

Validation Report Prepared for:

Mars Purifier Ltd

Riverside House, Forge Lane, Halton, Lancaster, Lancashire, LA2 6RH, UK
+44 (0)1524 812899 www.connect2cleanrooms.com





Client Information

| | |
|----------------------------------|---|
| Client Name | Mars Purifier Ltd |
| Client Address | 31 Wollaton Hall Drive Nottingham UK NG8 1AF |
| Validation Carried out at | Mars Purifier Ltd |
| Validation Address | As Client Address |

Testing Organisation

| | |
|-----------------------|---|
| Client Name | Connect 2 Cleanrooms |
| Client Address | Riverside House Forge Lane Halton Lancaster Lancashire LA2 6RH |
| Date of Test | 29 January 2021 |
| Test Engineer | Craig Druce |
| C2C Reference | QD32032 Issue Number: 1 |

| Report prepared by: | Job title: | Signature: | Date |
|---------------------|-----------------------|--|------------------|
| Connor Lynch | Planning Co-ordinator |  | 22 February 2021 |
| Checked by: | Job Title: | Signature: | Date |
| John Merrill | Aftersales Lead |  | 22 February 2021 |

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Amendment Record

| Amendment record | | | |
|------------------|---|--|--------------------|
| Date | Details | Sections affected | Ref / issue number |
| 22/02/2021 | Customer name amended to read 'Mars Purifier Ltd' throughout report. Removal of FAO. | Report Name / Client Information / Appendix 1 - Airflow Test Results | 2 |

2.0 Scope of works

2.1 Validation work to be carried out

- Checking of all air flow quantities and volumes on 4 purifiers at 4 different speed settings
- Checking operation and function of all controls.
- Ensuring fan and air intakes are clear of any debris.
- Carry out function check of all systems.
- Visually inspect the equipment and installation for damage.
- Full validation report upon completion of testing.

3.0 Air volumes and change rates

3.1 Test Results

| CADR Performance to ISO14644 m3/hr | | | | |
|------------------------------------|----------------|-----|-----|------|
| | Speed Setting: | | | |
| Unit Reference: | 1 | 2 | 3 | 4 |
| GEN S | 36 | 95 | 144 | 159 |
| GEN X | 271 | 455 | 727 | N/A |
| GEN Y | 209 | 449 | 550 | 633 |
| GEN Z | 174 | 704 | 973 | 1156 |

3.2 Comments

Please see Appendix 1 for raw data from airflow tests

Appendix 1 - Airflow Test Results

| Project: Mars Purifiers Ltd - QD32032 - GEN S - 29/01/2021 | | | | |
|--|-------------|-------------------|---------------------|----------------------|
| Speed | Average Air | Supply Area | Calculated CADR | Calculated CADR |
| Setting: | Speed (m/s) | (m ²) | (m ³ /s) | (m ³ /hr) |
| Speed 1 | 0.71 | 0.014137167 | 0.010037 | 36.1346 |
| Speed 2 | 1.87 | 0.014137167 | 0.026437 | 95.1714 |
| Speed 3 | 2.83 | 0.014137167 | 0.040008 | 144.0295 |
| Speed 4 | 3.12 | 0.014137167 | 0.044108 | 158.7887 |
| Filter delivery area: 0.014137167 m ² | | | | |

| Project: Mars Purifiers Ltd - QD32032 - GEN X - 29/01/2021 | | | | |
|--|-------------|-------------------|---------------------|----------------------|
| Speed | Average Air | Supply Area | Calculated CADR | Calculated CADR |
| Setting: | Speed (m/s) | (m ²) | (m ³ /s) | (m ³ /hr) |
| Speed 1 | 1.65 | 0.045601549 | 0.075243 | 270.8732 |
| Speed 2 | 2.77 | 0.045601549 | 0.126316 | 454.7386 |
| Speed 3 | 4.43 | 0.045601549 | 0.202015 | 727.2535 |
| Filter delivery area: 0.045601549 m ² | | | | |

| Project: Mars Purifiers Ltd - QD32032 - GEN Y - 29/01/2021 | | | | |
|--|-------------|-------------------|---------------------|----------------------|
| Speed | Average Air | Supply Area | Calculated CADR | Calculated CADR |
| Setting: | Speed (m/s) | (m ²) | (m ³ /s) | (m ³ /hr) |
| Speed 1 | 1.56 | 0.037246723 | 0.058105 | 209.1776 |
| Speed 2 | 3.35 | 0.037246723 | 0.124777 | 449.1955 |
| Speed 3 | 4.10 | 0.037246723 | 0.152712 | 549.7616 |
| Speed 4 | 4.72 | 0.037246723 | 0.175805 | 632.8963 |
| Filter delivery area: 0.037246723 m ² | | | | |

| Project: Mars Purifiers Ltd - QD32032 - GEN Z - 29/01/2021 | | | | |
|--|-------------|-------------------|---------------------|----------------------|
| Speed | Average Air | Supply Area | Calculated CADR | Calculated CADR |
| Setting: | Speed (m/s) | (m ²) | (m ³ /s) | (m ³ /hr) |
| Speed 1 | 0.53 | 0.091 | 0.048230 | 173.6280 |
| Speed 2 | 2.15 | 0.091 | 0.195650 | 704.3400 |
| Speed 3 | 2.97 | 0.091 | 0.270270 | 972.9720 |
| Speed 4 | 3.53 | 0.091 | 0.321230 | 1156.4280 |
| Filter delivery area: 0.091 m ² | | | | |

Appendix 2 - Equipment associated with validation

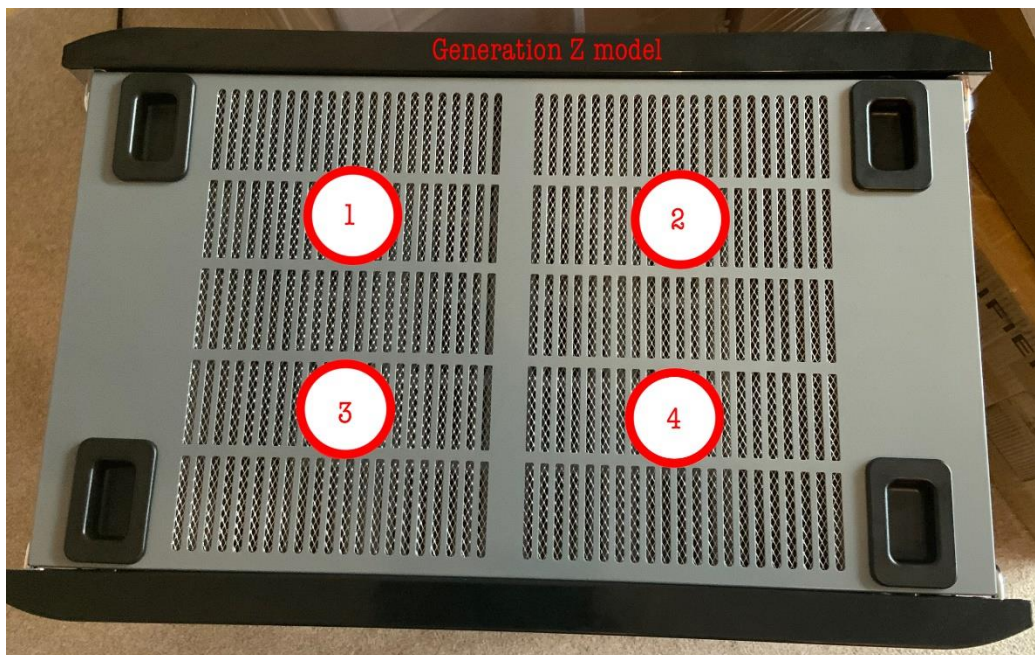
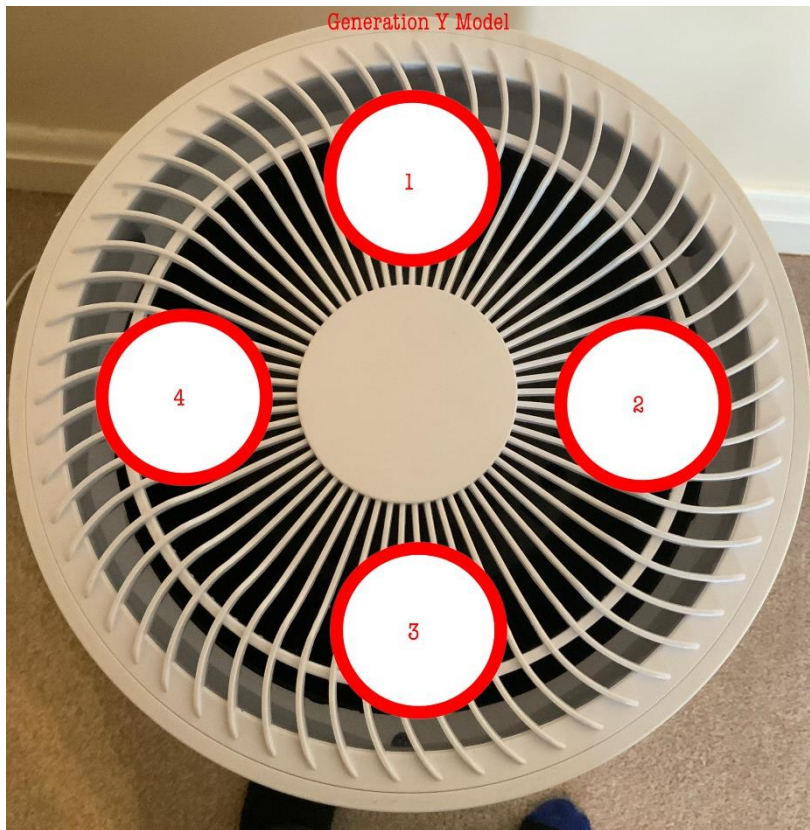
Equipment associated with validation

Calibration certificates will be issued as an attachment with the full report

| Description of Items | Model of Equipment | Serial Number | Calibration Due Date |
|----------------------------|--------------------|---------------|----------------------|
| Vane Anemometer/Flow Hoods | KIMO LV110 | 1P181269005 | 09/03/2021 |

Appendix 3 - Drawings associated with validation





Proposal Information:

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|---------------------|---|
| Prepared By: | Connor Lynch connor.lynch@connect2cleanrooms.com 01524 813020 |
| Checked By: | John Merrill john.merrill@connect2cleanrooms.com 01524 813020 |
| Issue Date: | 22/02/2021 |