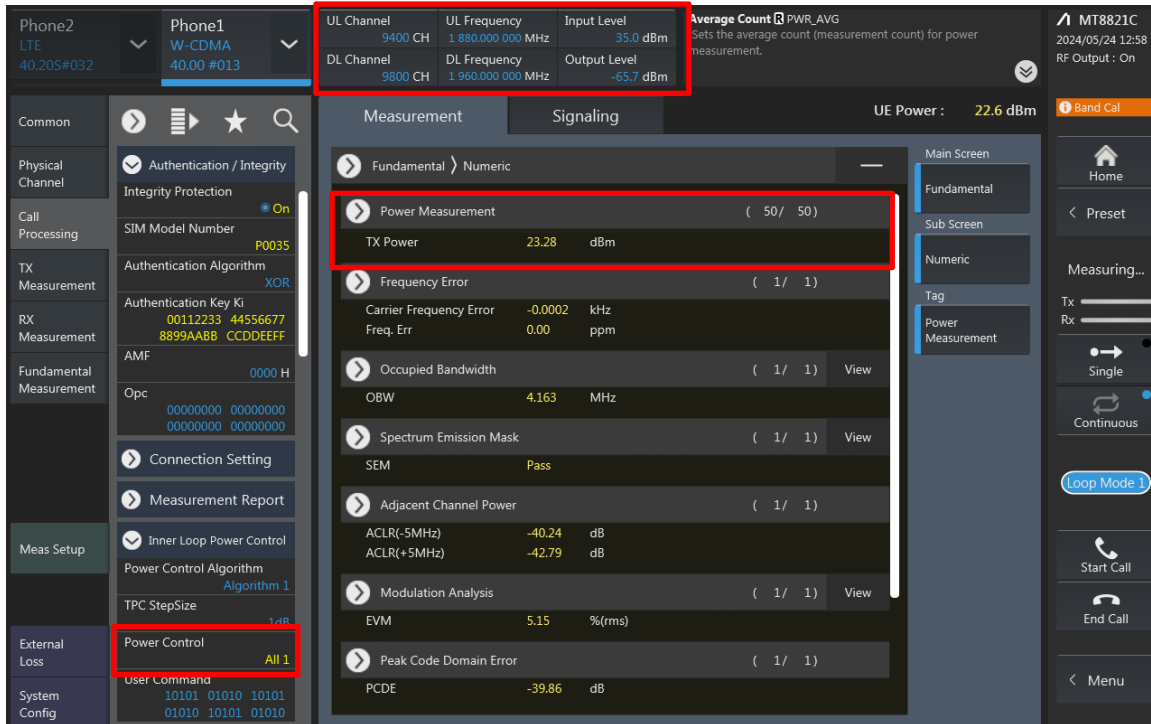


Power measurement connection diagram:

The power measurement for 3G/LTE/5G FR1/UL and DL CA is to establish a connection between device and call box, and via call box to configure Bands, channel, BWs, RB size, carrier aggregation of CA, frequency channels, SCS and maximum output power. Hereunder is screenshot call box connection information for 3G/LTE/5G FR1/UL and DL CA.

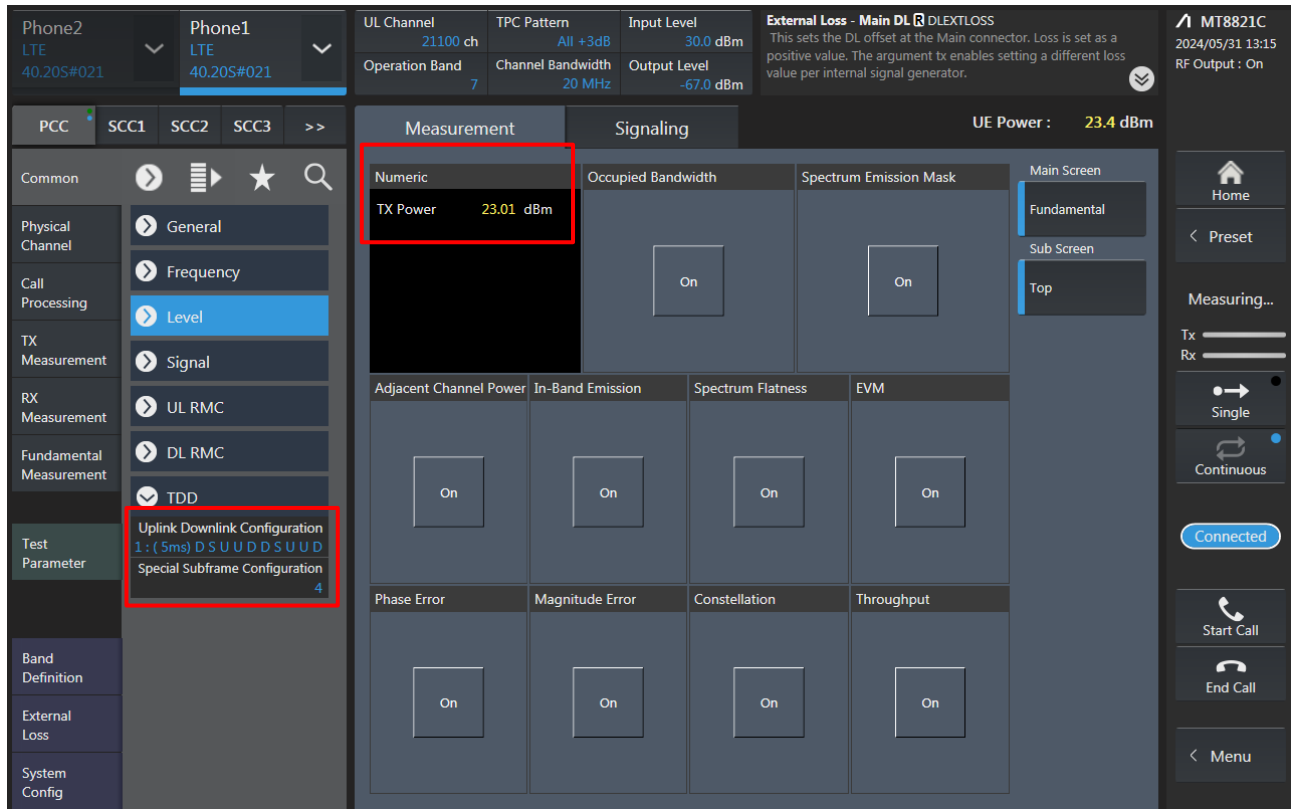
<WCDMA>



The screenshot displays the SPORTON LAB. software interface for WCDMA power measurement. The interface is divided into several sections:

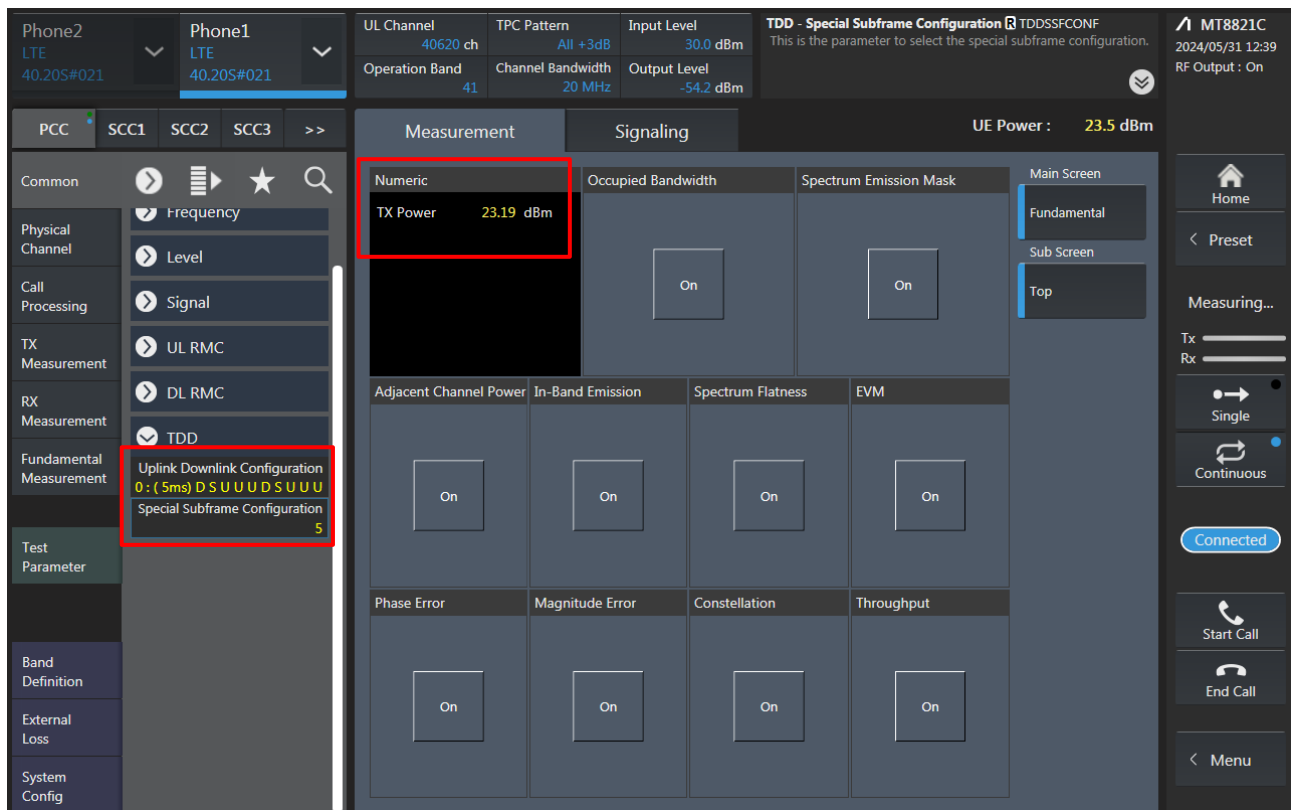
- Top Bar:** Shows Phone2 (LTE, 40.205#032) and Phone1 (W-CDMA, 40.00 #013). It also displays UL Channel (9400 CH), UL Frequency (1 880.000 000 MHz), Input Level (35.0 dBm), DL Channel (9800 CH), DL Frequency (1 960.000 000 MHz), and Output Level (-65.7 dBm). The Average Count (PWR_AVG) is shown as 50/50.
- Left Panel:** Contains various measurement and setup options, including Physical Channel, Call Processing, TX Measurement, RX Measurement, Fundamental Measurement, Meas Setup, External Loss, and System Config.
- Main Panel:** Displays the Measurement results for WCDMA. The 'Power Measurement' section is highlighted with a red box, showing TX Power (23.28 dBm). Other measurements include Frequency Error (Carrier Frequency Error: -0.0002 kHz, Freq. Err: 0.00 ppm), Occupied Bandwidth (OBW: 4.163 MHz), Spectrum Emission Mask (SEM: Pass), Adjacent Channel Power (ACLR(-5MHz): -40.24 dB, ACLR(+5MHz): -42.79 dB), Modulation Analysis (EVM: 5.15 %(rms)), and Peak Code Domain Error (PCDE: -39.86 dB).
- Right Panel:** Shows the UE Power (22.6 dBm) and a 'Band Cal' button. It also includes a 'Main Screen' section with 'Fundamental' and 'Sub Screen' options, and a 'Tag' section with 'Power Measurement'.

<LTE>



The screenshot shows the LTE measurement interface. On the left, a sidebar contains various configuration options. The 'Test Parameter' section is expanded, showing 'Uplink Downlink Configuration 1: (5ms) D S U U D D S U U D' and 'Special Subframe Configuration 4'. The main display area is divided into 'Measurement' and 'Signaling' tabs. Under 'Measurement', 'TX Power' is highlighted with a red box, showing a value of 23.01 dBm. Other measurement options like 'Occupied Bandwidth', 'Spectrum Emission Mask', 'Adjacent Channel Power', 'In-Band Emission', 'Spectrum Flatness', 'EVM', 'Phase Error', 'Magnitude Error', 'Constellation', and 'Throughput' are also visible. The right sidebar shows the 'Connected' status and various control buttons.

<LTE TDD Power class 3>



The screenshot shows the LTE TDD Power class 3 measurement interface. The 'Test Parameter' section is expanded, showing 'Uplink Downlink Configuration 0: (5ms) D S U U U D S U U U' and 'Special Subframe Configuration 5'. The main display area is divided into 'Measurement' and 'Signaling' tabs. Under 'Measurement', 'TX Power' is highlighted with a red box, showing a value of 23.19 dBm. Other measurement options like 'Occupied Bandwidth', 'Spectrum Emission Mask', 'Adjacent Channel Power', 'In-Band Emission', 'Spectrum Flatness', 'EVM', 'Phase Error', 'Magnitude Error', 'Constellation', and 'Throughput' are also visible. The right sidebar shows the 'Connected' status and various control buttons.

<LTE TDD Power class 2>

The screenshot displays the MT8821C software interface, which is used for configuring and measuring the TDDSSSFCONF parameter. The interface is divided into several sections:

- Top Bar:** Shows the device name "MT8821C", the date and time "2024/05/31 12:37", and the RF Output status "On".
- Left Panel:** Contains navigation tabs for "PCC", "SCC1", "SCC2", and "SCC3". Below these are icons for "Common", "Physical Channel", "Call Processing", "TX Measurement", "RX Measurement", "Fundamental Measurement", "Test Parameter", "Band Definition", "External Loss", and "System Config".
- Top Section:** Displays the "Phone2" and "Phone1" settings, both set to "LTE" with the value "40.20S#021". It also shows the "UL Channel" (40620 ch), "TPC Pattern" (All +3dB), "Input Level" (30.0 dBm), "Operation Band" (41), "Channel Bandwidth" (20 MHz), and "Output Level" (-54.2 dBm). A note indicates that the "TDD - Special Subframe Configuration" is used to select the special subframe configuration.
- Main Section:** Divided into "Measurement" and "Signaling" tabs. The "Measurement" tab is active, showing a grid of measurement parameters:
 - Numeric:** TX Power (26.16 dBm).
 - Occupied Bandwidth:** On.
 - Spectrum Emission Mask:** On.
 - Adjacent Channel Power:** On.
 - In-Band Emission:** On.
 - Spectrum Flatness:** On.
 - EVM:** On.
 - Phase Error:** On.
 - Magnitude Error:** On.
 - Constellation:** On.
 - Throughput:** On.
- Right Panel:** Contains a "Main Screen" section with "Fundamental", "Sub Screen", and "Top" options. Below this is a "Measuring..." section with "Tx" and "Rx" indicators, and a "Connected" status indicator.

The screenshot shows the 'PCC' (Primary Component Carrier) configuration and power measurement results for a UE (User Equipment) in an LTE band.

UE Configuration:

- UE Name: PCC
- Band: LTE 40.205#032
- Power Measurement - Meas. Count: 50
- Power Measurement - PWR_AVG: 25.4 dBm

Measurement Results:

Measurement	Value	Unit
UL Channel	18900	ch
TPC Pattern	All +3dB	
Input Level	35.0	dBm
Operation Band	2	
Channel Bandwidth	20	MHz
Output Level	-54.2	dBm

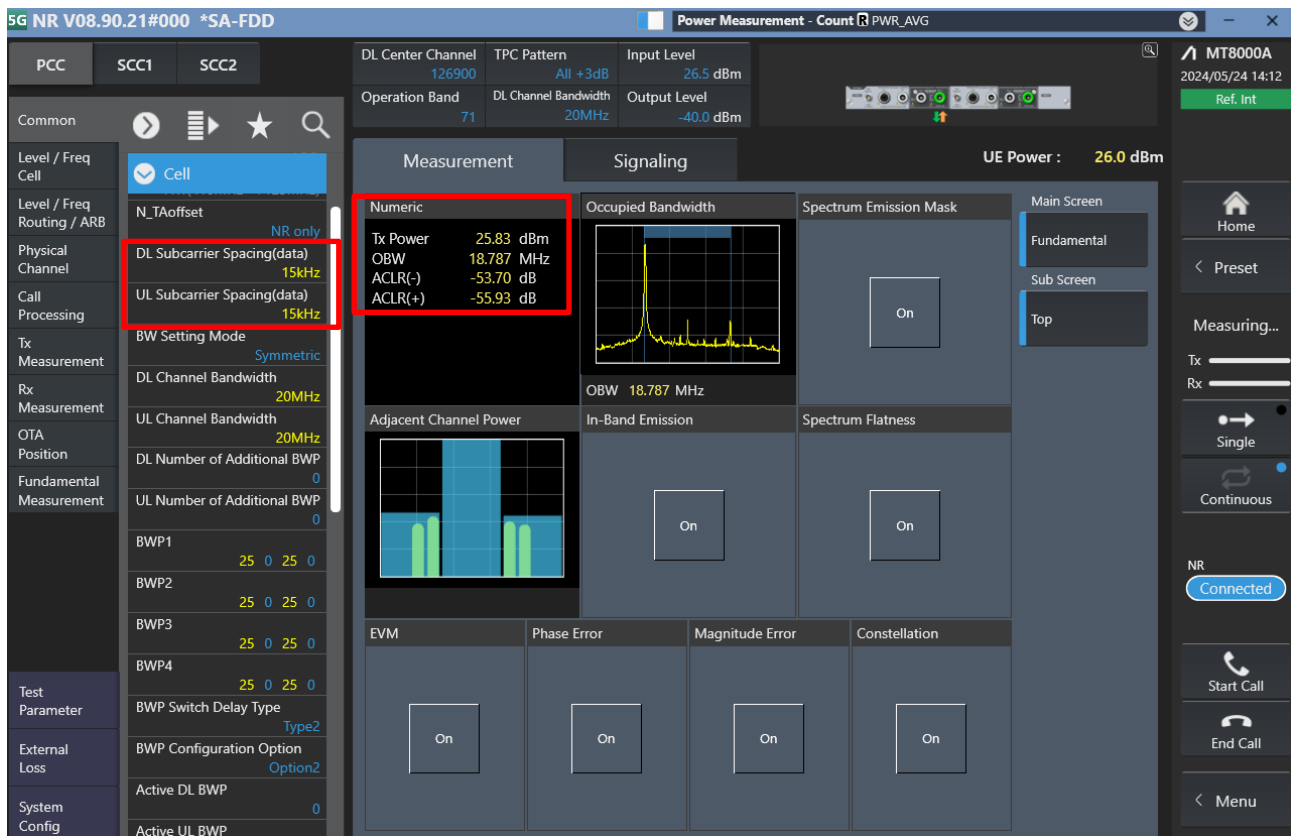
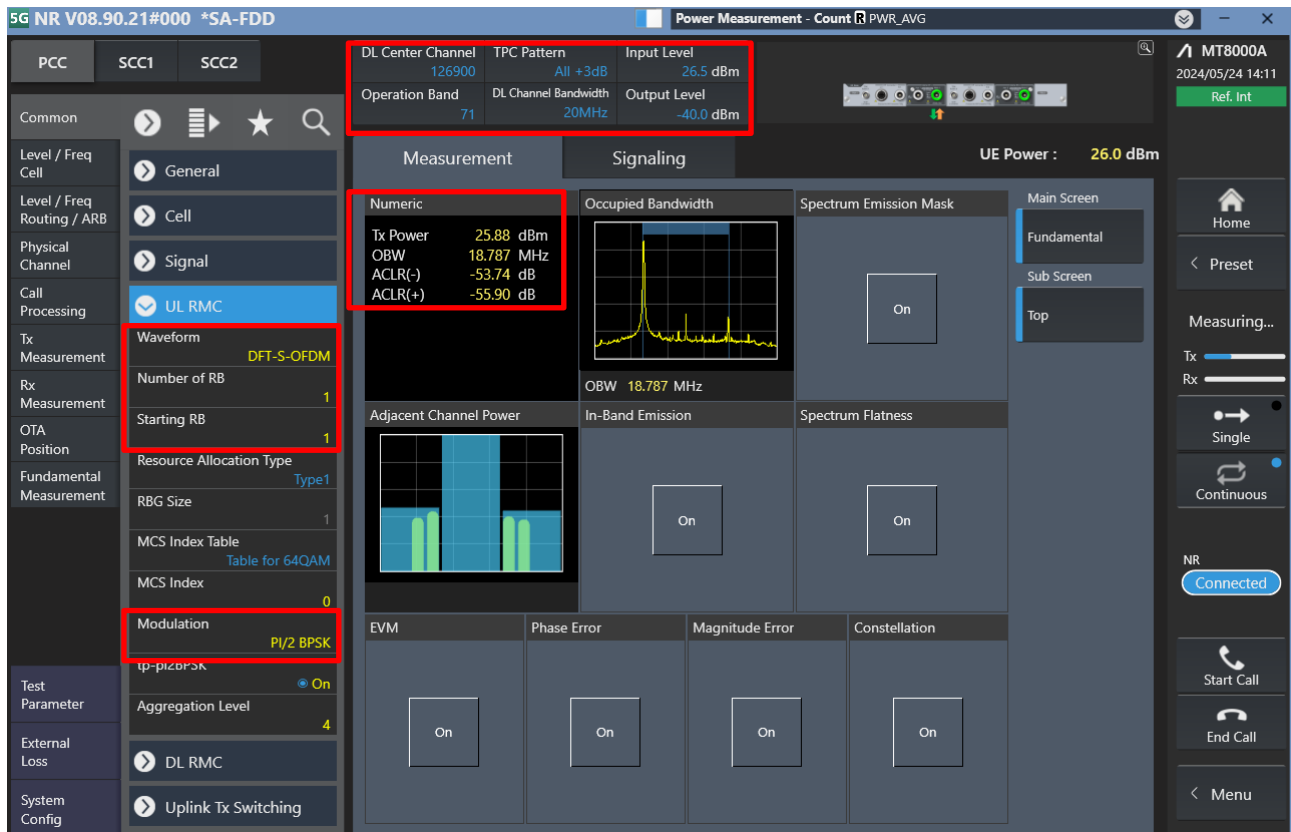
Test Parameter Settings:

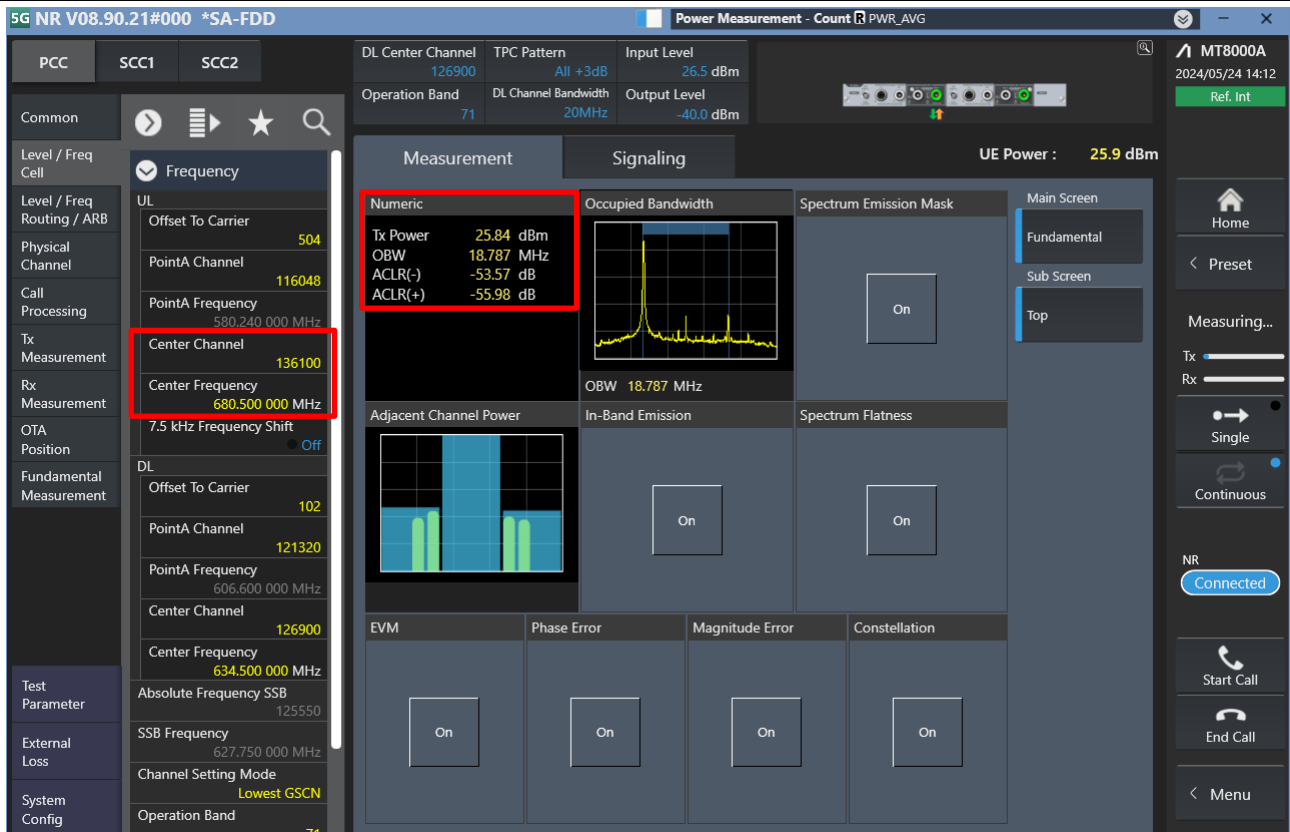
- General: Power Measurement (50/50)
- Frequency: TX Power (25.12 dBm)
- Level: Modulation Analysis (1/1)
- Signal: Freq. Err (0.00 ppm), EVM (1.35 % (rms))
- UL RMC: UL Allocation Mode (Normal), RB Pos. (Min(#0))
- Number of RB: 1
- Starting RB: 0
- Max UL Throughput: 72 kbps
- MCS Index: 5 QPSK 5 72 8
- External Loss: Disabled
- DL RMC: Disabled

Band Definition:

- Band: 40.205#032
- Bandwidth: 20 MHz
- Bandwidth Class: 20 MHz
- Bandwidth Class 2: 20 MHz
- Bandwidth Class 3: 20 MHz
- Bandwidth Class 4: 20 MHz
- Bandwidth Class 5: 20 MHz
- Bandwidth Class 6: 20 MHz
- Bandwidth Class 7: 20 MHz
- Bandwidth Class 8: 20 MHz
- Bandwidth Class 9: 20 MHz
- Bandwidth Class 10: 20 MHz
- Bandwidth Class 11: 20 MHz
- Bandwidth Class 12: 20 MHz
- Bandwidth Class 13: 20 MHz
- Bandwidth Class 14: 20 MHz
- Bandwidth Class 15: 20 MHz
- Bandwidth Class 16: 20 MHz
- Bandwidth Class 17: 20 MHz
- Bandwidth Class 18: 20 MHz
- Bandwidth Class 19: 20 MHz
- Bandwidth Class 20: 20 MHz

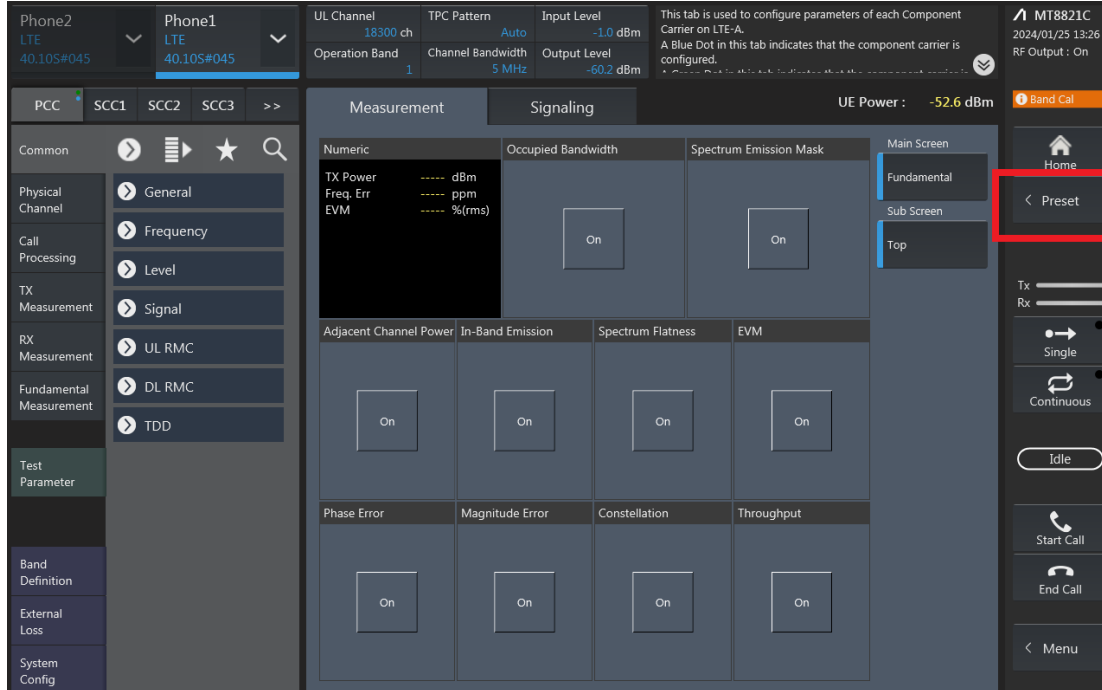
<5G NR FR1>





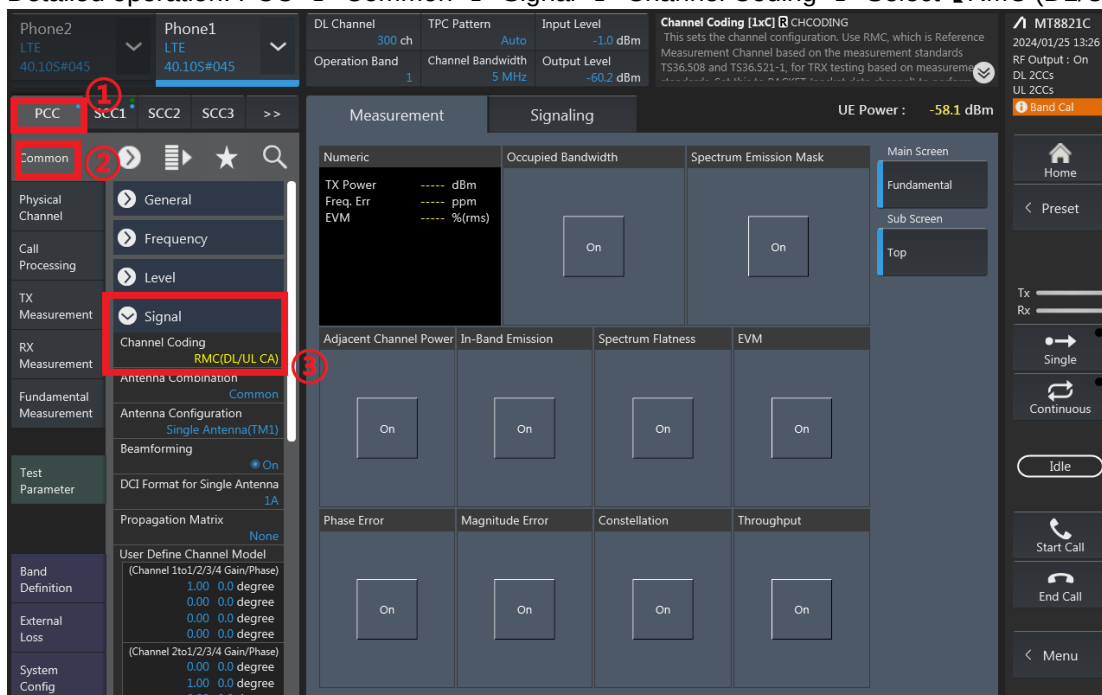
LTE Uplink and Downlink Carrier Aggregation configurations:

1. Change the Scenario in the Configuration of Phone1 LTE Signaling and Preset.

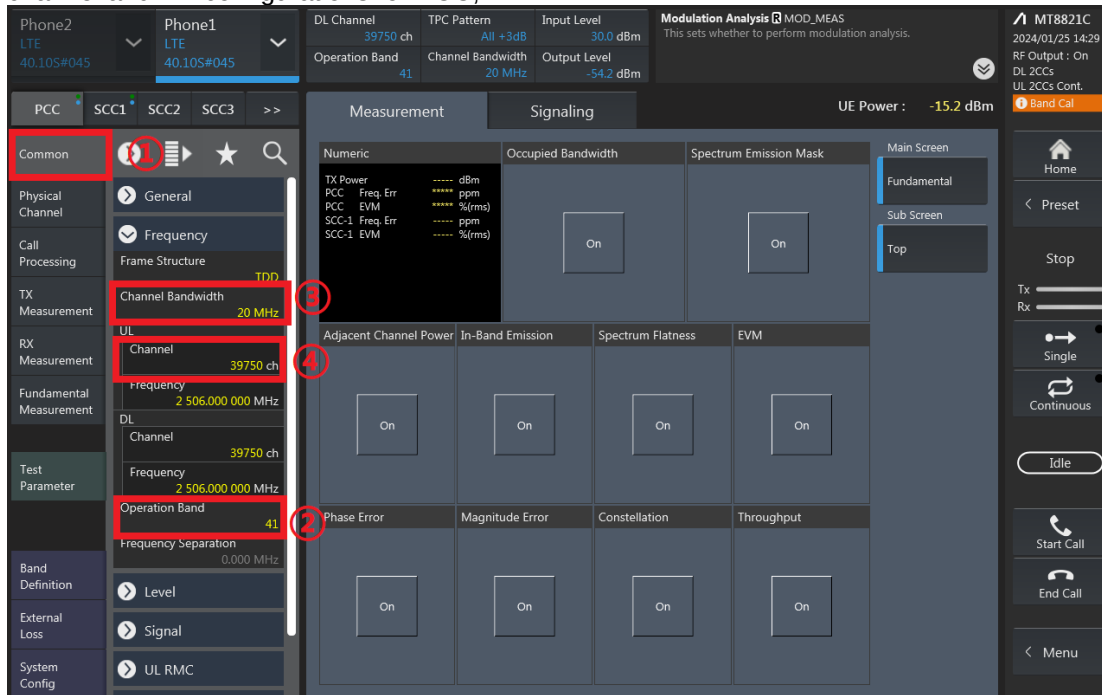


2. If Select "RMC (DL/UL CA)" for Uplink Carrier Aggregation;
If Select "RMC (DL CA)" for Downlink Carrier Aggregation.
For example, Uplink Carrier Aggregation:

Detailed operation: PCC → Common → Signal → Channel Coding → Select 【RMC (DL/UL CA)】



3. PCC parameter Settings: on the screen, and then select the PCC tab and Set operating band, BW, channel and RB configurations for PCC;



Phone2 LTE 40.10S#045 Phone1 LTE 40.10S#045

DL Channel 39750 ch TPC Pattern All +3dB Input Level 30.0 dBm Modulation Analysis MOD_MEAS This sets whether to perform modulation analysis.

Operation Band 41 Channel Bandwidth 20 MHz Output Level -54.2 dBm

MT8821C 2024/01/25 14:29 RF Output : On DL 2CCs UL 2CCs Cont.

UE Power : -15.2 dBm

Measurement Signaling

Common

Physical Channel General

Call Processing Frequency

TX Measurement Channel Bandwidth 20 MHz

RX Measurement Channel 39750 ch

Fundamental Measurement Frequency 2 506.000 000 MHz

Test Parameter Channel 39750 ch Frequency 2 506.000 000 MHz Operation Band 41 Frequency Separation 0.000 MHz

Band Definition Level

External Loss Signal

System Config UL RMC

Numeric

TX Power PCC Freq. Err. dBm PCC EVM ppm SCC-1 Freq. Err. ppm SCC-1 EVM ppm

Occupied Bandwidth

Spectrum Emission Mask

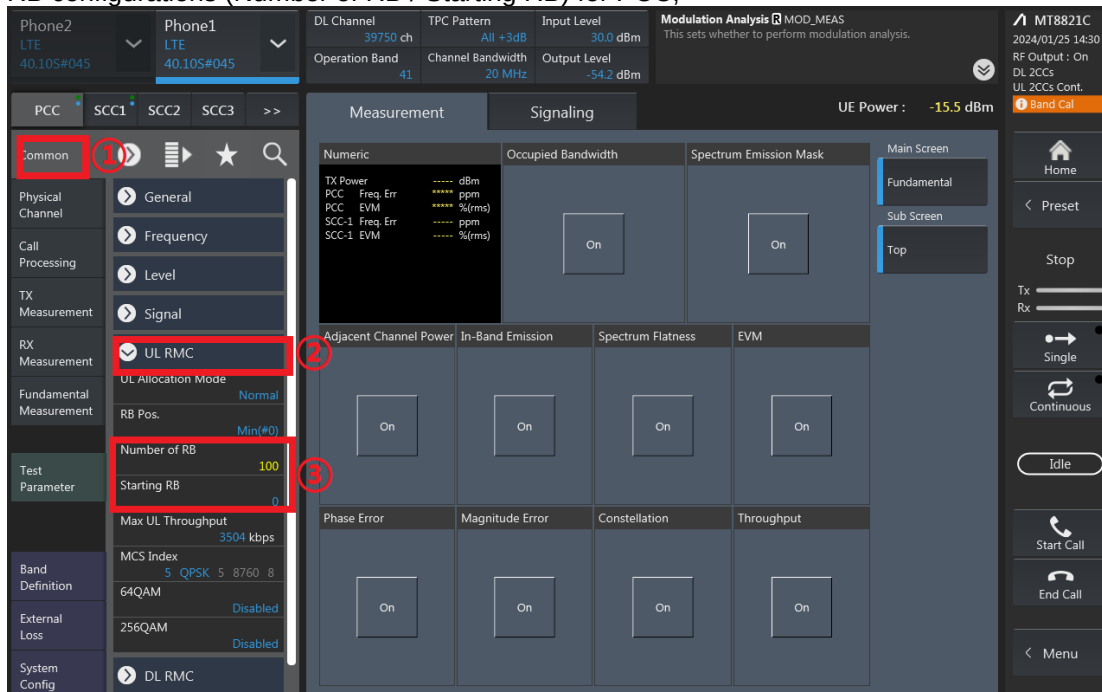
Main Screen Fundamental Sub Screen Top

Home Preset Stop Tx Rx Single Continuous Idle Start Call End Call Menu

Adjacent Channel Power In-Band Emission Spectrum Flatness EVM

Phase Error Magnitude Error Constellation Throughput

RB configurations (Number of RB / Starting RB) for PCC;



Phone2 LTE 40.10S#045 Phone1 LTE 40.10S#045

DL Channel 39750 ch TPC Pattern All +3dB Input Level 30.0 dBm Modulation Analysis MOD_MEAS This sets whether to perform modulation analysis.

Operation Band 41 Channel Bandwidth 20 MHz Output Level -54.2 dBm

MT8821C 2024/01/25 14:30 RF Output : On DL 2CCs UL 2CCs Cont.

UE Power : -15.5 dBm

Measurement Signaling

Common

Physical Channel General

Call Processing Frequency

TX Measurement Level

RX Measurement Signal

Fundamental Measurement UL RMC

Test Parameter UL Allocation Mode Normal RB Pos. Min(#0) Number of RB 100 Starting RB 0 Max UL Throughput 3504 kbps MCS Index 5 QPSK 5 8760 8 64QAM 256QAM Disabled Disabled

Band Definition DL RMC

Numeric

TX Power PCC Freq. Err. dBm PCC EVM ppm SCC-1 Freq. Err. ppm SCC-1 EVM ppm

Occupied Bandwidth

Spectrum Emission Mask

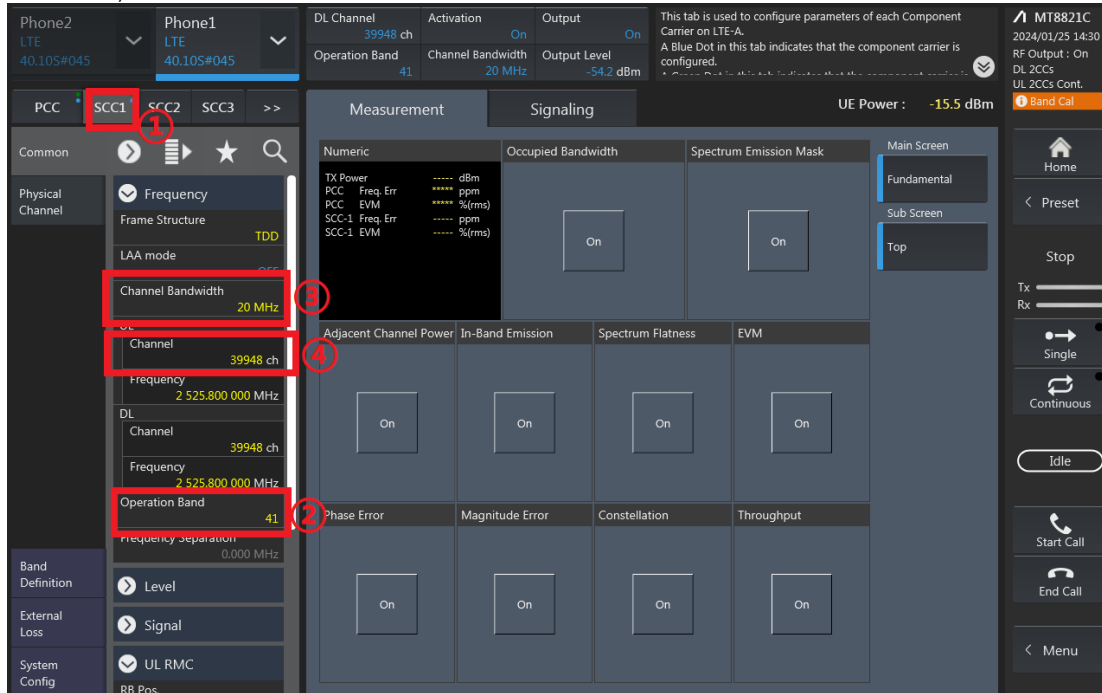
Main Screen Fundamental Sub Screen Top

Home Preset Stop Tx Rx Single Continuous Idle Start Call End Call Menu

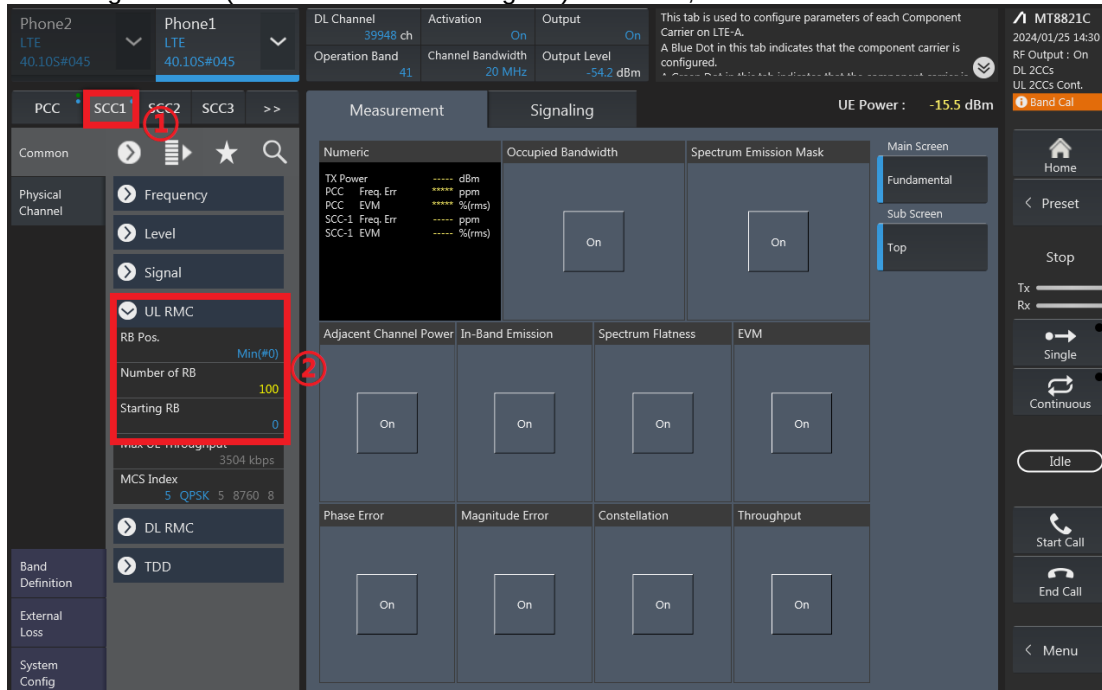
Adjacent Channel Power In-Band Emission Spectrum Flatness EVM

Phase Error Magnitude Error Constellation Throughput

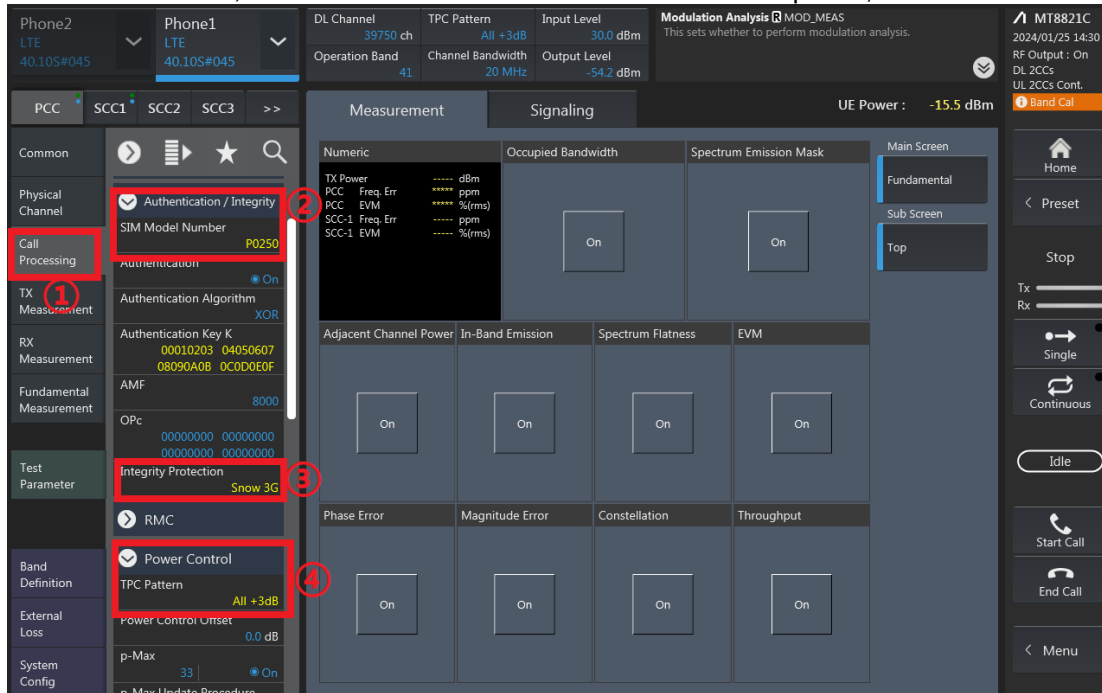
4. SCC parameter Settings: Select the SCC1 tab, Set operating band, BW, channel, and RB configurations for SCC1;



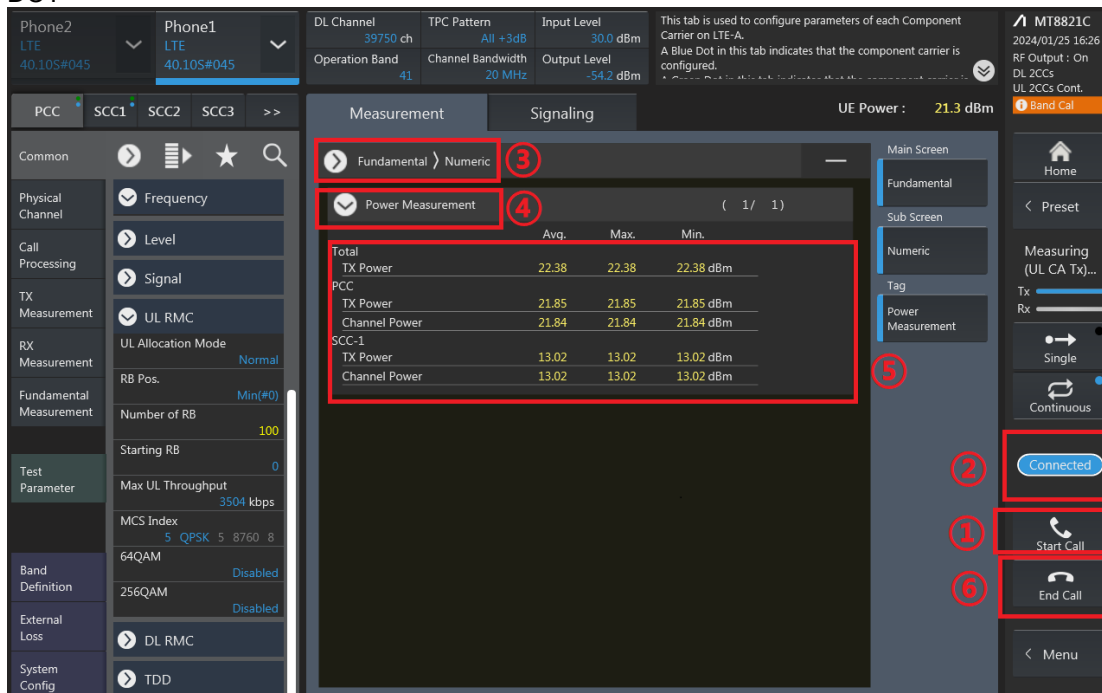
RB configurations (Number of RB / Starting RB) for SCC1;



5. Select the PCC tab, then set “SIM Model Number” and select max power;



6. Click the “Connect” button at the Right of the screen, if necessary, turn the Airplane mode on/off in the DUT



7. The inter-band ULCA test method is similar to intra-band ULCA, and DLCA test method is similar to intra-band ULCA too.

Uplink CA Power

CA_7C_Ant 3										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Power Reduction	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	49	0	0	1	0	Full	23.02
21100	21298	QPSK	1	49	0	0	1	0	Full	24.00
21350	21152	QPSK	1	49	0	0	1	0	Full	23.00
20850	21048	QPSK	1	49	0	0	1	0	Standalone	15.95
21100	21298	QPSK	1	49	0	0	1	0	Standalone	16.02
21350	21152	QPSK	1	49	0	0	1	0	Standalone	15.98

CA_38C_Ant 3										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Power Reduction	Measured Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
37850	38048	QPSK	1	49	0	0	1	0	Full	22.92
37901	38099	QPSK	1	49	0	0	1	0	Full	22.98
38150	37952	QPSK	1	49	0	0	1	0	Full	22.90
37850	38048	QPSK	1	49	0	0	1	0	Standalone	17.39
37901	38099	QPSK	1	49	0	0	1	0	Standalone	17.42
38150	37952	QPSK	1	49	0	0	1	0	Standalone	17.36

CA_41C_Ant 3											
Combination 20MHz+20MHz (100RB+100RB)											
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Power Reduction	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset					
39750	39948	QPSK	1	49	0	0	1	0	Full	21.82	23.00
40185	40383	QPSK	1	49	0	0	1	0	Full	21.78	23.00
40620	40818	QPSK	1	49	0	0	1	0	Full	21.90	23.00
41055	41253	QPSK	1	49	0	0	1	0	Full	21.88	23.00
41490	41292	QPSK	1	49	0	0	1	0	Full	21.85	23.00
39750	39948	QPSK	1	49	0	0	1	0	Standalone	14.90	16.00
40185	40383	QPSK	1	49	0	0	1	0	Standalone	14.85	16.00
40620	40818	QPSK	1	49	0	0	1	0	Standalone	14.93	16.00
41055	41253	QPSK	1	49	0	0	1	0	Standalone	14.82	16.00
41490	41292	QPSK	1	49	0	0	1	0	Standalone	14.88	16.00