How to activate TJA1153 PHY on RDB2/GoldBox

This guide provides a simple method to activate the TJA1153 on the S32G-VNP-RDB2/GoldBox for enabling CAN communication. After this activation of the TJA1153 by following steps, it will operate as a CAN PHY. *Contact NXP for further details about Secure CAN Transceiver or visit <u>http://www.nxp.com/CAN</u>.*

NOTE:

Only the boards with series number listed in the attached table need this activation. The serial number of your boards can be found on the label on the back of your boards.



Tools needed:

- 1. Terminal Emulator, such as Tera Term, Putty and other.
- 2. Download and install the FT232R USB-to-UART driver, if not installed already. FT232R USB-to-UART driver link . <u>https://www.ftdichip.com/Drivers/D2XX.htm.</u>
- 3. HxD Hex Editor or Win32DiskImage used to flash image onto an SD card.

Step1. Extract the file of 'TJA1153_Local_Activation.7z' attached to this document and install 'TJA1153_Local_Activation.exe'.

Step2. Obtain the image file named 'TJA1153_Local_Activation.bin_sd' that needs to be write to the SD card from the installation directory.

Step3. Flash the image 'TJA1153_Local_Activation.bin_sd' to the SD card.

For windows:

- 1. Insert SD card to the USB slot via SD card reader.
- 2. Open HxD Hex Editor.
- 3. Go to Tools -> Open disk

📓 File Edit	Searc	h V	liew	Ana	lysis	То	ols Window Help		_
📄 🚵 🗝 🔛				-	++ 1		Open main memory	Shift+Ctrl+M	\sim
III TIA1153 Lo.		ctive	tion	hin	cd	2	Open disk	Shift+Ctrl+D	
IN DATIDS_ED	cal_A	CUVC	nion		su		Open disk image	Shift+Ctrl+I	
Offset(h)	00	01	02	03	04		File tools	•	F Decoded text
00013DA0	5B	58	98	42	F4				B [X"BôØÒ.<.()
00013DB0	03	D1	18	79	0E		Options		5 .Ñ.y.OÀ⁴.à.y`头ÀF
00012000	00	27	00	0.0	00	40	70 42 00 48 70 4	12 00 44 B1 4	

4. Select the SD disk and untick the "Open as Readonly" checkbox as highlighted below.

Open disk			1
nserted disks:			
Name ^	Туре	Size	Hardware
 OSDisk (C:) 	Hard disk	476.00 GiB	Hard disk 1
 Untitled (D:) Physical disks 	Removeable disk	14.40 GiB	Removeable disk 1
i Hard disk 1	Hard disk	477.00 GiB	KBG40ZNS512G NVMe KIO
🖙 Removeable disk 1	Removeable disk	14.40 GiB	Realtek PCIE Card Reader
Open as Readonly			

- 5. Warning message pops up, click on OK.
- $\label{eq:constraint} 6. \quad \mbox{Go to File -> Open- > 'TJA1153_Local_Activation.bin_sd'}.$

FD	File	Edit Searc	h View	An	alysis	То	ols	Wind	low	Help	þ		
		New	Ctrl+N		+ +	16	`	~ \	Nind	ows	(ANS	si)	
हरो	2	Open	Ctrl+O		ed.	00 H							
80		Close	Ctrl+F4	- ľ	_su	ا ھي	kemo	ovea	bie d	ISK I			
0		Save	Ctrl+S	3	04	05	06	07	08	09	0A	0B	(
0		Save as		þ	00	00	00	00	00	00	00	00	(
0	D.	C		— þ	00	00	00	00	00	00	00	00	(
0	50	Save all		þ	00	00	00	00	00	00	00	00	(
0		Close all		þ	00	00	00	00	00	00	00	00	(
0		Save celectiv		- þ	00	00	00	00	00	00	00	00	(
0		Save Selection	///	_ 0	00	00	00	00	00	00	00	00	(
0		Import	1	۰ I	00	00	00	00	00	00	00	00	(
0		Export		, I	00	00	00	00	00	00	00	00	(
0	-			— þ	00	00	00	00	00	00	00	00	(
0	۲	Print	Ctrl+P	0	00	00	00	00	00	00	00	00	(
0		Recent files			00	00	00	00	00	00	00	00	(
0		Descent dist.		0	00	00	00	00	00	00	00	00	(
0		Necent disk	images	<u> </u>	00	00	00	00	00	00	00	00	(
0		Exit		0	00	00	00	00	00	00	00	00	(
				h	00	0.0	00	00	00	00	00	00	4

₩ HxD - [C:\Users\nxf42684\Desktop\git\s32g_rdb_revc_factory_test\Prc

- 7. Do Ctrl+A and Ctrl+C to copy all of the 'TJA1153_Local_Activation.bin_sd'.
- 8. Open this SD card window do Ctrl+A and Ctrl+B paste write the image to the SD card.

le	le Edit Search View Analysis Tools Window Help																		
3	- 📙			5	<u>.</u> -	+	16	i	\sim	W	indo	ws (A	ANSI)		~	h	ex		\sim
A1	A1153_Local_Activation.bin_sd 😃 Removeable disk 1																		
Es	et (h)	00	01	02	03	04	05	06	07	08	09	OA	0B	0C	OD	0E	OF	De
١F	FFC8	0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
١F	FFC9	0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
١F	FFCA	0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
١F	FFCB	0	00															00	
١F	FFCC	0	00															00	
١F	FFCD	0	00															00	
١F	FFCE	0	00															00	
١F	FFCF	0	00															00	
١F	FFDO	0	00															00	
١F	FFD1	0	00															00	
١F	FFD2	0	00															00	
١F	FFD3	0	00															00	
١F	FFD4	0	00							00	00	00	00	00	00	00	00	00	
١F	FFD5	0	00							C 🧉	D Ur	ndo			Ctr	I+Z	0	00	
١F	FFD6	0	00							C	- 0	.+			Ctr	L±Χ	0	00	
١F	FFD7	0	00							0					Cu ou		0	00	
١F	FFD8	0	00	00	00	00				сų	0	ру			Ctr	+C	0	00	
١F	FFD9	0	00							C []	Pa	iste i	nsert	_	Ctr	l+V	0	00	
١F	FFDA	0	00	00	00	00	00	00	00	C	Pa	iste v	vrite		Ctr	I+B	0	00	
١F	FFDB	0	00	00	00	00	00	00	00	0	< De	elete		_		Del	0	00	
١F	FFDC	0	00							<u>^</u> م						00	_ 0	00	
١F	FFDD	0	00							C	Fil	l sele	ectio	n			0	00	
١F	FFDE	0	00							C	C -	lect	bloc		C+-	4. E	- 0	00	
١F	FFDF	0	00	00	00	00	00	00	00	C	36	ect	DIOCI		Cu	IT C	0	00	
١F	FFEO	0	00							C	Se	lect	all		Ctr	+A	0	00	
١F	FFE1	0	00							C	Co	ору с	offset		Alt+	Ins	0	00	
١F	FFE2	0	0.0	00	00	00	00	00	00	Our								0.0	

- 9. Do Ctrl+S.
- 10. Warning message pops up, click on Yes.

For Linux distribution:

- 1. Insert the SD card to the Linux machine (eg: ubuntu) via SD card reader.
- Identify the device node assigned to the SD card, enter the command: Is /dev/sd* /dev/sda /dev/sdb1 /dev/sdb1 /dev/sdb2
 In this example it is assumed that the device assigned is /dev/sdb.

NOTE

Make sure the device node is correct for the SD card! Otherwise, it may damage your operating system or data or your PC.

 Writing the 'TJA1153_Local_Activation.bin_sd' to SD card sudo dd if= TJA1153_Local_Activation.bin_sd of=/dev/sdb bs=1M && sync

Step4. Set the switches to boot from the SD "Boot Mode Configuration".

Step5. Connect the UART1 port of the board to the laptop with a USB cable.



Step6. Open a serial tools such as putty or MobaXterm.

SSH Telnet	Rsh Xdmcp RDF	🔢 🍪 VNC FTP	SFTF Serial	Pile Shell	🌍 📡 Browser Mos	sh Aws S3 WSL			
🖋 Basic Serial s	settings								
Serial port	* COM12 (USB Serial F	ort (COM12))	~	Speed (bps) * 115	i200 V				
🖋 Advanced Ser	rial settings 💽 Term	nal settings 🛛 🔶	Bookmark settings						
	Serial engine: PuTT Data bits 8	Y (allovs manual C	COM port setting)		v				
	Stop bits 1 Parity None	✓ Ify co ✓ en	ou need to transfer fi nfiguration file), you o nbedded TFTP serve	iles (e.g. router can use MobaXterm r		- X			
	Flow control Xon/)	off ~ "S	ervers" window -	> TFTP server		71			
Execute macro at session start: <none></none>									
		📀 ок	8	Cancel					

Step7. Perform a power on reset of the board and check the log info from the serial session. The first activation will print the following log information.

CAN PHY of TJA1153 Local activation: build time = Nov 5 2021 19:28:18 S32G-VNP-RDB2 CPU: NXP S32G274A rev. 2.1.0
Setup local activation environment for TJA1153 00:00 [>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
TJA1153 / activated successful TJA1153 Local activation is finished.

Those that have been activated will print the following information.

CAN PHY of TJA1153 Local activation: build time = Nov	5 2021 19:28:18
532G-VNP-RDB2 CPU: NXP 532G2/4A rev. 2.1.0	
Setup local activation environment for TJA1153	
00:00 [>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	
TJA1153 4 has already been activated.	
TJA1153 5 has already been activated.	
TJA1153 6 has already been activated.	
TJA1153 7 has already been activated.	
TJA1153 Local activation is finished.	

Done.

Table1. The configuration of boot mode. For more information on how to enable RDB2:

https://www.nxp.com/design/designs/s32g-reference-design-2-for-vehicle-network-processing:S32G-VNP-RDB2

Switch	SD Boot Setting (default)	eMMC Boot Setting	NOR Flashing Boot Setting	Serial Boot Setting		
SW3	ON	OFF	-	_		
SW4	7-ON, REST-OFF	6,7-ON, REST-OFF	ALL-OFF	ALL-OFF		
SW5	ALL-OFF	ALL-OFF	ALL-OFF	ALL-OFF		
SW6	ALL-OFF	ALL-OFF	ALL-OFF	ALL-OFF		
SW7	ALL-OFF	ALL-OFF	ALL-OFF	ALL-OFF		
SW9	1-OFF, 2-OFF	1-0FF, 2-0FF	1-0FF, 2-0FF	1-0FF, 2-0FF		
SW10	1-0N, 2-0FF	1-0N, 2-0FF	1-0N, 2-0FF	1-OFF, 2-OFF		

Disclaimer

Information in this document is provided solely to enable system and software implementers to use NXP products. There are no express or implied copyright licenses granted hereunder to design or fabricate any integrated circuits based on the information in this document. NXP reserves the right to make changes without further notice to any products herein. NXP makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does NXP assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters that may be provided in NXP data sheets and/or specifications can and do vary in different applications, and actual performance may vary over time. All operating parameters, including "typicals," must be validated for each customer application by customer's technical experts. NXP does not convey any license under its patent rights nor the rights of others. NXP sells products pursuant to standard terms and conditions of sale, which can be found at the following address:nxp.com/SalesTermsandConditions. While NXP has implemented advanced security features, all products may be subject to

unidentified vulnerabilities. Customers are responsible for the design and operation of their

applications and products to reduce the effect of these vulnerabilities on customer's applications and products, and NXP accepts no liability for any vulnerability that is discovered. Customers should implement appropriate design and operating safeguards to minimize the risks associated with their applications and products.

© NXP B.V. 2021. All rights reserved.

For more information, please visit: http://www.nxp.com

For sales office addresses, please send an email to: salesaddresses@nxp.com