



CERTIFICATION TEST REPORT

Report Number. : 13003458-E1V2

Applicant : BRAUN GMBH
T-QTA FRANKFURTER STRASSE 145
KRONBERG TS, D-61476 DE

Model : 3768

FCC ID : USQ3768

EUT Description : Wireless Charger

Test Standard(s) : FCC 47 CFR PART 18 SUBPART C

Date Of Issue:

December 12, 2019

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

| Rev. | Issue Date | Revisions | Revised By |
|------|------------|--|------------|
| V1 | 12/4/2019 | Initial Issue | -- |
| V2 | 12/12/2019 | Updated operational frequency, support equipment and test equipment cal. | Tri Pham |

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: BRAUN GMBH
T-QTA FRANKFURTER STRASSE 145
KRONBERG TS, D-61476 DE

EUT DESCRIPTION: Wireless Charger

MODEL: 3768

SERIAL NUMBER: DVTD8H1850 05679

DATE TESTED: SEPTEMBER 30 – NOVEMBER 25, 2019

| APPLICABLE STANDARDS | |
|-----------------------|--------------|
| STANDARD | TEST RESULTS |
| FCC PART 18 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. This report must not be used by the client to claim product certification, approval, or endorsement by UL, NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:



Frank Ibrahim
OPERATIONS LEAD
UL Verification Services Inc.

Reviewed By:



Tri Pham
PROJECT ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC / OST MP-5, "FCC Methods of Measurements of Radio Noise Emissions from Industrial, Scientific, and Medical Equipment."

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 47173 Benicia Street | 47266 Benicia Street | 47658 Kato Rd. |
|---|---|---|
| <input type="checkbox"/> Chamber A (ISED:2324B-1) | <input type="checkbox"/> Chamber D (ISED:22541-1) | <input type="checkbox"/> Chamber I (ISED: 2324A-5) |
| <input type="checkbox"/> Chamber B (ISED:2324B-2) | <input type="checkbox"/> Chamber E (ISED:22541-2) | <input type="checkbox"/> Chamber J (ISED: 2324A-6) |
| <input type="checkbox"/> Chamber C (ISED:2324B-3) | <input type="checkbox"/> Chamber F (ISED:22541-3) | <input checked="" type="checkbox"/> Chamber K (ISED: 2324A-1) |
| | <input type="checkbox"/> Chamber G (ISED:22541-4) | <input type="checkbox"/> Chamber L (ISED: 2324A-3) |
| | <input type="checkbox"/> Chamber H (ISED:22541-5) | |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

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

| Parameter | Uncertainty |
|--|-------------|
| Conducted Disturbance, 9KHz to 0.15 MHz | 3.84 dB |
| Conducted Disturbance, 0.15 to 30 MHz | 3.65 dB |
| Radiated Disturbance, 9KHz to 30 MHz | 3.15 dB |
| Radiated Disturbance, 30 to 1000 MHz | 5.36 dB |
| Radiated Disturbance, 1000 to 18000 MHz | 4.32 dB |
| Radiated Disturbance, 18000 to 26000 MHz | 4.45 dB |
| Radiated Disturbance, 26000 to 40000 MHz | 5.24 dB |
| Occupied Channel Bandwidth | ±0.39 % |

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT is a wireless charger for electric toothbrushes.

5.2. OPERATING FREQUENCY AND POWER

- Operating Frequency of the WPT: 80-96 kHz

5.3. SOFTWARE AND FIRMWARE

N/A

5.4. CONFIGURATION AND INVESTIGATED

| Configuration | Description |
|---------------|---------------|
| 1 | Charging Mode |
| 2 | Standby Mode |

5.5. WORST-CASE MODE AND MODE

The EUT is wireless charger enclosed in a plastic case.

Note that the EUT was tested as standby and charging modes.

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.

5.6. DETAILS OF TESTED SYSTEM

SUPPORT EQUIPMENT

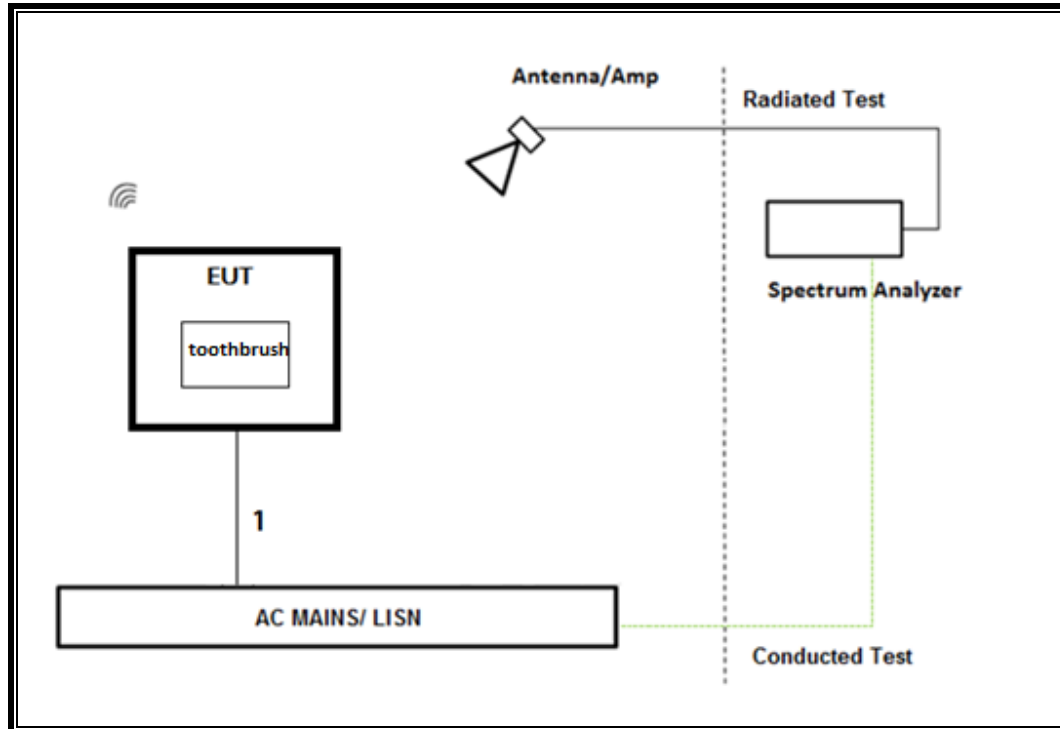
| SUPPORT EQUIPMENT & PERIPHERALS LIST | | | |
|--------------------------------------|--------------|-------|---------------|
| Description | Manufacturer | Model | Serial Number |
| Toothbrush | Braun | 3758 | W690 |

I/O CABLES

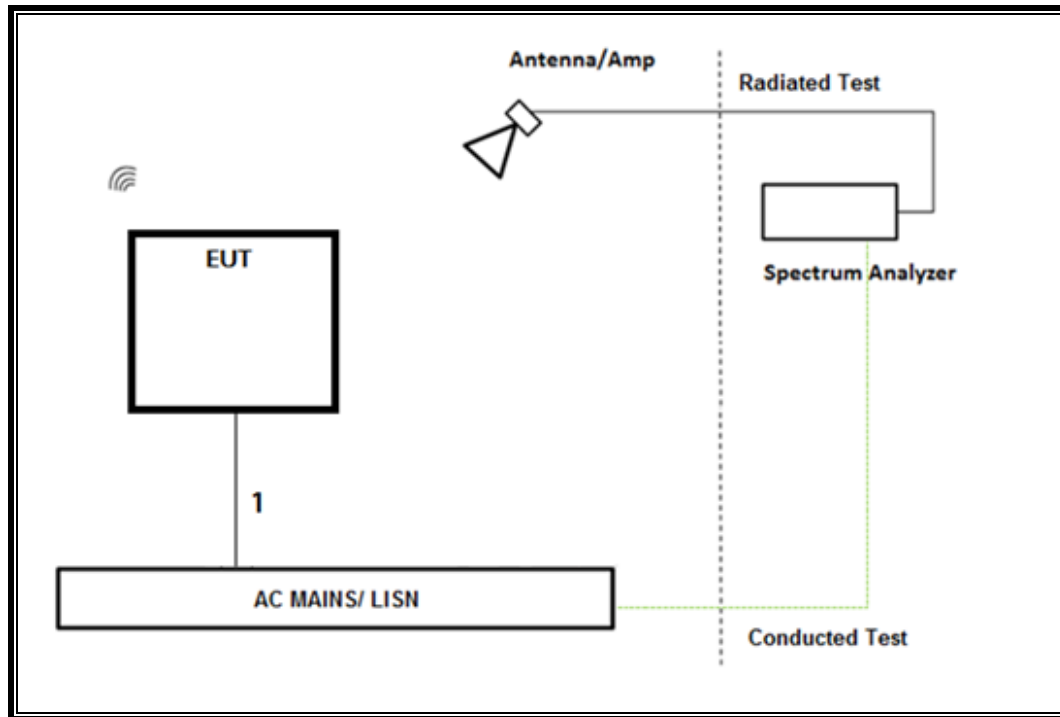
| I/O Cable List | | | | | | |
|----------------|------|----------------------|----------------|------------|------------------|---------|
| Cable No | Port | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1 | AC | 1 | AC | Unshield | 1.5 | |

TEST SETUP – AC POWER LINE CONDUCTED TEST AND RADIATED TEST

SETUP DIAGRAM CHARGING MODE



SETUP DIAGRAM STANDBY MODE



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 | Local ID (T No.) | Cal Date | Cal Due |
| Antenna, Horn 1-18GHz | ETS-Lindgren | 3117 | T863 | 05/30/2018 | 05/30/2020 |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz | Sunol Sciences Corp. | JB3 | T899 | 08/23/2019 | 08/23/2020 |
| Spectrum Analyzer, PXA, 3Hz to 44GHz | Agilent (Keysight) Technologies | N9030A | T1454 | 01/08/2019 | 01/08/2020 |
| RF Amplifier, 1-18GHz | MITEQ | AFS42-00101800-25-S-42 | T1165 | 06/24/2019 | 05/24/2020 |
| EMI TEST RECEIVER | Rohde & Schwarz | ESW44 | PRE0179372 | 02/16/2019 | 02/16/2020 |
| Hybrid Antenna, 30MHz to 3GHz | SunAR rf motion | JB3 | PRE0181575 | 09/05/2019 | 09/05/2020 |
| Spectrum Analyzer, PXA, 3Hz to 44GHz | Agilent (Keysight) Technologies | N9030A | T1454 | 01/23/2019 | 01/23/2020 |
| Antenna, Passive Loop 30Hz – 1MHz | Electro-Metrics | EM-6871 | PRE0179465 | 05/31/2019 | 5/31/2020 |
| Antenna, Passive Loop 100kHz – 30MHz | Electro-Metrics | EM-6872 | PRE0179467 | 05/31/2019 | 5/31/2020 |
| AC Line Conducted | | | | | |
| EMI Test Receiver | Rohde&Schwarz | ESR | T1436 | 4/10/2019 | 4/10/2020 |
| AC Power source | Schaffner | NSG1007 | T134 | 1/23/2019 | 1/23/2020 |
| L.I.S.N | FCC INC. | FCC LISN 50/250 | T1310 | 1/24/2019 | 1/24/2020 |
| UL AUTOMATION SOFTWARE | | | | | |
| Radiated Software | UL | UL EMC | Ver 9.5, Dec 01, 2016 | | |
| AC Line Conducted Software | UL | UL EMC | Ver 9.5, May 26, 2015 | | |

NOTE:

Equipment listed above that has a calibration due date during the testing period, the testing was completed before equipment expiration date.

7. APPLICABLE LIMITS AND TEST RESULTS

7.1. RADIATED EMISSIONS

LIMIT

§18.301 Operating frequencies

The EUT operates at 80 - 96 kHz

§18.305 Field Strength Limits

(b) The field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following:

| Equipment | Operating frequency | RF Power generated by equipment (watts) | Field strength limit (μV/m) | Distance (meters) |
|---|-----------------------|---|---|-------------------------|
| Any type unless otherwise specified (miscellaneous) | Any ISM frequency | Below 500 500 or more | 25 $25 \times \text{SQRT}(\text{power}/500)$ | 300 ¹ 300 |
| | Any non-ISM frequency | Below 500 500 or more | 15 $15 \times \text{SQRT}(\text{power}/500)$ | 300 ¹ 300 |

¹Field strength may not exceed 10 μV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.

The field strength limit is 23.5 dBuV/m at 300 m.

TEST PROCEDURE

FCC / MP-5

The frequency range was investigated from 9 kHz to 1 GHz.

KDB 414788 OFS and Chamber Correlation Justification

For below 30MHz testing, based on KDB 414788, Clause 2, for Part 18 equipment, Section 2.1 of FCC Measurement Procedure MP-5 also permits the use of test sites other than an open-field test site only if it can be shown that the results obtained at such a location are correlated with those made at an open-field test site.

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

Distance Correction Factor

Based on FCC 18.305, note 2. Testing for compliance with these limits may be made at closer distances, provided a sufficient number of measurements are taken to plot the radiation pattern, to determine the major lobes of radiation, and to determine the expected field strength level at 30, 300, or 1600 meters. Alternatively, if measurements are made at only one closer fixed distance, then the permissible field strength limits shall be adjusted using $1/d$ as an attenuation factor.

- Distance factor from 3m to 300m = $20\log(3/300) = -40\text{dB}$

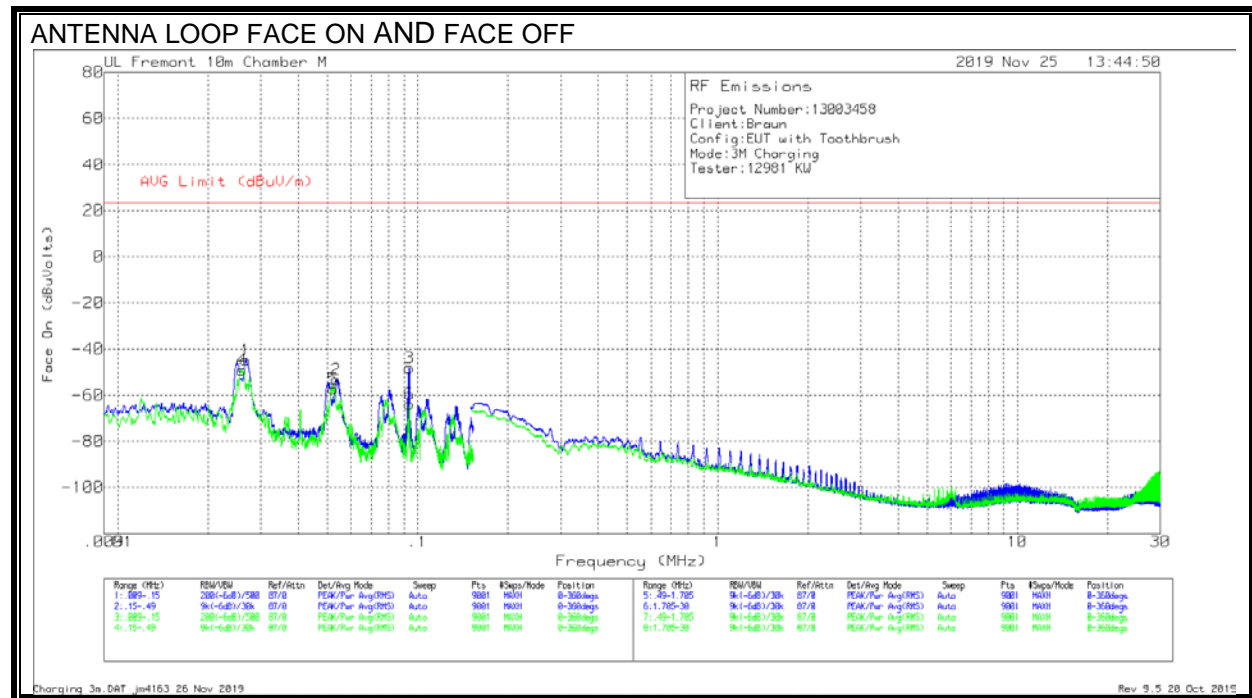
Extrapolation factor, X, is calculated from: $X \text{ Log}_{10}(\text{distance 1} / \text{distance 2}) = \text{Level at distance 1 (dBuV/m)} - \text{level at distance 2 (dBuV/m)}$.

The levels at 3m, 5m and 10m are the maximum / highest field strength values across all measurement antenna polarisations and EUT azimuths at each distance.

The lowest calculated value for X is then used to determine the factor to use to extrapolate the measured data at 3m to a distance of 300m and the level at 300m is the level at 3m minus the factor.

RESULTS

7.1.1. SPURIOUS EMISSIONS 9 kHz TO 30 MHz CHARGING MODE @3m



DATA

| Marker | Frequency (MHz) | Meter Reading (dBUV) | Det | Loop Antenna (ACF) | Amp/Cbl (dB) | Dist Corr 300m (dB) | Corrected Reading (dBUVolts) | AVG Limit (dBUV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|--------------------|--------------|---------------------|------------------------------|--------------------|-------------|----------------|
| 1 | .02666 | 52.58 | Pk | 58.1 | -32.4 | -123 | -44.72 | 23.5 | -68.22 | 0-360 |
| 2 | .05346 | 45.35 | Pk | 56.6 | -32.2 | -123 | -53.25 | 23.5 | -76.75 | 0-360 |
| 3 | .09378 | 51.5 | Pk | 55.5 | -32.1 | -123 | -48.1 | 23.5 | -71.6 | 0-360 |
| 4 | .02596 | 48.28 | Pk | 58.1 | -32.4 | -123 | -49.02 | 23.5 | -72.52 | 0-360 |
| 5 | .05223 | 41.3 | Pk | 56.7 | -32.2 | -123 | -57.2 | 23.5 | -80.7 | 0-360 |
| 6 | .09382 | 35.86 | Pk | 55.5 | -32.1 | -123 | -63.74 | 23.5 | -87.24 | 0-360 |

Pk - Peak detector

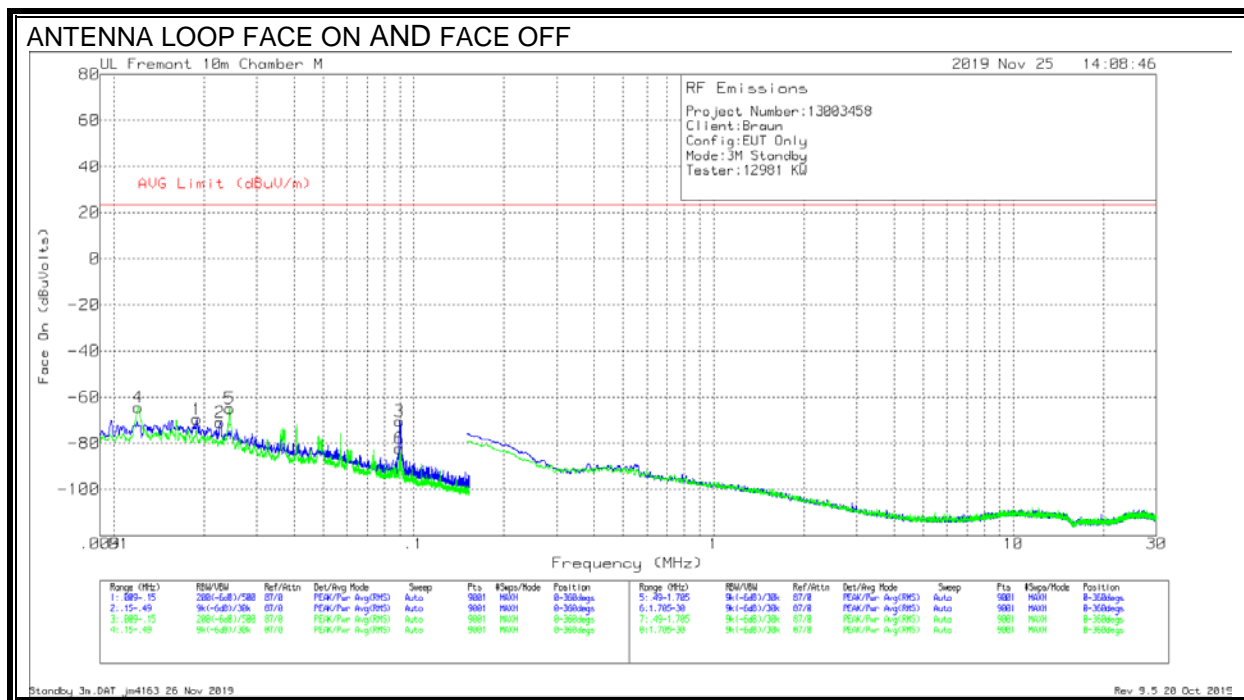
NOTE: Extrapolation factor, X, is calculated from: $X \log_{10} (\text{distance 1} / \text{distance 2}) = \text{Level at distance 1 (dBuV/m)} - \text{level at distance 2 (dBuV/m)}$.

The levels at 3m, 5m and 10m are the maximum / highest field strength values across all measurement antenna polarisations and EUT azimuths at each distance.

The lowest calculated value for X is then used to determine the factor to use to extrapolate the measured data at 3m to a distance of 300m and the level at 300m is the level at 3m minus the factor.

| Frequency | Highest Corrected Reading | | | Extrapolation Factor | | | | Peak level at 300m (dBuV/m) |
|-----------|---------------------------|-------|-------|---------------------------------|-----------|-----------|---------------|-----------------------------------|
| (MHz) | (dBuV/m) | | | X, Calculated from measurements | | | 3m to 300m | |
| | 3m | 5m | 10m | 3m to 5m | 3m to 10m | 5m to 10m | | |
| 0.02666 | 78.28 | 64.34 | 46.02 | -63 | -62 | -61 | 126 | -47.4 |
| 0.05346 | 69.75 | 55.69 | 39.69 | -63 | -57 | -53 | 127 | -57.0 |
| 0.09378 | 74.9 | 61.26 | 44.96 | -61 | -57 | -54 | 123 | -48.1 |

7.1.1. SPURIOUS EMISSIONS 9 kHz TO 30 MHz STANDBY MODE @3m



DATA

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | Loop Antenna (ACF) | Amp/Cbl (dB) | Dist Corr 300m (dB) | Corrected Reading (dBuVolts) | AVG Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) |
|--------|-----------------|----------------------|-----|--------------------|--------------|---------------------|------------------------------|--------------------|-------------|----------------|
| 1 | .01892 | 32 | Pk | 59 | -32.5 | -128 | -69.5 | 23.5 | -93 | 0-360 |
| 2 | .02257 | 31.04 | Pk | 58.5 | -32.5 | -128 | -70.96 | 23.5 | -94.46 | 0-360 |
| 3 | .08969 | 34.09 | Pk | 55.6 | -32.1 | -128 | -70.41 | 23.5 | -93.91 | 0-360 |
| 4 | .01206 | 36.17 | Pk | 59.9 | -32.5 | -128 | -64.43 | 23.5 | -87.93 | 0-360 |
| 5 | .02431 | 37.21 | Pk | 58.3 | -32.4 | -128 | -64.89 | 23.5 | -88.39 | 0-360 |
| 6 | .08959 | 22.28 | Pk | 55.6 | -32.1 | -128 | -82.22 | 23.5 | -105.72 | 0-360 |

Pk - Peak detector

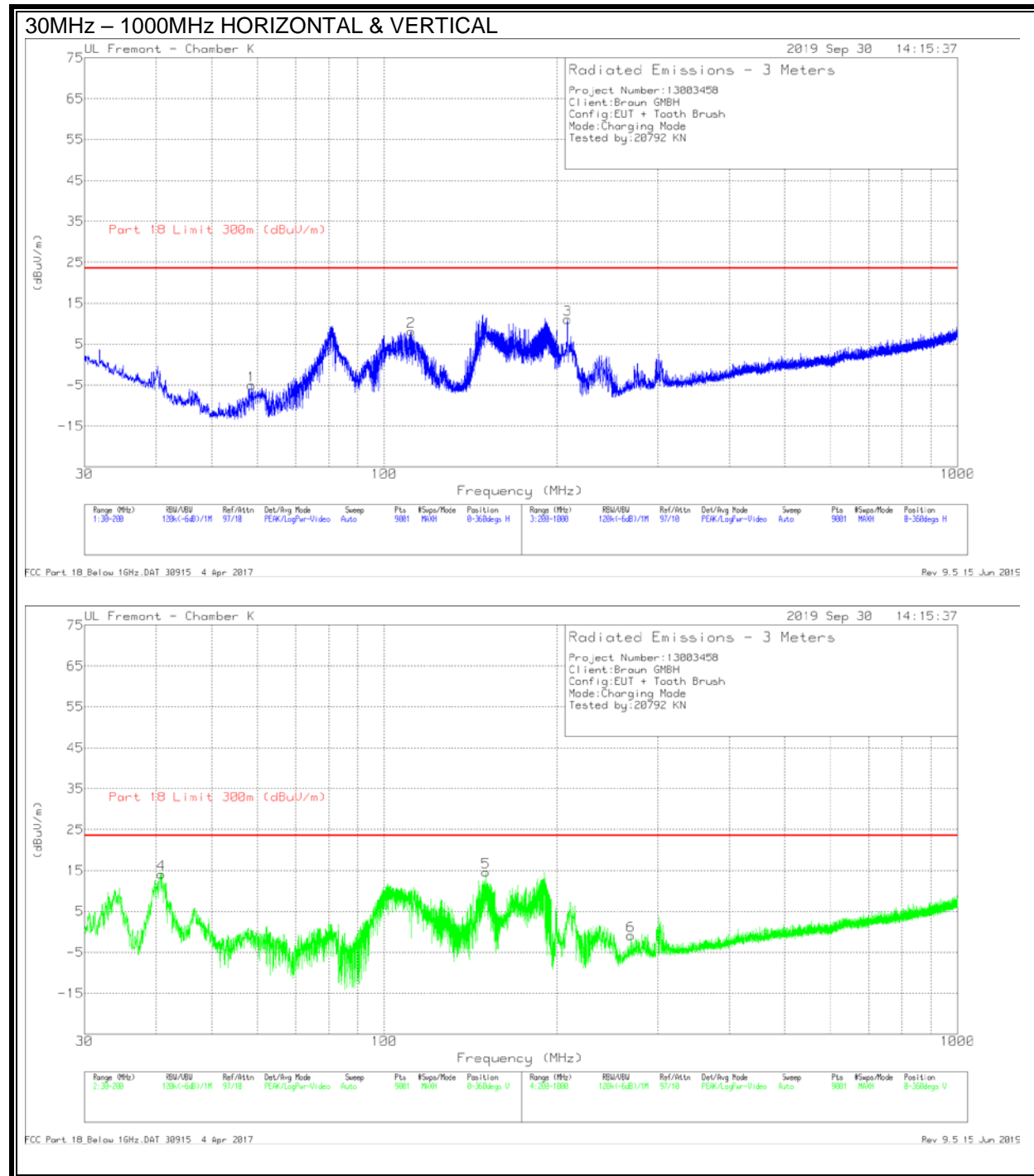
NOTE: Extrapolation factor, X, is calculated from: $X \log_{10} (\text{distance 1} / \text{distance 2}) = \text{Level at distance 1 (dBuV/m)} - \text{level at distance 2 (dBuV/m)}$.

The levels at 3m, 5m and 10m are the maximum / highest field strength values across all measurement antenna polarisations and EUT azimuths at each distance.

The lowest calculated value for X is then used to determine the factor to use to extrapolate the measured data at 3m to a distance of 300m and the level at 300m is the level at 3m minus the factor.

| Frequency (MHz) | Highest Corrected Reading (dBuV/m) | | | Extrapolation Factor X, Calculated from measurements | | | 3m to 300m | Peak level at 300m (dBuV/m) |
|--------------------|---------------------------------------|-------|-------|---|-----------|-----------|---------------|-----------------------------------|
| | 3m | 5m | 10m | 3m to 5m | 3m to 10m | 5m to 10m | | |
| 0.01292 | 63.57 | 53.97 | 22.39 | -43 | -79 | -105 | 210 | -146.2 |
| 0.22 | 57.04 | 52.01 | 32.68 | -23 | -47 | -64 | 128 | -71.4 |
| 0.89 | 57.59 | 48.61 | 27.47 | -40 | -58 | -70 | 140 | -82.9 |

7.1.2. SPURIOUS EMISSIONS 30 MHz TO 1000 MHz CHARGING MODE



DATA

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF PRE0184052 (dB/m) | Amp/Cbl (dB) | Dist Corr (dB) | 20dB Pad (dB) | Corrected Reading (dBuV/m) | Part 18 Limit 300m (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------------|--------------|----------------|---------------|----------------------------|-----------------------------|-------------|----------------|-------------|----------|
| 1 | 58.6546 | 32.8 | Pk | 13.3 | -31.2 | -40 | 20 | -5.1 | - | - | 0-360 | 299 | H |
| 2 | * 111.3549 | 40.29 | Pk | 18.7 | -30.9 | -40 | 20 | 8.09 | 23.5 | -15.41 | 0-360 | 199 | H |
| 4 | 40.8612 | 46.49 | Pk | 19 | -31.4 | -40 | 20 | 14.09 | - | - | 0-360 | 95 | V |
| 5 | 150.3796 | 46.79 | Pk | 18.4 | -30.6 | -40 | 20 | 14.59 | - | - | 0-360 | 95 | V |
| 3 | 208.5333 | 45.04 | Pk | 16.3 | -30.3 | -40 | 20 | 11.04 | - | - | 0-360 | 99 | H |
| 6 | * 268.9779 | 29.97 | Pk | 19.1 | -30 | -40 | 20 | -.93 | 23.5 | -24.43 | 0-360 | 100 | V |

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

Pk - Peak detector

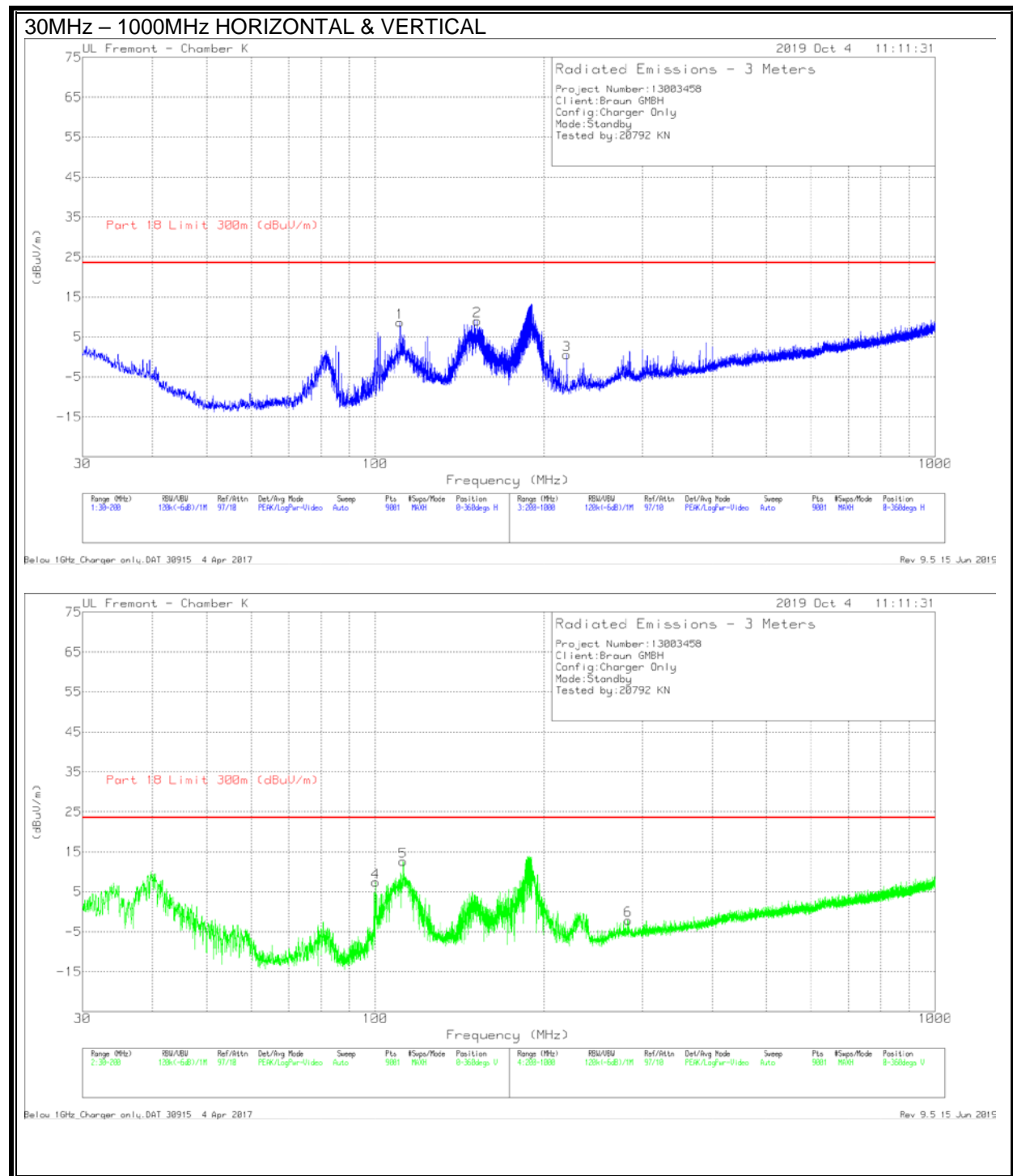
Radiated Emissions

| Frequency (MHz) | Meter Reading (dBuV) | Det | AF PRE0184052 (dB/m) | Amp/Cbl (dB) | Dist Corr (dB) | 20dB Pad (dB) | Corrected Reading (dBuV/m) | Part 18 Limit 300m (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|-----|----------------------|--------------|----------------|---------------|----------------------------|-----------------------------|-------------|----------------|-------------|----------|
| 58.8124 | 25.72 | Qp | 13.3 | -31.2 | -40 | 20 | -12.18 | - | - | 276 | 319 | H |
| * 269.1496 | 22.14 | Qp | 19.1 | -30 | -40 | 20 | -8.76 | 23.5 | -32.26 | 270 | 168 | V |

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

Qp - Quasi-Peak detector

7.1.3. SPURIOUS EMISSIONS 30 MHz TO 1000 MHz STANDBY MODE



DATA

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF PRE0184052 (dB/m) | Amp/Cbl (dB) | Dist Corr (dB) | 20dB Pad (dB) | Corrected Reading (dBuV/m) | Part 18 Limit 300m (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|----------------------|--------------|----------------|---------------|----------------------------|-----------------------------|-------------|----------------|-------------|----------|
| 1 | * 110.8449 | 40.96 | Pk | 18.6 | -30.9 | -40 | 20 | 8.66 | 23.5 | -14.84 | 0-360 | 299 | H |
| 2 | 152.0418 | 41.26 | Pk | 18.4 | -30.6 | -40 | 20 | 9.06 | - | - | 0-360 | 199 | H |
| 4 | 100.2104 | 42.02 | Pk | 16.2 | -30.9 | -40 | 20 | 7.32 | - | - | 0-360 | 100 | V |
| 5 | * 112.2616 | 44.43 | Pk | 18.9 | -30.8 | -40 | 20 | 12.53 | 23.5 | -10.97 | 0-360 | 100 | V |
| 3 | 219.9111 | 34.07 | Pk | 16.6 | -30.2 | -40 | 20 | .47 | - | - | 0-360 | 199 | H |
| 6 | * 282.6668 | 28.59 | Pk | 19.2 | -29.9 | -40 | 20 | -2.11 | 23.5 | -25.61 | 0-360 | 199 | V |

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

Radiated Emissions

| Frequency (MHz) | Meter Reading (dBuV) | Det | AF PRE0184052 (dB/m) | Amp/Cbl (dB) | Dist Corr (dB) | 20dB Pad (dB) | Corrected Reading (dBuV/m) | Part 18 Limit 300m (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|-----|----------------------|--------------|----------------|---------------|----------------------------|-----------------------------|-------------|----------------|-------------|----------|
| * 112.1902 | 35.3 | Qp | 18.8 | -30.8 | -40 | 20 | 3.3 | 23.5 | -20.2 | 0 | 109 | V |

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

7.2. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

§ 18.307 For the following equipment, when designed to be connected to the public utility (AC) power line the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies shall not exceed the limits in the following table. Compliance with the provisions of this paragraph shall be based on the measurements of the radio frequency voltage between each power line and ground at the power terminal using a 50 μ H/50 ohms line impedance stabilization network (LISN).

§ 18.307 (b) All other Part 18 consumer devices:

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

*Decreases with the logarithm of the frequency.

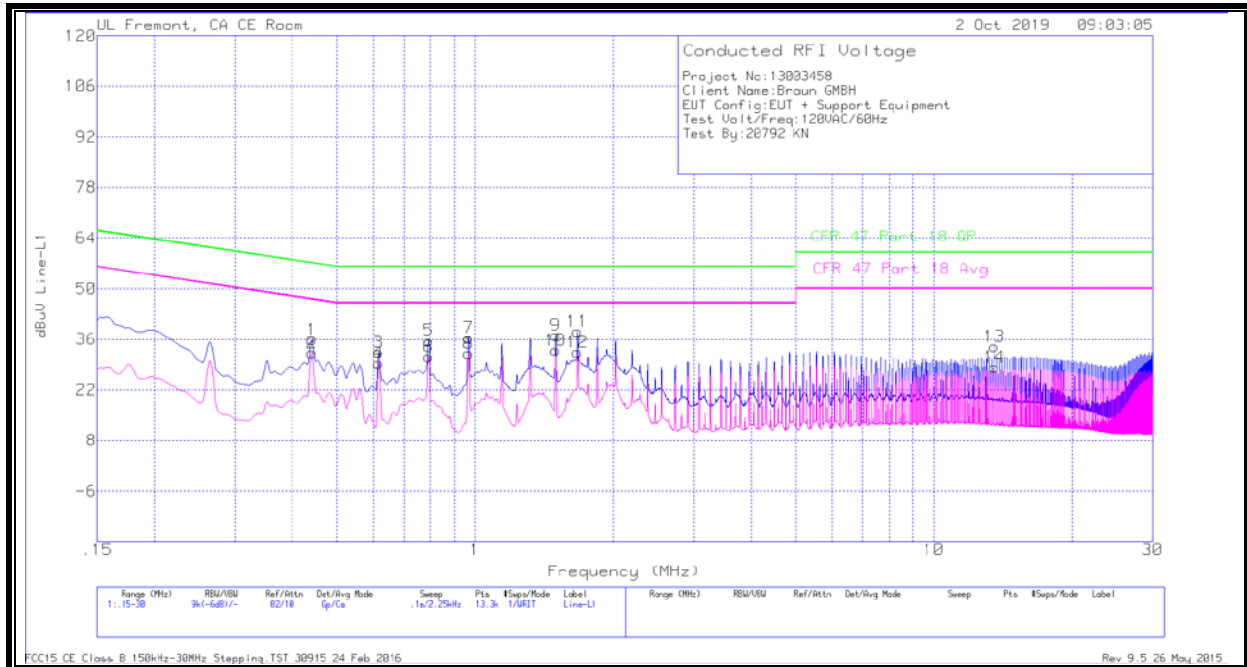
TEST PROCEDURE

FCC / OST MP-5

RESULTS

7.2.1. Charging Mode

LINE 1 RESULTS



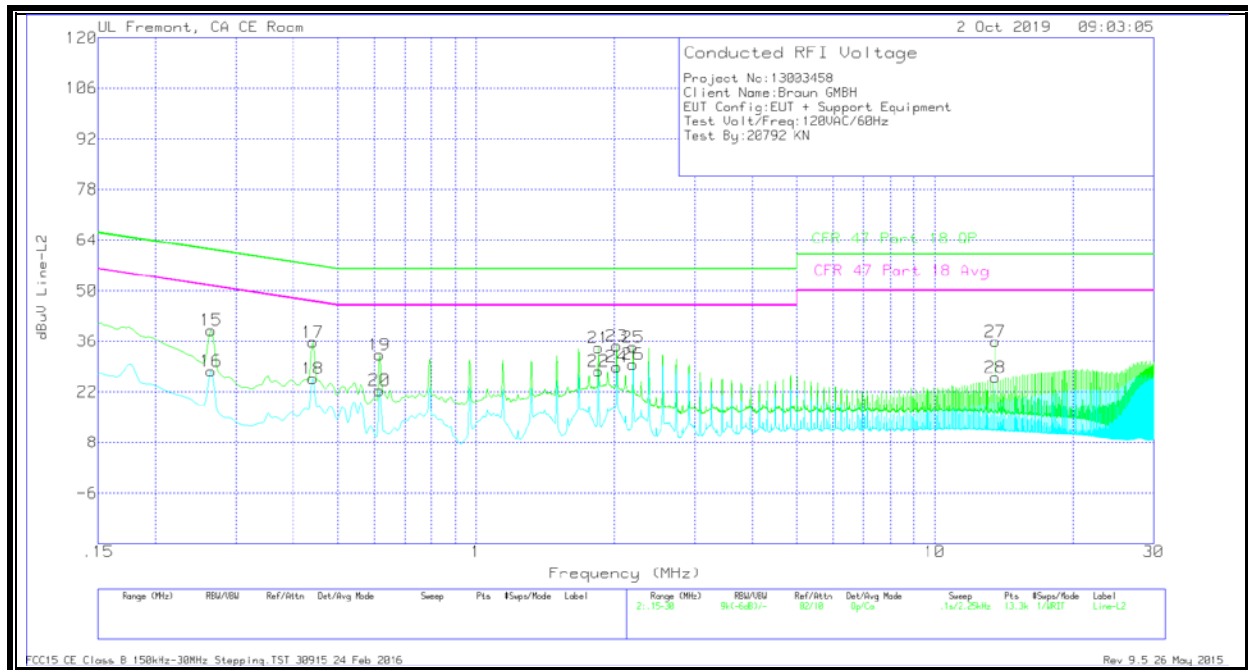
WORST EMISSIONS

| Range 1: Line-L1 .15 - 30MHz | | | | | | | | | | | |
|------------------------------|-----------------|----------------------|-----|---------|-----------------|--------------|------------------------|-------------------|----------------|--------------------|-----------------------|
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | LISN L1 | LC Cables C1&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 18 QP | QP Margin (dB) | CFR 47 Part 18 Avg | Av(CISPR) Margin (dB) |
| 1 | .44025 | 25.8 | Qp | 0 | 0 | 10.1 | 35.9 | 57.06 | -21.16 | - | - |
| 2 | .44025 | 22.19 | Ca | 0 | 0 | 10.1 | 32.29 | - | - | 47.06 | -14.77 |
| 3 | .61575 | 22.28 | Qp | 0 | 0 | 10.1 | 32.38 | 56 | -23.62 | - | - |
| 4 | .61575 | 19.37 | Ca | 0 | 0 | 10.1 | 29.47 | - | - | 46 | -16.53 |
| 5 | .79125 | 25.56 | Qp | 0 | 0 | 10.1 | 35.66 | 56 | -20.34 | - | - |
| 6 | .79125 | 21.17 | Ca | 0 | 0 | 10.1 | 31.27 | - | - | 46 | -14.73 |
| 7 | .969 | 26.16 | Qp | 0 | .1 | 10.1 | 36.36 | 56 | -19.64 | - | - |
| 8 | .969 | 21.89 | Ca | 0 | .1 | 10.1 | 32.09 | - | - | 46 | -13.91 |
| 9 | 1.4955 | 26.87 | Qp | 0 | .1 | 10.1 | 37.07 | 56 | -18.93 | - | - |
| 10 | 1.4955 | 22.84 | Ca | 0 | .1 | 10.1 | 33.04 | - | - | 46 | -12.96 |
| 11 | 1.67325 | 28 | Qp | 0 | .1 | 10.1 | 38.2 | 56 | -17.8 | - | - |
| 12 | 1.67325 | 22.22 | Ca | 0 | .1 | 10.1 | 32.42 | - | - | 46 | -13.58 |
| 13 | 13.56 | 23.55 | Qp | .1 | .2 | 10.2 | 34.05 | 60 | -25.95 | - | - |
| 14 | 13.55775 | 17.74 | Ca | .1 | .2 | 10.2 | 28.24 | - | - | 50 | -21.76 |

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



WORST EMISSIONS

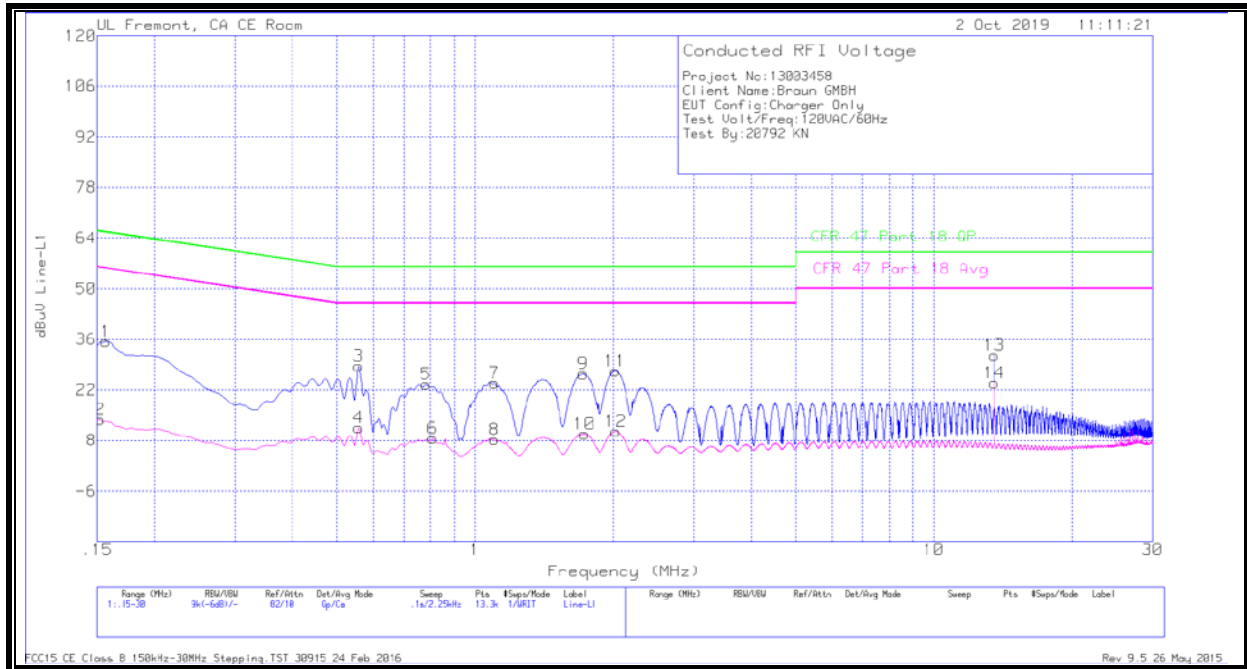
| Range 2: Line-L2 .15 - 30MHz | | | | | | | | | | | |
|------------------------------|-----------------|----------------------|-----|---------|-----------------|--------------|------------------------|-------------------|----------------|--------------------|-----------------------|
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | LISN L2 | LC Cables C2&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 18 QP | QP Margin (dB) | CFR 47 Part 18 Avg | Av(CISPR) Margin (dB) |
| 15 | .26475 | 28.91 | Qp | 0 | 0 | 10.1 | 39.01 | 61.28 | -22.27 | - | - |
| 16 | .26475 | 17.62 | Ca | 0 | 0 | 10.1 | 27.72 | - | - | 51.28 | -23.56 |
| 17 | .44025 | 25.58 | Qp | 0 | 0 | 10.1 | 35.68 | 57.06 | -21.38 | - | - |
| 18 | .44025 | 15.63 | Ca | 0 | 0 | 10.1 | 25.73 | - | - | 47.06 | -21.33 |
| 19 | .61575 | 22.18 | Qp | 0 | 0 | 10.1 | 32.28 | 56 | -23.72 | - | - |
| 20 | .61575 | 12.21 | Ca | 0 | 0 | 10.1 | 22.31 | - | - | 46 | -23.69 |
| 21 | 1.84875 | 24.01 | Qp | 0 | .1 | 10.1 | 34.21 | 56 | -21.79 | - | - |
| 22 | 1.84875 | 17.54 | Ca | 0 | .1 | 10.1 | 27.74 | - | - | 46 | -18.26 |
| 23 | 2.02425 | 24.46 | Qp | 0 | .1 | 10.1 | 34.66 | 56 | -21.34 | - | - |
| 24 | 2.02425 | 18.78 | Ca | 0 | .1 | 10.1 | 28.98 | - | - | 46 | -17.02 |
| 25 | 2.202 | 24.21 | Qp | 0 | .1 | 10.1 | 34.41 | 56 | -21.59 | - | - |
| 26 | 2.202 | 19.4 | Ca | 0 | .1 | 10.1 | 29.6 | - | - | 46 | -16.4 |
| 27 | 13.56 | 25.43 | Qp | .1 | .2 | 10.2 | 35.93 | 60 | -24.07 | - | - |
| 28 | 13.56 | 15.58 | Ca | .1 | .2 | 10.2 | 26.08 | - | - | 50 | -23.92 |

Qp - Quasi-Peak detector

Ca - CISPR average detection

7.2.1. Standby Mode

LINE 1 RESULTS



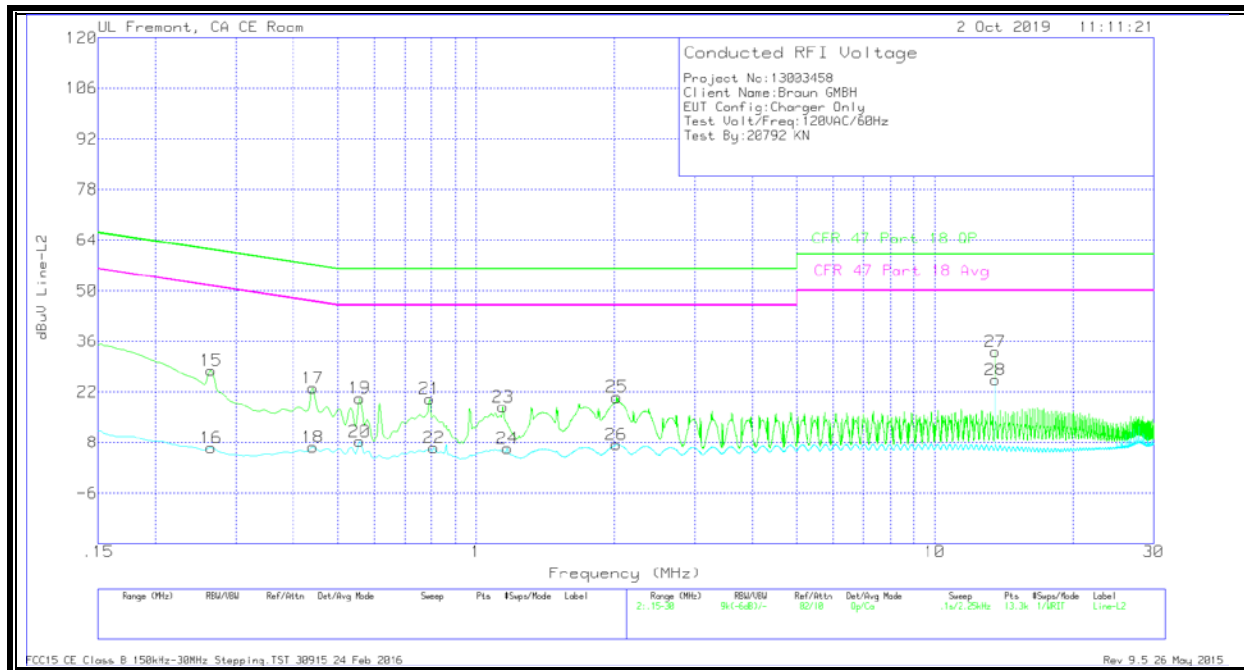
WORST EMISSIONS

| Range 1: Line-L1 .15 - 30MHz | | | | | | | | | | | |
|------------------------------|-----------------|----------------------|-----|---------|-----------------|--------------|------------------------|-------------------|----------------|--------------------|-----------------------|
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | LISN L1 | LC Cables C1&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 18 QP | QP Margin (dB) | CFR 47 Part 18 Avg | Av(CISPR) Margin (dB) |
| 1 | .15675 | 25.12 | Qp | .1 | 0 | 10.1 | 35.32 | 65.63 | -30.31 | - | - |
| 2 | .15225 | 3.61 | Ca | .1 | 0 | 10.1 | 13.81 | - | - | 55.88 | -42.07 |
| 3 | .55725 | 18.53 | Qp | 0 | 0 | 10.1 | 28.63 | 56 | -27.37 | - | - |
| 4 | .55725 | 1.41 | Ca | 0 | 0 | 10.1 | 11.51 | - | - | 46 | -34.49 |
| 5 | .78225 | 13.42 | Qp | 0 | 0 | 10.1 | 23.52 | 56 | -32.48 | - | - |
| 6 | .80925 | -1.54 | Ca | 0 | 0 | 10.1 | 8.56 | - | - | 46 | -37.44 |
| 7 | 1.10175 | 13.68 | Qp | 0 | .1 | 10.1 | 23.88 | 56 | -32.12 | - | - |
| 8 | 1.10175 | -1.97 | Ca | 0 | .1 | 10.1 | 8.23 | - | - | 46 | -37.77 |
| 9 | 1.7205 | 16.25 | Qp | 0 | .1 | 10.1 | 26.45 | 56 | -29.55 | - | - |
| 10 | 1.73288 | -.43 | Ca | 0 | .1 | 10.1 | 9.77 | - | - | 46 | -36.23 |
| 11 | 2.0175 | 17.06 | Qp | 0 | .1 | 10.1 | 27.26 | 56 | -28.74 | - | - |
| 12 | 2.02313 | .32 | Ca | 0 | .1 | 10.1 | 10.52 | - | - | 46 | -35.48 |
| 13 | 13.56 | 21.13 | Qp | .1 | .2 | 10.2 | 31.63 | 60 | -28.37 | - | - |
| 14 | 13.56 | 13.35 | Ca | .1 | .2 | 10.2 | 23.85 | - | - | 50 | -26.15 |

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



WORST EMISSIONS

| Range 2: Line-L2 .15 - 30MHz | | | | | | | | | | | |
|------------------------------|-----------------|----------------------|-----|---------|-----------------|--------------|------------------------|-------------------|----------------|--------------------|-----------------------|
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | LISN L2 | LC Cables C2&C3 | Limiter (dB) | Corrected Reading dBuV | CFR 47 Part 18 QP | QP Margin (dB) | CFR 47 Part 18 Avg | Av(CISPR) Margin (dB) |
| 15 | .26475 | 17.87 | Qp | 0 | 0 | 10.1 | 27.97 | 61.28 | -33.31 | - | - |
| 16 | .26475 | -3.52 | Ca | 0 | 0 | 10.1 | 6.58 | - | - | 51.28 | -44.7 |
| 17 | .44025 | 12.92 | Qp | 0 | 0 | 10.1 | 23.02 | 57.06 | -34.04 | - | - |
| 18 | .44025 | -3.35 | Ca | 0 | 0 | 10.1 | 6.75 | - | - | 47.06 | -40.31 |
| 19 | .55725 | 10.2 | Qp | 0 | 0 | 10.1 | 20.3 | 56 | -35.7 | - | - |
| 20 | .55725 | -1.81 | Ca | 0 | 0 | 10.1 | 8.29 | - | - | 46 | -37.71 |
| 21 | .79125 | 9.94 | Qp | 0 | 0 | 10.1 | 20.04 | 56 | -35.96 | - | - |
| 22 | .80925 | -3.58 | Ca | 0 | 0 | 10.1 | 6.52 | - | - | 46 | -39.48 |
| 23 | 1.1445 | 7.7 | Qp | 0 | .1 | 10.1 | 17.9 | 56 | -38.1 | - | - |
| 24 | 1.16925 | -3.86 | Ca | 0 | .1 | 10.1 | 6.34 | - | - | 46 | -39.66 |
| 25 | 2.02425 | 10.34 | Qp | 0 | .1 | 10.1 | 20.54 | 56 | -35.46 | - | - |
| 26 | 2.022 | -2.81 | Ca | 0 | .1 | 10.1 | 7.39 | - | - | 46 | -38.61 |
| 27 | 13.56 | 22.6 | Qp | .1 | .2 | 10.2 | 33.1 | 60 | -26.9 | - | - |
| 28 | 13.56 | 14.89 | Ca | .1 | .2 | 10.2 | 25.39 | - | - | 50 | -24.61 |

Qp - Quasi-Peak detector

Ca - CISPR average detection