

Comments on NIST Home-to-Grid Domain Expert Working Group *Modular Communication Interface Specification for Demand Response*

Collated Comments - July 26, 2011 – Rev August 18, 2011

Please identify the location of each comment by page and line number. Provide your comment and your proposed change, if any.

Please submit comments to:

Ken Wacks <kenn@alum.mit.edu>

Brian Seal <bseal@epri.com>

Jon Rappaport <jon@usnap.org>

E/G/T: E = editorial (typo, grammar, clarification), G = general, T = technical

ID = (Company initials)-(comment number); e.g., ACME-1 for ACME company first comment; ACME-2 for ACME company second comment

ID codes:

AE	Alliant Energy	Rick Potter	rickpotter@alliantenergy.com	608-458-3965
CMVG	Comverge Inc.	Mike Guyre	mguyre@comverge.com	678-802-8353
EG	Energate, Inc.	Ruben Rago	rrago@energateinc.com	613-482-7928 x208
EPRI	Electric Power Research Institute	Brian K. Seal	bseal@epri.com	865-217-8181
ER	e-Radio	Jackson Wang	jwang@e-radioinc.com	408-469-4376
GOOG	Google	Charles Spirakis	css@google.com	650-941-8757
GOOG	Google	Vint Cerf	vint@google.com	
TE	TE Connectivity	Brian Stephenson	brian.stephenson@te.com	717-986-5027
ZOME	Zome Energy Networks	Vinayak Ranade	vinayak@zomenet.com	

#	Page	Line	E/G/T	ID	Comment	Proposed change	Resolution by subcommittee
1	6	118	E	EPRI-7	Table 3-1 is hard to read because it is broken across pages.	Correct.	Accepted.
2	7	148	E	EPRI-8	Stray mark in table	Delete.	Accepted.

#	Page	Line	E/G/T	ID	Comment	Proposed change	Resolution by subcommittee
3	8	159	T	GOOG-1	Is there an issue with tML at 500ms if one is using rs485 and 19.2k baud with larger packets? For example, if one allows for 2048 byte packets, but the baudrate is 19.2K, it seems possible for tML to be reached before a packet is fully transferred.	Set tML to 4.5 seconds based on the max time limit of slowest communication rate (19.2K) and maximum data packet size (8192 bytes).	Accepted. Update Changed to rejected after further review. Long time window would not be practical and would potentially cause state machine issues and testing issues. Text was added to make the manufacturer aware of the fact that payload and speed must be used in the correct proportions.
4	10	194-197	E	ER-1	For the "Message Type Support Query", which of the following is the whole protocol unit: Is it meant to indicate the WHOLE protocol message looks like: 0x08,0x03,MT1,MT2,0x00,0x00,CS01,CS02 Or is this a special protocol message that does not use the 0x08 0x03 Data link message type: MT1,MT2,0x00,0x00,CS01,CS02	Lines 194-196 should be changed to explicitly indicate that 0x08 0x03 is not used for the "Message Type Support Query" if that is indeed the case.	Accepted. Clarification made in table.
5	11	TABLE	E	ER-2	Consistent language should be used for "Query: Maximum payload length?" and "Response: Maximum data unit length"	Query: Maximum data unit length?	Accepted.
6	12	200	T	EPRI-9	Error code 7 needs clarification to explain that it is not used in regards to application layer commands that are not supported. I assume it is intended for link-layer commands only.	Make clarification.	Accepted.
7	12	TABLE	E	ER-3	"Response Available Slot Numbers" -- need to define "Slot Number Detail" exactly. Does the SGD send several of these in a short interval, one for each slot that indicates if the slot is used? What is the bit format for the Opcode 2 that contains the "Detail"?	Define the bit format	Accommodated. Bit field defined. Maximum number of slots = 8.
8	7		T	ZOME-1	Strongly support the spec's evolution to the 2 byte Fletcher Checksum. It is important that this remains part of the ratified spec.	None	Noted.
9	13	205	E	EPRI-10	The word "use" is missing.	Add.	Accepted.

#	Page	Line	E/G/T	ID	Comment	Proposed change	Resolution by subcommittee
10	13	212	T	EPRI-11	The specification is missing any design guidelines for UL approval, failsafe design, current limiting, ground handling, plastic vs metal surfaces, etc.	Engage UL in discussion, make corrections as needed.	Noted. Recommend addressing during expert connector focus effort during SDO process.
11	13	218	T	EPRI-12	The specification mentions several negotiated settings (bit rate, power, etc.) but does not specify behavior across power outages.	For simplicity, recommend no memory, full re-negotiation after any power cycle.	Accepted. Clarifications added.
12	14	248	T	EPRI-13	This line mentions reversion to defaults if no communication for 15 minutes, but there does not seem to be a specified "keep-alive" message.	Identify some message to be used as a keep-alive.	Accommodated. The communication status message in table 6-2 is specified to be repeated every 1-5 minutes as a keep-alive once.
13	16	N/A	E	CMVG-2	Critical Peak Event, "few times a year, 5 hours max)"; does this imply that the receiver limits the duration value to 5 hours per event, 5 hours per year? If the passed duration is greater than 5 hours, what action should be taken (use 5 hours or return NAK)?	Reword	Accepted. Eliminated prescriptive text, used as example only.
14	16	N/A	E	CMVG-3	Does sending a Critical Peak event with duration of zero terminate the event?	Clarify	Accommodated. Per the spec, a duration of zero means "duration unknown". Opcode 0x02 is used to indicate the end of all curtailment events. Will add text to clarify.
15	16	N/A	E	CMVG-4	Does sending a Grid Emergency with duration of zero terminate the event?	Clarify	Accommodated. Per the spec, a duration of zero means "duration unknown". Opcode 0x02 is used to indicate the end of all curtailment events. Will add text to clarify.
16	N/A	N/A	E	CMVG-5	If the device receives a Basic DR packet (0x08,0x01) with a length value that is not zero or two, what is the correct action? Send Link NAK with Invalid Length or send Basic DR NAK with Opcode 2 = ??		Accommodated. Added a new "Invalid Length" error code to the Basic DR NAK. The link layer should not know that the app layer only uses length = 2. Will add text to clarify.
17	16	N/A	E	CMVG-6	Grid Emergency description	Change "Event Duration: Same s for OpCode 0x01" to "Event Duration: Defined in Section 6.1.2"	Accepted.
18	17	260	E	EPRI-14	Formatting Error in table on the Opcode 0x13 row	Correct.	Accepted.

#	Page	Line	E/G/T	ID	Comment	Proposed change	Resolution by subcommittee
19	17	260	T	EPRI-15	The Sleep/Wake functions do not indicate how quickly a UCM must have ready information after being awoken. What if an SGD puts the UCM to sleep to save power, then wakes it at run-time, only to find that the UCM needs 15 minutes to figure out the price / grid condition?	Recommend a time limit be created for use of these commands. E.g. UCMs must be able to report grid condition within 15 seconds of a "wake" signal.	Accepted. For the sake of the customer experience, require UCM readiness to provide grid data within 10 seconds of a wake signal. Leave it to UCM providers to decide how to internally manage the use of the Sleep and Wake messages/
20	17		T	ZOME-2	The outside communication connection status is said to be resent every 1 to 5 minutes.	Some clarifying text to give details on the 1-5 minutes restriction, and justification for this restriction. If there is none, then supporting more or less frequent comm status message.	Accepted. Clarifying text added in section 5.1.5.
21	18	266-268	E	ER-4	Should this not refer to "Message Type Support Query" and not to Opcode 15 which is the Wake/Refresh message?		Accepted.
22	18	266-268	E	EPRI-16	This paragraph belongs in chapter 5. "Opcode 0x15 should be changed to the Message Type Support query of the Link Layer.	Make edits.	Accepted.
23	19	303	E	EPRI-17	Sentence structure error. Missing word?	Correct.	Accepted. Corrections made.
24	20	312	E	EPRI-18	"Reduction" should include increases or reductions.	Reword.	Accepted. Clarification made.
25	20	324	E	EPRI-19	Two figure numbers listed.	Correct.	Accepted.
26	20	316	E	EPRI-20	Wrong reference on Table number	Correct	Accepted.
27	21	336	E	EPRI-21	Reference to Chapter 7 should be Chapter 9.	Make change.	Accepted.
28	23	383	E	EPRI-22	His section references commands previously deleted.	Remove this section.	Accepted. Section removed.
29	25		G	ZOME-3	The special attention given to pricing ensures support for consumers who really care about price, but total power consumption is also important.	Add a more general informational request to help out consumers who really care about the amount of power they are using, or factors other than just price and power.	Noted. The intention of this specification is to serve as a useful and sufficient first version. Other message types and other pass-through protocols may be added at any time in the future and revisions to the specification are made.
30	27		T	ZOME-4	All the predefined devices in the specification are complex devices	Add a new device type for 'simple' box-fan type devices	Accepted. Fan added. Unspecified device for others.
31	29	449	E	CMVG-7	OpCode2 is incorrect	Change OpCode2 to 0x00	Accepted.
32	29	450	E	CMVG-8	OpCode 2 is incorrect	Change OpCode2 to 0x80	Accepted.

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33	39	604	G	GOOG-2	Should SGD's handle Ipv4 or Ipv6 packets?	If the UCM/SGD chooses to handle IP passthrough, It is recommended that the SGD handled IPv6 packets (for example, to be compatible with 6lowpan). Optionally, the UCM/SGD can handle IPv4 as well as IPv6 packets. The header on the IP packet that is passed through will indicate what version of IP is in use.	Accepted. Clarification added that the pass-through mechanism for IP will accommodate either V4 or V6, allowing the networks and end devices to decide.
34	39	604	T	GOOG-3	Don't allow IP passthrough packets to be fragmented by the UCM.	If using the IP protocol passthrough, the minimum UCM/SGD packet size must be large enough to handle an IP packet. Based on opcode (0x19) which indicates the maximum data unit length, UCM/SGD that use IP protocol passthrough must allow for a minimum packet size of 2048. NOTE: The maximum IP packet is smaller than 2048 bytes, but 2048 is the smallest allowed value in opcode 0x19.	Accepted. Clarifications added in Section 9.
35	40	612	E	GOOG-4	Figure is misleading.	The figure only shows the header and implies 40 bytes are all that is needed. Should show a more complete IP packet with an indication of the maximum packet size.	Accepted. Figure modified for clarity.
36	43	690	T	TE-1	Present form factor is not optimized for an appliance	Redesign of socket shape so that it better fits into the shell of an appliance	Noted. An expert form factor review and design activity is being launched presently. Recommend continuing into the SDO process with the present version of this specification and allowing the connector work to run as part of the SDO process.

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37	43	690	T	TE-2	Present form factor may not be large enough for two protocol systems	Relax form factor; slightly larger base dimension might eliminate the need for the extended version	Rejected. Note the conflict of this review comment with that of line item 42 – essentially noting that the housings are too small in some regards, but too large in others. The options presently defined are seen as a compromise, providing a fair range of options. As additional connector types are considered (e.g. smaller connectors) going forward, a corresponding smaller housing may be likewise defined.
38	44	701	T	TE-3	It would be preferable to access PLC signals through the connector interface rather than routing additional wires out the back of the module	Add a pair of contacts assigned for use for PLC	Accommodated. The AC form factor is intended for this purpose.
39	45	707 (Figure 13.2)	E	EG-1	Dimensions and tolerances are blurred, cannot be read from the drawing.	Improve the drawing so the dimensions and tolerances can be read from the drawing. Make the dimensions of the standard layout compatible with USNAP 1.0 Specification.	Accepted. USNAP to provide high resolution drawings.
40	45	707 (Figure 13-2)	E	EG-2	The location of the connector is not specified with reference to the external case dimensions. Specifically, the second drawing in this Figure lacks the location of the connector in the axis perpendicular to the main plane surfaces of the case.	Specify the location of the connector in the axis perpendicular to the main plane surfaces of the case. This specification should be compatible with USNAP 1.0 Specification.	Accepted. USNAP to provide.
41	45	707 (Figure 13.2)	T	EG-3	The length of the standard layout is 53.5 mm, as opposed to 51 mm as specified by USNAP 1.0	The length of the standard layout should be 51 mm as specified by USNAP 1.0	Rejected. The USNAP package was modified slightly during the USNAP 2.0 process to add a curved body shape. It was acknowledged that thi change increased the total length to 53.5mm from 51mm.
42	45	707 (Figure 13.2)	T	EG-4	The height of the extended length in the axis perpendicular to the main plane surfaces of the case is excessively large.	Limit the height of the extended length in the axis perpendicular to the main plane surfaces of the case to 12.3 mm so it is the same as the standard layout.	Rejected. See notes on item 37. This additional height is a maximum, and was added to allow for UCMs that require larger components or antenna structures.
43	45	710	E	EG-5	There is a pdf icon with the text “USANP_Radio_Spec.pdf” which cannot be opened. Also the purpose of this icon is not explained.	Suppress this icon and add any relevant information to the main body of the document.	Accepted. USNAP to provide.

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44	46	719	T	TE-4	Appliance industry flammability standard is UL94-V0 in North America; GWT may be required outside North America	Change UL94 HB to UL94-V0; determine flammability standard necessary for outside North America	Accepted - Update. Changed to rejected. However, additional text was added to 13.2.1 to refer to the appropriate housing classes.
45	46	721	T	TE-5	Connector specification should include requirements for temperature, humidity, IP water resistance rating, physical shock, vibration, DC resistance, etc.	Add overall connector requirements to this section	Noted. See comments on item 36.
46	46	721	T	EPRI-1	This section identifies the connectors by listing manufacturer names and part numbers.	Change to a full specification of the connector, including all dimensions, tolerances, materials, pin details, etc. Any manufacturer may build to the specification.	Noted. Recommend that the SDO process oversee an expert connector / form factor effort to define these elements..
47	46 & 56	721 and 929	G	EPRI-3	Need to have a mechanism whereby manufacturers of connectors can submit products to an agency for compliance testing.	Make part of a certification document and process.	Noted. Certification is outside the scope of the interface specification. Recommend that the SDO process be paralleled with the establishment of certification processes, including connector and other part evaluations and listings.
48	46	722	T	TE-6	It would be preferable to access PLC signals through the connector interface rather than routing additional wires out the back of the module	Add a pair of contacts assigned for use for PLC	Accommodated. The AC form factor is intended for this purpose.
49	46	724	T	TE-7	Present connector limits electronic component mounting method	Open up connector interface to other interface styles	Noted. Future revisions of the specification are anticipated, with a limited number of alternative form factors being one of the anticipated additions.
50	46	724	E	EG-6	Connector Harwin M22-2351005 doesn't exist. It may be Harwin M22-2531005	Replace to Harwin M22-2531005	Accepted
51	52	860 - 865	G	CMVG-1	This section was added in error and does not apply to this protocol	Remove the section in its entirety	Accepted.
52	56	922	T	TE-8	Connector form factor does not allow for flush mounting of the module in an appliance	Open up the connector spec to allow use of a recessed socket in the appliance and a mating module	Accommodated. The spec allows for either flush or non-flush options. SGD makers may position the interface as they wish.
53	56	925	T	TE-9	Unclear whether there will ever be a requirement to bring both phases of North American 208/240V power into the communication module; outside North America 220V will be a requirement, but that is single phase	Review usages to determine whether both phases of North American 208/240V power would be required	Accepted. Changed language to "shall" to make mandatory.

#	Page	Line	E/G/T	ID	Comment	Proposed change	Resolution by subcommittee
54	56	929	T	EPRI-2	This section identifies the connector by listing a single manufacturer part number.	Multiple sources of supply and openness in the supply chain is needed. Embed a full specification for the connector, including all dimensions, tolerances, materials, pin details, etc. Any manufacturer may build to the specification.	Noted. The specification for the listed Molex part number will NOT be made an open standard by Molex. An expert connector evaluation and design process is presently underway. It is recommended that this process run concurrent with the SDO process.
55	56	929	T	EPRI-5	The AC connector does not define a retention mechanism.	Redesign is recommended so that the connector includes a "click" of some kind.	Noted. See comment on item 54.
56	56	929	T	EPRI-6	The AC connector specification does not specify the clearance requirements around the connector so as to guarantee UCMs fit to SGDs	Add details.	Noted. See comment on item 54.
57	56	930	T	EPRI-4	The mating connector for the AC interface defines only a PBC-mount right-angle connector.	Options for a connector-to-wire style that would allow for tethered UCM designs is needed.	Noted. See comment on item 54.
58	56	932	G	AE-1	Placeholder for material to be inserted later. "<mechanical details, second source and connector detail drawings to be inserted here>"	Add referenced materials.	Noted. See comment on item 54.
59	56	934-935	E	ER-5	Figure 14-1 - AC interface connector pin-out description table is too far right on my PDF reader: Foxit 4.3.1	Confirm PDF formatting problem in other readers, fix if necessary.	Accepted.
60	56	935	E	TE-10	The chart has been truncated and the right hand side cut off	Format chart to fit within page	Accepted.
61	56	935	T	TE-11	It would be preferable to access PLC signals through the connector interface rather than routing additional wires out the back of the module	Add a pair of contacts assigned for use for PLC	Accommodated. The AC form factor is intended for this purpose.
62	56	935	E	TE-10	The chart has been truncated and the right hand side cut off	Format chart to fit within page	Repeat
63	56	935	T	TE-11	It would be preferable to access PLC signals through the connector interface rather than routing additional wires out the back of the module	Add a pair of contacts assigned for use for PLC	Repeat
64			T	ZOME-5	Support for multiple communication modules is a must	More details needed regarding how to support multiple comm modules in either this specification or a near future version. Minimum requirement should support up to 4 UCMs	Accommodated. Multiple UCMs are accommodated as described in Table 5-1.

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65			T	ZOME-6	The specification is too vague on the inclusion of PLC support.	PLC support is currently assumed to be included in a future revision of the AC connector, but support for PLC within the DC connector is also important. Would like to see a connector design support all three (AC/DC/PLC) if possible.	Accommodated. PLC support exists in the AC interface presently. Added note: PLC support in the DC connector is currently impractical due to spacing and connector built. For future contemplation. Noted. Future form factors are possible.
66			E	GOOG-5	Include a block diagram to better illustrate the interfaces.	It would be helpful to have a diagram that shows the intention of the modules in a simple fashion.	Accepted. Diagram added in section 2.1
67	19-20	291 & 295	E	CMVG-9	The statements “The value of 0x00 is reserved...” and “...represent a range of Event Durations between 0 and 129032” are contradictory.	Remove the use of 0x00 to indicate unknown.	Accommodated. Retain 0 as a flag to indicate unknown. Since a 0-second event is not possible, change “between 0 and ...” to ‘between 2 and ...’.
68	13	209	T	CMVG-10	Table 5-3 states that the Maximum Continuous Average for both Low and High Power modes is 50 mA. Our review of WiFi 802.11n solutions indicates that the average current in receive mode is around 100 mA @ 3.3. This includes the WiFi radio, and a Cortex M3 processor.	Change Maximum Continuous Average for Power Level 0x01 to 150 mA	Accepted. Low remains at 50mA High changed to 150mA