ZigBee Device Interoperability Requirements for Compatibility Testing with California Utility Smart Meters

SOUTHERN CALIFORNIA **EDISON**
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	Tests	Test Objective
Provisioning and Commissioning	Join the meter	The device is capable of joining the meter and authenticating with success.
	Key establishment procedure	Each step of the key establishment procedure is successful.
	Rejoin the meter after device soft reset	The device shall be able to rejoin by itself, at network level, to the previously associated meter after a device reset. (e.g. button press, menu option, pinhole reset)
	Rejoin the meter after device power outage (device power outage = 5 min)	The device shall be able to rejoin by itself, at network level, to the previously associated meter after power failure.
	Rejoin the meter after device power outage (duration = 1 min). Test with (10) cycles of power outages.	The device shall rejoin at network level to the previously associated meter after power outage. This will be tested with 10 power outages with the duration of each outage = 1 min.
	Rejoin the meter after meter power outage (meter power outage = 15 min)	The device shall be able to rejoin at network level to the previously associated meter after a 15 min power outage in the meter.
	Rejoin the meter after meter power outage (meter power outage = 12 hour)	The device shall be able to rejoin at network level to the previously associated meter after a 12 hour power outage in the meter.
	Rejoin the meter after meter soft reset	The device shall rejoin at network level to the previously associated meter after a soft reset in the meter. *(Note that this is tested on PG&E meters only)*
	Commission to a different meter, HAN device hard reset	The device shall be capable to be commissioned to a different meter.
	HAN device leave	HAN device can be decommissioned from the HAN network by the meter.
	Rejoin after long (24 hour) power outage on HAN device	HAN Device can rejoin to the previously associated meter after powering off the HAN device for 24 hours.
	Commissioning after network outage (with other networks in the channel)	The HAN device shall be able to join the meter (after a power outage) in a channel with the meter plus three additional ZigBee networks in operation while the HAN join flags is on.

	Tests	Test Objective
Time	Synchronize time after join	The meter is a time server, the HAN device shall be able to detect the meter as a time server and synchronize with it.
	Synchronize time after reset	The device shall be able to re-synchronize time with the meter after a meter soft reset.
	Synchronize time after rejoin on device power outage	The device shall be able to synchronize time with the meter after a rejoining procedure or recovering from power outage.
	Synchronize time after meter power outage	The device shall synchronize time after recovering the communication with the meter.

	Tests	Test Objective
Metering	Summation Format 1 decimal place	The device shall display the summation information from the meter using the formatting information form the meter with at least 1 decimal precision
	Demand Format 1 decimal place	The device shall display the current demand or consumption using the formatting information from the meter with at least 1 decimal of precision.
	Historical Format 1 decimal place	The device might display historical consumption, and if it does, it shall use the formatting information from the meter with at least 1 decimal of precision.
	Unit of measure	The device shall not have the usage value for this attribute hardcoded. (Changing the value of this attribute prior to joining the HAN devices shall show the HAN device reading this attribute and displaying the usage in the proper units.)
	Summation formatting	The device shall display the consumption information according to the meter's configuration.
	Change Divisor Attribute	The device must use the attribute from the meter to apply the correct divisor for energy usage.
	Change Multiplier Attribute	The device must use the attribute from the meter to apply the correct multiplier for energy usage.

	Tests	Test Objective
Price	Support price information from the meter only	Devices should not come with fixed or hardcoded price data.

	Tests	Test Objective
Profile Extension	No manufacturer specific profiles/clusters	The HAN device shall not have any manufacturer specific profile/clusters.
	All APS communications shall be secured	Any APS profile specific communication shall be secured with APS layer encryption. All ZCL commands and cluster specific shall be secured.

	Tests	Test Objective
Freq Agility	Change channel frequency	The HAN device shall be able to change to a different channel frequency as indicated by the electric meter and continue to resume HAN operations without errors. *(Note that this is tested on PG&E meters only)*
	Device works on all sixteen ZigBee (802.15.4) channels	The HAN device shall be able to change to any of the sixteen ZigBee (802.15.4) channels in the spectrum while attempting to join the meter.

	Tests	Test Objective
Longevity	Connection lifetime, 72 hours	The objective is to show that the HAN device can remain connected and actively communicating with the electric meter for a period of at least 72 hours.