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ST8500 Hybrid PLC&RF connectivity development kit – User Terminal quick start guide

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Introduction

- Scope of this presentation is to introduce the user Terminal available from EVLKST8500GH868 or EVLKST8500GH915 STM32 Nucleo board USB port.
- This terminal allows user to get into the evaluation of some features like UDP data transfers via some launchable tests/demo.
- Required elements:
 - PC with a terminal tool installed like Teraterm.
 - Get 2 of EVLKST8500GH868 or 2 of EVLKST8500GH915 boards in order to be able to run data transfers from one PLC/RF node to the other.
 - Update boards with latest STSW-ST8500GH package available at:
https://www.st.com/content/st_com/en/products/embedded-software/evaluation-tool-software/stsw-st8500gh.html

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- 4 Terminal UDP data transfer tests: 'loopback' UDP Data Req test

Preliminary steps

NUCLEO-G070RB FW upgrade

- After installing the STM32 CubeProgrammer (available on https://www.st.com/content/st_com/en/products/development-tools/software-development-tools/stm32-software-development-tools/stm32-programmers/stm32cubeprog.html), connect the USB cable to the NUCLEO-G070RB USB connector and launch the appropriate batch (.bat) file, based on the network role and kit type (EVLKST8500GH868 or EVLKST8500GH915).
- Please note that for each G3-PLC network only one node must be programmed as Coordinator.
- Please connect one EVLKST8500GH at a time.

NUCLEO-G070RB FW upgrade (868 MHz)

```

C:\WINDOWS\system32\cmd.exe
-----
STM32CubeProgrammer v2.7.0
-----

ST-LINK SN   : 066CFF323532534157123511
ST-LINK FW   : V2J31M21
Board        : NUCLEO-G070RB
Voltage      : 3.24V
SWD freq     : 4000 KHz
Connect mode : Normal
Reset mode   : Software reset
Device ID    : 0x460
Revision ID  : Rev B
Device name  : STM32G07x/STM32G08x
Flash size   : 128 KBytes
Device type  : MCU
Device CPU   : Cortex-M0+

Coordinator

Memory Programming ...
Opening and parsing file: NUCLEO-G070RB_coord_868.hex
  File       : NUCLEO-G070RB_coord_868.hex
  Size       : 41286 Bytes
  Address    : 0x08000000

Erasing memory corresponding to segment 0:
Erasing internal memory sectors [0 20]
Download in Progress:
100%

File download complete
Time elapsed during download operation: 00:00:01.165
Press ENTER to continue

```

```
C:\WINDOWS\system32\cmd.exe
```

```
-----  
STM32CubeProgrammer v2.7.0  
-----  
  
ST-LINK SN   : 066CFF323532534157123511  
ST-LINK FW   : V2J31M21  
Board        : NUCLEO-G070RB  
Voltage      : 3.25V  
SWD freq     : 4000 KHz  
Connect mode : Normal  
Reset mode   : Software reset  
Device ID    : 0x460  
Revision ID  : Rev B  
Device name   : STM32G07x/STM32G08x  
Flash size   : 128 KBytes  
Device type   : MCU  
Device CPU    : Cortex-M0+  
  
Memory Programming ...  
Opening and parsing file: NUCLEO-G070RB_device_868.hex  
File           : NUCLEO-G070RB_device_868.hex  
Size           : 41276 Bytes  
Address        : 0x08000000  
  
Erasing memory corresponding to segment 0:  
Erasing internal memory sectors [0 20]  
Download in Progress:  
[Progress Bar] 100%  
  
File download complete  
Time elapsed during download operation: 00:00:01.149  
Press ENTER to continue.
```

NUCLEO-G070RB FW upgrade (915 MHz)

```
Select C:\WINDOWS\system32\cmd.exe

-----
STM32CubeProgrammer v2.7.0
-----

ST-LINK SN : 066CFF323532534157123511
ST-LINK FW : V2J31M21
Board      : NUCLEO-G070RB
Voltage    : 3.25V
SWD freq   : 4000 KHz
Connect mode: Normal
Reset mode : Software reset
Device ID  : 0x460
Revision ID: Rev B
Device name: STM32G07x/STM32G08x
Flash size : 128 KBytes
Device type: MCU
Device CPU  : Cortex-M0+

Coordinator

Memory Programming ...
Opening and parsing file: NUCLEO-G070RB_coord_915.hex
  File      : NUCLEO-G070RB_coord_915.hex
  Size      : 41286 Bytes
  Address    : 0x08000000

Erasing memory corresponding to segment 0:
Erasing internal memory sectors [0 20]
Download in Progress:
100%

File download complete
Time elapsed during download operation: 00:00:01.147
Press ENTER to continue
```

```
Select C:\WINDOWS\system32\cmd.exe

-----
STM32CubeProgrammer v2.7.0
-----

ST-LINK SN : 066CFF323532534157123511
ST-LINK FW : V2J31M21
Board      : NUCLEO-G070RB
Voltage    : 3.25V
SWD freq   : 4000 KHz
Connect mode: Normal
Reset mode : Software reset
Device ID  : 0x460
Revision ID: Rev B
Device name: STM32G07x/STM32G08x
Flash size : 128 KBytes
Device type: MCU
Device CPU  : Cortex-M0+

Device

Memory Programming ...
Opening and parsing file: NUCLEO-G070RB_device_915.hex
  File      : NUCLEO-G070RB_device_915.hex
  Size      : 41276 Bytes
  Address    : 0x08000000

Erasing memory corresponding to segment 0:
Erasing internal memory sectors [0 20]
Download in Progress:
100%

File download complete
Time elapsed during download operation: 00:00:01.150
Press ENTER to continue
```

ST8500 FW upgrade steps

- Launch *ST8500_G3_Hybrid_PE_RTE_upload.bat* file and follow the instructions.

```
C:\windows\system32\cmd.exe

#####
FW UPGRADE PROCEDURE FOR ST EVALUATION BOARDS
Before proceeding with FW upload, please ensure that STM32 MODE
switch position is "1" (DOWN) and PLC BOOT1 is "1" (DOWN)

FOR OTHER HARDWARE PLATFORMS, PLEASE ENSURE TO SET ST8500 BOOT1 HIGH (e.g. PULL-UP)
#####

#####
Press RESET or Power OFF/Power ON
#####

#####
Press RETURN
#####

Enter COM port number (e.g. 9) and press RETURN: 17

Selected COM port is : COM17
Current running protocol is:
Check running protocol
ACK
Protocol running is BOOT

#####
Press RESET or Power OFF/Power ON
#####

#####
Press RETURN
#####
Press any key to continue . . .
```

Running protocol is BOOT
if ST8500 SPI flash is
empty

ST8500 FW upgrade steps

- *ST8500_SPI_Loader.img* file upload on ST8500 RAM.
- After completion, FW images are written into ST8500 SPI flash.

```
Upload on ST8500 RAM a boot software on-going...
ACK
True
ACK
BOOT Version read:True
Loading IMG Header
ACK
Header OK... start sending file
ACK
Done Write 2.8%
ACK
Done Write 5.4%
ACK
Done Write 8.0%
ACK
Done Write 10.6%
ACK
Done Write 13.2%
ACK
Done Write 15.7%
ACK
Done Write 18.3%
ACK
Done Write 20.9%
```



```
Done Write 82.9%
ACK
Done Write 85.5%
ACK
Done Write 88.1%
ACK
Done Write 90.6%
ACK
Done Write 93.2%
ACK
Done Write 95.8%
ACK
Done Write 98.4%
ACK
Done Write 100.0%
PE IMG File Loaded: imgs\ST8500_SPI_Loader.img
Send IMG Start Request
ACK
START DONE
Press any key to continue . . .
```

ST8500 FW upgrade steps

- Write of FW images into ST8500 SPI flash (final part and program termination).
- After RESET, the ST8500 is ready.

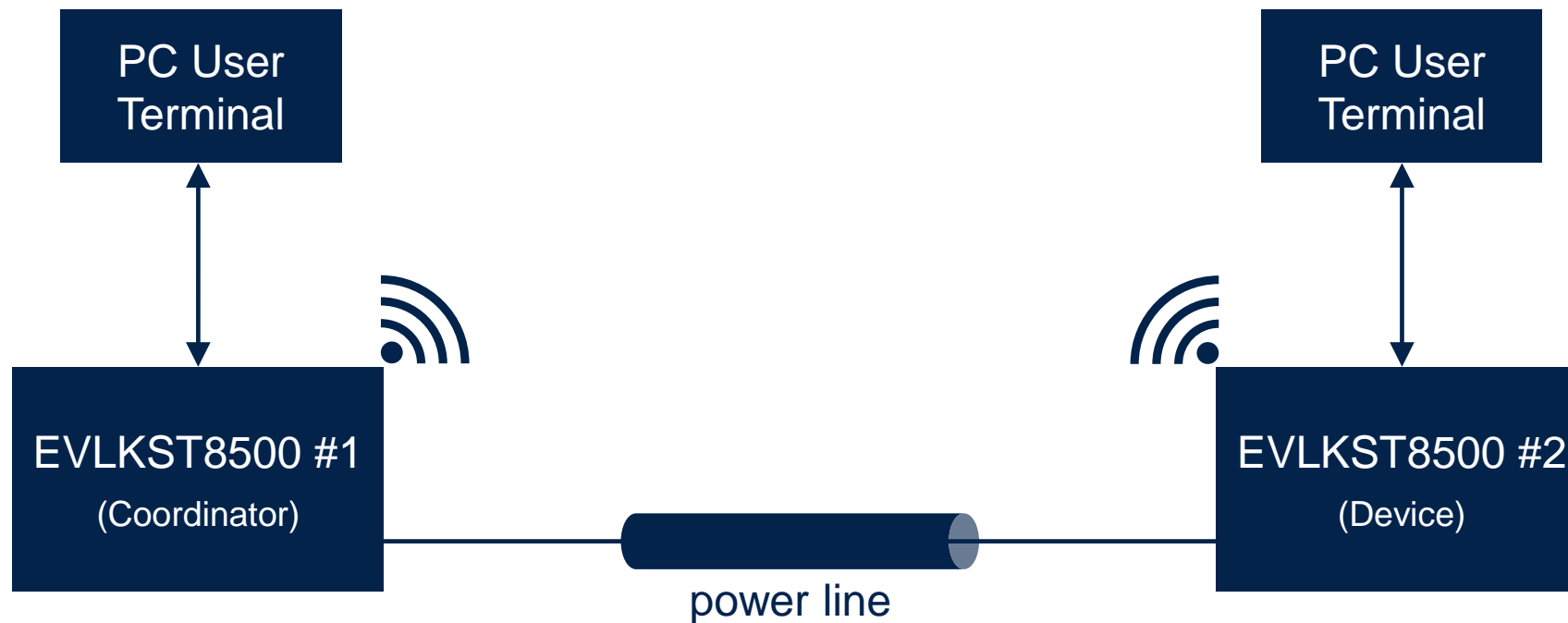
```
C:\windows\system32\cmd.exe
, 239, 15, 199, 108, 136, 44, 58, 99, 134, 22, 32, 196, 147, 66, 76, 7, 49, 170, 55, 100, 115, 96, 188, 211, 232, 83, 68
, 213, 181, 169, 46, 165, 186, 157, 146, 97, 130, 54, 213, 234, 213, 96, 228, 222, 2, 1, 208, 93, 189, 51, 64, 167, 107,
, 147, 119, 182, 241, 135, 48, 84, 93, 82, 53, 230, 107, 0, 63, 190, 90, 27, 204, 64, 167, 83, 152, 82, 173, 49, 144, 199
, 110, 128, 210, 43, 117, 76, 62, 100, 141, 177, 158, 81, 21, 85, 55, 51, 202, 76, 7, 31, 126, 154, 2, 177, 122, 180, 91
, 72, 147, 184, 139, 77, 86, 57, 13, 21, 215, 195, 24, 215, 57, 10, 115, 127, 244, 53, 60]')
Received: SFLASH_confirm_ID
SFLASH Confirm
SFLASH Request
Send data: ('[2, 134, <MM_cmd_id.SFLASH_request_ID: 78>, <SFLASH_operation.WRITE: 2>, 128, 0, 128, 222, 1, 0, 225, 161,
106, 183, 217, 177, 239, 246, 108, 60, 211, 221, 15, 190, 67, 160, 39, 55, 237, 231, 51, 66, 108, 214, 205, 31, 102, 49,
84, 223, 173, 178, 2, 205, 46, 0, 100, 84, 167, 246, 238, 102, 2, 86, 230, 158, 29, 163, 224, 231, 18, 243, 147, 104, 1
36, 84, 179, 17, 118, 240, 178, 182, 38, 181, 11, 57, 46, 101, 24, 176, 119, 95, 254, 72, 144, 2, 152, 65, 161, 228, 58,
32, 82, 76, 155, 64, 228, 105, 249, 53, 144, 183, 19, 35, 145, 212, 92, 228, 6, 17, 12, 207, 125, 191, 62, 152, 125, 11
2, 135, 97, 200, 21, 122, 9, 237, 35, 135, 175, 38, 12, 28, 44, 218, 45, 43, 16, 182, 165, 208, 63]')
Received: SFLASH_confirm_ID
SFLASH Confirm
SFLASH Request
Send data: ('[2, 54, <MM_cmd_id.SFLASH_request_ID: 78>, <SFLASH_operation.WRITE: 2>, 48, 0, 0, 223, 1, 0, 224, 176, 252,
252, 166, 109, 15, 37, 214, 193, 35, 176, 66, 141, 116, 199, 161, 173, 99, 236, 166, 51, 42, 23, 213, 26, 148, 236, 124
, 129, 224, 247, 189, 79, 62, 107, 57, 213, 151, 75, 159, 120, 245, 82, 107, 180, 155, 252, 140, 28]')
Received: SFLASH_confirm_ID
SFLASH Confirm
FW Upload status : 3
OK: FW upload completed

Press any key to continue . . .
#####
Press RESET or Power OFF/Power ON
#####

#####
Press RETURN
#####
```

Demo/test setup

- Basic/standard setup for the user terminal demo/test comes with 2 PLC/RF nodes connected as follows:



General handling

Board configuration

- S1 switch shall be set UP (= STM32 normal mode) on all boards.
- S2 switch shall be set DOWN (= ST8500 boot from SPI flash) on all boards.
- Boards will by default communicate via RF and PLC.
- Each board must be programmed with the proper NUCLEO-G070RB FW type, depending on the RF module. If 868 MHz modules are used, use the 868 MHz version, otherwise, if 915 MHz modules are used, use the 915 MHz version.
- If a 868 MHz module has to communicate with a 915 MHz module, a NUCLEO-G070RB FW modification is necessary to align the RF frequency (*rfconfig_req.data.RadioBaseFreq*).

PC Terminal configuration

- Open one serial terminal for each board PC side.

- Serial terminals port configuration:

- Port: <COM nb>
- Speed: 115200
- Data: 8bit
- Parity: none
- Stop bits: 1 bit
- Flow control: none

- Terminal setup:

- New line: Receive: CR, Transmit: CR
- Coding: Receive: UTF-8, Transmit: UTF-8
- For convenience “Local echo” can be activated (terminal live prints what is typed)

Using Teraterm: menu “Setup -> Serial port...”



Tera Term: Serial port setup and connection

Port:	COM256	New setting
Speed:	115200	
Data:	8 bit	Cancel
Parity:	none	
Stop bits:	1 bit	Help
Flow control:	none	

Transmit delay
0 msec/char 0 msec/line

Using Teraterm: menu “Setup -> Terminal...”

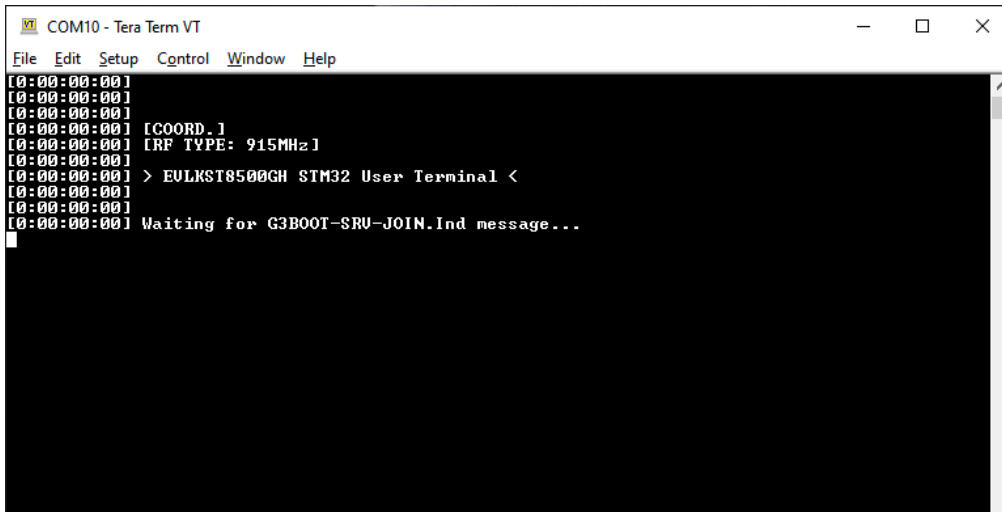


Tera Term: Terminal setup

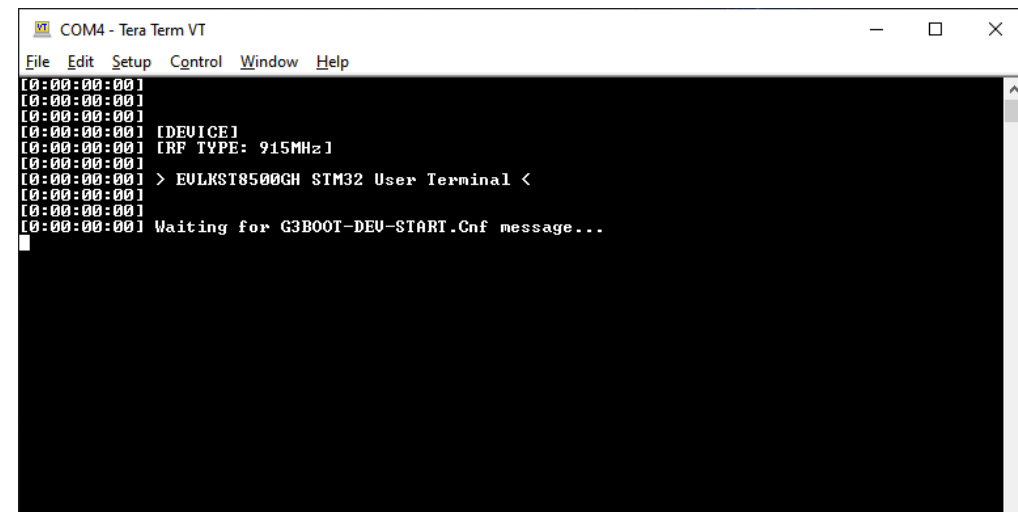
Terminal size 80 x 55 <input checked="" type="checkbox"/> Term size = win size <input type="checkbox"/> Auto window resize	New-line Receive: CR Transmit: CR	OK Cancel Help
Terminal ID: VT100	<input checked="" type="checkbox"/> Local echo	
Answerback:	<input type="checkbox"/> Auto switch (VT<->TEK)	
Coding (receive) UTF-8	Coding (transmit) UTF-8	
locale: american		

Terminal welcome menu

- Press the NUCLEO board reset button on all boards: the EVLKST8500GH STM32 Terminal welcome prompt appears.
- First, the user is invited to wait (~1min) for the end of the G3-PLC Bootstrap phase...



```
COM10 - Tera Term VT
File Edit Setup Control Window Help
[0:00:00:00]
[0:00:00:00]
[0:00:00:00]
[0:00:00:00] [COORD.]
[0:00:00:00] [RF TYPE: 915MHz]
[0:00:00:00]
[0:00:00:00] > EVLKST8500GH STM32 User Terminal <
[0:00:00:00]
[0:00:00:00]
[0:00:00:00] Waiting for G3BOOT-SRU-JOIN.Ind message...
```



```
COM4 - Tera Term VT
File Edit Setup Control Window Help
[0:00:00:00]
[0:00:00:00]
[0:00:00:00]
[0:00:00:00] [DEVICE]
[0:00:00:00] [RF TYPE: 915MHz]
[0:00:00:00]
[0:00:00:00] > EVLKST8500GH STM32 User Terminal <
[0:00:00:00]
[0:00:00:00]
[0:00:00:00] Waiting for G3BOOT-DEV-START.Cnf message...
```



*Left side terminal:
linked to EVLKST8500 #1
(Coordinator)*



*Right side terminal:
linked to EVLKST8500 #2
(Device)*

Terminal main test menu 1/2

- As soon as the final Bootstrap messages are received (i.e G3BOOT-SRV-JOIN.Ind on Coord. side and G3BOOT-DEV-START.Cnf on Device side), access to the terminal test menu is given:

```
COM10 - Tera Term VT
File Edit Setup Control Window Help
[0:00:00:00]
[0:00:00:00]
[0:00:00:00]
[0:00:00:00] [COORD.]
[0:00:00:00] [RF TYPE: 915MHz]
[0:00:00:00] > EULKST8500GH STM32 User Terminal <
[0:00:00:00]
[0:00:00:00] Waiting for G3BOOT-SRV-JOIN.Ind message...
[0:00:01:33] G3BOOT-SRV-JOIN.Ind received!
[0:00:01:34] Waiting for Platform Info message...
Platform info:
STM32 FW version: 130
PE FW version: 60110
G3Lib FW version: 1560B595
G3RTE FW version: 10910
Device Type: COORD.
Bandplan: CENELEC A
MAC addr.: FE4C66A80E1FF
sFlashID: EF4015
Usart num: 1
LED Conf: 1
Platform: ST8500
RF conn.: 1
Plat. Mode: IPV6 BOOT MODE
PanId: 8C57
ShortAddr: 0
[0:00:01:34]
[0:00:01:34] > EULKST8500GH main test menu: <
[0:00:01:34] <Press ESC. key then ENTER at any time to go back to this menu>
[0:00:01:34] To select UDP tests, press 0 then ENTER
```

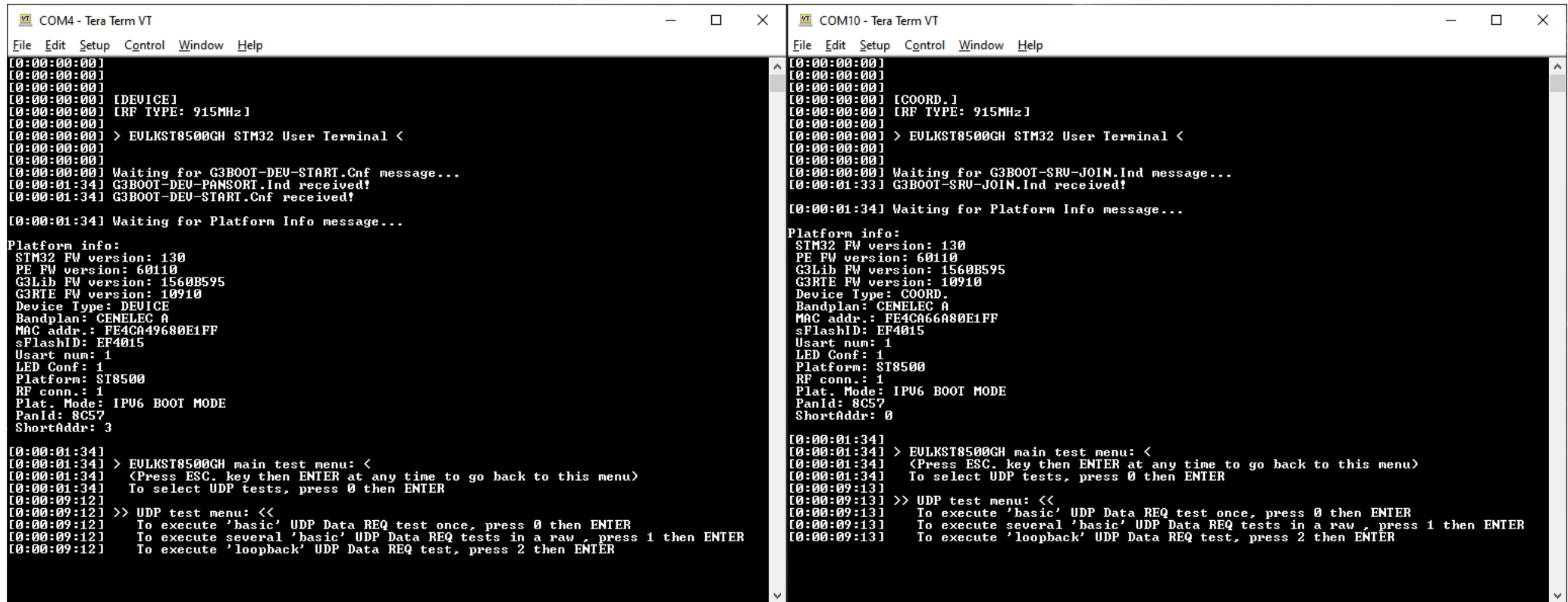
```
COM4 - Tera Term VT
File Edit Setup Control Window Help
[0:00:00:00]
[0:00:00:00]
[0:00:00:00]
[0:00:00:00] [DEVICE]
[0:00:00:00] [RF TYPE: 915MHz]
[0:00:00:00] > EULKST8500GH STM32 User Terminal <
[0:00:00:00]
[0:00:00:00] Waiting for G3BOOT-DEV-START.Cnf message...
[0:00:01:34] G3BOOT-DEV-PANSORT.Ind received!
[0:00:01:34] G3BOOT-DEV-START.Cnf received!
[0:00:01:34] Waiting for Platform Info message...
Platform info:
STM32 FW version: 130
PE FW version: 60110
G3Lib FW version: 1560B595
G3RTE FW version: 10910
Device Type: DEVICE
Bandplan: CENELEC A
MAC addr.: FE4C49680E1FF
sFlashID: EF4015
Usart num: 1
LED Conf: 1
Platform: ST8500
RF conn.: 1
Plat. Mode: IPV6 BOOT MODE
PanId: 8C57
ShortAddr: 3
[0:00:01:34]
[0:00:01:34] > EULKST8500GH main test menu: <
[0:00:01:34] <Press ESC. key then ENTER at any time to go back to this menu>
[0:00:01:34] To select UDP tests, press 0 then ENTER
```

- The user is invited to access further sub-menu and choose a test by typing the corresponding number and then pressing ENTER.

Terminal main test menu 2/2

- Tip: to run a specific test, the corresponding number must be selected on each board terminal through the menu hierarchy.

For example: to reach “UDP test menu”, selections through menu are the same (‘0’ then ‘ENTER’) for both terminals.



```
COM4 - Tera Term VT
File Edit Setup Control Window Help
[0:00:00:00]
[0:00:00:00]
[0:00:00:00]
[0:00:00:00] [DEVICE]
[0:00:00:00] [RF TYPE: 915MHz]
[0:00:00:00]
[0:00:00:00] > EULKST8500GH STM32 User Terminal <
[0:00:00:00]
[0:00:00:00] Waiting for G3BOOT-DEU-START.Cnf message...
[0:00:01:34] G3BOOT-DEU-PANSORT.Ind received!
[0:00:01:34] G3BOOT-DEU-START.Cnf received!
[0:00:01:34] Waiting for Platform Info message...
Platform info:
STM32 FW version: 130
PE FW version: 60110
G3Lib FW version: 1560B595
G3RTE FW version: 10910
Device Type: DEUIEC
Bandplan: CENELEC A
MAC addr.: FE4CA49680E1FF
sFlashID: EF4015
Usart num: 1
LED Conf: 1
Platform: ST8500
RF conn.: 1
Plat. Mode: IPV6 BOOT MODE
PanId: 8C57
ShortAddr: 3
[0:00:01:34]
[0:00:01:34] > EULKST8500GH main test menu: <
[0:00:01:34] <Press ESC. key then ENTER at any time to go back to this menu>
[0:00:01:34] To select UDP tests, press 0 then ENTER
[0:00:09:12]
[0:00:09:12] >> UDP test menu: <<
[0:00:09:12] To execute 'basic' UDP Data REQ test once, press 0 then ENTER
[0:00:09:12] To execute several 'basic' UDP Data REQ tests in a row, press 1 then ENTER
[0:00:09:12] To execute 'loopback' UDP Data REQ test, press 2 then ENTER

COM10 - Tera Term VT
File Edit Setup Control Window Help
[0:00:00:00]
[0:00:00:00]
[0:00:00:00]
[0:00:00:00] [COORD.]
[0:00:00:00] [RF TYPE: 915MHz]
[0:00:00:00]
[0:00:00:00] > EULKST8500GH STM32 User Terminal <
[0:00:00:00]
[0:00:00:00] Waiting for G3BOOT-SRU-JOIN.Ind message...
[0:00:01:33] G3BOOT-SRU-JOIN.Ind received!
[0:00:01:34] Waiting for Platform Info message...
Platform info:
STM32 FW version: 130
PE FW version: 60110
G3Lib FW version: 1560B595
G3RTE FW version: 10910
Device Type: COORD.
Bandplan: CENELEC A
MAC addr.: FE4CA66A80E1FF
sFlashID: EF4015
Usart num: 1
LED Conf: 1
Platform: ST8500
RF conn.: 1
Plat. Mode: IPV6 BOOT MODE
PanId: 8C57
ShortAddr: 0
[0:00:01:34]
[0:00:01:34] > EULKST8500GH main test menu: <
[0:00:01:34] <Press ESC. key then ENTER at any time to go back to this menu>
[0:00:01:34] To select UDP tests, press 0 then ENTER
[0:00:09:13]
[0:00:09:13] >> UDP test menu: <<
[0:00:09:13] To execute 'basic' UDP Data REQ test once, press 0 then ENTER
[0:00:09:13] To execute several 'basic' UDP Data REQ tests in a row, press 1 then ENTER
[0:00:09:13] To execute 'loopback' UDP Data REQ test, press 2 then ENTER
```

Terminal UDP data transfer tests: 'basic' UDP Data Req test

'Basic' UDP Data Req test launching

- This test aims at making a single UDP data transfer from one node to another.
- The test can be selected from terminals as follows:
 - From *EVLKST8500GH test menu*: press **0** to select *UDP tests*.
 - Then, from *UDP test menu*: press **0** to select '*basic*' *UDP Data REQ test*.
- In the test menu, the user is then invited to choose which node will play the role of UDP Data transfer originator and which node will play the role of UDP data transfer recipient.

'Basic' UDP Data Req test example

```
COM10 - Tera Term VT
File Edit Setup Control Window Help
[0:00:00:00] Waiting for G3BOOT-SRU-JOIN.Ind message...
[0:00:01:33] G3BOOT-SRU-JOIN.Ind received!
[0:00:01:34] Waiting for Platform Info message...

Platform info:
STM32 FW version: 130
PE FW version: 60110
G3Lib FW version: 1560B595
G3RIE FW version: 10910
Device Type: COORD.
Bandplan: CENELEC A
MAC addr.: FE4C86A80E1FF
sFlashID: EF4015
Usart num: 1
LED Conf: 1
Platform: ST8500
RP conn.: 1
Plat. Mode: IP06 BOOT MODE
PanId: 8C57
ShortAddr: 0

[0:00:01:34] > EVLKST8500GH main test menu: <
[0:00:01:34] <Press ESC. key then ENTER at any time to go back to this menu>
[0:00:01:34] To select UDP tests, press 0 then ENTER
[0:00:09:12] >> UDP test menu: <<
[0:00:09:12] To execute 'basic' UDP Data REQ test once, press 0 then ENTER
[0:00:09:12] To execute several 'basic' UDP Data REQ tests in a row, press 1 then ENTER
[0:00:09:12] To execute 'loopback' UDP Data REQ test, press 2 then ENTER
[0:00:16:15] >>> Basic UDP DataReq test: <<<
[0:00:16:15] If board is UDP DataReq originator, press 0 then ENTER
[0:00:16:15] If board is UDP DataReq recipient, press 1 then ENTER
[0:00:16:15] If not already done, launch corresponding test on the OTHER BOARD now!...
[0:00:16:15] Type (or send via file) the string to send over UDP link (max size = 99), the
[0:00:16:15] n ENTER
[0:00:17:58] Typed string is: Hello EVLKST8500 user!!!
[0:00:17:58] Waiting for G3UDP-DATA.Cnf message...
[0:00:17:58] G3UDP-DATA.Cnf received!
[0:00:17:58] Play test once more or press ESC. key then ENTER to go back to main menu
[0:00:17:58] Type (or send via file) the string to send over UDP link (max size = 99), the
[0:00:17:58] n ENTER

COM4 - Tera Term VT
File Edit Setup Control Window Help
Platform info:
STM32 FW version: 130
PE FW version: 60110
G3Lib FW version: 1560B595
G3RIE FW version: 10910
Device Type: DEVICE
Bandplan: CENELEC A
MAC addr.: FE4C849680E1FF
sFlashID: EF4015
Usart num: 1
LED Conf: 1
Platform: ST8500
RP conn.: 1
Plat. Mode: IP06 BOOT MODE
PanId: 8C57
ShortAddr: 3

[0:00:01:34] > EVLKST8500GH main test menu: <
[0:00:01:34] <Press ESC. key then ENTER at any time to go back to this menu>
[0:00:01:34] To select UDP tests, press 0 then ENTER
[0:00:09:12] >> UDP test menu: <<
[0:00:09:12] To execute 'basic' UDP Data REQ test once, press 0 then ENTER
[0:00:09:12] To execute several 'basic' UDP Data REQ tests in a row, press 1 then ENTER
[0:00:09:12] To execute 'loopback' UDP Data REQ test, press 2 then ENTER
[0:00:16:15] >>> Basic UDP DataReq test: <<<
[0:00:16:15] If board is UDP DataReq originator, press 0 then ENTER
[0:00:16:15] If board is UDP DataReq recipient, press 1 then ENTER
[0:00:16:15] If not already done, launch corresponding test on the OTHER BOARD now!...
[0:00:16:15] Type (or send via file) the string to send over UDP link (max size = 99), the
[0:00:16:15] n ENTER
[0:00:17:58] Typed string is: Hello EVLKST8500 user!!!
[0:00:17:58] Waiting for G3UDP-DATA.Cnf message...
[0:00:17:58] G3UDP-DATA.Cnf received!
[0:00:17:58] Play test once more or press ESC. key then ENTER to go back to main menu
[0:00:17:58] Type (or send via file) the string to send over UDP link (max size = 99), the
[0:00:17:58] n ENTER
```

'1' is selected:
EVLKST8500GH #1 is
UDP data transfer
recipient

Then EVLKST8500GH
#1 waits for message
reception...

Message is received
and displayed

Test is finished, system
waits for another test
string

'0' is selected:
EVLKST8500GH #2 is
UDP data transfer
originator

Then, the user is
invited to enter the
string to be sent
(string must be ended
by pressing ENTER)

Test is finished,
system prompts for
another test string

Terminal UDP data transfer tests: several 'basic' UDP Data Req test

Several 'basic' UDP Data Req test launching

- This test aims at making a series of basic UDP data transfer from one node to another.
- The test can be selected from terminals as follows:
 - From *EVLKST8500GH test menu*: press **0** to select *UDP tests*.
 - Then, from *UDP test menu*: press **1** to select several 'basic' UDP Data REQ test.
- In the test menu, the user is then invited to choose which node will play the role of UDP Data transfer originator and which node will play the role of UDP data transfer recipient.

Several 'Basic' UDP Data Req test example

*'1' is selected:
EVLKST8500GH #1 is
UDP data transfer
recipient*

*Then EVLKST8500GH
#1 waits for message
reception...*

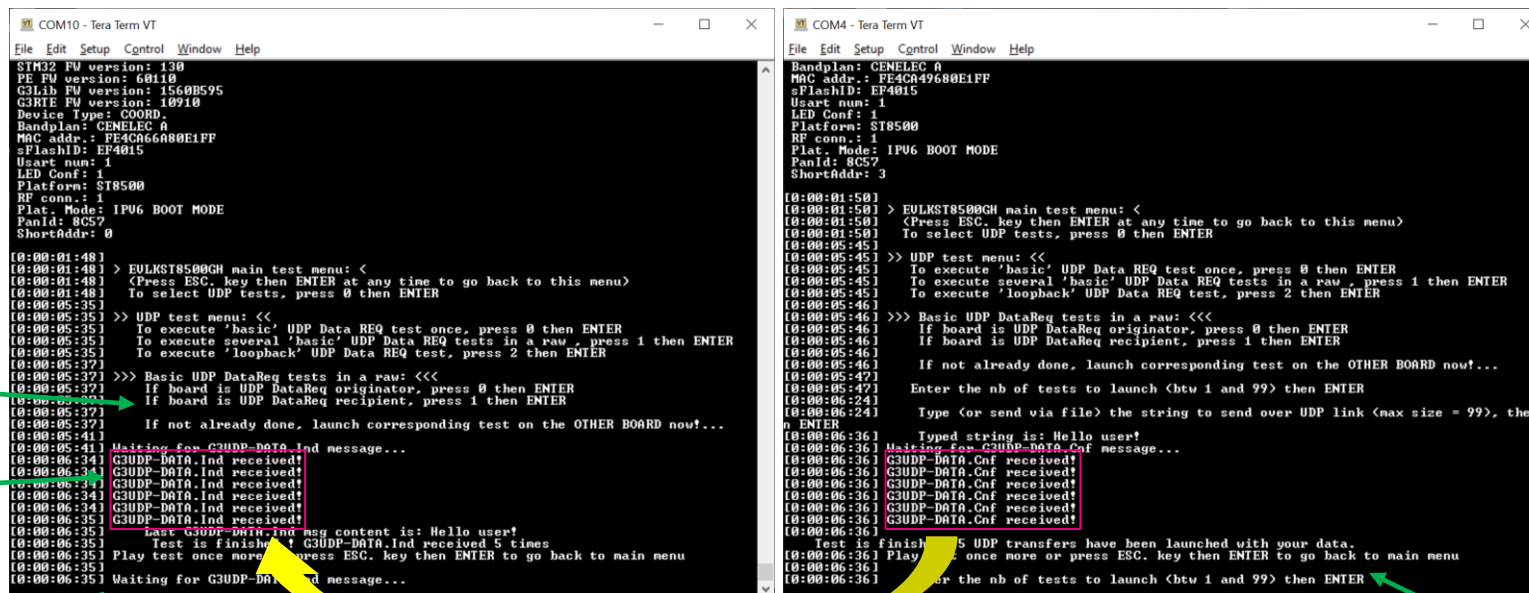
*Messages are received
and displayed*

Test is finished, system
waits for another test
string

'0' is selected:
EVLKST8500GH #2 is
UDP data transfer
originator

Then, the user is invited to enter the string to be sent (string must be ended by pressing ENTER)

*Test is finished,
system prompts for
another test string*



Terminal UDP data transfer tests: 'loopback' UDP Data Req test

'Loopback' UDP Data Req test launching

- This test aims at making a UDP data transfer from one node to another, then data are sent back to the originator. The data loopback transfer duration and number of exchanged bytes are reported.
- The test can be selected from terminals as follows:
 - From *EVLKST8500GH test menu*: press **0** to select *UDP tests*.
 - Then, from *UDP test menu*: press **2** to select '*loopback*' *UDP Data REQ test*.
- In the test menu, the user is then invited to choose which node will play the role of UDP Data transfer originator and which node will play the role of UDP data transfer mirror.

'Loopback' UDP Data Req test example

'0' is selected:

EVLKST8500GH #1 is
UDP data transfer
originator

Then, the user is invited to
enter string to be sent
(string must be ended by
pressing **ENTER**)

Then EVLKST8500GH #1
waits for message
loopback...

Message is received back,
displaying:

- **Msg content**
- **Nb of exchanged chars**
- **transfer duration**

```
COM10 - Tera Term VT
File Edit Setup Control Window Help
[0:00:26:43] > EVLKST8500GH main test menu: <
[0:00:26:43] <Press ESC. key then ENTER at any time to go back to this menu>
[0:00:26:43] To select UDP tests, press 0 then ENTER
[0:00:27:15] >> UDP test menu: <<
[0:00:27:15] To execute 'basic' UDP Data REQ test once, press 0 then ENTER
[0:00:27:15] To execute several 'basic' UDP Data REQ tests in a row, press 1 then ENTER
[0:00:27:15] To execute 'loopback' UDP Data REQ test, press 2 then ENTER
[0:00:27:17] >>> Loopback UDP DataReq test: <<<
[0:00:27:17] If board is UDP DataReq originator, press 0 then ENTER
[0:00:27:17] If board ensures the UDP DataReq mirroring, press 1 then ENTER
[0:00:27:17] If not already done, launch corresponding test on the OTHER BOARD now!...
[0:00:27:19] Type (or send via file) the string to send over UDP link (max size = 99), the
n ENTER
[0:00:27:55] Typed string is: Let's try the UDP data transfer loopback!
[0:00:27:55] Waiting for G3UDP-DATA.Ind message...
[0:00:27:56] G3UDP-DATA.Cnf received!
[0:00:27:56] G3UDP-DATA.Ind received!
[0:00:27:56] Loopback'd msg content is: Let's try the UDP data transfer loopback!
[0:00:27:56] 45 characters loopbacked in 140 ms
[0:00:27:56] Play test once more or press ESC. key then ENTER to go back to main menu
[0:00:27:56] Type (or send via file) the string to send over UDP link (max size = 99), the
n ENTER
```

```
COM4 - Tera Term VT
File Edit Setup Control Window Help
[0:00:27:01] > EVLKST8500GH main test menu: <
[0:00:27:01] <Press ESC. key then ENTER at any time to go back to this menu>
[0:00:27:01] To select UDP tests, press 0 then ENTER
[0:00:27:07] >> UDP test menu: <<
[0:00:27:07] To execute 'basic' UDP Data REQ test once, press 0 then ENTER
[0:00:27:07] To execute several 'basic' UDP Data REQ tests in a row, press 1 then ENTER
[0:00:27:07] To execute 'loopback' UDP Data REQ test, press 2 then ENTER
[0:00:27:10] >>> Loopback UDP DataReq test: <<<
[0:00:27:10] If board is UDP DataReq originator, press 0 then ENTER
[0:00:27:10] If board ensures the UDP DataReq mirroring, press 1 then ENTER
[0:00:27:10] If not already done, launch corresponding test on the OTHER BOARD now!...
[0:00:27:12] Waiting for G3UDP-DATA.Ind message...
[0:00:27:57] G3UDP-DATA.Cnf received!
[0:00:27:57] G3UDP-DATA.Ind received!
[0:00:27:57] G3UDP-DATA.Ind msg content is: Let's try the UDP data transfer loopback!
[0:00:27:57] Play test once more or press ESC. key then ENTER to go back to main menu
[0:00:27:57] G3UDP-DATA.Cnf received!
[0:00:27:57] Waiting for G3UDP-DATA.Ind message...
```

'1' is selected:
EVLKST8500GH #2 is
UDP data transfer
"mirror"

Data from originator is
received and sent
back

Test is finished,
system waits for
another test string

Thank you

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