BRIGOSHA TECHNOLOGIES, BANGALORE

PROJECT PRESENTATION

Presented By

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Guided By
Felicitous Solutions
Bangalore

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Requirement

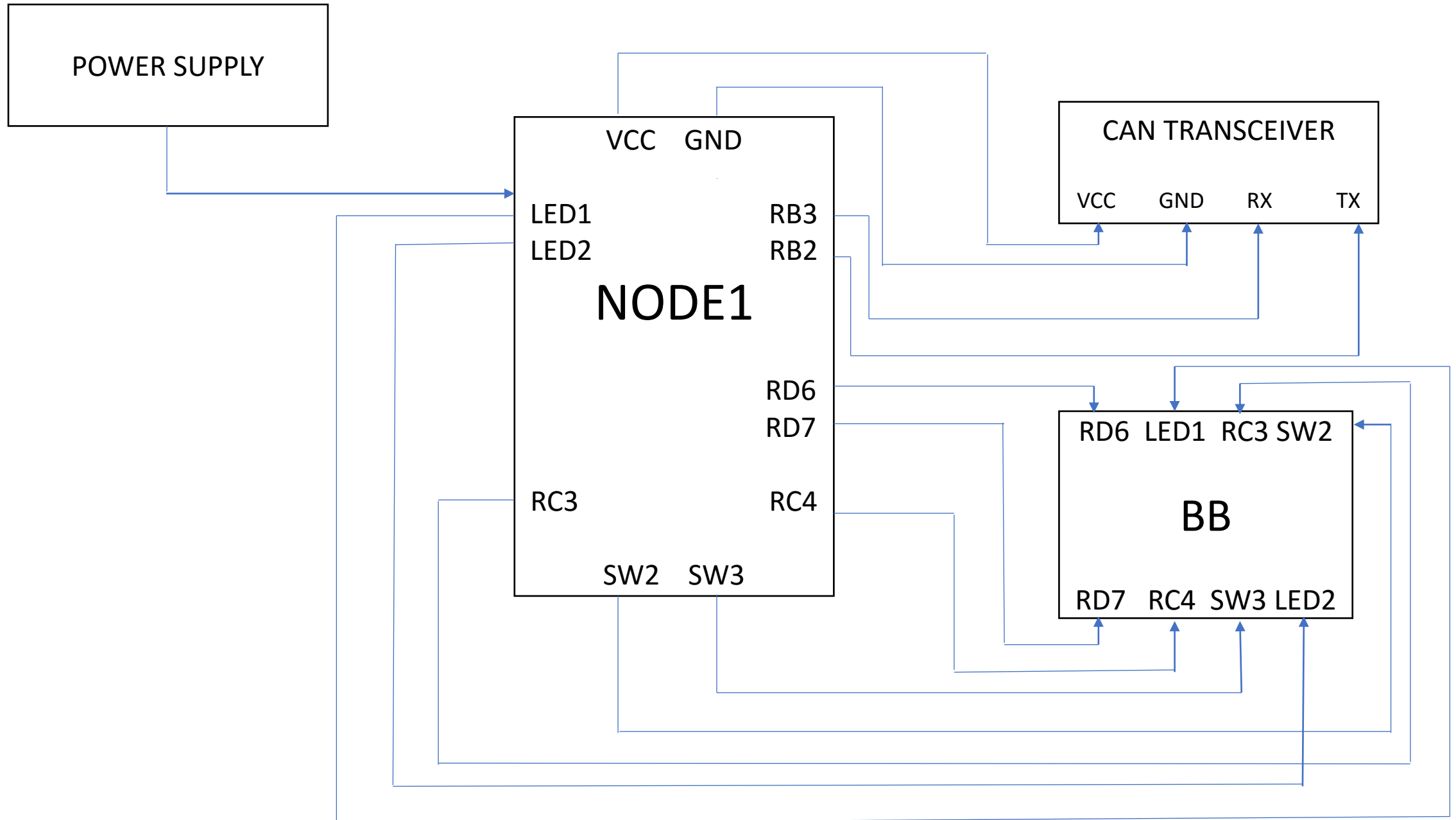|	Node description	Node name	MSG ID	Cycle time (ms)	MSG Size	Byte 7	Byte 6	Byte 5	Byte 4	Byte 3	Byte 2	Byte 1	Byte 0
4	Steering	STR	0x222	150	8	Steerign angle bit 11,10	Steerign angle bit 9,2	Steerign angle bit 1,0					
5	Driver assistance	DAS	0x198	300	8					Crash detection- Emergency braking			Airbag Warning Lamp activated/Faulty/Not activated : Bit0 - Bit1
6	Immobilizer	IMM	0x153	1000	8	Speed Byte plausi check 2	Speed Byte plausi check 1	Speed Byte plausi check 0					Warning lamp activation req: Bit0
7	Seat adjustment	SEA	0x705	3000	8	Driver seat Forward/Backward bit 7,6	Passenger seat Forward/Backward bit 7,6				Warning lamp activation req: Bit0		
8	Crusie controller	CRC	0x265	250	8	Front object distance byte 1	Front object distance byte 0				Warning lamp activation req: Bit0		
9	Wiper and washer	WIW	0x701	2000	8			Warning lamp activation req: Bit0	Front wiper status	Rare wiper status			
10	Braking BRK	BRK	0x050	200	8			Break info Byte 3	Break info Byte 2	Break info Byte 1	Break info Byte 0		Crash detection- Emergency braking
11	Lighting system	LIS	0x628	4000	8			Head lamp status	Left indicator	right indicator	door lock light		
12	Engine management	ENM	0x042	150	8	Speed Byte 2	Speed Byte 1	Speed Byte 0	Cruise control distance delta	Engine Torque Byte 3	Engine Torque Byte 2	Engine Torque Byte 1	Engine Torque Byte 0
13	Engine management	ENM	0x69	250						Engine RPM bit 12,9	Steerign angle bit 8,1	Steerign angle bit 0	Temprature status
14	Instrument cluster	INC	0x720	1000	8	System Warning lamp bit 0-bit1	TempratureIndicator	Speed Indicator					Airbag Warning Lamp activated/Faulty/Not activated : Bit0 - Bit1
15	Central lock	CEL	0x555	2000	8		Theft Detected	Remote unlock request status	Rear Hatch open/close	Child lock	Front Hatch open/close	All doors open/close	Warning lamp activation req: Bit0

SYSTEM SPECIFICATION
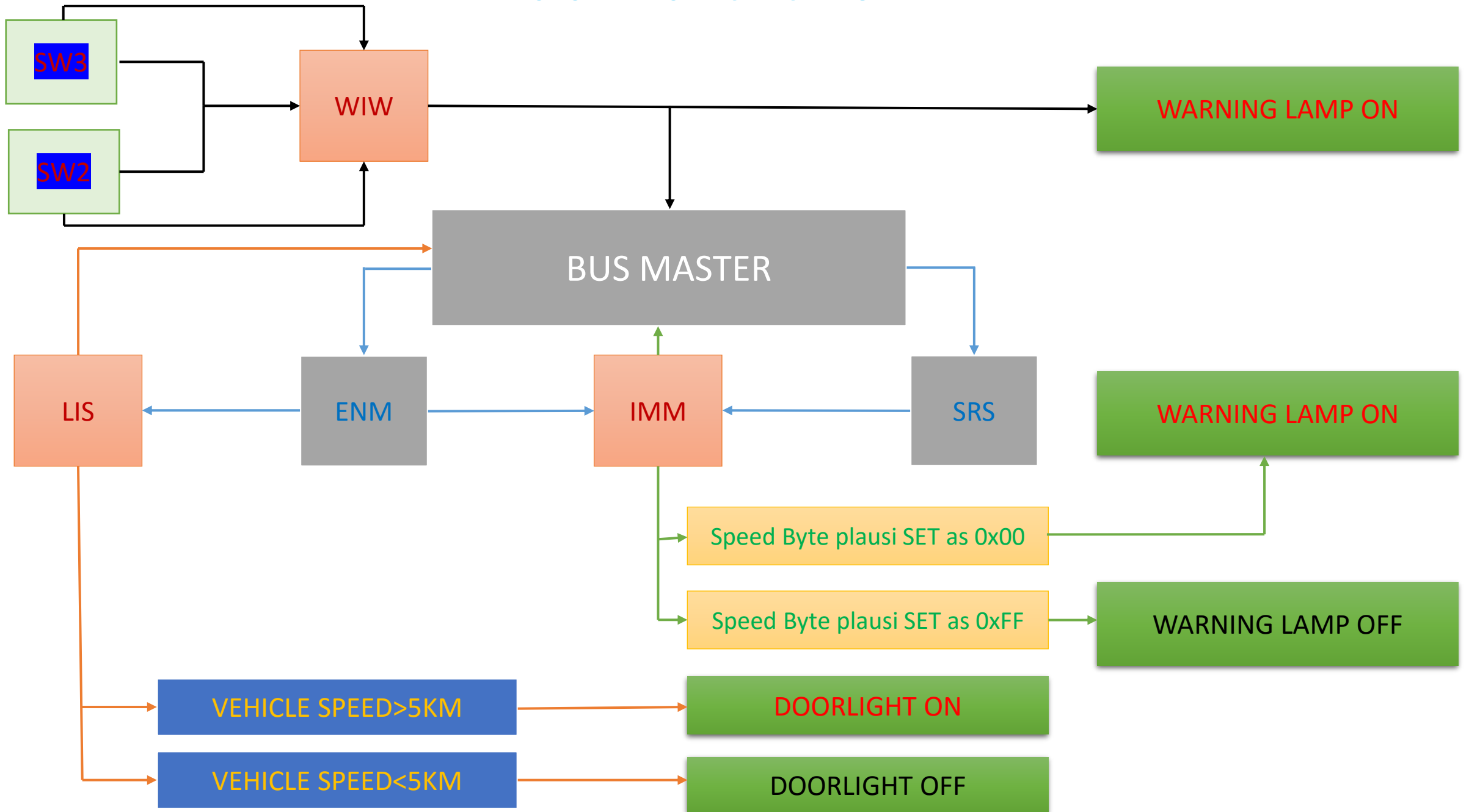
HARDWARE CONNECTION

HARDWARE CONNECTION

POWER SUPPLY	

NODE2

VCC GND

LED1 RB2

LED2 RB3

RD4

RD5

CAN TRANSCEIVER

VCC GND RX TX

DESIGN
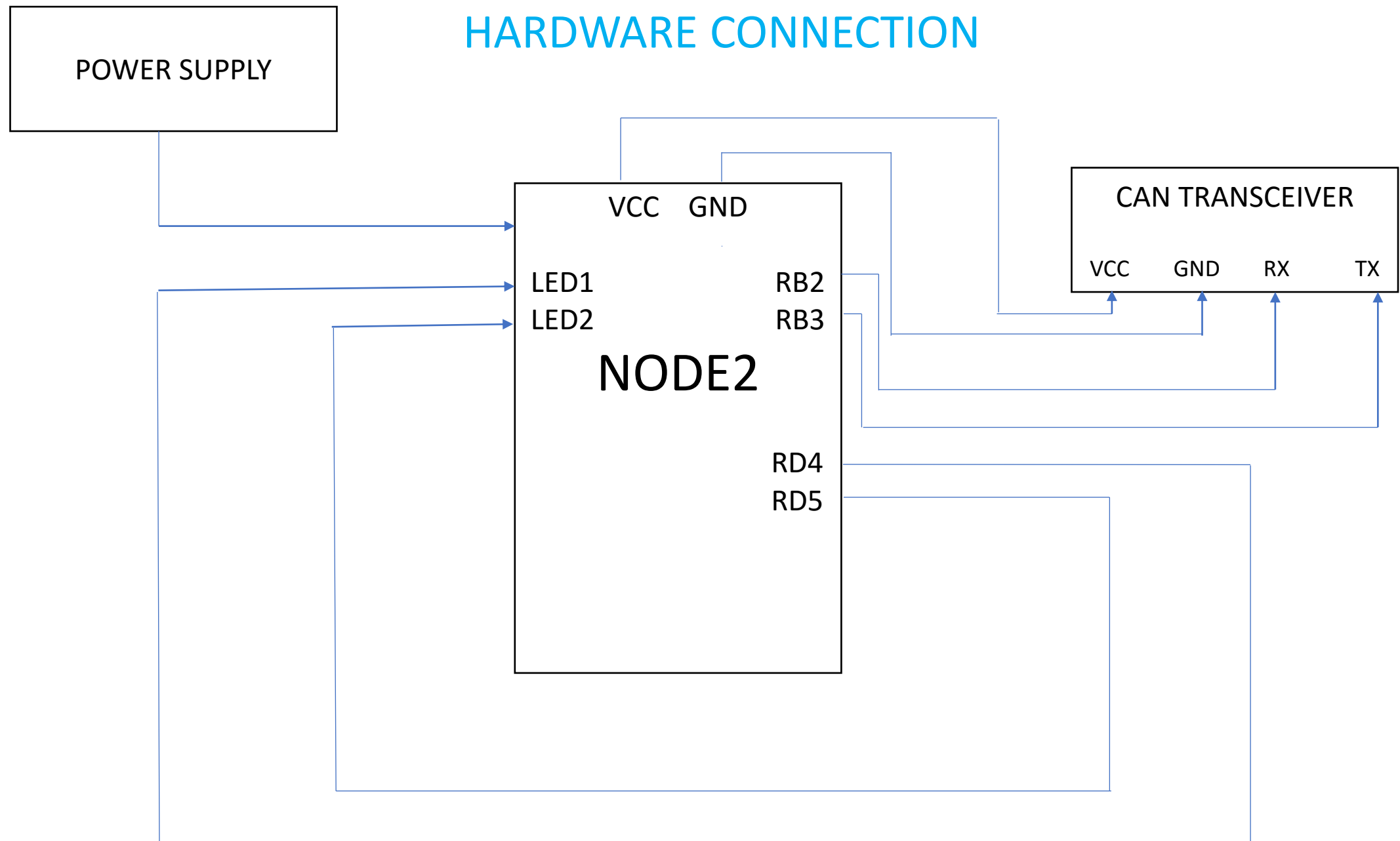
To Transmit the data from Wiper and Washer Node (Message ID = 0x701)

main

1 Initialize Port D as output port for LED.

2 Call the function to perform CAN driver initialization i.e., Can_init.

3 Call the function to monitor the switch and transmit data i.e., Switch_pressed.

Can_init

1 Initialize the transceiver i.e., RB2 as output for transmission and RB3 as input for reception.

2 Initialize CAN to Configuration Mode. Then check if it has entered into Configuration Mode. If it entered then proceed or else keep on checking till it enter into the Configuration Mode.

3 Initialize CAN Baud Rate Control Registers.

4 Initialize CAN Module I/O Control Register.

5 Initialize CAN to Normal Mode and Transmit Buffer 0.

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DESIGN

Switch_pressed

1 Initialize Port C as input Port for switch.

2 Monitor the switch continuously with delay of 2 seconds and based on the switch pressed call the function.

1) If both switches are pressed call the function can_tx_both_sw_pressed and Warning Lamp Activated.
2) If Switch 2(SW2) is pressed call the function can_tx_sw_2_pressed and Warning Lamp Activated.
3) If Switch 3(SW3) is pressed call the function can_tx_sw_3_pressed and Warning Lamp Activated.
4) If no switch is pressed call the function can_tx_no_sw_pressed and Warning Lamp Deactivated.

DESIGN…

Can_tx_sw_2_pressed

1. Check if it has entered into Normal Mode and Transmit Buffer 0. Also check Transmit Request Status bit is cleared (Automatically cleared when the message is successfully sent). If the condition satisfied then proceed.

2. Initialize CAN Transmit Buffer Identifier Registers (ID = 0x701).

3. Initialize CAN Transmit Buffer Data Length Code Register (DLC = 0x8).

4. Initialize CAN Transmit Buffer Data Field Byte Registers (Byte 4 = 0x01, Byte 3 = 0xFF).

5. Set Transmit Request Status bit for requests sending message.

Can_tx_sw_3_pressed

1. Check if it has entered into Normal Mode and Transmit Buffer 0. Also check Transmit Request Status bit is cleared (Automatically cleared when the message is successfully sent). If the condition satisfied then proceed.

2. Initialize CAN Transmit Buffer Identifier Registers (ID = 0x701).

3. Initialize CAN Transmit Buffer Data Length Code Register (DLC = 0x8).

4. Initialize CAN Transmit Buffer Data Field Byte Registers (Byte 4 = 0x01, Byte 2 = 0xFF).

5. Set Transmit Request Status bit for requests sending message.

DESIGN…

Can_tx_both_sw_pressed

1 Check if it has entered into Normal Mode and Transmit Buffer 0. Also check Transmit Request Status bit is cleared (Automatically cleared when the message is successfully sent). If the condition satisfied then proceed.

2 Initialize CAN Transmit Buffer Identifier Registers (ID = 0x701).

3 Initialize CAN Transmit Buffer Data Length Code Register (DLC = 0x8).

4 Initialize CAN Transmit Buffer Data Field Byte Registers (Byte 4 = 0x01, Byte 2 = 0xFF, Byte 3 = 0xFF).

5 Set Transmit Request Status bit for requests sending message.

Can_tx_no_sw_pressed

1 Check if it has entered into Normal Mode and Transmit Buffer 0. Also check Transmit Request Status bit is cleared (Automatically cleared when the message is successfully sent). If the condition satisfied then proceed.

2 Initialize CAN Transmit Buffer Identifier Registers (ID = 0x701).

3 Initialize CAN Transmit Buffer Data Length Code Register (DLC = 0x8).

4 Initialize CAN Transmit Buffer Data Field Byte Registers (Byte 4 = 0x00, Byte 3 = 0x00, Byte 2 = 0x00).

5 Set Transmit Request Status bit for requests sending message.

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DESIGN…

To Receive the data from Engine Management Node ENM (Message ID = 0x042) and Airbag General SRS (Message ID = 0x100) and transmit the data to Immobilizer Node IMM (Message ID = 0x153) and Lighting System Node LIS (Message ID = 0x628)

main

1. Initialize Port D as output port for LED.
2. Call the function to perform CAN driver initialization i.e., Can_init.
3. Call the function to perform CAN receiver initialization i.e., Can_rx_init.
4. Call the function to monitor the vehicle speed and transmit the data to Message ID 0x628.
5. Call the function to check the speed bytes received from Message ID 0x100 and Message ID 0x042 are matching and transmit the data to Message ID 0x153.

DESIGN…

Can_init

1. Initialize the transceiver i.e., RB2 as output for transmission and RB3 as input for reception.

2. Enable Global Interrupt, Peripheral Interrupt, Receiver Interrupts.

3. Initialize CAN to Configuration Mode. Then check if it has entered into Configuration Mode. If it entered then proceed or else keep on checking till it enter into the Configuration Mode.

4. Initialize CAN Baud Rate Control Registers.

5. Initialize CAN Module I/O Control Register.

6. Initialize CAN to Normal Mode.

Can_rx_init

1. Set the Acceptance Mask and Filter Code .

2. Set Receive Mode for Buffer 0.

DESIGN…

Interrupt

1. Condition checks for Receiver Buffer 0 Flag bit is set.

2. Call the function to store the data into array_enm if the Message ID received is 0x042.

3. Call the function to store the data into array_srs if the Message ID received is 0x100.

Can_rx_1

1. Store data from Data Buffer 7 (RXB0D7) to array_enm[2].

2. Store data from Data Buffer 6 (RXB0D6) to array_enm[1].

3. Store data from Data Buffer 5 (RXB0D5) to array_enm[0].

   (Message ID = 0x042)

Can_rx_2

1. Store data from Data Buffer 2 (RXB0D2) to array_srs[2].

2. Store data from Data Buffer 1 (RXB0D1) to array_srs[1].

3. Store data from Data Buffer 0 (RXB0D0) to array_srs[0].

   (Message ID = 0x100)

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DESIGN…

Vehicle_speed

1. If vehicle speed (Speed Byte 0 from ENM Node) is greater than 5 km (array_enm[0]) activate Door Lock Light by transmitting 0xFF to byte 0 of LIS Node (Message ID = 0x628).

2. If vehicle speed (Speed Byte 0 from ENM Node) is lesser than 5 km (array_enm[0]) deactivate Door Lock Light by transmitting 0x00 to byte 0 of LIS Node (Message ID = 0x628).

Speed_byte_Matching

Check whether array_enm[2] is equal to array_srs[2] and array_enm[1] is equal to array_srs[1] and array_enm[0] is equal to array_srs[0] . Then,

1. If Condition satisfies then call the function to transmit the data to IMM Node (Message ID 0x153) and Warning Lamp is Deactivated.

2. If Condition fails then call the function to transmit the data to IMM Node (Message ID 0x153) and Warning Lamp is Activated.

DESIGN…

Can_tx_door_lock_on	Can_tx_door_lock_off
1. Initialize CAN to Normal Mode and Transmit Buffer 0.	1. Initialize CAN to Normal Mode and Transmit Buffer 0.
2. Check if it has entered into Normal Mode and Transmit Buffer 0. Also check Transmit Request Status bit is cleared (Automatically cleared when the message is successfully sent). If the condition satisfied then proceed.	2. Check if it has entered into Normal Mode and Transmit Buffer 0. Also check Transmit Request Status bit is cleared (Automatically cleared when the message is successfully sent). If the condition satisfied then proceed.
3. Initialize CAN Transmit Buffer Identifier Registers (ID = 0x628).	3. Initialize CAN Transmit Buffer Identifier Registers (ID = 0x628).
4. Initialize CAN Transmit Buffer Data Length Code Register (DLC = 0x8).	4. Initialize CAN Transmit Buffer Data Length Code Register (DLC = 0x8).
5. Initialize CAN Transmit Buffer Data Field Byte Registers (Byte 1 = 0xFF).	5. Initialize CAN Transmit Buffer Data Field Byte Registers (Byte 1 = 0x00).
6. Set Transmit Request Status bit for requests sending message.	6. Set Transmit Request Status bit for requests sending message.

DESIGN…

Can_tx_speed_byte_match	Can_tx_speed_byte_unmatch
1. Initialize CAN to Normal Mode and Transmit Buffer 1.	1. Initialize CAN to Normal Mode and Transmit Buffer 1.
2. Check if it has entered into Normal Mode and Transmit Buffer 0. Also check Transmit Request Status bit is cleared (Automatically cleared when the message is successfully sent). If the condition satisfied then proceed.	2. Check if it has entered into Normal Mode and Transmit Buffer 0. Also check Transmit Request Status bit is cleared (Automatically cleared when the message is successfully sent). If the condition satisfied then proceed.
3. Initialize CAN Transmit Buffer Identifier Registers (ID = 0x153).	3. Initialize CAN Transmit Buffer Identifier Registers (ID = 0x153).
4. Initialize CAN Transmit Buffer Data Length Code Register (DLC = 0x8).	4. Initialize CAN Transmit Buffer Data Length Code Register (DLC = 0x8).
5. Initialize CAN Transmit Buffer Data Field Byte Registers (Byte 7 = 0xFF, Byte 6 = 0xFF, Byte 5 = 0xFF, Byte 0 = 0x00).	5. Initialize CAN Transmit Buffer Data Field Byte Registers (Byte 7 = 0xFF, Byte 6 = 0xFF, Byte 5 = 0xFF, Byte 0 = 0x01).
6. Set Transmit Request Status bit for requests sending message.	6. Set Transmit Request Status bit for requests sending message.

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TEST SPECIFICATION

Test case ID	Test case preconditions	Test case description	Test case steps
		TEST SPECIFICATION AND TEST REPORT	
	Author Names	1.Sharada M V 2.Arunkumar P 3.Kantineni Dinesh 4.Abishek 5.Yugadharshini B	
WIW 001	1.Test Environment . 2.Power is supplied is 8v 3.ECU node WIW . 4.CAN bus . 5.software tool - BUS master .	1.Check the communication of WIW with msg id 0x701 we are using BVA and EVC as the test Design techniques	1.Prepare the test environment as per the Test environment preparation. 2.Check the connection of switches . 3.connect power supply of 8volt to WIW node . 4.Check the WIW node with Tx Msg id 0x701 is transmitting for every 2000ms 5.Disconnect the power supply .
WIW 001	1.Test Environment . 2.Power supply with range of 16v 3.ECU node WIW . 4.CAN bus . 5.software tool - BUS master .	1.Check the communication of WIW with msg id 0x701 we are using BVA and EVC as the test techniques	1.Prepare the test environment as per the Test environment preparation. 2.Check the connection of switches . 3.connect power supply of 16voltS to WIW node . 4.Check the WIW node with Tx Msg id 0x701 is transmitting for every 2000ms 5.Disconnect the power supply .

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C7 | fx | 1.Check the communication of WIW with msg id 0x701

	A	B	C	D
53				
54		1.Test Environment . 2.Power supply range of 15.2v. 3.ECU nodes IMM, ENM, SRS .	1.check the speed bytes from 0 to 2 of SRS msg id 0x100 and speed bytes from	1.Prepare the test environment as per the Test environment preparation. 2.check the communication of ECU nodes IMM,ENM,SRS at given power supply. 3.check the speed bytes from 0 to 2 of SRS msg id 0x100 (500ms) and speed bytes from 0 to 2 o 4.Check the speed plausi bytes of IMM msg id 0x153 received from SRS and ENM nodes . 5.Disconnect the power supply.
	IMM 002			
55				
56		1.Test Environment . 2.Power supply range of 8v. 3.ECU nodes IMM, ENM, SRS . 4.Warning lamp	1.check the speed bytes from 0 to 2 of SRS msg id 0x100 and speed bytes from	1.Prepare the test environment as per the Test environment preparation. 2.check the communication of ECU nodes IMM,ENM,SRS at given power supply. 3.check the speed bytes from 0 to 2 of SRS msg id 0x100 (500ms) and speed bytes from 0 to 2 4.Check the speed plausi bytes of IMM msg id 0x153 received from SRS and ENM nodes . 5.Disconnect the power supply.
	IMM 003			
57				
58		1.Test Environment . 2.Power supply range of 16v. 3.ECU nodes IMM, ENM, SRS . 4.Warning lamp	1.check the speed bytes from 0 to 2 of SRS msg id 0x100 and speed bytes from	1.Prepare the test environment as per the Test environment preparation. 2.check the communication of ECU nodes IMM,ENM,SRS at given power supply. 3.check the speed bytes from 0 to 2 of SRS msg id 0x100 (500ms) and speed bytes from 0 to 2 4.Check the speed plausi bytes of IMM msg id 0x153 received from SRS and ENM nodes . 5.Disconnect the power supply.
	IMM 003			
59				
		1.Test Environment .	1.check the speed bytes from 0 to 2 of SRS msg id 0x100 and speed bytes from	1.Prepare the test environment as per the Test environment preparation.

+ ☰   SRS ▾   SRTP_TS ▾   Test Environment Preparation ▾   Legend ▾

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docs.google.com/spreadsheets/d/1IEgCwH6AiaCXAkauaPHdbxQUf-Gj0KqoKgGrWzNEkjQ/edit#gid=991237211

SRTP

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C7 | 1.Check the communication of WIW with msg id 0x701

	A	B	C	D
67				
68	LIS 001	1.Test Environment . 2.Power supply range of 8v 3.ECU nodes ENM ,LIS 4.door lock light .	1.check the vehicle speed from ENM msg id 0x042 of speed >5km and <5km	1.Prepare the test environment as per the Test environment preparation. 2.check the communication of ECU nodes ENM and LIS at given power supply. 3.Check the vehicle speed from ENM node of msg id 0x042 of speed >5km for every time (150r 4..Check the vehicle speed from ENM node of msg id 0x042 of speed <5km for every time (150 5.Check the door lock light of LIS msg id 0x628 is ON or OFF . 5.Disconnect power supply.
69				
70	LIS 001	1.Test Environment . 2.Power supply range of 16v. 3.ECU nodes ENM ,LIS 4.door lock light .	1.check the vehicle speed from ENM msg id 0x042 of speed >5km and <5km	1.Prepare the test environment as per the Test environment preparation. 2.check the communication of ECU nodes ENM and LIS at given power supply. 3.Check the vehicle speed from ENM node of msg id 0x042 of speed >5km for every time (150r 4..Check the vehicle speed from ENM node of msg id 0x042 of speed <5km for every time (150 5.Check the door lock light of LIS msg id 0x628 is ON or OFF . 5.Disconnect power supply.
71				
72	LIS 001	1.Test Environment . 2.Power supply range of 8.8v. 3.ECU nodes ENM ,LIS 4.door lock light .	1.check the vehicle speed from ENM msg id 0x042 of speed >5km and <5km	1.Prepare the test environment as per the Test environment preparation. 2.check the communication of ECU nodes ENM and LIS at given power supply. 3.Check the vehicle speed from ENM node of msg id 0x042 of speed >5km for every time (150r 4..Check the vehicle speed from ENM node of msg id 0x042 of speed <5km for every time (150 5.Check the door lock light of LIS msg id 0x628 is ON or OFF . 5.Disconnect power supply.
73				
74	LIS 001	1.Test Environment . 2.Power supply range of 7.2v. 3.ECU nodes ENM ,LIS 4.door lock light .	1.check the vehicle speed from ENM msg id 0x042 of speed >5km and <5km	1.Prepare the test environment as per the Test environment preparation. 2.check the communication of ECU nodes ENM and LIS at given power supply. 3.Check the vehicle speed from ENM node of msg id 0x042 of speed >5km for every time (150r 4..Check the vehicle speed from ENM node of msg id 0x042 of speed <5km for every time (150 5.Check the door lock light of LIS msg id 0x628 is ON or OFF . 5.Disconnect power supply.
75				

+ ≡ | SRS ▾ | SRTP_TS ▾ | Test Environment Preparation ▾ | Legend ▾

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TEST REPORT

THANK YOU