Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Rocket Setup Server

Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.1

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FORD CONFIDENTIAL

Revision History

Date	Ver	Notes	
Aug. 29, 2019	**1.0**	**Initial Release**	
December 20, 2019	**1.1**		
	STR-679269/B-Overview	MBORREL4: Added "if applicable" for Work. Removed Ambient Lighting	
	STR-679275/B-Terms and Definitions	MBORREL4: Added Final Purchase Flag	
	RKS-IIR-REQ-354840/B-RSServer_Rx	MBORREL4: Added REQ-370458	
	RKS-IIR-REQ-354841/B-RSServer_Tx	MBORREL4: Added REQ-370458	
	MD-REQ-370458/A-saveNavLocation	MBORREL4: New API	
	STR-668798/B-General Requirements	MBORREL4: Added REQ-364451	
	RKS-REQ-361373/B-FTCP Specification References	MBORREL4: Corrected the Class name	
	RKS-REQ-361339/B-Security Specification Reference	MBORREL4: Updated title	
	RKS-REQ-361338/B-Feature Configuration	MBORREL4: Added the default config. value	
	RKS-REQ-362420/B-RS Settings – RSServer Module Swap	MBORREL4: Added VehicleGGCCData message and startup condition	
	RKS-REQ-362421/B-RS Settings – Rocket Setup Disabled on RSServer	MBORREL4: Added reference to config req.	
	RKS-REQ-364451/A-RS Settings Feature Numbers/Structure	MBORREL4: New req.	
	STR-680484/B-Use Cases	MBORREL4: Removed REQ-361472	
	RKS-UC-REQ-361470/B-User selects and submits RS Settings on RSOffBoardClient	MBORREL4: Updated preconditions	
	RKS-UC-REQ-361471/B-RS Settings downloaded to RSServer when awake	MBORREL4: Updated usecase	
	RKS-UC-REQ-361473/B-RS Settings payload fails Payload Check(s)	MBORREL4: Updated usecase and title	
	STR-680483/B-Requirements	MBORREL4: Added REQ-364357, REQ-367354	
	RKS-REQ-361342/B-RS Settings Download – RSCommand	MBORREL4: Added req references	
	RKS-REQ-361344/B-RS Settings Download – Persistence	MBORREL4: Removed yellow text. No alert needed, no need to save URL	
	RKS-REQ-361345/B-RS Settings Download – Persistence Timer	MBORREL4: Updated "max time"	
	RKS-TMR-REQ-361379/B-T_Persist	MBORREL4: Updated Range	
	RKS-REQ-361346/B-RS Settings Download – Payload Timestamp	MBORREL4: Updated timestamp format to ISO 8601	
	RKS-REQ-362418/B-RS Settings Download – Failure	MBORREL4: Changed "download" to "persist"	
	RKS-REQ-364357/A-RS Settings Download - Failure Retry	MBORREL4: New req.	
	RKS-REQ-361348/B-RS Settings Download – RSCommandResponse	MBORREL4: Updated	

RKS-REQ-361349/B-RS Settings Download – RSAlert	MBORREL4: Updated
RKS-REQ-367354/A-RS Settings Download - Rejecting RSCommand	MBORREL4: New req.
RKS-UC-REQ-361474/B-User accepts and continues RS process on RSServer	MBORREL4: Updated precondition
RKS-UC-REQ-361475/B-User accepts and fails to complete RS process on RSServer	MBORREL4: Updated precondition
RKS-UC-REQ-361476/B-User denies RS process on RSServer	MBORREL4: Updated precondition
RKS-UC-REQ-361477/B-User postpones RS process on RSServer	MBORREL4: Updated precondition
RKS-UC-REQ-361478/B-User postpones RS process on RSServer (last retry)	MBORREL4: Updated precondition
RKS-UC-REQ-361480/B-RS & Master Reset – After RS Settings applied	MBORREL4: Updated precondition
STR-680487/B-Requirements	MBORREL4: Removed REQ-361359. Added REQ-372250
RKS-REQ-361351/B-Validate Identified User	MBORREL4: Updated req.
RKS-REQ-372250/A-RS Process Pause	MBORREL4: New req.
RKS-REQ-361356/B-RS Process - Accept	MBORREL4: Updated req.
RKS-REQ-361357/B-RS Process - Deny	MBORREL4: Updated req.
RKS-REQ-361360/B-RS Process – Postpone Retry	MBORREL4: Added validation requirement before showing welcome screen
RKS-REQ-362419/B-RS Process – Rocket Setup Complete Flag	MBORREL4: Updated req.
RKS-REQ-361362/B-Master Reset before RS Process Success	MBORREL4: Updated req.
RKS-REQ-361363/B-Master Reset after RS Process Success	MBORREL4: Updated req.
STR-680489/B-Requirements	MBORREL4: Removed REQ-362422 (settings are applied in parallel, not sequential). Removed Ambient Lighting section and all subsequent requirements. Added Drive Mode section and all subsequent requirements.
RKS-REQ-362424/B-RS Settings – Profile Name Format	MBORREL4: Updated table
RKS-REQ-362425/B-RS Settings – Profile Name Usage	MBORREL4: Added feature number & data value
RKS-REQ-362427/B-RS Settings – Failure to Apply Profile Name	MBORREL4: Updated default value
RKS-REQ-362428/B-RS Settings – Profile Photo Format	MBORREL4: Changed compression to encoding, updated table
RKS-REQ-362429/B-RS Settings – Profile Photo Usage	MBORREL4: Added feature number & data value
RKS-REQ-362431/B-RS Settings – Failure to Apply Profile Photo	MBORREL4: Updated default photo
STR-680495/B-Navigation Favorites	MBORREL4: Added REQ-367359
RKS-REQ-361366/B-RS Settings – Navigation Favorites	MBORREL4: Added "if applicable" for Work
RKS-REQ-362432/B-RS Settings – Navigation Favorites Parameters/Format	MBORREL4: Updated table

RKS-REQ-362433/B-RS Settings – Required Navigation Favorite Parameters	MBORREL4: Updated table
RKS-REQ-362434/B-RS Settings – Applying the Navigation Favorites	MBORREL4: Updated req.
RKS-REQ-362436/B-RS Settings – Multiple Addresses Found for a Navigation Favorite	MBORREL4: Removed "TBD"
RKS-REQ-367359/A-RS Settings – Max Saved Locations Occupied	MBORREL4: New req.
STR-680496/B-Radio Presets	MBORREL4: Added REQ-372296
RKS-REQ-372296/A-RS Settings - NA vs EU Preset Determination	MBORREL4: New req.
RKS-REQ-362446/B-RS Settings – Radio Presets Parameters/Format	MBORREL4: Updated table
RKS-REQ-362447/B-RS Settings - Required NA AM/FM Radio Preset Parameters	MBORREL4: Updated table
RKS-REQ-362448/B-RS Settings - Required NA SDARS Radio Preset Parameters	MBORREL4: Updated table
RKS-REQ-362449/B-RS Settings - Required EU FM/DAB Radio Preset Parameters	MBORREL4: Updated table
RKS-REQ-362453/B-RS Settings – Applying NA AM/FM Radio Presets	MBORREL4: Added feature number & data value
RKS-REQ-362454/B-RS Settings – Applying NA SDARS Radio Presets	MBORREL4: Added feature number & data value
RKS-REQ-362455/B-RS Settings – Applying EU FM/DAB Radio Presets	MBORREL4: Updated req.
RKS-REQ-362438/B-RS Settings – Departure Times Parameters/Format	MBORREL4: Updated table
RKS-REQ-362439/B-RS Settings – Applying the Departure Times	MBORREL4: Added feature number & data value
RKS-REQ-362440/B-RS Settings – Failure to Apply Departure Times	MBORREL4: Removed TBD note
STR-688823/A-Drive Mode	MBORREL4: New req.
RKS-REQ-364513/A-RS Settings – Drive Mode	MBORREL4: New req.
RKS-REQ-364514/A-RS Settings – Drive Mode Parameters/Format	MBORREL4: New req.
RKS-REQ-364515/A-RS Settings – Applying the Drive Mode Setting	MBORREL4: New req.
RKS-REQ-364516/A-RS Settings – Failure to Apply Drive Mode Setting	MBORREL4: New req.
STR-668800/B-Appendix: Reference Documents	MBORREL4: Updated references

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1 Overview

Rocket Setup is a feature that enables customers to select a set of preferences, via a FordPass application, for their recently purchased vehicle before they take ownership. Through Rocket Setup, the vehicle is already setup with the customer's preferences when they interact with the vehicle for the first time.

The core preferences/settings supported by this feature are:

- Name and Photo/Avatar
- Navigation Home/Work (if applicable)/Favorites
- EV Charge Departure Times
- Radio Presets (ex. FM/AM/Sirius/DAB)
- Drive Modes
- Apps (Apps Anywhere Phase 1)

This feature has an objective to improve dealership handover process of new vehicles, increase Ford Pass downloads, increase loyalty/satisfaction of customers and decrease customer complains related to navigation settings and mobile phone-vehicle pairing.

Rocket Setup will allow the customer to use a mobile phone, computer, or Ford kiosk in a dealership to select their preferences. The preferences will only be available to a vehicle after a first time purchase (not available to re-sale vehicles), and they will be sent to the vehicle one-time only (this is not a continuous app experience, app preference management, or preference synchronization).

1.1 Terms and Definitions

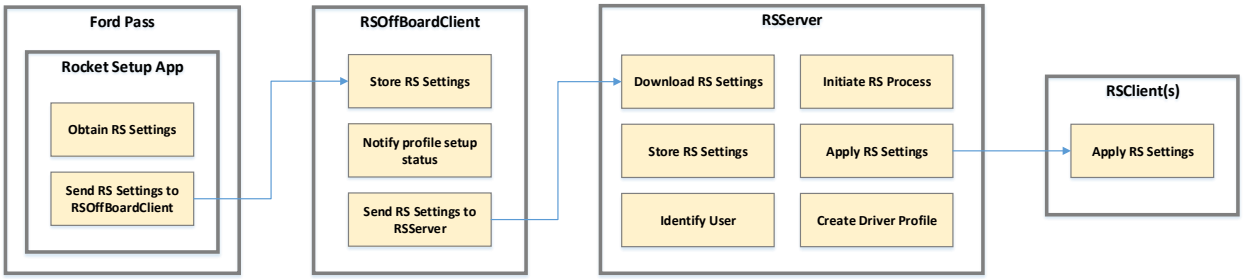
Abbreviation	Description
CAN	Controller Area Network
CCS	Customer Connectivity Setting
DID	Data Identifier
FCI	Ford Cloud Interface
FNV2.0	Fully Networked Vehicle 2nd Generation
FTCP	Ford Telematics Communication Protocol
IPPT	IP pass-through
POI	Points of interest
PPP	Portable Personal Profiles
RS	Rocket Setup
SDN	Service Delivery Network
SOA	Service Oriented Architecture
SPSS	Subsystem Part Specific Specification
WIR	Wireless Interface Router

Term	Description
RS Settings	The settings or preferences selected by the user via the RSOffBoardClient to be loaded in-vehicle
RS Settings payload	Specifically referring to the FTCP payload containing the RS Settings
SyncP	A Ford standard mechanism for secure communication.
Final Purchase Flag	The event/flag used to indicate Final Purchase and transfer of ownership from Ford to the customer

2 Architectural Design

2.1 Boundary Diagram

2.1.1 RKS-BD-REQ-360828/A-RS Boundary Diagram



2.2 RKS-CLD-REQ-354834/A-Rocket Setup Server

The Rocket Setup Server (RSServer) is responsible for the tasks listed below:

- Receive payload from RSOffBoardClient
- Send acknowledgement to RSOffBoardClient
- Push payload to all RSClients using existing interfaces

Please review the implementation guide/ block diagram to locate the Rocket Setup Server class.

2.3 RKS-CLD-REQ-354836/A-Rocket Setup OffBoard Client

The Rocket Setup OffBoardClient (RSOffBoardClient) is responsible for the tasks listed below:

- Receive user input via FordPass
- Compile user preferences into payload
- Send payload to RSServer
- Receive acknowledgement from RSServer

Please review the implementation guide/ block diagram to locate the Rocket Setup OffBoardClient class.

2.4 RKS-CLD-REQ-354835/A-Rocket Setup Client

The Rocket Setup Client (RSClient) is responsible for the tasks listed below:

- Receive and save settings from RSServer

Please review the implementation guide/ block diagram to locate the Rocket Setup Client class.

2.5 Physical Mapping of Classes

The table below shows an example of how the logical classes that make up the Rocket Setup feature can be mapped into physical modules. This mapping is an example only and does not necessarily carryover to other carlines or vehicle architectures.

Logical Class	Physical Module (ECU)
RSServer	SYNC
RSOffBoardClient	SDN
RSClient	AHU, BCM, HPCM, etc.

2.6 RSServer Interface

2.6.1 RKS-IIR-REQ-354840/B-RSServer_Rx

2.6.1.1 MD-REQ-361425/A-RSCommand

Message Type: FTCP

This message is used to send the RS Settings payload to the RSServer.

Note: Refer to the latest "Ford Telematics Communication Protocol Specification" and Protofile for the most up to date FTCP messages/definitions.

Command	Description
RSCommand	Command sent from the RSOffBoardClient to the RSServer including the RS Settings payload.

2.6.1.2 MD-REQ-361428/A-BLECommand

Message Type: FTCP

This message is used to send the BLE auto-pair key the RSServer.

Note: Refer to the latest "Ford Telematics Communication Protocol Specification" and Protofile for the most up to date FTCP messages/definitions.

Command	Description
BLECommand	Command sent from the RSOffBoardClient to the RSServer including the BLE auto-pair key.

2.6.1.3 MD-REQ-027149/A-IgnitionStatus_St (TcSE ROIN-225464-1)

Message Type: Status

Signal used to indicate ignition state.

Name	Literals	Value	Description
Type	-	-	Indicates ignition state
	Unknown	0x0	
	Off	0x1	
	Accessory	0x2	
	Run	0x4	
	Start	0x8	
	Invalid	0xF	

2.6.1.4 MD-REQ-028253/A-GearLeverPosition_St (TcSE ROIN-282103-1)

Message Type: Status

Status used to indicate the current gear selected.

Name	Literals	Value	Description

Type	-	-	Used to indicate current gear selected.
	Park	0x0	
	Reverse	0x1	
	Neutral	0x2	
	Drive	0x3	
	Sport_DriveSport	0x4	
	Low	0x5	
	First	0x6	
	Second	0x7	
	Third	0x8	
	Fourth	0x9	
	Fifth	0xA	
	Sixth	0xB	
	Undefined_Treat_as_Fault	0xC	
	Undefined_Treat_as_Fault1	0xD	
	Unknown_Position	0xE	
	Fault	0xF	

2.6.1.5 MD-REQ-014025/A-VehicleSpeed_St (TcSE ROIN-223023-1)

Message Type: Status

Status used to indicate vehicle speed.

Name	Literals	Value	Description
Type	-	-	Indicates vehicle speed. Unit: kph Resolution:0.01 Offset:0
	kph	0x0 to 0xFFFF	

2.6.1.6 MD-REQ-086348/A-CarMode_St

Message Type: Status

Name	Literals	Value	Description
Type	-	-	Defines what car mode state is active.
	Normal	0x0	
	Factory	0x1	
	NotUsed	0x2	
	Transportation	0x3	

2.6.1.7 MD-REQ-370458/A-saveNavLocation

This API is used to request the Nav Vendor to save a Navigation Favorite. The Nav Vendor also uses this API for its response.

Method Type	One-Shot (Synch)
QoS Level	Default
Retained	No

R/O	Name	Type	Literals	Value	Description
Request					

R	RequestID	Int32	-	-2147483648 to +2147483647	
R	Location Name	String	-	0-200 chars	
R	Phone Number	String	-	0-20 chars	
R	City	String	-	0-50 chars	Hypernym for e.g. city/village
R	SubCity	String	-	0-50 chars	Hypernym for e.g. district
R	State	String	-	0-100 chars	Portion of country (e.g. state, province)
R	Door Number	String	-	0-50 chars	Portion of thoroughfare e.g. house number
R	Street Name	String	-	0-100 chars	Hypernym for street, road etc.
R	Cross Street Name	String	-	0-100 chars	
R	ZIP Code	String	-	0-10 chars	ZIP, PLZ, PIN, CAP, PostalCode, etc.
R	Country	String	-	0-50 chars	Name of country
R	Latitude	Double	-	8 bytes	
R	Longitude	Double	-	8 bytes	
Response					
R	RequestID	Int32	-	-2147483648 to +2147483647	Corresponding to the RequestID in the request
R	Status	Enum	-	-	
			Success	0x0	
			Reject	0x1	

2.6.2 RKS-IIR-REQ-354841/B-RSServer_Tx

2.6.2.1 MD-REQ-361426/A-RSCommandResponse

Message Type: FTCP

This message is used to acknowledge the RSOffBoardClient's command containing the RS Settings payload.

Note: Refer to the latest "Ford Telematics Communication Protocol Specification" and Protofile for the most up to date FTCP messages/definitions.

Command	Description
RSCommandResponse	Response sent from the RSServer to the RSOffBoardClient upon receiving the RS Settings payload.

2.6.2.2 MD-REQ-361429/A-BLECommandResponse

Message Type: FTCP

This message is used to acknowledge the RSOffBoardClient's Command containing the BLE auto-pair key.

Note: Refer to the latest "Ford Telematics Communication Protocol Specification" and Protofile for the most up to date FTCP messages/definitions.

Command	Description
BLECommandResponse	Response sent from the RSServer to the RSOffBoardClient upon receiving the BLE auto-pair key.

2.6.2.3 MD-REQ-361427/A-RSAlert

Message Type: FTCP

This non correlated alert is used to notify the RSOffBoardClient of different success/failure statuses regarding the RS Settings payload.

Note: Refer to the latest "Ford Telematics Communication Protocol Specification" and Protofile for the most up to date FTCP messages/definitions.

Command	Description
RSAlert	Alert sent from the RSServer to the RSOffBoardClient for various RS Settings payload success/failure statuses.

2.6.2.4 MD-REQ-361430/A-BLEAlert

Message Type: FTCP

This non correlated alert is used to notify the RSOffBoardClient of different success/failure statuses regarding the BLE auto-pair key.

Note: Refer to the latest "Ford Telematics Communication Protocol Specification" and Protofile for the most up to date FTCP messages/definitions.

Command	Description
BLEAlert	Alert sent from the RSServer to the RSOffBoardClient for various BLE auto-pair key success/failure statuses.

2.6.2.5 MD-REQ-370458/A-saveNavLocation

This API is used to request the Nav Vendor to save a Navigation Favorite. The Nav Vendor also uses this API for its response.

Method Type	One-Shot (Synch)
QoS Level	Default
Retained	No

R/O	Name	Type	Literals	Value	Description
Request					
R	RequestID	Int32	-	-2147483648 to +2147483647	
R	Location Name	String	-	0-200 chars	
R	Phone Number	String	-	0-20 chars	
R	City	String	-	0-50 chars	Hypernym for e.g. city/village
R	SubCity	String	-	0-50 chars	Hypernym for e.g. district
R	State	String	-	0-100 chars	Portion of country (e.g. state, province)
R	Door Number	String	-	0-50 chars	Portion of thoroughfare e.g. house number
R	Street Name	String	-	0-100 chars	Hypernym for street, road etc.
R	Cross Street Name	String	-	0-100 chars	
R	ZIP Code	String	-	0-10 chars	ZIP, PLZ, PIN, CAP, PostalCode, etc.
R	Country	String	-	0-50 chars	Name of country
R	Latitude	Double	-	8 bytes	
R	Longitude	Double	-	8 bytes	
Response					
R	RequestID	Int32	-	-2147483648 to +2147483647	Corresponding to the RequestID in the request
R	Status	Enum	-	-	
			Success	0x0	
			Reject	0x1	

3 General Requirements

3.1 RKS-REQ-361373/B-FTCP Specification References

The following FTCP specifications define the FTCP alerts/commands mentioned in this SPSS, as well as the protocol used to transmit them via the RSServer:

- Ford Telematics Communication Protocol Specification
- FNV2-FCI Protocol SPSS

3.2 RKS-REQ-361339/B-Security Specification Reference

The RSServer shall comply with the security requirements per “Rocket Setup On-Board Security Specification”

3.3 RKS-REQ-361338/B-Feature Configuration

The RSServer shall have a configurable parameter/DID to allow the Rocket Setup feature to be enabled/disabled.

- When the parameter indicates that Rocket Setup is enabled, all the functionality and signals defined in this SPSS shall be supported.
- When the parameter indicates that Rocket Setup is disabled, none of the functionality defined in this SPSS shall be supported.
    - The default value for this parameter shall be Disabled.

3.4 RKS-REQ-362420/B-RS Settings – RSServer Module Swap

If the RSServer detects a new VIN via the VehicleGGCCData message upon an Ignition Cycle (transition from IgnitionStatus = Off to Run), it shall:

- delete the saved RS Settings payload if not yet applied, OR
- delete all internally applied RS Settings (the RS Settings for which the RSServer is the Server)

Note: Any RS Settings applied to an RSClient shall not be deleted.

3.5 RKS-REQ-362421/B-RS Settings – Rocket Setup Disabled on RSServer

If the Rocket Setup feature is disabled (per REQ-361338) on the RSServer, the RSServer shall delete the saved RS Settings payload if not yet applied.

3.6 RKS-REQ-364451/A-RS Settings Feature Numbers/Structure

The RS Settings are structured as a value pair of ‘Feature Number’ (also called LabelID in the FTCP protofile) and ‘Data Value’ (also called Label Value in the FTCP protofile). Each RS Setting is assigned their own Feature Number per the “Rocket Setup Data Elements” document. The RS Settings payload shall be formatted and received by the RSServer in a .proto structure.

4 Functional Definition

4.1 RKS-FUN-REQ-361370/A-RS Download

4.1.1 Use Cases

4.1.1.1 RKS-UC-REQ-361470/B-User selects and submits RS Settings on RSOffBoardClient

Actors	Mobile App User, RSOffBoardClient
Pre-conditions	FordPass Account created VIN added to Garage (manual process) OR Initial Order Complete (auto process)
Scenario Description	User selects Rocket Setup tile in the mobile app, personalizes settings, and presses submit.
Post-conditions	RS Settings are sent to RSOffBoardClient.
List of Exception Use Cases	
Interfaces	G-HMI

4.1.1.2 RKS-UC-REQ-361471/B-RS Settings downloaded to RSServer when awake

Actors	Vehicle Purchaser, RSOffBoardClient, RSServer
Pre-conditions	Powermode conditions are met RS Settings submitted and consent received Final Purchase Flag is not set
Scenario Description	User completes final purchase process and RS Settings payload is sent to RSServer.
Post-conditions	Final Purchase Flag is set RS Settings payload is downloaded to the RSServer.
List of Exception Use Cases	REQ-361473-RS Settings payload fails Payload Check(s)
Interfaces	FTCP, SoA

4.1.1.3 RKS-UC-REQ-361473/B-RS Settings payload fails Payload Check(s)

Actors	RSOffBoardClient, RSServer
Pre-conditions	Powermode conditions are met RS Settings payload submitted
Scenario Description	User completes final purchase process and RS Settings are sent to RSServer. RS Settings payload is corrupt, or timestamp is old.
Post-conditions	RS Settings payload fails the payload checks and fails to persist on the RSServer. RSServer requests another download.
List of Exception Use Cases	
Interfaces	FTCP

4.1.2 Requirements

4.1.2.1 RKS-REQ-361342/B-RS Settings Download – RSCommand

The RSServer shall receive and save (pending REQ-361449 & REQ-361347) the RS Settings payload contained within the RSCommand from the RSOffBoardClient.

4.1.2.2 RKS-REQ-361343/A-RS Settings Download – SyncP Wrapped

The RSServer shall receive the RS Settings payload SyncP wrapped (secured using SyncP v1) within the RSCommand from the RSOffBoardClient. Refer to "S13a SyncP Functional Specification" for more details.

4.1.2.3 RKS-REQ-361344/B-RS Settings Download – Persistence

The RSServer shall persist the RS Settings payload until:

- The RS Settings have been successfully applied (until the RS Process successfully completes, see REQ-361353), OR
- T_Persist has been reached

Once the RS Settings have been applied, or if the RS Settings have not been applied within T_Persist after having received/stored the RS Settings payload, the RS Settings payload shall be deleted.

The only exception to the above is the timestamp. The RSServer shall persist the timestamp permanently for use in the timestamp check (see REQ-361346). The RS Settings payload shall be persisted through ignition cycles, battery disconnects, loss of power, etc.

4.1.2.4 RKS-REQ-361345/B-RS Settings Download – Persistence Timer

The RSServer shall have a timer to monitor how long it shall persist the RS Settings payload. The timer shall be persisted through ignition cycles, battery disconnects, loss of power, etc. The max time to persist shall be defined by T_Persist.

4.1.2.5 RKS-TMR-REQ-361379/B-T_Persist

Name	Description	Units	Range	Resolution	Default
T_Persist	The maximum time the RSServer shall persist the RS Settings payload (1 day = 86400 sec) Note: Use the default value.	sec	86400-1728000	86400	864000

4.1.2.6 RKS-REQ-361346/B-RS Settings Download – Payload Timestamp

The RS Settings payload contains a timestamp to indicate the freshness of the RS Settings data. The timestamp format shall follow the ISO 8601 standard:

- Format (for reference): YYYY-MM-DDThh:mm:ssTZD
- Example (for reference) 2019-04-09T19:20:30+01:00

4.1.2.7 RKS-REQ-361449/A-RS Settings Download – Timestamp Check

The RSServer shall check the timestamp upon reception of the RSCommand. The check shall confirm whether:

- The timestamp is valid
- The timestamp is newer than that of the last received/saved RS Settings payload

4.1.2.8 RKS-REQ-361347/A-RS Settings Download – Payload Check

The RSServer shall check the RS Settings payload content upon reception of the RSCommand. The check shall confirm whether:

- The payload contents are readable
- The payload contents and parameter values are within the bounds identified in this SPSS
- The payload contents have not been modified in transit (per SyncP header)

4.1.2.9 RKS-REQ-362418/B-RS Settings Download – Failure

The RSServer shall fail and not persist the RS Settings payload from the RSCommand when:

- The RS Settings payload fails the Payload Check, OR
- The RS Settings payload fails the Timestamp Check, OR
- The RocketSetupComplete flag is set "True" when the RSCommand is received

4.1.2.10 RKS-REQ-364357/A-RS Settings Download - Failure Retry

When the RSServer fails to persist the RS Settings payload from the RSCommand due to a failed Timestamp or Payload Check, the RSAlert sent to the RSOffBoardClient shall request a re-download of the RS Settings payload (see REQ-361349).

This retry shall only occur once.

If the Timestamp Check fails again (or if both Checks fail):

- The RSServer shall discard the RS Settings payload
- The RSServer shall send an RSAlert to the RSOffBoardClient indicating “Failed” (no re-download)

If the Payload Check fails again:

- The RSServer shall apply the successful RS Settings in the payload (if any)
    - For the settings that have defaults defined in this SPSS (ex. Profile Name, Photo, etc.), those shall be used if the respective RS Setting failed
    - For the settings that have no defaults defined in this SPSS (ex. Radio Presets, Navigation Locations, etc.), that RS Setting shall be skipped
- The RSServer shall send an RSAlert to the RSOffBoardClient indicating “Applied”

4.1.2.11 RKS-REQ-361348/B-RS Settings Download – RSCommandResponse

The RSServer shall send RSCommandResponse to the RSOffBoardClient after reception of the RSCommand, indicating successful reception of the RSCommand.

4.1.2.12 RKS-REQ-361349/B-RS Settings Download – RSAlert

The RSServer shall send an RSAlert to the RSOffBoardClient to indicate any of the following:

1. That the RS Settings payload has failed to be applied. This may be due to one of the following reasons:
    - The payload is corrupt/invalid or timestamp is old/invalid (“Payload Corrupted”)
        - This shall trigger a re-download from the RSOffBoardClient
    - Master Reset has been performed (“Master Reset Interrupted”)
        - This may trigger a re-download from the RSOffBoardClient
2. That the RS Settings payload has been successfully applied
    - An additional indicator of “No User Response” shall also be sent per REQ-361357

4.1.2.13 RKS-REQ-367354/A-RS Settings Download - Rejecting RSCommand

The RSServer shall reject any incoming RSCommands once the user has been validated and the RS Process has been initiated. The RSServer shall send an RSCommandResponse to the RSOffBoardClient indicating “Failed” due to “Command Already In Progress.”

4.2 RKS-FUN-REQ-361371/A-RS Process

4.2.1 Use Cases

4.2.1.1 RKS-UC-REQ-361474/B-User accepts and continues RS process on RSServer

Actors	Vehicle Occupant, RSOffBoardClient, RSServer
Pre-conditions	Powermode conditions are met RS Settings downloaded User is validated
Scenario Description	User is presented with RS Welcome screen and presses Accept
Post-conditions	RSServer continues RS process and leads user to create a Driver Profile. Upon completion, Driver Profile is created and all RS Settings are applied.
List of Exception Use Cases	
Interfaces	G-HMI, FTCP, CAN, SoA

4.2.1.2 RKS-UC-REQ-361475/B-User accepts and fails to complete RS process on RSServer

Actors	Vehicle Occupant, RSServer
Pre-conditions	Powermode conditions are met RS Settings downloaded User is validated
Scenario Description	User is presented with RS Welcome screen and presses Accept. RSServer continues RS process and leads user to create a Driver Profile. User leaves/aborts the RS process.
Post-conditions	RSServer aborts RS process and offers a retry at the next ignition cycle.
List of Exception Use Cases	
Interfaces	G-HMI, FTCP

4.2.1.3 RKS-UC-REQ-361476/B-User denies RS process on RSServer

Actors	Vehicle Occupant, RSServer
Pre-conditions	Powermode conditions are met RS Settings downloaded User is validated
Scenario Description	User is presented with RS Welcome screen and presses Deny
Post-conditions	RSServer exits the RS process and deletes the RS Settings. No retries are given.
List of Exception Use Cases	
Interfaces	G-HMI, FTCP

4.2.1.4 RKS-UC-REQ-361477/B-User postpones RS process on RSServer

Actors	Vehicle Occupant, RSServer
Pre-conditions	Powermode conditions are met

	RS Settings downloaded User is validated Retry counter is not maxed out
Scenario Description	User is presented with RS Welcome screen and presses Postpone
Post-conditions	RSServer exits the RS process and offers a retry at next ignition cycle.
List of Exception Use Cases	
Interfaces	G-HMI, FTCP

4.2.1.5 RKS-UC-REQ-361478/B-User postpones RS process on RSServer (last retry)

Actors	Vehicle Occupant, RSServer
Pre-conditions	Powermode conditions are met RS Settings downloaded User is validated Retry counter is maxed out
Scenario Description	User is presented with RS Welcome screen and presses Postpone
Post-conditions	RSServer exits the RS process and deletes RS Settings. No retries are given.
List of Exception Use Cases	
Interfaces	G-HMI, FTCP

4.2.1.6 RKS-UC-REQ-361479/A-RS & Master Reset – Before RS Settings applied

Actors	Vehicle Occupant, RSOffBoardClient, RSServer
Pre-conditions	Powermode conditions are met RS Settings downloaded
Scenario Description	User navigates to Reset menu and presses Master Reset
Post-conditions	RSServer deletes the RS Settings, reboots, and request another download.
List of Exception Use Cases	
Interfaces	G-HMI, FTCP

4.2.1.7 RKS-UC-REQ-361480/B-RS & Master Reset – After RS Settings applied

Actors	Vehicle Occupant, RSServer
Pre-conditions	Powermode conditions are met RS Settings downloaded and applied
Scenario Description	User navigates to Reset menu and presses Master Reset
Post-conditions	RSServer deletes all data per Master Reset and reboots. No download is requested.
List of Exception Use Cases	
Interfaces	G-HMI, FTCP

4.2.2 Requirements

4.2.2.1 RKS-REQ-361353/A-RS Process

The RSServer shall implement and monitor an “RS Process” which is the in-vehicle procedure (start to finish) required to successfully complete the application of RS Settings. This process shall begin with the offering of the RS Welcome Screen and end with the successful creation of an Enhanced Memory Profile.

4.2.2.2 RKS-REQ-361340/A-Powermode Conditions – RS Settings Application

The RSServer shall allow the RS Settings to be applied only when the following preconditions are met (same preconditions as Enhanced Memory (see ENMEM-REQ-099699):

- IgnitionStatus_St = Run
- GearPosition = Park
- VehicleSpeed <= Driver Restrictions Threshold

4.2.2.3 RKS-REQ-361350/A-HMI – Display RS Welcome Screen

The RSServer shall display the RS Welcome Screen when the identified user has been validated (by either BLE Auto-pairing or Manual BT pairing).

4.2.2.4 RKS-REQ-361352/A-HMI – RS Welcome Screen Button Selections

The RSServer shall display and allow the user to select one of the below inputs on the RS Welcome Screen (not literal button text):

- Accept
- Deny
- Postpone

4.2.2.5 RKS-REQ-361351/B-Validate Identified User

The RSServer shall validate the identified user (via BLE) by comparing the MAI from the BLE pairing process (see REQ-XXXXXX of the BT Phone SPSS) against the Profile ID (Feature Number 0x0028) provided in the RS Settings payload.

If the identified user cannot be validated, the RSServer shall not show the RS Welcome Screen.

4.2.2.6 RKS-REQ-361354/A-RS Process Abort - Conditions

The RS Process shall utilize the abort conditions of Enhanced Memory (see ENMEM-REQ-116802).
For reference (refer to Enhanced Memory SPSS for the most up to date conditions):

- IgnitionStatus_St != Run
- GearPosition != Park
- VehicleSpeed > Driver Restrictions threshold
- User initiates an HMI domain change
- Infotainment System Reset

4.2.2.7 RKS-REQ-361355/A-RS Process Abort - Retry Strategy

If the RS Process is aborted any time after the user selects Accept, the RSServer shall continue to save the RS Settings until a subsequent and successful RS Process attempt is made. The retry strategy for an abort shall be the same as that of a Postpone selection made by the user (see REQ-361360).

Note: Upon an abort, any progress made within the Enhanced Memory profile creation process is deleted, a profile will not be created (see ENMEM-REQ-116802).

4.2.2.8 RKS-REQ-372250/A-RS Process Pause

The RSServer shall pause the application process (ex. applying of radio presets) as permitted by Enhanced Memory. One example of this is during an incoming/accepted phone call.

4.2.2.9 RKS-REQ-361356/B-RS Process - Accept

When Accept is selected on the RSServer, the RSServer shall initiate/use the existing Enhanced Memory profile creation process. The RSServer shall:

- Enable the Enhanced Memory feature if no prior profiles have been created
- Parse the RS Settings payload as needed/required
- Preload the Driver Profile Name with that from the RS Settings
- Preload the Photo/Avatar with that from the RS Settings
- If no DSM is present, automatically select and use the next available PersIndex for the remainder of the profile creation process
- Apply the rest of the RS Settings per REQ-362423
- Send the RSAlert to the RSOffBoardClient indicating “Applied”

4.2.2.10 RKS-REQ-361357/B-RS Process - Deny

When Deny is selected on the RSServer, the RSServer shall not apply the RS Settings or create a Driver Profile, but shall instead:

- Delete the saved RS Settings
- Send the RSAlert to the RSOffBoardClient indicating “Failed” due to ”No User Response”

4.2.2.11 RKS-REQ-361358/A-RS Process - Postpone (under N_Postpone)

When Postpone is selected on the RSServer and N_Postpone has not been reached, the RSServer shall:

- Close the RS Welcome Screen
- Increment the Postpone counter

4.2.2.12 RKS-REQ-361360/B-RS Process – Postpone Retry

When Postpone is selected, a retry strategy shall be performed. The retry strategy is as follows:

1. If the Postpone counter is less than N_Postpone (Counter < N_Postpone), the RSServer shall display the RS Welcome Screen to the user at the next Ignition Cycle (transition from IgnitionStatus = Off to Run), so long as the user has first been validated per REQ-361351. If not validated, the RS Welcome Screen shall not be shown.
2. If the Postpone counter is equal to N_Postpone (Counter = N_Postpone), the RSServer shall offer the RS Welcome Screen as in #1, but not include/show the Postpone button (only Accept/Deny).

4.2.2.13 RKS-REQ-361361/A-RS Process – Postpone Counter

The RSServer shall have a counter to monitor the number of postpone retries the user has completed. The counter shall be persisted through ignition cycles, battery disconnects, loss of power, etc. The number of retries offered shall be defined by N_Postpone.

4.2.2.14 RKS-REQ-361398/A-N_Postpone

Name	Description	Units	Range	Resolution	Default
N_Postpone	Maximum number of postpone retries offered to the user. Note: Use the default value.		0-30	1	20

4.2.2.15 RKS-REQ-362419/B-RS Process – Rocket Setup Complete Flag

When the RS Process is complete, the RS Settings have been applied, and an Enhanced Memory Driver Profile has been created, the RSServer shall set a completion flag true, RocketSetupComplete = True. This flag shall be set to False by default until the above has occurred. The RSServer shall persist the flag through ignition cycles, battery disconnects, loss of power, software updates, etc.). This flag shall be cleared (set to False) when a Master Reset is performed.

When the RocketSetupComplete flag is set to True, any subsequent RS Settings payloads and RSCommand’s containing new RS Settings received by the RSServer shall be ignored and not applied. The RSServer shall send an RSCommandResponse indicating “Failed” due to “Command Not Permitted” in this case. Only one profile shall be successfully applied for the life of the RSServer.

4.2.2.16 RKS-REQ-361362/B-Master Reset before RS Process Success

If a Master Reset occurs before the RSServer has successfully completed the RS Process, the RSServer shall:

- Delete the RS Settings payload
- Reset all counters and timers specific to this feature (ex. N_Postpone, T_Persist)
- Send the RSAlert to the RSOffBoardClient indicating “Failed” due to “Master Reset Interrupted”

Note: The RSOffBoardClient will determine whether a re-download is to be performed or not (this is based on a timer it maintains and initiates when the purchase event occurs).

4.2.2.17 RKS-REQ-361363/B-Master Reset after RS Process Success

If a Master Reset occurs any time after the RSServer has successfully completed the RS Process, the RSServer shall:

- Delete the RS Settings payload if it has not yet already been deleted
- Reset all counters and timers specific to this feature (ex. N_Postpone, T_Persist)
- Reset the Rocket Setup Complete Flag

4.3 RKS-FUN-REQ-361374/A-Applying RS Settings

4.3.1 Use Cases

4.3.1.1 RKS-UC-REQ-362592/A-RSServer applies RS Settings

Actors	RSServer, RSClient
Pre-conditions	Powermode conditions are met RS Settings downloaded User Accepted RS Welcome screen RS Process in progress
Scenario Description	RSServer begins to apply RS Settings within the Enhanced Memory Driver Profile creation process. RSServer steps through each of the RS Settings, requesting to save each either internally or from the applicable RSClient(s).
Post-conditions	RSServer and RSClient(s) save the requested RS Setting.
List of Exception Use Cases	
Interfaces	G-HMI, CAN, SoA

4.3.2 Requirements

4.3.2.1 RKS-REQ-362423/A-RS Settings – Time to Apply the RS Settings

During the RS Process, the RSServer shall only apply the RS Settings after the following has occurred (events from Enhanced Memory):

1. The Copy Operation has been issued (per ENMEM-REQ-198923-Copy Request)
2. All profile data required by Enhanced Memory has been saved (per ENMEM-REQ-198920-Execute Copy Operation)
3. A Recall of the new driver profile has been requested (per ENMEM-REQ-198918B-Recall New Driver Profile After Copy)
4. All profile data for the recalled profile has been loaded (per ENMEM-REQ-099673-Driver Profile Settings Recall)

Note: Once the recall is complete, the RS Settings will be applied to the active profile. The newly created profile must be active before applying the RS Settings; otherwise, the RS Settings will be applied to the previously active profile. The RS Settings will then be saved to the active profile when the RSServer and RSClients persist their settings per Enhanced Memory.

4.3.2.2 Profile Name

4.3.2.2.1 RKS-REQ-361364/A-RS Settings – Profile Name

The RSServer shall receive one Profile Name from the RS Settings payload.

4.3.2.2.2 RKS-REQ-362424/B-RS Settings – Profile Name Format

The RSServer shall receive the Profile Name in String format and it shall consist of no more than 20 characters.

RS Setting	RS Setting Payload – Packet Format		Range (in-vehicle)
	Feature Number (FeatNum)	Data Value (DatVal)	
Profile Name	0x0024	String	0-20 chars

4.3.2.2.3 RKS-REQ-362425/B-RS Settings – Profile Name Usage

During the RS Process, the RSServer shall use/preload 0x0024:"DataValue" in:

- the RS Welcome Screen greeting
- the Enhanced Memory Driver Profile Name entry screen

4.3.2.2.4 RKS-REQ-362426/A-RS Settings – Profile Name Edit

The RSServer shall allow the user to edit the Profile Name in the Enhanced Memory Driver Profile Name entry screen (as per normal Enhanced Memory procedure). If the user decides to change the Profile Name, the new name shall be used for the remainder of the RS Process.

4.3.2.2.5 RKS-REQ-362427/B-RS Settings – Failure to Apply Profile Name

If the RSServer cannot save or use the requested Profile Name for whatever reason (parameters invalid, parameters corrupt, etc.), the RSServer shall not display or prepopulate any Profile Name as required in REQ-362425. The RSServer shall instead:

- Display “Welcome” in the RS Welcome Screen
- Not populate a Profile Name in the Enhanced Memory Driver Profile Name entry screen (rely on the user to manually enter a profile name)

4.3.2.3 Profile Photo

4.3.2.3.1 RKS-REQ-361365/A-RS Settings – Profile Photo

The RSServer shall receive one Profile Photo from the RS Settings payload as well as a URL from which a larger photo/image may be accessed (URL not currently used).

4.3.2.3.2 RKS-REQ-362428/B-RS Settings – Profile Photo Format

The RSServer shall receive the Profile Photo in Bytes and shall be no larger than 80 KB.

- The photo format may be of the following types: Jpeg
- The photo may be encoded using the following encoding type: Base 64

RS Setting	RS Setting Payload – Packet Format		Range (in-vehicle)
	Feature Number (FeatNum)	Data Value (DatVal)	
Profile Photo	0x0025	Bytes	80kb
Profile Photo URL	0x0026	TBD	TBD

4.3.2.3.3 RKS-REQ-362429/B-RS Settings – Profile Photo Usage

During the RS Process, the RSServer shall use/preload the 0x0025:”DataValue” in:

- the RS Welcome Screen greeting
- the Enhanced Memory Driver Profile Photo entry screen

4.3.2.3.4 RKS-REQ-362430/A-RS Settings – Profile Photo Edit

The RSServer shall allow the user to edit the Profile Photo in the Enhanced Memory Driver Profile Photo entry screen. If the user decides to change the Profile Photo, the new photo shall be used for the remainder of the RS Process.

4.3.2.3.5 RKS-REQ-362431/B-RS Settings – Failure to Apply Profile Photo

If the RSServer cannot save or use the requested Profile Photo for whatever reason (parameters invalid, parameters corrupt, etc.), the RSServer shall use the “Profile Name Initials” avatar as the default Profile Photo.

4.3.2.4 Navigation Favorites

4.3.2.4.1 RKS-REQ-361366/B-RS Settings – Navigation Favorites

The RSServer shall receive one Home Favorite, one Work Favorite (if applicable), and up to ten additional Favorites from the RS Settings payload.

4.3.2.4.2 RKS-REQ-362432/B-RS Settings – Navigation Favorites Parameters/Format

The RSServer shall receive the Navigation Favorites as a collection of required and optional data parameters, formatted as indicated below, with their relative max values.

RS Setting	RS Setting Payload – Packet Format		Range (in-vehicle)
	Feature Number (FeatNum)	Data Value (DatVal)	
Home - Location Name	0x0345	String	0-200 chars
Home - Phone Number	0x0346	String	0-20 chars
Home - City	0x0347	String	0-50 chars
Home - Subcity	0x0348	String	0-50 chars
Home - State/Province	0x0349	String	0-100 chars
Home - Door Number	0x034A	String	0-50 chars
Home - Street Name	0x034B	String	0-100 chars
Home - Cross Street Name	0x034C	String	0-100 chars
Home - Zip Code/Postal Code	0x034D	String	0-10 chars
Home - Country	0x034E	String	0-50 chars
Home - Latitude	0x034F	Double	8 bytes
Home - Longitude	0x0350	Double	8 bytes
>> The set above is repeated for each additional favorite			
Work	0x0351 - 0x035C	-	-
Favorite 1	0x035D - 0x0368	-	-
Favorite 2	0x0369 - 0x0374	-	-
Favorite 3	0x0375 - 0x0380	-	-
Favorite 4	0x0381 - 0x038C	-	-
Favorite 5	0x038D - 0x0398	-	-
Favorite 6	0x0399 - 0x03A4	-	-
Favorite 7	0x03A5 - 0x03B0	-	-
Favorite 8	0x03B1 - 0x03BC	-	-
Favorite 9	0x03BD - 0x03C8	-	-
Favorite 10	0x03C9 - 0x03D4	-	-

4.3.2.4.3 RKS-REQ-362433/B-RS Settings – Required Navigation Favorite Parameters

The RS Settings payload includes both optional and required parameters for Navigation Favorites. The minimal parameters required by the RSServer (in order to save a Navigation Favorite) shall be:

Favorite #	RS Setting	Required/Optional
Home, Work, Favorite 1-10	Location Name	Required
	Phone Number	Required
	City	Required
	Subcity	Required
	State/Province	Required
	Door Number	Required
	Street Name	Required
	Cross Street Name	Required
	Zip Code/Postal Code	Required
	Country	Required
	Latitude	Required
	Longitude	Required

4.3.2.4.4 RKS-REQ-362434/B-RS Settings – Applying the Navigation Favorites

The RSServer shall request the Nav Application to save each favorite provided in the RS Settings payload using saveNavLocation.

The RSServer shall request saveNavLocation with the following parameters for a given favorite:

- RequestID = any unique int32 value used to correlate the response
- Location Name = “Favorite# - Location Name”:“DataValue”
  - ex. For Home, the value pair is 0x0345: “DataValue”
- Phone Number = “Favorite# - Phone Number”:“DataValue”
  - ex. For Home, the value pair is 0x0346: “DataValue”
- City = “Favorite# - City”:“DataValue”
  - ex. For Home, the value pair is 0x0347: “DataValue”
- SubCity = “Favorite# - SubCity”:“DataValue”
  - ex. For Home, the value pair is 0x0348: “DataValue”
- State = “Favorite# - State”:“DataValue”
  - ex. For Home, the value pair is 0x0349: “DataValue”
- Door Number = “Favorite# - Door Number”:“DataValue”
  - ex. For Home, the value pair is 0x034A: “DataValue”
- Street Name = “Favorite# - Street Name”:“DataValue”
  - ex. For Home, the value pair is 0x034B: “DataValue”
- Cross Street Name = “Favorite# - Cross Street Name”:“DataValue”
  - ex. For Home, the value pair is 0x034C: “DataValue”
- ZIP Code = “Favorite# - ZIP Code”:“DataValue”
  - ex. For Home, the value pair is 0x034D: “DataValue”
- Country = “Favorite# - Location Country”:“DataValue”
  - ex. For Home, the value pair is 0x034E: “DataValue”
- Latitude = “Favorite# - Latitude”:“DataValue”
  - ex. For Home, the value pair is 0x034F: “DataValue”
- Longitude = “Favorite# - Longitude”:“DataValue”
  - ex. For Home, the value pair is 0x0350: “DataValue”

The RSServer may issue requests in parallel or wait for a response before requesting to save subsequent favorites. The response shall indicate either a success or failure along with the correlated RequestID, however the RSServer is not required to take any action on a failed response at this time.

4.3.2.4.5 RKS-REQ-362435/A-RS Settings – Failure to Apply Navigation Favorites

If the Nav Application cannot save the requested Navigation Favorite for whatever reason (parameters invalid, parameters corrupt, address cannot be found, etc.), the Nav Application shall not perform a retry and shall skip the requested Navigation Favorite.

4.3.2.4.6 RKS-REQ-362436/B-RS Settings – Multiple Addresses Found for a Navigation Favorite

If the Nav Application finds multiple addresses for the requested Navigation Favorite, the Nav Application shall skip the requested Navigation Favorite.

4.3.2.4.7 RKS-REQ-367359/A-RS Settings – Max Saved Locations Occupied

If all of the allowable saved locations are occupied, the Nav Application shall overwrite as many locations as requested from the RSServer

4.3.2.4.8 RKS-REQ-362437/A-RS Settings – Nav Application Welcome Screen

If the Nav Application has a Welcome Screen or any such user interface that asks the user for any of the Navigation Parameters offered by the RocketSetup feature, the following shall be performed:

- If the RS Settings have been applied, the Nav Application shall remove/configure off their Welcome Screen.
- If the RS Settings have not been applied, the Nav Application shall offer their Welcome Screen and user entry per normal operation.

4.3.2.5 Radio Presets

4.3.2.5.1 RKS-REQ-361367/A-RS Settings – Radio Presets

The RSServer shall receive up to ten Radio Presets from the RS Settings payload.

4.3.2.5.2 RKS-REQ-372296/A-RS Settings - NA vs EU Preset Determination

For the preset requirements to follow, the RSServer shall use the below to determine whether the following presets types are available (and therefore which application method to follow) based on the configurations listed:

- **North American AM/FM:** DE00 Byte 2 Bit 6 = "0 – Non RDS Market"
- **North American SDARS:** DE00 Byte 1 Bit 5 = "1 – SDARS HMI and DTCs Enabled"
- **European FM:** DE00 Byte 2 Bit 6 = "1 – RDS Market"
- **European DAB:** DE00 Byte 1 Bit 0 = "1 – Available"

If the RS Settings Payload contains radio preset information for a region that the RSServer is not configured for, the RSServer shall ignore/skip those radio presets.

- Ex. The RS Settings Payload contains European DAB radio presets when the RSServer is configured for North American SDARS.

4.3.2.5.3 RKS-REQ-362446/B-RS Settings – Radio Presets Parameters/Format

The RSServer shall receive the Radio Presets as a collection of optional and required data parameters, formatted as indicated below, with their relative possible values.

RS Setting	RS Setting Payload – Packet Format		Range (in-vehicle)
	Feature Number (FeatNum)	Data Value (DatVal)	
Preset 1 – Frequency	0x021D	uint (500000 -108100000)	(500000-1600000) and (88100000-108100000)
Preset 1 – Band Type	0x021E	0x1, 0x5, 0x7, 0x9	0x1-0xC (1-FM1, 5-AM, 7-DAB, 9-SAT1)
Preset 1 – HDNumber	0x021F	0x1-0x7	0x1-0x7 (1-MC1, 2-MC2, 3-MC3, etc.)
Preset 1 – SID	0x0220	0x0001 – 0xFFFF	0x0001 – 0xFFFF
Preset 1 – ChannelID	0x0221	uint (0-9999)	0-9999
Preset 1 – Station Name	0x0222	String	16 chars
Preset 1 – PI Code	0x0223	0x0001 – 0xFFFF	0x0001 – 0xFFFF
>> The set above is repeated for each additional preset			
Preset 2	0x0224 - 0x022A	-	-
Preset 3	0x022B - 0x0231	-	-
Preset 4	0x0232 - 0x0238	-	-
Preset 5	0x0239 - 0x023F	-	-
Preset 6	0x0240- 0x0246	-	-
Preset 7	0x0247 - 0x024D	-	-
Preset 8	0x024E - 0x0254	-	-
Preset 9	0x0255 - 0x025B	-	-
Preset 10	0x025C - 0x0262	-	-

4.3.2.5.4 RKS-REQ-362447/B-RS Settings - Required NA AM/FM Radio Preset Parameters

The RS Settings payload includes both optional and required parameters for Radio Presets. The minimal parameters required by the RSServer (in order to save a North American AM/FM Radio Preset) shall be:

Radio Preset #	Parameter	Required/Optional
Radio Preset 1-10	Frequency	Required

	Band Type	Required
	HDNumber	Optional
	SID	N/A
	ChannelID	N/A
	Station Name	N/A
	PI Code	N/A

4.3.2.5.5 RKS-REQ-362448/B-RS Settings - Required NA SDARS Radio Preset Parameters

The RS Settings payload includes both optional and required parameters for Radio Presets. The minimal parameters required by the RSServer (in order to save a North American SDARS Radio Preset) shall be:

Radio Preset #	Parameter	Required/Optional
Radio Preset 1-10	Frequency	N/A
	Band Type	Required
	HDNumber	N/A
	SID	Required
	ChannelID	Required (IP Channels)
	Station Name	N/A
	PI Code	N/A

4.3.2.5.6 RKS-REQ-362449/B-RS Settings - Required EU FM/DAB Radio Preset Parameters

The RS Settings payload includes both optional and required parameters for Radio Presets. The minimal parameters required by the RSServer (in order to save a European DAB/FM Radio Preset) shall be:

Radio Preset #	Parameter	Required/Optional
Radio Preset 1-10	Frequency	Required (FM only)
	Band Type	Required
	HDNumber	N/A
	SID	Required (DAB only)
	ChannelID	N/A
	Station Name	Required
	PI Code	Required (FM only)

4.3.2.5.7 RKS-REQ-362450/A-RS Settings – Muting while Applying Radio Presets

When the RSServer is required to apply the Radio Presets, it shall mute the Media audio by using the SYNC_Alerts message and setting Attn_Info_Audio = “Attenuation_6” (full mute). Follow the attenuation strategy as defined in ALERT-FUN-REQ-014794-Audio Attenuation/Muting Strategy. For the attenuation for this feature, follow the Screen Interruption Table entry for Enhanced Memory and only allow interrupt events as required (see H22a_SYNC_4_Screen_Interruption_Table).

- TBD muted mixable prompts to avoid issues? If so, also reference ALERT-FUN-REQ-014780-Mixable Prompts. – We’ll need to test on AHU/DSP to make sure sending only the attenuation request is enough.

4.3.2.5.8 RKS-REQ-362451/A-RS Settings – UnMuting after Applying Radio Presets

When the RSServer has finished applying all of the Radio Presets, it shall unmute the Media audio by using the SYNC_Alerts message and setting Attn_Info_Audio = “No Attenuation of Audio.” Follow the attenuation strategy as defined in ALERT-FUN-REQ-014794-Audio Attenuation/Muting Strategy.

4.3.2.5.9 RKS-REQ-362452/A-RS Settings – Applying Radio Presets by Band Type

When the RSServer is required to apply the Radio Presets, it shall do so by applying each Radio Preset based on its Band Type, regardless of Preset Position (but still maintaining Preset Position). The RSServer shall apply the Radio Presets by Band Type in the following order:

- AM (analog)

- AM (multicast/HD)
- FM (analog)
- FM (multicast/HD)
- SDARS / DAB
- SDARS (IP Channels)

Note: This is done to reduce the number of band/source changes, expediting the process.

4.3.2.5.10 RKS-REQ-362453/B-RS Settings – Applying NA AM/FM Radio Presets

The RSServer shall utilize the existing AM/FM Radio Preset interfaces per AMFM-IIR-REQ-023795-AMFM Slave CAN Request and AMFM-IIR-REQ-023797-AMFM Slave CAN Status.

If the Radio Preset being requested is an AM or FM station (indicated by Band Type = “0x5 - AM” or “0x1 - FM1”) for a vehicle in North America, the RSServer shall:

1. Direct Tune to the Radio Preset frequency by setting and sending the below signals to the RSClient (see AMFM-SD-REQ-023838-Direct Station Selection):
    a. SetCurrentStat.Rq: Operation = “0x1 - Set Current Frequency”
    b. SetCurrentStat.Rq: Frequency = “Offset”
        i. See “Offset” under SetCurrentStat.Rq in AMFM-IIR-REQ-023797-AMFM Slave CAN Status (RSServer must calculate and use Offset, using the provided “Preset# - Frequency”:“DataValue”)
    c. SetCurrentStat.Rq: PICode = “Preset# - PI Code”:“DataValue”
        i. ex. For Preset1-PI Code, the value pair is 0x0223: “DataValue”
    d. SetCurrentStat.Rq: MCChannel = “Preset# - HDNumber”:“DataValue” (if applicable)
        i. ex. For Preset1-HDNumber, the value pair is 0x021F:“DataValue”
    e. **Note:** if the active band type is different than the one being requested, a SetCurrTUBand.Rq = “Preset# - Band Type”:“DataValue” shall be issued (per above ref. diagram)

2. Wait for the RSClient to respond with the below, indicating the Radio Preset frequency has been tuned to:
    a. CurrentTUBand.St = Band Type
    b. DirectTune.St = “0x2 - Valid Station”
    c. CurrentFreq.St = Offset
        i. See “Offset” under CurrentFreq.St in AMFM-IIR-REQ-023797-AMFM Slave CAN Status
    d. CurrentHDMulticast.St = HDNumber (if applicable)
    e. CurrentPICode.St = PI Code

3. Request a Store Preset operation by settings and sending the below signals to the RSClient (see AMFM-SD-REQ-023861-Store Preset):
    a. StorePreset2.Rq = Preset#

4. Wait for the RSClient to respond with the below, indicating the Radio Preset has been successfully stored:
    a. StorePreset.St = Preset#
    b. CurrentPreset2.St = Preset#

5. Repeat steps 1-4 for all AM or FM Radio Presets provided in the RS Settings payload

Reference requirements:
AMFM-IIR-REQ-023795-AMFM Slave CAN Request
AMFM-IIR-REQ-023797-AMFM Slave CAN Status
AMFM-SD-REQ-023838-Direct Station Selection
AMFM-SD-REQ-023861-Store Preset

4.3.2.5.11 RKS-REQ-362454/B-RS Settings – Applying NA SDARS Radio Presets

The RSServer shall utilize the existing SDARS Radio Preset interfaces per AMFM-IIR-REQ-023795-AMFM Slave CAN Request, AMFM-IIR-REQ-023797-AMFM Slave CAN Status, SDARS-IIR-REQ-195704-SDARSClient_Tx and SDARS-IIR-REQ-210911-SDARSRemoteServer_Rx.

If the Radio Preset being requested is an SDARS station (indicated by Band Type = “0x9 - SAT1”) for a vehicle in North America, the RSServer shall:

1. Direct Tune to the “Preset# - SID”:“DataValue” or “Preset# - ChannelID”:“DataValue” (see SDARSv2-SD-REQ-195749-Direct Channel Selection).
    a. For SDARSv2, the RSServer tunes internally, therefore, the RSServer shall internally tune to the SID or ChannelID provided.
    b. **Note:** if the active band type is different than the one being requested, a SetCurrTUBand.Rq = “Preset# - Band Type”:“DataValue” shall be issued (per above ref. diagram)

2. The Store Preset operation shall not be issued until the RSServer has updated the below signals after tuning to the SID/ChannelID (per SDARS-FUR-REQ-196124-Presets):
    a. ServiceID2.St
    b. CurrentChanNum2.St
    c. ChannelName.St

3. Request a Store Preset operation by settings and sending the below signals to the RSClient (see SDARSv2-SD-REQ-195723-Store SDARS Preset):
    a. StorePreset2.Rq = Preset#

4. Wait for the RSClient to respond with the below, indicating the Radio Preset has been successfully stored:
    a. StorePreset.St = Preset#
    b. CurrentPreset2.St = Preset#

5. Repeat steps 1-4 for all SDARS Radio Presets provided in the RS Settings payload

Reference requirements:
AMFM-IIR-REQ-023795-AMFM Slave CAN Request
AMFM-IIR-REQ-023797-AMFM Slave CAN Status
SDARS-IIR-REQ-195704-SDARSClient_Tx
SDARS-IIR-REQ-210911-SDARSRemoteServer_Rx
SDARSv2-FUN-REQ-195747-Direct Tune
SDARSv2-SD-REQ-195749-Direct Channel Selection
SDARS-FUR-REQ-196124-Presets
SDARSv2-SD-REQ-195723-Store SDARS Preset
SDARSv2-FUN-REQ-195721-Store Preset

4.3.2.5.12 RKS-REQ-362455/B-RS Settings – Applying EU FM/DAB Radio Presets

The RSServer shall utilize the existing FM/DAB Radio Preset interfaces per AMFM-IIR-REQ-023795-AMFM Slave CAN Request, AMFM-IIR-REQ-023797-AMFM Slave CAN Status, TU-IIR-REQ-299207-TunerClient-TunerServer, TU-IIR-REQ-299209-TunerServer-TunerClient, TU-FUN-REQ-268693-Station List Selection.

If the Radio Preset being requested is an FM station (indicated by “Preset# - Band Type”: “0x1 - FM1”) for a vehicle in Europe, the RSServer shall:

1. Request a tune to the FM Radio Preset via “Station List Selection” by setting and sending the below signals to the RSClient (see TU-SD-REQ-268244-Select Station From Station List Via Voice Command):
    a. SelectStation_Rq:RequestSelector = “0x1 - PI-Code”
    b. SelectStation_Rq:PI-Code = “Preset# - PI Code”:“DataValue”
        i. ex. For Preset1-PI Code, the value pair is 0x0223: “DataValue”
    c. SelectStation_Rq:SCID = “0x0000 - Inactive”
    d. SelectStation_Rq:SID = “0x0000 - Inactive”
    e. SelectStation_Rq:ECC = “0x00 - Inactive”
    f. **Note:** the band type will change automatically if needed.

2. Wait for the RSClient to respond with the below, indicating the FM Radio Preset frequency has been tuned to:
    a. SelectStation_Rsp:ResponseCode = “0x2 - Accepted”

3. Request a Store Preset operation by settings and sending the below signals to the RSClient (see AMFM-SD-REQ-023861-Store Preset, DAB-SD-REQ-024405-Store Preset):
    a. StorePreset2.Rq = Preset#

4. Wait for the RSClient to respond with the below, indicating the Radio Preset has been successfully stored:
    a. StorePreset.St = Preset#
    b. CurrentPreset2.St = Preset#

5. Repeat steps 1-4 for all FM Radio Presets provided in the RS Settings payload

If the Radio Preset being requested is a DAB station (indicated by "Preset# - Band Type":"0x7 - DAB1") for a vehicle in Europe, the RSServer shall:

1. Request a tune to the DAB Radio Preset via "Station List Selection" by setting and sending the below signals to the RSClient (see TU-SD-REQ-268244-Select Station From Station List Via Voice Command):
    a. SelectStation_Rq:RequestSelector = "0x2 - SCIDI_SID_EEC"
    b. SelectStation_Rq:PI-Code = "0x0000 - Inactive"
    c. SelectStation_Rq:SCID = "0x0000 - Inactive"
    d. SelectStation_Rq:SID = "Preset# - SID":"DataValue"
    e. SelectStation_Rq:EEC = "0x0000 - Inactive"
    f. **Note:** the band type will change automatically if needed.

2. Wait for the RSClient to respond with the below, indicating the DAB Radio Preset has been tuned to:
    a. SelectStation_Rsp:ResponseCode = "0x2 - Accepted"

3. Request a Store Preset operation by settings and sending the below signals to the RSClient (see AMFM-SD-REQ-023861-Store Preset, DAB-SD-REQ-024405-Store Preset):
    a. StorePreset2.Rq = Preset#

4. Wait for the RSClient to respond with the below, indicating the Radio Preset has been successfully stored:
    a. StorePreset.St = Preset#
    b. CurrentPreset2.St = Preset#

5. Repeat steps 1-4 for all DAB Radio Presets provided in the RS Settings payload

Reference requirements:
AMFM-IIR-REQ-023795-AMFM Slave CAN Request
AMFM-IIR-REQ-023797-AMFM Slave CAN Status
TU-IIR-REQ-299207-TunerClient-TunerServer
TU-IIR-REQ-299209-TunerServer-TunerClient
DAB-FUN-REQ-024402-Store DAB Preset
AMFM-SD-REQ-023861-Store Preset
DAB-SD-REQ-024405-Store Preset
TU-SD-REQ-268244-Select Station From Station List Via Voice Command
TU-FUN-REQ-268693-Station List Selection

4.3.2.5.13 RKS-REQ-362456/A-RS Settings – Failure to Tune to a Radio Preset

If the RSServer cannot tune to the requested Radio Preset, the RSServer shall:

- For AM/FM HD channels in North America
    - Tune to the analog frequency and store it instead (repeat same process in REQ-362453 but with CurrentHDMulticast.St = "0x0 - 0")
- For SDARS channels in North America
    - Skip the preset
- For FM/DAB in Europe
    - Store the frequency, regardless of active station

4.3.2.5.14 RKS-REQ-362457/A-RS Settings – Failure to Apply a Radio Preset

After sending StorePreset2.Rq, if the RSServer receives StorePreset.St set to any value other than the requested preset number, the RSServer shall not perform a retry and shall skip that Radio Preset.

4.3.2.6 Departure Times

4.3.2.6.1 RKS-REQ-361368/A-RS Settings – Departure Times

The RSServer shall receive up to fourteen Departure Times from the RS Settings payload.

4.3.2.6.2 RKS-REQ-362438/B-RS Settings – Departure Times Parameters/Format

The RSServer shall receive the Departure Times as a collection of required data parameters, formatted as indicated below, with their relative possible values.

RS Setting	RS Setting Payload – Packet Format		Range (in-vehicle)
	Feature Number (FeatNum)	Data Value (DatVal)	
Global Departure Time	0x0D10	0x1, 0x2	0x0-0x2 (0-Null, 1-Off, 2-On)
Element ID 1 – Hour	0x0D11	0x00-0x17	0x00-0x17 (dec: 0-23)
Element ID 1 - Minutes	0x0D12	0x0-0xB	0x0-0xB (dec: 0-55) (in increments of 5)
Element ID 1 - Precondition Setting	0x0D13	0x0-0x3	0x0-0x3 (0-Off, 1-Low, 2-Med, 3-High)
>> The set above (Hour/Min/Precondition only) is repeated for each additional Element ID			
Element ID 2	0x0D14 - 0x0D16	-	-
Element ID 3	0x0D17 - 0x0D19	-	-
Element ID 4	0x0D1A - 0x0D1C	-	-
Element ID 5	0x0D1D - 0x0D1F	-	-
Element ID 6	0x0D20 - 0x0D22	-	-
Element ID 7	0x0D23 - 0x0D25	-	-
Element ID 8	0x0D26 - 0x0D28	-	-
Element ID 9	0x0D29 - 0x0D2B	-	-
Element ID 10	0x0D2C - 0x0D2E	-	-
Element ID 11	0x0D2F - 0x0D31	-	-
Element ID 12	0x0D32 - 0x0D34	-	-
Element ID 13	0x0D35 - 0x0D37	-	-
Element ID 14	0x0D38 - 0x0D3A	-	-

4.3.2.6.3 RKS-REQ-362439/B-RS Settings – Applying the Departure Times

The RSServer shall utilize the existing EV Charge Programming interfaces per EVCS-IIR-REQ-250960-APIM Saving of Departure Times.

If the RSServer receives 0x0D10:"0x1 - Off", the RSServer shall:

1. Request the Global Departure Times be turned Off (if ChrgGoTAllOn_B_Stat = "(0x1 - Go Times On)") via:
   a. OnbChrgGoTOn_D_Rq = "0x0 - Go Times Off"
   b. OnbChrgGoTUpdate_B_Rq = "0x1 - Request"

2. Wait for the RSClient to respond with the below, indicating the Global Departure Times has been turned Off:
   a. ChrgGoTAllOn_B_Stat = "(0x0 - Go Times Off)"

3. Not request any Departure Times.

If the RSServer receives 0x0D10:"0x2 - On", the RSServer shall:

1. Request the Global Departure Times be turned On (if ChrgGoTAllOn_B_Stat = "(0x0 - Go Times Off)") via:
    a. OnbChrgGoTOn_D_Rq = "0x1 - Go Times On"
    b. OnbChrgGoTUpdate_B_Rq = "0x1 - Request"

2. Wait for the RSClient to respond with the below, indicating the Global Departure Times has been turned On:
    a. ChrgGoTAllOn_B_Stat = "(0x1 - Go Times On)"

3. Request the RSClient save the Departure Times Schedule (collection of all of the provided Departure Times) by setting and sending the following signals:
    a. OnbChrgGoTUpdate_B_Rq = "0x1 - Request"
        i. Hold this signal value until all ElementID's have been requested
    b. OnbChrgGoTElement_D_Rq = ElementID
    c. OnbChrgGoTHr_T_Rq = "Element ID # - Hour":"DataValue"
        i. ex. For Element ID 1, the value pair would be 0x0D11:"DataValue"
    d. OnbChrgGoTMnte_D_Rq = "Element ID # - Minutes":"DataValue"
        i. ex. For Element ID 1, the value pair would be 0x0D12:"DataValue"
    e. OnbChrgGoTPrcond_D_Rq = "Element ID # - Precondition Setting":"DataValue"
        i. ex. For Element ID 1, the value pair would be 0x0D13:"DataValue"
        ii. Repeat sending the signals in b, c, d, e for every ElementID provided in the RS Settings payload.
    f. OnbChrgGoTUpdate_B_Rq = "0x0 - No Request"
        i. Set this signal value after all ElementID's have been requested

4. Wait for the RSClient to respond with the below set of signals (repeated for each ElementID), indicating the Departure Times have been saved:
    a. ChrgGoTElement_D_Stat = ElementID
    b. ChrgGoTHr_T_Stat = Hour
    c. ChrgGoTMnte_D_Stat = Minutes
    d. ChrgGoTPrcond_D_Stat = Precondition Setting

Note: The Departure Times are requested by the RSServer as a set of ElementID's or a "Schedule." The RSServer must request each ElementID, with the accompanying parameters, using the above signals repeated for each ElementID. During this entire transmission, the Update flag must be sent to "Request" and set back to "No Request" when complete. The RSClient will respond after the Update flag has been cleared with the status of each ElementID, again repeated using the same set of status signals above.

Reference requirements:
EVCS-IIR-REQ-250960-APIM Saving of Departure Times
EVCS-REQ-263405-Communication - Onboard Update Flag - Charge Settings Update
EVCS-REQ-263401-Communication - Onboard Update Flag - No Update
EVCS-FUN-REQ-281551-Charge Schedule

4.3.2.6.4 RKS-REQ-362440/B-RS Settings – Failure to Apply Departure Times

If the RSServer cannot save the requested Departure Times for whatever reason (failure from OnBoardChargeSchedulerServer, etc.), the RSServer shall not perform a retry and shall skip the requested Departure Time.

4.3.2.7 Drive Mode

4.3.2.7.1 RKS-REQ-364513/A-RS Settings – Drive Mode

The RSServer shall receive one Drive Mode Setting from the RS Settings payload.

4.3.2.7.2 RKS-REQ-364514/A-RS Settings – Drive Mode Parameters/Format

The RSServer shall receive the Drive Mode Setting as a single required data parameter, formatted as indicated below, with its relative possible values.

RS Setting	RS Setting Payload – Packet Format	Range

	Feature Number (FeatNum)	Data Value (DatVal)	(in-vehicle)
Drive Mode	0x0E60	0x00, 0x01, 0x04	0x00-0x1E

4.3.2.7.3 RKS-REQ-364515/A-RS Settings – Applying the Drive Mode Setting

The RSServer shall request the SDM Application to select the Drive Mode Setting provided in the RS Settings payload using put internal API here (TBD).

4.3.2.7.4 RKS-REQ-364516/A-RS Settings – Failure to Apply Drive Mode Setting

If the RSServer cannot save the requested Drive Mode Setting for whatever reason (failure from DriveModeServer, etc.), the RSServer shall not perform a retry and shall skip the Drive Mode Setting.

5 Appendix: Reference Documents

Reference #	Document Title
1	Vehicle Settings APIM SPSS
2	AM_FM_HD Tuner APIM SPSS
3	DAB APIM SPSS
4	Satellite Radio v2 APIM SPSS
5	Ev Charge Programming APIM SPSS
6	Ford Telematics Communication Protocol Specification
7	FNV2-FCI Protocol SPSS
8	Rocket Setup On-Board Security Specification
9	ISO 8601 - https://www.iso.org/iso-8601-date-and-time-format.html
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