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TEST REPORT

Report No: 2016-ETT-01002

Type of equipment : Outboard Engine
Applicant : ZheJiang AnQiDi Power Machinery Co.,Ltd
: Tengda Road, Luqiao District, Taizhou, Zhejiang, China
Tel: +86-576-82419166 **Fax:** +86-576-82419160
Manufacturing site : Same as above
Type designation : F6 (F6BMS, F6BML)
LABORATORY : Hangzhou ETT Testing Technology Service Co.,Ltd.
DATE OF TEST : Date of receipt of test item: 2016-01-18
: Date of performance of test: 2016-01-20
DATE OF ISSUE : Jan.28, 2016
Test specification : EN ISO 14509-1:2008 : Small craft - Airborne sound emitted by powered recreational craft - Part 1: Pass-by measurement procedures (ISO 14509-1:2008)

Note: ALL TEST RESULTS ARE ONLY VALID FOR THE SAMPLES BEING TESTED. THIS TEST REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF THE TESTING LABORATORY.

Chief tester:

李廷林

Checked by:

李水娜

Approved by:

计峰

General remarks: This test report shall not be reproduced except in full without the written approval of the testing laboratory. The test results presented in this report relate only to the object tested. Throughout this report a comma is used as the decimal separator.

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General Information**Description of the Equipment Under Test (EUT)****Table 1**

Model item	Unit	F6 (F6BMS) (F6BML)
Overall length	mm	1040
Overall width	mm	403
Overall height	mm	750
Transom height	mm	440
Weight	kg	27
Full throttle operating range	r/min	5500
Maximum output	kW (HP) @r/min	4.4@5500
Idling speed (Neutral)	r/min	1500 ~ 1600
Engine type		OHV
Cylinders		Single-cylinder
Displacement	cm ³	139
Bore× stroke	mm	62x46
Ignition system		CDI
Control system		Tiller control
Starting system		Manual start
Gear positions		Forward-Neutral-Reverse
Gear ratio		2.08
Trim and tilt system		Manual tilt
Fuel tank capacity	L	Within1.1

Test specifications**Standards**

EN ISO 14509-1:2008 : Small craft - Airborne sound emitted by powered recreational craft - Part 1:
Pass-by measurement procedures (ISO 14509-1:2008)

Mode of operation during the test /Test peripherals used

The EUT was set to normal operation and all the operation modes were observed

Instrument list

Equipment	Type	Manu.	Serial number	Latest Calibration	Next Calibration
Calibrator	NL-52	RION	00342789	2015/08/15	2016/08/14
Soundmeter	NC-74	RION	34246531	2015/08/15	2016/08/14

Address and environments

Testing institution	Hangzhou ETT Testing Technology Service Co.,Ltd.	
Test number	2016-ETT-01002	
Test site location	Tengda Road, Luqiao District, Taizhou, Zhejiang, China	
Test site specification	meet this requirement	
Environmental conditions	Water surface conditions	good
	Wave height	<150mm
	Wind speed	2.0 m/s
	Wind direction	Northwest

Noise test

Test site specifications and environmental conditions

Test site specifications

Within 30 m around the craft under test and the microphone, there was no large surfaces (e.g. retaining walls, building facades, rocks, bridges) from which sound can be reflected back to the microphone.

In the vicinity of the microphone, there was no obstacles which could disturb the sound field. Therefore, no person was between the microphone and the sound source, and any observers were in such a position that any influence on the meter reading is avoided.

The area between the craft under test and the measurement microphone was open water, free from any sound absorbing or sound reflecting objects.

Environmental conditions

The measurements were performed under the following conditions:

- absence of precipitation
- wind speed less than 7 m/s measured at the microphone height;
- calm water; i.e. wave height less than 200 mm.

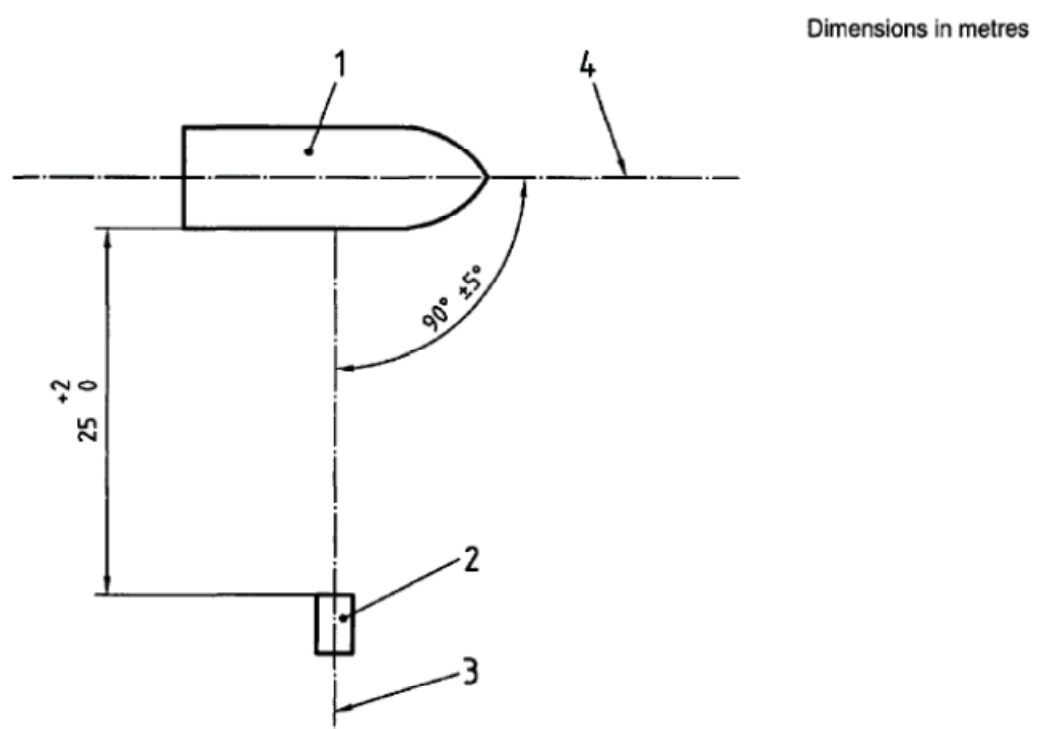
Background noise

For type tests, the AS-weighted background sound pressure level, L_{pAS} , shall be at least 10dB below the maximum AS-weighted sound pressure level, $L'_{pAS \max}$, obtained during the passage of the craft.

Test course, microphone positions and measurement distance

General

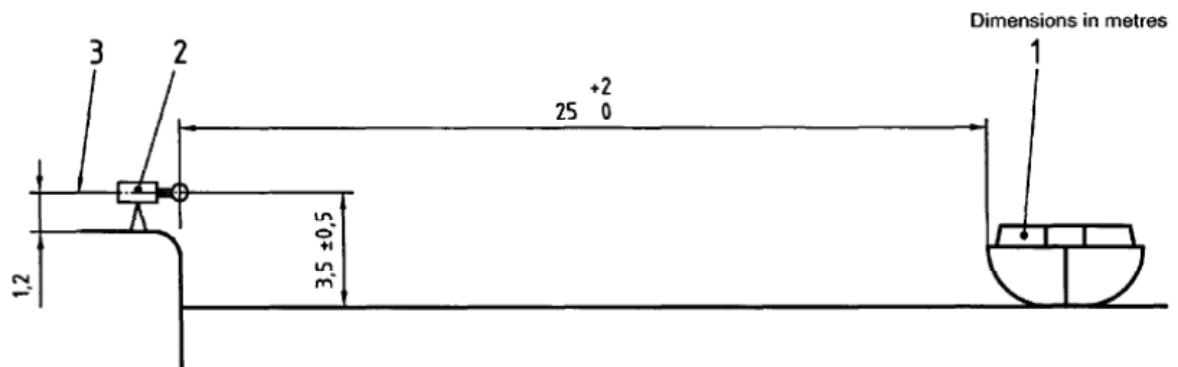
The test course to be followed was a straight line which is perpendicular within $\pm 5^\circ$ to a line through the microphone axis (see Figure 1).



Key**1 Craft****2 Microphones****3 Microphone axes****4 Craft course line****Figure 1 - Position of the microphone and test course**

The microphone was positioned at $3.5 \text{ m} \pm 0.5 \text{ m}$ above the water surface and, if mounted on a solid surface, shall be positioned at least 1.2 m above that surface. The microphone shall be positioned within $\pm 0.5 \text{ m}$ of the edge of the surface above which it is mounted.

Figure 2 shows the heights of the microphone position.

**Key****1 Craft****2 Microphones****3 Microphone axes****Figure 2 - Microphone position and heights**

The distance between the microphone and the side of the craft nearest to the microphone when passing it shall be 25^{+2}_0 m

The intended course line should be indicated with markers, if possible.

Operating conditions

Craft was operated with an equivalent two-person load and a minimum fuel load of 10 liters, except for craft intended for one person as well as all PWC which shall have an equivalent one-person load. An equivalent one-person load is defined as $75 \text{ kg} \pm 20 \text{ kg}$.

The engine of the craft was raised to operating temperature before the measurement starts. All the other operating conditions (fuel used, run-up time, etc.) was comply with the manufacturer's instructions.

For outboard motors shall be tested on standard craft as specified in clause 7.

The engine speed (r/min) shall be 100 % of the declared engine speed for all tests.

For propulsion systems which are equipped with adjustable trim, the trim angle shall be adjusted so that the propeller/impeller thrust is parallel to the bottom/keel-line of the craft to within 2° , hereafter referred to as zero trim for all test conditions.

For type tests, the propeller/impeller shall be selected such that at full throttle the engine speed falls within

±4% of the declared engine speed at level trim, in accordance with ISO 8665. In the case of spark-ignition engines without speed governor, the declared engine speed shall be the mid-point of the full throttle speed range recommended by the manufacturer for propeller selection. In the case of engines with speed governors, the declared engine speed shall be the governed speed specified by the manufacturer. For controllable pitch propellers, the pitch shall be fixed in a position required to obtain the declared engine speed at full throttle.

Test procedures

During the measurement the craft was pass through the test course as specified in clause 3.

The maximum AS-weighted sound pressure level, $L_{pAS\ max}$, during the passage was measured.

The AS-weighted background sound pressure level, L_{pAS} , shall be measured according to 3.3 immediately before and immediately after the passage of the craft. For monitoring tests, the correction for background noise according to 3.3.3 shall be applied on the measured $L_{pAS\ max}$ value to obtain the applicable measurement value, the maximum AS-weighted sound pressure level, $L_{pAS\ max}$ (but see also 6.5).

In the case of a reduced measurement distance according to 4.1.4 for type tests and for monitoring tests, the distance correction according to 9.2 shall, in addition to that stated in 6.4, be applied on $L_{pAS\ max}$ to obtain $L_{pAS\ max}$.

At least two measurements shall be made for each side of the craft. The sound pressure level for each side of the craft shall be the average of the first two determined values of $L_{pAS\ max}$ for each side which are within 1 dB of each other. The maximum AS-weighted sound pressure level, $L_{pAS\ max}$, be recorded shall be that of the louder side of the craft.

The values of the following quantities shall be recorded: $L_{pAS\ max}$, L_{pAS} , the corrections for background noise (if any), the distance corrections (if any), and $L_{pAS\ max}$

Standard craft specifications for outboard motor type tests according to clause 4

Any series production craft with a V-hull shape meeting the dimensional, mass and operating characteristics given in Table 1 may be used as standard craft:

Declared propeller shaft power of outboard motor under test (according to ISO 8665) kW	Length of hull (according to ISO 8666) m	Maximum beam (according to ISO 8666) m	Mass without engine kg
P<6	4.0	1.6	135
6≤P<25	4.4	1.75	220
25≤P<55	5.0	1.9	400
55≤P<150	5.5	2.2	750
P≥150	7.0	2.5	1400

A variation of ±10% is allowed in the dimensional characteristics (as given in Table 1) and a variation of ±20 % is allowed in the mass of the craft (as given in Table 1). In addition, the craft shall have no covers over the outboard motor or unusual extensions behind the transom which could affect the sound level. Outboard motors shall be fitted to the boat according to the manufacturer's instructions. No modifications on series production craft, such as applying additional absorbing components or trim tabs, are permitted.

Test record

Test model No. 1: F6

Type: Gasoline outboard motor

Model: F6

Declared propeller shaft power of outboard motor under test: 4.4 kW

Microphone was placed at a distance of 25m from the test source.

Speed of craft during the measurements:15.1 km/hr

Engine speed during the measurements: 5500 RPM

Original No.	1	2	3	4	5	6	7	8
shipboard	Port	Star	Port	Star	Port	Star	Port	Star
Craft speed (km/hr)	14.98	15.12	15.23	15.25	15.22	15.20	15.31	15.21
Engine speed (RPM)	5480	5490	5503	5510	5505	5510	5515	5530
Measurement distance (m)	25	25	25	25	25	25	25	25
L _{pAS} max (dB)	63.9	64.0	64.1	64.3	64.1	64.2	64.3	64.5
L _{"pAS} (dB)	53.2	54.0	53.7	53.5	53.5	52.9	53.2	52.8
Back-ground noise correction (dB)	0	0	0	0	0	0	0	0
Distance correction (dB)	0	0	0	0	0	0	0	0
L _{pAS} max (dB)	63.9	64.0	64.1	64.3	64.1	64.2	64.3	64.5

Port (average) L_{pAS} max 64.0 dB

Starboard (average) L_{pAS} max 64.15 dB

Max AS sound pressure level L_{pAS} max 64.15 dB Noise limit value (2003/44/EC) 67 dB

Verdict Pass

PHOTOGRAPHS -STRUCTURE OF PRODUCTS



F6

Outboard Engine



Model	:F6	Serial NO.:	01004
Rate output(kW/HP)	:4.4	Iding Speed(r/min)	:1500-1600
Displacement(cc)	:139	Maximum Speed(r/min)	:5500
Mass(S/L) (kg)	:27	Manufacture Year	:2016
Fuel tank capacity(L)	:1.1		

Manufacture :ZheJiang AnQiDi Power Machinery Co.,Ltd

Add : Tengda Road,Luqiao District,Taizhou,Zhejiang,China

Made in China

Test scene



PHOTOGRAPH OF F6 TESTING SETUP