Date : 6 April 2023

CERTIFICATE OF COMPLIANCE

This certificate of compliance validates the following			
TEST REPORT NUMBER 'Assessment Reports' are not acceptable	TE299472-A Issue: 3 TE299472-B Revision 1	**CERTIFICATE NUMBER**	117p-(cl-1)
DATE OF ISSUE	29 November 2017 7 September 2021	**DATE OF ISSUE**	18 January 2022
DATE OF EXPIRY	N/A	**DATE OF EXPIRY**	N/A
Manufacturer details			
NAME OF FACTORY/ MANUFACTURER	Hochiki Corporation	**NAME OF THE BRAND**	Hochiki Europe (UK) Ltd
FACTORY ADDRESS / REGION (STREET / TOWN / CITY / COUNTRY)	141-1 Maebara, Ejiri, Kakuda City Miyagi Prefecture 981-1521 Japan	**MODEL / NO**	**Multi Criteria Detectors** ACD-E ACD-E(WHT) ACD-EN ACD-EN(WHT)
WEBSITE	www.hochiki.co.jp	**LOGO ON THE PRODUCT**	HOCHIKI
TEL	81-3-3444-4116	**EMAIL**	info@hochikieurope.com

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Product Details From Test Report	Reference Test Report page NO
	N/A

DESCRIPTION OF THE PRODUCT
(TECHNICAL DETAILS FROM TEST REPORT, SUCH AS ACTUAL FIRE RATINGS/DIMENSIONS/THICKNESS/ SENSITIVITY ETC)

Certified Product	Description	LPCB Ref.No.
ACD-E	Intelligent Analogue Addressable Multi-Criteria Detector (Ivory colour) (YBN-R/3, YBN-R/3(WHT), YBN-R/3(SCI), YBN-R/3(WHT)-SCI, YBO-BS, YBO-BS(WHT), YBO-BSB2/WL, YBO-BSB2(WHT)/WL, YBO-BSB2/RL, YBO-BSB2(WHT)/RL bases) **Notes:** 1. Meets the requirements of EN 54-5, depending on the specific heat mode selected, at Classes A1, A1S, A1R, C, CS, CR 2. Meets the requirements of EN 54-7, depending on the specific smoke mode selected, at Sensitivity Settings 2% and 4.5% **Modes:** 9A* Smoke/Heat/Co Combine (Default Mode) 9B Co/Heat combine, Heat (RoR) 80* Smoke/Heat combine 81 Smoke/Heat combine 82* Smoke 83 Smoke 87 Heat (FT) Heat (RoR) (Fixed Level 1 – Class A1) 88 Heat (FT) Heat (RoR) (Fixed Level 2 – Class A1R) 89 Heat (FT) (Fixed Level 3 – Class A1S) 8A Heat (FT) Heat (RoR) (Fixed Level 4 – Class C) 8B Heat (FT) Heat (RoR) (Fixed Level 5 – Class CR) 8C Heat (FT) (Fixed Level 6 – Class CS) 8D Smoke, Co, Heat (FT), Heat (RoR), COHb 8E* Smoke/Heat Combine, COHb 8F* Smoke, COHb 93 Heat (FT), Heat (RoR), COHb (Fixed Level 1 – Class A1) +COHb 94 Heat (FT), Heat (RoR), COHb (Fixed Level 2 - Class A1R) +COHb 95 Heat (FT), COHb (Fixed Level 3 – Class A1S) +COHb 96 Heat (FT), Heat (RoR), COHb (Fixed Level 4 – Class C) +COHb 97 Heat (FT), Heat (RoR), COHb (Fixed Level 5 – Class CR) +COHb 98 Heat (FT), COHb (Fixed Level 6 – Class CS) +COHb 99* Smoke/Heat/CO Combine, Smoke, CO/Heat Combine, Heat (FT), Heat (RoR), COHb 9C COHb 9D CO FT = Fixed Temperature RoR = Rate of Rise COHb = Carboxyhemoglobin * Reduced false alarm function	117p/01
ACD-E(WHT)	Intelligent Analogue Addressable Multi-Criteria Detector (White colour) (YBN-R/3, YBN-R/3(WHT), YBN-R/3(SCI), YBN-R/3(WHT)-SCI, YBO-BS, YBO-BS(WHT), YBO-BSB2/WL, YBO-BSB2(WHT)/WL, YBO-BSB2/RL, YBO-BSB2(WHT)/RL bases) **Notes:** 1. Meets the requirements of EN 54-5, depending on the specific heat mode selected, at Classes A1, A1S, A1R, C, CS, CR 2. Meets the requirements of EN 54-7, depending on the specific smoke mode selected, at Sensitivity Settings 2% and 4.5%	117p/01

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	Modes: 9A* Smoke/Heat/Co Combine (Default Mode) 9B Co/Heat combine, Heat (RoR) 80* Smoke/Heat combine 81 Smoke/Heat combine 82* Smoke 83 Smoke 87 Heat (FT) Heat (RoR) (Fixed Level 1 – Class A1) 88 Heat (FT) Heat (RoR) (Fixed Level 2 – Class A1R) 89 Heat (FT) (Fixed Level 3 – Class A1S) 8A Heat (FT) Heat (RoR) (Fixed Level 4 – Class C) 8B Heat (FT) Heat (RoR) (Fixed Level 5 – Class CR) 8C Heat (FT) (Fixed Level 6 – Class CS) 8D Smoke, Co, Heat (FT), Heat (RoR), COHb 8E* Smoke/Heat Combine, COHb 8F* Smoke, COHb 93 Heat (FT), Heat (RoR), COHb (Fixed Level 1 – Class A1) +COHb 94 Heat (FT), Heat (RoR), COHb (Fixed Level 2 - Class A1R) +COHb 95 Heat (FT), COHb (Fixed Level 3 – Class A1S) +COHb 96 Heat (FT), Heat (RoR), COHb (Fixed Level 4 – Class C) +COHb 97 Heat (FT), Heat (RoR), COHb (Fixed Level 5 – Class CR) +COHb 98 Heat (FT), COHb (Fixed Level 6 – Class CS) +COHb 99* Smoke/Heat/CO Combine, Smoke, CO/Heat Combine, Heat (FT), Heat (RoR), COHb 9C COHb 9D CO FT = Fixed Temperature RoR = Rate of Rise COHb = Carboxyhemoglobin * Reduced false alarm function	
ACD-EN	Intelligent Analogue Addressable Multi-Criteria Detector (Ivory colour) (YBN-R/3, YBN-R/3(WHT), YBN-R/3(SCI), YBN-R/3(WHT)-SCI, YBO-BS, YBO-BS(WHT), YBO-BSB2/WL, YBO-BSB2(WHT)/WL, YBO-BSB2/RL, YBO-BSB2(WHT)/RL bases) **Notes:** 1. Meets the requirements of EN 54-5, depending on the specific heat mode selected, at Classes A1, A1S, A1R, C, CS, CR 2. Meets the requirements of EN 54-7, depending on the specific smoke mode selected, at Sensitivity Settings 2% and 4.5% **Modes:** 9A* Smoke/Heat/Co Combine (Default Mode) 9B Co/Heat combine, Heat (RoR) 80* Smoke/Heat combine 81 Smoke/Heat combine 82* Smoke 83 Smoke 87 Heat (FT) Heat (RoR) (Fixed Level 1 – Class A1) 88 Heat (FT) Heat (RoR) (Fixed Level 2 – Class A1R) 89 Heat (FT) (Fixed Level 3 – Class A1S) 8A Heat (FT) Heat (RoR) (Fixed Level 4 – Class C) 8B Heat (FT) Heat (RoR) (Fixed Level 5 – Class CR) 8C Heat (FT) (Fixed Level 6 – Class CS) 8D Smoke, Co, Heat (FT), Heat (RoR), COHb 8E* Smoke/Heat Combine, COHb 8F* Smoke, COHb 93 Heat (FT), Heat (RoR), COHb (Fixed Level 1 – Class A1) +COHb 94 Heat (FT), Heat (RoR), COHb (Fixed Level 2 - Class A1R) +COHb 95 Heat (FT), COHb (Fixed Level 3 – Class A1S) +COHb 96 Heat (FT), Heat (RoR), COHb (Fixed Level 4 – Class C) +COHb 97 Heat (FT), Heat (RoR), COHb (Fixed Level 5 – Class CR) +COHb 98 Heat (FT), COHb (Fixed Level 6 – Class CS) +COHb 99* Smoke/Heat/CO Combine, Smoke, CO/Heat Combine, Heat (FT), Heat (RoR), COHb	117p/02

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	9C COHb 9D CO FT = Fixed Temperature RoR = Rate of Rise COHb = Carboxyhemoglobin * Reduced false alarm function	
ACD-EN(WHT)	Intelligent Analogue Addressable Multi-Criteria Detector (White colour) (YBN-R/3, YBN-R/3(WHT), YBN-R/3(SCI), YBN-R/3(WHT)-SCI, YBO-BS, YBO-BS(WHT), YBO-BSB2/WL, YBO-BSB2(WHT)/WL, YBO-BSB2/RL, YBO-BSB2(WHT)/RL bases) **Notes:** 1. Meets the requirements of EN 54-5, depending on the specific heat mode selected, at Classes A1, A1S, A1R, C, CS, CR 2. Meets the requirements of EN 54-7, depending on the specific smoke mode selected, at Sensitivity Settings 2% and 4.5% **Modes:** 9A* Smoke/Heat/Co Combine (Default Mode) 9B Co/Heat combine, Heat (RoR) 80* Smoke/Heat combine 81 Smoke/Heat combine 82* Smoke 83 Smoke 87 Heat (FT) Heat (RoR) (Fixed Level 1 – Class A1) 88 Heat (FT) Heat (RoR) (Fixed Level 2 – Class A1R) 89 Heat (FT) (Fixed Level 3 – Class A1S) 8A Heat (FT) Heat (RoR) (Fixed Level 4 – Class C) 8B Heat (FT) Heat (RoR) (Fixed Level 5 – Class CR) 8C Heat (FT) (Fixed Level 6 – Class CS) 8D Smoke, Co, Heat (FT), Heat (RoR), COHb 8E* Smoke/Heat Combine, COHb 8F* Smoke, COHb 93 Heat (FT), Heat (RoR), COHb (Fixed Level 1 – Class A1) +COHb 94 Heat (FT), Heat (RoR), COHb (Fixed Level 2 - Class A1R) +COHb 95 Heat (FT), COHb (Fixed Level 3 – Class A1S) +COHb 96 Heat (FT), Heat (RoR), COHb (Fixed Level 4 – Class C) +COHb 97 Heat (FT), Heat (RoR), COHb (Fixed Level 5 – Class CR) +COHb 98 Heat (FT), COHb (Fixed Level 6 – Class CS) +COHb 99* Smoke/Heat/CO Combine, Smoke, CO/Heat Combine, Heat (FT), Heat (RoR), COHb 9C COHb 9D CO FT = Fixed Temperature RoR = Rate of Rise COHb = Carboxyhemoglobin * Reduced false alarm function	117p/02

Bases

YBN-R/3	Standard Analogue Mounting Base
YBN-R/3(WHT)	Standard Analogue Mounting Base
YBN-R/3(SCI)	Short Circuit Isolator Base
YBN-R/3(WHT)-SCI	Short Circuit Isolator Base
YBO-BS	Base Sounder
YBO-BS(WHT)	Base Sounder
YBO-BSB2/WL	Base Sounder Beacon (White LED)
YBO-BSB2(WHT)/WL	Base Sounder Beacon (White LED)
YBO-BSB2/RL	Base Sounder Beacon (Red LED)
YBO-BSB2(WHT)/RL	Base Sounder Beacon (Red LED)

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TEST STANDARD **(SUCH AS ASTM/BS EN/ DN ETC)**	EN 54-5:2000 + A1:2002 – Test Report EN 54-5:2017 + A1:2018 Certificate standard has been updated but no further testing was required. EN 54-7:2000 + A1:2002 + A2:2006 - Test Report EN 54-7:2018 Certificate standard has been updated but no further testing was required. EN 54-26: 2015 EN 54-29: 2015 EN 54-30: 2015 EN 54-31: 2015 CEA 4021:2003	Page 5
TEST DESCRIPTION	**TE299472 – A Issue 3** The object of this evaluation was to assess the performance of the Hochiki Europe (UK) Ltd ACD-E, ACD-E (WHT), ACD-EN and ACD-EN(WHT) heat, smoke and CO multi criteria detectors for compliance with the requirements of EN 54-5:2000 + A1:2002, EN 54-7:2000 + A1:2002 + A2:2005, CEA4021: July 2003, EN 54-26:2015, EN 54-29:2015, EN 54-30:2015 and EN 54-31:2014 when used with YBN-R/3(SCI) mounting base with short circuit isolator. This report (TE299472-A) is one of two reports, it covers testing of these devices to EN 54-5:2000 + A1:2002, EN 54-7:2000 + A1:2002 + A2:2005 and CEA4021: July 2003 (UKAS) whereas the second report (TE299472-B) covers testing to EN 54-26:2015, EN 54-29:2015, EN 54-30:2015 and EN 54-31:2014 (Non UKAS). Some testing was conducted in accordance with EN 54-31 where the tests did not deviate from those in EN 54-5:2000 + A1:2002, EN 54-7:2000 + A1:2002 + A2:2005 and CEA4021: July 2003. Where the tests differ, testing was also conducted in accordance with EN 54-5:2000 + A1:2002, EN 54-7:2000 + A1:2002 + A2:2005 and CEA4021: July 2003 **TE299472 – B Revision 1** The object of this evaluation was to assess the performance of the Hochiki Europe (UK) Ltd ACD-E, ACD-E (WHT), ACD-EN and ACD-EN(WHT) heat, smoke and CO multi criteria detectors for compliance with the requirements of EN 54-31: 2014, EN 54-30: 2015, EN 54-29: 2015 and EN 54-26: 2015 when used with YBN-R/3(SCI) mounting base with short circuit isolator. Additionally, the compatibility of the ACD-E(WHT) heat, smoke and CO multi criteria detector with the YBN-R/3(SCI) mounting base with short circuit isolator was assessed to EN 54-5:2000 + A1:2002 and EN 54-17:2005. This report (TE299472-B) is one of two reports, it covers testing of these devices to EN 54-26:2015, EN 54-29:2015, EN 54-30:2015 and EN 54-31:2014 (Non UKAS) whereas the first report (TE299472-A) covers testing to EN 54-5:2000 + A1:2002, EN 54-7:2000 + A1:2002 + A2:2005 and CEA4021: July 2003 (UKAS).	Page 5 Page 5

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SPECIFICATION OF TEST SPECIMEN

TE299472 – A Issue 3 — Page 6

Equipment		
Quantity.	**Description**	**Receipt date**
33	ACD-E(WHT) Multi-criteria detector	10/07/2015
33	ACD-EN(WHT) Multi-criteria detector	10/07/2015
20	YBN-R/3(SCI) mounting base with short circuit isolator	10/07/2015

Page 6

TE299472 – B Revision 1

First submission

Equipment		
Quantity.	**Description**	**Receipt date**
33	ACD-E(WHT) Multi-criteria detector	10/07/2015
33	ACD-EN(WHT) Multi-criteria detector	10/07/2015
20	YBN-R/3(SCI) mounting base with short circuit isolator	10/07/2015

Second submission

Equipment		
Quantity.	**Description**	**Receipt date**
33	ACD-E(WHT) Multi-criteria detector submitted due to EN 54-30 fire test failure on the ACD-EN(WHT) variant. Refer to Section 41.1 for further information.	28/04/2017

Third submission

Equipment		
Quantity.	**Description**	**Receipt date**
2	ACD-E(WHT) Multi-criteria detector	30/07/2020
2	YBN-R/3(SCI) mounting base with short circuit isolator	30/07/2020

TEST RESULT
(SUCH AS PASSED CRITERIA___/
COMPLIED TO___
DURATION___/OBSERVATION___/ETC)

TE299472 – A Issue 3 — Page 9-11

ACD-E(WHT)

EN 54-5:2000 Clause – Title/Test	Comments	Result

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1170-cl-F & 17p/01/02

4.3 – Position of heat sensitive elements	-	Pass
4.4 – Individual alarm indication	-	Pass
4.5 – Connection of ancillary devices	-	Pass
4.6 – Monitoring of detachable detectors	-	Pass
4.7 – Manufacturer's adjustments	-	Pass
4.8 – On-site adjustment of response behaviour	-	Pass
4.9 – Marking	See Section 6.1 of this test report	Pass
4.10 – Data	See Section 6.2 of this test report	Pass
4.11 – Requirements for software controlled detectors	Refer to test report TE299472-SW	Pass
5.2 – Directional dependence Class A1	See Section 6.3 of this test report	Pass

	Specimen No.01 0° Orientation Response Temperature °C	Specimen No.02 315° Orientation Response Temperature °C	Result
5.3 – Static response temperature Class A1	59.5	59.3	Pass
5.3 – Static response temperature Class C	86.6	87.9	Pass
5.4 – Response time from typical application temperature Class A1	See Section 6.4 of this test report		Pass
5.4 – Response time from typical application temperature Class C	See Section 6.5 of this test report		Pass

	Rate of rise	Response Time min:s	Temperature °C	Result
5.5 – Response from 25°C	3°C/min	>18:24	N/A	Pass
	20°C/min	02:31	74.1	Pass
5.6 – Response from high ambient temperature Class A1	3°C/min	03:29	60.6	Pass
	20°C/min	00:43	64.7	Pass
5.6 – Response from high ambient temperature Class C	3°C/min	03:22	90.6	Pass
	20°C/min	00:50	98.4	Pass

		Rate of rise	Upper supply voltage response time min:s	Lower supply voltage response time min:s	Result
5.7 – Variation in supply Range = 17V to 41V	315 ° (max response time orientation)	3°C/min	12:57	12:51	Pass
		20°C/min	01:58	01:57	Pass
	0 ° (min response time orientation)	3°C/min	12:42	12:44	Pass
		20°C/min	01:27	01:31	Pass
5.8 – Reproducibility Class A1		See Section 6.6 of this test report			Pass
5.8 – Reproducibility Class C		See Section 6.7 of this test report			Pass

	Rate of rise	Response time before test mm:ss	Response time after test mm:ss	Change in response mm:ss	Result
5.9 – Cold (operational)	3°C/min	12:45	12:49	00:04	Pass
	20°C/min	01:54	01:52	00:02	Pass

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5.10 – Dry heat (endurance)	3°C/min	12:49	13:02	00:13	Pass
	20°C/min	01:58	01:54	00:04	Pass
5.11 – Damp heat cyclic (operational)	3°C/min	12:57	13:00	00:03	Pass
	20°C/min	01:27	01:56	00:29	Pass
5.12 – Damp heat steady state (endurance)	3°C/min	12:42	12:44	00:02	Pass
	20°C/min	01:55	01:52	00:01	Pass
5.13 – Sulphur dioxide corrosion (endurance)	3°C/min	12:42	12:45	00:03	Pass
	20°C/min	01:55	01:52	00:03	Pass
5.14 – Shock (operational)	3°C/min	12:45	12:53	00:08	Pass
	20°C/min	01:54	01:56	00:02	Pass
5.15 – Impact (operational)	3°C/min	12:47	12:43	00:04	Pass
	20°C/min	02:00	01:54	00:04	Pass
5.16 & 5.17 – Vibration, sinusoidal (operational/ endurance)	3°C/min	12:01	12:41	00:40	Pass
	20°C/min	01:54	01:54	00:00	Pass
5.18a – Electrostatic discharge (operational)	3°C/min	12:56	12:35	00:21	Pass
	20°C/min	02:00	01:58	00:02	Pass
5.18b – Radiated electromagnetic fields (operational)	3°C/min	12:38	12:45	00:07	Pass
	20°C/min	01:54	01:56	00:02	Pass
5.18c – Conducted disturbances (operational)	3°C/min	12:48	12:50	00:02	Pass
	20°C/min	01:56	01:58	00:02	Pass
5.18d – Fast transient bursts (operational)	3°C/min	12:56	12:35	00:21	Pass
	20°C/min	02:00	01:58	00:02	Pass
5.18e – Slow high energy surge (operational)	3°C/min	12:56	12:35	00:21	Pass
	20°C/min	02:00	01:58	00:02	Pass
6.1 – Additional tests for suffix S detectors Class A1S					Pass
6.1 – Additional tests for suffix S detectors Class CS					Pass

		Rate of rise	Response time mm:ss	Temperature °C	Result
6.2 – Additional tests for suffix R detectors Class A1R	Specimen 11	10°C/min	02:51	34.3 °C	Pass
		20°C/min	01:35	33.6 °C	Pass
		30°C/min	00:54	32.6 °C	Pass
	Specimen 05	10°C/min	02:51	34.2 °C	Pass
		20°C/min	01:51	31.1 °C	Pass
		30°C/min	00:56	33.5 °C	Pass
6.2 – Additional tests for suffix R detectors Class CR	Specimen 1	10°C/min	03:20	68.5°C	Pass
		20°C/min	01:20	62.6°C	Pass
		30°C/min	00:56	63.5°C	Pass
	Specimen 2	10°C/min	03:37	71.5°C	Pass
		20°C/min	01:17	60.9°C	Pass
		30°C/min	00:54	62.3°C	Pass

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Page 20

EN 54-7:2000 Clause – Title/Test	Comments	Result
4.2 – Individual alarm indication	-	Pass
4.3 – Ancillary device connection	-	Pass
4.4 – Monitoring of detectors	-	Pass
4.5 – Manufacturer's adjustments	-	Pass
4.6 – On-site adjustment	-	Pass
4.7 – Ingress of foreign bodies	-	Pass
4.8 – Slowly developing fires	See Section **Error! Reference source not found.** of this test report	Pass
4.9 – Marking	See Section **Error! Reference source not found.** of this test report	Pass
4.10 – Data	See Section **Error! Reference source not found.** of this test report	Pass
4.11 – Requirements for software controlled detectors	Refer to test report TE299472-SW	Pass

Page 32

CEA 4021: 2003-07 Clause – Title/Test	Comments	Result
4.3.4 c – Sensor stability	-	Pass
4.3.5 – EMC	-	Pass
4.3.6 – Documentation	-	Pass
5.6 – Decalin fire	See Section **Error! Reference source not found.** of this report-	Pass

Page 35

ACD-EN(WHT)

EN 54-5:2000 Clause – Title/Test	Comments			Result
4.3 – Position of heat sensitive elements	-			Pass
4.9 – Marking	See Section **Error! Reference source not found.** of this test report			Pass
4.10 – Data	See Section **Error! Reference source not found.** of this test report			Pass
4.11 – Requirements for software controlled detectors	Refer to test report TE299472-SW			Pass
5.2 – Directional dependence Class A1	See Section **Error! Reference source not found.** of this test report			Pass
	Rate of rise	**Upper supply voltage response time min:s**	**Lower supply voltage response time min:s**	**Result**
5.8 – Reproducibility Class A1	See Section **Error! Reference source not found.** of this test report			Pass

Page 41

EN 54-7:2000 Clause – Title/Test	Comments			Result
4.8 – Slowly developing fires	See Section **Error! Reference source not found.** of this test report			Pass
4.9 – Marking	See Section **Error! Reference source not found.** of this test report			Pass
4.10 – Data	See Section **Error! Reference source not found.** of this test report			Pass
4.11 – Requirements for software controlled detectors	Refer to test report TE299472-SW			Pass
	Maximum RTV	**Minimum RTV**	**Ratio**	**Result**

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117p, cl 10 & 117p/01/02

			dB/m	dB/m		
5.2 – Repeatability 2%			0.15	0.14	1.07	Pass
5.3 – Directional dependence 2%			0.09	0.06	1.52	Pass
5.4 – Reproducibility 4.5%	(Ratio 1)	Mean RTV	0.19	-	1.19	Pass
	(Ratio 2)	0.16	-	0.14	1.20	
5.5 – Variation in supply Range = 17V to 41V			0.18	0.15	1.20	Pass
5.6 – Air movement 4.5%		0.2m/s	0.14	0.12	1.20	Pass
		1.0m/s	0.11	0.11		
5.7 – Dazzling 2%			0.09	0.07	1.31	Pass
			0.10	0.07	1.44	

Page 50

CEA 4021: 2003-07 Clause – Title/Test	Comments	Result
4.3.6 – Documentation	-	Pass
5.6 – Decalin fire	See Section **Error! Reference source not found.** of this report	Pass

Page 52

ACD-E

Page 55

EN 54-5:2000 Clause – Title/Test	Comments	Result
4.9 – Marking	See Section **Error! Reference source not found.** of this test report	Pass
4.10 – Data	See Section **Error! Reference source not found.** of this test report	Pass

Page 58

EN 54-7:2000 Clause – Title/Test	Comments	Result
4.9 – Marking	See Section **Error! Reference source not found.** of this test report	Pass
4.10 – Data	See Section **Error! Reference source not found.** of this test report	Pass

Page 59

CEA 4021: 2003-07 Clause – Title/Test	Comments	Result
4.3.6 – Documentation	-	Pass

Page 62

ACD-EN

EN 54-5:2000 Clause – Title/Test	Comments	Result
4.9 – Marking	See Section **Error! Reference source not found.** of this test report	Pass
4.10 – Data	See Section **Error! Reference source not found.** of this test report	Pass

Page 65

EN 54-7:2000 Clause – Title/Test	Comments	Result
4.9 – Marking	See Section **Error! Reference source not found.** of this test report	Pass
4.10 – Data	See Section **Error! Reference source not found.** of this test report	Pass

Page 11

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CEA 4021: 2003-07 Clause – Title/Test	Comments	Result
4.3.6 – Documentation	-	Pass

TE299472 – B Revision 1

ACD-E(WHT)

EN 54-5:2000 Clause – Title/Test	Comments	Result
5.8 – Reproducibility (Mode 8A - Class C)	See Section 6.1 of this test report	Pass – Sub 3[1]

EN 54-5:2000 Clause – Title/Test	Rate of rise	Response time before test mm:ss	Response time after test mm:ss	Change in response mm:ss	Result
5.18a – Dry Heat (Endurance) - Mode 8A - Class C	3°C/min	13:16	13:47	00:31	Pass – Sub 3[1]
	20°C/min	02:14	02:15	00:01	Pass – Sub 3[1]

Page 13-16

EN 54-31: 2014 Clause – Title/Test	Comments	Result
5.2.1 – Individual alarm indication	-	Pass
5.2.2 – Response to SDF, aging and contamination	See Section 8.1 of this test report	Pass
5.2.3 – Rate sensitive CO response	See Section 8.2 of this test report	Pass
5.2.4 – Repeatability of smoke response	See Section 8.3 of this test report	Pass
5.2.5 – Directional dependence of smoke response	See Section **Error! Reference source not found.** of this test report	Pass
5.2.6 – Repeatability of CO response	See Section **Error! Reference source not found.** of this test report	Pass
5.2.7 – Directional dependence of CO response	See Section **Error! Reference source not found.** of this test report	Pass
5.2.8 – Directional dependence of heat response	See Section 8.7 of this test report	Pass
5.2.9 – Lower limit of heat sensitivity	See Section **Error! Reference source not found.** of this test report	Pass
5.2.10 – Reproducibility of smoke response	See Section **Error! Reference source not found.** of this test report	Pass
5.2.11 – Reproducibility of CO response	See Section **Error! Reference source not found.** of this test report	Pass
5.2.12 – Reproducibility of heat response	See Section **Error! Reference source not found.** of this test report	Pass
5.3.1 – Connection of ancillary devices	-	Pass
5.3.2 – Monitoring of detachable detectors	-	Pass
5.3.3 – Manufacturer's adjustments	-	Pass
5.3.4 – On-site adjustment of behaviour	-	Pass
5.3.5 – Protection against the ingress of foreign bodies	-	Pass
5.3.6 – Software controlled devices	Refer to test report TE299472-SW Issue 2	Pass
5.3.7 – Long term stability – Mode 9D, 30ppm	-	Pass
5.6.5.3 – Exposure to chemical agents at environmental concentrations	See Section **Error! Reference source not found.** of this test report	Pass

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BUCKNALLS LANE
WATFORD
WD25 9XX, UK

8 – Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass

EN 54-31: 2014 Clause – Title/Test (Smoke measurements)		Maximum response value, m_{max} (dB/m)	Minimum response value, m_{min} (dB/m)	Ratio	Result
5.2.13 – Air movement – Mode 8D, 4.5%	0.2m/s	0.19	0.15	1.42	Pass
	1.0m/s	0.13	0.11		
5.2.14 – Dazzling – Mode 8D, 2%	Least sensitive orientation	0.08	0.05	1.60	Pass
	Least sensitive orientation + 90º	0.07	0.05	1.40	
5.4.1 – Variation in supply parameters – Mode 8D, 2%. Range = 17V to 41V		0.10	0.09	1.11	Pass
5.5.1 – Fire sensitivity		Refer to Sections 28.1 and 41.1 for further information			
5.6.1.1 – Dry heat (operational) – Mode 8D, 2%		0.10	0.07	1.43	Pass
5.6.1.3 – Cold (operational) – Mode 8D, 2%		0.09	0.07	1.29	Pass
5.6.2.1 – Damp heat cyclic (operational) – Mode 8D, 2%		0.09	0.09	1.00	Pass
5.6.2.2 – Damp heat steady-state – Mode 8D, 4.5% (endurance)		0.18	0.18	1.00	Pass
5.6.2.3 – Damp heat steady-state – Mode 8D, 2% (operational)		0.09	0.08	1.13	Pass
5.6.3.1 – Shock (operational), Mode 8D, 4.5%		0.19	0.17	1.12	Pass
5.6.3.2 – Impact (operational), Mode 8D, 4.5%		0.17	0.17	1.00	Pass
5.6.3.3 & 5.6.3.4 – Vibration, sinusoidal (operational & endurance), Mode 8D, 4.5%		0.17	0.17	1.00	Pass
5.6.4.1.2.3 a – Electrostatic discharge (operational), Mode 8D, 4.5%		0.17	0.15	1.13	Pass
5.6.4.1.2.3 b – Radiated electromagnetic fields (operational), Mode 8D, 4.5%		0.17	0.17	1.00	Pass
5.6.4.1.2.3 c – Conducted disturbances (operational), Mode 8D, 4.5%		0.17	0.17	1.00	Pass
5.6.4.1.2.3 d – Fast transient bursts (operational), Mode 8D, 4.5%		0.17	0.15	1.13	Pass
5.6.4.1.2.3 e – Slow high energy surge (operational), Mode 8D, 4.5%		0.17	0.15	1.13	Pass
5.6.5.1 – Sulphur dioxide SO_2 corrosion (endurance), Mode 8D, 4.5%		0.18	0.17	1.06	Pass

EN 54-31: 2014 Clause – Title/Test (Heat measurements)	Maximum response value, T_{max} (mm:ss)	Minimum response time, T_{min} (mm:ss)	Ratio	Result
5.7 – Variation in supply parameters – Mode 8D. Range = 17V to 41V	01:58	01:57	1.01	Pass
5.6.1.2 – Dry heat (endurance) – Mode 8D, A1	01:59	01:56	1.03	Pass
5.6.1.3 – Cold (operational) – Mode 8D, A1	01:54	01:52	1.02	Pass
5.6.2.1 – Damp heat cyclic (operational) – Mode 8D, A1	01:52	01:27	1.29	Pass
5.6.2.2 – Damp heat steady state (endurance) – Mode 8D, A1	01:55	01:54	1.01	Pass
5.6.2.3 – Damp heat steady state (operational) – Mode 8D, A1	01:54	01:56	1.02	Pass

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BUCKNALLS LANE
WATFORD
WD25 9XX, UK

5.6.3.1 – Shock (operational)	01:56	01:54	1.02	Pass
5.6.3.2 – Impact (operational)	02:00	01:54	1.05	Pass
5.6.3.3 & 5.6.3.4 – Vibration, sinusoidal (operational/ endurance)	01:54	01:54	1.00	Pass
5.6.4.1.2.3 a – Electrostatic discharge (operational)	02:00	01:58	1.02	Pass
5.6.4.1.2.3 b – Radiated electromagnetic fields (operational)	01:56	01:54	1.02	Pass
5.6.4.1.2.3 c – Conducted disturbances (operational)	01:58	01:56	1.02	Pass
5.6.4.1.2.3 d – Fast transient bursts (operational)	02:00	01:58	1.02	Pass
5.6.4.1.2.3 e – Slow high energy surge (operational)	02:00	01:58	1.02	Pass
5.6.5.1 – Sulphur dioxide SO2 corrosion (endurance)	01:55	01:52	1.03	Pass

EN 54-31: 2014 Clause – Title/Test (CO measurements)		Maximum CO response value, S_{max} (µl/l)	Minimum CO response value, S_{min} (µl/l)	Ratio	Result
5.2.13 – Air movement – Mode 8D	0.2m/s	32	28	0.94	Pass
	1.0m/s	34	30		
5.3.7 – Long term stability		36	32	1.13	Pass
5.4.1 – Variation in supply parameters – Mode 8D. Range = 17V to 41V		34	30	1.13	Pass
5.6.1.1 – Dry heat (operational)		30	27	1.11	Pass
5.6.1.2 – Dry heat (endurance) – 8D, 40ppm		42	38	1.11	Pass
5.6.1.3 – Cold (operational) – 8D, 30ppm		34	32	1.06	Pass
5.6.2.1 – Damp heat cyclic (operational) – 8D, 30ppm		36	28	1.29	Pass
5.6.2.2 – Damp heat steady state (endurance) – 8D, 40ppm		38	38	1.00	Pass
5.6.2.3 – Damp heat steady state (operational) – 8D, 30ppm		32	30	1.07	Pass
5.6.2.4 – Low humidity steady-state (operational) – 8D, 30ppm	S_1	34	32	1.06	Pass
	S_2	34	32	1.06	Pass
5.6.3.1 – Shock (operational), 40ppm		40	38	1.05	Pass
5.6.3.2 – Impact (operational), 40ppm		40	38	1.05	Pass
5.6.3.3 & 5.6.3.4 – Vibration, sinusoidal (operational/ endurance) 30ppm		32	30	1.07	Pass
5.6.4.1.2.3 a – Electrostatic discharge (operational) 30ppm		32	30	1.07	Pass
5.6.4.1.2.3 b – Radiated electromagnetic fields (operational) 30ppm		36	30	1.20	Pass
5.6.4.1.2.3 c – Conducted disturbances (operational) 30ppm		34	32	1.06	Pass
5.6.4.1.2.3 d – Fast transient bursts (operational) 30ppm		32	30	1.07	Pass
5.6.4.1.2.3 e – Slow high energy surge (operational) 30ppm		32	30	1.07	Pass

Page 38

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BUCKNALLS LANE
WATFORD
WD25 9XX, UK

5.6.5.1 – Sulphur dioxide SO2 corrosion (endurance) 30ppm	30	30	1.00	Pass
5.6.5.2 – Exposure to high levels of carbon monoxide	40	38	1.05	Pass

Page 40

EN 54-26: 2015 Clause – Title/Test	Comments	Result
8 - Marking, labelling and packaging	See Section 10.1 of this test report	Pass

Page 44

CO measurements	Maximum CO response value, S_{max} (µl/l)	Minimum CO response value, S_{min} (µl/l)	Ratio	Result
5.6.6.1 – Exposure to high levels of carbon monoxide	40	38	1.05	Pass

Page 46

EN 54-30: 2015 Clause – Title/Test	Comments	Result
5.5 – Fire sensitivity	See Section **Error! Reference source not found.** of this test report	Pass – Sub 2[1]
8 - Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass

Page 48

Page 50

EN 54-29: 2015 Clause – Title/Test	Comments	Result
8 - Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass

Page 52

ACD-E

EN 54-31: 2014 Clause – Title/Test	Comments	Result
8 – Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass
5.3.6 – Software controlled devices	Refer to test report TE299472-SW	Pass

Page 54

EN 54-26: 2015 Clause – Title/Test	Comments	Result
8 - Marking, labelling and packaging	See Section 18.1 of this test report	Pass

EN 54-30: 2015 Clause – Title/Test	Comments	Result
8 - Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass

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BUCKNALLS LANE
WATFORD
WD25 9XX, UK

EN 54-29: 2015 Clause – Title/Test	Comments	Result
8 - Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass

EN 54-31: 2014 Clause – Title/Test	Comments	Result	
5.2.4 – Repeatability of smoke response	See Section **Error! Reference source not found.** of this test report	Pass	
5.2.5 – Directional dependence of smoke response	See Section **Error! Reference source not found.** of this test report	Pass	
5.2.7 – Directional dependence of CO response	See Section **Error! Reference source not found.** of this test report	Pass	
5.2.8 – Directional dependence of heat response	See Section **Error! Reference source not found.** of this test report	Pass	
5.2.10 – Reproducibility of smoke response	See Section **Error! Reference source not found.** of this test report	Pass	Page 68
5.2.11 – Reproducibility of CO response	See Section **Error! Reference source not found.** of this test report	Pass	
5.2.12 – Reproducibility of heat response	See Section **Error! Reference source not found.** of this test report	Pass	
5.3.6 – Software controlled devices	Refer to test report TE299472-SW	Pass	Page 71
5.5.1 – Fire sensitivity	See Section **Error! Reference source not found.** of this test report	Pass	
8 - Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass	

Smoke measurements		Maximum response value, y_{max}/m_{max} (dB/m)	Minimum response value, y_{min}/m_{min} (dB/m)	Ratio	Result	
5.2.13 – Air movement	0.2m/s	0.13	0.14	1.23	Pass	Page 75
	1.0m/s	0.11	0.11			
5.2.14 – Dazzling	Least sensitive orientation	0.09	0.07	1.29	Pass	Page 79
	Least sensitive orientation + 90º	0.10	0.07	1.43		

CO measurements		Maximum CO response value, S_{max} (µl/l)	Minimum CO response value, S_{min} (µl/l)	Ratio	Result	
5.2.13 – Air movement	0.2m/s	30	30	0.91	Pass	Page 81
	1.0m/s	34	32			Page 83

EN 54-26: 2015 Clause – Title/Test	Comments	Result	
5.5.1 – Fire sensitivity	See Section **Error! Reference source not found.** of this test report	Pass	Page 85
8 - Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass	

EN 54-30: 2015 Clause – Title/Test	Comments	Result
5.5 – Fire sensitivity	See Section 28**Error! Reference source not found.** of this test report	Pass – Sub 2[1]
8 - Marking, labelling and packaging	See Section 28.2 of this test report	Pass

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EN 54-29: 2015 Clause – Title/Test	Comments	Result
5.5.1 – Fire sensitivity	See Section **Error! Reference source not found.** of this test report	Pass
8 - Marking, labelling and packaging	See Section **Error! Reference source not found.**2 of this test report	Pass

EN 54-31: 2014 Clause – Title/Test	Comments	Result
8 – Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass

EN 54-26: 2015 Clause – Title/Test	Comments	Result
8 - Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass

EN 54-30: 2015 Clause – Title/Test	Comments	Result
8 - Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass

EN 54-29: 2015 Clause – Title/Test	Comments	Result
8 - Marking, labelling and packaging	See Section **Error! Reference source not found.** of this test report	Pass

PRODUCT APPLICATION GUIDELINE (END USE) (CLEARLY STATE THE END USE WITH SPECIFIC APPLICATION, SUCH AS EXACT FIRE RATING/TO BE INSTALLED IN___/TO BE INSTALLED AT____/TO BE CONNECTED WITH____/TO BE INSTALLED WITH___ ETC ALONG WITH ANY WARNINGS SUCH AS NOT TO BE USED IN___/NOT TO BE INSTALLED AT___/ NOT TO BE INSTALLED WITH___ETC.	**2-3-0-246 Installation Instructions**	N/A

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Laboratory and Certification body details			
NAME OF CERTIFICATION BODY	BRE Global Ltd.	**NAME OF TEST FACILITY**	BRE Global Ltd.
CERTIFICATION BODY ADDRESS / REGION (STREET / TOWN / CITY / COUNTRY)	Bucknalls Lane Garston Watford WD25 9XX United Kingdom	**TEST FACILITY ADDRESS / REGION** (STREET / TOWN / CITY / COUNTRY)	Bucknalls Lane Garston Watford WD25 9XX United Kingdom
WEBSITE	https://www.bregroup.com/about-us/bre-global/	**WEBSITE**	https://www.bregroup.com/about-us/bre-global/
TEL	+44 (0)333 321 88 11	**TEL**	+44 (0)333 321 88 11
EMAIL	BREGlobalEnquiries@bregroup.com	**EMAIL**	BREGlobalEnquiries@bregroup.com
ACCREDITED BY (NAME OF ACCREDITATION BODY WHICH ISSUED ACCREDITATION TO THE CERTIFICATION BODY, ALONG WITH WEBSITE)	UKAS www.ukas.com	**ACCREDITED BY** (NAME OF ACCREDITATION BODY WHICH ISSUED ACCREDITATION TO THE LABORATORY, ALONG WITH WEBSITE)	UKAS www.ukas.com
AS PER (STANDARD TO WHICH THE CERTIFICATION BODY IS ACCREDITED TO)	EN45011: 1998 / ISO 17065: 2012	**AS PER** (STANDARD TO WHICH YOUR ORGANIZATION IS ACCREDITED TO)	ISO 17025: 2017
VALIDITY (EXPIRY DATE OF CERTIFICATION BODY ACCREDITATION)	N/A	**VALIDITY** (EXPIRY DATE OF LABORATORY ACCREDITATION)	N/A
REFERENCE NUMBER: (CERTIFICATION BODY ACCREDITATION REFERENCE NUMBER TO VERIFY ON THE ACCREDITOR'S WEBSITE)	0007	**REFERENCE NUMBER:** (THE LABORATORY ACCREDITATION REFERENCE NUMBER TO VERIFY ON THE ACCREDITOR'S WEBSITE)	0578
CERTIFICATION MARK	LOSS PREVENTION CERTIFICATION BOARD LPCB		

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(ENDORSEMENT) TO BE SIGNED BY MANUFACTURER			
NAME OF MANUFACTURER'S SIGNATORY	Shane Bartlett	**SIGNATURE**	
EMAIL / TEL	sbartlett@hochikieurope.com / 01634 266543	**FACTORY OFFICIAL SEAL**	HOCHIKI EUROPE (U.K.) LIMITED Grosvenor Road, Gillingham Business Park Gillingham, Kent ME8 0SA England
NOTES: I Undertake that all data and information provided are genuine and accurate			

(ENDORSEMENT) TO BE SIGNED BY CERTIFICATION BODY			
NAME OF CERTIFICATION BODY SIGNATORY	BRE Global Ltd. P Halligan	**SIGNATURE**	
EMAIL / TEL	BREGlobalEnquiries@bregroup.com +44 (0)333 321 88 11	**CERTIFICATION BODY OFFICIAL SEAL**	BRE GLOBAL LTD BUCKNALLS LANE WATFORD WD25 9XX, UK
NOTES: I Undertake that all data and information provided are genuine and accurate			

ATTACHMENTS:

- **COPY OF 'CERTIFICATE OF COMPLIANCE' ISSUED BY CERTIFICATION BODY (OLD OR NEW)**