CALIFORNIA AIR RESOURCES BOARD	YAMAHA MOTOR CO., LTD.	EXECUTIVE ORDER U-L-024-0012 New Off-Road Large Spark-Ignition Engines Above 19 Kilowatts

Pursuant to the authority vested in California Air Resources Board by the Health and Safety Code, Division 26, Part 5, Chapters 1 and 2; and

Pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-19-095;

IT IS ORDERED AND RESOLVED: That the following new large spark-ignition engines and emission control systems produced by the manufacturer are certified for use in off-road equipment as described below. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY NAME	ENGINE DISPLACEMENT (liters)	ENGINE CLASS	FUEL TYPE
2020	LYMXB.8242EH	0.824	≤ 825 cc	Gasoline

DURABILITY HOURS	SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT USAGE
1000	Oxygen Sensor, Multiport Fuel Injection	Riding Lawnmower

ENGINE MODELS (rated power in kilowatt, kW)	See Attachment

The following are the hydrocarbon plus oxides of nitrogen (HC+NOx) and carbon monoxide (CO) exhaust certification emission standards (Title 13, California Code of Regulations, (13 CCR) Section 2433(b)(1)) and certification emission levels for this engine family in grams per kilowatt-hour (g/kW-hr). Engines within this engine family shall have closed crankcases in conformance with 13 CCR Section 2433(b)(3).

(g/kW-hr)	HC+NOx	CO
Standards	8.0	549
Certification Levels	7.7	189

BE IT FURTHER RESOLVED: That for the listed engines for the aforementioned model-year, the manufacturer has submitted, and the Executive Officer hereby approves, the information and materials to demonstrate certification compliance with 13 CCR Section 2433(d) (certification and test procedures), 13 CCR Section 2404 (emission control labels), and 13 CCR Sections 2405 and 2406 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 12TH day of December 2019.

Allen Lyons, Chief
Emissions Certification and Compliance Division

S12. MODEL SUMMARY (Use an asterisk (*) to identify worst-case engine model used for certification testing.)

S13. Engine Model	S14. Engine Code	S15. Sales Codes (Check ALL appropriate)			S16. Eng. Displ. (Liters)	S17. Rated Power (kW)	S18. Rated Speed (RPM)	S19. Peak Torque (FT-LB)	S20. Peak Torque Speed (RPM)
		Calif. Only	49-State	50-State					
MX825V	**7UDJ-030**			*	**0.824**	**23.8**	**3600**	**46.5**	**2600**
MX800V	**7U1J-030**			*	**0.824**	**22.3**	**3600**	**45.0**	**2600**
MX775V	**7U2J-030**			*	**0.824**	**20.8**	**3600**	**42.8**	**2600**
MX825V	**7UDJ-040**			*	**0.824**	**23.8**	**3600**	**46.5**	**2600**
MX800V	**7U1J-040**			*	**0.824**	**22.3**	**3600**	**45.0**	**2600**
MX775V	**7U2J-040**			*	**0.824**	**20.8**	**3600**	**42.8**	**2600**

California Environmental Protection Agency

AIR RESOURCES BOARD

LSI ENGINES

Emission Compliant?: **Yes**

Application Type: R/C

CERTIFICATION SUMMARY COMPLIANT ENGINES

1. MODEL-YEAR 2020 **MANUFACTURER** YAMAHA MOTOR CO., LTD. **E. O. NO.:** U-L-024-0012

2. Engine Family(EF) Name: a. EPA-Standardized: LYMXB.8242EH **b. EF Name on Engine Label:** LYMXB.8242EH

c. Trade Name (e.g., Vortec): MX825V

Equipment Applications: A. O **B.** * **C.** * **D.** * **E.** * **F.** *

3. All Engine Sales Codes within EF: 50S

4. Production Engine Assembly: A

5. All Engine Displacement in EF in Cubic Centimeters(cc): 1) 824 **2)** **3)** **4)** **5)**

6. EF Rated Power (in kW): Highest Model: 23.8 **Lowest Model:** 20.8

7. Engine Design: a. Combustion Cycle: four-stroke if 2-stroke, Oil/Fuel Ratio is

b. Engine Type: Reciprocating **c.** Valvetrain: Overhead **d.** Total Number of Intake + Exhaust Valves/Ports per Cyl.: 3

e. Type of Engine Cooling: Air **f.** Number of Cylinders: 2 **g.** Cylinder Arrangement: V

h. Operating Fuel: (i) # of fuel system in EF: 1 (ii) Fuel system types: Dedicated (iii) Operating Fuel: GAS

8. Intake, Fuel and Emission Control Systems:

*	O2S	MFI	*	*	*	NAT	*	EM

9. Deterioration Factors (DFs): a. New Durability Testing?: NO if Carryover, from Engine Family: KYMXB.8242EL

b. Dura. Eng. Model: MX825VE DF Eng. ID: 7UBJ-T0001 Service Accumulation Hours: 1000

c. DF Type: multiplicative

d. Steady State DF Values: **HC:** **NOx:** **HC+NOx:** 1.08 **CO:** 1.1

e. Transient DF Values: **HC:** **NOx:** **HC+NOx:** **CO:**

10. Certification Test Engine Information: (EDE) Type: NEW if carryover, from Engine Family:

a. Test Engine (EDE) : Model: MX825V EDE ID: 7UDJ-3005184 CERT_EDE_kW: @ 3060 rpm

Break-in/Stabilization Hours: 2 CERT_Test Date: 2019-9-26

b. Test Fuel: California LEV III **c.** Test Procedure (TP): (i) RGM CERT_TP_CYCLE: G1

(iii) Special Test Equipment

11. HC+NOx Certification Emission Levels (in g/kW-hr): HC+NOx_Hi: 7.68 CO_Hi: 189.6

in compliance with Emission Standard of (g/kW-hr): HC+NOx_std: 8 CO_std: 549

Test No. Type, Fuel	Steady State Official Test Results, g/kW-hr				Deteriorated Certification Emissions, g/kW-hr			
	HC	NOx	HC+NOx	CO	HC	NOx	HC+NOx	CO
CTG	2.12	4.86	6.98	169.7			7.54	186.7
RTG	1.251	4.769	7.02	172.4			7.68	189.6

Test No. Type, Fuel	Transient Official Test Results, g/kW-hr				Deteriorated Certification Emissions, g/kW-hr			
	HC	NOx	HC+NOx	CO	HC	NOx	HC+NOx	CO

Quality Audit Procedure: CumSum **Manufacturer's Issue Date:** 9/26/2019 **Revision Date:**

Remarks: Added new models 7UDJ-040, 7U1J-040, 7U2J-040

Models: 7UDJ-030,7U1J-030,7U2J-030,7UDJ-040,7U1J-040,7U2J-040

Processed By: **Date Processed:** **Review By:** **Date Reviewed:**

California Environmental Protection Agency

AIR RESOURCES BOARD

LSI ENGINES

Emission Compliant?: **Yes**

Application Type: NEW

CERTIFICATION SUMMARY COMPLIANT ENGINES

1. MODEL-YEAR 2019 **MANUFACTURER** YAMAHA MOTOR CO., LTD. **E. O. NO.:**

2. Engine Family(EF) Name: a. EPA-Standardized: KYMXS.8242EL **b. EF Name on Engine Label:** KYMXB.8242EL

c. Trade Name (e.g., Vortec): MX825VE

Equipment Applications: A. O **B.** * **C.** * **D.** * **E.** * **F.** *

3. All Engine Sales Codes within EF: 50S

4. Production Engine Assembly: A

5. All Engine Displacement in EF in Cubic Centimeters(cc): 1) 824 **2) 3) 4) 5)**

6. EF Rated Power (in kW): Highest Model: 23.4 **Lowest Model:** 23.4

7. Engine Design: a. Combustion Cycle: four-stroke if 2-stroke, Oil/Fuel Ratio is

b. Engine Type: Reciprocating **c.** Valvetrain: Overhead **d.** Total Number of Intake + Exhaust Valves/Ports per Cyl.: 3

e. Type of Engine Cooling: Air **f.** Number of Cylinders: 2 **g.** Cylinder Arrangement: V

h. Operating Fuel: (i) # of fuel system in EF: 1 (ii) Fuel system types: Dedicated (iii) Operating Fuel: GAS

8. Intake, Fuel and Emission Control Systems:

*	O2S	MFI	*	*	*	NAT	*	EM

9. Deterioration Factors (DFs): a. New Durability Testing?: YES if Carryover, from Engine Family:

b. Dura. Eng. Model: MX825VE DF Eng. ID: 7UBJ-010 Service Accumulation Hours: 1000

c. DF Type: multiplicative

d. Steady State DF Values: **HC:** **NOx:** **HC+NOx:** **CO:**

e. Transient DF Values: **HC:** **NOx:** **HC+NOx:** **CO:**

10. Certification Test Engine Information: (EDE) Type: if carryover, from Engine Family:

a. Test Engine (EDE) : Model: EDE ID: CERT_EDE_kW: @ rpm

Break-in/Stabilization Hours: CERT_Test Date:

b. Test Fuel: **c.** Test Procedure (TP): (i) CERT_TP_CYCLE:

(iii) Special Test Equipment

11. HC+NOx Certification Emission Levels (in g/kW-hr): HC+NOx_Hi: CO_Hi:

in compliance with Emission Standard of (g/kW-hr): HC+NOx_std: 0 CO_std: 0

Test No. Type, Fuel	Steady State Official Test Results, g/kW-hr				Deteriorated Certification Emissions, g/kW-hr			
	HC	NOx	HC+NOx	CO	HC	NOx	HC+NOx	CO

Test No. Type, Fuel	Transient Official Test Results, g/kW-hr				Deteriorated Certification Emissions, g/kW-hr			
	HC	NOx	HC+NOx	CO	HC	NOx	HC+NOx	CO

Quality Audit Procedure: **Manufacturer's Issue Date:** **Revision Date:**

Remarks:

Models: 7UBJ-010

Processed By: **Date Processed:** **Review By:** **Date Reviewed:**