

IVISTA

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Intelligent Interaction Index Voice and Touch-Screen Test Protocol

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Voice and Touch-Screen Test Protocol

1 Scope

This document specifies the test methods of IVISTA China Intelligent Vehicle Index - Intelligent Interaction Index - Voice and Touch-Screen.

2 Normative References

The following normative documents contain provisions which, through reference in this text, constitute indispensable provisions of this document. For dated references, only the dated edition applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 36464.5-2018 Information Technology - Intelligent Speech Interaction System - Part 5: In-vehicle Terminal

3 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1

speech wakeup

process for a speech interaction system whose audio stream is in the monitoring state to switch to other processing states such as command word recognition and continuous speech recognition after the occurrence of a specific feature or event is detected

3.2

wakeup command word

structured keyword set used to wake up the on-board speech interaction system in the keyword recognition state; the official wakeup command word of the system under test is provided by the VUT's manufacturer

3.3

wakeup ratio

ratio of the on-board speech interaction system to correctly respond to wakeup operations, calculated by Formula (1)

$$\rho = \frac{n}{N_p} \times 100\% \quad \dots\dots\dots (1)$$

where,

ρ - wakeup ratio;

n - number of successful wakeups;

N_p - total number of wakeup operations.

3.4

wakeup time

waiting time from the moment when the wakeup command input ends to the moment when the prompt tone/prompt message is given by the system, calculated by Formula (2)

$$T_w = t_r - t_e \quad \dots\dots\dots (2)$$

where,

T_w - wakeup time;

t_r - moment when the prompt tone/prompt message is given by the system;

t_e - moment when the wakeup command input ends.

3.5

sound localization

position-related speech instructions sent at different positions in a vehicle, for example, window, A/C and seat control commands, to judge whether the vehicle can localize positions where speech instructions are sent, so as to control the window, A/C and seat at the corresponding positions in a targeted manner

3.6

noise shielding

create the noise environment composed of tire noise and wind noise in a vehicle through the noise acquisition and restoration system, test the response time and success rate of the speech system in the noise environment, and evaluate the noise shielding capability of the speech system

3.7

start-up time

time needed from the moment when the stylus pen touches the screen to the moment when the application interface is fully displayed in the case that an application is started up by tapping the touch screen, as calculated in Formula (3)

$$T_s = t_f - t_s \quad \dots\dots\dots (3)$$

T_s - response time;

t_f - moment when the application start-up is completed;

t_s - moment when the stylus pen touches the screen.

3.8

pixel density

number of pixels per inch of screen, expressed in PPI and calculated in Formula (4):

$$PPI = \sqrt{X^2 + Y^2} / Z \quad \dots\dots\dots (4)$$

X - number of pixels in the length direction;

Y - number of pixels in the width direction;

Z - screen size (in inch).

3.9

screen fluency

fluency of the screen while swiping the touch screen

Two parameters, i.e., maximum successive frame stuttering count and average frames per second, are used as evaluation indicators. If the refresh frequency of the touch screen of IVIS is N , n times of lags occur during swiping, the frames of each lag is recorded as f_1, f_2, \dots, f_n respectively, and the actual frames refreshed during the sliding is f , then the maximum successive frame stuttering count (P) and the average frames per second (X) can be calculated in Formulas (5) and (6):

$$P = \max(f_1, f_2, \dots, f_n) \dots\dots\dots (5)$$

$$\frac{X}{N} = \frac{f - (f_1 + f_2 + \dots + f_n)}{f} \dots\dots\dots (6)$$

3.10

driving interaction safety

interaction of the driver and the A/C in the vehicle through the central control touch screen, buttons, or knobs when the vehicle speed is stable at 50 km/h, during which the eye movement data of the driver and the dynamic data of the vehicle are recorded, using the max time of the sight off the road T , the number of the sight off the road N and the number of the steps n as the evaluation indicators

The max time of the sight off the road T is calculated in Formula (7):

$$T = \max(t_1, t_2, \dots, t_n) \dots\dots\dots (7)$$

t - each sight-off-road duration

During the interaction process, the camera records video images of the driver tapping the screen/tapping buttons/operating knobs. The number of taps and knob operations while the driver controls the A/C in the vehicle are counted through those video images.

4 Test Conditions

4.1 Test site and test environment

4.1.1 Requirements for test site

The test road surface shall be a straight and level road not less than 1 km in length.

4.1.2 Requirements for test environment

The static performance test of the voice and touch screen shall be conducted indoors at an ambient temperature of 20 °C ~ 30 °C.

The background noise outside the vehicle shall not exceed 40 dB during the speech interaction test.

4.2 Test equipment

4.2.1 Positions of artificial heads/mouths

4.2.1.1 Artificial heads/mouths for the sound localization test shall be placed on the driver seat, the front passenger seat as well as left and right seats in the second row respectively; and those for other voice tests shall be placed on the driver seat. The specific installation positions on the seat are shown in Fig. 1.

4.2.1.2 The artificial head/mouth on the driver seat shall be installed in the center of the head restraint, which is 40 cm ~ 50 cm away from the roof, and 60 cm ~ 80 cm away from the steering wheel (with the steering wheel adjusted to the highest and farthest position away from the seat).

4.2.1.3 The artificial head/mouth at the front passenger seat shall be installed in the center of the head restraint, which is 40 cm ~ 50 cm away from the roof, with identical longitudinal positioning with those at the driver seat along the vehicle's length.

4.2.1.4 The artificial heads/mouths in the rear row shall be installed in the center of the head restraints at left and right seats, which are 40 cm ~ 50 cm away from the roof.

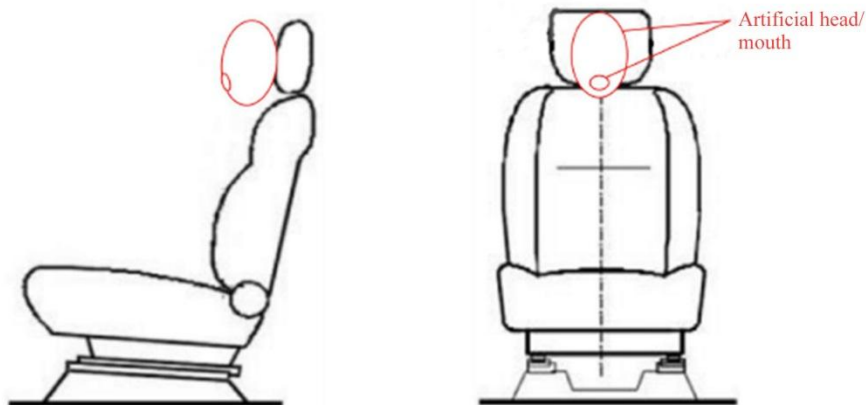


Fig. 1 Installation Position of Artificial Mouth

4.2.2 Pickup

The installation position of the pickup is shown in Fig. 2, and the pickup distance is determined as follows:

- 40 cm, if the loudspeaker of the system under test is arranged at the dome lamp;
- 70 cm, if the loudspeaker of the system under test is arranged at the center console.

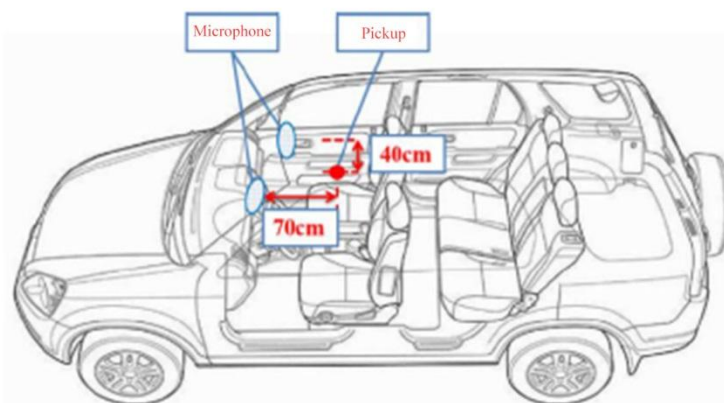


Fig. 2 Installation Position of Pickup

4.2.3 Noise playback speakers

The noise playback system simulates the noise through 4 Hi-Fi active playback speakers and 1 LF playback speaker. Hi-Fi active playback speakers are placed near left and right A-/B-pillars in the vehicle respectively, while the LF playback speaker is placed in the center of the rear-row seat. See Fig. 3 for details.

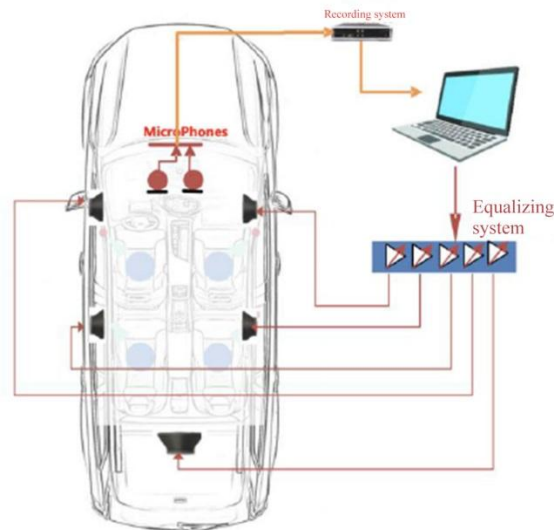


Fig. 3 Installation Position of Noise Restoration System

4.2.4 High-frame camera

The high-frame camera is fixed inside the vehicle using the mounting fixture, with its lens plane parallel to the touch screen, to ensure that the central control touch screen is completely within the field of view of the camera.

4.2.5 Eye tracker

- a) The sampling rate of the eye tracker for recording the driver's line of sight shall not be less than 60 Hz;
- b) Line-of-sight tracking accuracy: $\pm 0.5^\circ$;
- c) Tracking accuracy of head turning angle: $\pm 0.5^\circ$;
- d) Eyelid closure recognition accuracy: ± 0.1 cm.

Fix the eye tracker cameras below the front windshield in the vehicle with the mounting fixture. Install cameras 1 and 3 on the central console near the left and right A-pillars, and camera 2 on the central console directly below the rearview mirror (the specific installation positions can be adjusted based on the type of the central console of the model). Align the plane of the camera lens with face of the driver, and ensure that the latter is within the field of view of the eye tracker camera. The schematic diagram of the installation position of the eye tracker is shown in Fig. 4.

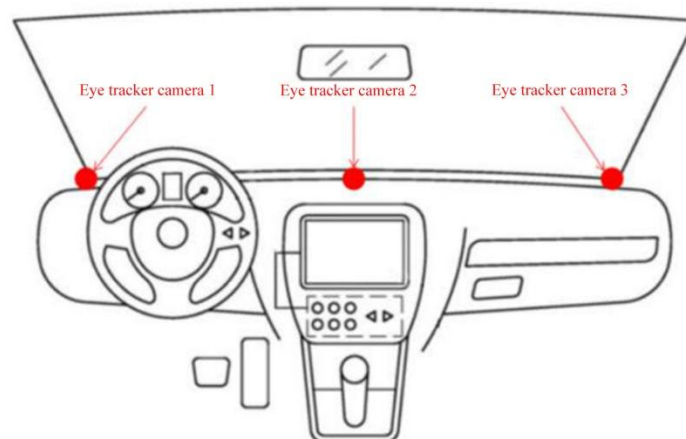


Fig. 4 Installation Position of Eye Tracker

4.3 Vehicle under test

4.3.1 System initialization

If necessary, both the voice system and the in-vehicle infotainment system (IVIS) may be initialized before the test, including the calibration of the microphone, touch screen and other sensors.

4.3.2 Vehicle state

- a) The VUT shall be new with a traveled mileage of not more than 5000 km;
- b) After the vehicle is started, both the voice system and the IVIS shall be normally on.

4.3.3 Functional check

Prior to the test, one test shall be conducted under the condition that each function contained in the voice system and the IVIS is triggered to ensure that each function works normally.

4.3.4 Preparation for voice and touch screen tests

4.3.4.1 The driver's seat shall be adjusted to a proper position prior to the test.

4.3.4.2 The mobile Internet service needed by the system shall be provided, and the vehicle network system shall be activated and kept connected during the test.

4.3.4.3 The VUT's manufacturer shall provide the Bluetooth version number of the IVIS under test. Before the test, a smartphone with Bluetooth of the same version shall be prepared, in which at least 200 contacts and 50 call records are stored.

4.3.4.4 Prepare a smartphone provided with NFC function, download the vehicle control APP, and input the information of the VUT.

4.3.4.5 During the speech interaction test, all windows shall be closed, the A/C set to the external circulation mode, and the air speed set to the middle or higher middle position, as shown in Fig. 5. All air outlets shall be turned on and their directions shall be adjusted to avoid direct pointing to vehicle microphones and pickups for the test.

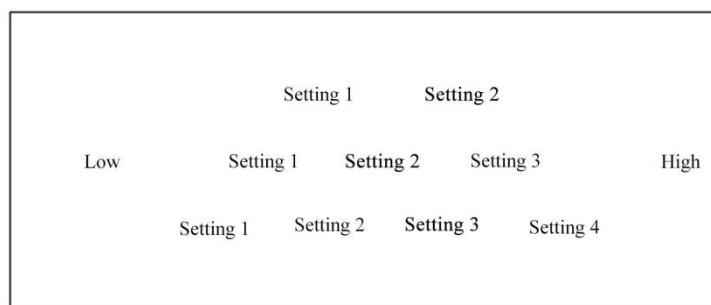


Fig. 5 A/C Air Speed Settings

4.3.4.6 Prior to the touch screen interaction test, input 3 music compilations in the music software of the system, and name them as compilations 1, 2 and 3 respectively. Save at least 10 songs in each compilation.

4.3.4.7 The engine of the vehicle shall be shut down and power down confirmed after each touch screen interaction test to ensure the complete exit of the system.

4.3.4.8 Prior to the driving interaction safety test, ensure that the A/C of the vehicle is turned off, and has a default temperature of 22 °C and the air volume is defaulted to the minimum after being turned on.

4.4 Speech test conditions

4.4.1 Speech wakeup test conditions

Considering various factors such as the gender, accent and age, the speech wakeup test set shall be formed by the recorded speeches of 10 male and 10 female speakers, with the official wakeup command word recorded once by each speaker.

4.4.2 Functional satisfaction test conditions

Considering various factors such as the gender, accent and age, the functional satisfaction test set shall be formed by the recorded speeches of 10 male and 10 female speakers, with a total of 60 fixed input instructions (see Annex A) involving 4 functions, i.e. navigation, telephone, music and radio, recorded by each speaker. The OEM may provide no more than 10 input instructions to replace the instructions in Annex A (Table A.1), but the replacement shall not change the control results of the input instructions.

4.4.3 Sound localization test conditions

Considering various factors such as the gender, accent and age, the sound localization test set shall comprise recorded speeches of 10 male and 10 female speakers, with a total of 30 fixed input instructions (see Annex A) recorded by each speaker for 3 functions of window, A/C and seat control. The OEM may provide no more than 5 input instructions to replace the instructions in Annex A (Table A.2), but the replacement shall not change the control results of the input instructions.

4.4.4 Requirements for speech input volume

The speech sound pressure level at the artificial mouth shall be within 60 dB ~ 70 dB.

4.4.5 Requirements for noise input volume

The sound pressure level range of high-speed driving noise generated by the environmental noise restoration and playback system in the vehicle shall be within 65 dB ~ 75 dB. The noise source is the interior noise collected under the scenario of vehicle speed of 100 km/h, all windows completely closed, and medium A/C air speed (the noise source is collected separately for each VUT).

4.5 Test photos

- a) Before installing the test equipment, take photos of the front left 45° of the VUT and the nameplate of the vehicle;
- b) After the test equipment is installed, take photos of the test equipment inside and outside the VUT.

5 Test Methods

5.1 Speech interaction test

5.1.1 Wakeup test

5.1.1.1 Wakeup ratio

Set the system under test to the standby state, and play the speech wakeup test set with an artificial mouth. Carry out 100 tests in total, record the number of successful wakeup of the system under test, and calculate the wakeup ratio.

5.1.1.2 Wakeup time

Adjust the system under test to the standby state, and play the wakeup speech test set with the

artificial mouths. Carry out 20 tests in total, and record the wakeup time of each test. Take the average value of 20 test results as the wakeup time of the system.

5.1.2 Functional satisfaction test

5.1.2.1 Telephone

Set the system under test to the standby state, play the telephone function related speech test set with an artificial mouth, and record the number of times that the system under test correctly understands the speech and executes the corresponding operation.

5.1.2.2 Navigation

Set the system under test to the standby state, play the navigation function related speech test set with an artificial mouth, including turn-on mode and recommendation of point of interest, and record the number of times that the system under test correctly understands the speech and executes the corresponding operation.

5.1.2.3 Radio

Set the system under test to the standby state, play the radio function related speech test set with an artificial mouth, and record the number of times that the system under test correctly understands the speech and executes the corresponding operation.

5.1.2.4 Music

Set the system under test to the standby state, play the music function related speech test set with an artificial mouth, including turn-on mode and switching function, and record the number of times that the system under test correctly understands the speech and executes the corresponding operation.

5.1.3 Functional richness test

Conduct tests on speech interaction functions other than telephone, navigation, radio and music item by item according to the vehicle manual or the functional description of the speech interaction system provided by the OEM and as per vehicle control, system settings, infotainment and other classification methods, and record functional items for which the corresponding operations can be executed by the system under test ("Turn a function on and off" and "Adjust the intensity of a function upward or downward by one position" will be considered as one function).

5.1.4 Dialect support test

Check the types of dialects supported by the speech interaction system according to the vehicle manual or the functional description of the speech interaction system provided by the OEM.

5.1.5 Sound localization test

5.1.5.1 Window

Adjust the system under test to the standby state, and play the speech test set of window control at the driver seat, front passenger seat as well as left and right seats in the second row respectively through the artificial mouths. Record the times of the system under test to correctly understand the test set and complete operations.

5.1.5.2 A/C

Adjust the system under test to the standby state, and play the speech test set of A/C control at the driver seat, front passenger seat as well as left and right seats in the second row respectively through the artificial mouths. Record the times of the system under test to correctly understand the test set and complete operations.

5.1.5.3 Seat

Adjust the system under test to the standby state, and play the speech test set of seat control at the driver seat, front passenger seat as well as left and right seats in the second row respectively through the artificial mouths. Record the times of the system under test to correctly understand the test set and complete operations.

5.1.6 Noise shielding test

5.1.6.1 Wakeup ratio

Set the system under test to the standby state, and play the speech wakeup test set with an artificial mouth. Carry out 100 tests in total, record the number of successful wakeup of the system under test, and calculate the wakeup ratio.

5.1.6.2 Wakeup time

Adjust the system under test to the standby state, and play the wakeup speech test set with the artificial mouths. Carry out 20 tests in total, and record the wakeup time of each test. Take the average value of 20 test results as the wakeup time of the system.

5.2 Touch screen interaction test

5.2.1 Availability test

5.2.1.1 Pixel density

Calculate the pixel density according to the resolution and size of the vehicle's central control touch screen. Obtain the final PPI value using the round-down method.

5.2.1.2 Brightness adjustment

Check the brightness adjusting method of the touch screen according to the vehicle manual. For a vehicle with adaptive adjustment function, verify this function by applying different lighting conditions to the screen.

5.2.1.3 Easy operation

Switch the navigation interface to the music interface by operating the touch screen, and record the number of operations on the screen (one tap is considered as one operation).

5.2.2 Richness test

5.2.2.1 On-line music

Check whether the vehicle has on-line music function according to the vehicle manual, and if any, verify the function by actual operations.

5.2.2.2 Application support

Check whether the vehicle is provided with the application download function or has been installed with navigation, on-line music, on-line radio, on-line video, weather, smart home and other applications according to the vehicle manual, and if any, verify the function or applications by actual operations.

5.2.3 Application start-up time test

5.2.3.1 Navigation

Start the vehicle, wait until the screen is completely started, and use a stylus pen to tap the navigation icon on the screen. End the test when the contents on the screen no longer change, and record the time needed from the moment when the stylus pen touches the screen to the moment

when the navigation interface is fully displayed. Repeat the test for 5 times, and take the average value as the final start-up time of navigation function.

5.2.3.2 Telephone

Start the vehicle, wait until the screen is completely started, and connect the Bluetooth of the mobile phone. Use a stylus pen to tap the telephone icon on the screen, end the test when the contents on the screen no longer change, and record the time needed from the moment when the stylus pen touches the screen to the moment when the telephone interface is fully displayed. Repeat the test for 5 times, and take the average value as the final start-up time of telephone function.

5.2.3.3 Music

Start the vehicle, wait until the screen is completely started, and use a stylus pen to click the music icon on the screen. End the test when the contents on the screen no longer change, and record the time needed from the moment when the stylus pen touches the screen to the moment when the music interface is fully displayed. Repeat the test for 5 times, and take the average value as the final start-up time of music function.

5.2.3.4 Radio

Start the vehicle, wait until the screen is completely started, and use a stylus pen to tap the radio icon on the screen. End the test when the contents on the screen no longer change, and record the time needed from the moment when the stylus pen touches the screen to the moment when the radio interface is fully displayed. Repeat the test for 5 times, and take the average value as the final start-up time of radio function.

5.2.3.5 Setting

Start the vehicle, wait until the screen is completely started, and use a stylus pen to tap the setting icon on the screen. End the test when the contents on the screen no longer change, and record the time needed from the moment when the stylus pen touches the screen to the moment when the setting interface is fully displayed. Repeat the test for 5 times, and take the average value as the final start-up time of setting function.

5.2.4 Fluency test

5.2.4.1 Contact list

Start the vehicle, wait until the screen is completely started, and connect the Bluetooth of the mobile phone. Wait until the contact list is updated, swipe the contact list interface up and down respectively with a stylus pen. End the test when the contents on the screen no longer change, record the lag during swiping, and calculate the maximum successive frame stuttering count and the average frames per second for a single test. If the contact list in the IVIS is displayed horizontally, swipe left and right respectively to carry out the test. Repeat the test for 5 times by swiping up (or left) and down (or right), take the highest value of maximum successive frame stuttering count and the mean value of average frames per second obtained in 10 tests as the final test results.

5.2.4.2 Call records list

Start the vehicle, wait until the screen is completely started, and connect the Bluetooth of the mobile phone. Wait until the contact list is updated, swipe the contact list interface up and down respectively with a stylus pen. End the test when the contents on the screen no longer change, record the lag during swiping, and calculate the maximum successive frame stuttering count and the average frames per second for a single test. If the call records list in the IVIS is displayed horizontally, swipe left and right respectively to carry out the test. Repeat the test for 5 times by swiping up (or left) and down (or right), take the highest value of 10 test results as the maximum successive frame stuttering count and the average value of average frames per second obtained in

10 tests as the final test value.

5.2.5 Driving interaction safety test

5.2.5.1 A/C control

- a) The driver shall get familiarized with the vehicle's various A/C control modes other than speech interaction within 10 minutes;
- b) The driver shall start the vehicle, drive onto a 1 km straight road and stabilize the speed at 50 km/h as soon as possible, turn on the A/C of the vehicle via the central control touch screen or physical buttons, and set the A/C temperature to 26 °C (main driver's seat) and the airflow to the middle or higher middle position (refer to 4.3.6);
- c) The test is successfully set up and then it ends. Record the max time of the sight off the road T, the number of the sight off the road N and the number of the steps n.
- d) One professional driver shall repeat the A/C setting tasks 5 times, and the average value of 5 test results shall be taken as the final value.

5.3 Terminal interconnection test

5.3.1 Mobile phone interconnection

5.3.1.1 Remote window closing

Check whether the vehicle is provided with the remote window closing function at the mobile phone terminal according to the vehicle manual, and if any, verify the function by actual operations.

5.3.1.2 Remote A/C start

Check whether the vehicle is provided with the remote A/C start function to reduce or increase the temperature at the mobile phone terminal according to the vehicle manual, and if any, verify the function by actual operations.

5.3.1.3 Display of vehicle localization

Check whether the vehicle is provided with the remote vehicle localization viewing function at the mobile phone terminal according to the vehicle manual, and if any, verify the function by actual operations.

5.3.1.4 Remote honking and flashing

Check whether the vehicle is provided with the remote vehicle honking and flashing control function at the mobile phone terminal according to the vehicle manual, and if any, verify the function by actual operations.

5.3.1.5 Remote unlocking/locking

Check whether the vehicle is provided with the remote door unlocking and locking function at the mobile phone terminal according to the vehicle manual, and if any, verify the function by actual operations.

5.3.1.6 Hotspot interconnection

Check whether the vehicle is provided with the Wi-Fi and hotspot connection function of IVIS according to the vehicle manual, and if any, verify the function by actual operations.

5.4 Head-up display test

5.4.1 Head-up display

5.4.1.1 Vehicle speed display

Check whether the head-up display system is provided with the current vehicle speed display function according to the vehicle manual, and if any, verify the function by actual operations.

5.4.1.2 Navigation indication

Check whether the head-up display system is provided with the navigation indication function according to the vehicle manual, and if any, verify the function by actual operations. Various types of navigation indications are defined as follows:

- a) Single-arrow navigation, to indicate the navigation information through a single arrow, for example, right turn (see Fig. 6);



Fig. 6 Schematic Diagram of Single-arrow Navigation

- b) Lane-level navigation, to indicate the navigation information through multiple arrows. The driver can judge the specific lane to enter based on the navigation information indicated by arrows, for example, right turn (see Fig. 7);

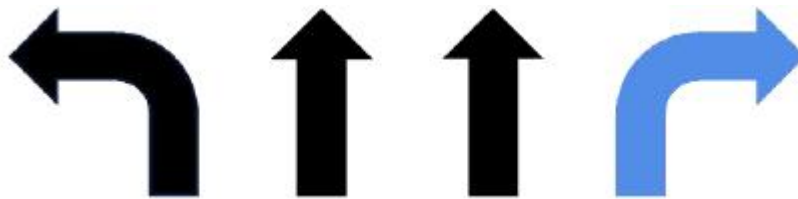


Fig. 7 Schematic Diagram of Lane-level Navigation

- c) AR navigation, the navigation display mode that the navigation indication arrows are overlapped on a real road surface or in a real scenario.

5.4.1.3 Speed limit prompt

Check whether the head-up display system is provided with the speed limit prompt function for the current section according to the vehicle manual, and if any, verify the function by actual operations.

5.4.1.4 Display of assisted driving state

Check whether the head-up display has the function of displaying the current vehicle assisted driving state (inactive, ready and active states, at least through the content of the HUD to determine whether the vehicle assisted driving system is active) according to the vehicle manual, and if any, verify the function by actual operations.

Annex A
List of Input Instructions for Functional Satisfaction Test of Speech Interaction

Table A.1 Input Instructions for Functional Satisfaction Test

Function under Test	Test Scenario	S/N of Instruction	Input Instruction	Description
Telephone	Make a call	1	Make a call to xxx	xxx is the name of contact
		2	Contact xxx	
		3	Ring xxx	
		4	Phone xxx	
		5	I want to speak to xxx	
	6	Get xxx on the phone	xxx is the telephone number	
	7	Dial xxx		
	8	Call xxx		
	9	Dial the number xxx		
	10	xxx		
Navigation	Turn-on mode	1	Enable navigation	-
		2	Navigation	-
		3	Open the map	xxx is the name or detailed address of the place
		4	Navigate to xxx	
		5	I need to go to xxx	
		6	I'm going to xxx	
		7	Go to xxx	
		8	To xxx	
		9	Plan the route to xxx	
		10	Find xxx	
Navigation	Recommendation of point of interest	1	I want to sleep	-
		2	I'm hungry	-
		3	Navigate to xxx	xxx is a category name, such as shopping mall, parking lot and gas station
		4	Where is the xxx nearby	
		5	To the nearest xxx	
		6	I want to go to xxx	
		7	Search the nearby xxx	
		8	Where can I xxx	
		9	Go to a place where I can xxx	
		10	I want to xxx	
Music	Turn-on mode	1	Music	-
		2	Play music	-
		3	Some music	-
		4	Play a song	xxx is the song name
		5	Play xxx	
		6	Get xxx	
		7	I want to listen xxx	xxx is the name of a TV series, movie, etc.
		8	Play the theme song of xxx	
		9	Play xxx music	xxx is the class of songs, e.g., "classical" or "popular"

	Switching function	10	I want to listen to xxx's songs	xxx is the name of a singer
		1	Next song	-
		2	Decrease the volume	
		3	Too loud	
		4	This song is not nice	
		5	It's too noisy	
		6	Change to another song	
		7	Random play	
		8	Repeat track	
		9	Pause	
		10	Exit music	
Radio	Turn-on mode	1	Turn on the radio/radio station	If the system cannot recognize "radio", test with "radio station"
		2	I want to listen to the radio/radio station	
		3	Play the radio/radio station	
		4	Radio/radio station	
		5	Turn on FMxxx	xxx is a channel name such as "93.8"
		6	FMxxx	xxx is a channel name such as "938"
		7	Play xxx	xxx is the name of a program
		8	I want to listen to xxx's program	xxx is the name of a person
		9	Turn on the xxx channel	xxx is the class of channel, e.g., "music" or "traffic"
		10	Turn off the radio/radio station	If the system cannot recognize "radio", test with "radio station"

Table A.2 Input Instructions for Sound Localization Test

Function under Test	Test Scenario	S/N of Instruction	Input Instruction	Description
Window	Window control	1	Open the window	-
		2	Close the window	
		3	Open window	
		4	Close window	
		5	Open the window in half	
		6	Open the window slightly	
		7	Close the window slightly	
		8	I want some air	
		9	Little stuffy in the car	
		10	I want to smoke	
A/C	A/C control	1	Turn on A/C	-
		2	Turn off A/C	
		3	Set the A/C temperature to 26 °C	
		4	Set the temperature to automatic	
		5	Increase the temperature slightly	
		6	Lower the temperature slightly	
		7	Lower the air volume slightly	
		8	Increase the air volume slightly	
		9	I feel a bit cold	
		10	I feel a bit hot	
Seat	Seat control	1	Turn on seat heating	-
		2	Disable the seat heater	
		3	Set the seat heating to the highest level	
		4	Set the seat heating to the lowest level	
		5	Turn on seat ventilation (or seat cooling)	
		6	Turn off seat ventilation (or seat cooling)	
		7	Set the seat ventilation to the highest level	
		8	Set the seat ventilation to the lowest level	
		9	Turn on seat massage	
		10	Turn off seat massage	