

VALIDATION CERTIFICATE

Certificate Number	x x x x x x
Customer Name & Address	x x x x x x x x x x x x

DETAILS OF THE UNIT UNDER VALIDATION

Description	Temperature Mapping
Equipment	Vacuum Oven
Location	Quality Control Wet Lab
Make	Scientific Instruments
Serial Number	-
Validation Date	22.02.2009
Next Validation Suggested	22.02.2010

DETAILS OF THE STANDARD INSTRUMENT USED FOR VALIDATION

Description	Data Acquisition Switch
Make	Agilent
Model	34970A, 34901A
Range	Refer Certificate
Resolution	Refer Certificate
Accuracy	Refer Certificate
Calibrated at	Transcal
Certificate No.	TSC/09-10/197601
Next Calibration Due	21.08.2009

Validation carried under the following method :

- i) Temperature mapping (distribution of heat) is done at 8 different points as shown in the diagram no. VTD 47 for 24 hours.
- ii) The Vacuum Oven temperature is recorded from 22.02.2009 at 16 hours 30 min to 23.02.2009 at 19 hours 30 min for 10 min interval.
- iii) The Vacuum Oven Temperature is set at 35°C, 75°C, 100°C, & 125°C. After stabilization the readings are recorded for duration of 6 hours each.

Remarks :

1. Unit under validation done at site
2. Temperature at all 8 sensors meets the required temperature tolerance $\pm 2^{\circ}\text{C}$ and hence validated.
3. Validated results are attached.
4. Quote Certificate Number for any clarification.
5. Functional adequacy and frequency of validation of UNIT UNDER VALIDATION are user defined.

Validated By :

Authorised By :

TEMPERATURE DISTRIBUTION DATA SHEET

Instrument Name: Vacuum oven

Code: QC/VO/44

LOADED OVEN @ TEMPERATURE 35 ± 2°C

Cycle time: 6 hours

From 22 Feb 2009 16:30:56

To 22 Feb 2009 22:30:56

TIME H:M:S	CH 01	CH 02	CH 03	CH 04	CH 05	CH 06	CH 07	CH 08	Minnum	Maximum
16:30:56	35.70	35.90	35.40	35.40	35.10	35.10	34.90	34.90	34.90	35.90
16:40:56	35.70	35.90	35.40	35.50	35.20	35.20	34.90	34.90	34.90	35.90
16:50:56	35.70	35.80	35.30	35.50	35.20	35.20	34.90	34.90	34.90	35.80
17:00:56	35.60	35.70	35.40	35.40	35.20	35.30	35.00	34.90	34.90	35.70
17:10:56	35.40	35.50	35.10	35.40	35.10	35.30	34.80	34.80	34.80	35.50
17:20:56	35.40	35.50	35.10	35.40	35.10	35.20	34.80	34.80	34.80	35.50
17:30:56	35.40	35.60	35.20	35.30	35.10	35.20	34.90	34.80	34.80	35.60
17:40:56	35.50	35.80	35.20	35.30	35.20	35.20	34.90	34.90	34.90	35.80
17:50:56	35.50	35.80	35.20	35.40	35.20	35.30	34.90	34.90	34.90	35.80
18:00:56	35.50	35.70	35.20	35.40	35.20	35.20	34.90	34.90	34.90	35.70
18:10:56	35.50	35.80	35.20	35.40	35.20	35.20	34.90	34.90	34.90	35.80
18:20:56	35.50	35.80	35.20	35.50	35.20	35.30	35.00	34.90	34.90	35.80
18:30:56	35.50	35.80	35.30	35.50	35.20	35.20	35.00	34.90	34.90	35.80
18:40:56	35.50	35.80	35.20	35.50	35.20	35.20	34.90	34.90	34.90	35.80
18:50:56	35.50	35.80	35.20	35.40	35.20	35.20	35.00	34.80	34.80	35.80
19:00:56	35.50	35.80	35.20	35.40	35.20	35.20	34.90	34.90	34.90	35.80
19:10:56	35.60	35.90	35.20	35.40	35.20	35.30	34.90	34.90	34.90	35.90
19:20:56	35.50	35.80	35.30	35.40	35.20	35.20	34.90	34.90	34.90	35.80
19:30:56	35.50	35.90	35.30	35.40	35.20	35.30	35.00	34.90	34.90	35.90
19:40:56	35.60	35.90	35.30	35.40	35.20	35.30	35.00	34.90	34.90	35.90
19:50:56	35.40	35.70	35.20	35.40	35.10	35.20	34.90	34.90	34.90	35.70
20:00:56	35.50	35.80	35.20	35.30	35.20	35.20	35.00	34.90	34.90	35.80
20:10:56	35.50	35.80	35.30	35.30	35.20	35.30	35.00	34.90	34.90	35.80
20:20:56	35.60	35.90	35.30	35.30	35.20	35.30	35.00	35.00	35.00	35.90
20:30:56	35.60	35.90	35.30	35.40	35.20	35.30	35.00	34.90	34.90	35.90
20:40:56	35.50	35.80	35.30	35.50	35.20	35.20	35.00	34.90	34.90	35.80
20:50:56	35.50	35.80	35.20	35.40	35.20	35.20	34.90	34.90	34.90	35.80
21:00:56	35.50	35.80	35.20	35.40	35.20	35.30	34.90	34.90	34.90	35.80
21:10:56	35.30	35.70	35.10	35.30	35.20	35.20	34.80	34.80	34.80	35.70
21:20:56	35.20	35.50	35.20	35.30	35.10	35.10	34.80	34.80	34.80	35.50
21:30:56	35.10	35.50	35.20	35.30	35.10	35.10	34.80	34.80	34.80	35.50
21:40:56	35.20	35.50	35.20	35.30	35.10	35.10	34.70	34.70	34.70	35.50
21:50:56	35.20	35.40	35.10	35.30	35.10	35.10	34.70	34.70	34.70	35.40
22:00:56	35.10	35.20	35.10	35.30	35.10	35.20	34.70	34.70	34.70	35.30
22:10:56	35.20	35.40	35.10	35.40	35.10	35.10	34.70	34.70	34.70	35.40
22:20:56	35.20	35.40	35.20	35.30	35.10	35.10	34.70	34.70	34.70	35.40
22:30:56	35.10	35.40	35.20	35.30	35.10	35.10	34.60	34.70	34.60	35.40

Checked By

Approved By

Data Acquisition System

TEMPERATURE DISTRIBUTION DATA SHEET

Instrument Name: Vacuum oven

Code: QC/VO/44

LOADED OVEN @ TEMPARATURE 75 ± 2°C

Cycle time: 6 hours

From 22 Feb 2009 23:30:56

To 23 Feb 2009 05:30:56

TIME H:M:S	CH 01	CH 02	CH 03	CH 04	CH 05	CH 06	CH 07	CH 08	Minnum	Maximum
23:30:56	75.90	75.60	75.40	75.30	74.90	74.80	74.60	74.30	74.30	75.90
23:40:56	75.50	75.50	75.50	75.30	74.90	74.90	74.50	74.30	74.30	75.50
23:50:56	75.50	75.50	75.50	75.30	74.90	74.90	74.60	74.20	74.20	75.50
0:00:56	75.80	75.60	75.50	75.20	74.70	74.70	74.80	74.40	74.40	75.80
0:10:56	75.60	75.40	75.40	75.20	74.70	74.80	74.70	74.40	74.40	75.60
0:20:56	75.50	75.50	75.50	75.20	74.80	74.80	74.60	74.30	74.30	75.50
0:30:56	75.60	75.50	75.60	75.20	74.70	74.70	74.70	74.40	74.40	75.60
0:40:56	75.80	75.60	75.50	75.20	74.70	74.70	74.90	74.50	74.50	75.80
0:50:56	75.90	75.70	75.50	75.20	74.60	74.70	74.80	74.40	74.40	75.90
1:00:56	75.90	75.70	75.40	75.30	74.50	74.60	74.80	74.40	74.40	75.90
1:10:56	75.90	75.70	75.30	75.30	74.60	74.70	74.90	74.40	74.40	75.90
1:20:56	75.90	75.70	75.20	75.30	74.50	74.60	74.90	74.40	74.40	75.90
1:30:56	75.90	75.70	75.20	75.30	74.50	74.60	74.90	74.30	74.30	75.90
1:40:56	75.90	75.70	75.20	75.30	74.50	74.70	74.90	74.40	74.40	75.90
1:50:56	76.00	75.80	75.30	75.40	74.60	74.70	74.80	74.30	74.30	76.00
2:00:56	76.00	75.80	75.40	75.40	74.60	74.70	74.80	74.30	74.30	76.00
2:10:56	76.00	75.80	75.40	75.40	74.70	74.80	74.80	74.30	74.30	76.00
2:20:56	76.00	75.80	75.40	75.40	74.60	74.70	74.80	74.30	74.30	76.00
2:30:56	76.00	75.80	75.30	75.40	74.60	74.70	74.90	74.30	74.30	76.00
2:40:56	76.00	75.80	75.40	75.40	74.60	74.80	74.80	74.30	74.30	76.00
2:50:56	76.00	75.80	75.50	75.50	74.70	74.70	74.80	74.20	74.20	76.00
3:00:56	76.00	75.80	75.40	75.40	74.70	74.80	74.80	74.20	74.20	76.00
3:10:56	76.10	75.90	75.40	75.40	74.70	74.80	74.70	74.20	74.20	76.10
3:20:56	76.00	75.80	75.30	75.40	74.60	74.70	74.80	74.20	74.20	76.00
3:30:56	76.10	75.90	75.40	75.50	74.70	74.70	74.80	74.20	74.20	76.10
3:40:56	76.10	75.90	75.50	75.50	74.70	74.80	74.70	74.20	74.20	76.10
3:50:56	76.10	75.90	75.30	75.50	74.60	74.70	74.80	74.20	74.20	76.10
4:00:56	76.00	75.80	75.40	75.40	74.60	74.70	74.90	74.30	74.30	76.00
4:10:56	76.00	75.80	75.30	75.40	74.60	74.70	74.90	74.30	74.30	76.00
4:20:56	75.90	75.90	75.40	75.40	74.50	74.60	74.90	74.30	74.30	75.90
4:30:56	76.00	75.80	75.40	75.40	74.60	74.80	74.80	74.30	74.30	76.00
4:40:56	75.90	75.90	75.30	75.50	74.60	74.70	74.90	74.30	74.30	75.90
4:50:56	76.00	75.80	75.20	75.40	74.60	74.70	74.80	74.20	74.20	76.00
5:00:56	75.90	75.90	75.20	75.30	74.50	74.50	74.90	74.40	74.40	75.90
5:10:56	75.80	75.80	75.20	75.30	74.50	74.60	74.80	74.40	74.40	75.80
5:20:56	75.80	75.70	75.10	75.20	74.50	74.50	74.80	74.40	74.40	75.80
5:30:56	75.80	75.70	75.30	75.20	74.40	74.60	74.80	74.40	74.40	75.80

Checked By

Approved By

Data Acquisition System

TEMPERATURE DISTRIBUTION DATA SHEET

Instrument Name: Vacuum oven

Code: QC/VO/44

LOADED OVEN @ TEMPARATURE 100 ± 2°C

Cycle time: 6 hours

From 23 Feb 2009 06:30:56

To 23 Feb 2009 12:30:56

TIME H:M:S	CH 01	CH 02	CH 03	CH 04	CH 05	CH 06	CH 07	CH 08	Minnum	Maximum
6:30:56	100.90	100.80	100.70	100.70	98.80	98.70	100.30	100.70	98.70	100.90
6:40:56	100.80	101.10	101.20	100.80	98.70	98.70	100.20	100.30	98.70	101.20
6:50:56	101.20	101.20	101.20	101.00	98.50	98.52	99.90	101.00	98.50	101.20
7:00:56	101.20	101.10	101.20	101.00	98.60	98.60	100.10	100.90	98.60	101.20
7:10:56	101.00	100.90	100.70	100.70	98.70	99.10	100.30	100.80	98.70	101.00
7:20:56	100.60	100.90	100.60	100.60	98.50	98.90	100.40	100.50	98.50	100.90
7:30:56	100.90	100.90	100.90	100.60	98.80	98.70	100.70	100.70	98.70	100.90
7:40:56	101.00	100.90	101.20	100.70	98.80	98.70	100.70	100.80	98.70	101.20
7:50:56	100.90	100.80	100.80	100.70	98.80	98.70	100.70	100.70	98.70	100.90
8:00:56	100.80	100.80	100.80	100.60	98.60	98.80	100.80	100.70	98.60	100.80
8:10:56	100.90	100.80	100.90	100.60	98.80	98.70	100.60	100.70	98.70	100.90
8:20:56	101.20	101.10	101.20	101.00	98.80	98.60	101.00	101.00	98.60	101.20
8:30:56	101.00	100.90	100.90	100.70	98.80	99.00	100.70	100.80	98.80	101.00
8:40:56	100.80	100.70	100.80	100.50	98.70	99.10	100.60	100.60	98.70	100.80
8:50:56	100.90	100.90	101.00	100.70	98.70	99.20	100.70	100.70	98.70	101.00
9:00:56	101.10	101.20	101.30	101.00	98.80	99.20	101.00	101.00	98.80	101.30
9:10:56	101.10	101.20	101.20	100.90	98.90	99.10	101.00	101.00	98.90	101.20
9:20:56	100.90	100.70	100.80	100.60	98.70	99.10	100.60	100.60	98.70	100.90
9:30:56	101.10	100.90	101.10	100.70	98.80	99.10	100.50	100.60	98.80	101.10
9:40:56	100.80	101.00	101.20	100.80	99.00	98.90	100.80	100.30	98.90	101.20
9:50:56	101.10	101.20	101.20	100.90	99.10	98.80	101.00	100.50	98.80	101.20
10:00:56	101.10	101.10	101.00	100.90	99.00	98.80	100.80	100.90	98.80	101.10
10:10:56	101.20	101.20	101.20	100.90	99.00	98.50	101.00	101.00	98.50	101.20
10:20:56	101.20	101.20	100.90	100.90	99.00	98.60	101.00	101.00	98.60	101.20
10:30:56	101.20	101.10	101.20	100.90	99.00	98.60	101.00	101.00	98.60	101.20
10:40:56	101.10	101.10	101.20	100.90	99.00	98.60	100.90	100.90	98.60	101.20
10:50:56	101.10	101.10	101.20	100.80	98.90	98.60	101.00	100.90	98.60	101.20
11:00:56	101.10	101.00	101.10	100.80	98.90	98.60	100.80	100.90	98.60	101.10
11:10:56	101.00	101.00	101.00	100.70	98.80	98.80	100.80	100.80	98.80	101.00
11:20:56	100.90	100.80	100.80	100.60	98.70	98.80	100.60	100.70	98.70	100.90
11:30:56	100.90	100.80	100.70	100.60	98.70	98.90	100.60	100.40	98.70	100.90
11:40:56	100.80	100.90	100.90	100.60	98.50	99.00	100.50	100.40	98.50	100.90
11:50:56	100.70	100.70	100.90	100.60	98.60	98.90	100.40	100.50	98.60	100.90
12:00:56	100.90	100.90	101.00	100.60	98.80	98.70	100.70	100.70	98.70	101.00
12:10:56	100.80	100.80	100.70	100.60	98.70	98.90	100.60	100.60	98.70	100.80
12:20:56	100.90	100.80	100.90	100.60	98.60	98.90	100.60	100.60	98.60	100.90
12:30:56	100.70	100.70	100.70	100.60	98.50	98.90	100.40	100.50	98.50	100.70

Checked By

Approved By

TEMPERATURE DISTRIBUTION DATA SHEET

Instrument Name: Vacuum oven

Code: QC/VO/44

LOADED OVEN @ TEMPERATURE 125 ± 2°C

Cycle time: 6 hours

From 23 Feb 2009 13:30:56

To 23 Feb 2009 19:30:56

TIME H:M:S	CH 01	CH 02	CH 03	CH 04	CH 05	CH 06	CH 07	CH 08	Minmum	Maximum
13:30:56	126.60	126.70	126.30	126.40	124.00	123.60	123.70	123.30	123.30	126.70
13:40:56	126.80	126.70	126.50	126.20	124.20	123.70	124.00	123.60	123.60	126.80
13:50:56	126.80	126.50	126.60	126.20	124.30	124.10	124.20	123.70	123.70	126.80
14:00:56	126.70	126.40	126.80	126.40	124.10	123.80	124.00	123.50	123.50	126.80
14:10:56	126.30	126.50	126.40	126.30	124.20	123.50	123.80	123.30	123.30	126.50
14:20:56	126.30	126.60	126.60	126.40	124.00	123.80	123.80	123.50	123.50	126.60
14:30:56	126.60	126.30	126.40	126.30	124.00	124.00	124.20	123.70	123.70	126.60
14:40:56	126.70	126.30	126.30	126.30	123.90	123.80	124.30	123.30	123.30	126.70
14:50:56	126.80	126.50	126.30	126.00	124.10	123.90	123.70	124.10	123.70	126.80
15:00:56	126.80	126.70	126.20	126.20	123.60	123.60	123.70	123.80	123.60	126.80
15:10:56	126.80	126.70	126.00	126.00	123.80	123.50	123.60	124.00	123.50	126.80
15:20:56	126.60	126.60	126.40	126.40	124.00	123.80	123.80	123.70	123.70	126.60
15:30:56	126.60	126.80	126.50	126.10	124.80	123.60	123.70	123.80	123.60	126.80
15:40:56	126.60	126.60	126.30	126.40	123.80	123.70	123.60	123.60	123.60	126.60
15:50:56	126.70	126.50	126.50	126.50	123.80	123.90	123.40	123.40	123.40	126.70
16:00:56	126.40	126.80	126.40	126.50	123.90	123.60	123.50	123.60	123.50	126.80
16:10:56	126.40	126.60	126.60	126.30	123.60	124.00	123.80	123.20	123.20	126.60
16:20:56	126.30	126.40	126.30	126.30	123.80	123.70	123.30	123.50	123.30	126.40
16:30:56	126.10	126.30	126.30	126.20	123.80	123.70	123.20	123.50	123.20	126.30
16:40:56	126.30	126.30	126.30	126.20	123.80	123.70	123.20	123.50	123.20	126.30
16:50:56	126.30	126.30	126.20	126.20	123.70	123.50	123.40	123.30	123.30	126.30
17:00:56	126.30	126.20	126.30	126.30	123.60	123.80	123.70	123.50	123.50	126.30
17:10:56	126.40	126.40	126.30	126.40	123.90	123.80	123.40	123.70	123.40	126.40
17:20:56	126.40	126.50	126.40	126.40	123.80	124.10	123.60	123.80	123.60	126.50
17:30:56	126.50	126.40	126.40	126.50	123.80	124.00	123.50	123.80	123.50	126.50
17:40:56	126.50	126.40	126.40	126.40	123.90	124.20	123.50	123.80	123.50	126.50
17:50:56	126.50	126.60	126.40	126.50	123.70	124.20	123.60	123.80	123.60	126.60
18:00:56	126.40	126.30	126.50	126.50	124.00	124.10	123.60	123.70	123.60	126.50
18:10:56	126.40	126.40	126.50	126.30	124.10	124.00	123.50	123.70	123.50	126.50
18:20:56	126.50	126.30	126.40	126.20	124.20	124.10	123.60	123.80	123.60	126.50
18:30:56	126.40	126.70	126.30	126.40	124.30	124.10	123.70	123.90	123.70	126.70
18:40:56	126.30	126.70	126.30	126.30	123.90	124.30	123.80	124.00	123.80	126.70
18:50:56	126.20	126.50	126.20	126.30	123.80	124.20	124.10	123.50	123.50	126.50
19:00:56	126.40	126.30	126.30	126.30	124.10	124.00	123.60	123.70	123.60	126.40
19:10:56	126.40	126.30	126.30	126.40	124.00	124.00	123.50	123.70	123.50	126.40
19:20:56	126.40	126.20	126.30	126.30	123.90	123.70	123.30	123.60	123.30	126.40
19:30:56	126.40	126.30	126.40	126.30	124.10	123.90	123.50	123.70	123.50	126.40

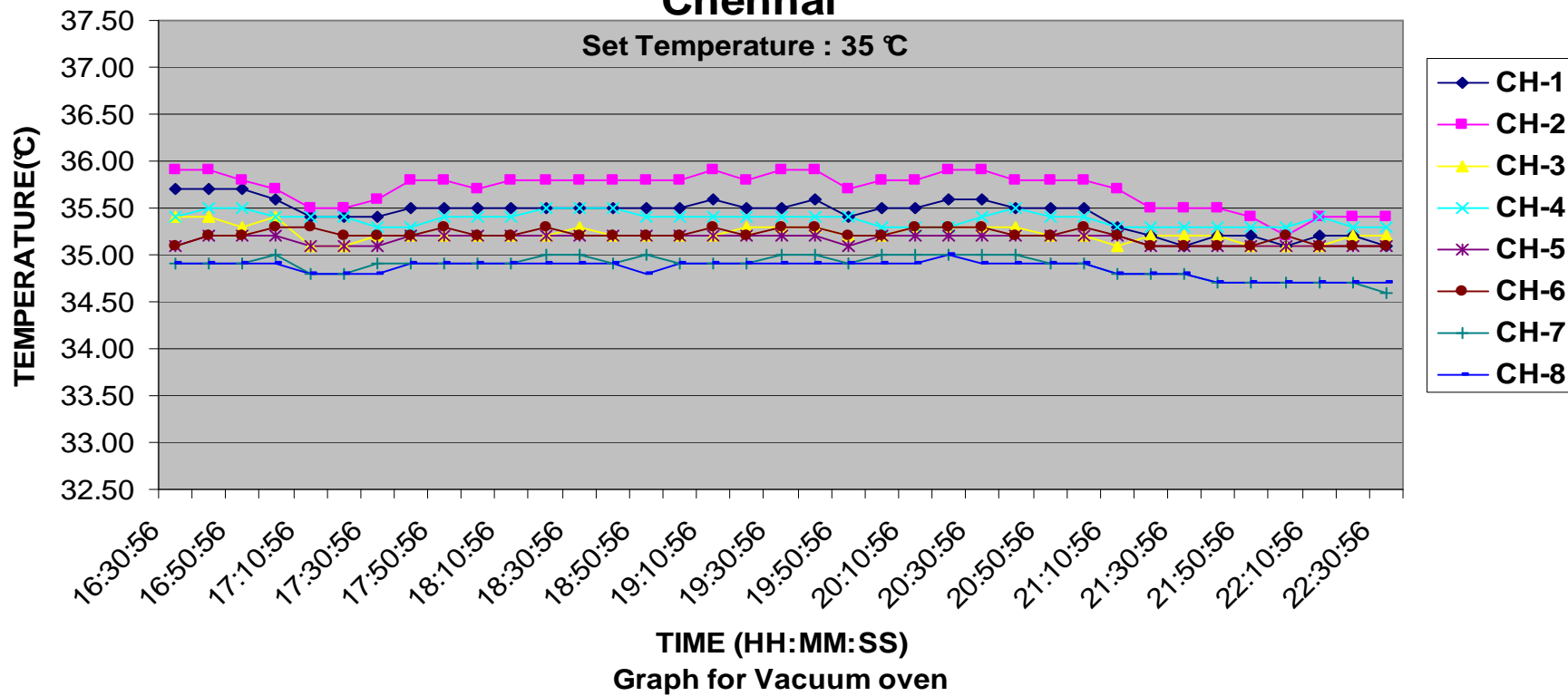
Checked By

Approved By

Data Acquisition System

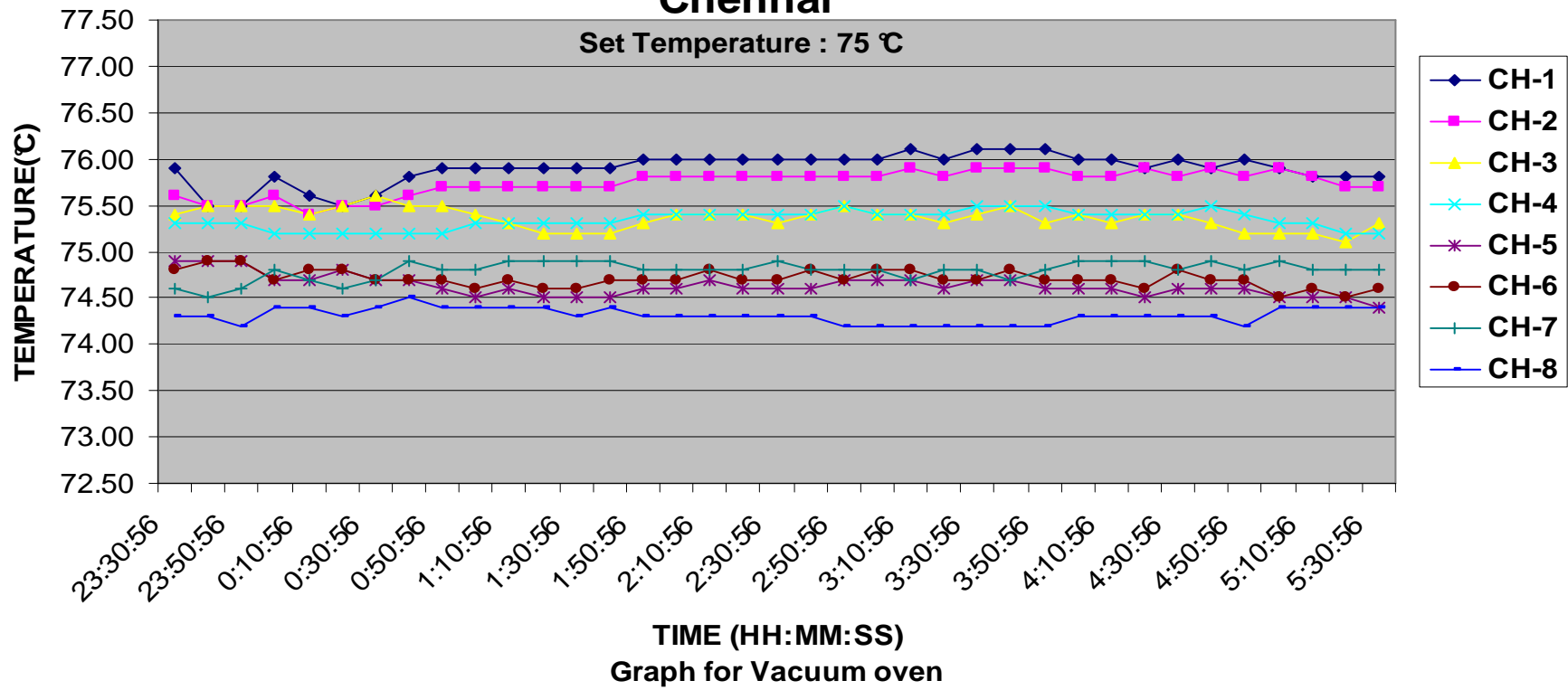
R & D Instrument Services Chennai

Set Temperature : 35 °C



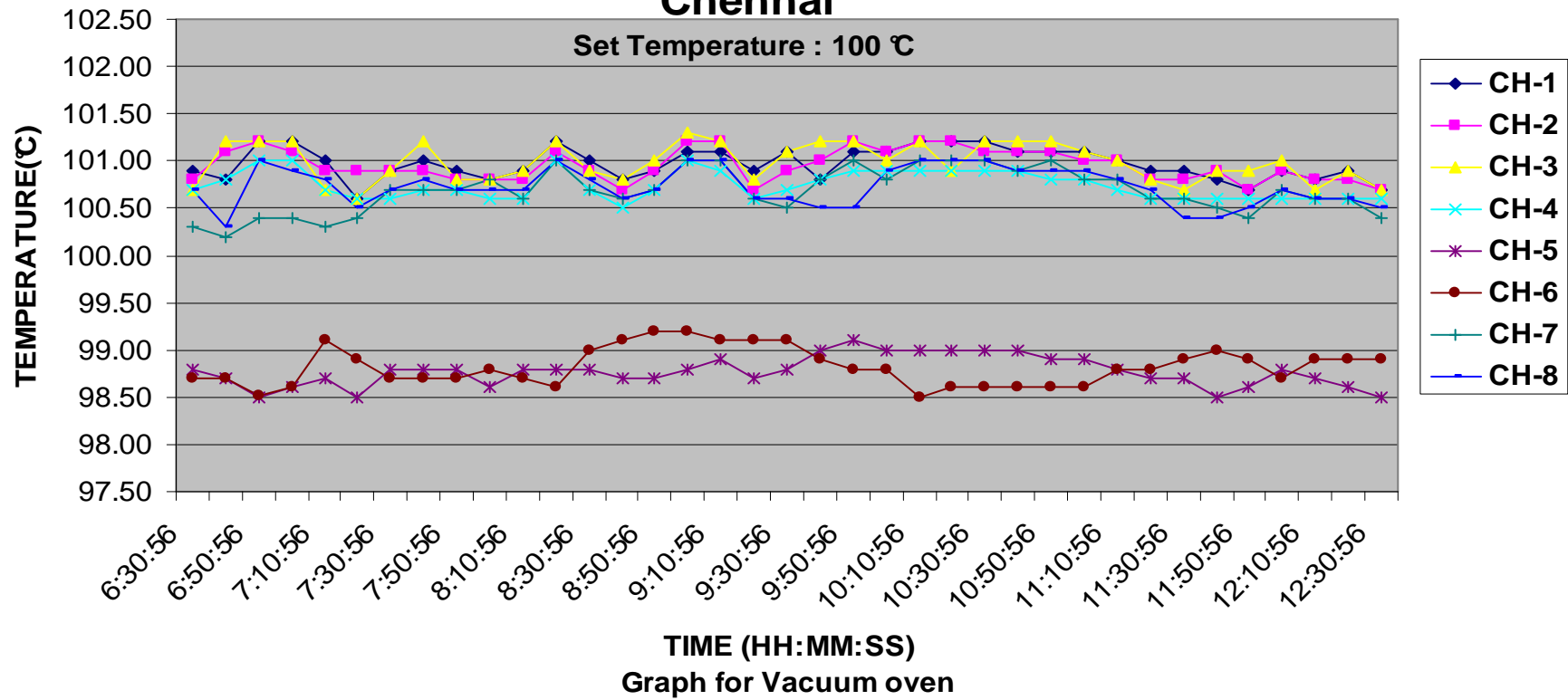
R & D Instrument Services Chennai

Set Temperature : 75 °C



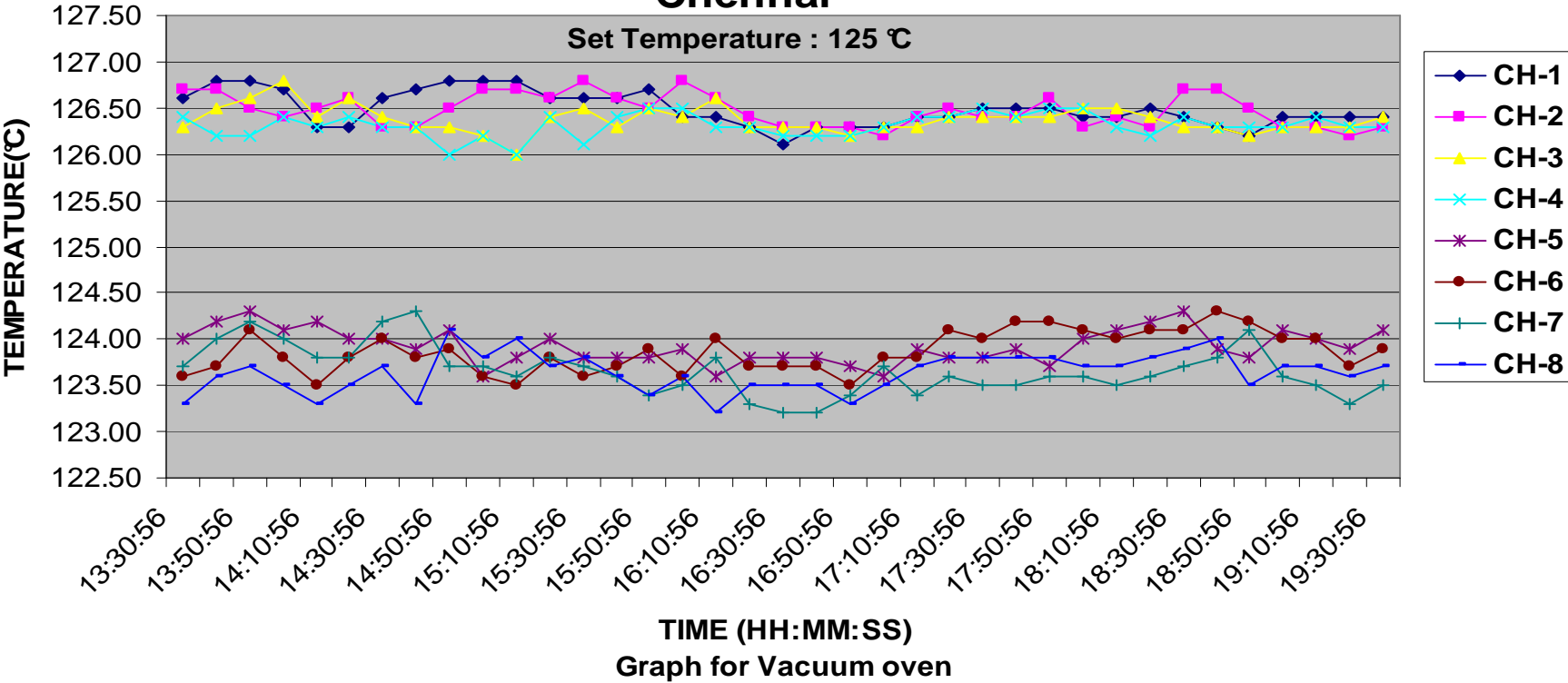
R & D Instrument Services Chennai

Set Temperature : 100 °C



R & D Instrument Services Chennai

Set Temperature : 125 °C



SUMMARY:

Loaded oven observation for temperature $35 \pm 2^\circ\text{C}$

	CH-01	CH-02	CH-03	CH-04	CH-05	CH-06	CH-07	CH-08
MIN	35.1	35.2	35.1	35.3	35.1	35.1	34.6	34.7
MAX	35.7	35.9	35.4	35.5	35.2	35.3	35.0	35.0

Loaded oven observation for temperature $75 \pm 2^\circ\text{C}$

	CH-01	CH-02	CH-03	CH-04	CH-05	CH-06	CH-07	CH-08
MIN	75.5	75.4	75.1	75.2	74.4	74.5	74.5	74.2
MAX	76.1	75.9	75.6	75.5	74.9	74.9	74.9	74.5

Loaded oven observation for temperature $100 \pm 2^\circ\text{C}$

	CH-01	CH-02	CH-03	CH-04	CH-05	CH-06	CH-07	CH-08
MIN	100.6	100.7	100.6	100.5	98.5	98.5	99.9	100.3
MAX	101.2	101.2	101.3	101.0	99.1	99.2	101.0	101.0

Loaded oven observation for temperature $125 \pm 2^\circ\text{C}$

	CH-01	CH-02	CH-03	CH-04	CH-05	CH-06	CH-07	CH-08
MIN	126.1	126.2	126.0	126.0	123.6	123.5	123.2	123.2
MAX	126.8	126.8	126.8	126.5	124.8	124.3	124.3	124.1

CONCLUSION:

As per the above results we conclude that all the channel results were within the acceptance criteria.
ie. for temperatures $35 \pm 2^\circ\text{C}$, $75 \pm 2^\circ\text{C}$, $100 \pm 2^\circ\text{C}$ and $125 \pm 2^\circ\text{C}$.
Hence the vacuum oven with ID.No:QC/VO/44 is validated and shall be used for routine purpose.

Validated by

Approved by