

# Appendix H. – Power reduction verification

Per the May 2017 TCBC Workshop notes, demonstration of proper functioning of the power reduction mechanism is required to support the corresponding SAR Configurations.

The verification process was divided into two parts:

- 1) Evaluation of output power levels for individual triggering mechanism
- 2) Evaluation of the triggering distances for proximity-based sensors.

## **1. Power Reduction Verification for Main Ant**

The Power verification was performed according to the following procedure:

- 1. A base station simulator was used to establish a conducted RF connection and output power was monitored. The Power measurements were conformed to be within expected tolerances for all states before and after a power reduction mechanism was triggered.
- 2. Step 1 was repeated for all relevant modes and frequency bands for the mechanism being investigated.
- 3. Step 1 and 2 were repeated for all individual power reduction mechanism and combinations thereof. For the combination cases, one mechanism was switched to a "triggered" state at a time; powers were conformed to be within tolerance after each additional mechanism was activated.



			wer reduction Mechania	sm
Mechanism(s)	Mode/Band	Un-triggered	Triggered	Triggered
		(Max Power)	(Reduced Power)	(Reduced Power)
Grip	GSM1900 Voice	29.66		27.83
Grip	GSM/GPRS/EDGE1900 1Tx	29.66		27.73
Grip	GSM/GPRS/EDGE1900 2Tx	27.47		25.47
Grip	GSM/GPRS/EDGE1900 3Tx	25.50		23.50
Grip	GSM/GPRS/EDGE1900 4Tx	24.33		22.55
Hotspot On	GSM1900 Voice	29.66	27.83	
Hotspot On	GSM/GPRS/EDGE1900 1Tx	29.66	27.78	
Hotspot On	GSM/GPRS/EDGE1900 2Tx	27.47	25.49	
Hotspot On	GSM/GPRS/EDGE1900 3Tx	25.50	23.53	
Hotspot On	GSM/GPRS/EDGE1900 4Tx	24.33	22.63	
Hotspot On, Then Grip	GSM1900 Voice	29.66	27.83	27.83
Hotspot On, Then Grip	GSM/GPRS/EDGE1900 1Tx	29.66	27.78	27.78
Hotspot On, Then Grip	GSM/GPRS/EDGE1900 2Tx	27.47	25.49	25.49
Hotspot On, Then Grip	GSM/GPRS/EDGE1900 3Tx	25.50	23.53	23.53
Hotspot On, Then Grip	GSM/GPRS/EDGE1900 4Tx	24.33	22.63	22.63
Grip Then Hotspot on	GSM1900 Voice	29.66	27.83	27.83
Grip Then Hotspot on	GSM/GPRS/EDGE1900 1Tx	29.66	27.73	27.78
Grip Then Hotspot on	GSM/GPRS/EDGE1900 2Tx	27.47	25.47	25.49
Grip Then Hotspot on	GSM/GPRS/EDGE1900 3Tx	25.50	23.50	23.53
Grip Then Hotspot on	GSM/GPRS/EDGE1900 4Tx	24.33	22.55	22.63

## **Main Antenna Verification Summary**



#### **1.1 Distance Verification Procedure**

Procedures for determining proximity sensor triggering distances

(KDB 616217D04v01r02§6.2)

The distance verification procedure was performed according to the following procedure:

A base station simulator was used to establish an RF connection and to monitor the power levels. The device being tested was placed below the relevant section of the phantom with the relevant side or edge of the device facing toward the phantom.

- 1. The device was moved toward and away from the phantom to determine the distance at which the mechanism triggers and the output power is reduced, per KDB Publication 616217 D04v01r02. Each applicable test position was evaluated. The distance was conformed to be the same or larger (more conservative) than the minimum distances provided by the manufacturer.
- 2. Step 1 and 2 were repeated for the relevant modes, as appropriate.
- 3. Steps1 through 3 were repeated for all distance-based power reduction mechanisms.

For detailed measurement conducted power results, please refer to the Section .11



Proximity Sensor Trigger Distance Assessment KDB 616217 D04§6.2 (Rear / Front / Bottom side)

#### LEGEND



Direction of DUT travel for determination of power reduction triggering point Direction of DUT travel for determination of full power resumption triggering point

	Trigger dista	ance - Rear	Trigger dista	ance - Front	Trigger distance - Bottom		
Tissue simulating liquid	Moving toward	Moving away	Moving toward	Moving away	Moving toward	Moving away	
rissue simulating liquid	phantom	from phantom	phantom	from phantom	phantom	from phantom	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
1900 MHz Tissue	11	12	7	8	13	14	

Distance Measurement verification for Proximity sensor



## Rear side - EUT Moving toward (Trigger) to the Phantom

FCC ID: A3LSMA546JPN

	Distance to DUT Output power (dBm)											
Mode	16[mm]	15[mm]	14[mm]	13[mm]	12[mm]	11[mm]	10[mm]	9[mm]	8[mm]	7[mm]		
GSM 1900 Voice	29.53	29.46	29.52	29.51	29.48	27.55	27.49	27.53	27.52	27.55		
GSM 1900 1Tx	29.51	29.50	29.46	29.51	29.51	27.52	27.51	27.49	27.45	27.50		
GSM 1900 2Tx	27.38	27.35	27.33	27.36	27.30	25.29	25.21	25.23	25.27	25.24		
GSM 1900 3Tx	25.28	25.27	25.22	25.25	25.22	23.46	23.38	23.42	23.40	23.40		
GSM 1900 4Tx	24.11	24.20	24.07	24.24	24.06	22.50	22.58	22.67	22.47	22.47		

Rear side - EUT Moving away (Release) from the Phantom

		Distance to DUT Output power (dBm)										
Mode	8[mm]	9[mm]	10[mm]	11[mm]	12[mm]	13[mm]	14[mm]	15[mm]	16[mm]	17[mm]		
GSM 1900 Voice	27.49	27.43	27.46	27.49	27.53	29.53	29.41	29.50	29.45	29.43		
GSM 1900 1Tx	27.49	27.45	27.48	27.45	27.45	29.48	29.43	29.44	29.46	29.48		
GSM 1900 2Tx	25.28	25.19	25.22	25.26	25.23	27.30	27.29	27.31	27.29	27.27		
GSM 1900 3Tx	23.43	23.30	23.35	23.38	23.39	25.25	25.20	25.14	25.25	25.18		
GSM 1900 4Tx	22.47	22.51	22.62	22.45	22.43	24.10	24.17	24.00	24.24	24.00		

Based on the most conservative measured triggering distance of 11 mm, additional Phablet SAR measurements were required at 10mm from rear side for the above modes.

Front side - EUT Moving toward (Trigger) to the Phantom

Mode	Distance to DUT Output power (dBm)											
wode	12[mm]	11[mm]	10[mm]	9[mm]	8[mm]	7[mm]	6[mm]	5[mm]	4[mm]	3[mm]		
GSM 1900 Voice	29.46	29.46	29.46	29.46	29.45	27.50	27.47	27.53	27.44	27.47		
GSM 1900 1Tx	29.51	29.45	29.45	29.45	29.50	27.46	27.47	27.44	27.45	27.46		
GSM 1900 2Tx	27.30	27.28	27.28	27.30	27.30	25.28	25.14	25.22	25.23	25.20		
GSM 1900 3Tx	25.24	25.24	25.15	25.20	25.21	23.46	23.32	23.36	23.38	23.32		
GSM 1900 4Tx	24.10	24.17	24.02	24.21	24.02	22.47	22.55	22.65	22.40	22.47		

Front side - EUT Moving away (Release) from the Phantom

Mede		Distance to DUT Output power (dBm)										
Mode	4[mm]	5[mm]	6[mm]	7[mm]	8[mm]	9[mm]	10[mm]	11[mm]	12[mm]	13[mm]		
GSM 1900 Voice	27.54	27.41	27.53	27.49	27.52	29.52	29.42	29.51	29.43	29.46		
GSM 1900 1Tx	27.52	27.44	27.47	27.43	27.45	29.47	29.49	29.42	29.51	29.51		
GSM 1900 2Tx	25.22	25.20	25.22	25.26	25.18	27.37	27.32	27.29	27.34	27.24		
GSM 1900 3Tx	23.39	23.37	23.36	23.37	23.35	25.24	25.23	25.17	25.25	25.18		
GSM 1900 4Tx	22.47	22.55	22.62	22.45	22.47	24.10	24.14	24.03	24.23	24.02		

Based on the most conservative measured triggering distance of 7mm, additional Phablet SAR measurements were required at 6mm from Front side for the above modes.



#### Bottom side - EUT Moving toward (Trigger) to the Phantom

FCC ID: A3LSMA546JPN

Mada	Distance to DUT Output power (dBm)											
Mode	18[mm]	17[mm]	16[mm]	15[mm]	14[mm]	13[mm]	12[mm]	11[mm]	10[mm]	9[mm]		
GSM 1900 Voice	29.46	29.41	29.46	29.49	29.41	27.49	27.44	27.50	27.52	27.53		
GSM 1900 1Tx	29.43	29.44	29.38	29.45	29.48	27.46	27.44	27.45	27.40	27.43		
GSM 1900 2Tx	27.32	27.35	27.27	27.29	27.28	25.23	25.18	25.20	25.24	25.19		
GSM 1900 3Tx	25.24	25.22	25.20	25.23	25.20	23.40	23.33	23.38	23.39	23.38		
GSM 1900 4Tx	24.09	24.14	24.03	24.23	24.04	22.44	22.50	22.64	22.41	22.47		

Bottom side - EUT Moving away (Release) from the Phantom

Mode	Distance to DUT Output power (dBm)											
wode	10[mm]	11[mm]	12[mm]	13[mm]	14[mm]	15[mm]	16[mm]	17[mm]	18[mm]	19[mm]		
GSM 1900 Voice	27.54	27.47	27.46	27.51	27.51	29.49	29.43	29.47	29.45	29.43		
GSM 1900 1Tx	27.49	27.51	27.43	27.41	27.45	29.47	29.49	29.39	29.47	29.43		
GSM 1900 2Tx	25.24	25.15	25.21	25.20	25.20	27.33	27.31	27.28	27.35	27.26		
GSM 1900 3Tx	23.39	23.32	23.40	23.38	23.37	25.23	25.26	25.14	25.21	25.15		
GSM 1900 4Tx	22.42	22.50	22.62	22.41	22.46	24.05	24.13	23.99	24.22	23.99		

Based on the most conservative measured triggering distance of 13 mm, additional Phablet SAR measurements were required at 12 mm from Bottom side for the above modes.





#### 1.2 Proximity Sensor Coverage for SAR measurements

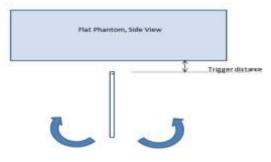
(KDB 616217 D04v01r02§6.3)

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

#### **1.3 Proximity Sensor Tilt Angle Assessment**

#### (KDB 616217 D04v01r02 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom side parallel to the base of the flat phantom for each band. The EUT was rotated about Bottom side for angles up to  $\pm 45^{\circ}$ . If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up $\pm 45^{\circ}$ .



Proximity sensor tilt angle assessment (Bottom side) KDB 616217 §6.4

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Bottom side)

	Minimum distance					Power	reductio	n status				
Tissue	At which power reduction was maintained over-45°	-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
1900 MHz Tissu	e 13 mm	On	On	On	On	On	On	On	On	On	On	On

#### 1.4 Resulting test positions for Phablet SAR measurements

Wireless technologies	Position	§6.2 Triggering Distance [mm]	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for Phablet SAR [mm]
WWAN	Rear	11	N/A	N/A	10
	Front	7	N/A	N/A	6
(GSM 1900)	Bottom	13	N/A	N/A	12

Note: FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in phablet use conditions.



## 2. Power reduction Verification for WLAN Ant

This device uses a power reduction mechanism for SAR compliance for WLAN operations during voice or VoIP held to ear scenarios.

When a user makes or receives a WLAN voice or WLAN VOIP call for WLAN Ant the audio of the call is sent through the Receiver at the top of the device will trigger the Power reduction for WLAN Ant (i.e. reducing output power for Head SAR compliance)

Detailed descriptions of the power reduction mechanism are included in the Main operational description document.

Condition				Conducte	d Power[dB	m]	
For Power	Wireless	Un-Trigg	gered (Max	(Power)	Triggere	ed (Reduced	l Power)
reduction	Technologies	Ant1	Ant2	MIMO	Ant1	Ant2	MIMO
RCV-on	2.4 GHz 802.11b	17.97		21.16	12.49		15.44
RCV-on	2.4 GHz 802.11g	16.55		19.76	12.15		15.30
RCV-on	2.4 GHz 802.11n	16.61		19.55	11.94		15.38
RCV-on	2.4 GHz 802.11ax20	16.00		19.14	11.92		15.27
RCV-on	5 GHz 802.11a		15.99	19.23		9.50	12.97
RCV-on	5 GHz 802.11n 20 MHz		16.17	19.37		9.58	12.65
RCV-on	5 GHz 802.11n 40 MHz		13.57	16.81		8.77	12.45
RCV-on	5 GHz 802.11ac 20 MHz		16.15	19.29		9.62	12.94
RCV-on	5 GHz 802.11ac 40 MHz		13.72	16.81		8.90	12.91
RCV-on	5 GHz 802.11ac 80 MHz		11.77	14.65		10.60	13.12
RCV-on	5 GHz 802.11ax 20 MHz		16.88	20.30		9.69	13.08
RCV-on	5 GHz 802.11ax 40 MHz		15.13	18.42		9.21	13.01
RCV-on	5 GHz 802.11ax 80 MHz		13.37	16.32		9.80	13.41

#### **Power Measurement Verification for WLAN**



# Appendix I. – Down-link CA Power Measurement



## 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

Phone2	~ Phone1 ~	Di Channel TFC Pattern Channel Generation Band Channel Band	Input Level däm watth Output Level däm	ULRMC - Number of RBQ LLRMC, N This sets the transfer of Nils (Pensione Unit turbric signal	to alicensi her the	MT8821C 2008/00/18 18:34 8F Output : On OL 2005
PCC S	cc1° \$CC2 \$CC3 >>	Measurement	Signaling	SIE Po	wer : -21,4 dBm	
Common	● ▶ ★ Q		Occupied Bendwidth	Spectrum Eminium Mask	Nain Sales	A Home
Physical Channel	③ General	TX Power dim Freq. Err erre ppm EVM erres Normal			mendemental	C Preset
Carl	Frequency	TAM SHOWED	<b>O</b> 1		Sub Somer Top	Automatic
Fracessing	Level					Signal not
TX Measurement	🔊 Signat		AND THE A DESCRIPTION			-
6X Measurement	O LA RMC	Adjacent Channel Power In-Ban	d Entition Spectrum	Tiames 2004		Soger -
Fundamental Measurement	DE RMC					Continuous
STREET, STREET,	001 🕥	ON .				
Test Parameter				EVM. HARPE		<u>ldie</u>
		Phase Error Magnit	nude Error Coninellar	toor Throughput		Start Call
Band Definition						fretLet
totemai Losi						< Menu
System Config						S. Galla

SCC Setting: Channel/ RB/ BW/ Modulation and call Connection

Phone2	~	Phone1	~	DL Channel Activation on Operation Band Otermel Ben	Overal eventh Corput Laws Overal Corput Laws	This tab is used to configure parameters Canter on LTE-A. A Blue Dot in this tab indicates that the o configured.		MT8821C 2019/03/18 09:00 RF Output LOH DK 2003
PCC 5	cci 🛛	scci scci		Measurement	Signaling	UEF	ower: 22.1 dBm	
Common	۲	▶ ★	Q	Nameric	Occupied Bandwiath	Spectrum Emission Mark	Mentonen	A.
Physical Charnel	0	Frequency		TX Power 22.09 dBm Freq. Err 0.00 ppm			Anderertal	< Preset
(Shanne)	0	Lovel		EVM 3.45 %(mm)	00	0.	Top's	
	0	Signal						Measuring
	۲	UL RMC						Rx
	0	DL RMC		Adjacent Channel Power In-Ba	nd Emission Spectrum	Famess CVM		€+ Single
	۲	100						Continuous
								Connected
				Phase Error Maga	mule Imm Constellat	EvM (245 harms) tion (https://www.		
				i sanan i li s				Start Call
Band Definition								End Call
External Loss						S. 01		
System Config								C Menu



## 2CA Downlink Carrier aggregation Maximum conducted Powers

					PCC							SCC	C DL SCC DL SCC DL Power Ena	ower		
Combination	Band	BW	PCC UL Ch.	PCC UL Freq.	PCC DL Ch.	PCC DL Freq.	Modul ation	RB	RB offset	Band	BW	SCC DL Ch.		Carrier Tx		Delta (2)-(1 <b>)</b>
41A-41A	41	20	40620	2593	40620	2593	QPSK	1	49	41	20	41490	2680	23.33	23.27	-0.06
41C	41	20	40620	2593	40620	2593	QPSK	1	49	41	20	40818	2612.8	23.33	23.24	0.09



## LTE Down Link 3CA Call Setup

1) PCC Setting: Channel /RB/BW/Modulation

Phone2	Phone1 Ellipside Increased Increase Increased Increased Increase Increased Increase	DL Channel TPC Pattern Ch Operation Band Channel Band	Input Level andth Output Level and dBre	Channel Bandwidth () Existements This was the charmed bandwidth where charges the setting values of the s setting ranges of the UC BAC Fit, and DU		MT8821C 2019/08/18 13:36 NF duaput : CH DL 3COs
PCC SC	cc1 scc2 scc3 ++	Measurement	Signaling	UE P	ower: -21.5 dBm	
Common		Mameric	Occupied Bandwatti	Spectrum Emission Mask	Make Screen	A
Physical Channel	General	TX Power dBm Freq.Em -7.48 ppm EVM 111.69 %(ma)			Andariental	< Preset
ái	Frequency				Top	Reference of
Processing	Invel					Signal not.
Measurement	🔊 Signal	discussion of the second strength				- and state
RX Measurament	ULRMC	Adjacent Channel Power, In-Banc	t Emission Spectrum	Flatness EVM		Single
Fundamental Measurement	DL RMC					Continuous
	TOD	01				
Teat Parameter				EVM 111.69 Normal		
190000000000000000000000000000000000000		Phase Error Magnit	ude Errer Constellat	A DECEMBER OF A		٩.
1		Indianal A				Start Call
Band Definition						End Call
External Loss				<b>en</b>		
System Config						< Menu

2) SCC1 Setting: Channel /RB/BW/Modulation

Phone2	<	DL Channel Activation Operation Band Channel Bar	Output Identifi Datput Level	SCC-L/2/3/4/5 - Channel Bandwidth   BMICWEDTU_SCC1 This sets the SCC-L/2/304/5 channel for the cetting values of the SCC-L/2/204/5	nowith. When charging	MT8821C 2018/07/18 13:37 BT Output : On DL 2003
PEC	soca soca soca »>	Measurement	Signaling	UE	Power : -21.5 dBm	
Cummum		Numeric TX Fower ++++ dBm	Occupied Bandwidth	Spectrum Emission Mask	Main Screen	Home
Physical Channel	Trequency 701,500,000 MHz	Freq. En erste skornel	- On		Sub Simen	C Preset
	DL Chernel 3035 ch Frequency 731,500 000 MHz				Top	Measuring
	Operation Band 12 Frequency Separation	Adjacent Channel Power In-Ba	nd Emilian Spectrum	Turren EVM		€→ Single
	Level	On				Continuous
	Signal					Ittle
	ULRMC	Phase Error Macr	made Error	EVM ***** Some)		
	DL RMC					Shart Call
Band Definition	<b>2</b> TDD					End Call
Esternal Loss		MAR. AN		· ·		
System Config					ļ	< Menu



	Phone1 UII PLOTEMORY PL	DL Channel Activation Dependence Band Channel San	Output Or dwidth Close Close Close	The tab is used to configure parameters Carrier on LTE-A. A Blue Dot in this tab indicates that the configured.		A MT8821C 2015/03/18 08:55 RF Output : On DL JCCS
PCC s	sca sca sca »>	Measurement	Signaling	UE	Power : 21.8 dBm	
Common		Numeric	Occupied Bandwidth	Spectrum Emission Mark	ManScen	A Home
Physical	> Frequency	TX Power 21.81 dBm Freq. Err 0.01 ppm			Fundamental	< Preset
Osanrei	Level	EVM 4.07 %(rms)	01	on	Sub Scieer	
	Signal				Teo	Measurings.
	> DL RMC					Πα
	TDD	Adjacent Channel Power In-Bar	d Emission Spectrum	Ratness EVM		•> Single
		on d		EVM 4.07 Sorra		Continuous
		Phase Error Magn	fude Error Constella	bon Throughput		Start Call
Band Definition						C Sted Call
External Loss				Cn		
System: Config						< Mena

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

# 3CA Downlink Carrier aggregation Maximum conducted Powers

					PCC							SCC				SCC		Tx P	ower	
Combination	Band	BW	PCC UL Ch.	PCC UL Freq.	PCC DL Ch.	PCC DL Freq.	Modul ation	RB	RB offset	Band	BW	SCC DL Ch.	SCC DL Freq.	Band	BW	SCC DL Ch.	SCC DL Freq.	LTE Single Carrier Tx Power (dBm) (1)	Power	Delta (2)-(1 <b>)</b>
41D	41	20	40620	2593	40620	2593	QPSK	1	49	41	20	40818	2612.8	41	20	41016	2632.6	23.33	23.30	-0.03



## LTE Down Link 2CA 4x4 MIMO Call Setup

PCC Setting: Channel/ RB/ BW/ Modulation

Phone2 254 Automatic Act Phone1	Phone1 In entitient	DL Channel TPC Parts Control Operation Band Channel I	em Input Level Internet Internet Internet Internet Internet Internet Internet Input Level Internet Input Level Internet Input Level Internet Intere	This fails is used to configure Earnier on LTE-A. A Blue Dot in this tab indicat configured.	es that the comp		MT8821C 2020/06/25 1718 BT Cutput : CH DI; 2003 242/444
PCC S	cca scc2 scc3 >>	Measurement	Signaling		UE Pow	ver : 23.5 dBm	Mate Noat
Gammun		Fundamental ) Throughput			-	Main Screen	Home
Physical Chareval	Ø General	[kbps] 70050	MAC DL total MAC UL total			Flatdamental	C Preset
Call Processing	Frequency	63000			- Total - PCC - SCC1	Throughput	Measuring
TX Measurement	Level     Signal	49000			- SCC2 - SCC3 - SCC4	Target	1=
RX Measurement	Channel Coding RMC(D), CA1	42000			and the	Target(DL/VL)	•→ Single
Fundamental Measurement	Antenna Combination Distributed Antenna Configuration	28000			- Total - Total - PCC - SCCI	Time Scole	Continuina
Tert	-444 MIMO(TMG) Desentioning B Dis	14000					Corrected
Farameter	DCI Format for Single Antenna UA Propagation Matrix	7000					
	TS36521-1 81	208.5	[sec]	21	8.5		Start Call
Band Definition	(Channel Soc) (3/3/4 Geov/Phase) 025: 0.0 degree 025: 0.1: degree	Measurement Status DL	ENd.				End Cell
External Loss	0.25 0.0 degree 0.25 0.0 degree (Cheviel 2x/L/2/14 Gen/Phase)	Throughput (Total) PCC		x2 \$CC3			¢ Menu
System Config	6.25 00 degree 0.25 00 degree 0.25 1800 degree		NA365 Kops 31622 Kops Inning and La species as a	köps kö art -t			

SCC Setting: Channel/ RB/ BW/ Modulation and call Connection

Phone2 Sel Anteres ter Phone1	Phone1	DL Channel Activation Operation Band Channel Ba	Output Indexitth Output Level 08m	This tab is used to corrigue Earner on LTE-A. A Blue Dot in this tab indica configured.	tes that the car		MT8821C 2020/06/25 1716 If Output : On DL 2005 242/444
PCC 4	sca sca sca »>	Measurement	Signaling		UE Po	wer: 23.5 dBm	Mute Moat
Gamman		Fundamental > Throughput				Main Screen	A Line
Physical Charmel	Frequency	Rbps] 70000	MAC DL total MAC UL total			Fundamental	C Preset
	S tevel	63000			- Total - PCC - SCC1	Throughput	Measuring
	Signal Antonia Configuration act Model (Chevel Intl/2004 Gen/Prace) 0.25 UB degree 0.25 UB degree	56000 49000 35000 29000 21000 14000 7000 0 22250		23	- SCC2 - SCC3 - SCC4 - SCC5 - SCC5 - SCC7 - Total - PCC - SCC5 - SCC5 - SCC7 - Total - PCC - SCC5 - SCC5 - SCC6 - SCC7 - SCC6 - SCC7 - SCC6 - SCC7 - SCC6 - SCC6 - SCC7 - SCC6 - SCC7 - SCC6 - SCC6 - SCC7 - SCC6 - SCC6 - SCC7 - SCC6 - SCC7 - SCC6 - SCC7 - SCC6 - SCC6 - SCC7 - SCC6 - SCC7 - SCC6 - SCC6 - SCC7 - SCC6 - SCC6 - SCC7 - SCC6 - SCC7 - SCC6 - SCC6 - SCC6 - SCC7 - SCC6 - SCC6 - SCC6 - SCC7 - SCC6 - S	Target 44 Target(DU/U) 21/Add Time Scole	Ra Binge Continuna Continuna
Band Definition	0.25 -50.0 degree 0.25 -50.0 degree 0.25 -30.0 degree (Charter AbJ-20.4 Geo/Hane) 0.25 -50.0 degree	Measurement Status DL Throughput (Total)	[sec] End 55907 ettps (= 40	0/0 50			Start Call
External Loss System Config	0.25 -90.0 degree 0.25 -90.0 degree 0.25 -90.0 degree 0.25 90.0 degree	PCC Throughput 24		5C2 5CC3	<del>5.</del> •		© Menu



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

					PCC					SCC				Tx P	ower	
Combination	Band	BW	PCC UL Ch.	PCC UL Freq.	PCC DL Ch.	PCC DL Freq.	Modul ation	RB	RB offset	Band	BW	SCC DL Ch.	SCC DL Freq.	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled (dBm) (2)	Delta (2)-(1 <b>)</b>
[41A]-41A	41	20	40620	2593	40620	2593	QPSK	1	49	41	20	41490	2680	23.33	23.32	-0.01
41A-[41A]	41	20	40620	2593	40620	2593	QPSK	1	49	41	20	41490	2680	23.33	23.31	-0.02
[41A]-[41A]	41	20	40620	2593	40620	2593	QPSK	1	49	41	20	41490	2680	23.33	23.23	-0.10
[41C]	41	20	40620	2593	40620	2593	QPSK	1	49	41	20	40818	2612.8	23.33	23.28	0.05



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

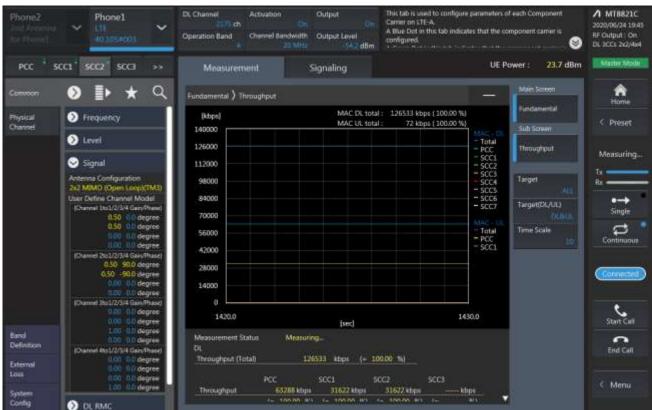
## PCC Setting: Channel /RB/BW/Modulation

Phone2 Stud American Ter Phone1	Phone1 LTE en ()Support	Operation Band Channel Ban	min dâm.	External Loss Main DL This sets the DL offset at the positive value. The argument value per internal tograit pon	Allain connecto to enables taitie		MT8821C 2030/06/24 19:45 #F Output: OH DL 3CCs 2/2/444
PCC. S	cc1 scc2 scc3 >>	Measurement	Signaling		UE Pow	ver : 23.7 dBm	Marile Mideo
Common	● ★ <	Fundamentai ) Throughput			-	Man Soner	A
Physical Channel	✓ Level Signal	Rtps] 140000	MAC DL total MAC UL total	: 126533 kbps (100.00 %) : 72 kbps (100.00 %)	MAZ-OL	fundamental Sub Screen	¢ Preset
Call Processing	Channel Coding SMC(DL CA)	126000			- Total - PCC - SCC1	Theoughput	Measuring
TX Measurement	Antervia Combination Individual Antervia Configuration	98000			- SCC2 - SCC3 - SCC4 - SCC5	Terget	
RX Measurement	444 MIMO(TM3) Beamforming	84000 70000			- \$006 - \$007	Target(DL/LL) DUIND	•→ Single
Fundamental Measurement	DCI Format for Single Antenna L Propagation Matrix	42000				Time Scale	Continuous
Test Parameter	1536.521-1.61 User Define Channel Model (Channel 2th/2/3/4 Gan/Phase) 0.25 (11) degree	28000					Connected
	025 02 degree 025 02 degree 025 00 degree 025 00 degree	13425	[sec]	13	12.5		Start Call
Band Definition External	025 00 degree 025 00 degree 025 1800 degree 025 1800 degree	Massurement Status DL Throughput (Total)	Measuring 126533 kbpc (+ 10)	100 %]			C End Call
Lina System Config	Channel Incl./2/1/6 Gam/Phase) 0.25 90.0 degree 0.25 -50.0 degree 0.25 90.0 degree		SOC1. SC 88 kbps 31622 kbps non en	C2 SCC3 31622.htps kb - 1991.htm == 1-	<u></u>		< Menu

SCC1 Setting: Channel /RB/BW/Modulation

Phone2 drug Antonna bin Phone b	Phonel.	UL Channel Activition Operation Band Channel Ban	dwidth Output Level	This fail is used to configure Carrier on LTE-A. A Blue Dot in this fait indicat configured.	es that the cor		▲ MT8821C 2020/06/24 19:45 IO Output I De DL 30Cs 262/464
PCC S	sca sca sca +>	Measurement	Signaling		UE Po	wer) 237 d8m	. Master Mode
Common	● ▶ ★ <	Fundamental ) Throughput				Main Screen	A Horma
Physical Channel	Frequency	[kitps]	MAC DL total MAC UL total			Fundamental Sub Screem	< Preset
14454355	Level	140000			- Total - PCC	Throughput	
	😔 Signal	112000			- SCC1 - SCC2 - SCC3		Measuring
	Actenna Configuration 2x2 MIMO (Open Loop)(TM3) User Define Channel Model	96000			- SCC4 - SCC5 - SCC6	Target ALL	<b>R</b>
	(Chartoni 1351/2/3/4 Clam/Phase) 0.50 0.11 degree	70000			- SCC7	Target(DL/UL)	Single
	0.50 Bill degree 1.00 Bill degree	56000			- Total - PCC	Time Scale	Continuous
	100 00 degree (Channel 2ts:1/2/3/4 Gam/Phase) 0.50 50.0 degree	42000			- SCC1		
	0.50 -50.0 degree	28000					Conected
	U10_UU degree Klowel 3h/1/2/3/4 Gen/Photel	0					
	100 0.0 degree 000 0.0 degree 100 0.0 degree	1402.5	[100]	141	2.5		Start Call
Band Definition	ICED II.II degree ICheviel 4101/2/3/4 Gan/Phase		Measuring				End Call
External	100 00 degree	Throughput (Total)	126533 kbpt (= 10				
System Config	O UL RMC		SCC3 SC 88 khps 51622 khps and sc 1, the Ad at 1,	C2 SCC3 31672 Maps kts - Trends W1 1_	<u>ps.</u>		< Menu





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

## LTE Downlink 3CA 4X4 MIMO Maximum Conducted Power

					PCC							SCC				SCC		Tx P	ower	
Combination	Band	BW	PCC UL Ch.	PCC UL Freq.	PCC DL Ch.	PCC DL Freq.	Modul ation	RB	RB offset	Band	BW	SCC DL Ch.	SCC DL Freq.	Band		SCC DL Ch.		LTE Single Carrier Tx Power (dBm) (1)	Power	Delta (2)-(1 <b>)</b>
[41D]	41	20	40620	2593	40620	2593	QPSK	1	49	41	20	40818	2612.8	41	20	41016	2632.6	23.33	23.24	-0.09