



ATG CALLBOX UI INSTALLATION AND TEST MANUAL USER MANUAL

Document Part Number: SYN-UG-050

Version: Rev I

Published: Aug 2026

© Copyright by **Airspan Networks Ltd.**, 2024-2025. All rights reserved worldwide.

Legal Notices

The information contained within this document is proprietary, privileged and intended only for the recipient. As such, the information is subject to all relevant copyright, patent and other laws protecting intellectual property, as well as any specific agreements protecting Airspan Networks Ltd. rights in the aforesaid information. Neither this document nor the information contained herein may be published, reproduced, transmitted or disclosed to third parties, in whole or in part, without the express, prior, written permission of Airspan Networks Ltd. In addition, any use of this document or the information contained herein for the purposes other than those for which it is disclosed is strictly forbidden.

Airspan Networks Ltd. reserves the right, without prior notice or liability, to make changes in equipment design or specifications.

Information supplied by Airspan Networks Ltd. is believed in good faith to be accurate and reliable, while every care has been taken in preparing these documents. However, Airspan Networks Ltd. does not make any representations and gives no warranties of whatever nature in respect of these documents, including without limitation, the accuracy or completeness of any information, facts and/or opinions contained therein. No responsibility is assumed by Airspan Networks Ltd. for the use of the documents nor for the rights of third parties which may be effected in any way by the use thereof. The provision of these documents (and the documents themselves) does not constitute professional advice of any kind. Any representation(s) in these documents concerning performance of Airspan Networks Ltd. product(s) are for informational purposes only and are not warranties of future performance, either expressed or implied. Airspan Networks Ltd., its affiliates, directors, employees and agents shall not be held liable for any damages or losses, of any nature whatsoever, arising from any use of and/or reliance on the documents.

These documents may contain flaws, omissions or typesetting errors; no warranty is granted nor liability assumed in relation thereto unless specifically undertaken in Airspan Networks Ltd. sales contract or order confirmation. Information contained herein is periodically updated and changes will be incorporated into subsequent editions. If you have encountered an error, please notify Airspan Networks Ltd.

Product performance figures quoted within this document are indicative and for information purposes only.

UK WEEE Registration number: WEEE/AB0207WZ. For more information, see [WEEE Information for Airspan Customers and Recyclers](#).

CONTENTS

§	Document Information	1
	Revision History	1
1	About This Document	2
1.1	Intended Audience	2
1.2	Open issues.....	2
1.3	Terminology.....	4
1.4	References.....	4
2	Physical layout	5
3	Installation	6
4	Test Setup	8
4.1	Connectivity.....	8
4.2	Configuration.....	8
4.2.1	<i>password.gpg</i>	8
4.2.2	<i>ue_db_gogo.conf</i>	9
4.2.3	<i>ascb.conf</i> :	9
4.3	Execution	11
4.4	Log files.....	14
4.4.1	<i>Callbox logs</i>	14
4.4.2	<i>User test logs</i>	14
4.5	Tests	15
5	Regulatory.....	37
5.1	Human Exposure to Radio Frequencies.....	37
5.2	FCC Statements	37

Figure 1: Search for Secure Boot	2
Figure 2: Select Disabled option	3
Figure 3: Exit.....	3
Figure 4: Save & Exit	4
Figure 5: Physical layout	5
Figure 6: Software package	6
Figure 7: Installation	7
Figure 8: Credentials	8
Figure 9: UE Information	9
Figure 10: If ascb.conf and Callbox configs are correct then above window appears	11
Figure 11: Execution	11
Figure 12: Callbox login credentials are wrong in password.gpg.....	12
Figure 13: Wrong pci value configured in ascb.conf file.....	12
Figure 14: Valid PCI list	13
Figure 15: Test Result	14
Figure 16: Start Cell button	15
Figure 17: UE list.....	15
Figure 18: Cell starts failed due to invalid gain value	16
Figure 19: All the editable config freeze till cell stop.....	16
Figure 20: Start Cell button	17
Figure 21: Cell started with valid configuration.....	17
Figure 22: Cell starts failed due to invalid gain value	18
Figure 23: All the editable config freeze till cell stop.....	18
Figure 24: Cell start checkbox used to stop cell	19
Figure 25: Cell stopped.....	19
Figure 26: Cell start checkbox used to stop cell	20
Figure 27: Cell stopped.....	20
Figure 28: Update attenuation.....	21
Figure 29: Cell started with updated operational attenuation	22
Figure 30: Update cell id.....	23
Figure 31: Cell started with updated cell id.....	23
Figure 32: Start Iperf server.....	24
Figure 33: Iperf server started on Callbox	24
Figure 34: Failed to start iperf server on Callbox.....	25
Figure 35: Get Iperf Log button	25
Figure 36: No data to display.....	26
Figure 37: Get Iperf Log fetches last iperf test result	26
Figure 38: Core selection.....	27
Figure 39: Connected UE List button disappears if cell not started	28
Figure 40: Connected UE List button appears as cell started successfully	28
Figure 41: Connected UE List data	29
Figure 42: MME UE data block and eNB UE data block.....	29
Figure 43: Close the application	30
Figure 44: Poweroff the Callbox.....	31
Figure 45: Poweroff the Callbox request received	31
Figure 46: Callbox performing poweroff command	32
Figure 47: Searching for Callbox.....	32
Figure 48: Callbox Poweroff request processed successfully; now Callbox offlin.....	33
Figure 49: Callbox still offline	33
Figure 50: Callbox online now	34

Figure 51: Minor UI Corrections	34
Figure 52: Keep Online unchecked	35
Figure 53: Keep Online checked	35
Figure 54: t & t spl output	36
Figure 55: Desktop Shortcut	36

§ Document Information

Revision History

Revision	Date	Summary of Changes	Created by
Rev A	December 2025	Initial release	Tushar Tupe
Rev B	December 2025	Template update	Ashvtosh Goel
Rev C	January 2026	Updated for new UI, V1.5	Tushar/Ashvtosh
Rev D	February 2026	Updated for UI update V1.6	Tushar Tupe
Rev E	February 2026	Minor UI correction, V1.7	Tushar Tupe
Rev F	March 2026	UI feature updates, V1.9	Tushar
Rev G	April 2026	UI feature updates, Physical Layout	Tushar
Rev H	July 2026	Added Minimum Safe Operating Distance	Stuart Parrott
Rev H	August 2026	FCC part 15 statements added	Charlie Blackham

1 About This Document

This document specifies the interface and control requirements between the 2.4G and DMA Aircard software and the ATG platform host for the ATG Evolution project.

1.1 Intended Audience

This document is intended for user performing the tests with callbox in Gogo and clients network.

1.2 Open issues

Sometimes the Callbox motherboard enables secure boot option leads to failure in external ethernet interface card [enp4s0] detection. This can be identified when UI application starts and reports all the interfaces.

To recover from this, a monitor/keyboard/mouse needs to be attached and reconfigure boot options as follows:

- 1. Enter boot mode:**
Press 'Delete' key during boot.
- 2. Search for Secure Boot option:**
Search for Secure boot in search tool.

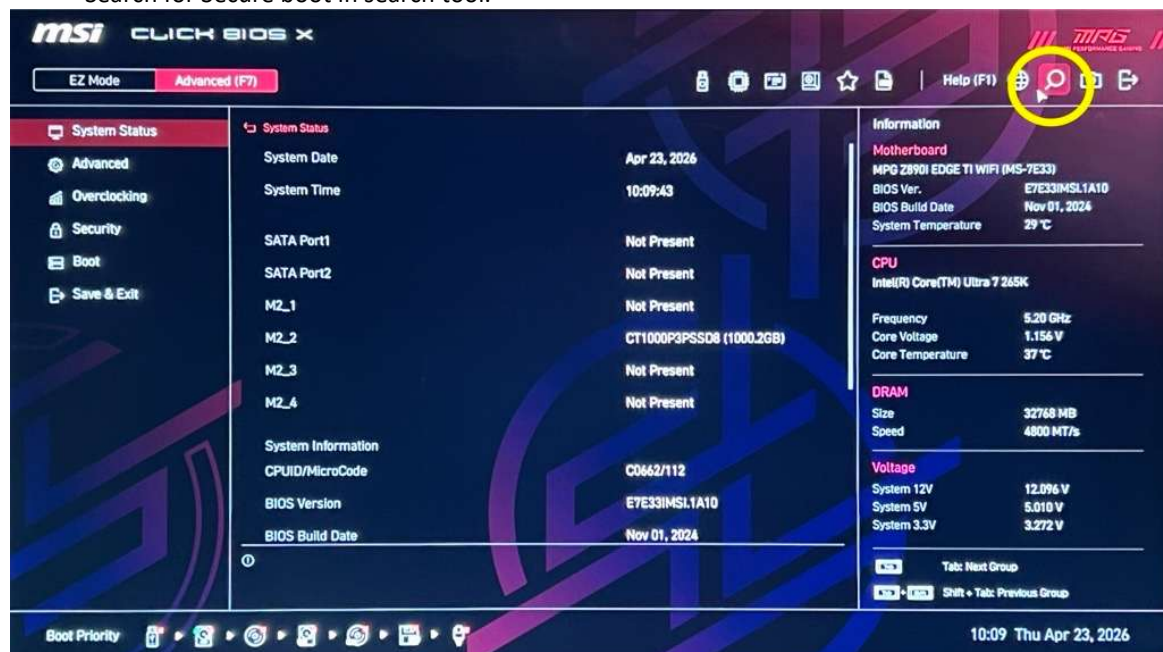


Figure 1: Search for Secure Boot

3. Disable Secure Boot:

Select Disabled option in dropdown.

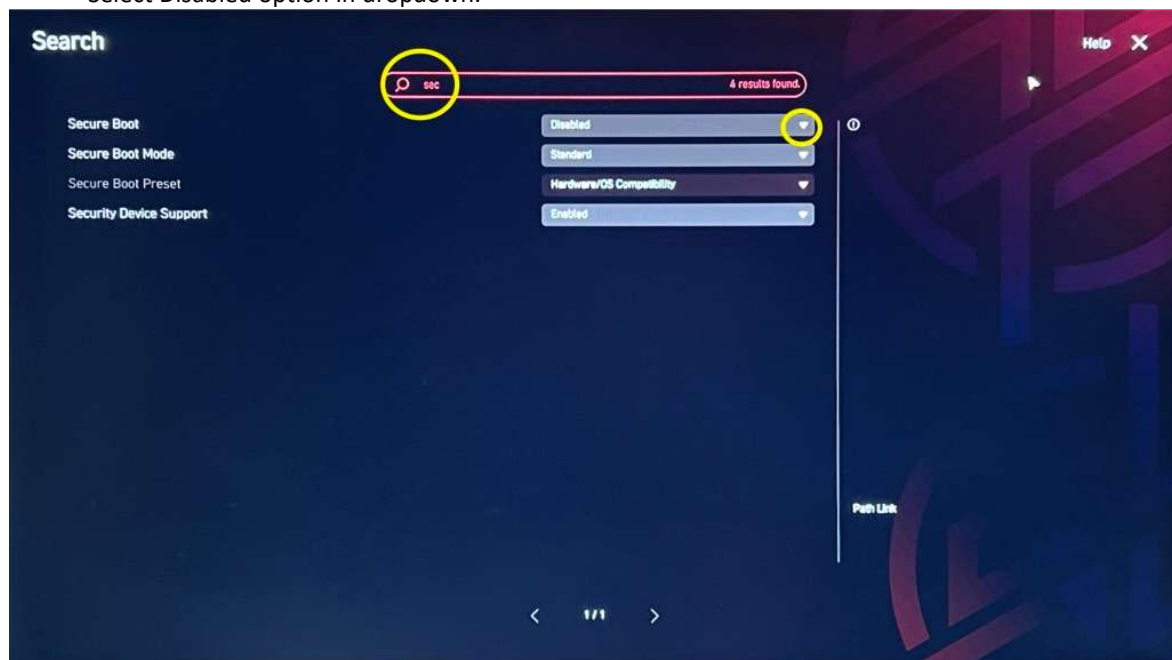


Figure 2: Select Disabled option

4. Click on Exit button:

Click on Exit button.

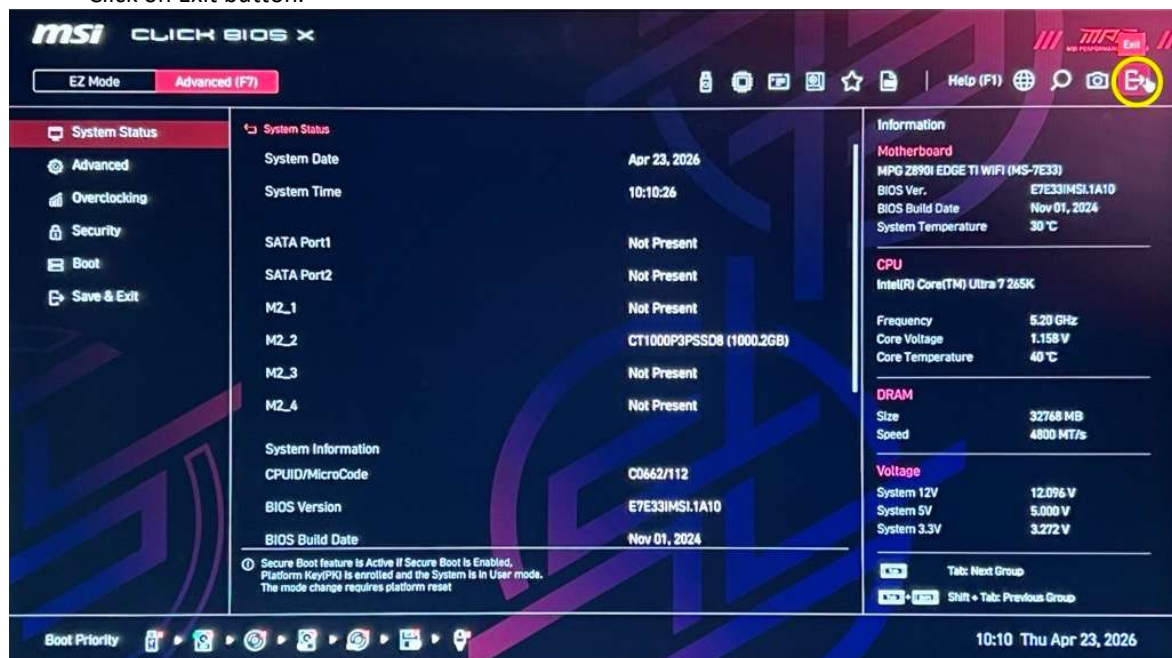


Figure 3: Exit

5. Save & Exit:

Click on Yes button to save configuration & exit from boot mode.

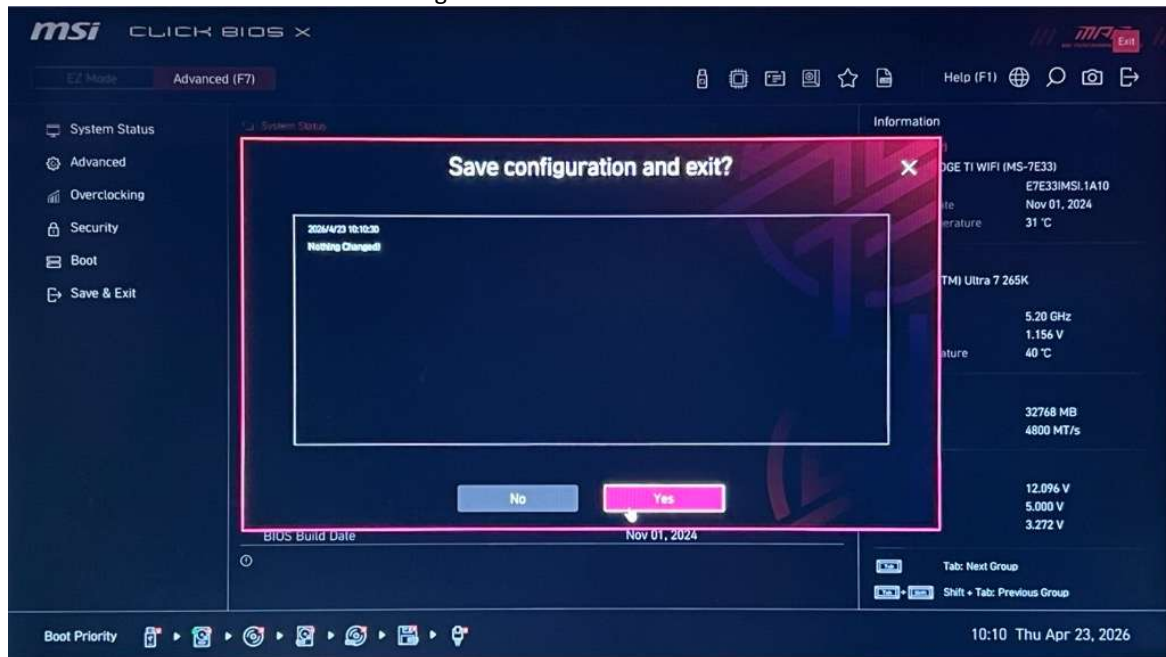


Figure 4: Save & Exit

1.3 Terminology

Callbox: a single box hosting enodeb and gnodeb services

Host PC: A PC with ubuntu22 which will execute the UI.

1.4 References

1.

2 Physical layout

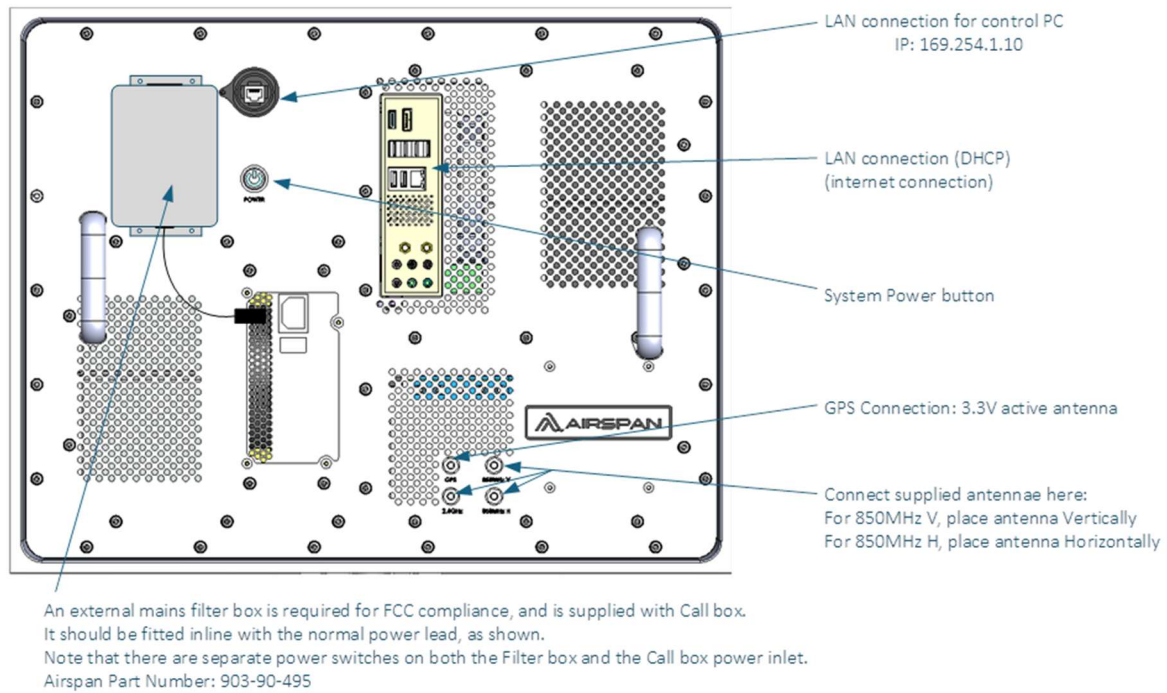


Figure 5: Physical layout

3 Installation

Callbox UI Tarball installation: Target – Test host PC

Basic system requirement for Host PC: Ubuntu 22.04

Basic requirement for test user: user should be part of sudoers for installation of the docker and software. User will be added to docker group during installation to avoid any further permission issues.

Release artifact: callbox_Vx.xx.tgz

Tarball content

- 1 version : package version
- 2 ascb.conf: Configuration file for IP addresses, iperf ports, eNodeB ID, gNodeBID, Cell ID, PCI etc
- 3 install.sh : script to install docker packages
- 4 callboxcontroluidocker.tar : docker with software
- 5 run.sh : execution script

User should untar the software release tarball in home directory.

```
airspan@asuktestpc1:~$ pwd
/home/airspan
airspan@asuktestpc1:~$ tar -xzf callbox_V1.5.tgz
callbox_V1.5/
callbox_V1.5/callboxcontroluidocker.tar
callbox_V1.5/run.sh
callbox_V1.5/ascb.conf
callbox_V1.5/install.sh
callbox_V1.5/version
airspan@asuktestpc1:~$
```

Figure 6: Software package

User should execute install.sh to install the docker environment. It is preferred to run with every release. This would also delete any old docker callbox ui image.

```
airspan@asuktestpc1:~$ cd callbox_V1.5/
airspan@asuktestpc1:~/callbox_V1.5$ ls
ascb.conf  callboxcontroluidocker.tar  install.sh  run.sh  version
airspan@asuktestpc1:~/callbox_V1.5$ ./install.sh
using username airspan
ctrl+c to abort in
1 sec Checking Docker installation...
Docker package found installed.
Docker command is available.
Docker version: Docker version 29.1.2, build 890dcca
current_images are
airspan@asuktestpc1:~/callbox_V1.5$ docker ps
CONTAINER ID   IMAGE                                COMMAND      CREATED      STATUS      PORTS      NAMES
airspan@asuktestpc1:~/callbox_V1.5$ docker images
```

IMAGE	ID	DISK USAGE	CONTENT SIZE	EXTRA
remoteamaricontrolui:V1.36	ec350ee763db	1.09GB	527MB	

```
airspan@asuktestpc1:~/callbox_V1.5$
```

Figure 7: Installation

Note1: If docker is installed for the first time, user should logout and login again before execution.
 Note2: Callbox should be connected to internet to install docker packages if not present already.

4 Test Setup

4.1 Connectivity

The callbox should be accessible to the test host PC over IPv4 ssh. The callbox is expected to have two ethernet interfaces, one with DHCP and one with static IP(v4) 169.254.1.10. If callbox network configuration changes, the configuration must be updated accordingly. See following section for the config files.

4.2 Configuration

Following are the config files required to start/control the UI application and callbox

4.2.1 password.gpg

The release docker comes with a password.gpg file which corresponds to the default username/password of the callbox. If the callbox password is updated, this file must be updated in the untarred release folder.

To create the gpg key file, create a password file with below content in <tag>: <value> format (user should update password with target machine credentials)

`USER_NAME: callbox`

`PASSWORD: <password>`

and run following command to create encrypted password.gpg file using above credentials

`$ gpg --batch -c --passphrase <pass phrase> --output password.gpg /tmp/password`

```
airspan@asuktestpc1:~/callbox_V1.5$ ls -altr
total 514876
-rw-rw-r-- 1 airspan airspan      28 Jan 29 09:08 version
-rwxrwxr-x 1 airspan airspan    6342 Jan 29 09:08 run.sh
-rwxrwxr-x 1 airspan airspan    3004 Jan 29 09:08 install.sh
-rw----- 1 airspan airspan 527189504 Jan 29 09:08 callboxcontroluidocker.tar
-rw-rw-r-- 1 airspan airspan     468 Jan 29 09:08 ascb.conf
-rw-rw-r-- 1 airspan airspan      43 Jan 29 09:29 password.txt
-rw-rw-r-- 1 airspan airspan     608 Jan 29 09:31 ue_db_gogo.cfg
drwxr-x--- 21 airspan airspan    4096 Jan 29 09:31 ..
drwxrwxr-x 2 airspan airspan    4096 Jan 29 09:31 .
airspan@asuktestpc1:~/callbox_V1.5$ cat password.txt
USER_NAME: callbox
PASSWORD: dummypassword
airspan@asuktestpc1:~/callbox_V1.5$ gpg --batch -c --passphrase "dummy pass phrase" --output password.gpg password.txt
airspan@asuktestpc1:~/callbox_V1.5$ ls -altr
total 514880
-rw-rw-r-- 1 airspan airspan      28 Jan 29 09:08 version
-rwxrwxr-x 1 airspan airspan    6342 Jan 29 09:08 run.sh
-rwxrwxr-x 1 airspan airspan    3004 Jan 29 09:08 install.sh
-rw----- 1 airspan airspan 527189504 Jan 29 09:08 callboxcontroluidocker.tar
-rw-rw-r-- 1 airspan airspan     468 Jan 29 09:08 ascb.conf
-rw-rw-r-- 1 airspan airspan      43 Jan 29 09:29 password.txt
-rw-rw-r-- 1 airspan airspan     608 Jan 29 09:31 ue_db_gogo.cfg
drwxr-x--- 21 airspan airspan    4096 Jan 29 09:31 ..
-rw-rw-r-- 1 airspan airspan     119 Jan 29 09:31 password.gpg
drwxrwxr-x 2 airspan airspan    4096 Jan 29 09:31 .
airspan@asuktestpc1:~/callbox_V1.5$
```

Figure 8: Credentials

4.2.2 ue_db_gogo.conf

This file is needed locally if the callbox internal core is used. This should have sim related info for the aircards which needs to be connected.

```
airspan@asuktestpc1:~/callbox_V1.5$ ls -altr
total 514880
-rw-rw-r-- 1 airspan airspan      28 Jan 29 09:08 version
-rwxrwxr-x 1 airspan airspan    6342 Jan 29 09:08 run.sh
-rwxrwxr-x 1 airspan airspan    3004 Jan 29 09:08 install.sh
-rw-r--r-- 1 airspan airspan 527189504 Jan 29 09:08 callboxcontroluidocker.tar
-rw-rw-r-- 1 airspan airspan     468 Jan 29 09:08 ascb.conf
-rw-rw-r-- 1 airspan airspan      43 Jan 29 09:29 password.txt
-rw-rw-r-- 1 airspan airspan     608 Jan 29 09:31 ue_db_gogo.cfg
drwxr-x-- 21 airspan airspan    4096 Jan 29 09:31 ..
-rw-rw-r-- 1 airspan airspan     119 Jan 29 09:31 password.gpg
drwxrwxr-x 2 airspan airspan    4096 Jan 29 09:31 .
airspan@asuktestpc1:~/callbox_V1.5$ cat ue_db_gogo.cfg
ue_db: [
{
  sim_algo: "milnaga",
  imsi: "300106667770278",
  opc: "DEADBEEF4E1FDEADBEEF1783238E11ED",
  amf: 0x8000,
  sqn: "000000000000",
  K: "DEADBEEF5E89DEADBEEF44381E237809",
  impu: ["300106667770278", "tel:30010958"],
  impi: "300106667770278@ims.mnc010.mcc300.3gppnetwork.org",
},
{
  sim_algo: "milnaga",
  imsi: "300100001108286",
  opc: "DEADBEEF4E1FDEADBEEF1783238E11ED",
  amf: 0x8000,
  sqn: "000000000000",
  K: "DEADBEEF5E89DEADBEEF44381E237809",
  impu: ["300100001108286", "tel:30010958"],
  impi: "300100001108286@ims.mnc010.mcc300.3gppnetwork.org",
},
],
airspan@asuktestpc1:~/callbox_V1.5$
```

Figure 9: UE Information

4.2.3 ascb.conf:

This file is supplied in the tarball with some default parameters and **must** be updated before starting the UI. These are configuration values to start and control the operation of callbox provided in <tag: value> format. User should change the param values as per current system.

This file lists all the **expert UI configurable values** that can be used to set / change the parameters like callbox ip, mme ip, amf ip, gtp address, ngap bind address, iperf server ip & port, plmn, enb id, gnb id, lte/nr cell attenuation, rx gain, pci, cell id, gps less operation, tac, nssai sst/sd & ssb nr arfcn of NR cell.

```
CALLBOX_IP: 169.254.1.10
MME_IP: 127.0.0.1
AMF_IP: 10.80.0.7
GTP_ADDR: 10.80.6.254
NGAP_BIND_ADDR: 10.80.6.254
IPERF_SERVER_IP: 10.80.6.254
IPERF_SERVER_PORT_4G: 7777
IPERF_SERVER_PORT_5G: 7778
PLMN: 31000
ENB_ID: 0x1
GNB_ID: 0x12345
CELL_ATTENUATION_4G: 20
CELL_ATTENUATION_5G: 55
ENB_RX_GAIN_P1: 20.0
```

```
ENB_RX_GAIN_P2: 20.0
GNB_RX_GAIN_P0: 44.0
LTE_CELL_ID: 25
PCI: 25
NR_CELL_ID: 2
PCI_5G: 2
TAC_4G: 10
TAC_5G: 10
GNB_SSB_NR_ARFCN: 495150
NSSAI_SST: 1
INCLUDE_NSSAI: 1
NSSAI_SD: 000001
OPERATION_WITH_GPS: 1
```

Note1: an *output* directory is created when executing the UI with application debug and test logs. This folder also has some configuration files which are generated from the input config files. If ascb.conf file needs to be updated, both cells should be stopped if running, the application should be stopped, final_ascb.conf from output needs to be removed and then application should be started again.

Note2: Since the SDR card output is connected to the FEM, the TX power from SDR card should be increased cautiously as it may burn the FEM. This power is controlled through CELL Attenuation values [CELL_ATTENUATION_4G/ CELL_ATTENUATION_5G]. The current limit in software is set to minimum of 10dB. Please do not try to set a lower attenuation.

4.3 Execution

To start the UI, user should change dir to release directory and use run.sh script from this directory.

```
$. /run.sh
```

This would start the traces on same console, and a UI window will pop up. An **output** directory will be created when the UI is started. It will have configuration files used by application within docker container. UI will also generate log files in this directory.

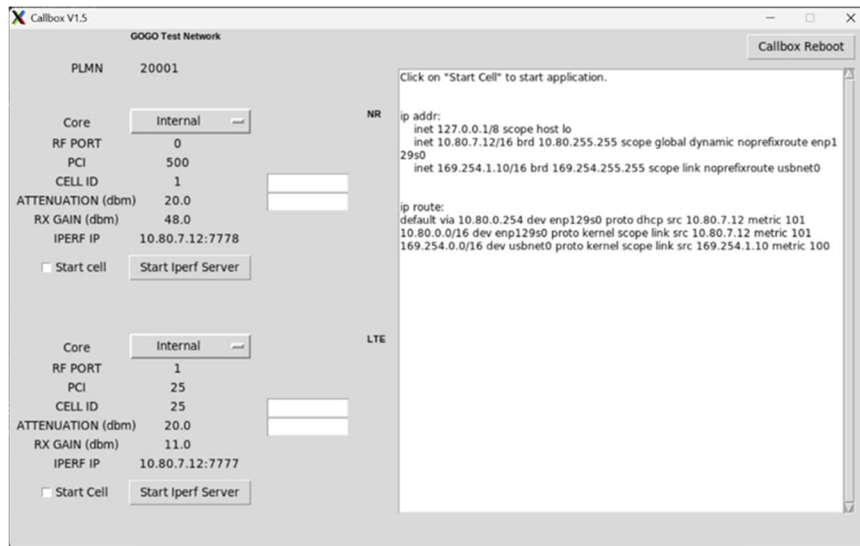


Figure 10: If ascb.conf and Callbox configs are correct then above window appears

```
airspan@asuktestpc1:~/callbox_V1.5$ ./run.sh
Checking Docker installation...
Docker package found installed.
Docker command is available.
Docker version: Docker version 29.1.2, build 890dcca
image: callboxcontrolui:V1.5
Docker image 'callboxcontrolui' already present.
airspan
Configuring X11 access...
Starting GUI container...
tail: cannot open '/tmp/usertest.log' for reading: No such file or directory
tail: '/tmp/usertest.log' has appeared; following new file
2026-01-29 09:41:04.997893: Starting Callbox Application
2026-01-29 09:41:35.024489: Click on "Start Cell" to start application.
2026-01-29 09:41:35.024489:
2026-01-29 09:41:35.024489: ip addr:
2026-01-29 09:41:35.024489:   inet 127.0.0.1/8 scope host lo
2026-01-29 09:41:35.024489:   inet 10.21.0.116/24 brd 10.21.0.255 scope global dynamic noprefixroute enp129s0
2026-01-29 09:41:35.024489:
2026-01-29 09:41:35.024489: ip route:
2026-01-29 09:41:35.024489: default via 10.21.0.254 dev enp129s0 proto dhcp src 10.21.0.116 metric 100
2026-01-29 09:41:35.024489: 10.21.0.0/24 dev enp129s0 proto kernel scope link src 10.21.0.116 metric 100
2026-01-29 09:42:22.382617: Performing cleanup before close
2026-01-29 09:42:22.383259: Stopping service
GUI exited. Docker container stopped.
airspan@asuktestpc1:~/callbox_V1.5$ ls -altr
total 514876
-rw-rw-r-- 1 airspan airspan      28 Jan 29 09:08 version
-rwxrwxr-x 1 airspan airspan    6342 Jan 29 09:08 run.sh
-rwxrwxr-x 1 airspan airspan    3004 Jan 29 09:08 install.sh
-rw-r--r-- 1 airspan airspan 527189504 Jan 29 09:08 callboxcontroluidocker.tar
-rw-rw-r-- 1 airspan airspan     608 Jan 29 09:31 ue_db_gogo.cfg
-rw-rw-r-- 1 airspan airspan     462 Jan 29 09:38 ascb.conf
drwxr-x-- 21 airspan airspan    4096 Jan 29 09:38 ..
drwxrwxr-x 3 airspan airspan    4096 Jan 29 09:41 .
drwxrwxr-x 2 airspan airspan    4096 Jan 29 09:41 output
airspan@asuktestpc1:~/callbox_V1.5$
```

Figure 11: Execution

For login failure with invalid credentials supplied from password.gpg file:

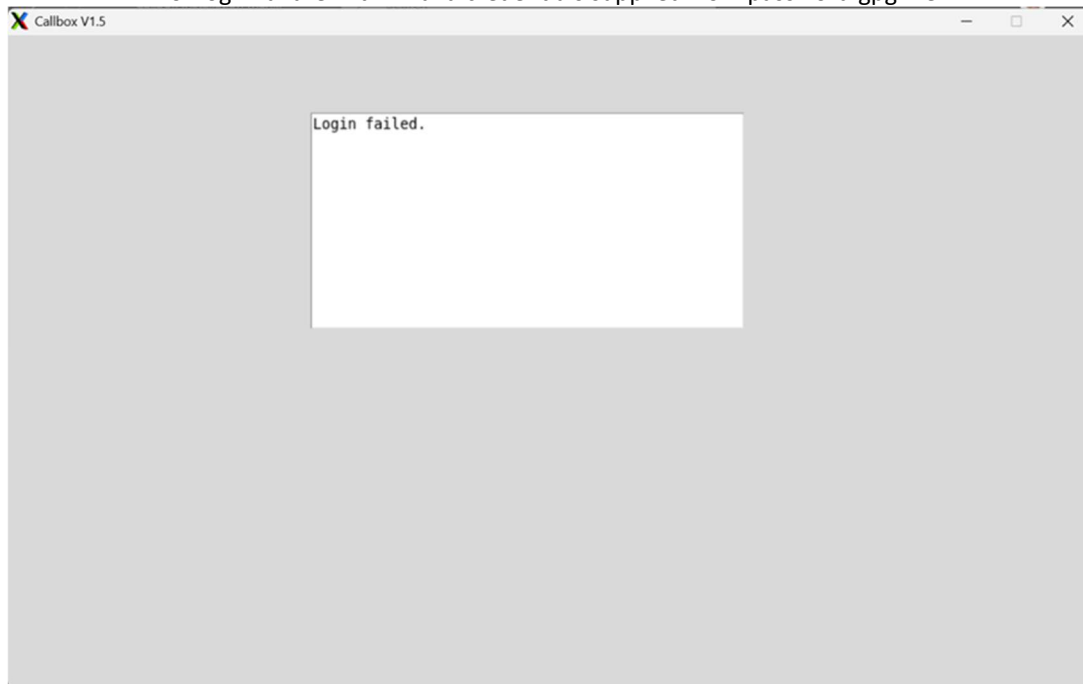


Figure 12: Callbox login credentials are wrong in password.gpg

For invalid PCI value supplied from ascb.conf file:



Figure 13: Wrong pci value configured in ascb.conf file

List of valid PCI's:

Valid PCIs										
0	59	102	155	200	259	300	347	400	465	501
1	60	103	156	207	260	301	348	401	466	502
2	61	104	157	208	267	302	349	405	467	503
6	62	105	158	209	268	303	350	406	468	
7	69	106	162	213	269	304	354	407	469	
8	70	107	163	214	270	305	355	408	470	
9	71	111	164	215	271	309	356	409	474	
10	75	112	165	216	272	310	363	410	475	
11	76	113	166	217	276	311	364	414	476	
15	77	114	167	218	277	312	365	415	477	
16	78	115	171	222	278	313	369	416	478	
17	79	116	172	223	285	314	370	417	479	
18	80	120	173	224	286	318	371	418	483	
19	84	121	174	225	287	319	372	419	484	
20	85	122	175	226	294	320	373	423	485	
24	86	129	176	227	295	321	374	424	492	
25	87	130	180	234	296	322	378	425	493	
26	88	131	181	235		323	379	432	494	
27	89	135	182	236		327	380	433	495	
28	93	136	183	240		328	381	434	496	
29	94	137	184	241		329	382	441	497	
33	95	138	185	242		330	383	442		
34		139	189	243		331	387	443		
35		140	190	244		332	388	447		
42		144	191	245		336	389	448		
43		145	192	249		337	390	449		
44		146	193	250		338	391	450		
51		147	194	251		339	392	451		
52		148	198	252		340	396	452		
53		149	199	253		341	397	459		
57		153		254		345	398	460		
58		154		258		346	399	461		

Figure 14: Valid PCI list

4.4 Log files

4.4.1 Callbox logs

All the Callbox logs will be redirected to **output/callbox.log** file. File contains all the debug logs, info logs and error logs with timestamp

4.4.2 User test logs

All the user test results will be seen in the output window in the UI and also redirected to output/usertest.log file with timestamp

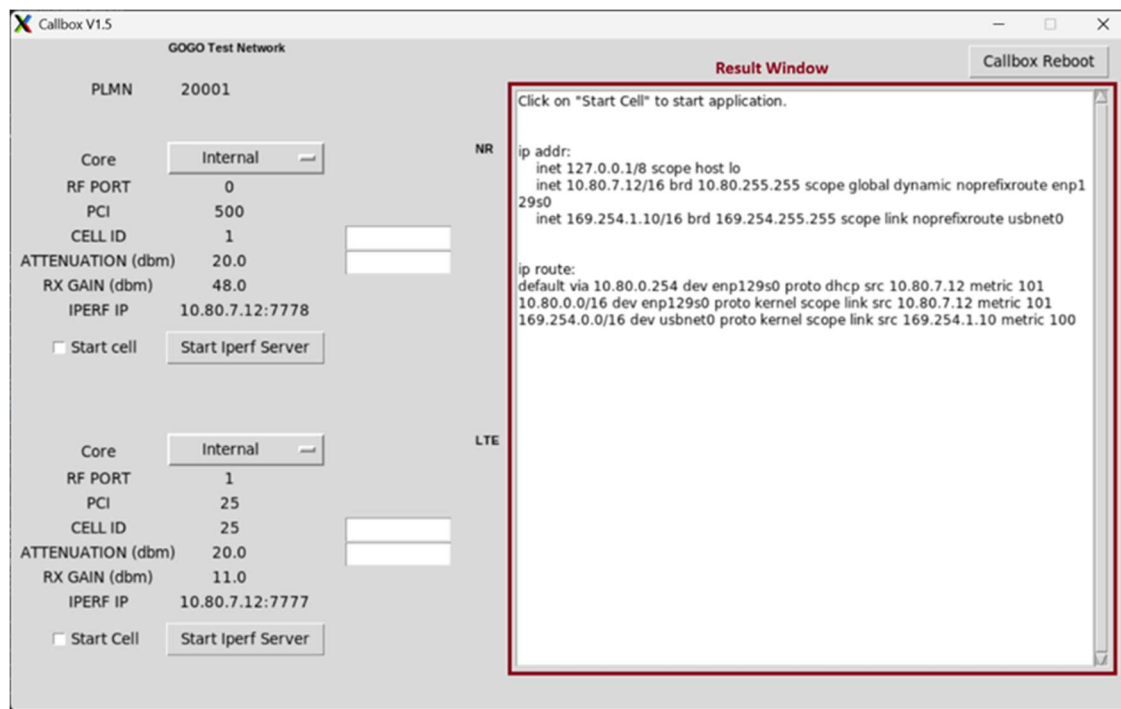


Figure 15: Test Result

4.5 Tests

The UI supports following options for the user to start callbox

1. Start 5G/NR Cell:

Now click on 'Start Cell' button to start 5G/NR cell.

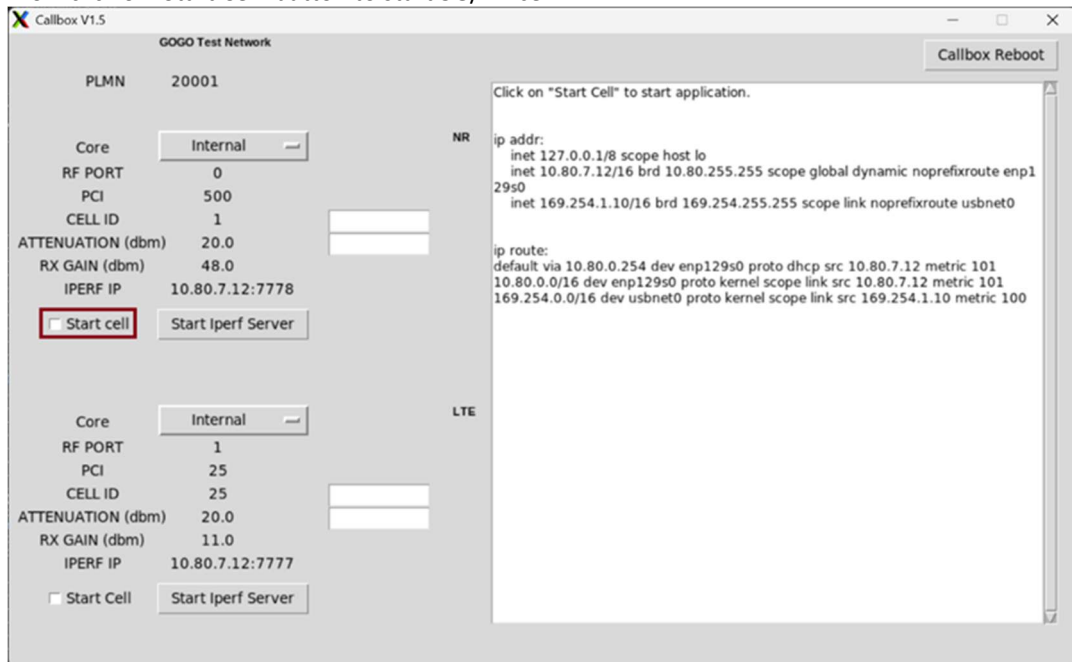


Figure 16: Start Cell button

If cell starts successfully with supplied configuration, then click on 'Start Cell' checkbox remains, 'Connected UE List' button now becomes visible and supplied valid configuration settings displayed on result window.

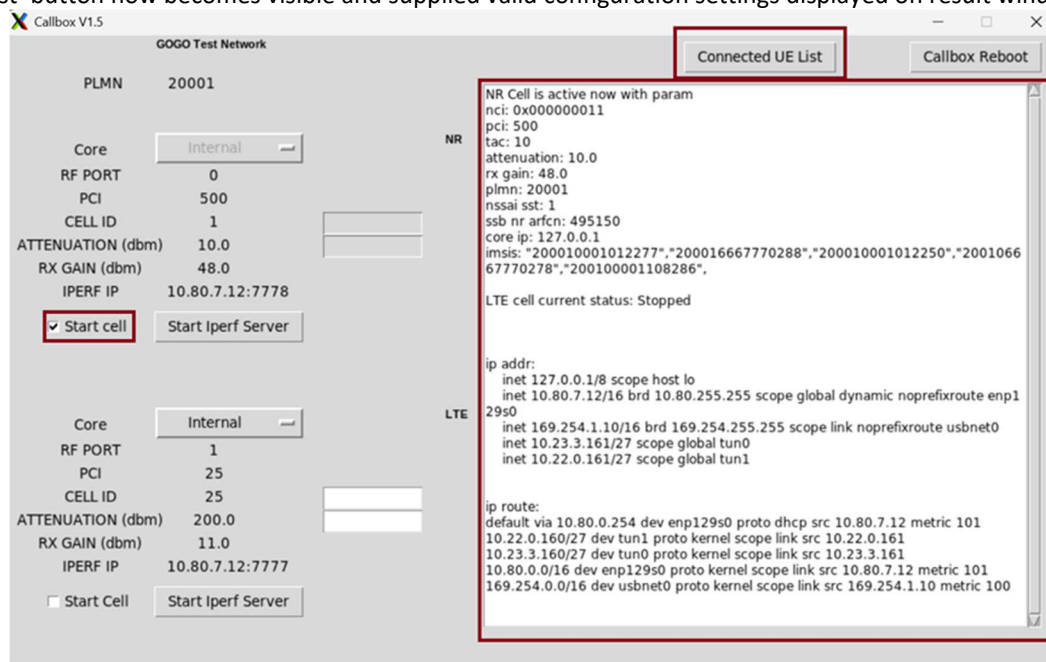


Figure 17: UE list

If cell start failed due to any issue 'Start Cell' checkbox tick will be automatically removed, all the editable textbox cleared, and error displayed in result window

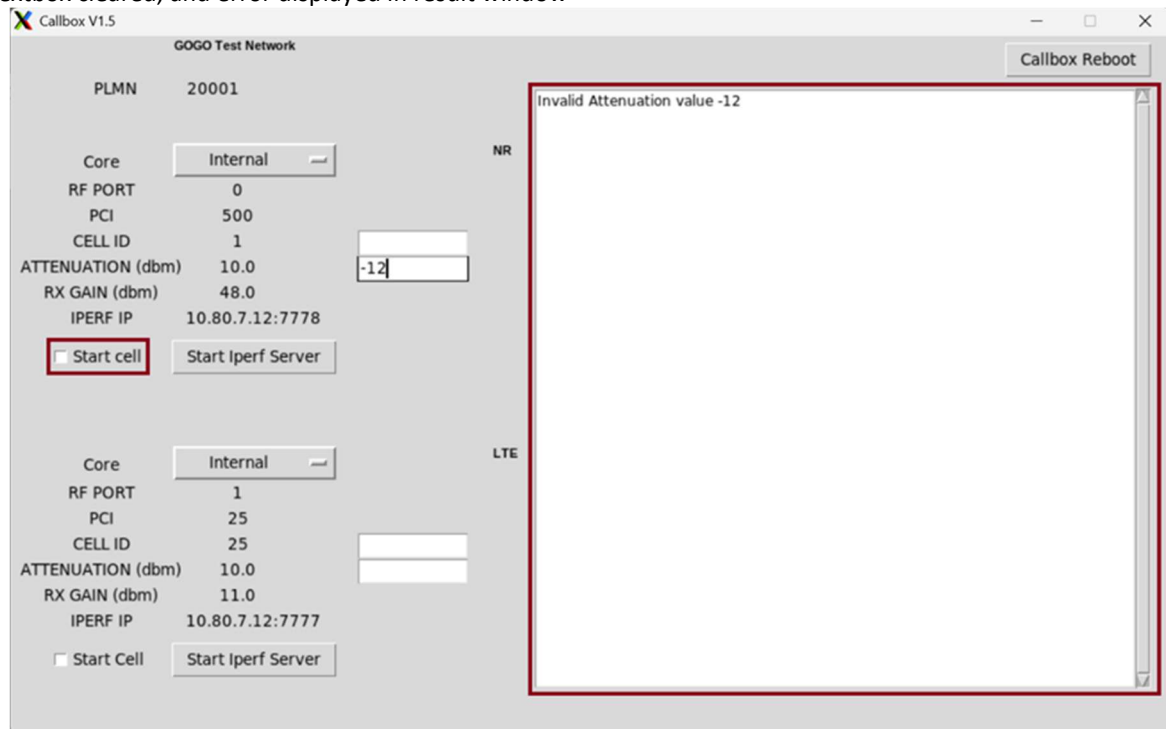


Figure 18: Cell starts failed due to invalid gain value

After successful Cell start with supplied configuration, all the config freeze till cell stopped.

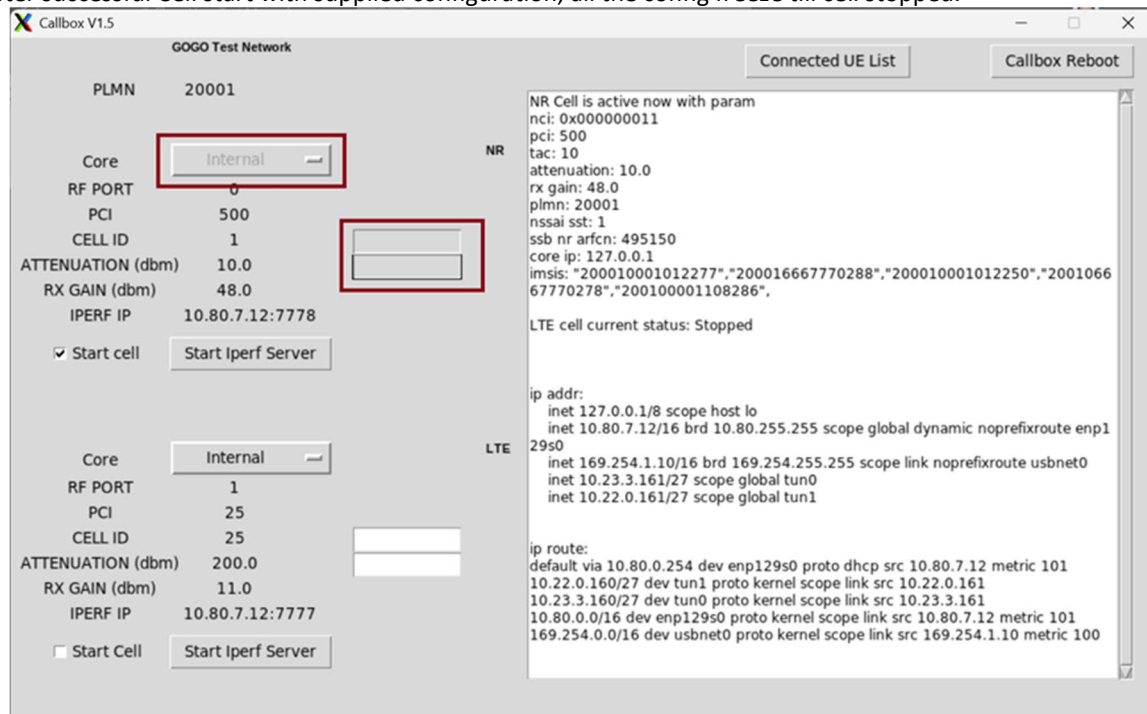


Figure 19: All the editable config freeze till cell stop

2. Start 4G/LTE Cell:

Now click on 'Start Cell' button to start 4G/LTE cell.

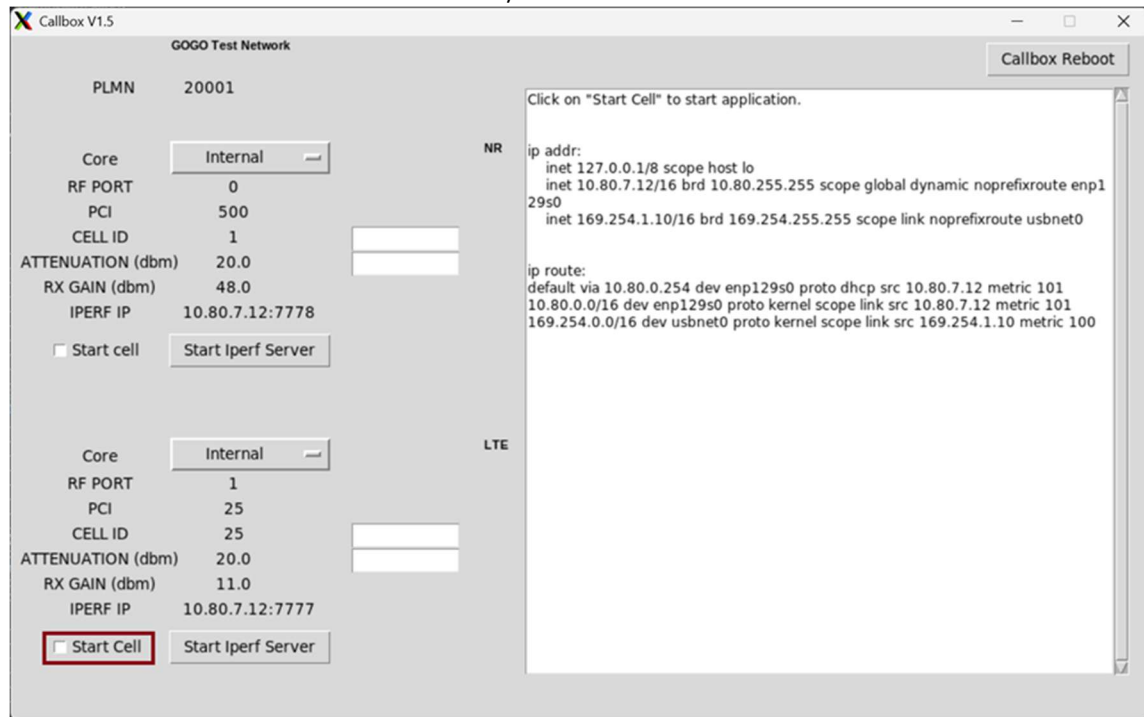


Figure 20: Start Cell button

If cell starts successfully with supplied configuration, then click on 'Start Cell' checkbox remains, 'Connected UE List' button now becomes visible and supplied valid configuration settings displayed on result window.

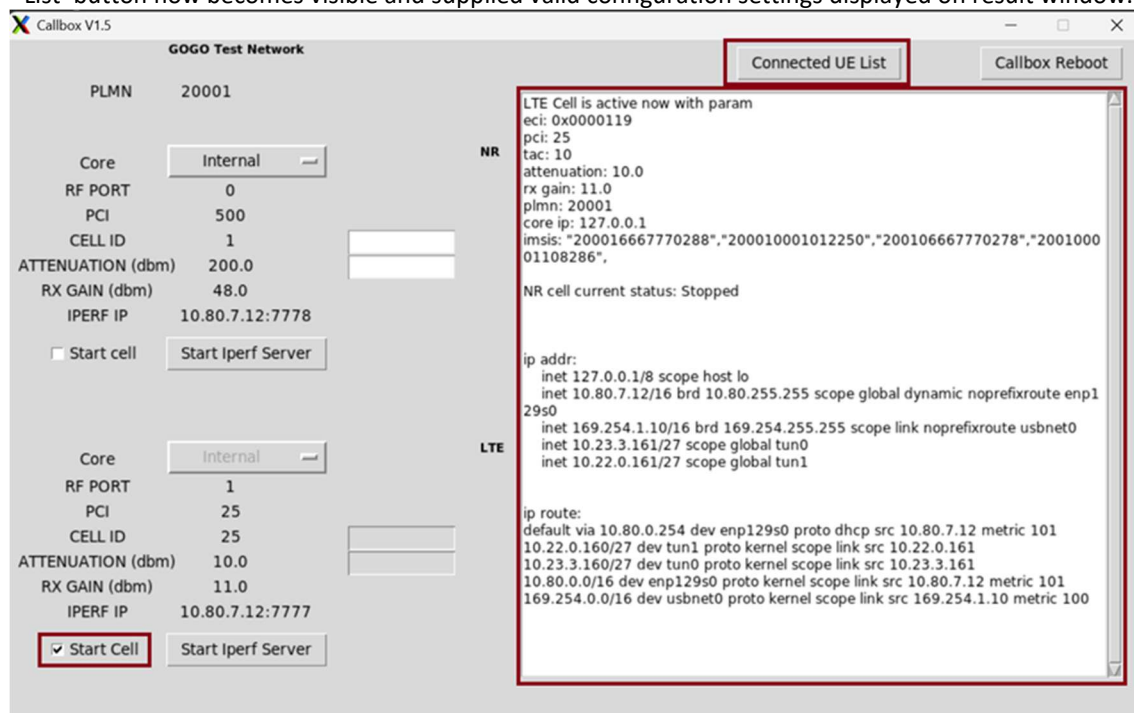


Figure 21: Cell started with valid configuration

If cell start failed due to any issue 'Start Cell' checkbox tick will be automatically removed, all the editable textbox cleared, and error displayed in result window

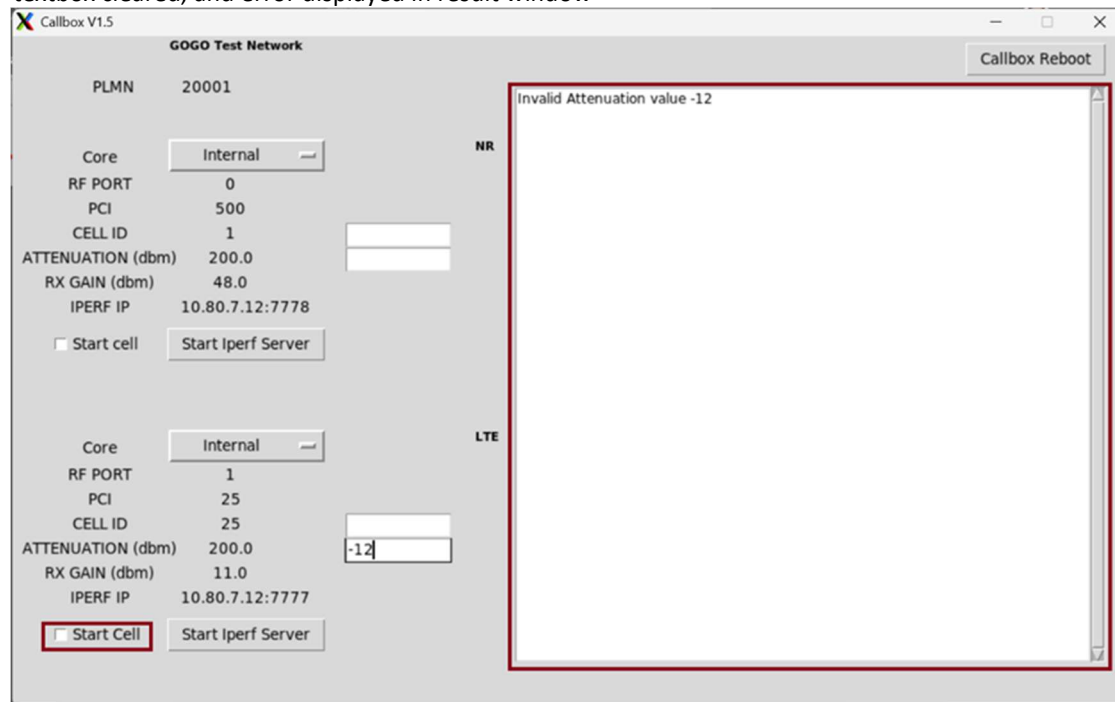


Figure 22: Cell starts failed due to invalid gain value

After successful Cell start with supplied configuration, all the config freeze till cell stopped.

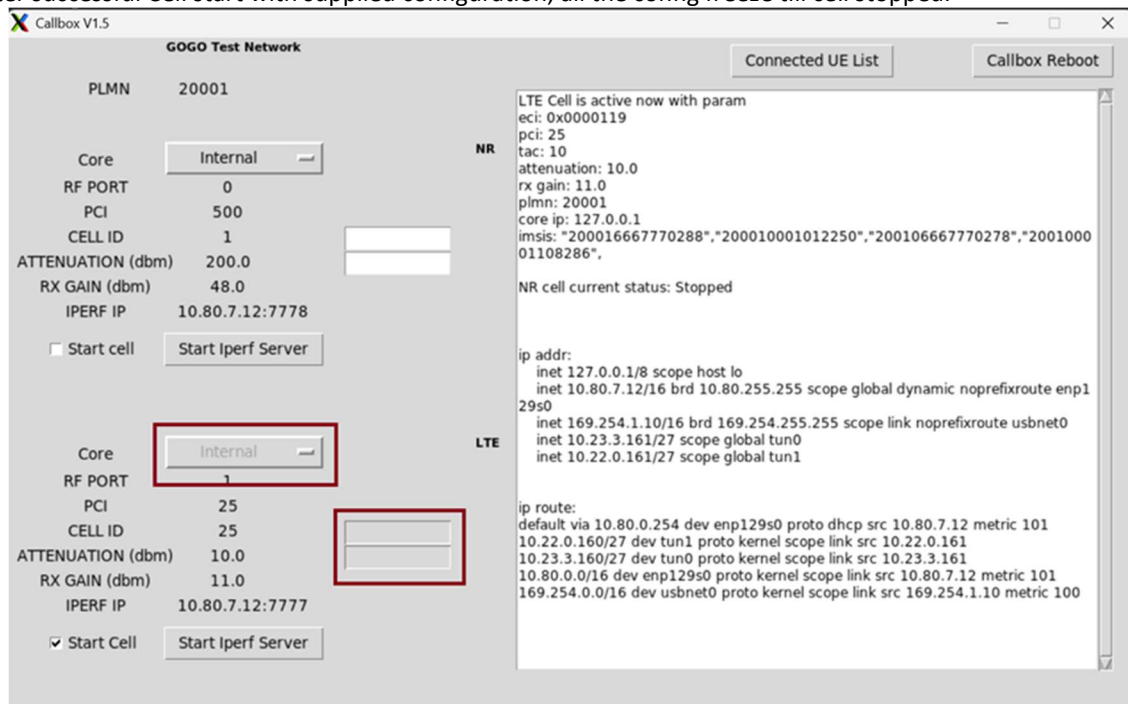


Figure 23: All the editable config freeze till cell stop

3. Stop Cell:

Callbox start with default attenuation value 200 (attenuation valid range 10 to 200dB) but if user wants to change the operational attenuation value with which cell should start every time, then that value needs to update in textbox then click on 'Start Cell' button to apply. Now this new value will be updated as CELL_ATTENUATION_4G for 4g/lte cell or CELL_ATTENUATION_5G for 5g/NR cell in final_ascb.conf.

4. Stop 5G/NR Cell:

Now to stop the cell needs to click on same 'Start Cell' checkbox.

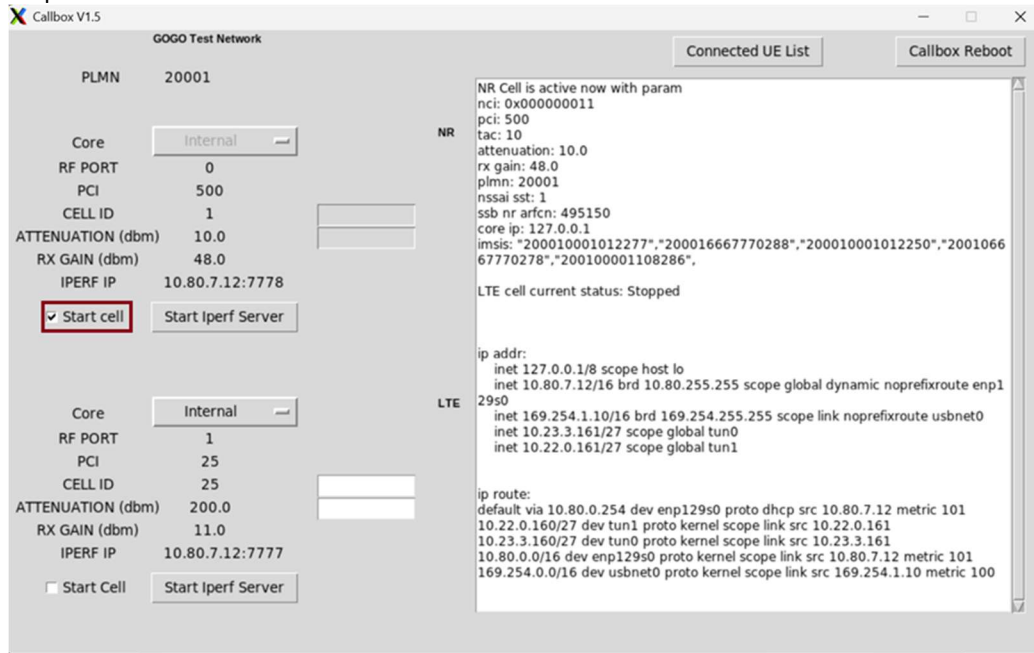


Figure 24: Cell start checkbox used to stop cell

After cell stop click on 'Start Cell' checkbox removed, Attenuation value updated as 200dB and result window updated with Cell Stopped now notification while all the editable config unfreezes.

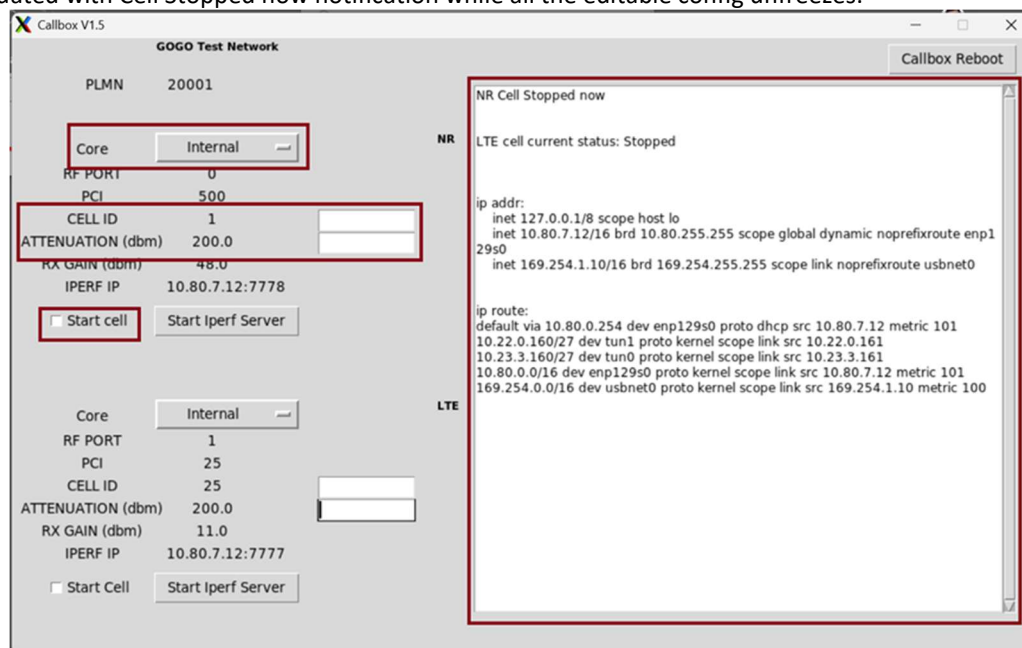


Figure 25: Cell stopped

5. Stop 4G/LTE Cell:

Now to stop the cell needs to click on same 'Start Cell' checkbox.

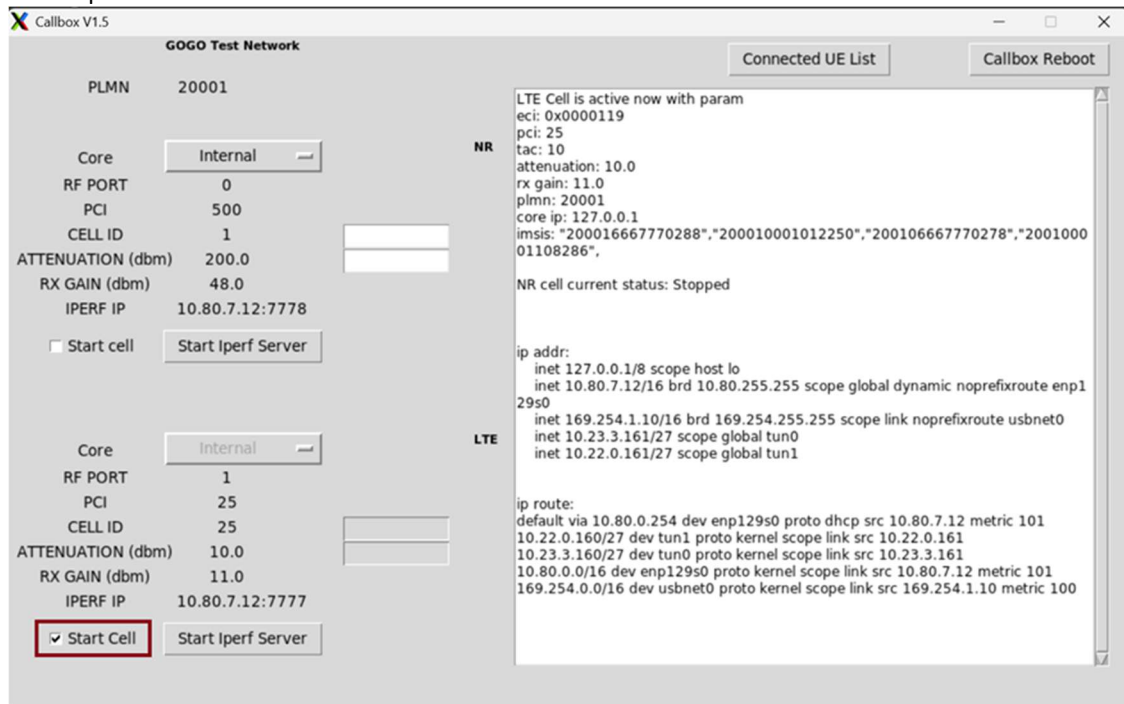


Figure 26: Cell start checkbox used to stop cell

After cell stop click on 'Start Cell' checkbox removed, Attenuation value updated as 200dB and result window updated with Cell Stopped now notification while all the editable config unfreezes.

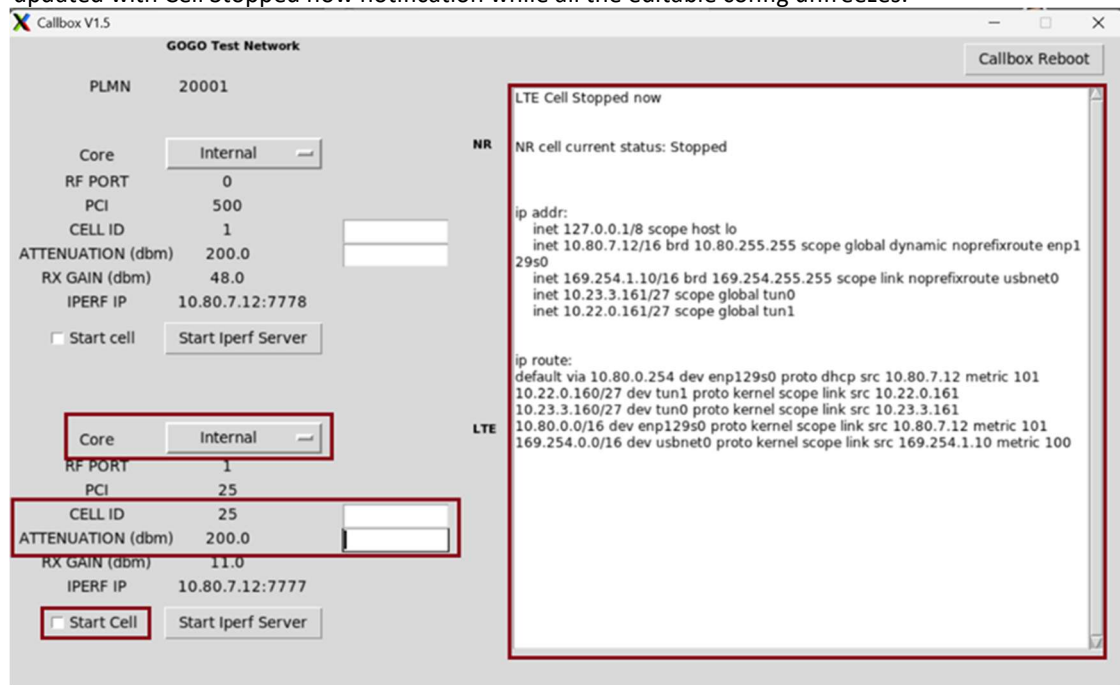


Figure 27: Cell stopped

6. Cell Start / Stop and Attenuation relation:

To stop cell, attenuation value updated as 200dB and to start cell attenuation value changed to 10 or user supplied operational attenuation. At 200dB cell won't transmit so won't be visible to UE. We are doing this to enable/disable cell as service start/stop apply to second cell also and thus interfere with second cell operations.

7. Attenuation / Operational attenuation updating:

To change operational attenuation; We can update any value between 10 to 200 dB (range can be changed based on /root/enb/config/airspan/max_gain.cfg file which reflects hardware gain limits) and click on 'Start Cell'

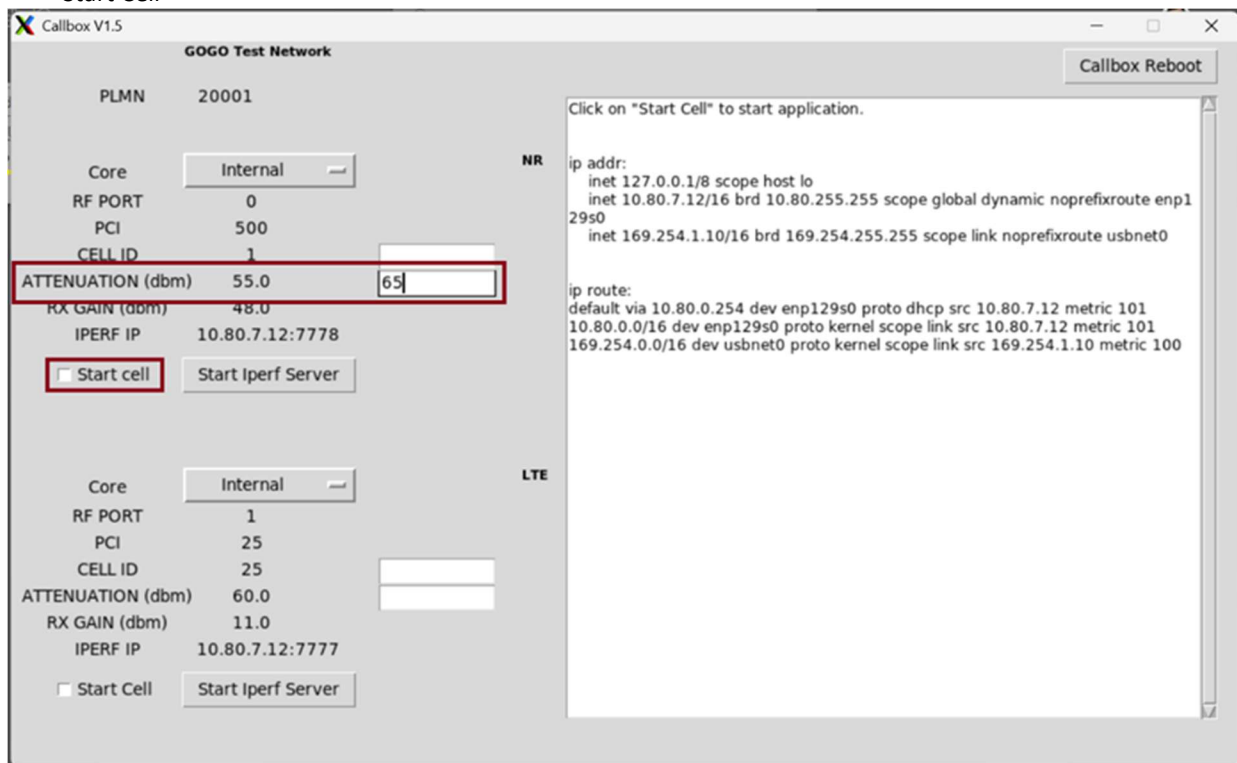


Figure 28: Update attenuation

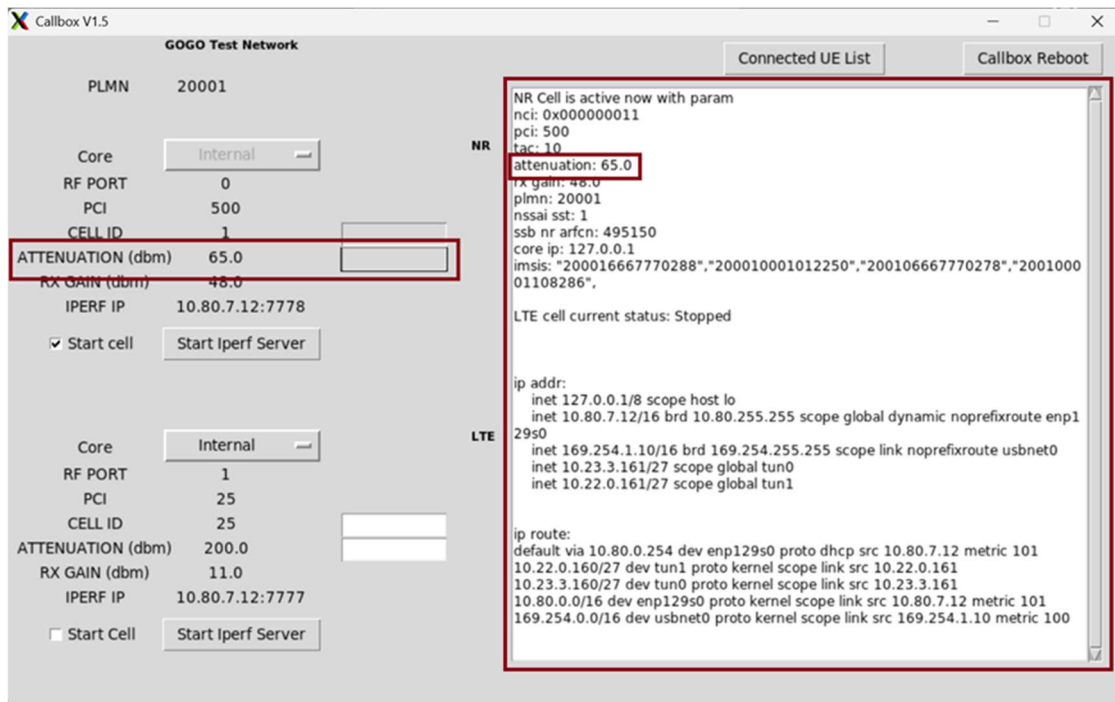


Figure 29: Cell started with updated operational attenuation

Now cell starts with this operational attenuation 65 dB for every reboot till final_ascb.conf file delete or again change attenuation as above. In final_ascb.conf file attenuation entry added as below

```
CELL_ATTENUATION_5G: 65
```

Similarly, if changed for LTE/4G cell in final_ascb.conf file entry added as CELL_ATTENUATION_4G.

8. Cell Id updating:

To change cell id; We can update any value between 0 to 15 (4 bit length) for NR/5G cell while 0 to 255 (8 bit length) for LTE/4G then click on 'Start Cell'

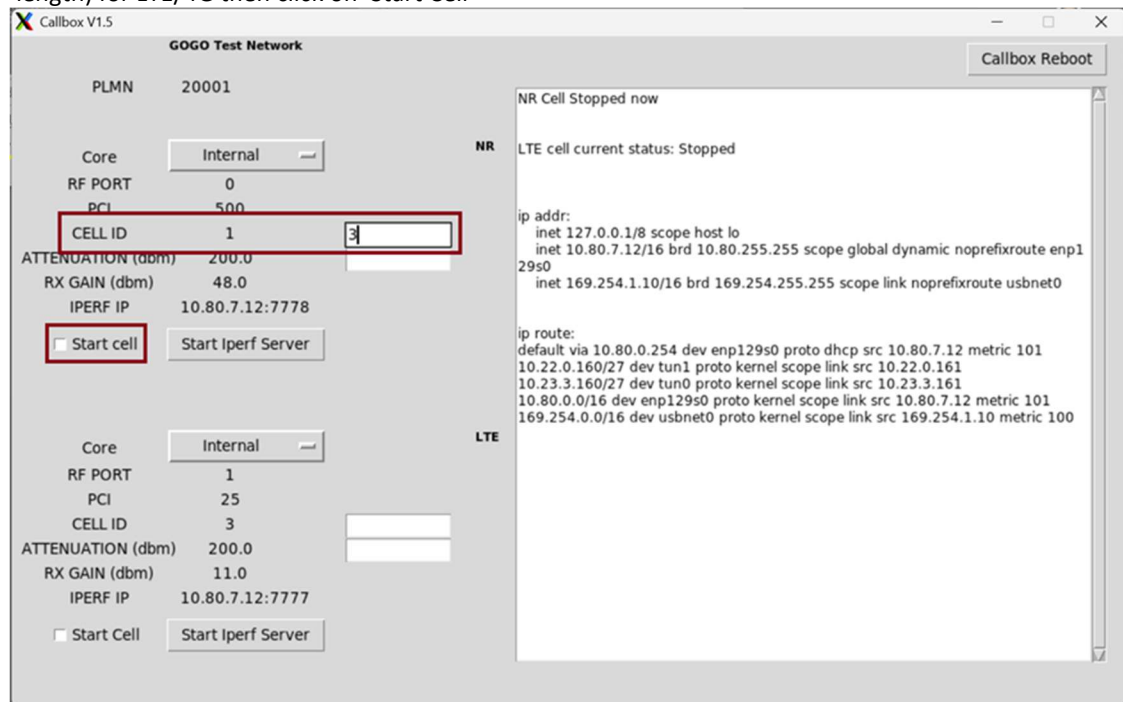


Figure 30: Update cell id

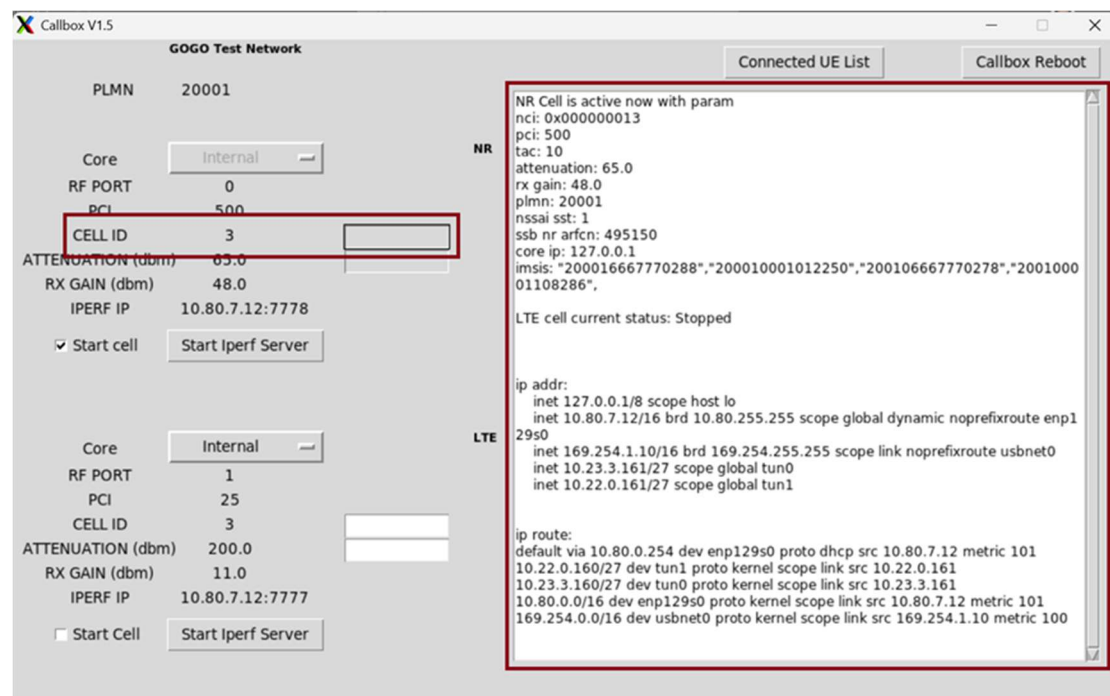


Figure 31: Cell started with updated cell id

Now cell starts with this cell id 3 for every reboot till final_ascb.conf file delete or again change cell id as above.

In final_ascb.conf file cell id entry added as below

`NR_CELL_ID: 3`

Similarly, if changed for LTE/4G cell final_ascb.conf file entry added as `LTE_CELL_ID`.

9. Start Iperf Server:

Click on 'Start Iperf Server' button to start iperf server on Callbox.

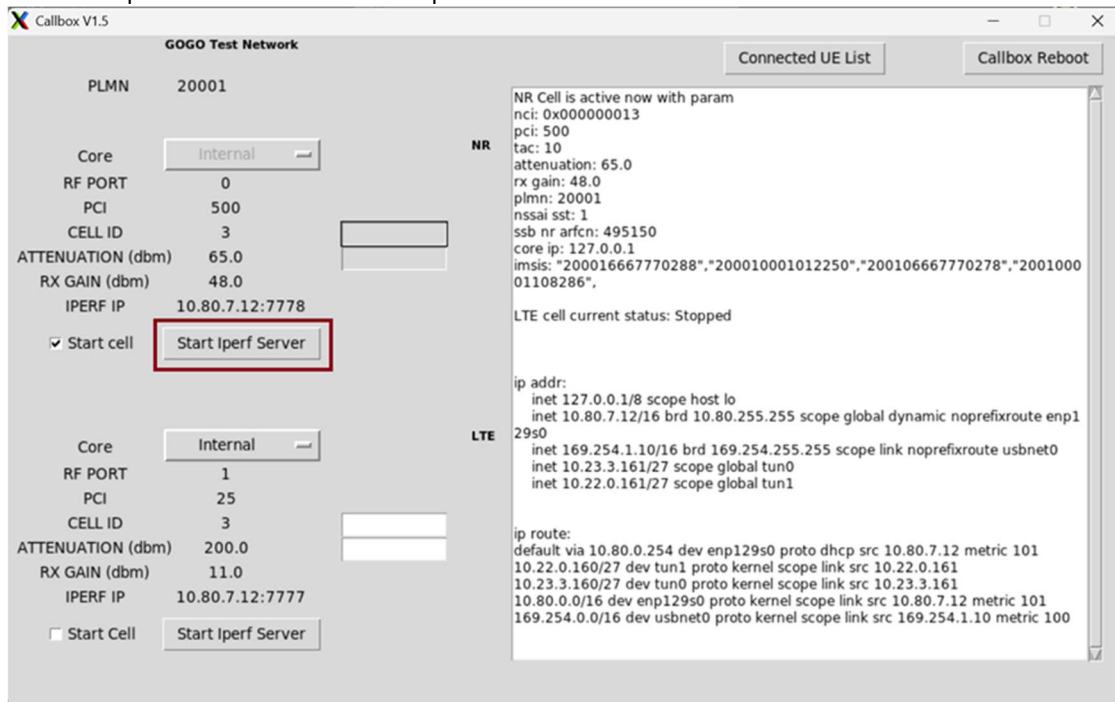


Figure 32: Start Iperf server

Start Iperf server triggers iperf3 session on Callbox.

If Iperf server started successfully then 'Get Iperf Log' button becomes visible to get the server result of last iperf test and notification displayed on result window.

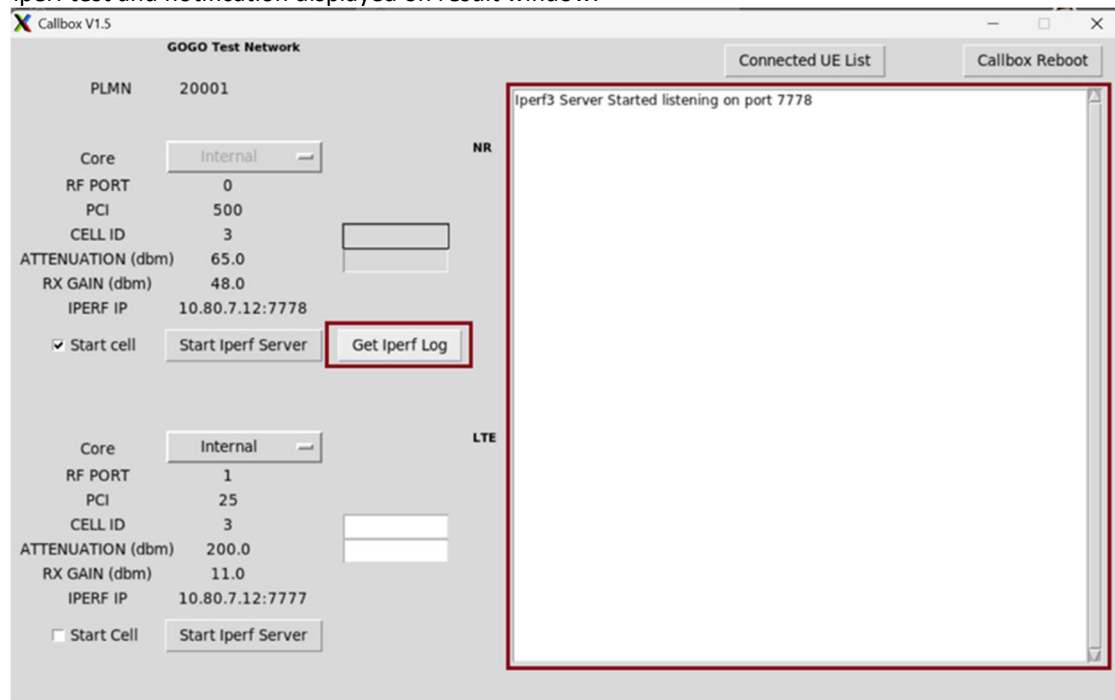


Figure 33: Iperf server started on Callbox

If Iperf server failed to start then 'Get Iperf Log' button won't be visible, and notification will be displayed on result window.

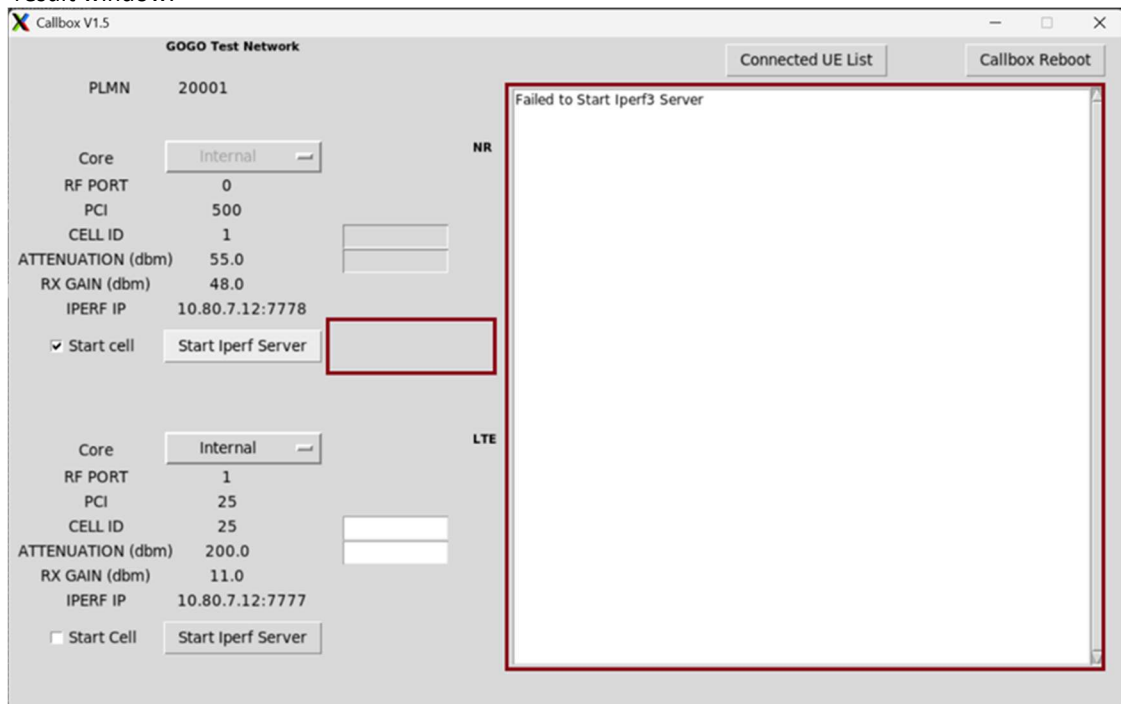


Figure 34: Failed to start iperf server on Callbox

10. Get Iperf Log:

'Get Iperf Log' if clicked on will fetch last iperf test result

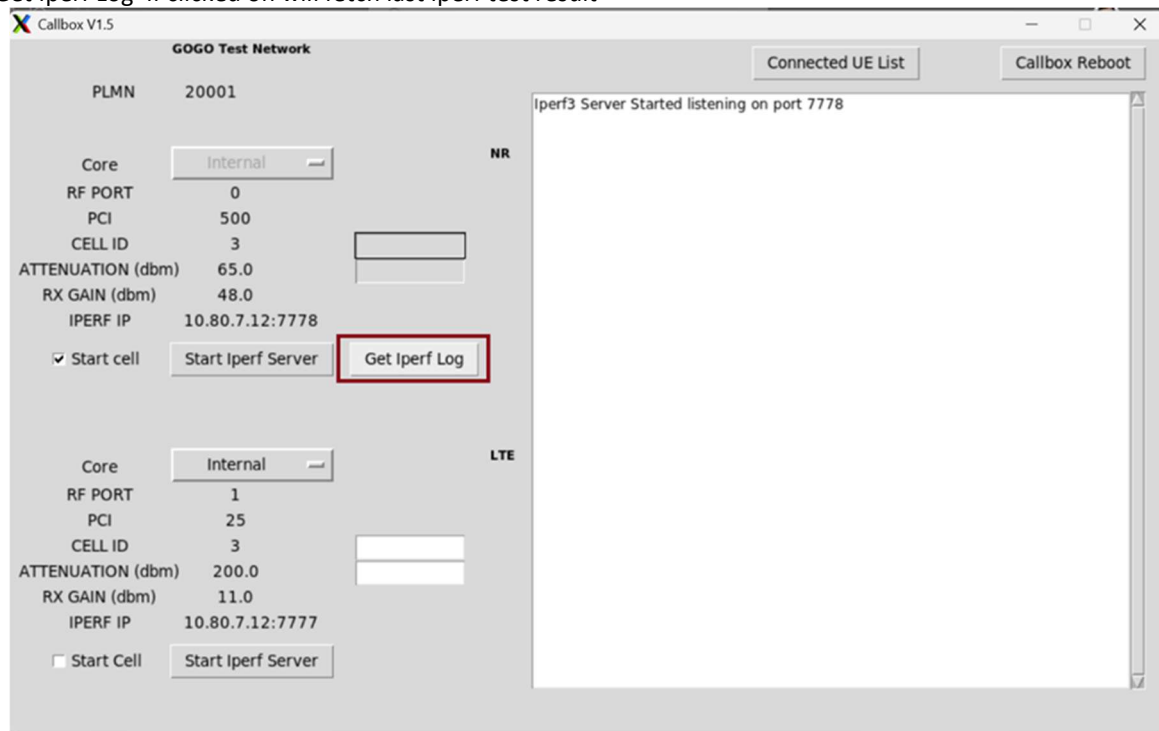


Figure 35: Get Iperf Log button

If iperf test not run yet, then 'No data to display' notification prints on result window

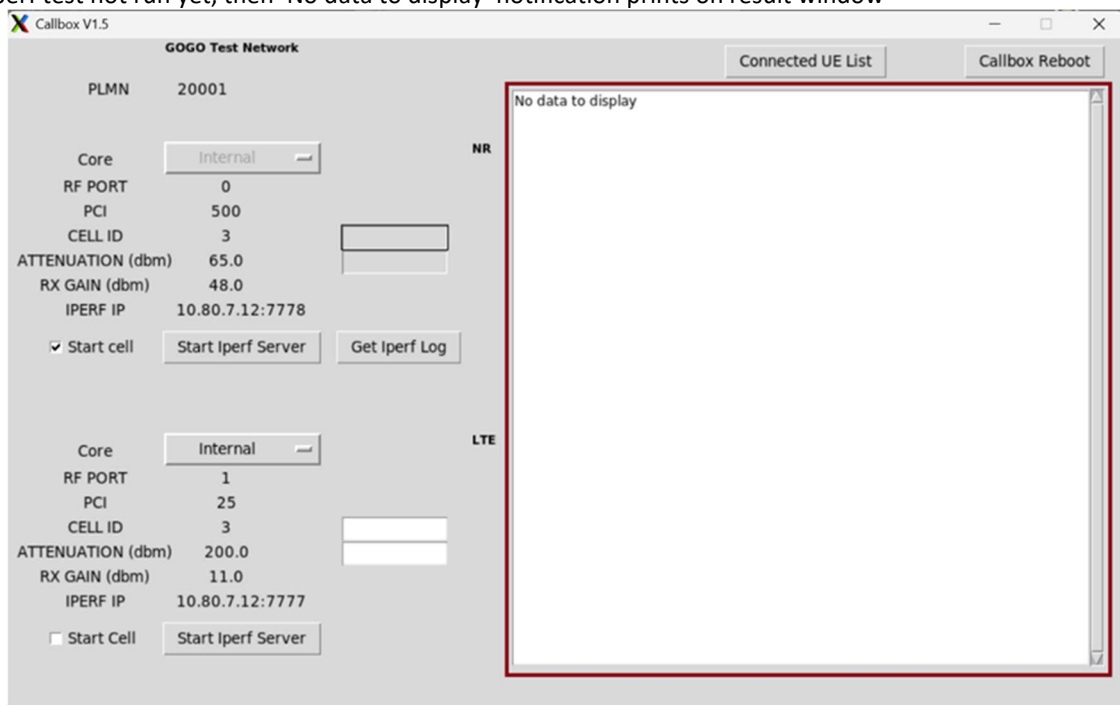


Figure 36: No data to display

Now run the iperf client and wait till test complete then click on 'Get Iperf Log' button, server test result will be displayed on result window

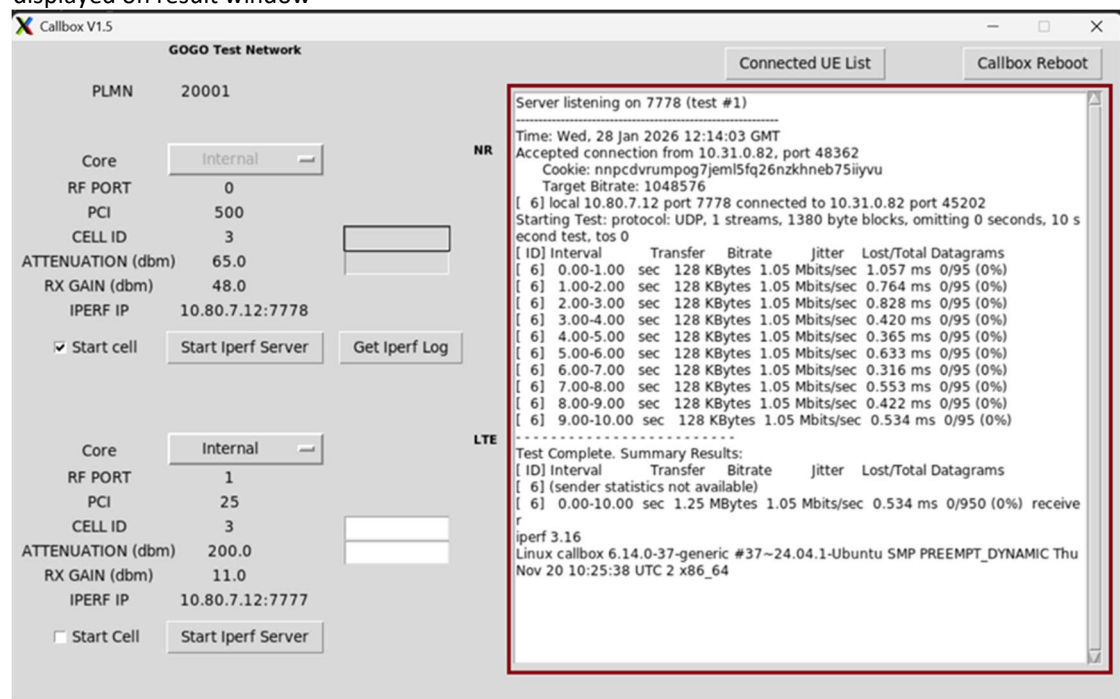


Figure 37: Get Iperf Log fetches last iperf test result

11. Core Dropdown:

Core dropdown can be used for Internal or External (external core ip will be listed here) core selection.

Dropdown menu will be available based on value of mme ip 'MME_IP' param in ascb.conf file. If 'MME_IP' param value passed as Callbox ip or loopback ip (127.0.0.1) then no dropdown menu appears while fixed 'Internal' value displayed for core while for any other ip value core will be displayed with dropdown and with 'Internal' and 'External ip address' as below.

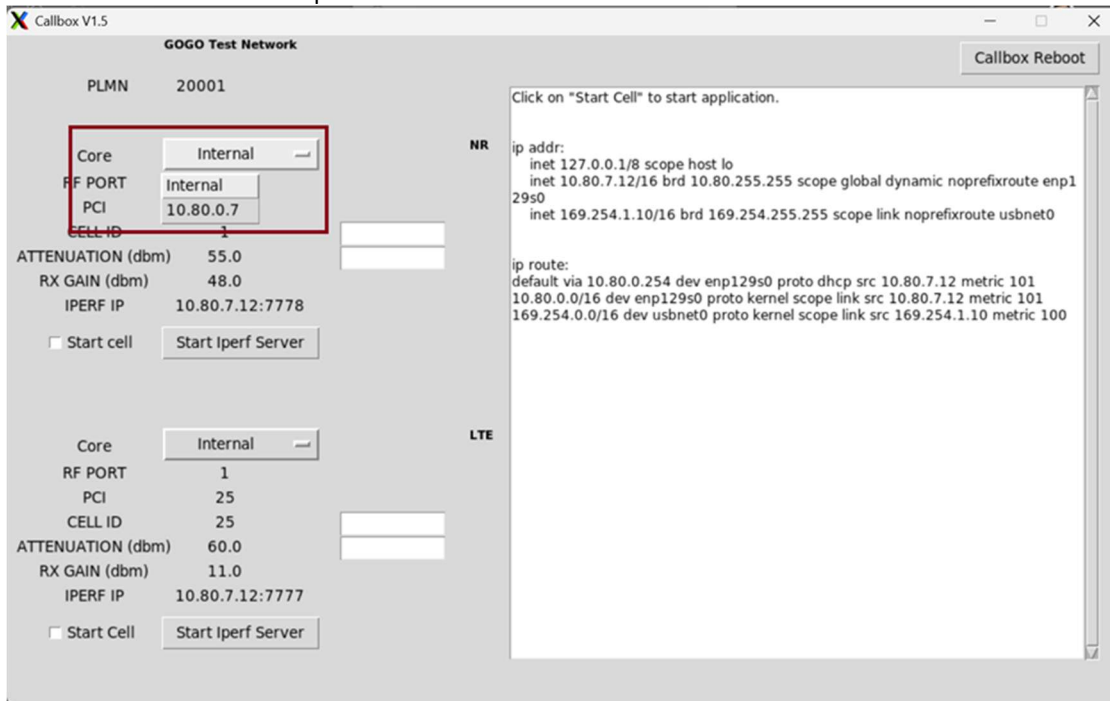


Figure 38: Core selection

By default, 'Internal' core will be selected in selection dropdown, user has to select external core manually if he wants to.

12. Connected UE List:

'Connected UE List' button won't appear initially, or cell start fails and appears only if cell started successfully

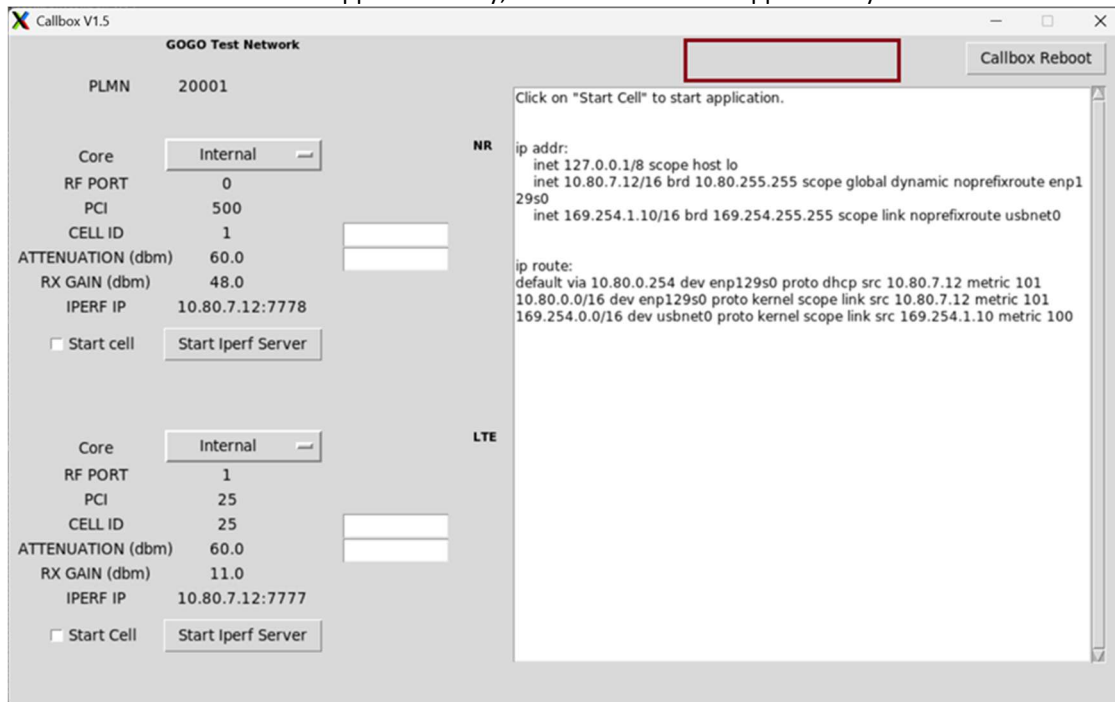


Figure 39: Connected UE List button disappears if cell not started

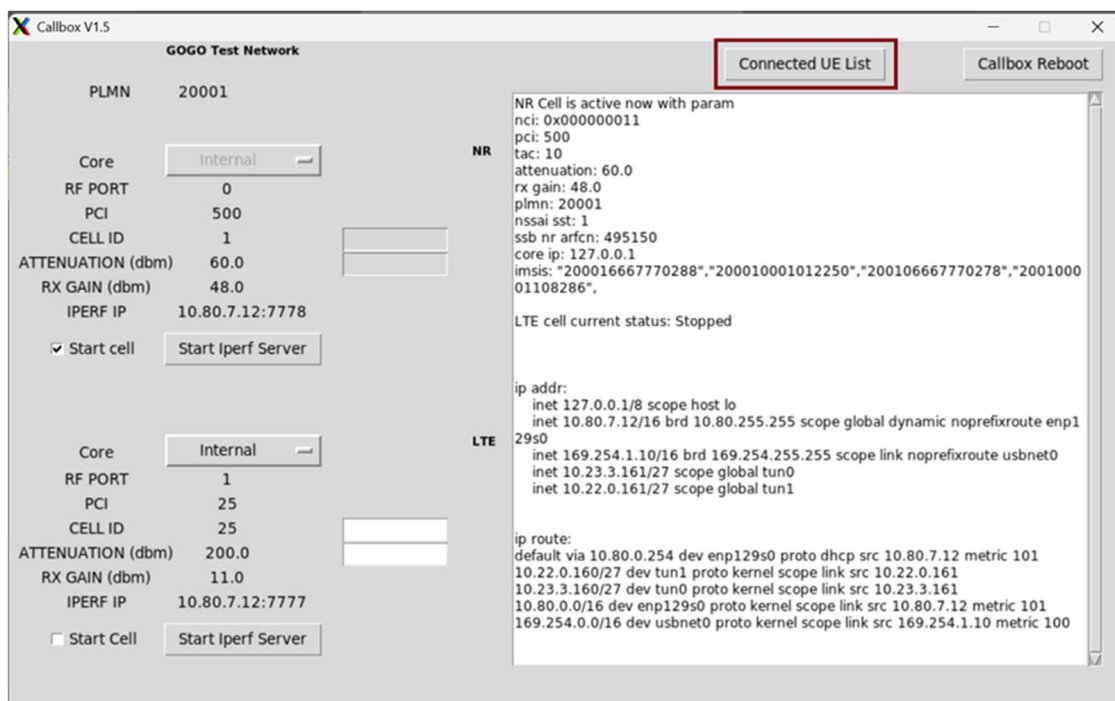


Figure 40: Connected UE List button appears as cell started successfully

User has to click on 'Connected UE List' button to get connected ue data

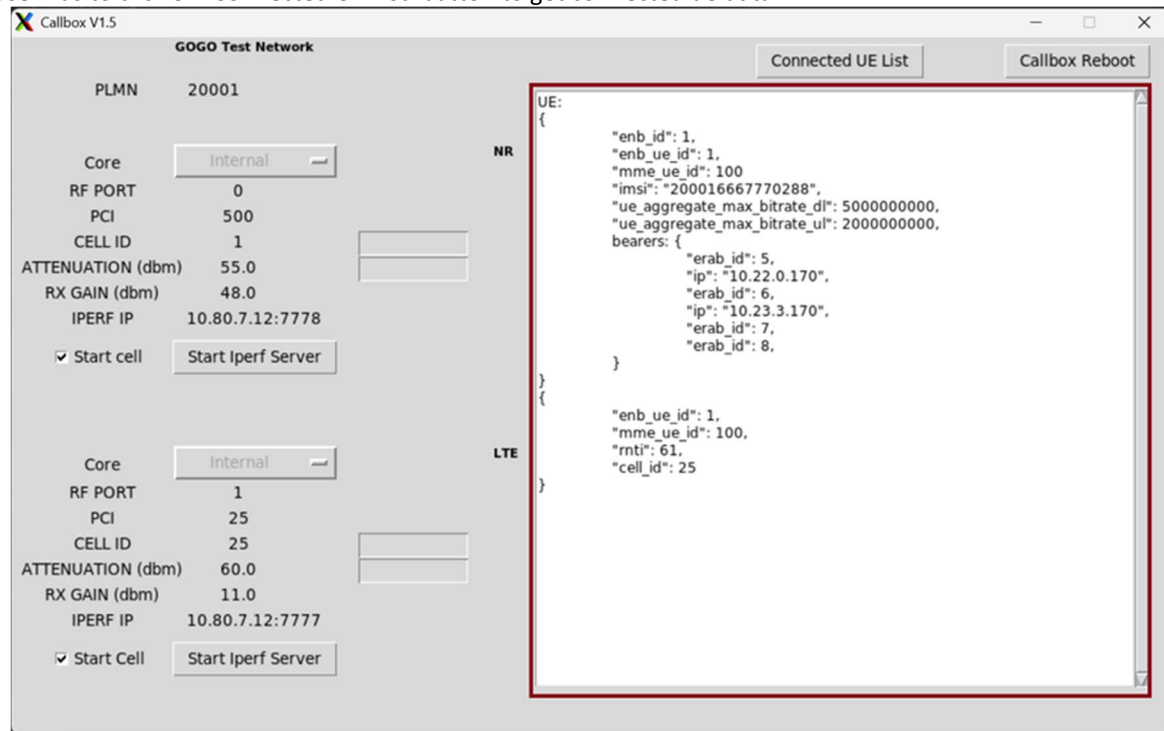


Figure 41: Connected UE List data

Connected UE List data contains two blocks for Internal core case, first block for MME ue data and second block for eNB ue data while for external core case only eNB ue data block present

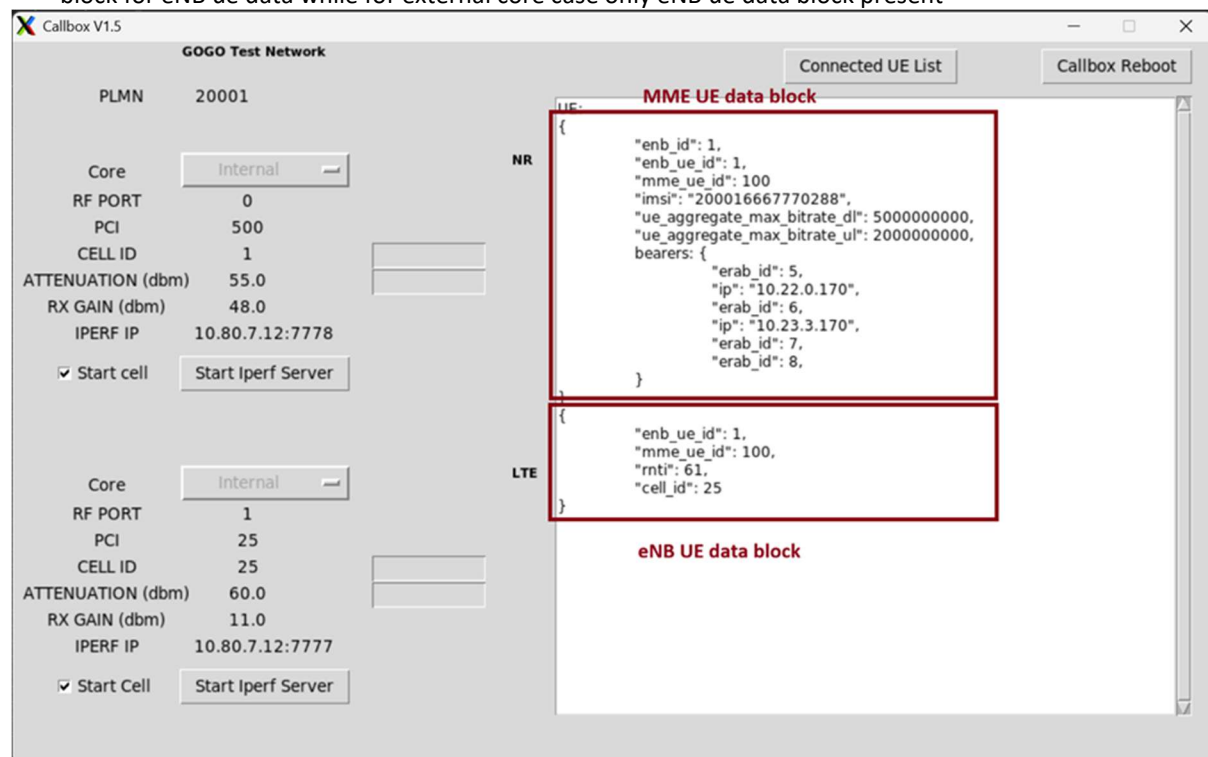


Figure 42: MME UE data block and eNB UE data block

13. Close the application:

To close application user need to click on 'X' which will close the application window, all the iperf instances running and stops lte service on Callbox.

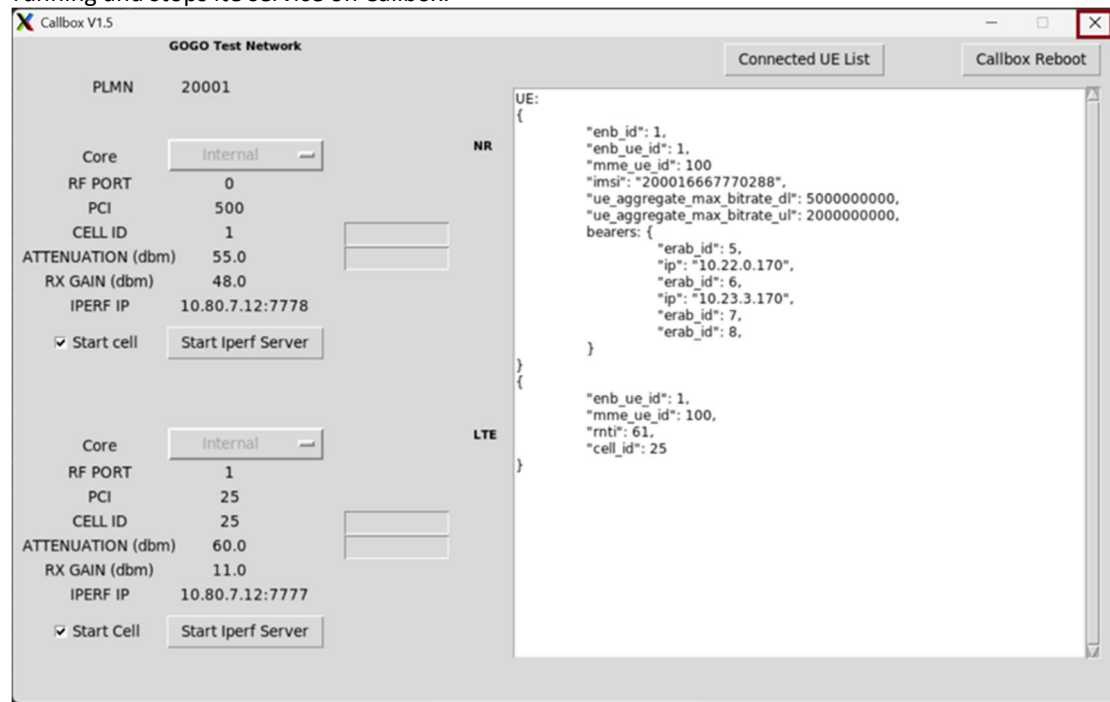


Figure 43: Close the application

On startup and on exit, application will **kill all the iperf3** and **stop lte service** running on callbox.

14. Poweroff the Callbox:

To poweroff callbox user need to click on 'Callbox Poweroff' button which will poweroff callbox unit (it execute poweroff command in linux shell).

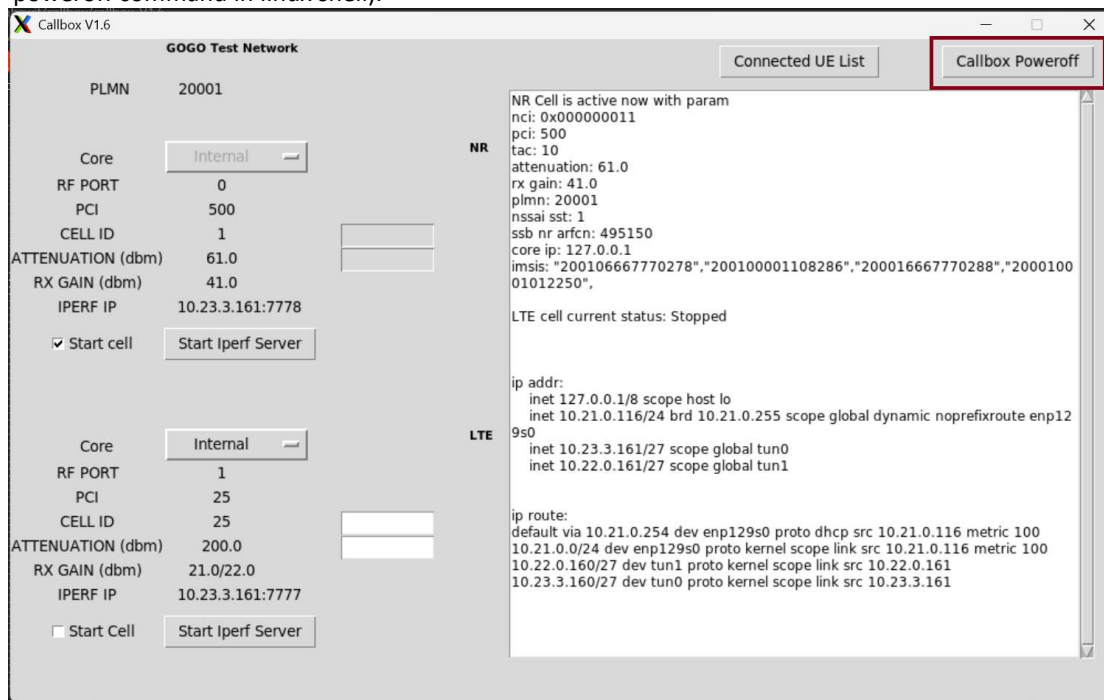


Figure 44: Poweroff the Callbox

Poweroff request received now stopping cells if running also iperf servers if running.

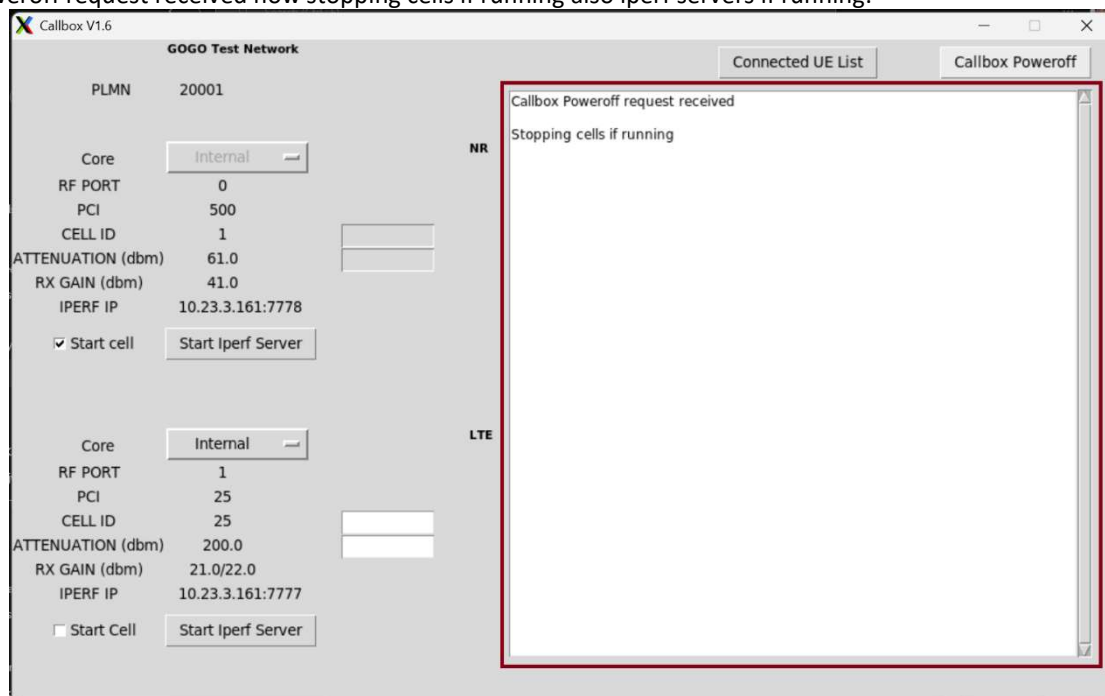


Figure 45: Poweroff the Callbox request received

Executing poweroff command in Callbox shell

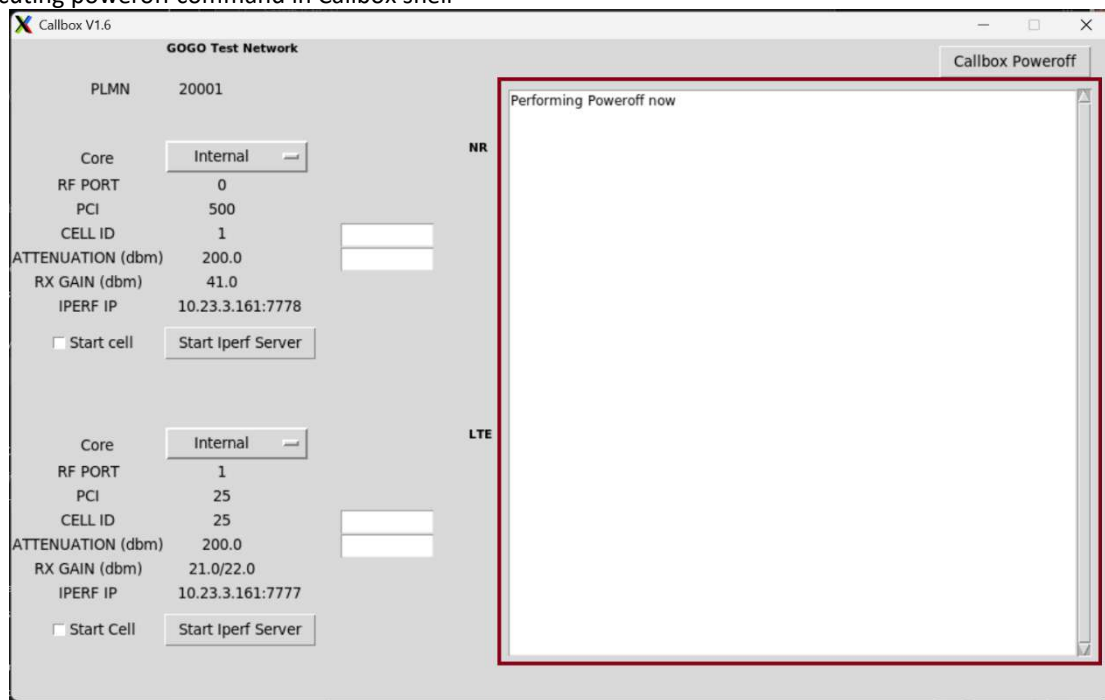


Figure 46: Callbox performing poweroff command

Application searching for Callbox to confirm poweroff (callbox gets offline/disconnected, needs manual power on)

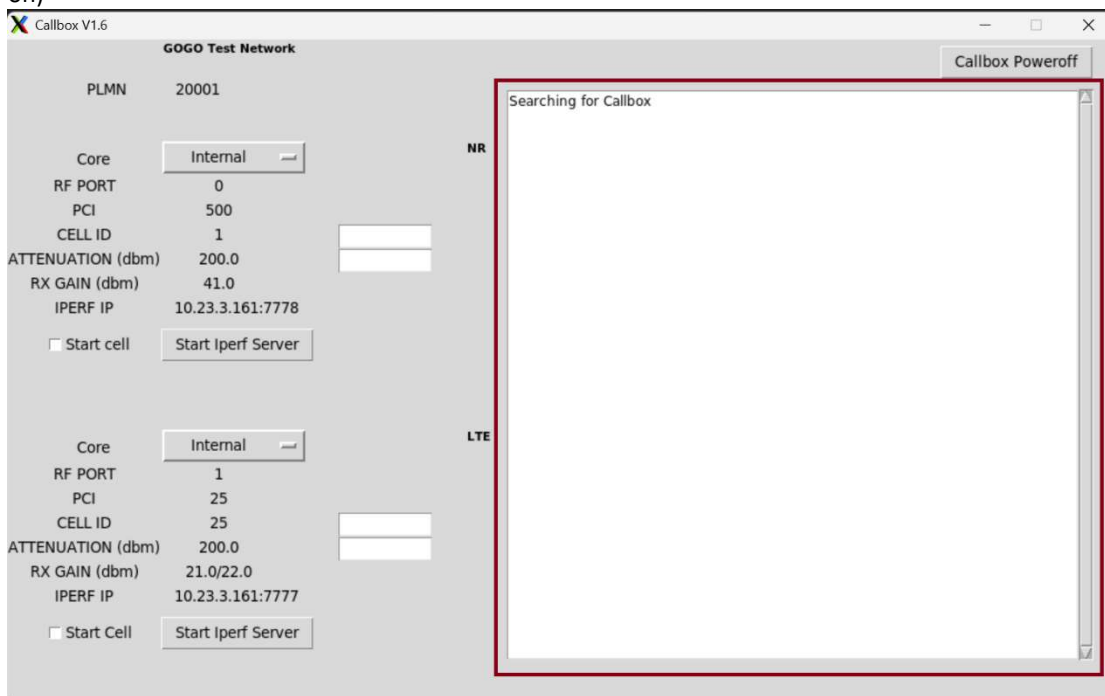


Figure 47: Searching for Callbox

Callbox is offline now and application is in disconnected state

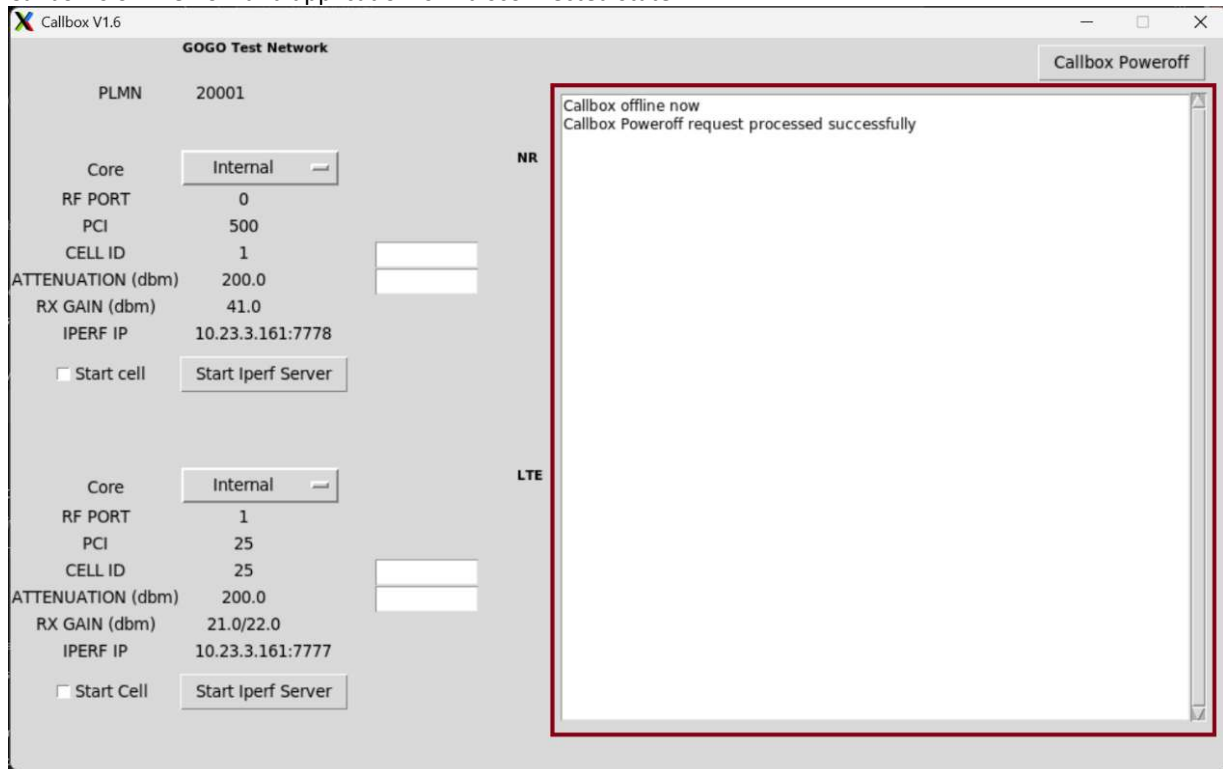


Figure 48: Callbox Poweroff request processed successfully; now Callbox offline.

For any action/button press Callbox recheck connectivity

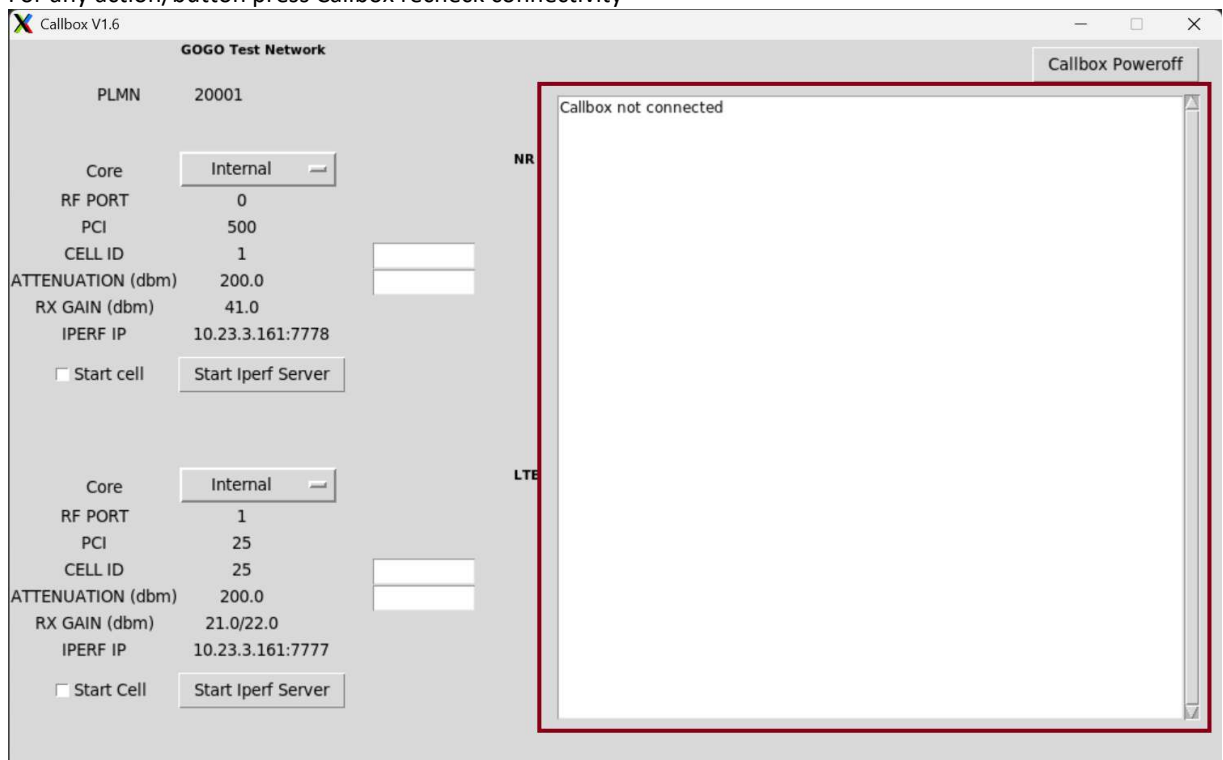


Figure 49: Callbox still offline

Callbox is online now and application starts performing intended actions

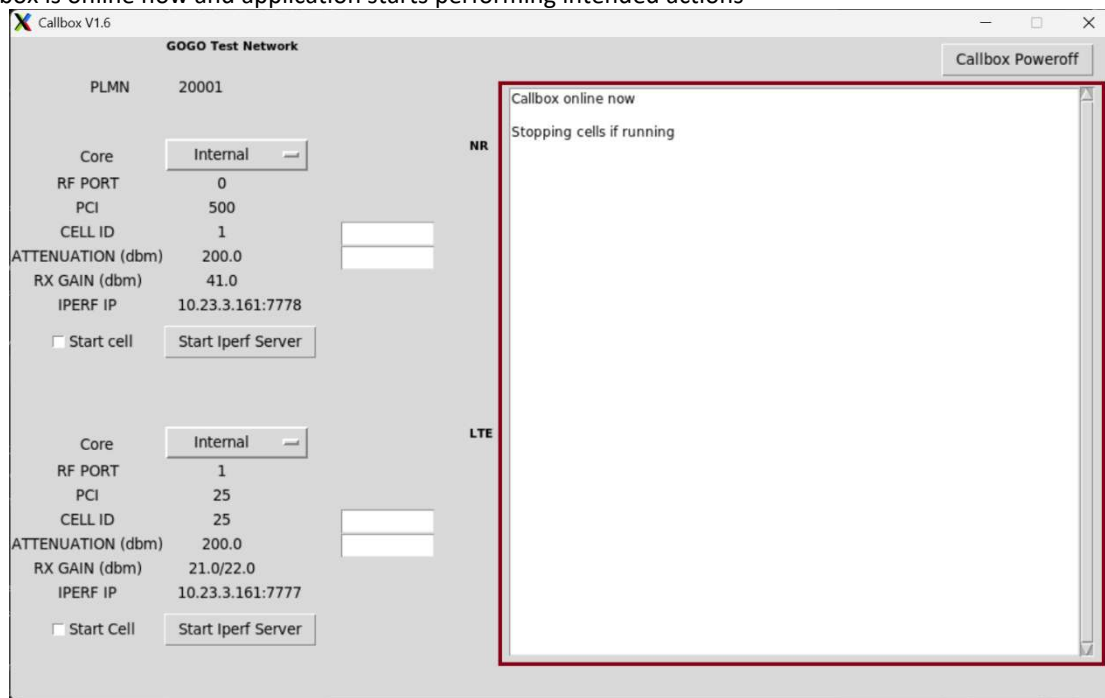


Figure 50: Callbox online now

Latest UI update has “ATTENUATION” & “RX GAIN” unit corrected to dB in place of dbm and Callbox Reboot Button converted to Callbox Poweroff.

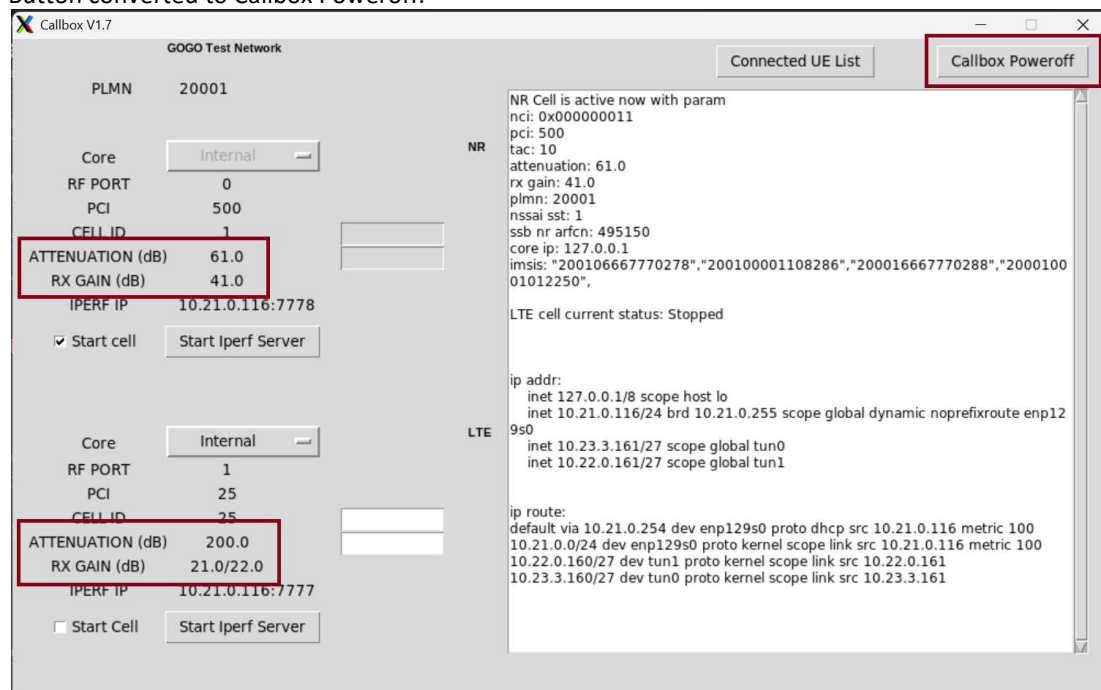


Figure 51: Minor UI Corrections

15. Keep Online Callbox after application close:

For every time we close UI application Callbox service stops so cell/cells down; To prevent this and keep Callbox service on user need to check 'Keep Online' checkbox.

Checkbox unchecked: Default behavior; for UI application close Callbox service stops thus cell/cells down

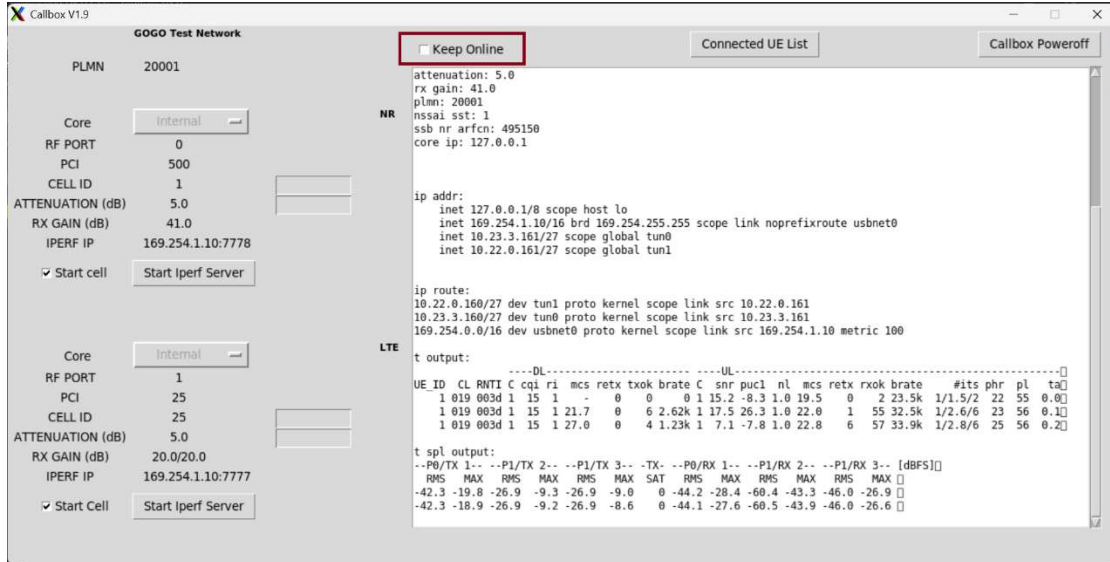


Figure 52: Keep Online unchecked

Checkbox checked: For UI application close Callbox remains online and current state maintained for next application start.

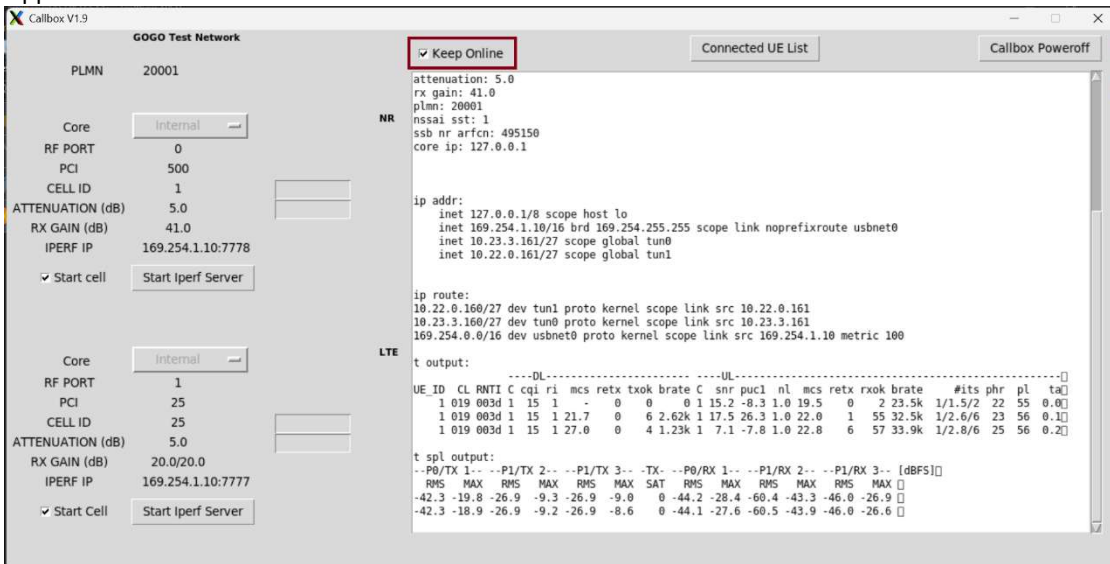


Figure 53: Keep Online checked

16. t & t spl screen command output:

Whenever LTE/NR Start Cell or Connected UE List button pressed t output and t spl output printed at bottom of result window.

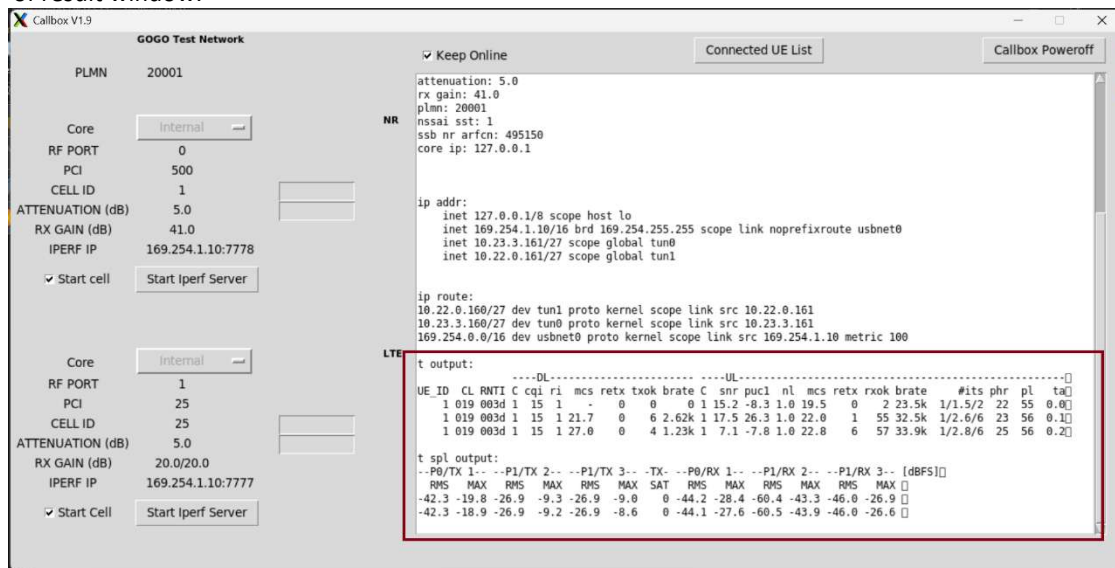


Figure 54: t & t spl output

17. Desktop Shortcut:

Install.sh create desktop shortcut to launch UI application.

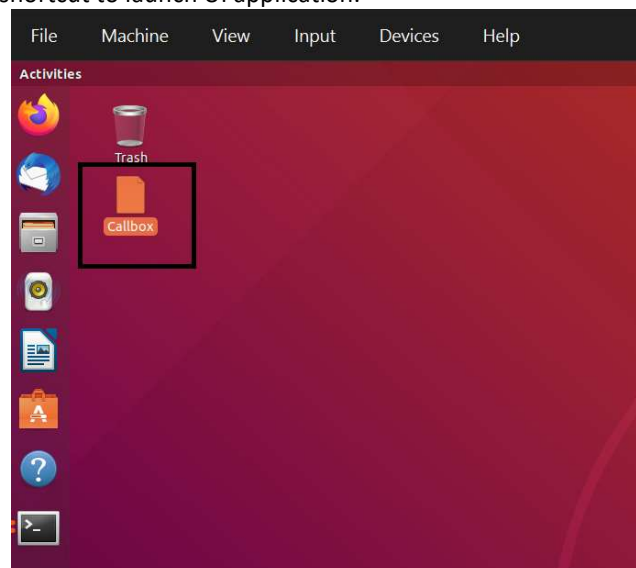


Figure 55: Desktop Shortcut

On startup and on exit, application will **kill all the iperf3** and **stop lte service** running on callbox.

5 Regulatory

5.1 Human Exposure to Radio Frequencies

The Safety Distance for the ATG Call Box is 55mm. Users should be no closer than 55mm from the antenna on the equipment.

5.2 FCC Statements

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device must accept any interference, and
2. This device must accept any interference received including interference that may cause undesired operation

Changes or modifications not expressly approved by Airspan could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment must be professionally installed.

Only the supplied antennae are to be used with the equipment.