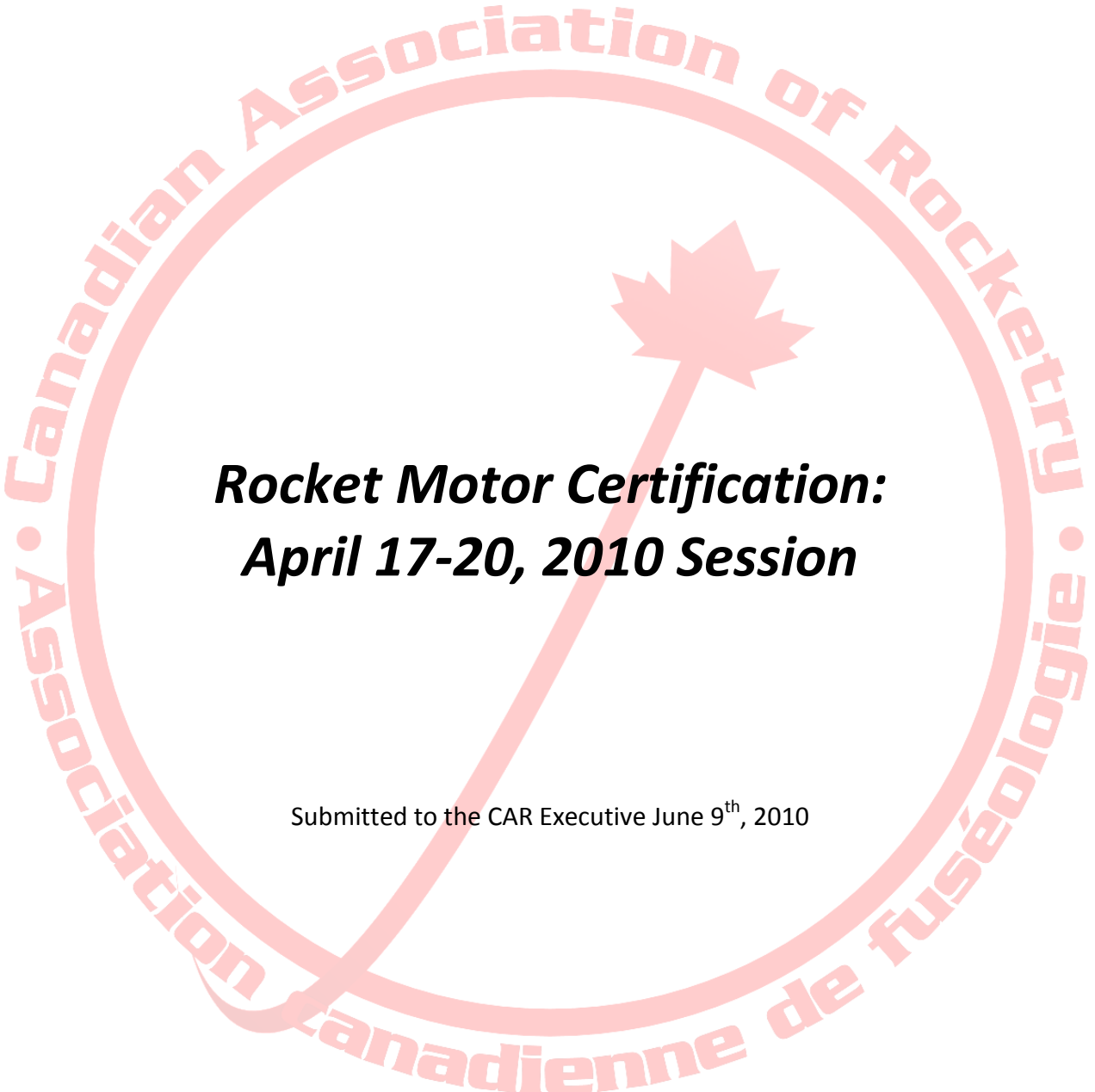
Canadian Association of Rocketry



Rocket Motor Certification: April 17-20, 2010 Session

Submitted to the CAR Executive June 9th, 2010

L'Association Canadienne De Fuséologie

Introduction

A motor testing session was held at the Cesaroni Technology Incorporated facility in Gormley, Ontario April 17th to 20th, 2010.

This session was remarkable in it's diversity – motor diameters ranged from 24mm to 161mm, and impulse ranged from 68 N-sec (F) to 29,920 N-sec (O). Propellants fired this session included a new 'White', Vmax, Skidmark, Red Lightning, Green^3, Imax, White Thunder, Smoky Sam and Blue Streak. In addition to the standard loads, several variants were certified (Dual-thrust and Longburn) as well.

The session was a busy one with 137 firings, 32 new motors and a total impulse of just over 173,903 N-seconds fired over the 4-day session.

A new line of 24mm reloadable motors (Pro24) was introduced and a variety of motors were certified in the Pro24-3G and Pro24-6G sizes.

A new AMW-Pro75 Adapter was certified that permits the use of standard CTI Pro75 reloads in AMW 76-hardware of compatible length (eg Pro75-2G reload in an AMW 75-2500 case). The adapter will ship with appropriate instructions, and the snap rings and Pro75 Nozzle Holder are still required.

While these motors were certified in Canada, a reciprocal agreement between the Canadian Association of Rocketry, the Tripoli Rocketry Association and the National Association of Rocketry means they may be flown in many jurisdictions.

I am very pleased to announce the certification of these thirty-two (32) new reloads from Cesaroni Technology, Inc. Individual certification letters follow for each motor. These letters and respective thrust curves will be posted to the official CAR-ACF website soon.

Respectfully submitted,

Thomas Raithby
Chair of CAR-ACF Motor Certification

Contents

Certified Motors

CTI 143-G150-BS-13A (CTI Pro24-6G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 143-G150-BS-13A** rocket motor was tested April 20th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR-ACF and any other rocketry associations with current reciprocal motor certification agreements in place with CAR-ACF.

CAR Designation	CTI 143-G150-BS-13A	**Test Date**	April 20th, 2010
Manufacturer Designation	**CTI HP143-G150-13A**	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Blue Steak***	**Hardware**	Pro24-6G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	24mm x 228mm
Loaded Weight	159.9 g	**Total Impulse**	142.5 Ns (32.0 lb-s)
Burnout Weight	84.3 g	**Maximum Thrust**	247.4 N (55.6 lb)
Propellant Weight	65.9 g	**Average Thrust**	146.7 N (33.0 lb)
Delays Tested	13-4 seconds, adjustable	**Specific Impulse (Isp)**	220.5
Samples per second	1000	**Burn time**	0.97 s
Notes	78.1% G – Considered HP under NFPA due to average thrust > 80N		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 139-G107-WH/DT-12A (CTI Pro24-6G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 139-G107-WH/DT-12A** rocket motor was tested April 20th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR-ACF and any other rocketry associations with current reciprocal motor certification agreements in place with CAR-ACF.

CAR Designation	**CTI 139-G107-WH/DT-12A**	**Test Date**	April 20th, 2010
Manufacturer Designation	**CTI HP139-G107-12A**	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White Dual Thrust***	**Hardware**	Pro24-6G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	24mm x 228mm
Loaded Weight	169.8 g	**Total Impulse**	139.1 Ns (31.3 lb-s)
Burnout Weight	84.2 g	**Maximum Thrust**	230.7 N (51.9 lb)
Propellant Weight	75.7 g	**Average Thrust**	106.9 N (24.0 lb)
Delays Tested	12–3 seconds, adjustable	**Specific Impulse (Isp)**	187.39 s
Samples per second	1000	**Burn time**	1.30 S
Notes	73.9% G Considered HP under NFPA due to average thrust > 80N		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 68-F240-VM-15A (CTI Pro24-3G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 68-F240-VM-15A** rocket motor was tested April 20th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 68-F240-VM-15A**	**Test Date**	April 20th, 2010
Manufacturer Designation	CTI HP68-F240-15A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***V-Max***	**Hardware**	Pro24-3G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	24mm x 133mm
Loaded Weight	91.8 g	**Total Impulse**	68.3 Ns (15.4 lb-s)
Burnout Weight	53.7 g	**Maximum Thrust**	285.9 N (64.3 lb)
Propellant Weight	30.3 g	**Average Thrust**	236.2 N (53.1 lb)
Delays Tested	15-7 seconds, adjustable	**Specific Impulse (Isp)**	229.88 s
Samples per second	1000	**Burn time**	0.29 s
Notes	70.8% F – considered HP under NFPA due to average thrust > 80N		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 142-G117-WH-11A (CTI Pro24-6G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 142-G117-WH-11A** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 142-G117-WH-11A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI HP142-G117- 11A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White***	**Hardware**	Pro24-6G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	24x228mm
Loaded Weight	172.5 g	**Total Impulse**	142.3 Ns (32.0 lb-s)
Burnout Weight	85.8 g	**Maximum Thrust**	181.2 N (40.7 lb)
Propellant Weight	79.1 g	**Average Thrust**	116.8 N (26.3 lb)
Delays Tested	11-4 seconds, adjustable	**Specific Impulse (Isp)**	183.46 s
Samples per second	1000	**Burn time**	1.22 s
Notes	77.9% G, considered HP under NFPA due to thrust > 80N and propellant > 62.5g		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 73-F30-WH/LB-6A (CTI Pro24-3G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 73-F30-WH/LB-6A** rocket motor was tested April 20th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 73-F30-WH/LB-6A**	**Test Date**	April 20th, 2010
Manufacturer Designation	CTI 73-F30-6A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White Longburn***	**Hardware**	CTI Pro24-3G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	24mm x 133mm
Loaded Weight	102.2 g	**Total Impulse**	73.1 Ns (16.4 lb-s)
Burnout Weight	54.4 g	**Maximum Thrust**	56.8 N (12.8 lb)
Propellant Weight	40.0 g	**Average Thrust**	31.0 N (7.0 lb)
Delays Tested	7-2 seconds, adjustable	**Specific Impulse (Isp)**	186.30 s
Samples per second	1000	**Burn time**	2.36 s
Notes	82.7% F		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 144-G65-WH/LB-8A (CTI Pro24-6G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 144-G65-WH/LB-8A** rocket motor was tested April 17th,2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 144-G65-WH/LB-8A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI HP144-G65-8A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White Longburn***	**Hardware**	CTI Pro24-6G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	24mm x 228mm
Loaded Weight	174.0 g	**Total Impulse**	144.3 Ns (32.4 lb-s)
Burnout Weight	83.1 g	**Maximum Thrust**	159.7 N (35.9 lb)
Propellant Weight	80.0 g	**Average Thrust**	64.7 N (14.6 lb)
Delays Tested	8-3 seconds, adjustable	**Specific Impulse (Isp)**	184.01 s
Samples per second	1000	**Burn time**	2.23 s
Notes	80.4% G, considered HP under NFPA due to propellant weight > 65g		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 131-G84-GR-10A (CTI Pro24-6G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 131-G84-GR-10A** rocket motor was tested April 18th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 131-G84-GR-10A**	**Test Date**	April 18th, 2010
Manufacturer Designation	CTI HP131-G84-10A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Green³***	**Hardware**	CTI Pro24-6G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	24mm x 228mm
Loaded Weight	172.0 g	**Total Impulse**	131.0 Ns (29.5 lb-s)
Burnout Weight	86.7 g	**Maximum Thrust**	132.3 N (29.7 lb)
Propellant Weight	77.3 g	**Average Thrust**	84.2 N (18.9 lb)
Delays Tested	10-2 seconds, adjustable	**Specific Impulse (Isp)**	172.82 s
Samples per second	1000	**Burn time**	1.56 s
Notes	63.8% G, considered HP under NFPA due to propellant weight > 65g		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 68-F79-SS-13A (CTI Pro24-3G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 68-F79-SS-13A** rocket motor was tested April 18th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 68-F79-SS-13A**	**Test Date**	April 18th, 2010
Manufacturer Designation	CTI 68-F79-13A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Smoky Sam***	**Hardware**	CTI Pro24-3G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	24mm x 133mm
Loaded Weight	107.5 g	**Total Impulse**	67.8 Ns (15.2 lb-s)
Burnout Weight	55.5 g	**Maximum Thrust**	98.3 N (22.1 lb)
Propellant Weight	40.1 g	**Average Thrust**	78.8 N (17.7 lb)
Delays Tested	13-4 seconds, adjustable	**Specific Impulse (Isp)**	172.42 s
Samples per second	1000	**Burn time**	0.86 s
Notes	69.5% F		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 168-H54-WH/LB-10A (CTI Pro29-3G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 168-H54-WH/LB-10A** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 168-H54-WH/LB-10A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 168-H54-10A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White Longburn***	**Hardware**	CTI Pro29-3G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	29mm x 187mm
Loaded Weight	209.0 g	**Total Impulse**	167.7 Ns (37.7 lb-s)
Burnout Weight	105.2 g	**Maximum Thrust**	105.0 N (23.6 lb)
Propellant Weight	96.6 g	**Average Thrust**	53.8 N (12.1 lb)
Delays Tested	10-3 seconds, adjustable	**Specific Impulse (Isp)**	176.99 s
Samples per second	1000	**Burn time**	3.12 s
Notes	4.8% H		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 108-G68-WH-13A (CTI Pro29-2G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI CTI 108-G68-WH-13A** rocket motor was tested April 20th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 108-G68-WH-13A**	**Test Date**	April 20th, 2010
Manufacturer Designation	CTI 108-G68-13A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White***	**Hardware**	CTI Pro29-2G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	29mm x 142mm
Loaded Weight	155.9 g	**Total Impulse**	107.8 Ns (24.2 lb-s)
Burnout Weight	87.6 g	**Maximum Thrust**	94.1 N (21.1 lb)
Propellant Weight	59.9 g	**Average Thrust**	67.0 N (15.1 lb)
Delays Tested	13-4 seconds, adjustable	**Specific Impulse (Isp)**	183.52 s
Samples per second	1000	**Burn time**	1.61 s
Notes	34.8% G		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 217-H135-WH-12A (CTI Pro29-4G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI CTI** 217-H135-WH-12A rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 217-H135-WH-12A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 217-H135-12A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White***	**Hardware**	CTI Pro29-4G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	29mm x 231mm
Loaded Weight	251.2 g	**Total Impulse**	216.7 Ns (48.7 lb-s)
Burnout Weight	121.5 g	**Maximum Thrust**	171.8 N (38.6 lb)
Propellant Weight	119.8 g	**Average Thrust**	135.1 N (30.4 lb)
Delays Tested	12-3 seconds, adjustable	**Specific Impulse (Isp)**	184.46 s
Samples per second	1000	**Burn time**	1.60 s
Notes	35.4% H		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 382-I243-WH-13A (CTI Pro29-6GXL)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 382-I243-WH-13A** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 382-I243-WH-13A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 382-I243-13A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White***	**Hardware**	CTI Pro29-6GXL
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	29mm x 365mm
Loaded Weight	398.6 g	**Total Impulse**	381.7 Ns (85.8 lb-s)
Burnout Weight	172.1 g	**Maximum Thrust**	445.8 N (100.2 lb)
Propellant Weight	212.1 g	**Average Thrust**	242.7 N (54.6 lb)
Delays Tested	13-4 seconds, adjustable	**Specific Impulse (Isp)**	183.50 s
Samples per second	1000	**Burn time**	1.57 s
Notes	19.3% I		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 650-J270-GR-13A (CTI Pro38-5G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 650-J270-GR-13A** rocket motor was tested April 18th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 650-J270-GR-13A**	**Test Date**	April 18th, 2010
Manufacturer Designation	CTI 650-J270-13A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Green³***	**Hardware**	CTI Pro38-5G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	38mm x 367mm
Loaded Weight	654.8 g	**Total Impulse**	650.3 Ns (146.2 lb-s)
Burnout Weight	261.4 g	**Maximum Thrust**	328.3 N (73.8 lb)
Propellant Weight	376.0 g	**Average Thrust**	270.8 N (60.9 lb)
Delays Tested	13-5 seconds, adjustable	**Specific Impulse (Isp)**	176.37 s
Samples per second	1000	**Burn time**	2.40 s
Notes	1.6% J		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 970-J394-GR-13A (CTI Pro38-6GXL)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 970-J394-GR-13A** rocket motor was tested April 20th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 970-J394-GR-13A**	**Test Date**	April 20th, 2010
Manufacturer Designation	CTI 970-J394-13A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Green³***	**Hardware**	CTI Pro38-6GXL
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	38mm x 500mm
Loaded Weight	938.9 g	**Total Impulse**	970.4 Ns (218.2 lb-s)
Burnout Weight	351.8 g	**Maximum Thrust**	515.7 N (115.9 lb)
Propellant Weight	572.1 g	**Average Thrust**	394.1 N (88.6 lb)
Delays Tested	13-4 seconds, adjustable	**Specific Impulse (Isp)**	172.96 s
Samples per second	1000	**Burn time**	2.46 s
Notes	51.6% J		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 137-G58-WH-13A (CTI Pro38-1G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 137-G58-WH-13A** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 137-G58-WH-13A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI HP137-G58- 13A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White***	**Hardware**	CTI Pro38-1G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	38mm x 127mm
Loaded Weight	212.5 g	**Total Impulse**	136.8 Ns (30.8 lb-s)
Burnout Weight	121.0 g	**Maximum Thrust**	97.7 N (22.0 lb)
Propellant Weight	76.3 g	**Average Thrust**	57.9 N (13.0 lb)
Delays Tested	13-4 seconds, adjustable	**Specific Impulse (Isp)**	182.86 s
Samples per second	1000	**Burn time**	2.36 s
Notes	71.0% G, considered HP under NFPA due to propellant weight > 62.5g		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 269-H110-WH-14A (CTI Pro38-2G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 269-H110-WH-14A** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 269-H110-WH-14A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 269-H110-14A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White***	**Hardware**	CTI Pro38-2G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	38mm x 186mm
Loaded Weight	325.3 g	**Total Impulse**	269.1 Ns (60.5 lb-s)
Burnout Weight	155.2 g	**Maximum Thrust**	127.5 N (28.7 lb)
Propellant Weight	152.6 g	**Average Thrust**	109.3 N (24.6 lb)
Delays Tested	14-5 seconds, adjustable	**Specific Impulse (Isp)**	179.84 s
Samples per second	1000	**Burn time**	2.47 s
Notes	68.2% I		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 411-I175-WH-14A (CTI Pro38-3G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 411-I175-WH-14A** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 411-I175-WH-14A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 411-I175-14A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White***	**Hardware**	CTI Pro38-3G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	38mm x 245mm
Loaded Weight	437.5 g	**Total Impulse**	411.4 Ns (92.5 lb-s)
Burnout Weight	190.2 g	**Maximum Thrust**	197.9 N (44.5 lb)
Propellant Weight	228.9 g	**Average Thrust**	174.4 N (39.2 lb)
Delays Tested	14-6 seconds, adjustable	**Specific Impulse (Isp)**	183.28 s
Samples per second	1000	**Burn time**	2.36 s
Notes	28.6% I		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 548-I242-WH-15A (CTI Pro38-4G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 548-I242-WH-15A** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 548-I242-WH-15A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 548-I242-15A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White***	**Hardware**	CTI Pro38-4G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	38mm x 303mm
Loaded Weight	549.9 g	**Total Impulse**	548.2 Ns (123.2 lb-s)
Burnout Weight	224.8 g	**Maximum Thrust**	284.7 N (64.0 lb)
Propellant Weight	305.2 g	**Average Thrust**	242.1 N (54.4 lb)
Delays Tested	15-6 seconds, adjustable	**Specific Impulse (Isp)**	183.15 s
Samples per second	1000	**Burn time**	2.26 s
Notes	71.3% I		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 684-J290-WH-15A (CTI Pro38-5G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 684-J290-WH-15A** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 684-J290-WH-15A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 684-J290-15A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White***	**Hardware**	CTI Pro38-5G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	38mm x 367mm
Loaded Weight	659.8 g	**Total Impulse**	683.6 Ns (153.7 lb-s)
Burnout Weight	256.8 g	**Maximum Thrust**	391.6 N (88.0 lb)
Propellant Weight	381.5 g	**Average Thrust**	295.4 N (66.4 lb)
Delays Tested	15-6 seconds, adjustable	**Specific Impulse (Isp)**	182.72 s
Samples per second	1000	**Burn time**	2.31 s
Notes	6.8% J		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 819-J354-WH-16A (CTI Pro38-6G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 819-J354-WH-16A** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 819-J354-WH-16A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 819-J354-16A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White***	**Hardware**	CTI Pro38-6G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	38mm x 421mm
Loaded Weight	778.2 g	**Total Impulse**	818.7 Ns (184.1 lb-s)
Burnout Weight	293.2 g	**Maximum Thrust**	521.8 N (117.3 lb)
Propellant Weight	457.8 g	**Average Thrust**	354.7 N (79.7 lb)
Delays Tested	16-7 seconds adjustable	**Specific Impulse (Isp)**	182.36 s
Samples per second	1000	**Burn time**	2.31 s
Notes	27.9% J		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 614-I100-RL/LB-17A (CTI Pro54-2G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 614-I100-RL/LB-17A** rocket motor was tested April 19th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 614-I100-RL/LB-17A**	**Test Date**	April 19th, 2010
Manufacturer Designation	CTI 614-I100- 17A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Red Lightning Longburn***	**Hardware**	CTI Pro54-2G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	54mm x 236mm
Loaded Weight	807.0 g	**Total Impulse**	613.6 Ns (137.9 lb-s)
Burnout Weight	409.8 g	**Maximum Thrust**	358.4 N (80.6 lb)
Propellant Weight	350.1 g	**Average Thrust**	98.5 N (22.1 lb)
Delays Tested	17-7 seconds, adjustable	**Specific Impulse (Isp)**	178.73 s
Samples per second	1000	**Burn time**	6.23 s
Notes	91.8% I		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 1211-J140-WH/LB-P (CTI Pro54-3G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 1211-J140-WH/LB-P** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 1211-J140-WH/LB-P**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 1211-J140-P	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White Longburn***	**Hardware**	CTI Pro54-3G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	54mm x 329mm
Loaded Weight	1279.8 g	**Total Impulse**	1210.6 Ns (272.2 lb-s)
Burnout Weight	543.0 g	**Maximum Thrust**	221.8 N (49.9 lb)
Propellant Weight	680.0 g	**Average Thrust**	142.9 N (32.1 lb)
Delays Tested	Plugged	**Specific Impulse (Isp)**	181.55 s
Samples per second	1000	**Burn time**	8.47 s
Notes	89.2% J		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 2021-K261-WH/LB-P (CTI Pro54-5G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 2021-K261-PW/LB-P** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 2021-K261-WH/LB-P**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 2021-K261-P	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White Longburn***	**Hardware**	CTI Pro54-5G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	54mm x 488mm
Loaded Weight	1931.7 g	**Total Impulse**	2020.9 Ns (454.3 lb-s)
Burnout Weight	730.7 g	**Maximum Thrust**	370.1 N (83.2 lb)
Propellant Weight	1151.9 g	**Average Thrust**	259.8 N (58.4 lb)
Delays Tested	plugged	**Specific Impulse (Isp)**	178.90 s
Samples per second	1000	**Burn time**	7.78 s
Notes	57.9% K		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 821-J430-WT-18A (CTI Pro54-2G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 821-J430-WT-18A** rocket motor was tested April 18th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 821-J430-WT-18A**	**Test Date**	April 18th, 2010
Manufacturer Designation	CTI 821-J430-18A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White Thunder***	**Hardware**	CTI Pro54-2G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	54mm x 236mm
Loaded Weight	799.8 g	**Total Impulse**	821.1 Ns (184.6 lb-s)
Burnout Weight	385.3 g	**Maximum Thrust**	546.8 N (122.9 lb)
Propellant Weight	384.0 g	**Average Thrust**	432.4 N (97.2 lb)
Delays Tested	18-8 seconds, adjustable	**Specific Impulse (Isp)**	218.04 s
Samples per second	1000	**Burn time**	1.90 s
Notes	28.3% J		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 1266-J760-WT-19A (CTI Pro54-3G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 1266-J760-WT-19A** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 1266-J760-WT-19A**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 1266-J760-19A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White Thunder***	**Hardware**	CTI Pro54-3G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	54mm x 329mm
Loaded Weight	1076.8 g	**Total Impulse**	1265.7 Ns (284.5 lb-s)
Burnout Weight	469.0 g	**Maximum Thrust**	937.3 N (210.7 lb)
Propellant Weight	576.0 g	**Average Thrust**	757.7 N (170.3 lb)
Delays Tested	19-9 seconds, adjustable	**Specific Impulse (Isp)**	224.07 s
Samples per second	1000	**Burn time**	1.67 s
Notes	97.8% J		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 1633-K940-WT-18A (CTI Pro54-4G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 1633-K940-WT-18A** rocket motor was tested April 18th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 1633-K940-WT-18A**	**Test Date**	April 18th, 2010
Manufacturer Designation	CTI 1633-K940-18A	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***White Thunder***	**Hardware**	CTI Pro54-4G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	54mm x 404mm
Loaded Weight	1366.5 g	**Total Impulse**	1632.7 Ns (367.1 lb-s)
Burnout Weight	570.1 g	**Maximum Thrust**	1120.8 N (252.0 lb)
Propellant Weight	768.0 g	**Average Thrust**	934.8 N (210.1 lb)
Delays Tested	18-8 seconds, adjustable	**Specific Impulse (Isp)**	216.79 s
Samples per second	1000	**Burn time**	1.75 s
Notes	27.6% K		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 8429-M2020-IM-P (CTI Pro75-6G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 8429-M2020-IM-P** rocket motor was tested April 18th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 8429-M2020-IM-P**	**Test Date**	April 18th, 2010
Manufacturer Designation	CTI 8429-M2020-P	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Imax***	**Hardware**	CTI Pro75-6G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	75mm x 757mm
Loaded Weight	7031.8 g	**Total Impulse**	8429.4 Ns (1895.0 lb-s)
Burnout Weight	2527.3 g	**Maximum Thrust**	2680.4 N (602.6 lb)
Propellant Weight	4349 g	**Average Thrust**	2021.9 N (454.5 lb)
Delays Tested	plugged	**Specific Impulse (Isp)**	197.6 s
Samples per second	1000	**Burn time**	4.17 s
Notes	64.6% M		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 2946-L820-SK-P (CTI Pro75-3G)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 2946-L820-SK-P** rocket motor was tested April 18th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 2946-L820-SK-P**	**Test Date**	April 18th, 2010
Manufacturer Designation	CTI 2946-L820-P	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Skidmark***	**Hardware**	CTI Pro75-3G
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	75mm x 486mm
Loaded Weight	3420.0 g	**Total Impulse**	2945.6 Ns (662.2 lb-s)
Burnout Weight	1597.8 g	**Maximum Thrust**	984.8 N (221.4 lb)
Propellant Weight	1760 g	**Average Thrust**	819.9 N (184.3 lb)
Delays Tested	plugged	**Specific Impulse (Isp)**	170.66 s
Samples per second	1000	**Burn time**	3.59 s
Notes	15.1% L		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 6827-M2080-SK-P (CTI Pro75-6GXL)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 6827-M2080-SK-P** rocket motor was tested April 18th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 6827-M2080-SK-P**	**Test Date**	April 18th, 2010
Manufacturer Designation	CTI 6827-M2080-P	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Skidmark***	**Hardware**	CTI Pro75-6GXL
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	75mm x 1025mm
Loaded Weight	7039.5 g	**Total Impulse**	6827.3 Ns (1534.8 lb-s)
Burnout Weight	2903.8 g	**Maximum Thrust**	2611.3 N (587.0 lb)
Propellant Weight	4107 g	**Average Thrust**	2081.5 N (467.9 lb)
Delays Tested	plugged	**Specific Impulse (Isp)**	169.53 s
Samples per second	1000	**Burn time**	3.28 s
Notes	33.3% M		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 8187-M1545-GR-P (CTI Pro75-6GXL)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 8187-M1545-GR-P** rocket motor was tested April 18th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 8187-M1545-GR-P**	**Test Date**	April 18th, 2010
Manufacturer Designation	CTI 8187-M1545-P	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Green³***	**Hardware**	CTI Pro75-6GXL
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	75mm x 1025mm
Loaded Weight	7878.3 g	**Total Impulse**	8186.7 Ns (1840.4 lb-s)
Burnout Weight	2965.5 g	**Maximum Thrust**	1840.2 N (413.7 lb)
Propellant Weight	4835 g	**Average Thrust**	1547.3 N (347.9 lb)
Delays Tested	plugged	**Specific Impulse (Isp)**	172.65 s
Samples per second	1000	**Burn time**	5.29 s
Notes	59.9% M		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 29920-O3700-SK-P (CTI Pro150-40k)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 29920-O3700-SK-P** rocket motor was tested April 18th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 29920-O3700-SK-P**	**Test Date**	April 18th, 2010
Manufacturer Designation	CTI 29920-O3700-P	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Skidmark***	**Hardware**	CTI Pro150-40K
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	161mm x 957mm
Loaded Weight	31350.5 g	**Total Impulse**	29919.9 Ns (6726.3 lb-s)
Burnout Weight	13234.0 g	**Maximum Thrust**	4081.6 N (917.6 lb)
Propellant Weight	17157 g	**Average Thrust**	3654.3 N (821.5 lb)
Delays Tested	plugged	**Specific Impulse (Isp)**	177.83 s
Samples per second	1000	**Burn time**	8.19 s
Notes	46.1% O		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

CTI 2245-K1075-SK-P (AMW 54-2500)

Canadian Association of Rocketry
CAR Motor Certification
c/o 1518-3rd Ave. S.
Lethbridge, AB
T1J 0K8

June 9th, 2010

Cesaroni Technology Incorporated
2561 Stouffville Road
Gormley, Ontario
L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 2245-K1075-SK-P** rocket motor was tested April 17th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

CAR Designation	**CTI 2245-K1075-SK-P**	**Test Date**	April 17th, 2010
Manufacturer Designation	CTI 2245-K1075-P	**Manufacturer**	Cesaroni Technology Inc.
Propellant	***Skidmark***	**Hardware**	AMW 54-2500
Single-Use/Reload/Hybrid	Reloadable	**Motor Dimensions**	54mm x 728mm
Loaded Weight	2638.8 g	**Total Impulse**	2245.1 Ns (504.7 lb-s)
Burnout Weight	1364.8 g	**Maximum Thrust**	1607.0 N (361.3 lb)
Propellant Weight	1259 g	**Average Thrust**	1073.0 N (241.2 lb)
Delays Tested	plugged	**Specific Impulse (Isp)**	181.90 s
Samples per second	1000	**Burn time**	2.09 s
Notes	75.4% K		

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

Canadian Association of Rocketry
Association Canadienne de fusée logie