

**Supporting ETC and ITS spot**

■ **Complete one piece type**

Only mainframe without any connection cable.

■ **Compact & lightweight**

Compact 138(W)×101(H)×30(D)mm and lightweight 250g.

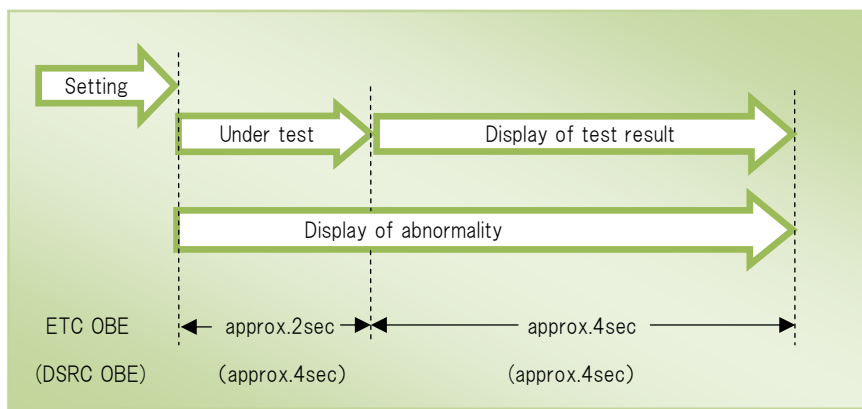
■ **Easy operation**

Easy operation by one multi-directional switch.



**Description of equipment**

DSRC OBE tester ME9100 is a tester to check whether OBE installed on a car communicates in the air correctly. For an automobile dealer, a car accessories shop and a car repair factory installing OBE, ME9100 is a necessary tool to deliver a perfect OBE to their customers. After transmitting FCMC from ME9100, it is confirmed whether ACTC and WCNC return from OBE correctly. Since the power is automatically turned off after about 6 seconds (about 8 seconds @ DSRC OBE) from test start, battery life becomes longer. The number of test times is possible about 500 times.



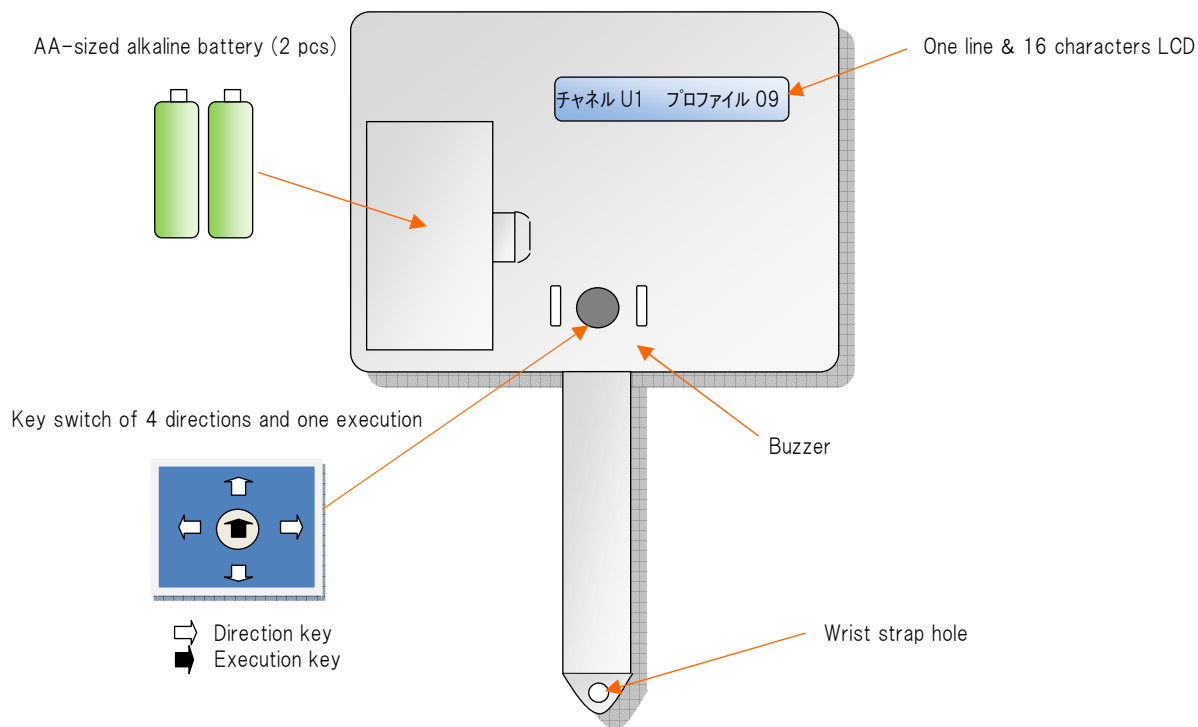
The screens of "Under test" and "Display of test result" are as follows.

シケンチュウ □■■■

フゴウカク □■■■

シケンチュウ : Under test, フゴウカク : Fail (パス : Pass)

Moreover, there are three kinds of flat battery, carrier detection and failure of equipment in "Display of abnormality".



### OBE basic test

The basic test of ETC OBE or DSRC OBE is very easy as described below. When the execution key is pressed, the power supply turns on and the following screen is displayed.



#### ■ Communication test of ETC OBE

The communication test can be performed only by pressing the execution key at the state of the above screen. In the ETC test, U1 and U2 channels of profile P9 are tested sequentially.

#### ■ Communication test of DSRC OBE

When left and right direction keys are pressed, DSRC test is selected. Then, when execution key is pressed, the communication test is performed.

In DSRC test, each two channels U1 and U2 of profile P9 and P12 are tested sequentially.



Selected with left and right direction keys.



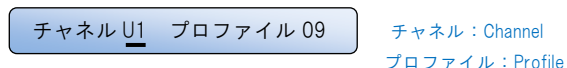
The display is alternately changed as ETC test or DSRC test whenever left and right direction keys are pressed.

When the power supply is turned on again, the same screen as last time is displayed.

### Detailed test (channel & profile setting)

The following screen will appear if up and down direction keys are pressed when "ETC test" or "DSRC test" is displayed. Since a cursor appears under the item to be set, a numerical value is chosen with up and down direction keys.

Channel or profile is selected with left and right direction keys.



#### ■ Setting of channel

Seven channels are assigned in the DSRC communication standard. ME9100 can select one channel from seven of U1 to U7 as well.

Channel	Carrier freq.
U1	5.835GHz
U2	5.845
U3	5.840
U4	5.830
U5	5.825
U6	5.820
U7	5.815

#### ■ Setting of profile

The profile specifies the combination of two modulation systems.

- ME9100 : Transmits FCMC, MDC and ACKC.
- OBE : Transmits ACTC, MDC and ACKC.

Item	P9	P10	P11	P12
FCMC/ACTC	ASK	ASK	ASK	QPSK
MDC/ACKC	ASK	ASK	QPSK	QPSK
Number of CH	2	7	7	7

## How to test

The test is completed in the easy procedures of ① to ④ as described below.

### ①Turning on ME9100

When execution key is pressed, the power supply is turned on.

### ②Setting of OBE to be tested

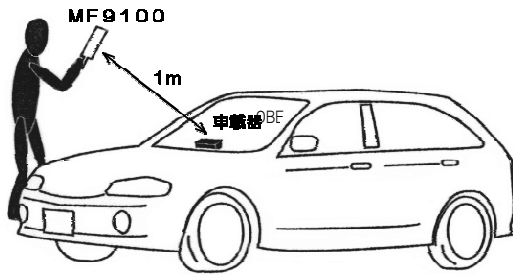
Either ETC test or DSRC test is selected with left and right direction keys.

### ③Execution of test

When execution key is pressed, the test is started.

### ④Confirmation of test result

“Pass” or “Fail” is confirmed with LCD screen or buzzer sound.



Moreover, ME9100 is opposed in parallel to OBE and the test is performed 1m away (range from 0.8 to 1.2m), as shown in figure. When the communication test is performed in this state, the radio wave strength of OBE can be checked simultaneously. If the test result is “Pass”, the radio wave strength of OBE is normal. If “Pass” is displayed at distance below 0.8 m, cable wiring or OBE itself should be rechecked because radio wave level is low.

## Buzzer sound

Regarding key operation, under test, test result or abnormality, the state can be confirmed with buzzer as shown in table below. The state can be grasped by sound though the LCD screen is not watched during test.

State		Buzzer sound	
Key operation		※1	—
Under test		※2	— — — — —
Test result	Pass	※3	
	Fail	※4	—————
Abnor-mal	Flat battery	※5	— — — — —
	Carrier detection	※6	— . — . — . — .
	Equipment failure	※7	— — — — —

- ※1 : One short sound
- ※2 : Short discontinuous sound
- ※3 : Soundless
- ※4 : Continuous sound
- ※5 : Long discontinuous sound
- ※6 : Long & short discontinuous sound
- ※7 : Three short discontinuous sound and soundless

## RSU carrier detection function

If there is a roadside unit (RSU) under operation nearby, it should not be affected from anything. So, ME9100 detects RSU carrier first, and the subsequent test will be stopped if a carrier exists. The minimum carrier detection level is approx. -78dBmreip. If a carrier is detected, the following screen is displayed. In this case, it should be confirmed whether RSU exists around. If it exists, the test should be performed further away.

キャリアセンス □■■■■ キャリアセンス  
: Carrier sense

## Battery remainder indication

The battery remainder is displayed at six levels on the right side of screen as shown in table below. Besides, the following screen is displayed in case of remainder 0%, and subsequent use is not available. Please exchange to new batteries. The alkaline battery will be recommended from a point of the capacity.

デンチコウカン □□□□ デンチコウカン  
: Battery exchange

Indication	Battery remainder
デンチコウカン □□□□	0%
□□□□	>0 to ≤10%
□□□■	>10 to ≤35%
□□■■■	>35 to ≤60%
□■■■■	>60 to ≤85%
■■■■■	>85 to ≤100%

## Self-check function

When execution key for test start is pressed, ME9100 performs read/write check of RAM in CPU and external RAM, and checksum of program ROM before test. If abnormal, the following screen is displayed and the subsequent operation is stopped.

キキイジョウ □■■■■ キキイジョウ  
: Equipment failure

## Setup power-off function

The setting values at the time of power-on are set to the values at the time of last power-off. Therefore, it is very convenient when carrying out test and measurement by the same setting.

## Auto power-off function

The power supply is automatically turned off after approx. 6 sec (approx. 8 sec at DSRC OBE) from the test start. The battery life will be longer for this function. The number of test times is possible about 500 times with the alkaline dry battery.

# Specifications

※Unless specified, the specifications of ETC(ASK) and ITS spot(QPSK) are in common.

## ■ Transmission characteristics

Transmission frequency	5775, 5780, 5785, 5790, 5795, 5800, 5805MHz
Accuracy	within±5ppm
Transmission power	within-1.7±1.9dBmeirp@ASK : peak power, QPSK : average power within burst
Strength of spurious or unwanted emission	Spurious band : less than 2.5 μW Out of band : less than 25 μW Boundary frequency : carrier±12.2MHz
Occupied bandwidth	less than 4.4MHz
Adjacent channel leakage power	less than -30dBc@5±2.2MHz less than -40dBc@10±2.2MHz ※ASK : peak power, QPSK : average power within burst
Carrier off leakage power	less than 2.5 μW
Signal transmission rate	1024kbps@ASK 4096kbps@QPSK
Accuracy	within±100ppm
Modulation factor /accuracy	more than 0.75@modulation factor(ASK) less than 10.0%@modulation accuracy(QPSK)

## ■ Receiving characteristics

Receiving frequency	5815, 5820, 5825, 5830, 5835, 5840, 5845MHz
Receiving sensitivity	approx.-48dBmeirp@front ※ASK : peak power, QPSK : average power within burst
Radio wave strength emitted subordinately	less than 2.5 μW
Input damage level	+3dBmeirp@front

## ■ Communication characteristics

Modulation method	ASK, π/4QPSK
Communication profile	Supporting profile 9 to 12
Communication system	Half-duplex
Communication form	point-to-point(Communication with one OBE)
SAM	Without

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■ Contents of test      Wireless communication test between ME9100 and OBE

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■ Other functions

- Buzzer sound
- RSU carrier detection function
- Battery remainder indication
- Self-check function
- Setup power-off function
- Auto power-off function

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## ■ General

Display	One line & 16 characters LCD
Power supply	AA-sized alkaline battery(2 pcs)
Operating temperature	-10 to +45°C
Storage temperature	-20 to +65°C
Water resistance	JIS C0920 /class1 equivalent (200mm height, precipitation 1mm / minute, 10 minutes dropping)
Dimensions	138(W)×101(H)×30(D)mm (excluding handle and projections)
Weight	approx.250g
Standard accessories	AA-sized alkaline battery(2 pcs), Operation manual

MICRONIX Corporation reserves the right to make changes in design, specification and other information without prior notice.

# MICRONIX

AGENCY

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