N725

eCall API Notes

Issue 1.0 Date 2022-11-01

Notice

This document provides guide for users to use N725.

This document is intended for system engineers (SEs), development engineers, and test engineers.

THIS DOCUMENT PROVIDES INSTRUCTIONS FOR CUSTOMERS TO DESIGN THEIR APPLICATIONS. PLEASE FOLLOW THE RULES AND PARAMETERS IN THIS GUIDE TO DESIGN AND COMMISSION. NEOWAY WILL NOT TAKE ANY RESPONSIBILITY OF BODILY HURT OR ASSET LOSS CAUSED BY IMPROPER OPERATIONS.

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Contents

About This Document

Scope

This document is applicable to the N725 series.

Audience

This document is intended for system engineers (SEs), development engineers, and test engineers.

Change History

Issue	Date	Change	Changed By
1.0	2022-11	Initial draft	Dong Nengxiang

Conventions

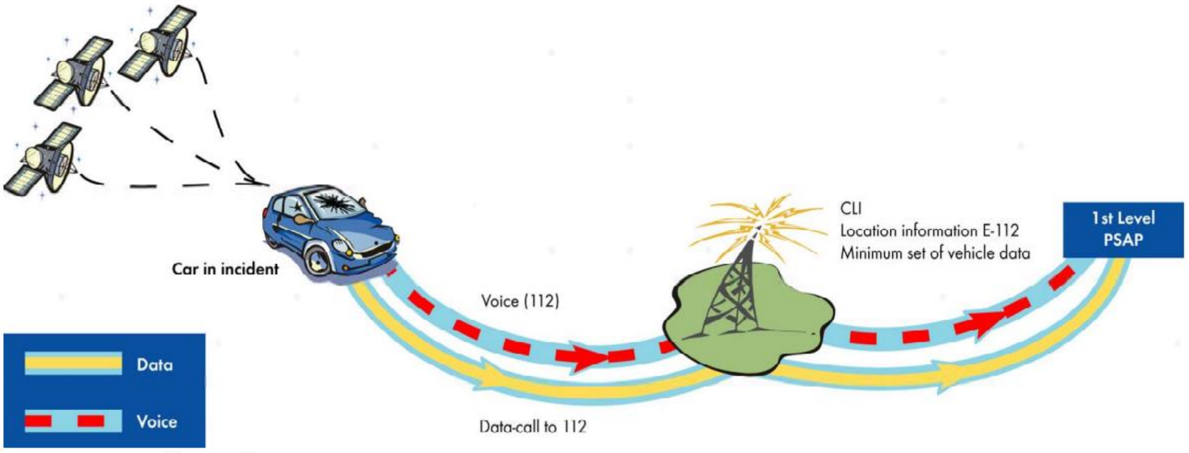
Symbol	Indication
❗	This warning symbol means danger. You are in a situation that could cause fatal device damage or even bodily damage.
⚠	Means reader be careful. In this situation, you might perform an action that could result in module or product damages.
ℹ	Means note or tips for readers to use the module

1 Overview

eCall (A112 emergency call) is an emergency call solution that is an initiative by the European Union. It intended to bring rapid assistance to motorists involved in a collision anywhere within the European Union.

The aim is for all new vehicles to incorporate a system that automatically contacts the emergency services in the event of a serious accident, sending location and sensor information. When a traffic accident occurs, the vehicle equipped with the eCall system first obtains the specific location information of the vehicle through the satellite positioning device, and will automatically or manually initiate an emergency voice call. Then the IVS (in-vehicle system) will send the MSD message (minimum data set) containing location information, passenger information, vehicle identification code and other data to the local public-safety answering point (PSAP), so that the collection of relevant information about the accident vehicle can be completed in a short time to facilitate subsequent emergency rescues.

For the specific scenario using the eCall system, see the following figure.



This document mainly introduces how to develop the eCall related functions via the eCall APIs provided by Neoway.

2 eCall APIs

This chapter provides APIs used to configure MSD, as well as to start/end eCall, receive a status report and process the timeout report.

2.1 nwy_voice_ecall_msdcfg

Function	int nwy_voice_ecall_msdcfg(nwy_ecall_msd_structure_s_type *msd, bool persistent)
Description	To configure specified the MSD message
Parameter	msd: msd message persistent: whether to permanently save the MSD configuration
Return Value	Failed: an integer value <0 Successful: 0

2.2 nwy_voice_ecall_msdgen

Function	int nwy_voice_ecall_msdgen(void)
Description	To update and create the MSD message
Parameter	None
Return Value	Failed: an integer value <0 Successful: 0

2.3 nwy_voice_ecall_only

Function	int nwy_voice_ecall_only(int active, char *number)
Description	To activate eCall mode and to configure or test the phone number
Parameter	active: whether to activate eCall mode number: phone number to be tested.
Return Value	Failed: an integer value <0 Successful: 0

2.4 nwy_voice_ecall_push

Function	int nwy_voice_ecall_push(void)
Description	To push the MSD message to PSAP.
Parameter	None
Return Value	Failed: an integer value <0 Successful: 0

2.5 nwy_voice_ecall_open

Function	int nwy_voice_ecall_open(nwy_ecall_option ecall_type)
Description	To enable the eCall function
Parameter	ecall_type: eCall operation type: 0: test the number 1: configure or call the eCall function 2: initiate an eCall manually 3: initiate an eCall automatically 4: eCall is not activated 5: release the eCall
Return Value	Failed: an integer value <0 Successful: 0

2.6 nwy_voice_add_statehandler

Function	int nwy_voice_add_statehandler(nwy_voice_statehandlerfunc state_handle)
Description	A callback function used to obtain the phone call state
Parameter	State_handle: call_id, phone_num voice phone number, state voice: phone call state *contextPtr mainly obtains the call_id of an incomming call
Return Value	Failed: an integer value <0 Successful: 0

3 Steps of Performing eCall Daemon

For the sample code, see **example/voice/nwy_voice_test.c**.

Step 1: Perform initialization: nwy_sdk_init

Step 2: Register the callback function to obtain the phone call state: voice_call_test_state_change

Step 3: Configure the specified MSD message: test_nwy_voice_ecall_msdcfg

Step 4: Update and create the MSD message: test_nwy_voice_ecall_msdgen

Step 5: Activate eCall mode and to configure or test the phone number (optional): test_nwy_voice_ecall_only

Step 6: Enable the eCall function: test_nwy_voice_ecall_open

Step 7: Push the MSD message to PSAP: test_nwy_voice_ecall_push

4 How to Use eCall Daemon

Step 1: Connect N725 to your computer.

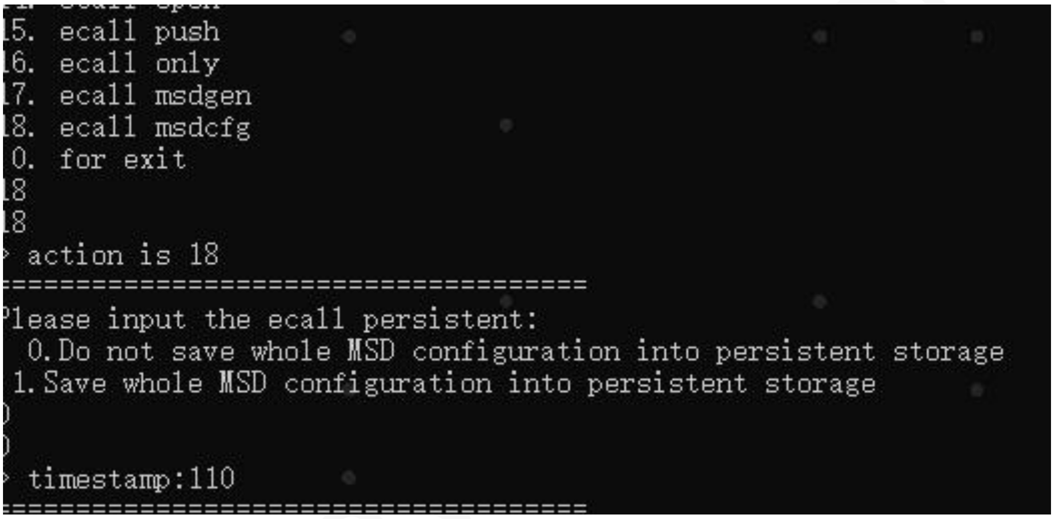
Step 2: Access a command-line interface (CLI) in your computer.

Step 3: Navigate the data directory.

Step 4: Execute **./nwy_voice_test** to enable the eCall test mode.

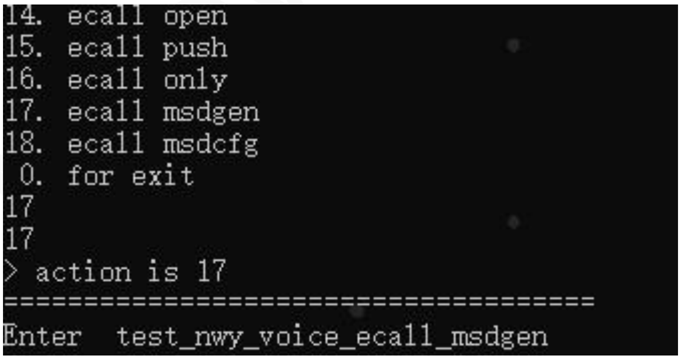
Step 5: Update the MSD message.

1. Select 18 to configure MSD message (in the test code, the message is configured by default).



```
15. ecall push
16. ecall only
17. ecall msdgen
18. ecall msdcfg
 0. for exit
18
18
> action is 18
=====================================
Please input the ecall persistent:
  0.Do not save whole MSD configuration into persistent storage
 1.Save whole MSD configuration into persistent storage
0
0
> timestamp:110
=====================================
```

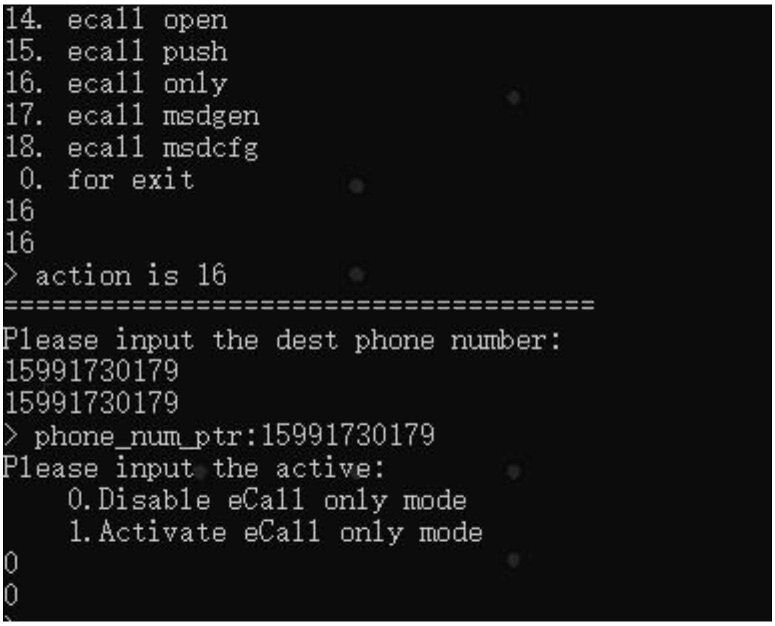
2. Select 17 to update the generated MSD message.



```
14. ecall open
15. ecall push
16. ecall only
17. ecall msdgen
18. ecall msdcfg
 0. for exit
17
17
> action is 17
=====================================
Enter  test_nwy_voice_ecall_msdgen
```

Step 6: Select 16 to set the PSAP number (optional).

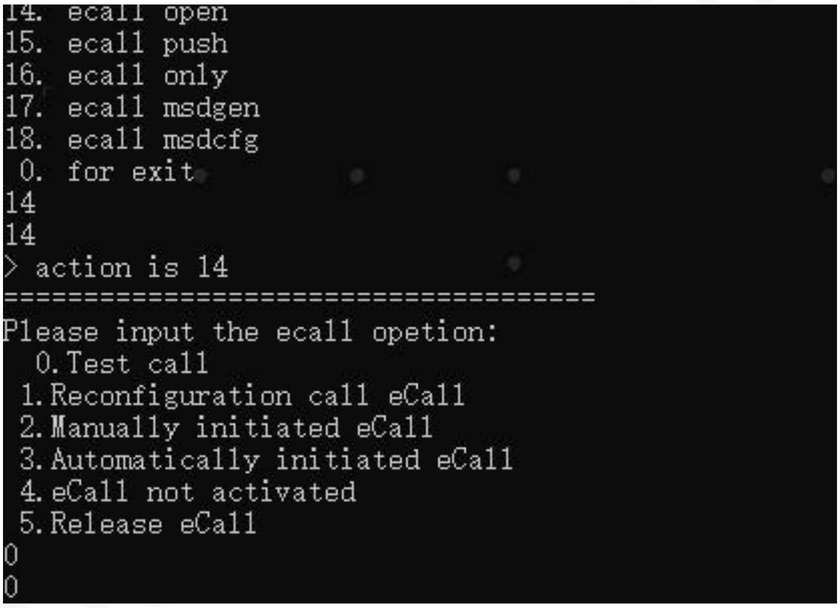
In actual application, the device with SIM card does not require number configuration.



```
14.  ecall open
15.  ecall push
16.  ecall only
17.  ecall msdgen
18.  ecall msdcfg
 0.  for exit
16
16
> action is 16
=====================================
Please input the dest phone number:
15991730179
15991730179
> phone_num_ptr:15991730179
Please input the active:
    0.Disable eCall only mode
    1.Activate eCall only mode
0
0
```

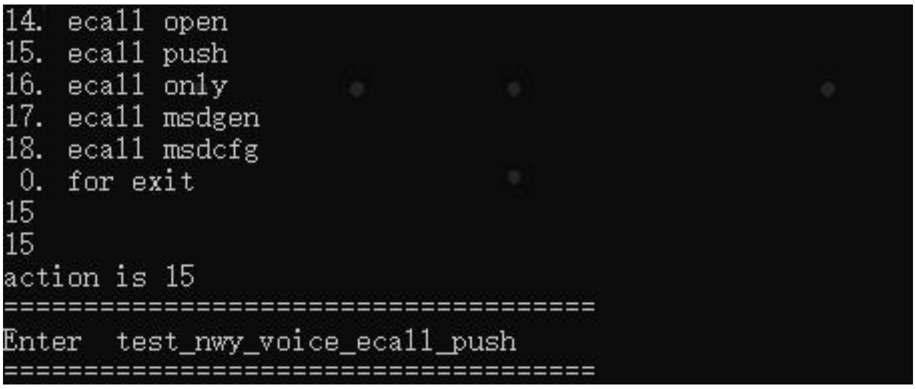
Step 7: Test the eCall function.

1. Select 14 to enter eCall test mode.



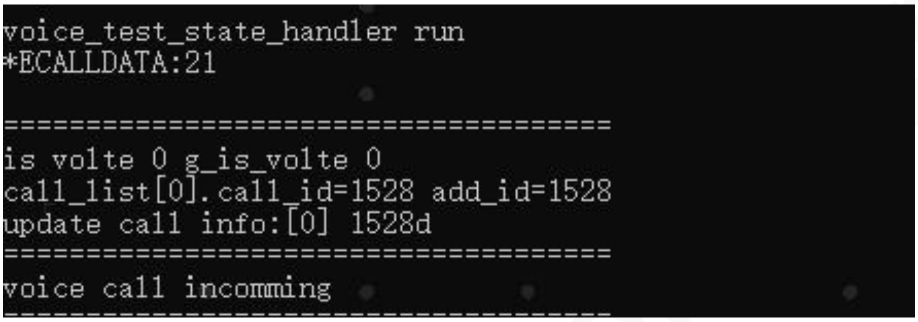
```
14.  ecall open
15.  ecall push
16.  ecall only
17.  ecall msdgen
18.  ecall msdcfg
 0.  for exit
14
14
> action is 14
=====================================
Please input the ecall opetion:
  0.Test call
 1.Reconfiguration call eCall
 2.Manually initiated eCall
 3.Automatically initiated eCall
 4.eCall not activated
 5.Release eCall
0
0
```

2. Select 15 to push the MSD to PSAP.



```
14. ecall open
15. ecall push
16. ecall only
17. ecall msdgen
18. ecall msdcfg
 0. for exit
15
15
action is 15
=====================================
Enter  test_nwy_voice_ecall_push
=====================================
```

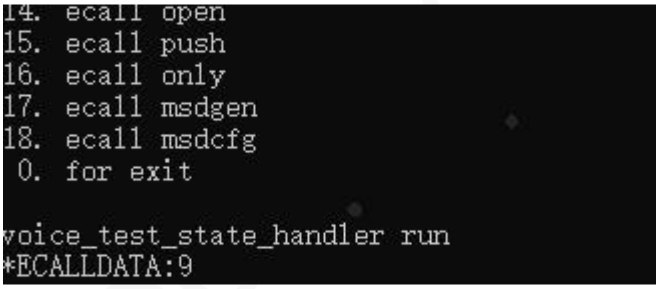
*ECALLDATA:21 indicates that MSD is updated successfully.



```
voice_test_state_handler run
*ECALLDATA:21

======================================
is volte 0 g_is_volte 0
call_list[0].call_id=1528 add_id=1528
update call info:[0] 1528d
======================================
voice call incomming
======================================
```

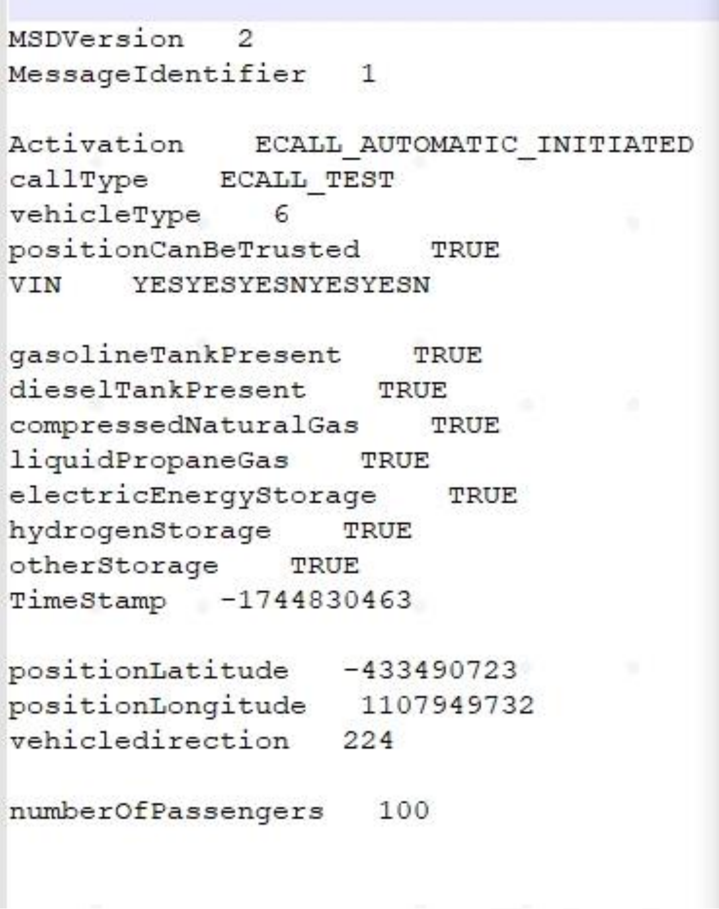
*ECALLDATA: 9 indicates that the PSAP requests to pull MSD.



```
14. ecall open
15. ecall push
16. ecall only
17. ecall msdgen
18. ecall msdcfg
 0. for exit

voice_test_state_handler run
*ECALLDATA:9
```

The figure below shows that the PSAP has received the MSD message successfully.



```
MSDVersion    2
MessageIdentifier    1

Activation     ECALL_AUTOMATIC_INITIATED
callType     ECALL_TEST
vehicleType     6
positionCanBeTrusted     TRUE
VIN     YESYESYESNYESYESN

gasolineTankPresent     TRUE
dieselTankPresent     TRUE
compressedNaturalGas     TRUE
liquidPropaneGas     TRUE
electricEnergyStorage     TRUE
hydrogenStorage     TRUE
otherStorage     TRUE
TimeStamp    -1744830463

positionLatitude    -433490723
positionLongitude    1107949732
vehicledirection    224

numberOfPassengers    100
```