EMS2 CANBUS Protocol V2.6

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1 SAE J1939 Message Format

Message ID	←	Data = 8 bytes						→
29 Bits	1	2	3	4	5	6	7	8

Message ID					
P	Res	DP	PF	PS/ TA	SA
3	1	1	8	8	8

P: Priority
Res: Reserved, for future, always set to 0
DP: Data Page, always set to 0
PF: Protocol Data Unit Format/ Message Format

- 0 <= PF <= 239, targeted
- 240 <= PF <= 255, broadcasted

PS/ TA:

- If the PF is between 0 and 239, the message is targeted/ addressable, and the PS/ TA field contains the Target Address.
- If the PF is between 240 and 255, the message is broadcasted, and the PS/ TA field contains a group extension.

SA: Source Address

Parameter Group Number (PGN): Res + DP + PF + PS/ TA = 18 bits

The SA (EMS2 source) and TA (target/ charger) address fields are configured via System Settings page that can be accessed via EPS EMS Android/ iOS app. Generic messages are broadcasted (to support display devices, etc.). Generic messages are Pack Summary, Fault/ Warning Summary, and Cell Voltage/ Temperature Summary. Individual cells are not broadcasted, but addressed to the requestor.
Data is transmitted in little endian byte order.

2 EMS2 CAN Messages

EMS2 CANBUS messages can be categorized into two different types:

1. Broadcast messages:
   These messages are mainly intended for monitoring devices (such as display monitors, etc.). Vital information such as Pack Summary is broadcasted without being queried by any node.
2. Addressed messages:
   a. Individual cell details information has to be queried/ requested. Any node on the CANBUS can query/ request the individual cell details information, the response is addressed to the requestor.
   b. Communication between a charging station and an EMS2 device is addressed to bolster safe charging practices. Both EMS2 (e.g. 0xF4) and charging station (e.g. 0x56) have specific CAN addresses, and individual messages are addressed accordingly.

3 Examples

3.1 Message ID with 8 bytes of data

3.1.1 Targeted/ Addressed message (EMS2 Tx message addressed to a charging station)

181056F4 - 01 02 03 04 05 06 07 08, where,

- 18 = Priority (3 bits - 110) + Res (1 bit - 0) + DP (1 bit - 0)
- 10 = Protocol Format, decimal value 16 (hex - 0x10) is less than 240, message is addressable, PS/ TA has the target address
- 56 = PS/ TA, target address (e.g. charging station address)
- F4 = SA, source address, EMS2 CAN address
- 01 02 03 04 05 06 07 08 = Data bytes in hex format

3.1.2 Broadcast message

1CFA20F4 - 01 02 03 04 05 06 07 08, where,

- 1C = Priority (3 bits - 111) + Res (1 bit - 0) + DP (1 bit - 0)
- FA = Protocol Format, decimal value 250 (hex – 0xFA) is greater than 239, message is broadcasted, PS/ TA has a group extension
- 20 = PS/ TA, group extension, used to identify a message
- F4 = SA/ source address, EMS2 CAN address
- 01 02 03 04 05 06 07 08 = Data bytes in hex format

4 CANBUS Flowchart Summary

4.1 Default operation

When an EMS2 device is configured and powered up, by default a series of CANBUS messages are broadcasted continuously in fixed time intervals. These broadcast messages can be used by external CANBUS nodes to monitor the EMS2 system vitals.

The following messages are broadcasted by default:

- Pack Summary
- Cell Voltage Summary
- Cell Temperature Summary
- Faults/Warnings Summary
- EMS2 Configuration Summary

The following messages are transmitted when queried by a CANBUS node:

- Individual Cell Voltages, 4 cells are grouped and sent in a single message. The number of cell voltage messages depend on the number of detected cells.
- Individual Cell Temperatures, 8 cells are grouped and sent in a single message. The number of cell temperature messages depend on the number of detected cells.

4.2 Charger detection

The EMS2 CPU handles the charging logic and communicates constantly with a charging station via CANBUS in the entirety of the charging process. When the EMS2 CPU receives a handshake/ initialize message from a charging station, the CPU determines whether or not the system needs charging and responds accordingly (EIM). If the system needs charging, EMS2 responds with charge-required (0xAA - EIM) message to initiate the charging process.

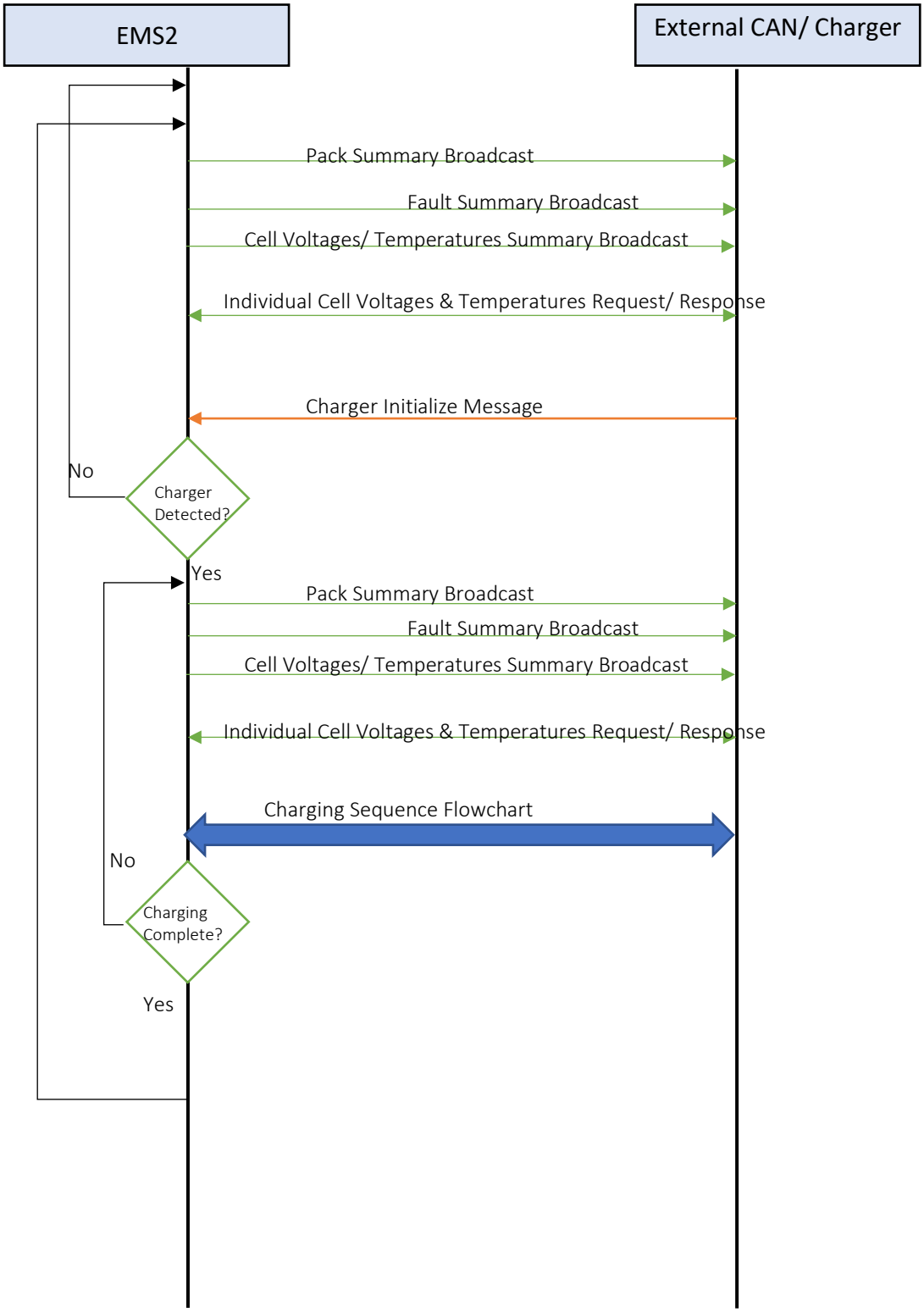
A complete charging process consists of a series of charge-balance cycles. The charging station is expected to constantly monitor the EMS2 Charging Request (ECR) to determine the state (constant current/ voltage state) and the amount of current/ voltage required by the EMS2 CPU. During charging, if any individual cell voltage value reaches a max threshold set point value (3.7 Volts) then, the EMS2 CPU requests 0 Amps constant-current (balancing state) from the charger for some time (5 Minutes) to allow the cells to balance appropriately before starting the next cycle. The number of balancing cycles depends on the system

capacity but is limited to a maximum of 6 cycles. These 6 balancing cycles together make one complete charge cycle.

In each balancing-cycle step, the current (Amps) request (ECR – constant current) is reduced by half (1/2*Current in previous balancing cycle). If the current is < 6A then, the charging-request (ECR) switches from constant-current to constant-voltage. Subsequently, the EMS2 system will continue to charge in constant-voltage mode for the next 15 minutes (with low current). After the completion of constant-voltage step, the charging process is terminated gracefully and the system then completes one complete charge cycle. Also, each balancing cycle is limited to a maximum of 15 minutes, after which the charging process is terminated.

EMS2 continues to broadcast the vital system information while charging process is underway, thereby enabling the display/ other monitoring devices to still function when the system is in charging mode.
The following flowchart summary shows the overall functionality of an EMS2 CANBUS interface.

4.2.1 Flowchart Summary



5 Broadcast Messages

As mentioned in the above section, EMS2 broadcasts 5 different messages. These messages are generic broadcast messages.

5.1 Generic Broadcast Messages

5.1.1 Pack Summary

Pack summary message is broadcasted with a heartbeat bit that toggles between 0 and 1. For display systems, this message alone is sufficient to extract system vitals such as SOC, Pack Voltage, Pack Current, Pack Fault, etc. The Pack Voltage/ Current value has to be multiplied with 0.1 to obtain the actual reading value. For example, if the Pack Current value is 4000 (0x0FA0), then 4000 * 0.1A = 400A is the actual current reading.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
PS	00FA20	7	8	1500	EMS2 – Broadcast

Start Byte	Length (Bytes)	Message Format
1	1	Bit8 – Heartbeat (Toggles between 0 and 1), bit7 – General Pack Fault (0 = No general faults, 1 = General fault(s) detected), bit6 – General warning (0 = No ground fault warning, 1 = Ground fault warning detected), bit5 – Spare, bit4,3,2,1 – BMS State (0 – Off, 1 – Power up)
2	1	Bit8 – Charge OK (0 = charging not allowed, 1 = charging allowed), bit7 – Discharge OK (0 = discharging not allowed, 1 = discharging allowed), bit6 – End of charge (0 = charge not complete, 1 = charge complete), bit5 – End of discharge (0 = discharge not complete, 1 = discharge complete), bit4 – Pack fault (0 = no pack faults, 1 = pack fault(s) detected), bit3 – Pack warning (0 = no pack warnings, 1 = pack warning(s) detected), bit2 – Heating request (0 = heating not requested, 1 = heating requested), bit1 – Cooling request (0 = cooling not requested, 1 = cooling requested)
3	1	SOC (State of charge in %)
4	1	Number of cells
5	2	Pack Current (0.1A)
7	2	Pack Voltage (0.1V)

5.1.2 Cell Voltage Summary

This message is helpful in determining the lowest/ highest cell voltage along with its index number. The average cell voltage is the mathematical average of all detected cell voltages. The sequence number indexes cells in ascending order starting with 1, from the Sense Board connection-cable end.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
CVS	00FA21	7	8	1500	EMS2 – Broadcast

Start Byte	Length (Bytes)	Message Format
1	2	Average cell voltage (0.01V)
3	1	Max cell voltage index (Cell sequence number)
4	2	Max cell voltage (0.01V)

6	1	Min cell voltage index (Cell sequence number)
7	2	Min cell voltage (0.01V)

5.1.3 Cell Temperature Summary

This message is helpful in determining the lowest/ highest cell temperature along with its index number. The average cell voltage is the mathematical average of all detected cell temperatures. The sequence number indexes cells in ascending order starting with 1, from the Sense Board connection-cable end.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
CTS	00FA22	7	8	1500	EMS2 – Broadcast

Start Byte	Length (Bytes)	Message Format
1	1	Max cell temperature index (Cell sequence number)
2	1	Max cell temperature (-50 F)
3	1	Min cell voltage index (Cell sequence number)
4	1	Max cell temperature (-50 F)
5	1	Average cell temperature (-50 F)
6	3	Spare

5.1.4 Faults/ Warnings Summary

System warnings and faults are encapsulated in this message. Active faults/ warnings show the faults/ warnings that are currently present in the system. Latched faults/warnings show previously occurred faults/ warnings. Each fault or warning summary is an 8-bit message, if multiple faults exist in the system, then the corresponding bits are set simultaneously.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
FWS	00FA23	7	8	1500	EMS2 – Broadcast

Start Byte	Length (Bytes)	Message Format
1	1	Active faults summary
2	1	Latched faults summary
3	1	Active warnings summary
4	1	Latched warnings summary
5	2	Spare
7	2	Reserved

For example, if bit-2 is set in Active Faults Summary, then the system is experiencing Cell-communication-fault/ unmanaged-cells alarm.

Active/ Latched Faults Summary	
Cell over voltage fault	Bit 8
Cell under voltage fault	Bit 7
Cell over temp fault	Bit 6
Cell under temp fault	Bit 5
Over voltage fault	Bit 4
Over current fault	Bit 3

Cell communication fault	Bit 2
Spare	Bit 1

Active/ Latched Warnings Summary	
Cell over voltage warning	Bit 8
Cell under voltage warning	Bit 7
Cell over temp warning	Bit 6
Cell under temp warning	Bit 5
Over voltage warning	Bit 4
Over current warning	Bit 3
Irregular heartbeat warning	Bit 2
Ground fault warning	Bit 1

5.1.5 EMS2 Configuration Message

This message shows the software and hardware version of the EMS2 CPU system. Software updates are released incrementally and the version number is subjected to change with each software release. The version number can be extracted from the major and minor bytes.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
EC	00FA27	7	8	1500	EMS2 – Broadcast

Start Byte	Length (Bytes)	Message Format
1	1	Software Version Major I
2	1	Software Version Major II
3	1	Software Version Minor
4	1	Hardware Version Major
5	1	Hardware Version Minor
6	3	Spare

6 Addressed Messages by Query (Cell Voltages/ Temperatures)

Individual cell voltages and temperatures are grouped and transmitted via the CANBUS interface with different PGN's. Cell voltages are grouped 4 at a time and cell temperatures are grouped 8 at a time i.e. 4 cell voltages are transmitted at once using the same PGN and 8 cell temperatures are transmitted at once using the same PGN.

The examples shown below entail details of up to 8 cells. The PGN's of the grouped cell voltages range from 0x003100 for cells 1 to 4, to 0x007B00 for cells 297 to 300. The PGN's of the grouped cell temperatures range from 0x008100 for cells 1 to 8, to 0x00A600 for cells 297 to 300. CAN message with PGN - 0x00A600 will contain only the last 4(297 to 300) cell temperatures. Please note that the CANBUS will transmit the voltages and temperatures of the individual cells detected by the EMS2 CPU system. If the system has an unmanaged cell alarm, then the number of CAN messages with respect to the cell temperatures/ voltages will not be the same as the specified cell count. Queried responses (Cell Voltages/ Temperatures) are addressed to the requestor.

6.1 Cell Voltages

6.1.1 Query: All Cell Voltages

Cell voltages query can be sent by any node present in the CANBUS, data bytes can be all 0x00 values. If 0x001B00 PGN is requested, then all detected cell voltages are grouped and transmitted in sets of 4.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
ACV	001B00	7	8	NA	Requestor – EMS2

Start Byte	Length (Bytes)	Message Format
1	8	0x00 (Spare)

6.1.2 Response: Cell Voltages (4 cells per message, sequential PGN for subsequent cells)

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
CV1to4	003100	7	8	On request	EMS2 – Requestor

Start Byte	Length (Bytes)	Message Format
1	2	Byte2&1 – Cell4
3	2	Byte4&3 – Cell3
5	2	Byte6&5 – Cell2
7	2	Byte8&7 – Cell1

6.2 Cell Temperatures

6.2.1 Query: All Cell Temperatures

Cell temperatures query can be sent by any node present in the CANBUS, data bytes can be all 0x00 values. If 0x001C00 PGN is requested, then all detected cell temperatures are grouped and transmitted in sets of 8.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
ACT	001C00	7	8	NA	Requestor – EMS2

Start Byte	Length (Bytes)	Message Format
1	8	0x00 (Spare)

6.2.2 Response: Cell Temperatures (8 cells per message, sequential PGN for subsequent cells)

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
CT1to8	008100	7	8	On request	EMS2 – Requestor

Start Byte	Length (Bytes)	Message Format
1	1	Byte1 – Cell8
2	1	Byte2 – Cell7

3	1	Byte3 – Cell6
4	1	Byte4 – Cell5
5	1	Byte5 – Cell4
6	1	Byte6 – Cell3
7	1	Byte7 – Cell2
8	1	Byte8 – Cell1

7 Charging Station - EMS2 (Addressed Messages)

EMS2 CPU is in broadcast mode by default. The EMS2 and the Charging Station are in a master-slave relationship with EMS2 being the master. The Charger/ Charging-Station sends a handshake (CIM) message to indicate the readiness of the charger to start charging whenever EMS2 commands it to start. CIM message is constantly sent by the charger whenever charging process is not-ongoing, indicating that the charger is ready to start anytime.

There are two different types of charging processes:

- Standard charging process
  - The standard charging process is the first charging process when the charge port and the CANBUS lines are connected.
  - Standard charging process undergoes a complete charge cycle including all the balancing cycles.
- Recharge process
  - After the standard charging step, if the charge port and the CANBUS lines remain connected, the recharge process may start after 3 hours under the following conditions, also the recharge process may repeat every 3 hours if the following conditions are met:
    - A discharge current of 25 Amps or more is seen.
    - The charging process is gracefully terminated by both nodes (Charger and EMS2 CPU) by sending an acknowledgment along with the EST/ CST message – ACK Byte 3.
  - If the charging process is error-terminated and acknowledged by both nodes (Charger and EMS2 CPU) with the EEM/ CEM message (ACK Byte 3 – 0xAA), the charging process must restart with a Handshake when both nodes are ready.
  - The constant-current request in the first balancing cycle of recharge process is a quarter of the constant-current request in standard charging process.

EPS battery cells must be balanced to attain optimum charging levels. So, the batteries must charge in multiple balancing cycles. In order to achieve this, EMS2 CPU will request Constant Current (0 or 6A <= CC <= 400A)/ Constant Voltage (Pack Voltage) depending on the state on the battery pack via ECR message.

In the first balancing cycle, the EMS2 CPU requests the maximum set-point current (say 400 A). During charging, if the highest cell reaches maximum voltage set-point value (say 3.7 V), then the EMS2 CPU drops the current request to 0 A (constant-current) for the next 5 minutes. Individual cells balance during this 5-minute time interval and the highest cell voltage may drop from 3.7 to a lower value. The charging station is expected to respond to the ECR (constant current/ voltage) request and drop the current to 0 A and sustain CANBUS communication (respond with CCS) even if the EMS2 CPU is requesting 0 A current.

Balancing cycle two starts after 5 minutes and EMS2 cuts down the constant current request (ECR) by half (400/2 A) and continues to charge until a cell reaches max voltage set-point value (3.7 V). Subsequent balancing cycles continue in the same fashion unless the current request drops to a value of < 6 A, in which case, the ECR message switches from constant-current request to constant-voltage request. The batteries continue to charge in constant voltage mode (Voltage = 3.55*Number-of-cells-in-series) for another 15 minutes before the EMS2 CPU finally stops charging (EST/ EDM message). Please refer to the charging station flowchart summary (sec 6.1) for overall description of the charging states.

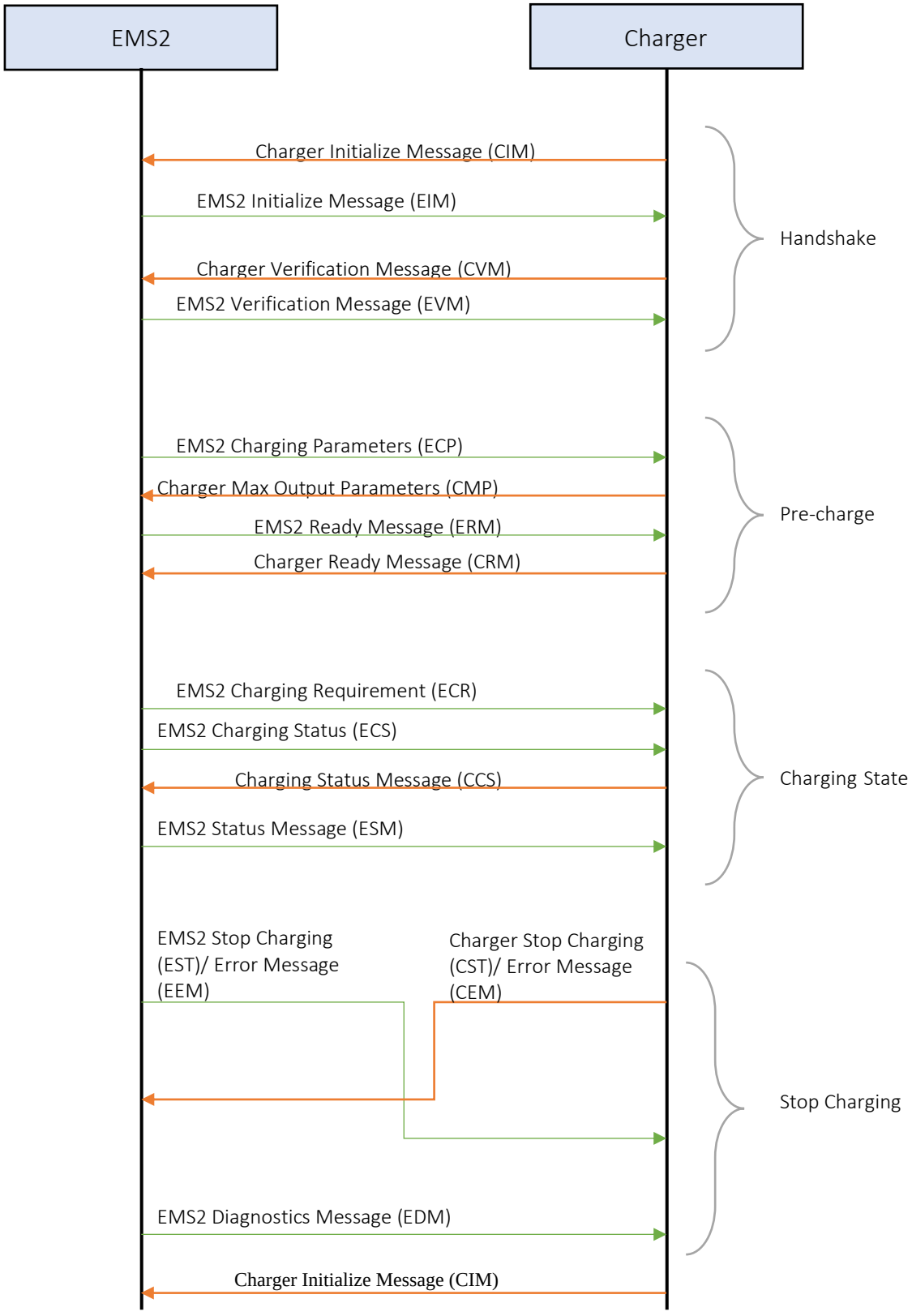
All message codes that start with a C (e.g. CIM, CVM, etc.) are Tx messages originating from the Charging Station to the EMS2 CPU. All message codes that start with an E (e.g. EIM, EVM, etc.) are Tx messages originating from the EMS2 CPU to the Charging Station.

Essentially, there are 4 states in charging process:

1. Handshake: Charging station initiates the communication by transmitting CIM message to the EMS2 CPU. Other details, such as the current state of the CPU, etc. are shared with the charging station.
2. Pre-charge: EMS2 CPU enters this state after it receives CVM (0xAA) from the charging station. Maximum and minimum data parameters are exchanged between the CPU and the charging station. This is to ensure that both systems understand the threshold limits before starting the charging process.
3. Charging: When both systems (charger and EMS2 CPU) are ready, the charging station is expected to charge the system with a constant current/voltage value read from the ECR message. The charging station is expected to monitor ECR, ECS and ESM messages and respond with a CCS message continuously while the system is charging/ balancing.
4. End charging/ Error: After the charging process is completed, EST (EMS2 stop charging) and EDM (EMS2 diagnostic) messages are transmitted by the EMS2 CPU. In case of an unexpected error, an EEM (EMS2 error) message is transmitted by the EMS2 CPU. Charging station is also expected to stop charging by sending CST and CEM in case of errors. Both EST and CST messages must be acknowledged by the other node/ party (Byte 3 – 0xAA). If an acknowledgement is received, then the node must stop sending EST or CST messages and reset to Handshake state. If an acknowledgement is not received, then the node must timeout (30 Secs) and reset to Handshake state.

The overall charging station flowchart summary is depicted in section 6.1. Individual messages are explained in detail in subsequent sections (6.2 to 6.7.2).

7.1 Charging station flowchart summary:



7.2 Initialize State

The charging station/ charger has to initiate the charging process by transmitting CIM to the EMS2 CPU. The CIM message must contain a particular sequence of bytes (0x000101) in order to start the charging process.

7.2.1 Charger Initialize Message (CIM)

The charging process is initiated when CIM is detected by the EMS2.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (seconds)	Source - Destination
CIM	002600	6	3	5	Charger – EMS2

Start Byte	Length (Bytes)	Message Format
1	3	byte3 – 0x00, byte2 – 0x01, byte1 – 0x01

7.2.2 EMS2 Initialize Message (EIM)

On receiving CIM, the EMS2 responds with the maximum pack voltage allowed value along with charge-required (yes/ no) field. The charging station must not exceed the max pack voltage value mentioned in the EIM message during the entirety of the charging process.

- If the charge-required field value is 0x00, then the charging station is expected to wait for 5 seconds and Tx CIM.
- If the charge-required field value is 0xAA, then the charging station can respond with CVM message and continue with the other charging states.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
EIM	002700	6	3	250	EMS2 – Charger

Start Byte	Length (Bytes)	Message Format
1	2	Max allowed pack voltage (Resolution = 0.1V)
3	1	Charge Required (<0x00: No>, <0xAA: Yes>)

7.2.3 Charger Verification Message (CVM)

If charge-required field in EIM is 0xAA then the charger can respond with an acknowledgement (0xAA). If the charger cannot support the maximum pack voltage value, then 0x00 response must be sent to EMS2 CPU.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
CVM	000100	6	1	250	Charger – EMS2

Start Byte	Length (Bytes)	Message Format
1	1	byte1(<0x00: Cannot verify>, <0xAA: Verified>)

7.2.4 EMS2 Verification Message (EVM)

EMS2 responds with a verification message that consists of prevailing pack voltage/ capacity values. The first 3 bytes can be used to display (if any) the battery management system initials (EPS – Elite Power Solutions).

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
EVM	000200	7	8	250	EMS2 – Charger

Start Byte	Length (Bytes)	Message Format

1	3	EPS (byte3 – 0x53, byte2 – 0x50, byte1 – 0x45)
4	1	byte1(<0x00: Cannot verify>, <0xAA: Verified>)
5	2	Current pack capacity (0.1Ah)
7	2	Current pack voltage (0.1V)

7.3 Pre-charge State

7.3.1 EMS2 Charging Parameters (ECP)

On receiving CVM, EMS2 transmits the maximum allowed cell/pack voltage, temperature and current parameters. The charger must not exceed these parameters in the entirety of the charging process.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
ECP	000600	7	8	500	EMS2 – Charger

Start Byte	Length (Bytes)	Message Format
1	2	Maximum cell voltage allowed (0.01 V)
3	2	Maximum current allowed (0.1 A)
5	2	Maximum pack voltage allowed (0.1 V)
7	2	Maximum cell temperature allowed (Offset = -50 F)

7.3.2 Charger Maximum Output Parameters (CMP)

The charging station must make a note of ECP and respond with its maximum output parameters.
e.g. Maximum current value = 0x07D0 (2000 decimal), actual reading = 400 – (2000 * (0.1)) = 400 – 200 = 200 A

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
CMP	000800	6	8	250	Charger – EMS2

Start Byte	Length (Bytes)	Message Format
1	2	Maximum voltage (0.1 V)
3	2	Minimum voltage (0.1 V)
5	2	Maximum current (0.1 A, Offset = -400A)
7	2	Minimum current (0.1 A, Offset = -400A)

7.3.3 EMS2 Ready Message (ERM)

EMS2 verifies the charging station parameters(CMP) and responds with a 0xAA message if the values are within the threshold limits.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
ERM	000900	4	1	250	EMS2 – Charger

Start Byte	Length (Bytes)	Message Format
1	1	EMS2 (<Ready: 0xAA, Not ready: 0x00, Invalid: 0xFF>)

7.3.4 Charger Ready Message (CRM)

The charging station is also expected to comply with the maximum set point values (ECP) and respond with 0xAA ready message.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
CRM	000A00	4	1	250	Charger – EMS2

Start Byte	Length (Bytes)	Message Format
1	1	Charger (<Ready: 0xAA, Not ready: 0x00, Invalid: 0xFF>)

7.4 Charging State

7.4.1 EMS2 Charging Request (ECR)

ECR message requests either constant current or constant voltage. In case of constant current request, bytes 3 & 4 have to be read for the current value. In case of constant voltage request, bytes 1 & 2 have to be read for the voltage value.

e.g.1. Current request value = 0x0000 (0 decimal), actual reading = 400 – (0 * (0.1)) = 400 A

e.g.2. Current request value = 0x07D0 (2000 decimal), actual reading = 400 – (2000 * (0.1)) = 400 – 200 = 200 A

e.g.3. Current request value = 0x0BB8 (3000 decimal), actual reading = 400 – (3000 * (0.1)) = 400 – 300 = 100 A

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
ECR	001000	6	5	50	EMS2 – Charger

Start Byte	Length (Bytes)	Message Format
1	2	Voltage request (0.1 V)
3	2	Current request (0.1 A, Offset= -400A)
5	1	Constant (Current<0x02>, Voltage<0x01>)

7.4.2 EMS2 Charging Status (ECS)

The prevailing voltage, current and SOC values are transmitted via ECS message.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
ECS	001100	7	7	250	EMS2 – Charger

Start Byte	Length (Bytes)	Message Format
1	2	Pack voltage (0.1 V)
3	2	Pack current (0.1 A, Offset= -400A)
5	2	Maximum cell voltage (0.01 V)
7	1	Current SOC (1%, Range 0-100)

7.4.3 Charger Charging Status (CCS)

The charging station is expected to transmit the CCS message continuously when the system is in charging state. If CCS message is not received by the EMS2 CPU for 10 seconds, then EMS2 transmits an error/ stop charging message. Similarly, if the charging station does not receive ECR, ECS and ESM messages for 10 seconds, then the charger is expected to timeout and stop the charging process.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
CCS	001200	6	5	50	Charger – EMS2

Start Byte	Length (Bytes)	Message Format
1	2	Voltage output (0.1 V)
3	2	Current output (0.1 A, Offset= -400A)
5	1	Charging allowed (<Stop: 0x00>, <Charge OK: 0x01>)

7.4.4 EMS2 Status Message (ESM)

The maximum and minimum parameters are transmitted via ESM. Also, the charging station is expected to monitor charging-allowed field in this message.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
ESM	001300	6	7	250	EMS2 – Charger

Start Byte	Length (Bytes)	Message Format
1	1	Maximum cell voltage index
2	1	Maximum cell temperature (1F, Offset = -50F)
3	1	Maximum cell temperature index
4	1	Minimum cell temperature (1F, Offset = -50F)
5	1	Minimum cell temperature index
6	1	Charging allowed (<Stop: 0x00>, <Charge OK: 0x01>)

7.5 Stop Charging

7.5.1 EMS2 Stop Charging (EST)

The EMS2 transmits this message in case of a stop charging event. The reason for stop charging is also embedded in the message.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
EST	001500	4	3	50	EMS2 – Charger

Start Byte	Length (Bytes)	Message Format
1	1	Stop reason (<bits 1~2: SOC reached>, <bits 3~4: Pack voltage reached>, <bits 5~6: Cell voltage reached>, <bits 7~8: Stop charging - others>), bits meaning (<0x00: No>, <0x01: Yes>, <0x10: Not sure>)
2	1	Stop error reason (<bits 1~2: Over current>, <bits 3~4: Abnormal voltage>), bits meaning (<0x00: No>, <0x01: Yes>, <0x10: Not sure>)
3	1	ACK (<Yes: 0xAA, No: 0x00>)

7.5.2 Charger Stop Charging (CST)

The charging station can also initiate the stop charging process in case of errors/ undesirable conditions.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
CST	001600	4	3	50	Charger – EMS2

Start Byte	Length (Bytes)	Message Format
1	1	Stop reason (<bits 1~2: Charger set point reached>, <bits 3~4: Manual stop>, <bits 5~6: error>, <bits 7~8: Stop charging - others>), bits meaning (<0x00: No>, <0x01: Yes>, <0x10: Not sure>)

2	1	Stop error reason (<bits 1~2: Current mismatch>, <bits 3~4: Abnormal voltage>), bits meaning (<0x00: No>, <0x01: Yes>, <0x10: Not sure>)
3	1	ACK (<Yes: 0xAA, No: 0x00>)

7.6 Diagnostics

7.6.1 EMS2 Diagnostics Message (EDM)

The EMS2 CPU transmits a diagnostic message indicating the final system parameters after the completion of charging process.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
EDM	001A00	6	7	250	EMS2 – Charger

Start Byte	Length (Bytes)	Message Format
1	1	Final SOC (1%)
2	2	Minimum cell voltage (0.01 V)
4	2	Maximum cell voltage (0.01 V)
6	1	Minimum cell temperature (1F, Offset = -50F)
7	1	Maximum cell temperature (1F, Offset = -50F)

7.7 Errors

7.7.1 EMS2 Error Message (EEM)

If the EMS2 system detects any errors (mostly timeout errors), an EEM message is transmitted along with the reason.

Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
EEM	001E00	2	3	250	EMS2 – Charger

Start Byte	Length (Bytes)	Message Format
1	1	Timeout error (<00: No>, <10: Yes >)
2	1	Other errors (<00: No>, <10: Yes >)
3	1	ACK (<Yes: 0xAA, No: 0x00>)

7.7.2 Charger Error Message (CEM)

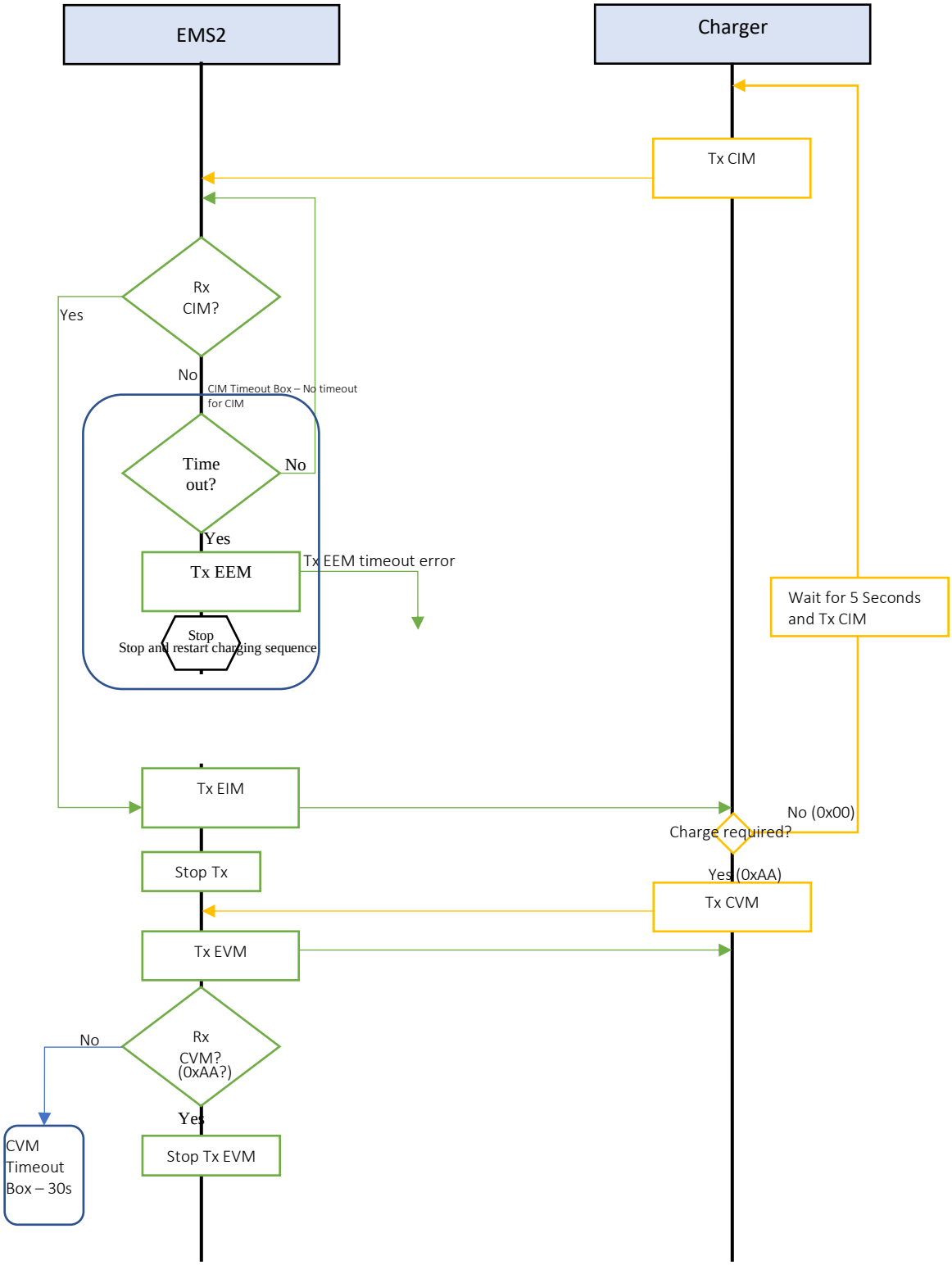
The charging station is expected to transmit CEM in case of ECR, ECS and ESM timeout errors. If EMS2 receives this message, then the charging process is stopped and EMS2 resets the states and waits for the handshake/ initialize message for subsequent charging.

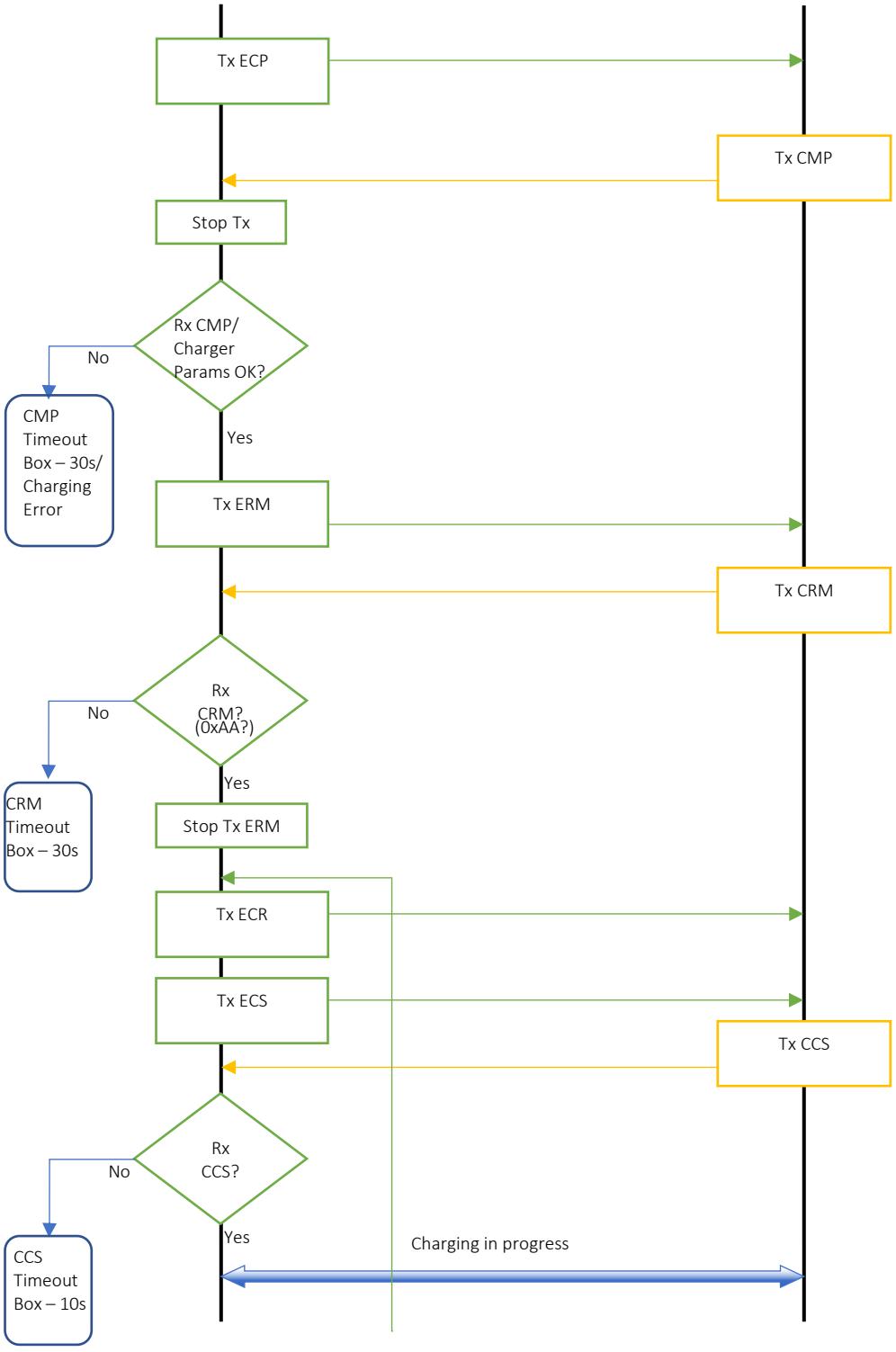
Code	PGN (Hex)	Priority	Length (Bytes)	Frequency (ms)	Source - Destination
CEM	001F00	2	3	250	Charger – EMS2

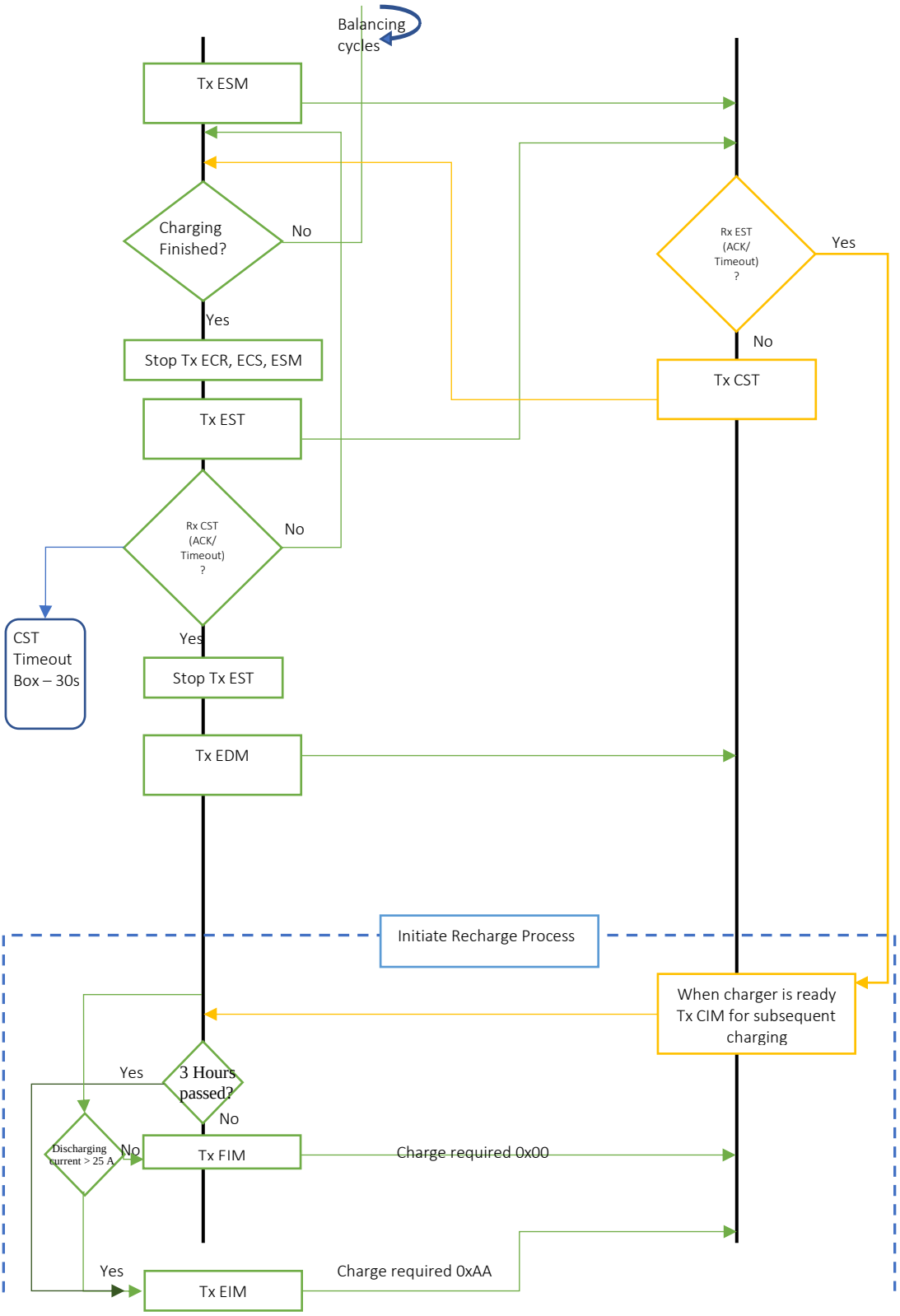
Start Byte	Length (Bytes)	Message Format
1	1	Timeout error (<00: No>, <10: Yes >)
2	1	Other errors (<00: No>, <10: Yes >)
3	1	ACK (<Yes: 0xAA, No: 0x00>)

A detailed flowchart of the charging process with individual CANBUS messages is depicted in section 7. Section 8 shows an example trace of Broadcast messages and Charger-EMS2 interactions.

8 Charging Sequence Flowchart




Tx ECP
Tx CMP
Stop Tx
Rx CMP/ Charger Params OK?
No
CMP Timeout Box – 30s/ Charging Error
Yes
Tx ERM
Tx CRM
Rx CRM? (0xAA?)
No
CRM Timeout Box – 30s
Yes
Stop Tx ERM
Tx ECR
Tx ECS
Tx CCS
Rx CCS?
No
CCS Timeout Box – 10s
Yes
Charging in progress


Balancing cycles
Tx ESM
Charging Finished?
No
Yes
Stop Tx ECR, ECS, ESM
Tx EST
Rx CST (ACK/ Timeout) ?
No
Yes
CST Timeout Box – 30s
Stop Tx EST
Tx EDM
Rx EST (ACK/ Timeout) ?
Yes
No
Tx CST
Initiate Recharge Process
When charger is ready Tx CIM for subsequent charging
Yes
3 Hours passed?
No
Discharging current > 25 A
No
Tx FIM
Charge required 0x00
Yes
Tx EIM
Charge required 0xAA

9 Appendix

An example of Broadcast trace is shown in section 8.1.

Charging station interaction trace is shown in section 8.2

Comments are placed next to some of the individual messages (for e.g. <= Pack Summary) for identification.

9.1 Broadcast Trace Example

```
;   Elite Power Solutions © 2020
;
;   Message Number
;   |         Time Offset (ms)
;   |         |        Type
;   |         |        |        ID (hex)
;   |         |        |        |     Data Length
;   |         |        |        |     |   Data Bytes (hex) ...
;   |         |        |        |     |   |
;---+--   ----+----  --+--  ----+---  +  -+ -- -- -- -- -- -- --
;
     1)       576.8  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00  <= Pack Summary
     2)       599.1  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01  <= Cell Voltage Summary
     3)       632.7  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00  <= Cell Temperature
Summary
     4)       771.5  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00  <= Fault/ Warnings
Summary
     5)       836.8  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00  <= EMS2 Configuration

     6)      1915.4  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
     7)      1930.9  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
     8)      1944.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
     9)      1971.7  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    10)      1986.5  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    11)      3128.1  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
    12)      3139.5  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    13)      3183.7  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    14)      3243.7  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    15)      3292.8  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    16)      4354.1  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
    17)      4368.1  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    18)      4381.4  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    19)      4409.5  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    20)      4424.7  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    21)      5478.2  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
    22)      5491.8  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    23)      5507.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    24)      5533.5  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    25)      5550.0  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    26)      6599.6  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
    27)      6613.0  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    28)      6632.6  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    29)      6660.2  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    30)      6678.1  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    31)      7768.2  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
    32)      7790.1  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    33)      7818.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    34)      7851.2  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    35)      7867.6  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    36)      8956.1  Rx     1CFA20F4  8  81 C0 4F 30 0A 00 0A 00
    37)      8982.0  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    38)      9004.3  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    39)      9059.9  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    40)      9086.9  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    41)     10227.5  Rx     1CFA20F4  8  01 C0 4F 30 0A 00 0A 00
```

```
    42)     10238.1  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    43)     10260.9  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    44)     10311.6  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    45)     10334.0  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    46)     11518.7  Rx     1CFA20F4  8  81 C0 4F 30 0A 00 0A 00
    47)     11569.2  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    48)     11604.9  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    49)     11656.5  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    50)     11695.3  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    51)     12751.4  Rx     1CFA20F4  8  01 C0 4F 30 0D 00 0A 00
    52)     12764.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    53)     12777.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    54)     12806.3  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    55)     12832.1  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    56)     13802.6  Tx     1C1BF44D  8  00 00 00 00 00 00 00 00  <= Query: All Cell
Voltages

    57)     13906.9  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
    58)     13919.3  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    59)     13932.7  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    60)     13959.1  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00

    61)     13975.0  Rx     1C314DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 1 to 4
    62)     13989.4  Rx     1C324DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 5 to 8
    63)     14004.3  Rx     1C334DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 9 to 12
    64)     14019.7  Rx     1C344DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 13 to 16
    65)     14035.8  Rx     1C354DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 17 to 20
    66)     14051.4  Rx     1C364DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 21 to 24
    67)     14065.9  Rx     1C374DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 25 to 28
    68)     14082.1  Rx     1C384DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 29 to 32
    69)     14099.7  Rx     1C394DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 33 to 36
    70)     14115.7  Rx     1C3A4DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 37 to 40
    71)     14129.0  Rx     1C3B4DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 41 to 44
    72)     14164.4  Rx     1C3C4DF4  8  42 01 42 01 42 01 42 01  <= Response: Cell
Voltages 45 to 48

    73)     14188.8  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    74)     15254.0  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
    75)     15275.8  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    76)     15289.7  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    77)     15318.0  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    78)     15332.9  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    79)     16384.4  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
    80)     16398.3  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    81)     16411.0  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    82)     16439.3  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    83)     16455.6  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    84)     16459.7  Tx     1C1CF44D  8  00 00 00 00 00 00 00 00  <= Query: All Cell
Temperatures

    85)     17510.8  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
    86)     17524.0  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    87)     17536.3  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
```

```
    88)     17564.9  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00

    89)     17581.9  Rx     1C814DF4  8  79 79 79 79 79 79 79 79  <= Response: Cell
Temperatures 1 to 8
    90)     17596.6  Rx     1C824DF4  8  79 79 79 79 79 79 79 79  <= Response: Cell
Temperatures 9 to 16
    91)     17614.0  Rx     1C834DF4  8  79 79 79 79 79 79 79 79  <= Response: Cell
Temperatures 17 to 24
    92)     17629.1  Rx     1C844DF4  8  79 79 79 79 79 79 79 79  <= Response: Cell
Temperatures 25 to 32
    93)     17646.3  Rx     1C854DF4  8  79 79 79 79 79 79 79 79  <= Response: Cell
Temperatures 33 to 40
    94)     17664.7  Rx     1C864DF4  8  79 79 79 79 79 79 79 79  <= Response: Cell
Temperatures 41 to 48

    95)     17681.1  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    96)     18736.5  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
    97)     18751.4  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    98)     18765.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    99)     18799.8  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   100)     18816.3  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

   101)     19875.0  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
   102)     19888.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   103)     19903.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   104)     19930.2  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   105)     19946.6  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

   106)     21035.9  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
   107)     21072.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   108)     21085.0  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   109)     21138.9  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   110)     21177.2  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
```

9.2 Charger Trace Example (Includes broadcast messages for monitoring devices)

```
;   Elite Power Solutions © 2020
;
;   Message Number
;   |         Time Offset (ms)
;   |         |        Type
;   |         |        |        ID (hex)
;   |         |        |        |     Data Length
;   |         |        |        |     |   Data Bytes (hex) ...
;   |         |        |        |     |   |
;---+--   ----+----  --+--  ----+---  +  -+ -- -- -- -- -- -- --
     1)       729.4  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
     2)       778.3  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
     3)       865.3  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
     4)       991.6  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
     5)      1008.4  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
     6)      2122.6  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
     7)      2143.8  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
     8)      2164.9  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00

     9)      2184.2  Tx     1826F456  3  01 01 00                  <= CIM, Initialize

    10)      2211.5  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    11)      2270.0  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
    12)      2434.2  Tx     1826F456  3  01 01 00

    13)      2483.2  Rx     182756F4  8  A9 01 AA 00 00 00 00 00   <= EIM, Initialize
Response

    14)      2684.2  Tx     1826F456  3  01 01 00
    15)      2934.2  Tx     1826F456  3  01 01 00
    16)      2977.4  Rx     182756F4  8  A9 01 AA 00 00 00 00 00
    17)      3184.3  Tx     1826F456  3  01 01 00
    18)      3368.9  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
    19)      3387.8  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    20)      3431.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    21)      3434.3  Tx     1826F456  3  01 01 00
    22)      3477.9  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    23)      3489.7  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
    24)      3500.7  Rx     182756F4  8  A9 01 AA 00 00 00 00 00
    25)      3684.3  Tx     1826F456  3  01 01 00
    26)      3934.3  Tx     1826F456  3  01 01 00
    27)      3950.6  Rx     182756F4  8  A9 01 AA 00 00 00 00 00
    28)      4184.3  Tx     1826F456  3  01 01 00
    29)      4434.3  Tx     1826F456  3  01 01 00
    30)      4441.5  Rx     182756F4  8  A9 01 AA 00 00 00 00 00
    31)      4542.8  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
    32)      4552.8  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    33)      4563.3  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    34)      4587.7  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    35)      4601.3  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    36)      5048.3  Tx     1801F456  1  00                       <= CVM, Verification

    37)      5298.4  Tx     1801F456  1  00
    38)      5304.4  Rx     1C0256F4  8  45 50 53 00 16 03 F6 FF
    39)      5548.4  Tx     1801F456  1  00
    40)      5653.6  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
    41)      5663.9  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    42)      5676.9  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    43)      5700.9  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    44)      5717.5  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
    45)      5727.1  Rx     1C0256F4  8  45 50 53 00 16 03 F6 FF
    46)      5798.4  Tx     1801F456  1  00
    47)      6048.4  Tx     1801F456  1  00
    48)      6055.4  Rx     1C0256F4  8  45 50 53 00 16 03 F6 FF
    49)      6298.3  Tx     1801F456  1  00
    50)      6548.4  Tx     1801F456  1  00
    51)      6555.0  Rx     1C0256F4  8  45 50 53 00 16 03 F6 FF
    52)      6769.1  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
```

```
    53)      6780.4  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    54)      6792.6  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    55)      6798.4  Tx     1801F456  1  00
    56)      6816.5  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    57)      6831.0  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
    58)      6840.5  Rx     1C0256F4  8  45 50 53 00 16 03 F6 FF
    59)      7048.4  Tx     1801F456  1  00
    60)      7298.4  Tx     1801F456  1  00
    61)      7305.7  Rx     1C0256F4  8  45 50 53 00 16 03 F6 FF
    62)      7931.1  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
    63)      7952.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    64)      7975.7  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    65)      8017.4  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    66)      8038.8  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
    67)      8048.6  Rx     1C0256F4  8  45 50 53 00 16 03 F6 FF

    68)      8153.5  Tx     1801F456  1  AA                      <= CVM Verified

    69)      8403.5  Tx     1801F456  1  AA

    70)      8414.7  Rx     1C0256F4  8  45 50 53 AA 16 03 F6 FF  <= EVM Verified

    71)      8653.5  Tx     1801F456  1  AA
    72)      8903.5  Tx     1801F456  1  AA
    73)      8910.4  Rx     1C0656F4  8  72 01 A0 0F A9 01 C3 00
    74)      9153.5  Tx     1801F456  1  AA
    75)      9157.4  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
    76)      9247.9  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    77)      9289.7  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    78)      9374.1  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    79)      9403.5  Tx     1801F456  1  AA
    80)      9455.3  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00

    81)      9494.6  Rx     1C0656F4  8  72 01 A0 0F A9 01 C3 00  <= ECP, Charging
Parameters

    82)      9653.5  Tx     1801F456  1  AA
    83)      9903.6  Tx     1801F456  1  AA
    84)     10153.5  Tx     1801F456  1  AA
    85)     10159.7  Rx     1C0656F4  8  72 01 A0 0F A9 01 C3 00
    86)     10403.5  Tx     1801F456  1  AA
    87)     10521.4  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
    88)     10534.0  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    89)     10569.7  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    90)     10608.6  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
    91)     10645.0  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
    92)     10713.9  Rx     1C0656F4  8  72 01 A0 0F A9 01 C3 00

    93)     11479.6  Tx     1808F456  8  A0 0F 64 00 34 21 04 10  <= CMP, Maximum Output
Parameters

    94)     11485.9  Rx     100956F4  8  AA 00 00 00 00 00 00 00  <= ERM, Ready

    95)     11722.4  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
    96)     11729.6  Tx     1808F456  8  A0 0F 64 00 34 21 04 10
    97)     11735.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
    98)     11747.7  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
    99)     11774.9  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   100)     11789.6  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   101)     11800.3  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   102)     11979.6  Tx     1808F456  8  A0 0F 64 00 34 21 04 10
   103)     12229.6  Tx     1808F456  8  A0 0F 64 00 34 21 04 10
   104)     12235.9  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   105)     12479.7  Tx     1808F456  8  A0 0F 64 00 34 21 04 10
   106)     12729.7  Tx     1808F456  8  A0 0F 64 00 34 21 04 10
   107)     12736.5  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   108)     12842.7  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
   109)     12855.0  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   110)     12866.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   111)     12892.3  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
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   112)     12907.6  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   113)     12979.7  Tx     1808F456  8  A0 0F 64 00 34 21 04 10
   114)     13229.7  Tx     1808F456  8  A0 0F 64 00 34 21 04 10
   115)     13263.6  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   116)     13479.7  Tx     1808F456  8  A0 0F 64 00 34 21 04 10
   117)     14183.2  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
   118)     14225.3  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   119)     14251.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   120)     14301.6  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   121)     14314.7  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   122)     15405.3  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
   123)     15429.0  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   124)     15459.5  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   125)     15503.9  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   126)     15538.0  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   127)     15547.3  Rx     100956F4  8  AA 00 00 00 00 00 00 00

   128)     15702.8  Tx     100AF456  1  FF                      <= CRM, Invalid

   129)     15951.8  Tx     100AF456  1  FF
   130)     15957.5  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   131)     16201.8  Tx     100AF456  1  FF
   132)     16451.8  Tx     100AF456  1  FF
   133)     16457.5  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   134)     16640.2  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
   135)     16652.4  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   136)     16679.4  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   137)     16701.9  Tx     100AF456  1  FF
   138)     16729.7  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   139)     16763.1  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   140)     16782.2  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   141)     16951.8  Tx     100AF456  1  FF
   142)     17817.5  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
   143)     17828.2  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   144)     17840.4  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   145)     17894.4  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00

   146)     17912.9  Tx     100AF456  1  00                      <= CRM, Not Ready

   147)     17929.4  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   148)     18162.9  Tx     100AF456  1  00
   149)     18168.6  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   150)     18412.9  Tx     100AF456  1  00
   151)     18662.9  Tx     100AF456  1  00
   152)     18669.5  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   153)     18912.9  Tx     100AF456  1  00
   154)     18981.6  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
   155)     18993.0  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   156)     19003.6  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   157)     19030.3  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   158)     19043.9  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   159)     19057.4  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   160)     19162.9  Tx     100AF456  1  00
   161)     19413.0  Tx     100AF456  1  00
   162)     19428.9  Rx     100956F4  8  AA 00 00 00 00 00 00 00
   163)     20098.8  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
   164)     20113.0  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   165)     20126.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   166)     20153.1  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   167)     20166.6  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   168)     20176.9  Rx     100956F4  8  AA 00 00 00 00 00 00 00

   169)     20268.0  Tx     100AF456  1  AA                      <= CRM, Ready

   170)     20282.0  Rx     181056F4  8  00 00 00 00 02 00 00 00  <= ECR, Charging Request
   171)     20286.2  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00  <= ECS, Charging Status
   172)     20290.6  Rx     181356F4  8  30 79 30 79 30 01 00 00  <= ESM, Status/
Statistics Message

   173)     20518.0  Tx     100AF456  1  AA
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174)     20524.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
175)     20544.0  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
176)     20548.2  Rx     181356F4  8  30 79 30 79 30 01 00 00
177)     20768.0  Tx     100AF456  1  AA
178)     20774.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
179)     21018.0  Tx     100AF456  1  AA
180)     21024.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
181)     21029.0  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
182)     21034.7  Rx     181356F4  8  30 79 30 79 30 01 00 00
183)     21216.6  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
184)     21227.3  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
185)     21240.3  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
186)     21264.6  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
187)     21268.0  Tx     100AF456  1  AA
188)     21281.8  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
189)     21291.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
190)     21295.6  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
191)     21299.9  Rx     181356F4  8  30 79 30 79 30 01 00 00
192)     21518.0  Tx     100AF456  1  AA
193)     21527.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
194)     21768.1  Tx     100AF456  1  AA
195)     21796.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
196)     21810.6  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
197)     21823.3  Rx     181356F4  8  30 79 30 79 30 01 00 00
198)     21854.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
199)     22018.1  Tx     100AF456  1  AA
200)     22024.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
201)     22268.1  Tx     100AF456  1  AA
202)     22274.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
203)     22280.1  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
204)     22284.2  Rx     181356F4  8  30 79 30 79 30 01 00 00
205)     22337.3  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
206)     22348.8  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
207)     22360.6  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
208)     22388.9  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
209)     22404.3  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
210)     22414.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
211)     22518.1  Tx     100AF456  1  AA
212)     22524.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
213)     23494.6  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
214)     23513.3  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
215)     23541.9  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00

216)     23548.1  Tx     1812F456  5  A4 01 A4 1F 01            <= CCS, Charging Status

217)     23589.1  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
218)     23598.1  Tx     1812F456  5  A4 01 A4 1F 01
219)     23603.8  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
220)     23614.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
221)     23618.2  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
222)     23622.5  Rx     181356F4  8  30 79 30 79 30 01 00 00
223)     23648.1  Tx     1812F456  5  A4 01 A4 1F 01
224)     23698.2  Tx     1812F456  5  A4 01 A4 1F 01
225)     23704.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
226)     23748.1  Tx     1812F456  5  A4 01 A4 1F 01
227)     23772.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
228)     23798.2  Tx     1812F456  5  A4 01 A4 1F 01
229)     23848.1  Tx     1812F456  5  A4 01 A4 1F 01
230)     23864.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
231)     23872.2  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
232)     23891.0  Rx     181356F4  8  30 79 30 79 30 01 00 00
233)     23898.1  Tx     1812F456  5  A4 01 A4 1F 01
234)     23948.2  Tx     1812F456  5  A4 01 A4 1F 01
235)     23960.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
236)     23998.1  Tx     1812F456  5  A4 01 A4 1F 01
237)     24048.2  Tx     1812F456  5  A4 01 A4 1F 01
238)     24066.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
239)     24098.2  Tx     1812F456  5  A4 01 A4 1F 01
240)     24127.2  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
241)     24144.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
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242)     24148.1  Tx     1812F456  5  A4 01 A4 1F 01
243)     24174.4  Rx     181356F4  8  30 79 30 79 30 01 00 00
244)     24198.1  Tx     1812F456  5  A4 01 A4 1F 01
245)     24214.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
246)     24248.2  Tx     1812F456  5  A4 01 A4 1F 01
247)     24274.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
248)     24298.1  Tx     1812F456  5  A4 01 A4 1F 01
249)     24348.2  Tx     1812F456  5  A4 01 A4 1F 01
250)     24398.2  Tx     1812F456  5  A4 01 A4 1F 01
251)     24426.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
252)     24431.8  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
253)     24448.2  Tx     1812F456  5  A4 01 A4 1F 01
254)     24451.3  Rx     181356F4  8  30 79 30 79 30 01 00 00
255)     24487.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
256)     24498.2  Tx     1812F456  5  A4 01 A4 1F 01
257)     24548.2  Tx     1812F456  5  A4 01 A4 1F 01
258)     24554.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
259)     24598.2  Tx     1812F456  5  A4 01 A4 1F 01
260)     24648.2  Tx     1812F456  5  A4 01 A4 1F 01
261)     24672.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
262)     24698.1  Tx     1812F456  5  A4 01 A4 1F 01
263)     24748.2  Tx     1812F456  5  A4 01 A4 1F 01
264)     24798.2  Tx     1812F456  5  A4 01 A4 1F 01
265)     24848.2  Tx     1812F456  5  A4 01 A4 1F 01
266)     24898.2  Tx     1812F456  5  A4 01 A4 1F 01
267)     24948.2  Tx     1812F456  5  A4 01 A4 1F 01
268)     24978.6  Rx     1CFA20F4  8  01 C0 4F 30 0D 00 0A 00
269)     24998.2  Tx     1812F456  5  A4 01 A4 1F 01
270)     25019.3  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
271)     25040.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
272)     25048.2  Tx     1812F456  5  A4 01 A4 1F 01
273)     25084.9  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
274)     25098.2  Tx     1812F456  5  A4 01 A4 1F 01
275)     25098.7  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
276)     25128.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
277)     25142.0  Rx     1C1156F4  8  0A 00 93 0F 42 01 4F 00
278)     25146.0  Rx     181356F4  8  30 79 30 79 30 01 00 00
279)     25148.1  Tx     1812F456  5  A4 01 A4 1F 01
280)     25198.2  Tx     1812F456  5  A4 01 A4 1F 01
281)     25206.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
282)     25248.1  Tx     1812F456  5  A4 01 A4 1F 01
283)     25298.1  Tx     1812F456  5  A4 01 A4 1F 01
284)     25304.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
285)     25348.2  Tx     1812F456  5  A4 01 A4 1F 01
286)     25398.2  Tx     1812F456  5  A4 01 A4 1F 01
287)     25404.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
288)     25408.9  Rx     1C1156F4  8  0A 00 93 0F 42 01 4F 00
289)     25412.9  Rx     181356F4  8  30 79 30 79 30 01 00 00
290)     25448.2  Tx     1812F456  5  A4 01 A4 1F 01
291)     25498.2  Tx     1812F456  5  A4 01 A4 1F 01
292)     25504.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
293)     25548.2  Tx     1812F456  5  A4 01 A4 1F 01
294)     25598.2  Tx     1812F456  5  A4 01 A4 1F 01
295)     25604.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
296)     25648.2  Tx     1812F456  5  A4 01 A4 1F 01
297)     25698.2  Tx     1812F456  5  A4 01 A4 1F 01
298)     25704.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
299)     25708.8  Rx     1C1156F4  8  0A 00 93 0F 42 01 4F 00
300)     25712.8  Rx     181356F4  8  30 79 30 79 30 01 00 00
301)     25748.2  Tx     1812F456  5  A4 01 A4 1F 01
302)     25798.2  Tx     1812F456  5  A4 01 A4 1F 01
303)     25804.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
304)     25848.3  Tx     1812F456  5  A4 01 A4 1F 01
305)     25898.2  Tx     1812F456  5  A4 01 A4 1F 01
306)     25904.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
307)     25948.2  Tx     1812F456  5  A4 01 A4 1F 01
308)     25998.2  Tx     1812F456  5  A4 01 A4 1F 01
309)     26004.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
310)     26008.6  Rx     1C1156F4  8  0A 00 93 0F 42 01 4F 00
311)     26012.7  Rx     181356F4  8  30 79 30 79 30 01 00 00
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312)     26048.2  Tx     1812F456  5  A4 01 A4 1F 01
313)     26098.3  Tx     1812F456  5  A4 01 A4 1F 01
314)     26105.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
315)     26148.2  Tx     1812F456  5  A4 01 A4 1F 01
316)     26174.9  Rx     1CFA20F4  8  81 C0 4F 30 0D 00 0A 00
317)     26198.2  Tx     1812F456  5  A4 01 A4 1F 01
318)     26210.2  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
319)     26226.7  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
320)     26248.2  Tx     1812F456  5  A4 01 A4 1F 01
321)     26281.3  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
322)     26298.2  Tx     1812F456  5  A4 01 A4 1F 01
323)     26306.1  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
324)     26315.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
325)     26332.0  Rx     1C1156F4  8  0A 00 93 0F 42 01 4F 00
326)     26336.1  Rx     181356F4  8  30 79 30 79 30 01 00 00
327)     26348.3  Tx     1812F456  5  A4 01 A4 1F 01
328)     26382.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
329)     26398.3  Tx     1812F456  5  A4 01 A4 1F 01
330)     26448.3  Tx     1812F456  5  A4 01 A4 1F 01
331)     26454.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
332)     26498.3  Tx     1812F456  5  A4 01 A4 1F 01
333)     26548.3  Tx     1812F456  5  A4 01 A4 1F 01
334)     26555.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
335)     26598.3  Tx     1812F456  5  A4 01 A4 1F 01
336)     26604.6  Rx     1C1156F4  8  0A 00 93 0F 42 01 4F 00
337)     26608.8  Rx     181356F4  8  30 79 30 79 30 01 00 00
338)     26614.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
339)     26648.3  Tx     1812F456  5  A4 01 A4 1F 01
340)     26698.3  Tx     1812F456  5  A4 01 A4 1F 01
341)     26704.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
342)     26748.3  Tx     1812F456  5  A4 01 A4 1F 01
343)     26798.3  Tx     1812F456  5  A4 01 A4 1F 01
344)     26806.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
345)     26848.3  Tx     1812F456  5  A4 01 A4 1F 01
346)     26898.3  Tx     1812F456  5  A4 01 A4 1F 01
347)     26906.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
348)     26910.9  Rx     1C1156F4  8  0A 00 93 0F 42 01 4F 00
349)     26915.1  Rx     181356F4  8  30 79 30 79 30 01 00 00
350)     26948.3  Tx     1812F456  5  A4 01 A4 1F 01
351)     26998.3  Tx     1812F456  5  A4 01 A4 1F 01
352)     27005.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
353)     27048.2  Tx     1812F456  5  A4 01 A4 1F 01
354)     27098.3  Tx     1812F456  5  A4 01 A4 1F 01
355)     27104.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
356)     27148.2  Tx     1812F456  5  A4 01 A4 1F 01
357)     27198.3  Tx     1812F456  5  A4 01 A4 1F 01
358)     27204.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
359)     27209.9  Rx     1C1156F4  8  0A 00 93 0F 42 01 4F 00
360)     27214.5  Rx     181356F4  8  30 79 30 79 30 01 00 00
361)     27248.3  Tx     1812F456  5  A4 01 A4 1F 01
362)     27298.3  Tx     1812F456  5  A4 01 A4 1F 01
363)     27305.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
364)     27348.2  Tx     1812F456  5  A4 01 A4 1F 01
365)     27358.1  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
366)     27369.0  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
367)     27382.0  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
368)     27398.3  Tx     1812F456  5  A4 01 A4 1F 01
369)     27408.6  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
370)     27424.5  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
371)     27434.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
372)     27448.3  Tx     1812F456  5  A4 01 A4 1F 01
373)     27498.3  Tx     1812F456  5  A4 01 A4 1F 01
374)     27504.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
375)     27511.9  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
376)     27522.2  Rx     181356F4  8  30 79 30 79 30 01 00 00
377)     27548.3  Tx     1812F456  5  A4 01 A4 1F 01
378)     27598.3  Tx     1812F456  5  A4 01 A4 1F 01
379)     27604.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
380)     27648.3  Tx     1812F456  5  A4 01 A4 1F 01
381)     27698.3  Tx     1812F456  5  A4 01 A4 1F 01
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382)     27704.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
383)     27748.3  Tx     1812F456  5  A4 01 A4 1F 01
384)     27798.3  Tx     1812F456  5  A4 01 A4 1F 01
385)     27804.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
386)     27820.3  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
387)     27824.5  Rx     181356F4  8  30 79 30 79 30 01 00 00
388)     27848.3  Tx     1812F456  5  A4 01 A4 1F 01
389)     27898.3  Tx     1812F456  5  A4 01 A4 1F 01
390)     27904.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
391)     27948.3  Tx     1812F456  5  A4 01 A4 1F 01
392)     27998.3  Tx     1812F456  5  A4 01 A4 1F 01
393)     28004.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
394)     28048.3  Tx     1812F456  5  A4 01 A4 1F 01
395)     28098.3  Tx     1812F456  5  A4 01 A4 1F 01
396)     28104.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
397)     28109.1  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
398)     28113.7  Rx     181356F4  8  30 79 30 79 30 01 00 00
399)     28148.4  Tx     1812F456  5  A4 01 A4 1F 01
400)     28198.3  Tx     1812F456  5  A4 01 A4 1F 01
401)     28204.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
402)     28248.3  Tx     1812F456  5  A4 01 A4 1F 01
403)     28298.3  Tx     1812F456  5  A4 01 A4 1F 01
404)     28304.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
405)     28348.3  Tx     1812F456  5  A4 01 A4 1F 01
406)     28398.3  Tx     1812F456  5  A4 01 A4 1F 01
407)     28405.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
408)     28409.2  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
409)     28413.2  Rx     181356F4  8  30 79 30 79 30 01 00 00
410)     28448.3  Tx     1812F456  5  A4 01 A4 1F 01
411)     28483.4  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
412)     28495.9  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
413)     28498.3  Tx     1812F456  5  A4 01 A4 1F 01
414)     28508.1  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
415)     28534.2  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
416)     28548.3  Tx     1812F456  5  A4 01 A4 1F 01
417)     28548.4  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
418)     28561.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
419)     28598.3  Tx     1812F456  5  A4 01 A4 1F 01
420)     28648.4  Tx     1812F456  5  A4 01 A4 1F 01
421)     28654.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
422)     28698.3  Tx     1812F456  5  A4 01 A4 1F 01
423)     28704.7  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
424)     28708.9  Rx     181356F4  8  30 79 30 79 30 01 00 00
425)     28714.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
426)     28748.4  Tx     1812F456  5  A4 01 A4 1F 01
427)     28798.4  Tx     1812F456  5  A4 01 A4 1F 01
428)     28804.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
429)     28848.4  Tx     1812F456  5  A4 01 A4 1F 01
430)     28898.4  Tx     1812F456  5  A4 01 A4 1F 01
431)     28905.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
432)     28948.4  Tx     1812F456  5  A4 01 A4 1F 01
433)     28998.4  Tx     1812F456  5  A4 01 A4 1F 01
434)     29004.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
435)     29008.9  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
436)     29021.9  Rx     181356F4  8  30 79 30 79 30 01 00 00
437)     29048.3  Tx     1812F456  5  A4 01 A4 1F 01
438)     29098.3  Tx     1812F456  5  A4 01 A4 1F 01
439)     29109.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
440)     29148.4  Tx     1812F456  5  A4 01 A4 1F 01
441)     29198.4  Tx     1812F456  5  A4 01 A4 1F 01
442)     29205.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
443)     29248.4  Tx     1812F456  5  A4 01 A4 1F 01
444)     29298.4  Tx     1812F456  5  A4 01 A4 1F 01
445)     29304.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
446)     29308.7  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
447)     29312.8  Rx     181356F4  8  30 79 30 79 30 01 00 00
448)     29348.4  Tx     1812F456  5  A4 01 A4 1F 01
449)     29398.4  Tx     1812F456  5  A4 01 A4 1F 01
450)     29405.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
451)     29448.4  Tx     1812F456  5  A4 01 A4 1F 01
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452)     29498.4  Tx     1812F456  5  A4 01 A4 1F 01
453)     29504.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
454)     29548.4  Tx     1812F456  5  A4 01 A4 1F 01
455)     29598.4  Tx     1812F456  5  A4 01 A4 1F 01
456)     29602.2  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
457)     29614.8  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
458)     29627.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
459)     29648.4  Tx     1812F456  5  A4 01 A4 1F 01
460)     29654.6  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
461)     29668.1  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
462)     29677.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
463)     29683.3  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
464)     29687.9  Rx     181356F4  8  30 79 30 79 30 01 00 00
465)     29698.4  Tx     1812F456  5  A4 01 A4 1F 01
466)     29748.4  Tx     1812F456  5  A4 01 A4 1F 01
467)     29758.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
468)     29798.4  Tx     1812F456  5  A4 01 A4 1F 01
469)     29848.4  Tx     1812F456  5  A4 01 A4 1F 01
470)     29857.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
471)     29898.4  Tx     1812F456  5  A4 01 A4 1F 01
472)     29948.4  Tx     1812F456  5  A4 01 A4 1F 01
473)     29956.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
474)     29961.0  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
475)     29965.1  Rx     181356F4  8  30 79 30 79 30 01 00 00
476)     29998.4  Tx     1812F456  5  A4 01 A4 1F 01
477)     30048.4  Tx     1812F456  5  A4 01 A4 1F 01
478)     30055.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
479)     30098.4  Tx     1812F456  5  A4 01 A4 1F 01
480)     30148.4  Tx     1812F456  5  A4 01 A4 1F 01
481)     30154.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
482)     30198.4  Tx     1812F456  5  A4 01 A4 1F 01
483)     30248.4  Tx     1812F456  5  A4 01 A4 1F 01
484)     30254.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
485)     30271.7  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
486)     30275.8  Rx     181356F4  8  30 79 30 79 30 01 00 00
487)     30298.4  Tx     1812F456  5  A4 01 A4 1F 01
488)     30348.4  Tx     1812F456  5  A4 01 A4 1F 01
489)     30354.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
490)     30398.5  Tx     1812F456  5  A4 01 A4 1F 01
491)     30448.4  Tx     1812F456  5  A4 01 A4 1F 01
492)     30454.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
493)     30498.4  Tx     1812F456  5  A4 01 A4 1F 01
494)     30548.4  Tx     1812F456  5  A4 01 A4 1F 01
495)     30555.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
496)     30559.5  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
497)     30563.6  Rx     181356F4  8  30 79 30 79 30 01 00 00
498)     30598.4  Tx     1812F456  5  A4 01 A4 1F 01
499)     30648.4  Tx     1812F456  5  A4 01 A4 1F 01
500)     30655.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
501)     30698.4  Tx     1812F456  5  A4 01 A4 1F 01
502)     30718.0  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
503)     30730.7  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
504)     30742.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
505)     30748.4  Tx     1812F456  5  A4 01 A4 1F 01
506)     30768.7  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
507)     30783.5  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
508)     30793.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
509)     30798.4  Tx     1812F456  5  A4 01 A4 1F 01
510)     30814.7  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
511)     30819.0  Rx     181356F4  8  30 79 30 79 30 01 00 00
512)     30848.4  Tx     1812F456  5  A4 01 A4 1F 01
513)     30854.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
514)     30898.4  Tx     1812F456  5  A4 01 A4 1F 01
515)     30948.4  Tx     1812F456  5  A4 01 A4 1F 01
516)     30954.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
517)     30998.5  Tx     1812F456  5  A4 01 A4 1F 01
518)     31048.4  Tx     1812F456  5  A4 01 A4 1F 01
519)     31054.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
520)     31098.5  Tx     1812F456  5  A4 01 A4 1F 01
521)     31107.2  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
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522)     31111.3  Rx     181356F4  8  30 79 30 79 30 01 00 00
523)     31117.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
524)     31148.5  Tx     1812F456  5  A4 01 A4 1F 01
525)     31198.5  Tx     1812F456  5  A4 01 A4 1F 01
526)     31205.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
527)     31248.4  Tx     1812F456  5  A4 01 A4 1F 01
528)     31298.4  Tx     1812F456  5  A4 01 A4 1F 01
529)     31305.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
530)     31348.5  Tx     1812F456  5  A4 01 A4 1F 01
531)     31398.5  Tx     1812F456  5  A4 01 A4 1F 01
532)     31405.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
533)     31410.5  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
534)     31414.9  Rx     181356F4  8  30 79 30 79 30 01 00 00
535)     31448.5  Tx     1812F456  5  A4 01 A4 1F 01
536)     31498.5  Tx     1812F456  5  A4 01 A4 1F 01
537)     31504.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
538)     31548.5  Tx     1812F456  5  A4 01 A4 1F 01
539)     31598.5  Tx     1812F456  5  A4 01 A4 1F 01
540)     31604.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
541)     31648.5  Tx     1812F456  5  A4 01 A4 1F 01
542)     31698.5  Tx     1812F456  5  A4 01 A4 1F 01
543)     31704.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
544)     31721.7  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
545)     31725.8  Rx     181356F4  8  30 79 30 79 30 01 00 00
546)     31748.5  Tx     1812F456  5  A4 01 A4 1F 01
547)     31798.5  Tx     1812F456  5  A4 01 A4 1F 01
548)     31839.6  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
549)     31848.5  Tx     1812F456  5  A4 01 A4 1F 01
550)     31852.5  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
551)     31863.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
552)     31888.6  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
553)     31898.5  Tx     1812F456  5  A4 01 A4 1F 01
554)     31903.5  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
555)     31913.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
556)     31948.5  Tx     1812F456  5  A4 01 A4 1F 01
557)     31998.5  Tx     1812F456  5  A4 01 A4 1F 01
558)     32043.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
559)     32048.5  Tx     1812F456  5  A4 01 A4 1F 01
560)     32080.5  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
561)     32084.6  Rx     181356F4  8  30 79 30 79 30 01 00 00
562)     32098.5  Tx     1812F456  5  A4 01 A4 1F 01
563)     32118.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
564)     32148.4  Tx     1812F456  5  A4 01 A4 1F 01
565)     32198.5  Tx     1812F456  5  A4 01 A4 1F 01
566)     32205.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
567)     32248.5  Tx     1812F456  5  A4 01 A4 1F 01
568)     32298.5  Tx     1812F456  5  A4 01 A4 1F 01
569)     32305.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
570)     32348.5  Tx     1812F456  5  A4 01 A4 1F 01
571)     32354.8  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
572)     32379.3  Rx     181356F4  8  30 79 30 79 30 01 00 00
573)     32385.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
574)     32398.5  Tx     1812F456  5  A4 01 A4 1F 01
575)     32448.5  Tx     1812F456  5  A4 01 A4 1F 01
576)     32465.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
577)     32498.5  Tx     1812F456  5  A4 01 A4 1F 01
578)     32548.5  Tx     1812F456  5  A4 01 A4 1F 01
579)     32554.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
580)     32598.5  Tx     1812F456  5  A4 01 A4 1F 01
581)     32648.5  Tx     1812F456  5  A4 01 A4 1F 01
582)     32654.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
583)     32658.8  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
584)     32664.2  Rx     181356F4  8  30 79 30 79 30 01 00 00
585)     32698.5  Tx     1812F456  5  A4 01 A4 1F 01
586)     32748.6  Tx     1812F456  5  A4 01 A4 1F 01
587)     32754.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
588)     32798.5  Tx     1812F456  5  A4 01 A4 1F 01
589)     32848.5  Tx     1812F456  5  A4 01 A4 1F 01
590)     32854.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
591)     32898.5  Tx     1812F456  5  A4 01 A4 1F 01
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592)     32948.5  Tx     1812F456  5  A4 01 A4 1F 01
593)     32996.2  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
594)     32998.5  Tx     1812F456  5  A4 01 A4 1F 01
595)     33017.9  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
596)     33042.5  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
597)     33048.5  Tx     1812F456  5  A4 01 A4 1F 01
598)     33096.7  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
599)     33098.5  Tx     1812F456  5  A4 01 A4 1F 01
600)     33123.3  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
601)     33135.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
602)     33139.7  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
603)     33144.7  Rx     181356F4  8  30 79 30 79 30 01 00 00
604)     33148.5  Tx     1812F456  5  A4 01 A4 1F 01
605)     33198.5  Tx     1812F456  5  A4 01 A4 1F 01
606)     33205.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
607)     33248.5  Tx     1812F456  5  A4 01 A4 1F 01
608)     33298.5  Tx     1812F456  5  A4 01 A4 1F 01
609)     33304.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
610)     33348.5  Tx     1812F456  5  A4 01 A4 1F 01
611)     33398.5  Tx     1812F456  5  A4 01 A4 1F 01
612)     33405.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
613)     33409.6  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
614)     33413.8  Rx     181356F4  8  30 79 30 79 30 01 00 00
615)     33448.5  Tx     1812F456  5  A4 01 A4 1F 01
616)     33498.5  Tx     1812F456  5  A4 01 A4 1F 01
617)     33505.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
618)     33548.5  Tx     1812F456  5  A4 01 A4 1F 01
619)     33598.6  Tx     1812F456  5  A4 01 A4 1F 01
620)     33606.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
621)     33648.5  Tx     1812F456  5  A4 01 A4 1F 01
622)     33698.6  Tx     1812F456  5  A4 01 A4 1F 01
623)     33706.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
624)     33710.4  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
625)     33714.6  Rx     181356F4  8  30 79 30 79 30 01 00 00
626)     33748.6  Tx     1812F456  5  A4 01 A4 1F 01
627)     33797.6  Tx     1812F456  5  A4 01 A4 1F 01
628)     33805.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
629)     33848.6  Tx     1812F456  5  A4 01 A4 1F 01
630)     33898.6  Tx     1812F456  5  A4 01 A4 1F 01
631)     33905.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
632)     33948.6  Tx     1812F456  5  A4 01 A4 1F 01
633)     33997.6  Tx     1812F456  5  A4 01 A4 1F 01
634)     34003.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
635)     34007.8  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
636)     34013.6  Rx     181356F4  8  30 79 30 79 30 01 00 00
637)     34047.6  Tx     1812F456  5  A4 01 A4 1F 01
638)     34098.6  Tx     1812F456  5  A4 01 A4 1F 01
639)     34105.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
640)     34148.6  Tx     1812F456  5  A4 01 A4 1F 01
641)     34198.6  Tx     1812F456  5  A4 01 A4 1F 01
642)     34215.4  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
643)     34238.3  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
644)     34247.6  Tx     1812F456  5  A4 01 A4 1F 01
645)     34259.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
646)     34298.6  Tx     1812F456  5  A4 01 A4 1F 01
647)     34311.4  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
648)     34335.3  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
649)     34348.6  Tx     1812F456  5  A4 01 A4 1F 01
650)     34355.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
651)     34370.2  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
652)     34374.4  Rx     181356F4  8  30 79 30 79 30 01 00 00
653)     34397.6  Tx     1812F456  5  A4 01 A4 1F 01
654)     34427.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
655)     34447.6  Tx     1812F456  5  A4 01 A4 1F 01
656)     34497.6  Tx     1812F456  5  A4 01 A4 1F 01
657)     34521.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
658)     34547.6  Tx     1812F456  5  A4 01 A4 1F 01
659)     34597.6  Tx     1812F456  5  A4 01 A4 1F 01
660)     34610.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
661)     34647.6  Tx     1812F456  5  A4 01 A4 1F 01
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662)     34654.2  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
663)     34668.5  Rx     181356F4  8  30 79 30 79 30 01 00 00
664)     34674.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
665)     34697.6  Tx     1812F456  5  A4 01 A4 1F 01
666)     34747.6  Tx     1812F456  5  A4 01 A4 1F 01
667)     34753.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
668)     34797.6  Tx     1812F456  5  A4 01 A4 1F 01
669)     34847.6  Tx     1812F456  5  A4 01 A4 1F 01
670)     34854.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
671)     34897.6  Tx     1812F456  5  A4 01 A4 1F 01
672)     34947.6  Tx     1812F456  5  A4 01 A4 1F 01
673)     34956.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
674)     34985.8  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
675)     34990.3  Rx     181356F4  8  30 79 30 79 30 01 00 00
676)     34997.6  Tx     1812F456  5  A4 01 A4 1F 01
677)     35047.6  Tx     1812F456  5  A4 01 A4 1F 01
678)     35055.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
679)     35097.7  Tx     1812F456  5  A4 01 A4 1F 01
680)     35147.6  Tx     1812F456  5  A4 01 A4 1F 01
681)     35158.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
682)     35197.6  Tx     1812F456  5  A4 01 A4 1F 01
683)     35247.6  Tx     1812F456  5  A4 01 A4 1F 01
684)     35263.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
685)     35279.7  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
686)     35291.7  Rx     181356F4  8  30 79 30 79 30 01 00 00
687)     35297.6  Tx     1812F456  5  A4 01 A4 1F 01
688)     35339.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
689)     35347.6  Tx     1812F456  5  A4 01 A4 1F 01
690)     35397.7  Tx     1812F456  5  A4 01 A4 1F 01
691)     35447.6  Tx     1812F456  5  A4 01 A4 1F 01
692)     35497.6  Tx     1812F456  5  A4 01 A4 1F 01
693)     35547.6  Tx     1812F456  5  A4 01 A4 1F 01
694)     35597.6  Tx     1812F456  5  A4 01 A4 1F 01
695)     35647.6  Tx     1812F456  5  A4 01 A4 1F 01
696)     35697.6  Tx     1812F456  5  A4 01 A4 1F 01
697)     35720.1  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
698)     35747.6  Tx     1812F456  5  A4 01 A4 1F 01
699)     35790.1  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
700)     35797.7  Tx     1812F456  5  A4 01 A4 1F 01
701)     35811.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
702)     35847.7  Tx     1812F456  5  A4 01 A4 1F 01
703)     35856.4  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
704)     35882.7  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
705)     35896.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
706)     35897.7  Tx     1812F456  5  A4 01 A4 1F 01
707)     35908.0  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
708)     35921.6  Rx     181356F4  8  30 79 30 79 30 01 00 00
709)     35947.7  Tx     1812F456  5  A4 01 A4 1F 01
710)     35961.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
711)     35997.7  Tx     1812F456  5  A4 01 A4 1F 01
712)     36025.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
713)     36047.7  Tx     1812F456  5  A4 01 A4 1F 01
714)     36097.7  Tx     1812F456  5  A4 01 A4 1F 01
715)     36103.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
716)     36147.7  Tx     1812F456  5  A4 01 A4 1F 01
717)     36197.7  Tx     1812F456  5  A4 01 A4 1F 01
718)     36203.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
719)     36207.8  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
720)     36211.8  Rx     181356F4  8  30 79 30 79 30 01 00 00
721)     36247.7  Tx     1812F456  5  A4 01 A4 1F 01
722)     36297.7  Tx     1812F456  5  A4 01 A4 1F 01
723)     36304.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
724)     36347.7  Tx     1812F456  5  A4 01 A4 1F 01
725)     36397.7  Tx     1812F456  5  A4 01 A4 1F 01
726)     36403.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
727)     36447.7  Tx     1812F456  5  A4 01 A4 1F 01
728)     36497.7  Tx     1812F456  5  A4 01 A4 1F 01
729)     36503.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
730)     36507.8  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
731)     36511.8  Rx     181356F4  8  30 79 30 79 30 01 00 00
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732)     36547.7  Tx     1812F456  5  A4 01 A4 1F 01
733)     36597.7  Tx     1812F456  5  A4 01 A4 1F 01
734)     36603.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
735)     36647.7  Tx     1812F456  5  A4 01 A4 1F 01
736)     36697.7  Tx     1812F456  5  A4 01 A4 1F 01
737)     36707.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
738)     36747.7  Tx     1812F456  5  A4 01 A4 1F 01
739)     36797.7  Tx     1812F456  5  A4 01 A4 1F 01
740)     36803.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
741)     36807.8  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
742)     36812.0  Rx     181356F4  8  30 79 30 79 30 01 00 00
743)     36847.7  Tx     1812F456  5  A4 01 A4 1F 01
744)     36897.6  Tx     1812F456  5  A4 01 A4 1F 01
745)     36941.6  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
746)     36947.6  Tx     1812F456  5  A4 01 A4 1F 01
747)     36953.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
748)     36966.7  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
749)     36991.8  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
750)     36997.6  Tx     1812F456  5  A4 01 A4 1F 01
751)     37020.0  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
752)     37037.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
753)     37047.6  Tx     1812F456  5  A4 01 A4 1F 01
754)     37062.9  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
755)     37081.5  Rx     181356F4  8  30 79 30 79 30 01 00 00
756)     37097.6  Tx     1812F456  5  A4 01 A4 1F 01
757)     37103.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
758)     37147.7  Tx     1812F456  5  A4 01 A4 1F 01
759)     37197.7  Tx     1812F456  5  A4 01 A4 1F 01
760)     37219.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
761)     37247.7  Tx     1812F456  5  A4 01 A4 1F 01
762)     37297.7  Tx     1812F456  5  A4 01 A4 1F 01
763)     37304.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
764)     37347.7  Tx     1812F456  5  A4 01 A4 1F 01
765)     37354.5  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
766)     37359.6  Rx     181356F4  8  30 79 30 79 30 01 00 00
767)     37365.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
768)     37397.7  Tx     1812F456  5  A4 01 A4 1F 01
769)     37447.7  Tx     1812F456  5  A4 01 A4 1F 01
770)     37454.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
771)     37497.7  Tx     1812F456  5  A4 01 A4 1F 01
772)     37547.7  Tx     1812F456  5  A4 01 A4 1F 01
773)     37554.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
774)     37597.7  Tx     1812F456  5  A4 01 A4 1F 01
775)     37647.7  Tx     1812F456  5  A4 01 A4 1F 01
776)     37653.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
777)     37657.9  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
778)     37662.0  Rx     181356F4  8  30 79 30 79 30 01 00 00
779)     37697.7  Tx     1812F456  5  A4 01 A4 1F 01
780)     37747.7  Tx     1812F456  5  A4 01 A4 1F 01
781)     37753.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
782)     37797.7  Tx     1812F456  5  A4 01 A4 1F 01
783)     37847.7  Tx     1812F456  5  A4 01 A4 1F 01
784)     37853.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
785)     37897.7  Tx     1812F456  5  A4 01 A4 1F 01
786)     37947.7  Tx     1812F456  5  A4 01 A4 1F 01
787)     37953.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
788)     37957.9  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
789)     37962.0  Rx     181356F4  8  30 79 30 79 30 01 00 00
790)     37997.8  Tx     1812F456  5  A4 01 A4 1F 01
791)     38047.7  Tx     1812F456  5  A4 01 A4 1F 01
792)     38081.8  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
793)     38093.2  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
794)     38097.7  Tx     1812F456  5  A4 01 A4 1F 01
795)     38106.3  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
796)     38132.2  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
797)     38147.7  Tx     1812F456  5  A4 01 A4 1F 01
798)     38149.8  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
799)     38159.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
800)     38197.8  Tx     1812F456  5  A4 01 A4 1F 01
801)     38247.8  Tx     1812F456  5  A4 01 A4 1F 01
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802)     38253.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
803)     38258.1  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
804)     38262.1  Rx     181356F4  8  30 79 30 79 30 01 00 00
805)     38297.8  Tx     1812F456  5  A4 01 A4 1F 01
806)     38347.8  Tx     1812F456  5  A4 01 A4 1F 01
807)     38353.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
808)     38397.8  Tx     1812F456  5  A4 01 A4 1F 01
809)     38447.8  Tx     1812F456  5  A4 01 A4 1F 01
810)     38454.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
811)     38497.8  Tx     1812F456  5  A4 01 A4 1F 01
812)     38547.8  Tx     1812F456  5  A4 01 A4 1F 01
813)     38554.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
814)     38561.3  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
815)     38571.4  Rx     181356F4  8  30 79 30 79 30 01 00 00
816)     38597.8  Tx     1812F456  5  A4 01 A4 1F 01
817)     38647.8  Tx     1812F456  5  A4 01 A4 1F 01
818)     38653.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
819)     38697.8  Tx     1812F456  5  A4 01 A4 1F 01
820)     38747.8  Tx     1812F456  5  A4 01 A4 1F 01
821)     38754.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
822)     38797.8  Tx     1812F456  5  A4 01 A4 1F 01
823)     38847.8  Tx     1812F456  5  A4 01 A4 1F 01
824)     38854.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
825)     38860.0  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
826)     38864.2  Rx     181356F4  8  30 79 30 79 30 01 00 00
827)     38897.8  Tx     1812F456  5  A4 01 A4 1F 01
828)     38947.8  Tx     1812F456  5  A4 01 A4 1F 01
829)     38954.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
830)     38997.8  Tx     1812F456  5  A4 01 A4 1F 01
831)     39047.8  Tx     1812F456  5  A4 01 A4 1F 01
832)     39054.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
833)     39097.8  Tx     1812F456  5  A4 01 A4 1F 01
834)     39147.8  Tx     1812F456  5  A4 01 A4 1F 01
835)     39153.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
836)     39158.2  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
837)     39162.2  Rx     181356F4  8  30 79 30 79 30 01 00 00
838)     39197.8  Tx     1812F456  5  A4 01 A4 1F 01
839)     39211.2  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
840)     39223.7  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
841)     39244.3  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
842)     39247.8  Tx     1812F456  5  A4 01 A4 1F 01
843)     39272.5  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
844)     39286.1  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
845)     39295.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
846)     39297.8  Tx     1812F456  5  A4 01 A4 1F 01
847)     39347.8  Tx     1812F456  5  A4 01 A4 1F 01
848)     39353.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
849)     39397.8  Tx     1812F456  5  A4 01 A4 1F 01
850)     39447.8  Tx     1812F456  5  A4 01 A4 1F 01
851)     39453.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
852)     39458.2  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
853)     39462.2  Rx     181356F4  8  30 79 30 79 30 01 00 00
854)     39497.8  Tx     1812F456  5  A4 01 A4 1F 01
855)     39547.8  Tx     1812F456  5  A4 01 A4 1F 01
856)     39553.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
857)     39597.8  Tx     1812F456  5  A4 01 A4 1F 01
858)     39647.8  Tx     1812F456  5  A4 01 A4 1F 01
859)     39654.3  Rx     181056F4  8  00 00 00 00 02 00 00 00
860)     39697.8  Tx     1812F456  5  A4 01 A4 1F 01
861)     39747.8  Tx     1812F456  5  A4 01 A4 1F 01
862)     39754.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
863)     39771.5  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
864)     39775.5  Rx     181356F4  8  30 79 30 79 30 01 00 00
865)     39797.8  Tx     1812F456  5  A4 01 A4 1F 01
866)     39847.8  Tx     1812F456  5  A4 01 A4 1F 01
867)     39854.2  Rx     181056F4  8  00 00 00 00 02 00 00 00
868)     39897.8  Tx     1812F456  5  A4 01 A4 1F 01
869)     39947.8  Tx     1812F456  5  A4 01 A4 1F 01
870)     39953.9  Rx     181056F4  8  00 00 00 00 02 00 00 00
871)     40337.2  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
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872)     40349.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
873)     40361.0  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
874)     40386.8  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
875)     40401.7  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
876)     40413.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
877)     40418.0  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
878)     40422.2  Rx     181356F4  8  30 79 30 79 30 01 00 00
879)     41453.6  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
880)     41465.0  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
881)     41475.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
882)     41501.6  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
883)     41515.2  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
884)     41526.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
885)     42707.0  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
886)     42747.5  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
887)     42824.4  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
888)     42921.3  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
889)     42963.2  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
890)     42973.6  Rx     181056F4  8  00 00 00 00 02 00 00 00
891)     42991.9  Rx     1C1156F4  8  0A 00 95 0F 42 01 4F 00
892)     42995.9  Rx     181356F4  8  30 79 30 79 30 01 00 00
893)     44054.1  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
894)     44080.3  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
895)     44102.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
896)     44155.8  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
897)     44185.3  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
898)     44194.5  Rx     181056F4  8  00 00 00 00 02 00 00 00
899)     45420.2  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
900)     45453.8  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
901)     45497.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
902)     45551.5  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
903)     45575.5  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
904)     45595.8  Rx     181056F4  8  00 00 00 00 02 00 00 00
905)     45600.1  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
906)     45611.0  Rx     181356F4  8  30 79 30 79 30 01 00 00
907)     45650.7  Rx     181056F4  8  00 00 00 00 02 00 00 00
908)     46651.2  Rx     1CFA20F4  8  01 C0 4F 30 0D 00 0A 00
909)     46667.5  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
910)     46698.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
911)     46743.7  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
912)     46770.3  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
913)     46787.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
914)     47828.0  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
915)     47839.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
916)     47851.9  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
917)     47877.3  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
918)     47891.8  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
919)     47901.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
920)     47905.3  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
921)     47911.2  Rx     181356F4  8  30 79 30 79 30 01 00 00
922)     48953.3  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
923)     48965.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
924)     48978.3  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
925)     49004.3  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
926)     49019.9  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
927)     49029.1  Rx     181056F4  8  00 00 00 00 02 00 00 00
928)     50074.0  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
929)     50085.3  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
930)     50096.6  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
931)     50125.6  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
932)     50142.3  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
933)     50153.4  Rx     181056F4  8  00 00 00 00 02 00 00 00
934)     50160.0  Rx     1C1156F4  8  0A 00 94 0F 42 01 4F 00
935)     50167.3  Rx     181356F4  8  30 79 30 79 30 01 00 00
936)     51194.0  Rx     1CFA20F4  8  01 C0 4F 30 0C 00 0A 00
937)     51206.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
938)     51219.8  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
939)     51244.1  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
940)     51259.6  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
941)     51269.0  Rx     181056F4  8  00 00 00 00 02 00 00 00
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   942)      51274.5  Rx     181A56F4  8  4F 42 01 42 01 79 79 00   <= EDM, Diagnostics

   943)      51286.5  Rx     081E56F4  8  00 10 00 00 00 00 00 00   <= EEM, Error, CCS
timeout (10 seconds)

   944)      52309.0  Rx     1CFA20F4  8  81 C0 4F 30 0B 00 0A 00
   945)      52319.8  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   946)      52331.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   947)      52357.2  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   948)      52370.1  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   949)      53542.1  Rx     1CFA20F4  8  01 C0 4F 30 0B 00 0A 00
   950)      53552.1  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   951)      53566.6  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   952)      53606.8  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   953)      53638.8  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   954)      53647.5  Rx     081E56F4  8  00 10 00 00 00 00 00 00
   955)      54704.5  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
   956)      54739.4  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   957)      54760.6  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   958)      54805.2  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   959)      54829.1  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   960)      55952.0  Rx     1CFA20F4  8  01 C0 4F 30 0D 00 0A 00
   961)      55967.2  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   962)      56028.1  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   963)      56074.3  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   964)      56110.0  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   965)      56133.4  Rx     081E56F4  8  00 10 00 00 00 00 00 00
   966)      57301.1  Rx     1CFA20F4  8  81 C0 4F 30 0C 00 0A 00
   967)      57316.6  Rx     1CFA21F4  8  42 01 30 42 01 30 42 01
   968)      57327.2  Rx     1CFA22F4  8  30 79 30 79 79 00 00 00
   969)      57371.3  Rx     1CFA23F4  8  00 00 00 00 00 00 00 00
   970)      57394.7  Rx     1CFA27F4  8  01 09 01 01 01 00 00 00
   971)      57416.2  Rx     081E56F4  8  00 10 00 00 00 00 00 00
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