



TEST REPORT

Report Number. : 13371066-E1V2

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

Model : A2384

FCC ID : BCGA2384

IC : 579C-A2384

EUT Description : MAG SAFE BATTERY PACK

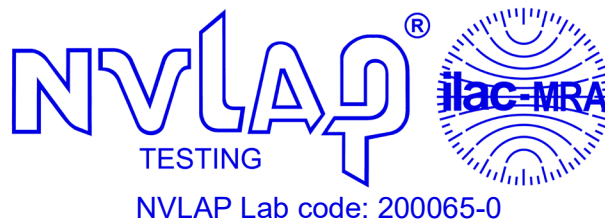
Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-216 ISSUE 2

Date Of Issue:

April 26, 2021

Prepared by:

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	4/23/2021	Initial Revision	Chin Pang
V2	4/26/2021	Address TCB Questions	Chin Pang

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION Wireless Charger and Battery Pack

MODEL: A2384

BRAND : APPLE

SERIAL NUMBER: DND351202Y70NJM1Q

SAMPLE RECEIPT DATE: 03/04/2021

DATE TESTED: MARCH 05, 2021 – APRIL 21, 2021

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Complies
ISED RSS-216 Issue 2	Complies
ISED RSS-GEN Issue 5	Complies

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

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

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:



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UL Verification Services Inc.

Prepared By:



Gabe Nunez
Test Engineer
Consumer Technology Division
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, KDB 414788 D01 Radiated Test Site v01r01, FCC CFR 47 Part 2, and FCC CFR 47 Part 15, RSS-GEN Issue 5 and RSS-216 Issue 2 January 2016.

3. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0, 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	US0104	2324A	208313
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538	US0104	22541	208313
☐	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	U _{Lab}
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.39 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.07 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.52 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.17 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The battery pack described in this document inductively charges other Apple supported wireless charging devices. The charging function operates at 127.7 kHz (Qi) and 360.0 kHz. The battery pack supports charging up to 5 W at 127.7 kHz and 15 W at 360.0 kHz and NFC passive tag operation.

I/O CABLES

I/O Cable List					
Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
DC	1	USB-C	Un-shielded	1	30W Power Supply
DC	1	Magnetic 5 pin	Un-shielded	3	60W Power Supply
USB	1	Lightening	Un-shielded	1	Communication

5.2. MAXIMUM E-FIELD AND H-FIELD STRENGTH

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

Fundamental Frequency (kHz)	Mode	E field (300m distance) FCC (dBuV/m)	H field (3m distance) IC (dBuA/m)
360	Operating mode	-17.99	6.51
127.7	Operating mode	-3.14	23.91

5.3. SOFTWARE AND FIRMWARE

The firmware version installed in the EUT during testing is v202.

5.4. WORST-CASE CONFIGURATION AND MODE

The EUT is a dual frequencies magnetic charger enclosed in a plastic case. For the entire radiated emissions test, the EUT was examining on the following configuration.

Config	Mode	Descriptions
1	Standby mode (Radiated Spurious Only)	EUT powered by AC/DC adapter via USB-C cable
2	Standby mode (Radiated Spurious Only)	EUT Only
3	Operating mode (EUT w/360kHz Fund)	EUT powered by AC/DC adapter via USB-C cable with iPhone + Case at charging mode
4	Operating mode (EUT w/127.7kHz Fund)	EUT powered by AC/DC adapter via USB-C cable with Legacy iPhone + Case at charging mode
5	Operating mode (EUT w/127.7kHz Fund)	EUT powered by AC/DC adapter via USB-C cable with AirPods at charging mode
6	Operating mode (EUT w/360kHz Fund)	EUT power by internal battery with iPhone + Case at charging mode
7	Operating mode (EUT w/127.7kHz Fund)	EUT powered by internal battery with AirPod at charging mode
8	Operating mode (EUT w/127.7kHz Fund)	EUT power by internal battery with Legacy iPhone + Case at charging mode

EUT was tested as standby and operation modes. For worst case operational mode, EUT was tested with iPhones, with iPhone at 15W has a magnetic alignment and Legacy iPhones at 5W without magnetic alignment. EUT was tested with AirPods, with AirPods at 1.5W with no magnetic alignment. Device being charged was at a state of 20 – 50% charged.

For below 30MHz testing, investigation was done on three antenna orientations (Face-On, Face-Off, and ground-parallel); Face-On and Face-Off are the worst orientations, therefore testing was performed on these two orientations only.

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

5.5. DESCRIPTION OF TEST SETUP

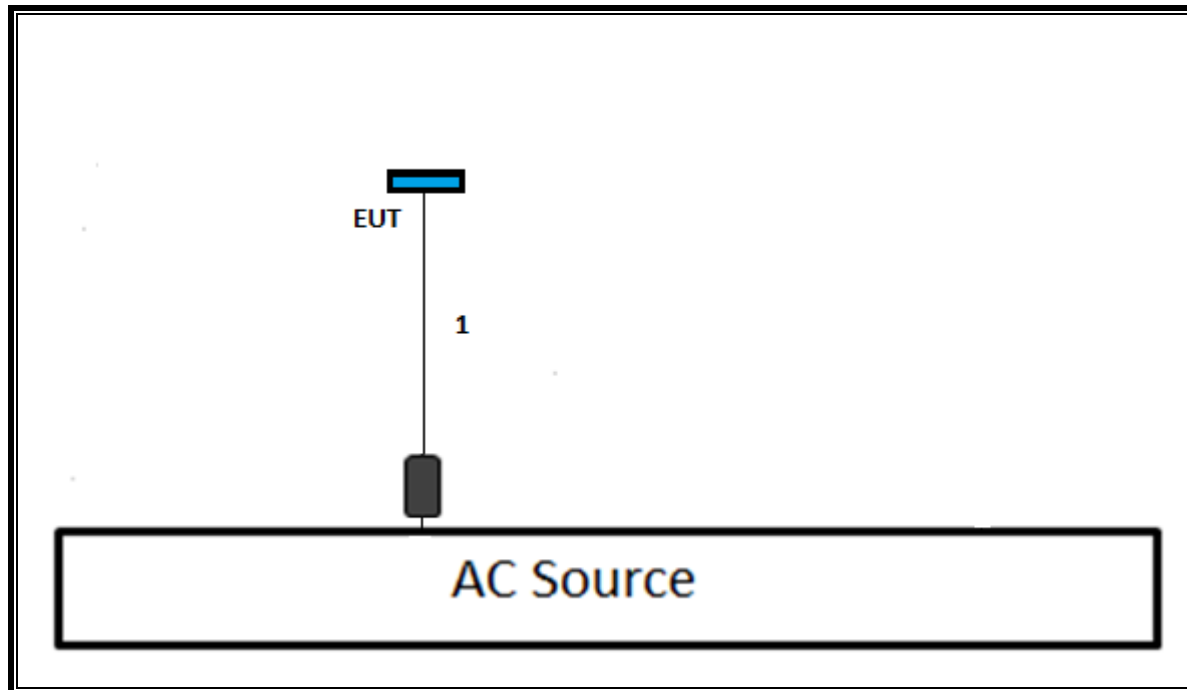
SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC/DC adapter	Apple	A1882	C4H748200RXH80MAY	DoC
Legacy iPhone	Apple	A2161	G6TZ707DNXPV	BCG-E3306A
iPhone	Apple	A2172	G6TD701M0C7J	BCG-E3542A
Airpods	Apple	A2190	GFHYPHSJMMT	BCG-A2292

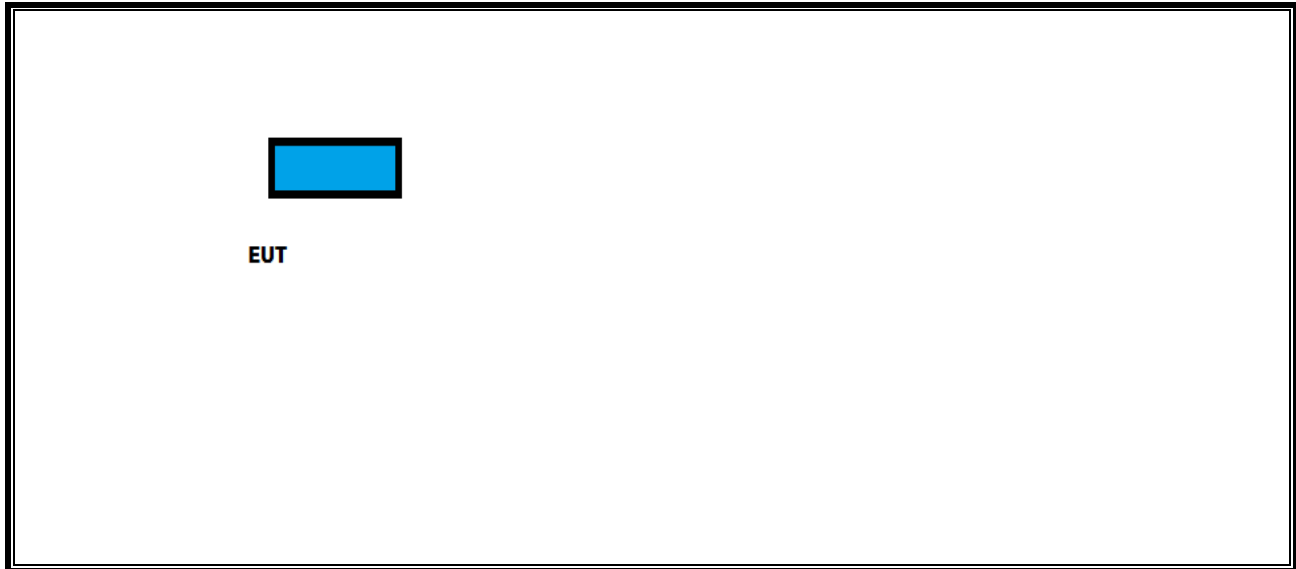
TEST SETUP

The EUT can be operating by either AC/DC adapter or internal battery.

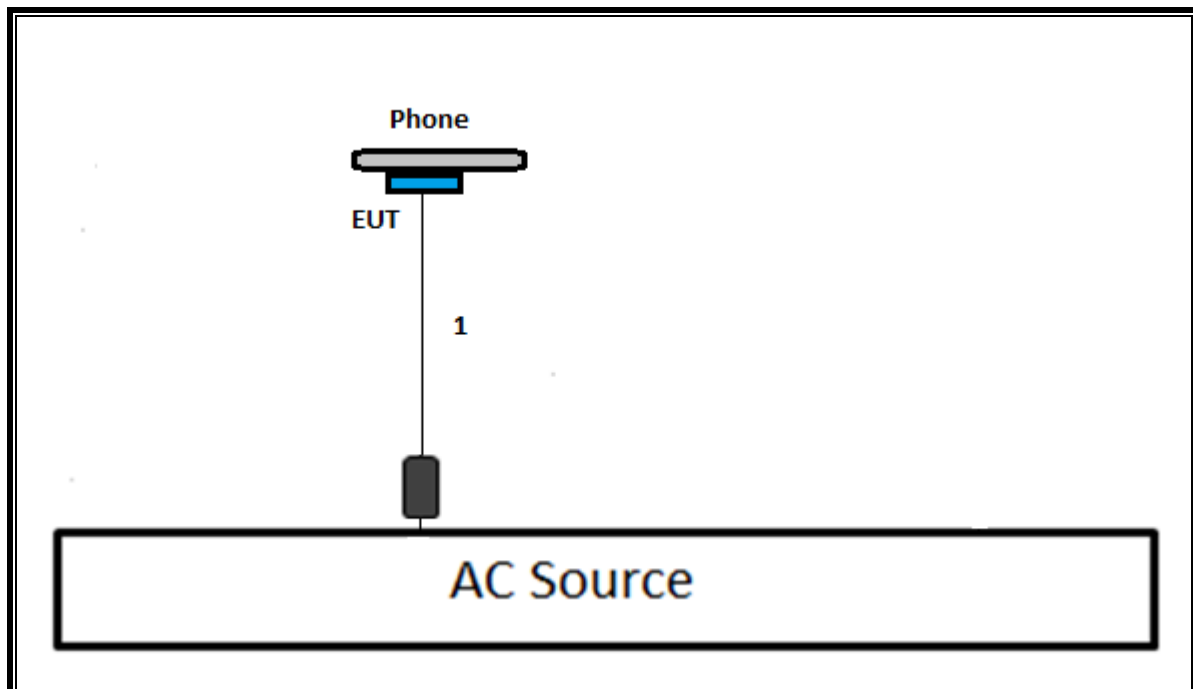
CONFIGURATION 1: STANDBY MODE WITH POWER ADAPTER



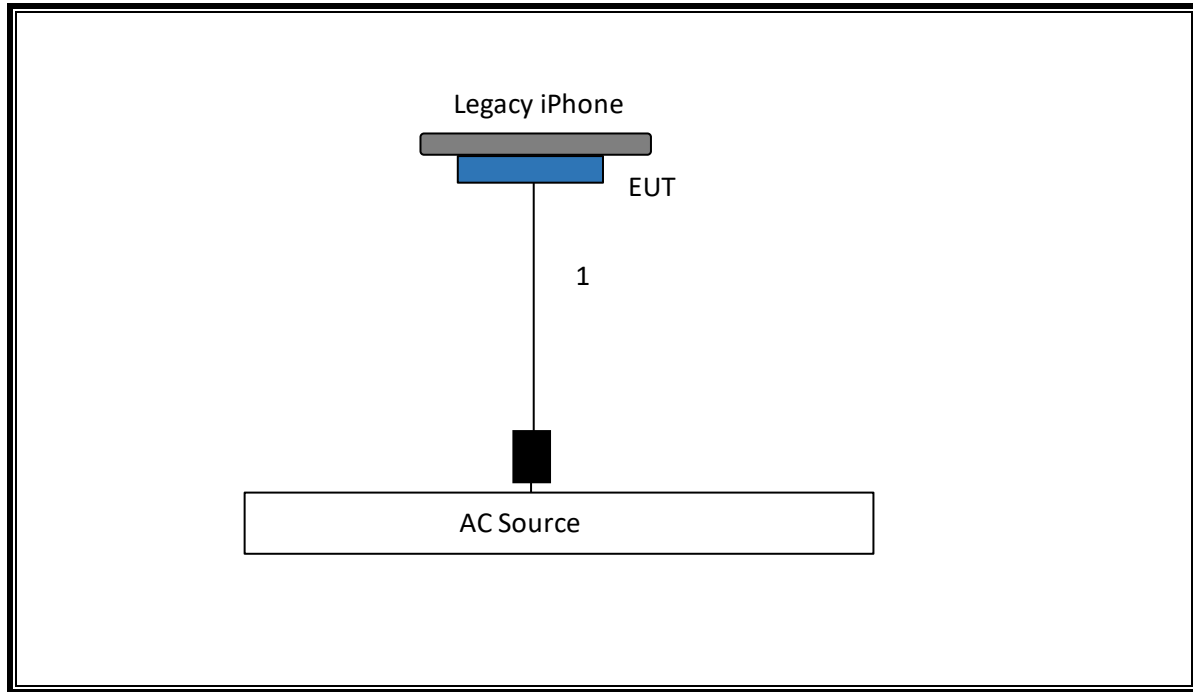
CONFIGURATION 2: STANDBY MODE EUT ONLY



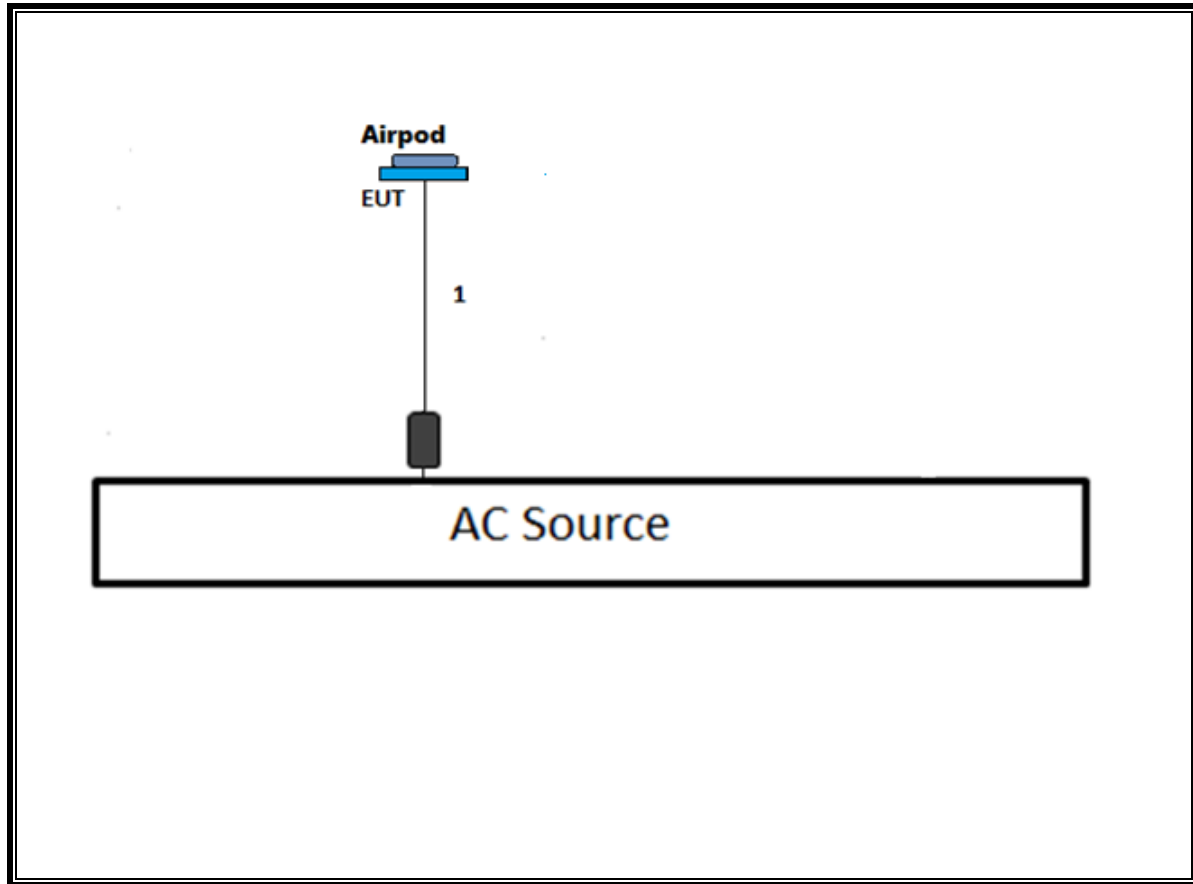
CONFIGURATION 3: OPERATING MODE EUT WITH POWER SOURCE + iPHONE + CASE



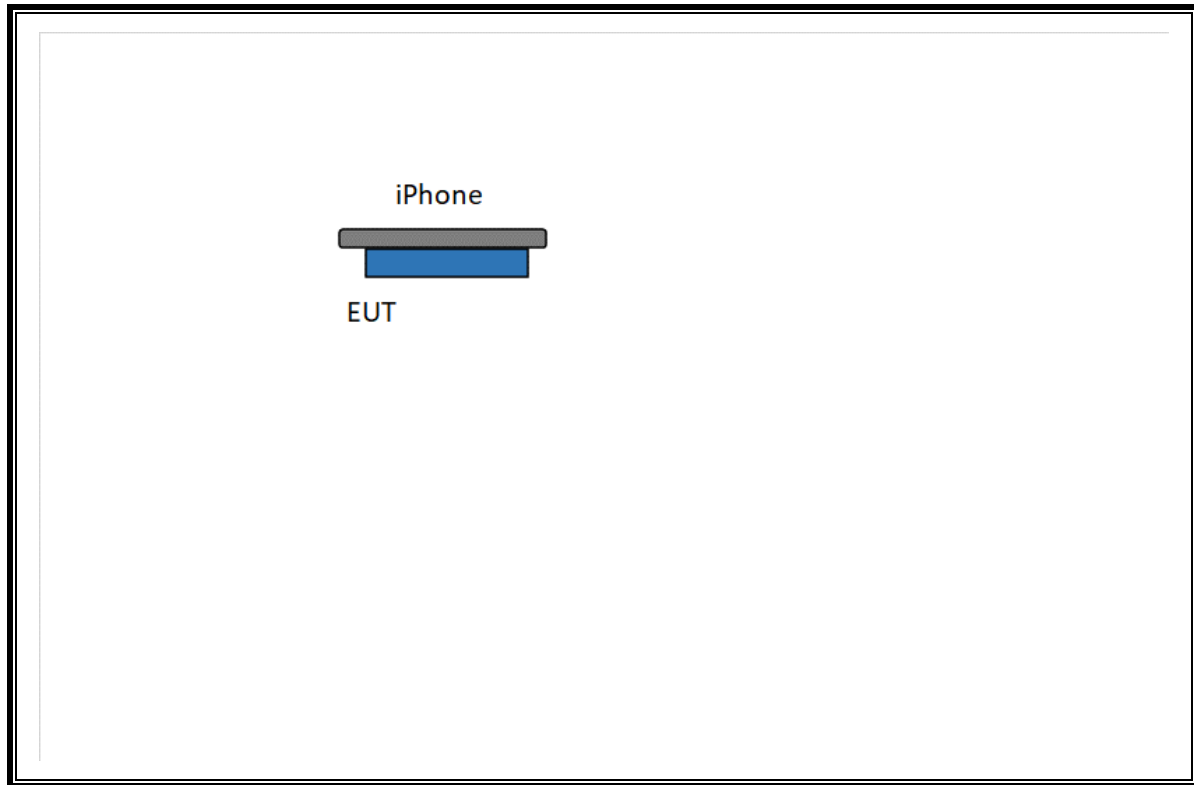
CONFIGURATION 4: OPERATING MODE EUT WITH POWER SOURCE + LEGACY iPHONE + CASE



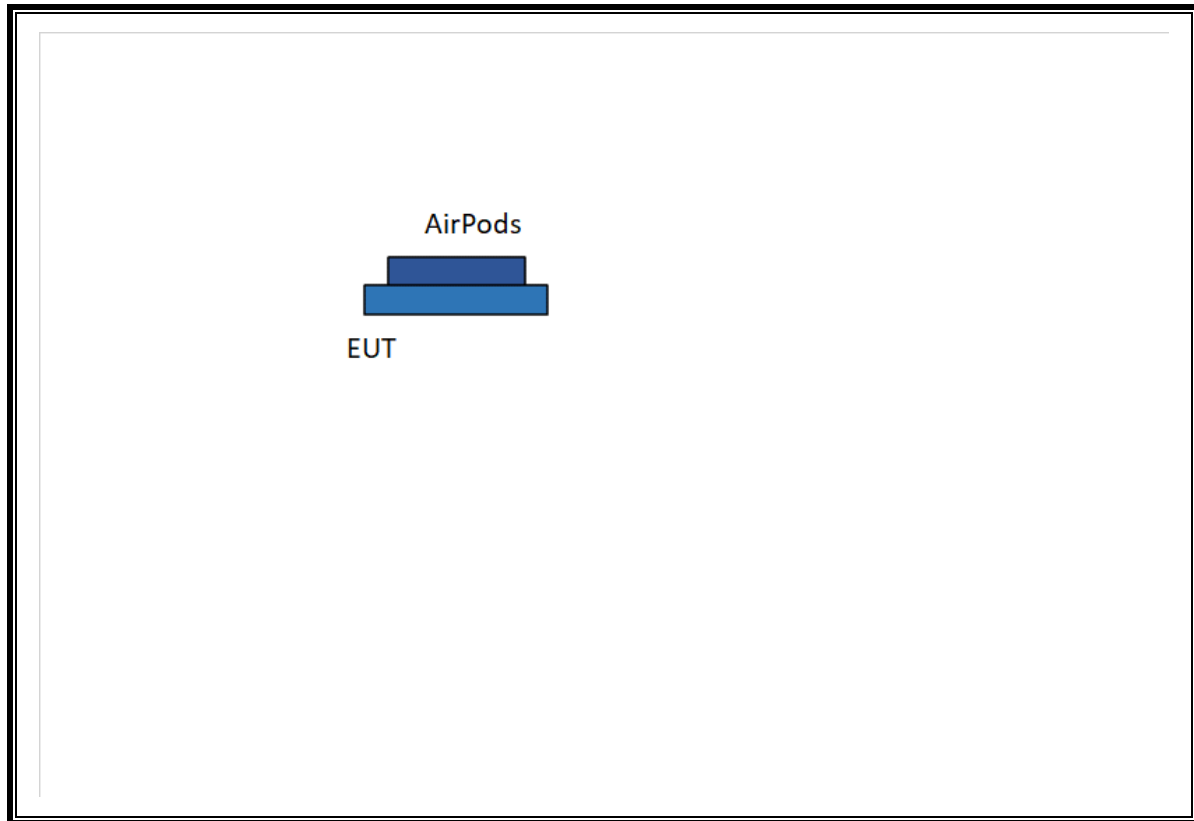
CONFIGURATION 5: OPERATION MODE EUT WITH POWER SOURCE + AIRPODS



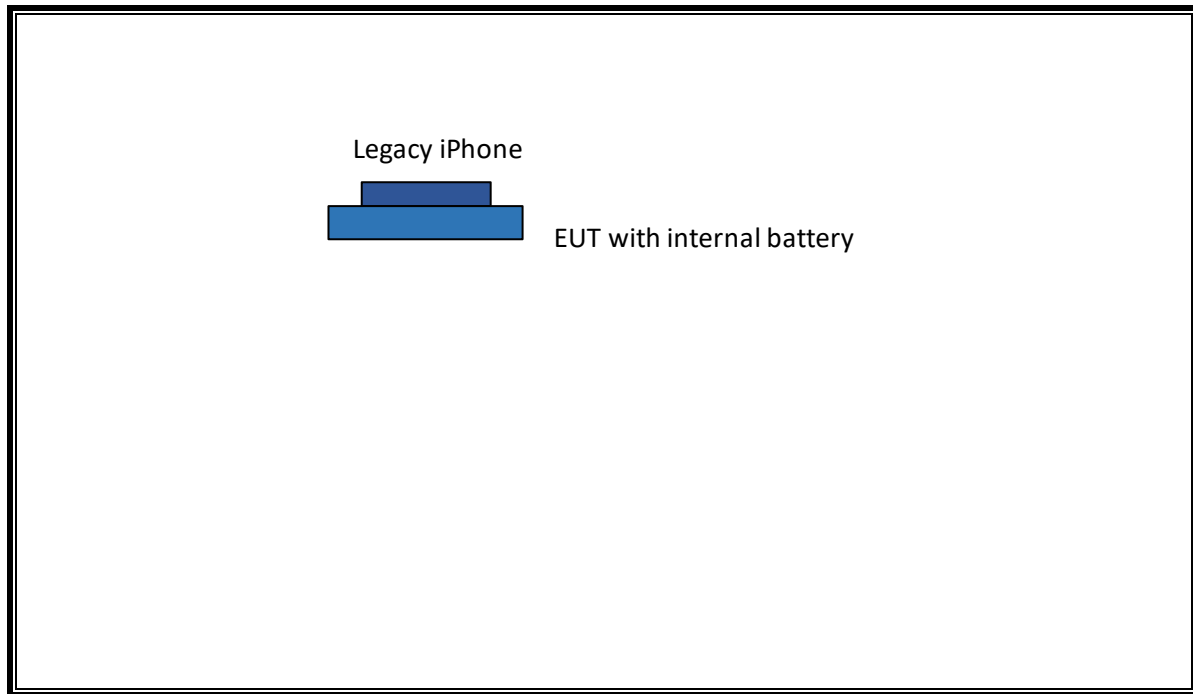
CONFIGURATION 6: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + iPHONE + CASE



CONFIGURATION 7: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + AIRPODS



**CONFIGURATION 8: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + LEGACY
iPHONE + CASE**



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST						
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal	
Antenna, Active Loop 9KHz to 30MHz	ETS-Lindgren	6502	T1683	04/30/2021	4/28/2020	
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 CISPR-16	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, Mar 6, 2020		
Conducted Software	UL	UL EMC	2020.2.26		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, February 21, 2020		

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.

EUT SETUP

Configuration 1 & 2: N/A due to no intended radiator.

Configuration 3/6: Charger with iPhone in operating mode, transmitting at 360kHz test.

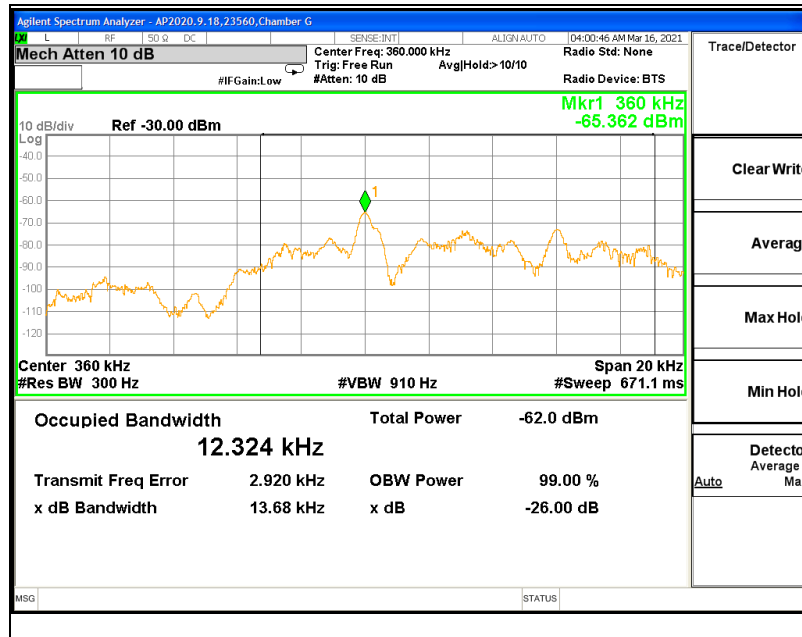
Configuration 4/8: Charger with Legacy iPhone in operating mode, transmitting at 127.7kHz test

Configuration 5/7: Charger with AirPods in operating mode, transmitting at 127.7kHz test

RESULTS

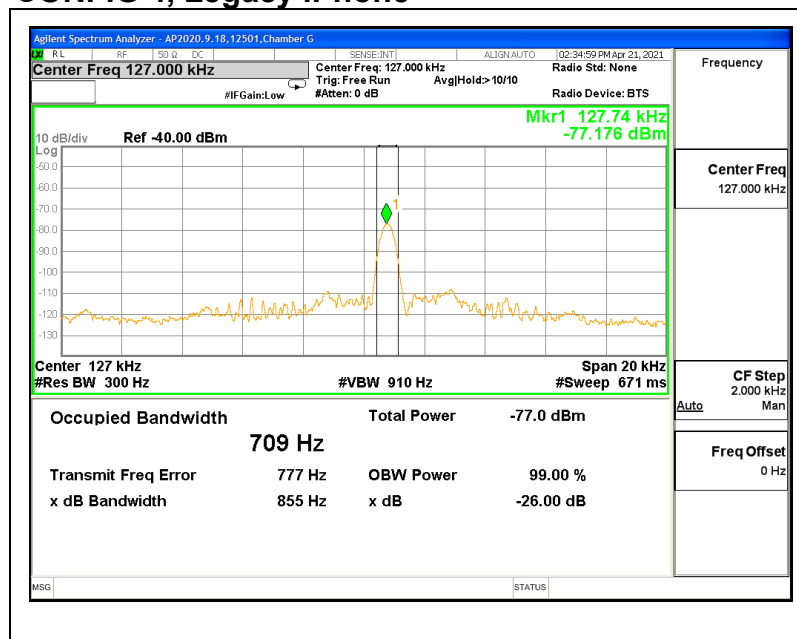
7.1. 360kHz

7.1.1. CONFIG 3, iPhone



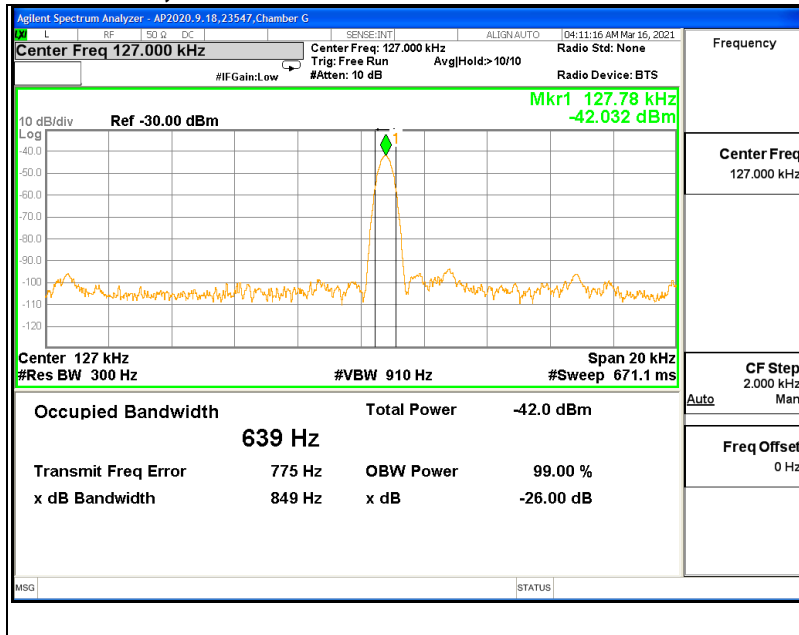
7.2. 127.7kHz

7.2.1. CONFIG 4, Legacy iPhone



7.3. 127.7kHz

7.3.1. CONFIG 5, AirPods



8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMIT

FCC §15.209 (a)

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

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

ICES-001 Issue 5 Table 2 & Table 4:

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

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

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

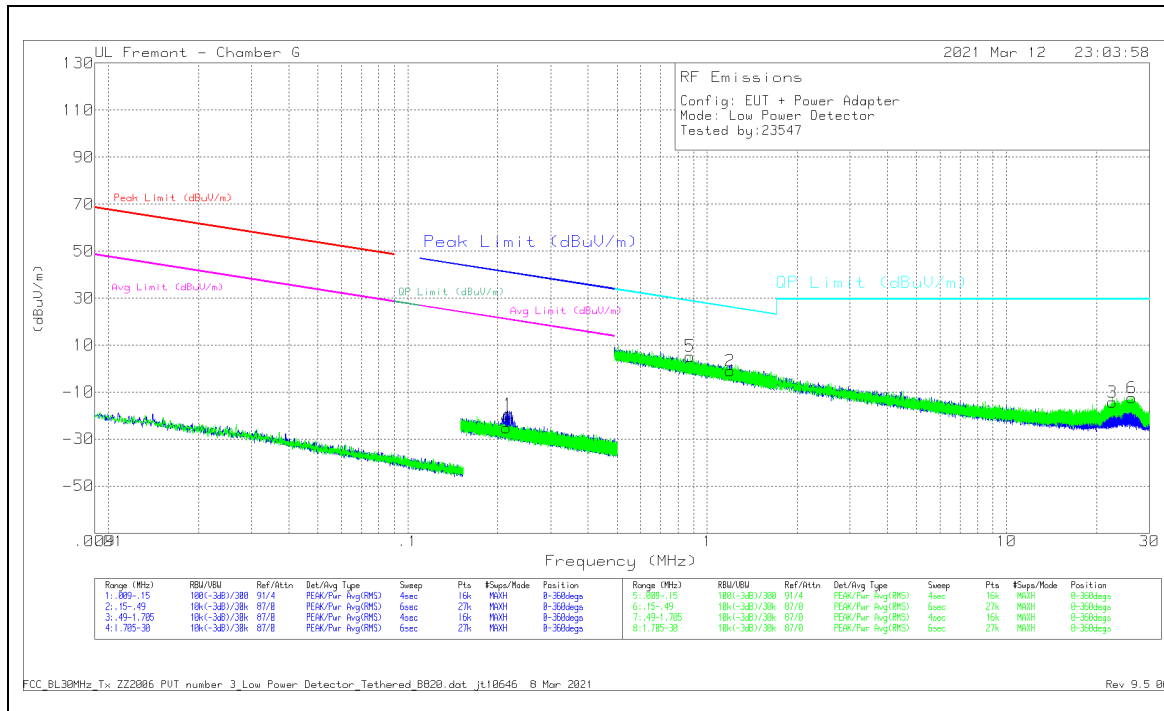
Frequency range (MHz)	OATS or SAC * 10 m measurement distance Quasi-peak (dBμV/m)	OATS or SAC * 3 m measurement distance Quasi-peak (dBμV/m)	FAR * 3 m measurement distance Quasi-peak (dBμV/m)
30 – 230	30	40	42 to 35**
230 – 1000	37	47	42
Note: The more stringent limit applies at the transition frequency. * OATS = open-area test site, SAC = semi-anechoic chamber, FAR = fully-anechoic room (see CSA C11:19). ** The limit level in dBμV/m decreases linearly with the logarithm of frequency.			

RESULTS

The test was performed on both Face On (blue color with Marker 1, 2 & 3) and Face Off (green color with Marker 4, 5 & 6) orientations.

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

8.2.1. CONFIG 1: STANDBY CONFIGURATION EUT WITH POWER ADAPTER



DATA

Radiated Emissions

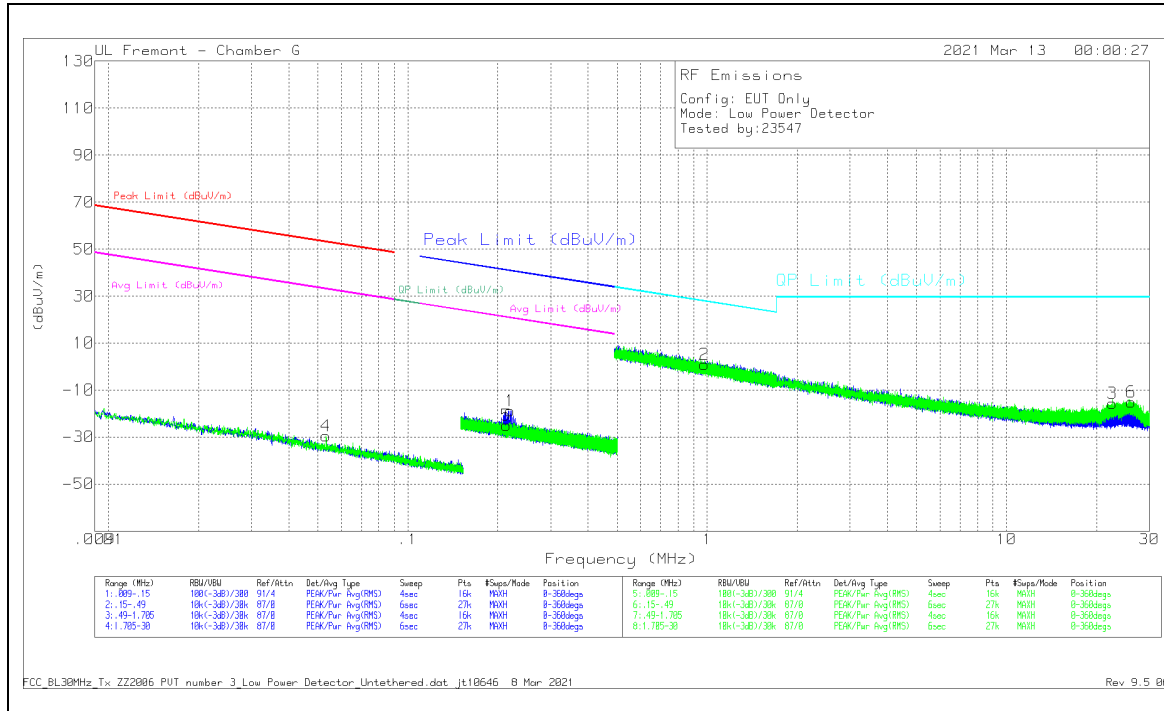
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
4	.20612	44.21	Pk	11	.1	-80	-24.69	41.34	-66.03	-	-	169
	.20776	31.85	Av	11	.1	-80	-37.05	-	-	21.27	-58.32	169
1	.21424	49.89	Pk	11	.1	-80	-19.01	41	-60.01	-	-	293
	.21505	31.58	Av	11	.1	-80	-37.32	-	-	20.97	-58.29	293

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)
5	.88537	25.66	Qp	11	.1	-40	-3.24	28.68	-31.92	340
2	1.17906	22.81	Qp	11.2	.2	-40	-5.79	26.19	-31.98	322
3	22.5659	9.75	Qp	9.7	.7	-40	-19.85	29.5	-49.35	7
6	26.18	11.97	Qp	9	.8	-40	-18.23	29.5	-47.73	360

Qp - Quasi-Peak detector

8.2.2. CONFIG 2: STANDBY CONFIGURATION EUT ONLY



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)
4	.03749	39.47	Pk	13.7	.1	-80	-26.73	56.11	-82.84	-	-	205
	.0449	28.11	Av	12.9	.1	-80	-38.89	-	-	34.54	-73.43	205
5	.20523	43.66	Pk	11	.1	-80	-25.24	41.37	-66.61	-	-	83
	.21252	31.71	Av	11	.1	-80	-37.19	-	-	21.07	-58.26	83
1	.21508	31.72	Av	11	.1	-80	-37.18	-	-	20.97	-58.15	322
	.21598	49.12	Pk	11	.1	-80	-19.78	40.93	-60.71	-	-	323

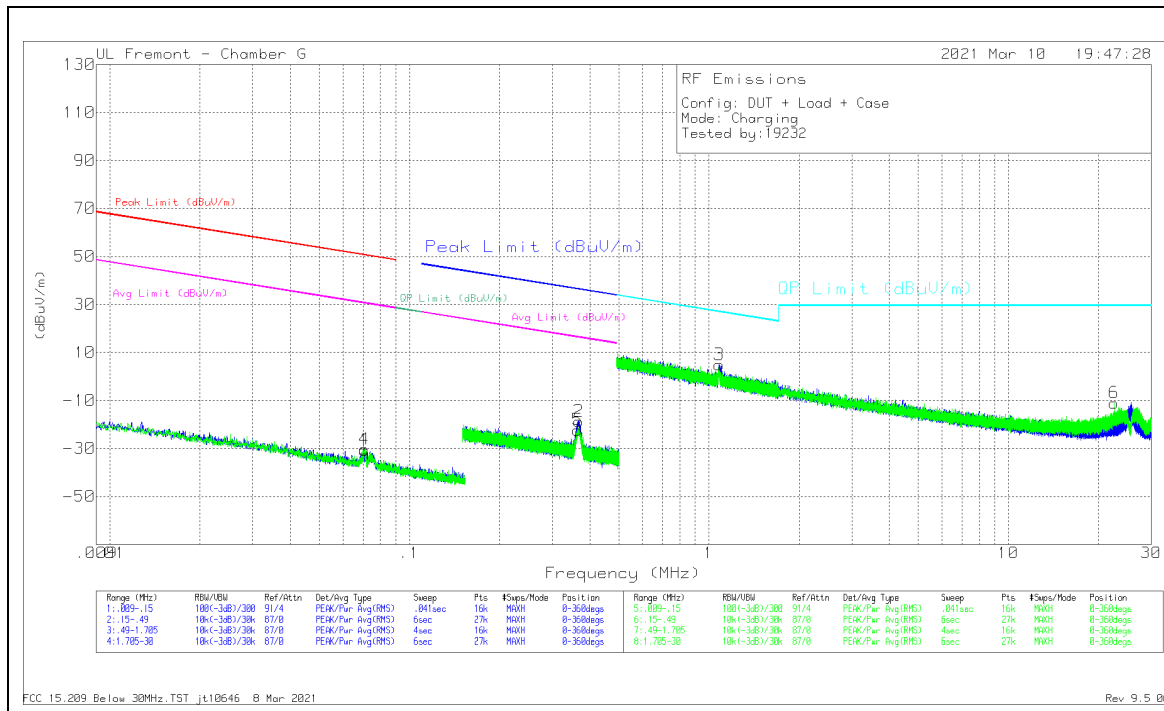
Pk - Peak detector

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)
2	.96635	24.93	Qp	11.1	.1	-40	-3.87	27.92	-31.79	209
3	22.5692	8.28	Qp	9.7	.7	-40	-21.32	29.5	-50.82	275
6	26.0494	10.24	Qp	9.1	.8	-40	-19.86	29.5	-49.36	356

Qp - Quasi-Peak detector

8.2.3. CONFIG 3: OPERATING 360kHz WITH iPhone + CASE LOAD



DATA Radiated Emissions

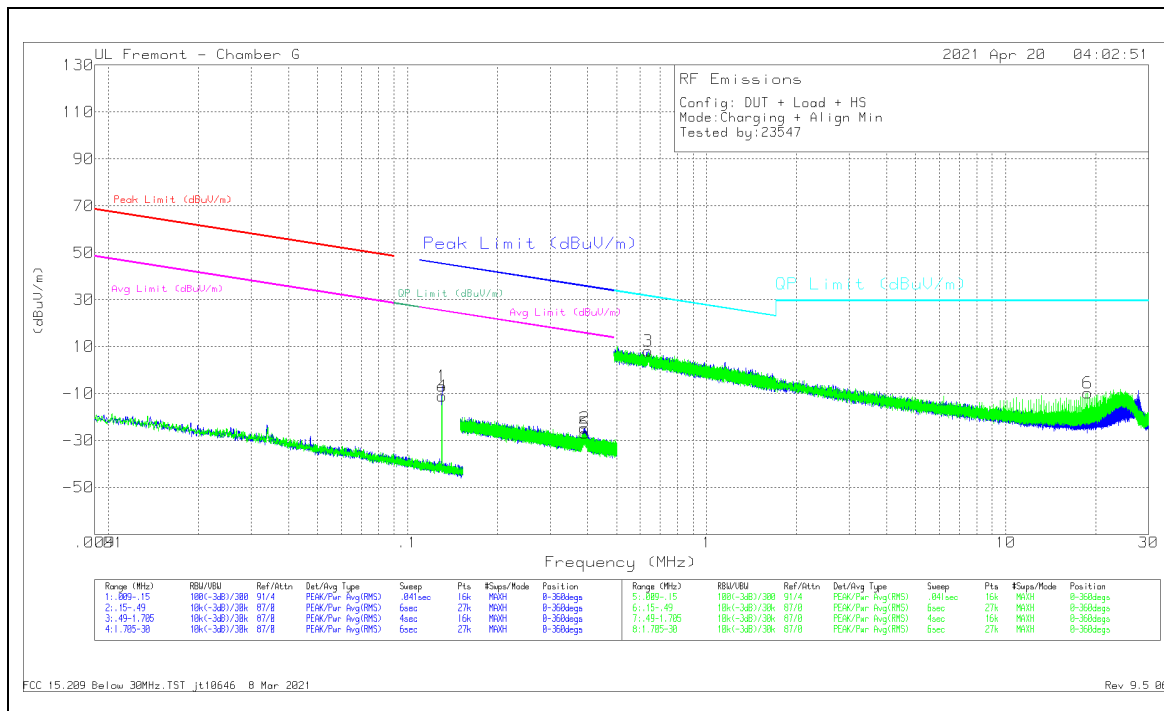
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.0679	39.95	Pk	12.1	.1	-80	-27.85	50.95	-78.8	-	-	359
	.06802	32.07	Av	12.1	.1	-80	-35.73	-	-	30.93	-66.66	359
4	.06955	34.83	Av	12	.1	-80	-33.07	-	-	30.74	-63.81	53
	.0696	40.72	Pk	12	.1	-80	-27.18	50.73	-77.91	-	-	53
5	.35931	42.07	Av	10.8	.1	-80	-27.03	-	-	16.5	-43.53	145
	.35991	46.01	Pk	10.8	.1	-80	-23.09	36.48	-59.57	-	-	145
2	.35988	51.11	Pk	10.8	.1	-80	-17.99	36.49	-54.48	-	-	217
	.35958	48.83	Av	10.8	.1	-80	-20.27	-	-	16.49	-36.76	217

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)
3	1.08025	31.51	Qp	11.2	.1	-40	2.81	26.95	-24.14	235
6	22.5647	14.91	Qp	9.7	.7	-40	-14.69	29.5	-44.19	237

Qp - Quasi-Peak detector

8.2.4. CONFIG 4: OPERATING 127.7kHz WITH LEGACY iPhone + CASE LOAD



DATA

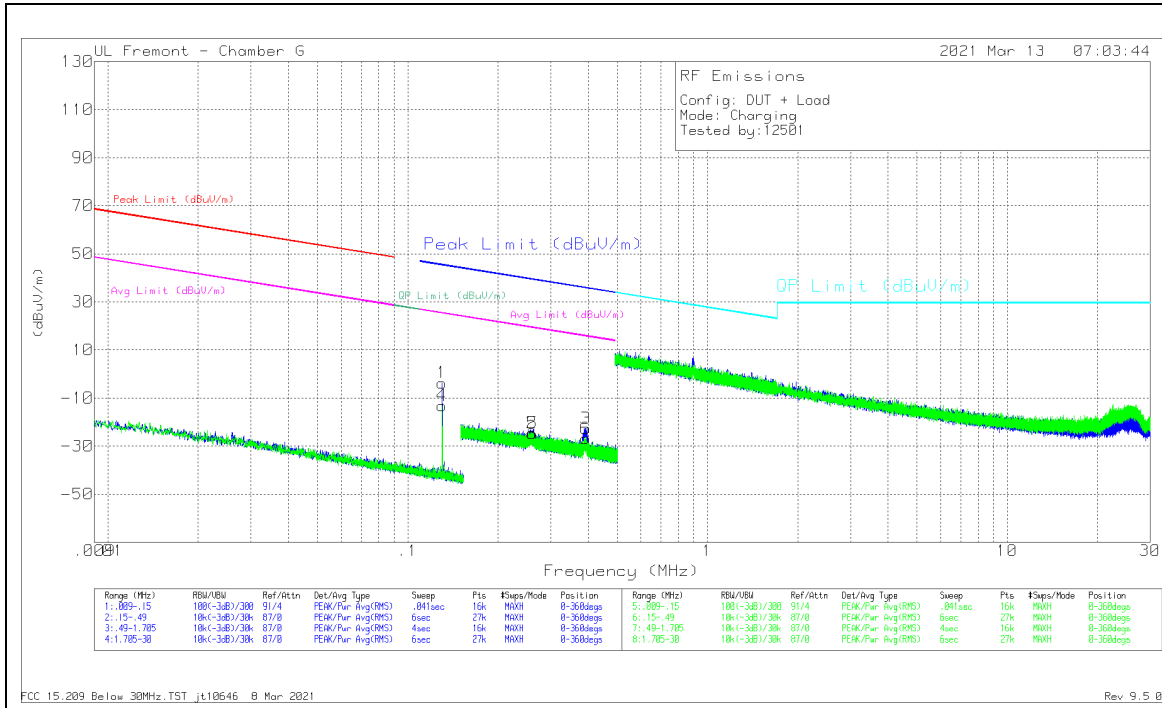
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.12777	61.96	Pk	11.2	.1	-80	-6.74	-	-	-	-	139
	.12777	61.7	Av	11.2	.1	-80	-7	-	-	25.5	-32.5	139
4	.12777	57.94	Pk	11.2	.1	-80	-10.76	-	-	-	-	55
	.12777	57.56	Av	11.2	.1	-80	-11.14	-	-	25.5	-36.64	55
2	.38326	43.39	Pk	10.8	.1	-80	-25.71	35.94	-61.65	-	-	152
	.3838	38.14	Av	10.8	.1	-80	-30.96	-	-	15.93	-46.89	152
5	.38383	42.23	Pk	10.8	.1	-80	-26.87	35.93	-62.8	-	-	51
	.38459	33.81	Av	10.8	.1	-80	-35.29	-	-	15.91	-51.2	51

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)
3	.6388	33.93	Qp	11	.1	-40	5.03	31.5	-26.47	323
6	18.7833	18.38	Qp	10.2	.7	-40	-10.72	29.5	-40.22	9

Qp - Quasi-Peak detector

8.2.5. CONFIG 5: OPERATING 127.7kHz WITH AIRPODS LOAD

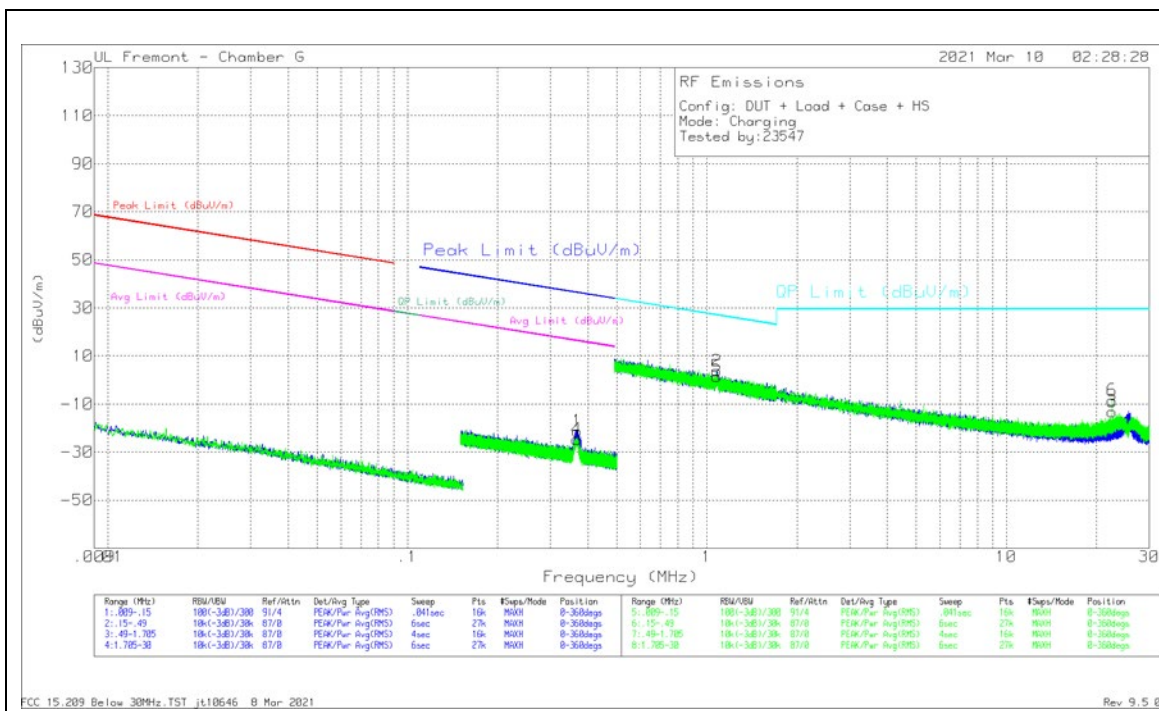


DATA Radiated Emissions

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)
4	.12718	57.88	Pk	11.3	.1	-80	-10.72	-	-	-	-	339
	.12718	54.83	Av	11.3	.1	-80	-13.77	-	-	25.54	-39.31	339
1	.128	65.46	Pk	11.3	.1	-80	-3.14	-	-	-	-	256
	.128	64.57	Av	11.3	.1	-80	-4.03	-	-	25.48	-29.51	256
2	.25456	45.17	Pk	11	.1	-80	-23.73	39.5	-63.23	-	-	127
	.25456	38.2	Av	11	.1	-80	-30.7	-	-	19.5	-50.2	127
5	.25516	43.25	Pk	11	.1	-80	-25.65	39.48	-65.13	-	-	176
	.25516	33.93	Av	11	.1	-80	-34.97	-	-	19.48	-54.45	176
6	.38215	41.56	Pk	10.9	.1	-80	-27.44	35.96	-63.4	-	-	284
	.38215	33.68	Av	10.9	.1	-80	-35.32	-	-	15.96	-51.28	284
3	.38338	46.26	Pk	10.9	.1	-80	-22.74	35.94	-58.68	-	-	171
	.38338	42.76	Av	10.9	.1	-80	-26.24	-	-	15.94	-42.18	171

Pk - Peak detector
Av - Average detection

8.2.6. CONFIG 6: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + iPhone + CASE



DATA

Radiated Emissions

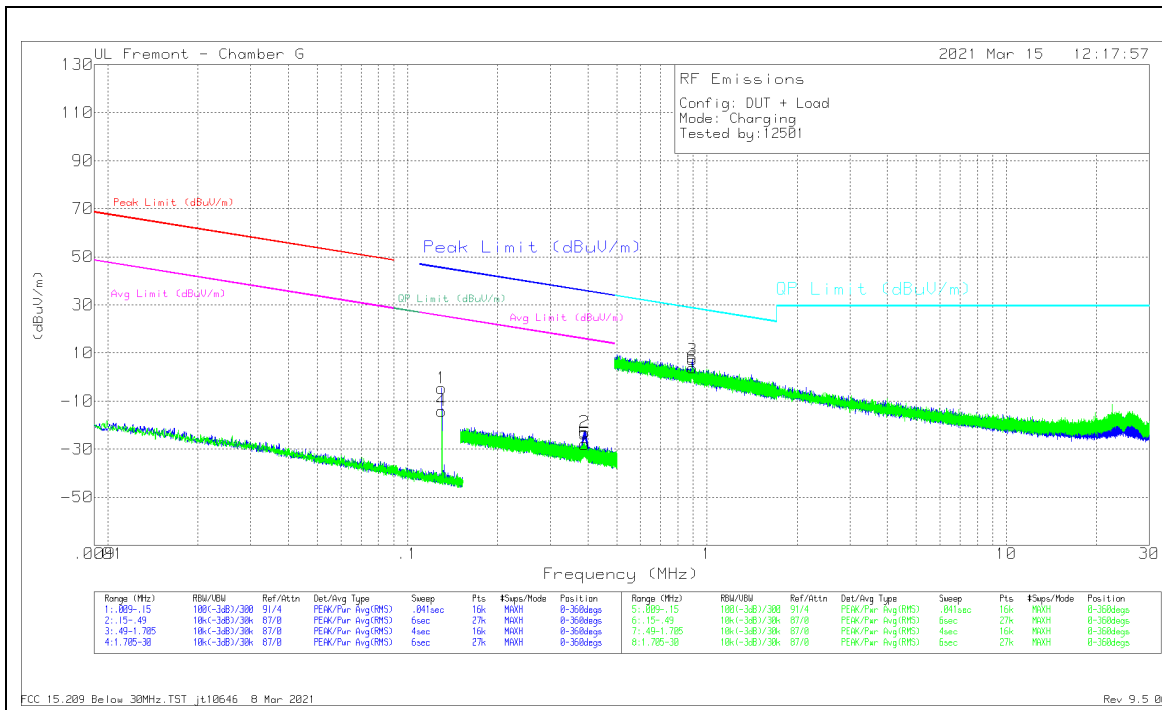
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
4	.35886	45.39	Pk	10.8	.1	-80	-23.71	36.51	-60.22	-	-	127
	.36105	39.78	Av	10.8	.1	-80	-29.32	-	-	16.46	-45.78	127
1	.36039	45.19	Av	10.8	.1	-80	-23.91	-	-	16.47	-40.38	241
	.3603	47.93	Pk	10.8	.1	-80	-21.17	36.48	-57.65	-	-	241

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)
2	1.08061	29.2	Qp	11.2	.1	-40	.5	26.95	-26.45	217
5	1.08601	23.8	Qp	11.2	.1	-40	-4.9	26.91	-31.81	100
6	22.5675	15.18	Qp	9.7	.7	-40	-14.42	29.5	-43.92	282
3	22.571	10.87	Qp	9.7	.7	-40	-18.73	29.5	-48.23	315

Qp - Quasi-Peak detector

8.2.7. CONFIG 7: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + AIRPODS



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)
1	.12757	64.7	Pk	11.2	.1	-80	-4	-	-	-	-	268
	.12757	63.82	Av	11.2	.1	-80	-4.88	-	-	25.51	-30.39	268
4	.12813	54.08	Av	11.2	.1	-80	-14.62	-	-	25.47	-40.09	353
	.12823	56.58	Pk	11.2	.1	-80	-12.12	-	-	-	-	353
2	.38339	45.07	Pk	10.8	.1	-80	-24.03	35.94	-59.97	-	-	176
	.38339	41.74	Av	10.8	.1	-80	-27.36	-	-	15.94	-43.3	176
5	.38409	40.7	Pk	10.8	.1	-80	-28.4	35.92	-64.32	-	-	284
	.38409	32.67	Av	10.8	.1	-80	-36.43	-	-	15.92	-52.35	284

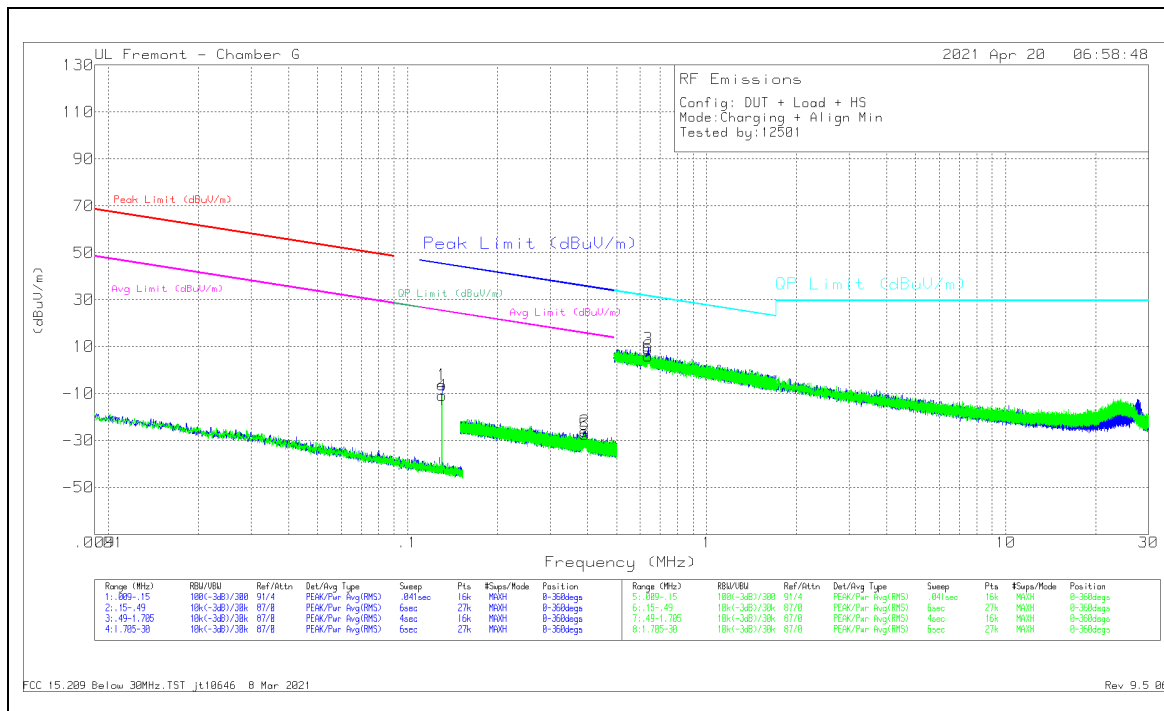
Pk - Peak detector

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)
3	.89459	33.66	Qp	11	.1	-40	4.76	28.59	-23.83	273
6	.89567	28.21	Qp	11	.1	-40	-69	28.58	-29.27	158

Qp - Quasi-Peak detector

8.2.8. CONFIG 8: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + LEGACY IPHONE



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)
1	.12737	63.46	Pk	11.2	.1	-80	-5.24	-	-	-	-	143
	.12741	62.32	Av	11.2	.1	-80	-6.38	-	-	25.52	-31.9	143
4	.12764	59.93	Pk	11.2	.1	-80	-8.77	-	-	-	-	56
	.12764	57.95	Av	11.2	.1	-80	-10.75	-	-	25.51	-36.26	56
2	.38002	38.23	Pk	10.8	.1	-80	-30.87	36.01	-66.88	-	-	131
	.38002	27.65	Av	10.8	.1	-80	-41.45	-	-	16.01	-57.46	131
5	.38114	33.4	Av	10.8	.1	-80	-35.7	-	-	15.99	-51.69	179
	.3834	41.9	Pk	10.8	.1	-80	-27.2	35.93	-63.13	-	-	179

Pk - Peak detector
Av - Average detection

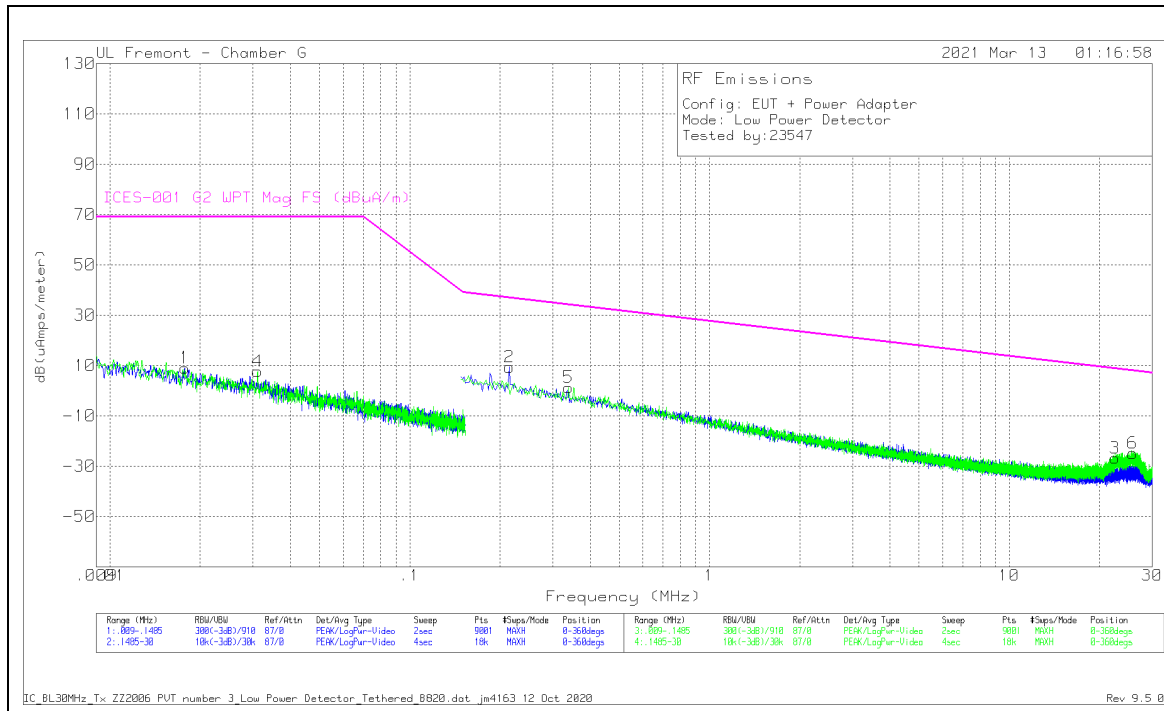
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 30m	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
6	.63687	31.46	Qp	11	.1	-40	2.56	31.53	-28.97	213
3	.63922	33.84	Qp	11	.1	-40	4.94	31.5	-26.56	335

Qp - Quasi-Peak detector

FCC 15.209 Below 30MHz.TST jt10646 8 Mar 2021
Rev 9.5 06 Mar 2020

8.3. IC / CISPR 11 TX FUNDAMENTAL AND SPURIOUS EMISSIONS FROM 9 kHz TO 30 MHz

8.3.1. CONFIG 1: STANDBY CONFIGURATION EUT WITH POWER ADAPTER



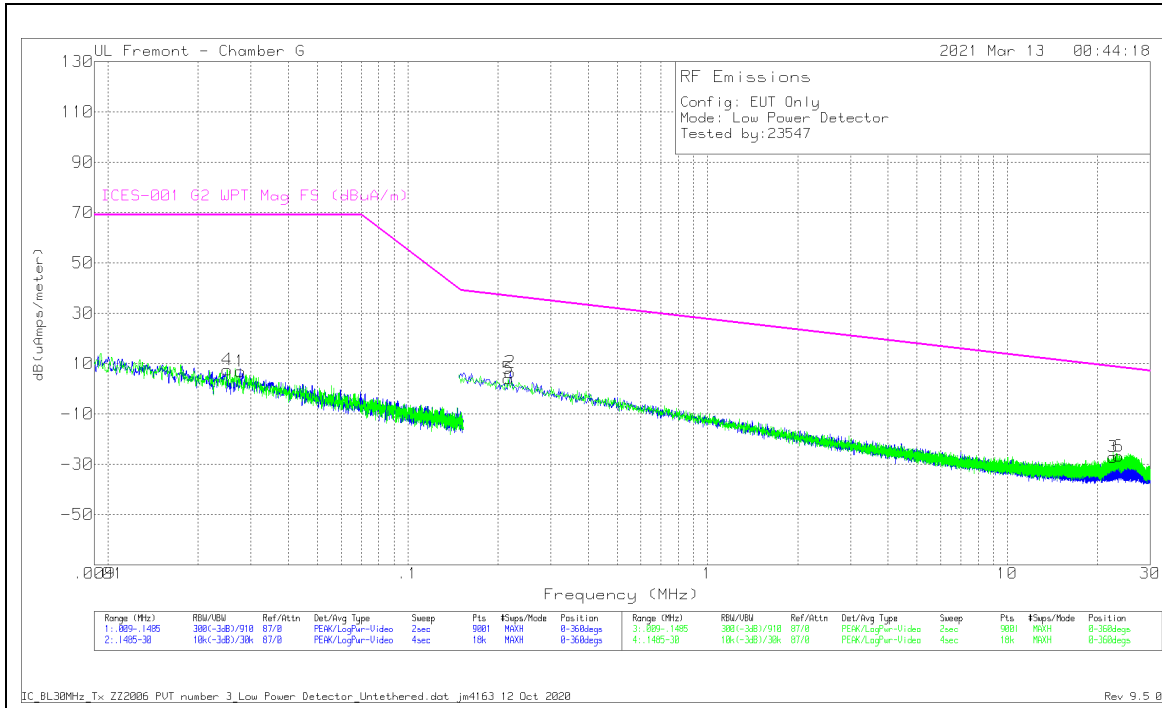
DATA

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)
1	0.01775	37.61	Qp	-32.4	.1	5.31	69	-63.69	113
4	0.03106	36.64	Qp	-35.9	.1	.84	69	-68.16	174
2	0.21456	39.42	Qp	-40.4	.1	-.88	36.84	-37.72	275
5	0.32408	35.08	Qp	-40.6	.1	-5.42	34.35	-39.77	291
3	22.5658	9.06	Qp	-41.8	.7	-32.04	8.72	-40.76	324
6	25.8109	12.18	Qp	-42.4	.8	-29.42	7.91	-37.33	22

Qp - Quasi-Peak detector

8.3.2. CONFIG 2: STANDBY CONFIGURATION EUT ONLY

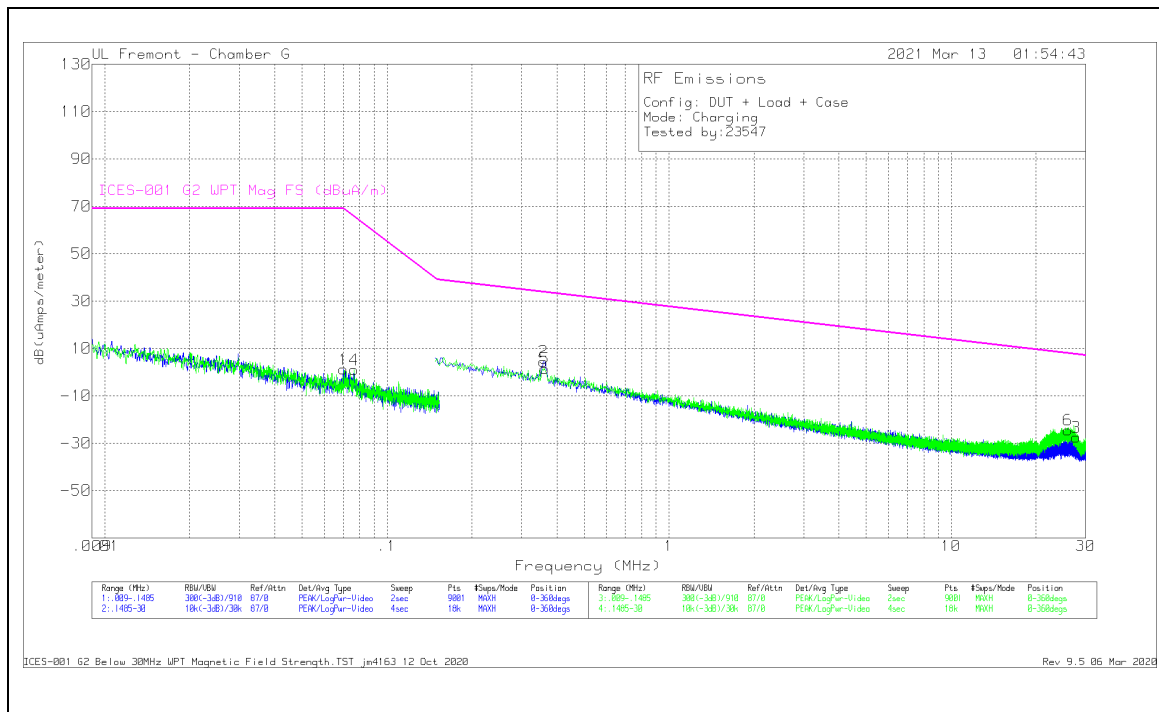


DATA Radiated Emissions

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)
4	.02498	37.27	Qp	-33.6	.1	3.77	69	-65.23	341
1	.02764	37.49	Qp	-34.2	.1	3.39	69	-65.61	231
5	.21454	39.4	Qp	-40.4	.1	-.9	36.84	-37.74	217
2	.21851	38.45	Qp	-40.4	.1	-1.85	36.73	-38.58	26
3	22.5667	10.15	Qp	-41.8	.7	-30.95	8.72	-39.67	9
6	23.5504	8.95	Qp	-41.9	.7	-32.25	8.46	-40.71	0

Qp - Quasi-Peak detector

8.3.3. CONFIG 3: OPERATING 360kHz WITH iPhone + CASE LOAD



DATA

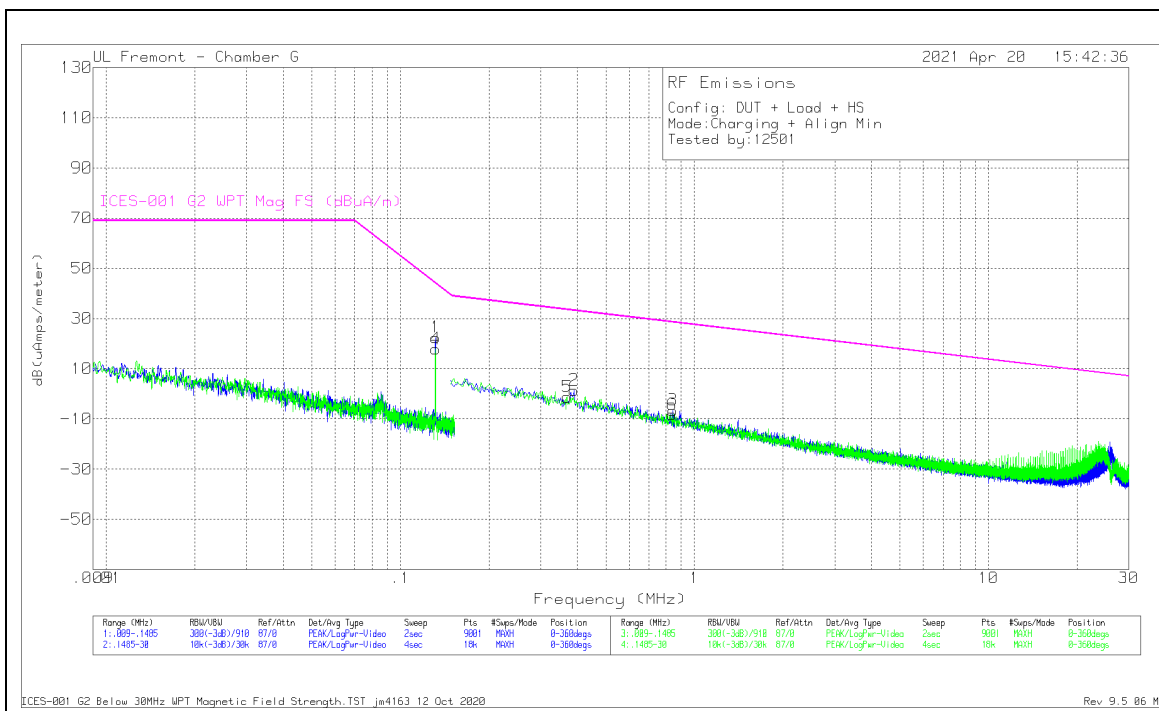
Radiated Emissions

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)
1	.06951	37.4	Qp	-39.5	.1	-2	69	-71	7
4	.06961	37.56	Qp	-39.5	.1	-1.84	69	-70.84	37
5	.3601	42.1	Qp	-40.6	.1	1.6	33.71	-32.11	287
2	.36037	44.87	QP	-40.6	.1	4.37	33.71	-29.34	287
6	25.9158	12.53	Qp	-42.4	.8	-29.07	7.88	-36.95	348
3	27.7407	6.67	Qp	-42.7	.8	-35.23	7.47	-42.7	337

Pk - Peak detector

Qp - Quasi-Peak detector

8.3.4. CONFIG 4: OPERATING 127.7kHz WITH LEGACY iPhone + CASE LOAD

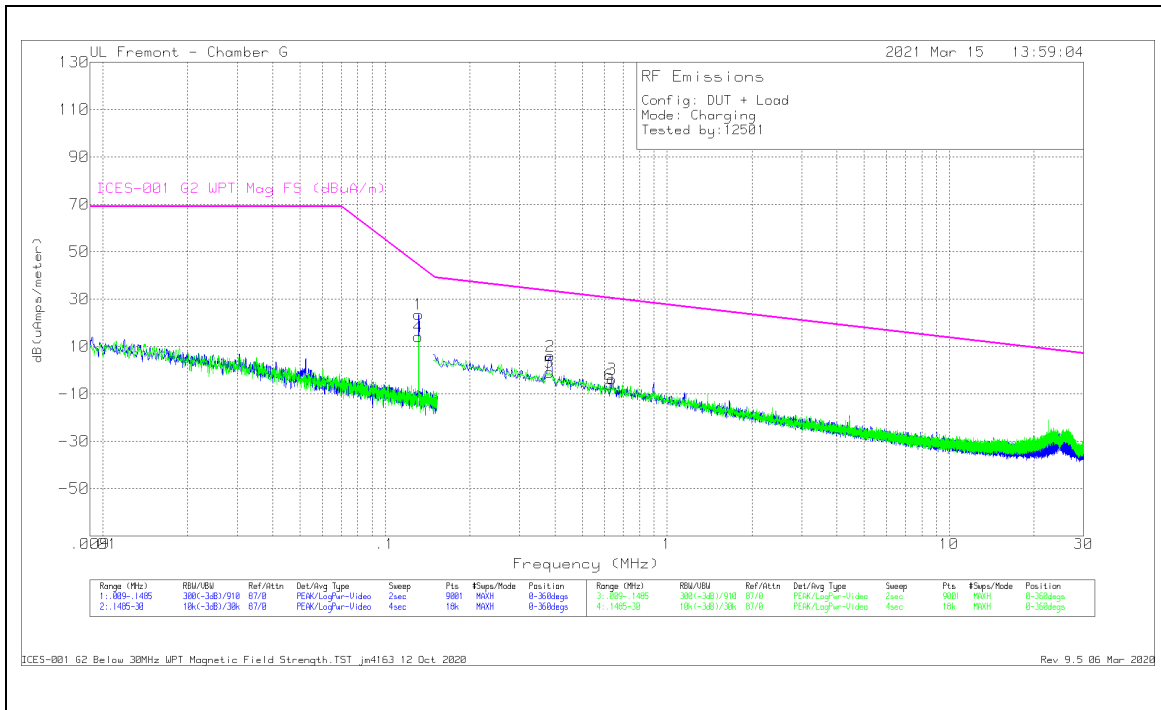


DATA

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)
2	.1277	59.05	Qp	-40.2	.1	18.95	45.34	-26.39	56
1	.12775	63.14	Qp	-40.2	.1	23.04	45.32	-22.28	146
4	.38246	35.74	Qp	-40.6	.1	-4.76	33.35	-38.11	5
3	.38445	38.62	Qp	-40.6	.1	-1.88	33.32	-35.2	119
6	.84605	26.27	Qp	-40.5	.1	-14.13	28.55	-42.68	346
5	.85231	26.1	Qp	-40.4	.1	-14.2	28.51	-42.71	95

Qp - Quasi-Peak detector

8.3.5. CONFIG 5: OPERATING 127.7KHz WITH AIRPODS LOAD



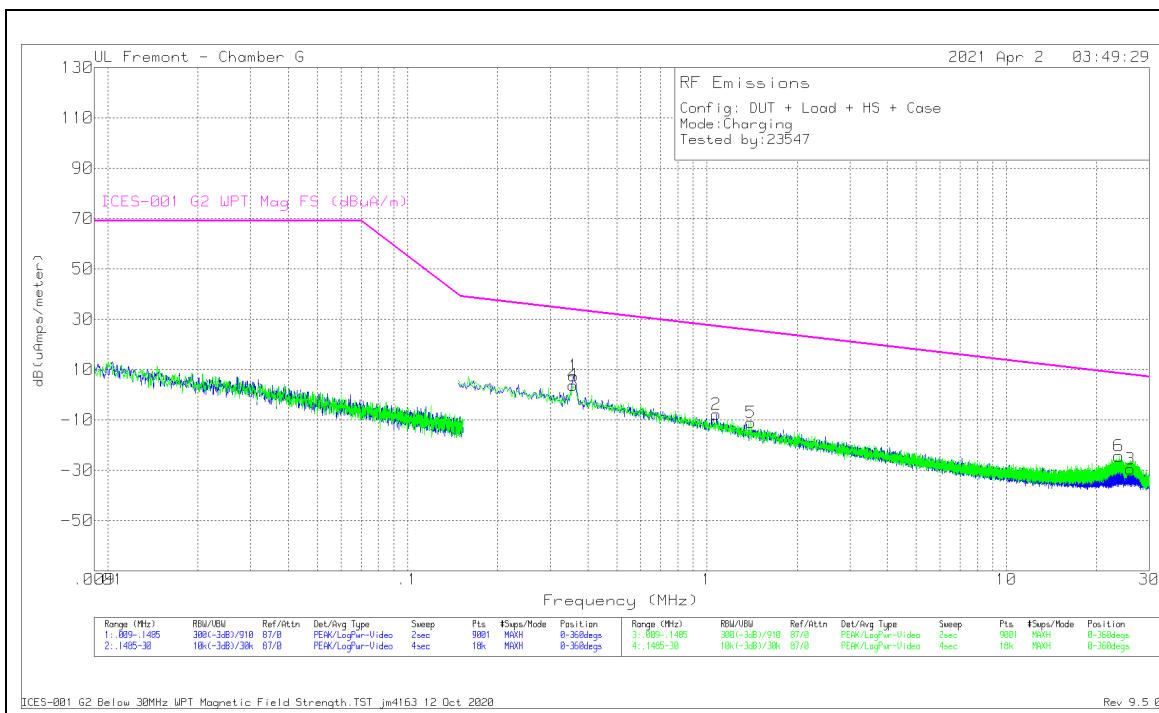
DATA

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)
4	.12733	55.58	Qp	-40.2	.1	15.48	45.45	-29.97	172
1	.128	64.01	Qp	-40.2	.1	23.91	45.24	-21.33	252
5	.38161	37.78	Qp	-40.6	.1	-2.72	33.36	-36.08	312
2	.38434	45.49	Qp	-40.6	.1	4.99	33.32	-28.33	229
3	.63826	34.42	Qp	-40.5	.1	-5.98	30.25	-36.23	313
6	.64141	30.7	Qp	-40.5	.1	-9.7	30.22	-39.92	201

Qp - Quasi-Peak detector

8.3.6. CONFIG 6: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + iPhone + CASE

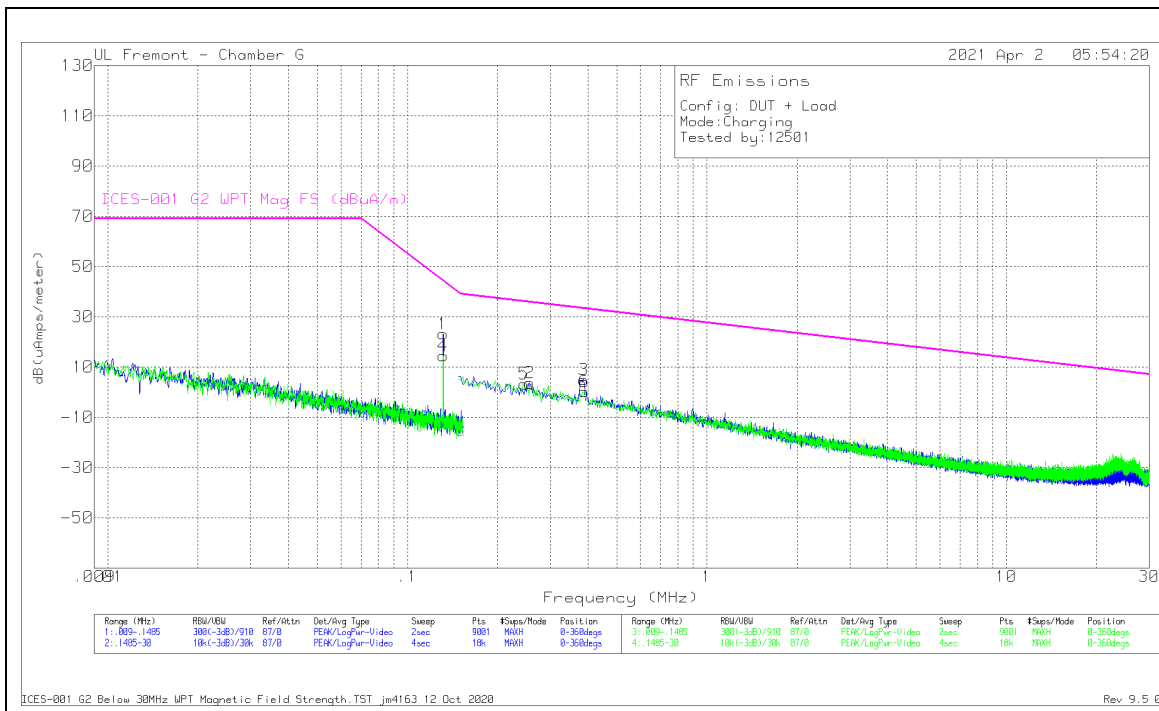


DATA Radiated Emissions

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)
1	.36025	47.01	Qp	-40.6	.1	6.51	33.71	-27.2	157
4	.36062	43.58	Qp	-40.6	.1	3.08	33.7	-30.62	59
2	1.07978	29.34	Qp	-40.2	.1	-10.76	27.08	-37.84	164
5	1.38312	21.86	Qp	-40.2	.2	-18.14	25.58	-43.72	134
6	23.733	10.3	Qp	-41.9	.7	-30.9	8.42	-39.32	32
3	25.9966	6.93	Qp	-42.4	.8	-34.67	7.87	-42.54	327

Qp - Quasi-Peak detector

8.3.7. CONFIG 7: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + AIRPODS

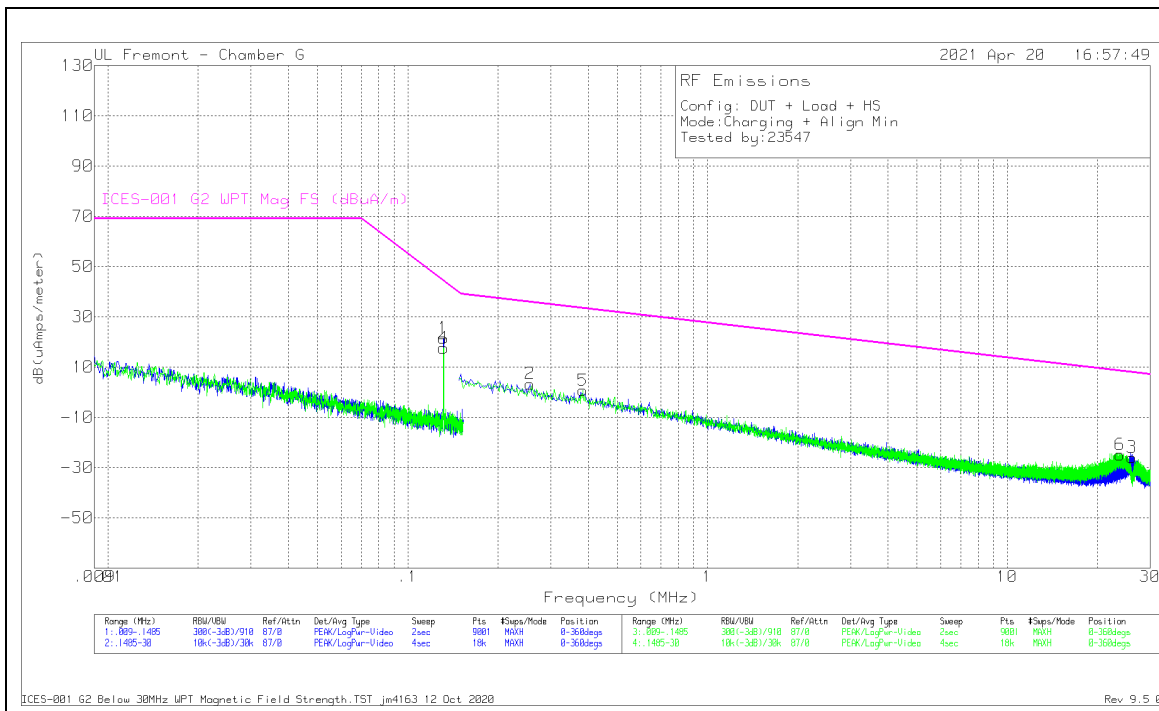


DATA Radiated Emissions

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)
1	.12743	63.95	Qp	-40.2	.1	23.85	45.42	-21.57	254
4	.12857	55.39	Qp	-40.2	.1	15.29	45.07	-29.78	329
5	.23272	38.18	Qp	-40.5	.1	-2.22	36.35	-38.57	305
2	.25607	40.47	Qp	-40.5	.1	.07	35.77	-35.7	125
6	.38311	37.39	Qp	-40.6	.1	-3.11	33.34	-36.45	64
3	.38401	45.57	Qp	-40.6	.1	5.07	33.32	-28.25	205

Qp - Quasi-Peak detector

8.3.8. CONFIG 8: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + LEGACY iPHONE



DATA

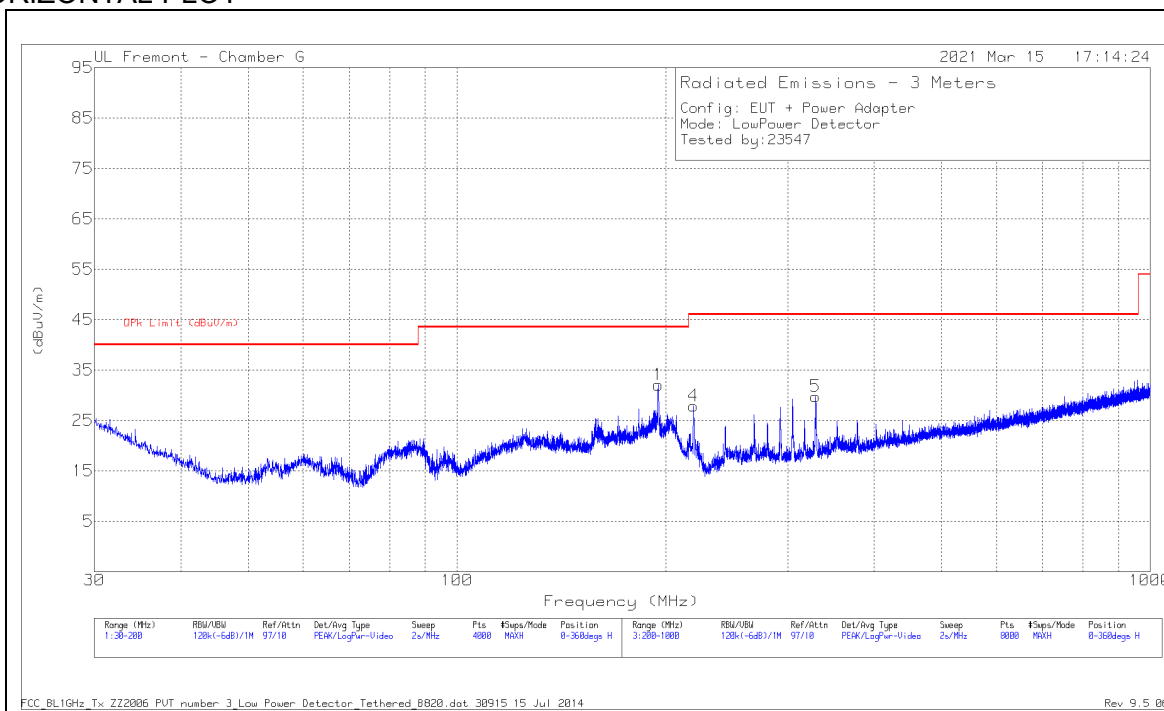
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Corrected Reading dB(uAmps/meter)	ICES-001 G2 WPT Mag FS (dBuA/m)	Margin (dB)	Azimuth (Degs)
1	.12777	62.18	Pk	-40.2	.1	22.08	45.31	-23.23	153
	.12779	61.91	Qp	-40.2	.1	21.81	45.31	-23.5	153
4	.12777	58.19	Pk	-40.2	.1	18.09	45.31	-27.22	60
	.12777	58.02	Qp	-40.2	.1	17.92	45.31	-27.39	60
2	.2542	39.08	Qp	-40.5	.1	-1.32	35.81	-37.13	309
5	.38604	36.58	Qp	-40.6	.1	-3.92	33.29	-37.21	230
6	23.7981	12.38	Qp	-42	.7	-28.92	8.4	-37.32	8
3	26.1154	12.91	Qp	-42.4	.8	-28.69	7.84	-36.53	326

Pk - Peak detector
Qp - Quasi-Peak detector

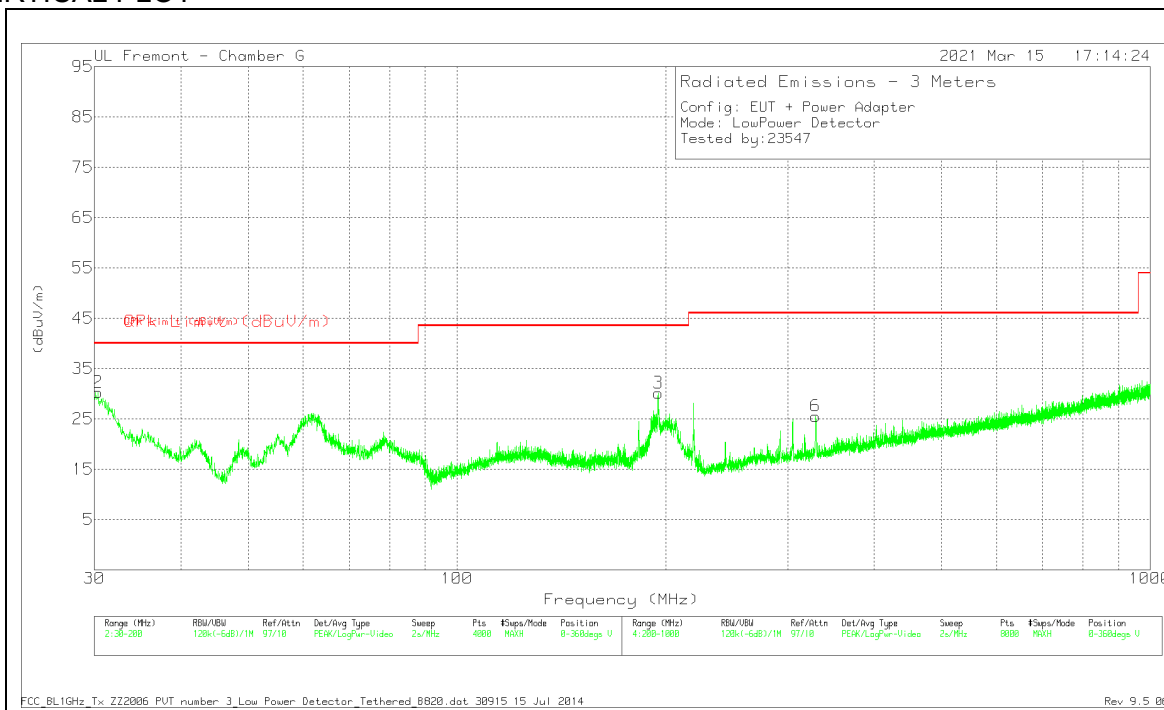
8.4. FCC TX SPURIOUS EMISSION 30 TO 1000 MHz

8.4.1. CONFIG 1: STANDBY CONFIGURATION EUT WITH POWER ADAPTER

HORIZONTAL PLOT



VERTICAL PLOT



DATA
Radiated Emissions

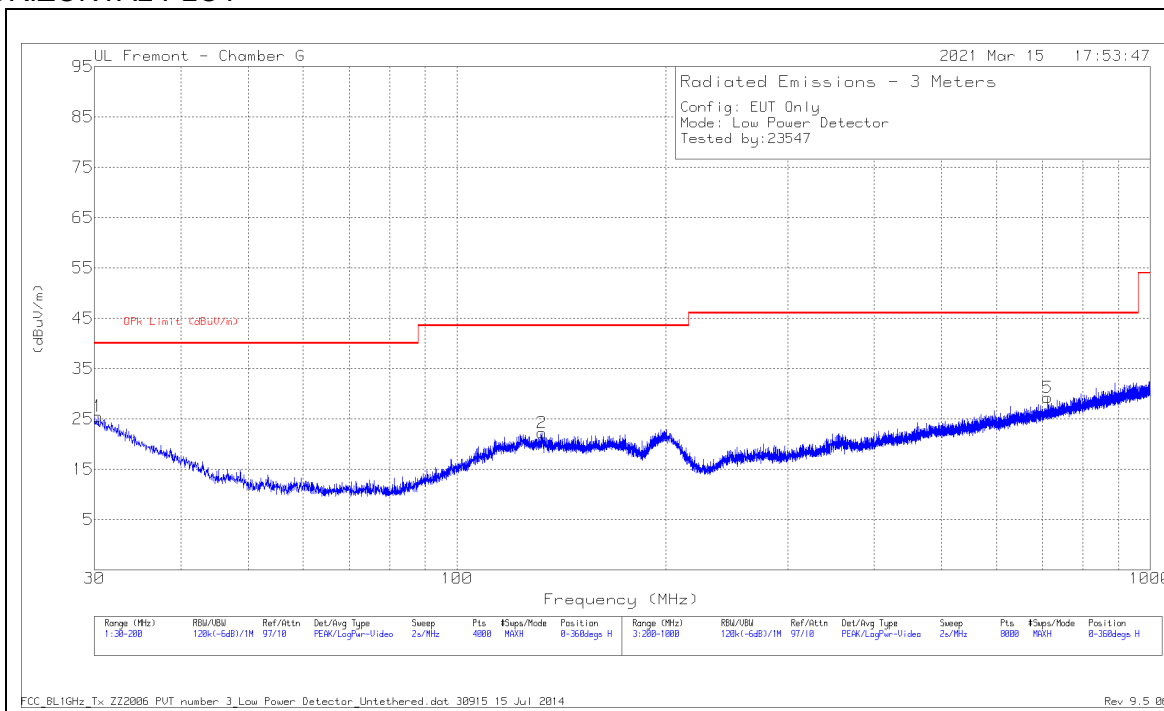
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AFT130 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 329.0948	35.14	Qp	20.5	-28.7	26.94	46.02	-19.08	180	139	H
6	* 329.0648	32.89	Qp	20.5	-28.7	24.69	46.02	-21.33	18	112	V
2	30.513	29.37	Qp	27.5	-31	25.87	40	-14.13	227	109	V
3	195.0372	39.16	Qp	18.4	-29.5	28.06	43.52	-15.46	68	126	V
1	195.0442	40.8	Qp	18.4	-29.5	29.7	43.52	-13.82	123	177	H
4	219.4505	39.27	Qp	17.2	-29.4	27.07	46.02	-18.95	47	120	H

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

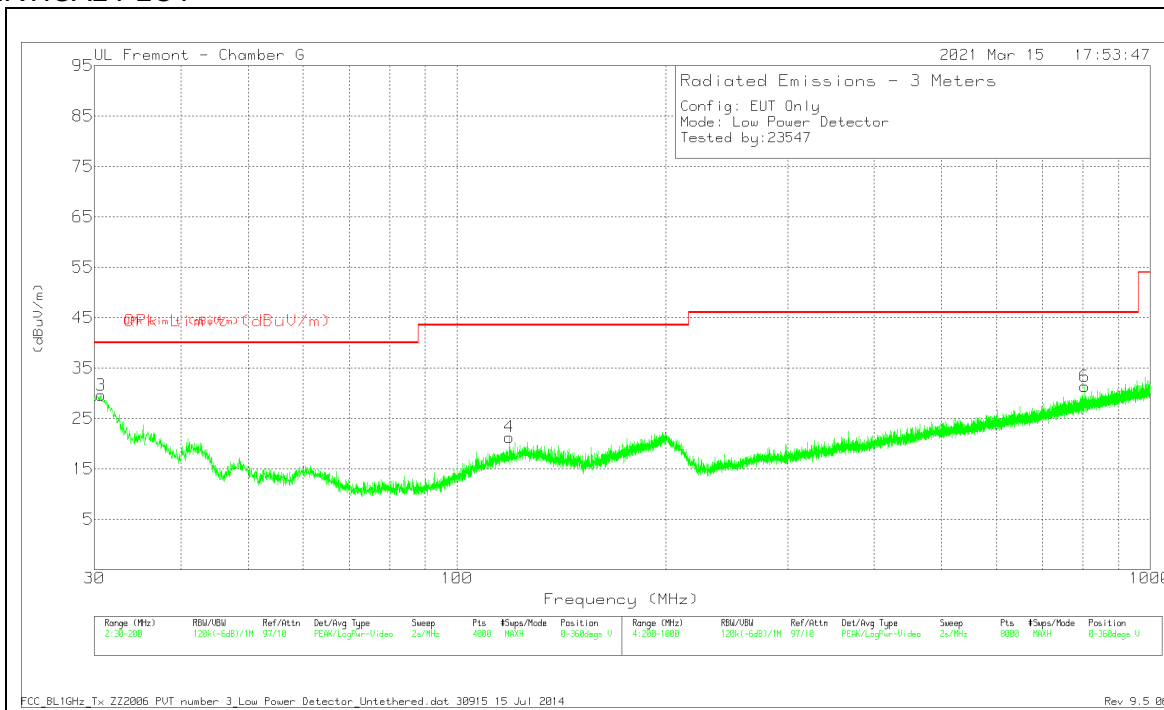
Qp - Quasi-Peak detector

8.4.2. CONFIG 2: STANDBY CONFIGURATION EUT ONLY

HORIZONTAL PLOT



VERTICAL PLOT



DATA
Radiated Emissions

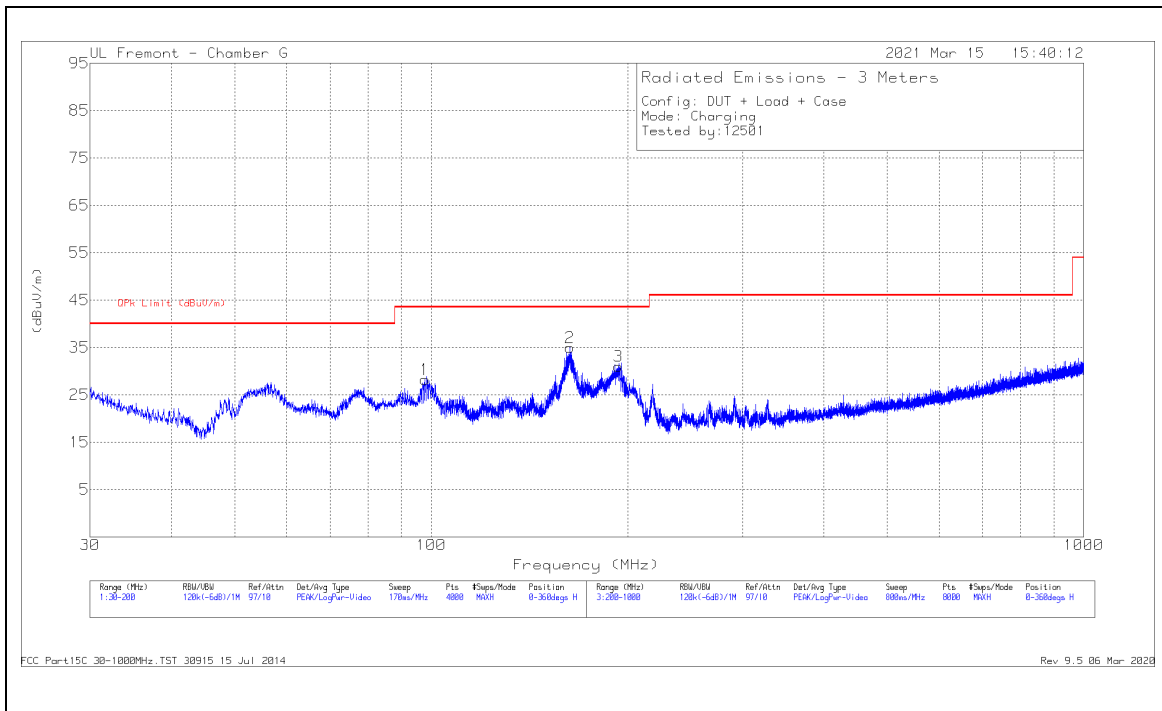
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AFT130 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 133.055	27.77	Qp	20	-30	17.77	43.52	-25.75	272	190	H
4	* 118.1331	23.83	Qp	19.9	-30.2	13.53	43.52	-29.99	133	325	V
1	30.534	23.77	Qp	27.5	-31	20.27	40	-19.73	259	357	H
3	31.212	28.81	Qp	27	-31	24.81	40	-15.19	313	103	V
5	711.5285	22.49	Qp	26.6	-27.3	21.79	46.02	-24.23	205	106	H
6	805.4606	22.56	Qp	27.9	-26.8	23.66	46.02	-22.36	314	116	V

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

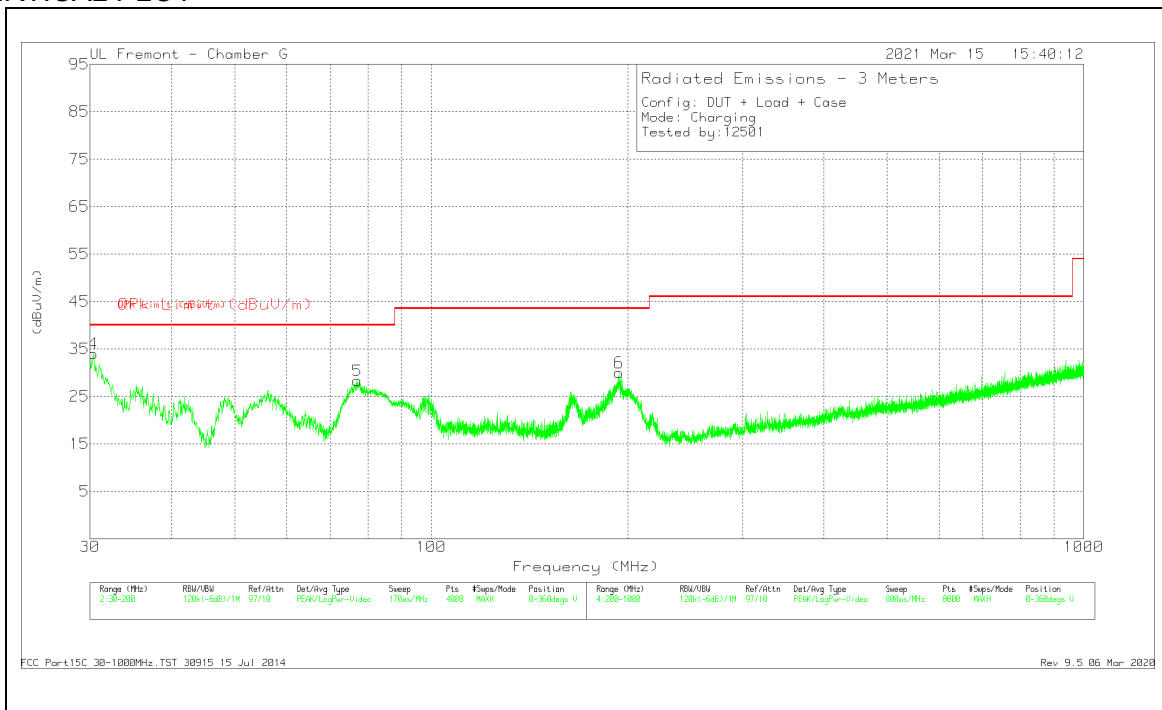
Qp - Quasi-Peak detector

8.4.3. CONFIG 3: OPERATING 360kHz WITH iPhone + CASE LOAD

HORIZONTAL PLOT



VERTICAL PLOT



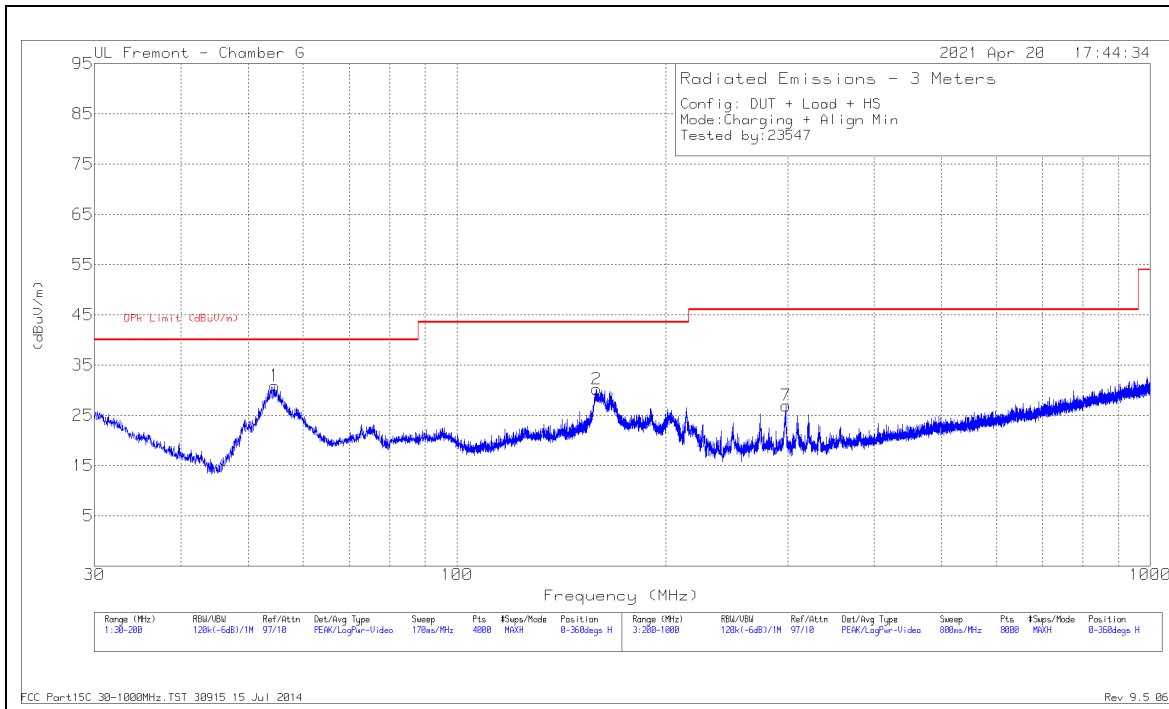
DATA
Radiated Emissions

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
2	* 162.162	42.62	Qp	18.5	-29.8	31.32	43.52	-12.2	146	164	H
4	30.3298	32.9	Qp	27.6	-31	29.5	40	-10.5	110	103	V
5	76.9497	42.65	Qp	13.9	-30.5	26.05	40	-13.95	343	100	V
1	97.8023	40.11	Qp	15.8	-30.3	25.61	43.52	-17.91	119	312	H
3	192.1148	39.13	Qp	17.9	-29.5	27.53	43.52	-15.99	48	120	H
6	193.9305	37.26	Qp	18.2	-29.5	25.96	43.52	-17.56	70	104	V

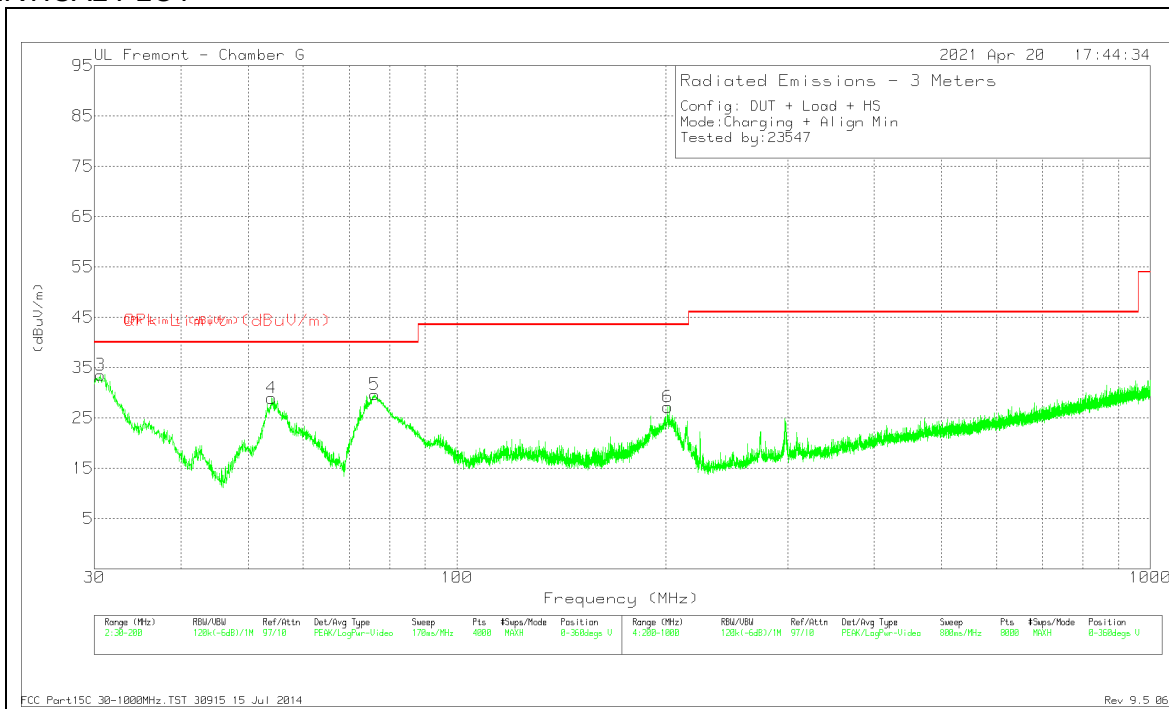
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

8.4.4. CONFIG 4: OPERATING 127.7kHz WITH LEGACY iPhone + CASE LOAD

HORIZONTAL PLOT



VERTICAL PLOT



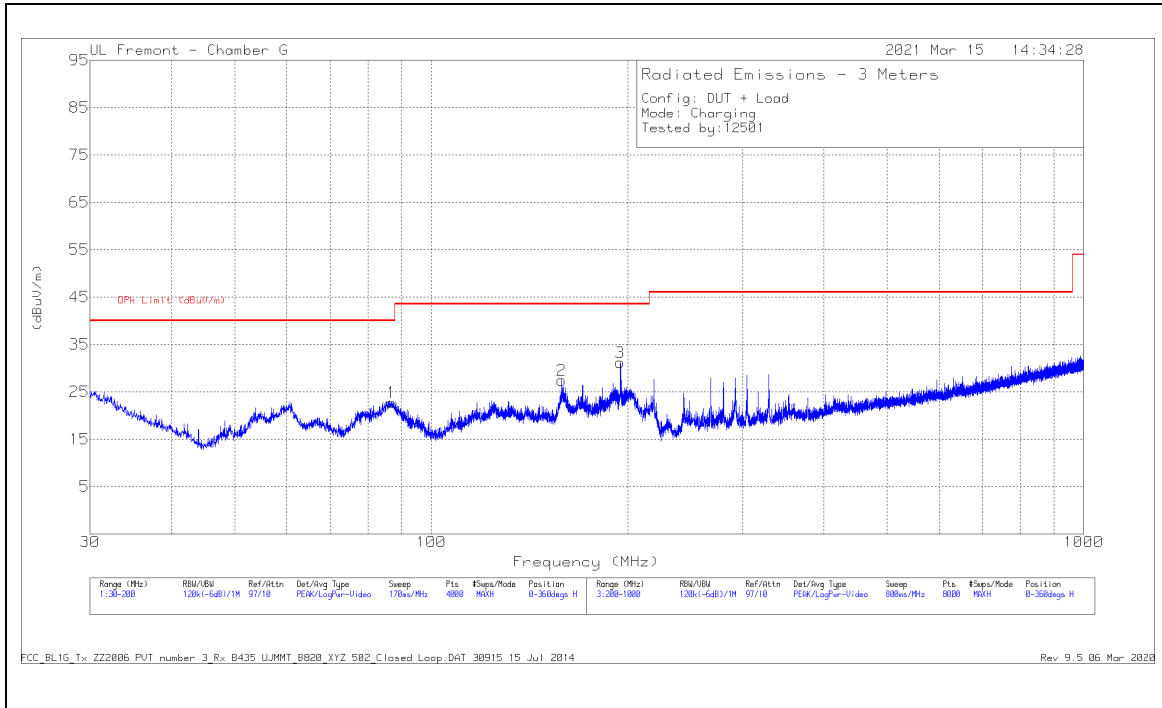
DATA

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
3	30.8014	33.3	Qp	27.3	-31.3	29.3	40	-10.7	8	101	V
4	54.2705	43.88	Qp	13.5	-31	26.38	40	-13.62	348	208	V
1	54.5733	46.25	Qp	13.5	-31	28.75	40	-11.25	83	392	H
5	76.0704	41.81	Qp	14	-30.8	25.01	40	-14.99	337	100	V
2	158.9789	36.28	Qp	18.6	-30.1	24.78	43.52	-18.74	130	188	H
6	201.613	33.19	Qp	18.9	-29.8	22.29	43.52	-21.23	77	101	V
7	298.1746	36.03	Qp	19.7	-29.2	26.53	46.02	-19.49	3	106	H

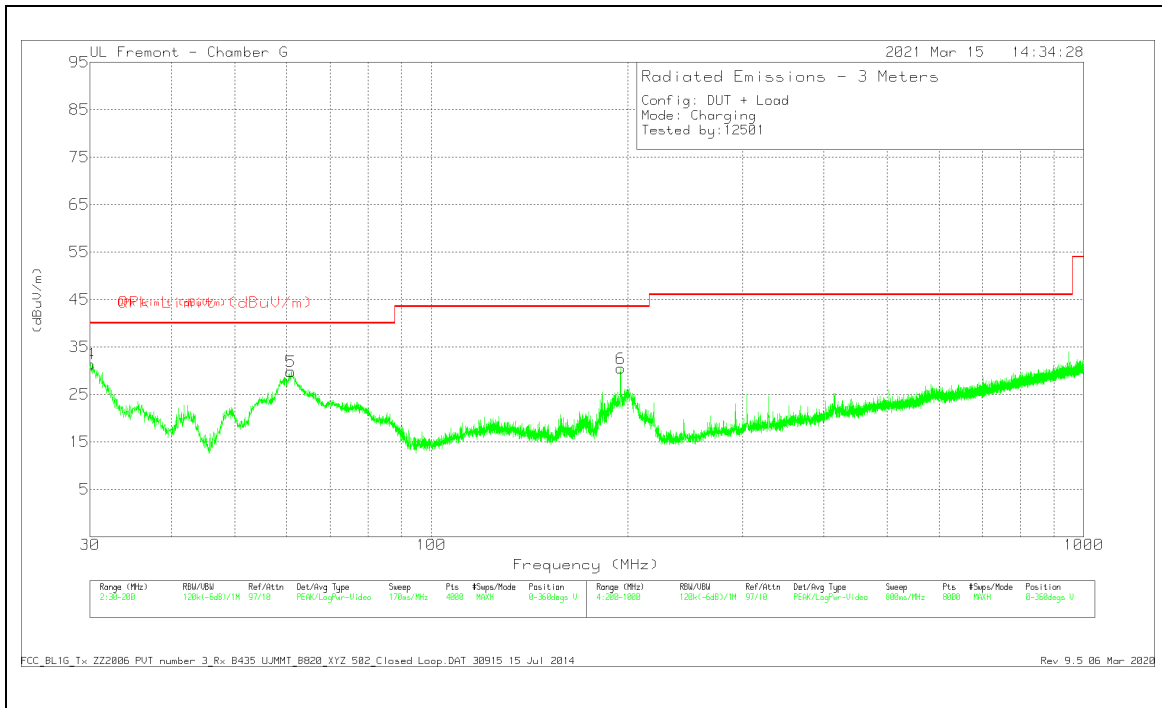
Qp - Quasi-Peak detector

8.4.5. CONFIG 5: OPERATING 127.7kHz WITH AIRPODS LOAD

HORIZONTAL PLOT



VERTICAL PLOT



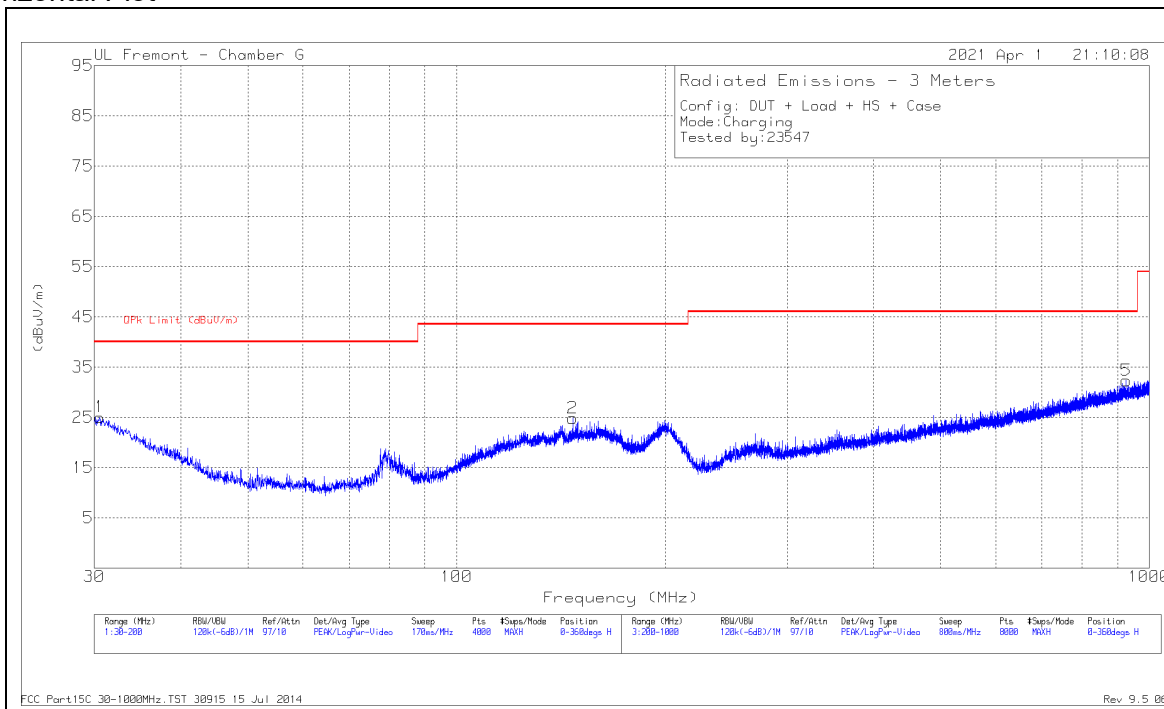
DATA
Radiated Emissions

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
4	30.0445	30.25	Qp	27.9	-31.1	27.05	40	-12.95	246	105	V
5	60.464	41.92	Qp	13.5	-30.7	24.72	40	-15.28	8	104	V
1	86.9233	33.95	Qp	13.3	-30.4	16.85	40	-23.15	105	368	H
2	158.4673	36.34	Qp	18.6	-29.8	25.14	43.52	-18.38	132	164	H
3	194.8012	40.53	Qp	18.4	-29.5	29.43	43.52	-14.09	39	129	H
6	194.9767	39.07	Qp	18.4	-29.5	27.97	43.52	-15.55	84	128	V

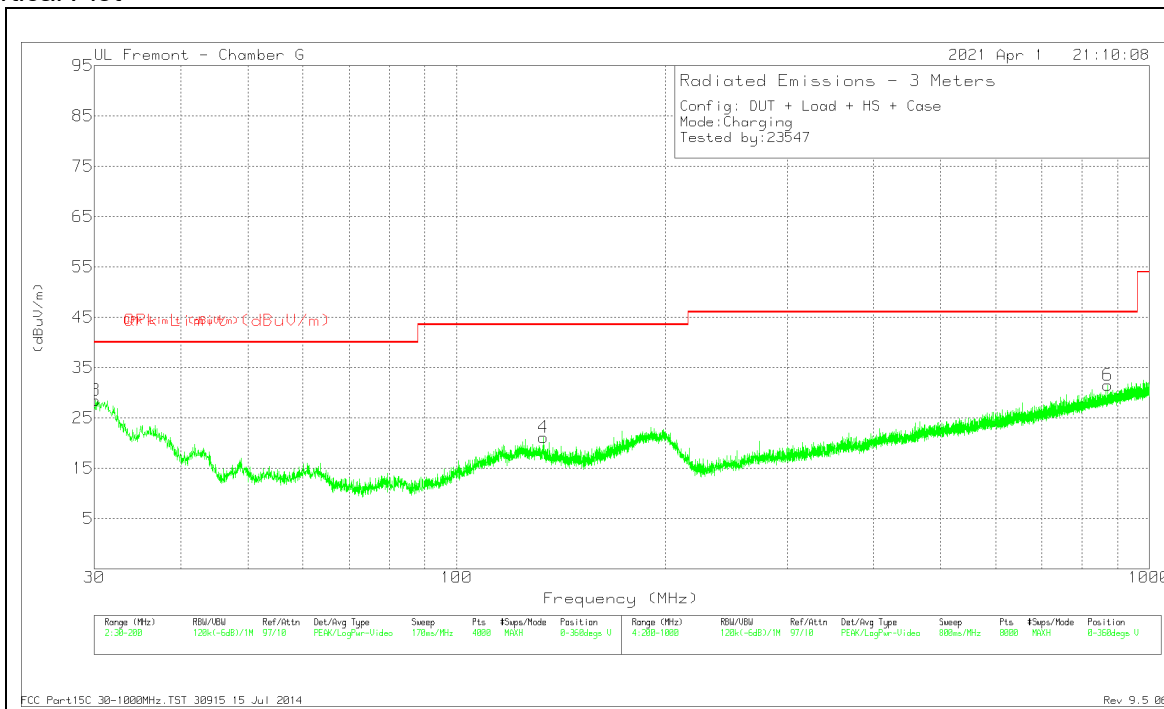
Qp - Quasi-Peak detector

8.4.6. CONFIG 6: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + iPhone + CASE

Horizontal Plot



Vertical Plot



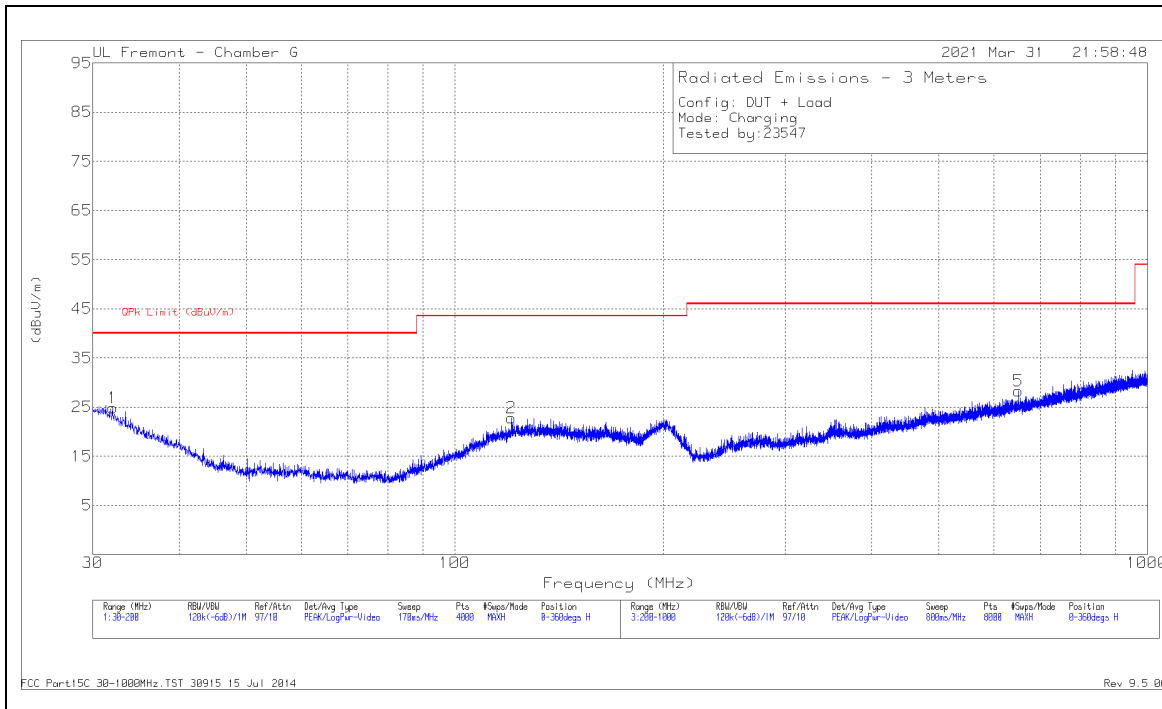
DATA
Radiated Emissions

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
4	* 132.6753	24.44	Qp	20	-30	14.44	43.52	-29.08	130	313	V
3	31.59	28.03	Qp	26.7	-31	23.73	40	-16.27	319	106	V
1	31.923	23.78	Qp	26.5	-31	19.28	40	-20.72	215	239	H
2	148.4408	30.34	Qp	18.8	-29.9	19.24	43.52	-24.28	328	154	H
6	870.1113	22.57	Qp	28.3	-26.4	24.47	46.02	-21.55	49	172	V
5	925.9724	22.17	Qp	28.9	-25.9	25.17	46.02	-20.85	203	370	H

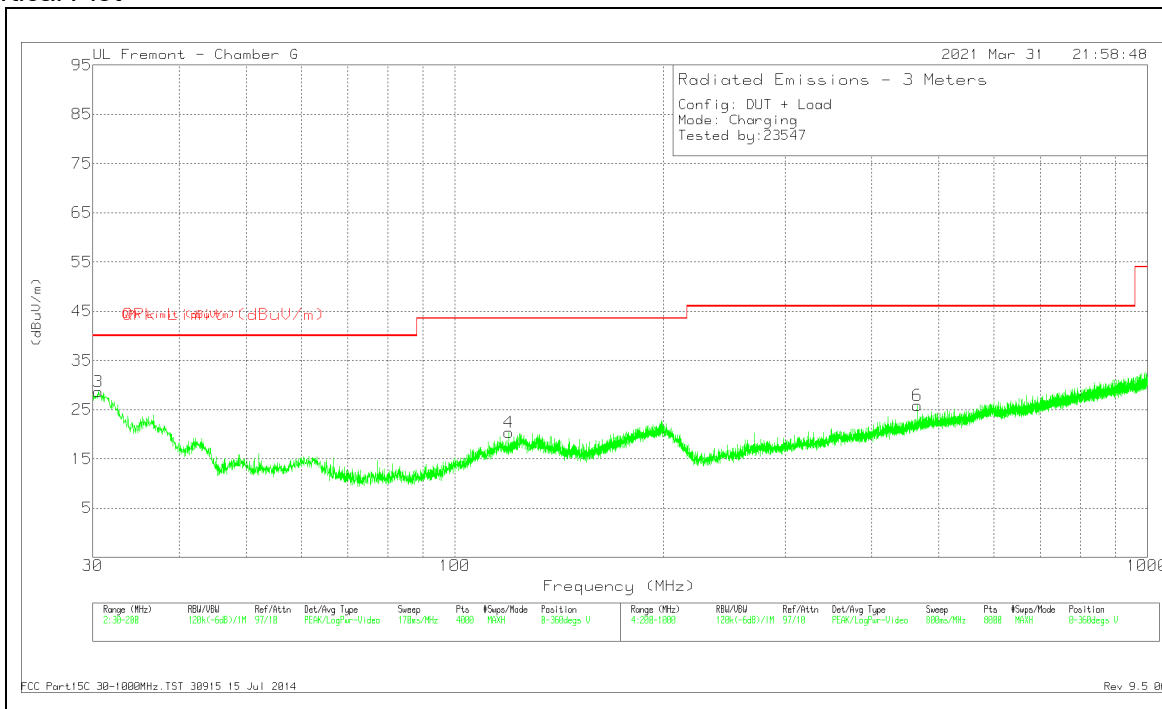
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

8.4.7. CONFIG 7: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + AIRPODS

Horizontal Plot



Vertical Plot



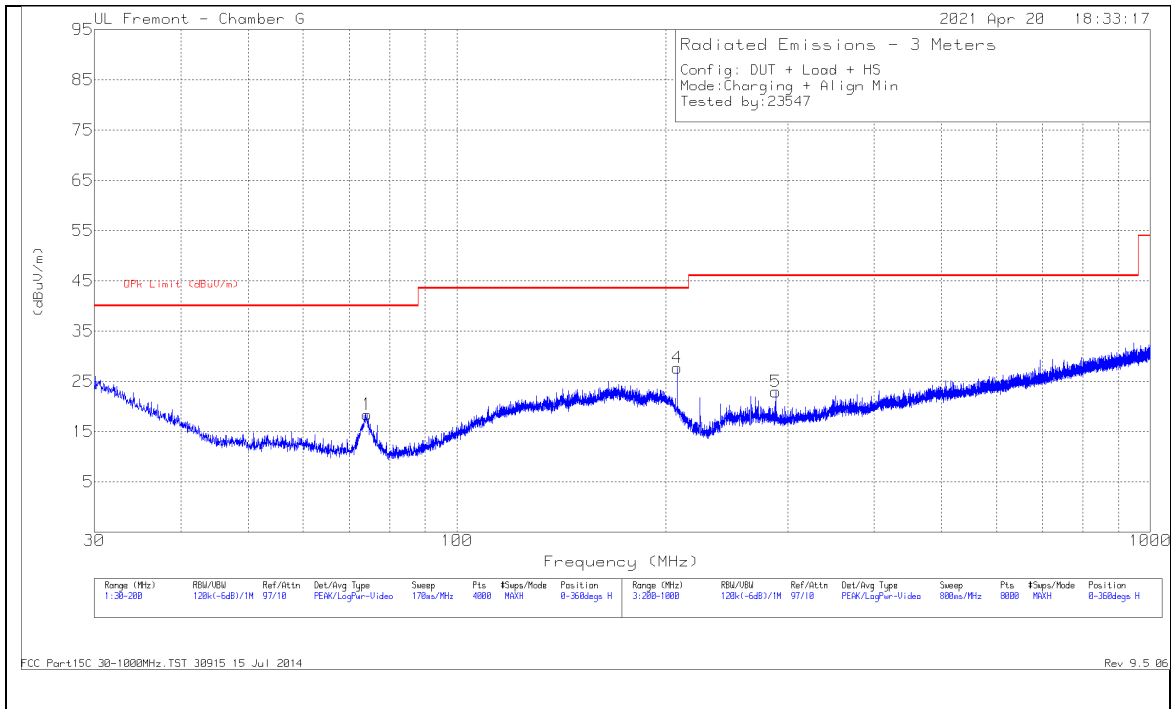
DATA
Radiated Emissions

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
2	* 120.6859	26.95	Qp	20.1	-30.1	16.95	43.52	-26.57	270	170	H
4	* 119.548	24.39	Qp	20.1	-30.1	14.39	43.52	-29.13	128	108	V
3	30.6769	28.32	Qp	27.4	-31	24.72	40	-15.28	194	109	V
1	32.0784	23.67	Qp	26.3	-31	18.97	40	-21.03	63	166	H
6	465.0481	22.62	Qp	23.4	-28.1	17.92	46.02	-28.1	202	102	V
5	650.665	22.29	Qp	26.1	-27.4	20.99	46.02	-25.03	83	199	H

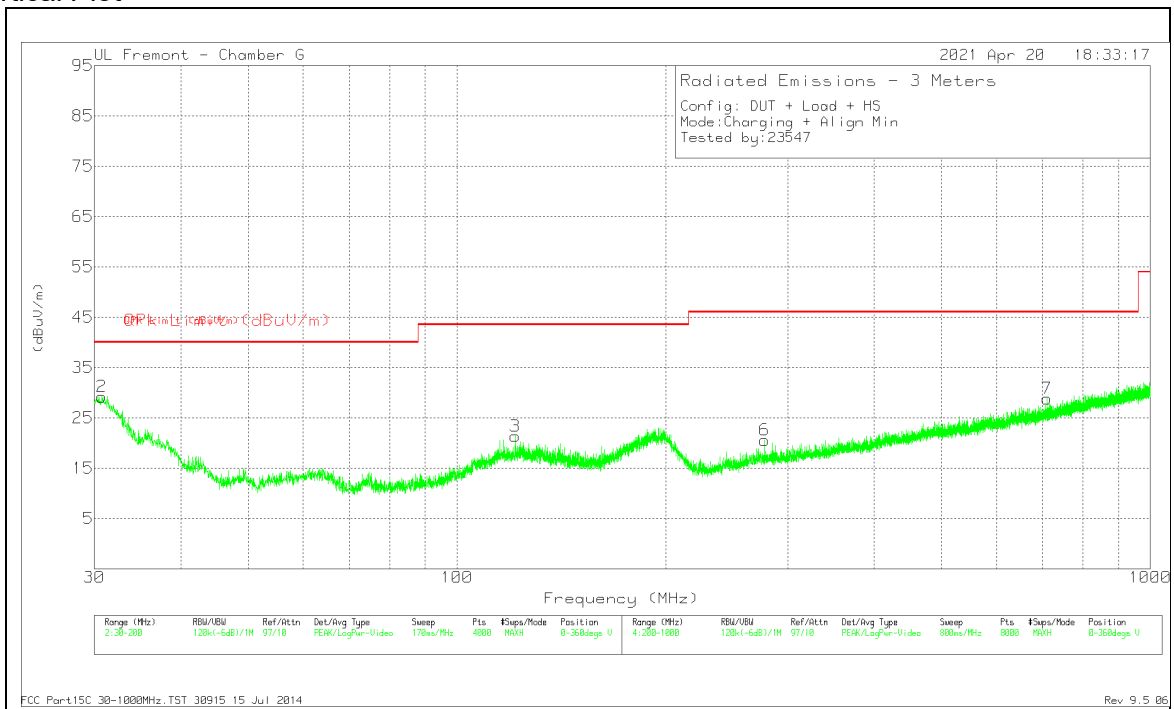
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

8.4.8. CONFIG 8: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + LEGACY iPHONE

Horizontal Plot



Vertical Plot



DATA

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
1	* 74.2617	32.31	Qp	14.1	-30.8	15.61	40	-24.39	233	221	H
3	* 121.2969	23.52	Qp	20.1	-30.4	13.22	43.52	-30.3	106	389	V
6	* 277.6611	23.2	Qp	19.6	-29.3	13.5	46.02	-32.52	177	142	V
2	30.7945	27.98	Qp	27.3	-31.3	23.98	40	-16.02	7	167	V
4	207.9781	28.02	Qp	17	-29.7	15.32	43.52	-28.2	300	188	H
5	288.5453	32.52	Qp	19.7	-29.3	22.92	46.02	-23.1	152	101	H
7	709.4838	22.48	Qp	26.6	-27.6	21.48	46.02	-24.54	145	239	V

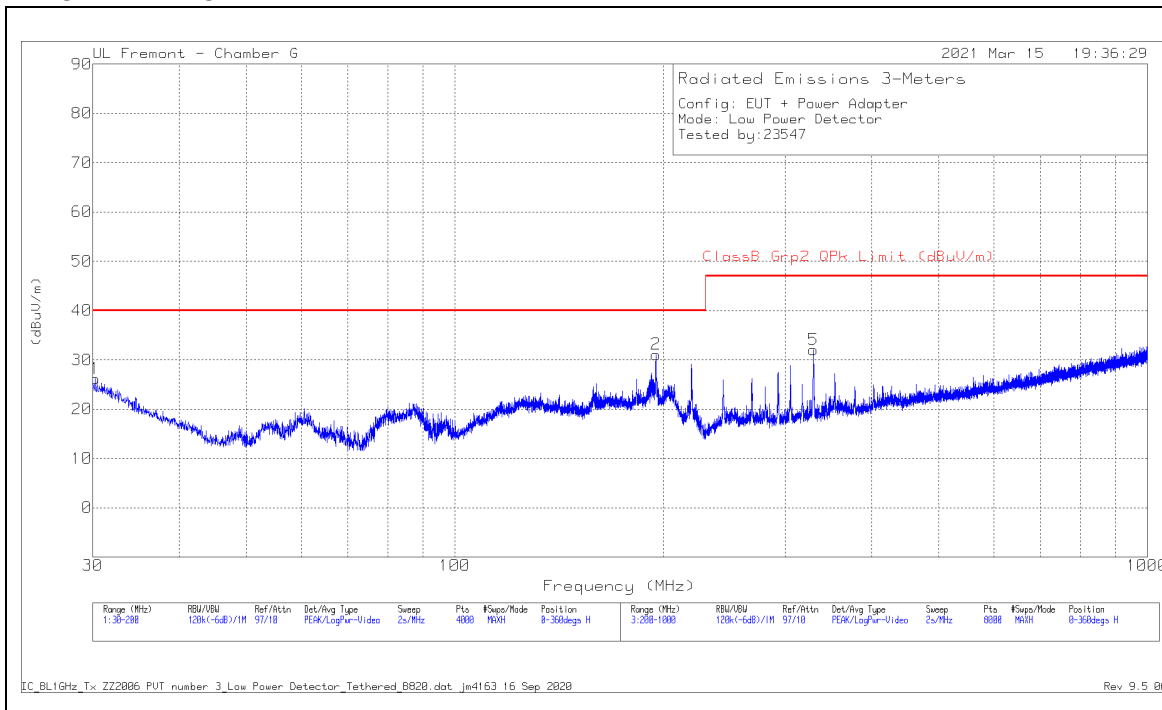
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Qp - Quasi-Peak detector

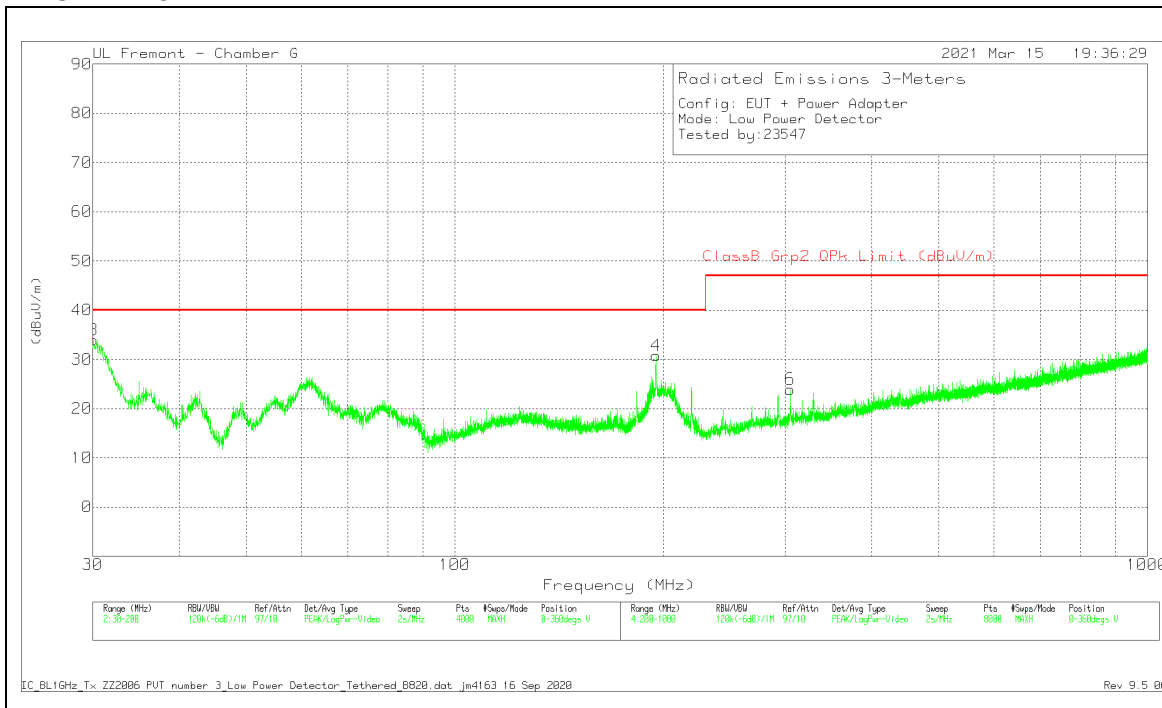
8.5. IC / CISPR 11 TX SPURIOUS EMISSION 30 TO 1000 MHz

8.5.1. CONFIG 1: STANDBY CONFIGURATION EUT WITH POWER ADAPTER

HORIZONTAL PLOT



VERTICAL PLOT



DATA

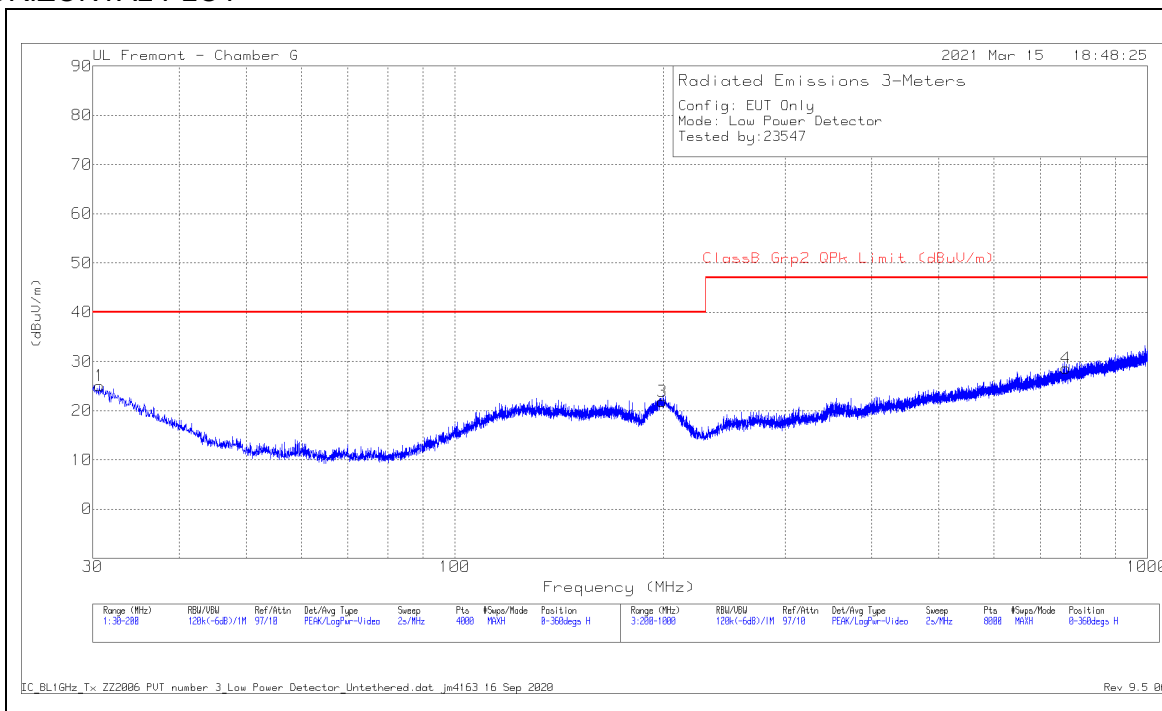
Radiated Emissions

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	30.423	31.9	Qp	27.6	-31	28.5	40	-11.5	124	102	V
1	30.675	23.96	Qp	27.4	-31	20.36	40	-19.64	325	318	H
2	195.0897	40.54	Qp	18.4	-29.5	29.44	40	-10.56	41	137	H
4	195.1267	40.43	Qp	18.4	-29.5	29.33	40	-10.67	84	105	V
6	304.9297	30.56	Qp	20	-28.8	21.76	47	-25.24	212	133	V
5	329.2258	39.06	Qp	20.5	-28.7	30.86	47	-16.14	192	102	H

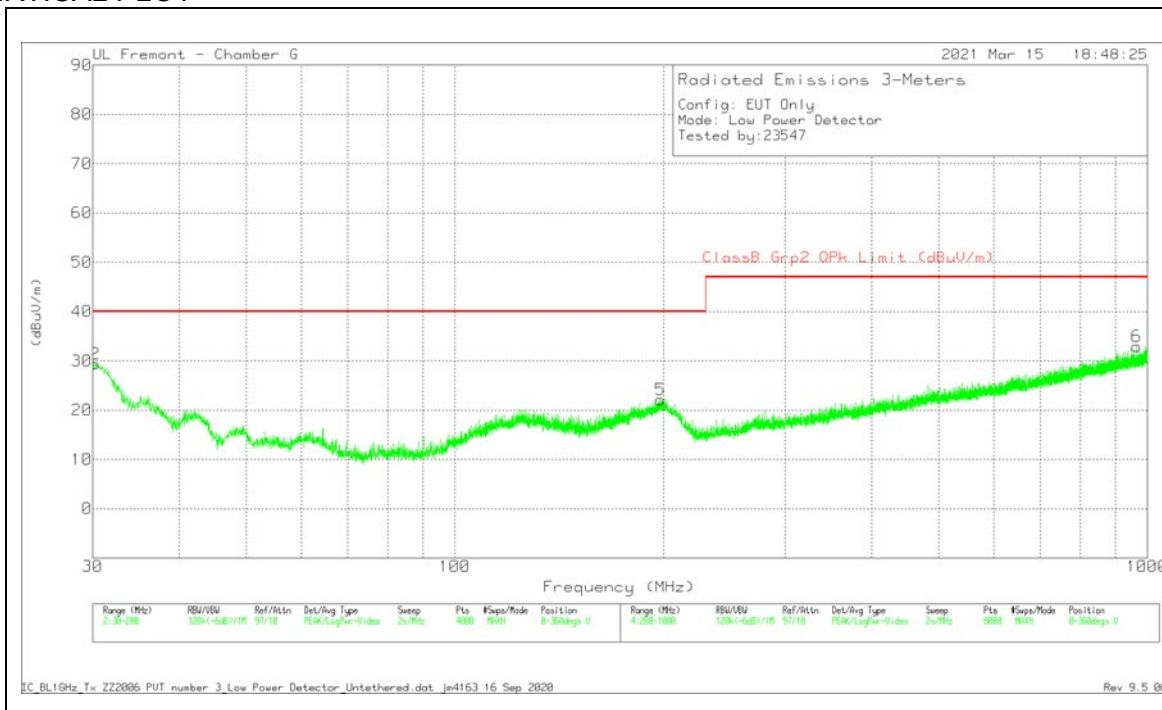
Qp - Quasi-Peak detector

8.5.2. CONFIG 2: STANDBY CONFIGURATION EUT ONLY

HORIZONTAL PLOT



VERTICAL PLOT



DATA

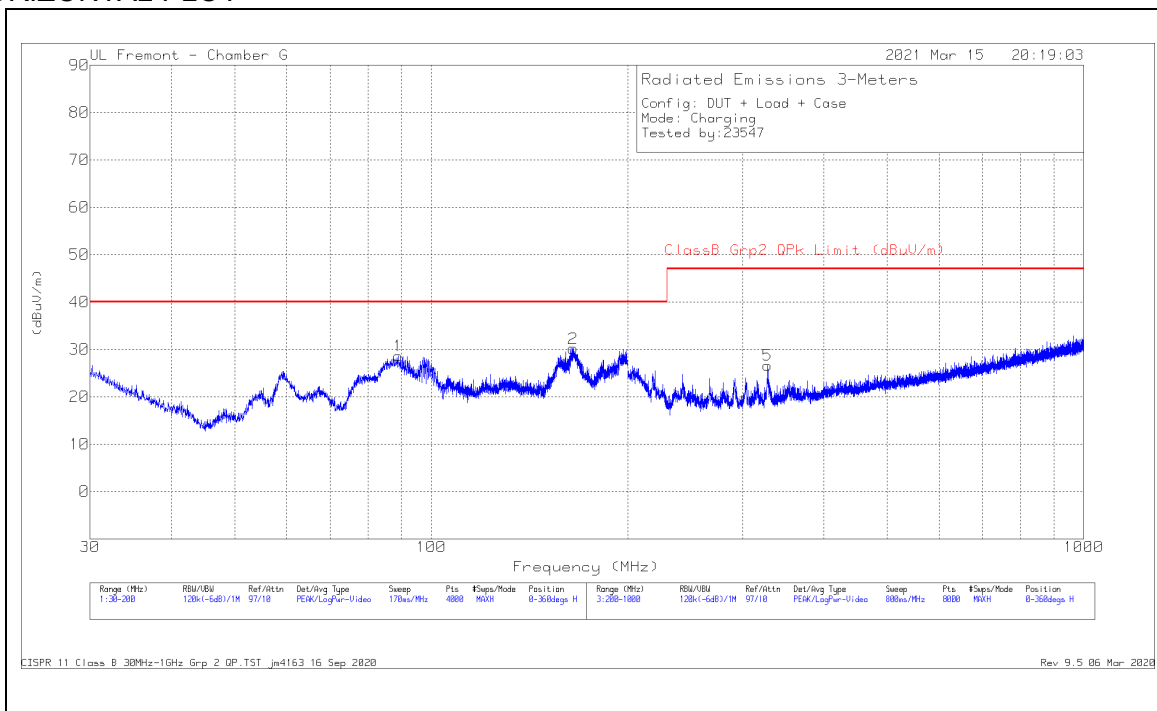
Radiated Emissions

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
2	30.834	28.86	Qp	27.2	-31	25.06	40	-14.94	172	107	V
1	31.272	23.99	Qp	26.9	-31	19.89	40	-20.11	295	190	H
5	197.7175	28.72	Qp	19	-29.5	18.22	40	-21.78	206	101	V
3	199.5719	29.61	Qp	19.2	-29.5	19.31	40	-20.69	147	183	H
4	763.1031	22.34	Qp	27.3	-27	22.64	47	-24.36	126	265	H
6	964.6234	21.84	Qp	29.3	-25.4	25.74	47	-21.26	107	244	V

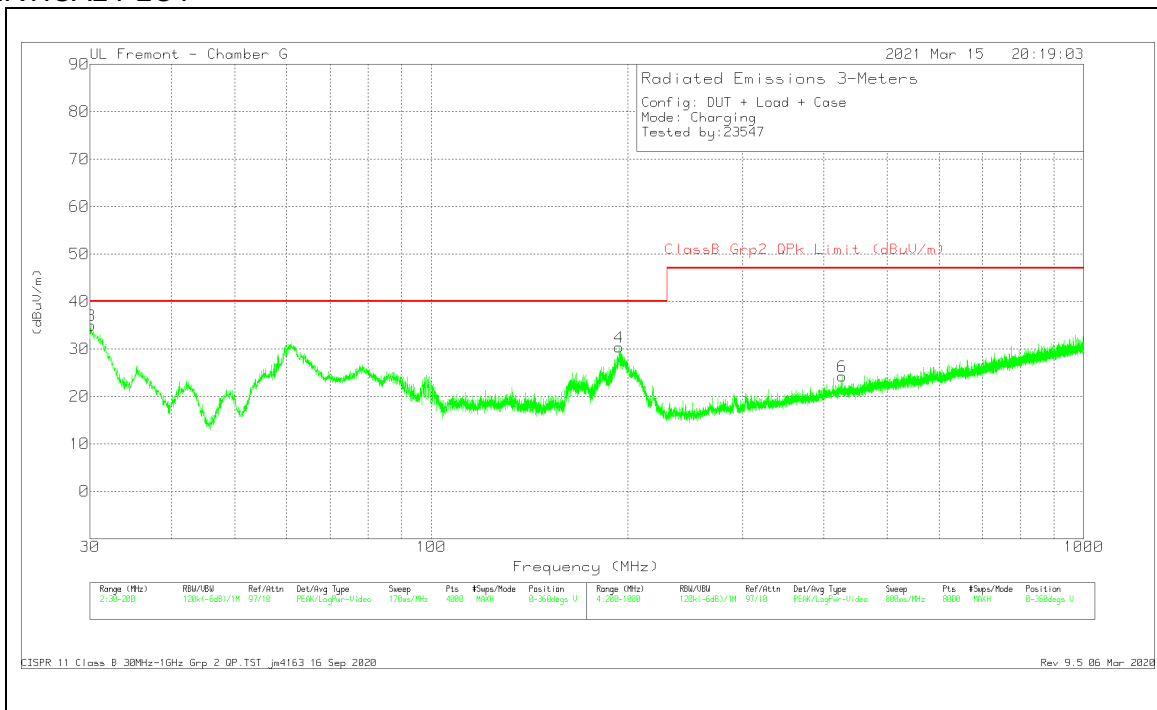
Qp - Quasi-Peak detector

8.5.3. CONFIG 3: OPERATING 360kHz WITH iPhone+ CASE LOAD

HORIZONTAL PLOT



VERTICAL PLOT



DATA

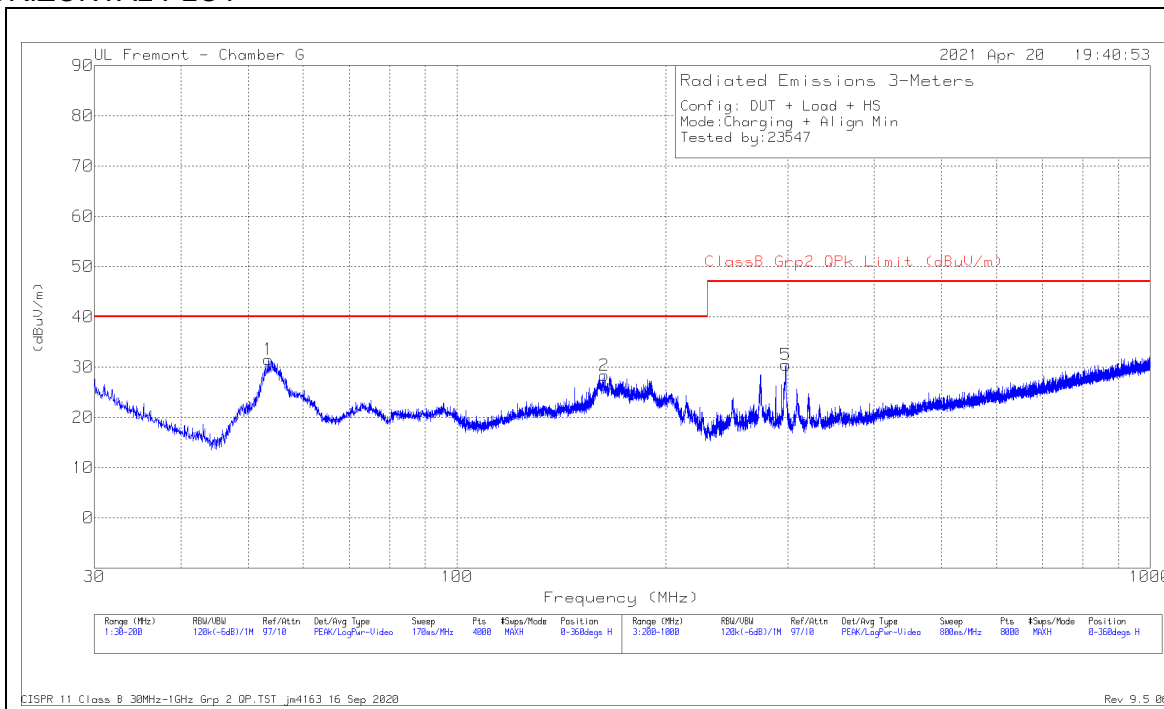
Radiated Emissions

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	30.9056	32.03	Qp	27.2	-31	28.23	40	-11.77	124	105	V
1	89.0188	42.69	Qp	13.5	-30.4	25.79	40	-14.21	113	217	H
2	164.7154	37.71	Qp	18.4	-29.8	26.31	40	-13.69	121	166	H
4	194.1165	36.85	Qp	18.2	-29.5	25.55	40	-14.45	91	161	V
5	327.4386	30.88	Qp	20.5	-28.6	22.78	47	-24.22	190	107	H
6	425.9414	22.86	Qp	22.7	-28.2	17.36	47	-29.64	7	247	V

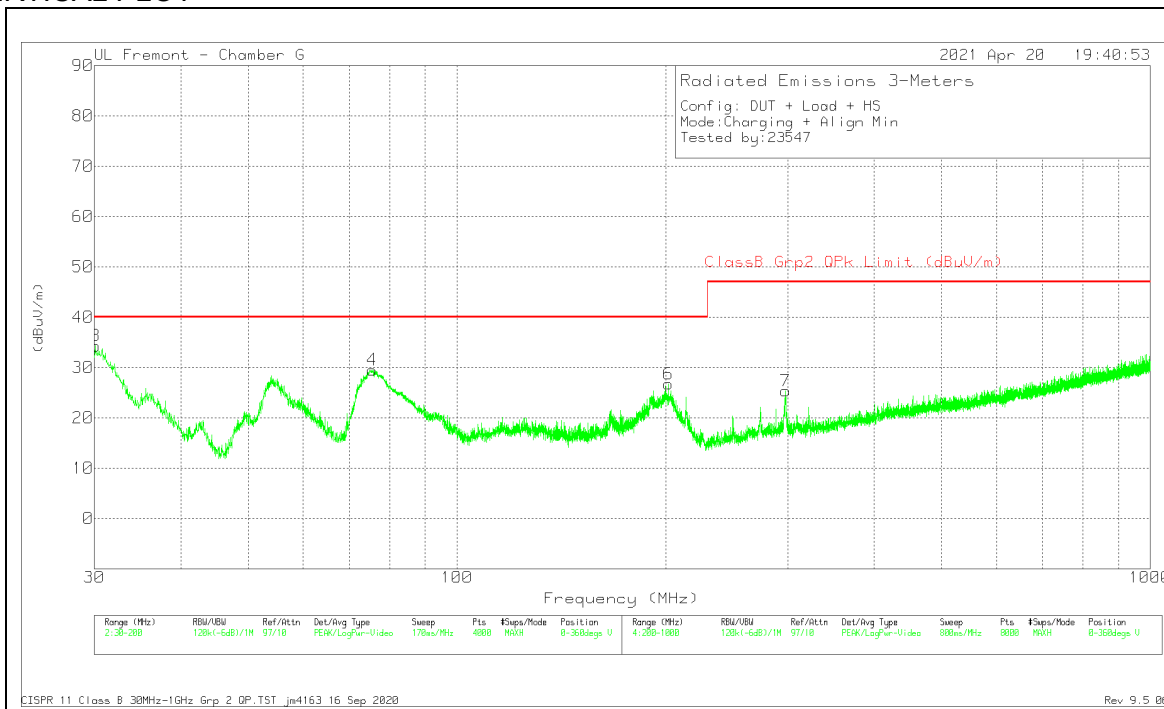
Qp - Quasi-Peak detector

8.5.4. CONFIG 4: OPERATING 127.7kHz WITH LEGACY iPhone+ CASE LOAD

HORIZONTAL PLOT



VERTICAL PLOT



DATA

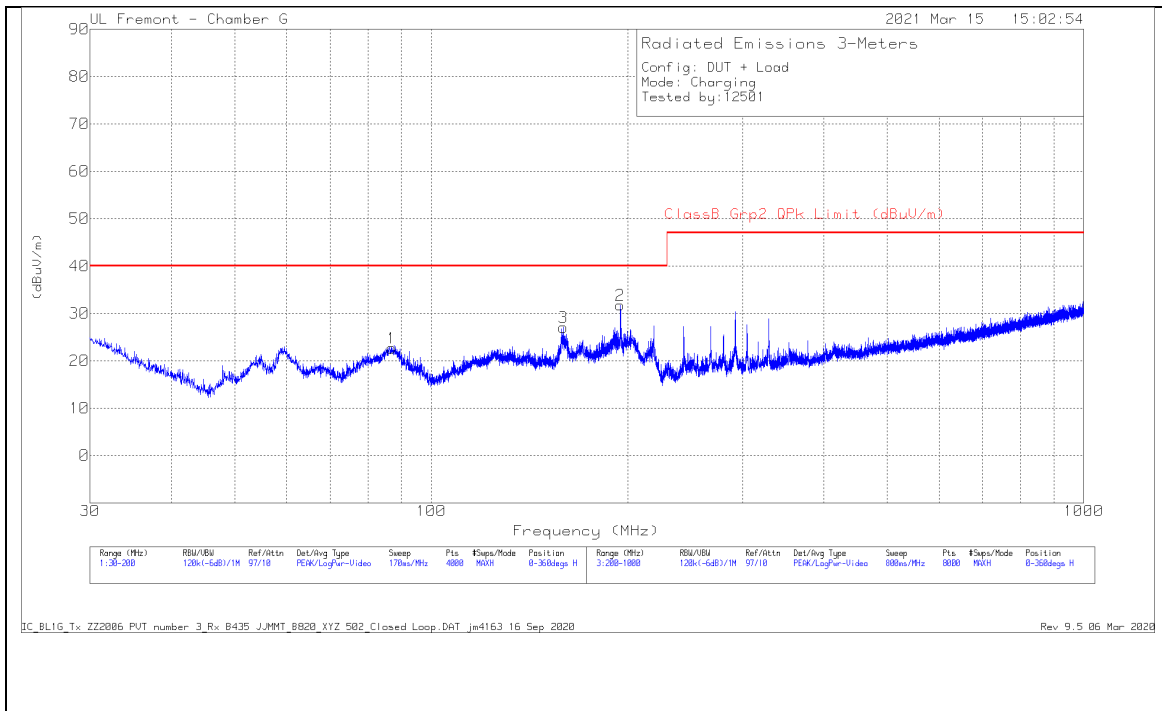
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AFT130 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	ClassB Grp2 QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	30.2535	33.92	Qp	27.7	-31.3	30.32	40	-9.68	183	105	V
1	53.5129	45.43	Qp	13.6	-31	28.03	40	-11.97	82	381	H
4	75.7693	42.19	Qp	14	-30.8	25.39	40	-14.61	348	101	V
2	163.162	34.69	Qp	18.5	-30.1	23.09	40	-16.91	140	151	H
6	202.0144	33.44	Qp	18.7	-29.8	22.34	40	-17.66	73	106	V
5	298.0326	40.2	Qp	19.7	-29.2	30.7	47	-16.3	121	104	H
	298.1178	45.63	Pk	19.7	-29.2	36.13	47	-10.87	121	104	H
7	298.1375	34.15	Qp	19.7	-29.2	24.65	47	-22.35	248	129	V

Pk - Peak detector

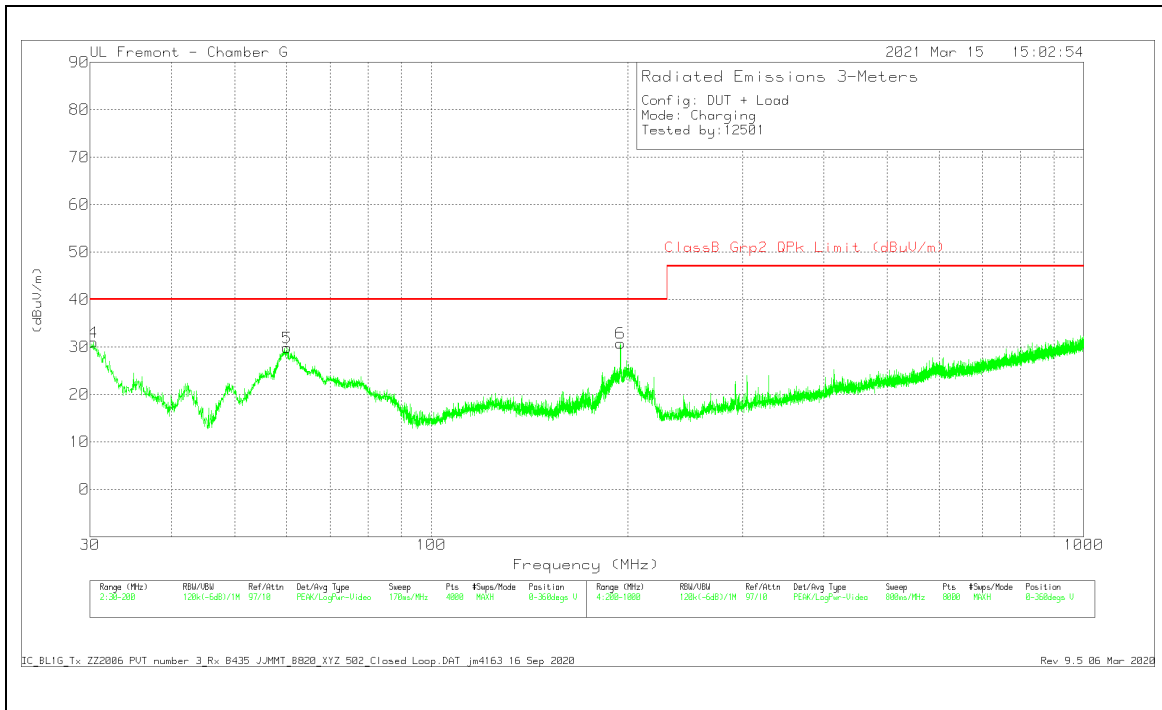
Qp - Quasi-Peak detector

8.5.5. CONFIG 5: OPERATING 127.7kHz WITH AIRPODS LOAD

HORIZONTAL PLOT



VERTICAL PLOT



DATA

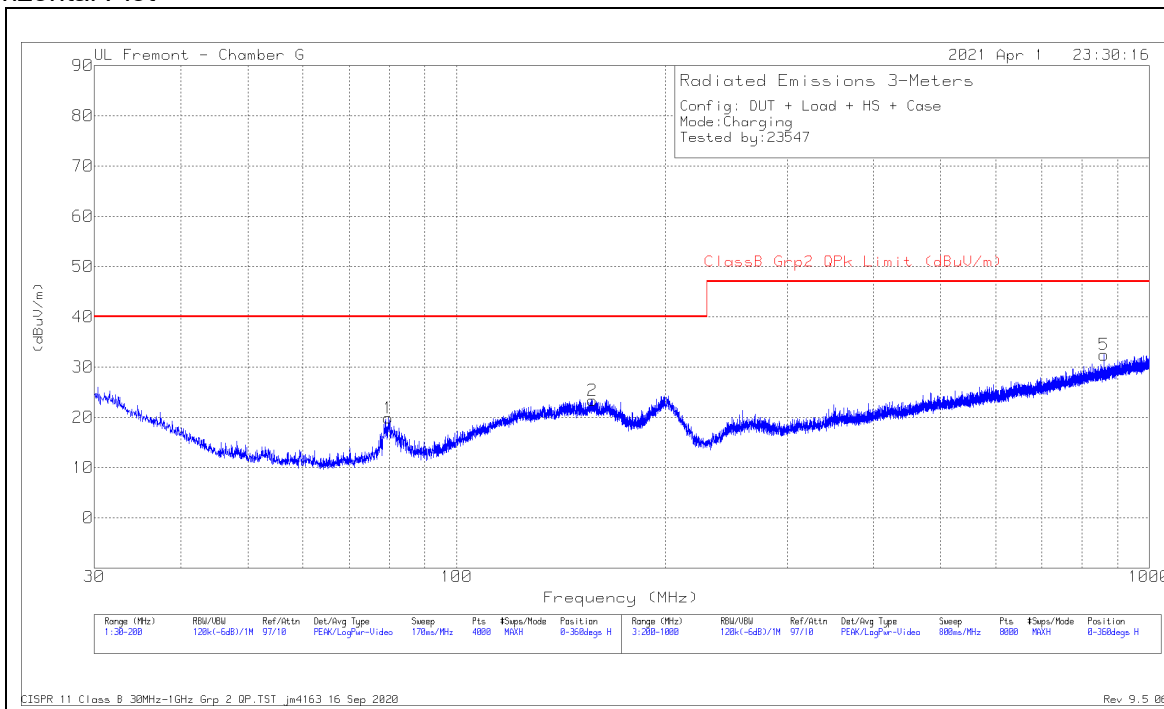
Radiated Emissions

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
4	30.469	30.03	Qp	27.5	-31	26.53	40	-13.47	141	103	V
5	60.8743	43.11	Qp	13.6	-30.7	26.01	40	-13.99	6	101	V
1	86.9644	38.59	Qp	13.3	-30.4	21.49	40	-18.51	91	389	H
3	158.4555	36.3	Qp	18.6	-29.8	25.1	40	-14.9	135	176	H
6	194.9137	39.3	Qp	18.4	-29.5	28.2	40	-11.8	82	107	V
2	195.0647	37.14	Qp	18.4	-29.5	26.04	40	-13.96	118	135	H

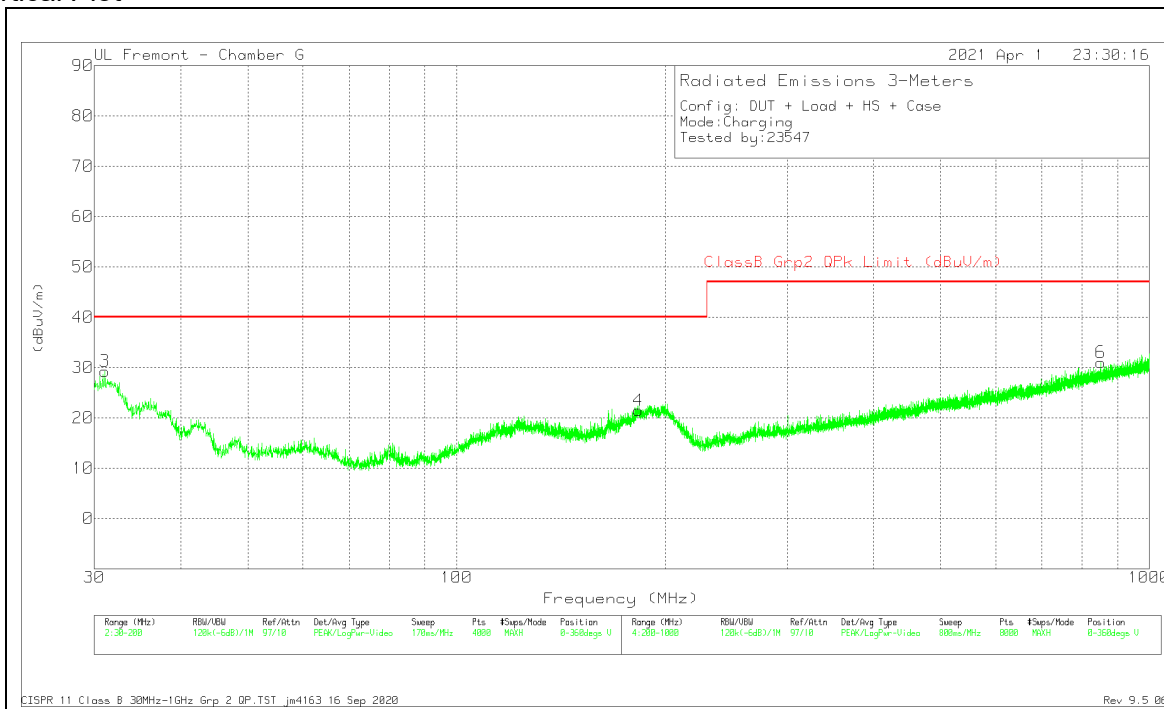
Qp - Quasi-Peak detector

8.5.6. CONFIG 6: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + iPhone + CASE

Horizontal Plot



Vertical Plot



DATA

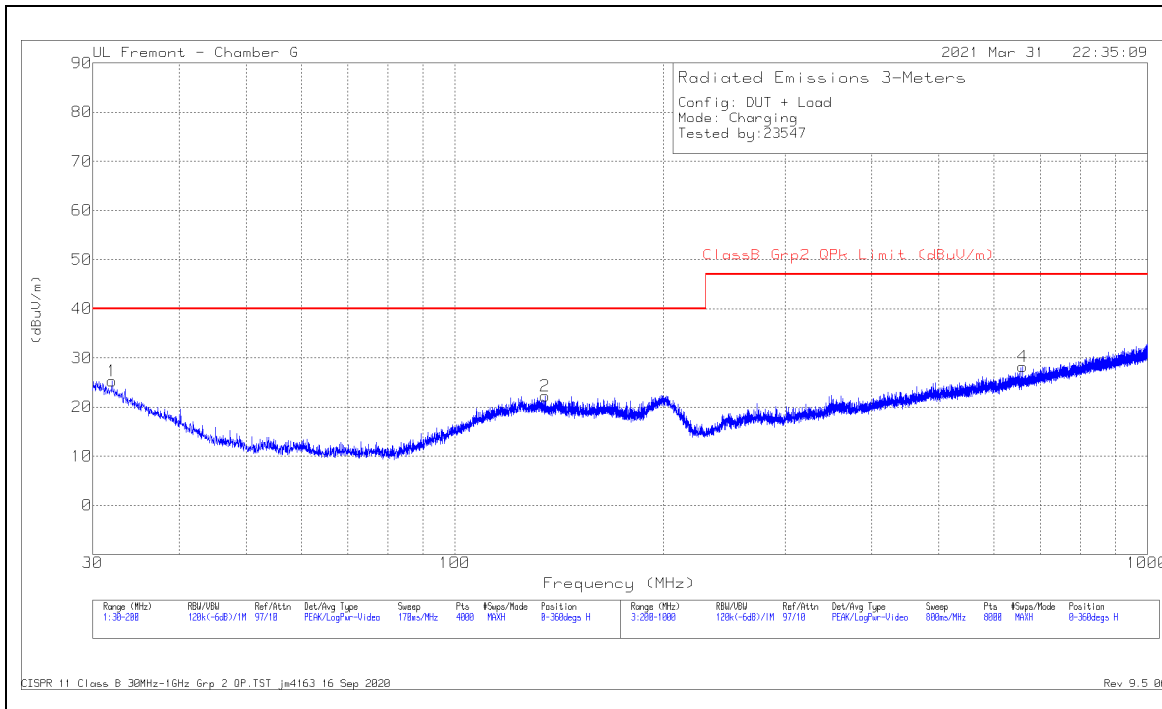
Radiated Emissions

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	31.5508	28.33	Qp	26.7	-31	24.03	40	-15.97	210	111	V
1	79.7279	35.72	Qp	13.6	-30.5	18.82	40	-21.18	78	241	H
2	157.2649	30.03	Qp	18.6	-29.8	18.83	40	-21.17	344	101	H
4	183.0931	28.61	Qp	17.6	-29.6	16.61	40	-23.39	56	154	V
6	852.8127	22.52	Qp	28.3	-26.5	24.32	47	-22.68	204	171	V
5	860.1278	22.57	Qp	28.3	-26.5	24.37	47	-22.63	337	311	H

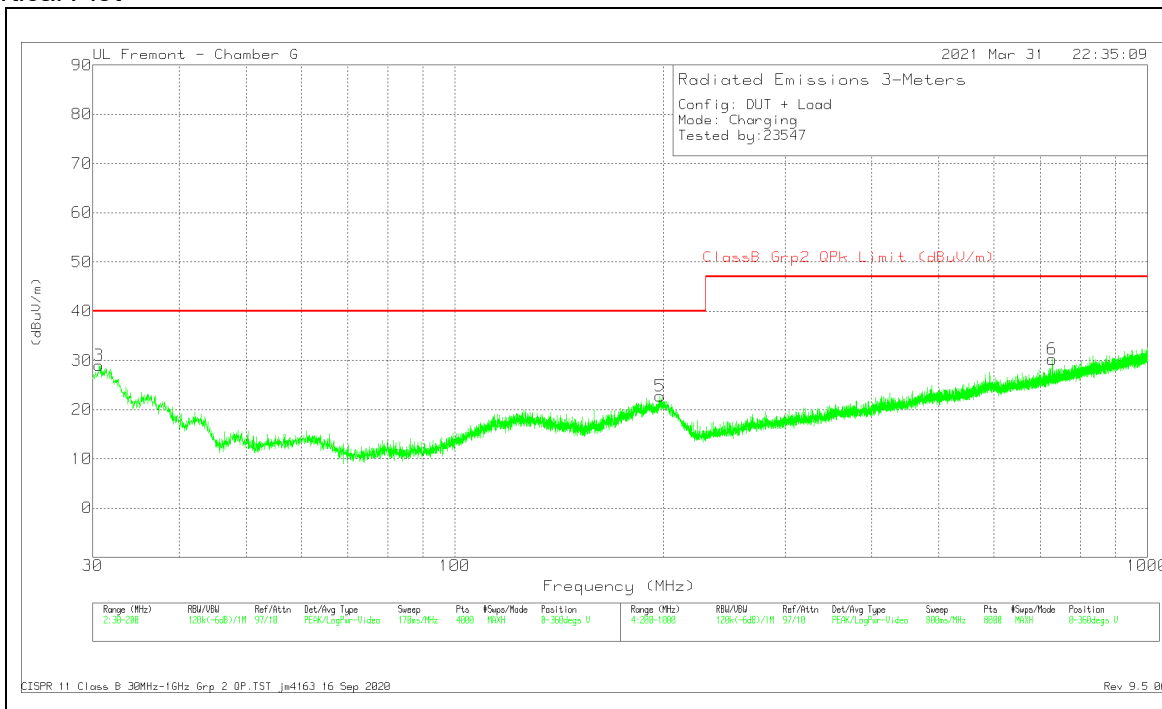
Qp - Quasi-Peak detector

8.5.7. CONFIG 7: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + AIRPODS

Horizontal Plot



Vertical Plot



DATA

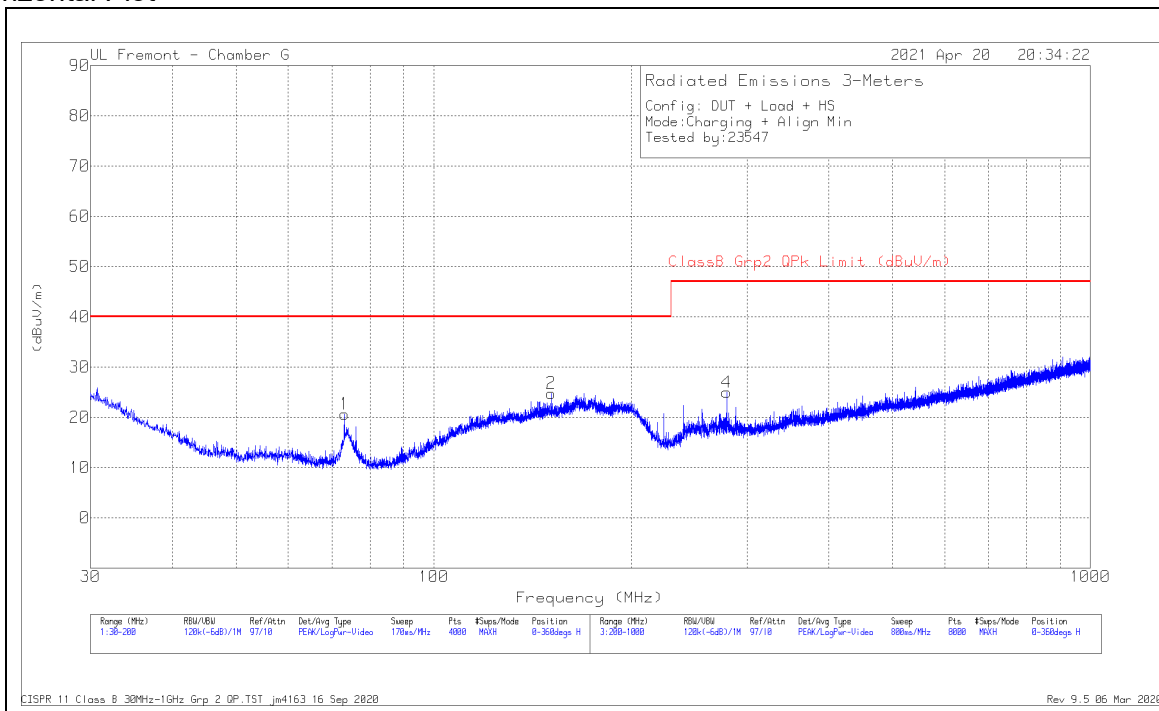
Radiated Emissions

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	30.8047	28.68	Qp	27.3	-31	24.98	40	-15.02	231	103	V
1	31.9798	23.69	Qp	26.4	-31	19.09	40	-20.91	86	400	H
2	134.9182	27.71	Qp	19.8	-30	17.51	40	-22.49	271	193	H
5	197.6369	29.06	Qp	19	-29.5	18.56	40	-21.44	298	104	V
4	660.4681	22.38	Qp	26	-27.4	20.98	47	-26.02	50	175	H
6	728.8967	22.78	Qp	26.9	-27.3	22.38	47	-24.62	336	162	V

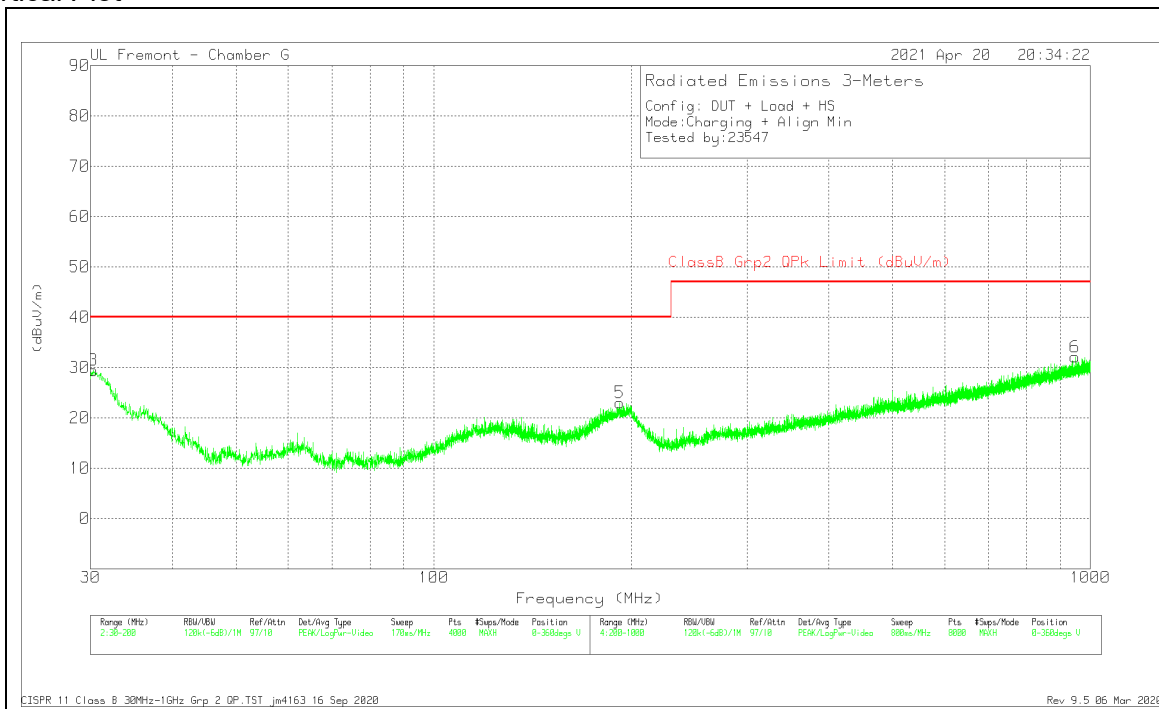
Qp - Quasi-Peak detector

8.5.8. CONFIG 8: OPERATING MODE EUT POWERED BY INTERNAL BATTERY + LEGACY iPHONE

Horizontal Plot



Vertical Plot



DATA

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	30.4978	29.38	Qp	27.5	-31.3	25.58	40	-14.42	204	109	V
1	73.345	31.96	Qp	14.1	-30.8	15.26	40	-24.74	217	232	H
2	150.6723	30.51	Qp	18.7	-30.1	19.11	40	-20.89	331	128	H
5	191.9815	29.83	Qp	17.9	-29.9	17.83	40	-22.17	204	110	V
4	279.3541	27.75	Qp	19.6	-29.3	18.05	47	-28.95	150	111	H
6	948.209	21.94	Qp	29.4	-26	25.34	47	-21.66	157	287	V

Qp - Quasi-Peak detector

9. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)
RSS-Gen 8.8

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

*Decreases with the logarithm of the frequency.

ICES-001 Issue 5 Table 1:

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

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

TEST PROCEDURE

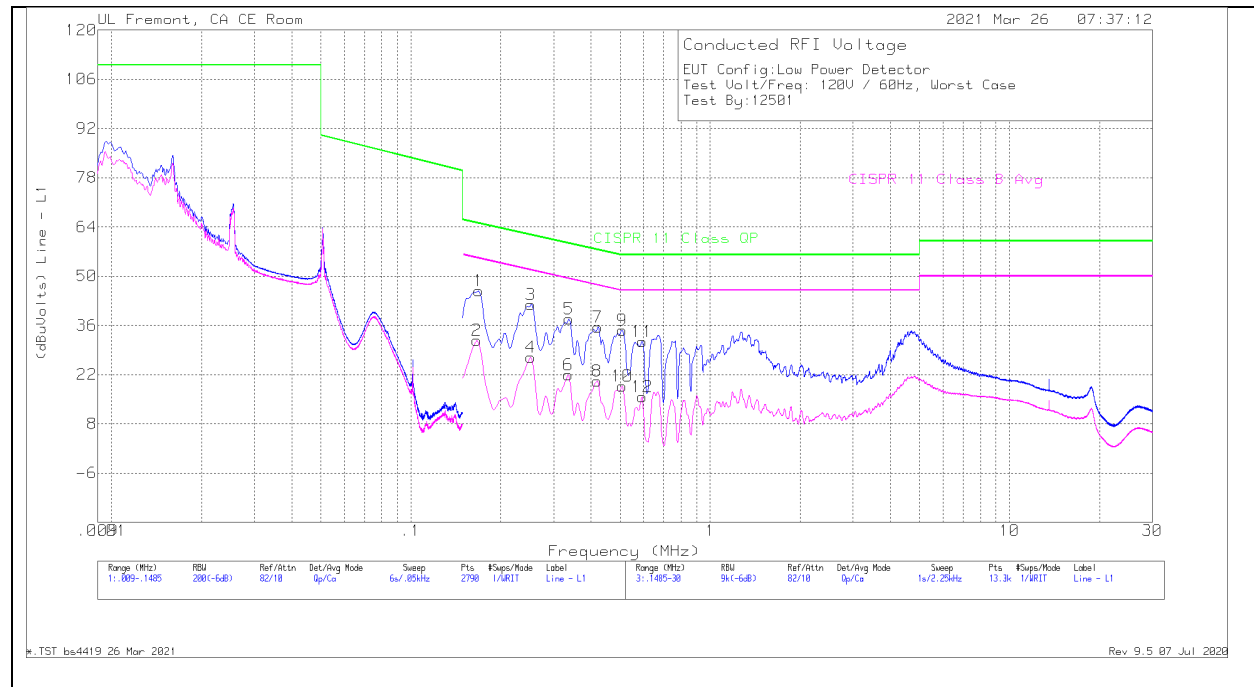
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ICES-001 and ANSI C63.10

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

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

RESULTS

9.1.1. CONFIG 1: STANDBY CONFIGURATION CHARGING LINE 1 RESULTS

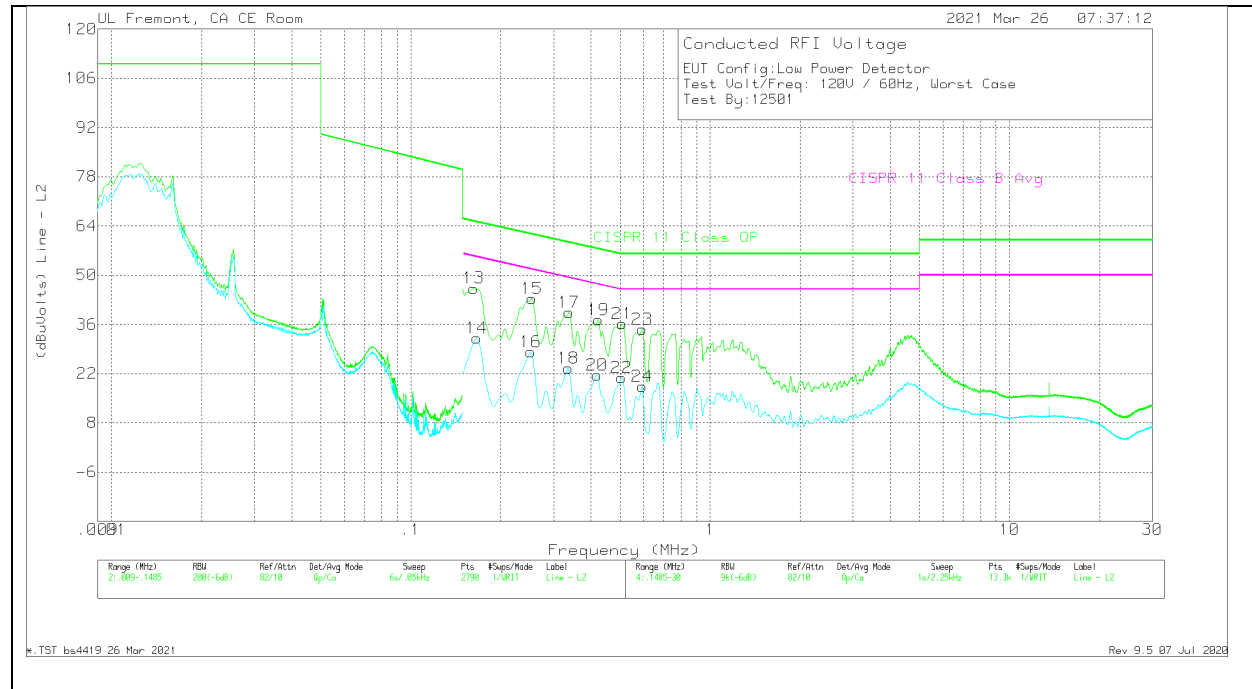


WORST EMISSIONS

Range 3: Line - L1 .1485 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 LISN09(IL L1) r	LC Cables C1&C3 dB	Limiter (dB)	Corrected Reading (dBuVolts)	CISPR 11 Class QP	Margin (dB)	CISPR 11 Class B Avg	Margin (dB)
1	.16875	35.68	Qp	0	0	10.1	45.78	64.95	-19.17	-	-
2	.1665	21.6	Ca	0	0	10.1	31.7	-	-	55.13	-23.43
3	.252	31.81	Qp	0	0	10.1	41.91	61.64	-19.73	-	-
4	.252	16.79	Ca	0	0	10.1	26.89	-	-	51.69	-24.8
5	.3375	27.66	Qp	0	0	10.1	37.76	59.24	-21.48	-	-
6	.33525	11.88	Ca	0	0	10.1	21.98	-	-	49.32	-27.34
7	.42188	25.33	Qp	0	0	10.1	35.43	57.4	-21.97	-	-
8	.4185	10	Ca	0	0	10.1	20.1	-	-	47.48	-27.38
9	.5085	24.53	Qp	0	0	10.1	34.63	56	-21.37	-	-
10	.5085	8.6	Ca	0	0	10.1	18.7	-	-	46	-27.3
11	.59175	21.35	Qp	0	0	10.1	31.45	56	-24.55	-	-
12	.59175	5.53	Ca	0	0	10.1	15.63	-	-	46	-30.37

LINE 2 RESULTS



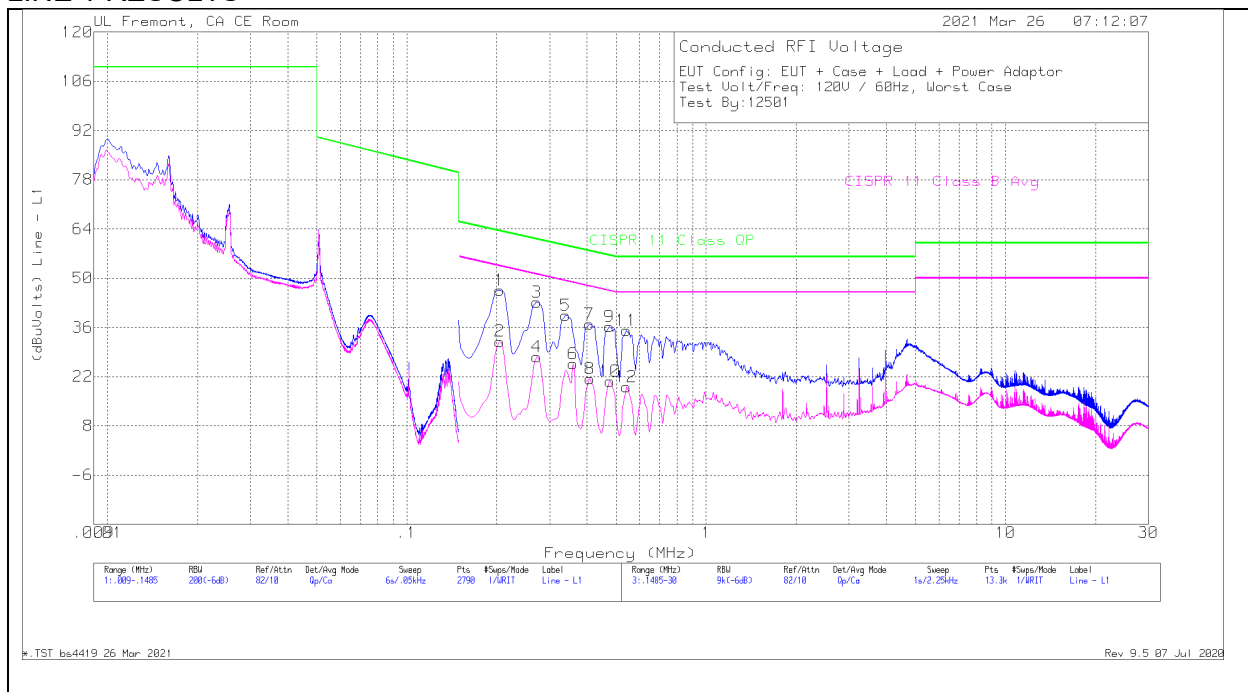
WORST EMISSIONS

Range 4: Line - L2 .1485 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 LISN10(IL L2) r	LC Cables C2&C3 dB	Limiter (dB)	Corrected Reading (dBuVolts)	CISPR 11 Class QP	Margin (dB)	CISPR 11 Class B Avg	Margin (dB)
13	.162	36.18	Qp	0	0	10.1	46.28	65.28	-19	-	-
14	.1665	21.96	Ca	0	0	10.1	32.06	-	-	55.13	-23.07
15	.25425	33.2	Qp	0	0	10.1	43.3	61.57	-18.27	-	-
16	.252	18.06	Ca	0	0	10.1	28.16	-	-	51.69	-23.53
17	.3375	29.26	Qp	0	0	10.1	39.36	59.24	-19.88	-	-
18	.33525	13.37	Ca	0	0	10.1	23.47	-	-	49.32	-25.85
19	.423	27.12	Qp	0	0	10.1	37.22	57.38	-20.16	-	-
20	.41963	11.53	Ca	0	0	10.1	21.63	-	-	47.46	-25.83
21	.5085	26.07	Qp	0	0	10.1	36.17	56	-19.83	-	-
22	.50625	10.73	Ca	0	0	10.1	20.83	-	-	46	-25.17
23	.59175	24.5	Qp	0	0	10.1	34.6	56	-21.4	-	-
24	.59175	8.23	Ca	0	0	10.1	18.33	-	-	46	-27.67

9.1.2. CONFIG 3: OPERATING 360kHz WITH iPhone LOAD

LINE 1 RESULTS

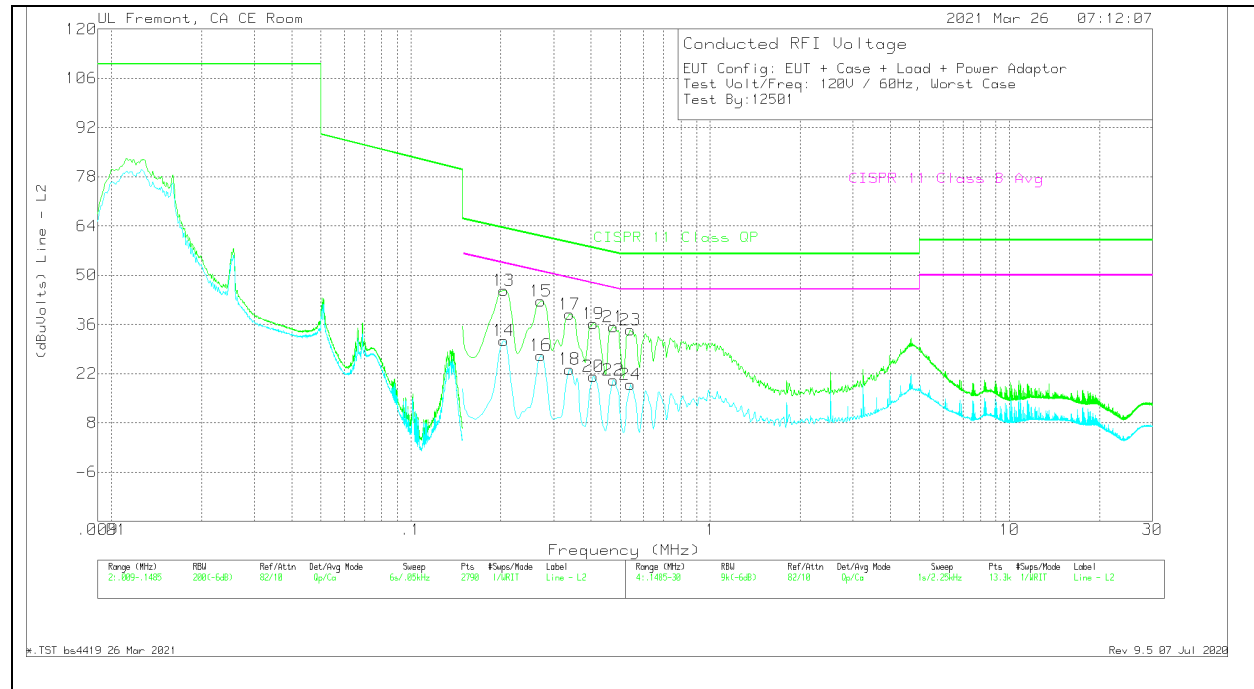


WORST EMISSIONS

Range 3: Line - L1 .1485 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 LISN09(IL L1) r	LC Cables C1&C3 dB	Limiter (dB)	Corrected Reading (dBuVolts)	CISPR 11 Class QP	Margin (dB)	CISPR 11 Class B Avg	Margin (dB)
1	.20475	36.48	Qp	0	0	10.1	46.58	63.35	-16.77	-	-
2	.20475	21.91	Ca	0	0	10.1	32.01	-	-	53.42	-21.41
3	.27225	33.12	Qp	0	0	10.1	43.22	61.01	-17.79	-	-
4	.27225	17.58	Ca	0	0	10.1	27.68	-	-	51.05	-23.37
5	.33975	29.37	Qp	0	0	10.1	39.47	59.18	-19.71	-	-
6	.36	15.51	Ca	0	0	10.1	25.61	-	-	48.73	-23.12
7	.40725	26.83	Qp	0	0	10.1	36.93	57.69	-20.76	-	-
8	.4095	11.29	Ca	0	0	10.1	21.39	-	-	47.66	-26.27
9	.47475	26.02	Qp	0	0	10.1	36.12	56.43	-20.31	-	-
10	.477	10.64	Ca	0	0	10.1	20.74	-	-	46.39	-25.65
11	.54225	25.1	Qp	0	0	10.1	35.2	56	-20.8	-	-
12	.54225	9	Ca	0	0	10.1	19.1	-	-	46	-26.9

LINE 2 RESULTS



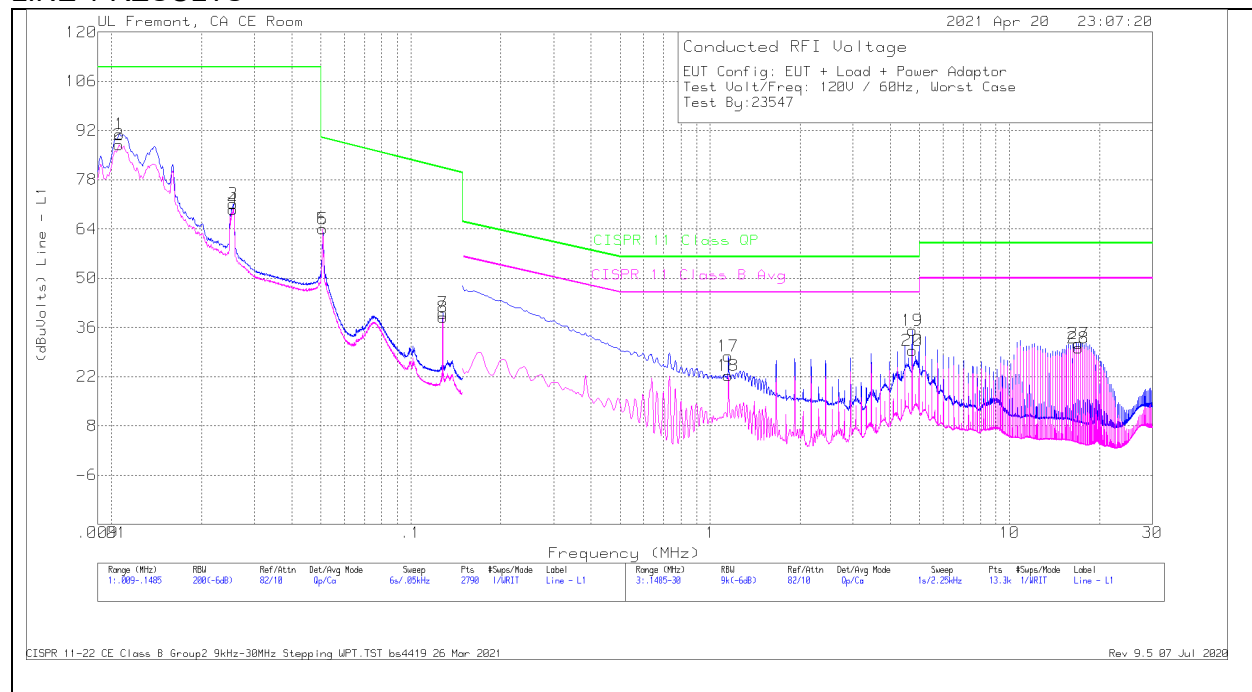
WORST EMISSIONS

Range 4: Line - L2 .1485 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 LISN10(IL L2) r	LC Cables C2&C3 dB	Limiter (dB)	Corrected Reading (dBuVolts)	CISPR 11 Class QP	Margin (dB)	CISPR 11 Class B Avg	Margin (dB)
13	.20475	35.59	Qp	0	0	10.1	45.69	63.35	-17.66	-	-
14	.20475	21.33	Ca	0	0	10.1	31.43	-	-	53.42	-21.99
15	.27225	32.48	Qp	0	0	10.1	42.58	61.01	-18.43	-	-
16	.27225	17.09	Ca	0	0	10.1	27.19	-	-	51.05	-23.86
17	.33975	28.84	Qp	0	0	10.1	38.94	59.18	-20.24	-	-
18	.33975	13.16	Ca	0	0	10.1	23.26	-	-	49.21	-25.95
19	.40725	26.15	Qp	0	0	10.1	36.25	57.69	-21.44	-	-
20	.40725	11.11	Ca	0	0	10.1	21.21	-	-	47.7	-26.49
21	.47475	25.21	Qp	0	0	10.1	35.31	56.43	-21.12	-	-
22	.47475	10.11	Ca	0	0	10.1	20.21	-	-	46.43	-26.22
23	.54225	24.35	Qp	0	0	10.1	34.45	56	-21.55	-	-
24	.54225	8.73	Ca	0	0	10.1	18.83	-	-	46	-27.17

9.1.3. CONFIG 4: OPERATING 127.7kHz WITH LEGACY iPHONE LOAD

LINE 1 RESULTS



WORST EMISSIONS

Range 1: Line - L1 .009 - .1485MHz

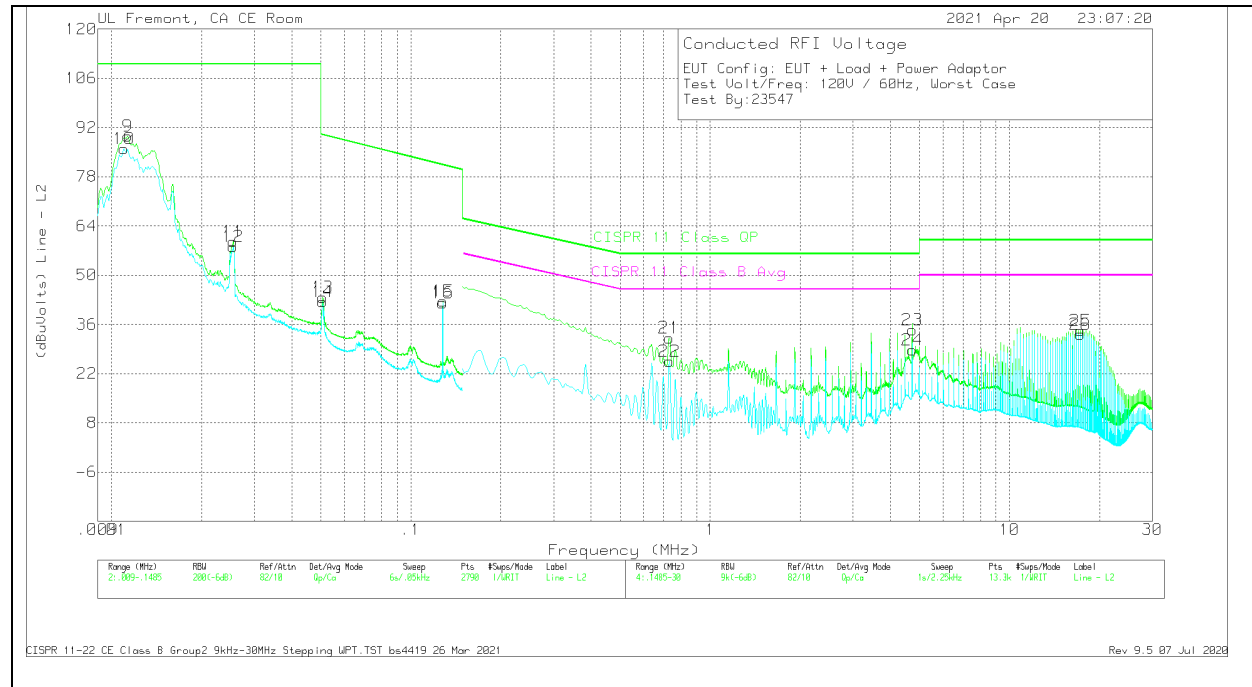
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 LISN09(IL L1) r	LC Cables C1&C3 dB	Limiter	Corrected Reading (dBuVolts)	CISPR 11 Class QP	Margin (dB)	CISPR 11 Class B Avg	Margin (dB)
1	.01065	76.07	Qp	4.2	0	10.7	90.97	110	-19.03	-	-
2	.0106	73.09	Ca	4.2	0	10.7	87.99	-	-	-	-
3	.0255	59.78	Qp	1.1	0	10.3	71.18	110	-38.82	-	-
4	.0255	58.13	Ca	1.1	0	10.3	69.53	-	-	-	-
5	.0508	53.48	Qp	.3	0	10.2	63.98	89.85	-25.87	-	-
6	.0508	53.5	Ca	.3	0	10.2	64	-	-	-	-
7	.1278	29.84	Qp	.1	0	10.1	40.04	81.38	-41.34	-	-
8	.1278	28.6	Ca	.1	0	10.1	38.8	-	-	-	-

Range 3: Line - L1 .1485 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 LISN09(IL L1) r	LC Cables C1&C3 dB	Limiter	Corrected Reading (dBuVolts)	CISPR 11 Class QP	Margin (dB)	CISPR 11 Class B Avg	Margin (dB)
17	1.14975	17.61	Qp	0	.1	10.1	27.81	56	-28.19	-	-
18	1.14975	12.08	Ca	0	.1	10.1	22.28	-	-	46	-23.72
19	4.72725	24.76	Qp	0	.1	10.2	35.06	56	-20.94	-	-
20	4.72725	19.16	Ca	0	.1	10.2	29.46	-	-	46	-16.54
27	16.99425	20.93	Qp	0	.2	10.3	31.43	60	-28.57	-	-
28	16.99425	19.62	Ca	0	.2	10.3	30.12	-	-	50	-19.88

Qp - Quasi-Peak detector
Ca - CISPR 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	Limiter	Corrected Reading (dBuVolts)	CISPR 11 Class QP	Margin (dB)	CISPR 11 Class B Avg	Margin (dB)
9	.01135	74.9	Qp	3.9	0	10.7	89.5	110	-20.5	-	-
10	.011	71.35	Ca	4	0	10.7	86.05	-	-	-	-
11	.0255	48.16	Qp	1.1	0	10.3	59.56	110	-50.44	-	-
12	.0255	46.7	Ca	1.1	0	10.3	58.1	-	-	-	-
13	.0507	33.23	Qp	.3	0	10.2	43.73	89.87	-46.14	-	-
14	.0507	31.87	Ca	.3	0	10.2	42.37	-	-	-	-
15	.1278	32.35	Qp	.1	0	10.1	42.55	81.38	-38.83	-	-
16	.12775	31.89	Ca	.1	0	10.1	42.09	-	-	-	-

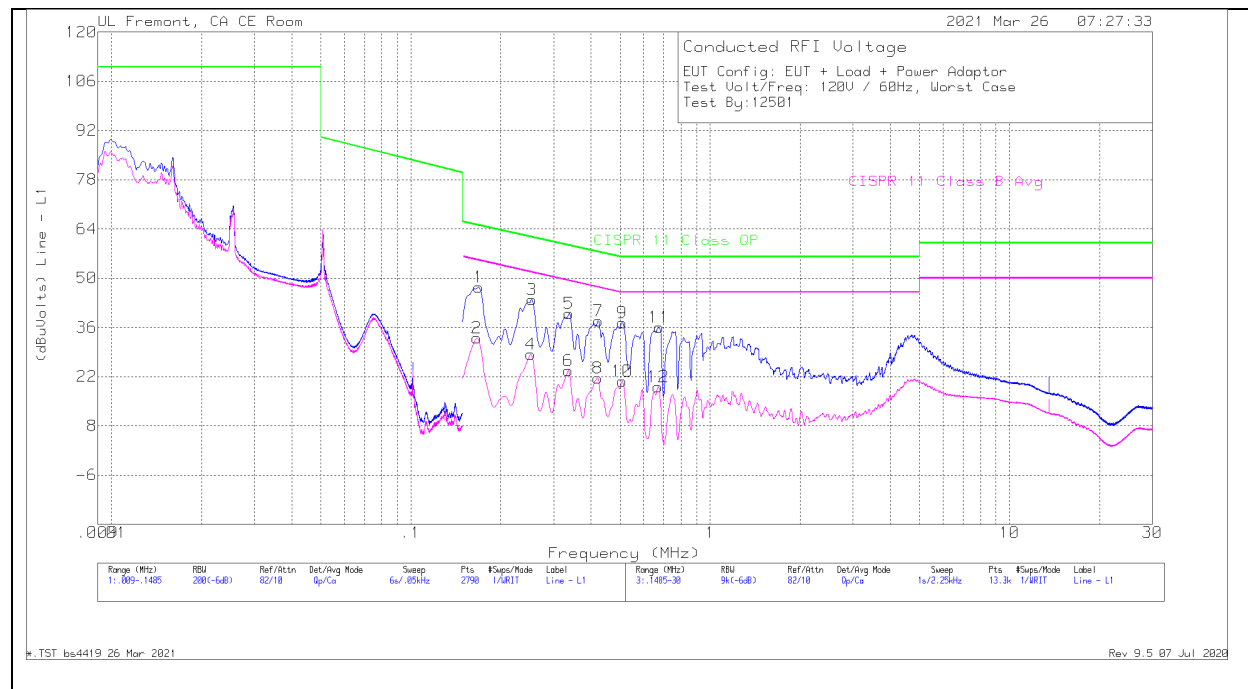
Range 4: Line - L2 .1485 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE0186446 LISN10(IL L2) r	LC Cables C2&C3 dB	Limiter	Corrected Reading (dBuVolts)	CISPR 11 Class QP	Margin (dB)	CISPR 11 Class B Avg	Margin (dB)
21	.729	22.08	Qp	0	0	10.1	32.18	56	-23.82	-	-
22	.73125	15.4	Ca	0	0	10.1	25.5	-	-	46	-20.5
23	4.725	24.04	Qp	0	.1	10.2	34.34	56	-21.66	-	-
24	4.725	18.43	Ca	0	.1	10.2	28.73	-	-	46	-17.27
25	17.2485	23.77	Qp	0	.2	10.3	34.27	60	-25.73	-	-
26	17.2485	22.68	Ca	0	.2	10.3	33.18	-	-	50	-16.82

Qp - Quasi-Peak detector

Ca - CISPR average detection

9.1.4. CONFIG 5: OPERATING 127.7kHz WITH AIRPODS LOAD LINE 1 RESULTS

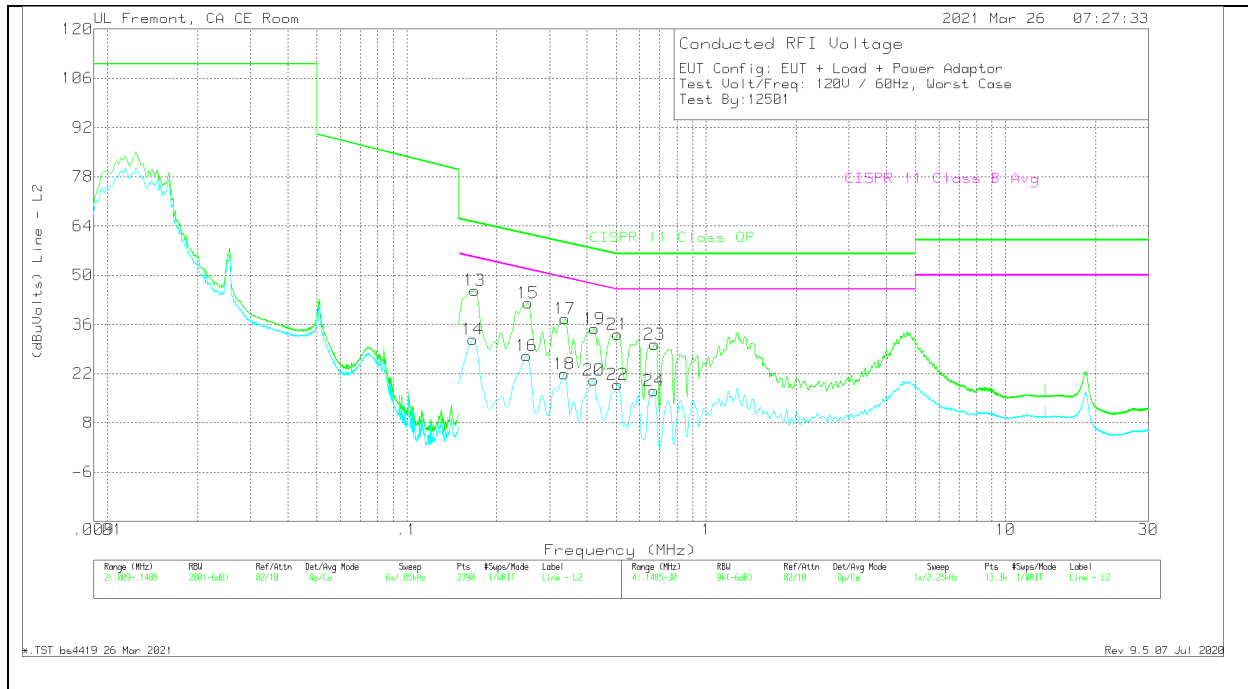


WORST EMISSIONS

Range 3: Line - L1 .1485 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 LISN09(IL L1) r	LC Cables C1&C3 dB	Limiter (dB)	Corrected Reading (dBuVolts)	CISPR 11 Class QP	Margin (dB)	CISPR 11 Class B Avg	Margin (dB)
1	.16875	37.32	Qp	0	0	10.1	47.42	64.95	-17.53	-	-
2	.1665	22.97	Ca	0	0	10.1	33.07	-	-	55.13	-22.06
3	.25425	33.73	Qp	0	0	10.1	43.83	61.57	-17.74	-	-
4	.252	18.31	Ca	0	0	10.1	28.41	-	-	51.69	-23.28
5	.3375	29.8	Qp	0	0	10.1	39.9	59.24	-19.34	-	-
6	.33525	13.66	Ca	0	0	10.1	23.76	-	-	49.32	-25.56
7	.423	27.72	Qp	0	0	10.1	37.82	57.38	-19.56	-	-
8	.42075	11.55	Ca	0	0	10.1	21.65	-	-	47.43	-25.78
9	.5085	27.25	Qp	0	0	10.1	37.35	56	-18.65	-	-
10	.5085	10.57	Ca	0	0	10.1	20.67	-	-	46	-25.33
11	.675	25.85	Qp	0	0	10.1	35.95	56	-20.05	-	-
12	.6705	9.05	Ca	0	0	10.1	19.15	-	-	46	-26.85

LINE 2 RESULTS



WORST EMISSIONS

Range 4: Line - L2 .1485 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	PRE018644 6 LISN10(IL L2) r	LC Cables C2&C3 dB	Limiter (dB)	Corrected Reading (dBuVolts)	CISPR 11 Class QP	Margin (dB)	CISPR 11 Class B Avg	Margin (dB)
13	.16875	35.55	Qp	0	0	10.1	45.65	64.95	-19.3	-	-
14	.1665	21.69	Ca	0	0	10.1	31.79	-	-	55.13	-23.34
15	.25425	31.99	Qp	0	0	10.1	42.09	61.57	-19.48	-	-
16	.252	17.03	Ca	0	0	10.1	27.13	-	-	51.69	-24.56
17	.3375	27.49	Qp	0	0	10.1	37.59	59.24	-21.65	-	-
18	.33525	11.83	Ca	0	0	10.1	21.93	-	-	49.32	-27.39
19	.423	24.71	Qp	0	0	10.1	34.81	57.38	-22.57	-	-
20	.42075	9.97	Ca	0	0	10.1	20.07	-	-	47.43	-27.36
21	.50625	23.08	Qp	0	0	10.1	33.18	56	-22.82	-	-
22	.50625	8.77	Ca	0	0	10.1	18.87	-	-	46	-27.13
23	.67275	20.19	Qp	0	0	10.1	30.29	56	-25.71	-	-
24	.66825	7	Ca	0	0	10.1	17.1	-	-	46	-28.9

10. SETUP PHOTOS

Please refer to 13371066-EP1V1 for setup photos

END OF TEST REPORT