

TEST REPORT

Report Number. : 14919986-E1V2

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

Model : WIZ022

FCC ID : K7SWIZ022

EUT Description : BoostCharge Portable USB-C Apple Watch Charger

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

Date Of Issue:

2024-01-26

Prepared by:

UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888



Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	2023-12-06	Initial Issue	---
V2	2024-01-26	Updated Section 5.1 to address TCB's question	Tina Chu

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. DECISION RULES AND MEASUREMENT UNCERTAINTY	7
4.1. METROLOGICAL TRACEABILITY	7
4.2. DECISION RULES.....	7
4.3. MEASUREMENT UNCERTAINTY.....	7
5. EQUIPMENT UNDER TEST	8
5.1. DESCRIPTION OF EUT	8
5.2. MAXIMUM E-FIELD STRENGTH	8
5.3. SOFTWARE AND FIRMWARE.....	8
5.4. WORST-CASE CONFIGURATION.....	9
6. TEST AND MEASUREMENT EQUIPMENT	10
7. OCCUPIED BANDWIDTH	11
8. RADIATED EMISSION TEST RESULTS	12
8.1. LIMITS AND PROCEDURE.....	12
8.2. FCC TX FUNDAMENTAL AND SPURIOUS EMISSIONS FROM 9 kHz TO 30 MHz... 13	
8.2.1. CONFIGURATION 1: WPT ON STANDBY	13
8.2.2. CONFIGURATION 2: OPERATING MODE WITH Apple Watch (326.5kHz)	14
8.2.3. CONFIGURATION 3: OPERATING MODE WITH Apple Watch (1.778MHz)	15
8.3. FCC TX SPURIOUS EMISSION 30 TO 1000 MHz	16
8.3.1. CONFIGURATION 1: WPT ON STANDBY	16
8.3.2. CONFIGURATION 3: OPERATING MODE WITH Apple Watch (1.778MHz)	18
8.3.3. CONFIGURATION 4: OPERATING MODE WITH Apple Watch (1.778MHz)	20
9. AC MAINS LINE CONDUCTED EMISSIONS.....	22
9.1. CONFIGURATION 1: WPT ON STANDBY.....	23
9.2. CONFIGURATION 3: OPERATING MODE WITH Apple Watch (1.778MHz)	25
9.3. CONFIGURATION 4: OPERATING MODE WITH Apple Watch (1.778MHz)	27
10. DESCRIPTION OF TEST SETUP AND SETUP PHOTOS	29

1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: BoostCharge Portable USB-C Apple Watch Charger

MODEL NUMBER: WIZ022

BRAND: belkin

SERIAL NUMBER: 61E10F6AD00072

SAMPLE RECEIPT DATE: 2023-10-18

DATE TESTED: 2023-10-20 TO 2023-10-26

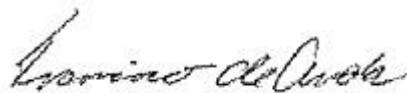
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47 CFR PART 15 SUBPART C	Complies

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:



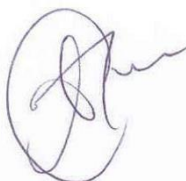
Francisco de Anda
Staff Engineer
Consumer Technology Division
UL Verification Services Inc.

Prepared By:



Gerardo Abrego
Senior Test Engineer
Consumer Technology Division
UL Verification Services Inc.

Reviewed By:



Tina Chu
Senior Project Engineer
Consumer Technology Division
UL Verification Services Inc.

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 47 CFR Part 2
FCC 47 CFR Part 15 C
KDB 414788 D01 Radiated Test Site

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, USA	US0104	2324A	550739
<input type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
<input checked="" type="checkbox"/>	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, BoostCharge Portable USB-C Apple Watch Charger, is a single coil wireless charger capable of charging one client device at a time. It is used to charge an Apple Watch at 326.5kHz or 1.778MHz (5W Max).

The EUT is powered through a USB-C port that can output at least 5V/1A (5W).

5.2. MAXIMUM E-FIELD STRENGTH

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

Fundamental Frequency (kHz)	E field (300m distance) (dBuV/m)
326.5 (standby)	-17.59
326.5 (Legacy Watch)	-27.98
Fundamental Frequency	E field (30m distance) FCC (dBuV/m)
1778 (New Watch)	10

5.3. SOFTWARE AND FIRMWARE

The firmware version installed in the EUT during testing was:
326.5kHz/1.778MHz: V20.30

5.4. WORST-CASE CONFIGURATION

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

The EUT can be a mobile and a portable device (e.g. when it connects to a laptop with Type C port). Investigation was performed for both mobile and portable modes. For radiated emissions tests, the EUT was tested in the following configurations as worst case. The client devices where charging between 20% to 50% state of charge.

EUT worse case configurations;

Config	Descriptions	Frequency	EUT orientation	Client and worst-case orientation
1	EUT is powered by AC/DC adapter.	326.5kHz	Y-orientation (Landscape)	No WPT client used. Stand-By.
2	EUT is powered by AC/DC adapter. Direct contact during charging/operating between the EUT & WPT Client.	326.5kHz (1W)	Y-orientation (Landscape)	Legacy watch. 270 degrees with the digital crown/home button is on the right, 3 o'clock relative to the USB Type-C port
3		1.778MHz (5W)	Y-orientation (Landscape)	Series 8 watch. 270 degrees with the digital crown/home button is on the right, 3 o'clock relative to the USB Type-C port
4	EUT is powered by laptop. Direct contact during charging/operating between the EUT & WPT Client.	1.778MHz (5W)	X-orientation (Flatbed)	Series 8 watch. 270 degrees with the digital crown/home button is on the right, 3 o'clock relative to the USB Type-C port

Radiated spurious emission 30MHz to 1GHz and AC conducted emissions were performed on Configuration 1, 3 at EUT minimum and maximum load as worst-case. Additional AC conducted emissions and 30MHz to 1GHz radiated emissions were performed on Configuration 4.

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	170013	2024-07-31	2022-07-28
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO METRICS	EM-6872	170015	2024-07-31	2022-07-28
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB1	80293	2024-04-30	2023-04-11
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	170647	2023-11-11	2022-11-11
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	230547	2024-02-29	2023-02-15
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	2023-01-27
EMI TEST RECEIVER	Rohde & Schwarz	ESR	171646	2024-02-29	2023-02-20
Transient Limiter	TE	TBFL1	207996	2024-08-31	2023-08-10
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC		Rev 9.5 2023-05-01	
AC Line Conducted Software	UL	UL EMC		Rev 9.5 2023-03-03	

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:	28199 JM
----------------	----------

Configuration	Frequency (kHz)	99% Bandwidth (Hz)
1	326.5	672.8
2	326.5	679.8
3	1778	660.5



CONFIGURATION 1 (326.5kHz)



CONFIGURATION 2 (326.5kHz)



CONFIGURATION 3 (1778kHz)

Intentionally left blank

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

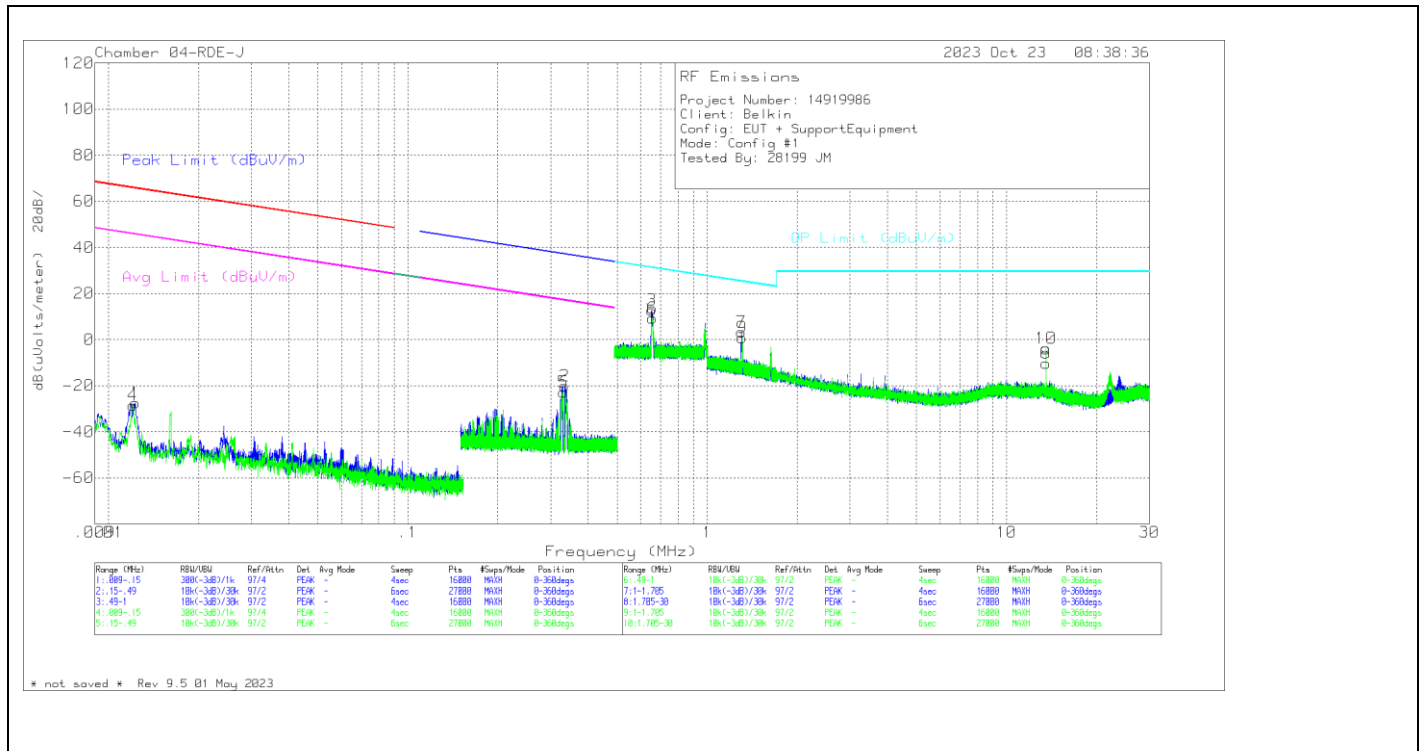
Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

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) dB/m	Amp/Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.0123	23.87	Pk	60.1	-31.3	-80	-27.33	65.79	-93.12	45.79	-73.12	-	-	-	-	0-360
2	.3347	35.71	Pk	56.3	-32.2	-80	-20.19	-	-	-	-	37.12	-57.31	17.12	-37.31	0-360
4	.0121	22.77	Pk	60.1	-31.3	-80	-28.43	65.97	-94.4	45.97	-74.4	-	-	-	-	0-360
5	.3305	33.05	Pk	56.3	-32.2	-80	-22.85	-	-	-	-	37.23	-60.08	17.23	-40.08	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) dB/m	Amp/Cables (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.6525	28.75	Pk	56.3	-32.2	-40	12.85	31.32	-18.47	0-360
6	.6557	25.27	Pk	56.3	-32.2	-40	9.37	31.28	-21.91	0-360
7	1.3011	30.21	Pk	45.2	-32.2	-40	3.21	25.34	-22.13	0-360
8*	13.5589	27.37	Pk	34.3	-31.9	-40	-10.23	29.5	-39.73	0-360
9*	1.3086	27.94	Pk	45.2	-32.2	-40	-.94	25.29	-24.35	0-360
10	13.561	33.72	Pk	34.3	-31.9	-40	-3.88	29.5	-33.38	0-360

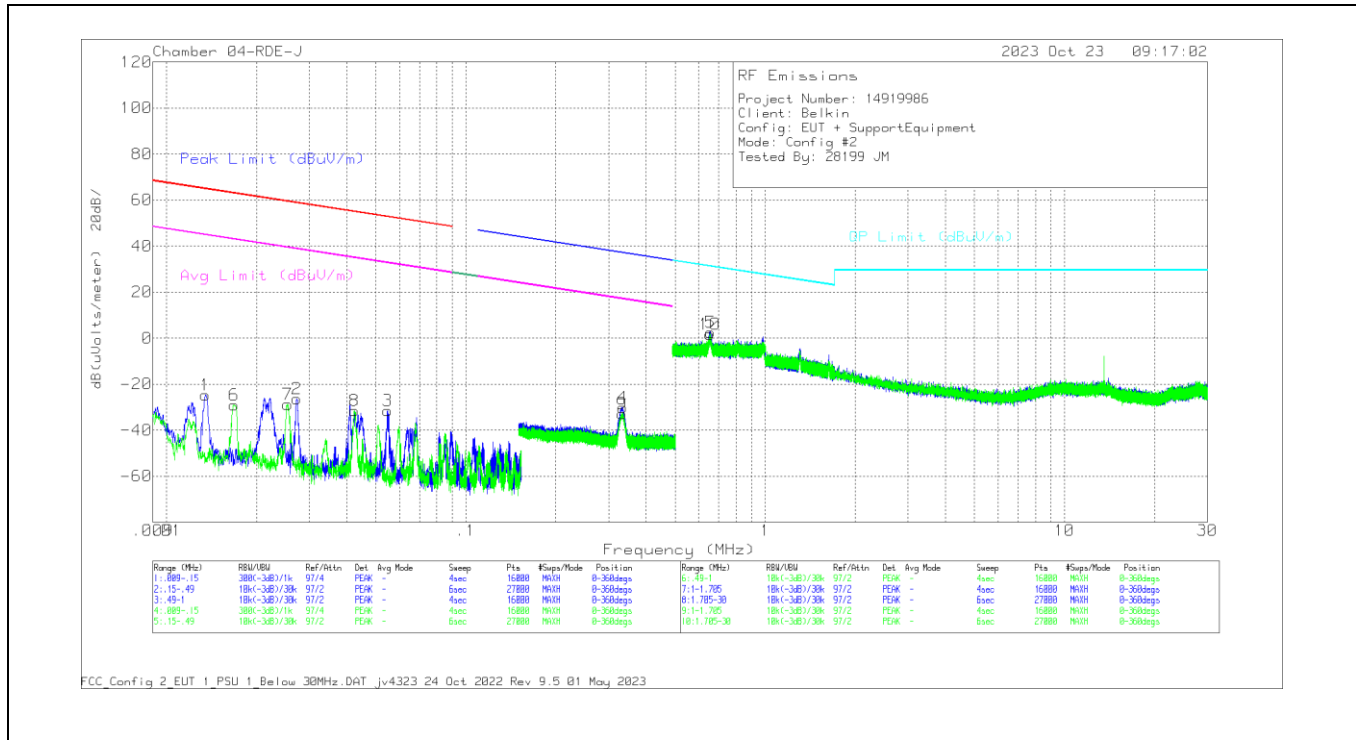
Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) dB/m	Amp/Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
.3262	38.31	Pk	56.3	-32.2	-80	-17.59	37.34	-54.93	17.34	-34.93	294
.3265	34.54	Pk	56.3	-32.2	-80	-21.36	37.33	-58.69	17.33	-38.69	20

Pk - Peak detector

* Investigation was performed. Markers 8, 10 are not related to EUT.

8.2.2. CONFIGURATION 2: OPERATING MODE WITH Apple Watch (326.5kHz)



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) dB/m	Amp/Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.0135	26.87	Pk	59.9	-31.4	-80	-24.63	64.98	-89.61	44.98	-69.61	-	-	-	-	0-360
2	.0272	27.44	Pk	58.3	-32.2	-80	-26.46	58.89	-85.35	38.89	-65.35	-	-	-	-	0-360
3	.0548	23.96	Pk	56.8	-32.3	-80	-31.54	52.81	-84.35	32.81	-64.35	-	-	-	-	0-360
4	.3338	25.66	Pk	56.3	-32.2	-80	-30.24	-	-	-	-	37.14	-67.38	17.14	-47.38	0-360
6	.0168	23.12	Pk	59.5	-31.7	-80	-29.08	63.07	-92.15	43.07	-72.15	-	-	-	-	0-360
7	.0254	24.83	Pk	58.5	-32.1	-80	-28.77	59.48	-88.25	39.48	-68.25	-	-	-	-	0-360
8	.0424	23.6	Pk	57.3	-32.3	-80	-31.4	55.03	-86.43	35.03	-66.43	-	-	-	-	0-360
9	.3321	23.14	Pk	56.3	-32.2	-80	-32.76	-	-	-	-	37.18	-69.94	17.18	-49.94	0-360

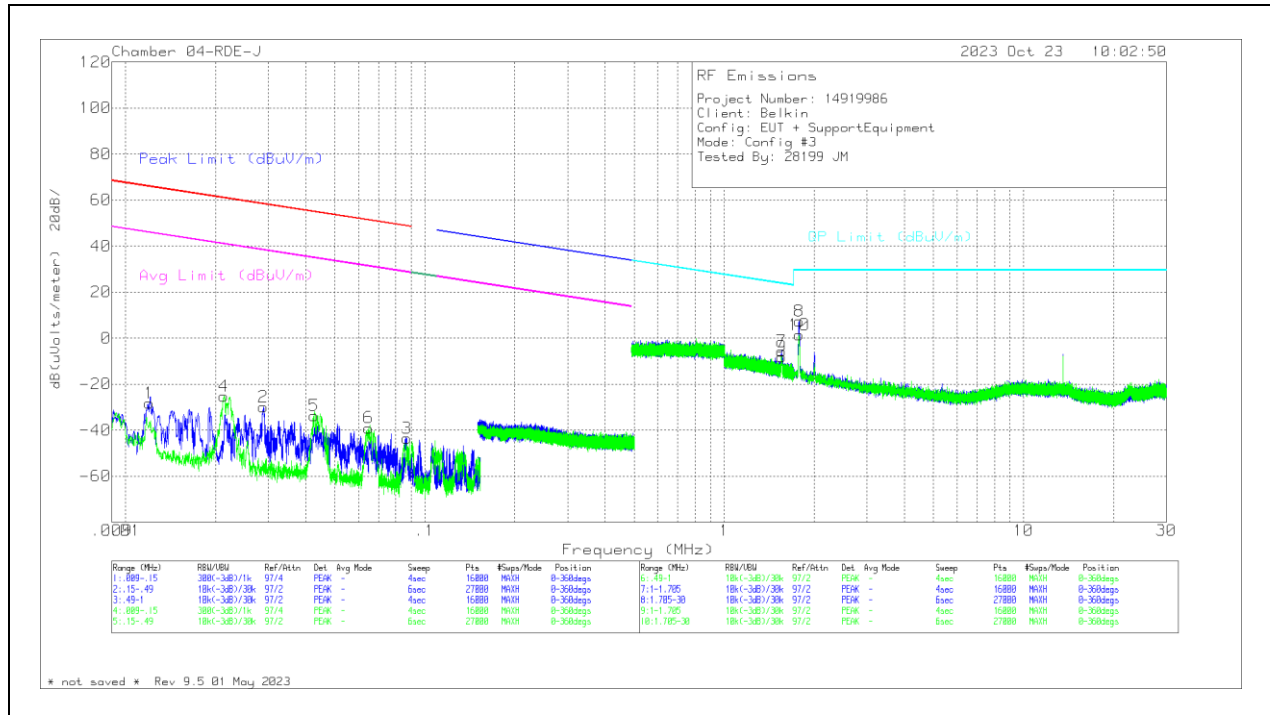
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) dB/m	Amp/Cables (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
5	.6565	18.35	Pk	56.3	-32.2	-40	2.45	31.27	-28.82	0-360
10	.6545	17.59	Pk	56.3	-32.2	-40	1.69	31.29	-29.6	0-360

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) dB/m	Amp/Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
.3271	27.92	Pk	56.3	-32.2	-80	-27.98	37.32	-65.3	17.32	-45.3	182
.327	26.77	Pk	56.3	-32.2	-80	-29.13	37.32	-66.45	17.32	-46.45	30

Pk - Peak detector

8.2.3. CONFIGURATION 3: OPERATING MODE WITH Apple Watch (1.778MHz)



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) dB/m	Amp/Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.012	22.94	Pk	60.1	-31.3	-80	-28.26	65.98	-94.24	45.98	-74.24	0-360
2	.0289	24.18	Pk	58.2	-32.2	-80	-29.82	58.37	-88.19	38.37	-68.19	0-360
3	.0869	12.88	Pk	55.9	-32.3	-80	-43.52	48.8	-92.32	28.8	-72.32	0-360
4	.0213	27.88	Pk	59	-32.1	-80	-25.22	61.01	-86.23	41.01	-66.23	0-360
5	.0427	21.36	Pk	57.3	-32.3	-80	-33.64	54.97	-88.61	34.97	-68.61	0-360
6	.065	17.11	Pk	56.2	-32.3	-80	-38.99	51.32	-90.31	31.32	-70.31	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) dB/m	Amp/Cables (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
7	1.5563	22.56	Pk	43.9	-32.1	-40	-5.64	23.79	-29.43	0-360
8	1.7773	36.73	Pk	42.7	-32.1	-40	7.33	29.5	-22.17	0-360
9	1.5547	20.03	Pk	43.9	-32.1	-40	-8.17	23.8	-31.97	0-360
10	1.7784	30.76	Pk	42.7	-32.1	-40	1.36	29.5	-28.14	0-360

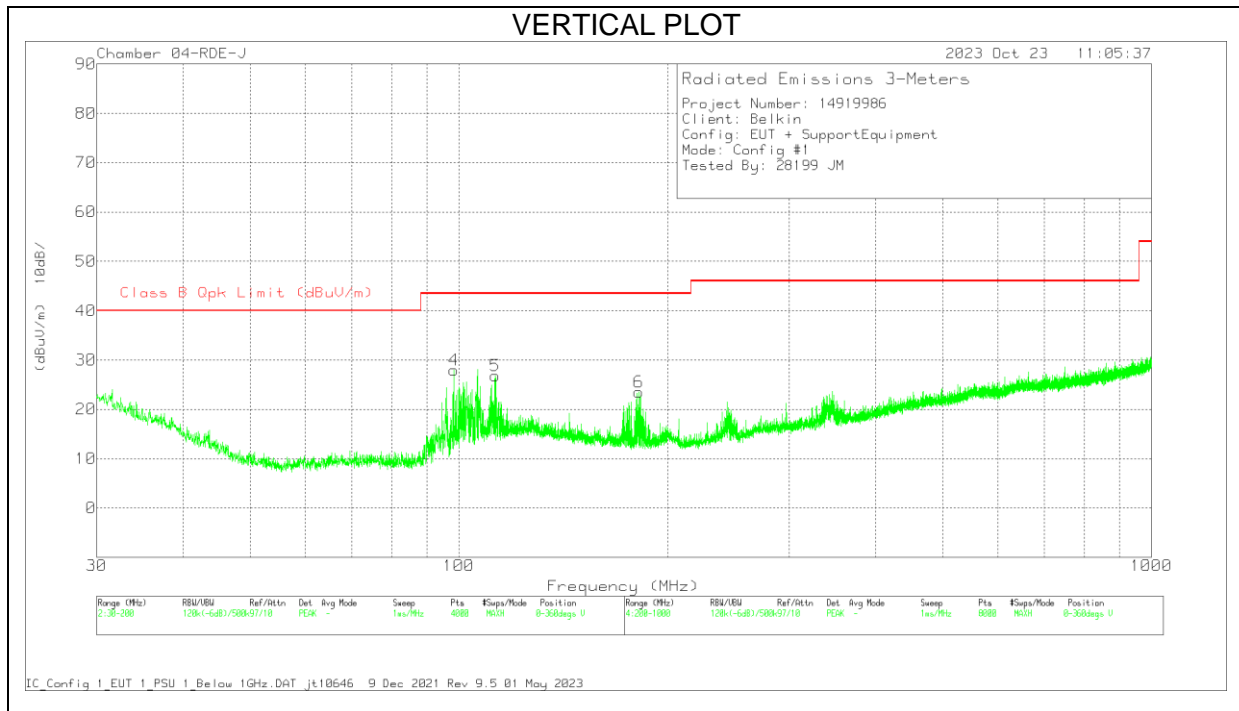
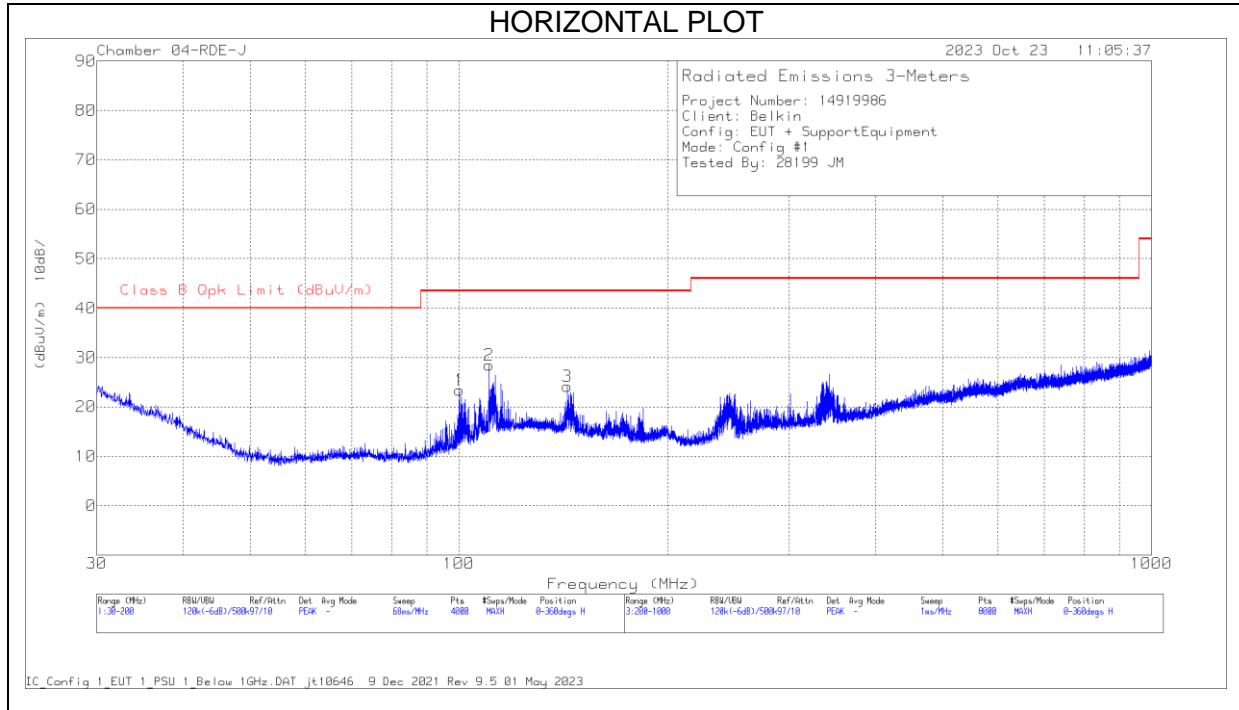
Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) dB/m	Amp/Cables (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1.778	39.4	Pk	42.7	-32.1	-40	10	29.5	-19.5	358
1.7779	36.37	Pk	42.7	-32.1	-40	6.97	29.5	-22.53	279

Pk - Peak detector

8.3. FCC TX SPURIOUS EMISSION 30 TO 1000 MHz

8.3.1. CONFIGURATION 1: WPT ON STANDBY



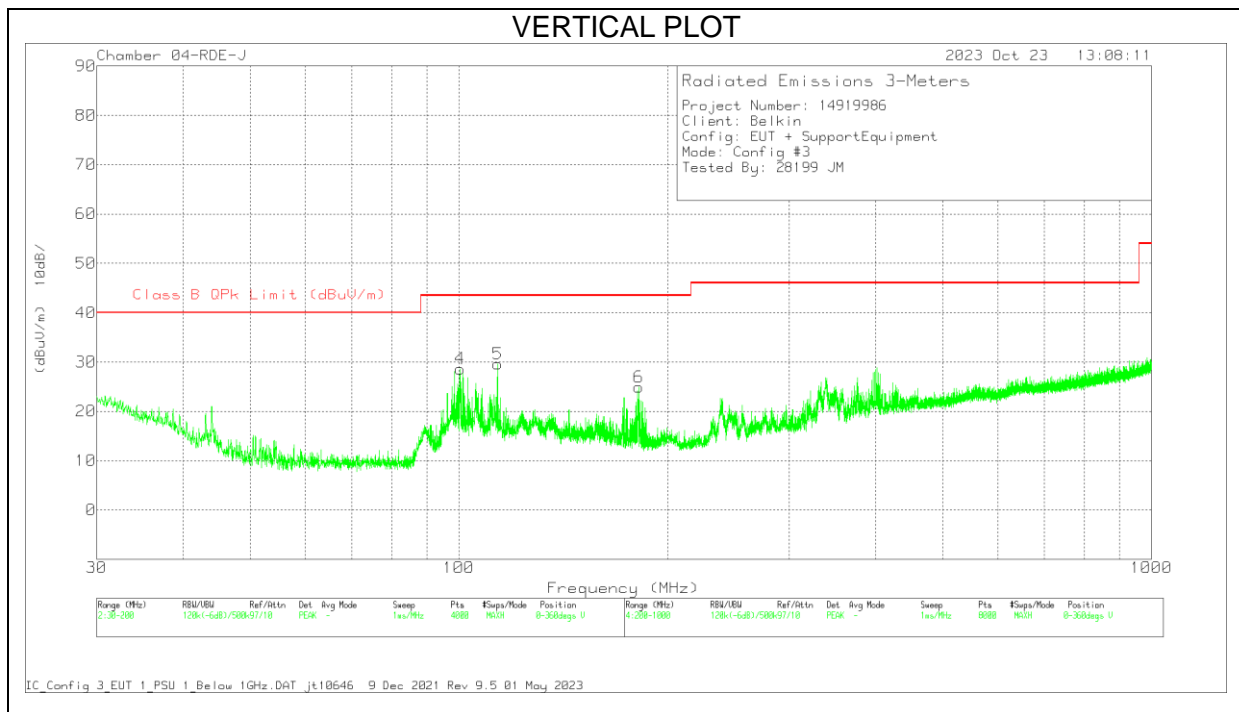
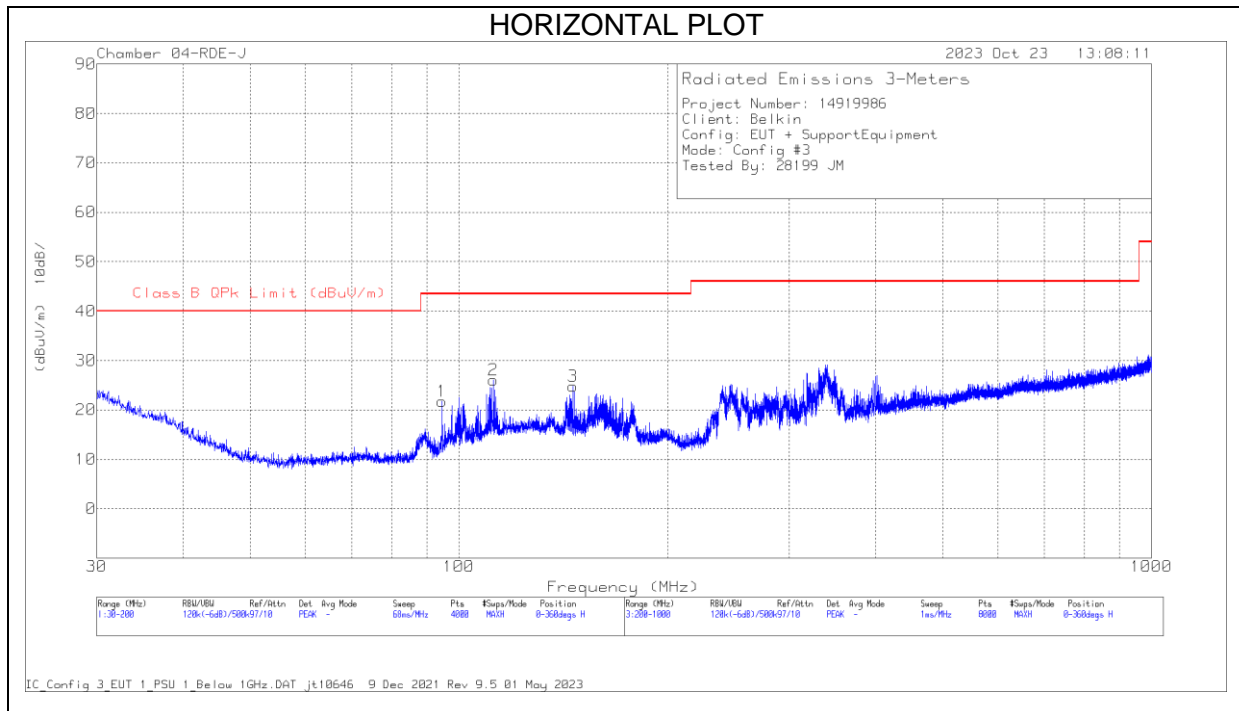
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80293 ACF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Class B Qpk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	100.271	38.48	Pk	16.1	-31.2	23.38	43.5	-20.12	0-360	299	H
2	110.01	29.59	Pk	18.5	-31.2	16.89	43.5	-26.61	183	164	H
	109.18	21.9	Qp	18.4	-31.2	9.1	43.5	-34.4	183	164	H
3	143.377	36.29	Pk	18.9	-31	24.19	43.5	-19.31	0-360	199	H
4	98.2727	43.52	Pk	15.6	-31.2	27.92	43.5	-15.58	0-360	100	V
5	112.896	38.9	Pk	19.1	-31.2	26.8	43.5	-16.7	0-360	100	V
6	181.722	37.31	Pk	17	-30.8	23.51	43.5	-19.99	0-360	100	V

Pk - Peak detector

Qp - Quasi-Peak detector

8.3.2. CONFIGURATION 3: OPERATING MODE WITH Apple Watch (1.778MHz)

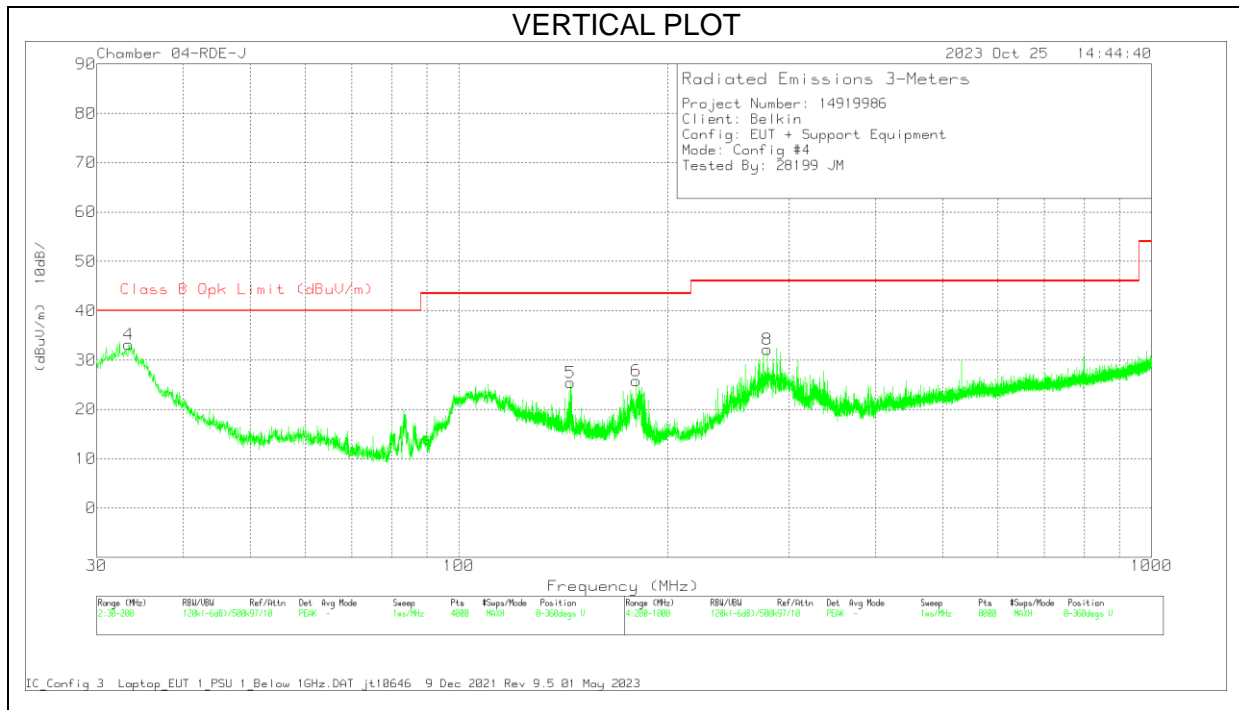
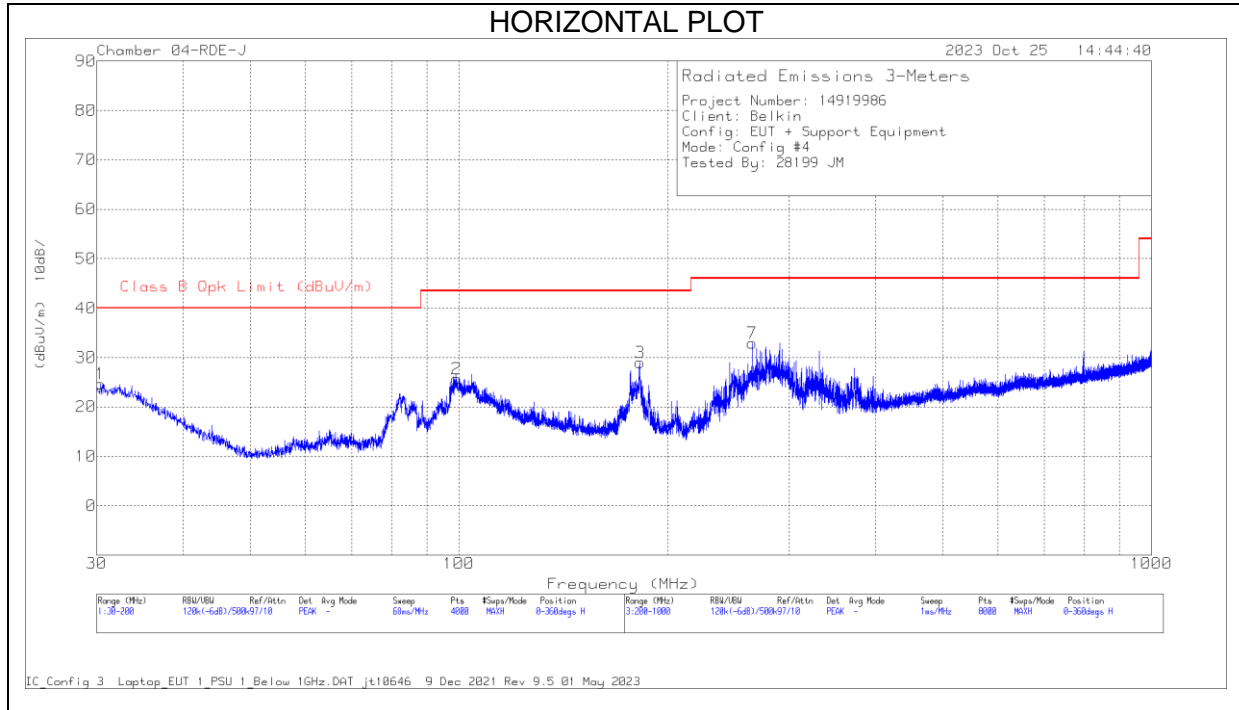


DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80293 ACF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Class B QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	94.6167	38.38	Pk	14.7	-31.3	21.78	43.5	-21.72	0-360	299	H
2	112.131	38.38	Pk	18.9	-31.2	26.08	43.5	-17.42	0-360	199	H
3	146.183	37.12	Pk	18.7	-31	24.82	43.5	-18.68	0-360	199	H
4	100.526	43.76	Pk	16.1	-31.2	28.66	43.5	-14.84	0-360	100	V
5	105.657	38.06	Pk	17.4	-31.2	24.26	43.5	-19.24	148	128	V
	105.782	34.78	Qp	17.5	-31.2	21.08	43.5	-22.42	148	128	V
6	181.934	38.72	Pk	17	-30.8	24.92	43.5	-18.58	0-360	100	V

Pk - Peak detector
 Qp - Quasi-Peak detector

8.3.3. CONFIGURATION 4: OPERATING MODE WITH Apple Watch (1.778MHz)



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80293 ACF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Class B Qpk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.3826	30.02	Pk	26.4	-31.8	24.62	40	-15.38	0-360	399	H
2	99.2079	41.05	Pk	15.8	-31.2	25.65	43.5	-17.85	0-360	299	H
3	182.529	42.82	Pk	17	-30.8	29.02	43.5	-14.48	0-360	199	H
4	33.5728	41.47	Pk	24.2	-31.8	33.87	40	-6.13	28	127	V
	33.5863	35.44	Qp	24.2	-31.8	27.84	40	-12.16	28	127	V
5	144.78	37.7	Pk	18.7	-31	25.4	43.5	-18.1	0-360	100	V
6	180.489	39.61	Pk	17	-30.8	25.81	43.5	-17.69	0-360	100	V
7	265.208	44.77	Pk	18.6	-30.4	32.97	46	-13.03	0-360	99	H
8	279.01	43.31	Pk	19.2	-30.4	32.11	46	-13.89	0-360	199	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

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.

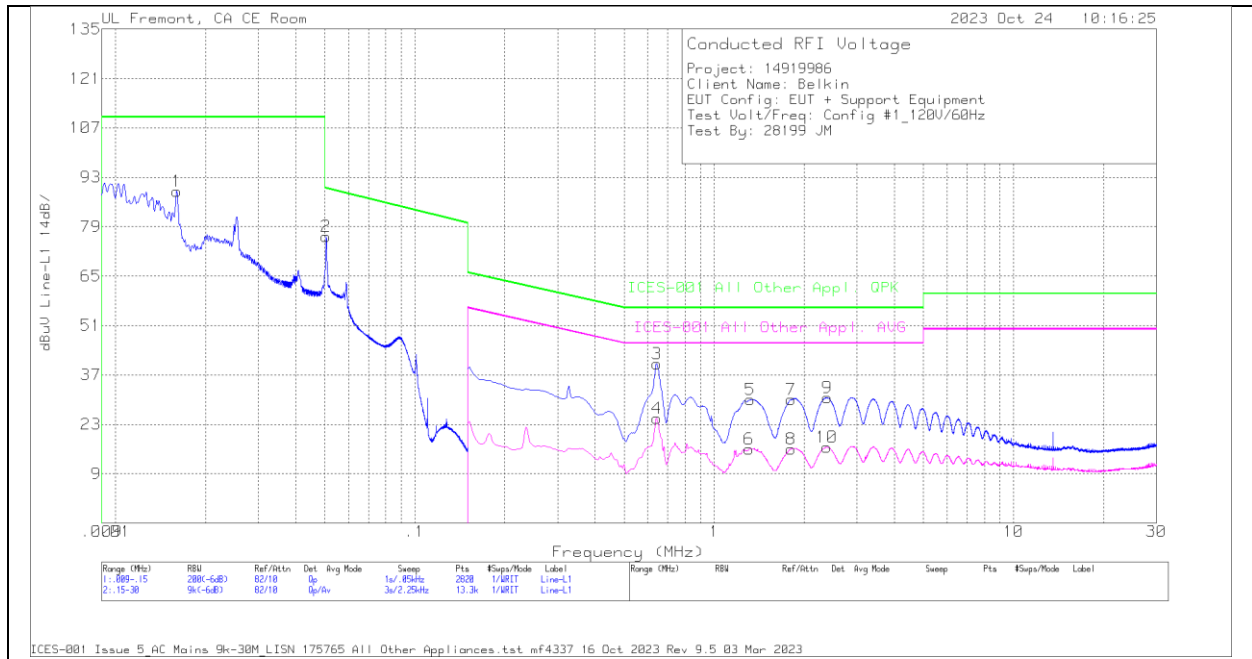
The receiver is set to a resolution bandwidth of 200Hz for below 150kHz, 9kHz for 150kHz to 30MHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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 ISED frequency range.

9.1. CONFIGURATION 1: WPT ON STANDBY LINE 1 RESULTS



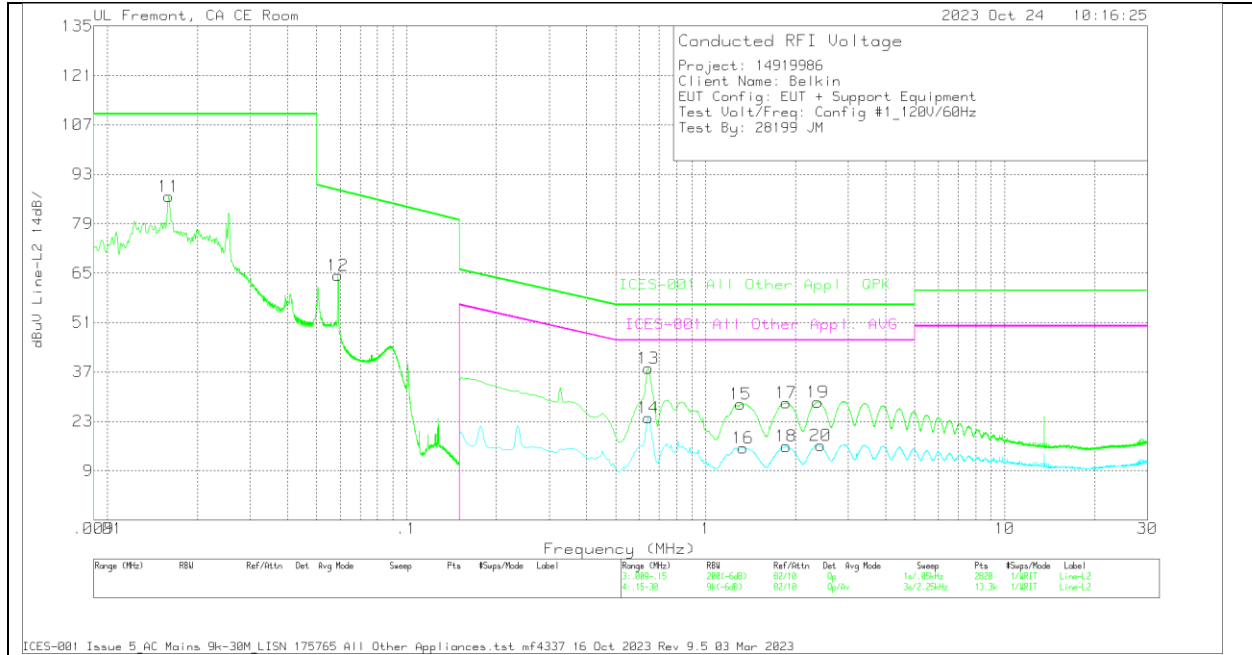
WORST EMISSIONS

Range 1: Line-L1 .009 - .15MHz													
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)	
1	.0161	65.7	Qp	2	-.1	11.5	10	89.1	110	-20.9	-	-	
2	.0506	56.07	Qp	.1	0	10	10	76.17	89.89	-13.72	-	-	

Range 2: Line-L1 .15 - 30MHz													
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)	
4	.6428	5.23	Av	0	.1	9.4	10	24.73	-	-	46	-21.27	
6	1.3065	-3.34	Av	0	0	9.4	10	16.06	-	-	46	-29.94	
8	1.8026	-3.57	Av	0	.1	9.4	10	15.93	-	-	46	-30.07	
10	2.3809	-2.88	Av	0	.1	9.3	10	16.52	-	-	46	-29.48	
3	.6428	20.73	Qp	0	.1	9.4	10	40.23	56	-15.77	-	-	
5	1.32	10.59	Qp	0	0	9.4	10	29.99	56	-26.01	-	-	
7	1.8015	10.47	Qp	0	.1	9.4	10	29.97	56	-26.03	-	-	
9	2.3865	11.13	Qp	0	.1	9.3	10	30.53	56	-25.47	-	-	

Qp - Quasi-Peak detector
 Av - Average detection

LINE 2 RESULTS



WORST EMISSIONS

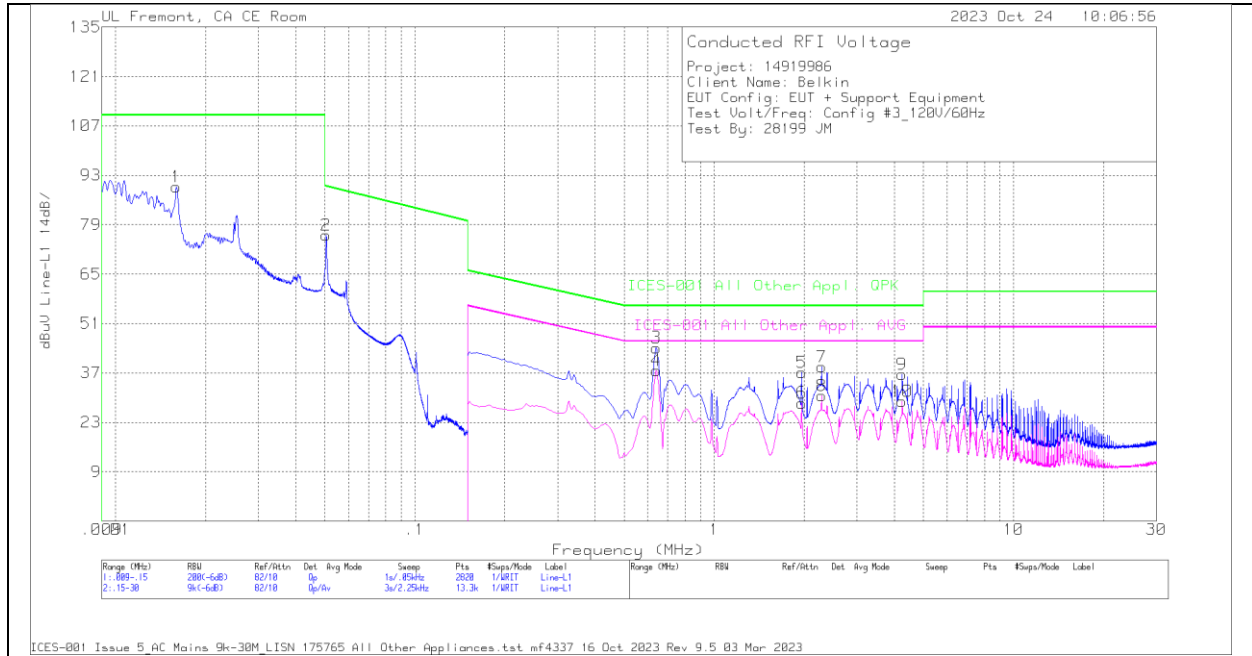
Range 3: Line-L2 .009 - .15MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
11	.0161	63.17	Qp	2.1	0	11.5	10	86.77	110	-23.23	-	-
12	.059	44.45	Qp	0	0	9.8	10	64.25	88.49	-24.24	-	-

Range 4: Line-L2 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
14	.6428	4.48	Av	0	.1	9.4	10	23.98	-	-	46	-22.02
16	1.3324	-3.96	Av	0	.1	9.3	10	15.44	-	-	46	-30.56
18	1.8611	-3.6	Av	0	.1	9.4	10	15.9	-	-	46	-30.1
20	2.4225	-3.17	Av	0	.1	9.3	10	16.23	-	-	46	-29.77
13	.6428	18.45	Qp	0	.1	9.4	10	37.95	56	-18.05	-	-
15	1.3065	8.55	Qp	0	0	9.4	10	27.95	56	-28.05	-	-
17	1.8623	8.75	Qp	0	.1	9.4	10	28.25	56	-27.75	-	-
19	2.3708	9	Qp	0	.1	9.4	10	28.5	56	-27.5	-	-

Qp - Quasi-Peak detector
 Av - Average detection

9.2. CONFIGURATION 3: OPERATING MODE WITH Apple Watch (1.778MHz)

LINE 1 RESULTS



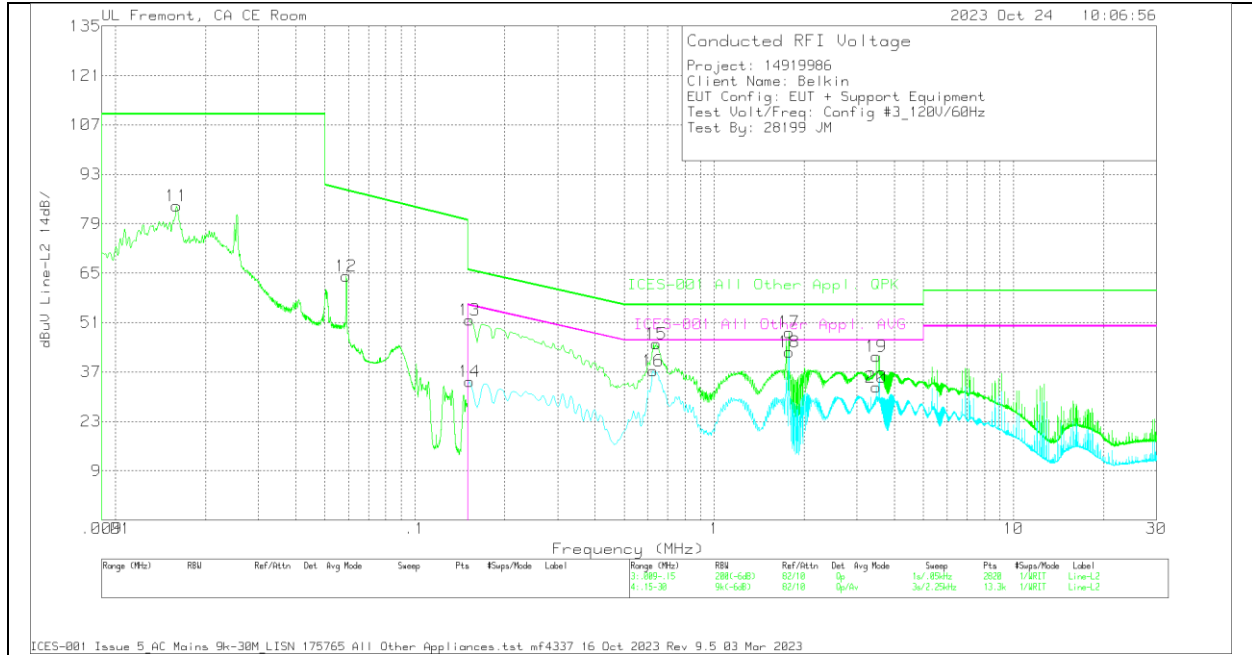
WORST EMISSIONS

Range 1: Line-L1 .009 - .15MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
1	.016	66.34	Qp	2	-.1	11.5	10	89.74	110	-20.26	-	-
2	.0506	55.88	Qp	.1	0	10	10	75.98	89.89	-13.91	-	-

Range 2: Line-L1 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
4	.6405	18.14	Av	0	.1	9.4	10	37.64	-	-	46	-8.36
6	1.959	9.11	Av	0	.1	9.3	10	28.51	-	-	46	-17.49
8	2.2853	11.01	Av	0	.1	9.4	10	30.51	-	-	46	-15.49
10	4.245	9.51	Av	0	.1	9.4	10	29.01	-	-	46	-16.99
3	.6405	24.65	Qp	0	.1	9.4	10	44.15	56	-11.85	-	-
5	1.959	17.65	Qp	0	.1	9.3	10	37.05	56	-18.95	-	-
7	2.2853	19.19	Qp	0	.1	9.4	10	38.69	56	-17.31	-	-
9	4.245	17.08	Qp	0	.1	9.4	10	36.58	56	-19.42	-	-

Qp - Quasi-Peak detector
 Av - Average detection

LINE 2 RESULTS



WORST EMISSIONS

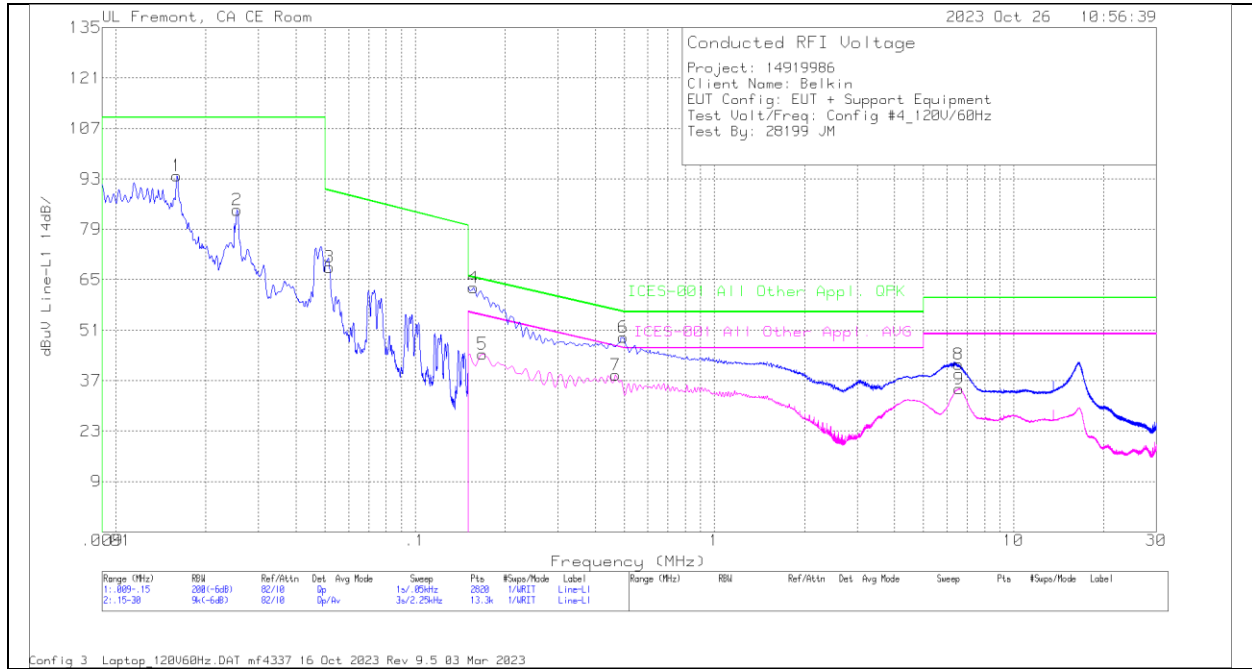
Range 3: Line-L2 .009 - .15MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
11	.016	60.42	Qp	2.1	0	11.5	10	84.02	110	-25.98	-	-
12	.0591	44.35	Qp	0	0	9.8	10	64.15	88.49	-24.34	-	-

Range 4: Line-L2 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
14	.1523	14.77	Av	0	0	9.5	10	34.27	-	-	55.88	-21.61
16	.6248	17.81	Av	0	.1	9.4	10	37.31	-	-	46	-8.69
18	1.7768	23.19	Av	0	.1	9.4	10	42.69	-	-	46	-3.31
20	3.4778	13.01	Av	0	.2	9.4	10	32.61	-	-	46	-13.39
13	.1523	32.21	Qp	0	0	9.5	10	51.71	65.88	-14.17	-	-
15	.6405	25.44	Qp	0	.1	9.4	10	44.94	56	-11.06	-	-
17	1.7768	28.74	Qp	0	.1	9.4	10	48.24	56	-7.76	-	-
19	3.4778	21.74	Qp	0	.2	9.4	10	41.34	56	-14.66	-	-

Qp - Quasi-Peak detector
 Av - Average detection

9.3. CONFIGURATION 4: OPERATING MODE WITH Apple Watch (1.778MHz)

LINE 1 RESULTS



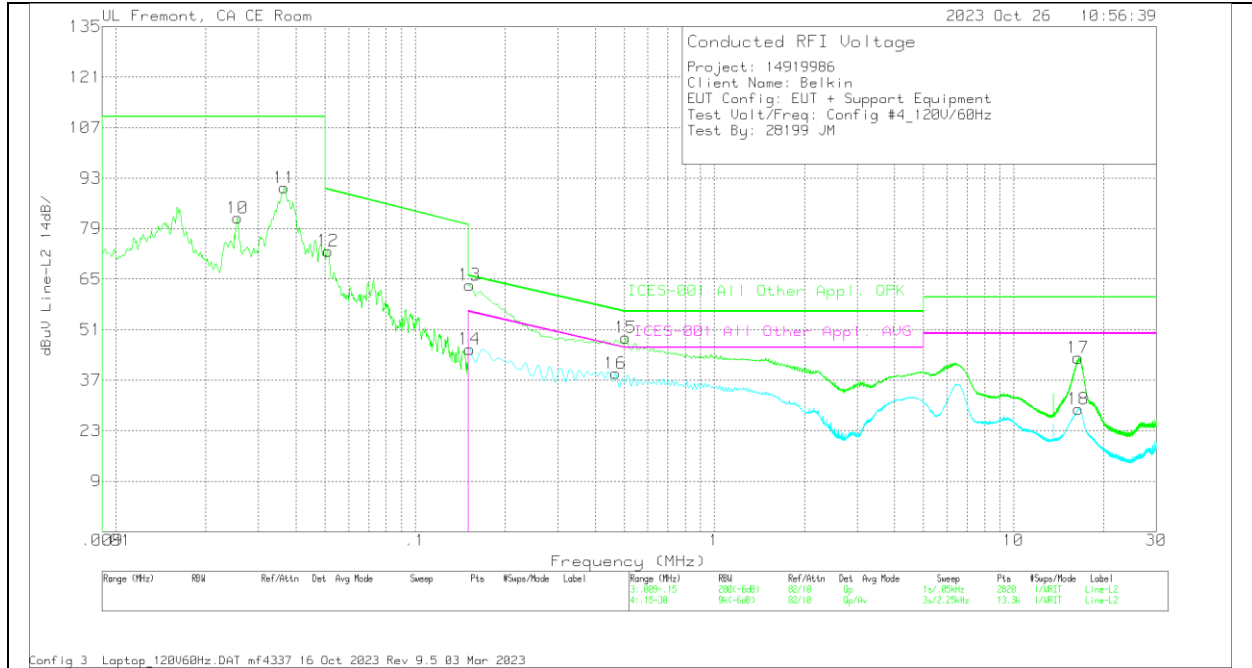
WORST EMISSIONS

Range 1: Line-L1 .009 - .15MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
1	.016	70.45	Qp	2	-.1	11.5	10	93.85	110	-16.15	-	-
2	.0255	62.47	Qp	1	.1	10.8	10	84.37	110	-25.63	-	-
3	.0518	48.39	Qp	.1	0	10	10	68.49	89.69	-21.2	-	-

Range 2: Line-L1 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
5	.168	24.85	Av	0	0	9.5	10	44.35	-	-	55.06	-10.71
7	.4673	19.14	Av	0	.1	9.3	10	38.54	-	-	46.56	-8.02
9	6.576	15.11	Av	0	.2	9.4	10	34.71	-	-	50	-15.29
4	.1568	43.3	Qp	0	0	9.5	10	62.8	65.63	-2.83	-	-
6	.4965	29.71	Qp	0	0	9.3	10	49.01	56.06	-7.05	-	-
8	6.5378	21.89	Qp	0	.2	9.4	10	41.49	60	-18.51	-	-

Qp - Quasi-Peak detector
 Av - Average detection

LINE 2 RESULTS



WORST EMISSIONS

Range 3: Line-L2 .009 - .15MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
10	.0255	60.06	Qp	1	.1	10.8	10	81.96	110	-28.04	-	-
11	.0366	69.61	Qp	.3	0	10.4	10	90.31	110	-19.69	-	-
12	.0512	52.81	Qp	0	0	10	10	72.81	89.79	-16.98	-	-

Range 4: Line-L2 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	10dB Atten (dB)	Corrected Reading dBuV	ICES-001 All Other Appl. QPK	Margin (dB)	ICES-001 All Other Appl. AVG	Margin (dB)
14	.1523	26.1	Av	0	0	9.5	10	45.6	-	-	55.88	-10.28
16	.4673	19.62	Av	0	0	9.3	10	38.92	-	-	46.56	-7.64
18	16.4693	9.19	Av	.1	.3	9.4	10	28.99	-	-	50	-21.01
13	.1523	43.89	Qp	0	0	9.5	10	63.39	65.88	-2.49	-	-
15	.5055	29.49	Qp	0	0	9.3	10	48.79	56	-7.21	-	-
17	16.44	23.41	Qp	.1	.3	9.4	10	43.21	60	-16.79	-	-

Qp - Quasi-Peak detector
 Av - Average detection

10. DESCRIPTION OF TEST SETUP AND SETUP PHOTOS

Please refer to 14919986-EP1 (FCC) for description of test up and setup photo.

END OF TEST REPORT