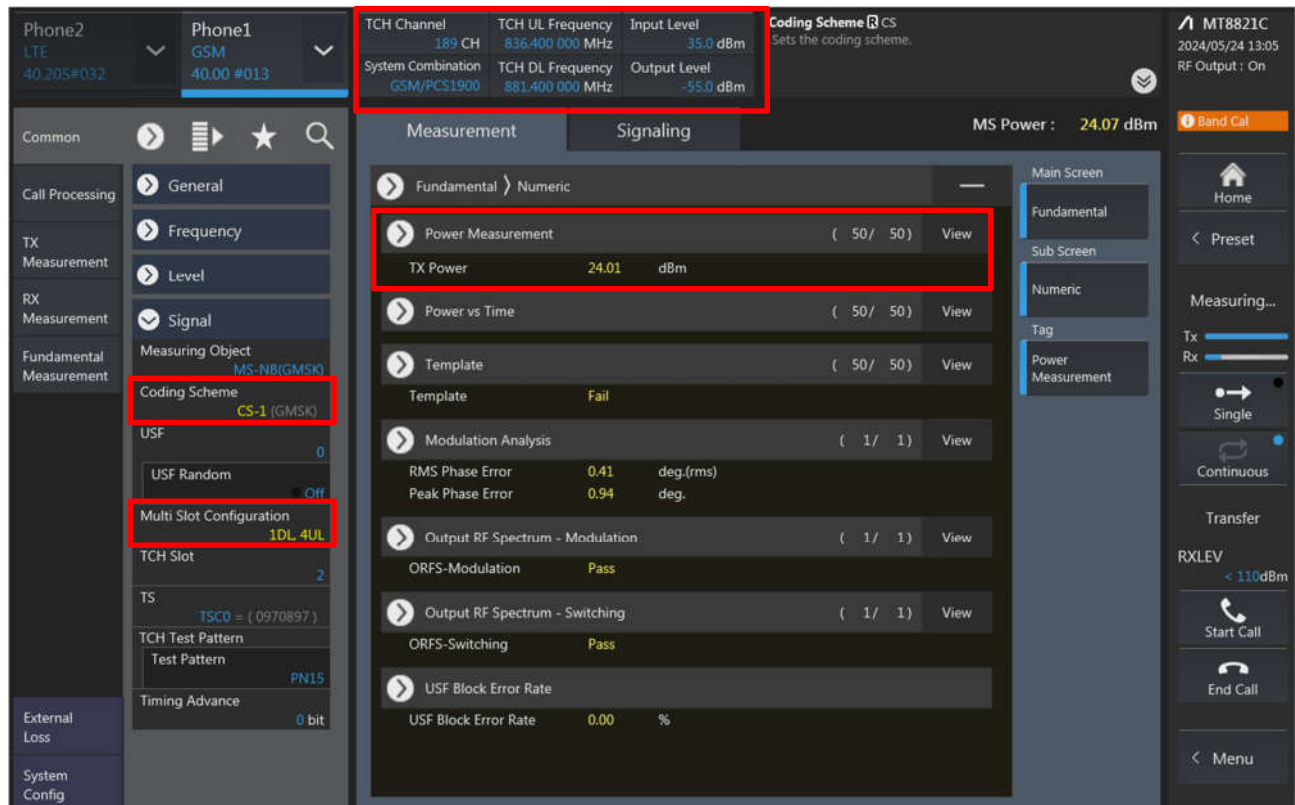


Power measurement connection diagram:

The power measurement for 2G/3G/LTE/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 2G/3G/LTE/UL and DL CA.

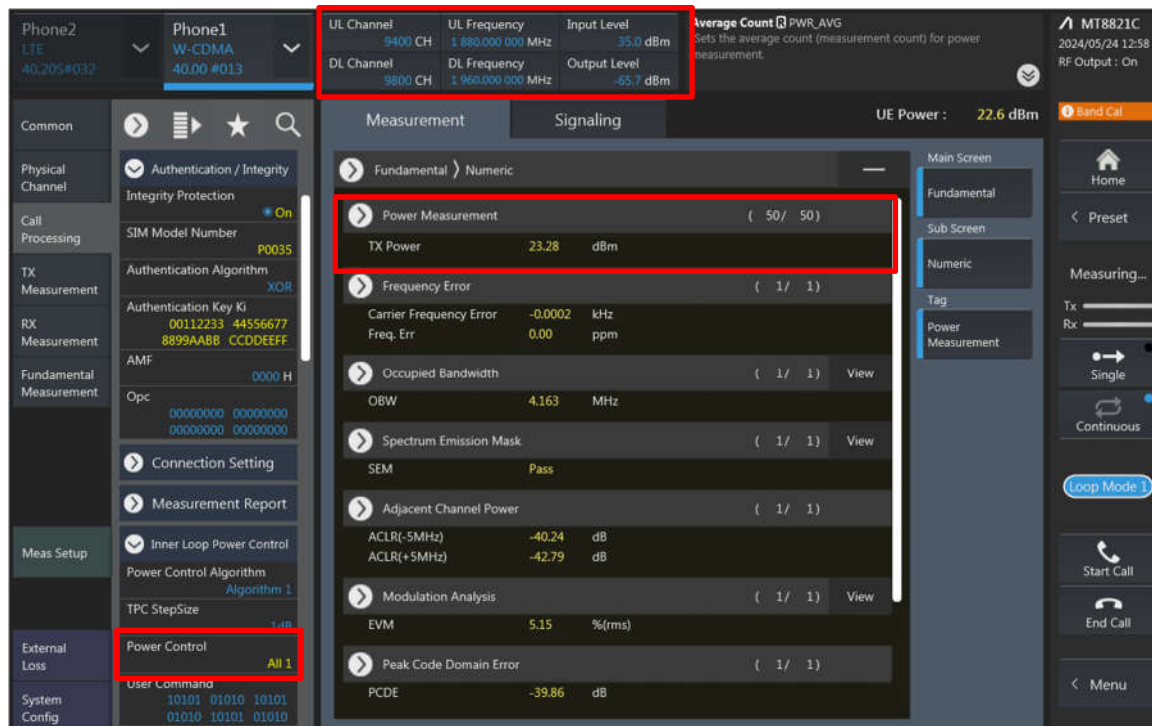
<GSM>



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

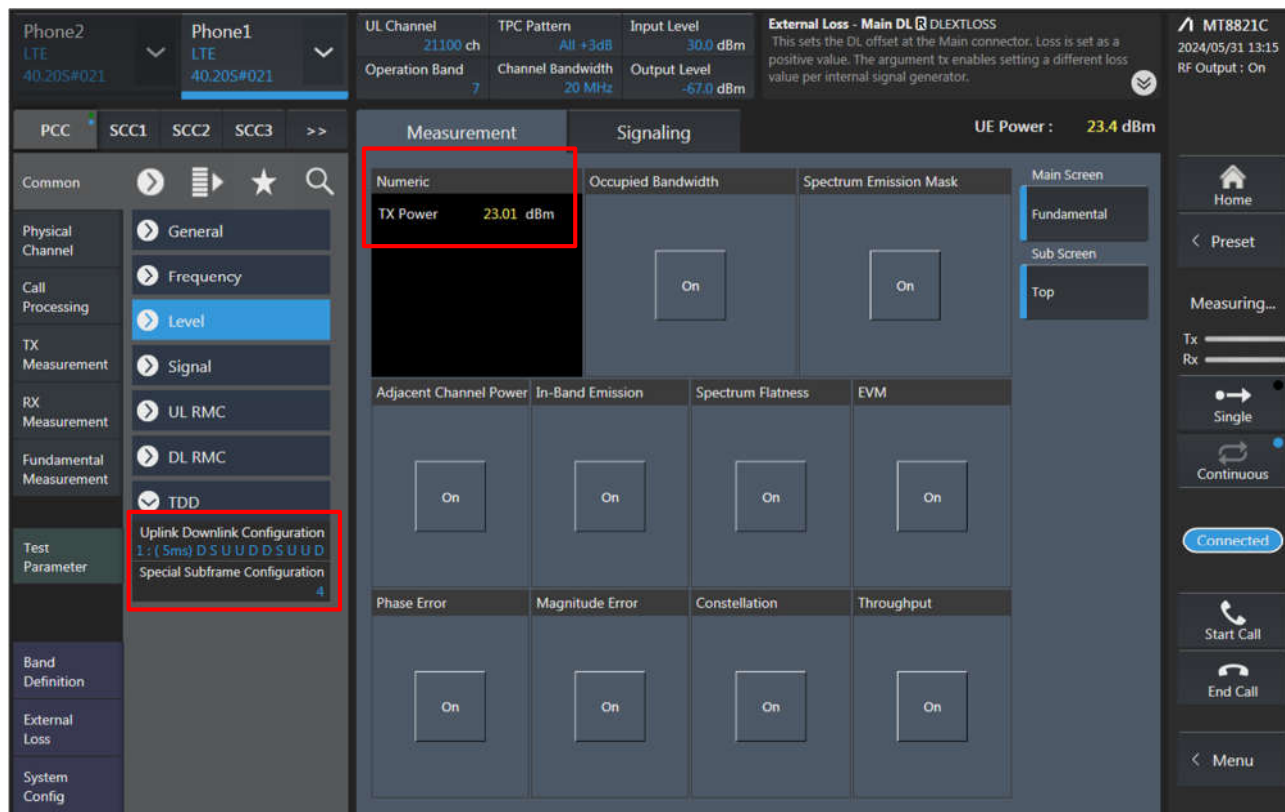
- Phone Information:** Phone2 (LTE, 40.20S#032) and Phone1 (GSM, 40.00 #013).
- Measurement Parameters:**
 - TCH Channel: 189 CH
 - TCH UL Frequency: 836.400 000 MHz
 - Input Level: 35.0 dBm
 - System Combination: GSM/PCS1900
 - TCH DL Frequency: 881.400 000 MHz
 - Output Level: -55.0 dBm
- Coding Scheme:** CS (Sets the coding scheme).
- Measurement Results:**
 - TX Power: 24.01 dBm
 - Power vs Time: (50/ 50) View
 - Template: Fail
 - Modulation Analysis: (1/ 1) View
 - RMS Phase Error: 0.41 deg.(rms)
 - Peak Phase Error: 0.94 deg.
 - Output RF Spectrum - Modulation: (1/ 1) View
 - ORFS-Modulation: Pass
 - Output RF Spectrum - Switching: (1/ 1) View
 - ORFS-Switching: Pass
 - USF Block Error Rate: 0.00 %
- Configuration:**
 - Measuring Object: MS-NB(GMSK)
 - Coding Scheme: CS-1 (GMSK)
 - USF: 0
 - USF Random: Off
 - Multi Slot Configuration: 1DL, 4UL
 - TCH Slot: 2
 - TS: TSC0 = (0970897)
 - TCH Test Pattern: Test Pattern: PN15
 - Timing Advance: 0 bit
- External Loss:** 0 bit
- System Config:**
- MS Power:** 24.07 dBm
- Band Cal:** MT8821C, 2024/05/24 13:05, RF Output : On
- Navigation:** Home, Preset, Measuring..., Single, Continuous, Transfer, RXLEV < 110dBm, Start Call, End Call, Menu.

<WCDMA>



The WCDMA interface shows two phone configurations: Phone2 (LTE, 40.205#032) and Phone1 (W-CDMA, 40.00 #013). The main measurement area is divided into 'Measurement' and 'Signaling' tabs. The 'Measurement' tab is active, showing various metrics. A red box highlights the 'Power Measurement' section, which includes 'TX Power' (23.28 dBm) and 'Frequency Error' (-0.0002 kHz, 0.00 ppm). Another red box highlights the 'UL Channel' and 'DL Channel' settings, showing 'UL Channel' (9400 CH, 1 880.000 000 MHz, Input Level 35.0 dBm) and 'DL Channel' (9800 CH, 1 960.000 000 MHz, Output Level -65.7 dBm). The 'Fundamental' section shows 'Occupied Bandwidth' (4.163 MHz) and 'Spectrum Emission Mask' (Pass). The 'Adjacent Channel Power' section shows 'ACLR(-5MHz)' (-40.24 dB) and 'ACLR(+5MHz)' (-42.79 dB). The 'Modulation Analysis' section shows 'EVM' (5.15 % (rms)). The 'Peak Code Domain Error' section shows 'PCDE' (-39.86 dB). The 'UE Power' is 22.6 dBm. The 'Meas Setup' section shows 'Power Control' (All 1) and 'User Command' (10101 01010 10101 01010 10101 01010).

<LTE>



The LTE interface shows two phone configurations: Phone2 (LTE, 40.205#021) and Phone1 (LTE, 40.205#021). The main measurement area is divided into 'Measurement' and 'Signaling' tabs. The 'Measurement' tab is active, showing various metrics. A red box highlights the 'TX Power' (23.01 dBm). Another red box highlights the 'Uplink Downlink Configuration' (1: (5ms) D S U U D D S U U D) and 'Special Subframe Configuration' (4). The 'Occupied Bandwidth' and 'Spectrum Emission Mask' sections show 'On' buttons. The 'Adjacent Channel Power', 'In-Band Emission', 'Spectrum Flatness', and 'EVM' sections show 'On' buttons. The 'Phase Error', 'Magnitude Error', 'Constellation', and 'Throughput' sections show 'On' buttons. The 'UE Power' is 23.4 dBm. The 'External Loss - Main DL' section shows 'DLEXTLOSS' (This sets the DL offset at the Main connector. Loss is set as a positive value. The argument tx enables setting a different loss value per internal signal generator.).

<LTE TDD Power class 3>

Phone2 LTE 40.20S#021 Phone1 LTE 40.20S#021

UL Channel 40620 ch TPC Pattern All +3dB Input Level 30.0 dBm TDD - Special Subframe Configuration TDDSSFCNF This is the parameter to select the special subframe configuration. MT8821C 2024/05/31 12:39 RF Output : On

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

PCC SCC1 SCC2 SCC3 >>

Common Frequency Level Signal UL RMC DL RMC TDD Uplink Downlink Configuration 0 : (5ms) D S U U U D S U U U Special Subframe Configuration 5

Measurement Signaling UE Power : 23.5 dBm

Numeric TX Power 23.19 dBm

Occupied Bandwidth Spectrum Emission Mask

On On

Adjacent Channel Power In-Band Emission Spectrum Flatness EVM

On On On On

Phase Error Magnitude Error Constellation Throughput

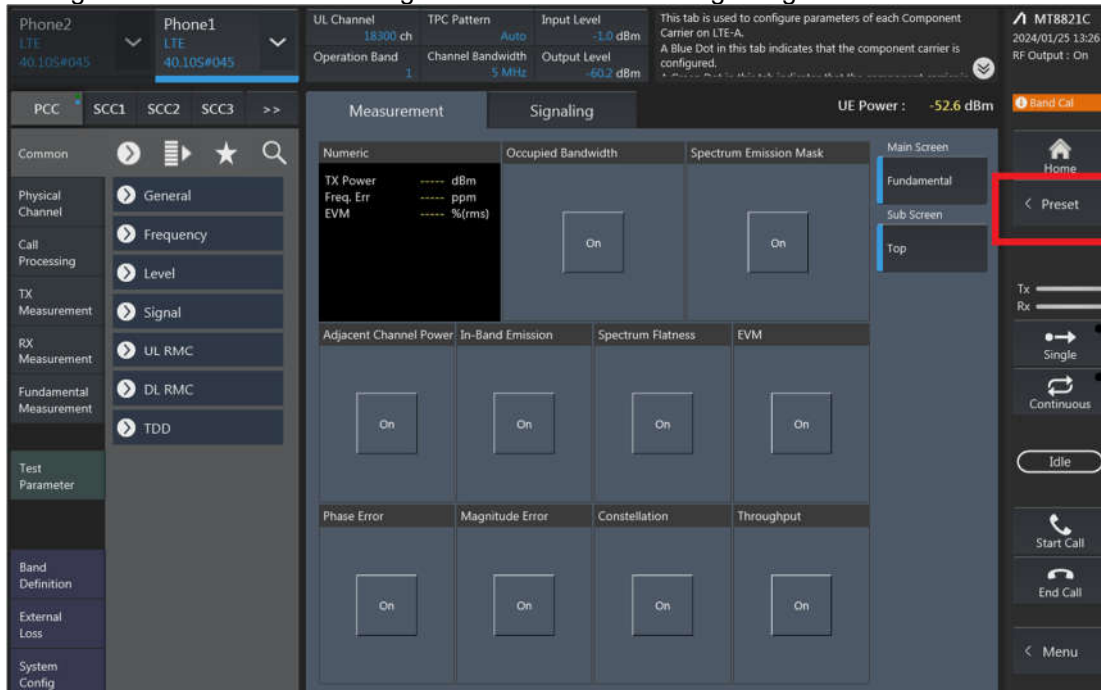
On On On On

Main Screen Fundamental Sub Screen Top

Home Preset Measuring... Tx Rx Single Continuous Connected Start Call End Call Menu

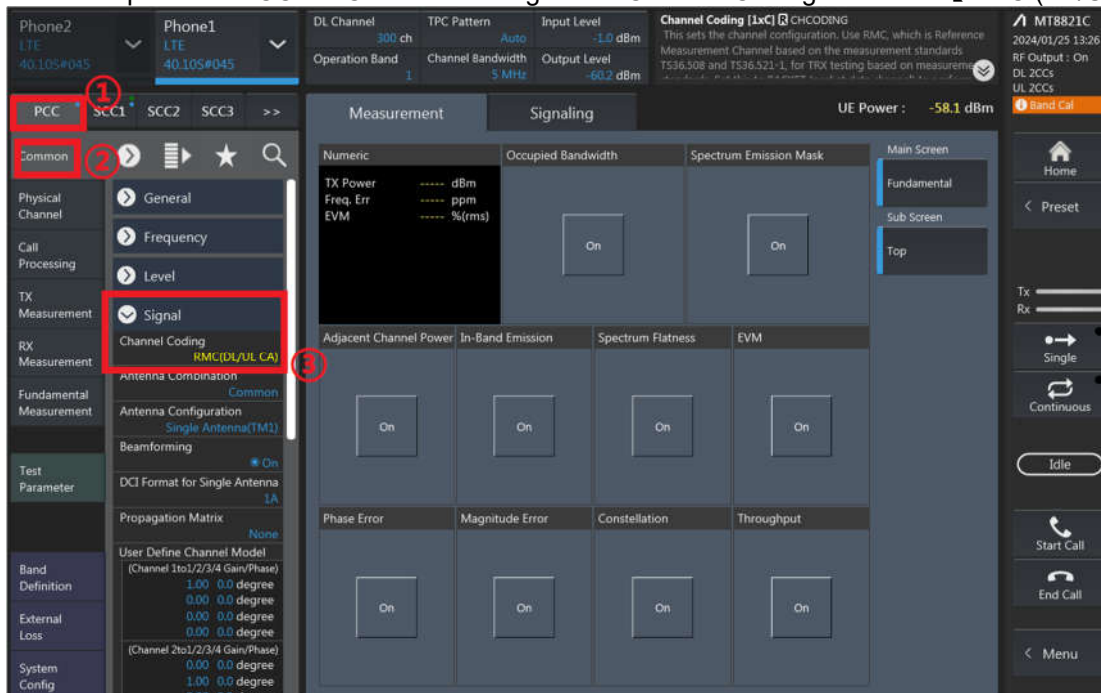
LTE Uplink and Downlink Carrier Aggregation configurations:

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

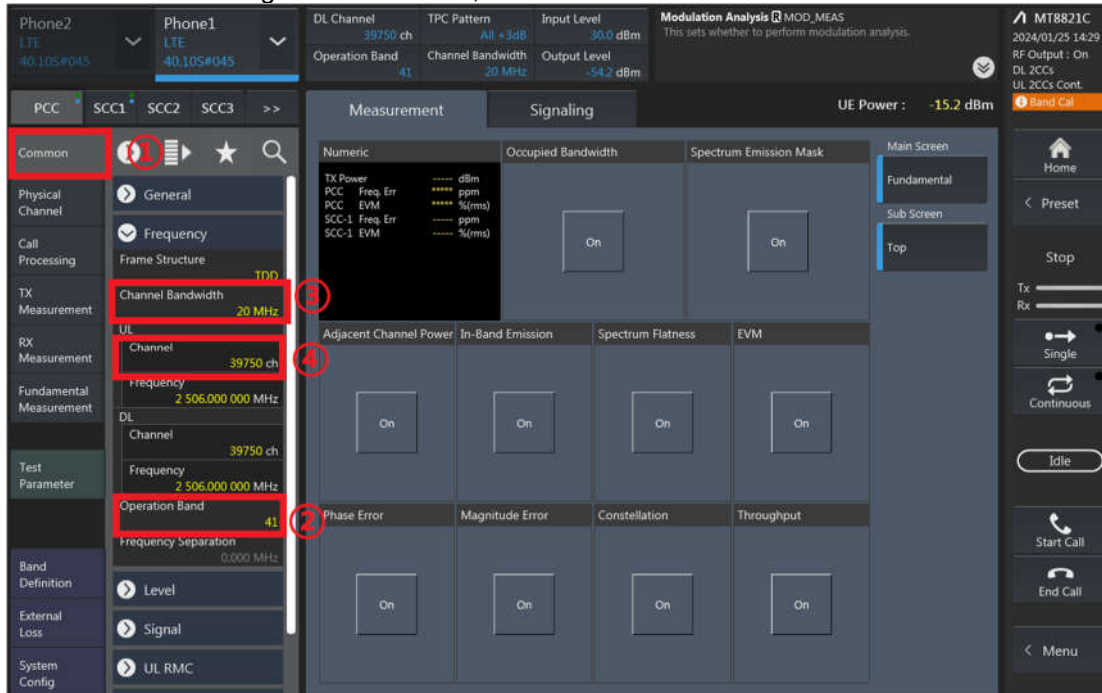


2. If Select "RMC (DL/UL CA)" for Uplink Carrier Aggregation;
If Select "RMC (DL CA)" for Downlink Carrier Aggregation.
For example, Uplink Carrier Aggregation:

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



- 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 40.105#045 Phone1 LTE 40.105#045

DL Channel 39750 ch TPC Pattern A1 +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

Common

Physical Channel

Call Processing

TX Measurement

RX Measurement

Fundamental Measurement

Test Parameter

Band Definition

External Loss

System Config

General

Frequency

Channel Bandwidth 20 MHz

Channel 39750 ch

Frequency 2 506 000 000 MHz

DL Channel 39750 ch

Frequency 2 506 000 000 MHz

Operation Band 41

Frequency Separation 0.000 MHz

Level

Signal

UL RMC

Numeric

Occupied Bandwidth

Spectrum Emission Mask

Main Screen

Fundamental

Sub Screen

Top

Home

Preset

Stop

Tx

Rx

Single

Continuous

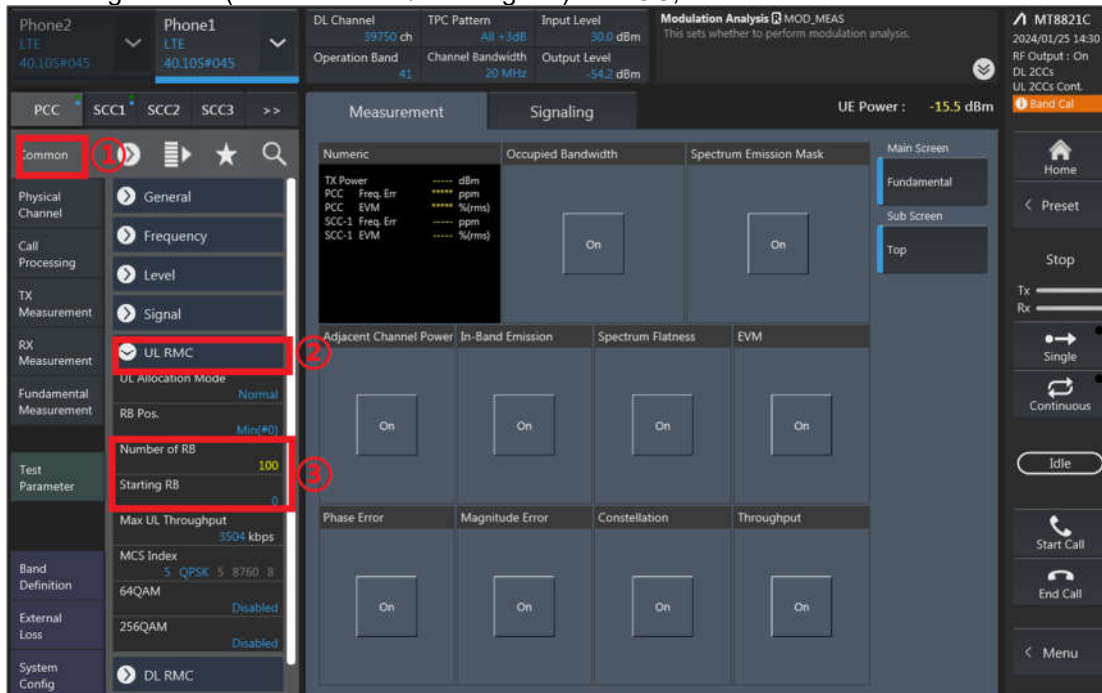
Idle

Start Call

End Call

Menu

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



Phone2 LTE 40.105#045 Phone1 LTE 40.105#045

DL Channel 39750 ch TPC Pattern A1 +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

Common

Physical Channel

Call Processing

TX Measurement

RX Measurement

Fundamental Measurement

Test Parameter

Band Definition

External Loss

System Config

General

Frequency

Level

Signal

UL RMC

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 B

64QAM

256QAM

DL RMC

Numeric

Occupied Bandwidth

Spectrum Emission Mask

Main Screen

Fundamental

Sub Screen

Top

Home

Preset

Stop

Tx

Rx

Single

Continuous

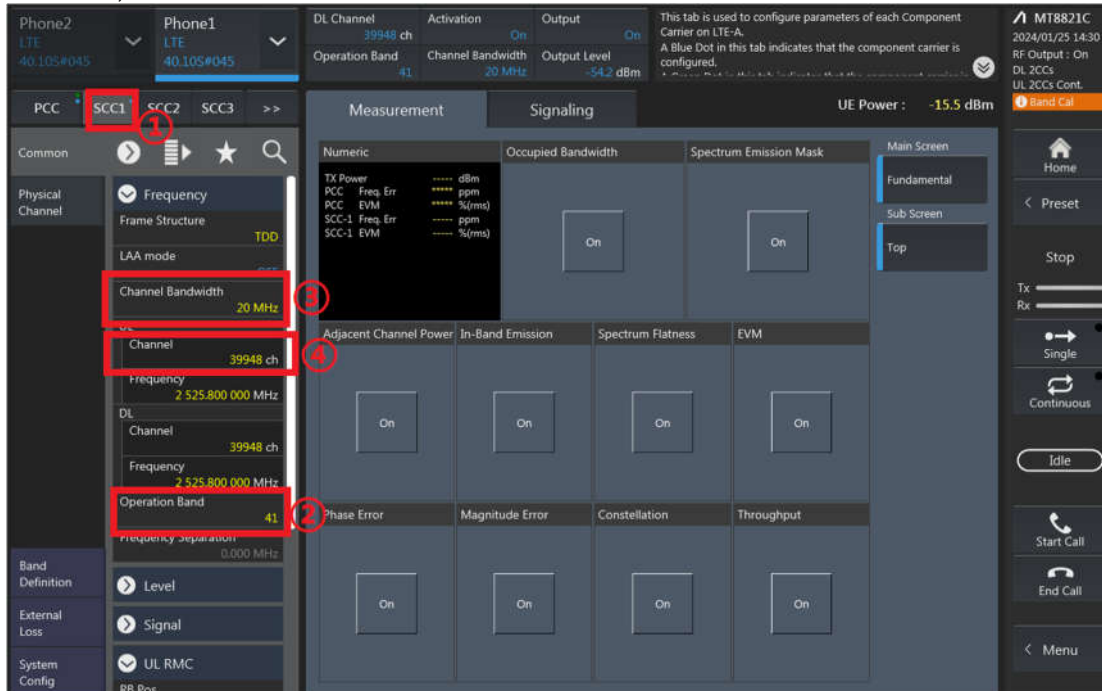
Idle

Start Call

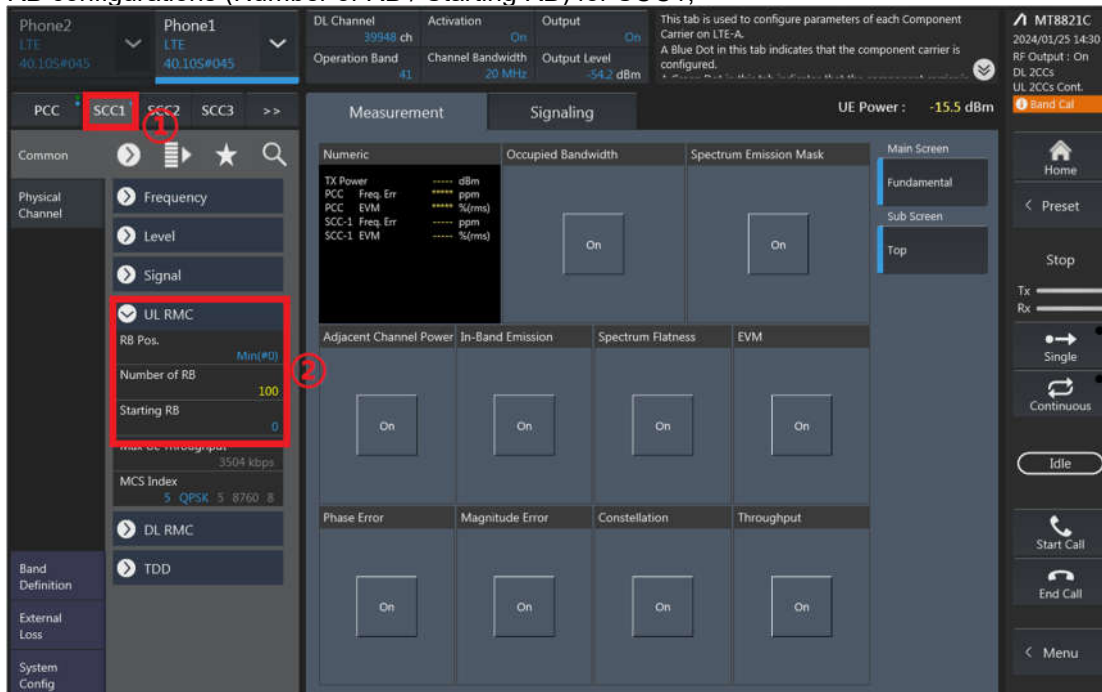
End Call

Menu

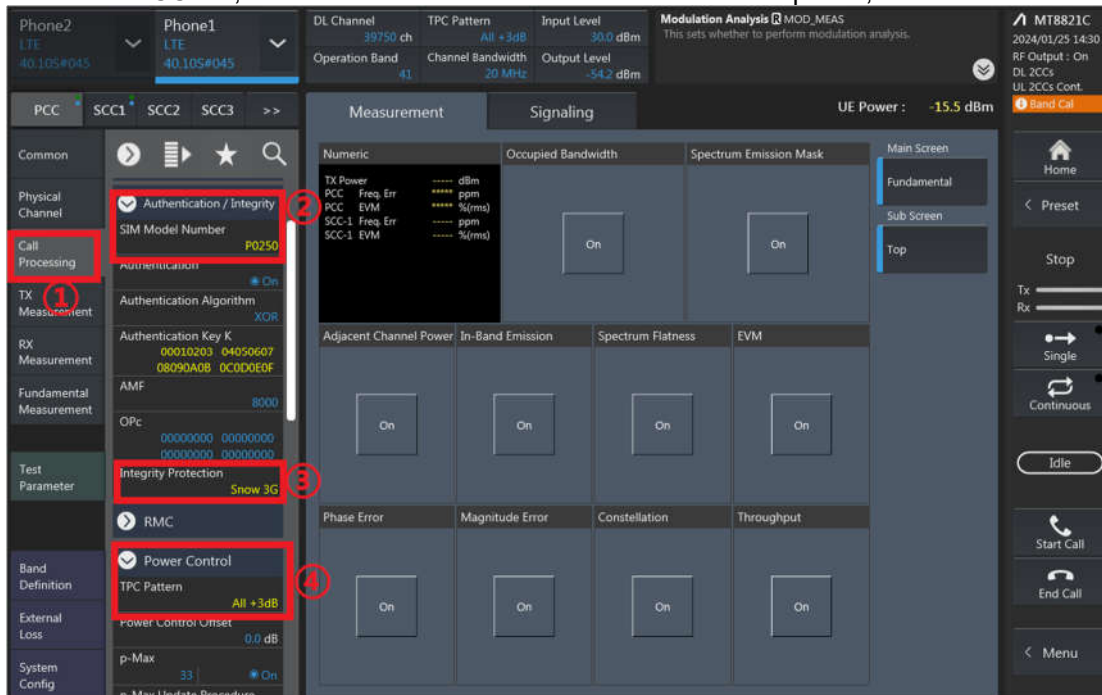
4. SCC parameter Settings: Select the SCC1 tab, Set operating band, BW, channel, and RB configurations for SCC1;



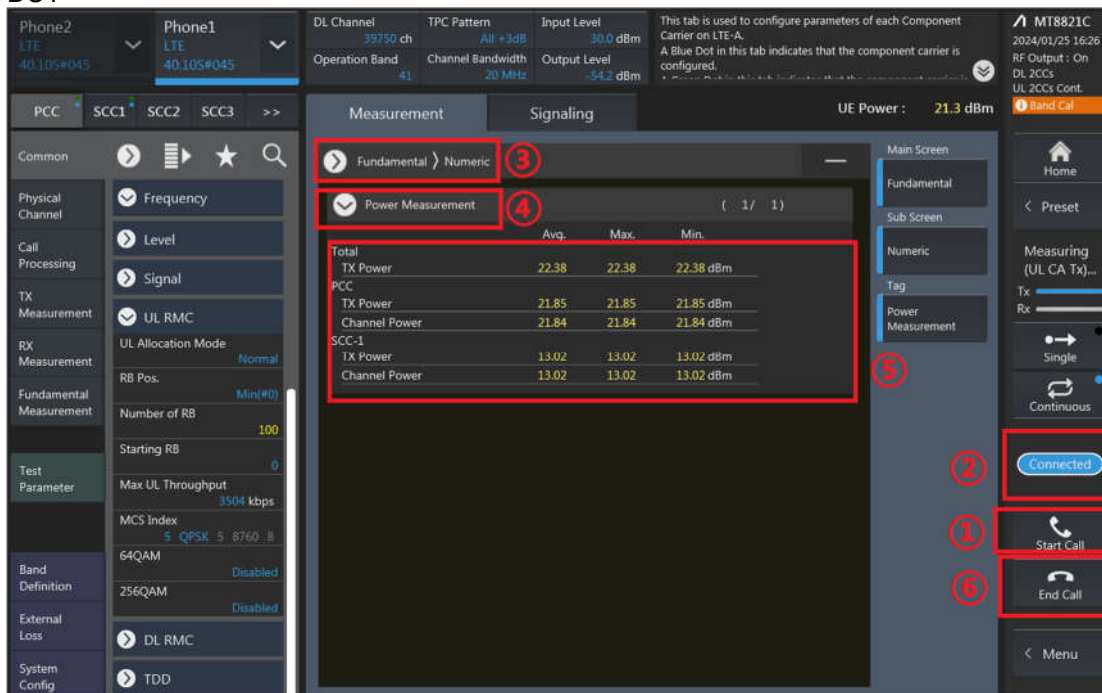
RB configurations (Number of RB / Starting RB) for SCC1;



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.

<Intra-Band Power Measurement>

【CA_41C_Ant 1】

Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB Offset	RB Size	RB Offset		
39750	39948	QPSK	1	99	0	0	23.88	25.00
40185	39987	QPSK	1	99	1	0	23.82	25.00
40620	40422	QPSK	1	99	1	0	23.96	25.00
41055	40857	QPSK	1	99	1	0	23.81	25.00
41490	41292	QPSK	1	0	1	99	23.76	25.00

【CA_42C_Ant 3】

Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB Offset	RB Size	RB Offset		
42190	42388	QPSK	1	99	1	0	20.01	21.00
42590	42788	QPSK	1	99	1	0	20.06	21.00
42990	42792	QPSK	1	0	1	99	19.92	21.00
