHz using ICES-001 Issue Table 1 “All other appliances” limit to cover both FCC and ISSED frequency range.

9.1. CONFIGURATION 1: WPT ON STANDBY

LINE 1 RESULTS



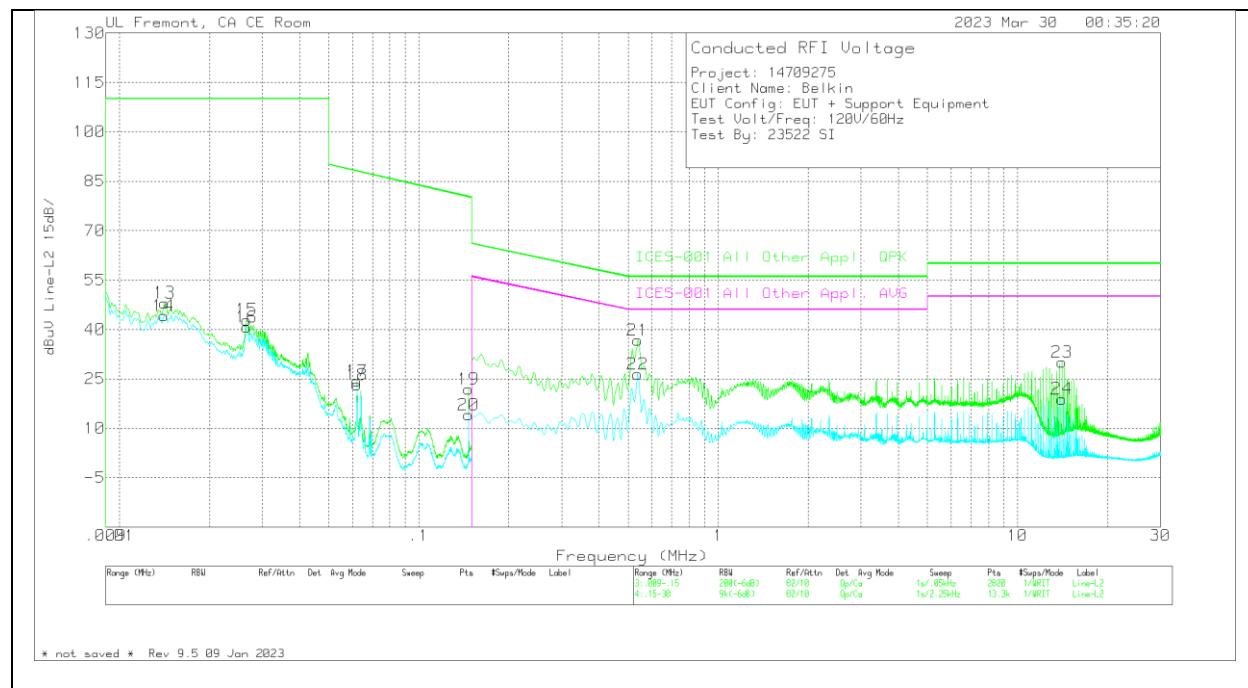
WORST EMISSIONS

Range 1: Line-L1 .009 - .15MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv	C1&C3 cable path loss	207996 Limiter with short cabl	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
2	.0156	31.76	Ca	2.1	0	10.8	44.66	-	-	-	-
4	.0266	32.47	Ca	.9	0	10.7	44.07	-	-	-	-
6	.0622	13.44	Ca	0	0	9.7	23.14	-	-	-	-
1	.0156	33.75	Qp	2.1	0	10.8	46.65	110	-63.35	-	-
3	.0267	34.66	Qp	.9	0	10.7	46.26	110	-63.74	-	-
5	.0622	15.14	Qp	0	0	9.7	24.84	88.02	-63.18	-	-

Range 2: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv	C1&C3 cable path loss	207996 Limiter with short cabl	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
8	.537	6.69	Ca	0	.1	9.3	16.09	-	-	46	-29.91
10	5.2778	4.81	Ca	0	.1	9.3	14.21	-	-	50	-35.79
12	14.0741	8.9	Ca	.1	.2	9.3	18.5	-	-	50	-31.5
7	.5393	26.47	Qp	0	.1	9.3	35.87	56	-20.13	-	-
9	5.2778	15.06	Qp	0	.1	9.3	24.46	60	-35.54	-	-
11	14.0753	20.5	Qp	.1	.2	9.3	30.1	60	-29.9	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2 RESULTS



WORST EMISSIONS

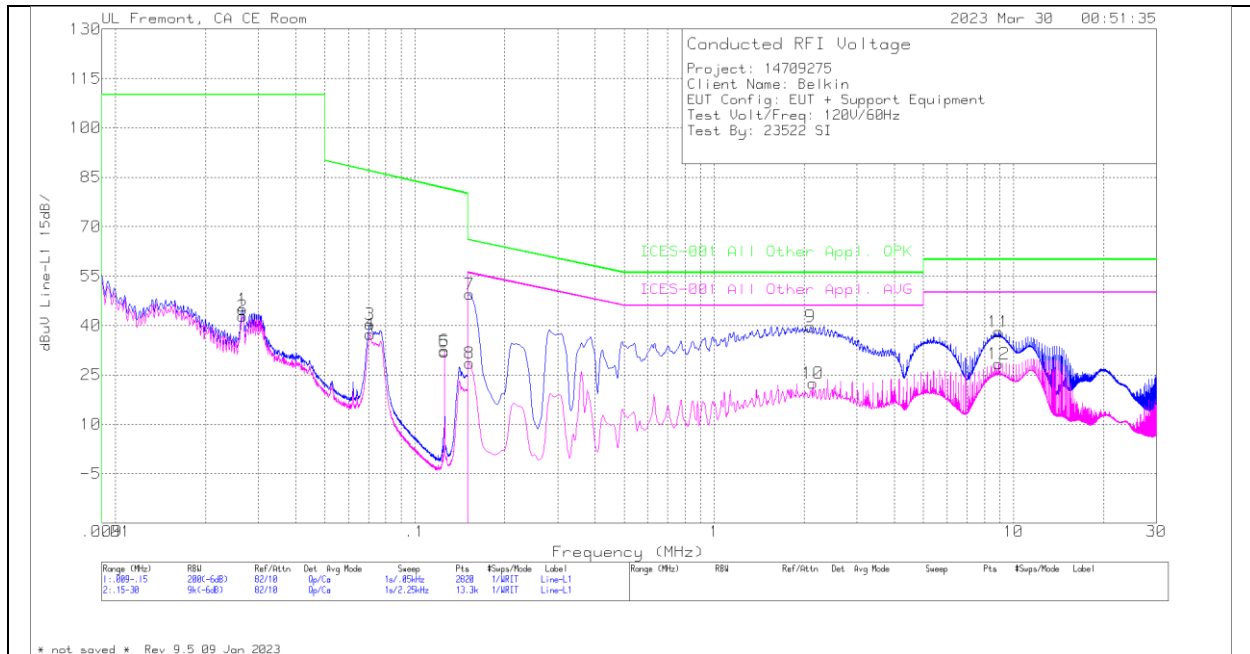
Range 3: Line-L2 .009 - .15MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN	C2&C3 cable path loss	207996 Limiter with short cabl	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
14	.0141	30.8	Ca	2.7	0	10.6	44.1	-	-	-	-
16	.0267	29.23	Ca	.9	0	10.7	40.83	-	-	-	-
18	.0622	13.52	Ca	0	0	9.7	23.22	-	-	-	-
20	.1466	4.67	Ca	0	0	9.4	14.07	-	-	-	-
13	.0142	34.88	Qp	2.6	0	10.6	48.08	110	-61.92	-	-
15	.0266	31.34	Qp	.9	0	10.7	42.94	110	-67.06	-	-
17	.0622	14.72	Qp	0	0	9.7	24.42	88.02	-63.6	-	-
19	.1466	12.51	Qp	0	0	9.4	21.91	80.21	-58.3	-	-

Range 4: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN	C2&C3 cable path loss	207996 Limiter with short cabl	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
22	.5393	17	Ca	0	.1	9.3	26.4	-	-	46	-19.6
24	14.0753	9.35	Ca	.1	.2	9.3	18.95	-	-	50	-31.05
21	.5393	27.27	Qp	0	.1	9.3	36.67	56	-19.33	-	-
23	14.0753	20.47	Qp	.1	.2	9.3	30.07	60	-29.93	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

9.2. CONFIGURATION 7: OPERATING MODE WITH iPhone (360kHz) + iPhone (111-148kHz)

LINE 1 RESULTS



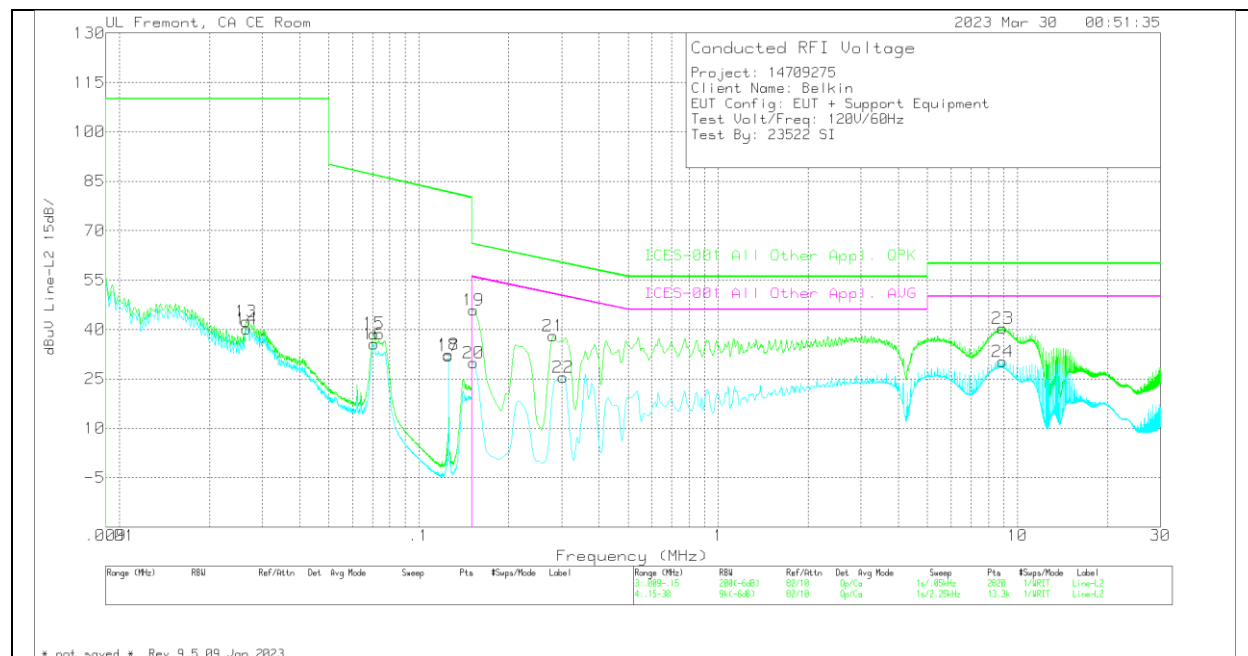
WORST EMISSIONS

Range 1: Line-L1 .009 - .15MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv	C1&C3 cable path loss	207996 Limiter with short cabl	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
2	.0267	31.27	Ca	.9	0	10.7	42.87	-	-	-	-
4	.071	27.7	Ca	0	0	9.6	37.3	-	-	-	-
6	.1257	23	Ca	0	0	9.4	32.4	-	-	-	-
1	.0266	33.39	Qp	.9	0	10.7	44.99	110	-65.01	-	-
3	.0708	30.8	Qp	0	0	9.6	40.4	86.83	-46.43	-	-
5	.1257	22.51	Qp	0	0	9.4	31.91	81.61	-49.7	-	-

Range 2: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L1_LISN.csv	C1&C3 cable path loss	207996 Limiter with short cabl	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
8	.1523	19.25	Ca	0	0	9.4	28.65	-	-	55.88	-27.23
10	2.1368	13.11	Ca	0	.1	9.3	22.51	-	-	46	-23.49
12	8.9228	18.95	Ca	0	.2	9.3	28.45	-	-	50	-21.55
7	.1523	40.03	Qp	0	0	9.4	49.43	65.88	-16.45	-	-
9	2.1008	30.3	Qp	0	.1	9.3	39.7	56	-16.3	-	-
11	8.9228	28.62	Qp	0	.2	9.3	38.12	60	-21.88	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2 RESULTS



WORST EMISSIONS

Range 3: Line-L2 .009 - .15MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN	C2&C3 cable path loss	207996 Limiter with short cabl	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
14	.0266	28.59	Ca	.9	0	10.7	40.19	-	-	-	-
16	.0708	25.95	Ca	0	0	9.6	35.55	-	-	-	-
18	.1257	23.05	Ca	0	0	9.4	32.45	-	-	-	-
13	.0265	30.73	Qp	.9	0	10.8	42.43	110	-67.57	-	-
15	.0708	29.15	Qp	0	0	9.6	38.75	86.83	-48.08	-	-
17	.1257	22.62	Qp	0	0	9.4	32.02	81.61	-49.59	-	-

Range 4: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	L2_LISN	C2&C3 cable path loss	207996 Limiter with short cabl	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
20	.1523	20.51	Ca	0	0	9.4	29.91	-	-	55.88	-25.97
22	.303	16.22	Ca	0	0	9.3	25.52	-	-	50.16	-24.64
24	8.9228	20.77	Ca	0	.2	9.3	30.27	-	-	50	-19.73
19	.1523	36.56	Qp	0	0	9.4	45.96	65.88	-19.92	-	-
21	.2805	28.71	Qp	0	0	9.3	38.01	60.8	-22.79	-	-
23	8.9228	30.89	Qp	0	.2	9.3	40.39	60	-19.61	-	-

Qp - Quasi-Peak detector
Ca - CISPR average detection

10. DESCRIPTION OF TEST SETUP AND SETUP PHOTOS

Please refer to 14709275-EP1 (FCC) for description of test up and setup photo.

END OF TEST REPORT