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# EMC/EMI Test Report

Tested Product:

**CAM300**

representative of SHARE2U

Test Report TR-0621255\_R2

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**REVISION HISTORY**

| Revision | Description                               | Date       |
|----------|---|------------|
| 0        | Initial Release                           | 2022-09-09 |
| 1        | Correction in the address of the customer | 2022-10-04 |
| 2        | Updated ICES-003 standard                 | 2023-08-25 |

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## 1 INTRODUCTION

This test report describes EMC tests on the product CAM300:

- in compliance with electromagnetic compatibility directive 2014/30/EU as part of the requirements leading to the CE marking
- in compliance with FCC part 15 subpart B
- in compliance with ICES-003

The essential requirements of the directive 2014/30/EU are covered by the following harmonized standards:

- EN 55032 (2015) A11 (2020) – *Electromagnetic compatibility of multimedia equipment - Emission requirements*
- EN 55035 (2017) A11 (2020) – *Electromagnetic compatibility of multimedia equipment – Immunity requirements*

All qualification tests will be performed on CAM300, which is a representative of SHARE2U product. There are no electronic differences among these models. See APPENDIX E for detailed explanation.

## 2 ACRONYMS

EMC: ElectroMagnetic Compatibility  
EUT: Equipment Under Test  
S/N: Serial Number  
N/A: Not Applicable / Not Available  
NCR: No Calibration Required  
VERIF: Internal Verification of Equipment Characteristics  
AC: Alternating Current  
DC: Direct Current  
PSU: Power Supply Unit  
AE: Auxiliary Equipment  
QTP: Qualification Test Procedure.  
LISN: Line Impedance Stabilisation Network  
AM: Amplitude Modulation  
CDN: Coupling/Decoupling Network  
EM Clamp: Electromagnetic Clamp  
I/O: Inputs/Outputs  
PE: Protective Earth  
HCP: Horizontal Coupling Plane  
VCP: Vertical Coupling Plane  
ESD: Electrostatic Discharge  
EFT: Electrical Fast Transient  
Pst: short-term flicker  
Plt: long-term flicker  
Un: Nominal Voltage

## 3 PROJECT DATES

|  |   |
|--|---|
| <b>RECEPTION DATE(S)</b><br>(yyyy-mm-dd) | 2022-08-15 (LABCEM#3249, LABCEM#3250)                                   |
| <b>TESTS DATE(S)</b><br>(yyyy-mm-dd)     | From 2022-08-15 to 2022-08-19 (LABCEM#3249)<br>2022-08-18 (LABCEM#3250) |

4 DESCRIPTION OF EQUIPMENT UNDER TEST

4.1 EUT

|                                    |  |  |
|------------------------------------|--|--|
| <b>TYPE:</b>                       | Camera Selector  |  |
| <b>PRODUCT NAME:</b>               | CAM300   |  |
| <b>MANUFACTURER:</b>               | Inogeni  |  |
| <b>LABCEM NUMBER:</b>              | LABCEM#3249  | LABCEM#3250 (ESD only)   |
| <b>PART NUMBER:</b>                | CAM300   | CAM300   |
| <b>SERIAL NUMBER:</b>              | N/A  | N/A  |
| <b>VOLTAGE RATING:</b>             | 12Vdc  | 12Vdc  |
| <b>EXTERNAL PSU INFO:</b>          | Manufacturer: Pihong<br>Model: PSA15R-120P<br>P/N: PSA15R-120P<br>S/N: PN10010020A1<br>Input Voltage: 120-240V, 50-60Hz<br>Output Voltage: 12Vdc | Manufacturer: Pihong<br>Model: PSA15R-120P<br>P/N: PSA15R-120P<br>S/N: PN10010020A1<br>Input Voltage: 120-240V, 50-60Hz<br>Output Voltage: 12Vdc |
| <b>EUT SIZE:</b>                   | Width = 19cm<br>Height = 4cm<br>Depth = 11cm   | Width = 19cm<br>Height = 4cm<br>Depth = 11cm   |
| <b>FIRMWARE:</b>                   | USB Controller: 2.2<br>Video Processor: 2.0  | USB Controller: 2.2<br>Video Processor: 2.0  |
| <b>HIGHEST INTERNAL FREQUENCY:</b> | 1GHz   | 1GHz   |



Photo 1: EUT



Photo 2: PSU



Photo 3: PSU – S/N

4.2 AE

|                        |               |
|------------------------|---------------|
| <b>TYPE:</b>           | Webcam        |
| <b>PRODUCT NAME:</b>   | Logitech C920 |
| <b>MANUFACTURER:</b>   | Logitech      |
| <b>SERIAL NUMBER:</b>  | 2151LV01T8P8  |
| <b>VOLTAGE RATING:</b> | 5Vdc (USB)    |
| <b>FIRMWARE:</b>       | N/A           |



Photo 4: AE – Webcam #1

|                        |               |
|------------------------|---------------|
| <b>TYPE:</b>           | Webcam        |
| <b>PRODUCT NAME:</b>   | Logitech C920 |
| <b>MANUFACTURER:</b>   | Logitech      |
| <b>SERIAL NUMBER:</b>  | 2210LV010UP8  |
| <b>VOLTAGE RATING:</b> | 5Vdc (USB)    |
| <b>FIRMWARE:</b>       | N/A           |



Photo 5: AE – Webcam #2

### 4.3 Support Equipment

EUT was exercised with support equipment supplied by client.



Photo 6: Support Equipment - - HDMI Generator #1



Photo 7: Support Equipment - - HDMI Generator #2



**Photo 8: Support Equipment - - Monitor**



**Photo 9: Support Equipment - - Laptop**



#### 4.4 EUT Setup Diagram

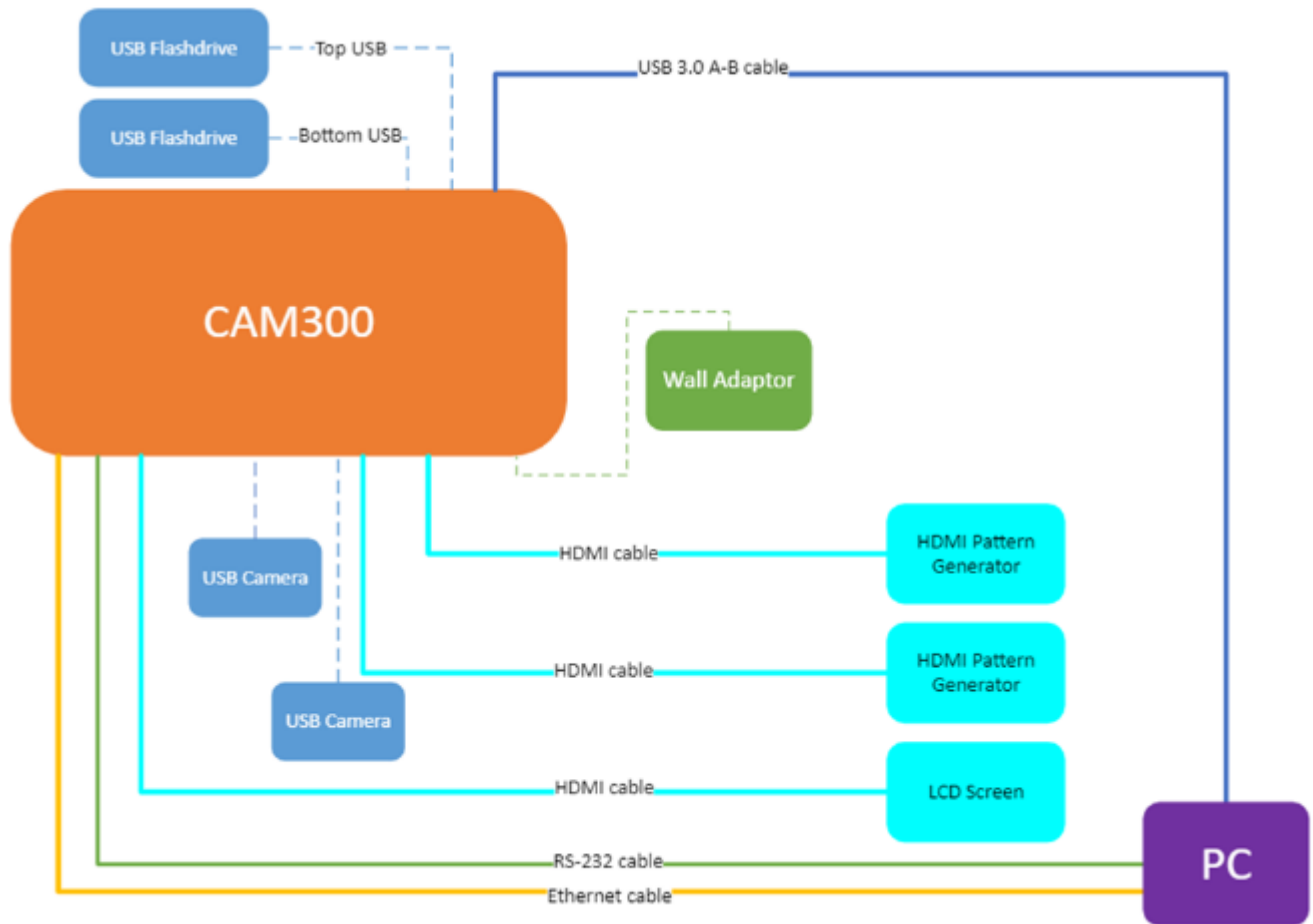


Figure 1: EUT Setup Diagram

#### 4.5 Mode of Operation

During the tests, the EUT was exercised by sharing the selected camera from one of the four possible inputs (USB or HDMI input). The selected camera was displayed on the laptop and the monitor.

#### 4.6 Method of Monitoring

During the tests, the EUT was monitored by observing the selected camera on the laptop and the monitor.

### 5 PERFORMANCE CRITERIA

During the tests, EUT shall operate normally and the picture shall remain stable on the display of the laptop and the monitor.

The performance criteria for the evaluation of the immunity test results are defined by EN 55035 standard (Electromagnetic compatibility of multimedia equipment – Immunity requirements).

*Performance criterion A: The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.*

*Performance criterion B: During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.*

*After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.*

*If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.*

*Performance criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.*

## 6 CALCULATION OF THE COMPLIANCE MARGIN

|   |   |
|---|---|
| Conducted Emission Level (dB $\mu$ V) = | Value Reading at the EMI receiver (dB $\mu$ V) + Correction Factor (dB)         |
| Correction Factor (dB) =                | LISN Attenuation (dB) + Cable Loss (dB) – Amplifier Gain (dB) + Attenuator (dB) |
| Margin (dB) =                           | Conducted Emission Level (dB $\mu$ V) – Limit Value (dB $\mu$ V)                |

**Table 1: Example of Conducted Emissions Margin Calculation**

|  |   |
|--|---|
| Radiated Emission Level (dB $\mu$ V/m) = | Value reading at the EMI receiver (dB $\mu$ V) + Antenna Factor (dB/m) + Correction Factor (dB) |
| Correction Factor (dB) =                 | Cable Loss (dB) – Amplifier Gain (dB) + Attenuator (dB)   |
| Margin (dB) =                            | Radiated Emission Level (dB $\mu$ V/m) – Limit Value (dB $\mu$ V/m)                             |

**Table 2: Example of Radiated Emissions Margin Calculation**

## 7 MEASUREMENT UNCERTAINTIES

All measurements under compliance testing, involve certain levels of uncertainties based on test equipment and facilities. The measurement uncertainties of National Technical Systems Canada Inc. (U<sub>LAB</sub>) were calculated according to CISPR16-4-2 standard and were lower than the maximum allowed by the standard (U<sub>CISPR</sub>). Therefore, the measurement uncertainties need not to be considered for compliance.

The following table presents uncertainty calculation for emission measurements as requested by ANSI C63.4 (2014):

| Test   | Expanded Uncertainty with k=2 Coverage Factor (95% Confidence Level) |
|--|--|
| Conducted Emissions with LISN (9kHz-150kHz)  | ± 3.77 dB  |
| Conducted Emissions with LISN (150kHz-30MHz) | ± 3.33 dB  |
| Radiated Emissions (30MHz-1GHz)              | ± 5.87 dB  |
| Radiated Emissions (1GHz-18GHz)              | ± 5.10 dB  |

**Table 3: Measurement Uncertainties**

All other calculations of uncertainties evaluation are available upon request.

**8 ENGINEERING COMMENTS**

**8.1 Modifications incorporated in the EUT**

No modification was performed on the EUT during testing.

**8.2 Deviations from the standards and/or laboratory tests procedure**

No deviation from standards and/or test laboratory procedure was performed during testing.

## 9 TEST SUMMARY

The following table lists all tests called by the harmonized standards indicated in the test report introduction.

| Test Name Standards  | Test Specifications   | Minimum Performance Criterion Required | EUT Serial Number | Results |
|--|---|--|-------------------|---------|
| Conducted Emissions<br>FCC part 15 subpart B (2021)  | Class A<br>150kHz-30MHz   | N/A                                    | LABCEM#3249       | Pass    |
| Radiated Emissions<br>FCC part 15 subpart B (2021)   | Class A<br>30MHz-1GHz   | N/A                                    | LABCEM#3249       | Pass    |
| Conducted Emissions<br>ICES-003 Issue 7 (2020)   | Class A<br>150kHz-30MHz   | N/A                                    | LABCEM#3249       | Pass    |
| Radiated Emissions<br>ICES-003 Issue 7 (2020)  | Class A<br>30MHz-1GHz   | N/A                                    | LABCEM#3249       | Pass    |
| Conducted Emissions<br>EN 55032 (2015) A11 (2020)  | Class A<br>150kHz-30MHz   | N/A                                    | LABCEM#3249       | Pass    |
| Radiated Emissions<br>EN 55032 (2015) A11 (2020)   | Class A<br>30MHz-1GHz   | N/A                                    | LABCEM#3249       | Pass    |
| Harmonic Current Emission Limits<br>EN IEC 61000-3-2 (2019) A1 (2021)                            | Class A   | N/A                                    | LABCEM#3249       | Pass    |
| Voltage Fluctuations and Flicker<br>Limitations<br>EN 61000-3-3 (2013) A1 (2019)<br>A2 (2021)    | Observation period for $P_{st}$ : 10 min<br>Observation period for $P_{it}$ : 120 min               | N/A                                    | LABCEM#3249       | Pass    |
| Electrostatic Discharge Immunity<br>IEC 61000-4-2 (2008)   | Contact: $\pm 4kV$<br>Air: $\pm 2kV, \pm 4kV, \pm 8kV$  | B                                      | LABCEM#3250       | Pass    |
| Radiated Electromagnetic Field Immunity<br>IEC 61000-4-3 (2020)                                  | 80MHz-1000MHz: 3V/m<br>1800MHz, 2600MHz, 3500MHz,<br>5000MHz: 3V/m                                  | A                                      | LABCEM#3249       | Pass    |
| Electrical Fast Transient Immunity<br>IEC 61000-4-4 (2012)                                       | Power: $\pm 1kV / 5kHz$<br>I/O Ports: $\pm 0.5kV / 5kHz$<br>Communication Ports: $\pm 0.5kV / 5kHz$ | B                                      | LABCEM#3249       | Pass    |
| Surge Immunity<br>IEC 61000-4-5 (2014) A1 (2017)   | Power: $\pm 2kV$ L-PE / $\pm 1kV$ L-L<br>I/O Ports: N/A<br>Communication Ports: N/A                 | B                                      | LABCEM#3249       | Pass    |
| Immunity to Conducted Disturbances,<br>Induced by Radio-Frequency Fields<br>IEC 61000-4-6 (2013) | Power: 3V<br>I/O Ports: 3V<br>Communication Ports: 3V   | A                                      | LABCEM#3249       | Pass    |
| Power Frequency Magnetic Field<br>Immunity<br>IEC 61000-4-8 (2009)                               | Continuous Field: 1A/m / 50Hz<br>& 60Hz   | A                                      | LABCEM#3249       | Pass    |

| Test Name Standards  | Test Specifications  | Minimum Performance Criterion Required | EUT Serial Number | Results |
|--|--|--|-------------------|---------|
| Voltage Dips, Short Interruptions and Voltage Variation Immunity on AC Input IEC 61000-4-11 (2020) | Voltage dips:<br>0%Un during half cycle<br>70%Un during 25 cycles (at 50Hz)<br>70%Un during 30 cycles (at 60Hz)<br><br>Short interruptions:<br>0%Un during 250 cycles(at 50Hz)<br>0%Un during 300 cycles (at 60Hz) | B<br>C<br>C<br><br>C<br>C              | LABCEM#3249       | Pass    |

**Table 4: Test Summary**

**10 EMISSIONS TESTS****10.1 Conducted Emissions****10.1.1 Test Details**

|                           |   |
|---------------------------|---|
| <b>REFERENCE STANDARD</b> | EN 55032 (2015) A11 (2020)<br>ANSI C63.4 (2014) |
|---------------------------|---|

|                        |   |
|------------------------|---|
| <b>SPECIFICATIONS</b>  |   |
| <b>Limit</b>           | EN 55032 (2015) A11 (2020) class A<br>FCC part 15 subpart B (2021) class A<br>ICES-003 Issue 7 (2020) class A |
| <b>Frequency Range</b> | 150kHz – 30MHz  |
| <b>Installation</b>    | Table-top equipment   |

|                       |                        |
|-----------------------|------------------------|
| <b>EUT</b>            |                        |
| <b>Identification</b> | CAM300                 |
| <b>Voltage Input</b>  | 230V/50Hz<br>120V/60Hz |

|  |                           |
|--|---------------------------|
| <b>TEST INFO</b>                                   |                           |
| <b>Test Date</b><br>(yyyy-mm-dd)                   | 2022-08-16                |
| <b>Temperature</b><br>°C (For Info Only)           | 24.9°C                    |
| <b>Relative humidity</b><br>% (For Info Only)      | 43.9%                     |
| <b>Atmospheric pressure</b><br>kPa (For Info Only) | 101.9kPa                  |
| <b>Operator</b>                                    | Jean Cadotte              |
| <b>Client Witness</b>                              | Donatien Crémet (Inogeni) |

### 10.1.2 Test Equipment

| Manufacturer  | Description               | Model                   | Serial No  | Calibration Cycle (month) | Next Calibration (y-m-d)               |
|---------------|---------------------------|-------------------------|------------|---------------------------|--|
| TDK           | Emission Anechoic Chamber | 16706-1                 | 5412       | 24                        | 2022-09-04 (NSA)<br>2023-01-07 (SVSWR) |
| NEXIO         | Software                  | BAT-EMC<br>v2022.0.11.0 | N/A        | N/A                       | N/A                                    |
| Rohde&Schwarz | EMI receiver              | ESW44                   | 101905     | 12                        | 2023-01-19                             |
| NARDA         | LISN                      | PMM L2-16B              | 000WX20813 | 12                        | 2022-09-21                             |
| TESEQ         | ISN, CDN                  | ST08A                   | 33995      | 24                        | 2022-10-19                             |

**Table 5: Conducted Emissions – Test Equipment**



### 10.1.3 Test Results

| Tested Line                 | Frequency (MHz) | Average Limit (dB $\mu$ V) | Quasi-Peak Limit (dB $\mu$ V) | Results |
|-----------------------------|-----------------|----------------------------|-------------------------------|---------|
| Power – Phase (230V/50Hz)   | 0.150 – 0.50    | 66                         | 79                            | Pass    |
|                             | 0.50 – 30       | 60                         | 73                            |         |
| Power – Neutral (230V/50Hz) | 0.150 – 0.50    | 66                         | 79                            | Pass    |
|                             | 0.50 – 30       | 60                         | 73                            |         |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client.

**Table 6: Conducted Emissions – Test Results –EN55032 Class A**

| Tested Line                 | Frequency (MHz) | Average Limit (dB $\mu$ V) | Quasi-Peak Limit (dB $\mu$ V) | Results |
|-----------------------------|-----------------|----------------------------|-------------------------------|---------|
| Power – Phase (120V/60Hz)   | 0.150 – 0.50    | 66                         | 79                            | Pass    |
|                             | 0.50 – 30       | 60                         | 73                            |         |
| Power – Neutral (120V/60Hz) | 0.150 – 0.50    | 66                         | 79                            | Pass    |
|                             | 0.50 – 30       | 60                         | 73                            |         |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client.

**Table 7: Conducted Emissions – Test Results – FCC Part 15 Subpart B / ICES-003 Class A**

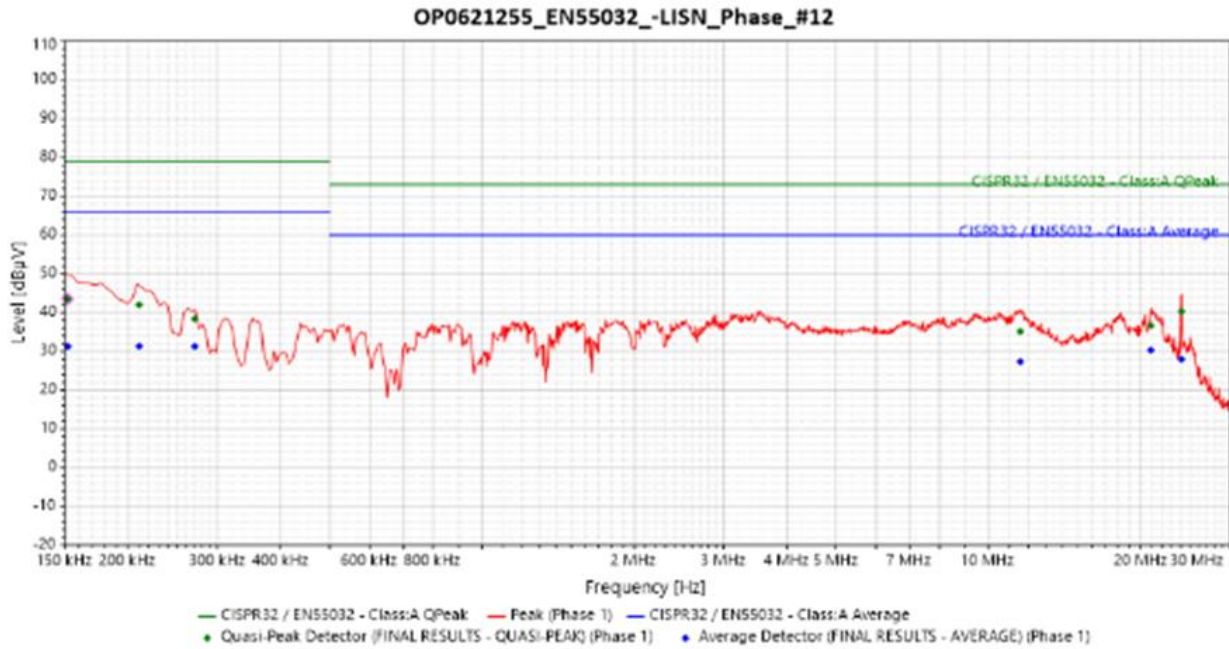
| Tested Line | Frequency (MHz) | Average Limit (dB $\mu$ V) | Quasi-Peak Limit (dB $\mu$ V) | Results |
|-------------|-----------------|----------------------------|-------------------------------|---------|
| Ethernet    | 0.150 – 0.50    | 84 to 74                   | 97 to 87                      | Pass    |
|             | 0.50 – 30       | 74                         | 87                            |         |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client.

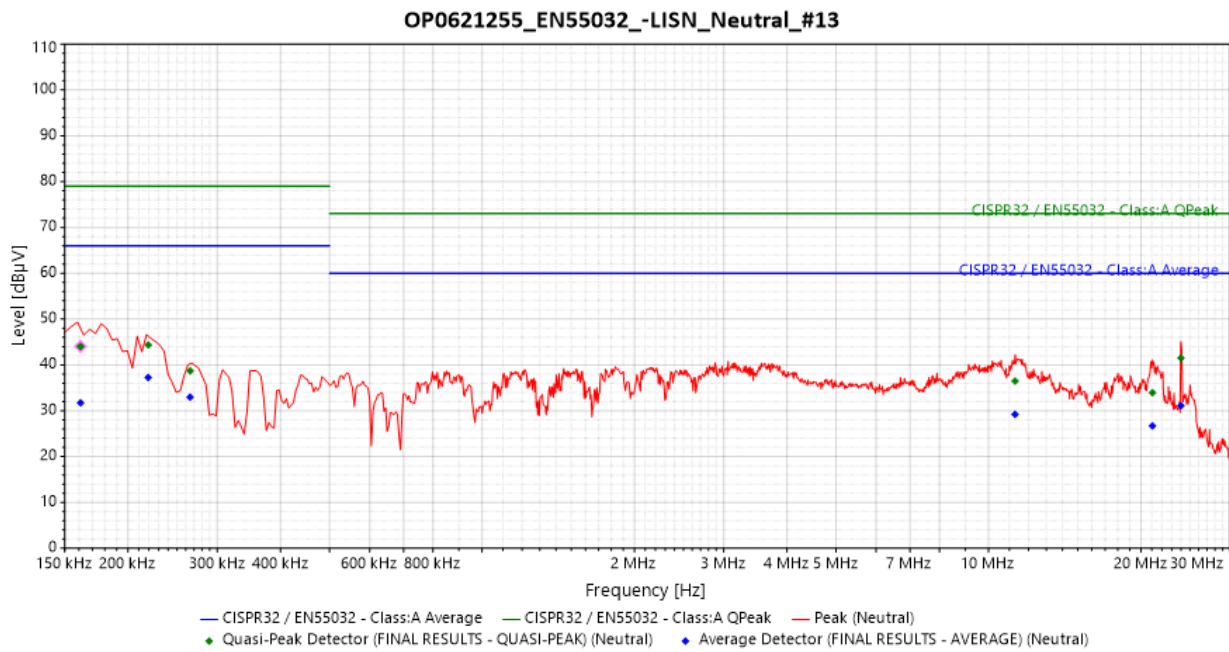
**Table 8: Conducted Emissions – Test Results – EN55032 Class A Telecom Ports**

### 10.1.4 Test Data

See APPENDIX A for data files.



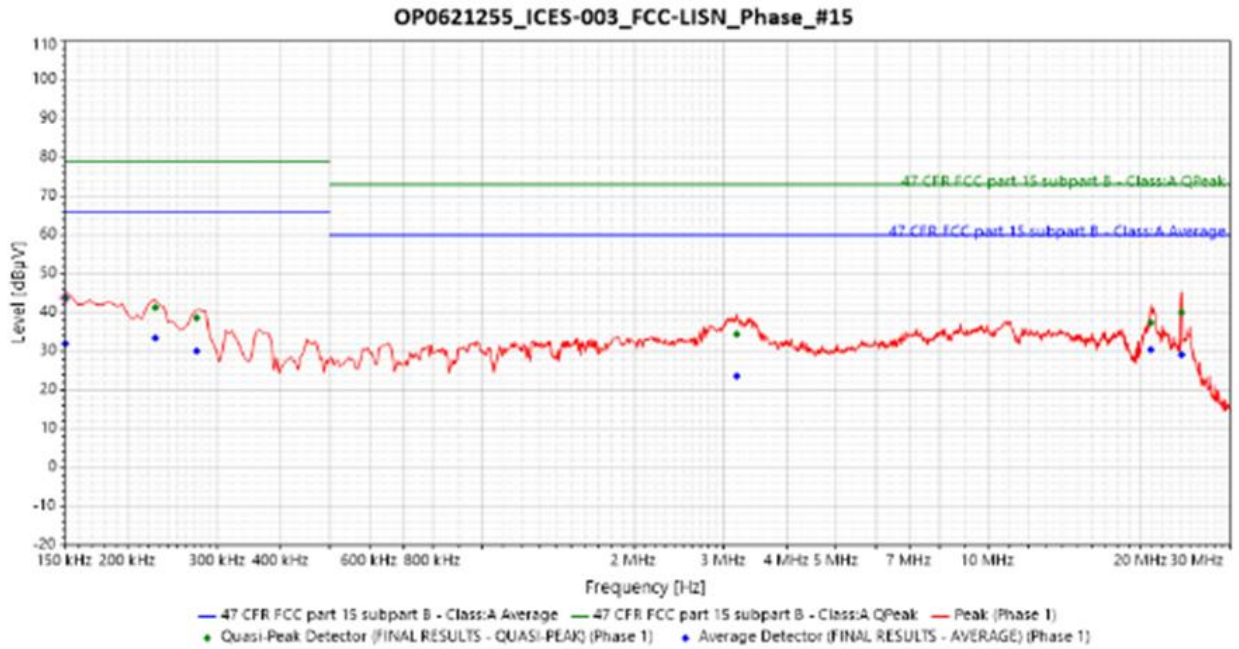
Graph 1: Conducted Emissions – EN55032 – Power – Phase



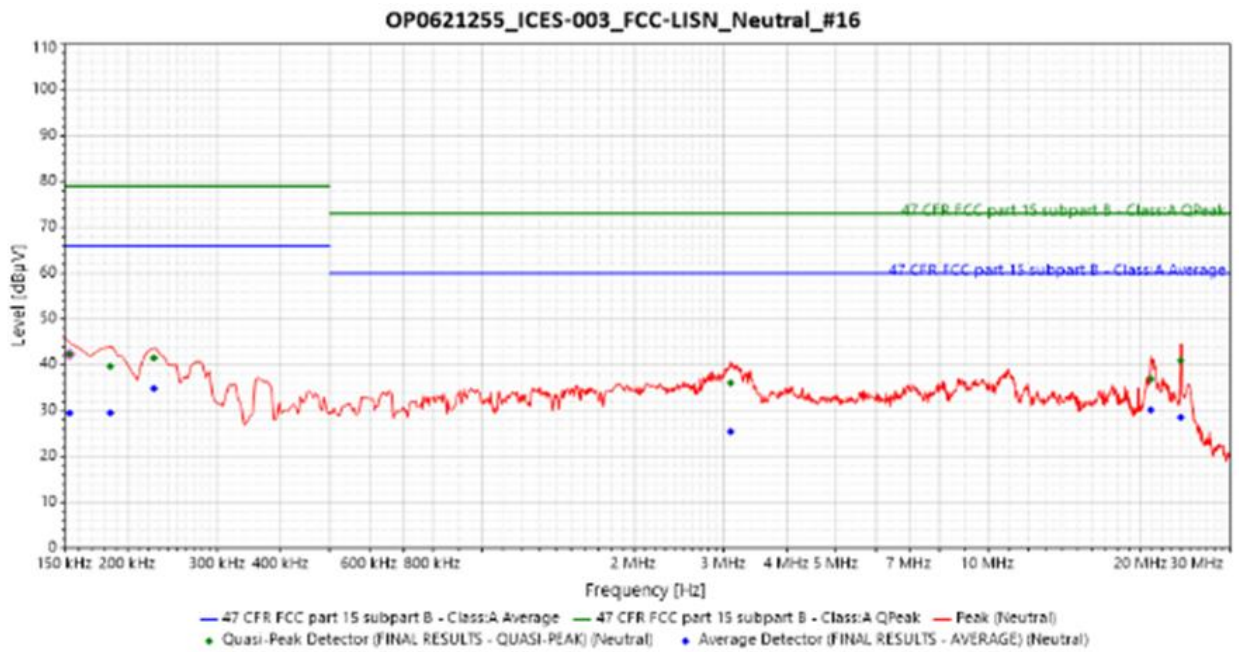
Graph 2: Conducted Emissions – EN55032 – Power – Neutral

| Tested Line                 | Frequency (MHz) | Detector | Level (dB $\mu$ V) | Limit (dB $\mu$ V) | Bandwidth (kHz) | Measurement Time (s) | Margin |
|-----------------------------|-----------------|----------|--------------------|--------------------|-----------------|----------------------|--------|
| Power – Phase (230V/50Hz)   | 20.9178         | Average  | 30.301             | 60.000             | 9 kHz           | 15                   | 29.699 |
| Power – Neutral (230V/50Hz) | 0.2193          | Average  | 37.264             | 66.000             | 9 kHz           | 15                   | 28.736 |

**Table 9: Conducted Emissions – Lowest Margin according to EN55032**



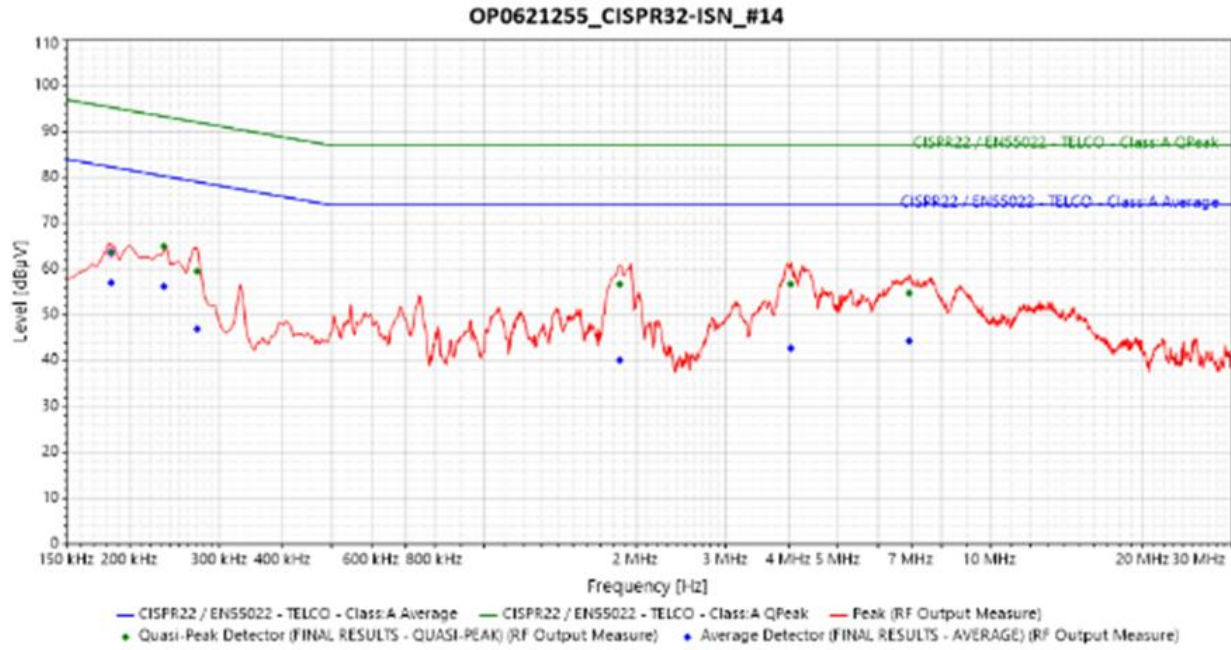
Graph 3: Conducted Emissions – ICES-003 - FCC part 15 Subpart B – Power – Phase



Graph 4: Conducted Emissions – ICES-003 - FCC part 15 Subpart B – Power – Neutral

| Tested Line                 | Frequency (MHz) | Detector | Level (dB $\mu$ V) | Limit (dB $\mu$ V) | Bandwidth (kHz) | Measurement Time (s) | Margin |
|-----------------------------|-----------------|----------|--------------------|--------------------|-----------------|----------------------|--------|
| Power – Phase (120V/60Hz)   | 20.9172         | Average  | 30.442             | 60.000             | 9 kHz           | 15                   | 29.558 |
| Power – Neutral (120V/60Hz) | 20.9171         | Average  | 30.168             | 60.000             | 9 kHz           | 15                   | 29.832 |

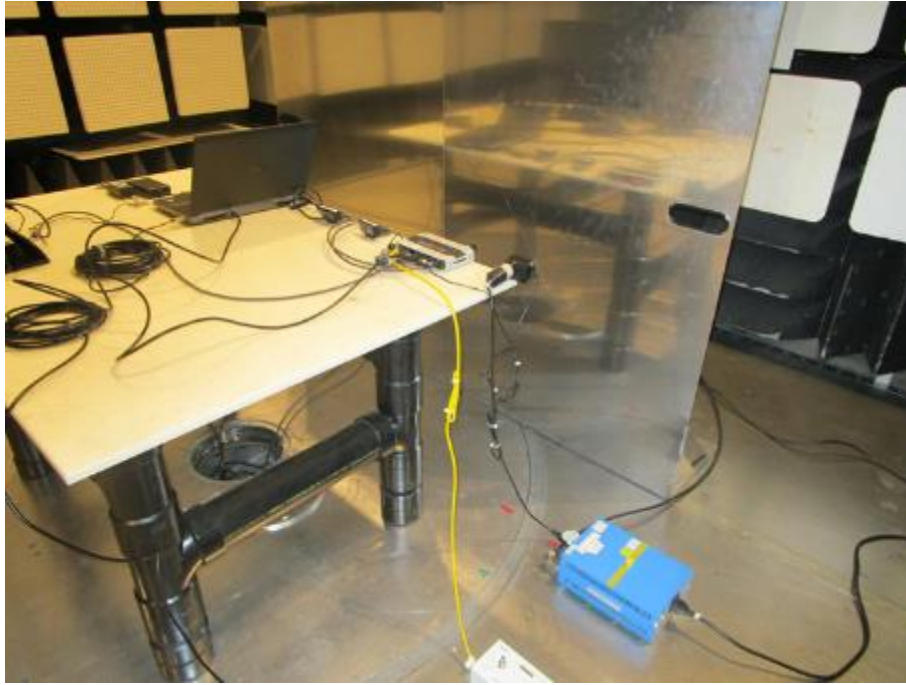
**Table 10: Conducted Emissions – Lowest Margin according to FCC Part 15 Subpart B / ICES-003**



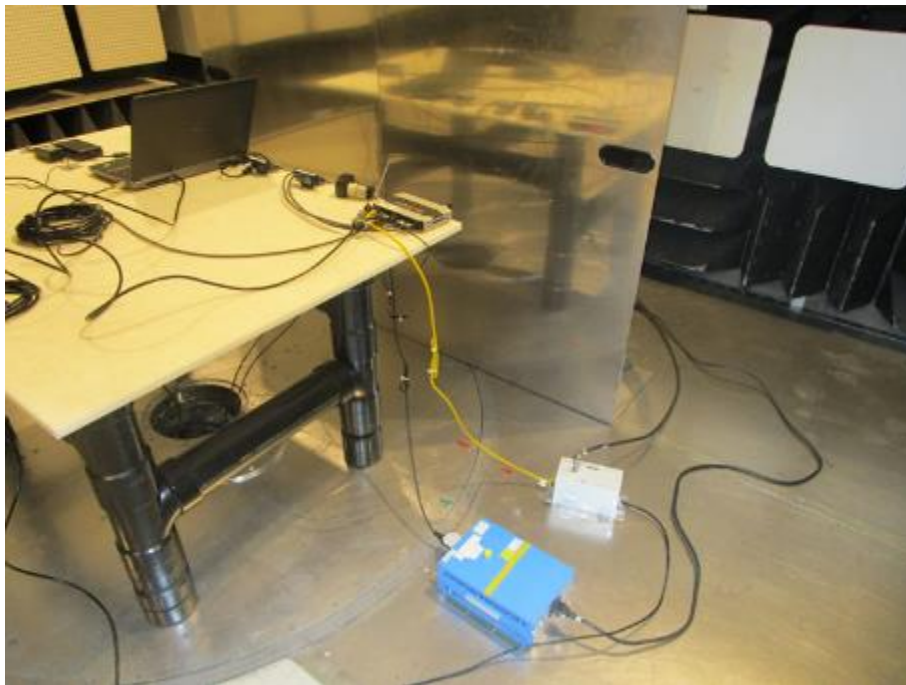
**Graph 5: Conducted Emissions – EN55032 – Telecom Ports**

| Tested Line | Frequency (MHz) | Detector | Level (dBµV) | Limit (dBµV) | Bandwidth (kHz) | Measurement Time (s) | Margin |
|-------------|-----------------|----------|--------------|--------------|-----------------|----------------------|--------|
| Ethernet    | 0.2334          | Average  | 56.249       | 80.250       | 9 kHz           | 15                   | 24.004 |

**Table 11: Conducted Emissions – Lowest Margin according to EN55032 – Telecom Ports**



**Photo 10: Conducted Emissions – Test Setup**



**Photo 11: Conducted Emissions – Telecom Ports – Test Setup**

### 10.1.5 Test Method

Conducted emissions were performed using the procedures of the reference standard.

Once the configuration or mode of operation causing the highest emission level (worst case) was determined, a scan was performed with the Peak detector in the frequency range specified by the reference standard.

Frequencies where level was above the limit or within 20dB of the limit were recorded. The level at these frequencies was measured with the detector specified by the limit.



## 10.2 Radiated Emissions

### 10.2.1 Test Details

|                           |   |
|---------------------------|---|
| <b>REFERENCE STANDARD</b> | CISPR 32 (2015) / EN 55032 (2015) A11 (2020)<br>ANSI C63.4 (2014) |
|---------------------------|---|

|                             |   |
|-----------------------------|---|
| <b>SPECIFICATIONS</b>       |   |
| <b>Limit</b>                | EN 55032 (2015) A11 (2020) class A<br>FCC part 15 subpart B (2021) class A<br>ICES-003 Issue 7 (2020) class A |
| <b>Frequency Range</b>      | 30MHz – 6GHz (EN55032 / FCC / ICES-003)<br>6GHz – 18GHz (FCC / ICES-003)                                      |
| <b>Measurement Distance</b> | 3m  |
| <b>Installation</b>         | Table-top equipment   |

|                       |           |
|-----------------------|-----------|
| <b>EUT</b>            |           |
| <b>Identification</b> | CAM300    |
| <b>Voltage Input</b>  | 230V/50Hz |

|  |   |
|--|---|
| <b>TEST INFO</b>                                   |   |
| <b>Test Date</b><br>(yyyy-mm-dd)                   | 2022-08-15  |
| <b>Temperature</b><br>°C (For Info Only)           | 23.4°C  |
| <b>Relative humidity</b><br>% (For Info Only)      | 46.3%   |
| <b>Atmospheric pressure</b><br>kPa (For Info Only) | 101.7kPa  |
| <b>Operator</b>                                    | Jean Cadotte  |
| <b>Client Witness</b>                              | Donatien Crémet (Inogeni)<br>Gilles Chouinard (Inogeni) |

## 10.2.2 Test Equipment

| Manufacturer               | Description               | Model                | Serial No    | Calibration Cycle (month) | Next Calibration (y-m-d)               |
|----------------------------|---------------------------|----------------------|--------------|---------------------------|--|
| TDK                        | Emission Anechoic Chamber | 16706-1              | 5412         | 24                        | 2022-09-04 (NSA)<br>2023-01-07 (SVSWR) |
| Sunol Sciences Corporation | Antenna Positioning Tower | TLT2                 | LABCEM #0181 | N.C.R.                    | N.C.R.                                 |
| Sunol Sciences Corporation | Flush Mount Turntable     | FM2011VS/2022VS      | LABCEM #0182 | N.C.R.                    | N.C.R.                                 |
| Sunol Sciences Corporation | System Controller         | SC110V               | LABCEM #0183 | N.C.R.                    | N.C.R.                                 |
| NEXIO                      | Software                  | BAT-EMC v2022.0.11.0 | N/A          | N/A                       | N/A                                    |
| Rohde&Schwarz              | EMI receiver              | ESW44                | 101905       | 12                        | 2023-01-19                             |
| Schaffner                  | Bilog antenna             | CBL6112D             | 22617        | 24                        | 2023-06-28                             |
| Amplical                   | Amplifier 1GHz-18GHz      | AMP1G18-30-N/PSU     | 121212       | 12                        | 2022-12-22                             |
| Com-Power                  | Horn antenna              | AH-118               | 071324       | 24                        | 2024-08-03                             |

Table 12: Radiated Emissions – Test Equipment

### 10.2.3 Test Results

| Frequency (MHz) | Quasi-Peak Limit extrapolated at 3m (dB $\mu$ V/m) | Average Limit at 3m (dB $\mu$ V/m) | Peak Limit at 3m (dB $\mu$ V/m) | Results |
|-----------------|--|------------------------------------|---------------------------------|---------|
| 30 – 230        | 50   | -                                  | -                               | Pass    |
| 230 – 1000      | 57   | -                                  | -                               |         |
| 1000 – 3000     | -  | 56                                 | 76                              | Pass    |
| 3000 – 6000     | -  | 60                                 | 80                              |         |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client.

**Table 13: Radiated Emissions – Test Results – EN55032 Class A**

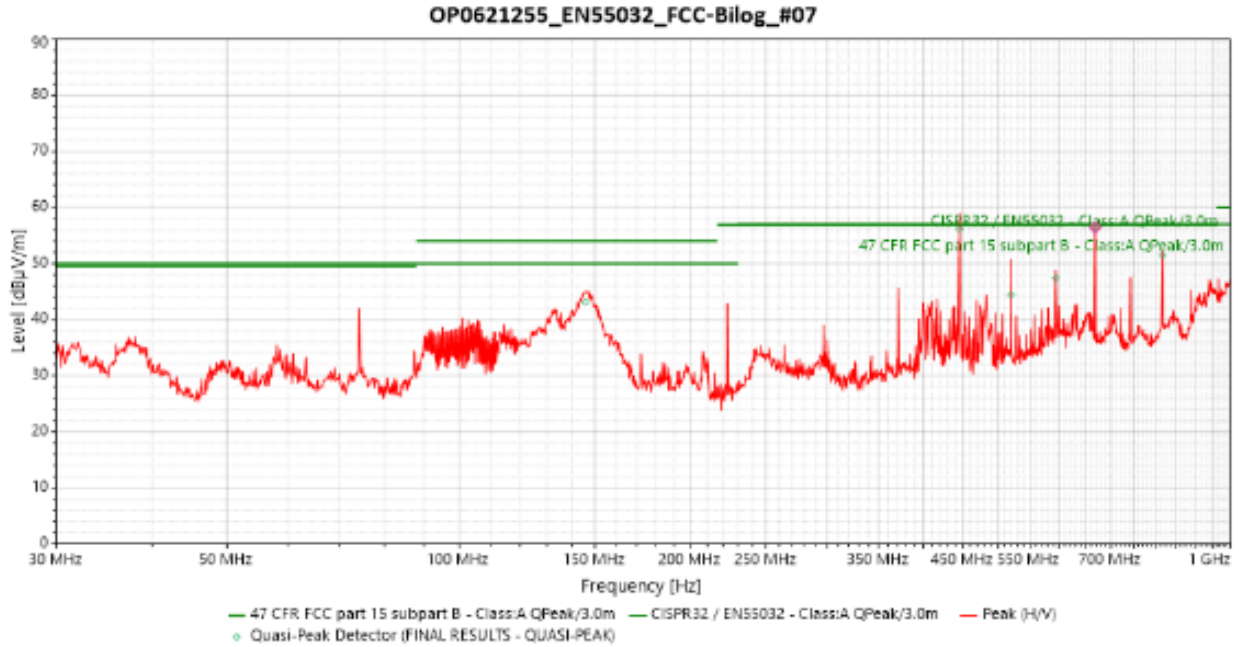
| Frequency (MHz) | Quasi-Peak Limit extrapolated at 3m (dB $\mu$ V/m) | Average Limit at 3m (dB $\mu$ V/m) | Peak Limit at 3m (dB $\mu$ V/m) | Results |
|-----------------|--|------------------------------------|---------------------------------|---------|
| 30 – 88         | 49.5   | -                                  | -                               | Pass    |
| 88 – 216        | 54.0   | -                                  | -                               |         |
| 216 – 960       | 56.9   | -                                  | -                               |         |
| 960 – 1000      | 60.0   | -                                  | -                               |         |
| 1000 – 18000    | -  | 60                                 | 80                              | Pass    |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client.

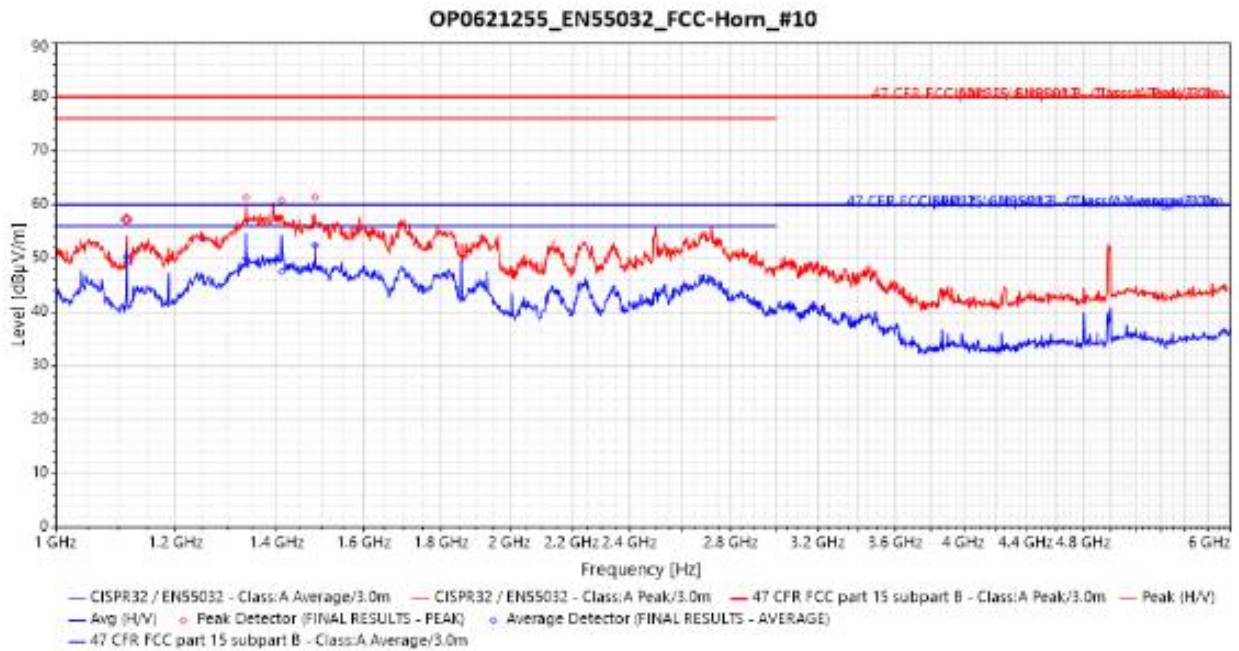
**Table 14: Radiated Emissions – Test Results – FCC Part 15 Subpart B / ICES-003 Class A**

### 10.2.4 Test Data

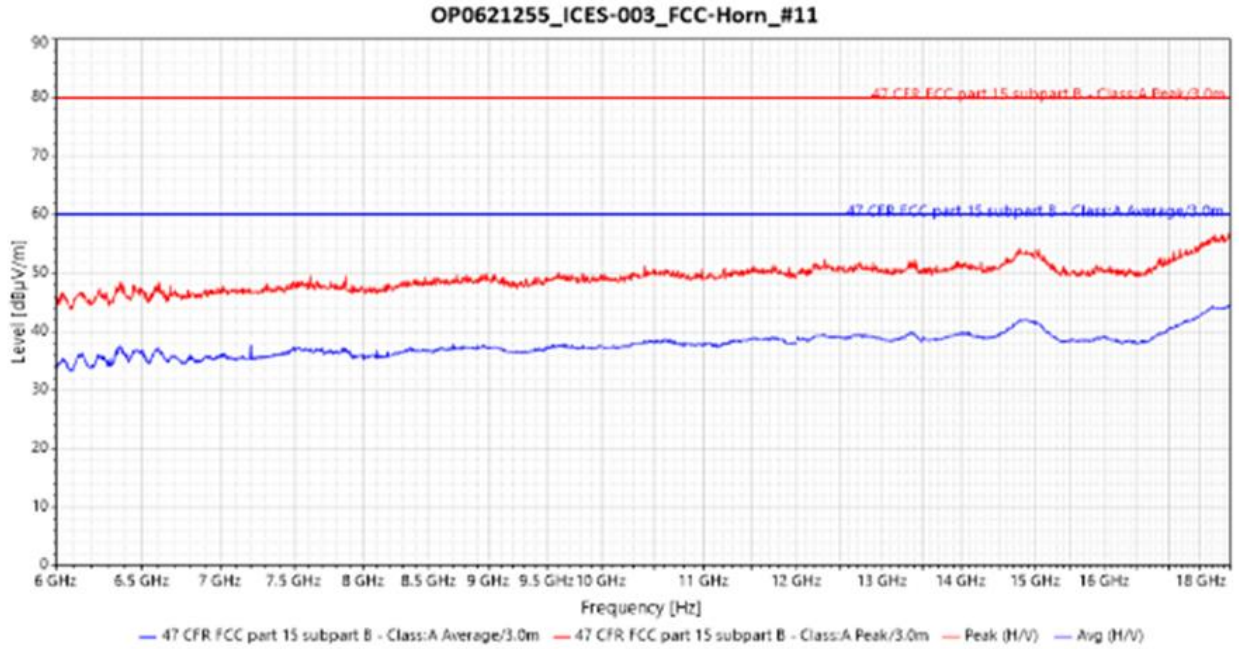
See APPENDIX B for data files.



Graph 6: Radiated Emissions 30MHz-1GHz



Graph 7: Radiated Emissions 1GHz-6GHz



Graph 8: Radiated Emissions 6GHz-18GHz

| Frequency (MHz) | Detector   | Level (dBµV/m) | Limit (dBµV/m) | Bandwidth (kHz) | Measurement Time(s) | Margin (dB) |
|-----------------|------------|----------------|----------------|-----------------|---------------------|-------------|
| 668.2791        | Quasi-Peak | 56.458         | 57.000         | 120             | 15                  | 0.542       |
| 1485.0648       | Average    | 52.437         | 56.000         | 1000            | 15                  | 3.563       |

Table 15: Radiated Emissions – Lowest Margin according to EN55032

| Frequency (MHz) | Detector   | Level (dBµV/m) | Limit (dBµV/m) | Bandwidth (kHz) | Measurement Time(s) | Margin (dB) |
|-----------------|------------|----------------|----------------|-----------------|---------------------|-------------|
| 668.2791        | Quasi-Peak | 56.458         | 56.900         | 120             | 15                  | 0.442       |
| 1485.0648       | Average    | 52.437         | 60.000         | 1000            | 15                  | 7.563       |

Table 16: Radiated Emissions – Lowest Margin according to FCC Part 15 Subpart B / ICES-003

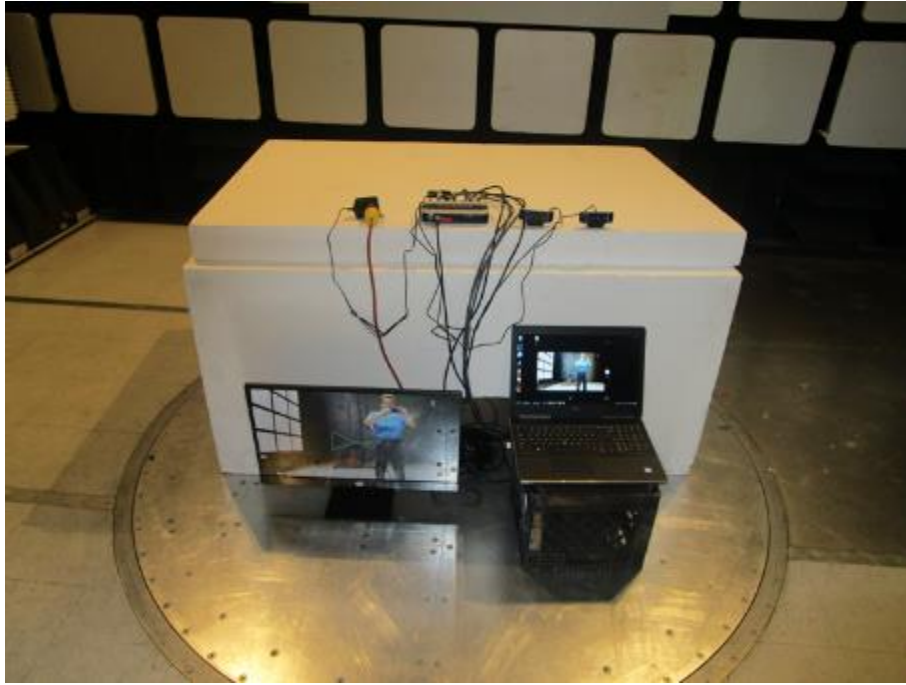


Photo 12: Radiated Emissions – Test Setup

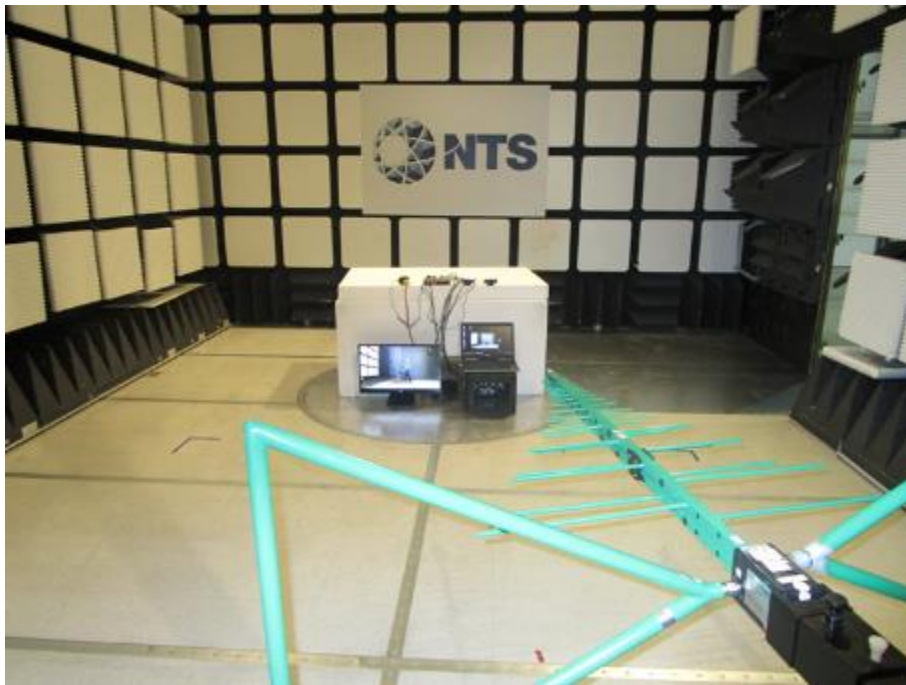


Photo 13: Radiated Emissions – Test Setup 30MHz-1GHz

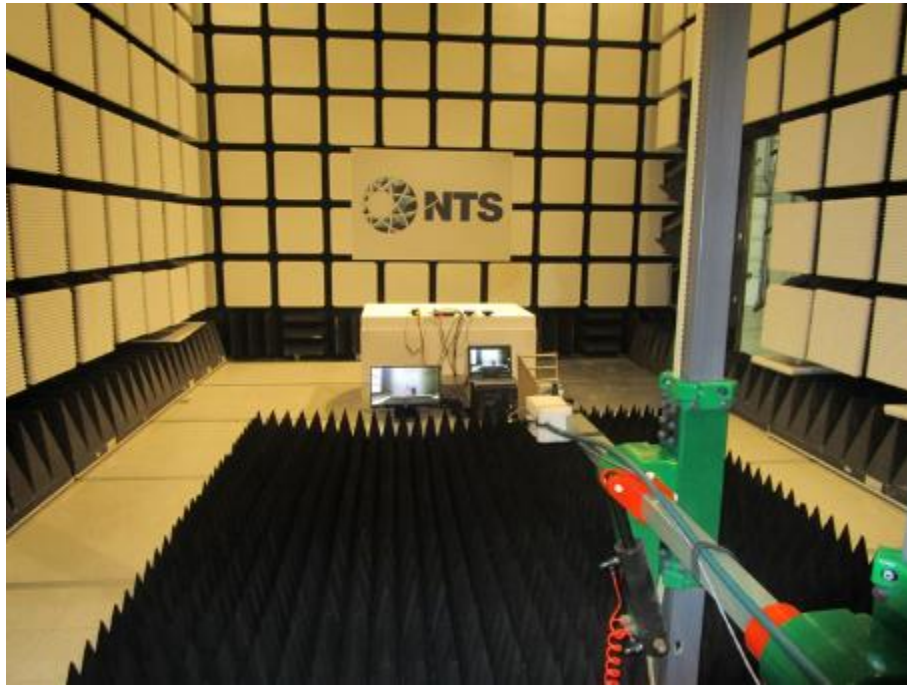


Photo 14: Radiated Emissions – Test Setup 1GHz-18GHz



Photo 15: Radiated Emissions – Support Equipment

### 10.2.5 Test Method

Radiated emissions were performed using the procedures of the reference standard.

Once the configuration or mode of operation causing the highest emission level (worst case) was determined, spectral previews were performed with the Peak detector in the frequency range specified by the reference standard.

Frequencies where level was above the limit or within 10 dB of the limit were recorded. The level at these frequencies was maximized and measured with the detector specified by the limit.

Note: FCC measurements combined with CISPR measurements for frequency above 1 GHz  
Measurement methods of radiated emissions are slightly different between FCC regulation and CISPR standard. The FCC through ANSI C63.4 requires boresighting (tilt) and CISPR16-2-3 does not. For better efficiency, only the boresighting method is carried out, which may increase the level of disturbances during the final evaluation with the CISPR limit.



### 10.3 Harmonic Current Emissions

#### 10.3.1 Test Details

**REFERENCE STANDARD** EN IEC 61000-3-2 (2019) A1 (2021)

**SPECIFICATIONS**  
**Limit** Class A

**EUT**  
**Identification** CAM300  
**Voltage Input** 230V/50Hz

**TEST INFO**  
**Test Date** 2022-08-17  
(yyyy-mm-dd)  
**Temperature** 23.7°C  
°C (For Info Only)  
**Relative humidity** 48.9%  
% (For Info Only)  
**Atmospheric pressure** 101.9kPa  
kPa (For Info Only)  
**Operator** Jean Cadotte  
**Client Witness** Donatien Crémet (Inogeni)

#### 10.3.2 Test Equipment

| Manufacturer | Description        | Model        | Serial No             | Calibration Cycle (month) | Next Calibration (y-m-d) |
|--------------|--------------------|--------------|-----------------------|---------------------------|--------------------------|
| TESEQ        | Software           | Win2100 v4.9 | N/A                   | N/A                       | N/A                      |
| TESEQ        | AC-DC Power source | NSG 1007     | 1232A04499 (NSG 1007) | 12                        | 2022-09-14               |

**Table 17: Harmonic Current Emissions – Test Equipment**

**10.3.3 Test Results**

| Class A <input checked="" type="checkbox"/>  | Class B <input type="checkbox"/> | Class C <input type="checkbox"/> | Class D <input type="checkbox"/> |
|--|----------------------------------|----------------------------------|----------------------------------|
| <p>Class A:<br/>Equipment not specified as belonging to Class B, C or D shall be considered as Class A equipment.</p> <ul style="list-style-type: none"> <li>• balanced three-phase equipment;</li> <li>• household appliances, excluding those specified as belonging to Class B, C or D;</li> <li>• vacuum cleaners;</li> <li>• high pressure cleaners;</li> <li>• tools, excluding portable tools;</li> <li>• independent phase control dimmers;</li> <li>• audio equipment;</li> <li>• professional luminaires for stage lighting and studios.</li> </ul> <p>NOTE 1 Equipment that can be shown to have a significant effect on the supply system may be reclassified in a future of this document, taking into account the following factors:</p> <ul style="list-style-type: none"> <li>– number of pieces of equipment in use;</li> <li>– duration of use;</li> <li>– simultaneity of use;</li> <li>– power consumption;</li> <li>– harmonic spectrum, including phase.</li> </ul> <p>Class B:</p> <ul style="list-style-type: none"> <li>• portable tools;</li> <li>• arc welding equipment which is not professional equipment.</li> </ul> <p>Class C:</p> <ul style="list-style-type: none"> <li>• lighting equipment.</li> </ul> <p>Class D:<br/>Equipment having a specified power according to 6.3.2 less than or equal to 600 W, of the following types:</p> <ul style="list-style-type: none"> <li>• personal computers and personal computer monitors;</li> <li>• television receivers;</li> <li>• refrigerators and freezers having one or more variable-speed drives to control compressor motor(s).</li> </ul> <p>NOTE 2 Class D limits are reserved for equipment that, by virtue of the factors listed in note 1, can be shown to have a pronounced effect on the public electricity supply system.</p> <p>*Starting and stopping<br/>When a piece of equipment is brought into operation or is taken out of operation, manually or automatically, harmonic currents and power are not taken into account for the first 10 s following the switching event.<br/>The equipment under test shall not be in stand-by mode (see 3.14) for more than 10 % of any observation period.</p> |                                  |                                  |                                  |

**Table 18: Harmonic Current Emissions – Classification of Equipment**

| Tested Line          | Limit   | Observation Time (min) | Results |
|----------------------|---------|------------------------|---------|
| Power<br>(230V/50Hz) | Class A | 10                     | Pass    |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client.

**Table 19: Harmonic Current Emissions – Test Results**

### 10.3.4 Test Data

See APPENDIX C for data files



**Photo 16: Harmonic Current Emissions – Test Setup**

### 10.3.5 Test Method

Harmonic current emissions measurements were performed using the procedures of the reference standard.

## 10.4 Voltage Fluctuations and Flicker Measurements

### 10.4.1 Test Details

|                           |   |
|---------------------------|---|
| <b>REFERENCE STANDARD</b> | EN 61000-3-3 (2013) A1 (2019) A2 (2021) |
|---------------------------|---|

|  |         |
|--|---------|
| <b>SPECIFICATIONS</b>                    |         |
| <b>P<sub>st</sub> Observation Period</b> | 10 min  |
| <b>P<sub>ft</sub> Observation Period</b> | 120 min |

|                         |           |
|-------------------------|-----------|
| <b>EUT</b>              |           |
| <b>Identification</b>   | CAM300    |
| <b>Voltage Input</b>    | 230V/50Hz |
| <b>Manual Switching</b> | NO        |

|  |                           |
|--|---------------------------|
| <b>TEST INFO</b>                                   |                           |
| <b>Test Date</b><br>(yyyy-mm-dd)                   | 2022-08-17                |
| <b>Temperature</b><br>°C (For Info Only)           | 23.7°C                    |
| <b>Relative humidity</b><br>% (For Info Only)      | 48.9%                     |
| <b>Atmospheric pressure</b><br>kPa (For Info Only) | 101.9kPa                  |
| <b>Operator</b>                                    | Jean Cadotte              |
| <b>Client Witness</b>                              | Donatien Crémet (Inogeni) |

#### 10.4.2 Test Equipment

| Manufacturer | Description        | Model        | Serial No               | Calibration Cycle (month) | Next Calibration (y-m-d) |
|--------------|--------------------|--------------|-------------------------|---------------------------|--------------------------|
| TESEQ        | Software           | Win2100 v4.9 | N/A                     | N/A                       | N/A                      |
| TESEQ        | AC-DC Power source | NSG 1007     | 1232A04499 (NSG 1007)   | 12                        | 2022-09-14               |
| TESEQ        | Lumped impedance   | CCN 1000-1   | 1232A04499 (CCN 1000-1) | 12                        | 2022-09-14               |

**Table 20: Voltage Fluctuations and Flicker Measurements – Test Equipment**

#### 10.4.3 Test Results

| Parameters                                 | Limit | Results |
|--|-------|---------|
| Short-term flicker value: $P_{st}$         | 1.0   | Pass    |
| Long-term flicker value: $P_{lt}$          | 0.65  | Pass    |
| Voltage change for more than 500ms: $d(t)$ | 3.3%  | Pass    |
| Relative steady state voltage change: $dc$ | 3.3%  | Pass    |
| Maximum relative voltage change: $d_{max}$ | 4%    | Pass    |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client.

**Table 21: Voltage Fluctuations and Flicker Measurements – Test Results**

#### 10.4.4 Test Data

See APPENDIX D for data files

Test setup was identical to harmonic current emissions measurements.

#### 10.4.5 Test Method

Voltage fluctuations and flicker measurements were performed using the procedures of the reference standard.

## 11 IMMUNITY TESTS

### 11.1 Electrostatic Discharge Immunity

#### 11.1.1 Test Details

|                           |                      |
|---------------------------|----------------------|
| <b>REFERENCE STANDARD</b> | IEC 61000-4-2 (2008) |
|---------------------------|----------------------|

|                             |  |
|-----------------------------|--|
| <b>SPECIFICATIONS</b>       |  |
| <b>Test Level</b>           | Contact: $\pm 4\text{kV}$<br>Air: $\pm 2\text{kV}$ , $\pm 4\text{kV}$ , $\pm 8\text{kV}$ |
| <b>Installation</b>         | Table-top equipment  |
| <b>Ungrounded Equipment</b> | YES  |

|                              |   |
|------------------------------|---|
| <b>PERFORMANCE CRITERION</b> | B |
|------------------------------|---|

|                       |           |
|-----------------------|-----------|
| <b>EUT</b>            |           |
| <b>Identification</b> | CAM300    |
| <b>Voltage Input</b>  | 230V/50Hz |

|   |                           |
|---|---------------------------|
| <b>TEST INFO</b>                                      |                           |
| <b>Test Date</b><br>(yyyy-mm-dd)                      | 2022-08-18                |
| <b>Temperature</b><br>Min 15°C – Max 35°C             | 24.1°C                    |
| <b>Relative Humidity</b><br>Min 30% - Max 60%         | 50.6%                     |
| <b>Atmospheric Pressure</b><br>Min 86kPa – Max 106kPa | 101kPa                    |
| <b>Operator</b>                                       | Jean Cadotte              |
| <b>Client Witness</b>                                 | Donatien Cr met (Inogeni) |

## 11.1.2 Test Equipment

| Manufacturer | Description                     | Model       | Serial No         | Calibration Cycle (month) | Next Calibration (y-m-d) |
|--------------|---------------------------------|-------------|-------------------|---------------------------|--------------------------|
| Vaisala      | Thermo-Hygrometer               | MI70/HMP77  | H4610004/JO430012 | 24                        | 2023-08-13               |
| EMC-Partner  | Discharge Generator             | ESD3000     | 1550              | 18                        | 2023-04-06               |
| EMC-Partner  | Relay Module                    | ESD3000RM32 | 1892              | 18                        | 2023-04-06               |
| EMC-Partner  | Discharge Network 150pF/330Ohms | ESD3000DN1  | 1551              | 18                        | 2023-04-06               |

Table 22: ESD – Test Equipment

## 11.1.3 Test Results

| Coupling Plane | Position | Polarity Test Level (kV) | Number    | Time Interval (s) | Generator Perpendicular | Comments | Results |
|----------------|----------|--------------------------|-----------|-------------------|-------------------------|----------|---------|
| HCP            | Front    | ±4                       | 10+ / 10- | 1                 | YES                     | No event | Pass    |
| VCP            | Front    | ±4                       | 10+ / 10- | 1                 | YES                     | No event | Pass    |
|                | Right    | ±4                       | 10+ / 10- | 1                 | YES                     | No event | Pass    |
|                | Rear     | ±4                       | 10+ / 10- | 1                 | YES                     | No event | Pass    |
|                | Left     | ±4                       | 10+ / 10- | 1                 | YES                     | No event | Pass    |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail.

Table 23: ESD – Test Results – Indirect Discharges – CAM300

| Coupling Plane | Position | Polarity Test Level (kV) | Number    | Time Interval (s) | Generator Perpendicular | Comments | Results |
|----------------|----------|--------------------------|-----------|-------------------|-------------------------|----------|---------|
| HCP            | Front    | ±4                       | 10+ / 10- | 1                 | YES                     | No event | Pass    |
| VCP            | Front    | ±4                       | 10+ / 10- | 1                 | YES                     | No event | Pass    |
|                | Right    | ±4                       | 10+ / 10- | 1                 | YES                     | No event | Pass    |
|                | Rear     | ±4                       | 10+ / 10- | 1                 | YES                     | No event | Pass    |
|                | Left     | ±4                       | 10+ / 10- | 1                 | YES                     | No event | Pass    |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail.

Table 24: ESD – Test Results – Indirect Discharges – PSU

| ESD Point  | ESD Type | Test Level (kV) | Number    | Time Interval (s) | Generator Perpendicular | Comments | Results |
|--|----------|-----------------|-----------|-------------------|-------------------------|----------|---------|
| C1 to C14  | Contact  | ±4              | 10+ / 10- | 1                 | YES                     | No event | Pass    |
| NONE   | Air      | ±2, ±4, ±8      | 10+ / 10- | 1                 | N/A                     | Note 1   | Pass    |
| The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail. |          |                 |           |                   |                         |          |         |
| Note 1: After discharge points research, no possible air discharge was found on the EUT.   |          |                 |           |                   |                         |          |         |

**Table 25: ESD – Test Results – Direct Discharges – CAM300**

| ESD Point  | ESD Type | Test Level (kV) | Number    | Time Interval (s) | Generator Perpendicular | Comments | Results |
|--|----------|-----------------|-----------|-------------------|-------------------------|----------|---------|
| NONE   | Contact  | ±4              | 10+ / 10- | 1                 | N/A                     | Note 1   | Pass    |
| NONE   | Air      | ±2, ±4, ±8      | 10+ / 10- | 1                 | N/A                     | Note 2   | Pass    |
| The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail. |          |                 |           |                   |                         |          |         |
| Note 1: After discharge points research, no possible contact discharge was found on the EUT.   |          |                 |           |                   |                         |          |         |
| Note 2: After discharge points research, no possible air discharge was found on the EUT.   |          |                 |           |                   |                         |          |         |

**Table 26: ESD – Test Results – Direct Discharges – PSU**



11.1.4 Test Data

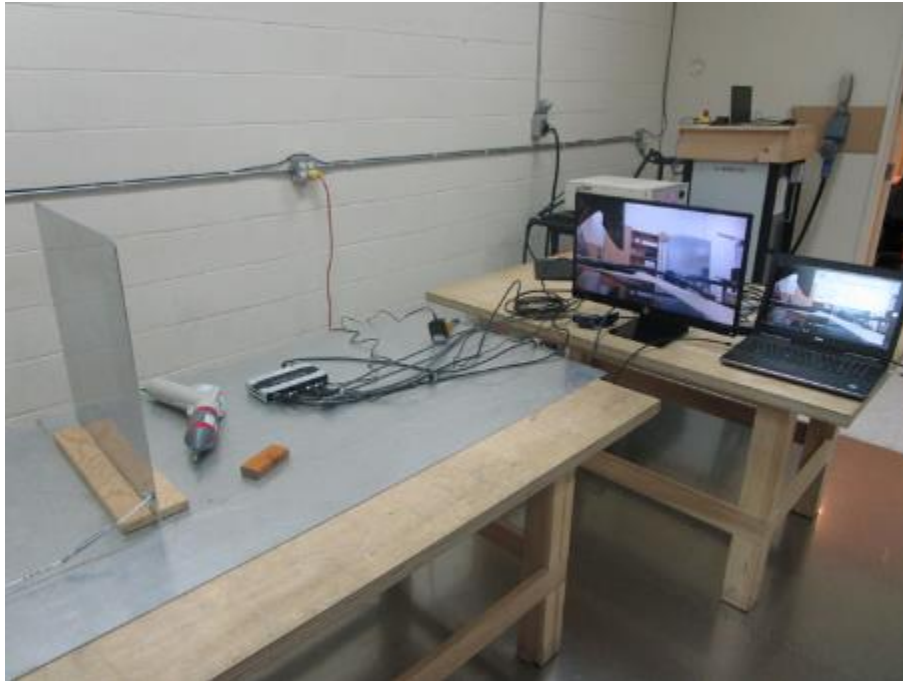


Photo 17: ESD – Test Setup

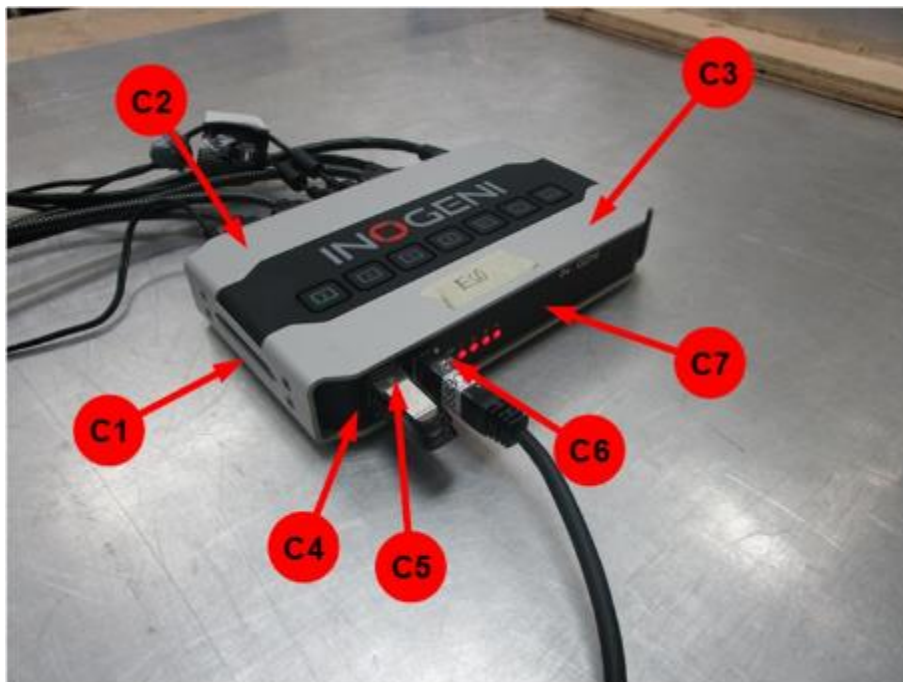


Photo 18: ESD – Location of Discharge Points #1

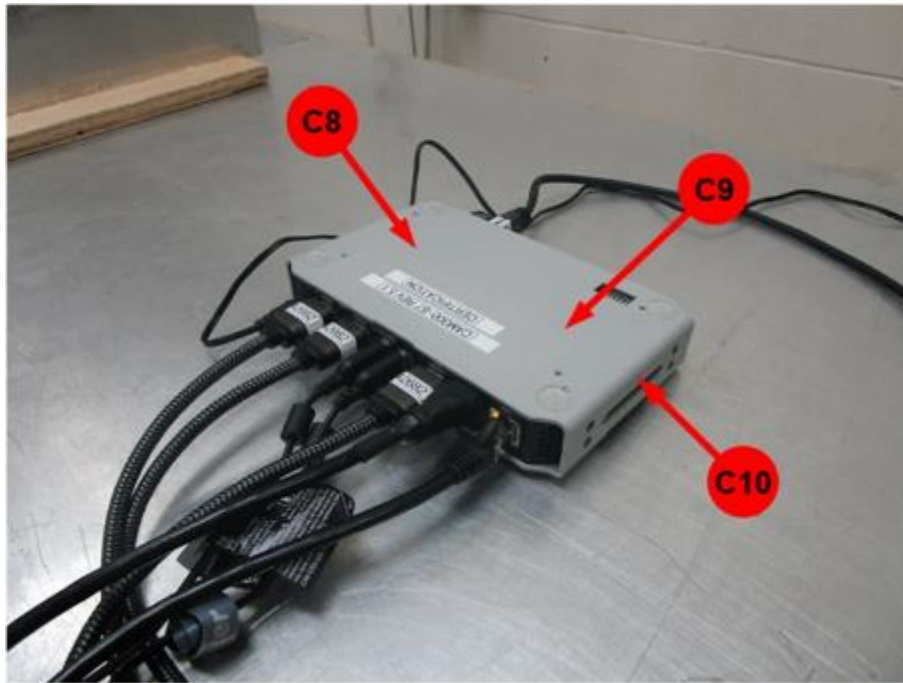


Photo 19: ESD – Location of Discharge Points #2

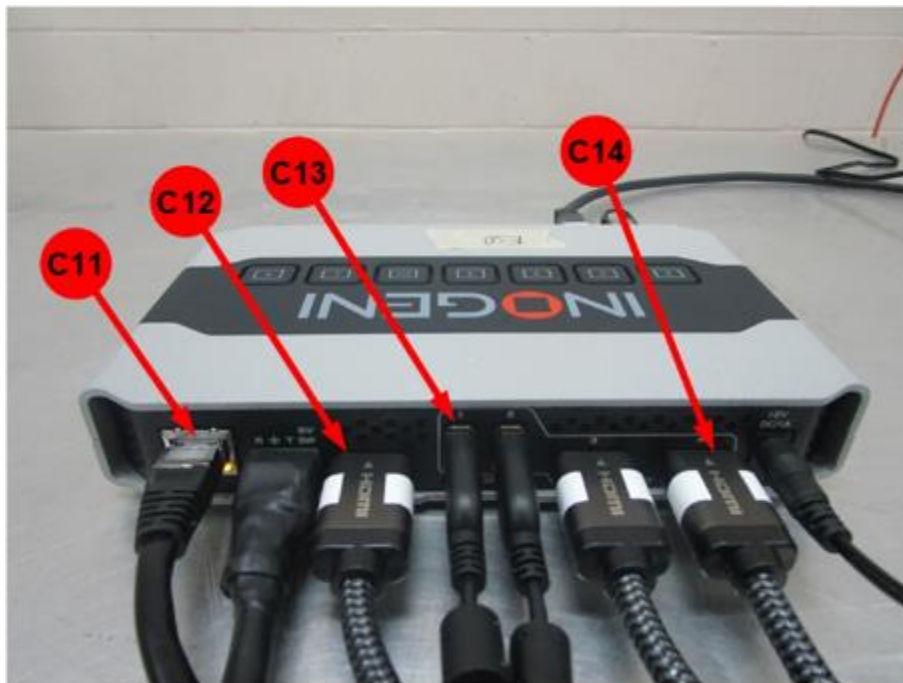


Photo 20: ESD – Location of Discharge Points #3

### 11.1.5 Test Method

Electrostatic discharge immunity tests were performed using the procedures of the reference standard.

Application of direct discharges was applied to points and surfaces of EUT which are accessible to person during normal use. If contact discharge cannot be applied, the air discharge method shall be performed.

Application of indirect discharges was applied to the horizontal coupling plane (0.1m from the front of EUT) and to vertical coupling plane (VCP is positioned at 0.1m from EUT in order to illuminate the four faces of EUT).

## 11.2 Radiated Electromagnetic Field Immunity

### 11.2.1 Test Details

|  |                              |                              |                              |
|--|------------------------------|------------------------------|------------------------------|
| <b>REFERENCE STANDARD</b>                          | IEC 61000-4-3 (2020)         |                              |                              |
| <b>SPECIFICATIONS</b>                              |                              |                              |                              |
| <b>TEST</b>  | <b>#1</b>                    | <b>#2</b>                    | <b>#3</b>                    |
| <b>Frequency Range</b>                             | 80MHz-1000MHz                | 1.8GHz, 2.6GHz               | 3.5GHz, 5.0GHz               |
| <b>Test Level</b>                                  | 3V/m                         | 3V/m                         | 3V/m                         |
| <b>Test Distance</b>                               | 2m                           | 2m                           | 2.7m                         |
| <b>Uniformity Field Area</b>                       | 1.5m x 1.5m<br>Height @ 80cm | 1.5m x 1.5m<br>Height @ 80cm | 1.5m x 1.5m<br>Height @ 80cm |
| <b>Modulation</b>                                  | AM 80% / 1kHz                | AM 80% / 1kHz                | AM 80% / 1kHz                |
| <b>Frequency Step</b>                              | 1%                           | N/A                          | N/A                          |
| <b>Dwell Time</b>                                  | 0.5s                         | 10s                          | 10s                          |
| <b>Illuminated Face</b>                            | 4                            |                              |                              |
| <b>Installation</b>                                | Table-top equipment          |                              |                              |
| <b>PERFORMANCE CRITERION</b>                       | A                            |                              |                              |
| <b>EUT</b>   |                              |                              |                              |
| <b>Identification</b>                              | CAM300                       |                              |                              |
| <b>Voltage Input</b>                               | 230V/50Hz                    |                              |                              |
| <b>TEST INFO</b>                                   |                              |                              |                              |
| <b>Test Date</b><br>(yyyy-mm-dd)                   | 2022-08-17                   |                              |                              |
| <b>Temperature</b><br>°C (For Info Only)           | 23.7°C                       |                              |                              |
| <b>Relative humidity</b><br>% (For Info Only)      | 48.9%                        |                              |                              |
| <b>Atmospheric pressure</b><br>kPa (For Info Only) | 101.9kPa                     |                              |                              |
| <b>Operator</b>                                    | Jean Cadotte                 |                              |                              |
| <b>Client Witness</b>                              | Donatien Crémet (Inogeni)    |                              |                              |

## 11.2.2 Test Equipment

| Manufacturer            | Description                            | Model                | Serial No  | Calibration Cycle (month) | Next Calibration (y-m-d) |
|-------------------------|--|----------------------|------------|---------------------------|--------------------------|
| TDK                     | Immunity Anechoic Chamber              | 16706-2              | 5712       | N/A                       | N/A                      |
| NEXIO                   | Software                               | BAT-EMC v2022.0.11.0 | N/A        | N/A                       | N/A                      |
| TESEQ                   | Signal generator                       | ITS 6006             | 33007      | 12                        | 2022-08-02<br>Note 1     |
| Werlatone               | Directional coupler (80MHz-1GHz)       | C3908-10             | 98552      | 12                        | 2022-12-22               |
| Werlatone               | Directional coupler (0.8GHz-3GHz)      | C6721-10             | 98746      | 12                        | 2022-12-22               |
| Amplifier Research (AR) | Dual Directional Coupler, 2-8GHz, 600W | DC7281A              | 348875     | 12                        | 2023-03-29               |
| TESEQ                   | Power meter                            | PM 6006              | 72804      | 12                        | 2022-08-05<br>Note 1     |
| TESEQ                   | Power meter                            | PM 6006              | 72805      | 12                        | 2022-08-05<br>Note 1     |
| TESEQ                   | Power meter                            | PM 6006              | 77352      | 12                        | 2022-08-05<br>Note 1     |
| TESEQ                   | Power meter                            | PM 6006              | 77353      | 12                        | 2022-08-05<br>Note 1     |
| Rohde & Schwarz         | 3-Path Diode Power Sensor 10MHz-18GHz  | NRP18SN              | 102193     | 12                        | 2023-04-29               |
| Rohde & Schwarz         | 3-Path Diode Power Sensor 10MHz-18GHz  | NRP18SN              | 102192     | 12                        | 2023-04-29               |
| TESEQ                   | RF amplifier (80MHz-1GHz)              | CBA 1G-500           | T44193     | VERIF                     | VERIF                    |
| TESEQ                   | RF amplifier (800MHz-3GHz)             | CBA 3G-180           | T44194     | VERIF                     | VERIF                    |
| IFI                     | RF Amplifier (2GHz-8GHz)               | T82-300              | O1159-0710 | VERIF                     | VERIF                    |
| Schwarzbeck             | Antenna                                | STLP 9128 D special  | 9128DS 025 | VERIF                     | VERIF                    |
| TESEQ                   | Horn Antenna                           | BHA9118              | 33053      | 24                        | 2022-10-21               |
| Narda                   | Electric Field Probe                   | PMM EP601            | 711WX80868 | 18                        | 2022-10-28               |
| LABCEM                  | RF Uniformity Field 80MHz-1GHz (36V/m) | N/A                  | N/A        | 12                        | 2022-12-27               |
| LABCEM                  | RF Uniformity Field 1GHz-3GHz (18V/m)  | N/A                  | N/A        | 12                        | 2022-12-27               |
| LABCEM                  | RF Uniformity Field 3GHz-6GHz (18V/m)  | N/A                  | N/A        | 12                        | 2023-08-02               |

Note 1: The calibration of the equipment was extended by 30 days due to the replacement equipment being sent for repair.

**Table 27: Radiated EM Field – Test Equipment**

### 11.2.3 Test Results

| Illuminated Face | Frequencies (MHz) | Test Level (V/m) | Modulation | Polarization           | Comments          | Results |
|------------------|-------------------|------------------|------------|------------------------|-------------------|---------|
| Front            | 80 - 1000         | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event<br>Note1 | Pass    |
|                  | 1800, 2600        | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event<br>Note1 | Pass    |
|                  | 3500, 5000        | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event<br>Note1 | Pass    |
| Right            | 80 - 1000         | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event          | Pass    |
|                  | 1800, 2600        | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event          | Pass    |
|                  | 3500, 5000        | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event          | Pass    |
| Rear             | 80 - 1000         | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event          | Pass    |
|                  | 1800, 2600        | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event          | Pass    |
|                  | 3500, 5000        | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event          | Pass    |
| Left             | 80 - 1000         | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event          | Pass    |
|                  | 1800, 2600        | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event          | Pass    |
|                  | 3500, 5000        | 3                | AM / 1kHz  | Horizontal<br>Vertical | No event          | Pass    |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail.

Note 1: 1m of cable was exposed to the electromagnetic field

**Table 28: Radiated EM Field – Test Results**

11.2.4 Test Data



Photo 21: Radiated EM Field – Test setup – Front



Photo 22: Radiated EM Field – Test setup – Right



Photo 23: Radiated EM Field – Test setup – Rear



Photo 24: Radiated EM Field – Test setup – Left





Photo 25: Radiated EM Field – Test setup – >3GHz

#### 11.2.5 Test Method

Radiated field immunity tests were performed using the procedures of the reference standard.

During the first illuminated face of EUT, radiated immunity test equipment's were verified by monitoring the EM field.

## 11.3 Electrical Fast Transient Immunity

### 11.3.1 Test Details

|  |   |
|--|---|
| <b>REFERENCE STANDARD</b>                          | IEC 61000-4-4 (2012)  |
| <b>SPECIFICATIONS</b>                              |   |
| <b>Test Level</b>                                  | Power Ports: $\pm 1\text{kV}$<br>I/O Ports: $\pm 0.5\text{kV}$<br>Communication Ports: $\pm 0.5\text{kV}$ |
| <b>Repetition Frequency</b>                        | 5kHz  |
| <b>Installation</b>                                | Table-top equipment   |
| <b>PERFORMANCE CRITERION</b>                       | B   |
| <b>EUT</b>   |   |
| <b>Identification</b>                              | CAM300  |
| <b>Voltage Input</b>                               | 230V/50Hz   |
| <b>TEST INFO</b>                                   |   |
| <b>Test Date</b><br>(yyyy-mm-dd)                   | 2022-08-18  |
| <b>Temperature</b><br>°C (For Info Only)           | 23.9°C  |
| <b>Relative humidity</b><br>% (For Info Only)      | 50.9%   |
| <b>Atmospheric pressure</b><br>kPa (For Info Only) | 101kPa  |
| <b>Operator</b>                                    | Jean Cadotte  |
| <b>Client Witness</b>                              | Donatien Cr met (Inogeni)   |

### 11.3.2 Test Equipment

| Manufacturer | Description             | Model          | Serial No | Calibration Cycle (month) | Next Calibration (y-m-d) |
|--------------|-------------------------|----------------|-----------|---------------------------|--------------------------|
| TESEQ        | Software                | Win3000 v1.3.2 | N/A       | N/A                       | N/A                      |
| TESEQ        | Multifunction generator | NSG 3040       | 1918      | 12                        | 2022-09-08               |
| TESEQ        | EFT Clamp               | CDN 3425       | 1730      | VERIF                     | VERIF                    |

**Table 29: EFT – Test Equipment**

### 11.3.3 Test Results

| Tested Line            | Polarity Test level (kV) | Coupling Method  | Repetition Frequency (kHz) | Test Duration By Polarity (s) | Comments | Results |
|------------------------|--------------------------|------------------|----------------------------|-------------------------------|----------|---------|
| L, N, PE               | ±1                       | CDN              | 5                          | 60                            | No event | Pass    |
| Ethernet, Serial, PC   | ±0.5                     | Capacitive clamp | 5                          | 60                            | No event | Pass    |
| HDMI3, HDMI4, HDMI_OUT | ±0.5                     | Capacitive clamp | 5                          | 60                            | No event | Pass    |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail.

This test result is considered as a Pass according to performance criteria defined in section 5

**Table 30: EFT – Test Results**

11.3.4 Test Data

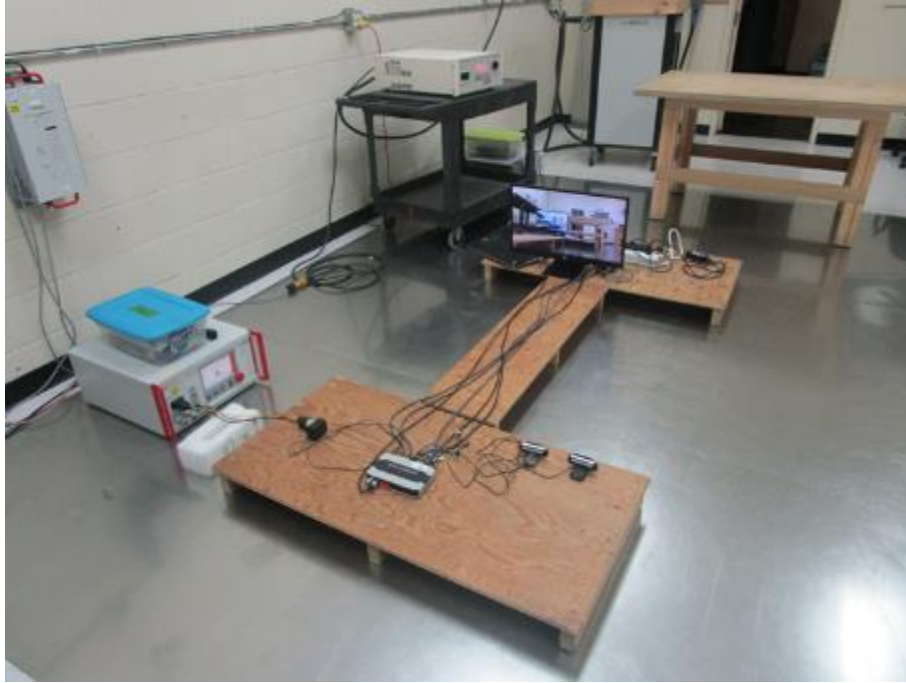


Photo 26: EFT – Test Setup

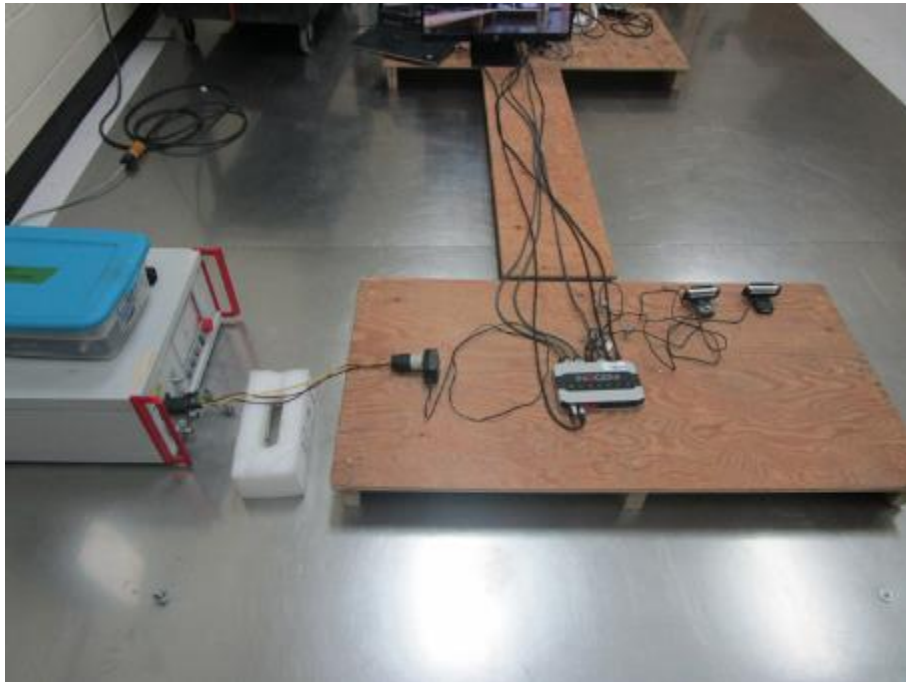


Photo 27: EFT – Test Setup – CDN – Power

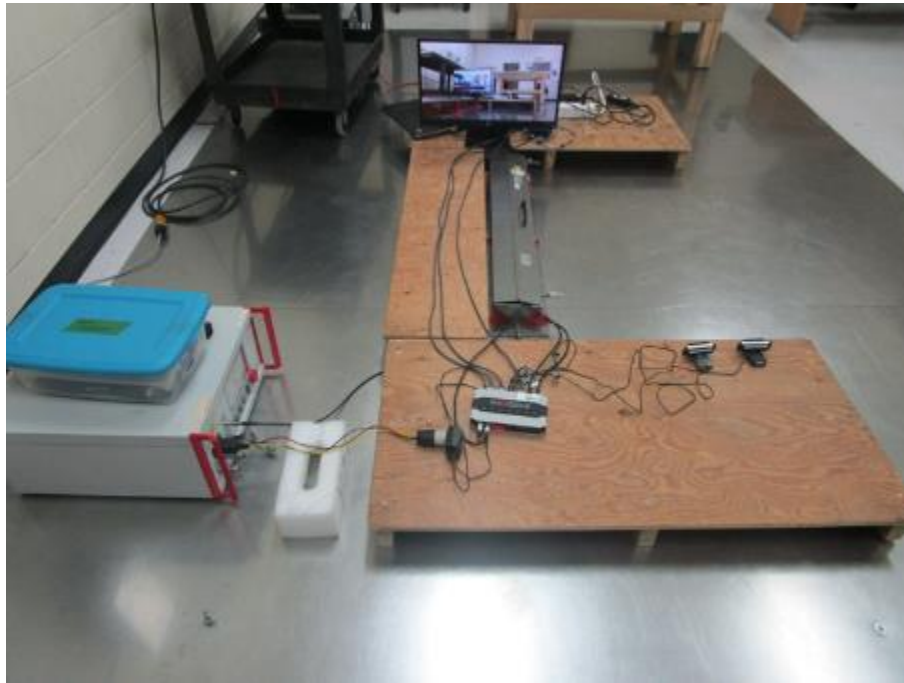


Photo 28: EFT – Test Setup – Capacitive Clamp – Ethernet, Serial, PC

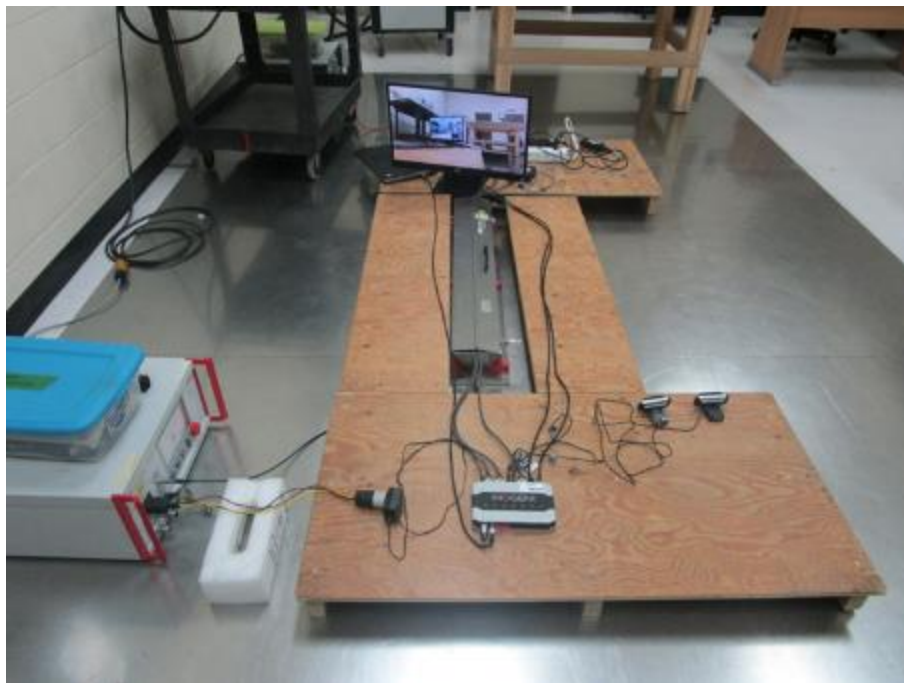


Photo 29: EFT – Test Setup – Capacitive Clamp – HDMI3, HDMI4, HDMI\_OUT

### 11.3.5 Test Method

Electrical fast transient immunity tests were performed using the procedures of the reference standard.

## 11.4 Surge Immunity

### 11.4.1 Test Details

|  |   |
|--|---|
| <b>REFERENCE STANDARD</b>                          | IEC 61000-4-5 (2014) A1 (2017)  |
| <b>SPECIFICATIONS</b>                              |   |
| <b>1.2/50<math>\mu</math>s Waveform</b>            | Open-Circuit Voltage: 1.2 $\mu$ s/50 $\mu$ s<br>Short-Circuit Current: 8 $\mu$ s/20 $\mu$ s |
| <b>Test level</b>                                  | Power: $\pm$ 2kV L-PE / $\pm$ 1kV L-L<br>I/O Ports: N/A<br>Communication Ports: N/A         |
| <b>PERFORMANCE CRITERION</b>                       | B   |
| <b>EUT</b>   |   |
| <b>Identification</b>                              | CAM300  |
| <b>Voltage Input</b>                               | 230V/50Hz   |
| <b>TEST INFO</b>                                   |   |
| <b>Test Date</b><br>(yyyy-mm-dd)                   | 2022-08-18  |
| <b>Temperature</b><br>°C (For Info Only)           | 23.9°C  |
| <b>Relative humidity</b><br>% (For Info Only)      | 50.9%   |
| <b>Atmospheric pressure</b><br>kPa (For Info Only) | 101kPa  |
| <b>Operator</b>                                    | Jean Cadotte  |
| <b>Client Witness</b>                              | Donatien Cr met (Inogeni)   |

## 11.4.2 Test Equipment

| Manufacturer | Description             | Model          | Serial No | Calibration Cycle (month) | Next Calibration (y-m-d) |
|--------------|-------------------------|----------------|-----------|---------------------------|--------------------------|
| TESEQ        | Software                | Win3000 v1.3.2 | N/A       | N/A                       | N/A                      |
| TESEQ        | Multifunction generator | NSG 3040       | 1918      | 12                        | 2022-09-08               |

Table 31: Surge – Test Equipment

## 11.4.3 Test Results

| Application  |     | Polarity Test Level (kV) | Additional Impedance | Number | Interval (s) | Phase Shifting (°) | Comments | Results |
|--|-----|--------------------------|----------------------|--------|--------------|--------------------|----------|---------|
| between  | and |                          |                      |        |              |                    |          |         |
| L  | PE  | ±0.5<br>±1<br>±2         | 10Ω                  | 5+     | 30           | 90                 | Note 1   | Pass    |
|  |     |                          |                      |        |              | 270                | Note 1   | Pass    |
| N  | PE  | ±0.5<br>±1<br>±2         | 10Ω                  | 5+     | 30           | 90                 | Note 1   | Pass    |
|  |     |                          |                      |        |              | 270                | Note 1   | Pass    |
| L  | N   | ±0.5<br>±1               | 0Ω                   | 5+     | 30           | 90                 | No event | Pass    |
|  |     |                          |                      |        |              | 270                | No event | Pass    |
| The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail. |     |                          |                      |        |              |                    |          |         |
| Note 1: EUT without PE, no L vs PE test performed  |     |                          |                      |        |              |                    |          |         |

Table 32: 1.2/50µs Surge – Test Results – Power Ports



#### 11.4.4 Test Data



Photo 30: 1.2/50 $\mu$ s Surge – Test Setup – Power Ports

#### 11.4.5 Test Method

Surge immunity tests were performed using the procedures of the reference standard.

## 11.5 Conducted Disturbances Immunity

### 11.5.1 Test Details

|  |  |                              |                              |
|--|--|------------------------------|------------------------------|
| <b>REFERENCE STANDARD</b>                          | IEC 61000-4-6 (2013)   |                              |                              |
| <b>SPECIFICATIONS</b>                              |  |                              |                              |
| <b>Test level</b>                                  | Power: 3Vrms<br>I/O Ports: 3Vrms<br>Communication Ports: 3Vrms |                              |                              |
| <b>Frequency Range</b>                             | 150kHz-80MHz   |                              |                              |
| <b>Modulation</b>                                  | AM: 80% / 1kHz   |                              |                              |
| <b>Frequency Step</b>                              | 1%   |                              |                              |
| <b>Dwell Time</b>                                  | 0.5s   |                              |                              |
| <b>PERFORMANCE CRITERION</b>                       | A  |                              |                              |
| <b>EUT</b>   |  |                              |                              |
| <b>Identification</b>                              | CAM300   |                              |                              |
| <b>Voltage Input</b>                               | 230V/50Hz  |                              |                              |
| <b>TEST INFO</b>                                   |  |                              |                              |
| <b>Test Date</b><br>(yyyy-mm-dd)                   | 2022-08-16   | 2022-08-17                   | 2022-08-19                   |
| <b>Temperature</b><br>°C (For Info Only)           | 24.9°C   | 23.0°C                       | 23.1°C                       |
| <b>Relative humidity</b><br>% (For Info Only)      | 43.9%  | 49.3%                        | 54.3%                        |
| <b>Atmospheric pressure</b><br>kPa (For Info Only) | 101.9kPa   | 101.9kPa                     | 101.3kPa                     |
| <b>Operator</b>                                    | Jean Cadotte   | Jean Cadotte                 | Jean Cadotte                 |
| <b>Client Witness</b>                              | Donatien Crémet<br>(Inogeni)                                   | Donatien Crémet<br>(Inogeni) | Donatien Crémet<br>(Inogeni) |

### 11.5.2 Test Equipment

| Manufacturer | Description  | Model                | Serial No    | Calibration Cycle (month) | Next Calibration (y-m-d) |
|--------------|--|----------------------|--------------|---------------------------|--------------------------|
| NEXIO        | Software   | BAT-EMC v2022.0.11.0 | N/A          | N/A                       | N/A                      |
| TESEQ        | Conducted Immunity Test Generator  | NSG 4070C-110        | 59017        | 12                        | 2023-01-25               |
| TESEQ        | CDN M2/M3  | CDN M016             | 34597        | 24                        | 2022-09-24               |
| TESEQ        | CDN M2   | CDN M216             | 32740        | 24                        | 2022-09-24               |
| TESEQ        | EM Clamp   | KEMZ 801A            | 33460        | 24                        | 2022-09-22               |
| TESEQ        | RF Current Clamp   | MD 4070              | 33320        | 24                        | 2022-09-18               |
| TESEQ        | Attenuation Clamp  | KEMA 801A            | 33174        | NCR                       | NCR                      |
| TESEQ        | Attenuation Clamp  | KEMA 801A            | 34759        | NCR                       | NCR                      |
| Pasternack   | 6dB Fixed Attenuator 150W  | PE7AP150-06          | LABCEM #0287 | VERIF                     | VERIF                    |
| LABCEM       | Laboratory 3 - Conducted Voltage Immunity Calibration CDN-M2 - CI Injection Cable                                    | N/A                  | N/A          | 12                        | 2023-08-03               |
| LABCEM       | Laboratory 3 - Conducted Voltage Immunity Calibration EM Clamp (sn:33460) - CI Injection Cable + CI Monitoring Cable | N/A                  | N/A          | 12                        | 2023-08-03               |

**Table 33: Conducted Disturbances – Test Equipment**

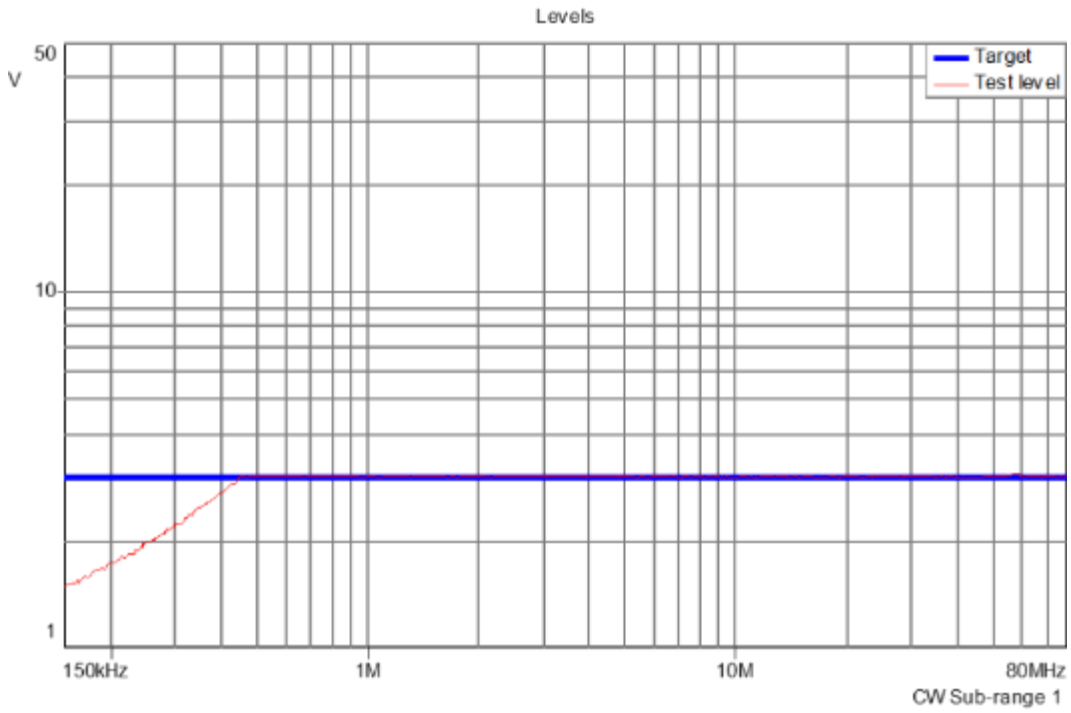
### 11.5.3 Test Results

| Tested Line              | Coupling Method | Frequency (MHz) | Test Level (V) | Modulation | Comments | Results |
|--------------------------|-----------------|-----------------|----------------|------------|----------|---------|
| Power (230V/50Hz)        | CDN-M2          | 0.150 - 80      | 3              | AM / 1kHz  | No event | Pass    |
| Ethernet & Serial        | EM Clamp        | 0.150 - 80      | 3              | AM / 1kHz  | No event | Pass    |
| HDMI3, HDMI4<br>HDMI_OUT | EM Clamp        | 0.150 - 80      | 3              | AM / 1kHz  | No event | Pass    |
| PC (USB)                 | EM Clamp        | 0.150 - 80      | 3              | AM / 1kHz  | No event | Pass    |

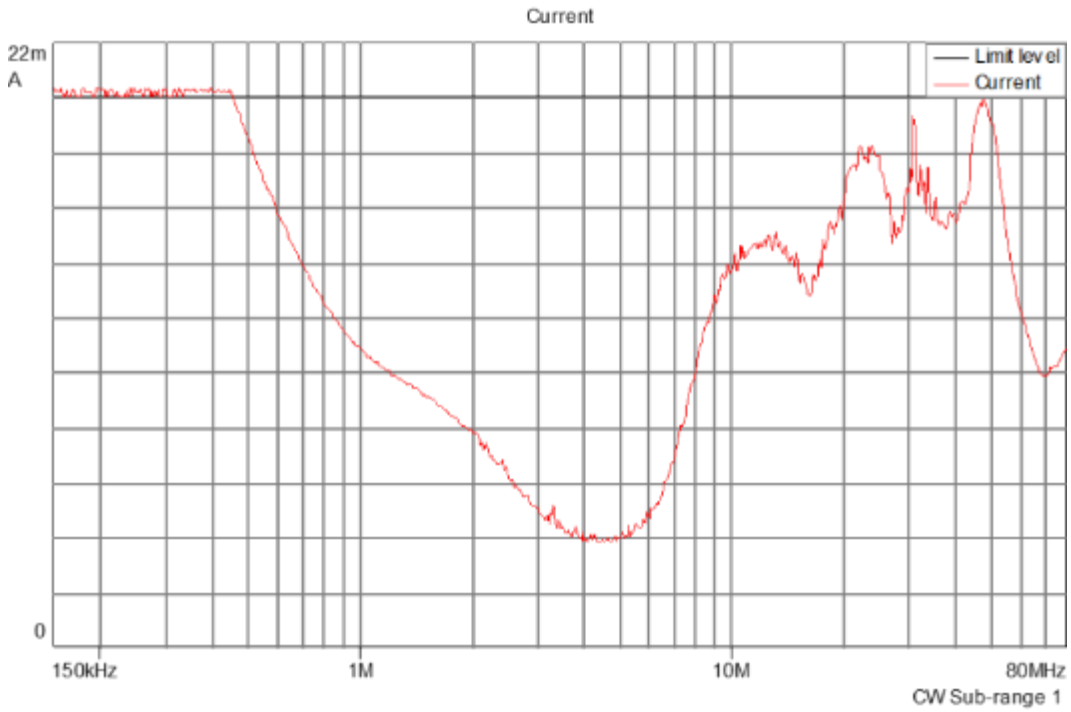
The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail.

**Table 34: Conducted Disturbances – Test Results**

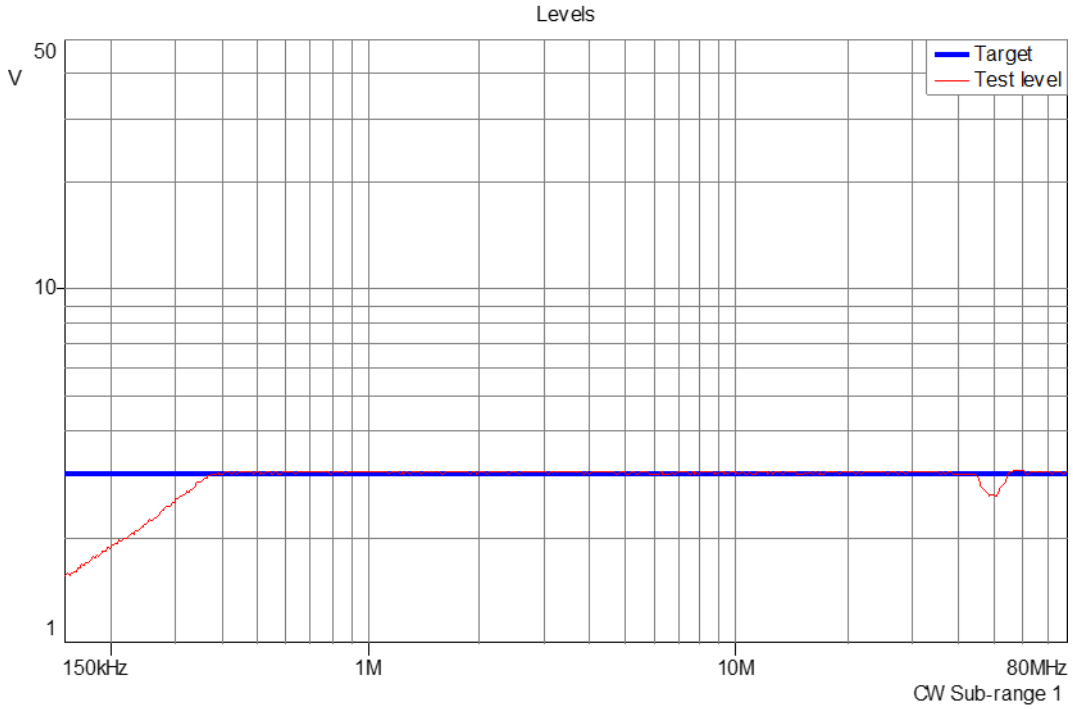
### 11.5.4 Test Data



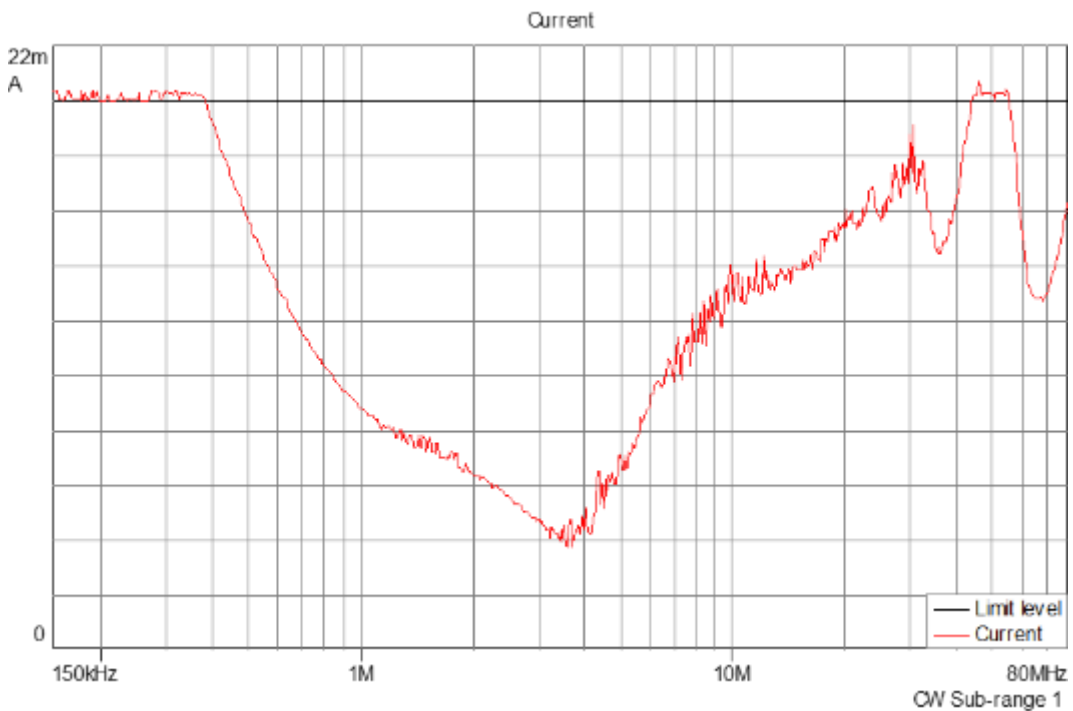
Graph 9: Conducted Disturbances – Voltage Level – EM Clamp – Eth & Serial



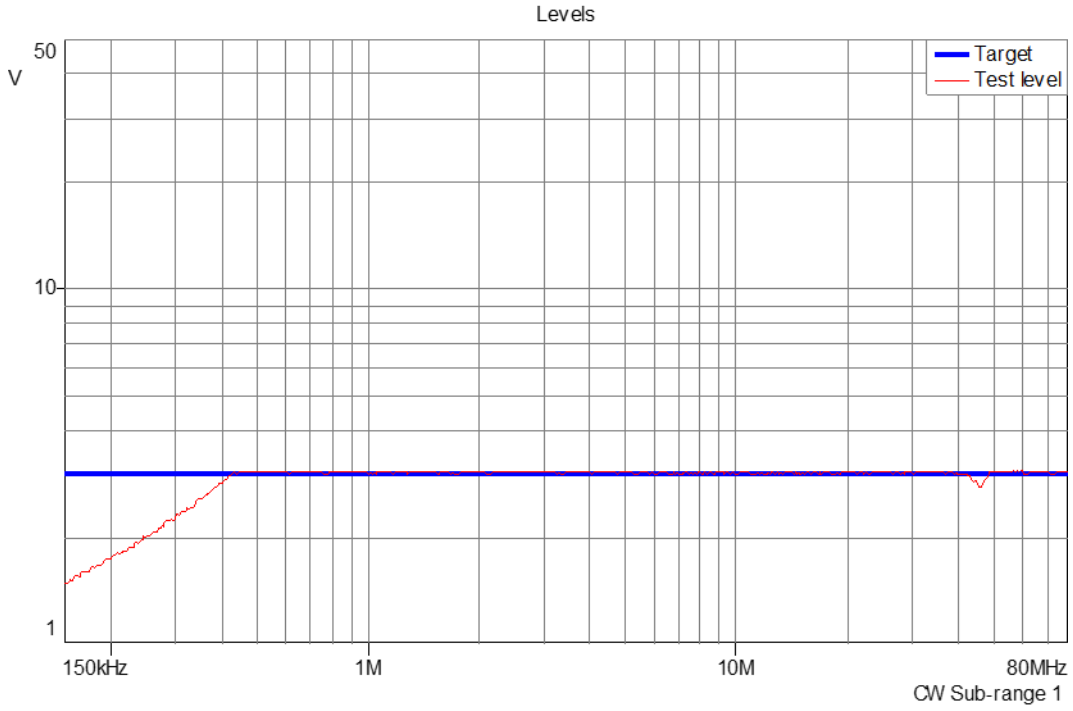
Graph 10: Conducted Disturbances – Current Measurements – EM Clamp – Eth & Serial



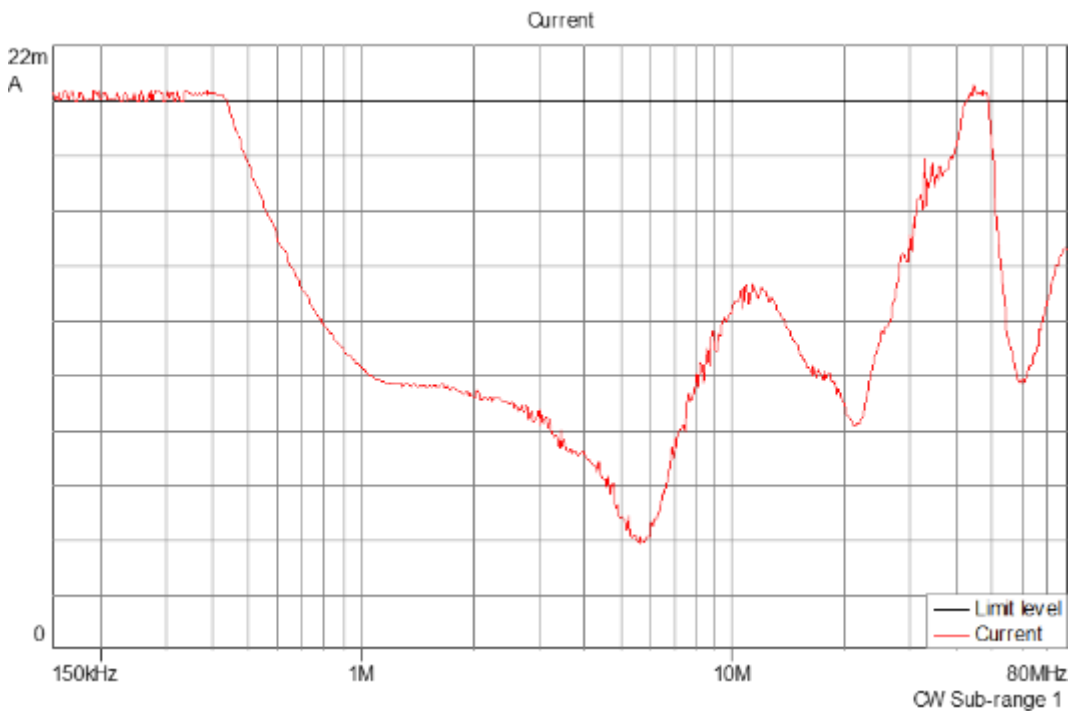
Graph 11: Conducted Disturbances – Voltage Level – EM Clamp – HDMI3-HDMI4-HDMI\_OUT



Graph 12: Conducted Disturbances – Current Measurements – EM Clamp – HDMI3-HDMI4-HDMI\_OUT



Graph 13: Conducted Disturbances – Voltage Level – EM Clamp – PC (USB)



Graph 14: Conducted Disturbances – Current Measurements – EM Clamp – PC (USB)



Photo 31: Conducted Disturbances – Test Setup



Photo 32: Conducted Disturbances – Test Setup – CDN – Power



Photo 33: Conducted Disturbances – Test Setup – EM Clamp – Eth & Serial



Photo 34: Conducted Disturbances – Test Setup – EM Clamp – HDMI3-HDMI4-HDMI\_OUT





Photo 35: Conducted Disturbances – Test Setup – EM Clamp – PC (USB)

#### 11.5.5 Test Method

Conducted Disturbances immunity tests were performed using the procedures of the reference standard.

## 11.6 Power Frequency Magnetic Field Immunity

### 11.6.1 Test Details

|  |                              |
|--|------------------------------|
| <b>REFERENCE STANDARD</b>                          | IEC 61000-4-8 (2009)         |
| <b>SPECIFICATIONS</b>                              |                              |
| <b>Test Level</b>                                  | Continuous field: 1A/m (60s) |
| <b>Frequency</b>                                   | 50Hz / 60Hz                  |
| <b>Induction Coil</b>                              | 1m x 1m                      |
| <b>PERFORMANCE CRITERION</b>                       | A                            |
| <b>EUT</b>   |                              |
| <b>Identification</b>                              | CAM300                       |
| <b>Voltage Input</b>                               | 230V/50Hz<br>120V/60Hz       |
| <b>TEST INFO</b>                                   |                              |
| <b>Test Date</b><br>(yyyy-mm-dd)                   | 2022-08-18                   |
| <b>Temperature</b><br>°C (For Info Only)           | 24.1°C                       |
| <b>Relative humidity</b><br>% (For Info Only)      | 50.6%                        |
| <b>Atmospheric pressure</b><br>kPa (For Info Only) | 101kPa                       |
| <b>Operator</b>                                    | Jean Cadotte                 |
| <b>Client Witness</b>                              | Donatien Crémet (Inogeni)    |

### 11.6.2 Test Equipment

| Manufacturer | Description             | Model             | Serial No             | Calibration Cycle (month) | Next Calibration (y-m-d) |
|--------------|-------------------------|-------------------|-----------------------|---------------------------|--------------------------|
| TESEQ        | Software                | Win2120 v6.0 BETA | N/A                   | N/A                       | N/A                      |
| TESEQ        | AC-DC Power source      | NSG 1007          | 1232A04499 (NSG 1007) | 12                        | 2022-09-14               |
| TESEQ        | Magnetic coil interface | INA 2141          | 1417                  | NCR                       | NCR                      |
| TESEQ        | Magnetic coil           | INA 703           | 1978                  | VERIF                     | VERIF                    |
| Fluke        | Digital Clamp Meter     | 353               | 21950072              | 12                        | 2023-07-25               |
| F.W. Bell    | ELF Meter               | 4190              | 1237005               | 24                        | 2022-10-08               |

**Table 35: Magnetic Field – Test Equipment**

### 11.6.3 Test Results

| Position | Frequency (Hz) | Test Level (A/m) | Test Duration (s) | Comments | Results |
|----------|----------------|------------------|-------------------|----------|---------|
| 1        | 50             | 1                | 60                | No event | Pass    |
| 2        | 50             | 1                | 60                | No event | Pass    |
| 3        | 50             | 1                | 60                | No event | Pass    |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail.

**Table 36: Magnetic Field – Test Results – 230V/50Hz**

| Position | Frequency (Hz) | Test Level (A/m) | Test Duration (s) | Comments | Results |
|----------|----------------|------------------|-------------------|----------|---------|
| 1        | 60             | 1                | 60                | No event | Pass    |
| 2        | 60             | 1                | 60                | No event | Pass    |
| 3        | 60             | 1                | 60                | No event | Pass    |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail.

**Table 37: Magnetic Field – Test Results – 120V/60Hz**

11.6.4 Test Data



Photo 36: Magnetic Field – Test Setup – Position #1



Photo 37: Magnetic Field – Test Setup – Position #2



Photo 38: Magnetic Field – Test Setup – Position #3

### 11.6.5 Test Method

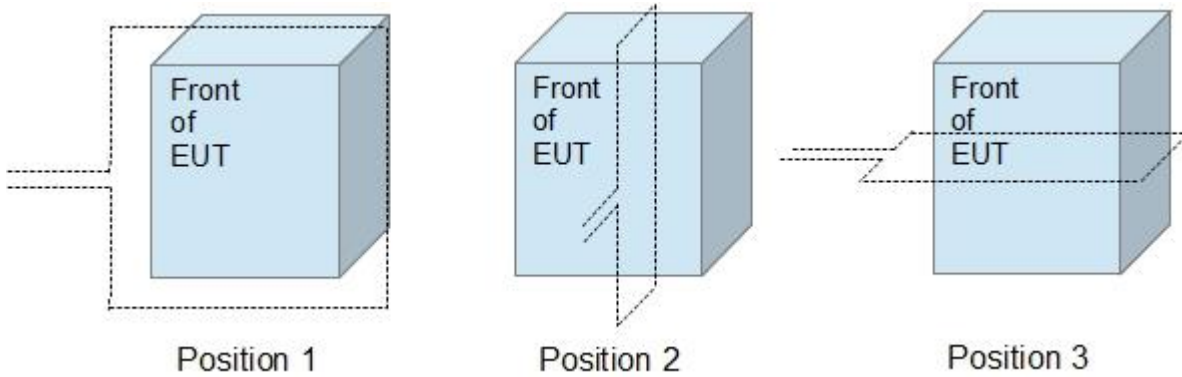


Figure 2: Magnetic Field – Position of Induction Coil

Power frequency field magnetic immunity tests were performed using the procedures of the reference standard.

## 11.7 Voltage Dips, Short Interruptions and Voltage Variation Immunity on AC input

### 11.7.1 Test Details

|  |   |
|--|---|
| <b>REFERENCE STANDARD</b>                          | IEC 61000-4-11 (2020)   |
| <b>SPECIFICATIONS</b>                              |   |
| <b>Voltage Dips</b>                                | 0%Un: ½ cycle<br>70%Un: 25 cycles<br>70%Un: 30 cycles   |
| <b>Short Interruptions</b>                         | 0%Un: 250 cycles<br>0%Un: 300 cycles  |
| <b>PERFORMANCE CRITERION</b>                       | 0%Un / ½ cycle: B<br>70%Un / 25 cycles: C<br>70%Un / 30 cycles: C<br>0%Un / 250 cycles: C<br>0%Un / 300 cycles: C |
| <b>EUT</b>   |   |
| <b>Identification</b>                              | CAM300  |
| <b>Voltage Input</b>                               | 240V/50Hz<br>100V/60Hz  |
| <b>TEST INFO</b>                                   |   |
| <b>Test Date</b><br>(yyyy-mm-dd)                   | 2022-08-18  |
| <b>Temperature</b><br>°C (For Info Only)           | 23.9°C  |
| <b>Relative humidity</b><br>% (For Info Only)      | 50.9%   |
| <b>Atmospheric pressure</b><br>kPa (For Info Only) | 101kPa  |
| <b>Operator</b>                                    | Jean Cadotte  |
| <b>Client Witness</b>                              | Donatien Crémet (Inogeni)   |

### 11.7.2 Test Equipment

| Manufacturer | Description             | Model          | Serial No | Calibration Cycle (month) | Next Calibration (y-m-d) |
|--------------|-------------------------|----------------|-----------|---------------------------|--------------------------|
| TESEQ        | Software                | Win3000 v1.3.2 | N/A       | N/A                       | N/A                      |
| TESEQ        | Multifunction generator | NSG 3040       | 1918      | 12                        | 2022-09-08               |
| TESEQ        | Step transformer        | INA 6502       | 190       | 12                        | 2022-09-08               |
| EMC-Partner  | Software                | GENECS 3.28    | N/A       | N/A                       | N/A                      |
| EMC-Partner  | Transient Test System   | TRA3000        | 1507      | 18                        | 2023-08-25               |

**Table 38: Voltage Variations on AC Input – Test Equipment**

### 11.7.3 Test Results

| Tested line       | Test Level (% Un) | Duration (Cycle) | Number | Interval (s) | Phase Shifting (°) | Comments | Results |
|-------------------|-------------------|------------------|--------|--------------|--------------------|----------|---------|
| Power (240V/50Hz) | 0                 | 1/2              | 3      | 10           | 0                  | No event | Pass    |
|                   | 70                | 25               | 3      | 10           | 0                  | No event | Pass    |
|                   | 0                 | 250              | 3      | 10           | 0                  | Note 1   | Pass    |
| Power (100V/60Hz) | 0                 | 1/2              | 3      | 10           | 0                  | No event | Pass    |
|                   | 70                | 30               | 3      | 10           | 0                  | No event | Pass    |
|                   | 0                 | 300              | 3      | 10           | 0                  | Note 1   | Pass    |

The decision rule used to determine the test results is based on the limits stated in the test standard and the functional requirement provided by the client. See section 5 for further detail.

Note 1: Self-recoverable degradation: EUT turned off during the interruptions. Came back to normal by itself. This test result is considered as a Pass according to performance criteria defined in section 5

**Table 39: Voltage Variations on AC Input – Test Results**

### 11.7.4 Test Data



Photo 39: Voltage Variations on AC Input – Test Setup

### 11.7.5 Test Method

Voltage dips, short interruptions and voltage variation on AC Input immunity tests were performed using the procedures of the reference standard.



**APPENDIX A  
CONDUCTED EMISSIONS**



CONDUCTED EMISSIONS - VOLTAGE  
page 1 / 2

**Project:** OP0621255 **Customer:** Inogeni

DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

Equipment: CAM300  
 Manufacturer: Inogeni  
 Hardware Version:  
 Software Version:

CONDUCTED EMISSIONS MEASUREMENT: OP0621255\_EN55032\_-LISN\_Phase\_#12

Test Location: Anechoic chamber  
 Test Date: 2022-08-16 1:22:44 PM  
 Operator(s): Jean Cadotte  
 Test Standard: EN55032 Class A  
 Power: 230V/50Hz  
 Tested Line: Phase  
 Operating Mode:  
 Comments:

TEST PARAMETERS

Frequency Range: 150 kHz - 30 MHz  
 Bandwidth: 9 kHz

TEST EQUIPMENT USED

LF#1+LF#2  
 LISN : PMM L2-16B#20813-yellow  
 Rohde & Schwarz : ESW44

FINAL RESULTS - QUASI-PEAK

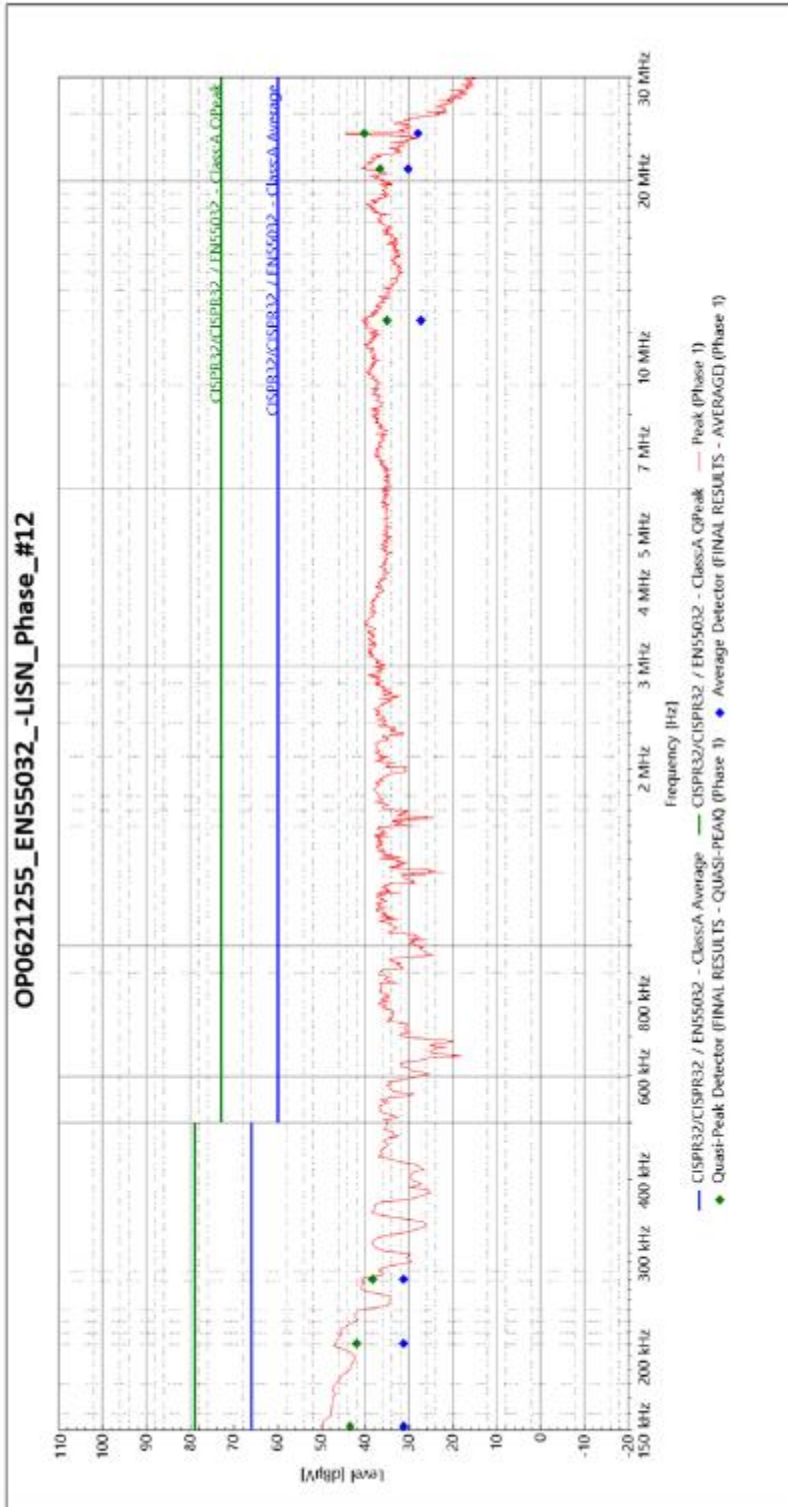
| Frequency     | SR # | Quasi-Peak Detector (dBµV) | Quasi-Peak Limit (dBµV) | Margin (dB) | Correction (dB) |
|---------------|------|----------------------------|-------------------------|-------------|-----------------|
| 152.178 kHz   | 1    | 43.493                     | 79                      | 35.507      | -0.049          |
| 210.446 kHz   | 1    | 42.013                     | 79                      | 36.987      | -0.077          |
| 271.076 kHz   | 1    | 38.381                     | 79                      | 40.619      | -0.078          |
| 11.562043 MHz | 1    | 35.114                     | 73                      | 37.896      | 0.104           |
| 20.917752 MHz | 1    | 36.654                     | 73                      | 36.346      | 0.3             |
| 24.041071 MHz | 1    | 40.278                     | 73                      | 32.722      | 0.36            |

FINAL RESULTS - AVERAGE

| Frequency     | SR # | Average Detector (dBµV) | Average Limit (dBµV) | Margin (dB) | Correction (dB) |
|---------------|------|-------------------------|----------------------|-------------|-----------------|
| 152.178 kHz   | 1    | 31.249                  | 66                   | 34.751      | -0.049          |
| 210.446 kHz   | 1    | 31.325                  | 66                   | 34.675      | -0.077          |
| 271.076 kHz   | 1    | 31.258                  | 66                   | 34.742      | -0.078          |
| 11.562043 MHz | 1    | 27.334                  | 60                   | 32.666      | 0.104           |
| 20.917752 MHz | 1    | 30.301                  | 60                   | 29.699      | 0.3             |
| 24.041071 MHz | 1    | 27.976                  | 60                   | 32.024      | 0.36            |

PR / OP0621255\_EN55032\_-LISN\_Phase\_#12







CONDUCTED EMISSIONS - VOLTAGE  
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**Project:** OP0621255 **Customer:** Inogeni

DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

Equipment: CAM300  
 Manufacturer: Inogeni  
 Hardware Version:  
 Software Version:

CONDUCTED EMISSIONS MEASUREMENT: OP0621255\_EN55032\_-LISN\_Neutral\_#13

Test Location: Anechoic chamber  
 Test Date: 2022-08-16 1:36:21 PM  
 Operator(s): Jean Cadotte  
 Test Standard: EN55032 Class A  
 Power: 230V/50Hz  
 Tested Line: Neutral  
 Operating Mode:  
 Comments:

TEST PARAMETERS

Frequency Range  
150 kHz - 30 MHz  
 Bandwidth  
9 kHz

TEST EQUIPMENT USED

LF#1+LF#2  
 LISN : PMM L2-16B#20813-yellow  
 Rohde & Schwarz : ESW44

FINAL RESULTS - QUASI-PEAK

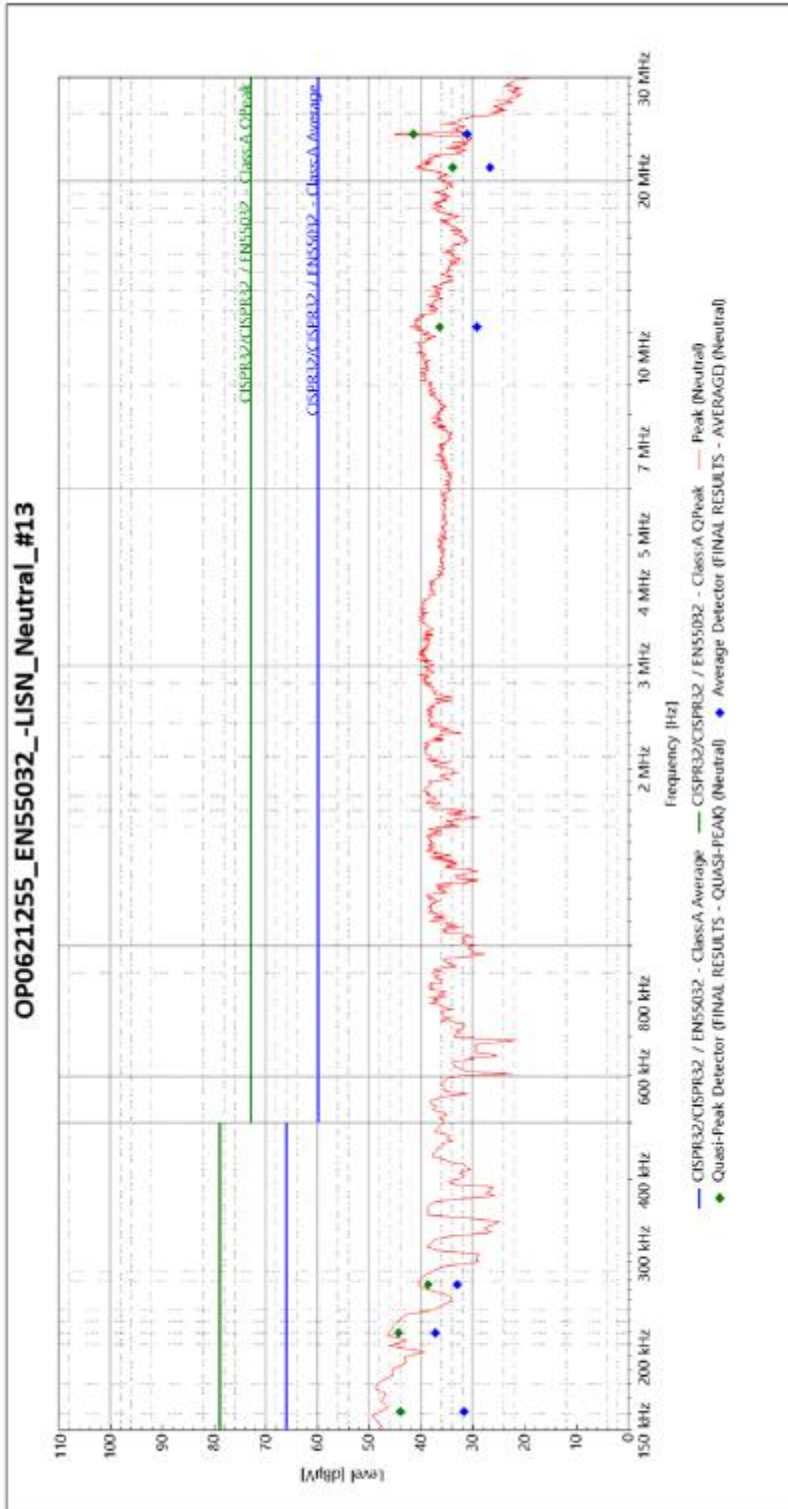
| Frequency     | SR # | Quasi-Peak Detector (dBµV) | Quasi-Peak Limit (dBµV) | Margin (dB) | Correction (dB) |
|---------------|------|----------------------------|-------------------------|-------------|-----------------|
| 161.171 kHz   | 1    | 44.044                     | 79                      | 34.956      | -0.152          |
| 219.265 kHz   | 1    | 44.374                     | 79                      | 34.626      | -0.169          |
| 265.267 kHz   | 1    | 38.682                     | 79                      | 40.318      | -0.168          |
| 11.285459 MHz | 1    | 36.469                     | 73                      | 36.531      | 0.022           |
| 21.071709 MHz | 1    | 33.94                      | 73                      | 39.06       | 0.286           |
| 23.987027 MHz | 1    | 41.503                     | 73                      | 31.497      | 0.358           |

FINAL RESULTS - AVERAGE

| Frequency     | SR # | Average Detector (dBµV) | Average Limit (dBµV) | Margin (dB) | Correction (dB) |
|---------------|------|-------------------------|----------------------|-------------|-----------------|
| 161.171 kHz   | 1    | 31.743                  | 66                   | 34.257      | -0.152          |
| 219.265 kHz   | 1    | 37.264                  | 66                   | 28.736      | -0.169          |
| 265.267 kHz   | 1    | 32.986                  | 66                   | 33.014      | -0.168          |
| 11.285459 MHz | 1    | 29.213                  | 60                   | 30.787      | 0.022           |
| 21.071709 MHz | 1    | 26.7                    | 60                   | 33.3        | 0.286           |
| 23.987027 MHz | 1    | 31.112                  | 60                   | 28.888      | 0.358           |

PR / OP0621255\_EN55032\_-LISN\_Neutral\_#13







CONDUCTED EMISSIONS - VOLTAGE  
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**Project:** OP0621255 **Customer:** Inogeni

DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

Equipment: CAM300  
 Manufacturer: Inogeni  
 Hardware Version:  
 Software Version:

CONDUCTED EMISSIONS MEASUREMENT: OP0621255\_JCES-003\_FCC-LISN\_Phase\_#15

Test Location: Anechoic chamber  
 Test Date: 2022-08-16 1:51:00 PM  
 Operator(s): Jean Cadotte  
 Test Standard: ICES-003 / FCC part 15 subpart B / Class A  
 Power: 120V/60Hz  
 Tested Line: Phase  
 Operating Mode:  
 Comments:

TEST PARAMETERS

Frequency Range  
150 kHz - 30 MHz

Bandwidth  
9 kHz

TEST EQUIPMENT USED

LF#1+LF#2  
 LISN : PMM L2-16B#20813-yellow  
 Rohde & Schwarz : ESW44

FINAL RESULTS - QUASI-PEAK

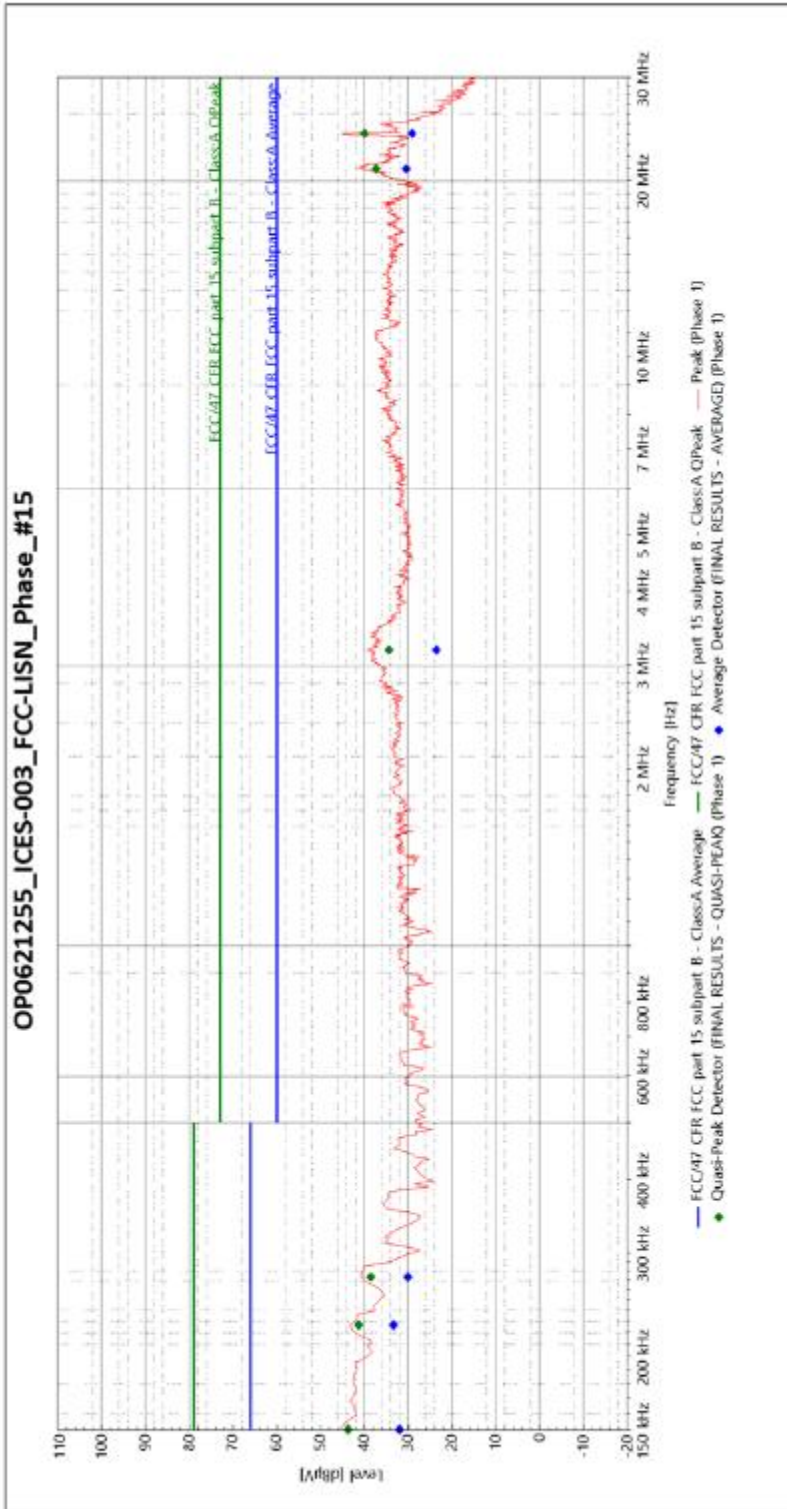
| Frequency     | SR # | Quasi-Peak Detector (dBµV) | Quasi-Peak Limit (dBµV) | Margin (dB) | Correction (dB) |
|---------------|------|----------------------------|-------------------------|-------------|-----------------|
| 150.391 kHz   | 1    | 43.808                     | 79                      | 35.192      | -0.051          |
| 226.456 kHz   | 1    | 41.295                     | 79                      | 37.705      | -0.079          |
| 273.243 kHz   | 1    | 38.622                     | 79                      | 40.378      | -0.078          |
| 3.183824 MHz  | 1    | 34.419                     | 73                      | 38.581      | -0.042          |
| 20.917208 MHz | 1    | 37.372                     | 73                      | 35.628      | 0.3             |
| 24.044774 MHz | 1    | 40.032                     | 73                      | 32.968      | 0.36            |

FINAL RESULTS - AVERAGE

| Frequency     | SR # | Average Detector (dBµV) | Average Limit (dBµV) | Margin (dB) | Correction (dB) |
|---------------|------|-------------------------|----------------------|-------------|-----------------|
| 150.391 kHz   | 1    | 31.959                  | 66                   | 34.041      | -0.051          |
| 226.456 kHz   | 1    | 33.447                  | 66                   | 32.553      | -0.079          |
| 273.243 kHz   | 1    | 30.059                  | 66                   | 35.941      | -0.078          |
| 3.183824 MHz  | 1    | 23.623                  | 60                   | 36.377      | -0.042          |
| 20.917208 MHz | 1    | 30.442                  | 60                   | 29.558      | 0.3             |
| 24.044774 MHz | 1    | 29.141                  | 60                   | 30.859      | 0.36            |

PR / OP0621255\_JCES-003\_FCC-LISN\_Phase\_#15







CONDUCTED EMISSIONS - VOLTAGE  
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**Project:** OP0621255 **Customer:** Inogeni

DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

Equipment: CAM300  
 Manufacturer: Inogeni  
 Hardware Version:  
 Software Version:

CONDUCTED EMISSIONS MEASUREMENT: OP0621255\_ICES-003\_FCC-LISN\_Neutral\_#16

Test Location: Anechoic chamber  
 Test Date: 2022-08-16 2:04:23 PM  
 Operator(s): Jean Cadotte  
 Test Standard: ICES-003 / FCC part 15 subpart B / Class A  
 Power: 120V/60Hz  
 Tested Line: Neutral  
 Operating Mode:  
 Comments:

TEST PARAMETERS

Frequency Range  
150 kHz - 30 MHz  
 Bandwidth  
9 kHz

TEST EQUIPMENT USED

LF#1+LF#2  
 LISN : PMM L2-16B#20813-yellow  
 Rohde & Schwarz : ESW44

FINAL RESULTS - QUASI-PEAK

| Frequency     | SR # | Quasi-Peak Detector (dBµV) | Quasi-Peak Limit (dBµV) | Margin (dB) | Correction (dB) |
|---------------|------|----------------------------|-------------------------|-------------|-----------------|
| 153.366 kHz   | 1    | 42.319                     | 79                      | 36.681      | -0.139          |
| 184.509 kHz   | 1    | 39.717                     | 79                      | 39.283      | -0.159          |
| 224.938 kHz   | 1    | 41.506                     | 79                      | 37.494      | -0.162          |
| 3.097269 MHz  | 1    | 36.057                     | 73                      | 36.943      | -0.15           |
| 20.917126 MHz | 1    | 36.924                     | 73                      | 36.076      | 0.28            |
| 23.969253 MHz | 1    | 40.923                     | 73                      | 32.077      | 0.357           |

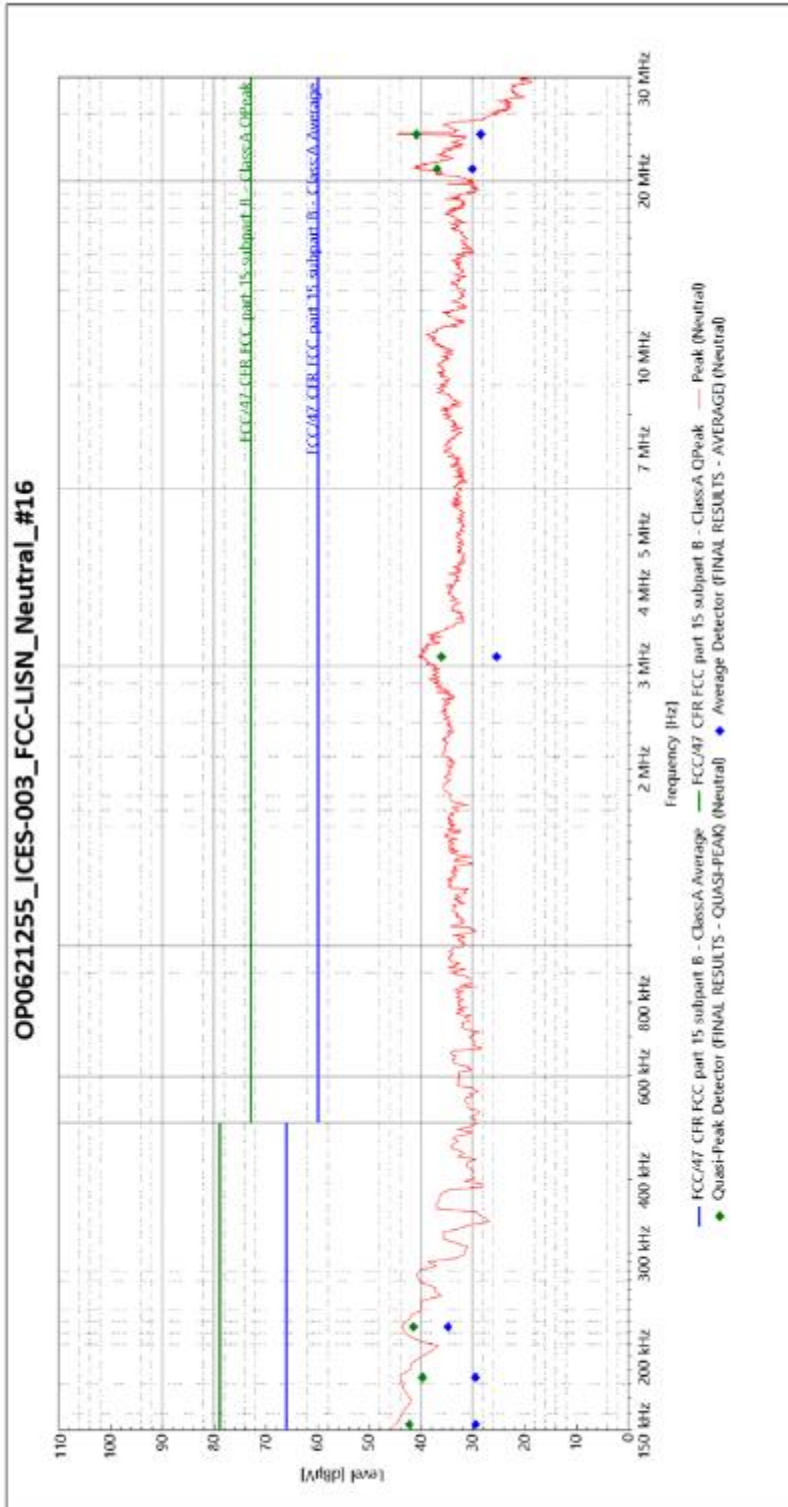
FINAL RESULTS - AVERAGE

| Frequency     | SR # | Average Detector (dBµV) | Average Limit (dBµV) | Margin (dB) | Correction (dB) |
|---------------|------|-------------------------|----------------------|-------------|-----------------|
| 153.366 kHz   | 1    | 29.48                   | 66                   | 36.52       | -0.139          |
| 184.509 kHz   | 1    | 29.544                  | 66                   | 36.456      | -0.159          |
| 224.938 kHz   | 1    | 34.873                  | 66                   | 31.127      | -0.162          |
| 3.097269 MHz  | 1    | 25.462                  | 60                   | 34.538      | -0.15           |
| 20.917126 MHz | 1    | 30.168                  | 60                   | 29.832      | 0.28            |
| 23.969253 MHz | 1    | 28.556                  | 60                   | 31.444      | 0.357           |

PR / OP0621255\_ICES-003\_FCC-LISN\_Neutral\_#16









CONDUCTED EMISSIONS - VOLTAGE  
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**Project:** OP0621255 **Customer:** Inogeni

DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

Equipment: CAM300  
 Manufacturer: Inogeni  
 Hardware Version:  
 Software Version:

CONDUCTED EMISSIONS MEASUREMENT: OP0621255\_CISPR32-1SN\_#14

Test Location: Anechoic chamber  
 Test Date: 2022-08-16 2:26:36 PM  
 Operator(s): Jean Cadotte  
 Test Standard: CISPR32 Class A  
 Power: 230V/50Hz  
 Tested Line: Ethernet  
 Operating Mode: 10% traffic  
 Comments:

TEST PARAMETERS

Frequency Range: 150 kHz - 30 MHz  
 Bandwidth: 9 kHz

TEST EQUIPMENT USED

ISN : ST08A  
 LF#1+LF#2  
 Rohde & Schwarz : ESW44

FINAL RESULTS - QUASI-PEAK

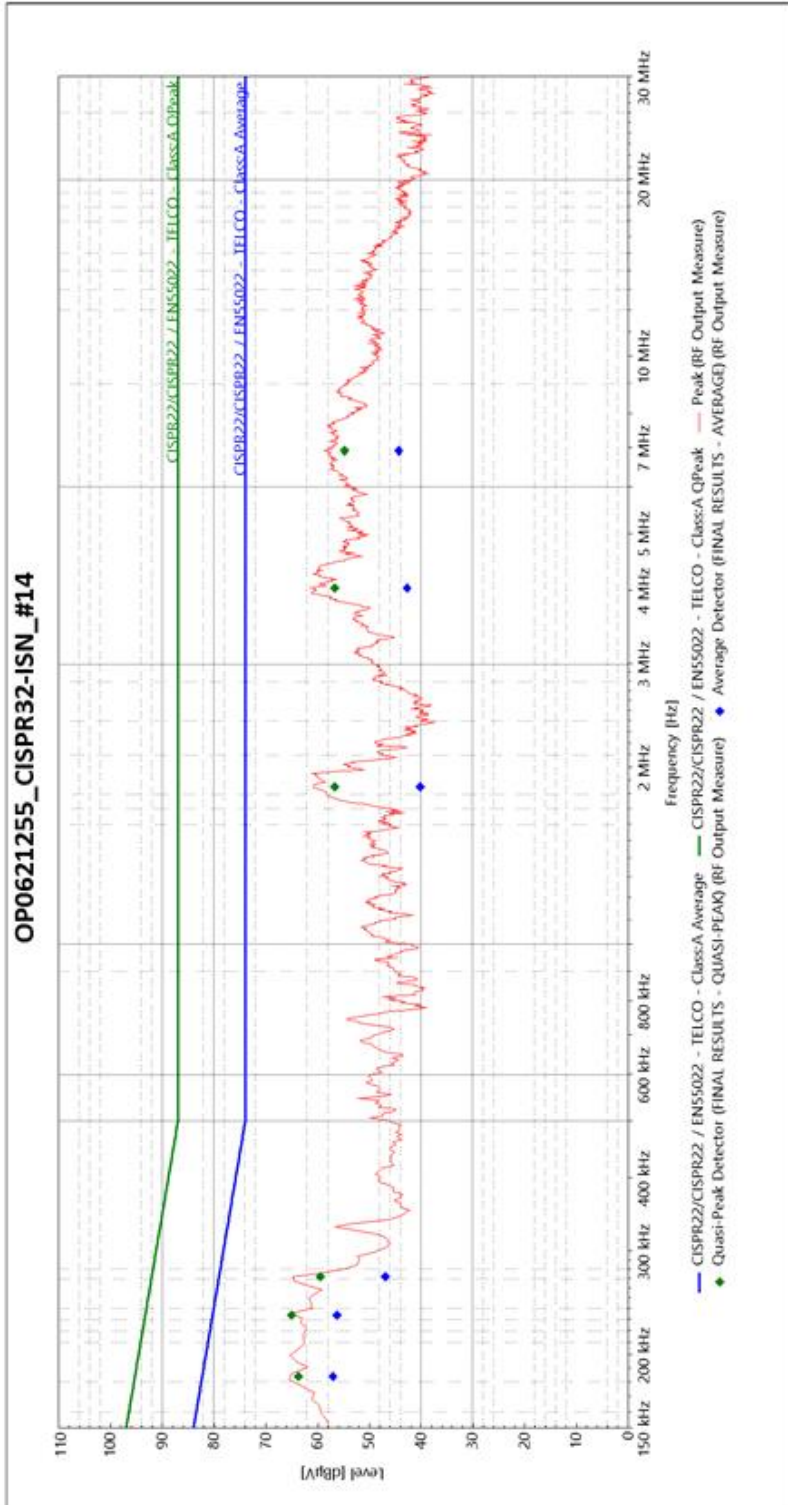
| Frequency    | SR # | Quasi-Peak Detector (dBµV) | Quasi-Peak Limit (dBµV) | Margin (dB) | Correction (dB) |
|--------------|------|----------------------------|-------------------------|-------------|-----------------|
| 183.688 kHz  | 1    | 63.68                      | 95.417                  | 31.736      | 9.741           |
| 233.361 kHz  | 1    | 65.01                      | 93.253                  | 28.244      | 9.726           |
| 271.456 kHz  | 1    | 59.54                      | 92.072                  | 32.532      | 9.722           |
| 1.853056 MHz | 1    | 56.729                     | 87                      | 30.271      | 9.67            |
| 4.033285 MHz | 1    | 56.752                     | 87                      | 30.248      | 9.709           |
| 6.907388 MHz | 1    | 54.804                     | 87                      | 32.196      | 9.804           |

FINAL RESULTS - AVERAGE

| Frequency    | SR # | Average Detector (dBµV) | Average Limit (dBµV) | Margin (dB) | Correction (dB) |
|--------------|------|-------------------------|----------------------|-------------|-----------------|
| 183.688 kHz  | 1    | 57.068                  | 82.417               | 25.349      | 9.741           |
| 233.361 kHz  | 1    | 56.249                  | 80.253               | 24.004      | 9.726           |
| 271.456 kHz  | 1    | 46.971                  | 79.072               | 32.101      | 9.722           |
| 1.853056 MHz | 1    | 40.164                  | 74                   | 33.836      | 9.67            |
| 4.033285 MHz | 1    | 42.761                  | 74                   | 31.239      | 9.709           |
| 6.907388 MHz | 1    | 44.358                  | 74                   | 29.642      | 9.804           |

PR / OP0621255\_CISPR32-1SN\_#14





**APPENDIX B  
RADIATED EMISSIONS**



RADIATED EMISSIONS – ELECTRIC FIELD  
page 1 / 2

**Project:** OP0621255 **Customer:** Inogeni

**DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)**

Equipment: CAM300  
 Manufacturer: Inogeni  
 Hardware Version:  
 Software Version:

**RADIATED EMISSIONS MEASUREMENT:** OP0621255\_EN55032\_FCC-Bilog\_#07

Test Location: Anechoic chamber  
 Test Date: 2022-08-15 3:02:00 PM  
 Operator(s): Jean Cadotte  
 Test Standard: EN55032 / FCC part 15 subpart B / Class A  
 Power: 230V/50Hz  
 Operating Mode:  
 Comments: CAM300-Medium Low

TEST PARAMETERS

Frequency Range: 30 MHz - 1 GHz  
 Bandwidth: 120 kHz  
 Test Distance: 3 m

TEST EQUIPMENT USED

Antenna Mast : SUNOL  
 Bilog Antenna + 6dB : Schaffner CBL6112D#22617  
 HF#1 + HF#2  
 Rohde & Schwarz : ESW44  
 Turntable : SUNOL

FINAL RESULTS - QUASI-PEAK

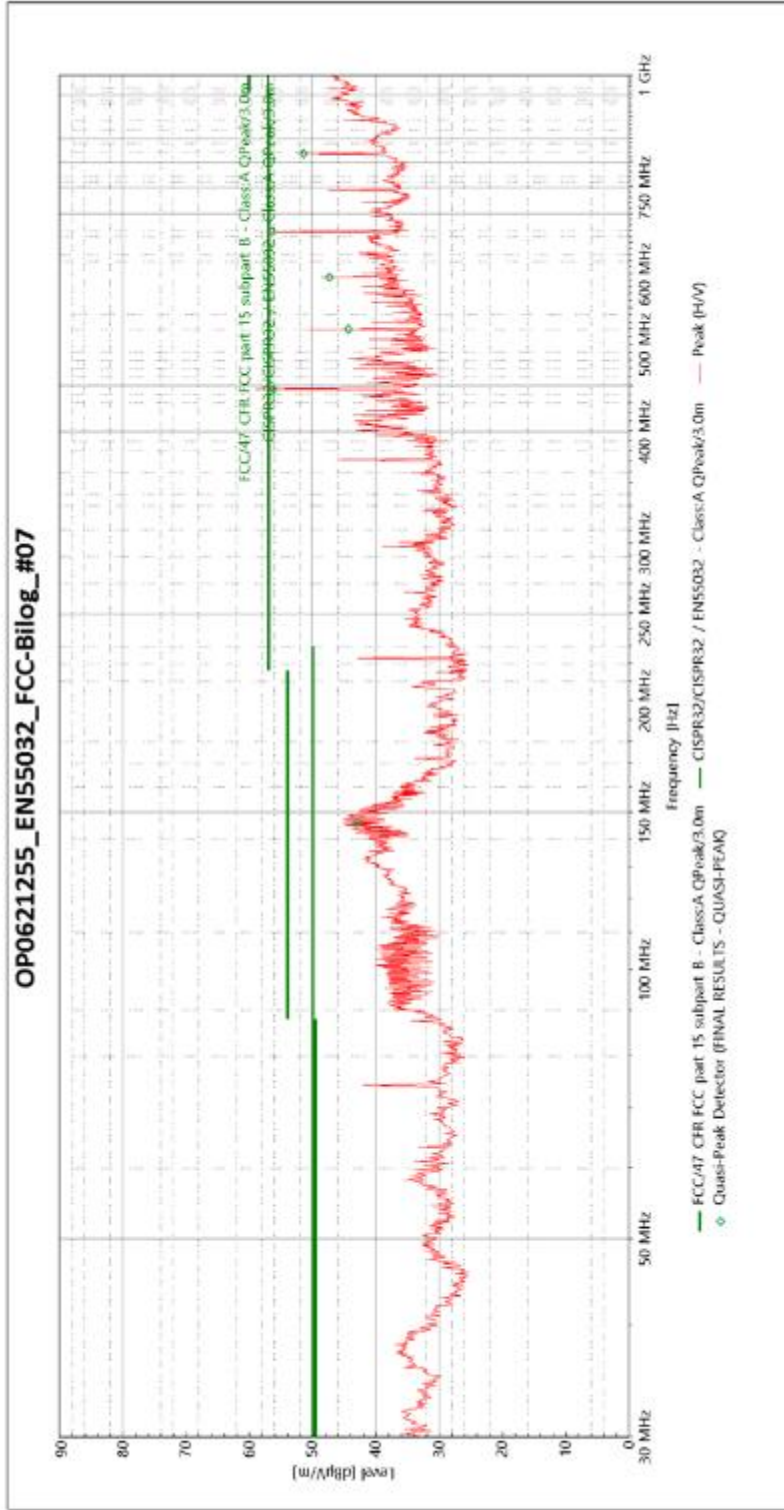
| Frequency      | SR # | Quasi-Peak Detector (dBµV/m) | Quasi-Peak Limit (dBµV/m) | Margin (dB) | Polarization | Azimuth (degree) | Height (m) | Correction (dB) |
|----------------|------|------------------------------|---------------------------|-------------|--------------|------------------|------------|-----------------|
| 145.855277 MHz | 1    | 43.112                       | 50                        | 6.888       | 0            | 281.5            | 1.098      | 17.792          |
| 445.519771 MHz | 1    | 56.183                       | 57                        | 0.817       | 0            | 189.25           | 1          | 24.55           |
| 519.774362 MHz | 1    | 44.417                       | 57                        | 12.583      | 0            | 181              | 2          | 25.66           |
| 594.027534 MHz | 1    | 47.362                       | 57                        | 9.618       | 0            | 27.5             | 1          | 27              |
| 668.279073 MHz | 1    | 56.458                       | 57                        | 0.542       | 0            | 200.5            | 1.099      | 27.482          |
| 816.78531 MHz  | 1    | 51.492                       | 57                        | 5.508       | 0            | 192.5            | 1.097      | 28.71           |

PR / OP0621255\_EN55032\_FCC-Bilog\_#07





OP0621255\_EN55032\_FCC-Bilog\_#07





RADIATED EMISSIONS – ELECTRIC FIELD  
page 1 / 2

Project: OP0621255

Customer: Inogeni

DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

Equipment: CAM300  
 Manufacturer: Inogeni  
 Hardware Version:  
 Software Version:

RADIATED EMISSIONS MEASUREMENT: OP0621255\_EN55032\_FCC-Horn\_#10

Test Location: Anechoic chamber  
 Test Date: 2022-08-15 5:00:19 PM  
 Operator(s): Jean Cadotte  
 Test Standard: EN55032 / FCC part 15 subpart B / Class A  
 Power: 230V/50Hz  
 Operating Mode:  
 Comments:

TEST PARAMETERS

| Frequency Range | Bandwidth | Test Distance |
|-----------------|-----------|---------------|
| 1 GHz - 3.6 GHz | 1 MHz     | 3 m           |
| 3.6 GHz - 6 GHz | 1 MHz     | 3 m           |

TEST EQUIPMENT USED

Antenna Mast : SUNOL  
 HF#1+HF#2 + HF-LNA + 3dB  
 Horn Antenna : Com-Power AH-118  
 Rohde & Schwarz : ESW44  
 Turntable : SUNOL

FINAL RESULTS - PEAK

| Frequency       | SR # | Peak Detector (dBµV/m) | Peak Limit (dBµV/m) | Margin (dB) | Polarization | Azimuth (degree) | Height (m) | Correction (dB) |
|-----------------|------|------------------------|---------------------|-------------|--------------|------------------|------------|-----------------|
| 1.113797001 GHz | 1    | 57.227                 | 76                  | 18.773      | 0            | 149.25           | 2.922      | -14.15          |
| 1.336560544 GHz | 1    | 61.319                 | 76                  | 14.681      | 0            | 0                | 3.114      | -13.732         |
| 1.410815258 GHz | 1    | 60.78                  | 76                  | 15.22       | 0            | 249.5            | 3.877      | -13.237         |
| 1.485064794 GHz | 1    | 61.357                 | 76                  | 14.643      | 0            | 149.25           | 3.879      | -13.298         |

FINAL RESULTS - AVERAGE

| Frequency       | SR # | Average Detector (dBµV/m) | Average Limit (dBµV/m) | Margin (dB) | Polarization | Azimuth (degree) | Height (m) | Correction (dB) |
|-----------------|------|---------------------------|------------------------|-------------|--------------|------------------|------------|-----------------|
| 1.113797001 GHz | 1    | 50.214                    | 56                     | 5.786       | 0            | 149.25           | 2.922      | -14.15          |
| 1.336560544 GHz | 1    | 49.922                    | 56                     | 6.078       | 0            | 0                | 3.114      | -13.732         |
| 1.410815258 GHz | 1    | 47.519                    | 56                     | 8.481       | 0            | 249.5            | 3.877      | -13.237         |
| 1.485064794 GHz | 1    | 52.437                    | 56                     | 3.563       | 0            | 149.25           | 3.879      | -13.298         |

PR / OP0621255\_EN55032\_FCC-Horn\_#10







RADIATED EMISSIONS – ELECTRIC FIELD  
page 1 / 2

**Project:** OP0621255 **Customer:** Inogeni

**DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)**

Equipment: CAM300  
Manufacturer: Inogeni  
Hardware Version:  
Software Version:

**RADIATED EMISSIONS MEASUREMENT:** OP0621255\_ICES-003\_FCC-Horn\_#11

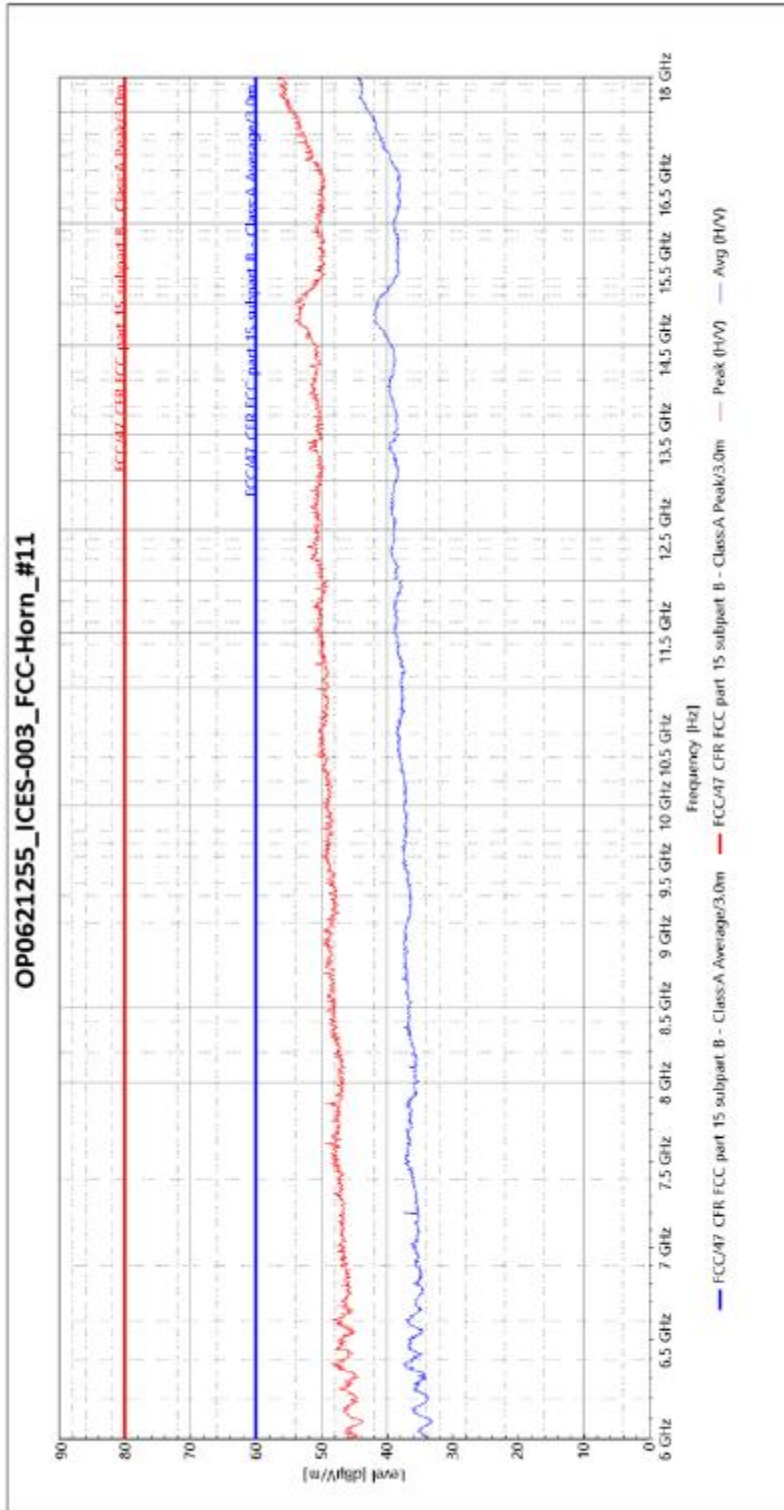
Test Location: Anechoic chamber  
Test Date: 2022-08-15 8:11:58 PM  
Operator(s): Jean Cadotte  
Test Standard: ICES-003 / FCC part 15 subpart B / Class A  
Power: 120V/60Hz  
Operating Mode:  
Comments:

| TEST PARAMETERS |           |               | TEST EQUIPMENT USED                              |
|-----------------|-----------|---------------|--|
| Frequency Range | Bandwidth | Test Distance |  |
| 6 GHz - 9 GHz   | 1 MHz     | 3 m           | Antenna Mast : SUNOL<br>HF#1+HF#2 + HF-LNA + 3dB |
| 9 GHz - 12 GHz  | 1 MHz     | 3 m           | Horn Antenna : Com-Power AH-118                  |
| 12 GHz - 15 GHz | 1 MHz     | 3 m           | Rohde & Schwarz : ESW44                          |
| 15 GHz - 18 GHz | 1 MHz     | 3 m           | Turntable : SUNOL                                |

PR / OP0621255\_ICES-003\_FCC-Horn\_#11



OP0621255\_ICES-003\_FCC-Horn\_#11



PR/OP0621255\_ICES-003\_FCC-Horn\_#11

**APPENDIX C  
HARMONIC CURRENT EMISSIONS LIMITS**

Teseq Proflite  
4542 Luterbach, Switzerland

2022-08-19  
10:35 AM

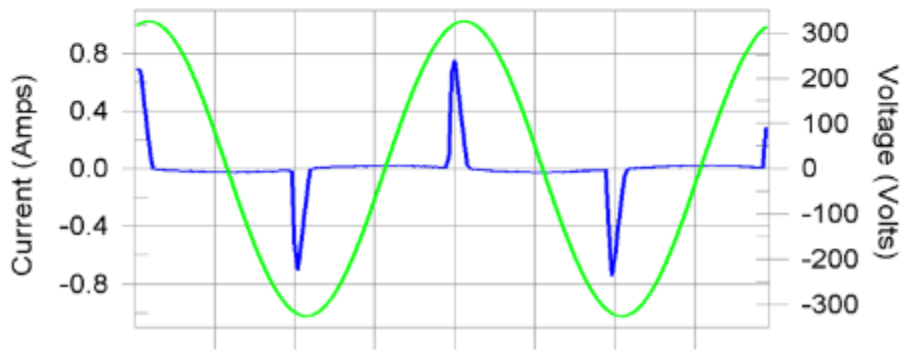
**Harmonics – Class-A per Ed. 4.0 (2014)(Run time)**

EUT: CAM300  
Test category: Class-A per Ed. 4.0 (2014) (European limits)  
Test date: 8/17/2022  
Test duration (min): 10  
Comment: Harmonics Fluctuations  
Customer: Inogeni OP0621255

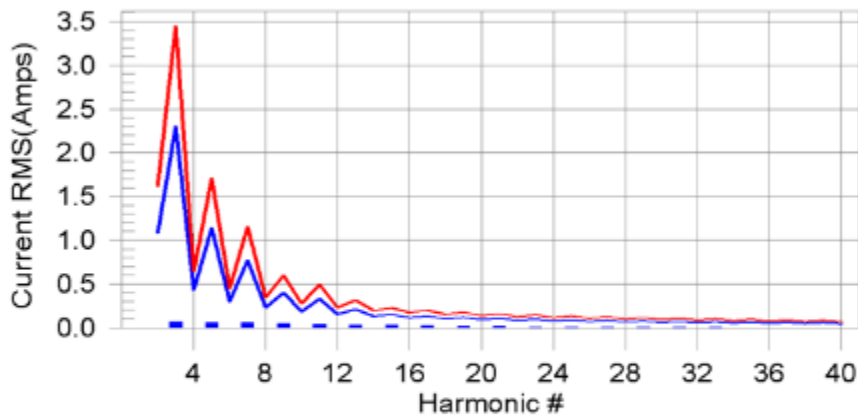
Tested by: Jean Cadotte  
Test Margin: 100  
Start time: 6:16:52 PM  
End time: 6:27:13 PM  
Data file name: H-000114.cts\_data

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line      European Limits



Test result: Pass Worst harmonic was #15 with 14.2% of the limit.

Teseq Profiline  
4542 Luterbach, Switzerland

2022-08-19  
10:35 AM

**Current Test Result Summary (Run time)**

EUT: CAM300 Tested by: Jean Cadotte  
 Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100  
 Test date: 8/17/2022 Start time: 6:16:52 PM End time: 6:27:13 PM  
 Test duration (min): 10 Data file name: H-000114.cts\_data  
 Comment: Harmonics Fluctuations  
 Customer: Inogeni OP0621255

Test Result: Pass Source qualification: Normal  
 THC(A): 0.144 I-THD(%): 200.6 POHC(A): 0.031 POHC Limit(A): 0.251

Highest parameter values during test:

|                       |                      |
|-----------------------|----------------------|
| V_RMS (Volts): 230.53 | Frequency(Hz): 50.00 |
| I_Peak (Amps): 0.776  | I_RMS (Amps): 0.165  |
| I_Fund (Amps): 0.072  | Crest Factor: 4.817  |
| Power (Watts): 15.5   | Power Factor: 0.416  |

| Harm# | Harms(avg) | 100%Limit | %of Limit | Harms(max) | 150%Limit | %of Limit | Status |
|-------|------------|-----------|-----------|------------|-----------|-----------|--------|
| 2     | 0.001      | 1.080     | N/A       | 0.001      | 1.620     | N/A       | Pass   |
| 3     | 0.066      | 2.300     | 2.9       | 0.066      | 3.450     | 1.9       | Pass   |
| 4     | 0.001      | 0.430     | N/A       | 0.001      | 0.645     | N/A       | Pass   |
| 5     | 0.062      | 1.140     | 5.5       | 0.063      | 1.710     | 3.7       | Pass   |
| 6     | 0.001      | 0.300     | N/A       | 0.001      | 0.450     | N/A       | Pass   |
| 7     | 0.058      | 0.770     | 7.5       | 0.058      | 1.155     | 5.0       | Pass   |
| 8     | 0.001      | 0.230     | N/A       | 0.001      | 0.345     | N/A       | Pass   |
| 9     | 0.052      | 0.400     | 13.0      | 0.052      | 0.600     | 8.7       | Pass   |
| 10    | 0.001      | 0.184     | N/A       | 0.001      | 0.276     | N/A       | Pass   |
| 11    | 0.045      | 0.330     | 13.8      | 0.046      | 0.495     | 9.3       | Pass   |
| 12    | 0.001      | 0.153     | N/A       | 0.001      | 0.230     | N/A       | Pass   |
| 13    | 0.039      | 0.210     | 18.4      | 0.039      | 0.315     | 12.3      | Pass   |
| 14    | 0.001      | 0.131     | N/A       | 0.001      | 0.197     | N/A       | Pass   |
| 15    | 0.032      | 0.150     | 21.1      | 0.032      | 0.225     | 14.2      | Pass   |
| 16    | 0.001      | 0.115     | N/A       | 0.001      | 0.173     | N/A       | Pass   |
| 17    | 0.025      | 0.132     | 19.1      | 0.026      | 0.198     | 12.9      | Pass   |
| 18    | 0.001      | 0.102     | N/A       | 0.001      | 0.153     | N/A       | Pass   |
| 19    | 0.020      | 0.118     | 16.6      | 0.020      | 0.178     | 11.2      | Pass   |
| 20    | 0.001      | 0.092     | N/A       | 0.001      | 0.138     | N/A       | Pass   |
| 21    | 0.015      | 0.107     | 14.3      | 0.016      | 0.161     | 9.7       | Pass   |
| 22    | 0.001      | 0.084     | N/A       | 0.001      | 0.125     | N/A       | Pass   |
| 23    | 0.012      | 0.098     | 12.8      | 0.013      | 0.147     | 8.7       | Pass   |
| 24    | 0.001      | 0.077     | N/A       | 0.001      | 0.115     | N/A       | Pass   |
| 25    | 0.011      | 0.090     | 12.2      | 0.011      | 0.135     | 8.3       | Pass   |
| 26    | 0.000      | 0.071     | N/A       | 0.001      | 0.107     | N/A       | Pass   |
| 27    | 0.010      | 0.083     | 12.5      | 0.011      | 0.125     | 8.5       | Pass   |
| 28    | 0.000      | 0.066     | N/A       | 0.001      | 0.099     | N/A       | Pass   |
| 29    | 0.010      | 0.078     | 12.9      | 0.010      | 0.116     | 8.8       | Pass   |
| 30    | 0.000      | 0.061     | N/A       | 0.001      | 0.092     | N/A       | Pass   |
| 31    | 0.009      | 0.073     | 13.0      | 0.010      | 0.109     | 8.8       | Pass   |
| 32    | 0.000      | 0.058     | N/A       | 0.001      | 0.086     | N/A       | Pass   |
| 33    | 0.009      | 0.068     | 12.6      | 0.009      | 0.102     | 8.5       | Pass   |
| 34    | 0.000      | 0.054     | N/A       | 0.001      | 0.081     | N/A       | Pass   |
| 35    | 0.007      | 0.064     | 11.5      | 0.008      | 0.096     | 7.8       | Pass   |
| 36    | 0.000      | 0.051     | N/A       | 0.001      | 0.077     | N/A       | Pass   |
| 37    | 0.006      | 0.061     | 10.0      | 0.006      | 0.091     | 6.8       | Pass   |
| 38    | 0.000      | 0.048     | N/A       | 0.000      | 0.073     | N/A       | Pass   |
| 39    | 0.005      | 0.058     | N/A       | 0.005      | 0.087     | N/A       | Pass   |
| 40    | 0.000      | 0.046     | N/A       | 0.000      | 0.069     | N/A       | Pass   |

Teseq Proflin  
4542 Luterbach, Switzerland

2022-08-19  
10:35 AM

**Voltage Source Verification Data (Run time)**

EUT: CAM300 Tested by: Jean Cadotte  
 Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100  
 Test date: 8/17/2022 Start time: 6:16:52 PM End time: 6:27:13 PM  
 Test duration (min): 10 Data file name: H-000114.cts\_data  
 Comment: Harmonics Fluctuations  
 Customer: Inogeni OP0621255

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

|                                 |                                |
|---------------------------------|--------------------------------|
| Voltage (Vrms): 230.53          | Frequency(Hz): 50.00           |
| I <sub>Peak</sub> (Amps): 0.776 | I <sub>RMS</sub> (Amps): 0.165 |
| I <sub>Fund</sub> (Amps): 0.072 | Crest Factor: 4.817            |
| Power (Watts): 15.5             | Power Factor: 0.416            |

| Harm# | Harmonics V-rms | Limit V-rms | % of Limit | Status |
|-------|-----------------|-------------|------------|--------|
| 2     | 0.027           | 0.461       | 5.90       | OK     |
| 3     | 0.417           | 2.075       | 20.09      | OK     |
| 4     | 0.029           | 0.461       | 6.26       | OK     |
| 5     | 0.043           | 0.922       | 4.67       | OK     |
| 6     | 0.030           | 0.461       | 6.45       | OK     |
| 7     | 0.024           | 0.692       | 3.40       | OK     |
| 8     | 0.007           | 0.461       | 1.55       | OK     |
| 9     | 0.029           | 0.461       | 6.26       | OK     |
| 10    | 0.007           | 0.461       | 1.52       | OK     |
| 11    | 0.029           | 0.231       | 12.63      | OK     |
| 12    | 0.012           | 0.231       | 5.37       | OK     |
| 13    | 0.022           | 0.231       | 9.55       | OK     |
| 14    | 0.003           | 0.231       | 1.51       | OK     |
| 15    | 0.021           | 0.231       | 9.30       | OK     |
| 16    | 0.012           | 0.231       | 5.11       | OK     |
| 17    | 0.020           | 0.231       | 8.63       | OK     |
| 18    | 0.014           | 0.231       | 6.19       | OK     |
| 19    | 0.017           | 0.231       | 7.38       | OK     |
| 20    | 0.013           | 0.231       | 5.67       | OK     |
| 21    | 0.016           | 0.231       | 6.76       | OK     |
| 22    | 0.005           | 0.231       | 2.01       | OK     |
| 23    | 0.013           | 0.231       | 5.59       | OK     |
| 24    | 0.003           | 0.231       | 1.11       | OK     |
| 25    | 0.012           | 0.231       | 5.12       | OK     |
| 26    | 0.002           | 0.231       | 0.94       | OK     |
| 27    | 0.017           | 0.231       | 7.16       | OK     |
| 28    | 0.002           | 0.231       | 0.71       | OK     |
| 29    | 0.011           | 0.231       | 4.71       | OK     |
| 30    | 0.003           | 0.230       | 1.29       | OK     |
| 31    | 0.013           | 0.231       | 5.61       | OK     |
| 32    | 0.002           | 0.231       | 0.70       | OK     |
| 33    | 0.013           | 0.231       | 5.48       | OK     |
| 34    | 0.002           | 0.231       | 0.78       | OK     |
| 35    | 0.013           | 0.231       | 5.45       | OK     |
| 36    | 0.003           | 0.231       | 1.10       | OK     |
| 37    | 0.012           | 0.231       | 5.32       | OK     |
| 38    | 0.002           | 0.231       | 1.00       | OK     |
| 39    | 0.010           | 0.231       | 4.52       | OK     |
| 40    | 0.006           | 0.230       | 2.52       | OK     |

**APPENDIX D**  
**VOLTAGE FLUCTUATIONS AND FLICKER LIMITATIONS**

Teseq Proflin  
4542 Luterbach, Switzerland

2022-08-19  
10:36 AM

**Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)**

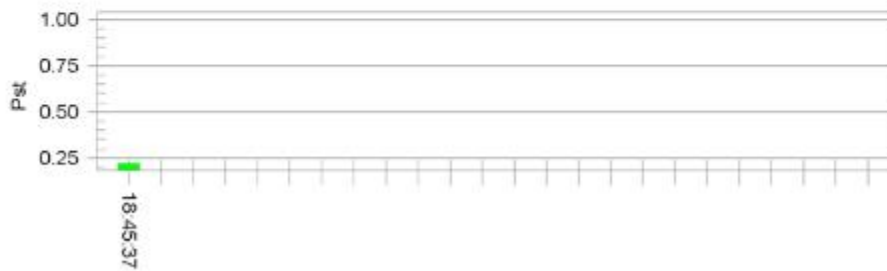
EUT: CAM300  
 Test category: All parameters (European limits)  
 Test date: 8/17/2022  
 Test duration (min): 10  
 Comment: Flickers Pst  
 Customer: Inogeni OP0621255

Tested by: Jean Cadotte  
 Test Margin: 100  
 End time: 6:45:38 PM  
 Data file name: F-000115.cts\_data

**Test Result: Pass**                      **Status: Test Completed**

**Pst<sub>t</sub> and limit line**

**European Limits**



**Plt and limit line**



**Parameter values recorded during the test:**

|                                 |        |                  |               |
|---------------------------------|--------|------------------|---------------|
| Vrms at the end of test (Volt): | 230.45 |                  |               |
| Highest dt (%):                 | 0.00   | Test limit (%):  | N/A      N/A  |
| T-max (mS):                     | 0      | Test limit (mS): | 500.0    Pass |
| Highest dc (%):                 | 0.00   | Test limit (%):  | 3.30     Pass |
| Highest dmax (%):               | 0.02   | Test limit (%):  | 4.00     Pass |
| Highest Pst (10 min. period):   | 0.224  | Test limit:      | 1.000    Pass |
| Highest Plt (2 hr. period):     | 0.098  | Test limit:      | 0.650    Pass |



Teseq Proflin  
4542 Luterbach, Switzerland

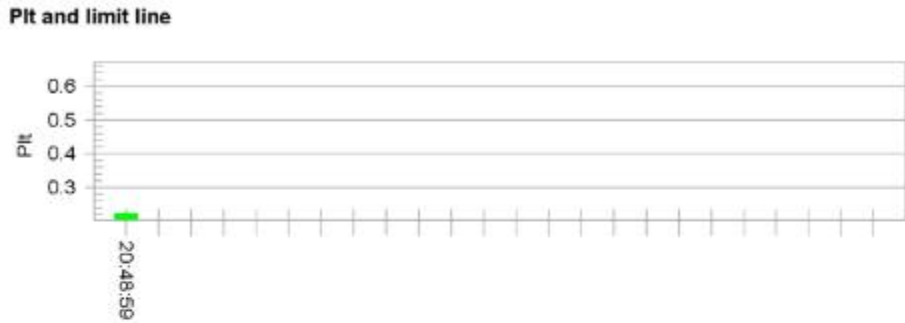
2022-08-19  
10:36 AM

**Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)**

EUT: CAM300  
 Test category: All parameters (European limits)  
 Test date: 8/17/2022  
 Test duration (min): 120  
 Comment: Flickers Pit  
 Customer: Inogeni OP0621255

Tested by: Jean Cadotte  
 Test Margin: 100  
 End time: 8:49:00 PM  
 Start time: 6:46:50 PM  
 Data file name: F-000116.cts\_data

Test Result: Pass                      Status: Test Completed



**Parameter values recorded during the test:**

|                                 |        |                  |               |
|---------------------------------|--------|------------------|---------------|
| Vrms at the end of test (Volt): | 230.46 |                  |               |
| Highest dt (%):                 | 0.00   | Test limit (%):  | N/A      N/A  |
| T-max (mS):                     | 0      | Test limit (mS): | 500.0    Pass |
| Highest dc (%):                 | 0.00   | Test limit (%):  | 3.30     Pass |
| Highest dmax (%):               | 0.10   | Test limit (%):  | 4.00     Pass |
| Highest Pst (10 min. period):   | 0.235  | Test limit:      | 1.000    Pass |
| Highest Plt (2 hr. period):     | 0.225  | Test limit:      | 0.650    Pass |



**APPENDIX E**  
**CLIENT DOCUMENTATION**

The following documentation was provided by manufacturer for internal information.  
NTS Canada did not verify and so does not take the responsibility of this information.

Annex

Differences between CAM300 and SHARE2U are the followings:

CAM300

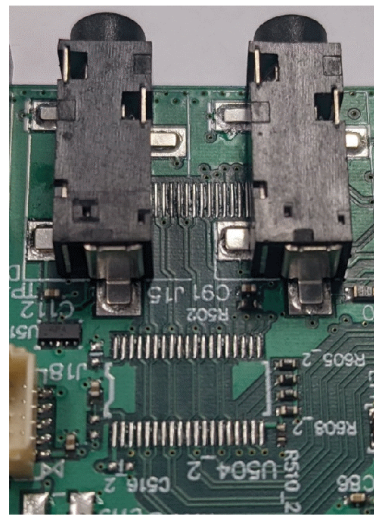


A 4th input is present, which is a HDMI connector.

SHARE2U



The 4th input from CAM300 which was a HDMI connector is replaced by Analog Audio IN and OUT on the SHARE2U



Taking into considerations that:

- RF emissions on the SHARE2U are similar to the CAM300
- Analog audio IN and OUT are functioning at low frequency (48 kHz) on the SHARE2U comparing to the HDMI on the CAM300.
- There are only a few components differences between CAM300 and SHARE2U (ESD protection, connector and some passive components)

We consider that the SHARE2U is equivalent to the CAM300 for this test report.

# END OF TEST REPORT