ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Tuesday, January 3, 2023 9:05:31 AM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20230103_090531.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3024.8	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2848.9	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1600.8	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.2	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.5	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.2	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2848.9	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.0	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.8	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.7	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.3	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.15	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.06	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	-0.02	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	-0.09	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.1	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.8	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.2	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.5	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	4.21	**Fail**
Energy ratio 2000 / 1000	4.00	0.80	0.15	**Fail**

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.31	**Fail**
P-P noise 2050 - 1950 (%T)	0.221	0.00	3.296	**Fail**
P-P noise 1050 - 950 (%T)	0.10	0.00	0.43	**Fail**
P-P noise 550 - 450 (%T)	1.50	0.00	5.34	**Fail**
RMS noise 4050 - 3950	0.05	0.00	0.07	**Fail**
RMS noise 2050 - 1950	0.039	0.00	0.655	**Fail**
RMS noise 1050 - 950	0.014	0.00	0.100	**Fail**
RMS noise 550 - 450	0.30	0.00	1.14	**Fail**

PV Detector linearity

Slope	1.10	0.90	1.01	Pass
Intercept (%T)	1.00	-1.00	0.14	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.1	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.0	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.1	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.8	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.7	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.3	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.2	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Wednesday, January 4, 2023 11:40:54 AM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20230104_114054.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.6	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.1	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1600.8	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.2	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.4	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.1	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.1	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.0	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.8	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.7	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.3	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.2	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.25	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.05	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.14	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	-0.03	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.1	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.8	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.4	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	4.18	**Fail**
Energy ratio 2000 / 1000	4.00	0.80	0.14	**Fail**

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.37	**Fail**
P-P noise 2050 - 1950 (%T)	0.221	0.00	2.892	**Fail**
P-P noise 1050 - 950 (%T)	0.10	0.00	0.35	**Fail**
P-P noise 550 - 450 (%T)	1.50	0.00	5.42	**Fail**
RMS noise 4050 - 3950	0.05	0.00	0.08	**Fail**
RMS noise 2050 - 1950	0.039	0.00	0.628	**Fail**
RMS noise 1050 - 950	0.014	0.00	0.086	**Fail**
RMS noise 550 - 450	0.30	0.00	1.07	**Fail**

PV Detector linearity

Slope	1.10	0.90	1.01	Pass
Intercept (%T)	1.00	-1.00	0.12	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.2	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.1	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.0	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.8	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.7	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.3	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.2	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

System Suitability

Operator: OMNICAdmin
Date: Thu, Jan 05 2023, 11:34 AM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Smart Accessory: iTX Smart ATR
Smart Accessory Serial Number: Y92890
Experiment title: Smart iTX - Diamond
Experiment file: C:\my documents\omnic\Param\Smart iTX_Diamond.exp

Test Description	High Limit	Low Limit	Measured	Result
Throughput test (%T)				
Throughput at 3990.00 (cm-1)	120.0	80.0	100.04	Pass
Throughput at 2600.00 (cm-1)	120.0	80.0	100.21	Pass
Throughput at 1000.00 (cm-1)	120.0	80.0	99.97	Pass
Contamination test				
Contamination 3100.00 to 2800.00 (cm-1)	0.2	0.0	0.0	Pass
Contamination 1800.00 to 1600.00 (cm-1)	0.2	0.0	0.0	Pass
Contamination 1300.00 to 1100.00 (cm-1)	0.2	0.0	0.0	Pass
Noise level				
100% Line Slope 2200.00 - 2100.00 (%T)	0.61	0.0	2.075	**Out of spec.**
RMS noise 2200.00 - 2100.00	0.112	0.0	0.519	**Out of spec.**
Noise trend limit	0.028	-0.028	-0.001	Pass
X-Axis Accuracy				
Peak at 3060.00 (cm-1)	3061.0	3059.0	3059.15	Pass
Peak at 1601.00 (cm-1)	1602.0	1600.0	1600.81	Pass
Peak at 1028.30 (cm-1)	1029.3	1027.3	1028.19	Pass
Y-Axis Accuracy				
Peak Height at 1154.50 (cm-1)	0.44	0.14	0.31	Pass
Peak Height at 1028.30 (cm-1)	0.79	0.49	0.69	Pass
Peak Height at 1601.30 (cm-1)	1.14	0.74	1.03	Pass

Performed by:_____ Title:_____ Date:_____
Approved by:_____ Title:_____ Date:_____
Comments:_____

Max should be closer to 1
KJB T

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Thursday, January 12, 2023 12:25:27 PM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20230112_122527.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.5	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.3	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.0	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.4	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.6	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.6	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.3	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.9	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.00	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.01	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.02	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.36	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.47	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.02	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.014	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.01	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.17	Pass
RMS noise 4050 - 3950	0.05	0.00	0.00	Pass
RMS noise 2050 - 1950	0.039	0.00	0.003	Pass
RMS noise 1050 - 950	0.014	0.00	0.002	Pass
RMS noise 550 - 450	0.30	0.00	0.02	Pass

PV Detector linearity

Slope	1.10	0.90	1.04	Pass
Intercept (%T)	1.00	-1.00	0.00	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.3	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.9	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

System Suitability

Operator: OMNICAdmin
Date: Thu, Jan 12 2023, 12:20 AM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Experiment title: Transmission
Experiment file: C:\my documents\omnic\Param\Default.exp

Test Description	High Limit	Low Limit	Measured	Result
Throughput test (%T)				
Throughput at 3990.00 (cm-1)	120.0	80.0	99.54	Pass
Throughput at 2600.00 (cm-1)	120.0	80.0	99.77	Pass
Throughput at 1000.00 (cm-1)	120.0	80.0	99.91	Pass
Contamination test				
Contamination 3100.00 to 2800.00 (cm-1)	0.2	0.0	0.0	Pass
Contamination 1800.00 to 1600.00 (cm-1)	0.2	0.0	0.0	Pass
Contamination 1300.00 to 1100.00 (cm-1)	0.2	0.0	0.0	Pass
Noise level				
100% Line Slope 2200.00 - 2100.00 (%T)	0.61	0.0	0.008	Pass
RMS noise 2200.00 - 2100.00	0.112	0.0	0.002	Pass
Noise trend limit	0.028	-0.028	0.0	Pass
X-Axis Accuracy				
Peak at 3060.00 (cm-1)	3061.0	3059.0	3059.56	Pass
Peak at 1601.00 (cm-1)	1602.0	1600.0	1601.0	Pass
Peak at 1028.30 (cm-1)	1029.3	1027.3	1028.35	Pass
Y-Axis Accuracy				
Peak Height at 1154.50 (cm-1)	0.44	0.14	0.31	Pass
Peak Height at 1028.30 (cm-1)	0.79	0.49	0.69	Pass
Peak Height at 1601.30 (cm-1)	1.14	0.74	1.02	Pass

Performed by:_____ Title:_____ Date:_____
Approved by:_____ Title:_____ Date:_____
Comments:_____

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Wednesday, July 12, 2023 9:15:47 AM (GMT-05:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20230712_091547.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3026.0	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.9	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.2	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.5	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.7	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	39.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.8	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.8	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.2	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.1	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.6	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.5	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	38.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	-0.01	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.01	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	-0.02	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	-0.05	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.9	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.2	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.5	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.7	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.45	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.17	**Fail**
Energy ratio 2000 / 1000	4.00	0.80	1.26	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.32	**Fail**
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.080	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.12	**Fail**
P-P noise 550 - 450 (%T)	1.50	0.00	2.53	**Fail**
RMS noise 4050 - 3950	0.05	0.00	0.07	**Fail**
RMS noise 2050 - 1950	0.039	0.00	0.018	Pass
RMS noise 1050 - 950	0.014	0.00	0.029	**Fail**
RMS noise 550 - 450	0.30	0.00	0.48	**Fail**

PV Detector linearity

Slope	1.10	0.90	1.04	Pass
Intercept (%T)	1.00	-1.00	-0.23	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.9	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.8	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.2	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.1	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.6	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Thursday, July 20, 2023 10:49:42 AM (GMT-05:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20230720_104942.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.7	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.5	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.1	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.4	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.7	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.8	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.5	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.6	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	-0.02	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.01	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.8	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.7	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.33	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.53	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.08	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.044	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.06	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.50	Pass
RMS noise 4050 - 3950	0.05	0.00	0.02	Pass
RMS noise 2050 - 1950	0.039	0.00	0.010	Pass
RMS noise 1050 - 950	0.014	0.00	0.015	**Fail**
RMS noise 550 - 450	0.30	0.00	0.10	Pass

PV Detector linearity

Slope	1.10	0.90	1.03	Pass
Intercept (%T)	1.00	-1.00	0.01	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.8	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.6	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.1	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Monday, July 24, 2023 12:19:47 PM (GMT-05:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20230724_121947.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.8	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.6	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.1	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.4	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.7	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.8	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.6	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.1	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.6	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.04	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.00	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.8	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.7	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.35	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.56	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.07	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.030	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.09	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.49	Pass
RMS noise 4050 - 3950	0.05	0.00	0.01	Pass
RMS noise 2050 - 1950	0.039	0.00	0.005	Pass
RMS noise 1050 - 950	0.014	0.00	0.015	**Fail**
RMS noise 550 - 450	0.30	0.00	0.09	Pass

PV Detector linearity

Slope	1.10	0.90	1.01	Pass
Intercept (%T)	1.00	-1.00	0.04	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.8	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.6	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.1	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Wednesday, July 26, 2023 9:40:35 AM (GMT-05:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20230726_094035.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.6	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.4	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.1	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.4	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.6	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.6	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.4	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.00	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.01	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.34	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.47	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.02	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.016	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.02	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.12	Pass
RMS noise 4050 - 3950	0.05	0.00	0.00	Pass
RMS noise 2050 - 1950	0.039	0.00	0.004	Pass
RMS noise 1050 - 950	0.014	0.00	0.004	Pass
RMS noise 550 - 450	0.30	0.00	0.03	Pass

PV Detector linearity

Slope	1.10	0.90	1.03	Pass
Intercept (%T)	1.00	-1.00	0.02	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.4	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Tuesday, October 17, 2023 1:35:11 PM (GMT-05:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231017_133511.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3020.0	**Fail**
Peak at 2851.0 (cm-1)	2856.0	2846.0	2854.9	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1590.0	**Fail**
Peak at 1028.0 (cm-1)	1029.0	1027.0	1027.9	Pass
Peak at 907.0 (cm-1)	908.0	906.0	924.9	**Fail**
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	0.00	**Fail**
Resolution 1589 - 1583 (%T)	100.00	12.00	0.00	**Fail**
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	2	**Fail**
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.4	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.2	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.9	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.01	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.00	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	4.63	**Fail**
Energy ratio 2000 / 1000	4.00	0.80	0.13	**Fail**

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.07	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.475	**Fail**
P-P noise 1050 - 950 (%T)	0.10	0.00	0.07	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.96	Pass
RMS noise 4050 - 3950	0.05	0.00	0.01	Pass
RMS noise 2050 - 1950	0.039	0.00	0.096	**Fail**
RMS noise 1050 - 950	0.014	0.00	0.014	Pass
RMS noise 550 - 450	0.30	0.00	0.18	Pass

PV Detector linearity

Slope	1.10	0.90	0.98	Pass
Intercept (%T)	1.00	-1.00	0.08	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.4	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.2	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.3	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.9	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Tuesday, October 17, 2023 12:42:09 PM (GMT-05:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231017_124209.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.4	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.2	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.0	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.3	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.6	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.4	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.3	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.9	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	-0.04	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	-0.01	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.01	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	4.63	**Fail**
Energy ratio 2000 / 1000	4.00	0.80	0.13	**Fail**

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.05	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.422	**Fail**
P-P noise 1050 - 950 (%T)	0.10	0.00	0.08	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.76	Pass
RMS noise 4050 - 3950	0.05	0.00	0.01	Pass
RMS noise 2050 - 1950	0.039	0.00	0.085	**Fail**
RMS noise 1050 - 950	0.014	0.00	0.017	**Fail**
RMS noise 550 - 450	0.30	0.00	0.16	Pass

PV Detector linearity

Slope	1.10	0.90	0.98	Pass
Intercept (%T)	1.00	-1.00	0.05	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.4	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.3	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.2	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.9	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Tuesday, October 17, 2023 10:03:16 AM (GMT-05:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231017_100316.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.4	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.2	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.0	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.3	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.6	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.4	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.2	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.9	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	-0.06	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	-0.01	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	-0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	4.08	**Fail**
Energy ratio 2000 / 1000	4.00	0.80	0.13	**Fail**

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.06	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.338	**Fail**
P-P noise 1050 - 950 (%T)	0.10	0.00	0.09	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	1.08	Pass
RMS noise 4050 - 3950	0.05	0.00	0.02	Pass
RMS noise 2050 - 1950	0.039	0.00	0.075	**Fail**
RMS noise 1050 - 950	0.014	0.00	0.019	**Fail**
RMS noise 550 - 450	0.30	0.00	0.22	Pass

PV Detector linearity

Slope	1.10	0.90	0.98	Pass
Intercept (%T)	1.00	-1.00	0.05	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.4	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.2	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.2	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.9	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Tuesday, October 31, 2023 9:53:14 AM (GMT-05:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231031_095314.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.5	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.4	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.1	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.4	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.6	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.6	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.4	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.00	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	-0.01	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.45	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.35	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.56	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.02	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.012	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.02	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.19	Pass
RMS noise 4050 - 3950	0.05	0.00	0.00	Pass
RMS noise 2050 - 1950	0.039	0.00	0.003	Pass
RMS noise 1050 - 950	0.014	0.00	0.003	Pass
RMS noise 550 - 450	0.30	0.00	0.03	Pass

PV Detector linearity

Slope	1.10	0.90	1.01	Pass
Intercept (%T)	1.00	-1.00	0.01	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.3	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Thursday, November 9, 2023 4:55:32 PM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231109_165532.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.3	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.1	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1600.9	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.3	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.5	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.3	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.1	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.3	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.8	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	-0.03	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.00	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.3	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.8	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.2	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.5	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.12	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	4.52	**Fail**
Energy ratio 2000 / 1000	4.00	0.80	0.14	**Fail**

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.04	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.323	**Fail**
P-P noise 1050 - 950 (%T)	0.10	0.00	0.03	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.82	Pass
RMS noise 4050 - 3950	0.05	0.00	0.01	Pass
RMS noise 2050 - 1950	0.039	0.00	0.053	**Fail**
RMS noise 1050 - 950	0.014	0.00	0.008	Pass
RMS noise 550 - 450	0.30	0.00	0.16	Pass

PV Detector linearity

Slope	1.10	0.90	0.99	Pass
Intercept (%T)	1.00	-1.00	-0.02	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.3	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.1	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.2	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.8	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.8	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.3	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.2	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Thursday, November 9, 2023 3:09:31 PM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231109_150931.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.3	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.1	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1600.9	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.2	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.5	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.3	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.1	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.3	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.8	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.2	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	-0.03	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.00	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	-0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.3	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.8	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.2	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.5	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.12	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	3.75	**Fail**
Energy ratio 2000 / 1000	4.00	0.80	0.13	**Fail**

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.06	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.317	**Fail**
P-P noise 1050 - 950 (%T)	0.10	0.00	0.05	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.71	Pass
RMS noise 4050 - 3950	0.05	0.00	0.01	Pass
RMS noise 2050 - 1950	0.039	0.00	0.058	**Fail**
RMS noise 1050 - 950	0.014	0.00	0.011	Pass
RMS noise 550 - 450	0.30	0.00	0.16	Pass

PV Detector linearity

Slope	1.10	0.90	0.99	Pass
Intercept (%T)	1.00	-1.00	0.04	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.3	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.1	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.2	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.8	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.8	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.3	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.2	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Monday, November 13, 2023 1:39:10 PM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231113_133910.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.5	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.4	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.1	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.4	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.6	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.6	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.4	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.00	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.00	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.00	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.45	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.34	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.55	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.05	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.045	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.01	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.26	Pass
RMS noise 4050 - 3950	0.05	0.00	0.01	Pass
RMS noise 2050 - 1950	0.039	0.00	0.010	Pass
RMS noise 1050 - 950	0.014	0.00	0.002	Pass
RMS noise 550 - 450	0.30	0.00	0.05	Pass

PV Detector linearity

Slope	1.10	0.90	1.01	Pass
Intercept (%T)	1.00	-1.00	-0.02	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.4	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Monday, November 13, 2023 9:27:43 AM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231113_092743.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.2	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.1	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1600.9	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.3	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.5	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.3	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.1	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.3	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.8	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.4	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	-0.09	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.01	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.00	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.3	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.5	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	4.40	**Fail**
Energy ratio 2000 / 1000	4.00	0.80	0.14	**Fail**

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.05	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.213	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.05	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	1.17	Pass
RMS noise 4050 - 3950	0.05	0.00	0.01	Pass
RMS noise 2050 - 1950	0.039	0.00	0.055	**Fail**
RMS noise 1050 - 950	0.014	0.00	0.011	Pass
RMS noise 550 - 450	0.30	0.00	0.25	Pass

PV Detector linearity

Slope	1.10	0.90	0.99	Pass
Intercept (%T)	1.00	-1.00	0.03	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.3	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.1	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.2	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1600.9	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1582.8	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.3	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Monday, November 27, 2023 10:52:39 AM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231127_105239.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.5	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.4	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.1	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.4	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.6	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.6	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.4	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153:5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.00	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.00	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	-0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.34	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.55	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.01	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.006	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.01	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.19	Pass
RMS noise 4050 - 3950	0.05	0.00	0.00	Pass
RMS noise 2050 - 1950	0.039	0.00	0.001	Pass
RMS noise 1050 - 950	0.014	0.00	0.003	Pass
RMS noise 550 - 450	0.30	0.00	0.04	Pass

PV Detector linearity

Slope	1.10	0.90	1.01	Pass
Intercept (%T)	1.00	-1.00	-0.04	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.4	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Monday, December 4, 2023 1:44:06 PM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231204_134406.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.5	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.4	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.1	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.4	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.6	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.6	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.4	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.02	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.00	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.00	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.23	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.36	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.02	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.008	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.02	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.43	Pass
RMS noise 4050 - 3950	0.05	0.00	0.00	Pass
RMS noise 2050 - 1950	0.039	0.00	0.002	Pass
RMS noise 1050 - 950	0.014	0.00	0.004	Pass
RMS noise 550 - 450	0.30	0.00	0.07	Pass

PV Detector linearity

Slope	1.10	0.90	1.02	Pass
Intercept (%T)	1.00	-1.00	-0.01	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.4	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Monday, December 11, 2023 3:29:25 PM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231211_152925.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.5	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.4	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.1	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.4	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.6	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.6	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.4	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.01	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	-0.01	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	-0.01	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.35	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.56	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.01	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.007	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.02	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.30	Pass
RMS noise 4050 - 3950	0.05	0.00	0.00	Pass
RMS noise 2050 - 1950	0.039	0.00	0.001	Pass
RMS noise 1050 - 950	0.014	0.00	0.003	Pass
RMS noise 550 - 450	0.30	0.00	0.05	Pass

PV Detector linearity

Slope	1.10	0.90	1.01	Pass
Intercept (%T)	1.00	-1.00	-0.04	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.4	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Monday, December 11, 2023 2:29:28 PM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231211_142928.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.6	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.0	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.2	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1027.5	Pass
Peak at 907.0 (cm-1)	908.0	906.0	930.2	**Fail**
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	122724.00	**Fail**
Resolution 1589 - 1583 (%T)	100.00	12.00	-442.00	**Fail**
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	3	**Fail**
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.6	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.4	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.1	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	24.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.00	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	0.00	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.00	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.23	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.36	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.02	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.009	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.02	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.24	Pass
RMS noise 4050 - 3950	0.05	0.00	0.00	Pass
RMS noise 2050 - 1950	0.039	0.00	0.002	Pass
RMS noise 1050 - 950	0.014	0.00	0.005	Pass
RMS noise 550 - 450	0.30	0.00	0.04	Pass

PV Detector linearity

Slope	1.10	0.90	1.02	Pass
Intercept (%T)	1.00	-1.00	-0.03	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.4	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Friday, December 22, 2023 11:40:54 AM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231222_114054.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.5	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.4	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.0	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.4	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.6	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	7	Pass
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.6	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.4	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.01	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	-0.01	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	0.00	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.34	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.55	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.02	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.021	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.03	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.18	Pass
RMS noise 4050 - 3950	0.05	0.00	0.00	Pass
RMS noise 2050 - 1950	0.039	0.00	0.004	Pass
RMS noise 1050 - 950	0.014	0.00	0.009	Pass
RMS noise 550 - 450	0.30	0.00	0.03	Pass

PV Detector linearity

Slope	1.10	0.90	1.02	Pass
Intercept (%T)	1.00	-1.00	0.01	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.4	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.

ValPro Qualification Report

Qualification test: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV
Operator: OMNICAdmin
Date: Friday, December 22, 2023 10:42:36 AM (GMT-06:00)
Instrument: Nicolet iS20 Serial number: BEP2210424
Filename: Nicolet iS20 KBr - Factory (CP,JP,PHEUR,PV,USP) - PV_20231222_104236.spg

Test description	High limit	Low limit	Measured	Result
CP Wavenumber accuracy				
Peak at 3027.0 (cm-1)	3032.0	3022.0	3025.5	Pass
Peak at 2851.0 (cm-1)	2856.0	2846.0	2849.9	Pass
Peak at 1601.0 (cm-1)	1602.0	1600.0	1601.1	Pass
Peak at 1028.0 (cm-1)	1029.0	1027.0	1028.3	Pass
Peak at 907.0 (cm-1)	908.0	906.0	906.0	Pass
CP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	78.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	29.00	Pass
CP Peak Resolution				
Peaks between 3120 and 2850 cm-1	7	7	6	**Fail**
JP Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.5	3058.5	3059.6	Pass
Peak at 2849.5 (cm-1)	2851.0	2848.0	2849.4	Pass
Peak at 1942.9 (cm-1)	1944.4	1941.4	1942.5	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
JP Optical resolution				
Resolution 2870 - 2849.5 (%T)	100.00	18.00	37.00	Pass
Resolution 1589 - 1583 (%T)	100.00	12.00	25.00	Pass
JP Repeatability				
Peak at 3027.1 (cm-1)	5.00	-5.00	0.00	Pass
Peak at 1028.3 (cm-1)	1.00	-1.00	0.00	Pass
Intensity at 2849.5 (%T)	0.50	-0.50	-0.01	Pass
Intensity at 1028.3 (%T)	0.50	-0.50	-0.02	Pass
PHEUR Wavenumber accuracy				
Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.4	Pass
Peak at 906.6 (cm-1)	907.6	905.6	906.6	Pass
PHEUR Optical resolution				
Resolution 2870 - 2849.5 (Abs)	10.00	0.33	0.44	Pass
Resolution 1589 - 1583 (Abs)	10.00	0.08	0.13	Pass
PV Energy ratio				
Energy ratio 4000 / 2000	1.00	0.20	0.34	Pass
Energy ratio 2000 / 1000	4.00	0.80	1.55	Pass

PV Noise level

P-P noise 4050 - 3950 (%T)	0.25	0.00	0.01	Pass
P-P noise 2050 - 1950 (%T)	0.221	0.00	0.013	Pass
P-P noise 1050 - 950 (%T)	0.10	0.00	0.02	Pass
P-P noise 550 - 450 (%T)	1.50	0.00	0.31	Pass
RMS noise 4050 - 3950	0.05	0.00	0.00	Pass
RMS noise 2050 - 1950	0.039	0.00	0.003	Pass
RMS noise 1050 - 950	0.014	0.00	0.004	Pass
RMS noise 550 - 450	0.30	0.00	0.05	Pass

PV Detector linearity

Slope	1.10	0.90	1.01	Pass
Intercept (%T)	1.00	-1.00	-0.03	Pass

USP Wavenumber accuracy

Peak at 3060.0 (cm-1)	3061.0	3059.0	3059.6	Pass
Peak at 2849.5 (cm-1)	2850.5	2848.5	2849.4	Pass
Peak at 1942.9 (cm-1)	1943.9	1941.9	1942.4	Pass
Peak at 1601.2 (cm-1)	1602.2	1600.2	1601.0	Pass
Peak at 1583.0 (cm-1)	1584.0	1582.0	1583.0	Pass
Peak at 1154.5 (cm-1)	1155.5	1153.5	1154.5	Pass
Peak at 1028.3 (cm-1)	1029.3	1027.3	1028.3	Pass

Performed by: _____ Title: _____ Date: _____

Approved by: _____ Title: _____ Date: _____

Comments: _____

Digital comment(s):
No digital comments found.