

How to use Pixela's test tool "ZCertHelper"

2016.5.2 Pixela Corporation

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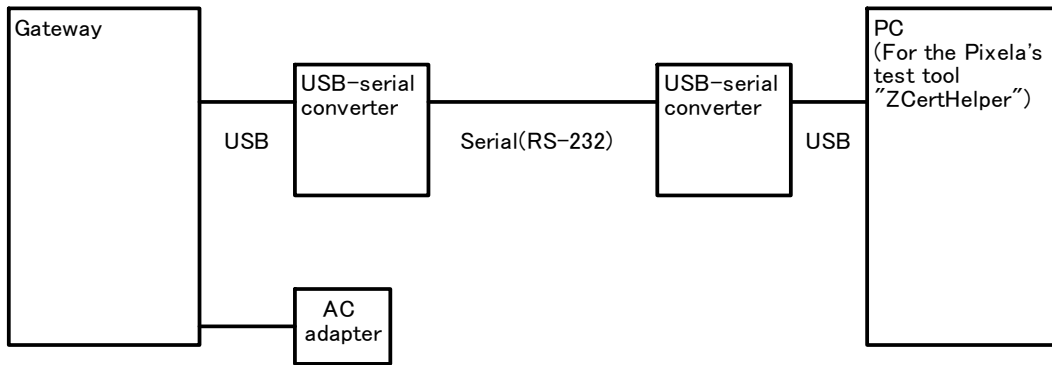
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Changes

2016.4.4	-	first version
2016.5.2	3.6, 4.5	Learn mode command when DUT is added to / removed from Z-Wave Network. [related CD.1.4]
-	3.10	(added) The Description of how the association group is used and/or triggered by the product [related D.10]
-	5	(added) How to check firmware build number.

1 Overview

1.1 Connection Diagram



1.2 Included Item List

No	Item	Number of item	Remarks
1	Gateway (PIX-GW100Z)	1	Call as "DUT"
2	AC adapter	1	For Gateway
3	USB-serial cable	2	
4	Serial cable	1	Cross cable
5	Pixela's test tool "ZCertHelper"	-	PC application Windows7 64bit + .net framework 4.5
6			

1.3 About PIX-GW100Z and "ZCertHelper"

PIX-GW100Z is a Z-Wave Gateway. And "ZCertHelper" is a PC application to control PIX-GW100Z for use in certification test.

This device is a security enabled Z-Wave Plus product that is able to use encrypted Z-Wave Plus messages to communicate to other security enabled Z-Wave Plus products

1.4 Interoperability

You are about to include a Z-Wave compatible device that is not promoted by '*service provider name*' for use in this application. While the device should work as expected the device may or may not support all of the features of the '*service provider name*' recommended device.

2 Setup Flow

<DUT setup>

- i. Connect a USB-Serial cable to the DUT's USB port.
- ii. Connect a USB-serial cable to a PC's USB port.
- iii. Connect a serial cable between a USB-Serial cable's serial connector and other one.
- iv. Connect a AC adapter to the DUT. (Automatically, The DUT turn on)
- v. One of two front LED of the DUT is Green, and other one is blackout.

<PC test tools setup>

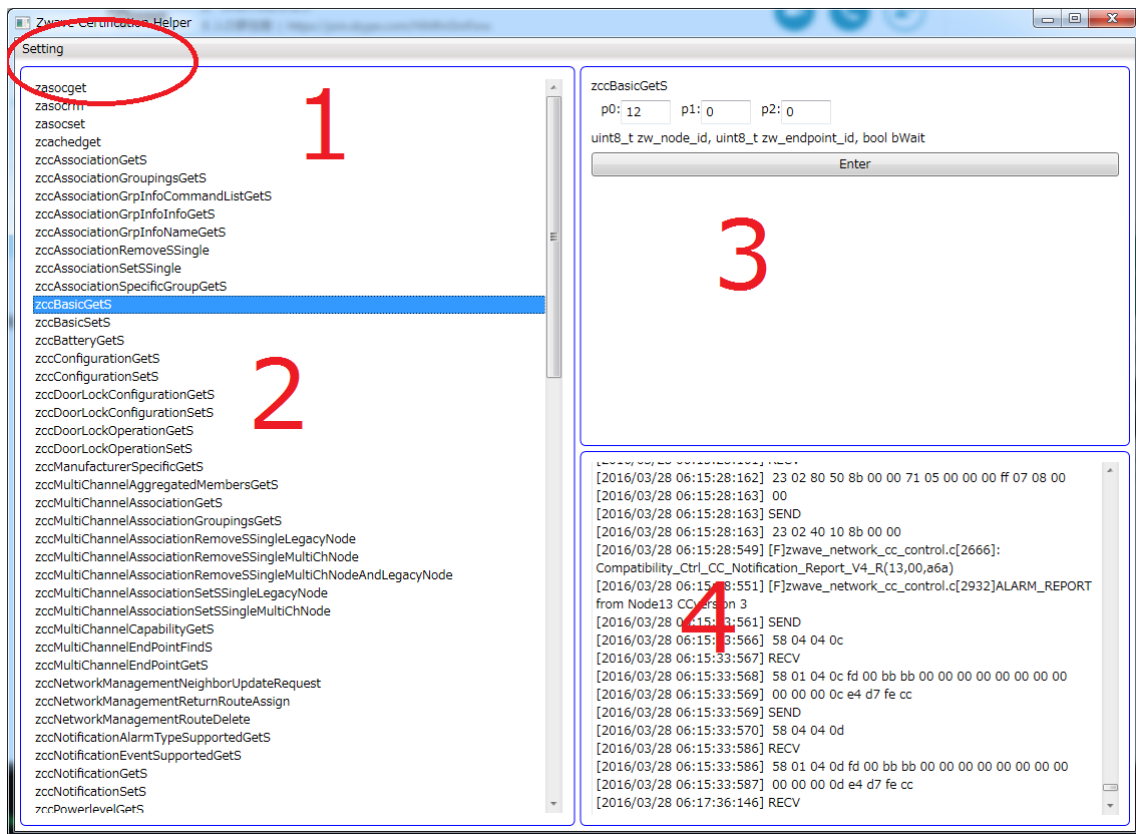
- vi. Copy the Pixela's test tool "ZCertHelper" to a PC.
- vii. Double click the ZCertHelper.
- viii. Setup a COM port.
(Select "Setting" -> "Com Port". And select the USB serial's COM number .)
- ix. Select "zcertenter" in left side, input "zcertBtlmo1" as p0, and Click "Enter" button on right upper side.
- x. Check that display "OK" log on right lower side.

3 How to use DUT and PC application

3.1 Terminology

Terms	z-wave terms	Explanation
ADD	Inclusion	To add a z-wave device to DUT
REMOVE	Exclusion	To remove a z-wave device to DUT
RESET	Set default	Factory reset

3.2 Application UI



<field 1>

This is setting menu.

If you want to change COM port, select “Setting” -> “Com port”

<field 2>

DUT control command list window.

<field 3>

DUT control command window.

DUT control command and arguments are displayed, when you select a command at <field 2>.

Push "Enter" button, this application send command to DUT.

<field 4>

Output log window.

Application log and DUT's outputs are displayed.

3.3 Activate Test Mode

- a. Start the PC application, and set using COM port.
- b. Select the "zcertenter" commands with parameter p0. (No need to modify p0 value)

3.4 ADD(Inclusion)

To do this, follow these steps:

- a. Select the "zincasoc" commands with parameter p0 = 1, to start inclusion mode.
- b. Execute the adding operation of the z-wave device.
- c. Wait for few minutes.
- d. "Finish Inclusion process" is displayed in the Output log window, when it is completed.

3.5 REMOVE(exclusion)

To do this, follow these steps:

- a. Select the "zexclusion" commands with parameter p0 = 1, to start inclusion mode.
- b. Execute the adding operation of the z-wave device.
- c. "Finish Exclusion process" is displayed in the Output log window, when it is completed.

3.6 Learn mode

To do this, follow these steps:

- a. Select the “zlearn” commands with parameter p0 = 1 or 2, to put into learn mode.
(parameter details: See 4.5)
- b. “Finish set learn mode process” is displayed in the Output log window, when it is completed.

3.7 ADD(Include) the DUT into existing network

- a. The SIS controller of existing network to the inclusion mode. .
- b. The DUT to start learn mode
- c. Wait for few minutes.
- d. “Finish set learn mode process” is displayed in the Output log window, when it is completed.

3.8 REMOVE(exclude) the DUT from existing network

- a. The SIS controller of existing network to the exclusion mode. .
- b. The DUT to start learn mode
- c. Wait for few minutes.
- d. “Finish set learn mode process” is displayed in the Output log window, when it is completed.

3.9 RESET(set default) the DUT into existing network

- a. Select the “zdefault” commands with parameter p0 = 1, to start RESET mode.
- b. Wait for few minutes.
- c. “Finish set default process” is displayed in the Output log window, when it is completed.

3.10 DUT's Association CC specifications

The DUT's association CC specifications are as follows:

Grouping ID	Maximum number of target can be added
1	1

The purpose of the Association Group 1 is that when the GW reset, it will send out a Device Reset Local CC to all the members in this group. It is not used for any other purpose.

3.11 When DUT receives Basic CC

The DUT set received value, but do nothing.

3.12 Replication

Get the DUT into “add(inclusion) mode”, and the other controller into learn mode. When this happen, the replication of network information to another controller will happen.

4 Control Function

4.1 Inclusion & Association

4.1.1 Description

The DUT enter the inclusion & associaion mode.

4.1.2 Usage

- Select a "zincasoc" on left side.
- Click the "Enter" button.

Function	Command	Params
<Inclusion and association>	zincasoc	P0: get command class version (1: TRUE, 0: FALSE)

This command includes Inclusion, association, z-wave plus info, return route, and version commands.

4.2 Default

4.2.1 Description

Default the Zwave Chip.

4.2.2 Usage

- Select a "zdefault" on left side.
- Click the "Enter" button.

Function	Command	Params
<Set default>	zincasoc	P0: 1

4.3 Exclusion

4.3.1 Description

The DUT enter exclusion mode.

4.3.2 Usage

- Select a “zexclusion” on left side.
- Click the “Enter” button.

Function	Command	Params
<Exclusion>	zexclusion	P0: 1

4.4 Failed remove / Failed replace

4.4.1 Description

The DUT enter failed remove mode or failed replace mode.

4.4.2 Usage

- Select a “zfailedremove/zfailedreplace” on left side.
- Click the “Enter” button.

Function	Command	Params
<Failed remove>	zfailedremove	P0: node id (> 1) P1: endpoint id (> 0)
<Failed replace>	zfailedreplace	P0: node id (> 1) P1: endpoint id (> 0)

4.5 Learn

4.5.1 Description

The DUT enter learn mode.

4.5.2 Usage

- Select a “zlearn” on left side.
- Click the “Enter” button.

When adding the DUT to the Z-Wave network.

Function	Command	Params
<learn mode(Classic)>	zlearn	P0: 1
<learn mode(NWI)>	zlearn	P0: 2

When removing the DUT from the Z-Wave network.

Function	Command	Params
<learn mode>	zlearn	P0: 1

4.6 Polling mode

4.6.1 Description

The DUT enter polling mode.

4.6.2 Usage

- Select a “zpollstart / zpollstop” on left side.
- Click the “Enter” button.

Function	Command	Params
<polling mode start >	zpollstart	P0: node id (> 1) P1: endpoint id (> 0) P2: polling mode (0: NOP, 1: Basic Get) P3: polling counts
<polling mode stop>	zpollstop	None

4.7 Show included device list

4.7.1 Description

The DUT shows included device list.

4.7.2 Usage

- Select a “zlist” on left side.
- Click the “Enter” button.

Function	Command	Params
<show device list >	zlist	None

4.8 Association CC

4.8.1 Description

Invoke "Association Command class".

4.8.2 Usage

- Select a "zccAssociationXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	command	Params
Association Set Command	zccAssociationSetSSigle	P0: node id (> 1) P1: endpoint id (> 0) P2: grouping id P3: associated node id
Association Get Command	zccAssociationGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: grouping id P3: 1
Association Remove Command	zccAssociationRemoveSSigle	P0: node id (> 1) P1: endpoint id (> 0) P2: grouping id P3: associated node id
Association Supported Groupings Get Command	zccAssociationGroupingsGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Association Specific Group Get Command	zccAssociationSpecificGroupGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1

4.9 Association Group Information CC

4.9.1 Description

Invoke "Association Group Information command class".

4.9.2 Usage

- Select a "zccAssociationGrpInfoXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	command	Params
Association Group Name Get	zccAssociationGrpInfoNameGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: grouping id P3 : 1
Association Group Info Get	zccAssociationGrpInfoInfoGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: list mode (1: TRUE, 0: FALSE) P3: grouping id P4: refresh cache (1: TRUE, 0: FALSE) P5: 1
Association Group Command List Get	zccAssociationGrpInfoCommandListGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: allow cache (1: TRUE, 0: FALSE) P3: grouping id P4: 1

4.10 Basic CC

4.10.1 Description

Invoke “Basic command class”.

4.10.2 Usage

- Select a “zccBasicXXX” command (refer to following table) on left side.
- Input params on right upper side.
- Click the “Enter” button on right upper side.

Function	Command	Params
Basic Set Command	zccBasicSetS	P0: node id (> 1) P1: endpoint id (> 0) P2: value
Basic Get Command	zccBasicGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1

4.11 Battery CC

4.11.1 Description

Invoke "Battery command class".

4.11.2 Usage

- Select a "zccBatteryXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Battery Level Get Command	zccBatteryGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1

4.12 Multilevel Sensor CC

4.12.1 Description

Invoke "Multilevel Sensor command class".

4.12.2 Usage

- Select a "zccSensorMultievelXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Multilevel Sensor Get Supported Sensor Command	zccSensorMultievelSupportedSensorGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Multilevel Sensor Get Supported Scale Command	zccSensorMultievelSupportedScaleGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: sensor type P3: 1
Multilevel Sensor Get Command	zccSensorMultievelGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: sensor type P3: scale P4: 1

4.13 Color Switch CC

4.13.1 Description

Invoke “Color Switch command class”.

4.13.2 Usage

- Select a “zccSwitchColorXXX” command (refer to following table) on left side.
- Input params on right upper side.
- Click the “Enter” button on right upper side.

Function	Command	Params
Color Switch Supported Get Command	zccSwitchColorSupportedGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Color Switch Set Command	zccSwitchColorSetSSingle	P0: node id (> 1) P1: endpoint id (> 0) P2: Color component id P3: value
Color Switch Get Command	zccSwitchColorGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: Color component id P3: 1
Color Switch Start Level Change Command	zccSwitchColorStartLevelChangeS	P0: node id (> 1) P1: endpoint id (> 0) P2: Color component id P3: start level P4: Increasing (1: TRUE, 0: FALSE) P5: Ignore start level (1: TRUE, 0: FALSE)
Color Switch Stop Level Change Command	zccSwitchColorStopLevelChangeS	P0: node id (> 1) P1: endpoint id (> 0) P2: Color component id

4.14 Multilevel Switch CC

4.14.1 Description

Invoke "Multilevel Switch command class".

4.14.2 Usage

- Select a "zccSwitchMultilevelXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Multilevel Switch Set Command	zccSwitchMultilevelSetS	P0: node id (> 1) P1: endpoint id (> 0) P2: value
Multilevel Switch Get Command	zccSwitchMultilevelGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Multilevel Switch Start Level Change Command	zccSwitchMultilevelStartLevelChangeS	P0: node id (> 1) P1: endpoint id (> 0) P2: start level P3: Increasing (1: TRUE, 0: FALSE) P4: Ignore start level (1: TRUE, 0: FALSE)
Multilevel Switch Stop Level Change Command	zccSwitchMultilevelStopLevelChangeS	P0: node id (> 1) P1: endpoint id (> 0)

4.15 Configuration CC

4.15.1 Description

Invoke "Configuration command class".

4.15.2 Usage

- Select a "zccConfigurationXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Configuration Set Command	zccConfigurationSetS	P0: node id (> 1) P1: endpoint id (> 0) P2: parameter number P3: default flag (1: TRUE, 0: FALSE) P4: value P5: value size
Configuration Get Command	zccConfigurationGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: parameter number P3: 1

4.16 Door Lock CC

4.16.1 Description

Invoke “Door Lock command class”.

4.16.2 Usage

- Select a “zccDoorLockXXX” command (refer to following table) on left side.
- Input params on right upper side.
- Click the “Enter” button on right upper side.

Function	Command	Params
Door Lock Operation Set Command	zccDoorLockOperationSetS	P0: node id (> 1) P1: endpoint id (> 0) P2: door lock mode
Door Lock Operation Get Command	zccDoorLockOperationGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Door Lock Configuration Set Command	zccDoorLockConfigurationSetS	P0: node id (> 1) P1: endpoint id (> 0) P2: operation type P3: outside door handle mode P4: inside door handle mode P5: lock timeout minutes P6: lock timeout seconds
Door Lock Configuration Get Command	zccDoorLockConfigurationGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1

4.17 Manufacturer Specific CC

4.17.1 Description

Invoke "Manufacturer specific command class".

4.17.2 Usage

- Select a "zccManufacturerSpecificXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Manufacturer Specific Get Command	zccManufacturerSpecificGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1

4.18 Multi Channel Association CC

4.18.1 Description

Invoke "Multi Channel Association command class".

4.18.2 Usage

- Select a "zccMultiChannelAssociationXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Multi Channel Association Set Command (for association type = legacy)	zccMultiChannelAssociationSetSSi gleLegacyNode	P0: node id (> 1) P1: endpoint id (> 0) P2: grouping id P3: associated node id
Multi Channel Association Set Command (for association type = multi channel)	zccMultiChannelAssociationSetSSi gleMultiChNode	P0: node id (> 1) P1: endpoint id (> 0) P2: grouping id P3: associated node id P4: associated endpoint id P5: use bit address (1:TRUE, 0:FALSE)
Multi Channel Association Get Command	zccMultiChannelAssociationGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: grouping id P3: 1
Multi Channel Association Remove Command (for association type = legacy)	zccMultiChannelAssociationRemoveSSi gleLegacyNode	P0: node id (> 1) P1: endpoint id (> 0) P2: grouping id P3: associated node id

Function	Command	Params
Multi Channel Association Remove Command (for association type = multi channel)	zccMultiChannelAssociationRemoveSSigleMultiChNode	P0: node id (> 1) P1: endpoint id (> 0) P2: grouping id P3: associated node id P4: associated endpoint id P5: use bit address (1:TRUE, 0:FALSE)
Multi Channel Association Supported Groupings Get Command	zccMultiChannelAssociationGroupingsGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1

4.19 Multi Channel CC

4.19.1 Description

Invoke "Multi channel command class".

4.19.2 Usage

- Select a "zccMultiChannelXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Multi Channel Endpoint Get Command	zccMultiChannelEndPointGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Multi Channel Capability Get Command	zccMultiChannelCapabilityGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: target endpoint P3: 1
Multi Channel Endpoint Find Command	zccMultiChannelEndPointFindS	P0: node id (> 1) P1: endpoint id (> 0) P2: generic device class P3: specific device class P4: 1
Multi Channel Aggregated members Get Command	zccMultiChannelCapabilityGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: aggregated endpoint P3: 1

4.20 Notification CC

4.20.1 Description

Invoke "Notification command class".

4.20.2 Usage

- Select a "zccNotificationXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Notification Set Command	zccNotificationSetS	P0: node id (> 1) P1: endpoint id (> 0) P2: notification type P3: notification status
Notification Get Command	zccNotificationGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: alarm type P3: zwave alarm type P4: 1
Notification Supported Get Command	zccNotificationAlarmTypeSupportedGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Notification Event Supported Get Command	zccNotificationEventSupportedGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: notification type P3: 1

4.21 Powerlevel CC

4.21.1 Description

Invoke "Powerlevel command class".

4.21.2 Usage

- Select a "zccPowerlevelXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Powerlevel Set Command	zccPowerlevelSetS	P0: node id (> 1) P1: endpoint id (> 0) P2: powerlevel P3: timeout second
Powerlevel Get Command	zccPowerlevelGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Powerlevel Test Node Set Command	zccPowerlevelTestNodeSetS	P0: node id (> 1) P1: endpoint id (> 0) P2: test node id P3: test power level P4: test frame count
Powerlevel Test Node Get Command	zccPowerlevelTestNodeGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1

4.22 Version CC

4.22.1 Description

Invoke "Version command class".

4.22.2 Usage

- Select a "zccVersionXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Version Get Command	zccVersionGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Version Command Class Get Command	zccVersionCommandClassGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: request command class P3: 1

4.23 Wake Up CC

4.23.1 Description

Invoke "Wake Up command class".

4.23.2 Usage

- Select a "zccWakeUpXXX" command (refer to following table) on left side.
- Input params on right upper side.
- Click the "Enter" button on right upper side.

Function	Command	Params
Wake Up Interval Set Command	zccWakeUpIntervalSetS	P0: node id (> 1) P1: endpoint id (> 0) P2: second P3: notice node id
Wake Up Interval Get Command	zccWakeUpIntervalGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Wake Up Interval Capabilities Get Command	zccWakeUpCapabilitiesGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1
Wake Up No More Information Command	zccWakeUpNoMoreInformationS	P0: node id (> 1) P1: endpoint id (> 0)

4.24 Z-Wave Plus Info CC

4.24.1 Description

Invoke “Z-Wave Plus Info command class”.

4.24.2 Usage

- Select a “zccZwavePlusInfoXXX” command (refer to following table) on left side.
- Input params on right upper side.
- Click the “Enter” button on right upper side.

Function	Command	Params
Z-Wave Plus Info Get Command	zccZwavePlusInfoGetS	P0: node id (> 1) P1: endpoint id (> 0) P2: 1

4.25 Getting Gateway Mode

4.25.1 Description

Get Gateway Status Inclusion controller or Secondary controller.

4.25.2 Usage

- Select a “zgetgwmode” command (refer to following table) on left side.
- Click the “Enter” button on right upper side.
- The results are displayed in the log window.

If DUT runs in secondary controller, Network Management commands such as Inclusion, Exclusion,.. are not disble. Learn mode is only available.

If DUT runs in inclusion controller, Network Management commands are available.

PC application is for test use, so Network Management commands do not disappear from menu when running in the secondary mode. It is by design.

Function	Command	Params
Get Gateway Mode	zgetgwmode	None

5 FW update Flow

- i. Put a FW image file (“fw.bin”) on the empty USB Memory.
- ii. Power off the DUT.
- iii. Insert the USB memory to the DUT.
- iv. Power on the DUT.
- v. Two front LEDs of the DUT will get orange.
- vi. After a few minutes, the front LEDs will get green blink.
- vii. Power off the DUT.
- viii. Remove the USB memory from the DUT.

How to check FW build number.

Select “ver” command with no parameter, and push Enter button.

And then Firmware build number will be appeared in the output log window.

(output example) M0.0.1 | Rev.1050