York EMC Services

Test Report for the
EMC Testing of the
Wolf Convection Stainless Steel Variant Microwave oven
for
Sharp Manufacturing Company of UK

Test Report number 13117TR2

Project number C4345/1

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Approved: ....
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Issue	Description			Issue by	Date
2	Second Issue	PDF	x	CWG	20th March 2019

CONTENTS

Test Report Change History

Issue	Date	Modification Details
1	8th March 2019	Original issue of test report
2	20th March 2019	Reissue: Photographs removed Calibration date of the Narda LISN (Asset no. C0413) amended to 12th October 2018
3		
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Section 1 Test Location

All testing was performed at;

Eurofins York Ltd	Unit 5
	Speedwell Road
	Castleford
	WF10 5PY
Tel:	01977 731173
Website	https://www.yorkemc.com
UKAS Testing No.	1574

1.1 UKAS Accreditation

Tests marked "Not UKAS Accredited" in this report are not included in the UKAS Accreditation Schedule for our laboratory.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Eurofins York latest accreditation schedule can be found at:

http://www.ukas.org/testing/lab_detail.asp?lab_id=989&location_id=&vMenuOption=3

Eurofins York, listed as York EMC Services Ltd, is a recognised test facility with the Federal Communications Commission (FCC). The appropriate FCC recognition number is UK0022, recognition date 5th September 2017.

Section 2 Customer Information

Company name	Sharp Manufacturing Ltd
Address	Davy Way
	Llay
	Wrexham
	Clwyd
	LL12 0PG
Tel:	01978 857706
Contact	Ms Kelly Jones
Email	Kelly.Jones@sharp.eu
Customer Representative(s) present during testing	None – Unwitnessed testing

Section 3 Equipment Details

3.1 Equipment Under Test (EUT)

<table>
<tr><td>Date received:</td><td colspan="6">9th October 2018</td></tr>
<tr><td>EUT name:</td><td colspan="6">Wolf Convection Stainless Steel Variant Microwave Oven</td></tr>
<tr><td>Type/Part no:</td><td colspan="6">A3R080URK0</td></tr>
<tr><td>Serial no/s:</td><td colspan="6">13/06/2018 000023</td></tr>
<tr><td>EUT description:</td><td colspan="6">EUT is a mains powered combination Microwave/Convection Oven with Grill function.</td></tr>
<tr><td>No of units tested:</td><td colspan="6">One</td></tr>
<tr><td>EUT power:</td><td>220</td><td>V</td><td>60</td><td>Hz</td><td>Single phase</td><td>20 A</td></tr>
<tr><td>Highest internal frequency:</td><td colspan="6">The operating frequency of the EUT was declared as 2.45GHz; therefore, as per FCC MP-5, section 2.3(a), measurements were made to the tenth harmonic, which is 24.5GHz.</td></tr>
<tr><td>Cables:</td><td>Cable 1</td><td>1.5</td><td>m</td><td colspan="2">Unscreened</td><td>AC Mains cable</td></tr>
<tr><td>Size of EUT (mm)</td><td>L: -</td><td>600</td><td>W: -</td><td>755</td><td>H: -</td><td>455</td></tr>
<tr><td>Tested as</td><td colspan="6">Table top</td></tr>
<tr><td>Mode/s of operation</td><td colspan="6">100% microwave power. The cavity was loaded with 700 millilitres of water in a 190mm external diameter borosilicate glass container with a height of 90mm. The container was placed in the centre of the turntable and the water was changed periodically to prevent boiling.</td></tr>
<tr><td>Client modification statement:</td><td colspan="6">None</td></tr>
<tr><td>Modifications incorporated during testing:</td><td colspan="6">None required</td></tr>
</table>

Configuration of EUT

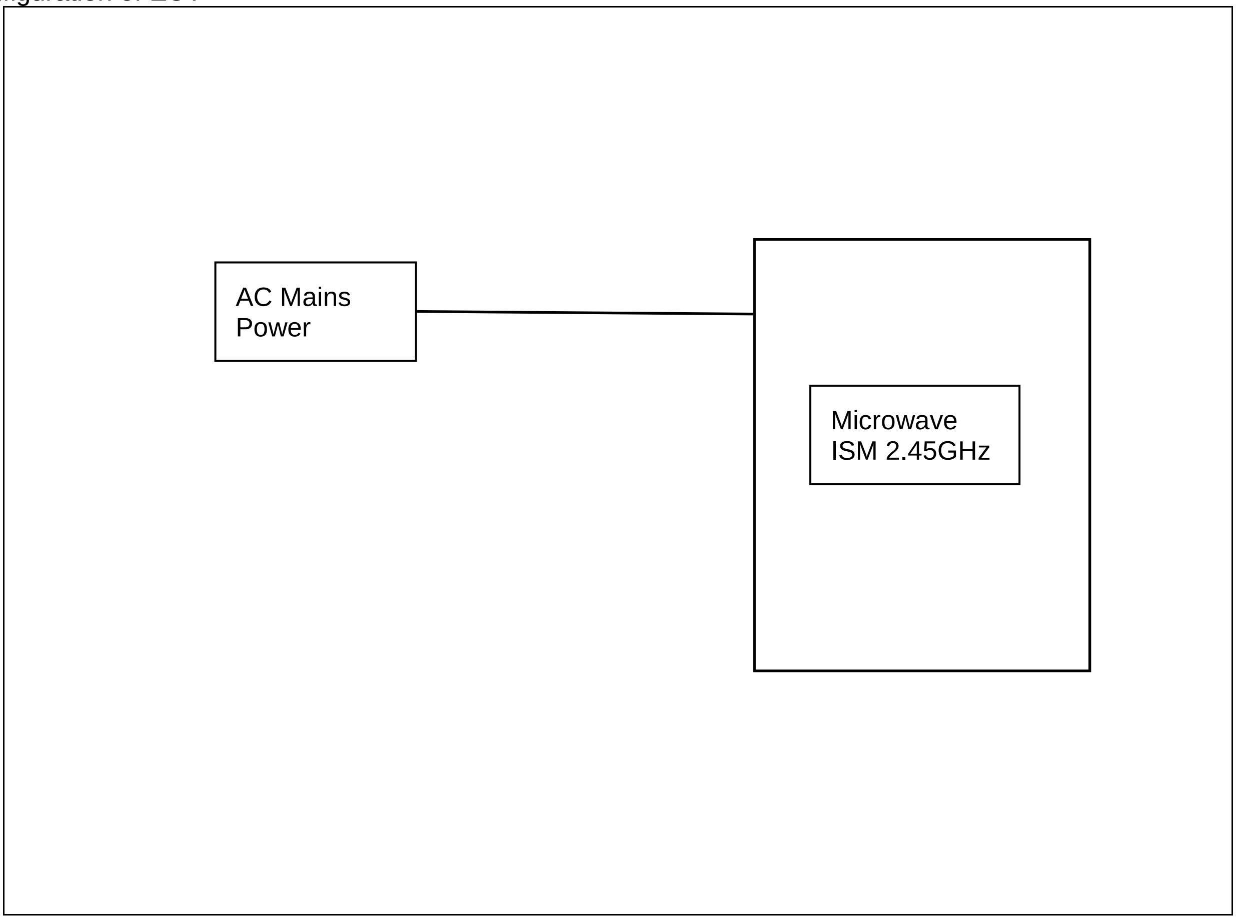


Figure 1: Diagram of EUT

Section 4 Test Specifications

The tests were performed in accordance with Eurofins York Quotation C4345/1.

Test	Method	Levels
Conducted Emissions (0.15 – 30MHz)	Method based on MP5 1986 section 7.1.	Part 18 Clause 18.307 Class B
Radiated Emissions Electric Field Measurements (30 – 24500MHz)	Method based on MP5 1986 section 4.	Part 18 Clause 18.305 Class B
Power output Measurements	Method based on MP5 1986 section 4.3 and EN60705:1999 section 8 (Calorimetric method)	Part 18 Clause 18.305
Frequency variation Measurements	Methods based on MP5 1986 section 4.5	Part 18 Clause 18.301

Note 1: The testing was carried out in accordance to the test methods contained within ‘FCC methods of measurements of Radio Noise emissions from Industrial, Scientific and medical equipment’
February 1986 - FCC/OST MP5 (1986)

4.1 Knowledge Database References

The following KDBs were referenced during the testing of the Wolf Convection Glass Variant

The latest knowledge database references are available via the FCC KDB website at:

https://apps.fcc.gov/kdb

4.1.1 Conducted Emissions

Publication Number	Keyword	Publication Date
174176	Section 15.107, 15.207,18.307, C63.4, C63.10, Suitable Dummy Load, AC Power Line Conducted Measurement	03/06/2015

4.1.2 Radiated Emissions (30MHz to 1000MHz)

Publication Number	Keyword	Publication Date
746324	CE Mark and use of CISPR 22 limits	06/12/2015
414788	Test sites for radiated emissions	18/04/2017
822428	Antenna calibration	16/12/2015

4.1.3 Radiated Emissions (1GHz to 40GHz)

Publication Number	Keyword	Publication Date
746324	CE Mark and use of CISPR 22 limits	12/06/2015
714737	15B, Average Detector for Unintentional Radiator	30/11/2010
704992	Test Site Validation Requirements above 1 GHZ.	12/06/2015
822428	Antenna calibration	16/12/2015

4.2 Compliance Statement

The Wolf Convection Stainless Steel Variant Microwave Oven, as tested, was shown to meet requirements of the standards listed in Section 4 of this report.

Section 5 Conducted Emission Results

5.1 Test Specification

Standard	Method based on MP5 1986
Measurement Uncertainty	The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 % is +/- 3.31dB

5.2 Power Line Emission Limits

Frequency (MHz)	Class B (dBμV)	
	Quasi Peak	Average
0.15 – 0.5	66 – 56*	56 – 46*
0.5 – 5.0	56.0	46.0
5.0 - 30	60.0	50.0

Note: * The limit decreases linearly with the logarithm of the frequency in the range

5.3 Receiver Settings

Receiver Parameters	Setting
Detector Function	Quasi Peak and Average
Start Frequency	150kHz
Stop Frequency	30MHz
Resolution Bandwidth	10kHz
Video Bandwidth	Auto

5.4 Procedure and Test Software Version

Eurofins York test procedure	CEP19 Issue 5
Test software	RadiMation Version 2016.1.6

5.4.1 Date of Test

19th October 2018

5.4.2 Test Area

LAB 4

5.4.3 Tested by

Bryan
Renton

5.4.4 Test Setup

This test was applied to the EUT's Live and Neutral lines. The EUT was configured in the screened room on an 80cm high table and was positioned 40cm from the room wall.

The EUT was powered from the mains supply via a Line Impedance Stabilisation Network (LISN).

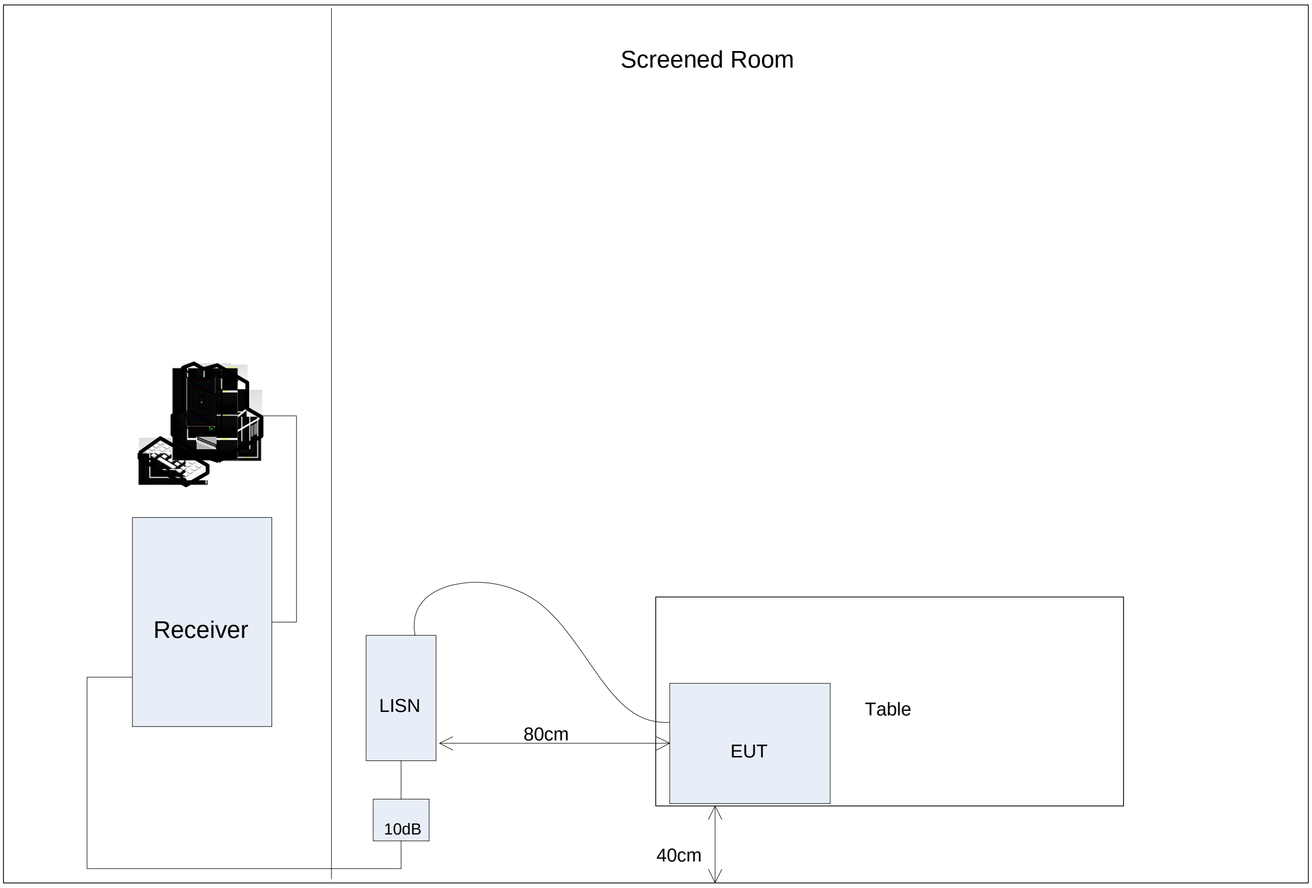


Figure 2: Test setup for Conducted Emissions on the AC power port

The screened room provides an environment that ensures valid, repeatable measurement results that meet the requirements of Clause 5.2 of ANSI C63.4-2014.

5.4.5 Plots

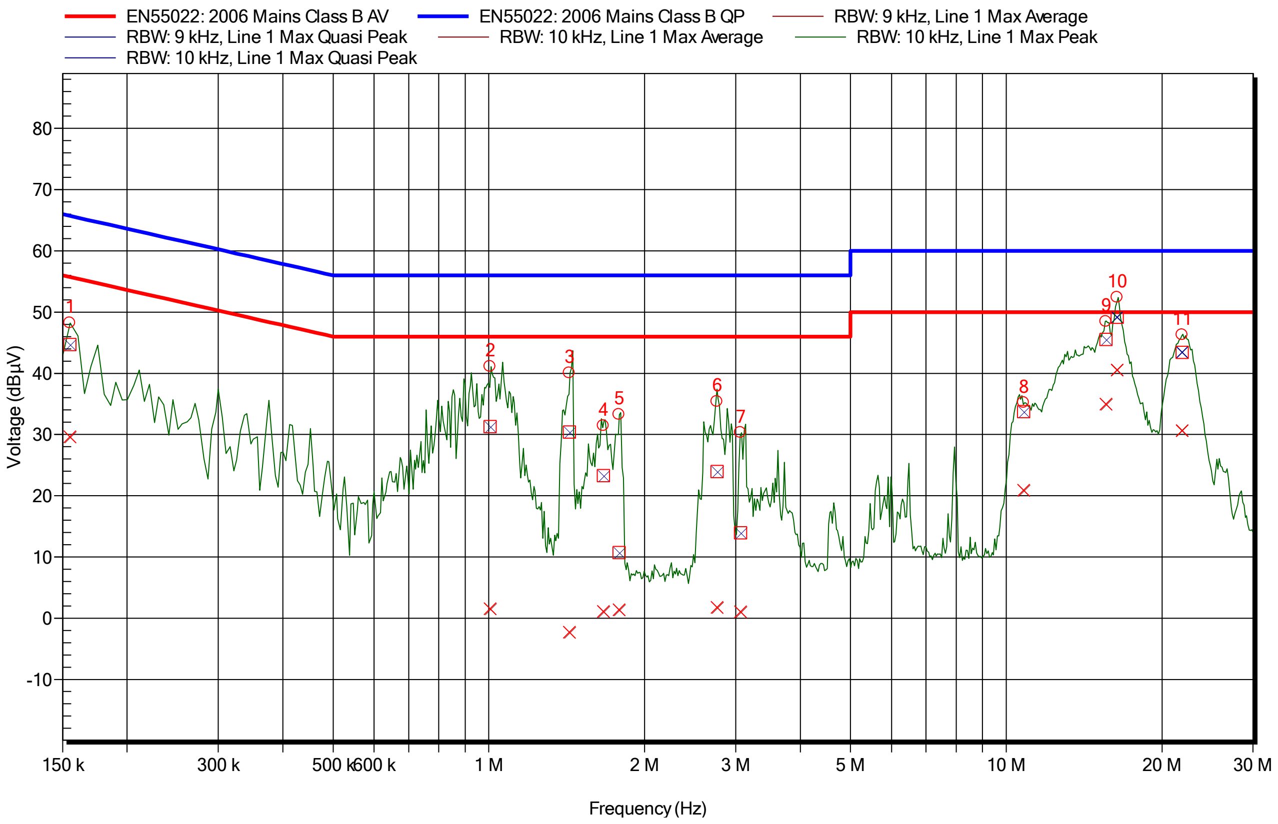


Figure 3: Conducted Emissions Plot - Input Power 220V 60Hz Live

Frequency	Peak	Average	Average Limit	Average Difference	Average Correction	Average Status	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Correction	Quasi-Peak Status	Status
155 kHz	48.2 dBµV	29.6 dBµV	55.7 dBµ	-26.12 dB	10 dB	Pass	44.7 dBµV	65.7 dBµV	-21.03 dB	10 dB	Pass	Pass
1.005 MHz	41.1 dBµV	1.5 dBµV	46 dBµV	-44.47 dB	10.1 dB	Pass	31.3 dBµV	56 dBµV	-24.69 dB	10.1 dB	Pass	Pass
1.43 MHz	40.1 dBµV	-2.3 dBµV	46 dBµV	-48.28 dB	10.2 dB	Pass	30.4 dBµV	56 dBµV	-25.59 dB	10.2 dB	Pass	Pass
1.665 MHz	31.4 dBµV	1.1 dBµV	46 dBµV	-44.88 dB	10.2 dB	Pass	23.3 dBµV	56 dBµV	-32.71 dB	10.2 dB	Pass	Pass
1.785 MHz	33.2 dBµV	1.4 dBµV	46 dBµV	-44.64 dB	10.3 dB	Pass	10.7 dBµV	56 dBµV	-45.26 dB	10.3 dB	Pass	Pass
2.76 MHz	35.4 dBµV	1.8 dBµV	46 dBµV	-44.22 dB	10.4 dB	Pass	23.9 dBµV	56 dBµV	-32.06 dB	10.4 dB	Pass	Pass
3.065 MHz	30.3 dBµV	1 dBµV	46 dBµV	-44.98 dB	10.4 dB	Pass	13.9 dBµV	56 dBµV	-42.06 dB	10.4 dB	Pass	Pass
10.8 MHz	35.2 dBµV	20.9 dBµV	50 dBµV	-29.08 dB	11 dB	Pass	33.8 dBµV	60 dBµV	-26.24 dB	11 dB	Pass	Pass
15.59 MHz	48.4 dBµV	35 dBµV	50 dBµV	-15.05 dB	11.3 dB	Pass	45.5 dBµV	60 dBµV	-14.48 dB	11.3 dB	Pass	Pass
16.375 MHz	52.4 dBµV	40.5 dBµV	50 dBµV	-9.49 dB	11.3 dB	Pass	49.2 dBµV	60 dBµV	-10.83 dB	11.3 dB	Pass	Pass
21.875 MHz	46.2 dBµV	30.6 dBµV	50 dBµV	-19.38 dB	11.6 dB	Pass	43.4 dBµV	60 dBµV	-16.6 dB	11.6 dB	Pass	Pass

Table 1: Input Power Live Conducted Emissions Peaks

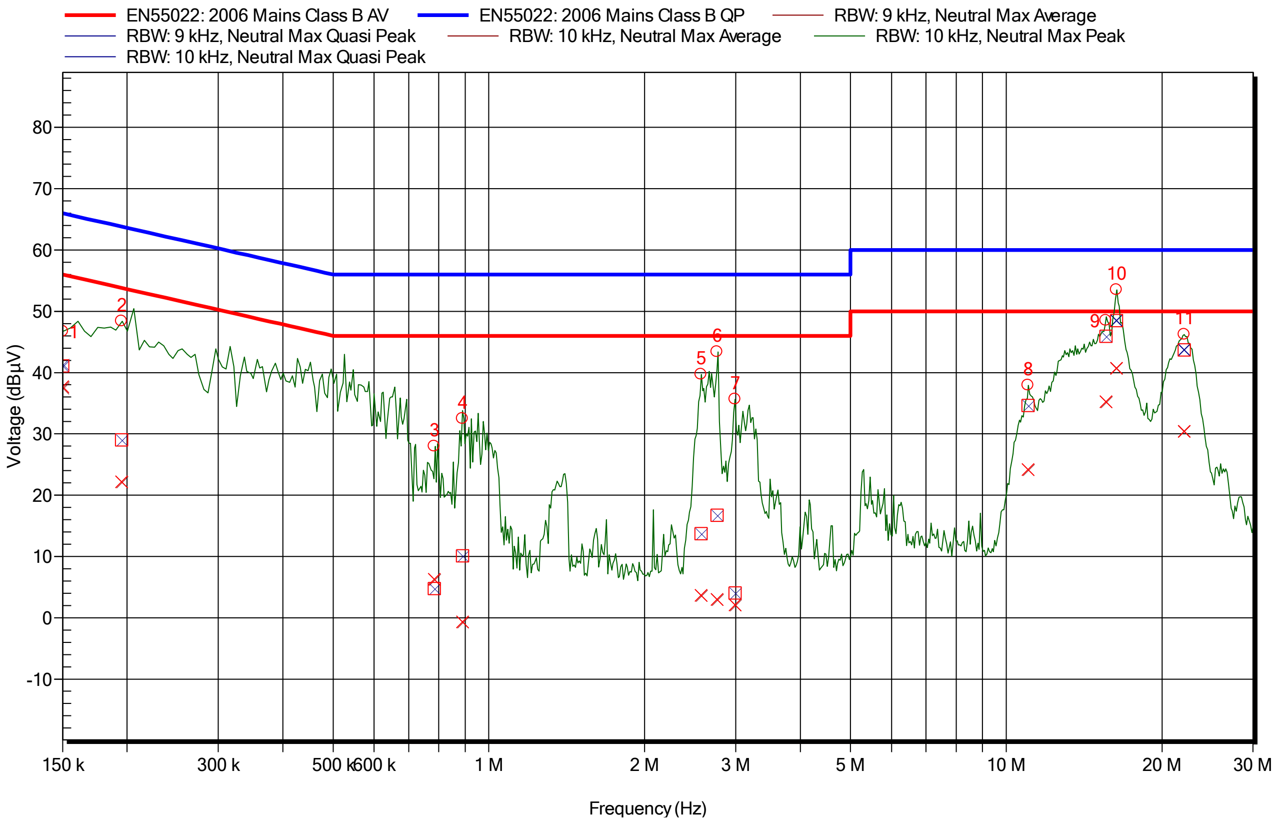


Figure 4: Conducted Emissions Plot - Input Power 220V 60Hz Neutral

Frequency	Peak	Average	Average Limit	Average Difference	Average Correction	Average Status	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Correction	Peak Status	Status
150 kHz	46.7 dBµV	37.7 dBµV	56 dBµV	-18.33 dB	10 dB	Pass	41.1 dBµV	66 dBµV	-24.94 dB	10 dB	Pass	Pass
195 kHz	48.4 dBµV	22.2 dBµV	53.8 dBµV	-31.65 dB	10 dB	Pass	29 dBµV	63.8 dBµV	-34.81 dB	10 dB	Pass	Pass
785 kHz	28 dBµV	6.3 dBµV	46 dBµV	-39.73 dB	10.1 dB	Pass	4.7 dBµV	56 dBµV	-51.25 dB	10.1 dB	Pass	Pass
890 kHz	32.5 dBµV	-0.7 dBµV	46 dBµV	-46.7 dB	10.1 dB	Pass	10.1 dBµV	56 dBµV	-45.92 dB	10.1 dB	Pass	Pass
2.57 MHz	39.7 dBµV	3.6 dBµV	46 dBµV	-42.36 dB	10.3 dB	Pass	13.7 dBµV	56 dBµV	-42.27 dB	10.3 dB	Pass	Pass
2.76 MHz	43.4 dBµV	3 dBµV	46 dBµV	-43.04 dB	10.4 dB	Pass	16.7 dBµV	56 dBµV	-39.28 dB	10.4 dB	Pass	Pass
2.99 MHz	35.6 dBµV	2.1 dBµV	46 dBµV	-43.9 dB	10.4 dB	Pass	4.1 dBµV	56 dBµV	-51.94 dB	10.4 dB	Pass	Pass
11.025 MHz	37.9 dBµV	24.2 dBµV	50 dBµV	-25.81 dB	11.1 dB	Pass	34.6 dBµV	60 dBµV	-25.37 dB	11.1 dB	Pass	Pass
15.59 MHz	48.5 dBµV	35.2 dBµV	50 dBµV	-14.76 dB	11.3 dB	Pass	45.9 dBµV	60 dBµV	-14.1 dB	11.3 dB	Pass	Pass
16.325 MHz	53.5 dBµV	40.7 dBµV	50 dBµV	-9.32 dB	11.3 dB	Pass	48.5 dBµV	60 dBµV	-11.49 dB	11.3 dB	Pass	Pass
22.065 MHz	46.2 dBµV	30.4 dBµV	50 dBµV	-19.61 dB	11.7 dB	Pass	43.7 dBµV	60 dBµV	-16.33 dB	11.7 dB	Pass	Pass

Table 2: Input Power 120V 60Hz Neutral Conducted Emissions Peaks

5.4.6 Correction factors

The quasi-peak correction and average correction are shown in the above table. This correction figure consists of LISN Insertion loss (IL), Cable loss (CL) and Transient Limiter Loss (TL)

The Actual Signal Level (ASL) is calculated as follows:

ASL (dBµV) = Indicated Signal Level (dBµV) + IL (dB) + CL (dB) + TL (dB)

5.4.7 Sample Data

The Quasi-Peak level at 11.025MHz

ASL (dBµV) = 34.6dBµV = 23.83dBµV + 0.438dB + 0.23dB + 10.1dB

Section 6 Radiated Emission Results

6.1 Test Specification

Standard	Method based on MP5 1986
Measurement Uncertainty	The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95% is +/- 5.81dB for the frequency range 30MHz to 1GHz +/- 4.82dB for the frequency range from 1GHz to 6GHz +/- 5.16dB for the frequency range from 6GHz to 18GHz +/- 4.81dB for the frequency range from 18GHz to 40GHz

6.2 Procedure and Test Software Version

Eurofins York test procedure (30MHz to 1GHz)	CEP23 Issue 4
Eurofins York test procedure (1GHz to 40GHz)	CEP64 Issue 5
Test software	RadiMation Version 2016.2.8

6.3 Radiated Emissions (30MHz to 1GHz)

6.3.1 Limits at 3m

Frequency (MHz)	(dBµV/m)
	Quasi Peak
30 - 1000	65.2

6.3.2 Receiver Settings

Receiver Parameters	Setting
Detector Function	Quasi Peak
Start Frequency	30MHz
Stop Frequency	1000MHz
Resolution Bandwidth	120kHz
Video Bandwidth	Auto

6.3.3 Emissions measurements

6.3.4 Date of Test

18th October 2018

6.3.5 Test Area

LAB 1 (SAC)

6.3.6 Tested by

Bryan Renton

6.3.7 Test Setup

The EUT was configured in the SAC on an 80cm high table.

The measurement was performed with an antenna to EUT separation distance of 3m. The Quasi peak limits are therefore increased by 10dB (from the 10m values), to allow for the reduction in the measurement distance.

The results were maximised in orientation 0-360 degrees and height 1-4m.

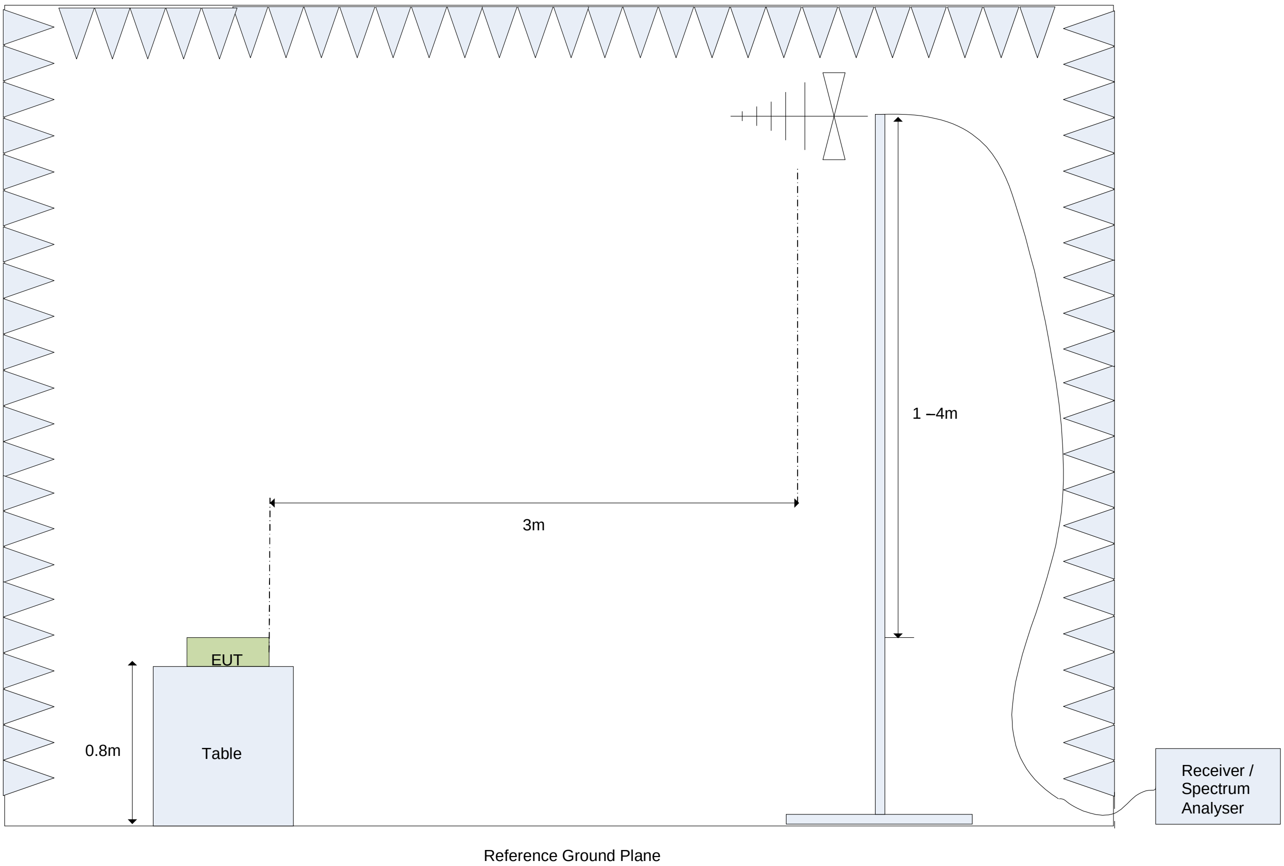


Figure 5: Test Setup for E-Field Measurements from 30MHz to 1GHz

Note 1 : With the EUT de-energized the ambient radio noise and signals met the 6dB peak detection requirement of ANSI C63.4-2014 Clause 5.1.3.

Note 2 : There were no significant environmental temperature changes during the test duration and hence it was not considered necessary to consider any variation in cable loss.

6.3.8 Electric field emissions, 30MHz to 1GHz

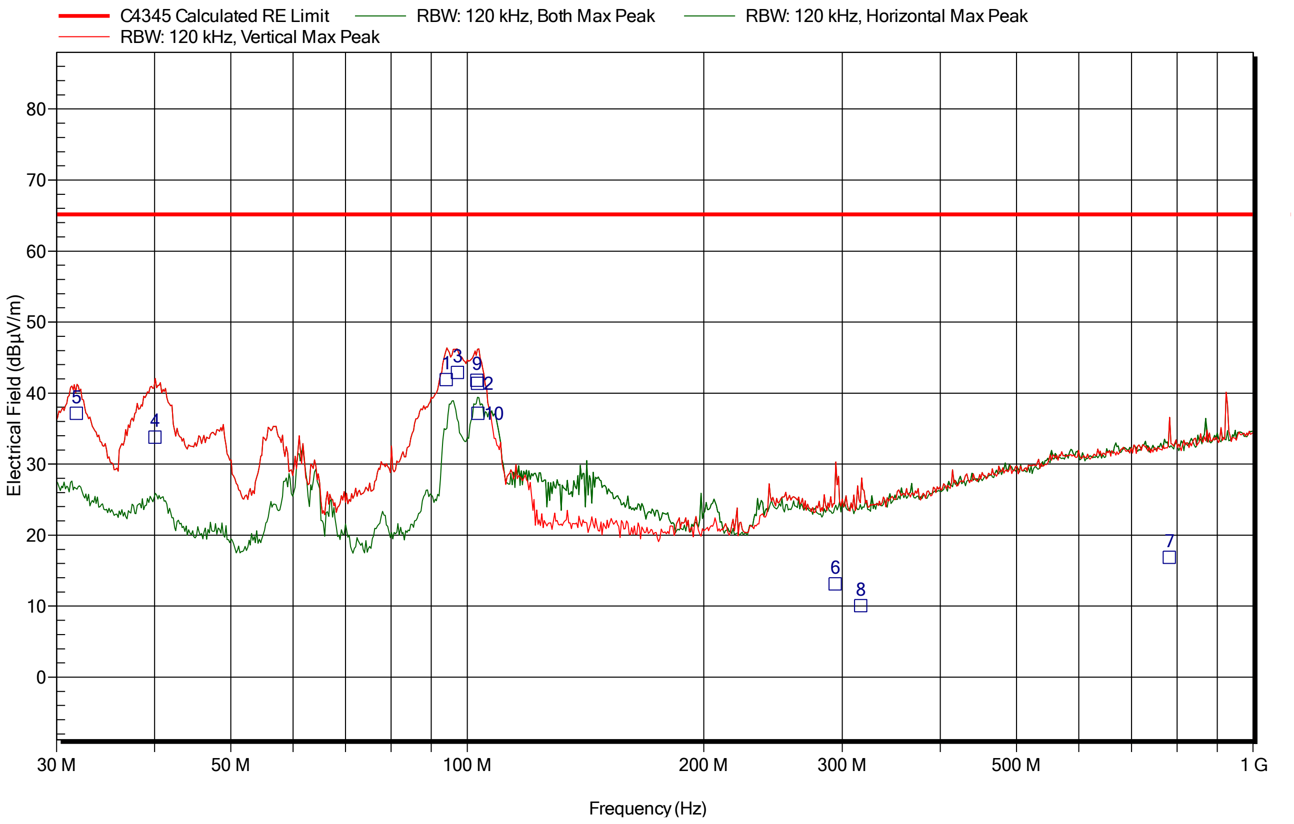


Figure 6: Electric field emissions Plot, 30MHz to 1GHz

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Correction	Quasi-Peak Status	Status	Angle	Height	Polarization
93.96 MHz	41.9 dBµV/m	65.2 dBµV/m	-23.3 dB	16.6 dB	Pass	Pass	360 Degree	1 m	Vertical
103.08 MHz	41.4 dBµV/m	65.2 dBµV/m	-23.8 dB	17.9 dB	Pass	Pass	5 Degree	1 m	Vertical
97.14 MHz	42.9 dBµV/m	65.2 dBµV/m	-22.2 dB	17.1 dB	Pass	Pass	310 Degree	1.1 m	Vertical
40.02 MHz	33.8 dBµV/m	65.2 dBµV/m	-31.4 dB	19.8 dB	Pass	Pass	140 Degree	1 m	Vertical
31.8 MHz	37.2 dBµV/m	65.2 dBµV/m	-28.0 dB	23.8 dB	Pass	Pass	20 Degree	1.2 m	Vertical
293.82 MHz	13.1 dBµV/m	65.2 dBµV/m	-52.0 dB	20.7 dB	Pass	Pass	10 Degree	1.4 m	Vertical
781.86 MHz	16.9 dBµV/m	65.2 dBµV/m	-48.3 dB	28.5 dB	Pass	Pass	345 Degree	3.9 m	Vertical
316.62 MHz	10.1 dBµV/m	65.2 dBµV/m	-55.1 dB	21.1 dB	Pass	Pass	20 Degree	1.4 m	Vertical
102.78 MHz	41.8 dBµV/m	65.2 dBµV/m	-23.4 dB	17.8 dB	Pass	Pass	0 Degree	1 m	Vertical
103.14 MHz	37.2 dBµV/m	65.2 dBµV/m	-28.0 dB	17.9 dB	Pass	Pass	30 Degree	2.9 m	Horizontal

Table 3: Electric Field Emissions Peaks, 30MHz to 1GHz

6.3.9 Quasi Peak correction factors

The quasi peak correction is shown in the above table. This correction figure consists of Antenna factor (AF); and Cable loss (CL).

Field strength (FS) is calculated as follows:

FS (dBµV/m) = Indicated Signal Level (dBµV) + AF (dB) + CL (dB)

6.3.10 Sample Data

The Quasi-Peak level at 293.82MHz

FS (dBµV/m) = 13.1dB = -7.7dBµV + 19.01dB + 1.8dB

6.4 Radiated Emissions (1GHz to 24.5GHz)

6.4.1 Limits

Frequency (GHz)	(dBµV/m)
	Average
1-24.5	65.2

6.4.2 Receiver Settings

Receiver Parameters	Setting
Detector Function	Average
Start Frequency	1GHz
Stop Frequency	24.5GHz
Resolution Bandwidth	1MHz
Video Bandwidth	Auto

6.4.3 Emissions measurements

6.4.4 Date of Test

18th October 2018 and 16th February 2019

6.4.5 Test Area

LAB 1 (SAC)

6.4.6 Tested by

Bryan Renton
Colin Greenfield

6.4.7 Test Setup

The EUT was configured in the SAC on an 80cm high table.
The measurement was then performed with an antenna to EUT separation distance of 3m.
The results were maximised in orientation 0-360 degrees and height 1-4m.

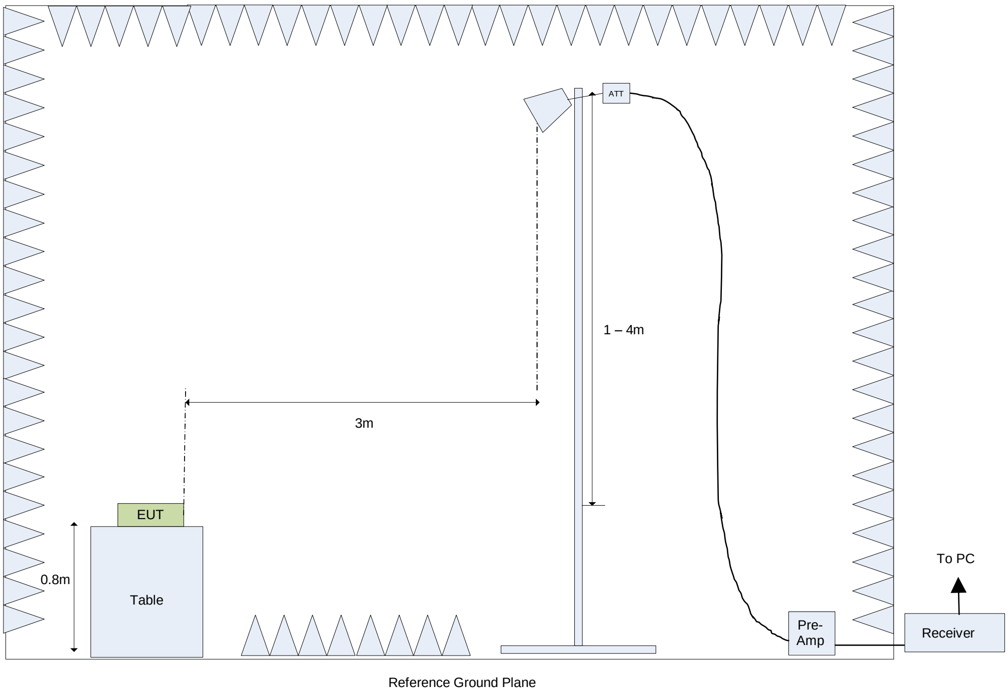


Figure 7: Test Setup for Final E-Field Measurements from 1GHz to 18GHz

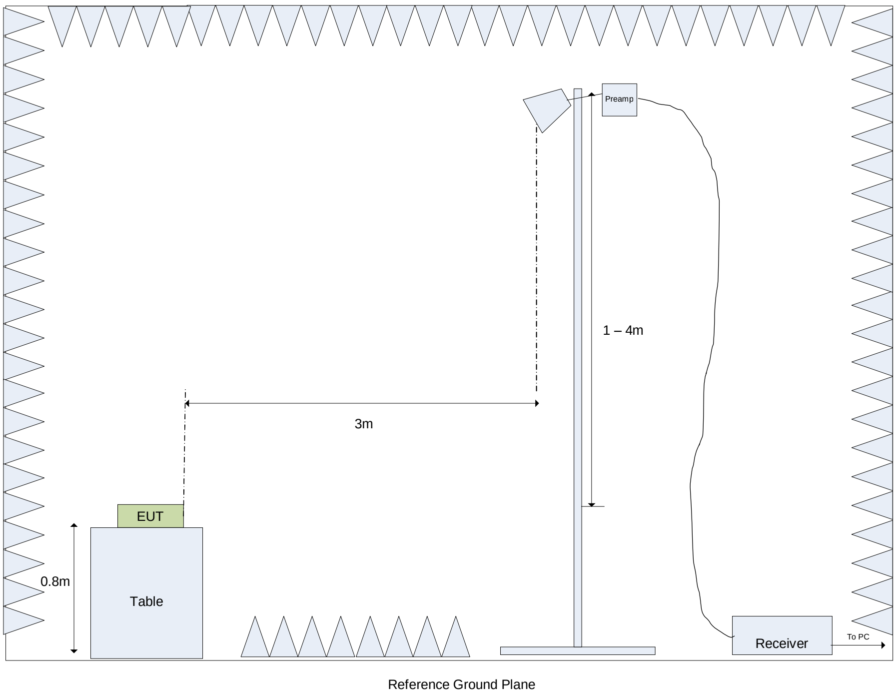


Figure 8: Test Setup for Final E-Field Measurements from 18GHz to 40GHz

Note 1 : With the EUT de-energized the ambient radio noise and signals met the 6dB peak detection requirement of ANSI C63.4-2014 Clause 5.1.3.

Note 2 : There were no significant environmental temperature changes during the test duration and hence it was not considered necessary to consider any variation in cable loss.

6.4.8 Calculation of electric field strength limit

Output power

The output power of the unit was first determined by the calorimetric method based on the procedure described in EN60705:1999 Section 8, and FCC document MP5 :1986 Sections 4.1 and 4.3. The test was performed using 1000g ±5g of tap water heated in a 150mm diameter cylindrical glass vessel placed in the centre of the oven. Start Temp is that of the water before it was poured into the glass vessel. Final temperature of the water was taken within 60sec of the microwave cycle finishing, after it had been stirred.

$$\text{Output power (in Watts)} = \frac{1000 \times (\text{Final temp} - \text{Start temp}) \times 4.1868}{\text{Time}}$$

Where temperatures are measured in degree Celsius, Time in seconds, and 4.1868 J/gram degC is the specific heat capacity of water.

Values obtained were as follows:

Start temp (degC)	Finish temp (degC)	Temp difference (degC)	Time (s)	Calculated power (Watts)
17.9	34.3	16.4	90	762.93
18.2	32.1	13.9	70	831.38
18.4	30.4	12.0	70	717.74

Electric field limit

ISM equipment operating on a frequency specified in Section 18.301 of the FCC Rules is permitted unlimited radiated energy in the band specified for that frequency.

The limit of field strength levels of emissions that lie outside the ISM bands is specified in Section 18.305 of the FCC rules as follows:

Where the operating frequency is within an ISM frequency band and where the output power is greater than 500W at a measurement distance of 300m the limit for radiated field strength outside of the ISM bands is:

$$\text{Limit } (\mu\text{V/m}) \text{ at } 300\text{m} = 15\sqrt{\frac{P}{500}}$$

Where P is the measured output power of the oven in w (refer to section 3.1 of this test report).

In units of dBµV/m, and at a measurement distance of 3m the limit is calculated as:

$$\text{Limit } (\text{dB}\mu\text{V/m}) \text{ at } 3\text{m} = 20\log_{10}\left(15\sqrt{\frac{P}{500}}\right) + 20\log_{10}\left(\frac{300}{3}\right)$$

The measured oven power P, was 831W. Using this measured value of P in above formula this gives a field strength limit of 65.2dBµV/m at a measurement distance of 3m.

The electric field strength between 100MHz and 24.5GHz was measured at 3m and compared to this limit calculated at 3m.

Note: Section 4.6.1 of FCC Document MP5 dated 1986 states that a conservative value of the field strength limit at closer distances than 300m may be calculated using inverse linear variation of field with distance.

6.4.9 Electric field emissions, 1GHz to 18GHz

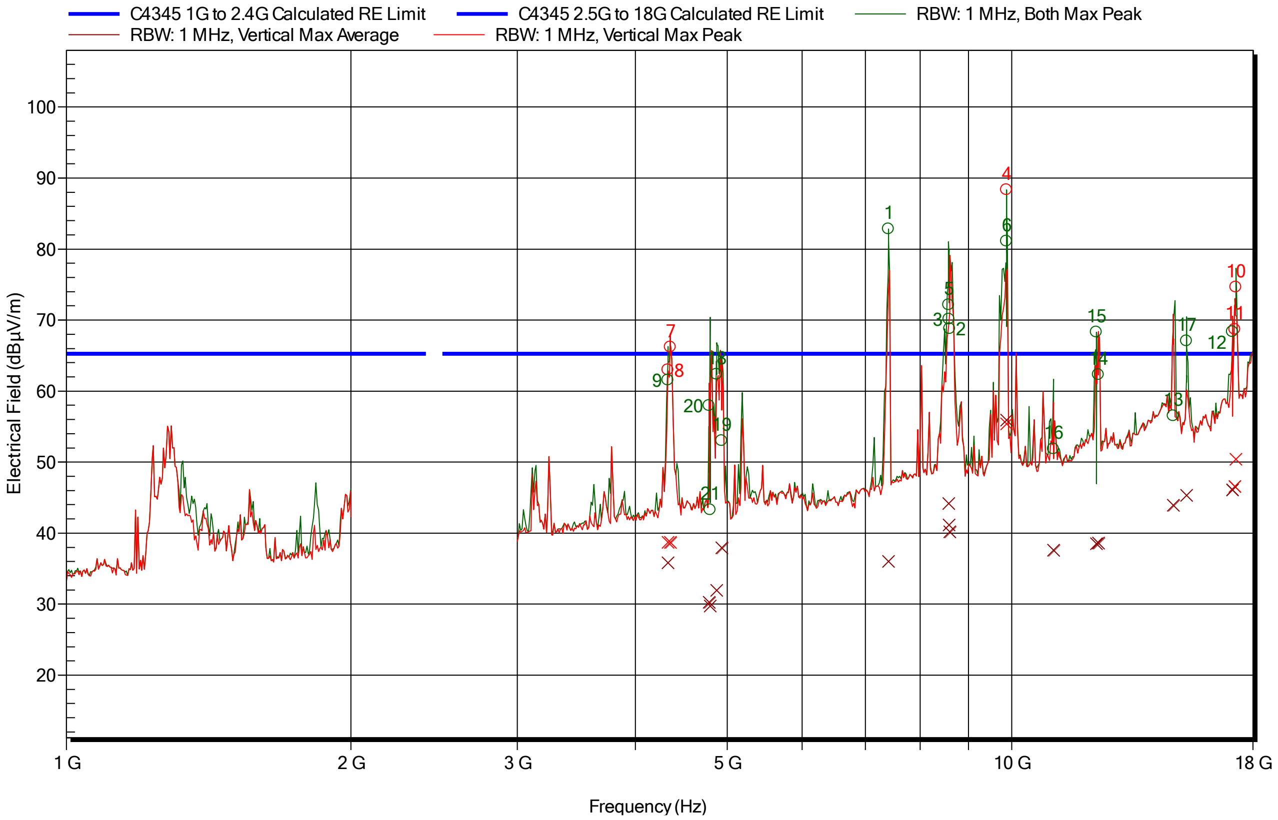


Figure 9: Electric field emissions Plot, 1GHz to 18GHz

Frequency	Peak	Average	Average Limit	Average Difference	Average Correction	Average Status	Status	Angle	Height	Polarization
7.409 GHz	82.81 dBµV/m	35.99 dBµV	65.26 dBµ	-29.27 dB	-5.6 dB	Pass	Pass	160 Degree	1.1 m	Horizontal
8.601 GHz	68.76 dBµV/m	40.17 dBµV	65.26 dBµ	-25.09 dB	-3.1 dB	Pass	Pass	230 Degree	1.2 m	Vertical
8.585 GHz	70.08 dBµV/m	41.12 dBµV	65.26 dBµ	-24.14 dB	-3.1 dB	Pass	Pass	275 Degree	1.8 m	Horizontal
9.876 GHz	88.33 dBµV/m	55.39 dBµV	65.26 dBµ	-9.87 dB	-0.9 dB	Pass	Pass	265 Degree	2.8 m	Horizontal
8.574 GHz	72.12 dBµV/m	44.15 dBµV	65.26 dBµ	-21.11 dB	-3.1 dB	Pass	Pass	270 Degree	1.2 m	Horizontal
9.872 GHz	81.07 dBµV/m	55.89 dBµV	65.26 dBµ	-9.37 dB	-0.9 dB	Pass	Pass	270 Degree	2.4 m	Horizontal
4.355 GHz	66.15 dBµV/m	38.71 dBµV	65.26 dBµ	-26.55 dB	-11.1 dB	Pass	Pass	15 Degree	1 m	Vertical
4.329 GHz	62.97 dBµV/m	38.72 dBµV	65.26 dBµ	-26.54 dB	-10.5 dB	Pass	Pass	35 Degree	2.7 m	Horizontal
4.331 GHz	61.5 dBµV/m	35.8 dBµV/	65.26 dBµ	-29.46 dB	-10.6 dB	Pass	Pass	355 Degree	1 m	Horizontal
17.259 GHz	74.62 dBµV/m	50.39 dBµV	65.26 dBµ	-14.87 dB	11.9 dB	Pass	Pass	240 Degree	1.6 m	Horizontal
17.213 GHz	68.64 dBµV/m	46.57 dBµV	65.26 dBµ	-18.69 dB	11.8 dB	Pass	Pass	50 Degree	2.9 m	Vertical
17.126 GHz	68.31 dBµV/m	46.1 dBµV/	65.26 dBµ	-19.16 dB	11.3 dB	Pass	Pass	270 Degree	1.2 m	Vertical
14.82 GHz	56.48 dBµV/m	43.94 dBµV	65.26 dBµ	-21.32 dB	8.7 dB	Pass	Pass	280 Degree	1.6 m	Vertical
12.348 GHz	62.28 dBµV/m	38.58 dBµV	65.26 dBµ	-26.68 dB	3.5 dB	Pass	Pass	255 Degree	3.8 m	Vertical
12.294 GHz	68.28 dBµV/m	38.49 dBµV	65.26 dBµ	-26.77 dB	3.5 dB	Pass	Pass	205 Degree	3.1 m	Horizontal
11.075 GHz	51.84 dBµV/m	37.6 dBµV/	65.26 dBµ	-27.66 dB	0.4 dB	Pass	Pass	250 Degree	1.2 m	Vertical
15.308 GHz	67.02 dBµV/m	45.31 dBµV	65.26 dBµ	-19.95 dB	8.4 dB	Pass	Pass	220 Degree	1.2 m	Horizontal
4.873 GHz	62.34 dBµV/m	31.93 dBµV	65.26 dBµ	-33.33 dB	-10.1 dB	Pass	Pass	295 Degree	2.6 m	Horizontal
4.934 GHz	53.01 dBµV/m	37.92 dBµV	65.26 dBµ	-27.34 dB	-8.9 dB	Pass	Pass	25 Degree	4 m	Vertical
4.786 GHz	57.92 dBµV/m	30.24 dBµV	65.26 dBµ	-35.02 dB	-10.1 dB	Pass	Pass	215 Degree	1 m	Vertical
4.8 GHz	43.24 dBµV/m	29.75 dBµV	65.26 dBµ	-35.51 dB	-10.2 dB	Pass	Pass	205 Degree	1.1 m	Horizontal

Table 4: Electric Field Emissions Peaks, 1GHz to 18GHz

6.4.10 Electric field emissions, 2GHz to 3GHz

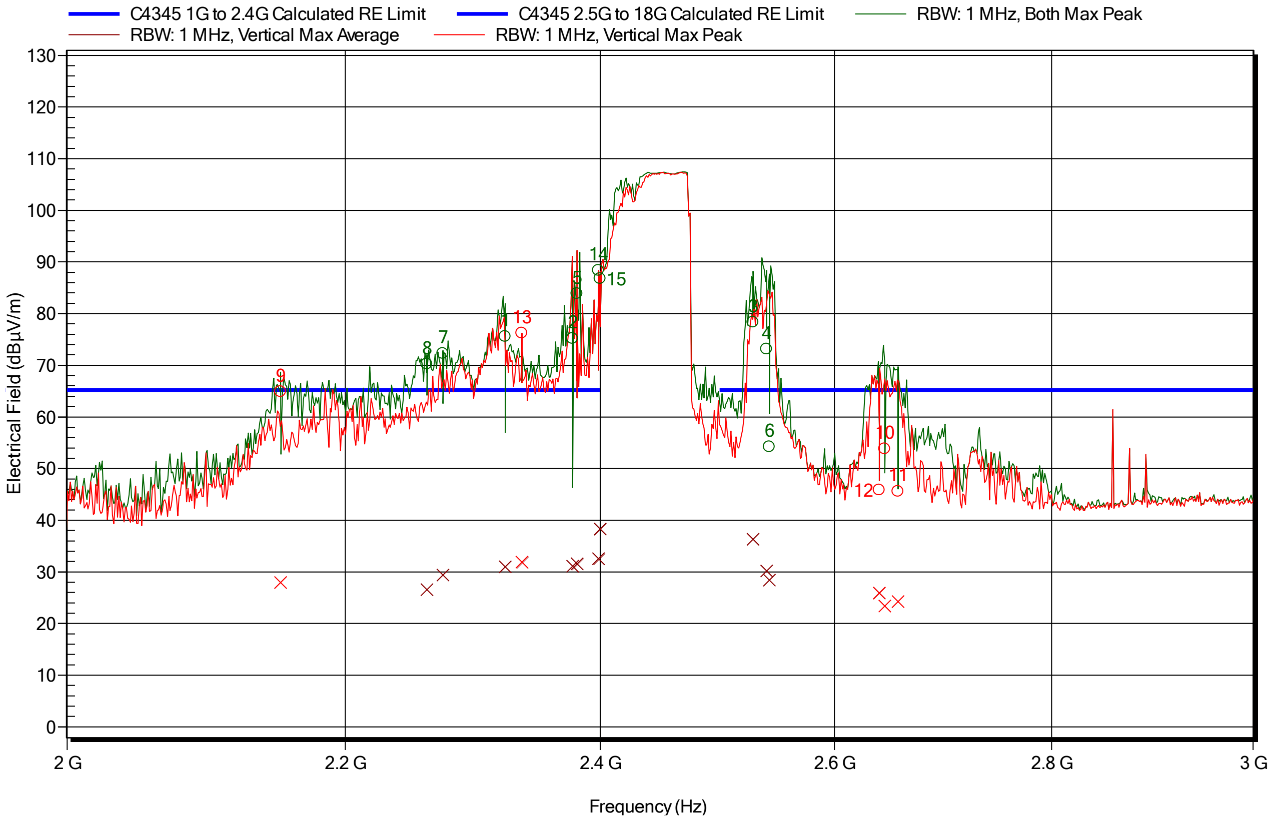


Figure 10: Electric field emissions Plot, 2GHz to 3GHz

Frequency	Peak	Peak Correction	Average	Average Limit	Average Difference	Average Correction	Average Status	Status	Angle	Height	Polarization
2.324 GHz	75.51 dBµV/m	-17.6 dB	30.99 dBµV/m	65.16 dBµV/m	-34.17 dB	-17.6 dB	Pass	Pass	360 Degree	2.8 m	Horizontal
2.377 GHz	75.11 dBµV/m	-17.5 dB	31.11 dBµV/m	65.16 dBµV/m	-34.05 dB	-17.5 dB	Pass	Pass	360 Degree	2.9 m	Horizontal
2.529 GHz	78.29 dBµV/m	-17.1 dB	36.28 dBµV/m	65.16 dBµV/m	-28.88 dB	-17.1 dB	Pass	Pass	360 Degree	1.4 m	Horizontal
2.54 GHz	73.09 dBµV/m	-17 dB	30.17 dBµV/m	65.16 dBµV/m	-34.99 dB	-17 dB	Pass	Pass	360 Degree	1 m	Horizontal
2.381 GHz	83.8 dBµV/m	-17.5 dB	31.58 dBµV/m	65.16 dBµV/m	-33.58 dB	-17.5 dB	Pass	Pass	360 Degree	2.6 m	Vertical
2.543 GHz	54.14 dBµV/m	-17 dB	28.38 dBµV/m	65.16 dBµV/m	-36.78 dB	-17 dB	Pass	Pass	20 Degree	2.1 m	Horizontal
2.275 GHz	72.21 dBµV/m	-17.7 dB	29.38 dBµV/m	65.16 dBµV/m	-35.78 dB	-17.7 dB	Pass	Pass	320 Degree	1.9 m	Horizontal
2.262 GHz	70.19 dBµV/m	-17.7 dB	26.52 dBµV/m	65.16 dBµV/m	-38.64 dB	-17.7 dB	Pass	Pass	40 Degree	2.1 m	Horizontal
2.152 GHz	64.84 dBµV/m	-17.9 dB	27.94 dBµV/m	65.16 dBµV/m	-37.22 dB	-17.9 dB	Pass	Pass	0 Degree	1.2 m	Horizontal
2.645 GHz	53.78 dBµV/m	-16.5 dB	23.41 dBµV/m	65.16 dBµV/m	-41.75 dB	-16.5 dB	Pass	Pass	0 Degree	1.1 m	Horizontal
2.657 GHz	45.54 dBµV/m	-16.4 dB	24.23 dBµV/m	65.16 dBµV/m	-40.93 dB	-16.4 dB	Pass	Pass	0 Degree	1 m	Horizontal
2.64 GHz	45.82 dBµV/m	-16.5 dB	25.91 dBµV/m	65.16 dBµV/m	-39.25 dB	-16.5 dB	Pass	Pass	20 Degree	1.8 m	Vertical
2.337 GHz	76.16 dBµV/m	-17.6 dB	31.87 dBµV/m	65.16 dBµV/m	-33.29 dB	-17.6 dB	Pass	Pass	0 Degree	2.9 m	Vertical
2.399 GHz	88.28 dBµV/m	-17.5 dB	32.53 dBµV/m	65.16 dBµV/m	-32.63 dB	-17.5 dB	Pass	Pass	240 Degree	3.8 m	Vertical
2.4 GHz	86.72 dBµV/m	-17.5 dB	38.3 dBµV/m	65.16 dBµV/m	-26.86 dB	-17.5 dB	Pass	Pass	260 Degree	2.3 m	Vertical

Table 5: Electric Field Emissions Peaks, 2GHz to 3GHz

6.4.11 Electric field emissions, 18GHz to 24.5GHz

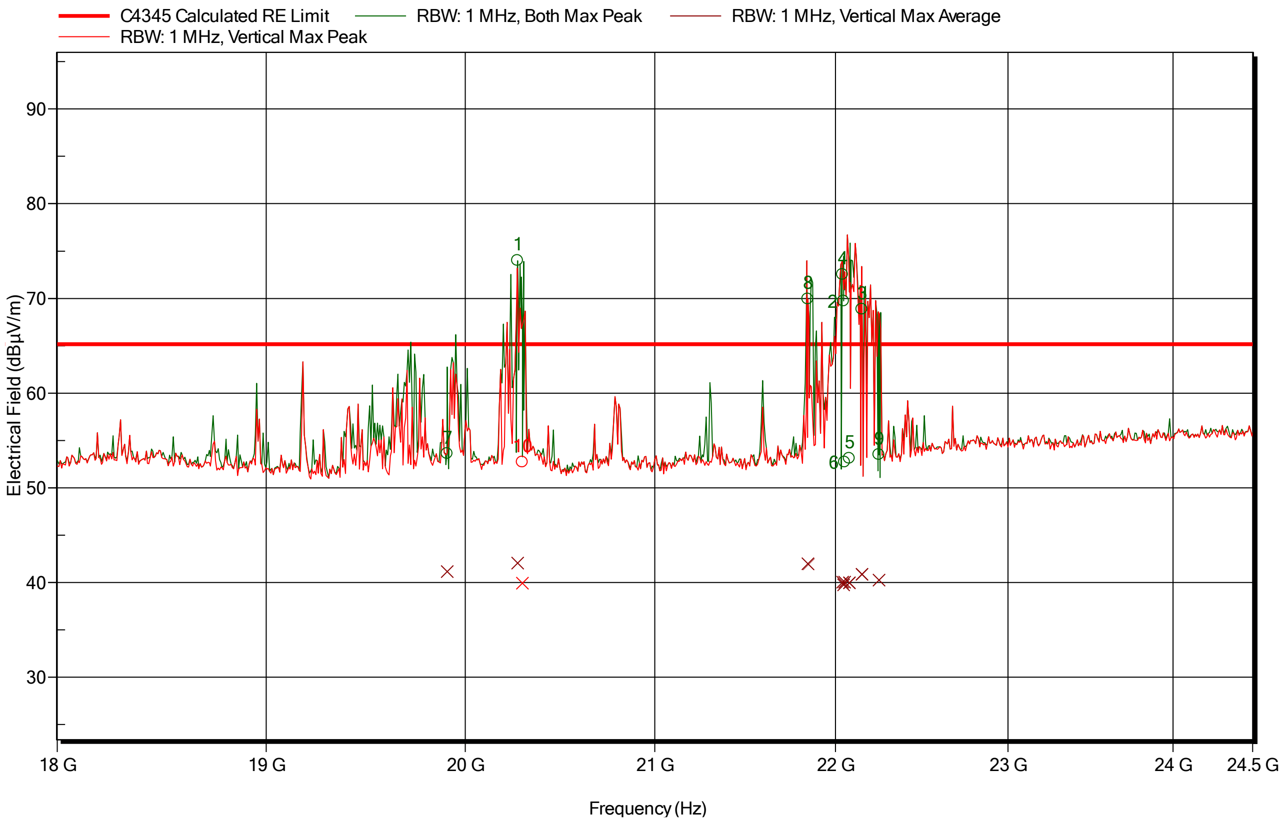


Figure 11: Electric field emissions Plot, 18GHz to 24.5GHz

Frequency	Peak	Average	Average Correction	Average Limit	Average Difference	Avergae Status	Angle	Height	Polarization
20.271 GHz	73.98 dBµV/m	42.04 dBµV/m	14.3 dB	65.2 dBuV/m	-23.16	Pass	35 Degree	1.5 m	Horizontal
22.249 GHz	53.47 dBµV/m	40.26 dBµV/m	17.2 dB	65.2 dBuV/m	-24.94	Pass	65 Degree	3.4 m	Horizontal
21.845 GHz	69.9 dBµV/m	41.98 dBµV/m	16.2 dB	65.2 dBuV/m	-23.22	Pass	50 Degree	2.6 m	Vertical
19.906 GHz	53.58 dBµV/m	41.15 dBµV/m	14.4 dB	65.2 dBuV/m	-24.05	Pass	80 Degree	1 m	Horizontal
22.151 GHz	68.82 dBµV/m	40.85 dBµV/m	16.8 dB	65.2 dBuV/m	-24.35	Pass	90 Degree	2.2 m	Vertical
22.047 GHz	69.7 dBµV/m	39.74 dBµV/m	16.4 dB	65.2 dBuV/m	-25.46	Pass	55 Degree	1.31 m	Horizontal
22.054 GHz	52.69 dBµV/m	40.03 dBµV/m	16.4 dB	65.2 dBuV/m	-25.17	Pass	150 Degree	1 m	Horizontal
22.08 GHz	53.07 dBµV/m	39.95 dBµV/m	16.5 dB	65.2 dBuV/m	-25.25	Pass	130 Degree	3.2 m	Vertical
22.041 GHz	72.48 dBµV/m	40.02 dBµV/m	16.4 dB	65.2 dBuV/m	-25.18	Pass	115 Degree	1 m	Horizontal
20.297 GHz	52.7 dBµV/m	39.91 dBµV/m	14.3 dB	65.2 dBuV/m	-25.29	Pass	145 Degree	2 m	Horizontal

Table 6: Electric Field Emissions Peaks, 18GHz to 24.5GHz

6.4.12 Average correction factors

The total average corrections are shown in the above table. This correction figure consists of Preamplifier gain (PG), Antenna factor (AF) and Cable loss (CL).

Field strength (FS) is calculated as follows:

FS (dBµV/m) = Indicated Signal Level (dBµV) - PG (dB) + AF (dB) + CL (dB)

6.4.13 Sample Data

The Average level at 2.64GHz

FS (dBµV/m) = 25.91dBµV/m = 42.14dBµV – 51.04dB + 29.04dB + 5.77dB

6.4.14 Electric Field Emissions, 2nd and 3rd harmonics

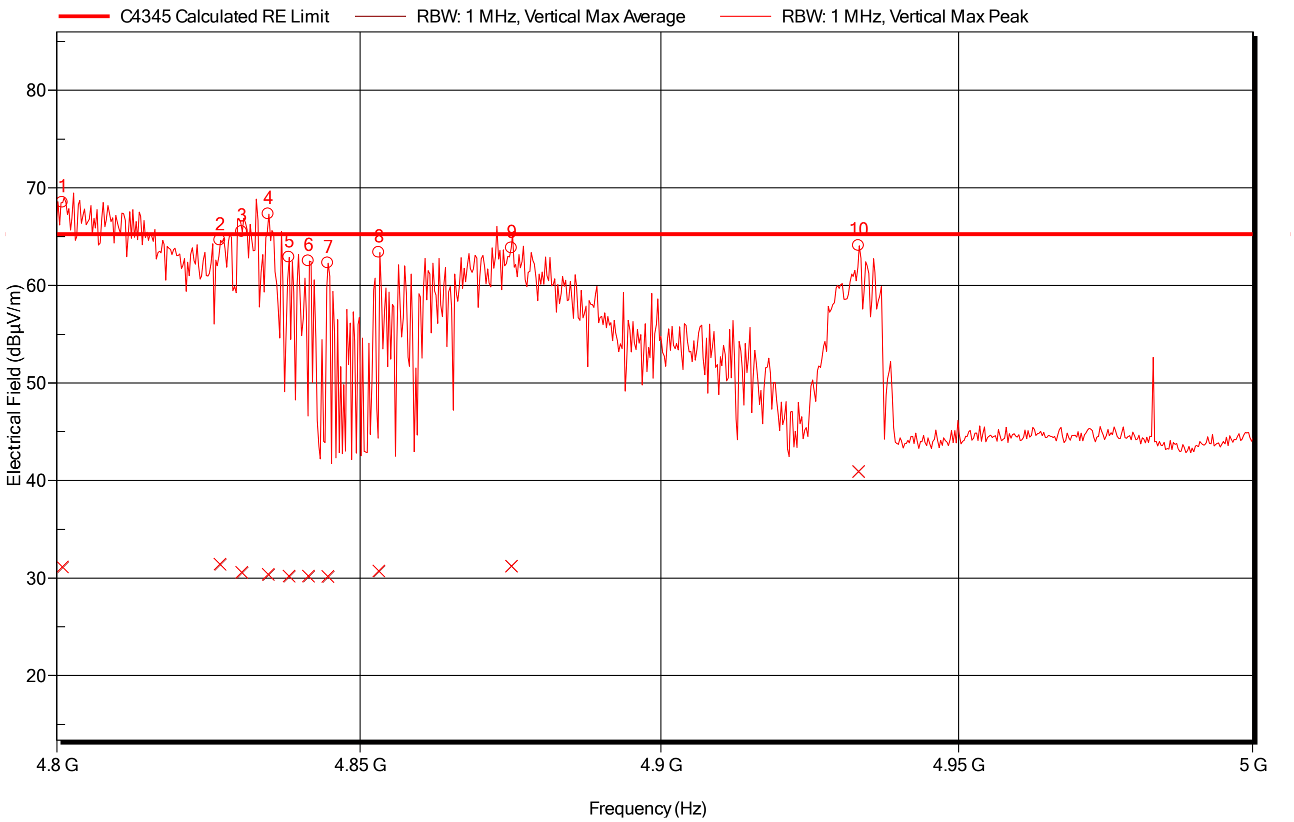


Figure 12: Electric field emissions, 2nd harmonic, 700ml in centre of oven

Frequency	Peak	Peak Correction	Average	Average Correction	Angle	Height	Polarization
4.801 GHz	68.5 dBµV/m	-9.6 dB	31.2 dBµV/m	-9.6 dB	360 Degree	1 m	Vertical
4.827 GHz	64.6 dBµV/m	-9.7 dB	31.4 dBµV/m	-9.7 dB	360 Degree	1 m	Vertical
4.83 GHz	65.5 dBµV/m	-9.7 dB	30.6 dBµV/m	-9.7 dB	360 Degree	1 m	Vertical
4.835 GHz	67.3 dBµV/m	-9.7 dB	30.4 dBµV/m	-9.7 dB	360 Degree	1 m	Vertical
4.838 GHz	62.9 dBµV/m	-9.6 dB	30.2 dBµV/m	-9.6 dB	360 Degree	1 m	Vertical
4.841 GHz	62.5 dBµV/m	-9.6 dB	30.2 dBµV/m	-9.6 dB	360 Degree	1 m	Vertical
4.845 GHz	62.3 dBµV/m	-9.6 dB	30.2 dBµV/m	-9.6 dB	360 Degree	1 m	Vertical
4.853 GHz	63.4 dBµV/m	-9.6 dB	30.7 dBµV/m	-9.6 dB	360 Degree	1 m	Vertical
4.875 GHz	63.8 dBµV/m	-9.3 dB	31.2 dBµV/m	-9.3 dB	360 Degree	1 m	Vertical
4.933 GHz	64.1 dBµV/m	-8 dB	40.9 dBµV/m	-8 dB	360 Degree	1 m	Vertical

Table 10: Electric Field Emissions, 2nd harmonic, 700ml in centre of oven

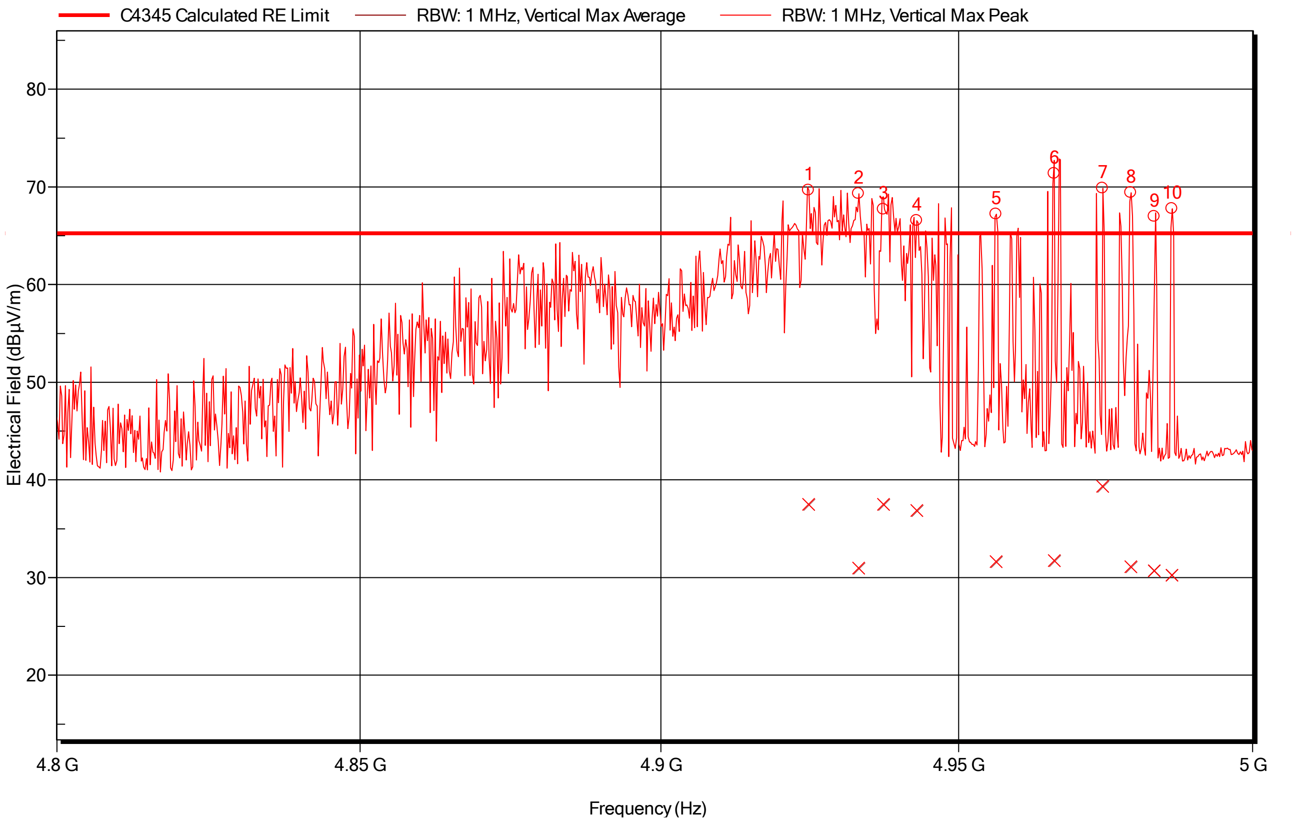


Figure 13: Electric field emissions, 2nd harmonic, 700ml in front right of oven

Frequency	Peak	Peak Correction	Average	Average Correction	Angle	Height	Polarization
4.925 GHz	69.6 dBµV/m	-9.1 dB	37.5 dBµV/m	-9.1 dB	0 Degree	1 m	Vertical
4.933 GHz	69.3 dBµV/m	-8.9 dB	31 dBµV/m	-8.9 dB	0 Degree	1 m	Vertical
4.937 GHz	67.7 dBµV/m	-8.8 dB	37.5 dBµV/m	-8.8 dB	0 Degree	1 m	Vertical
4.943 GHz	66.5 dBµV/m	-8.6 dB	36.9 dBµV/m	-8.6 dB	0 Degree	1 m	Vertical
4.956 GHz	67.2 dBµV/m	-8.2 dB	31.7 dBµV/m	-8.2 dB	0 Degree	1 m	Vertical
4.966 GHz	71.3 dBµV/m	-8.1 dB	31.7 dBµV/m	-8.1 dB	0 Degree	1 m	Vertical
4.974 GHz	69.9 dBµV/m	-8.3 dB	39.3 dBµV/m	-8.3 dB	0 Degree	1 m	Vertical
4.979 GHz	69.4 dBµV/m	-8.4 dB	31.1 dBµV/m	-8.4 dB	0 Degree	1 m	Vertical
4.983 GHz	67 dBµV/m	-8.5 dB	30.7 dBµV/m	-8.5 dB	0 Degree	1 m	Vertical
4.986 GHz	67.8 dBµV/m	-8.5 dB	30.2 dBµV/m	-8.5 dB	0 Degree	1 m	Vertical

Table 11: Electric Field Emissions, 2nd harmonic, 700ml in front right of oven

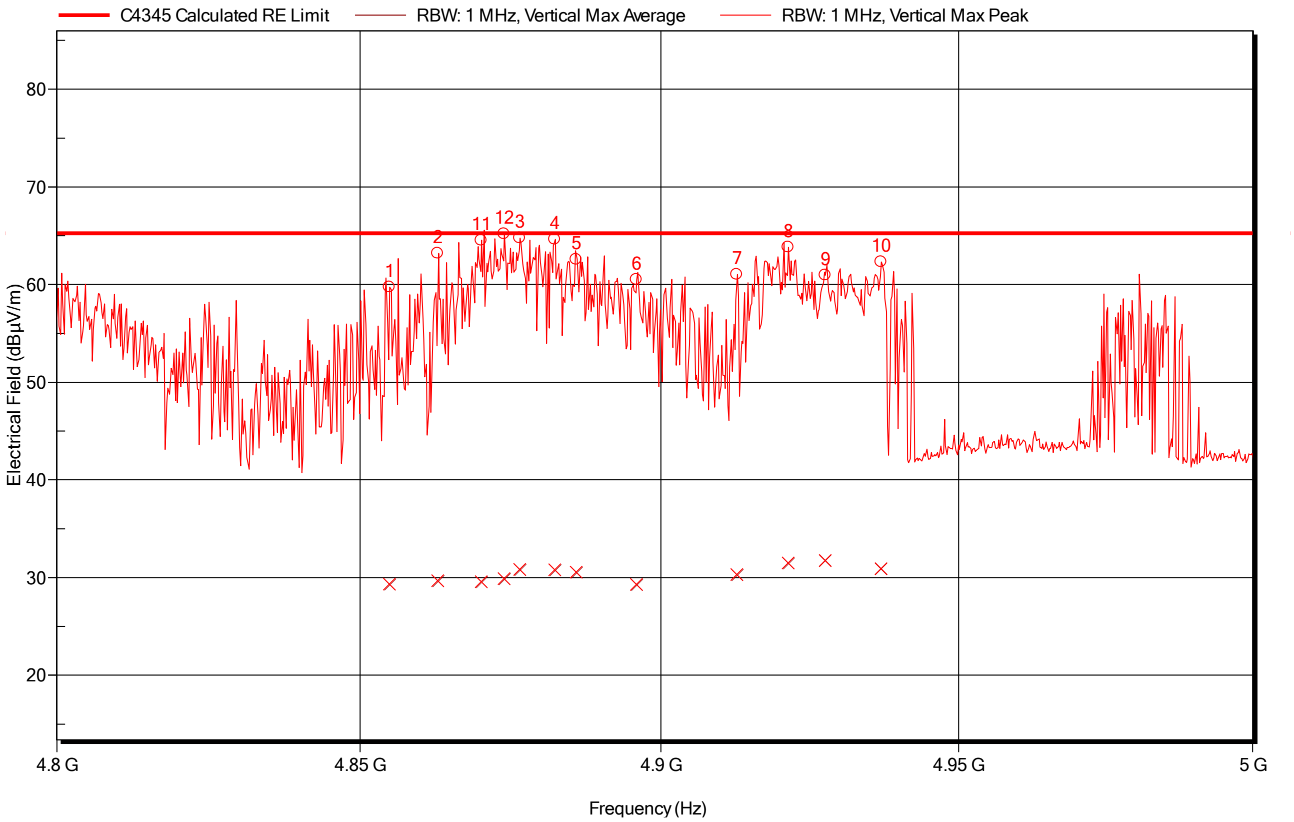


Figure 14: Electric field emissions, 2nd harmonic, 300ml in centre of oven

Frequency	Peak	Peak Correction	Average	Average Correction	Angle	Height	Polarization
4.855 GHz	59.7 dBµV/m	-10.3 dB	29.3 dBµV/m	-10.3 dB	0 Degree	1 m	Vertical
4.863 GHz	63.2 dBµV/m	-10.3 dB	29.7 dBµV/m	-10.3 dB	0 Degree	1 m	Vertical
4.876 GHz	64.8 dBµV/m	-10.1 dB	30.8 dBµV/m	-10.1 dB	0 Degree	1 m	Vertical
4.882 GHz	64.6 dBµV/m	-10 dB	30.8 dBµV/m	-10 dB	0 Degree	1 m	Vertical
4.886 GHz	62.6 dBµV/m	-9.9 dB	30.6 dBµV/m	-9.9 dB	0 Degree	1 m	Vertical
4.896 GHz	60.5 dBµV/m	-9.8 dB	29.3 dBµV/m	-9.8 dB	0 Degree	1 m	Vertical
4.913 GHz	61 dBµV/m	-9.5 dB	30.3 dBµV/m	-9.5 dB	0 Degree	1 m	Vertical
4.921 GHz	63.8 dBµV/m	-9.2 dB	31.5 dBµV/m	-9.2 dB	0 Degree	1 m	Vertical
4.928 GHz	61 dBµV/m	-9.1 dB	31.7 dBµV/m	-9.1 dB	0 Degree	1 m	Vertical
4.937 GHz	62.3 dBµV/m	-8.8 dB	30.9 dBµV/m	-8.8 dB	0 Degree	1 m	Vertical
4.87 GHz	64.5 dBµV/m	-10.2 dB	29.6 dBµV/m	-10.2 dB	0 Degree	1 m	Vertical
4.874 GHz	65.2 dBµV/m	-10.1 dB	29.9 dBµV/m	-10.1 dB	0 Degree	1 m	Vertical

Table 12: Electric Field Emissions, 2nd harmonic, 300ml in centre of oven

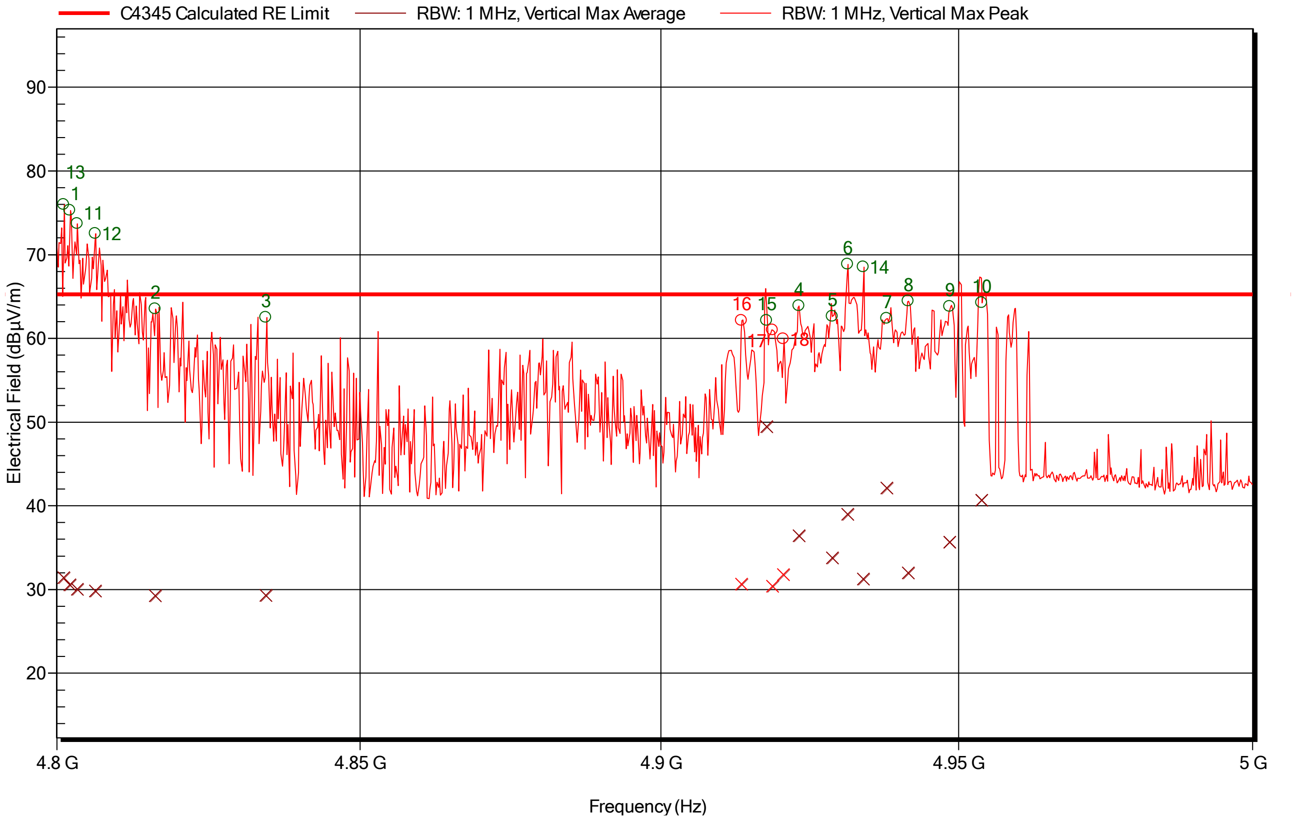


Figure 15: Electric field emissions, 2nd harmonic, 300ml in front right of oven

Frequency	Peak	Peak Correction	Average	Average Correction	Angle	Height	Polarization
4.802 GHz	75.3 dBµV/m	-10.3 dB	30.6 dBµV/m	-10.3 dB	0 Degree	1 m	Vertical
4.816 GHz	63.5 dBµV/m	-10.4 dB	29.3 dBµV/m	-10.4 dB	0 Degree	1 m	Vertical
4.834 GHz	62.5 dBµV/m	-10.3 dB	29.3 dBµV/m	-10.3 dB	0 Degree	1 m	Vertical
4.923 GHz	63.9 dBµV/m	-9.2 dB	36.4 dBµV/m	-9.2 dB	0 Degree	1 m	Vertical
4.929 GHz	62.6 dBµV/m	-9 dB	33.8 dBµV/m	-9 dB	0 Degree	1 m	Vertical
4.931 GHz	68.8 dBµV/m	-9 dB	39 dBµV/m	-9 dB	0 Degree	1 m	Vertical
4.938 GHz	62.4 dBµV/m	-8.8 dB	42.1 dBµV/m	-8.8 dB	0 Degree	1 m	Vertical
4.942 GHz	64.5 dBµV/m	-8.7 dB	32 dBµV/m	-8.7 dB	0 Degree	1 m	Vertical
4.949 GHz	63.8 dBµV/m	-8.5 dB	35.7 dBµV/m	-8.5 dB	0 Degree	1 m	Vertical
4.954 GHz	64.2 dBµV/m	-8.3 dB	40.7 dBµV/m	-8.3 dB	0 Degree	1 m	Vertical
4.803 GHz	73.7 dBµV/m	-10.3 dB	30 dBµV/m	-10.3 dB	0 Degree	1 m	Vertical
4.806 GHz	72.5 dBµV/m	-10.3 dB	29.9 dBµV/m	-10.3 dB	0 Degree	1 m	Vertical
4.801 GHz	76 dBµV/m	-10.2 dB	31.4 dBµV/m	-10.2 dB	0 Degree	1 m	Vertical
4.934 GHz	68.5 dBµV/m	-8.9 dB	31.2 dBµV/m	-8.9 dB	0 Degree	1 m	Vertical
4.918 GHz	62.1 dBµV/m	-9.3 dB	49.5 dBµV/m	-9.3 dB	0 Degree	1 m	Vertical
4.914 GHz	62.1 dBµV/m	-9.5 dB	30.6 dBµV/m	-9.5 dB	0 Degree	1 m	Vertical
4.919 GHz	61 dBµV/m	-9.3 dB	30.4 dBµV/m	-9.3 dB	0 Degree	1 m	Vertical
4.921 GHz	59.9 dBµV/m	-9.3 dB	31.8 dBµV/m	-9.3 dB	0 Degree	1 m	Vertical

Table 13: Electric Field Emissions, 2nd harmonic, 300ml in front right of oven

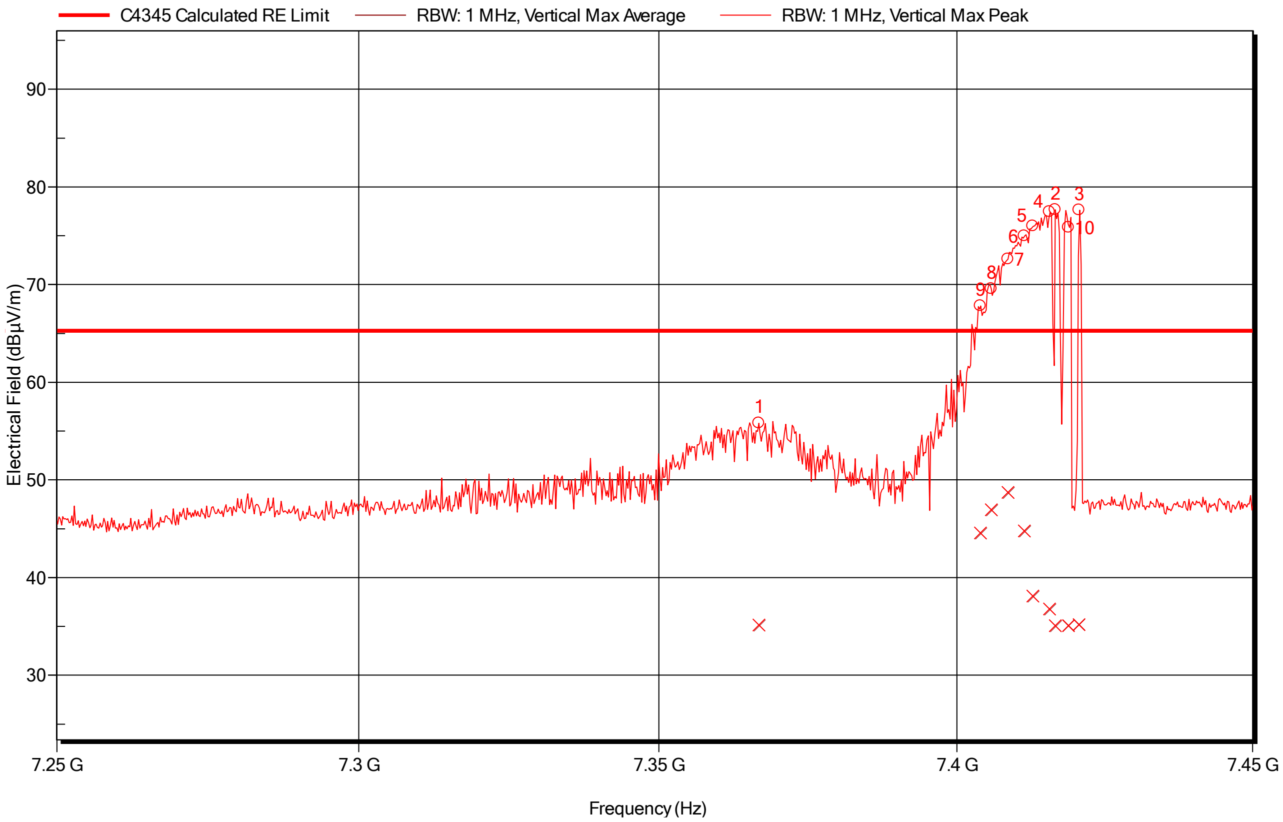


Figure 16: Electric field emissions, 3rd harmonic, 700ml in centre of oven

Frequency	Peak	Peak Correction	Average	Average Correction	Angle	Height	Polarization
7.367 GHz	55.8 dBµV/m	-4.7 dB	35.1 dBµV/m	-4.7 dB	360 Degree	1 m	Vertical
7.417 GHz	77.6 dBµV/m	-4.6 dB	35.1 dBµV/m	-4.6 dB	360 Degree	1 m	Vertical
7.421 GHz	77.6 dBµV/m	-4.6 dB	35.2 dBµV/m	-4.6 dB	360 Degree	1 m	Vertical
7.416 GHz	77.5 dBµV/m	-4.6 dB	36.8 dBµV/m	-4.6 dB	360 Degree	1 m	Vertical
7.413 GHz	76 dBµV/m	-4.6 dB	38.1 dBµV/m	-4.6 dB	360 Degree	1 m	Vertical
7.411 GHz	75 dBµV/m	-4.6 dB	44.8 dBµV/m	-4.6 dB	360 Degree	1 m	Vertical
7.409 GHz	72.6 dBµV/m	-4.6 dB	48.7 dBµV/m	-4.6 dB	360 Degree	1 m	Vertical
7.406 GHz	69.6 dBµV/m	-4.6 dB	47 dBµV/m	-4.6 dB	360 Degree	1 m	Vertical
7.404 GHz	67.8 dBµV/m	-4.6 dB	44.6 dBµV/m	-4.6 dB	360 Degree	1 m	Vertical
7.419 GHz	75.9 dBµV/m	-4.6 dB	35.1 dBµV/m	-4.6 dB	360 Degree	1 m	Vertical

Table 14: Electric Field Emissions, 3rd harmonic, 700ml in centre of oven

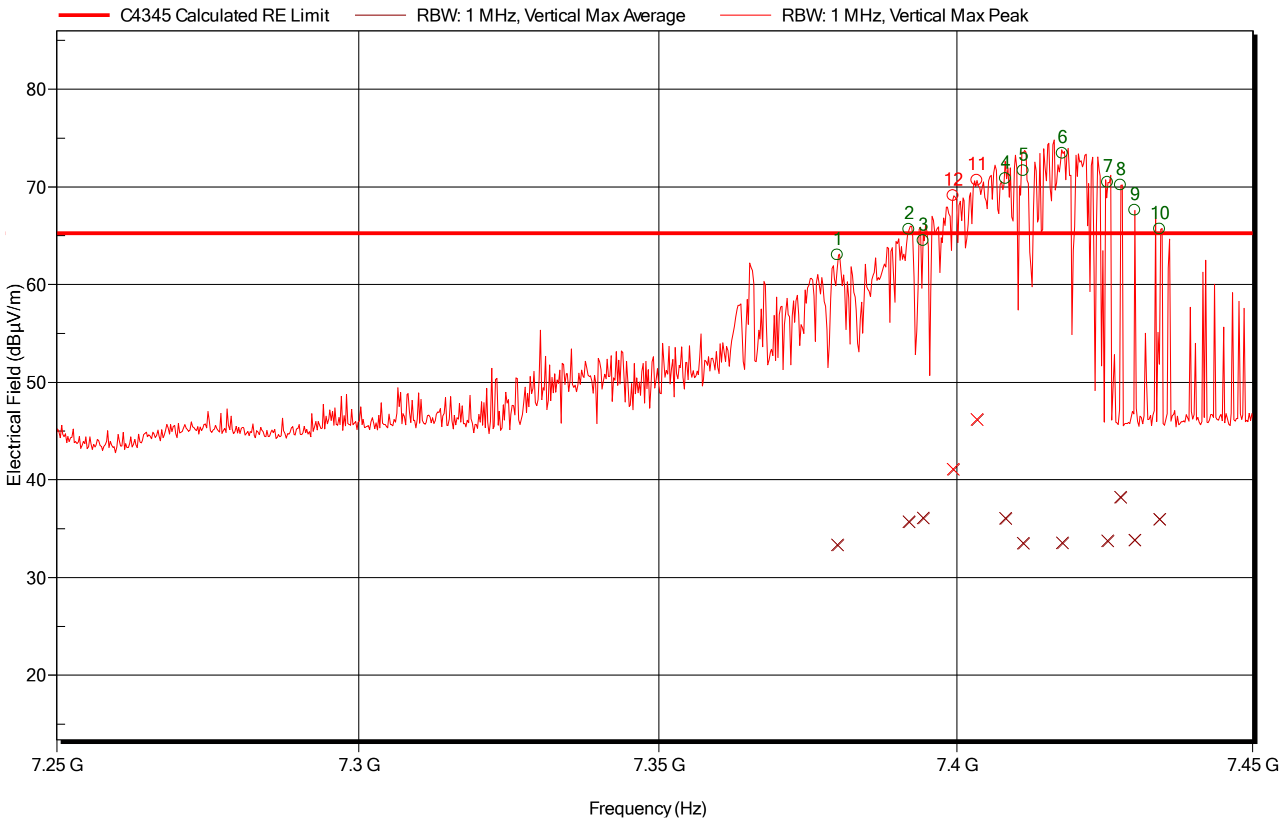


Figure 17: Electric field emissions, 3rd harmonic, 700ml in front right of oven

Frequency	Peak	Peak Corr	Average	Average Correction	Angle	Height	Polarization
7.38 GHz	63 dBµV/m	-5.7 dB	33.3 dBµV/m	-5.7 dB	0 Degree	1 m	Vertical
7.392 GHz	65.6 dBµV/m	-5.7 dB	35.7 dBµV/m	-5.7 dB	0 Degree	1 m	Vertical
7.394 GHz	64.5 dBµV/m	-5.7 dB	36.1 dBµV/m	-5.7 dB	0 Degree	1 m	Vertical
7.408 GHz	70.8 dBµV/m	-5.6 dB	36.1 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.411 GHz	71.6 dBµV/m	-5.6 dB	33.5 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.418 GHz	73.4 dBµV/m	-5.6 dB	33.6 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.425 GHz	70.4 dBµV/m	-5.6 dB	33.8 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.428 GHz	70.2 dBµV/m	-5.6 dB	38.2 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.43 GHz	67.6 dBµV/m	-5.6 dB	33.8 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.434 GHz	65.7 dBµV/m	-5.6 dB	36 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.403 GHz	70.7 dBµV/m	-5.6 dB	46.2 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.399 GHz	69.1 dBµV/m	-5.6 dB	41.1 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical

Table 15: Electric Field Emissions, 3rd harmonic, 700ml in front right of oven

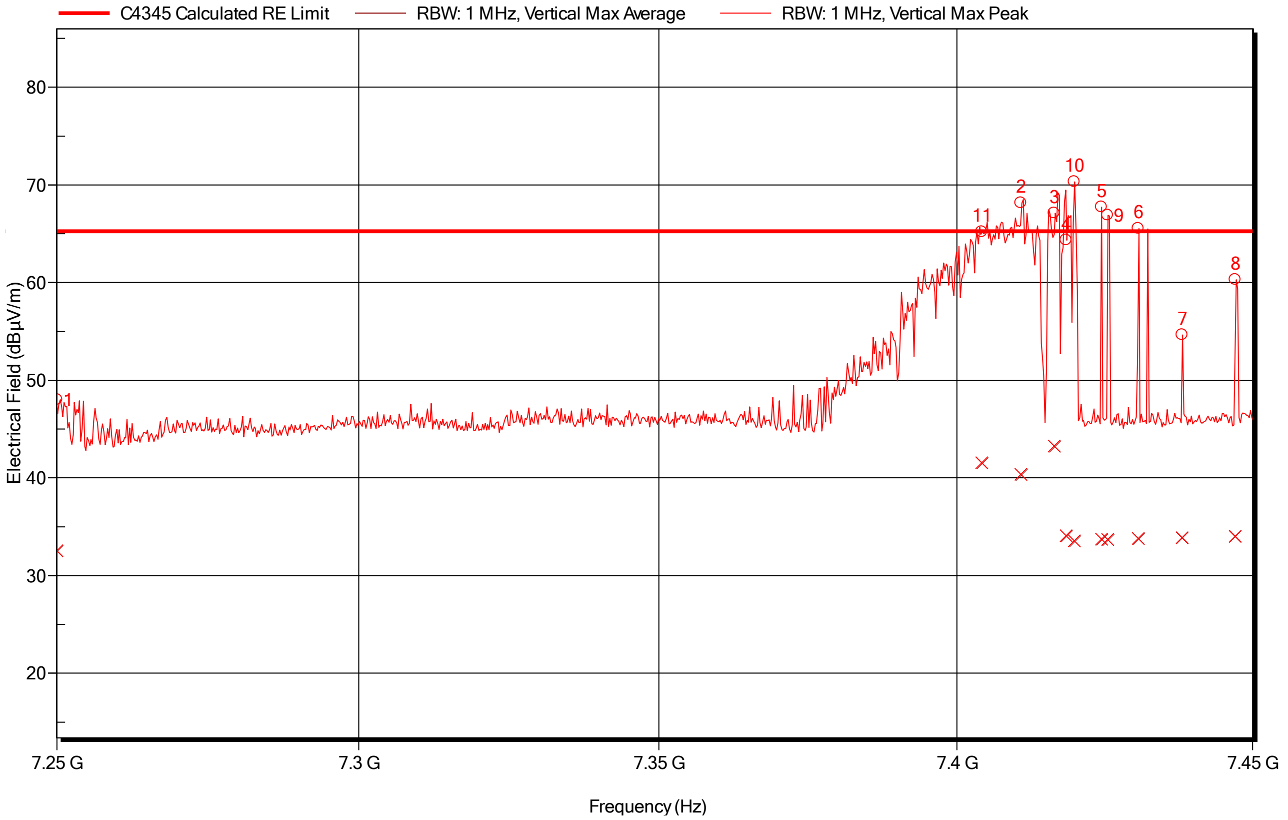


Figure 18: Electric field emissions, 3rd harmonic, 300ml in centre of oven

Frequency	Peak	Peak Correction	Average	Average Correction	Angle	Height	Polarization
7.25 GHz	48 dBµV/m	-5.9 dB	32.6 dBµV/m	-5.9 dB	0 Degree	1 m	Vertical
7.411 GHz	68.2 dBµV/m	-5.6 dB	40.4 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.416 GHz	67.1 dBµV/m	-5.6 dB	43.3 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.418 GHz	64.3 dBµV/m	-5.6 dB	34.1 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.424 GHz	67.7 dBµV/m	-5.6 dB	33.7 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.431 GHz	65.5 dBµV/m	-5.6 dB	33.8 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.438 GHz	54.6 dBµV/m	-5.6 dB	33.9 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.447 GHz	60.3 dBµV/m	-5.6 dB	34 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.425 GHz	66.9 dBµV/m	-5.6 dB	33.7 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.42 GHz	70.3 dBµV/m	-5.6 dB	33.6 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.404 GHz	65.2 dBµV/m	-5.6 dB	41.5 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical

Table 16: Electric Field Emissions, 3rd harmonic, 300ml in centre of oven

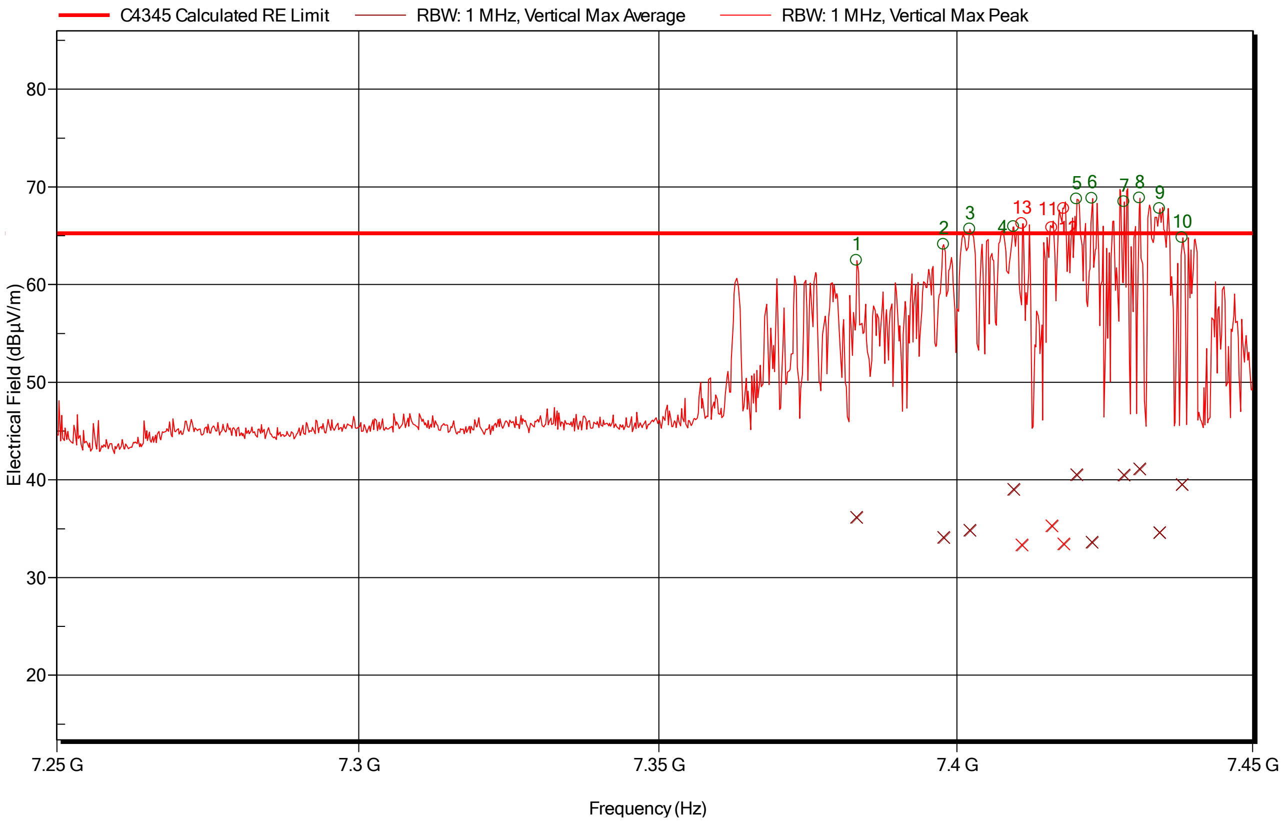


Figure 19: Electric field emissions, 3rd harmonic, 300ml in front right of oven

Frequency	Peak	Peak Correction	Average	Average Correction	Angle	Height	Polarization
7.383 GHz	62.5 dBµV/m	-5.7 dB	36.2 dBµV/m	-5.7 dB	0 Degree	1 m	Vertical
7.398 GHz	64.1 dBµV/m	-5.6 dB	34.1 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.402 GHz	65.7 dBµV/m	-5.6 dB	34.8 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.41 GHz	65.9 dBµV/m	-5.6 dB	39 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.42 GHz	68.7 dBµV/m	-5.6 dB	40.5 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.423 GHz	68.8 dBµV/m	-5.6 dB	33.6 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.428 GHz	68.5 dBµV/m	-5.6 dB	40.5 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.431 GHz	68.8 dBµV/m	-5.6 dB	41.1 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.434 GHz	67.8 dBµV/m	-5.6 dB	34.6 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.438 GHz	64.8 dBµV/m	-5.6 dB	39.5 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.418 GHz	67.7 dBµV/m	-5.6 dB	33.4 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.416 GHz	65.8 dBµV/m	-5.6 dB	35.3 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical
7.411 GHz	66.2 dBµV/m	-5.6 dB	33.3 dBµV/m	-5.6 dB	0 Degree	1 m	Vertical

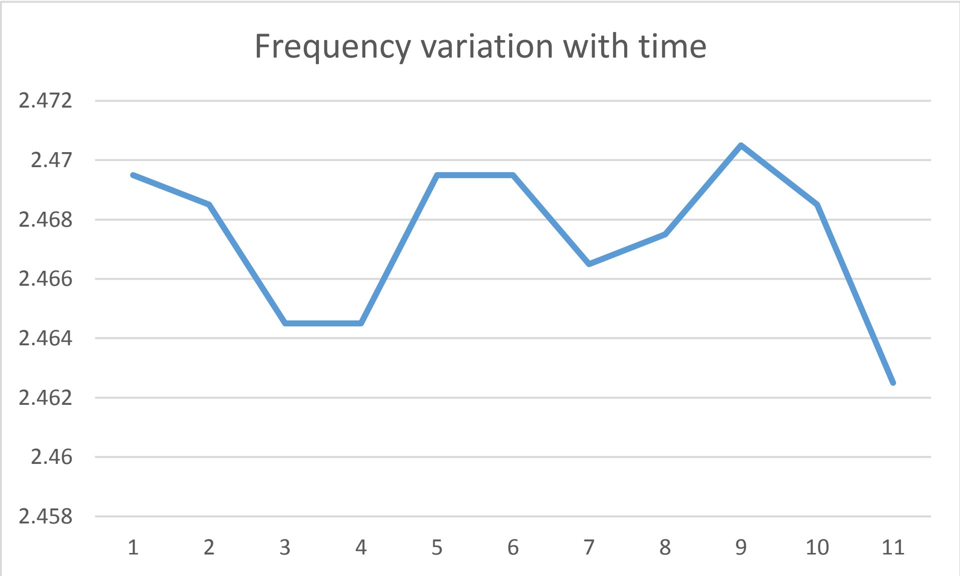
Table 17: Electric Field Emissions, 3rd harmonic, 300ml in front right of oven

Section 7 Frequency Variation

7.1.1 Frequency Variation with time

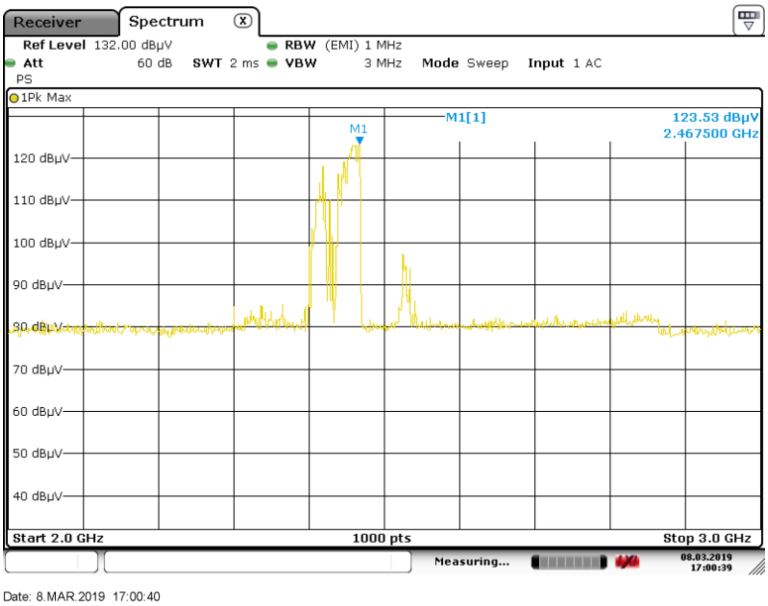
The operating frequency range specified in CFR 18.301 is 2.45GHz +/- 50MHz. The method of MP5 para 4.5(a) was used. Measurement of the operating frequency were made at 5 minute intervals and are tabulated below:

Time (min)	Frequency (GHz)
0	2.4695
5	2.4685
10	2.4645
15	2.4645
20	2.4695
25	2.4695
30	2.4665
35	2.4675
40	2.4705
45	2.4685
50	2.4625

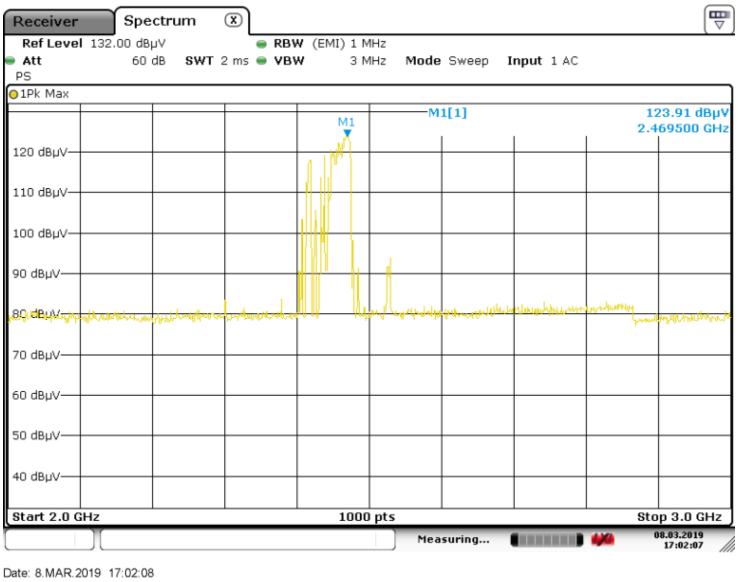


7.1.2 Frequency Variation line voltage

The operating frequency range specified in CFR 18.301 is 2.45GHz +/- 50MHz. The method of MP5 para 4.5(b) was used. Measurement of the operating frequency were made at line voltages of 176Vac (80% of 220Vac) and 275Vac (125% of 220Vac).



Operating frequency at 176Vac



Operating frequency at 275Vac

Frequency extremes were 2.4675GHz were 2.4695GHz, within allowed margins.

Appendix A EUT Test Photos

Photographs are supplied as separate exhibits.

Appendix B Test Equipment List

Conducted Emissions

Item	Serial No.	Last Calibration Date	Calibration Interval
Rohde & Schwarz ESR 7	C0499	01/02/2018	12 Months
Narda LISN	C0413	12/10/2018	24 Months
Cable	C5	11/1/2018	12 Months
Cable	D4	19/1/2018	12 Months
10dB Transient limiter	78087	29/1/2018	12 Months

Radiated Emissions Equipment

Item	Serial No.	Last Calibration Date	Calibration Interval
Laboratory 1 Semi-Anechoic Chamber	Lab 1	07/12/2016	36 Months
ETS Lindgren 2017B Mast (1 – 4m) with tilting mechanism	--	N/A	N/A
Rohde & Schwarz ESR 26	101464	18/04/2018	12 Months
Teseq CBL6112D Bilog Antenna	49040	15/08/2018	12 Months
6dB Attenuator (For use with Bilog Antenna)	C0506B	15/08/2018	12 Months
HF25 Cable (For use from 9kHz to 18GHz)	181004-001	15/01/2019	12 Months
HF14 Cable (For use from 9kHz to 18GHz)	167003-001	15/01/2019	12 Months
HF17 Cable (For use from 9kHz to 18GHz)	167002-001	15/01/2019	12 Months
EMCO 3115 Horn Antenna	9712-5380	02/05/2018	24 Months
BONN BLMA 0118-5A Preamplifier	149759	07/01/2019	12 Months
RS 1313 thermometer	C0488	Feb 2018	12 months
K type thermocouple	434858	Feb 2018	12 months

Note: The last two items were used during determination of output power in order to calculate the radiated emissions limit.