

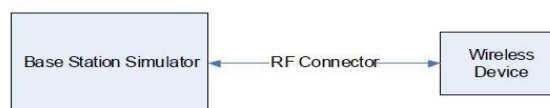
# Appendix I. – DLCA Power Measurement / 5G NR Call Box Setup

## 1. LTE Down-link Carrier Aggregation Conducted Powers

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number component carriers (CCs) supported by test product implementation. For those configurations required by April 2018 TCBC Workshop notes, conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only.

### Downlink Carrier aggregation:

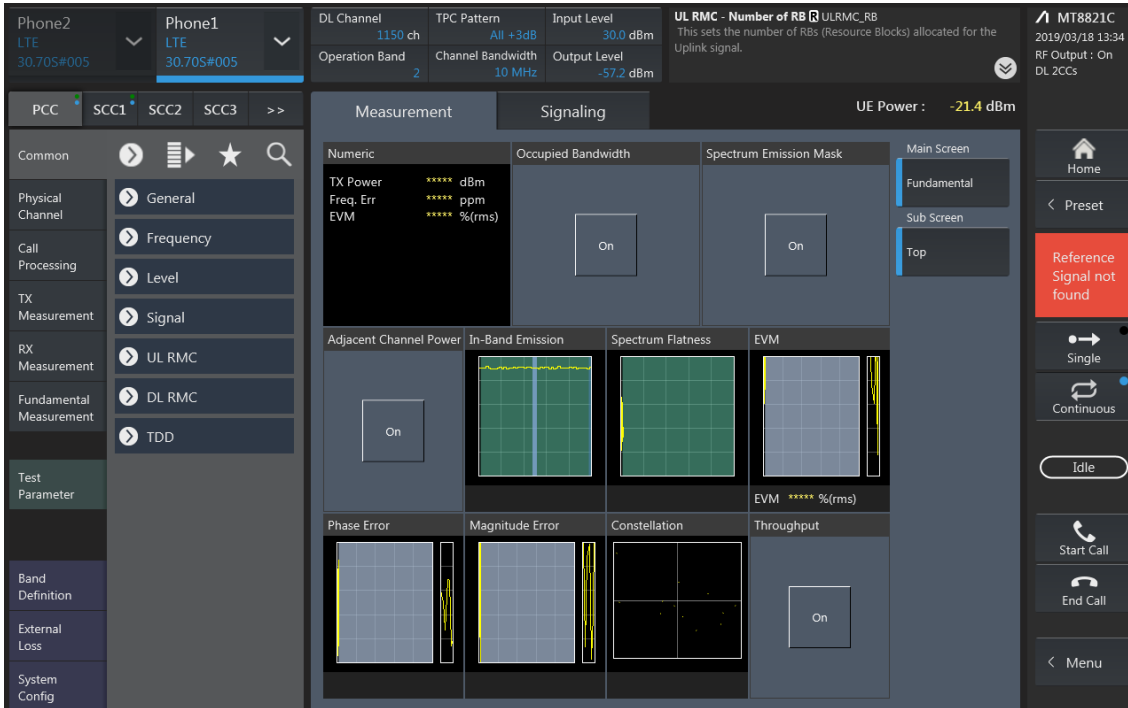
1. This device only supports downlink carrier aggregation. For every supported combination of downlink carrier aggregation, power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.
2. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
3. Per FCC KDB publication 941225 D05A v01r02, Section C)3)b)ii), PCC uplink channel was selected at downlink carrier aggregation combinations. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
4. For continuous intra-band carrier aggregation, the downlink channel spacing between the component carriers was set to multiple of 300kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521.
5. For non-continuous intra-band carrier aggregation, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
6. All selected downlink channels remained fully within the downlink transmission band of the respective component carrier.



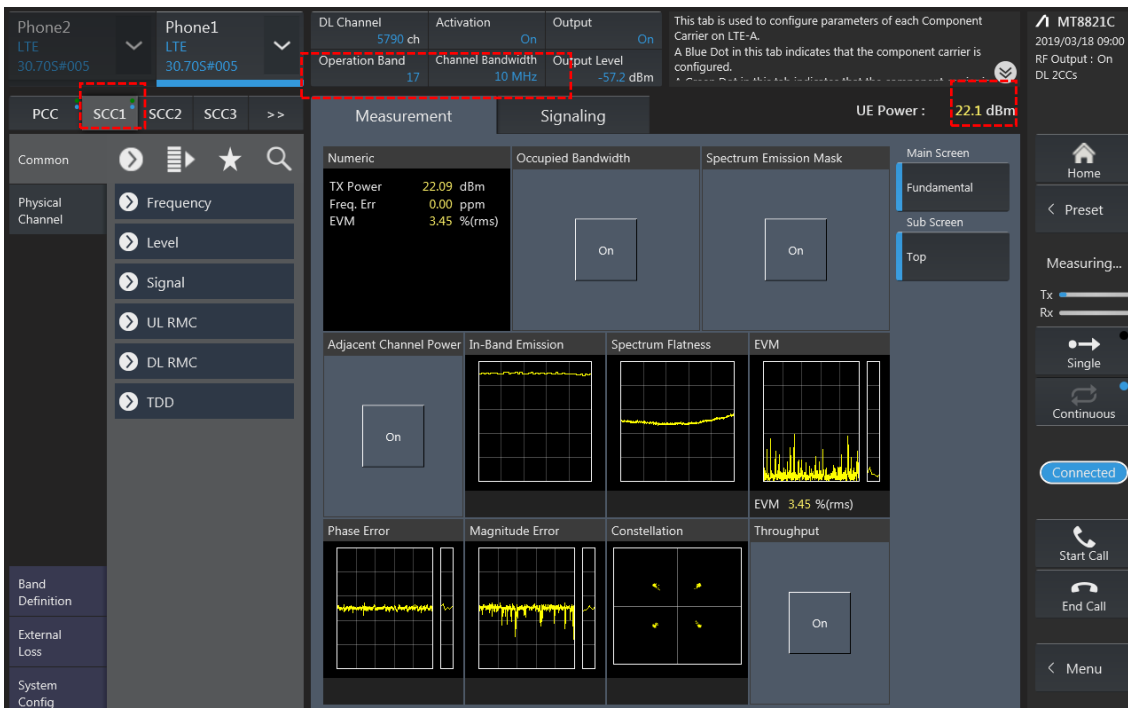
Power Measurement setup

### LTE Down Link 2CA Call Setup

#### PCC Setting (Channel/ RB/ BW/ Modulation)



#### SCC Setting (Channel/ RB/ BW/ Modulation) and call Connection

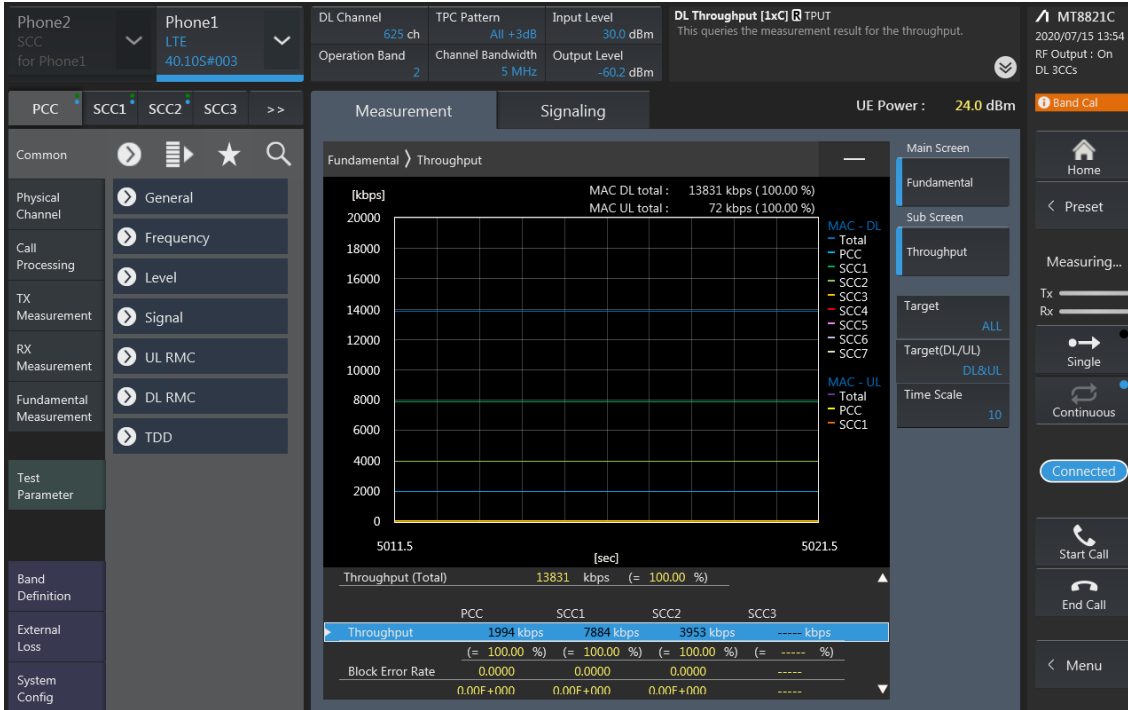


## 2CA Downlink Carrier aggregation Maximum conducted Powers

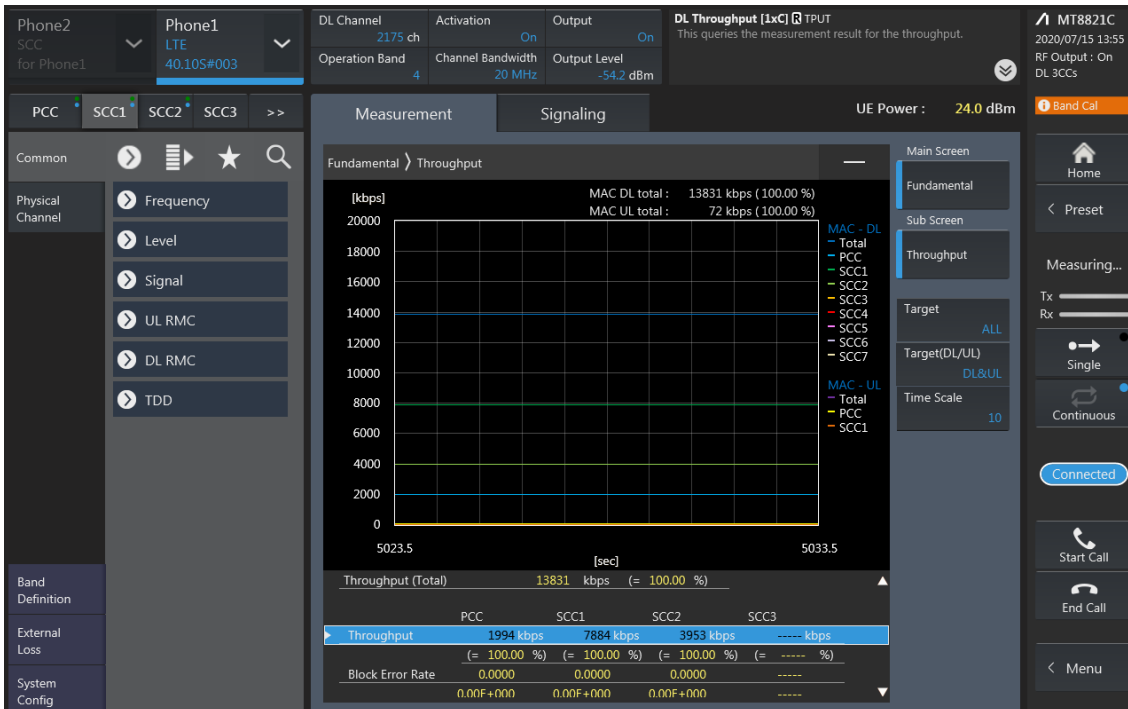
Combination	PCC									SCC				Tx Power		Deviation(dB) (2)-(1)
	Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled(dBm) (2)	
4A-48A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	48	20	55990	3625	24.12	24.20	0.08
12A-48A	12	5	23095	707.5	5095	737.5	QPSK	1	12	48	20	55990	3625	24.79	24.72	-0.07
25A-25A	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	25	10	8090	1935	24.56	24.45	-0.11
25A-25A	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	25	20	8140	1940	24.56	24.53	-0.03
25A-41A	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	41	20	40620	2593	24.56	24.57	0.01
41A-41A	41	20	40185	2549.5	40185	2549.5	QPSK	1	0	41	20	40620	2593	24.43	24.45	0.02
66A-71A	66	20	132572	1770	67036	2190	QPSK	1	99	71	20	68761	634.5	24.4	24.40	0.00
66A-71A	71	5	133447	695.5	68911	649.5	QPSK	1	12	66	20	66786	2145	24.4	24.44	0.04
12A-46A	12	5	23095	707.5	5095	737.5	QPSK	1	12	46	20	50665	5537.5	24.79	24.87	0.08
48A-71A	71	5	133447	695.5	68911	649.5	QPSK	1	12	48	20	55990	3625	24.4	24.33	-0.07

**LTE Down Link 3CA Call Setup**

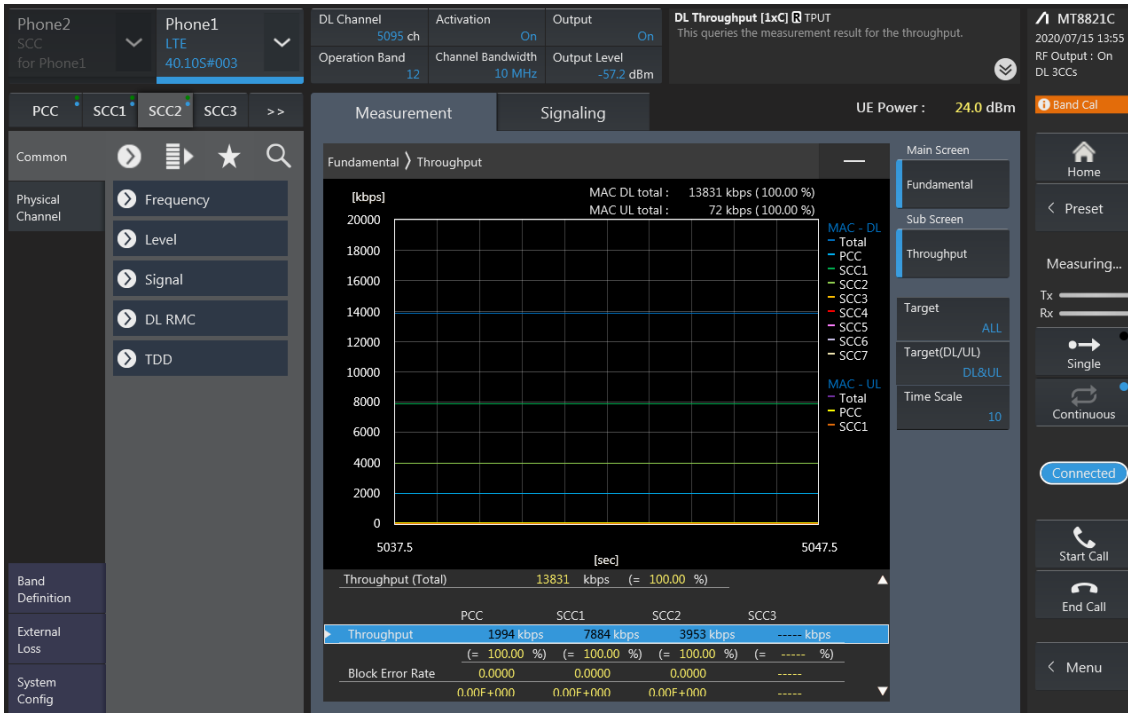
**PCC Setting (Channel/ RB/ BW/ Modulation)**



**SCC1 Setting (Channel/ RB/ BW/ Modulation) and call Connection**



SCC2 Setting (Channel/ RB/ BW/ Modulation) and call Connection

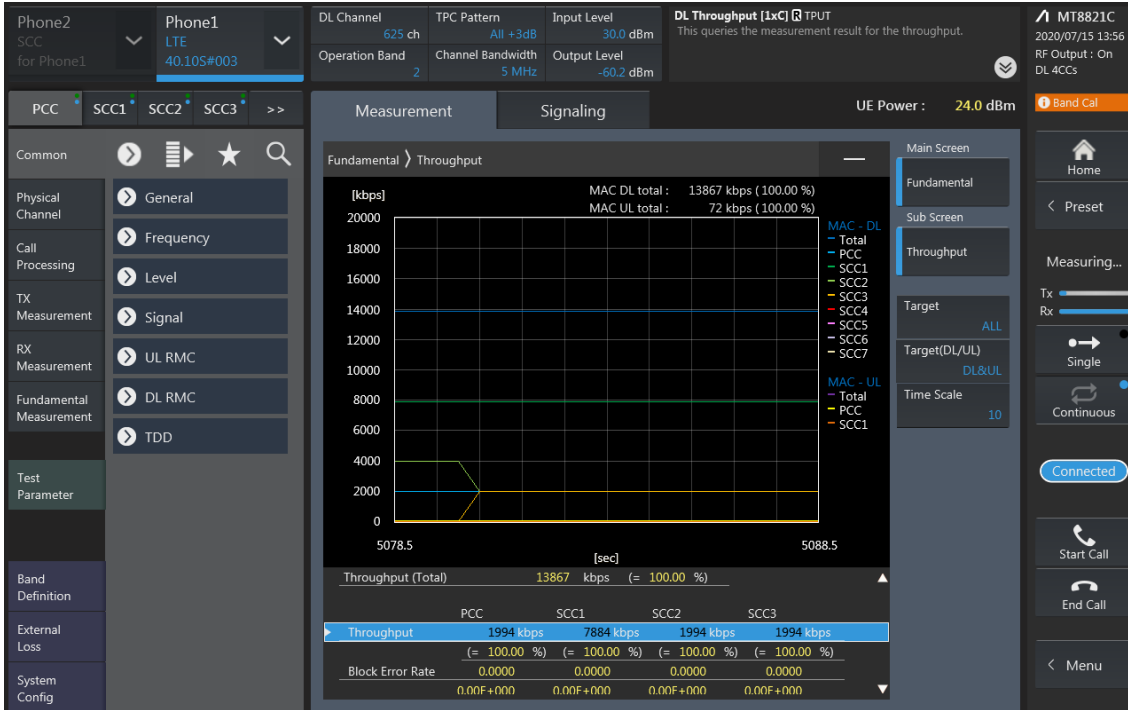


### 3CA Downlink Carrier aggregation conducted Powers

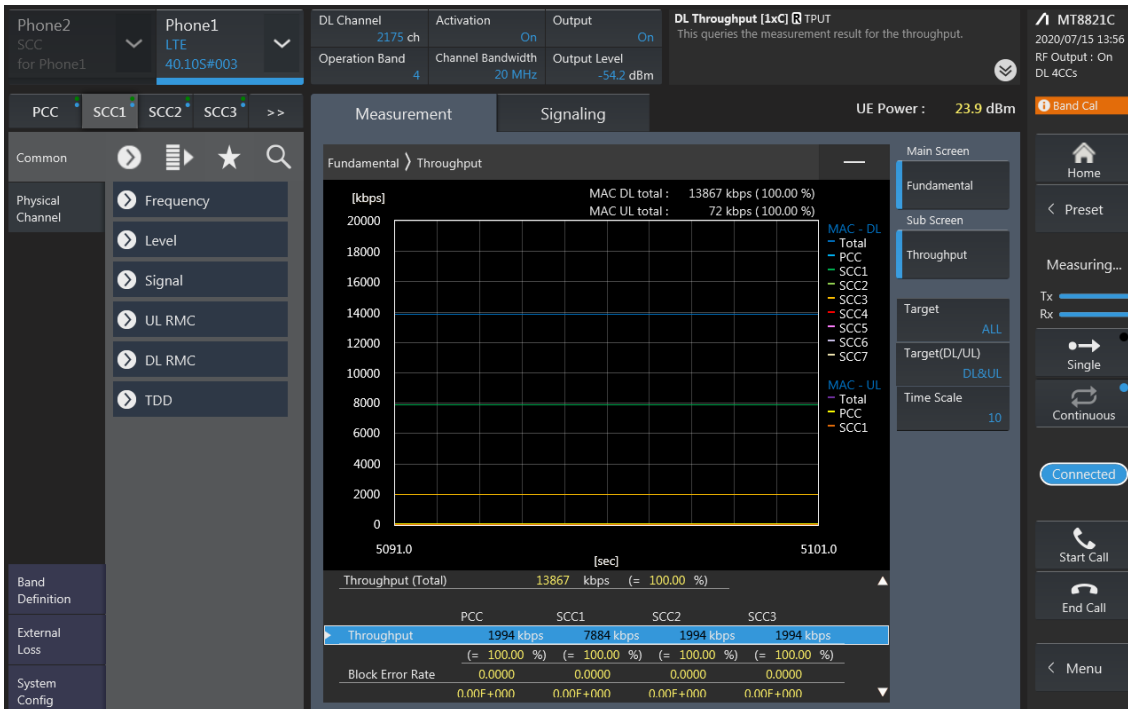
Combination	PCC									SCC				SCC				Tx Power		
	Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel	SCC DL Frequency	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled (dBm) (2)	Deviation (dB) (2)-(1)
2A-2A-71A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	71	20	66761	634.5	24.57	24.44	-0.13
2A-2A-71A	71	5	133447	695.5	68911	649.5	QPSK	1	12	2	20	700	1940	2	20	1100	1980	24.4	24.23	-0.17
2A-4A-13A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	4	20	2175	2132.5	13	10	5230	751	24.57	24.40	-0.17
2A-4A-13A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	2	20	900	1960	13	10	5230	751	24.12	24.18	0.06
2A-4A-13A	13	10	23230	782	5230	751	QPSK	1	24	4	20	2175	2132.5	2	20	900	1960	24.63	24.53	-0.10
4A-4A-13A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	4	20	2050	2120	13	10	5230	751	24.4	24.30	-0.10
4A-4A-13A	13	10	23230	782	5230	751	QPSK	1	24	4	20	2050	2120	4	20	2300	2145	24.63	24.68	0.05
4A-4A-71A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	4	20	2050	2120	71	20	68786	637	24.12	24.03	-0.09
4A-4A-71A	71	5	133447	695.5	68911	649.5	QPSK	1	12	4	20	2050	2120	4	20	2300	2145	24.4	24.22	-0.18
4A-48C	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	48	20	55990	3625	48	20	56188	3644.8	24.12	24.01	-0.11
12A-48C	12	5	23095	707.5	5095	737.5	QPSK	1	12	48	20	55990	3625	48	20	56188	3644.8	24.79	24.87	0.08
25A-41C	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	41	20	40620	2593	41	20	40818	2612.8	24.56	24.59	0.03
41A-41C	41	20	40185	2549.5	40185	2549.5	QPSK	1	0	41	20	41490	2680	41	20	41292	2660.2	24.43	24.50	0.07
2A-2A-46A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	46	20	50690	5540	24.57	24.39	-0.18
4A-46A-46A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	46	20	46890	5160	46	20	54340	5905	24.12	24.18	0.06
4A-46C	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	46	20	50692	5540.2	46	20	50890	5560	24.12	23.95	-0.17
13A-46A-46A	13	10	23230	782	5230	751	QPSK	1	24	46	20	46890	5160	46	20	54340	5905	24.63	24.50	-0.13
2A-5A-46A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	5	10	2600	889	46	20	50690	5540	24.57	24.57	0.00
2A-5A-46A	5	5	20425	826.5	2425	871.5	QPSK	1	24	2	20	1100	1980	46	20	50690	5540	24.32	24.29	-0.03
2A-46A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	66	20	66786	2165	46	20	50690	5540	24.57	24.40	-0.17
2A-46A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	1100	1980	46	20	50690	5540	24.4	24.40	0.00
5A-46A-66A	5	5	20425	826.5	2425	871.5	QPSK	1	24	66	20	66786	2165	46	20	50690	5540	24.32	24.35	0.03
5A-46A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	5	10	2600	889	46	20	50690	5540	24.4	24.50	0.10
2A-7A-13A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	7	15	3100	2655	13	10	5230	751	24.57	24.55	-0.02
2A-7A-13A	7	15	21100	2535	3100	2655	QPSK	1	0	2	20	1100	1980	13	10	5230	751	23.74	23.57	-0.17
2A-7A-13A	13	10	23230	782	5230	751	QPSK	1	24	7	15	3100	2655	2	20	1100	1980	24.63	24.51	-0.12
2A-7A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	7	15	3100	2655	66	20	66786	2165	24.57	24.63	0.06
2A-7A-66A	7	15	21100	2535	3100	2655	QPSK	1	0	2	20	1100	1980	66	20	66786	2165	23.74	23.81	0.07
2A-7A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	7	15	3100	2655	2	20	1100	1980	24.4	24.5	0.10

### LTE Down Link 4CA Call Setup

#### PCC Setting (Channel/ RB/ BW/ Modulation)

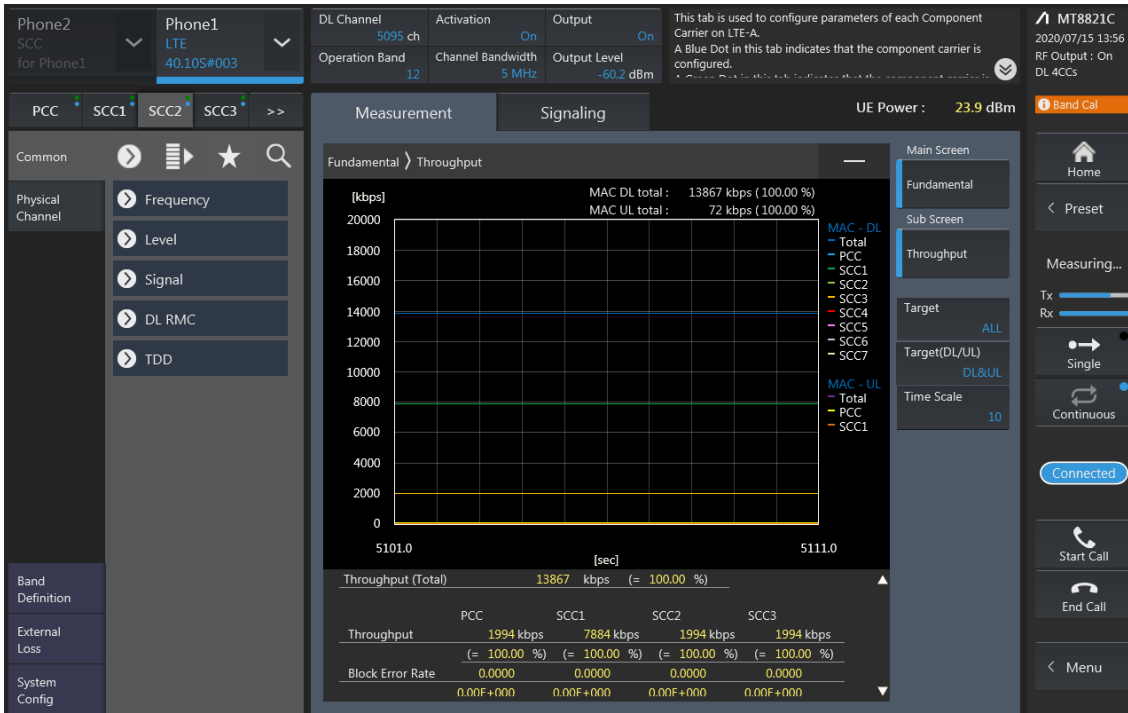


#### SCC1 Setting (Channel/ RB/ BW/ Modulation) and call Connection

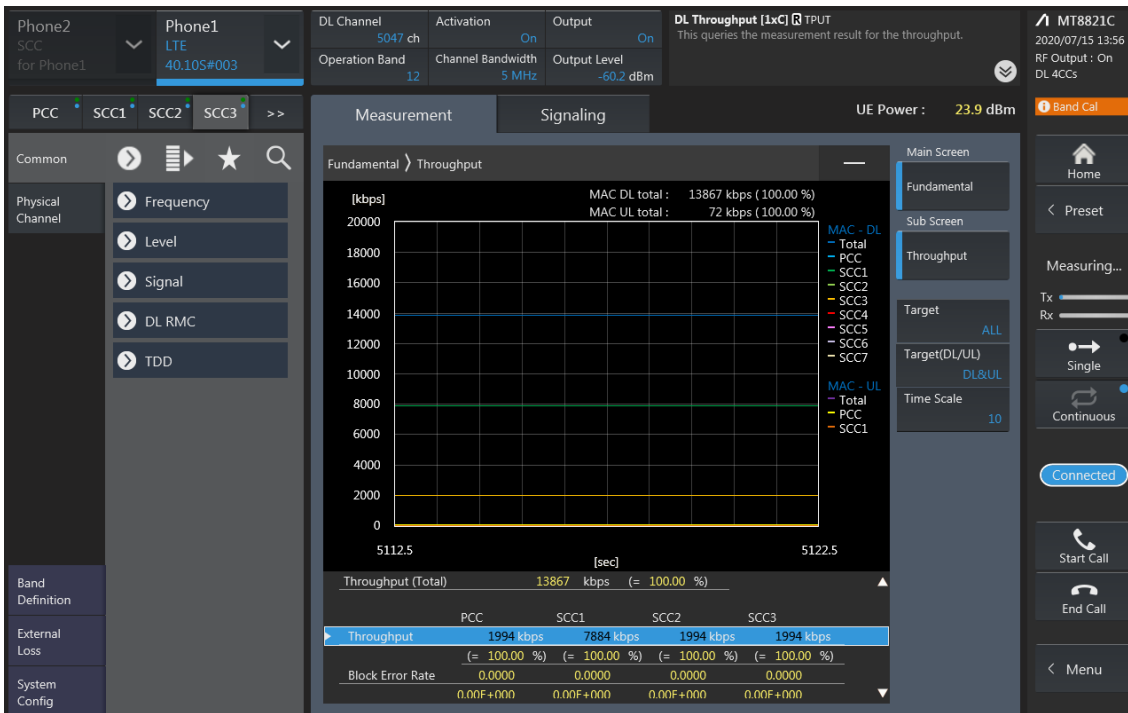




**SCC2 Setting (Channel/ RB/ BW/ Modulation) and call Connection**



**SCC3 Setting (Channel/ RB/ BW/ Modulation) and call Connection**



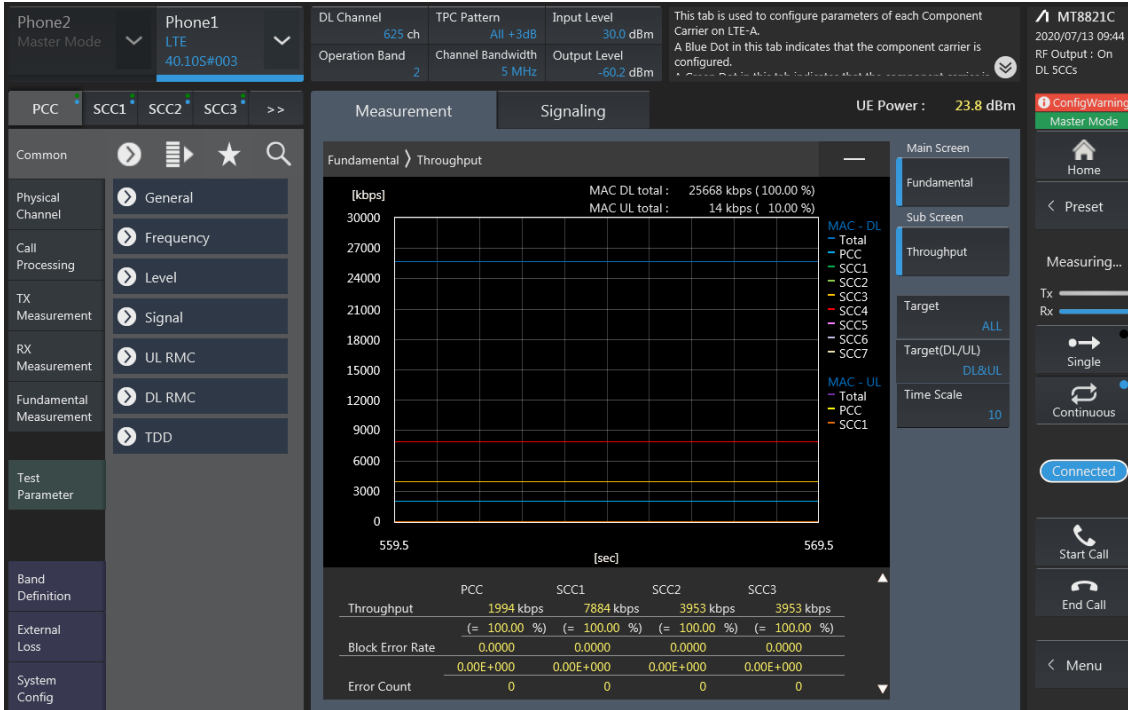
4CA Downlink Carrier aggregation conducted Powers

Combination	PCC									SCC									SCC									SCC									Tx Power		
	Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	C/DL Chan	SCC DL Channel	SCC DL Frequency	LTE SSB Center Freq. (dBm)	LTE TxPower (dBm)	LTE TxPower (dBm)	Deviation(dB)													
2A-2A-4A-4A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	4	20	2080	2120	4	20	2300	2145	24.57	24.41	24.2	-0.16														
2A-2A-4A-4A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	4	20	2300	2145	2	20	700	1940	2	20	1100	1980	4	20	1100	1980	24.12	24.2	0.08											
2A-2A-4A-4A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	20	2060	2120	2	20	700	1940	2	20	1100	1980	24.06	24.16	0.1															
2A-2A-4A-4A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	4	20	2175	2132.5	5	10	2525	881.5	24.57	24.6	0.03															
2A-2A-4A-5A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	2	20	700	1940	2	20	1100	1980	5	10	2525	881.5	24.12	24.07	-0.05															
2A-2A-4A-5A	5	5	20425	826.5	2425	871.5	QPSK	1	24	2	20	700	1940	2	20	1100	1980	4	20	2175	2132.5	24.32	24.17	-0.15															
2A-2A-4A-12A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	4	20	2175	2132.5	12	10	5095	707.5	24.57	24.52	-0.05															
2A-2A-4A-12A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	2	20	700	1940	2	20	1100	1980	12	10	5095	707.5	24.12	24.2	0.08															
2A-2A-4A-12A	12	5	23095	707.5	5095	737.5	QPSK	1	12	2	20	700	1940	2	20	2175	2132.5	4	20	2175	2132.5	24.79	24.51	-0.18															
2A-2A-4A-71A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	4	20	2175	2132.5	71	20	88781	634.5	24.57	24.46	-0.11															
2A-2A-4A-71A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	2	20	700	1940	2	20	1100	1980	71	20	88781	634.5	24.12	24.08	-0.04															
2A-2A-4A-71A	71	5	133447	695.5	68911	649.5	QPSK	1	12	2	20	700	1940	2	20	1100	1980	4	20	2175	2132.5	24.4	24.47	0.07															
2A-2A-29A-30A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	29	10	9715	722.5	30	10	9820	2355	24.57	24.46	-0.11															
2A-2A-29A-30A	30	10	27710	2310	9820	2355	QPSK	1	24	2	20	1100	1980	29	10	9715	722.5	29	10	9715	722.5	22.63	22.49	-0.14															
2A-2A-30A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	30	10	9820	2355	66	20	66796	2165	24.57	24.41	-0.16															
2A-2A-30A-66A	30	10	27710	2310	9820	2355	QPSK	1	24	2	20	700	1940	2	20	1100	1980	66	20	66796	2165	22.63	22.66	0.03															
2A-2A-30A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	700	1940	2	20	1100	1980	30	10	9820	2355	24.4	24.28	-0.12															
2A-2A-66A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	66	20	66536	2140	66	20	67036	2190	24.57	24.37	-0.2															
2A-2A-66A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	2	20	700	1940	2	20	1100	1980	24.4	24.46	0.06															
2A-2A-66B	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	66	10	66496	2135	66	10	66585	2144.9	24.57	24.47	-0.1															
2A-2A-66B	66	10	132622	1775	67086	2195	QPSK	1	0	66	10	66687	2185.1	2	20	700	1940	66	10	66796	2165	24.79	24.21	-0.17															
2A-2A-66C	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	66	20	67036	2190	66	20	66838	2170.2	24.57	24.56	-0.01															
2A-2A-66C	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	2	20	700	1940	2	20	1100	1980	24.4	24.25	-0.15															
2C-66A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	1058	1975.8	66	20	66536	2140	66	20	67036	2190	24.57	24.66	0.09															
2C-66A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	2	20	1058	1975.8	2	5	1175	1987.5	24.4	24.48	0.08															
2A-2A-66A-71A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	66	20	66796	2165	71	20	88781	634.5	24.57	24.4	0.03															
2A-2A-66A-71A	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	700	1940	2	20	1100	1980	71	20	88781	634.5	24.4	24.23	-0.17															
2A-2A-66A-71A	71	5	133447	695.5	68911	649.5	QPSK	1	12	2	20	700	1940	2	20	1100	1980	66	20	66838	2170.2	24.4	24.39	-0.01															
2A-4A-4A-5A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	4	20	2050	2120	4	20	2300	2145	5	10	2525	881.5	24.57	24.51	-0.06															
2A-4A-4A-5A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	4	20	2050	2120	2	20	700	1940	5	10	2525	881.5	24.06	23.86	-0.2															
2A-4A-4A-5A	5	5	20425	826.5	2425	871.5	QPSK	1	24	4	20	2050	2120	4	20	2300	2145	2	20	700	1940	24.32	24.14	-0.18															
2A-4A-4A-12A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	4	20	2050	2120	4	20	2300	2145	12	10	5095	707.5	24.57	24.61	0.04															
2A-4A-4A-12A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	4	20	2050	2120	2	20	700	1940	12	10	5095	737.5	24.12	24.18	0.06															
2A-4A-4A-12A	12	5	23095	707.5	5095	737.5	QPSK	1	12	4	20	2050	2120	4	20	2300	2145	2	20	700	1940	24.79	24.7	-0.09															
2A-4A-5B	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	4	20	2300	2145	5	5	2425	871.5	5	10	2497	878.7	24.57	24.5	-0.07															
2A-4A-5B	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	2	20	700	1940	5	5	2425	871.5	5	10	2497	878.7	24.12	24.05	-0.07															
2A-4A-5B	5	5	20425	826.5	2425	871.5	QPSK	1	24	5	10	2497	878.7	2	20	700	1940	4	20	2300	2145	24.32	24.32	0															
2A-5A-48A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	5	5	2425	871.5	48	20	55990	3625	66	20	66796	2165	24.57	24.43	-0.14															
2A-5A-48A-66A	5	5	20425	826.5	2425	871.5	QPSK	1	24	7	20	55973	3603.3	48	20	55973	3603.3	66	20	66796	2165	24.57	24.32	0															
2A-5A-48A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	5	5	2425	871.5	48	20	55990	3625	2	20	700	1940	24.4	24.3	-0.1															
2A-7A-7A-13A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	7	15	3100	2655	7	20	3350	2680	13	5	5230	751	24.57	24.43	-0.14															
2A-7A-7A-13A	7	15	21100	2535	3100	2655	QPSK	1	0	7	20	2850	2630	2	20	700	1940	13	5	5230	751	23.74	23.6	-0.14															
2A-7A-7A-13A	13	5	23230	782	5230	751	QPSK	1	12	7	20	2850	2630	7	20	3350	2680	2	20	700	1940	24.69	24.56	-0.13															
2A-13A-48A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	13	10	5230	751	66	20	66796	2165	48	20	55990	3625	24.57	24.59	0.02															
2A-13A-48A-66A	13	5	23230	782	5230	751	QPSK	1	12	2	20	700	1940	66	20	66796	2165	48	20	55990	3625	24.69	24.4	-0.09															
2A-13A-66C	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	2300	2145	13	10	5230	751	48	20	5590	3625	24.4	24.38	-0.02															
2A-13A-66C	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	13	10	5230	751	66	20	67036	2190	66	20	66838	2170.2	24.57	24.66	0.09															
2A-13A-66C	13	5	23230	782	5230	751	QPSK	1	12	2	20	700	1940	66	20	67036	2190	66	20	66838	2170.2	24.69	24.5	-0.19															
2A-13A-66C	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	2	20	700	1940	13	10	5230	751	24.4	24.34	-0.06															
2A-29A-30A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	30	10	9820	2355	66	20	66796	2165	29	10	9715	722.5	24.57	24.53	-0.04															
2A-29A-30A-66A	30	10	27710	2310	9820	2355	QPSK	1	24	2	20	700	1940	66	20	66796	2165	29	10	9715	722.5	22.63	22.67	0.07															
2A-29A-30A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	30	10	9820	2355	2	20	700	1940	29	10	9715	722.5	24.4	24.46	0.06															
2A-48A-48A-66A	2	5	19175	1907.5	1175	1987.																																	

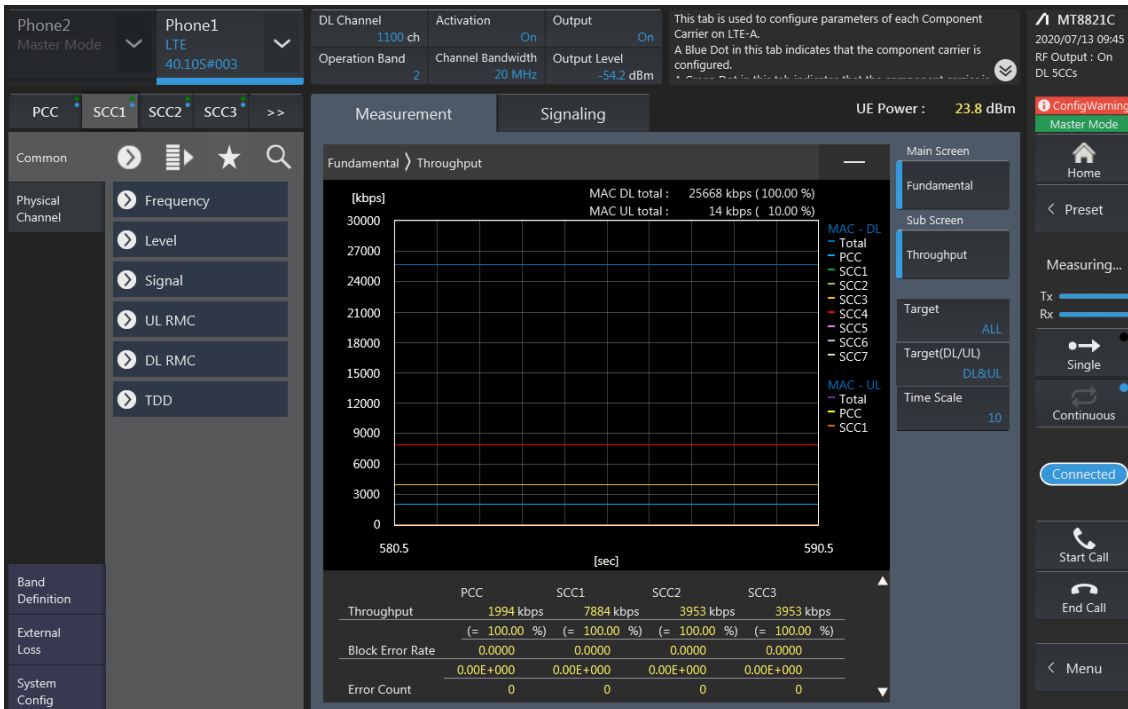
2A-7C-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	7	15	3100	2655	7	20	3271	2672.1	66	20	66786	2145	24.57	24.45	-0.12
2A-7C-66A	7	15	21100	2535	3100	2655	QPSK	1	0	7	20	3271	2672.1	66	20	66786	2145	2	20	900	1960	23.74	23.68	-0.06
2A-7C-66A	66	20	132572	1770	67036	2190	QPSK	1	99	7	15	3100	2655	7	20	3271	2672.1	2	20	900	1960	24.4	24.22	-0.18
2A-13A-66B	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	13	10	5230	751	66	15	66786	2145	66	5	66879	2154.3	24.57	24.55	-0.02
2A-13A-66B	13	5	23230	782	5230	751	QPSK	1	12	66	15	66786	2145	66	5	66879	2154.3	2	20	900	1960	24.69	24.68	-0.01
2A-13A-66B	66	10	132622	1775	67086	2175	QPSK	1	0	66	10	66987	2165.1	2	20	900	1960	13	10	5230	751	24.4	24.28	-0.12
2A-46C-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50892	5540.2	46	20	50890	5560	66	20	66536	2120	24.57	24.52	-0.05
2A-46C-66A	66	20	132572	1770	67036	2190	QPSK	1	99	46	20	50892	5540.2	46	20	50890	5560	2	20	900	1960	24.4	24.38	-0.02
46C-66A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2120	46	20	50892	5540.2	46	20	50890	5560	24.4	24.35	-0.05
2A-2A-29A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	29	10	9715	722.5	66	20	66786	2145	24.57	24.65	0.08
2A-2A-29A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	900	1960	2	20	1100	1980	29	10	9715	722.5	24.4	24.34	-0.06
2A-29A-66A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	29	10	9715	722.5	66	20	66536	2140	66	20	67036	2190	24.57	24.58	0.01
2A-29A-66A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	2	20	900	1960	29	10	9715	722.5	24.4	24.21	-0.19
29A-30A-66A-66A	30	10	27710	2310	3620	2355	QPSK	1	24	66	20	66536	2140	66	20	67036	2190	29	10	9715	722.5	22.58	22.55	-0.03
29A-30A-66A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	30	10	3620	2355	29	10	9715	722.5	24.4	24.46	0.06
48A-48A-66A-66A	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	48	20	55340	3560	48	20	56640	3690	24.4	24.29	-0.11
48A-48A-66B	66	10	132622	1775	67086	2175	QPSK	1	0	66	10	66987	2165.1	48	20	55340	3560	48	20	56640	3690	24.38	24.3	-0.08
48A-48A-66C	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	48	20	55340	3560	48	20	56640	3690	24.4	24.22	-0.18

### LTE Down Link 5CA Call Setup

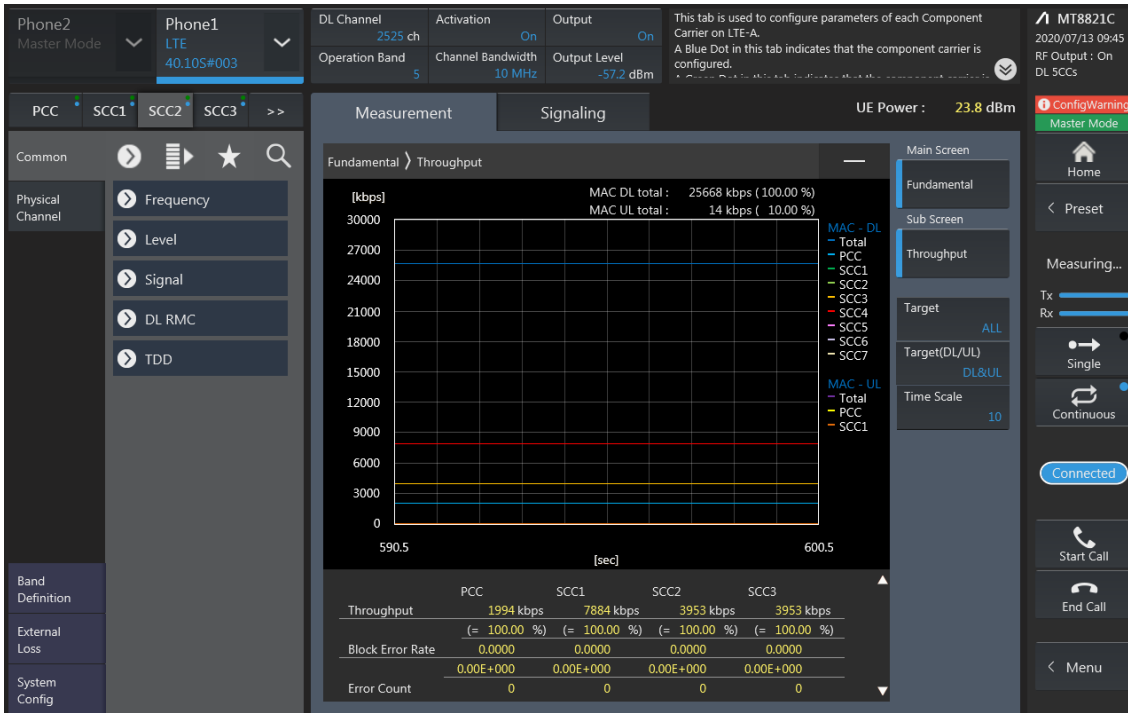
#### PCC Setting (Channel/ RB/ BW/ Modulation)



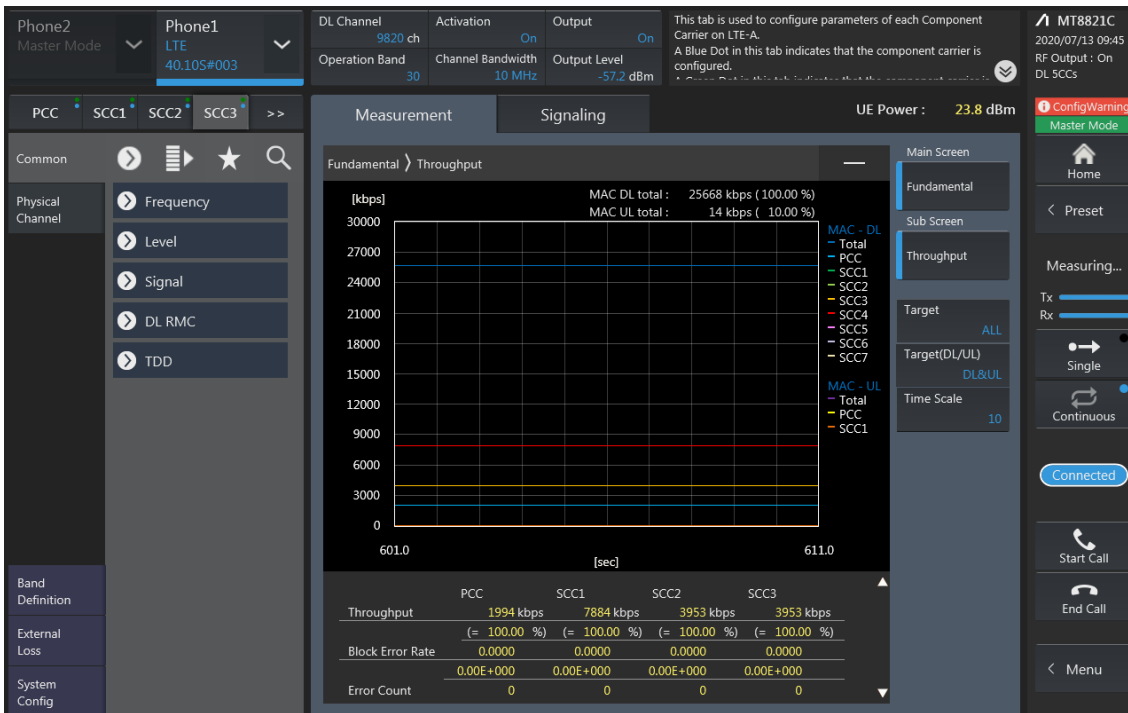
#### SCC1 Setting (Channel/ RB/ BW/ Modulation) and call Connection



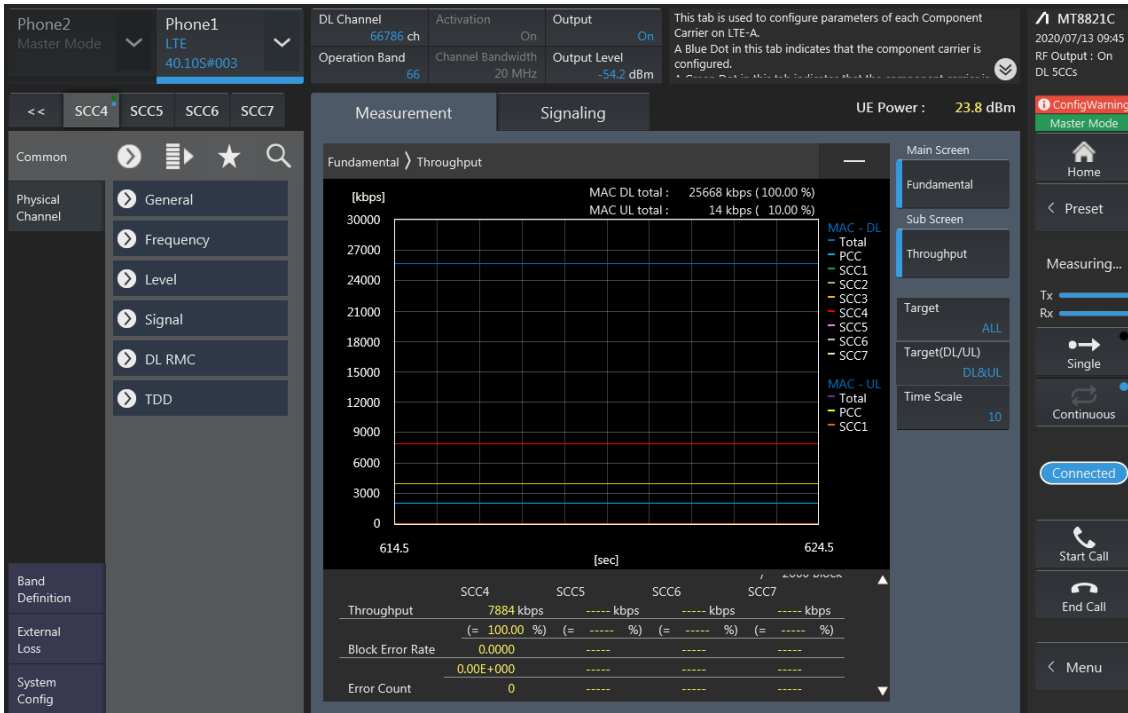
SCC2 Setting (Channel/ RB/ BW/ Modulation) and call Connection



SCC3 Setting (Channel/ RB/ BW/ Modulation) and call Connection



**SCC4 Setting (Channel/ RB/ BW/ Modulation) and call Connection**

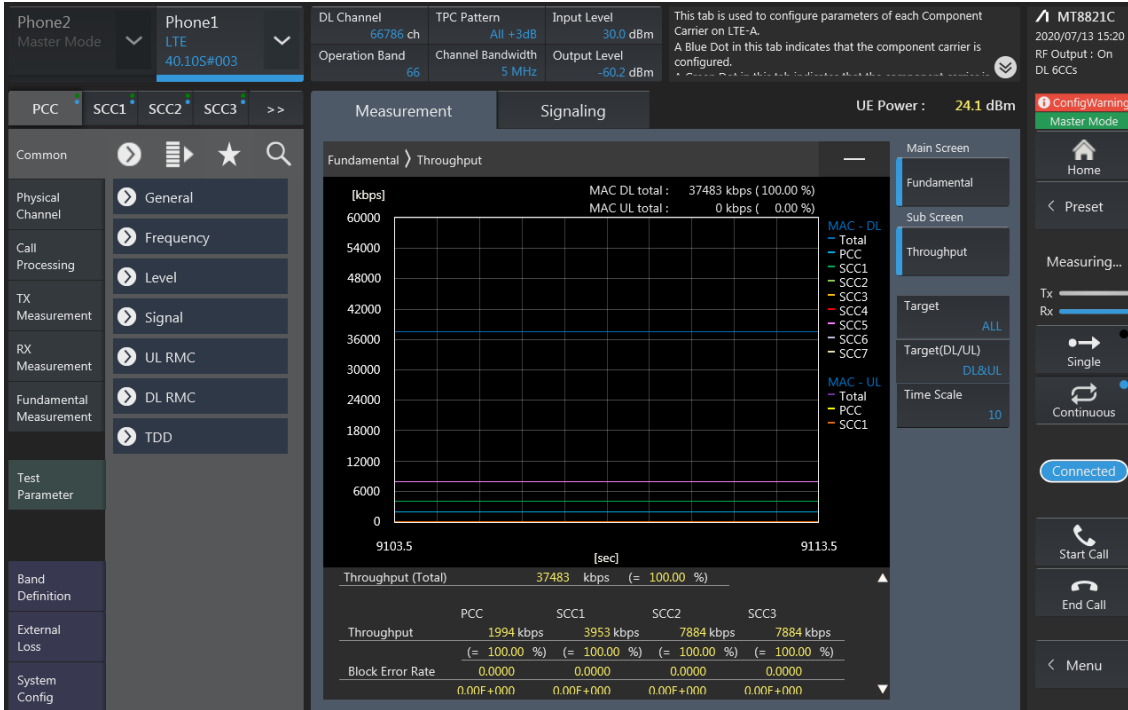


5CA Downlink Carrier aggregation conducted Powers

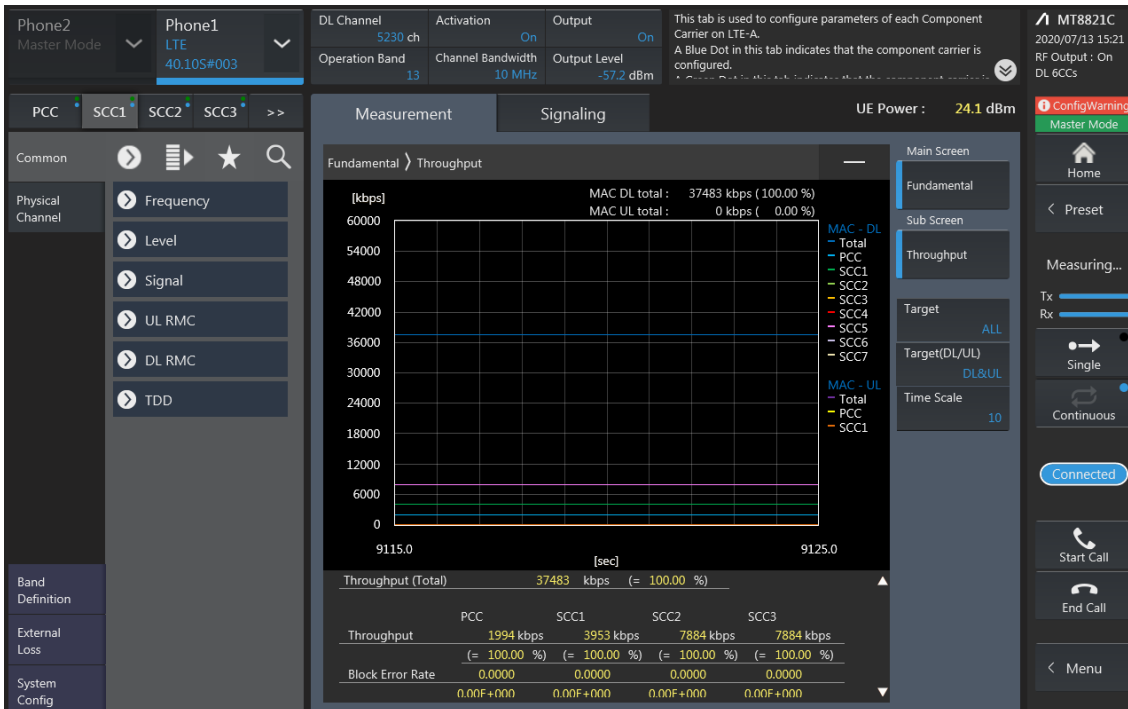
Combination	POC					SCC					SCC					SCC					SCC					Tx Power				
	Band	BW	POC UL Frequency	POC UL Frequency	POC UL Frequency	Modulation	RB	offset	Band	BW	SCC UL Channel	SCC UL Frequency	Band	BW	SCC UL Channel	SCC UL Frequency	Band	BW	SCC UL Channel	SCC UL Frequency	Band	BW	SCC UL Channel	SCC UL Frequency	Band	BW	SCC UL Channel	SCC UL Frequency	UE E-UTRA Tx Power (P <sub>EMAX</sub> ) (dBm)	UE E-UTRA Tx Power (P <sub>EMAX</sub> ) (dBm)
2A-2A-5A-30A-66A	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	2	20	700	1940	5	10	2525	881.5	30	10	9820	2355	66	20	66786	2145	2457	2455	-0.02		
2A-2A-5A-30A-66A	5	5	20425	826.5	2425	871.5	QPSK	1	24	30	10	9820	2355	66	20	66786	2145	24	20	900	1960	2	10	1100	1980	2432	2429	-0.03		
2A-2A-5A-30A-66A	30	10	27710	2310	9820	2355	QPSK	1	24	66	20	66786	2145	2	20	900	1960	5	10	2525	881.5	26	20	66786	2145	2432	2429	-0.03		
2A-2A-5A-30A-66A	66	20	132672	1770	67036	2190	QPSK	1	99	2	20	900	1960	2	20	1100	1980	5	10	2525	881.5	30	10	9820	2355	244	2424	-0.16		
2A-2A-5A-66A-66A	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	2	20	700	1940	5	10	2525	881.5	66	20	66786	2145	66	20	66786	2145	2457	2447	-0.05		
2A-2A-5A-66A-66A	5	5	20425	826.5	2425	871.5	QPSK	1	24	66	20	66786	2145	66	20	66786	2145	66	20	66786	2145	66	20	66786	2145	2457	2447	-0.05		
2A-2A-5A-66A-66A	66	20	132672	1770	67036	2190	QPSK	1	99	66	20	66536	2140	2	20	700	1940	5	10	2525	881.5	26	20	1100	1980	2457	2447	-0.05		
2A-2A-5A-66B	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	2	20	700	1940	5	10	2525	881.5	66	20	66786	2145	66	20	66786	2145	2457	2446	-0.06		
2A-2A-5A-66B	5	5	20425	826.5	2425	871.5	QPSK	1	24	66	15	66786	2145	66	5	66879	2154.3	2	20	900	1960	2	10	1100	1980	2432	2438	0.06		
2A-2A-5A-66B	66	10	132622	1775	67086	2195	QPSK	1	0	66	10	66987	2185.1	2	20	700	1940	5	10	2525	881.5	66	20	1100	1980	2438	2429	-0.09		
2A-2A-5A-66C	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	2	20	700	1940	5	10	2525	881.5	66	20	66786	2145	66	20	66786	2145	2457	2445	-0.08		
2A-2A-5A-66C	5	5	20425	826.5	2425	871.5	QPSK	1	24	66	20	66786	2145	66	20	66984	2164.8	2	20	900	1960	2	10	1100	1980	2432	2431	-0.01		
2A-2A-5A-66C	66	20	132672	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	2	20	900	1960	2	20	1100	1980	5	10	2525	881.5	244	2436	-0.04		
2A-2A-12B-66A	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	2	20	700	1940	12	5	5048	732.8	12	10	5120	740	66	20	66786	2145	2457	2463	0.06		
2A-2A-12B-66A	12	5	23095	707.5	5095	737.5	QPSK	1	12	12	10	5167	744.7	66	20	66786	2145	2	20	700	1940	2	10	1100	1980	2479	2462	-0.17		
2A-2A-12B-66A	66	20	132672	1770	67036	2190	QPSK	1	99	2	20	700	1940	2	20	1100	1980	12	5	5048	732.8	12	10	5120	740	244	2427	-0.13		
2A-2A-12A-30A-66A	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	2	20	700	1940	12	10	5095	737.5	30	10	9820	2355	66	20	66786	2145	2457	2445	-0.12		
2A-2A-12A-30A-66A	12	5	23095	707.5	5095	737.5	QPSK	1	12	30	10	9820	2355	66	20	66786	2145	2	20	900	1960	2	10	1100	1980	2479	2466	-0.13		
2A-2A-12A-30A-66A	30	10	27710	2310	9820	2355	QPSK	1	24	66	20	66786	2145	2	20	900	1960	2	20	1100	1980	12	10	5095	737.5	244	2448	-0.08		
2A-2A-12A-66A-66A	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	2	20	700	1940	12	5	5048	732.8	66	20	66786	2145	66	20	66786	2145	2457	2446	-0.15		
2A-2A-12A-66A-66A	12	5	23095	707.5	5095	737.5	QPSK	1	12	66	20	66786	2145	66	20	66786	2145	66	20	66786	2145	66	20	66786	2145	2457	2448	-0.05		
2A-2A-12A-66A-66A	66	20	132672	1770	67036	2190	QPSK	1	99	66	20	66536	2140	2	20	900	1960	2	20	1100	1980	13	10	5230	751	244	2432	-0.08		
2A-2A-14A-30A-66A	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	2	20	700	1940	14	10	5330	763	30	10	9820	2355	66	20	66786	2145	2457	2457	0		
2A-2A-14A-30A-66A	14	10	23330	793	5330	763	QPSK	1	24	66	20	9820	2355	66	20	66786	2145	2	20	900	1960	2	10	1100	1980	2478	2471	-0.07		
2A-2A-14A-30A-66A	30	10	27710	2310	9820	2355	QPSK	1	24	66	20	66786	2145	66	20	66786	2145	2	20	1100	1980	14	10	5330	763	2457	2446	-0.11		
2A-2A-14A-30A-66A	66	20	132672	1770	67036	2190	QPSK	1	99	2	20	900	1960	2	20	1100	1980	14	10	5330	763	30	10	9820	2355	244	245	0.1		
2A-2A-14A-66A-66A	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	2	20	700	1940	14	10	5330	763	66	20	66786	2145	66	20	66786	2145	2457	244	-0.17		
2A-2A-14A-66A-66A	14	10	23330	793	5330	763	QPSK	1	24	66	20	66786	2145	66	20	66786	2145	2	20	900	1960	2	10	1100	1980	2478	2472	-0.06		
2A-2A-14A-66A-66A	66	20	132672	1770	67036	2190	QPSK	1	99	66	20	66536	2140	2	20	900	1960	2	20	1100	1980	14	10	5330	763	244	2438	-0.04		
2A-5B-66A-66A	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	5	10	2525	881.5	66	20	66786	2145	66	20	66786	2145	66	20	66786	2145	2457	2446	-0.06		
2A-5B-66A-66A	5	5	20425	826.5	2425	871.5	QPSK	1	24	5	10	2497	878.7	66	20	66786	2145	66	20	66786	2145	66	20	66786	2145	2457	2438	-0.11		
2A-5B-66A-66A	66	20	132672	1770	67036	2190	QPSK	1	99	66	20	66536	2140	2	20	900	1960	5	10	2525	881.5	5	10	2624	891.4	244	244	0		
2A-5B-66B	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	5	5	2425	871.5	5	10	2497	878.7	66	15	66786	2145	66	5	66879	2154.3	2457	2457	0		
2A-5B-66B	5	5	20425	826.5	2425	871.5	QPSK	1	24	5	10	2497	878.7	66	15	66786	2145	66	5	66879	2154.3	2	20	900	1960	2432	2441	-0.09		
2A-5B-66B	66	10	132622	1775	67086	2195	QPSK	1	0	66	10	66987	2185.1	2	20	700	1940	5	10	2525	881.5	66	20	2497	878.7	2438	243	-0.08		
2A-5B-66C	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	5	5	2425	871.5	5	10	2497	878.7	66	20	66786	2145	66	20	66786	2145	2457	2446	-0.11		
2A-5B-66C	5	5	20425	826.5	2425	871.5	QPSK	1	24	5	10	2497	878.7	66	20	66786	2145	66	20	66984	2164.8	2	20	700	1940	2432	2414	-0.18		
2A-5B-66C	66	20	132672	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	5	5	2425	871.5	5	10	2525	881.5	2	20	700	1940	244	243	-0.1		
2A-5A-30A-66A-66A	2	5	19175	1907.5	1175	1907.5	QPSK	1	12	5	10	2525	881.5	30	10	9820	2355	66	20	66786	2145	66	20	66786	2145	2457	2437	-0.2		
2A-5A-30A-66A-66A	5	5	20425	826.5	2425	871.5	QPSK	1	24	66	20	66786	2145	66	20	66786	2145	66	20	66786	2145	66	20	66786	2145	2457	2446	-0.09		
2A-5A-30A-66A-66A	30	10	27710	2310	9820	2355	QPSK	1	24	66	20	66786	2145	66	20	66786	2145	66	20	66786	2145	66	20	66786	2145	2457	2447	-0.05		
2A-5A-30A-66A-66A	66	20	132672	1770	67036	2190	QPSK	1	99	66	20	66536	2140	5	10															

**LTE Down Link 6CA Call Setup**

**PCC Setting (Channel/ RB/ BW/ Modulation)**

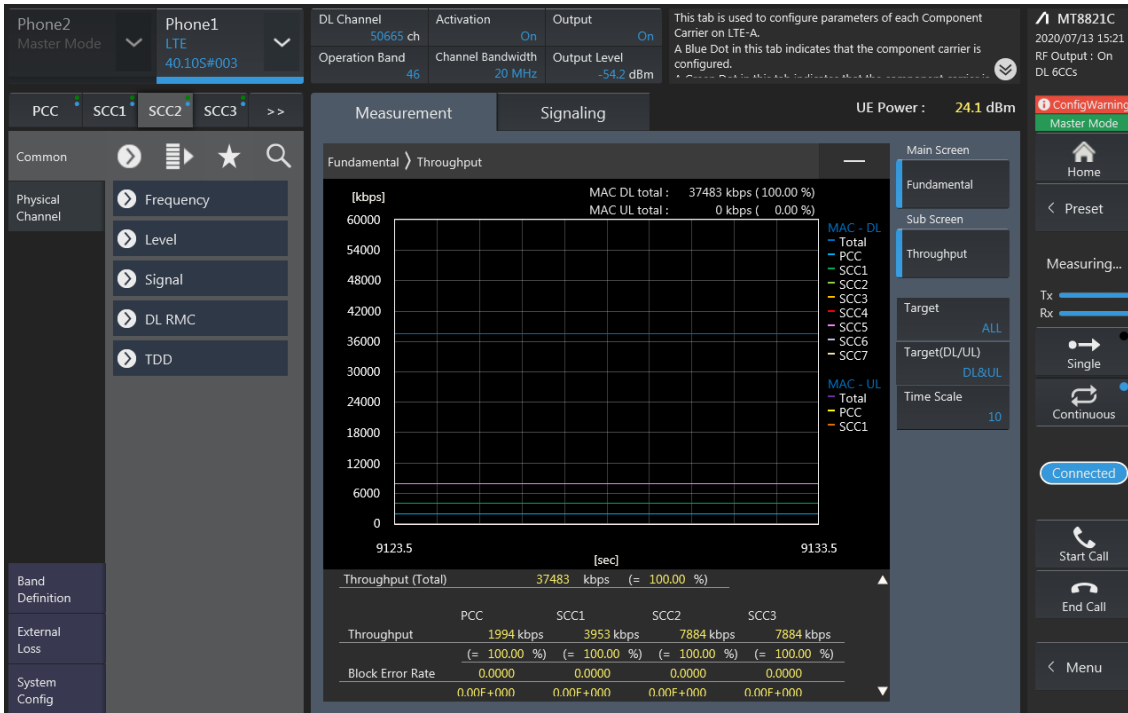


**SCC1 Setting (Channel/ RB/ BW/ Modulation) and call Connection**

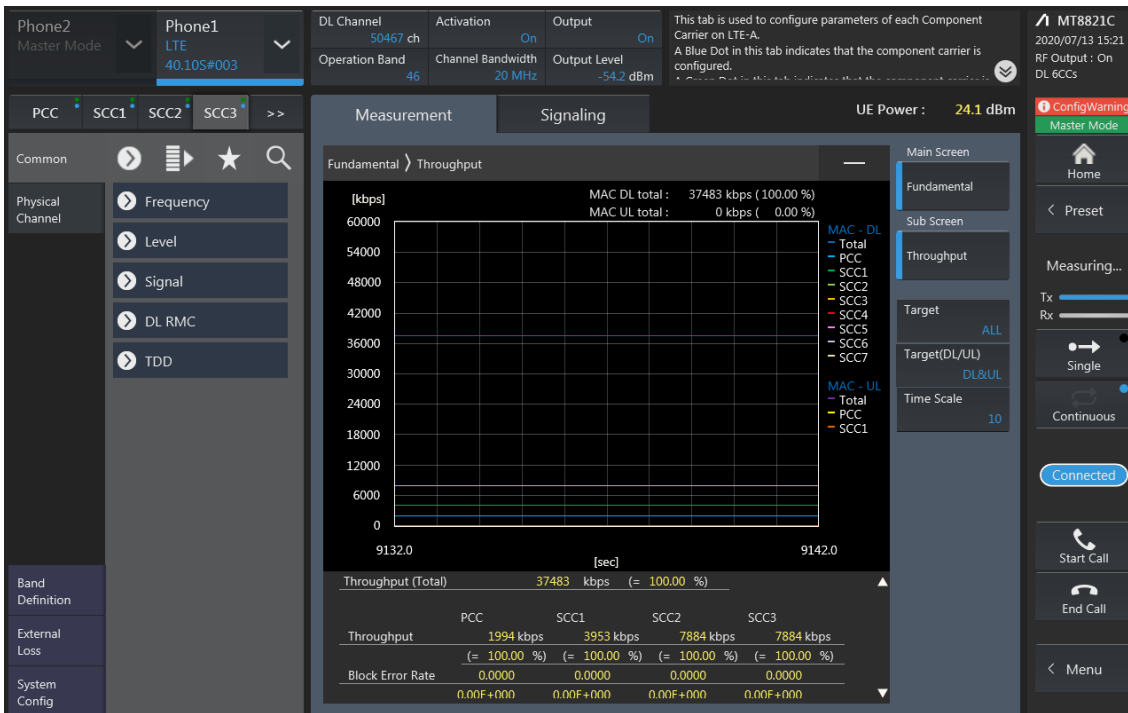




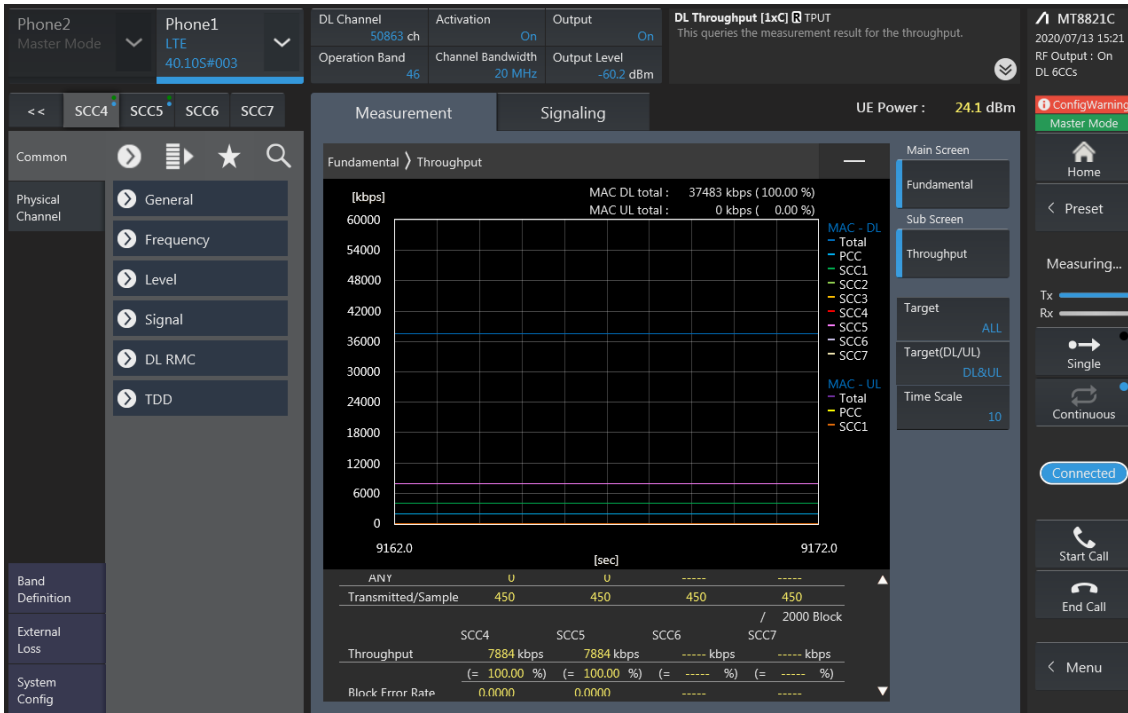
SCC2 Setting (Channel /RB/BW/Modulation) and call Connection



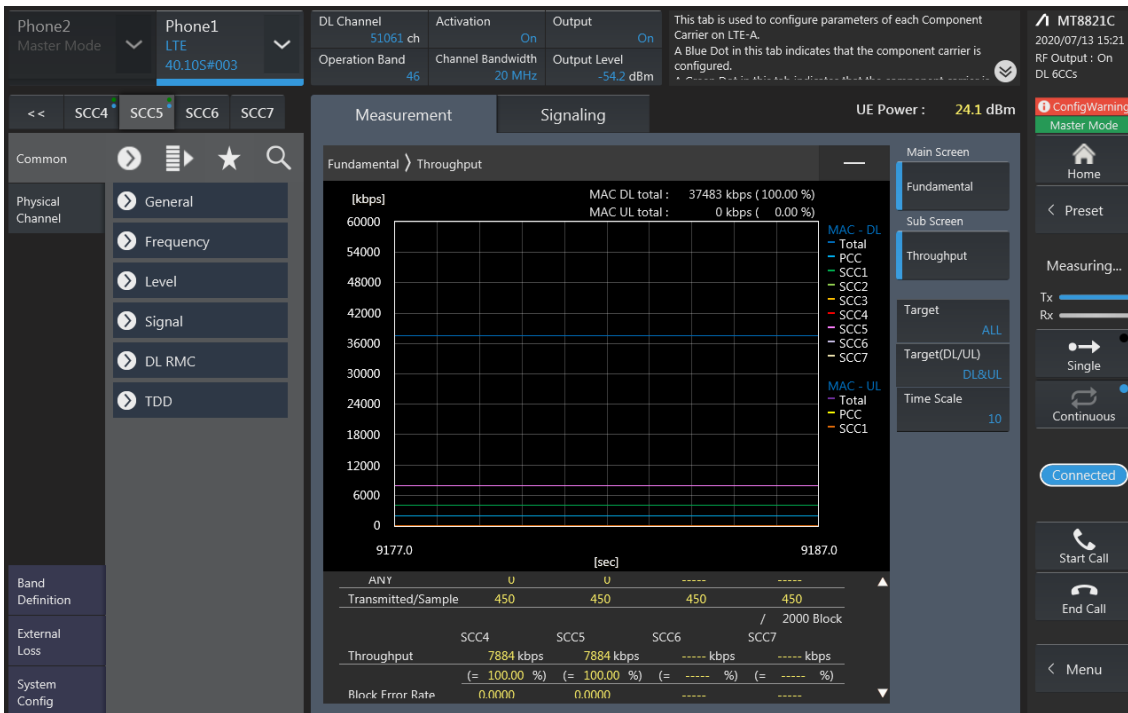
SCC3 Setting (Channel /RB/BW/Modulation) and call Connection



SCC4 Setting (Channel /RB/BW/Modulation) and call Connection



SCC5 Setting (Channel /RB/BW/Modulation) and call Connection



### 6CA Downlink Carrier aggregation conducted Powers

Combination	Band	BW	PCC				Modulation	RB	offset	SCC				SCC				SCC				Tx Power										
			PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency				Band	BW	C.DL.Chan	C.DL.Frequen	Band	BW	C.DL.Chan	C.DL.Frequen	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel	SCC DL Frequency	Maximum Carrier Tx power (W)	Tx Power with sub-carrier (W)	Deviation (dB)
2A-4RE-66A	2	5	19175	1907.5	1175	1897.5	QPSK	1	12	48	20	5573	3503.3	48	20	5591	3523.1	48	20	5619	3542.9	48	20	5637	3562.7	48	20	5679	2145	24.57	24.66	0.09
2A-4RE-66A	66	20	152572	1770	5708	2190	QPSK	1	99	2	20	700	1940	48	20	5673	3503.3	48	20	5691	3523.1	48	20	5719	3542.9	48	20	5737	24.4	24.49	0.09	

LTE 4X4 MIMO Downlink Standalone Conducted Power  
(Per TCBC Workshop note May 2017)

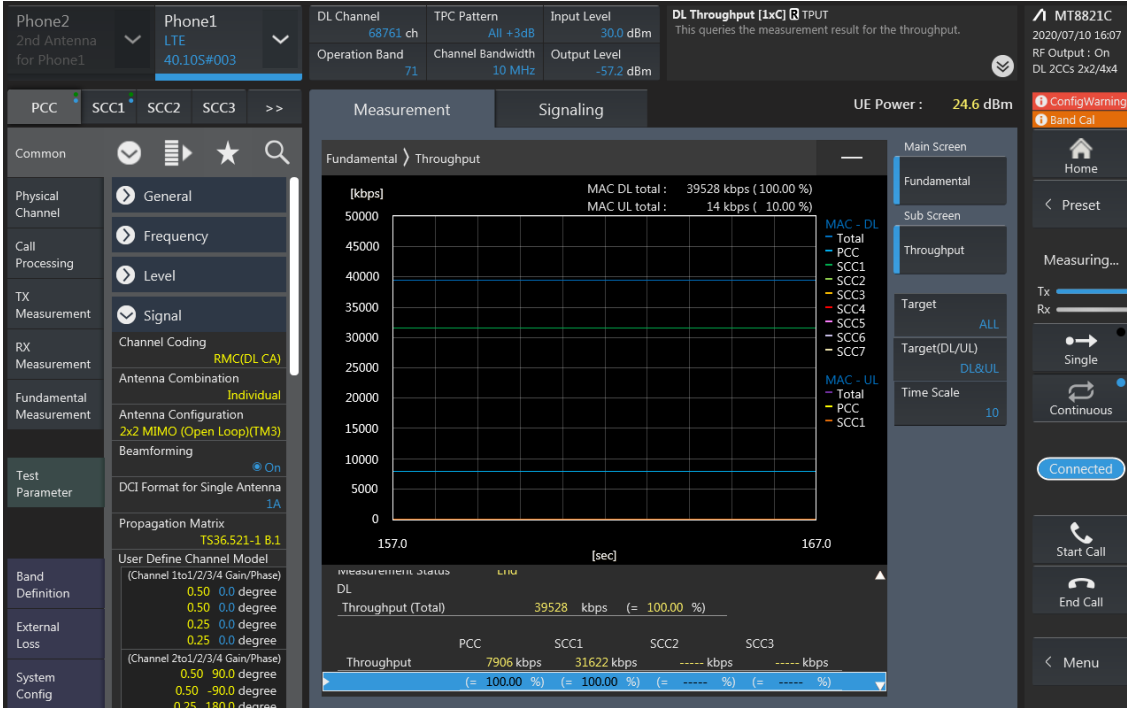
SAR test exclusion for LTE DL 4x4 MIMO should be determined by

–UL power measurements with and without DL MIMO

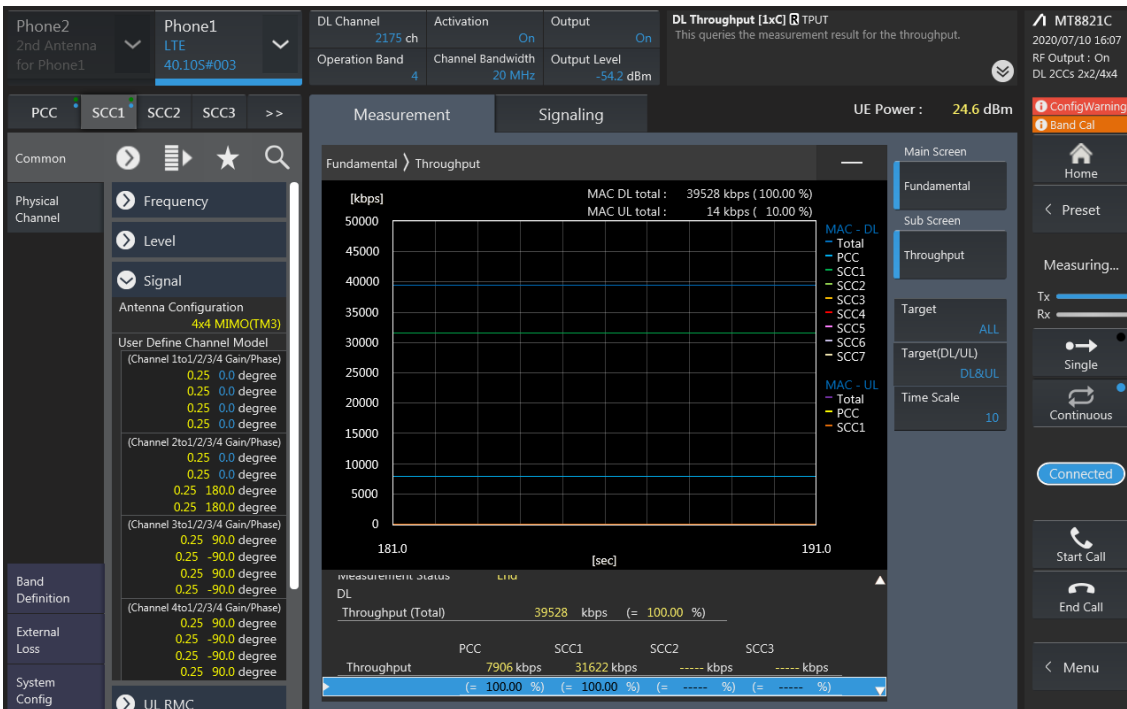
–using the highest UL output power configuration without DL MIMO to confirm that UL output with DL MIMO is < ¼ dB higher

–for DL MIMO with carrier aggregation, the same SAR test exclusion procedure should be considered

**LTE Down Link 2CA 4x4 MIMO Call Setup**  
PCC Setting (Channel/ RB/ BW/ Modulation)



SCC Setting (Channel/ RB/ BW/ Modulation) and call Connection

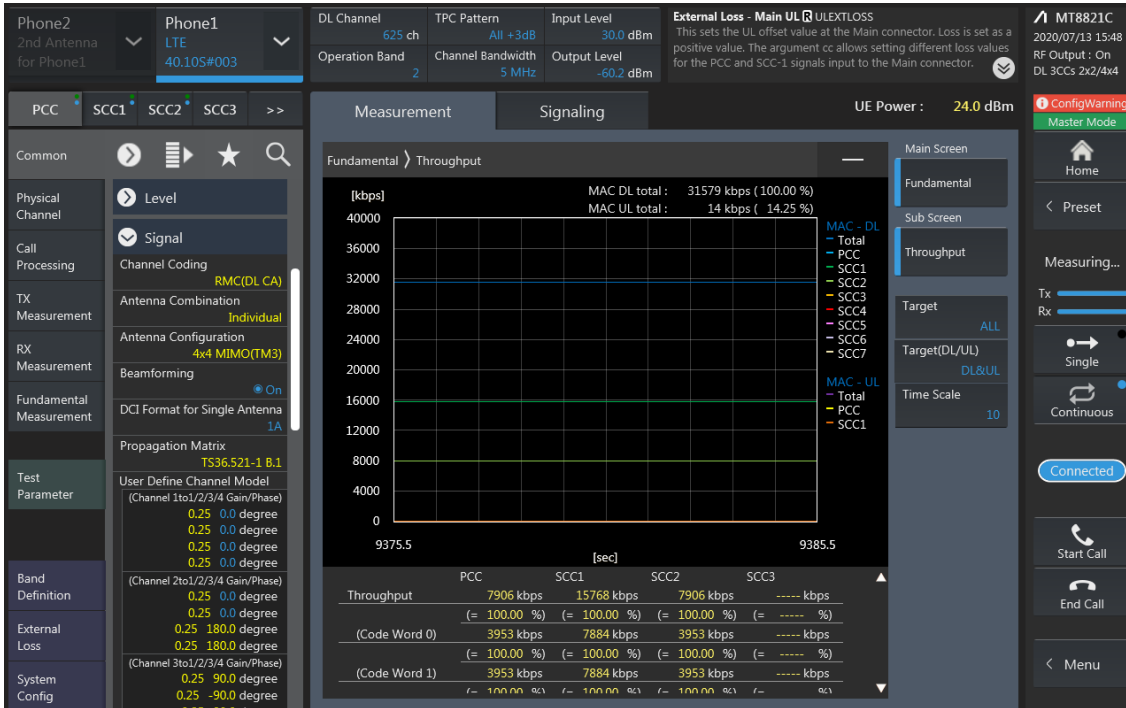


**LTE Downlink 2CA 4X4 MIMO Maximum Conducted Power**

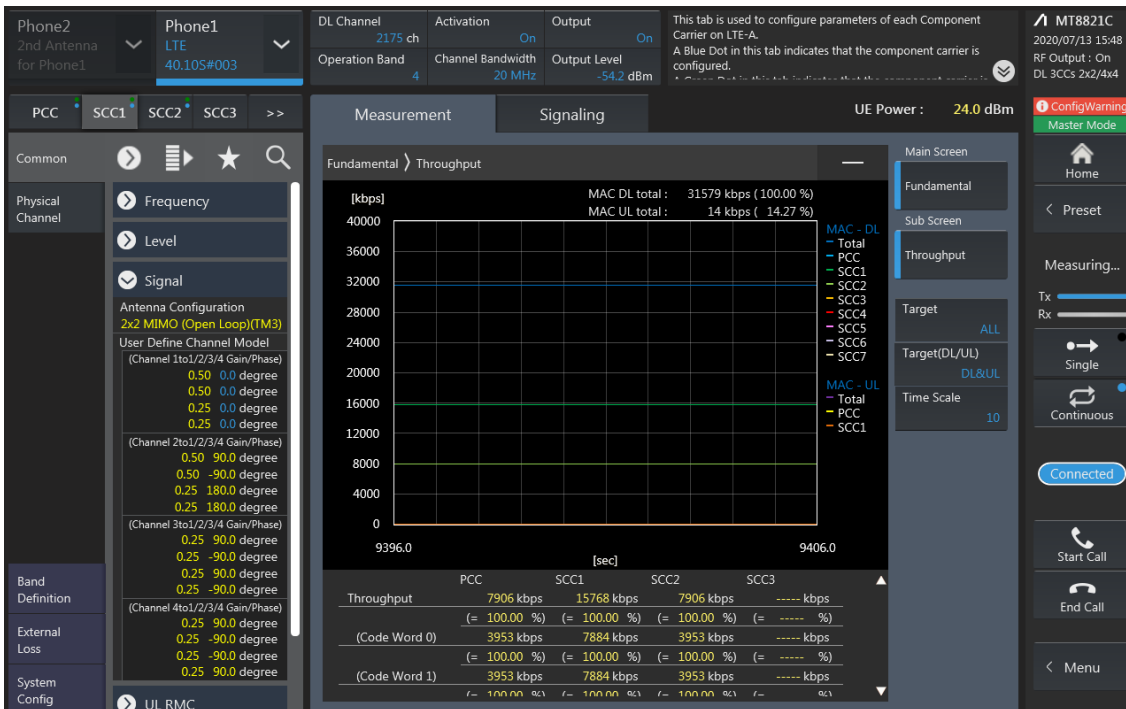
Combination	PCC									SCC				Tx Power		Deviation(dB) (2)-(1)
	Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled(dBm) (2)	
4A-[48A]	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	48	20	55990	3625	24.12	23.97	-0.15
[4A]-48A	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	48	20	55990	3625	24.12	23.94	-0.18
[4A]-[48A]	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	48	20	55990	3625	24.12	24.21	0.09
12A-[48A]	12	5	23095	707.5	5095	737.5	QPSK	1	12	48	20	55990	3625	24.79	24.76	-0.03
25A-[25A]	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	25	10	8090	1935	24.56	24.56	0.00
[25A]-25A	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	25	20	8140	1940	24.56	24.39	-0.17
[25A]-[25A]	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	25	5	8065	1932.5	24.56	24.36	-0.20
25A-[41A]	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	41	20	40620	2593	24.56	24.40	-0.16
[25A]-41A	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	41	20	40620	2593	24.56	24.37	-0.19
[25A]-[41A]	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	41	20	40620	2593	24.56	24.59	0.03
41A-[41A]	41	20	40185	2549.5	40185	2549.5	QPSK	1	0	41	20	41490	2680	24.43	24.44	0.01
[41A]-41A	41	20	40185	2549.5	40185	2549.5	QPSK	1	0	41	20	41490	2680	24.43	24.53	0.10
[41A]-[41A]	41	20	40185	2549.5	40185	2549.5	QPSK	1	0	41	20	41490	2680	24.43	24.53	0.10
[25A]-46A	25	5	26665	1912.5	8665	1992.5	QPSK	1	12	46	20	50665	5537.5	24.56	24.40	-0.16
[48A]-71A	71	5	133447	695.5	68911	649.5	QPSK	1	12	48	20	55990	3625	24.40	24.38	-0.02

**LTE Down Link 3CA 4x4 MIMO Call Setup**

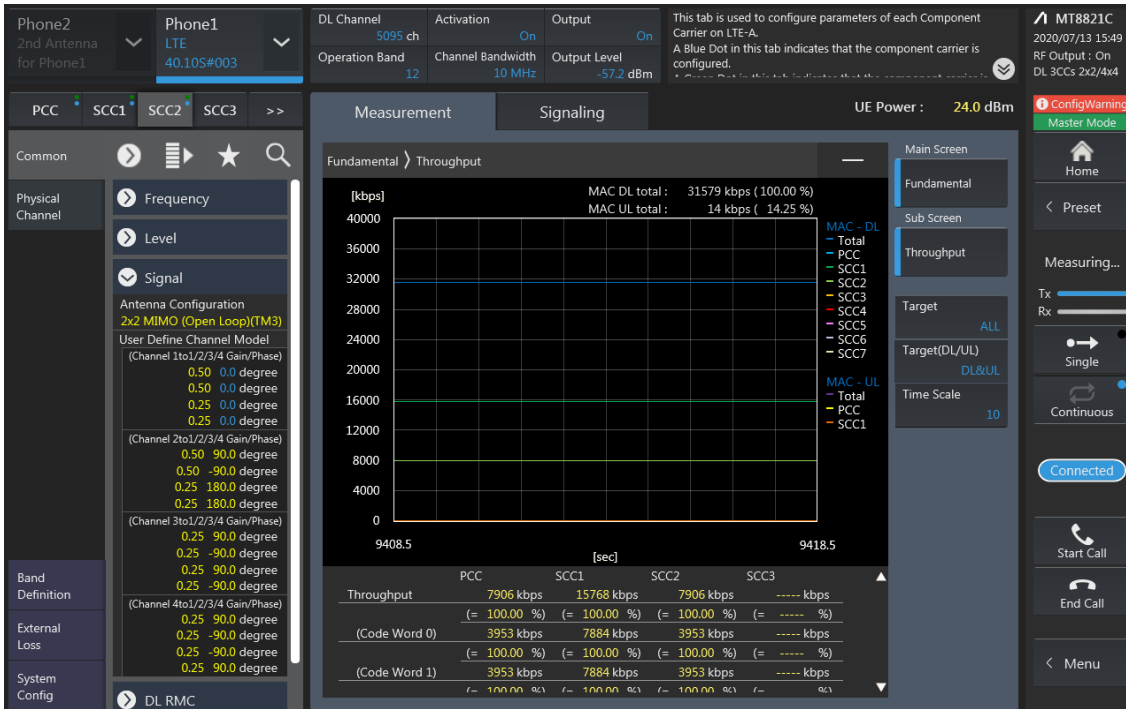
**PCC Setting (Channel/ RB/ BW/ Modulation)**



**SCC1 Setting (Channel/ RB/ BW/ Modulation) and call Connection**



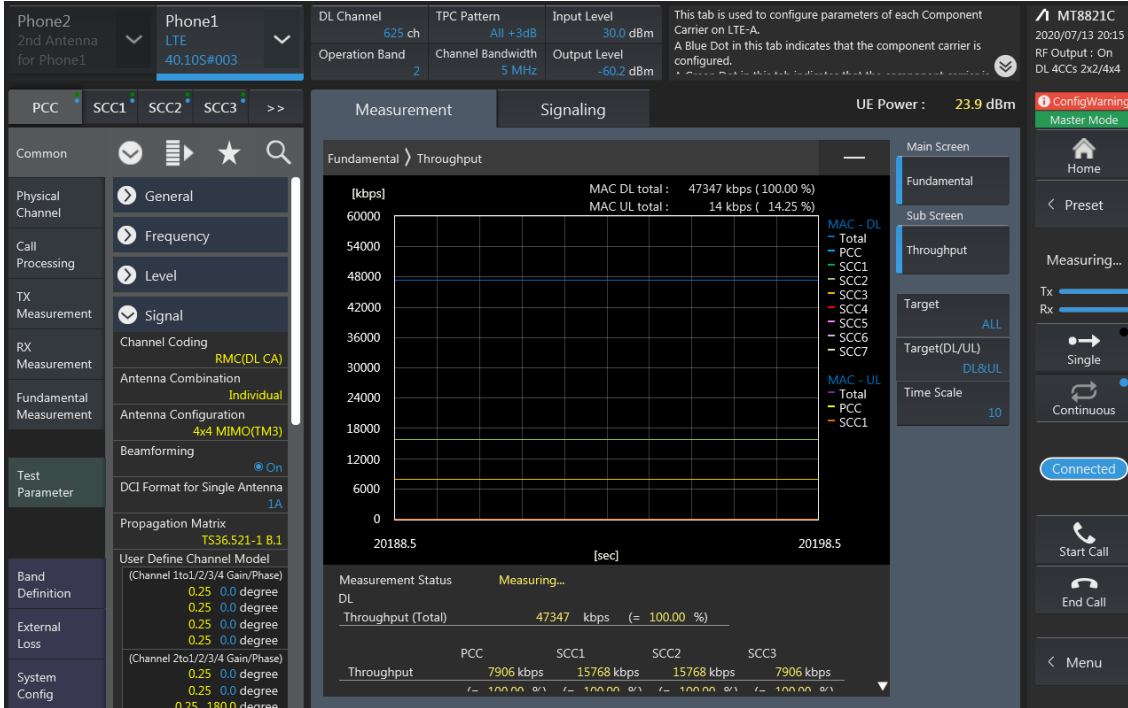
SCC2 Setting (Channel/ RB/ BW/ Modulation) and call Connection



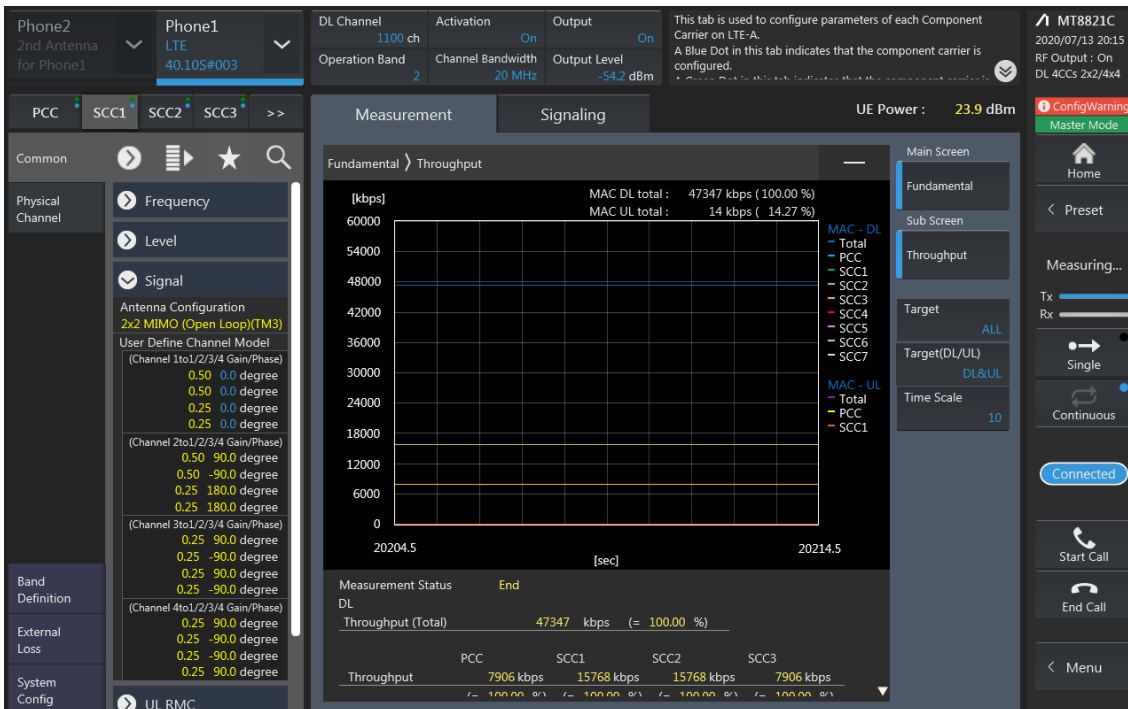




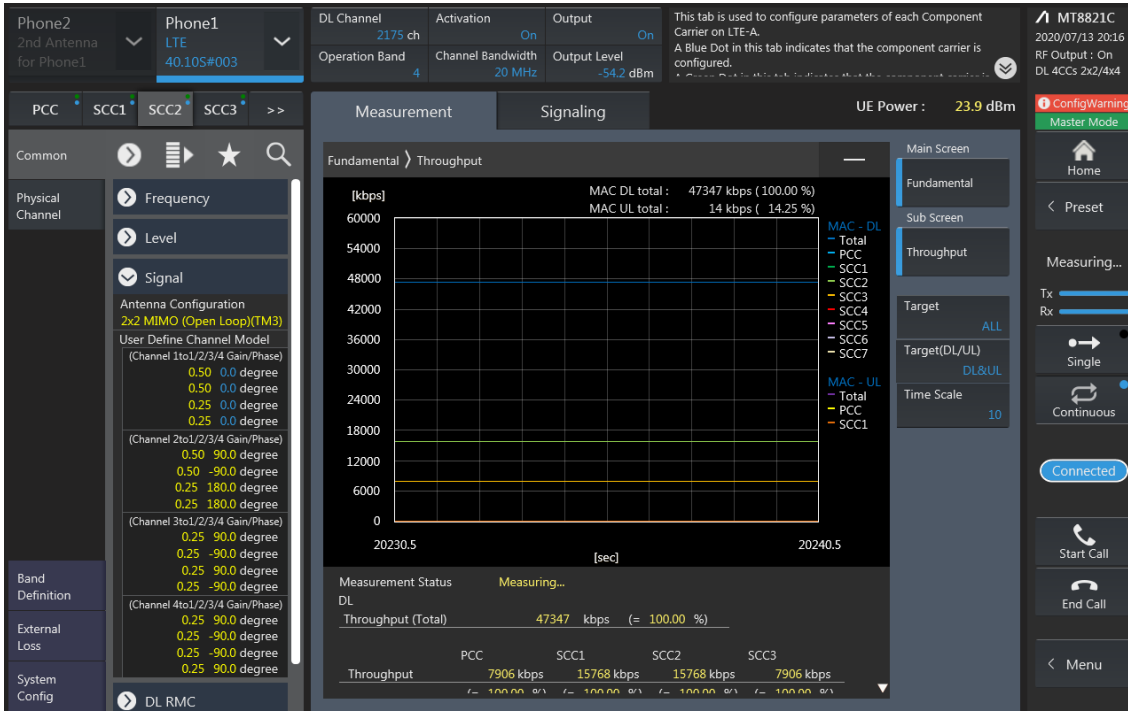
**LTE Down Link 4CA 4x4 MIMO Call Setup**  
**PCC Setting (Channel/ RB/ BW/ Modulation)**



**SCC1 Setting (Channel/ RB/ BW/ Modulation) and call Connection**



**SCC2 Setting (Channel/ RB/ BW/ Modulation) and call Connection**



**SCC3 Setting (Channel/ RB/ BW/ Modulation) and call Connection**

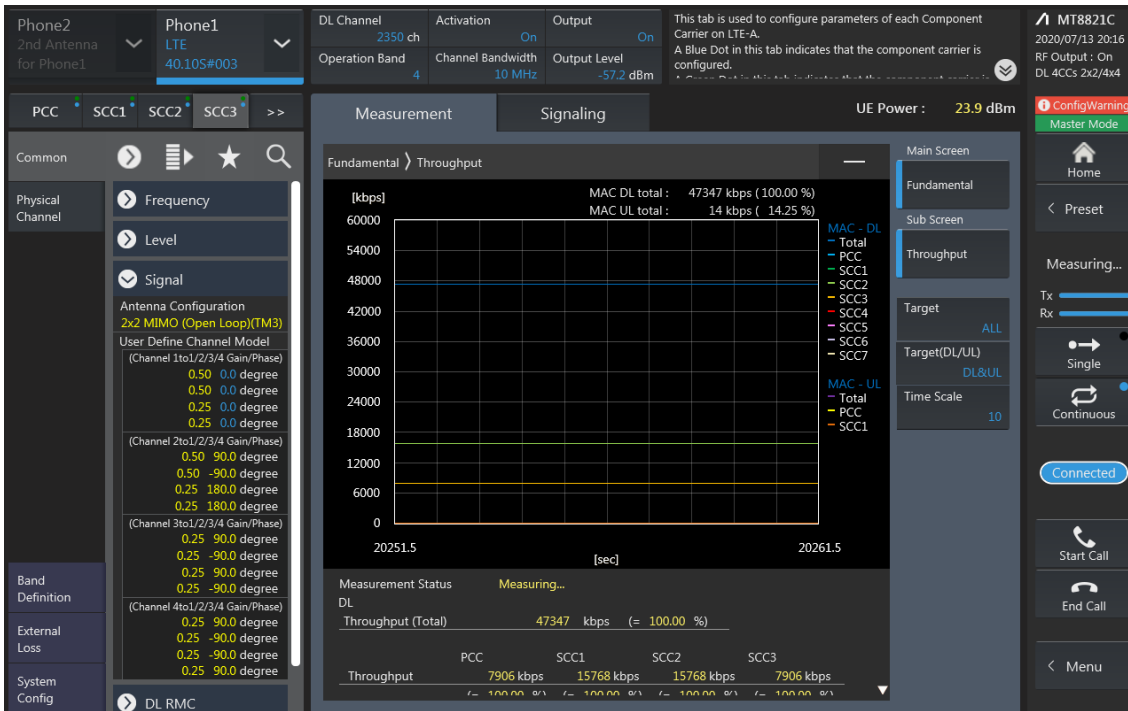








Table with columns for model numbers, frequencies, modulation types, and various test parameters. The table lists numerous device variants such as 2A-[2A]-[66B] and 2A-[4A]-[4A]-5A, along with their corresponding frequencies and test results.









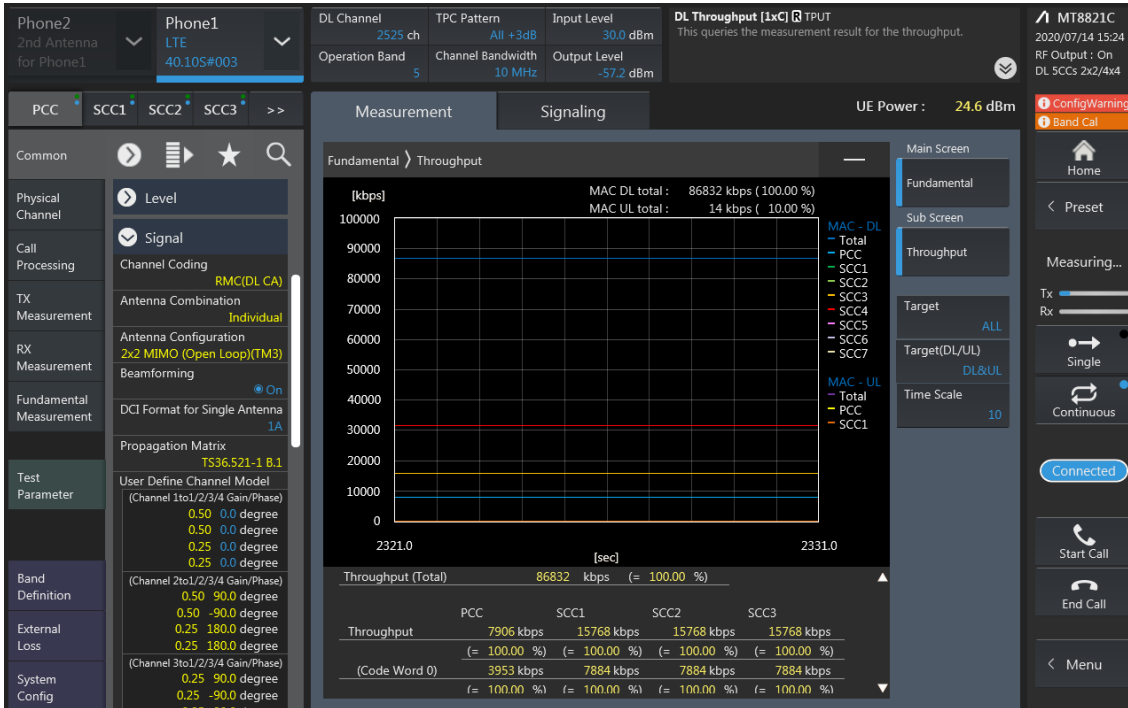


Table with multiple columns containing technical specifications, frequencies, and values. The table lists various frequency bands and their associated parameters across numerous rows.

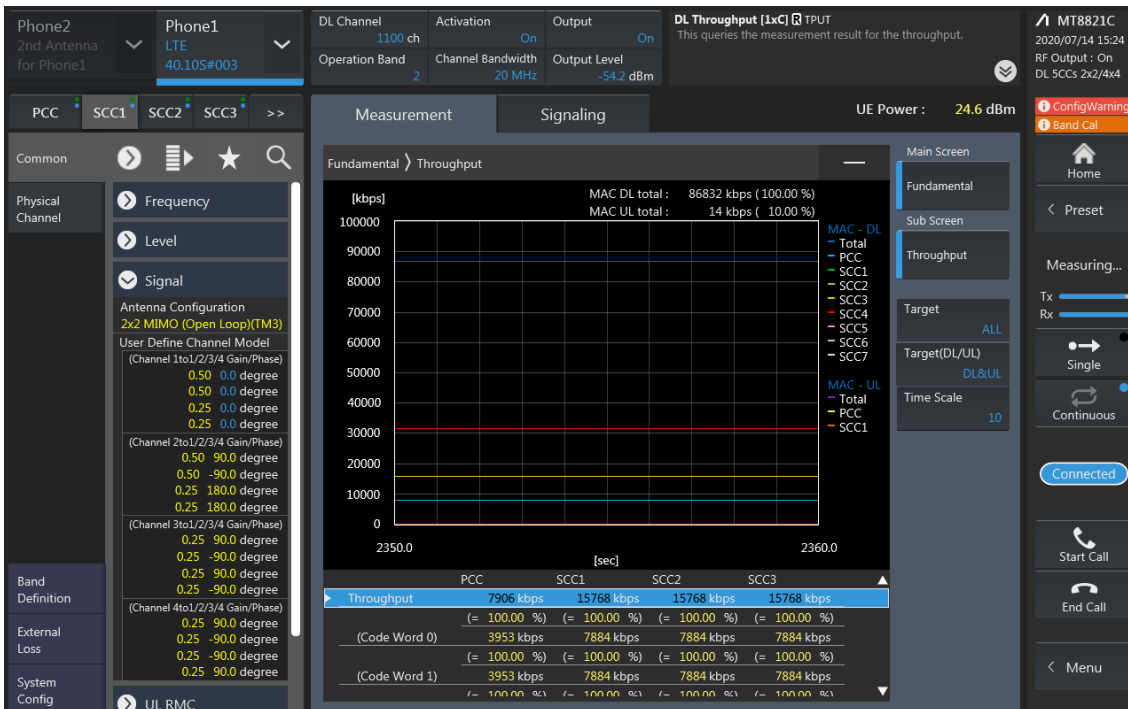
48A-[48A]-[66A]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	48	20	55340	3560	48	20	56640	3690	24.40	24.40	0
48A-[48A]-[66A]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	48	20	55340	3560	48	20	56640	3690	24.40	24.21	-0.19
48A-[48A]-[66A]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	48	20	55340	3560	48	20	56640	3690	24.40	24.39	-0.01
[48A]-48A-[66A]-66A	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	48	20	55340	3560	48	20	56640	3690	24.40	24.40	0
[48A]-48A-[66A]-66A	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	48	20	55340	3560	48	20	56640	3690	24.40	24.47	0.07
[48A]-48A-[66A]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	48	20	55340	3560	48	20	56640	3690	24.40	24.42	0.02
[48A]-[48A]-[66A]-66A	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	48	20	55340	3560	48	20	56640	3690	24.40	24.47	0.07
[48A]-[48A]-[66A]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66536	2140	48	20	55340	3560	48	20	56640	3690	24.40	24.28	-0.12
48A-48A-[66B]	66	10	132622	1775	67086	2175	QPSK	1	0	66	10	66987	2165.1	48	20	55340	3560	48	20	56640	3690	24.38	24.23	-0.15
48A-[48A]-[66B]	66	10	132622	1775	67086	2175	QPSK	1	0	66	10	66987	2165.1	48	20	55340	3560	48	20	56640	3690	24.38	24.37	-0.01
48A-[48A]-[66B]	66	10	132622	1775	67086	2175	QPSK	1	0	66	10	66987	2165.1	48	20	55340	3560	48	20	56640	3690	24.38	24.22	-0.16
[48A]-48A-[66B]	66	10	132622	1775	67086	2175	QPSK	1	0	66	10	66987	2165.1	48	20	55340	3560	48	20	56640	3690	24.38	24.39	0.01
[48A]-48A-[66B]	66	10	132622	1775	67086	2175	QPSK	1	0	66	10	66987	2165.1	48	20	55340	3560	48	20	56640	3690	24.38	24.24	-0.14
[48A]-[48A]-[66B]	66	10	132622	1775	67086	2175	QPSK	1	0	66	10	66987	2165.1	48	20	55340	3560	48	20	56640	3690	24.38	24.18	-0.2
[48A]-[48A]-[66B]	66	10	132622	1775	67086	2175	QPSK	1	0	66	10	66987	2165.1	48	20	55340	3560	48	20	56640	3690	24.38	24.20	-0.18
48A-48A-[66C]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	48	20	55340	3560	48	20	56640	3690	24.40	24.27	-0.13
48A-[48A]-[66C]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	48	20	55340	3560	48	20	56640	3690	24.40	24.42	0.02
48A-[48A]-[66C]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	48	20	55340	3560	48	20	56640	3690	24.40	24.40	0
[48A]-48A-[66C]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	48	20	55340	3560	48	20	56640	3690	24.40	24.36	-0.04
[48A]-48A-[66C]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	48	20	55340	3560	48	20	56640	3690	24.40	24.27	-0.13
[48A]-[48A]-[66C]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	48	20	55340	3560	48	20	56640	3690	24.40	24.27	-0.13
[48A]-[48A]-[66C]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	66838	2170.2	48	20	55340	3560	48	20	56640	3690	24.40	24.36	-0.04

**LTE Down Link 5CA 4x4 MIMO Call Setup**

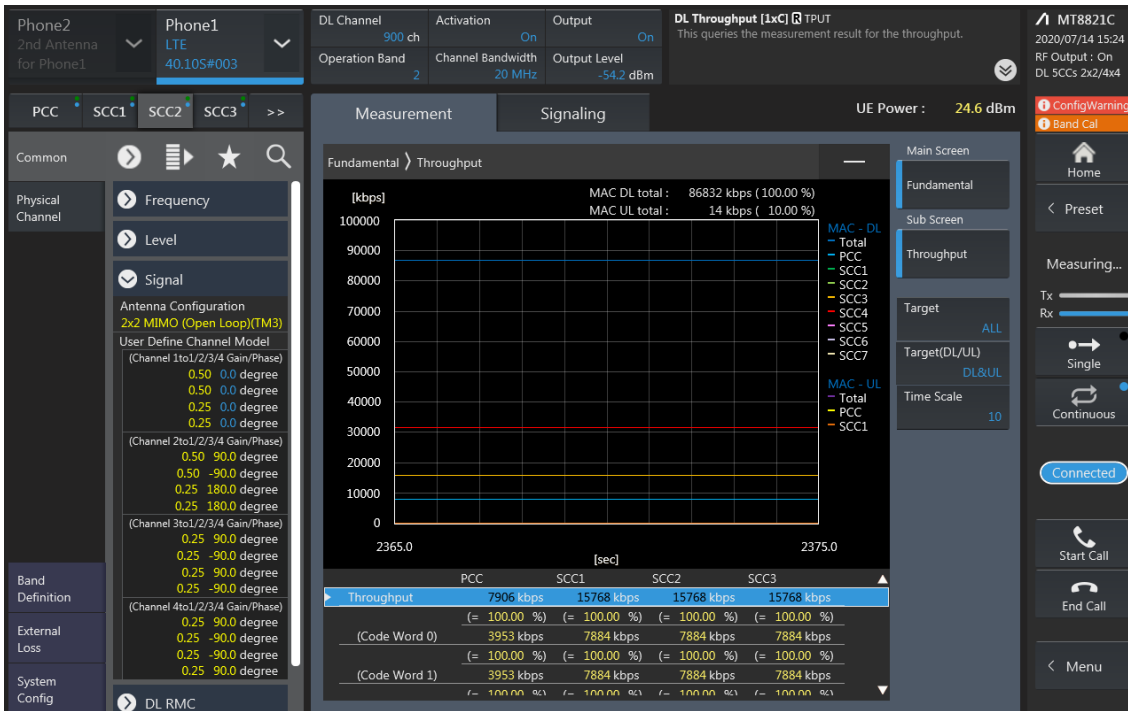
**PCC Setting (Channel/ RB/ BW/ Modulation)**



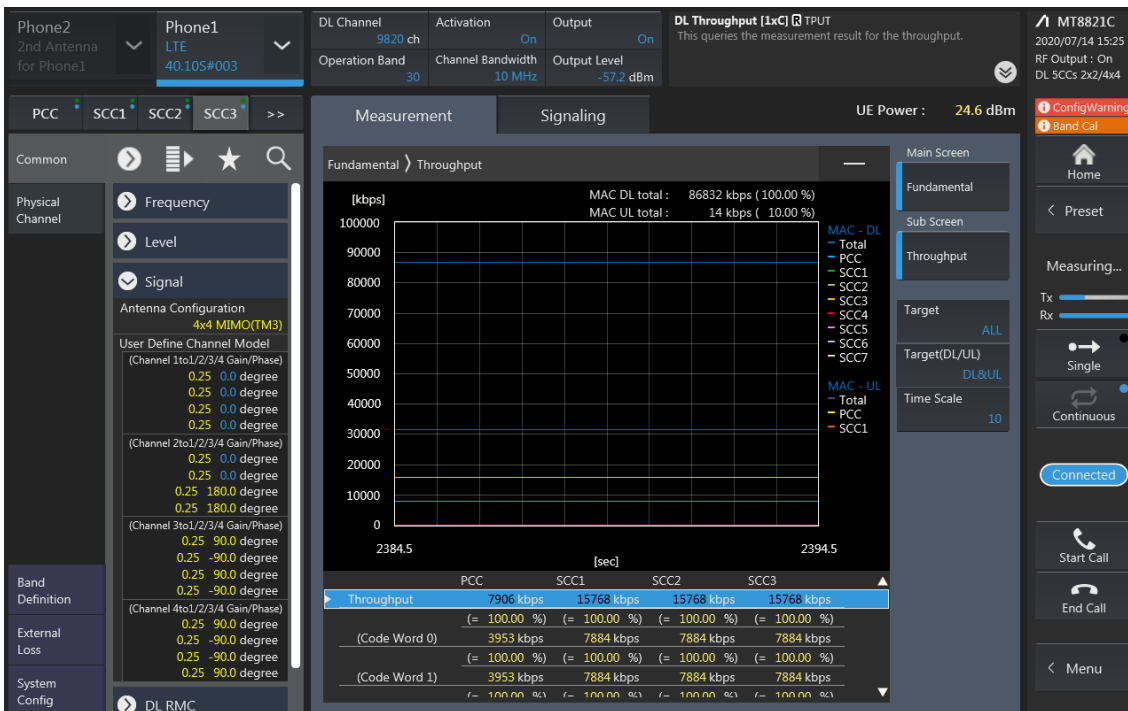
**SCC1 Setting (Channel/ RB/ BW/ Modulation) and call Connection**



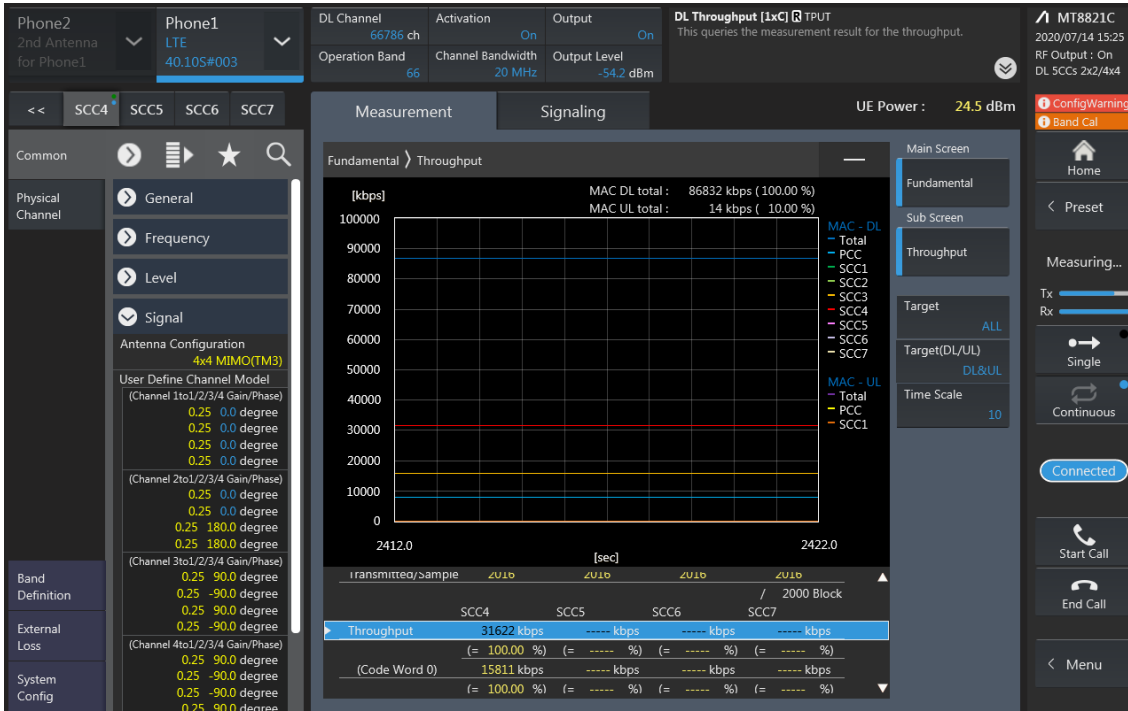
SCC2 Setting (Channel/ RB/ BW/ Modulation) and call Connection



SCC3 Setting (Channel/ RB/ BW/ Modulation) and call Connection



SCC4 Setting (Channel/ RB/ BW/ Modulation) and call Connection





### LTE Downlink 5CA 4X4 MIMO Maximum Conducted Power

Combination	Band	BW	PCC				SCC				SCC				SCC				Tx Power		Deviation(dB) (2-1)							
			PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel		SCC DL Frequency	LTE Carrier Tx Power (W)	LTE Tx Power with CA Enabled (dBm)				
2A-2A-5A-30A-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	5	10	2525	881.5	30	10	9820	2355	[66]	20	66786	2145	24.57	24.45	-0.12











Table with columns for FCC ID, Part, Frequency, Power, Modulation, and various test parameters. Rows include labels like 2A-SA-30A-180A-66A and 2A-SA-30A-180A-66A, along with numerical data points.

Table with multiple columns containing technical specifications, frequencies, and numerical values. The table is organized into rows and columns, with a header row and many data rows.





Table with columns for FCC ID, Frequency, Power, Modulation, and various test parameters (e.g., 2A-14A-30A-66A-66A, 30, 10, 27710, 2310, 9820, 2355, QPSK, 1, 24, 66, 20, 66786, 2145, 66, 20, 67236, 2190, 2, 20, 900, 1960, 14, 10, 5330, 763, 2263, 2257, -0.06). The table contains numerous rows of test data for various frequencies and modulation schemes.

13A-[48D]-[66A]	13	5	23230	782	5230	751	QPSK	1	12	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	66	20	66786	2145	24.69	24.71	0.02
13A-[48D]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	13	10	5230	751	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	24.40	24.25	-0.15
13A-[48D]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	13	10	5230	751	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	24.40	24.22	-0.18
13A-[48D]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	13	10	5230	751	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	24.40	24.24	-0.06
48A-[48E]	48	20	55773	3603.3	55773	3603.3	QPSK	1	99	48	20	56640	3690	48	20	56442	3670.2	48	20	56244	3650.4	48	20	56046	3630.6	22.11	21.86	-0.16
48A-[48E]	48	20	55773	3603.3	55773	3603.3	QPSK	1	99	48	20	56640	3690	48	20	56442	3670.2	48	20	56244	3650.4	48	20	56046	3630.6	22.11	21.05	-0.16
48A-[48E]	48	20	55773	3603.3	55773	3603.3	QPSK	1	99	48	20	56640	3690	48	20	56442	3670.2	48	20	56244	3650.4	48	20	56046	3630.6	22.11	21.91	-0.2
48C-[48D]	48	20	55773	3603.3	55773	3603.3	QPSK	1	99	48	20	55975	3983.5	48	20	56640	3690	48	20	56442	3670.2	48	20	56244	3650.4	22.11	21.96	-0.15
48C-[48D]	48	20	55773	3603.3	55773	3603.3	QPSK	1	99	48	20	55975	3983.5	48	20	56640	3690	48	20	56442	3670.2	48	20	56244	3650.4	22.11	22.15	0.04
48C-[48D]	48	20	55773	3603.3	55773	3603.3	QPSK	1	99	48	20	55975	#REF!	48	20	56640	3690	48	20	56442	3670.2	48	20	56244	3650.4	22.11	22.12	0.01
[48F]	48	20	55773	3603.3	55773	3603.3	QPSK	1	99	48	20	55971	3623.1	48	20	56169	3642.9	48	20	56367	3662.7	48	20	56665	3682.5	22.11	22.19	0.08
2A-[2A]-[46D]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	24.57	24.38	-0.19
[2A]-[2A]-[46D]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	24.57	24.59	0.02
[2A]-[2A]-[46D]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	2	20	700	1940	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	24.57	24.44	-0.13
2A-[46A]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540	46	20	48892	5160.2	46	20	47090	5180	46	20	47288	5199.8	24.57	24.37	-0.2
2A-[46A]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540	46	20	48892	5160.2	46	20	47090	5180	46	20	47288	5199.8	24.57	24.56	-0.01
[2A]-[46E]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	46	20	51090	5580	24.57	24.56	-0.01
2A-[46D]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	46	20	55773	3603.3	24.57	24.48	-0.09
2A-[46D]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	46	20	55773	3603.3	24.57	24.56	-0.01
[2A]-[46D]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	46	20	55773	3603.3	24.57	24.47	-0.1
[2A]-[46D]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	46	20	55773	3603.3	24.57	24.66	0.09
2A-[46A]-[46C]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540	46	20	54142	5885.2	46	20	54340	5905	66	20	66786	2145	24.57	24.37	-0.2
2A-[46A]-[46C]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540	46	20	54142	5885.2	46	20	54340	5905	66	20	66786	2145	24.57	24.37	-0.2
[2A]-[46A]-[46C]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540	46	20	54142	5885.2	46	20	54340	5905	66	20	66786	2145	24.57	24.66	0.09
2A-[46A]-[46C]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	900	1960	46	20	50492	5520.2	46	20	54142	5885.2	46	20	54340	5905	24.40	24.26	-0.14
[2A]-[46A]-[46C]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	900	1960	46	20	50690	5540	46	20	54142	5885.2	46	20	54340	5905	24.40	24.43	0.03
[2A]-[46A]-[46C]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	900	1960	46	20	50690	5540	46	20	54142	5885.2	46	20	54340	5905	24.40	24.31	-0.09
2A-[46D]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	66	20	66786	2145	24.57	24.64	0.07
[2A]-[46D]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	66	20	66786	2145	24.57	24.42	-0.15
[2A]-[46D]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	66	20	66786	2145	24.57	24.62	0.05
2A-[46D]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	900	1960	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	24.40	24.50	0.1
[2A]-[46D]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	900	1960	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	24.40	24.42	0.02
[2A]-[46D]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	900	1960	46	20	50492	5520.2	46	20	50690	5540	46	20	50888	5559.8	24.40	24.29	-0.11
2A-[46C]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540.2	46	20	50890	5560	48	20	55773	3603.3	48	20	55971	3623.1	24.57	24.67	0.1
[2A]-[46C]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540.2	46	20	50890	5560	48	20	55773	3603.3	48	20	55971	3623.1	24.57	24.43	-0.14
[2A]-[46C]-[66A]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540.2	46	20	50890	5560	48	20	55773	3603.3	48	20	55971	3623.1	24.57	24.57	0
2A-[46A]-[48D]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	24.57	24.49	-0.08
[2A]-[46A]-[48D]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	24.57	24.61	0.04
[2A]-[46A]-[48D]	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	46	20	50690	5540	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	24.57	24.44	-0.13
[4A]-[46A]-[48D]	4	15	20325	1747.5	2325	2147.5	QPSK	1	74	46	20	50690	5540	48	20	48892	5160.2	46	20	47090	5180	46	20	47288	5199.8	24.12	23.33	-0.19
46A-[46C]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	50690	5540	46	20	48892	5160.2	46	20	47090	5180	46	20	47288	5199.8	24.40	24.37	-0.03
[2A]-[46D]-[66A]	66	20	132572	1770	67036	2190	QPSK	1	99	66	20	50690	5540	46	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.			

### LTE Down Link 6CA 4x4 MIMO Call Setup

#### PCC Setting (Channel/ RB/ BW/ Modulation)

DL Channel: 625 ch, TPC Pattern: All +3dB, Input Level: 30.0 dBm, External Loss - Main DL: 0 dB, Operation Band: 2, Channel Bandwidth: 5 MHz, Output Level: -60.2 dBm, UE Power: 24.0 dBm

	PCC	SCC1	SCC2	SCC3
Throughput	7906 kbps	7906 kbps	15768 kbps	15768 kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)
(Code Word 0)	3953 kbps	3953 kbps	7884 kbps	7884 kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)
(Code Word 1)	3953 kbps	3953 kbps	7884 kbps	7884 kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)
Block Error Rate	0.0000	0.0000	0.0000	0.0000
0.00E+000	0.00E+000	0.00E+000	0.00E+000	0.00E+000
Error Count	0	0	0	0
NACK	0	0	0	0
DTX	0	0	0	0
ANY	0	0	----	----
Transmitted/Sample	2016	2016	2016	2016
				/ 2000 Block
	SCC4	SCC5	SCC6	SCC7
Throughput	15768 kbps	31622 kbps	----- kbps	----- kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= ----- %)	(= ----- %)
(Code Word 0)	7884 kbps	15811 kbps	----- kbps	----- kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= ----- %)	(= ----- %)
(Code Word 1)	7884 kbps	15811 kbps	----- kbps	----- kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= ----- %)	(= ----- %)
Block Error Rate	0.0000	0.0000	-----	-----

#### SCC1 Setting (Channel/ RB/ BW/ Modulation) and call Connection

DL Channel: 5230 ch, Activation: On, Output: On, This tab is used to configure parameters of each Component Carrier on LTE-A. A Blue Dot in this tab indicates that the component carrier is configured. UE Power: 23.9 dBm

	PCC	SCC1	SCC2	SCC3
Throughput	7906 kbps	7906 kbps	15768 kbps	15768 kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)
(Code Word 0)	3953 kbps	3953 kbps	7884 kbps	7884 kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)
(Code Word 1)	3953 kbps	3953 kbps	7884 kbps	7884 kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= 100.00 %)
Block Error Rate	0.0000	0.0000	0.0000	0.0000
0.00E+000	0.00E+000	0.00E+000	0.00E+000	0.00E+000
Error Count	0	0	0	0
NACK	0	0	0	0
DTX	0	0	0	0
ANY	0	0	----	----
Transmitted/Sample	900	900	900	900
				/ 2000 Block
	SCC4	SCC5	SCC6	SCC7
Throughput	15768 kbps	31622 kbps	----- kbps	----- kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= ----- %)	(= ----- %)
(Code Word 0)	7884 kbps	15811 kbps	----- kbps	----- kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= ----- %)	(= ----- %)
(Code Word 1)	7884 kbps	15811 kbps	----- kbps	----- kbps
(= 100.00 %)	(= 100.00 %)	(= 100.00 %)	(= ----- %)	(= ----- %)
Block Error Rate	0.0000	0.0000	-----	-----



SCC2 Setting (Channel/ RB/ BW/ Modulation) and call Connection

The screenshot displays the SCC2 configuration and call connection interface. The top status bar shows 'Phone1' selected with LTE carrier '40.105#003'. The DL Channel is set to 50665 ch, Operation Band 46, Channel Bandwidth 20 MHz, and Output Level -54.2 dBm. The UE Power is 23.9 dBm. The interface is divided into several sections:

- Physical Channel:** Includes Frequency, Level, and Signal settings. Antenna Configuration is set to 2x2 MIMO (Open Loop)(TM3). User Define Channel Model is selected, showing gain/phase settings for channels 1to1/2/3/4 and 2to1/2/3/4.
- Measurement:** Shows 'Fundamental' and 'Numeric' views. The 'Throughput' table is expanded, displaying data for PCC, SCC1, SCC2, and SCC3. SCC2 throughput is 15768 kbps.
- Call Connection:** On the right, a 'Connected' status is shown with a blue button. Below it are 'Start Call' and 'End Call' buttons.

	PCC	SCC1	SCC2	SCC3
Throughput	7906 kbps	7906 kbps	15768 kbps	15768 kbps
(Code Word 0)	3953 kbps	3953 kbps	7884 kbps	7884 kbps
(Code Word 1)	3953 kbps	3953 kbps	7884 kbps	7884 kbps
Block Error Rate	0.0000	0.0000	0.0000	0.0000
Error Count	0	0	0	0
NACK	0	0	0	0
DTX	0	0	0	0
ANY	0	0	----	----
Transmitted/Sample	2016	2016	2016	2016

SCC3 Setting (Channel/ RB/ BW/ Modulation) and call Connection

This screenshot is identical to the one above, showing the SCC2 configuration. The UE Power remains at 23.9 dBm, and the 'Connected' status is maintained.

SCC4 Setting (Channel/ RB/ BW/ Modulation) and call Connection

DL Channel: 50863 ch, Operation Band: 46, Channel Bandwidth: 20 MHz, Output Level: -54.2 dBm

UE Power: 23.9 dBm

	PCC	SCC1	SCC2	SCC3
Throughput	7906 kbps	7906 kbps	15768 kbps	15768 kbps
(Code Word 0)	3953 kbps	3953 kbps	7884 kbps	7884 kbps
(Code Word 1)	3953 kbps	3953 kbps	7884 kbps	7884 kbps
Block Error Rate	0.0000	0.0000	0.0000	0.0000
Error Count	0	0	0	0
NACK	0	0	0	0
DTX	0	0	0	0
ANY	0	0	----	----
Transmitted/Sample	1800	1800	1800	1800

Antenna Configuration: 2x2 MIMO (Open Loop(TM3))

SCC5 Setting (Channel/ RB/ BW/ Modulation) and call Connection

DL Channel: 66786 ch, Operation Band: 66, Channel Bandwidth: 20 MHz, Output Level: -54.2 dBm

UE Power: 23.9 dBm

	PCC	SCC1	SCC2	SCC3
Throughput	7906 kbps	7906 kbps	15768 kbps	15768 kbps
(Code Word 0)	3953 kbps	3953 kbps	7884 kbps	7884 kbps
(Code Word 1)	3953 kbps	3953 kbps	7884 kbps	7884 kbps
Block Error Rate	0.0000	0.0000	0.0000	0.0000
Error Count	0	0	0	0
NACK	0	0	0	0
DTX	0	0	0	0
ANY	0	0	----	----
Transmitted/Sample	2016	2016	2016	2016

Antenna Configuration: 4x4 MIMO(TM3)

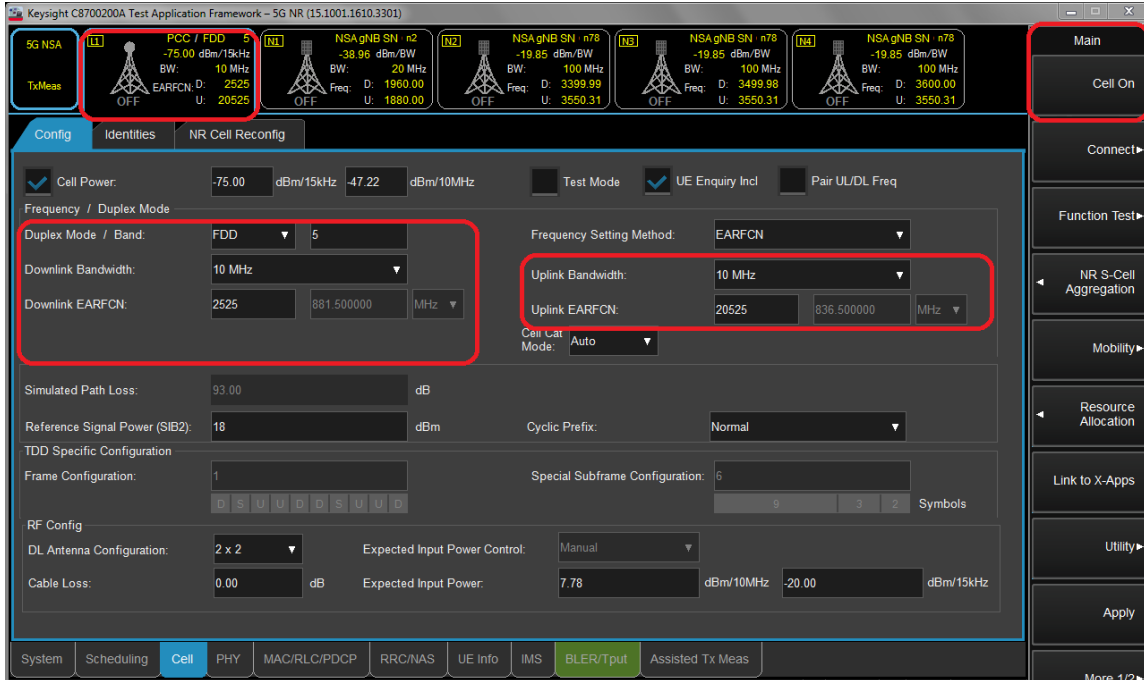
**LTE Downlink 6CA 4X4 MIMO Maximum Conducted Power**

Combination	PCC					SCC					SCC					SCC					SCC					Tx Power									
	Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel	SCC DL Frequency	Band	BW	SCC DL Channel	SCC DL Frequency	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Evaluation (dBm) (2)
2A-48E-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	48	20	56367	3662.7	[66]	20	56786	2145	24.57	24.39	-0.18			
2A-48E-66A	2	5	19175	1907.5	1175	1987.5	QPSK	1	12	[48]	20	55773	3603.3	[48]	20	55971	3623.1	[48]	20	56169	3642.9	[48]	20	56367	3662.7	66	20	66786	2145	24.57	24.53	-0.04			
[2A]-48E-66A	[2]	5	19175	1907.5	1175	1987.5	QPSK	1	12	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	48	20	56367	3662.7	66	20	66786	2145	24.57	24.43	-0.14			
[2A]-48E-66A	[2]	5	19175	1907.5	1175	1987.5	QPSK	1	12	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	48	20	56367	3662.7	[66]	20	66786	2145	24.57	24.57	0			
2A-48E-66A	[66]	20	132572	1770	67036	2190	QPSK	1	99	2	20	700	1940	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	48	20	56367	3662.7	24.4	24.39	-0.01			
2A-48E-66A	66	20	132572	1770	67036	2190	QPSK	1	99	2	20	700	1940	[48]	20	55773	3603.3	[48]	20	56169	3642.9	[48]	20	56367	3662.7	48	20	66786	2145	24.57	24.44	0.04			
[2A]-48E-66A	[66]	20	132572	1770	67036	2190	QPSK	1	99	[2]	20	700	1940	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	48	20	56367	3662.7	24.4	24.48	0.08			
[2A]-48E-66A	[66]	20	132572	1770	67036	2190	QPSK	1	99	[2]	20	700	1940	48	20	55773	3603.3	48	20	55971	3623.1	48	20	56169	3642.9	48	20	56367	3662.7	24.4	24.5	0.1			

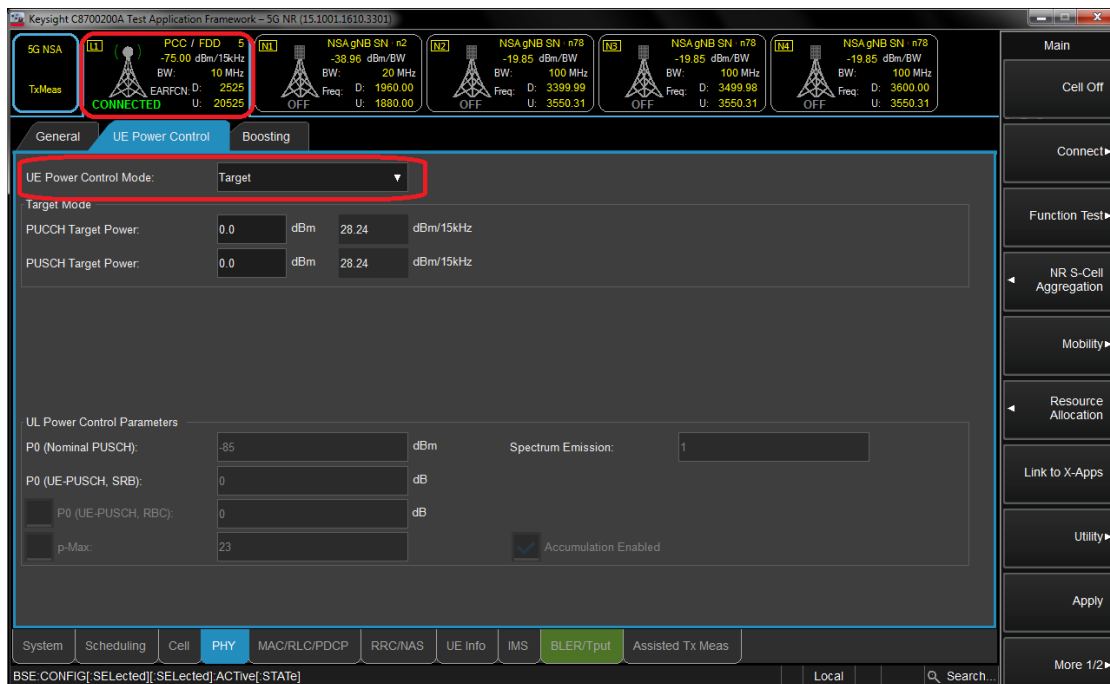
## 2. 5G NR Call Box Setup

Procedure used to establish output Power measurement for NR Bands  
Select operating band, BW and Channel.

- Click Cell on button in the right of Test application screen.
- Turn the LTE Cell On using "ON/OFF" Key.

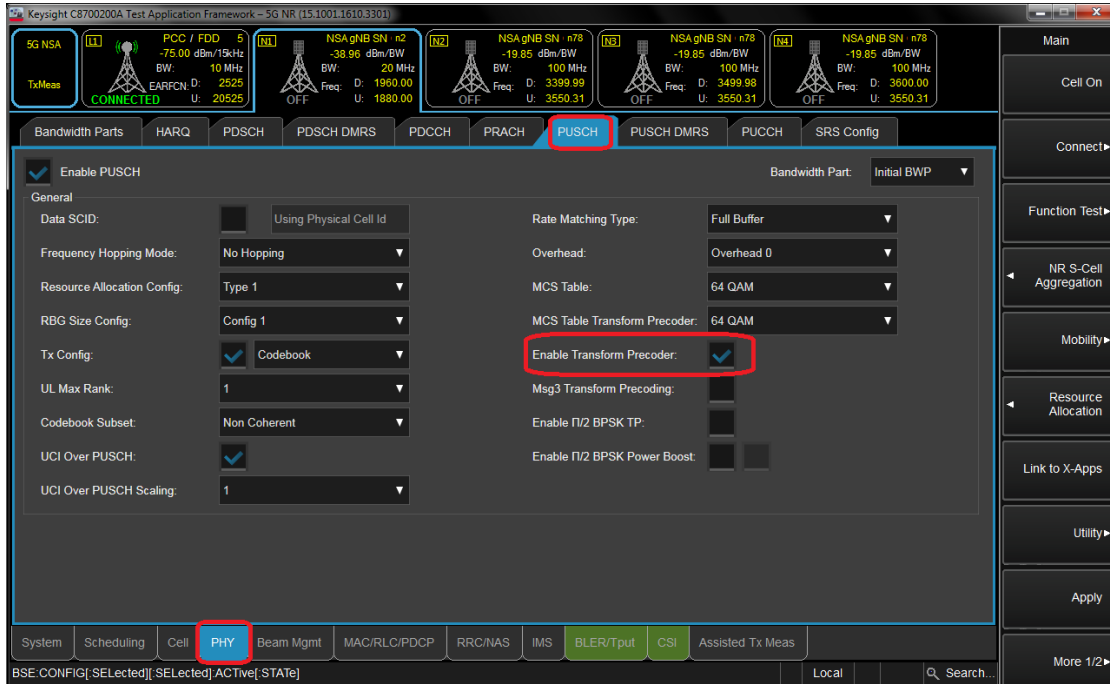


- Turn the Airplane Mode On and then turn the Airplane mode off.
- Select All down bits for UL Power control Mode in LTE.

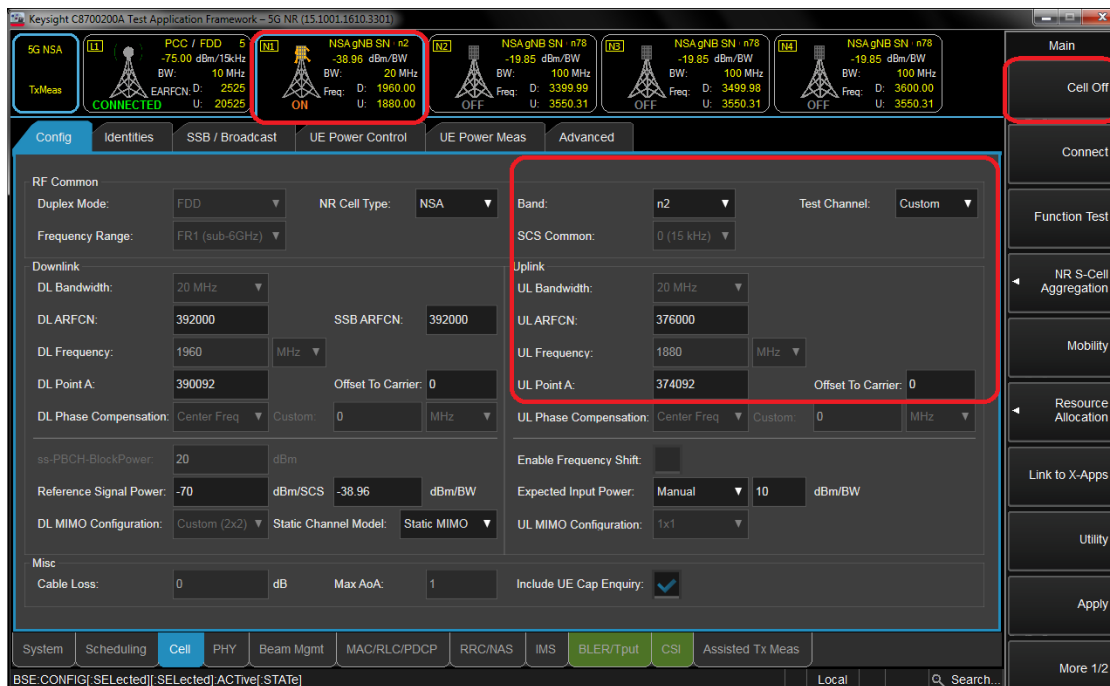


Setup for NR Band

- Select waveform for Setting NR Band (PHY->PUSCH->Enable Transform Precoder)
  - Enable : DFT-s-OFDM, Disable : CP-OFDM

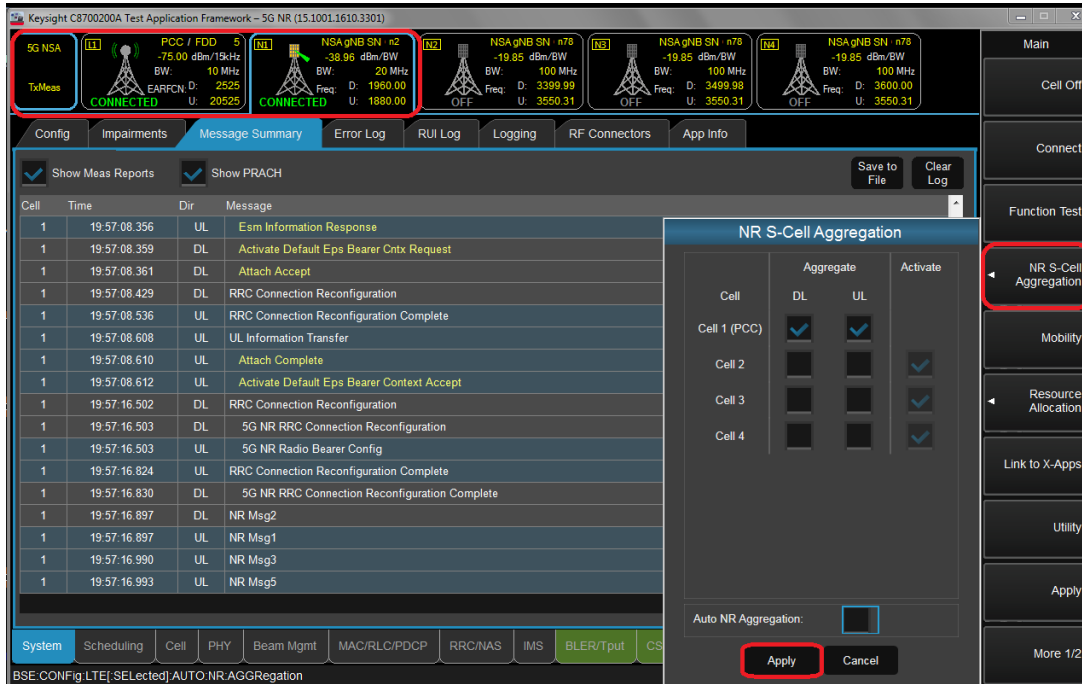


- Select operating band, BW, SCS and Channel.
- Turn the NR Cell On using “ON/OFF” Key.



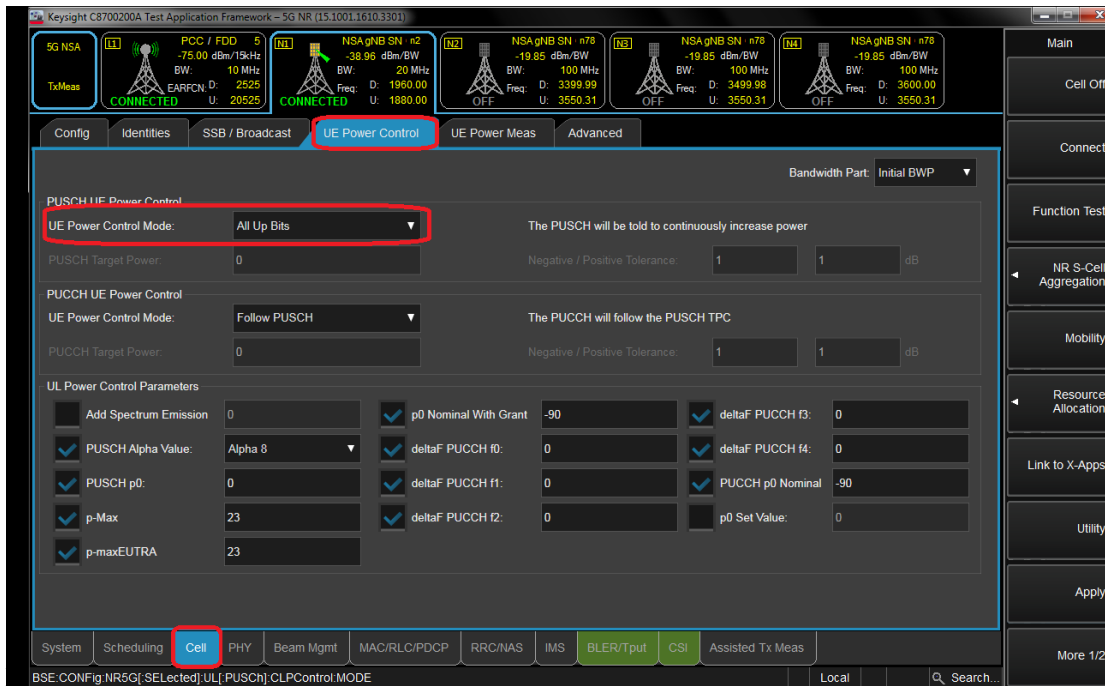
Connect NR S-Cell Aggregation

- Click NR S-Cell Aggregation
- Check the Cell 1's DL and UL box(PCC) and then Click Apply.
- Check the message summary If message shows NR Msg 5, It is connected.



Max Power setting

- Click "Cell in the bottom of screen.
- Click "UE Power control" then change UE Power control mode to All Up bits.



Selecting Start RB/Count/MCS

- Select the each test configuring (Start RB, Count, MCS).



View Tx Power

- Click "Link to X-Apps." (Please refer to Figure-7)
- Select "Channel Power".

