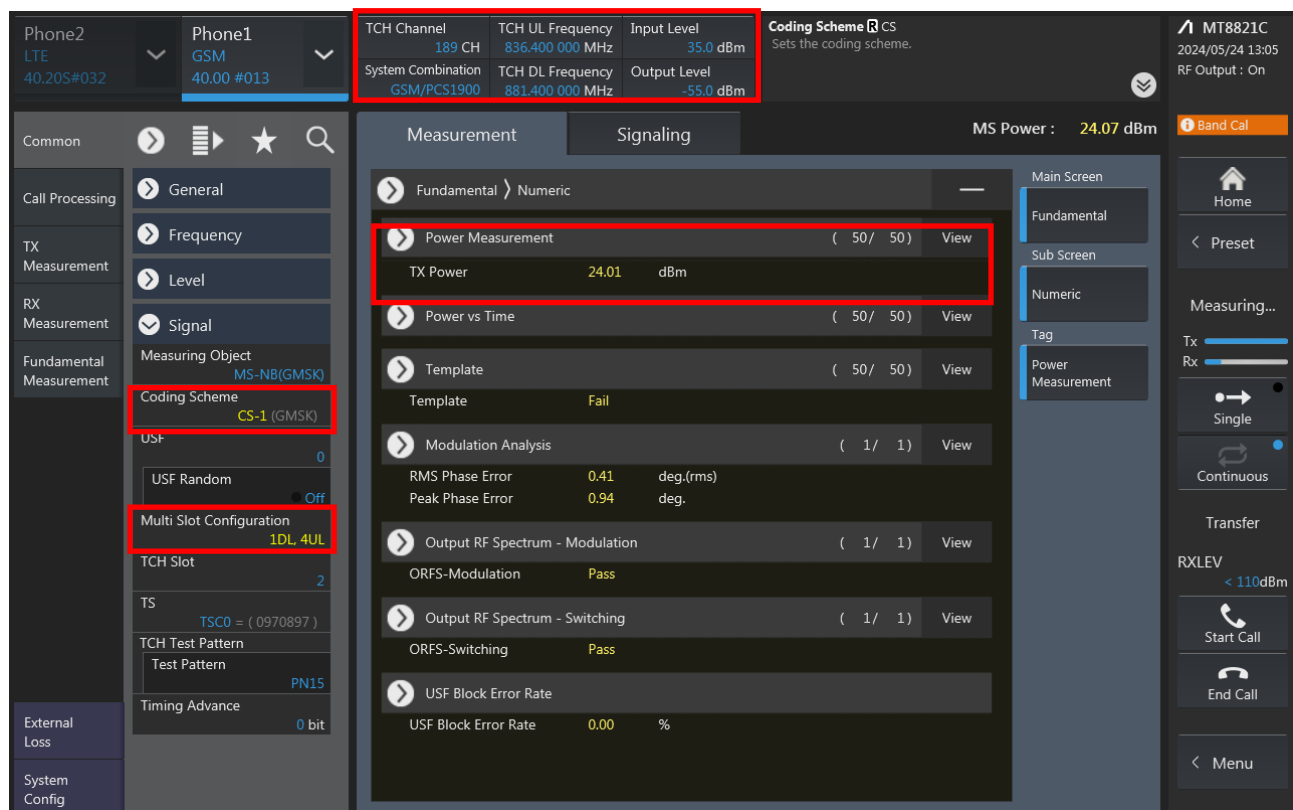


Appendix D-3. 2G/3G/LTE/5G FR1/UL and DL CA connection diagram

General Note:

The power measurement for 2G/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 2G/3G/LTE/5G FR1/UL and DL CA.

GSM



The screenshot displays the MT8821C software interface for GSM testing. The top status bar shows 'Phone2 LTE 40.205#032' and 'Phone1 GSM 40.00 #013'. The 'TCH Channel' is set to 189 CH, 'TCH UL Frequency' is 836.400 000 MHz, 'Input Level' is 35.0 dBm, 'System Combination' is GSM/PCS1900, 'TCH DL Frequency' is 881.400 000 MHz, and 'Output Level' is -55.0 dBm. The 'Coding Scheme' is CS. The 'MS Power' is 24.07 dBm. The 'Fundamental' measurement screen shows 'Power Measurement' with 'TX Power' at 24.01 dBm. The 'Signal' measurement screen shows 'Power vs Time' at (50/50), 'Template' at (50/50), 'Modulation Analysis' at (1/1), 'Output RF Spectrum - Modulation' at (1/1), 'Output RF Spectrum - Switching' at (1/1), and 'USF Block Error Rate' at 0.00 %.

Measurement	Value	Unit
TX Power	24.01	dBm
Power vs Time	(50/50)	
Template	(50/50)	
Modulation Analysis	(1/1)	
Output RF Spectrum - Modulation	(1/1)	
Output RF Spectrum - Switching	(1/1)	
USF Block Error Rate	0.00	%

WCDMA

Phone2
LTE
40.20S#032

Phone1
W-CDMA
40.00 #013

UL Channel
9400 CH

UL Frequency
1 880.000 000 MHz

Input Level
35.0 dBm

Average Count PWR_AVG
Sets the average count (measurement count) for power measurement.

DL Channel
9800 CH

DL Frequency
1 960.000 000 MHz

Output Level
-65.7 dBm

MT8821C
2024/05/24 12:58
RF Output : On

Common

Physical Channel

Call Processing

TX Measurement

RX Measurement

Fundamental Measurement

Meas Setup

External Loss

System Config

Authentication / Integrity

Integrity Protection

SIM Model Number

P0035

Authentication Algorithm

XOR

Authentication Key Ki

00112233 44556677
8899AABB CCDDDEFF

AMF

0000 H

Opc

00000000 00000000
00000000 00000000

Connection Setting

Measurement Report

Inner Loop Power Control

Power Control Algorithm

Algorithm 1

TPC StepSize

1dB

Power Control

All 1

User Command

10101 01010 10101
01010 10101 01010

Measurement

Signaling

UE Power : 22.6 dBm

Band Cal

Home

Preset

Measuring...

Tx

Rx

Single

Continuous

Loop Mode 1

Start Call

End Call

Menu

Fundamental

Numeric

Power Measurement (50/ 50)

TX Power 23.28 dBm

Frequency Error (1/ 1)

Carrier Frequency Error -0.0002 kHz

Freq. Err 0.00 ppm

Occupied Bandwidth (1/ 1) View

OBW 4.163 MHz

Spectrum Emission Mask (1/ 1) View

SEM Pass

Adjacent Channel Power (1/ 1)

ACLR(-5MHz) -40.24 dB

ACLR(+5MHz) -42.79 dB

Modulation Analysis (1/ 1) View

EVM 5.15 %(rms)

Peak Code Domain Error (1/ 1)

PCDE -39.86 dB

LTE

Phone2
LTE
40.20S#032

Phone1
LTE
40.20S#032

UL Channel
18900 ch

TPC Pattern
All +3dB

Input Level
35.0 dBm

Power Measurement - Meas. Count PWR_AVG
This sets the measurement count of the power measurement.

Operation Band
2

Channel Bandwidth
20 MHz

Output Level
-54.2 dBm

MT8821C
2024/05/24 12:51
RF Output : On

PCC

SCC1

SCC2

SCC3

>>

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

1

Starting RB

0

Max UL Throughput

72 kbps

MCS Index

5 QPSK 5 72 8

256QAM

Disabled

DL RMC

Measurement

Signaling

UE Power : 25.4 dBm

Band Cal

Home

Preset

Measuring...

Tx

Rx

Single

Continuous

Connected

Start Call

End Call

Menu

Fundamental

Numeric

Power Measurement (50/ 50)

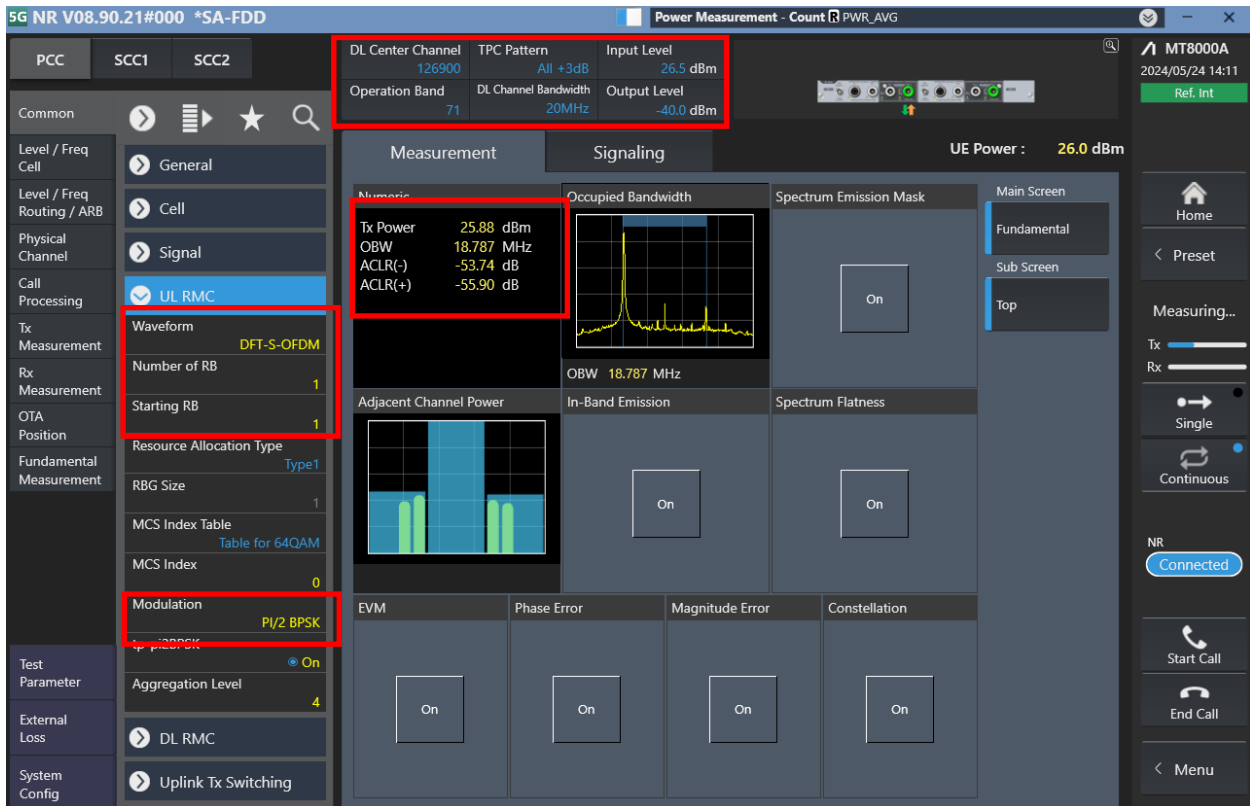
TX Power 25.12 dBm

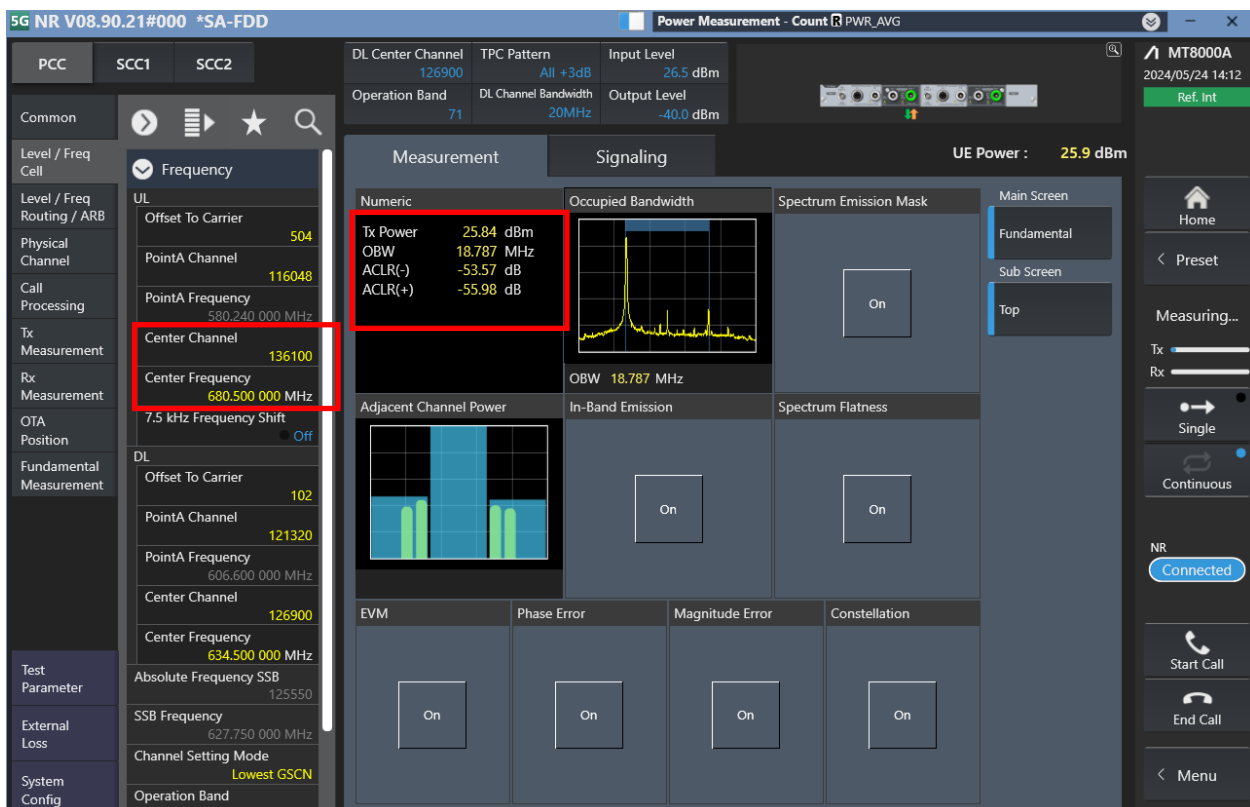
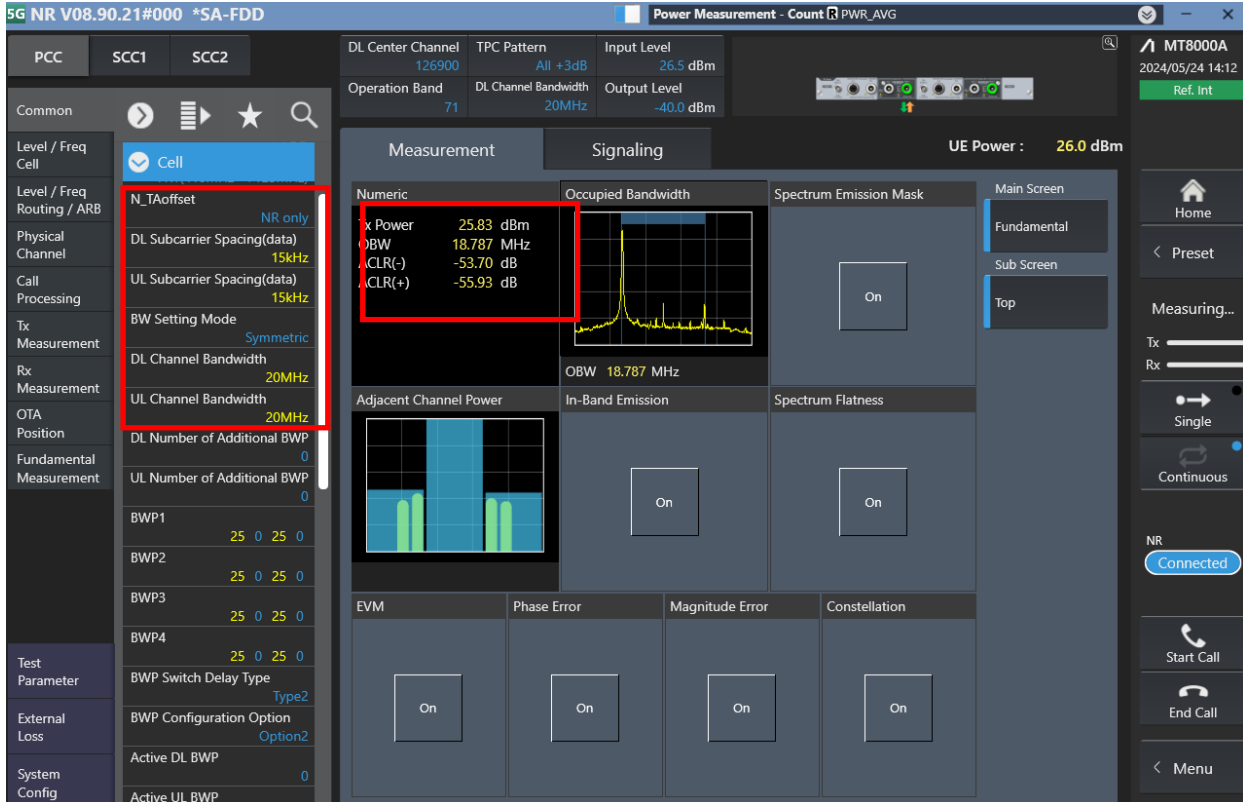
Modulation Analysis (1/ 1) View

Freq. Err 0.00 ppm

EVM 1.35 %(rms)

5G NR FR1



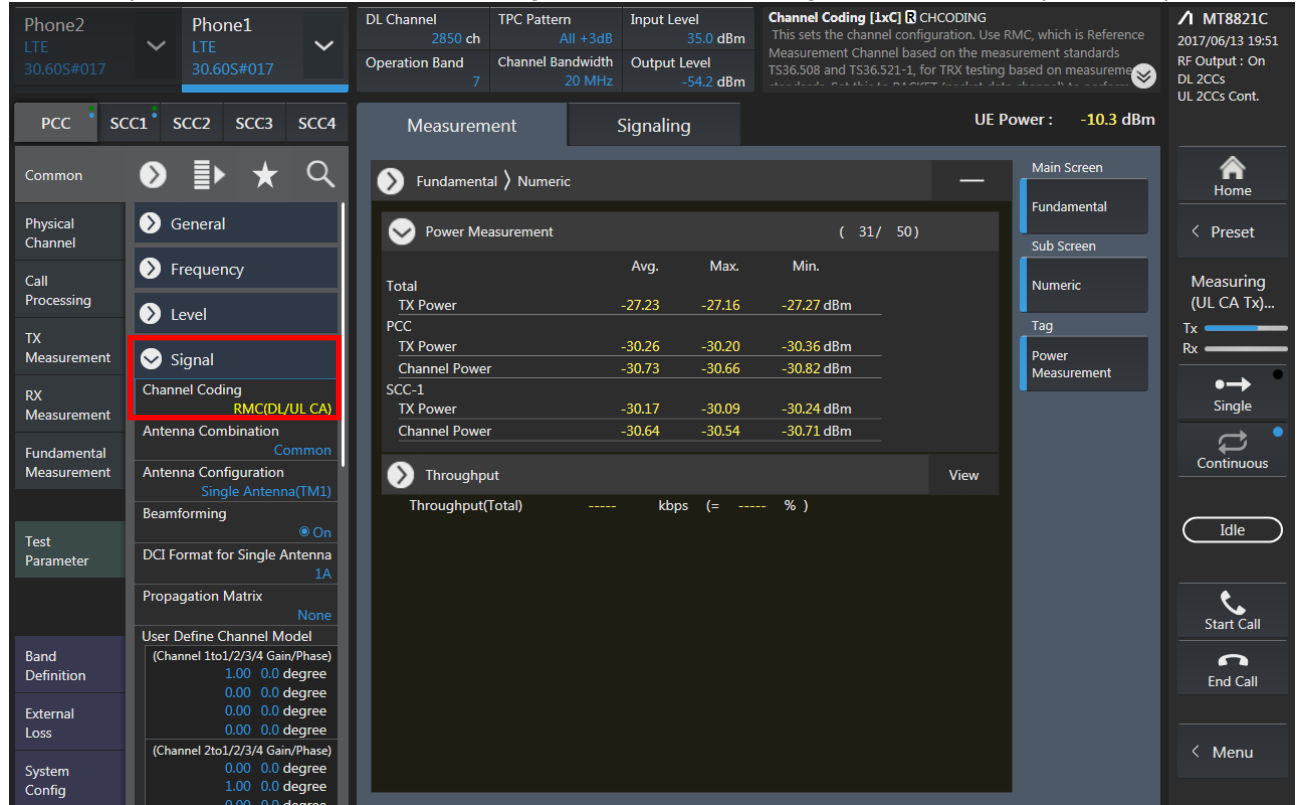


LTE Uplink and Downlink Carrier Aggregation configurations:

1. Select "RMC (DL/UL CA)" for Uplink Carrier Aggregation;
Select "RMC (DL CA)" for Downlink Carrier Aggregation.

For example, Uplink Carrier Aggregation:

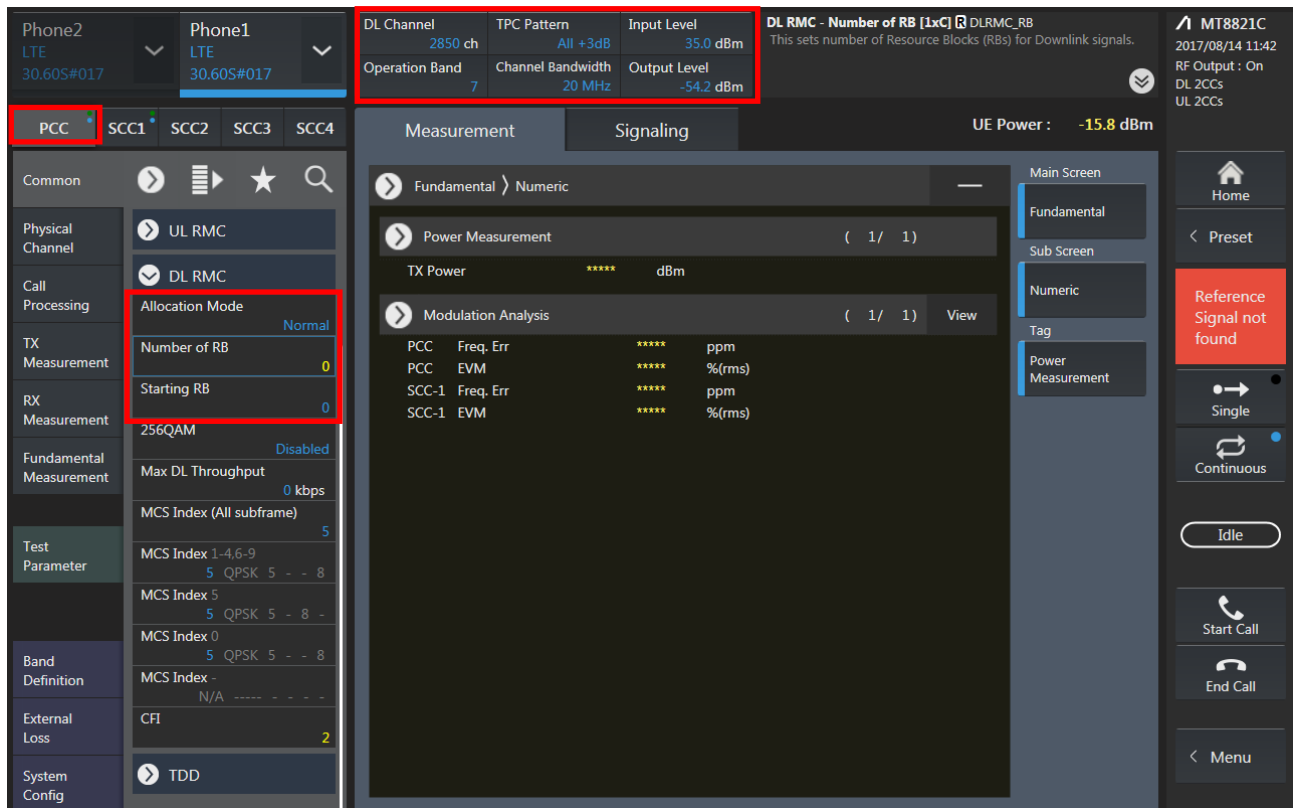
Detailed operation: PCC → Common → Signal → Channel Coding → Select **【RMC (DL/UL CA)】**



The screenshot displays the SPORTON LAB. FCC SAR TEST REPORT interface. The top section shows configuration parameters for Phone1 and Phone2, including DL Channel (2850 ch), TPC Pattern (All +3dB), Input Level (35.0 dBm), Operation Band (7), Channel Bandwidth (20 MHz), and Output Level (-54.2 dBm). The Channel Coding [1xC] is set to CHCODING. The bottom section shows the Measurement and Signaling tabs. The Measurement tab is active, displaying Power Measurement and Throughput data. The Power Measurement table shows TX Power, PCC, and SCC-1 values. The Throughput table shows Throughput(Total) in kbps and %.

Measurement	Avg.	Max.	Min.
Total TX Power	-27.23	-27.16	-27.27 dBm
PCC TX Power	-30.26	-30.20	-30.36 dBm
PCC Channel Power	-30.73	-30.66	-30.82 dBm
SCC-1 TX Power	-30.17	-30.09	-30.24 dBm
SCC-1 Channel Power	-30.64	-30.54	-30.71 dBm

2. PCC parameter Settings: select the PCC tab and Set operating band, BW, channel and RB configurations for PCC.

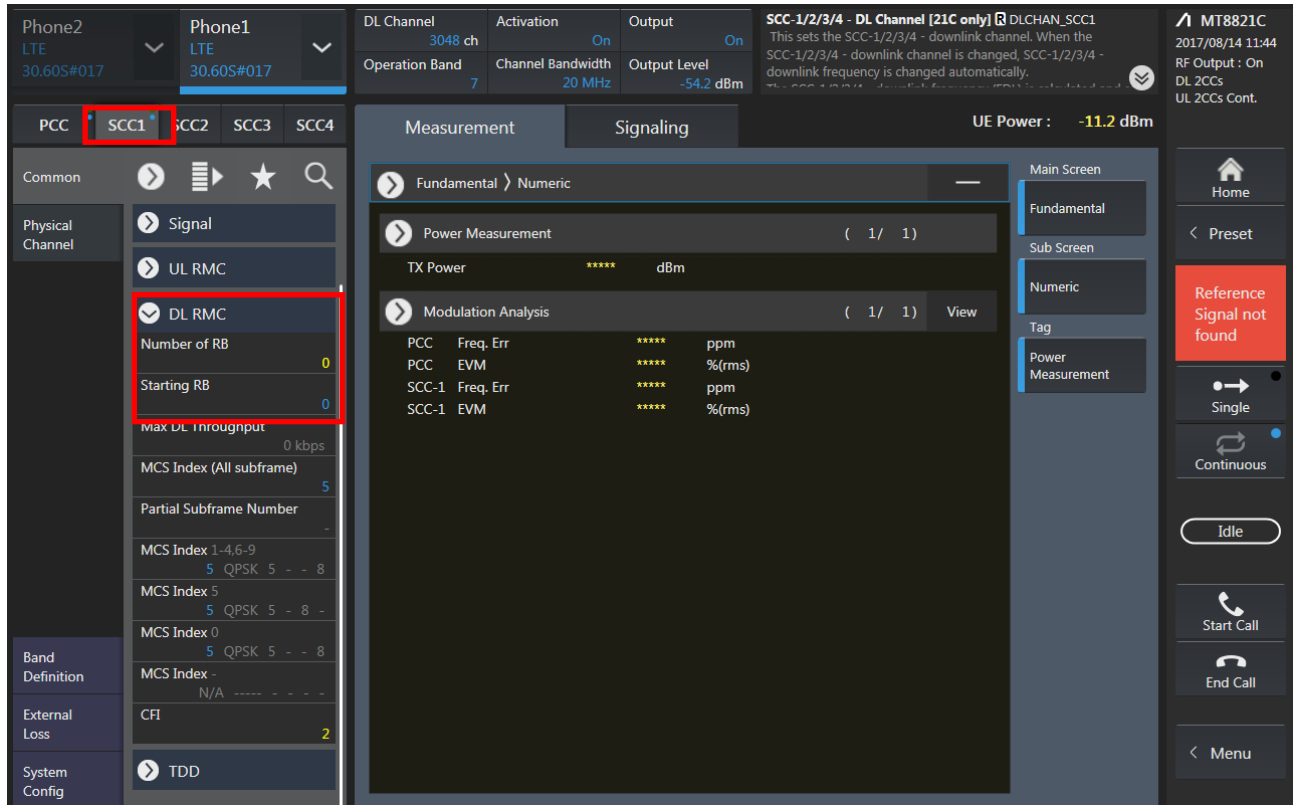


The screenshot displays the SPORTON LAB. FCC SAR TEST REPORT interface. The left sidebar contains various configuration tabs, with 'PCC' selected and highlighted in red. The main area shows the 'PCC' configuration settings, including 'DL Channel' (2850 ch), 'TPC Pattern' (All +3dB), 'Input Level' (35.0 dBm), 'Operation Band' (7), 'Channel Bandwidth' (20 MHz), and 'Output Level' (-54.2 dBm). The 'DL RMC - Number of RB [1x] [3] DLRMC_RB' is also visible. The 'PCC' tab is highlighted in red, and the 'DL RMC' section is also highlighted in red. The 'PCC' configuration is shown in the 'Fundamental' section, with 'Power Measurement' and 'Modulation Analysis' tabs. The 'Modulation Analysis' table shows the following data:

Measurement	Value	Unit
PCC Freq. Err	*****	ppm
PCC EVM	*****	%(rms)
SCC-1 Freq. Err	*****	ppm
SCC-1 EVM	*****	%(rms)

The right sidebar shows the 'MT8821C' status, including 'RF Output : On', 'DL 2CCs', and 'UL 2CCs'. The 'Reference Signal not found' message is displayed in a red box. The 'UE Power' is shown as -15.8 dBm. The 'PCC' tab is highlighted in red, and the 'DL RMC' section is also highlighted in red.

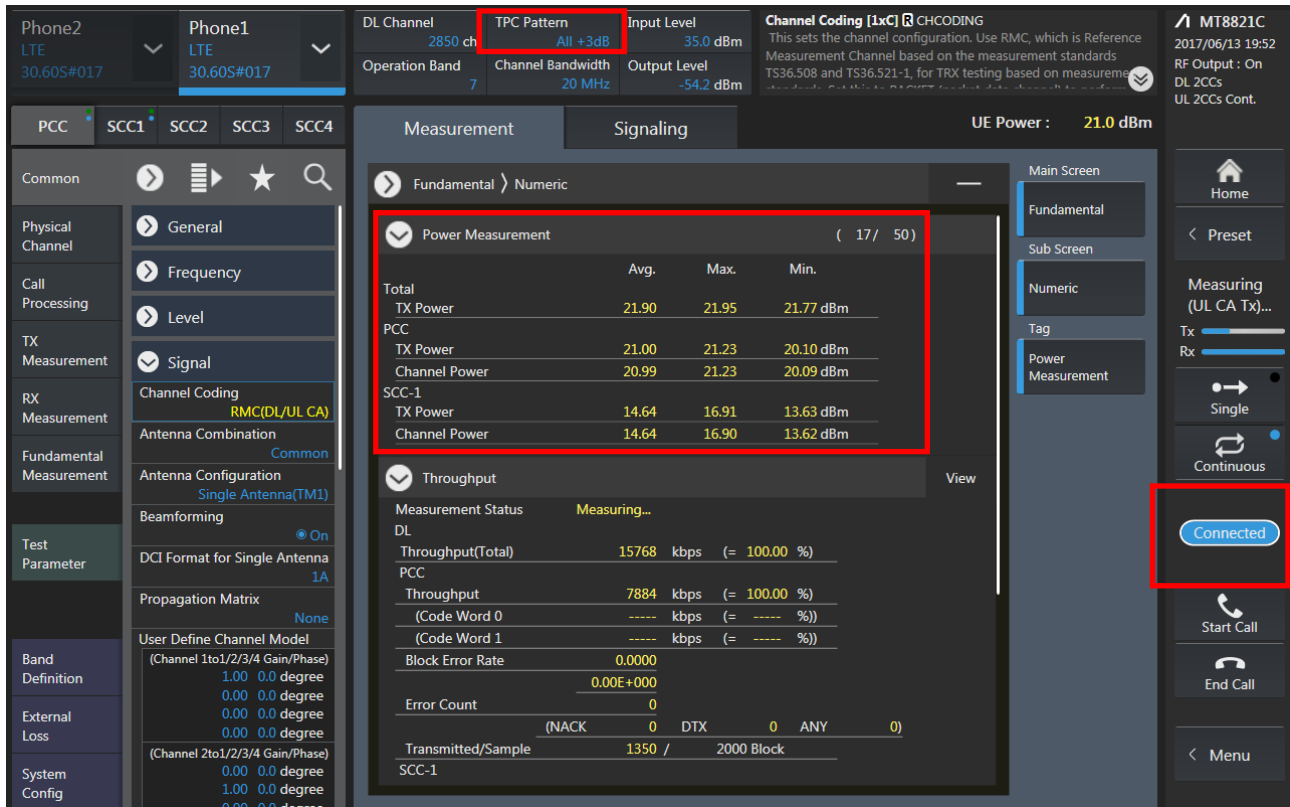
3. SCC parameter Settings: select the SCC tab and Set operating band, BW, channel and RB configurations for SCC.



The screenshot displays the SPORTON LAB. FCC SAR TEST REPORT interface. The top section shows the 'Phone1' configuration with 'LTE' and '30.60S#017'. The 'DL Channel' is set to '3048 ch', 'Operation Band' is '7', 'Channel Bandwidth' is '20 MHz', and 'Output Level' is '-54.2 dBm'. The 'Activation' and 'Output' status are both 'On'. The 'SCC-1/2/3/4 - DL Channel [21C only]' is selected, and the 'DLCHAN_SCC1' is set to 'DLCHAN_SCC1'. The 'UE Power' is '-11.2 dBm'. The 'Physical Channel' section is expanded, showing 'Signal', 'UL RMC', and 'DL RMC' (selected). The 'DL RMC' settings are: 'Number of RB' is '0', 'Starting RB' is '0', 'Max DL Throughput' is '0 kbps', 'MCS Index (All subframe)' is '5', 'Partial Subframe Number' is '-', 'MCS Index 1-4,6-9' is '5 QPSK 5 - - 8', 'MCS Index 5' is '5 QPSK 5 - - 8', 'MCS Index 0' is '5 QPSK 5 - - 8', 'MCS Index -' is 'N/A - - - - -', and 'CFI' is '2'. The 'System Config' section shows 'TDD'. The 'Measurement' section is expanded, showing 'Fundamental' and 'Modulation Analysis'. The 'Modulation Analysis' section shows 'PCC Freq. Err' as '***** ppm', 'PCC EVM' as '***** %(rms)', 'SCC-1 Freq. Err' as '***** ppm', and 'SCC-1 EVM' as '***** %(rms)'. The 'Main Screen' section shows 'Fundamental' and 'Sub Screen' (selected). The 'Tag' section shows 'Power Measurement'. The 'Reference Signal not found' message is displayed. The 'Home' button is visible at the bottom right.

4. Select the PCC tab, and select max power;

Click the “Connect” button at the Right of the screen.



The screenshot displays the SPORTON LAB. FCC SAR TEST REPORT interface. The top bar shows 'Phone2' and 'Phone1' both set to 'LTE' with frequency '30.605#017'. The 'DL Channel' is '2850 ch', 'Operation Band' is '7', 'Channel Bandwidth' is '20 MHz', 'Input Level' is '35.0 dBm', and 'Output Level' is '-54.2 dBm'. The 'Channel Coding' is '1xC' and 'CHCODING' is 'RMC(DL/UL CA)'. The 'UE Power' is '21.0 dBm'. The 'PCC' tab is selected, and the 'Signal' section is active. The 'Power Measurement' table is highlighted with a red box, showing the following data:

	Avg.	Max.	Min.
Total TX Power	21.90	21.95	21.77 dBm
PCC TX Power	21.00	21.23	20.10 dBm
Channel Power	20.99	21.23	20.09 dBm
SCC-1 TX Power	14.64	16.91	13.63 dBm
Channel Power	14.64	16.90	13.62 dBm

The 'Throughput' section shows 'Measuring...' status. The 'Connected' button is highlighted with a red box on the right side of the screen.