

Annex F LTE CA data

Appendix to Test Report No.: 1-6965/13-14-02-E



Testing Laboratory

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Accredited Test Laboratory:

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)

The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01

Annex F presents the measurement setup for LTE Carrier Aggregation conducted measurements and detailed test results as they were provided by the customer.

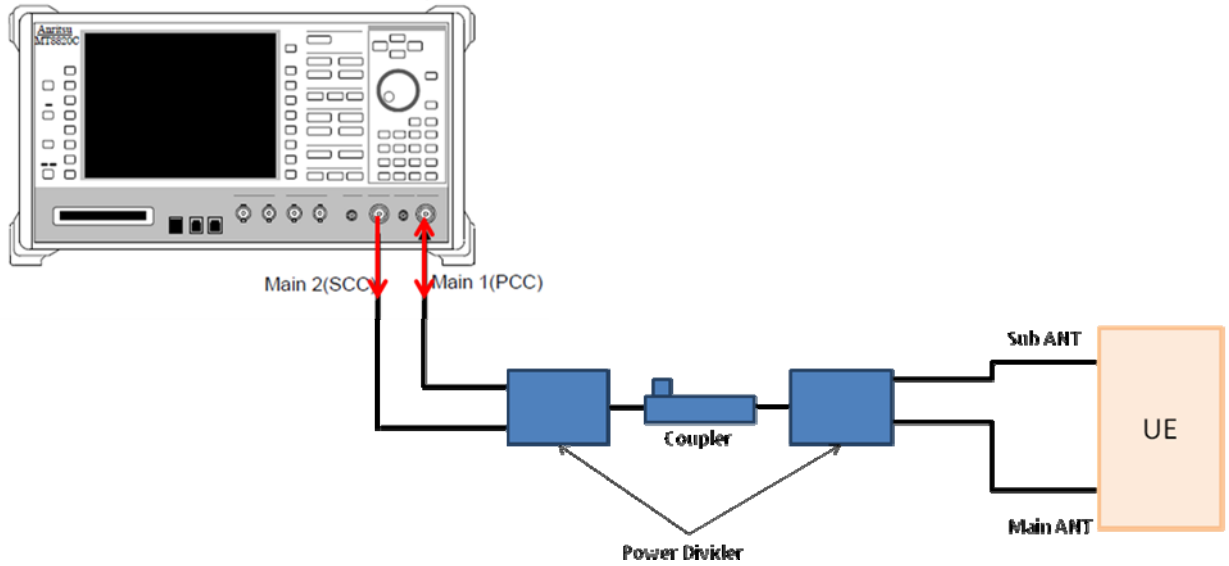
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1.1 Description of measurement

Measurement setup for output power measurement

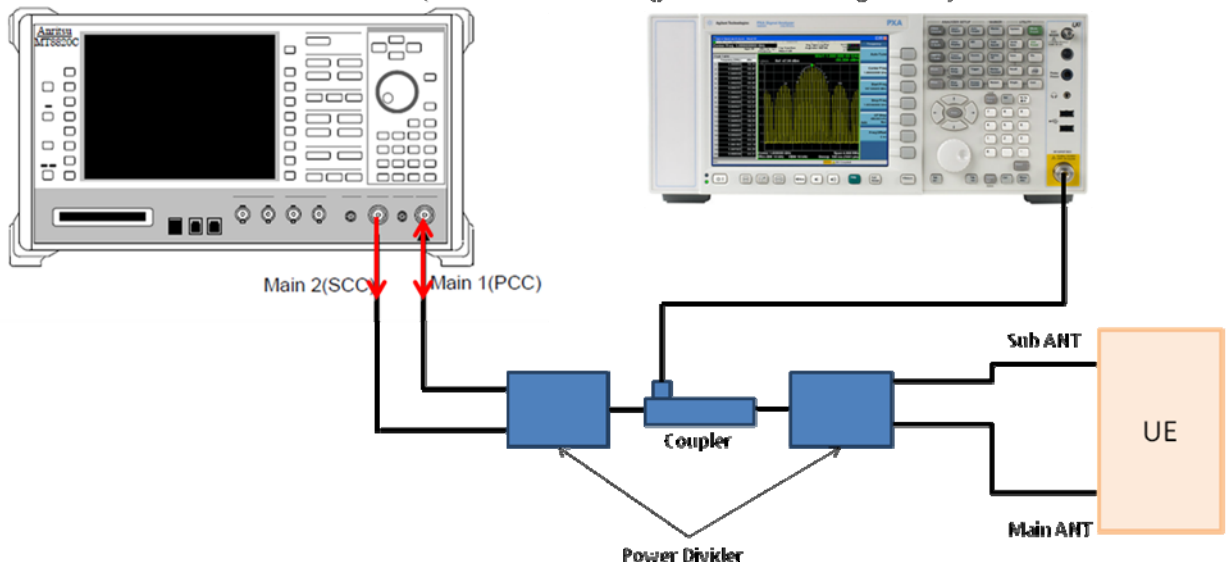
Anritsu MT8820C Radio Communication Analyzer



Measurement setup for DL spectrum

Anritsu MT8820C Radio Communication Analyzer

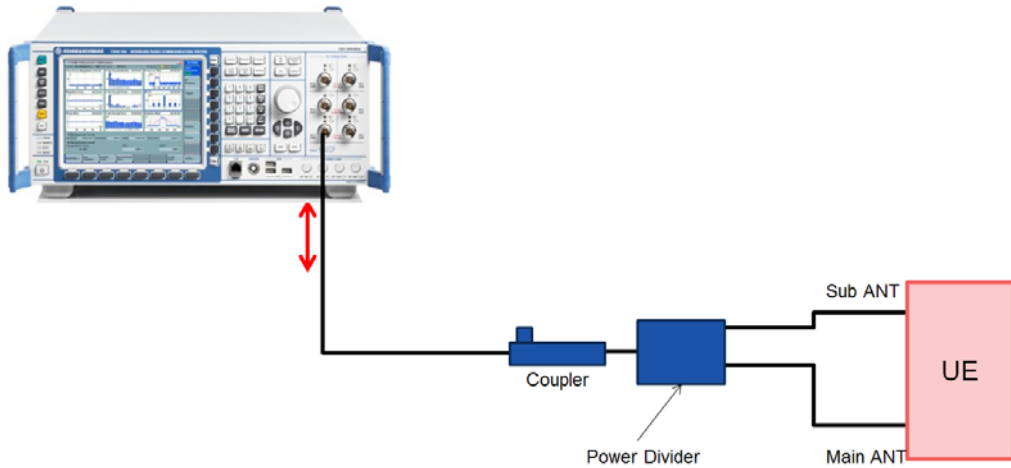
Agilent PXA N9030A Signal Analyzer



Alternatively a R&S CMW 500 was used as shown in the in the following

Measurement Setup for Output power measurement

R&S CMW 500 Radio Communication Tester



Measurement Setup for DL spectrum

R&S CMW 500 Radio Communication Tester

Agilent PSA E4445A Spectrum Analyzer

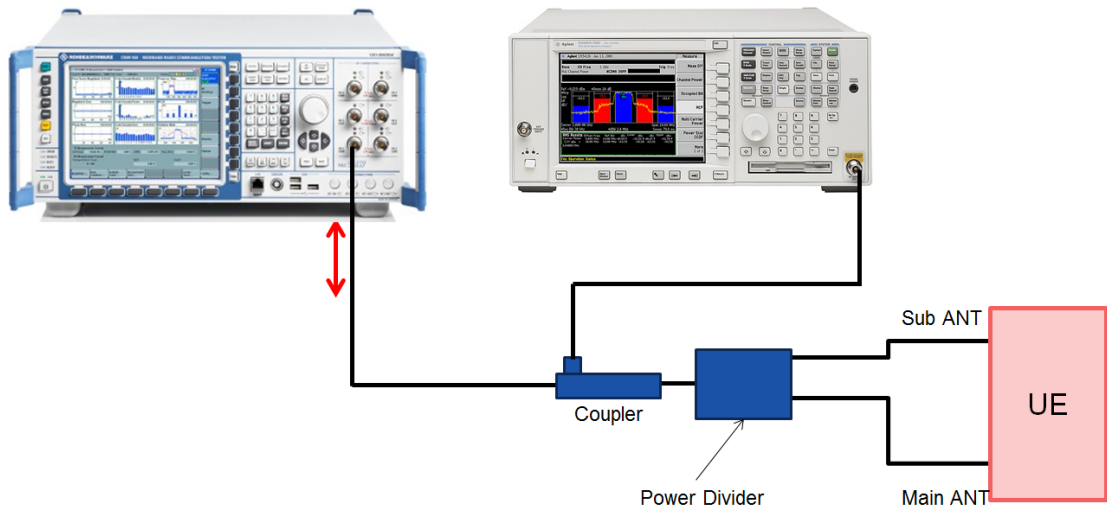


Photo 1/2

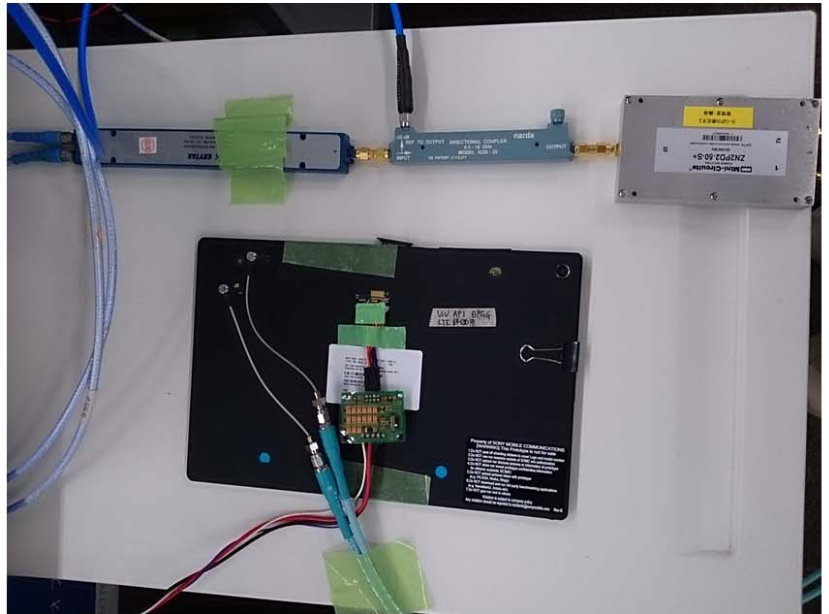
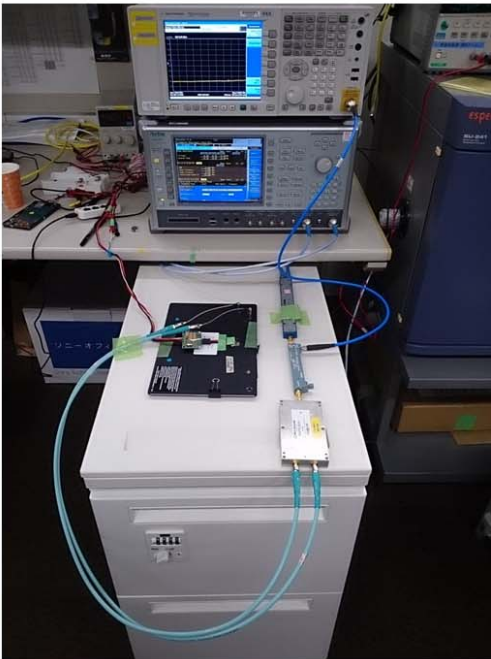
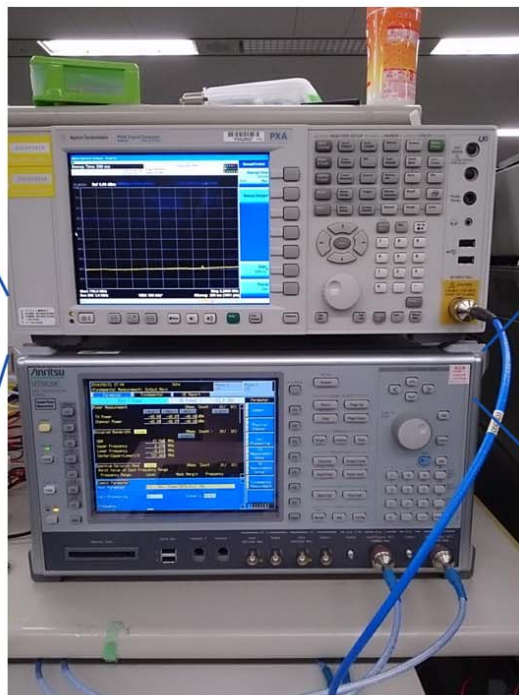


Photo 2/2



1.2 LTE – Carrier Aggregation B4 with second downlink carrier B13

1.2.1 LTE – Carrier Aggregation B4 - B13 – Conducted Power

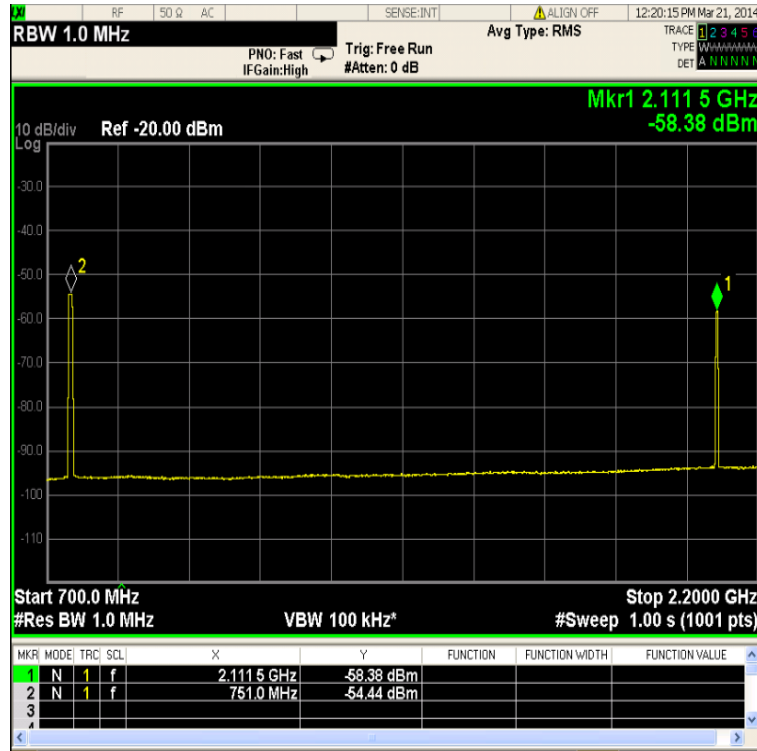
BW [MHz]	Channel / Frequency [MHz]	Resource block allocation	Output Power (conducted_CA)			Output Power (Conducted_Non-CA)		Deviation (nonCA - CA) [dB]	
			Average Output Power [dBm]	Average Output Power [dBm]	SCC setting (band 13)	Average Output Power [dBm]	Average Output Power [dBm]	QPSK	16-QAM
			QPSK	16-QAM		QPSK	16-QAM		
5	19975 / 1712.5	100% RB	22.1	21.0	10 MHz BW 100% RB	22.2	21.1	0.1	0.1
	20175 / 1732.5	100% RB	21.7	20.8	10 MHz BW 100% RB	21.8	20.8	0.1	0.0
	20375 / 1752.5	100% RB	22.0	21.0	10 MHz BW 100% RB	22.1	21.2	0.1	0.2
10	20000 / 1715.0	100% RB	22.1	21.1	10 MHz BW 100% RB	22.2	21.1	0.1	0.0
	20175 / 1732.5	100% RB	21.8	20.8	10 MHz BW 100% RB	21.8	20.9	0.0	0.1
	20350 / 1750.0	100% RB	22.1	20.9	10 MHz BW 100% RB	22.1	21.1	0.0	0.2

Table 1: Results for LTE B4 default power.

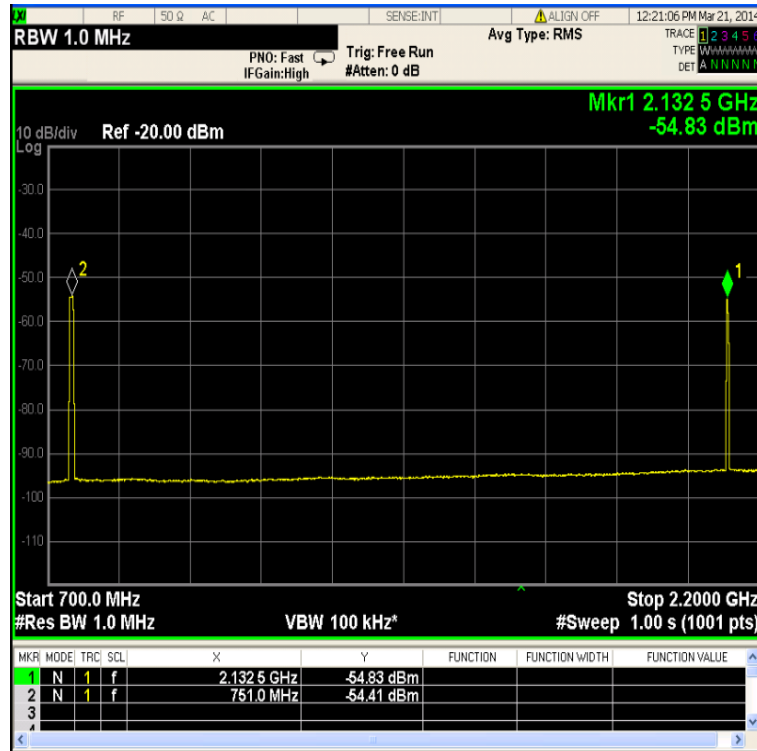
BW [MHz]	Channel / Frequency [MHz]	Resource block allocation	Output Power (conducted_CA)			Output Power (Conducted_Non-CA)		Deviation (nonCA - CA) [dB]	
			Average Output Power [dBm]	Average Output Power [dBm]	SCC setting (band 13)	Average Output Power [dBm]	Average Output Power [dBm]	QPSK	16-QAM
			QPSK	16-QAM		QPSK	16-QAM		
5	19975 / 1712.5	100% RB	13.0	13.1	10 MHz BW 100% RB	12.5	12.6	-0.5	-0.5
	20175 / 1732.5	100% RB	13.0	13.0	10 MHz BW 100% RB	12.5	12.5	-0.5	-0.5
	20375 / 1752.5	100% RB	13.1	13.1	10 MHz BW 100% RB	12.6	12.6	-0.5	-0.5
10	20000 / 1715.0	100% RB	13.2	13.2	10 MHz BW 100% RB	12.7	12.7	-0.5	-0.5
	20175 / 1732.5	100% RB	13.2	13.0	10 MHz BW 100% RB	12.7	12.5	-0.5	-0.5
	20350 / 1750.0	100% RB	13.3	13.2	10 MHz BW 100% RB	12.8	12.7	-0.5	-0.5

Table 2: Results for LTE B4 back off power.

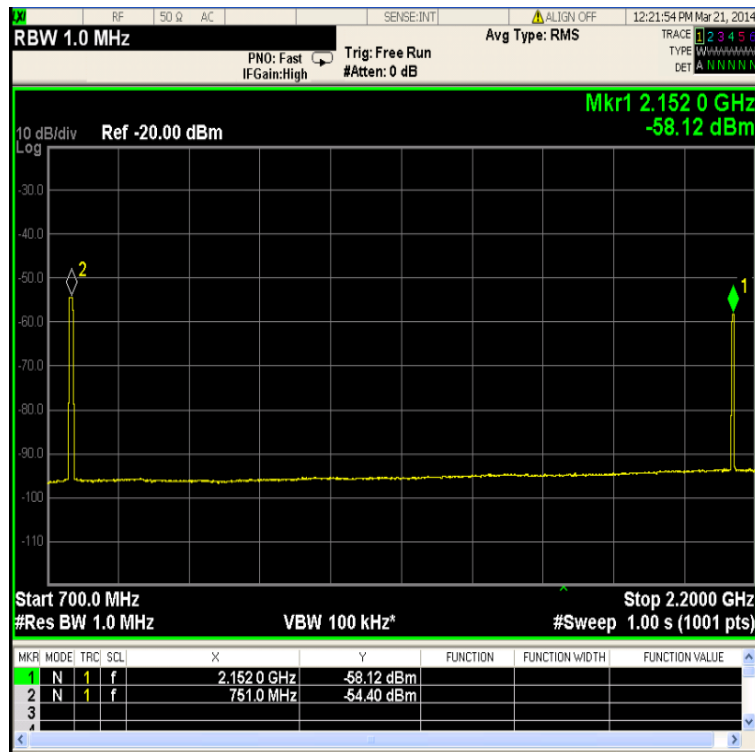
1.2.2 LTE – Carrier Aggregation B4 - B13 – Spectrums



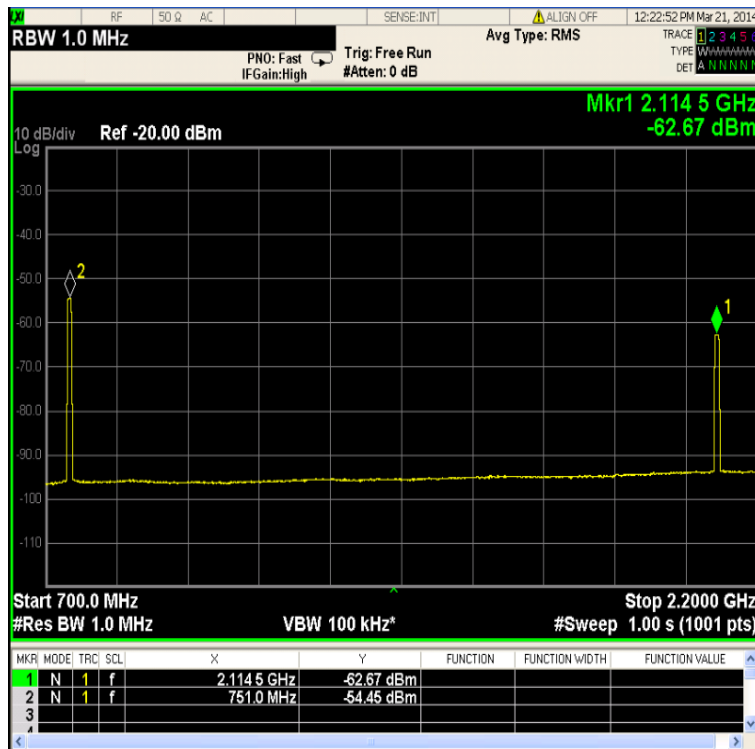
PCC: B4 5MHz Low channel
SCC: B13 10MHz



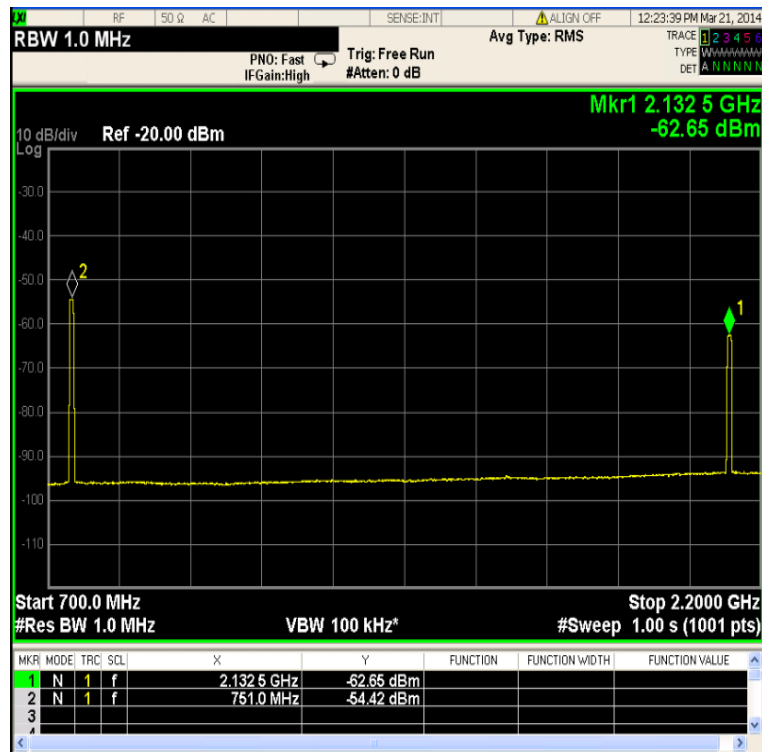
PCC: B4 5MHz Middle channel
SCC: B13 10MHz



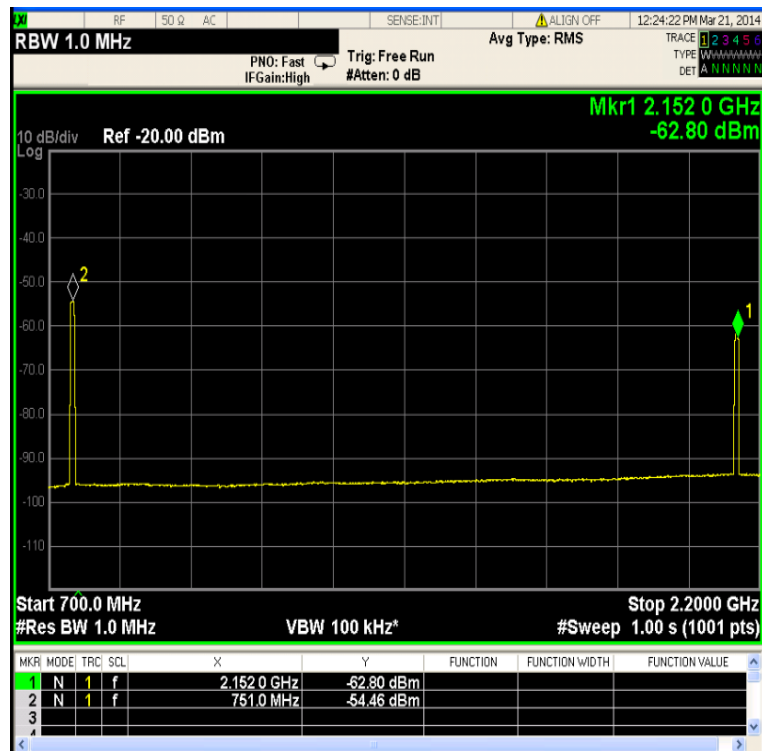
PCC: B4 5MHz High channel
 SCC: B13 10MHz



PCC: B4 10MHz Low channel
 SCC: B13 10MHz



PCC: B4 10MHz Middle channel
SCC: B13 10MHz



PCC: B4 10MHz High channel
SCC: B13 10MHz

1.2.3 LTE – Carrier Aggregation B4 - B13 – Base station simulator settings

The following plots show the radio communication tester settings (Anritsu MT8820C) for the configuration that produced the highest output power with LTE B4 + B13.

PCC: LTE FDD 4 with 10MHz BW at low channel 20000 (1715.0 MHz) and RB allocation 100%

2014/03/21 10:39 Connected Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main
 Parameter Fundamental UE Report Band Cal
 End - Pass UE Power : 21,9 dBm
Frequency
 Frame Structure FDD
 Channel Bandwidth 10MHz
 UL Channel & Frequency 20000 CH = 1715.000000 MHz
 DL Channel & Frequency 2000 CH = 2115.000000 MHz
 Operation Band 4
 Frequency Separation (400)MHz
Level
 Input Level 30.0 dBm
 Output Level -50.0 dBm(Total) -77.8 dBm/15kHz(EPRP) On
 AWGN Level -20.0 dB Off
 External Loss On
 Main UL 10.2 dB
 Main DL 10.2 dB
 AUX 0.0 dB
Signal
 Channel Coding RMC(DL CA - PCC)
 Antenna Configuration Single Antenna
 DCI Format for Single Antenna 1A
 Propagation Matrix None

Connection settings

2014/03/21 10:40 Connected Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main
 Parameter Fundamental UE Report
 End - Pass UE Power : 20,7 dBm
DL Carrier Aggregation
 PCC
 Channel Bandwidth 5MHz
 UL Channel 20000 CH
 UL RMC
 Number of RB 20
 Starting RB
 Modulation TBS Index TBS
 MCS Index (5) (5) (5) (2216)
 SCC-1
 Channel Bandwidth 10MHz
 DL Channel 5230 CH = (751.000000)MHz
 Operation Band (13)
 DL RMC
 Number of RB 50 Aggregation Level
 Subframe Modulation TBS Index TBS SI-RNTI C-RNTI
 MCS Index (1-4,6-9) 5 (QPSK) (5) (4382) - 8
 MCS Index (5) 5 (QPSK) (5) (4008) 8 -
 MCS Index (0) 5 (QPSK) (5) (4382) - 8
 MCS Index (-) (N/A) (-----) (---) (-----) - -
 Packet Parameter

Bandwidth-settings

2014/03/21 10:39		Connected		Phone-2	Phone-1		
<Fundamental Measurement> Output Main				LTE	LTE		
Parameter	Fundamental	UE Report					
End - Pass		UE Power :		21,8 dBm			
Signal				Parameter			
Channel Coding	RMC(DL CA - PCC)			Common			
Antenna Configuration	Single Antenna			Physical Channel			
DCI Format for Single Antenna	1A			Call Processing			
Propagation Matrix	None			TX Measurement Setup			
RMC Configuration	PUSCH			RX Measurement Setup			
UE Category	6			Fundamental Measurement			
DTCH Data Pattern	MAC Padding Bits						
UL RMC							
Number of RB	50						
Starting RB	0	Aggregation Level					
		Modulation	TBS Index	TBS	C-RNTI		
MCS Index	5 (QPSK)	(5)	(4392)	8			
64QAM	Disabled						
DL RMC							
Number of RB	50						
Starting RB	0	Aggregation Level					
		Subframe	Modulation	TBS Index	TBS	SI-RNTI	C-RNTI
MCS Index	(1-4,6-9)	5 (QPSK)	(5)	(4392)	-	8	
MCS Index	(5)	5 (QPSK)	(5)	(4008)	8	-	
MCS Index	(0)	5 (QPSK)	(5)	(4392)	-	8	
MCS Index	(-)	(N/A) (-----)	(--)	(-----)	-	-	

QPSK

2014/03/21 10:39		Connected		Phone-2	Phone-1		
<Fundamental Measurement> Output Main				LTE	LTE		
Parameter	Fundamental	UE Report					
End - Pass		UE Power :		20,8 dBm			
Signal				Parameter			
Channel Coding	RMC(DL CA - PCC)			Common			
Antenna Configuration	Single Antenna			Physical Channel			
DCI Format for Single Antenna	1A			Call Processing			
Propagation Matrix	None			TX Measurement Setup			
RMC Configuration	PUSCH			RX Measurement Setup			
UE Category	6			Fundamental Measurement			
DTCH Data Pattern	MAC Padding Bits						
UL RMC							
Number of RB	50						
Starting RB	0	Aggregation Level					
		Modulation	TBS Index	TBS	C-RNTI		
MCS Index	12 16QAM	(11)	(9912)	8			
64QAM	Disabled						
DL RMC							
Number of RB	50						
Starting RB	0	Aggregation Level					
		Subframe	Modulation	TBS Index	TBS	SI-RNTI	C-RNTI
MCS Index	(1-4,6-9)	5 (QPSK)	(5)	(4392)	-	8	
MCS Index	(5)	5 (QPSK)	(5)	(4008)	8	-	
MCS Index	(0)	5 (QPSK)	(5)	(4392)	-	8	
MCS Index	(-)	(N/A) (-----)	(--)	(-----)	-	-	

16-QAM

SCC: LTE Band 13 with 10MHz BW and RB allocation 100%

2014/03/21 10:40 Off Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main

Parameter Fundamental UE Report
 UE Power : 20,7 dBm

Frequency
 Frame Structure FDD
 Channel Bandwidth 10MHz
 UL Channel & Frequency 23230 CH = 1715.000000 MHz
 DL Channel & Frequency 5230 CH = 751.000000 MHz
 Operation Band 13
 Frequency Separation (-31)MHz

Level
 Input Level 30,0 dBm
 Output Level -50,0 dBm(Total) -77,8 dBm/15kHz(EPRE) On
 AWGN Level -20,0 dB Off
 External Loss On
 Main UL 10,2 dB
 Main DL 10,2 dB
 AUX 0,0 dB

Signal
 Channel Coding RMC(DL CA - SCC)
 Antenna Configuration Single Antenna
 DCI Format for Single Antenna 1A
 Propagation Matrix None

1 2 3 4

SCC-Output settings

2014/03/21 10:40 Off Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main

Parameter Fundamental UE Report Band Cal
 UE Power : 20,8 dBm

Signal
 Channel Coding RMC(DL CA - SCC)
 Antenna Configuration Single Antenna
 DCI Format for Single Antenna 1A
 Propagation Matrix None
 RMC Configuration PUSCH
 UE Category 6
 DTCH Data Pattern MAC Padding Bits
 UL RMC
 Number of RB 50
 Starting RB 0 Aggregation Level

MCS Index	Modulation	TBS Index	TBS	C-RNTI
5	QPSK	(5)	(4392)	8
64QAM	Disabled			

DL RMC
 Number of RB 50
 Starting RB 0 Aggregation Level

Subframe	MCS Index	Modulation	TBS Index	TBS	SI-RNTI	C-RNTI
(1-4,6-9)	5	(QPSK)	(5)	(4392)	-	8
(5)	5	(QPSK)	(5)	(4008)	-	-
(0)	5	(QPSK)	(5)	(4392)	-	8
(-)	(N/A)	(-----)	(-)	(-----)	-	-

1 2 3 4

SCC-Connection settings

2014/03/21 10:40 Off Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main

Parameter Fundamental UE Report Band Cal.

UE Power : 20,8 dBm

DL Carrier Aggregation

PCC

Channel Bandwidth 10MHz
 UL Channel 20000 CH
 UL RMC
 Number of RB 50
 Starting RB 0

Modulation TBS Index TBS
 MCS Index 5 QPSK (5) (4392)

SCC-1

Channel Bandwidth 5MHz
 DL Channel CH=(2159,800000)MHz
 Operation Band (1)
 DL RMC

Number of RB Aggregation Level

Subframe	Modulation	TBS Index	TBS	SI-RNTI	C-RNTI
MCS Index (1-4,6-9)	(QPSK)	(5)	(2216)	-	4
MCS Index (5)	(QPSK)	(5)	(1864)	4	-
MCS Index (0)	(QPSK)	(5)	(2216)	-	4
MCS Index (-)	(N/A) (-----)	(--)	(-----)	-	-

Packet Parameter

1 2 3 4

QPSK

2014/03/21 10:41 Off Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main

Parameter Fundamental UE Report Band Cal.

UE Power : 20,8 dBm

DL Carrier Aggregation

PCC

Channel Bandwidth 10MHz
 UL Channel 20000 CH
 UL RMC
 Number of RB 50
 Starting RB 0

Modulation TBS Index TBS
 MCS Index 12 16QAM (11) (9912)

SCC-1

Channel Bandwidth 5MHz
 DL Channel CH=(2159,800000)MHz
 Operation Band (1)
 DL RMC

Number of RB Aggregation Level

Subframe	Modulation	TBS Index	TBS	SI-RNTI	C-RNTI
MCS Index (1-4,6-9)	(QPSK)	(5)	(2216)	-	4
MCS Index (5)	(QPSK)	(5)	(1864)	4	-
MCS Index (0)	(QPSK)	(5)	(2216)	-	4
MCS Index (-)	(N/A) (-----)	(--)	(-----)	-	-

Packet Parameter

1 2 3 4

16-QAM

Results:

2014/03/21 10:39		Connected		Phone-2	Phone-1
<Fundamental Measurement> Output Main				LTE	LTE
Parameter	Fundamental	UE Report		Band Cal.	
End - Pass		UE Power :		21,8 dBm	
Power Measurement		(Meas. Count : 10/ 10)		Fundamental	
	Avg.	Max.	Min.	Limit	
TX Power	22,08	22,12	22,02	dBm 19,3 to 25,7 dBm	
Channel Power	22,08	22,12	22,02	dBm	
Throughput		End			
DL		Limit			
Throughput(Total)	7906	kbps (= 100,00 %)			
PCC					
Throughput	3953	kbps (= 100,00 %)			
(Code Word 0)		kbps (= %)			
(Code Word 1)		kbps (= %)			
Block Error Rate	0,0000				
	0,00E+00				
Error Count	0				
	(NACK 0 DTX 0)				
Transmitted/Sample	2007 /	2000 Block			
SCC-1					
Throughput	3953	kbps (= 100,00 %)			
(Code Word 0)		kbps (= %)			
(Code Word 1)		kbps (= %)			
Block Error Rate	0,0000				

Default power (QPSK)

2014/03/21 10:41		Connected		Phone-2	Phone-1
<Fundamental Measurement> Output Main				LTE	LTE
Parameter	Fundamental	UE Report		Band Cal.	
End - Pass		UE Power :		20,8 dBm	
Power Measurement		(Meas. Count : 10/ 10)		Fundamental	
	Avg.	Max.	Min.	Limit	
TX Power	21,10	21,13	21,04	dBm 19,3 to 25,7 dBm	
Channel Power	21,08	21,12	21,04	dBm	
Throughput		End			
DL		Limit			
Throughput(Total)	7906	kbps (= 100,00 %)			
PCC					
Throughput	3953	kbps (= 100,00 %)			
(Code Word 0)		kbps (= %)			
(Code Word 1)		kbps (= %)			
Block Error Rate	0,0000				
	0,00E+00				
Error Count	0				
	(NACK 0 DTX 0)				
Transmitted/Sample	2007 /	2000 Block			
SCC-1					
Throughput	3953	kbps (= 100,00 %)			
(Code Word 0)		kbps (= %)			
(Code Word 1)		kbps (= %)			
Block Error Rate	0,0000				

Default power (16-QAM)

2014/03/21 15:37		Connected		Phone-2	Phone-1
<Fundamental Measurement>		Output Main	Single	LTE	LTE
Parameter	Fundamental	UE Report			
Measuring		UE Power :		13,1 dBm	
Power Measurement		(Meas. Count : 10/ 10)			
		Avg.	Max.	Min.	Limit
TX Power		13.37	13.38	13.36	dBm 19.3 to 25.7 dBm
Channel Power		13.37	13.38	13.36	dBm
Throughput		End			
DL		Limit			
Throughput(Total)		7906	kbps (= 100.00 %)		
PCC					
Throughput		3953	kbps (= 100.00 %)		
(Code Word 0)			kbps (= ----- %)		
(Code Word 1)			kbps (= ----- %)		
Block Error Rate		0.0000			
Error Count		0.00E+00			
		(NACK 0 DTX 0)			
Transmitted/Sample		1728	/ 2000 Block		
SCC-1					
Throughput		3953	kbps (= 100.00 %)		
(Code Word 0)			kbps (= ----- %)		
(Code Word 1)			kbps (= ----- %)		
Block Error Rate		0.0000			

Power back off (QPSK)

2014/03/21 15:38		Connected		Phone-2	Phone-1
<Fundamental Measurement>		Output Main	Single	LTE	LTE
Parameter	Fundamental	UE Report			
Measuring		UE Power :		12,9 dBm	
Power Measurement		(Meas. Count : 10/ 10)			
		Avg.	Max.	Min.	Limit
TX Power		13.19	13.22	13.14	dBm 19.3 to 25.7 dBm
Channel Power		13.19	13.22	13.13	dBm
Throughput		End			
DL		Limit			
Throughput(Total)		7906	kbps (= 100.00 %)		
PCC					
Throughput		3953	kbps (= 100.00 %)		
(Code Word 0)			kbps (= ----- %)		
(Code Word 1)			kbps (= ----- %)		
Block Error Rate		0.0000			
Error Count		0.00E+00			
		(NACK 0 DTX 0)			
Transmitted/Sample		1728	/ 2000 Block		
SCC-1					
Throughput		3953	kbps (= 100.00 %)		
(Code Word 0)			kbps (= ----- %)		
(Code Word 1)			kbps (= ----- %)		
Block Error Rate		0.0000			

Power back off (16-QAM)

1.3 LTE – Carrier Aggregation B13 with second downlink carrier B4

1.3.1 LTE – Carrier Aggregation B13 - B4 – Conducted Power

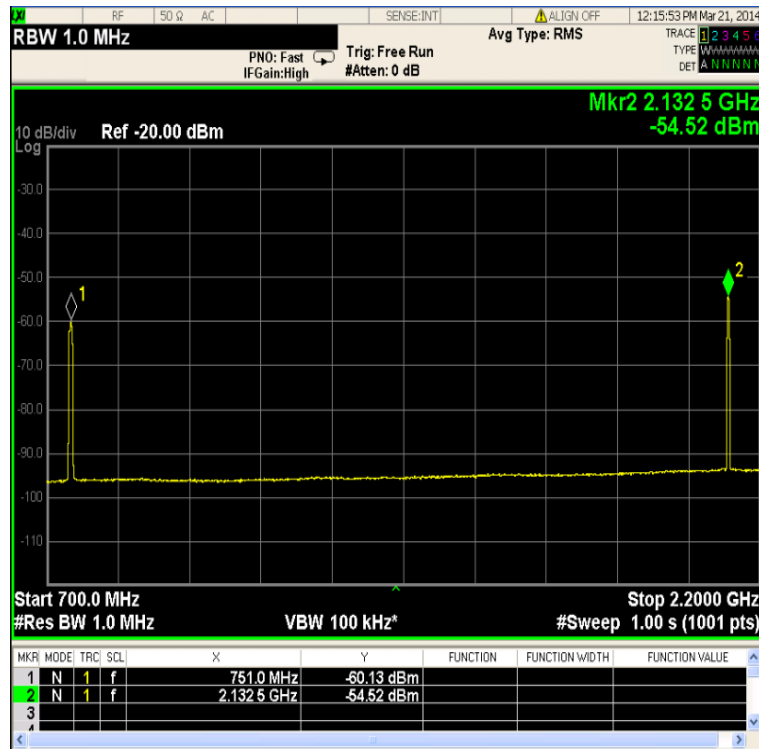
BW [MHz]	Channel / Frequency [MHz]	Resource block allocation	Output Power (conducted_CA)			Output Power (Conducted_Non-CA)		Deviation (nonCA - CA) [dB]	
			Average Output Power [dBm]	Average Output Power [dBm]	SCC setting (band 13)	Average Output Power [dBm]	Average Output Power [dBm]	QPSK	16-QAM
			QPSK	16-QAM		QPSK	16-QAM		
10	23230 / 782	100% RB	21.9	21.0	5 MHz BW 100% RB	22.3	21.3	0.4	0.3
	23230 / 782	100% RB	21.9	21.0	10 MHz BW 100% RB	22.3	21.3	0.4	0.3

Table 3: Results for LTE B13 default power.

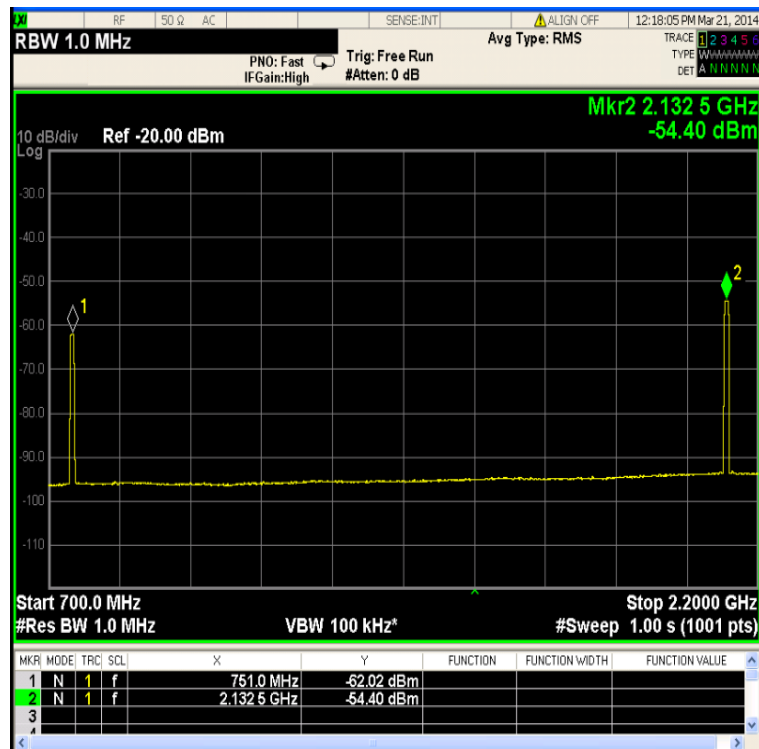
BW [MHz]	Channel / Frequency [MHz]	Resource block allocation	Output Power (conducted_CA)			Output Power (Conducted_Non-CA)		Deviation (nonCA - CA) [dB]	
			Average Output Power [dBm]	Average Output Power [dBm]	SCC setting (band 13)	Average Output Power [dBm]	Average Output Power [dBm]	QPSK	16-QAM
			QPSK	16-QAM		QPSK	16-QAM		
10	23230 / 782	100% RB	18.9	19.0	5 MHz BW 100% RB	19.1	19.1	0.2	0.1
	23230 / 782	100% RB	18.9	19.0	10 MHz BW 100% RB	19.1	19.1	0.2	0.1

Table 4: Results for LTE B13 back off power.

1.3.2 LTE – Carrier Aggregation B13 - B4 – Spectrums



PCC: B13 10MHz Middle channel
SCC: B4 5MHz



PCC: B13 10MHz Middle channel
SCC: B4 10MHz

1.3.3 LTE – Carrier Aggregation B13 – B4 – Base station simulator settings

The following plots show the radio communication tester settings (Anritsu MT8820C) for the configuration that produced the highest output power with LTE B13 + B4.

PCC: LTE FDD 13 with 10MHz BW at middle channel 23230 (782.0 MHz) and RB allocation 100%

2014/03/21 09:49 Connected Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main Continuous
 Parameter Fundamental UE Report Band Cal
Measuring UE Power : 20.7 dBm
 Frequency
 Frame Structure FDD
 Channel Bandwidth 10MHz
 UL Channel & Frequency 23230 CH = 782.000000 MHz
 DL Channel & Frequency 5230 CH = 751.000000 MHz
 Operation Band 13
 Frequency Separation (-31)MHz
 Level
 Input Level 30.0 dBm
 Output Level -50.0 dBm(Total) -77.8 dBm/15kHz(EPRE) On
 AWGN Level -20.0 dB Off
 External Loss On
 Main UL 10.2 dB
 Main DL 10.2 dB
 AUX 0.0 dB
 Signal
 Channel Coding RMC(DL CA - PCC)
 Antenna Configuration Single Antenna
 DCI Format for Single Antenna 1A
 Propagation Matrix None

Connection settings

2014/03/21 09:50 Connected Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main Continuous
 Parameter Fundamental UE Report
Measuring UE Power : 20.7 dBm
 DL Carrier Aggregation
 PCC
 Channel Bandwidth 10MHz
 UL Channel 18900 CH
 UL RMC
 Number of RB
 Starting RB
 Modulation TBS Index TBS
 MCS Index 5 (5) (2216)
 SCC-1
 Channel Bandwidth 10MHz
 DL Channel 2175 CH=(2132.500000)MHz
 Operation Band (4)
 DL RMC
 Number of RB 50 Aggregation Level
 Subframe Modulation TBS Index TBS SI-RNTI C-RNTI
 MCS Index (1-4, 6-9) 5 (QPSK) (5) (4392) - 8
 MCS Index (5) 5 (QPSK) (5) (4008) 8 -
 MCS Index (0) 5 (QPSK) (5) (4392) - 8
 MCS Index (-) (N/A) (-----) (---) (-----) - -
 Packet Parameter

Bandwidth-settings

2014/03/21 09:50		Connected	Phone-2	Phone-1
<Fundamental Measurement> Output Main		Continuous	LTE	LTE
Parameter	Fundamental	UE Report	Band Cal.	
Measuring		UE Power :	21.7 dBm	
Signal				
Channel Coding	RMC(DL CA - PCC)			
Antenna Configuration	Single Antenna			
DCI Format for Single Antenna	1A			
Propagation Matrix	None			
RMC Configuration	PUSCH			
UE Category	6			
DTCH Data Pattern	MAC Padding Bits			
UL RMC				
Number of RB	50			
Starting RB	0	Aggregation Level		
		Modulation TBS Index TBS C-RNTI		
MCS Index	5 QPSK	(5) (4392) 8		
64QAM	Disabled			
DL RMC				
Number of RB	50			
Starting RB	0	Aggregation Level		
		Subframe Modulation TBS Index TBS SI-RNTI C-RNTI		
MCS Index (1-4,6-9)	5 (QPSK)	(5) (4392) - 8		
MCS Index (5)	5 (QPSK)	(5) (4008) 8 -		
MCS Index (0)	5 (QPSK)	(5) (4392) - 8		
MCS Index (-)	(N/A) (-----)	(--) (-----) - -		

QPSK

2014/03/21 09:50		Connected	Phone-2	Phone-1
<Fundamental Measurement> Output Main		Continuous	LTE	LTE
Parameter	Fundamental	UE Report	Band Cal.	
Measuring		UE Power :	20.7 dBm	
Signal				
Channel Coding	RMC(DL CA - PCC)			
Antenna Configuration	Single Antenna			
DCI Format for Single Antenna	1A			
Propagation Matrix	None			
RMC Configuration	PUSCH			
UE Category	6			
DTCH Data Pattern	MAC Padding Bits			
UL RMC				
Number of RB	50			
Starting RB	0	Aggregation Level		
		Modulation TBS Index TBS C-RNTI		
MCS Index	12 16QAM	(11) (9912) 8		
64QAM	Disabled			
DL RMC				
Number of RB	50			
Starting RB	0	Aggregation Level		
		Subframe Modulation TBS Index TBS SI-RNTI C-RNTI		
MCS Index (1-4,6-9)	5 (QPSK)	(5) (4392) - 8		
MCS Index (5)	5 (QPSK)	(5) (4008) 8 -		
MCS Index (0)	5 (QPSK)	(5) (4392) - 8		
MCS Index (-)	(N/A) (-----)	(--) (-----) - -		

16-QAM

SCC: LTE Band 4 with 10MHz BW and RB allocation 100%

2014/03/21 09:50 Off Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main

Parameter Fundamental UE Report
 UE Power : 20,7 dBm

Frequency		
Frame Structure	FDD	
Channel Bandwidth	10MHz	
UL Channel & Frequency	20175	CH = 782.000000 MHz
DL Channel & Frequency	2175	CH = 2132.500000 MHz
Operation Band	4	
Frequency Separation	(400)MHz	

Level		
Input Level	30.0 dBm	
Output Level	-47.0 dBm(Total)	-74.8 dBm/15kHz(EPRE) On
AWGN Level	-20.0 dB	Off
External Loss	On	
Main UL	10.2 dB	
Main DL	10.2 dB	
AUX	0.0 dB	

Signal		
Channel Coding	RMC(DL CA - SCC)	
Antenna Configuration	Single Antenna	
DCI Format for Single Antenna	1A	
Propagation Matrix	None	

Parameter
 Common
 Physical Channel
 Call Processing
 TX Measurement Setup
 RX Measurement Setup
 Fundamental Measurement

1 2 3 4

SCC-Output settings

2014/03/21 09:52 Off Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main

Parameter Fundamental UE Report Band Calc

UE Power : 20,7 dBm

Signal		
Channel Coding	RMC(DL CA - SCC)	
Antenna Configuration	Single Antenna	
DCI Format for Single Antenna	1A	
Propagation Matrix	None	
RMC Configuration	PUSCH	
UE Category	6	
DTCH Data Pattern	MAC Padding Bits	
UL RMC		
Number of RB	50	
Starting RB	0	Aggregation Level
MCS Index	5 (QPSK)	(5) (4392) 8
64QAM	Disabled	
DL RMC		
Number of RB	50	
Starting RB	0	Aggregation Level
MCS Index (1-4, 6-9)	5 (QPSK)	(5) (4392) - 8
MCS Index (5)	5 (QPSK)	(5) (4008) 8 -
MCS Index (0)	5 (QPSK)	(5) (4392) - 8
MCS Index (-)	(N/A) (-----)	(-) (-----) - -

Parameter
 Common
 Physical Channel
 Call Processing
 TX Measurement Setup
 RX Measurement Setup
 Fundamental Measurement

1 2 3 4

SCC-Connection settings

2014/03/21 09:53 Off Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main

Parameter Fundamental UE Report Band Cal

UE Power : 20.7 dBm

DL Carrier Aggregation

PCC

Channel Bandwidth 10MHz
 UL Channel 23230 CH
 UL RMC
 Number of RB 50
 Starting RB 0

Modulation TBS Index TBS
 MCS Index 5 QPSK (5) (4392)

SCC-1

Channel Bandwidth 5MHz
 DL Channel 4938 CH=(2159.800000)MHz
 Operation Band (1)
 DL RMC

Number of RB		Aggregation Level				
Subframe	Modulation	TBS Index	TBS	SI-RNTI	C-RNTI	
MCS Index (1-4, 6-9)	(QPSK)	(5)	(2216)	-	4	
MCS Index (5)	(QPSK)	(5)	(1864)	4	-	
MCS Index (0)	(QPSK)	(5)	(2216)	-	4	
MCS Index (-)	(N/A) (-----)	(--)	(-----)	-	-	

Packet Parameter 1 2 3 4

QPSK

2014/03/21 09:53 Off Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main

Parameter Fundamental UE Report Band Cal

UE Power : 20.7 dBm

DL Carrier Aggregation

PCC

Channel Bandwidth 10MHz
 UL Channel 23230 CH
 UL RMC
 Number of RB 50
 Starting RB 0

Modulation TBS Index TBS
 MCS Index 12 16QAM (11) (9912)

SCC-1

Channel Bandwidth 5MHz
 DL Channel 4938 CH=(2159.800000)MHz
 Operation Band (1)
 DL RMC

Number of RB		Aggregation Level				
Subframe	Modulation	TBS Index	TBS	SI-RNTI	C-RNTI	
MCS Index (1-4, 6-9)	(QPSK)	(5)	(2216)	-	4	
MCS Index (5)	(QPSK)	(5)	(1864)	4	-	
MCS Index (0)	(QPSK)	(5)	(2216)	-	4	
MCS Index (-)	(N/A) (-----)	(--)	(-----)	-	-	

Packet Parameter 1 2 3 4

16-QAM

Results:

2014/03/21 11:13 Connected Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main

Parameter Fundamental UE Report Band Cal.

End - Pass UE Power : 21.7 dBm Fundamental

Power Measurement (Meas. Count : 10/ 10)

Parameter	Avg.	Max.	Min.	Limit
TX Power	21.94	21.95	21.93	19.3 to 25.7 dBm
Channel Power	21.94	21.95	21.93	

Throughput End

DL Limit

Throughput(Total) 7906 kbps (= 100.00 %)

PCC

Throughput 3953 kbps (= 100.00 %)

(Code Word 0) kbps (= %)

(Code Word 1) kbps (= %)

Block Error Rate 0.0000

0.00E+00

Error Count 0

(NACK 0 DTX 0)

Transmitted/Sample 2007 / 2000 Block

SCC-1

Throughput 3953 kbps (= 100.00 %)

(Code Word 0) kbps (= %)

(Code Word 1) kbps (= %)

Block Error Rate 0.0000

1 | 2 | 3

Default power (QPSK)

2014/03/21 11:14 Connected Phone-2 LTE Phone-1 LTE
 <Fundamental Measurement> Output Main

Parameter Fundamental UE Report Band Cal.

End - Pass UE Power : 20.7 dBm Fundamental

Power Measurement (Meas. Count : 10/ 10)

Parameter	Avg.	Max.	Min.	Limit
TX Power	21.00	21.03	20.94	19.3 to 25.7 dBm
Channel Power	21.00	21.02	20.94	

Throughput End

DL Limit

Throughput(Total) 7906 kbps (= 100.00 %)

PCC

Throughput 3953 kbps (= 100.00 %)

(Code Word 0) kbps (= %)

(Code Word 1) kbps (= %)

Block Error Rate 0.0000

0.00E+00

Error Count 0

(NACK 0 DTX 0)

Transmitted/Sample 2007 / 2000 Block

SCC-1

Throughput 3953 kbps (= 100.00 %)

(Code Word 0) kbps (= %)

(Code Word 1) kbps (= %)

Block Error Rate 0.0000

1 | 2 | 3

Default power (16-QAM)

2014/03/21 15:52		Connected		Phone-2	Phone-1
<Fundamental Measurement> Output Main				LTE	LTE
Parameter	Fundamental	UE Report		Band Cal	
End - Fail		UE Power :		18,7 dBm	
Power Measurement		(Meas. Count : 10/ 10)		Fundamental	
	Avg.	Max.	Min.	Limit	
TX Power	18.94	18.95	18.93	dBm	19.3 to 25.7 dBm
Channel Power	18.94	18.95	18.92	dBm	
Throughput		End		Limit	
DL					
Throughput(Total)	7906	kbps (= 100.00 %)			
PCC					
Throughput	3953	kbps (= 100.00 %)			
(Code Word 0)		kbps (= ----- %)			
(Code Word 1)		kbps (= ----- %)			
Block Error Rate	0.0000				
	0.00E+00				
Error Count	0				
	(NACK 0 DTX 0)				
Transmitted/Sample	2007 /	2000 Block			
SCC-1					
Throughput	3953	kbps (= 100.00 %)			
(Code Word 0)		kbps (= ----- %)			
(Code Word 1)		kbps (= ----- %)			
Block Error Rate	0.0000				

Power back off (QPSK)

2014/03/21 15:52		Connected		Phone-2	Phone-1
<Fundamental Measurement> Output Main Single				LTE	LTE
Parameter	Fundamental	UE Report		Band Cal	
Measuring		UE Power :		18,7 dBm	
Power Measurement		(Meas. Count : 10/ 10)		Fundamental	
	Avg.	Max.	Min.	Limit	
TX Power	19.02	19.06	18.97	dBm	19.3 to 25.7 dBm
Channel Power	19.02	19.05	18.97	dBm	
Throughput		Measuring		Limit	
DL					
Throughput(Total)	7906	kbps (= 100.00 %)			
PCC					
Throughput	3953	kbps (= 100.00 %)			
(Code Word 0)		kbps (= ----- %)			
(Code Word 1)		kbps (= ----- %)			
Block Error Rate	0.0000				
	0.00E+00				
Error Count	0				
	(NACK 0 DTX 0)				
Transmitted/Sample	864 /	2000 Block			
SCC-1					
Throughput	3953	kbps (= 100.00 %)			
(Code Word 0)		kbps (= ----- %)			
(Code Word 1)		kbps (= ----- %)			
Block Error Rate	0.0000				

Power back off (16-QAM)

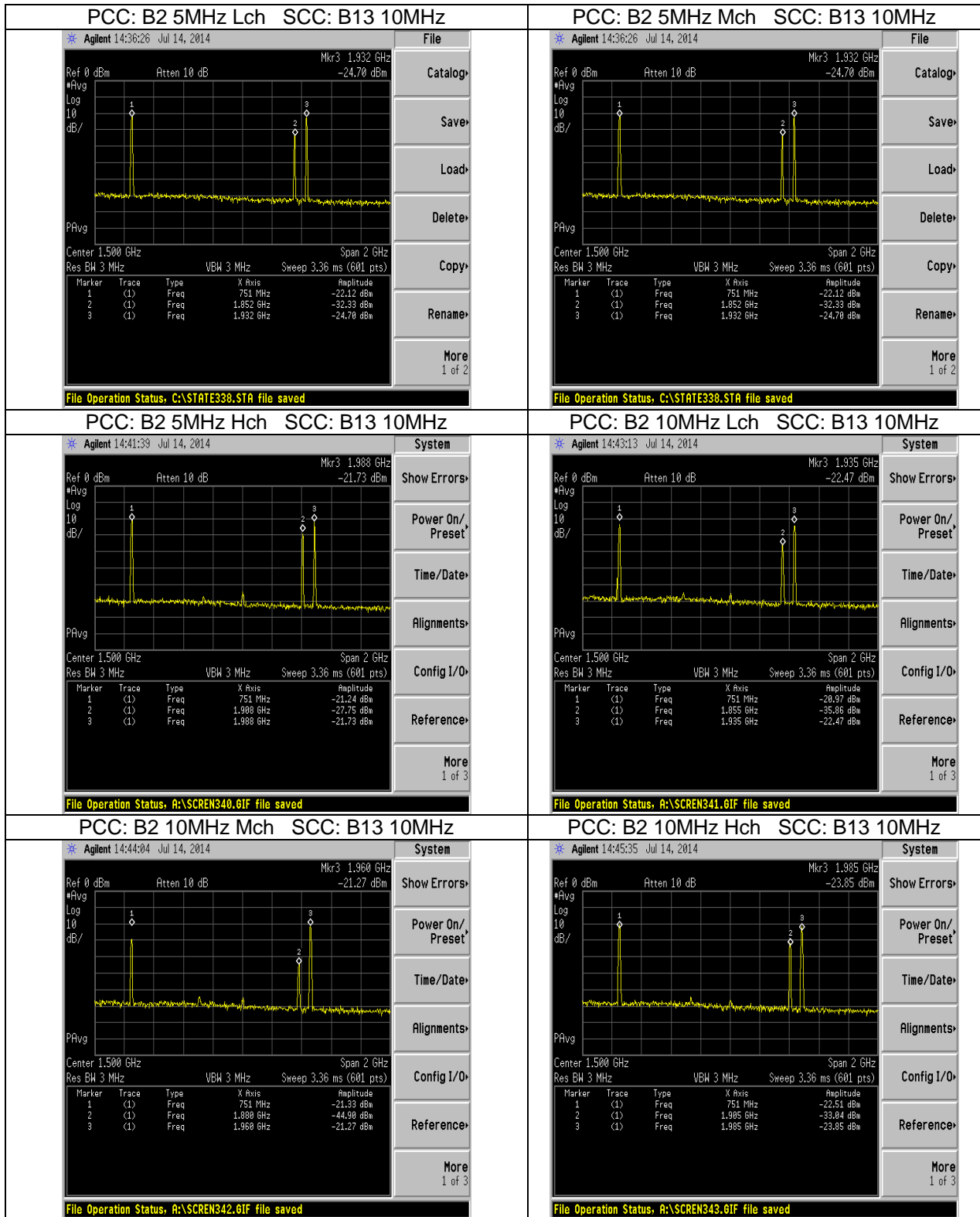
1.4 LTE – Carrier Aggregation B2 with second downlink carrier B13

1.4.1 LTE – Carrier Aggregation B2 - B13 – Conducted Power

Bandwidth [MHz]	Channel / Frequency [MHz]	Resource block allocation	Output Power (conducted_CA)			Output Power (Conducted_Non-CA)		Deviation (nonCA - CA) [dB]	
			Average Output Power [dBm]	Average Output Power [dBm]	SCC setting (band 13)	Average Output Power [dBm]	Average Output Power [dBm]	QPSK	16-QAM
			QPSK	16-QAM		QPSK	16-QAM		
default power									
5 MHz	18625 / 1852.5	100% RB	22.11	21.13	10 MHz BW 100% RB	21.98	21.09	-0.13	-0.04
	18900 / 1880.0	100% RB	21.76	20.75	10 MHz BW 100% RB	21.73	20.73	-0.03	-0.02
	19175 / 1907.5	100% RB	22.26	21.20	10 MHz BW 100% RB	22.22	21.16	-0.04	-0.04
10 MHz	18650 / 1855.0	100% RB	22.12	21.07	10 MHz BW 100% RB	22.04	21.00	-0.08	-0.07
	18900 / 1880.0	100% RB	21.78	20.87	10 MHz BW 100% RB	21.77	20.84	-0.01	-0.03
	19150 / 1905.0	100% RB	22.10	21.02	10 MHz BW 100% RB	22.10	21.11	0.00	0.09
backoff power									
5 MHz	18625 / 1852.5	100% RB	12.55	12.45	10 MHz BW 100% RB	12.41	12.26	-0.14	-0.19
	18900 / 1880.0	100% RB	12.39	12.48	10 MHz BW 100% RB	12.46	12.34	0.07	-0.14
	19175 / 1907.5	100% RB	12.23	12.19	10 MHz BW 100% RB	12.13	12.07	-0.10	-0.12
10 MHz	18650 / 1855.0	100% RB	12.43	12.29	10 MHz BW 100% RB	12.30	12.19	-0.13	-0.10
	18900 / 1880.0	100% RB	12.52	12.56	10 MHz BW 100% RB	12.41	12.47	-0.11	-0.09
	19150 / 1905.0	100% RB	12.41	12.41	10 MHz BW 100% RB	12.33	12.33	-0.08	-0.08

Table 5: Results for LTE B2 including back off power levels.

1.4.2 LTE – Carrier Aggregation B2 - B13 – Spectrums



1.4.3 LTE – Carrier Aggregation B2 - B13 – Base station simulator settings

The following plots show the radio communication tester settings (R&S CMW500) for the configuration that produced the highest output power with LTE B2 + B13.

PCC: LTE FDD 2 with 5MHz BW at high channel 19175 (1907.5 MHz) and RB allocation 100%

The screenshot shows the LTE Signaling 1 - V3.2.70 interface. The 'Connection Setup' section is expanded, showing the following parameters:

- Operating Band: Band 2 (FDD)
- Channel: 1175 Ch (Downlink), 19175 Ch (Uplink)
- Frequency: 1987.5 MHz (Downlink), 1907.5 MHz (Uplink)
- Cell Bandwidth: 5.0 MHz (Downlink), 5.0 MHz (Uplink)
- RS EPRE: -85.0 dBm/15kHz
- Full Cell BW Pow.: -60.2 dBm
- PUSCH Open Loop Nom.Power: 23 dBm
- PUSCH Closed Loop Target Power: -20.0 dBm
- Scheduling: RMC
- #RB: 25 (Downlink), 25 (Uplink)
- RB Pos./Start RB: low (Downlink), low (Uplink)
- Modulation: QPSK (Downlink), QPSK (Uplink)
- TBS Idx / Value: 5 / 2216 (Downlink), 5 / 2216 (Uplink)
- Throughput: 1.953 Mbit/s (Downlink), 2.216 Mbit/s (Uplink)

The 'LTE Signaling' button is highlighted in blue and labeled 'ON'.

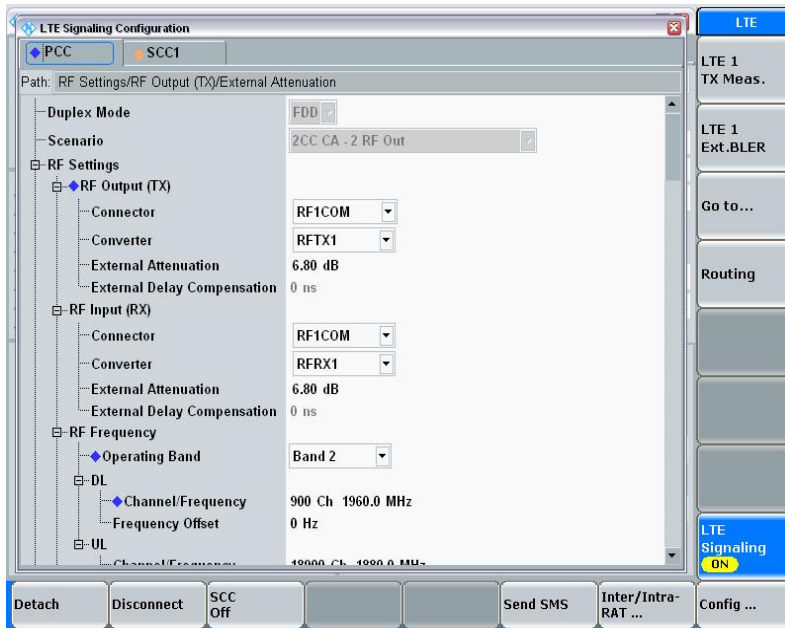
QPSK

The screenshot shows the LTE Signaling 1 - V3.2.70 interface. The 'Connection Setup' section is expanded, showing the following parameters:

- Operating Band: Band 2 (FDD)
- Channel: 1175 Ch (Downlink), 19175 Ch (Uplink)
- Frequency: 1987.5 MHz (Downlink), 1907.5 MHz (Uplink)
- Cell Bandwidth: 5.0 MHz (Downlink), 5.0 MHz (Uplink)
- RS EPRE: -85.0 dBm/15kHz
- Full Cell BW Pow.: -60.2 dBm
- PUSCH Open Loop Nom.Power: 23 dBm
- PUSCH Closed Loop Target Power: -20.0 dBm
- Scheduling: RMC
- #RB: 25 (Downlink), 25 (Uplink)
- RB Pos./Start RB: low (Downlink), low (Uplink)
- Modulation: QPSK (Downlink), 16-QAM (Uplink)
- TBS Idx / Value: 5 / 2216 (Downlink), 11 / 4968 (Uplink)
- Throughput: 1.953 Mbit/s (Downlink), 4.968 Mbit/s (Uplink)

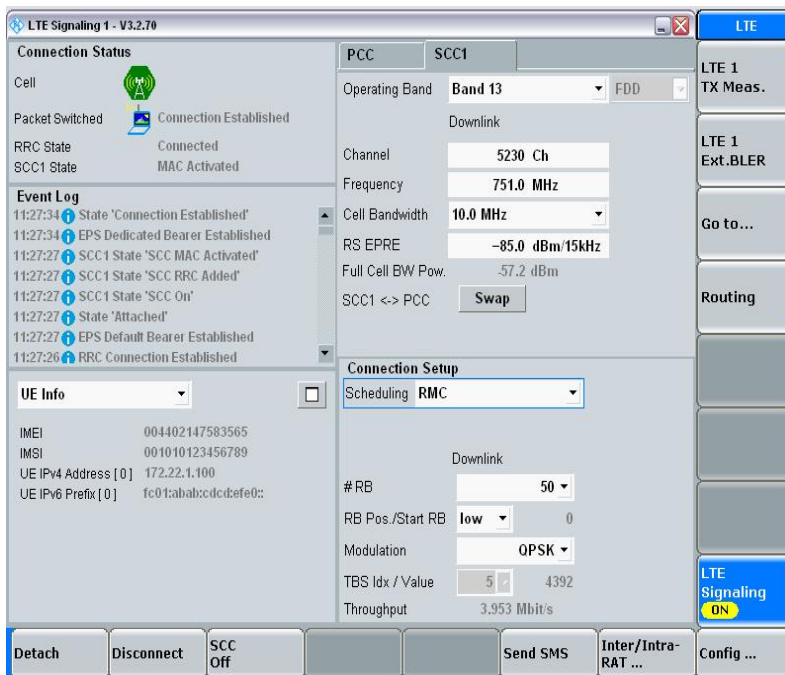
The 'LTE Signaling' button is highlighted in blue and labeled 'ON'.

16-QAM



Output-settings

SCC: LTE Band 13 with 10MHz BW and RB allocation 100%



SCC-settings

Path: RF Settings/RF Output (TX)/External Attenuation

- Duplex Mode: FDD
- Scenario: 2CC CA - 2 RF Out
- SCC Activation Mode: Auto
- RF Settings
 - RF Output (TX)
 - Connector: RF1COM
 - Converter: RFTX3
 - External Attenuation: 6.30 dB
 - External Delay Compensation: 0 ns
 - RF Input (RX)
 - Connector: RF1COM
 - Converter: RFRX1
 - External Attenuation: 6.80 dB
 - External Delay Compensation: 0 ns
- RF Frequency
 - Operating Band: Band 13
- DL
 - Channel/Frequency: 5230 Ch 751.0 MHz
 - Frequency Offset: 0 Hz

Buttons: Detach, Disconnect, SCC Off, Send SMS, Inter/Intra-RAT, Config ...

SCC-output-settings

Results:

Multi Evaluation | PRACH | SRS

FDD Freq.: 1907.5 MHz Ref. Level: 40.00 dBm Bandwidth: 5.0 MHz Cyclic Prefix: Normal Meas Subfr.: 0

Error Vector Magnitude

Detected Allocation NoRB: 25 OffsetRB: 0

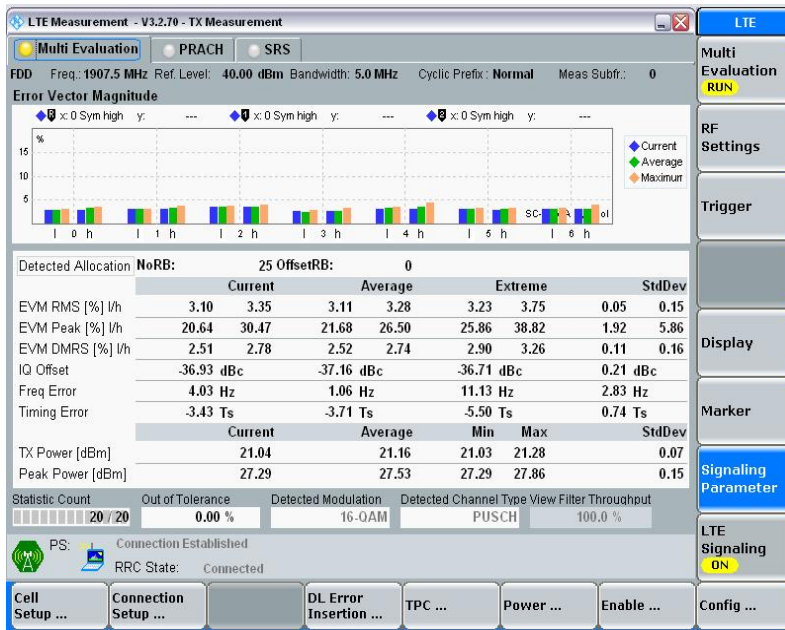
	Current		Average		Extreme		StdDev	
EVM RMS [%] /h	2.79	3.13	2.79	3.13	2.95	3.33	0.04	0.04
EVM Peak [%] /h	13.73	33.45	15.77	30.93	20.12	40.29	1.97	1.65
EVM DMRS [%] /h	2.34	3.33	2.39	3.09	2.96	4.13	0.11	0.34
IQ Offset	-38.45 dBc		-38.47 dBc		-37.86 dBc		0.20 dBc	
Freq Error	1.89 Hz		1.43 Hz		13.23 Hz		2.35 Hz	
Timing Error	-2.21 Ts		-2.16 Ts		-6.16 Ts		0.46 Ts	
	Current		Average		Min		Max	
TX Power [dBm]	22.22		22.22		22.13		22.25	
Peak Power [dBm]	27.56		27.72		27.38		27.96	

Statistic Count: 20 / 20 | Out of Tolerance: 0.00 % | Detected Modulation: QPSK | Detected Channel Type: PUSCH | View Filter Throughput: 100.0 %

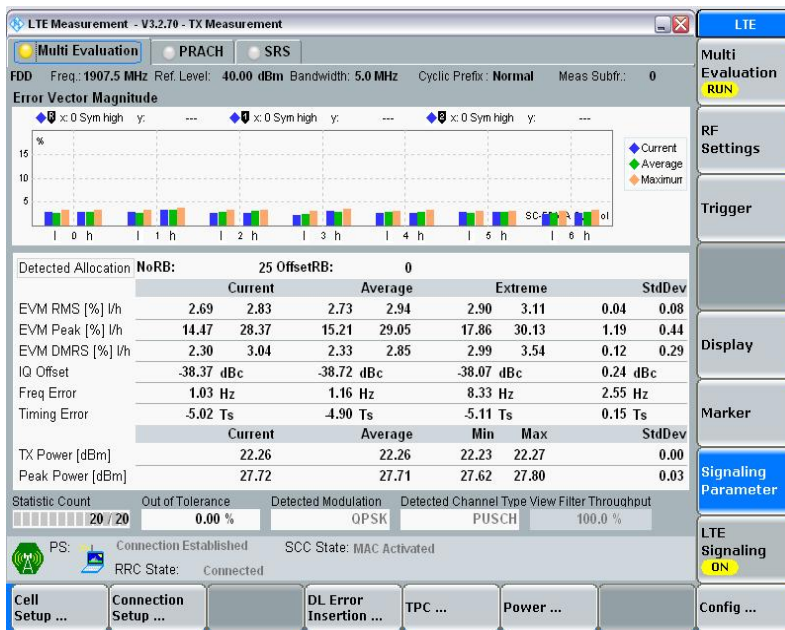
PS: Connection Established | RRC State: Connected

Buttons: Cell Setup, Connection Setup, DL Error Insertion, TPC, Power, Enable, Config ...

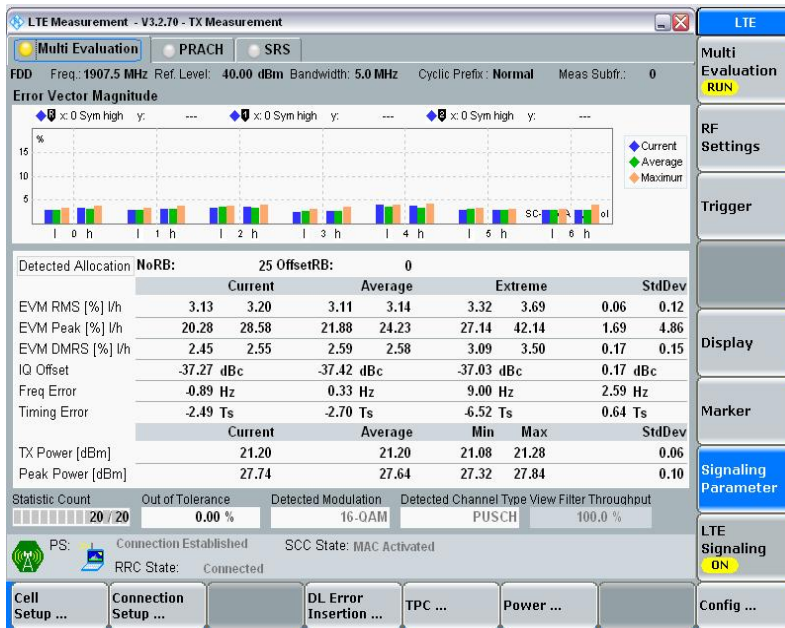
Default power non CA (QPSK)



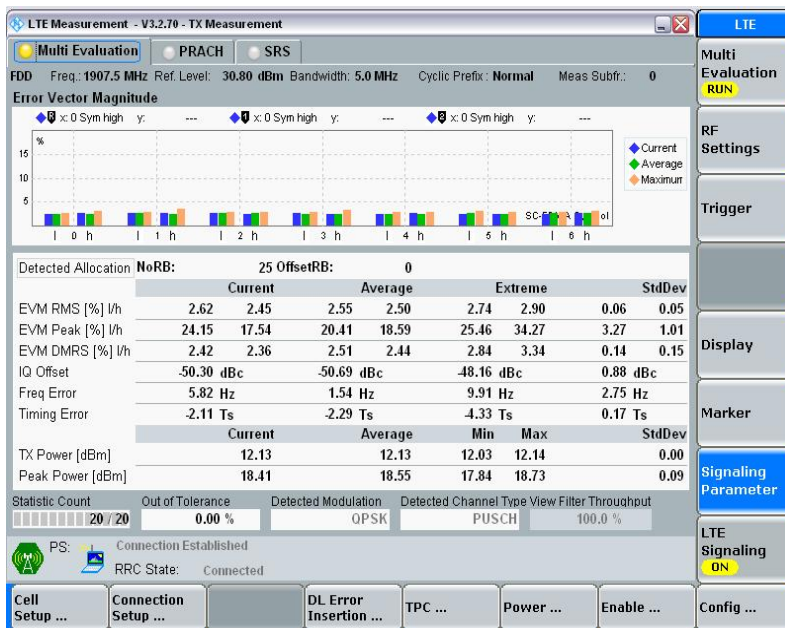
Default power non CA (16-QAM)



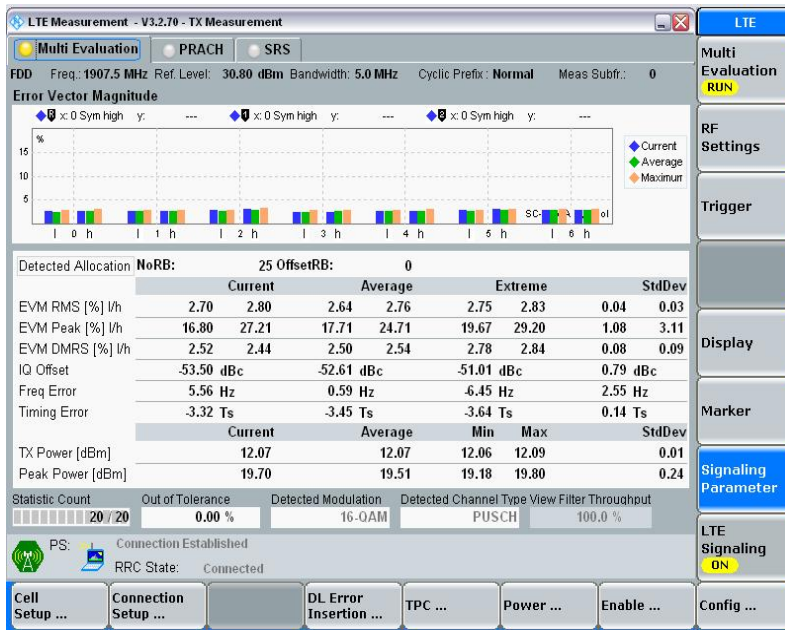
Default power CA (QPSK)



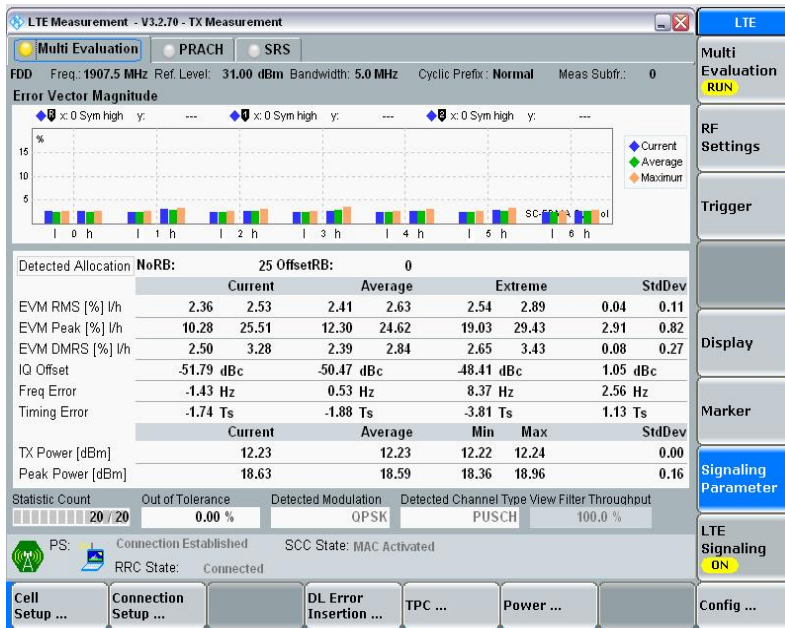
Default power CA (16-QAM)



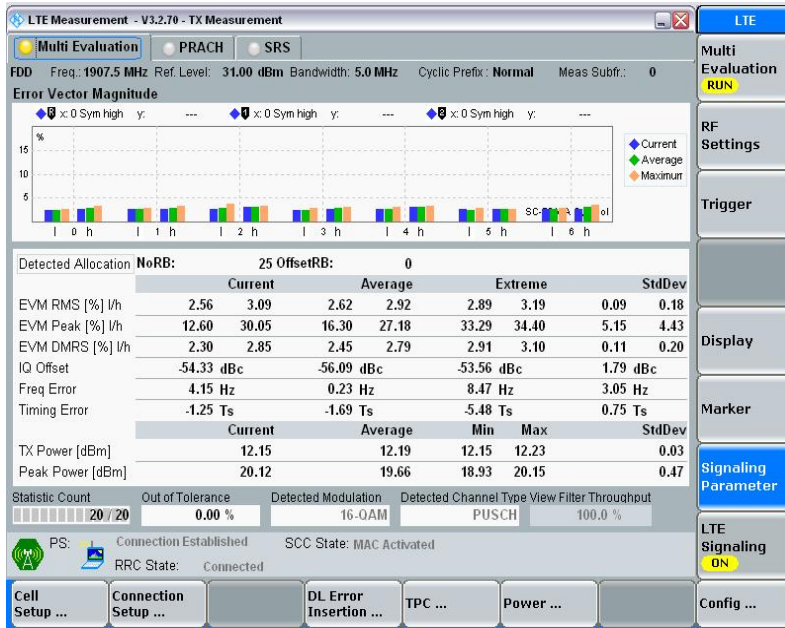
Back off power non CA (QPSK)



Back off power non CA (16-QAM)



Back off power CA (QPSK)



Back off power CA (16-QAM)

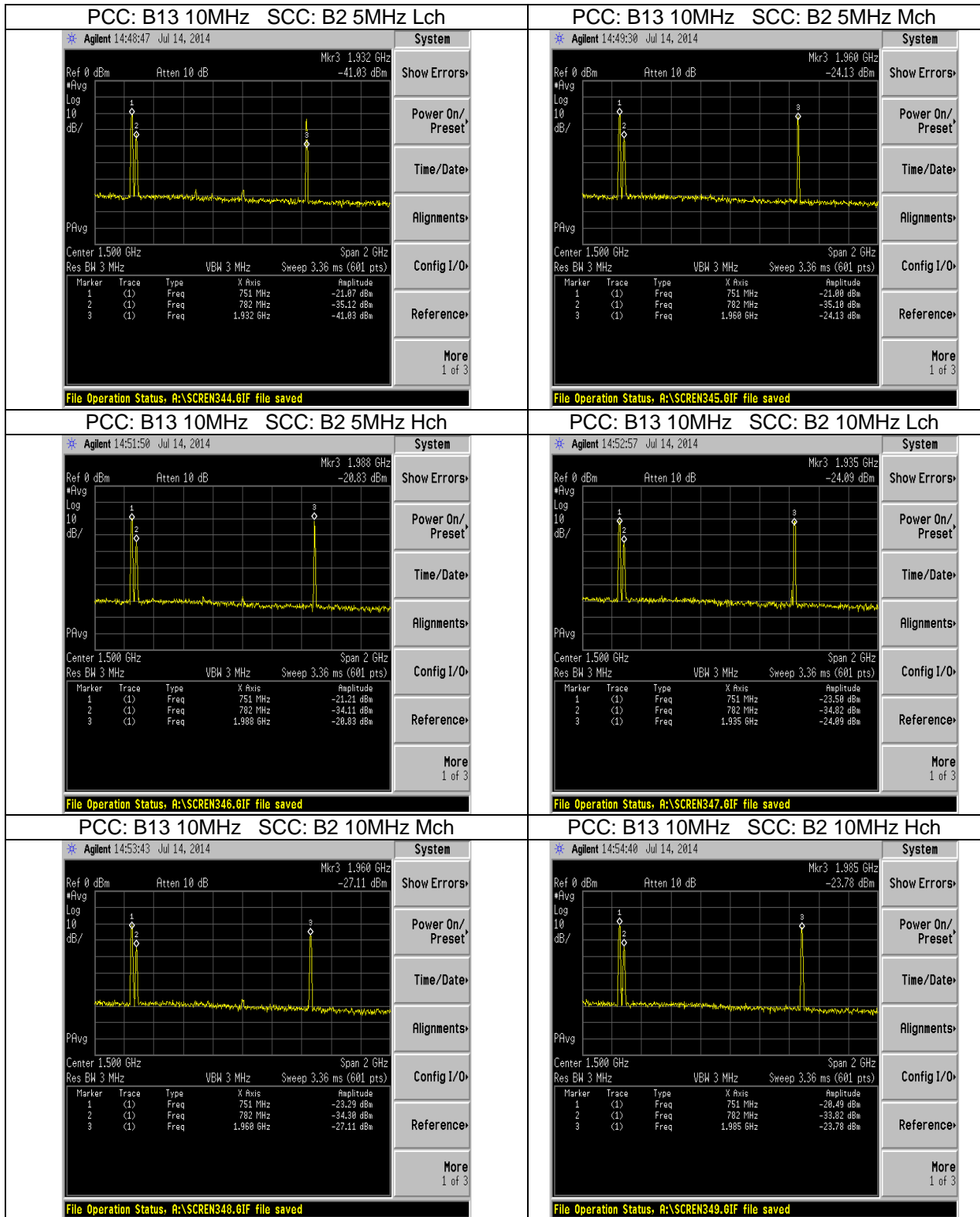
1.5 LTE – Carrier Aggregation B13 with second downlink carrier B2

1.5.1 LTE – Carrier Aggregation B13 - B2 – Conducted Power

			Output Power (conducted_CA)			Output Power (Conducted_Non-CA)		Deviation (nonCA - CA) [dB]	
Bandwidth [MHz]	Channel / Frequency [MHz]	Resource block allocation	Average Output Power [dBm]	Average Output Power [dBm]	SCC setting (band 2)	Average Output Power [dBm]	Average Output Power [dBm]	QPSK	16-QAM
			QPSK	16-QAM		QPSK	16-QAM		
default power									
10 MHz	23230 / 782	100% RB	21.82	20.86	5 MHz BW 100% RB	21.70	20.73	-0.12	-0.13
10 MHz	23230 / 782	100% RB	21.83	20.85	10 MHz BW 100% RB	21.70	20.73	-0.13	-0.12
backoff power									
10 Mhz	23230 / 782	100% RB	18.66	18.65	5 MHz BW 100% RB	18.59	18.60	-0.07	-0.05
10 MHz	23230 / 782	100% RB	18.66	18.66	10 MHz BW 100% RB	18.59	18.60	-0.07	-0.06

Table 6: Results for LTE B13 including back off power levels.

1.5.2 LTE – Carrier Aggregation B13 - B2 – Spectrums



1.5.3 LTE – Carrier Aggregation B13 - B2 – Base station simulator settings

The following plots show the radio communication tester settings (R&S CMW500) for the configuration that produced the highest output power with LTE B13 + B2.

PCC: LTE FDD 13 with 10MHz BW at high channel 23230 (782.0 MHz) and RB allocation 100%

The screenshot shows the LTE Signaling 1 - V3.2.70 interface. The 'Connection Setup' section is expanded, showing the following configuration:

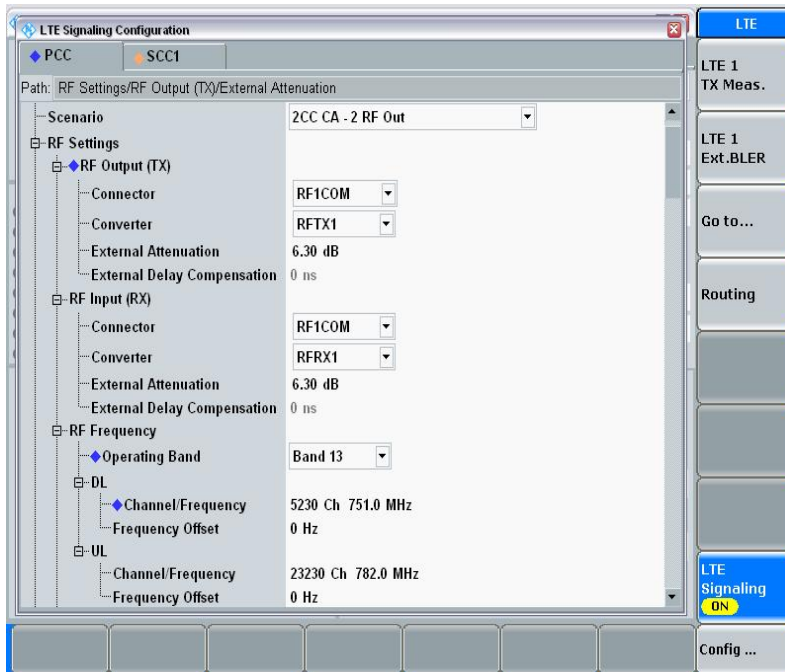
- Operating Band: Band 13 (FDD)
- Channel: 5230 Ch (Downlink), 23230 Ch (Uplink)
- Frequency: 751.0 MHz (Downlink), 782.0 MHz (Uplink)
- Cell Bandwidth: 10.0 MHz (Downlink), 10.0 MHz (Uplink)
- RS EPRE: -85.0 dBm/15kHz
- Full Cell BW Pow.: -57.2 dBm
- PUSCH Open Loop Nom.Power: 23 dBm
- PUSCH Closed Loop Target Power: -20.0 dBm
- Scheduling: RMC
- #RB: 50 (Downlink), 50 (Uplink)
- RB Pos./Start RB: low (Downlink), 0 (Uplink)
- Modulation: QPSK (Downlink), QPSK (Uplink)
- TBS Idx / Value: 5 / 4392 (Downlink), 6 / 5160 (Uplink)
- Throughput: 3.953 Mbit/s (Downlink), 5.160 Mbit/s (Uplink)

QPSK

The screenshot shows the LTE Signaling 1 - V3.2.70 interface. The 'Connection Setup' section is expanded, showing the following configuration:

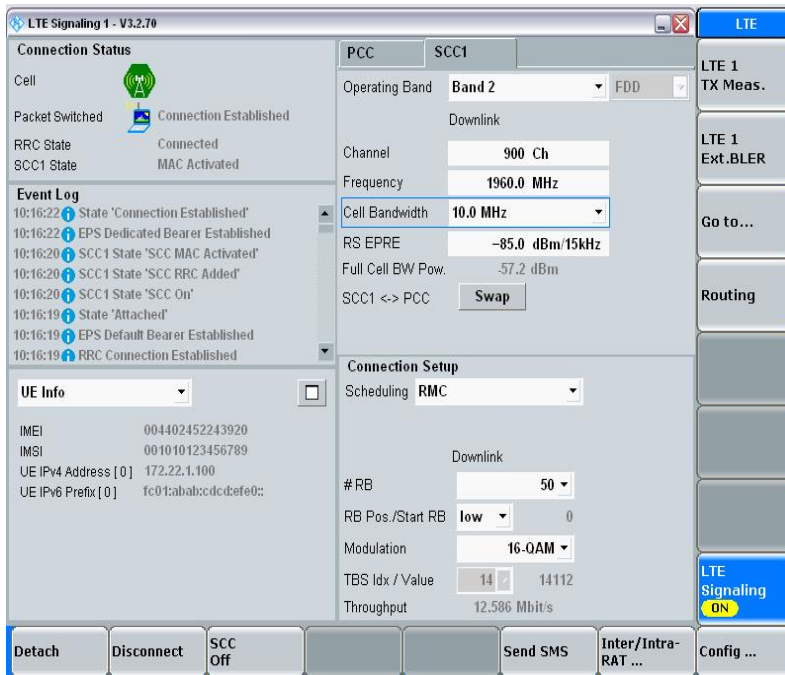
- Operating Band: Band 13 (FDD)
- Channel: 5230 Ch (Downlink), 23230 Ch (Uplink)
- Frequency: 751.0 MHz (Downlink), 782.0 MHz (Uplink)
- Cell Bandwidth: 10.0 MHz (Downlink), 10.0 MHz (Uplink)
- RS EPRE: -85.0 dBm/15kHz
- Full Cell BW Pow.: -57.2 dBm
- PUSCH Open Loop Nom.Power: 23 dBm
- PUSCH Closed Loop Target Power: -20.0 dBm
- Scheduling: RMC
- #RB: 50 (Downlink), 50 (Uplink)
- RB Pos./Start RB: low (Downlink), 0 (Uplink)
- Modulation: QPSK (Downlink), 16-QAM (Uplink)
- TBS Idx / Value: 5 / 4392 (Downlink), 19 / 21384 (Uplink)
- Throughput: 3.953 Mbit/s (Downlink), 21.384 Mbit/s (Uplink)

16-QAM



Output-settings

SCC: LTE Band 2 with 10MHz BW and RB allocation 100%



SCC-settings

The screenshot shows the 'LTE Signaling Configuration' window with the 'SCC1' tab selected. The path is 'RF Settings/RF Output (TX)/External Attenuation'. The scenario is '2CC CA - 2 RF Out'. Under 'RF Output (TX)', the 'External Attenuation' is set to 6.80 dB. Other settings include 'Connector: RF1COM', 'Converter: RFTX3', and 'External Delay Compensation: 0 ns'. Under 'RF Input (RX)', 'External Attenuation' is 6.30 dB. The 'Operating Band' is 'Band 2'. The 'Channel/Frequency' is '900 Ch 1960.0 MHz'.

SCC-output-settings

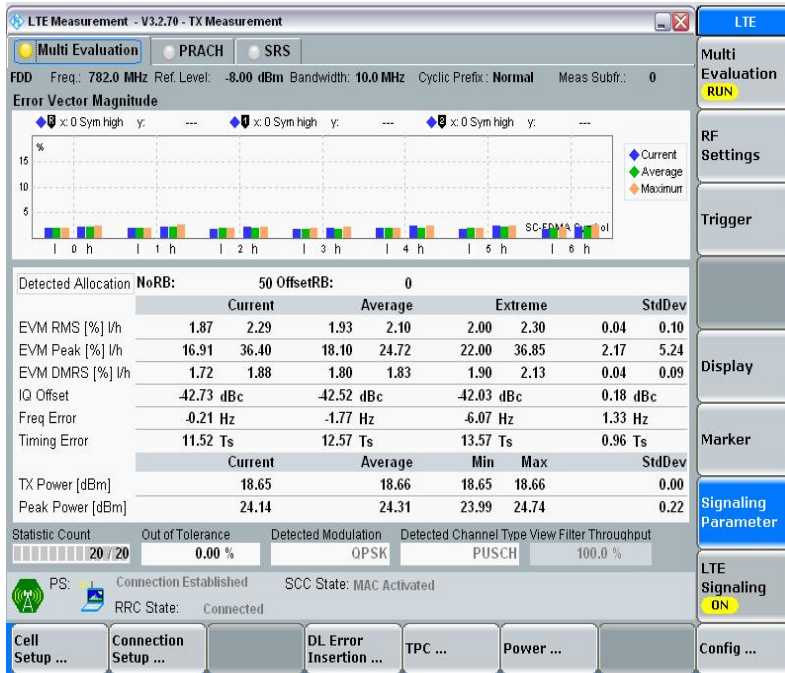
Results:

The screenshot shows the 'LTE Measurement - V3.2.70 - TX Measurement' window. The 'Multi Evaluation' button is active. The graph displays 'Error Vector Magnitude' over time (0h to 6h). Below the graph is a table of measurement data:

	NoRB:		50 OffsetRB:		0		StdDev
	Current	Average	Current	Average	Current	Average	
EVM RMS [%] 1/h	1.72	1.89	1.78	1.94	1.85	2.03	0.04
EVM Peak [%] 1/h	15.45	22.56	17.48	22.91	20.79	24.70	2.04
EVM DMRS [%] 1/h	1.67	1.70	1.66	1.69	1.79	1.79	0.03
IQ Offset	-44.87 dBc	-44.44 dBc	-43.88 dBc	-43.88 dBc	-43.88 dBc	-43.88 dBc	0.24 dBc
Freq Error	-1.76 Hz	-0.60 Hz	-0.60 Hz	-0.60 Hz	4.21 Hz	4.21 Hz	1.52 Hz
Timing Error	18.95 Ts	19.06 Ts	19.06 Ts	19.06 Ts	19.25 Ts	19.25 Ts	0.16 Ts
					Min	Max	
TX Power [dBm]	21.83	21.83	21.83	21.83	21.82	21.83	0.00
Peak Power [dBm]	27.06	27.19	27.19	27.19	26.84	27.44	0.19

Additional information: Detected Allocation NoRB: 50, OffsetRB: 0. Statistic Count: 20/20, Out of Tolerance: 0.00%. Detected Modulation: QPSK, Detected Channel Type: PUSCH, View Filter Throughput: 100.0%. Connection State: Connected.

Default power (QPSK)



Back off power (16-QAM)

1.6 Test Equipment

Equipment	Type	Manufact.	Serial No.	Last Calibration	Next Calibration
Radio Communication Analyzer	MT8820C	Anritsu	6.201E+09	04.2014	03.2015
Radio Communication Tester	CMW 500	R&S	1201.0002K50-106105-Vr	08.2013	08.2014
Signal Analyzer	N9030A	Agilent	MY51380404	07.2013	07.2014
Spectrum Analyzer	E4445A	Agilent	MY48250222	03.2013	03.2014
DC Power Supply	E3632A	Agilent	MY52470209	n.a	n.a
Power Splitter	ZN2PD2-50-S+	Mini-Circuits	60400627	n.a	n.a
Power Divider	6005180	KRYTAR	100778	n.a	n.a
Directional Coupler	4226-20	narda	3473	n.a	n.a

1.7 Device under test

The measurements were performed with following sample:

HW: A (AP1)
S/N: CB5126DPGG
Default Power S/N CB5126DPJR
Backoff Power S/N CB5126SKBX