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Part of Standard Release	4.3.1

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1 SRS_ADCCDriver

1.1 Specification Item SRS_Adc_12280

Trace References:

RS_BRF_01872

Content:

Type:	Valid
Description:	The ADC Driver shall allow the following result access modes for each ADC Channel Group:
Rationale:	Every channel value shall be accessible until the next scan of the channel group is completed.
Applies to:	
Use Case:	–
Supporting Material:	BMW Specification MCAL V1.0a, MAL14.2.0–.

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

- RfC #78035: SRS requirements refer to BMW specifications

Problem description:

AUTOSAR documents shall not relate to any particular company.

The requirements below reference various BMW specifications and have to be corrected.

Document: SRS_EEPROMDriver:

[SRS_Eep_00087] The EEPROM driver shall provide an asynchronous read function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00088] The EEPROM driver shall provide an asynchronous write function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00089] The EEPROM driver shall provide an asynchronous erase function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00090] The EEPROM driver shall provide a synchronous cancel function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00091] The EEPROM driver shall provide a synchronous function which returns the job processing status

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00096] EEPROM driver static shall be configured

"Supporting Material: BMW Specification MCAL V1.0a"

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"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00094] The EEPROM driver shall handle the EEPROM memory segmentation

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00095] The EEPROM driver shall handle only one job at the same time

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12047] The EEPROM driver shall provide a function that has to be called for job processing

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12050] The job processing function of the EEPROM driver shall process only as much data as the EEPROM hardware can handle

"Supporting Material: BMW Specification MCAL V1.0a"

Document: SRS_SPALGeneral:

[SRS_SPAL_12056] All driver modules shall allow the static configuration of notification mechanism

"Supporting Material: BMW Specification MCAL V1.0a, [...]"

[SRS_SPAL_12057] All driver modules shall implement an interface for initialization

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

[SRS_SPAL_12063] All driver modules shall only support raw value mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.6.0"

[SRS_SPAL_12064] All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.2"

SRS_SPAL_12067 All driver modules shall set their wake-up conditions depending on the selected operation mode

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Document: SRS_PWMDriver:

[SRS_Pwm_12293] The PWM driver shall allow the static configuration of PWM channel properties

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4 The idle level configuration covers the active phase requirement from Hella.

[SRS_Pwm_12295] The PWM driver shall provide a service for setting the duty cycle of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.x"

[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0; Kojak movies (in case you do not know Kojak)"

Document: SRS_BSWGeneral:

Chapter 5 "General Requirements on Basic Software"

The ECU application experience is taken from the following concrete applications:

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ESP ECU

BMW, DC and VW standard software packages (Standard Core, Standard Software Platform, Standard Software Core) including OSEK OS, communication modules, bootloader, basic diagnostic functions for the domains listed above

Infotainment control ECU

[SRS_BSW_00305] Data types naming convention

"Supporting Material: BMW Standard Core Programming Guidelines"

Document: SRS_COM:

[SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, particularly for future concepts running at BMW (reuse an ECU within another vehicle product line with different and incompatible communication layouts)."

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"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12291] The ADC Driver shall provide a service for querying the status of an ADC Channel Group

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[SRS_Adc_12288] Based on the channel group configuration the ADC driver shall be able to handle the buffers of stream jobs

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[SRS_Adc_12292] If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.2."

Document: SRS_DIODriver:

[SRS_Dio_12003] The DIO Driver shall provide a service that writes a data word to

the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.0"

[SRS_Dio_12004] The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.1"

[SRS_Dio_12005] The DIO Driver shall provide a service for write access to single DIO channels

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12006] The DIO Driver shall provide a service for reading a data word from the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.1"

[SRS_Dio_12008] The DIO Driver shall provide a service for reading one bit of an assigned DIO channel

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.6.0"

Agreed solution:

CP_SRS_ADCCDriver

SRS_Adc_12280, SRS_Adc_12283, SRS_Adc_12819, SRS_Adc_12291,
SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

====

CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "-" in SRS_BSW_00305

====

CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line

with different and incompatible communication layouts."

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CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

====

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064, SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1

1.2 Specification Item SRS_Adc_12283

Trace References:

RS_BRF_01872

Content:

Type:	Valid
Description:	The ADC driver shall mask out information bits from the conversion result not belonging to the ADC value.
Rationale:	Information bits are microcontroller specific.
Applies to:	
Use Case:	Some μ Cs are saving information bits in the result register (e.g. the channel number). These bits shall be masked out.
Supporting Material:	BMW Specification MCAL V1.0a, MAL14.4.1–.

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

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"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00089] The EEPROM driver shall provide an asynchronous erase function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00090] The EEPROM driver shall provide a synchronous cancel function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00091] The EEPROM driver shall provide a synchronous function which returns the job processing status

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00096] EEPROM driver static shall be configured

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00092] The EEPROM driver shall only write data if at least one data value of the affected erasable block is different from the data value to be written

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00094] The EEPROM driver shall handle the EEPROM memory segmentation

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00095] The EEPROM driver shall handle only one job at the same time

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12047] The EEPROM driver shall provide a function that has to be called for job processin

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12050] The job processing function of the EEPROM driver shall process only as much data as the EEPROM hardware can handle

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[SRS_SPAL_12056] All driver modules shall allow the static configuration of notification mechanism

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[SRS_SPAL_12057] All driver modules shall implement an interface for initialization

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

[SRS_SPAL_12063] All driver modules shall only support raw value mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.6.0"

[SRS_SPAL_12064] All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.2"

SRS_SPAL_12067 All driver modules shall set their wake-up conditions depending on the selected operation mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.0"

Document: SRS_PWMDriver:

[SRS_Pwm_12293] The PWM driver shall allow the static configuration of PWM channel properties

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4 The idle level configuration covers the active phase requirement from Hella."

[SRS_Pwm_12295] The PWM driver shall provide a service for setting the duty cycle of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.x"

[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0; Kojak movies (in case you do not know Kojak)"

Document: SRS_BSWGeneral:

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Infotainment control ECU

[SRS_BSW_00305] Data types naming convention

"Supporting Material: BMW Standard Core Programming Guidelines"

Document: SRS_COM:

[SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, particularly for future concepts running at BMW (reuse an ECU within another vehicle product line with different and incompatible communication layouts)."

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"Supporting Material: BMW Specification MCAL V1.0a, MAL14.2.0."

[SRS_Adc_12283] The ADC driver shall mask out information bits from the conversion result not belonging to the ADC value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.1."

[SRS_Adc_12819] The ADC Driver shall provide a synchronous service for reading the last valid conversion results of the selected channel group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12291] The ADC Driver shall provide a service for querying the status of an ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12288] Based on the channel group configuration the ADC driver shall be able to handle the buffers of stream jobs

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12292] If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.2."

Document: SRS_DIODriver:

[SRS_Dio_12003] The DIO Driver shall provide a service that writes a data word to the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.0"

[SRS_Dio_12004] The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.1"

[SRS_Dio_12005] The DIO Driver shall provide a service for write access to single DIO channels

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12006] The DIO Driver shall provide a service for reading a data word from the assigned DIO port

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[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.1"

[SRS_Dio_12008] The DIO Driver shall provide a service for reading one bit of an assigned DIO channel

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.6.0"

Agreed solution:

CP_SRS_ADCCDriver

SRS_Adc_12280, SRS_Adc_12283, SRS_Adc_12819, SRS_Adc_12291,
SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

====

CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "-" in SRS_BSW_00305

===

CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line with different and incompatible communication layouts."

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CP_SRS_DIODriver

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SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,

SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

===

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064,
SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1

1.3 Specification Item SRS_Adc_12288

Trace References:

RS_BRF_01872

Content:

Type:	Valid
Description:	Based on the channel group configuration the ADC driver shall be able to handle the buffers of stream jobs in two different way:
Rationale:	Allow cyclic streams of ADC conversion that run automatically.
Applies to:	
Use Case:	Electric motor control.
Supporting Material:	BMW Specification MCAL V1.0a.–

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

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Change from:

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====

CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

===

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064, SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1

1.4 Specification Item SRS_Adc_12291

Trace References:

RS_BRF_01872

Content:

Type:	Valid
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Description:	The ADC Driver shall provide a service for querying the status of an ADC Channel Group.
Rationale:	Before reading a value it might be necessary to query the status of the ADC.
Applies to:	
Use Case:	The status can be used for access synchronization.
Supporting Material:	BMW Specification MCAL V1.0a.–

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

- RfC #78035: SRS requirements refer to BMW specifications

Problem description:

AUTOSAR documents shall not relate to any particular company.

The requirements below reference various BMW specifications and have to be corrected.

Document: SRS_EEPROMDriver:

[SRS_Eep_00087] The EEPROM driver shall provide an asynchronous read function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00088] The EEPROM driver shall provide an asynchronous write function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00089] The EEPROM driver shall provide an asynchronous erase function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00090] The EEPROM driver shall provide a synchronous cancel function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00091] The EEPROM driver shall provide a synchronous function which returns the job processing status

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00096] EEPROM driver static shall be configured

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00092] The EEPROM driver shall only write data if at least one data value of the affected erasable block is different from the data value to be written
"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00094] The EEPROM driver shall handle the EEPROM memory segmentation
"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00095] The EEPROM driver shall handle only one job at the same time
"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12047] The EEPROM driver shall provide a function that has to be called for job processing
"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12050] The job processing function of the EEPROM driver shall process only as much data as the EEPROM hardware can handle
"Supporting Material: BMW Specification MCAL V1.0a"

Document: SRS_SPALGeneral:

[SRS_SPAL_12056] All driver modules shall allow the static configuration of notification mechanism
"Supporting Material: BMW Specification MCAL V1.0a, [...]"

[SRS_SPAL_12057] All driver modules shall implement an interface for initialization
"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

[SRS_SPAL_12063] All driver modules shall only support raw value mode
"Supporting Material: BMW Specification MCAL V1.0a, MAL1.6.0"

[SRS_SPAL_12064] All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations
"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.2"

SRS_SPAL_12067 All driver modules shall set their wake-up conditions depending on the selected operation mode
"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.0"

Document: SRS_PWMDriver:

[SRS_Pwm_12293] The PWM driver shall allow the static configuration of PWM channel properties

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4 The idle level configuration covers the active phase requirement from Hella.

[SRS_Pwm_12295] The PWM driver shall provide a service for setting the duty cycle of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.x"

[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0; Kojak movies (in case you do not know Kojak)"

Document: SRS_BSWGeneral:

Chapter 5 "General Requirements on Basic Software"

The ECU application experience is taken from the following concrete applications:

Sunroof and power window ECU

Diesel engine ECU

ESP ECU

BMW, DC and VW standard software packages (Standard Core, Standard Software Platform, Standard Software Core) including OSEK OS, communication modules, bootloader, basic diagnostic functions for the domains listed above

Infotainment control ECU

[SRS_BSW_00305] Data types naming convention

"Supporting Material: BMW Standard Core Programming Guidelines"

Document: SRS_COM:

[SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, particularly for future concepts running at BMW (reuse an ECU within another vehicle product line with different

and incompatible communication layouts)."

Document: SRS_ADCDriver:

[SRS_Adc_12280] The ADC Driver shall allow a specific result access modes for each ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.2.0."

[SRS_Adc_12283] The ADC driver shall mask out information bits from the conversion result not belonging to the ADC value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.1."

[SRS_Adc_12819] The ADC Driver shall provide a synchronous service for reading the last valid conversion results of the selected channel group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12291] The ADC Driver shall provide a service for querying the status of an ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12288] Based on the channel group configuration the ADC driver shall be able to handle the buffers of stream jobs

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12292] If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.2."

Document: SRS_DIODriver:

[SRS_Dio_12003] The DIO Driver shall provide a service that writes a data word to the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.0"

[SRS_Dio_12004] The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.1"

[SRS_Dio_12005] The DIO Driver shall provide a service for write access to single DIO channels

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12006] The DIO Driver shall provide a service for reading a data word from the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.1"

[SRS_Dio_12008] The DIO Driver shall provide a service for reading one bit of an assigned DIO channel

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.6.0"

Agreed solution:

CP_SRS_ADCCDriver

SRS_Adc_12280, SRS_Adc_12283, SRS_Adc_12819, SRS_Adc_12291,
SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

====

CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "-" in SRS_BSW_00305

====

CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line with different and incompatible communication layouts."

====

CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

===

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064,
SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1

1.5 Specification Item SRS_Adc_12292

Trace References:

RS_BRF_01872

Content:

Type:	Valid
Description:	If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value.
Rationale:	Allow mapping of ADC return values to standard AUTOSAR integer data types.
Applies to:	
Use Case:	Some microcontrollers provide signed ADC values.
Supporting Material:	BMW Specification MCAL V1.0a, MAL14.4.2.–

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

- RfC #78035: SRS requirements refer to BMW specifications

Problem description:

AUTOSAR documents shall not relate to any particular company.

The requirements below reference various BMW specifications and have to be corrected.

Document: SRS_EEPROMDriver:

[SRS_Eep_00087] The EEPROM driver shall provide an asynchronous read function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00088] The EEPROM driver shall provide an asynchronous write function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00089] The EEPROM driver shall provide an asynchronous erase function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00090] The EEPROM driver shall provide a synchronous cancel function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00091] The EEPROM driver shall provide a synchronous function which returns the job processing status

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00096] EEPROM driver static shall be configured

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00092] The EEPROM driver shall only write data if at least one data value of the affected erasable block is different from the data value to be written

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00094] The EEPROM driver shall handle the EEPROM memory segmentation

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00095] The EEPROM driver shall handle only one job at the same time

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12047] The EEPROM driver shall provide a function that has to be called for job processing

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12050] The job processing function of the EEPROM driver shall process only as much data as the EEPROM hardware can handle

"Supporting Material: BMW Specification MCAL V1.0a"

Document: SRS_SPALGeneral:

[SRS_SPAL_12056] All driver modules shall allow the static configuration of notification mechanism

"Supporting Material: BMW Specification MCAL V1.0a, [...]"

[SRS_SPAL_12057] All driver modules shall implement an interface for initialization

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

[SRS_SPAL_12063] All driver modules shall only support raw value mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.6.0"

[SRS_SPAL_12064] All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.2"

SRS_SPAL_12067 All driver modules shall set their wake-up conditions depending on the selected operation mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.0"

Document: SRS_PWMDriver:

[SRS_Pwm_12293] The PWM driver shall allow the static configuration of PWM channel properties

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4 The idle level configuration covers the active phase requirement from Hella.

[SRS_Pwm_12295] The PWM driver shall provide a service for setting the duty cycle of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.x"

[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0; Kojak movies (in case you do not know Kojak)"

Document: SRS_BSWGeneral:

Chapter 5 "General Requirements on Basic Software"

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ESP ECU

BMW, DC and VW standard software packages (Standard Core, Standard Software Platform, Standard Software Core) including OSEK OS, communication modules, bootloader, basic diagnostic functions for the domains listed above

Infotainment control ECU

[SRS_BSW_00305] Data types naming convention

"Supporting Material: BMW Standard Core Programming Guidelines"

Document: SRS_COM:

[SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, particularly for future concepts running at BMW (reuse an ECU within another vehicle product line with different and incompatible communication layouts)."

Document: SRS_ADCCDriver:

[SRS_Adc_12280] The ADC Driver shall allow a specific result access modes for each ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.2.0."

[SRS_Adc_12283] The ADC driver shall mask out information bits from the conversion result not belonging to the ADC value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.1."

[SRS_Adc_12819] The ADC Driver shall provide a synchronous service for reading the last valid conversion results of the selected channel group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12291] The ADC Driver shall provide a service for querying the status of an ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12288] Based on the channel group configuration the ADC driver shall be able to handle the buffers of stream jobs

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12292] If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.2."

Document: SRS_DIODriver:

[SRS_Dio_12003] The DIO Driver shall provide a service that writes a data word to the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.0"

[SRS_Dio_12004] The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.1"

[SRS_Dio_12005] The DIO Driver shall provide a service for write access to single DIO channels

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12006] The DIO Driver shall provide a service for reading a data word from the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.1"

[SRS_Dio_12008] The DIO Driver shall provide a service for reading one bit of an assigned DIO channel

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.6.0"

Agreed solution:

CP_SRS_ADCCDriver

SRS_Adc_12280, SRS_Adc_12283, SRS_Adc_12819, SRS_Adc_12291,
SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

====

CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "-" in SRS_BSW_00305

====

CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line with different and incompatible communication layouts."

====

CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

====

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064,
SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1

1.6 Specification Item SRS_Adc_12819

Trace References:

RS_BRF_01872

Content:

Type:	Valid
Description:	The ADC Driver shall provide a synchronous service for reading the last valid conversion results of the selected channel group (passed as parameter).
Rationale:	Provide access to the most recent converted values of a channel group.
Applies to:	
Use Case:	This is the standard functionality for reading ADC values.
Supporting Material:	BMW Specification MCAL V1.0a-

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

- RfC #78035: SRS requirements refer to BMW specifications

Problem description:

AUTOSAR documents shall not relate to any particular company.

The requirements below reference various BMW specifications and have to be corrected.

Document: SRS_EEPROMDriver:

[SRS_Eep_00087] The EEPROM driver shall provide an asynchronous read function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00088] The EEPROM driver shall provide an asynchronous write function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00089] The EEPROM driver shall provide an asynchronous erase function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00090] The EEPROM driver shall provide a synchronous cancel function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00091] The EEPROM driver shall provide a synchronous function which returns the job processing status

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00096] EEPROM driver static shall be configured

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00092] The EEPROM driver shall only write data if at least one data value of the affected erasable block is different from the data value to be written

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00094] The EEPROM driver shall handle the EEPROM memory segmentation

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00095] The EEPROM driver shall handle only one job at the same time

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[SRS_Eep_12047] The EEPROM driver shall provide a function that has to be called for job processin

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12050] The job processing function of the EEPROM driver shall process only as much data as the EEPROM hardware can handle

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Document: SRS_SPALGeneral:

[SRS_SPAL_12056] All driver modules shall allow the static configuration of notification mechanism

"Supporting Material: BMW Specification MCAL V1.0a, [...]"

[SRS_SPAL_12057] All driver modules shall implement an interface for initialization

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

[SRS_SPAL_12063] All driver modules shall only support raw value mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.6.0"

[SRS_SPAL_12064] All driver modules shall raise an error if the change of

the operation mode leads to degradation of running operations

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.2"

SRS_SPAL_12067 All driver modules shall set their wake-up conditions depending on the selected operation mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.0"

Document: SRS_PWMDriver:

[SRS_Pwm_12293] The PWM driver shall allow the static configuration of PWM channel properties

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4 The idle level configuration covers the active phase requirement from Hella.

[SRS_Pwm_12295] The PWM driver shall provide a service for setting the duty cycle of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.x"

[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0; Kojak movies (in case you do not know Kojak)"

Document: SRS_BSWGeneral:

Chapter 5 "General Requirements on Basic Software"

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Infotainment control ECU

[SRS_BSW_00305] Data types naming convention

"Supporting Material: BMW Standard Core Programming Guidelines"

Document: SRS_COM:

[SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, particularly for future concepts running at BMW (reuse an ECU within another vehicle product line with different and incompatible communication layouts)."

Document: SRS_ADCDriver:

[SRS_Adc_12280] The ADC Driver shall allow a specific result access modes for each ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.2.0."

[SRS_Adc_12283] The ADC driver shall mask out information bits from the conversion result not belonging to the ADC value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.1."

[SRS_Adc_12819] The ADC Driver shall provide a synchronous service for reading the last valid conversion results of the selected channel group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12291] The ADC Driver shall provide a service for querying the status of an ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12288] Based on the channel group configuration the ADC driver shall be able to handle the buffers of stream jobs

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12292] If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.2."

Document: SRS_DIODriver:

[SRS_Dio_12003] The DIO Driver shall provide a service that writes a data word to the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.0"

[SRS_Dio_12004] The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.1"

[SRS_Dio_12005] The DIO Driver shall provide a service for write access to single DIO channels

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12006] The DIO Driver shall provide a service for reading a data word from the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.1"

[SRS_Dio_12008] The DIO Driver shall provide a service for reading one bit of an assigned DIO channel

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.6.0"

Agreed solution:

CP_SRS_ADCCDriver

SRS_Adc_12280, SRS_Adc_12283, SRS_Adc_12819, SRS_Adc_12291,
SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

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CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "–" in SRS_BSW_00305

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CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line with different and incompatible communication layouts."

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CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

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CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

===

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064,
SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1