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MEASUREMENT REPORT FCC Part 30 5G mmWave

#### **Applicant Name:**

Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea Date of Testing: 09/10/2020 – 10/08/2020 Test Site/Location: PCTEST KOREA Lab. Yongin-si, Gyeonggi-do, Korea Test Report Serial No.: 8K20090901-02-R2.A3L

# FCC ID: APPLICANT:

# A3LAT1K04-B10

Samsung Electronics Co., Ltd.

Application Type: Model: EUT Type: FCC Classification: Test Procedure(s): Certification AT1K04-B10 5G Access Unit Part 30 Fixed Transmitter (5GB) ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 842590 D01 v01r01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

This revised Test Report (S/N: 8K20090901-02-R2.A3L) supersedes and replaces the previously issued test report (S/N: 8K20090901-02-R1.A3L) on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Prepared b

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Reviewed by

FCC ID: A3LAT1K04-B10		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 1 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 1 of 469
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# TABLE OF CONTENTS

1.0	INTR	ODUCTION	5
	1.1	Scope	5
	1.2	PCTEST KOREA Test Location	5
	1.3	Test Facility / Accreditations	5
2.0	PRO	DUCT INFORMATION	6
	2.1	Equipment Description	6
	2.2	Device Capabilities	6
	2.3	Test Configuration	6
	2.4	EMI Suppression Device(s)/Modifications	20
3.0	DES	CRIPTION OF TESTS	21
	3.1	Measurement Procedure	21
	3.2	Radiated Power and Radiated Spurious Emissions	21
4.0	MEA	SUREMENT UNCERTAINTY	24
5.0	TEST	EQUIPMENT CALIBRATION DATA	25
6.0	SAM	PLE CALCULATIONS	26
7.0	TEST	RESULTS	27
	7.1	Summary	27
	7.2	Occupied Bandwidth	
	7.3	Equivalent Isotropic Radiated Power (EIRP) Density	57
	7.4	RF Conducted Output Power	
	7.5	Radiated Spurious and Harmonic Emissions	
	7.6	Band Edge Emissions	
	7.7	Frequency Stability / Temperature Variation	461
8.0	CON	CLUSION	464
9.0	APPE	ENDIX A	465
	9.1	HARMONIC MIXER Verification Certificate	
10.0	APPE	ENDIX B	468
	10.1	Introduction (KDB 484596 Section 3 a)	
	10.2	Explain the Differences (KDB 484596 Section 3 b)	
	10.3	Spot Check Verification Data (KDB 484596 Section 3 c)	
	10.4	Reference Section (KDB 484596 Section 3 d)	

FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 2 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 2 of 469
© 2020 DOTEST	•	•		PK-OP-16-00 Pov 02



# MEASUREMENT REPORT FCC Part 30



Bandwidth		FCC Rule			EIRP	Density	Emission	
(MHz)	Mode	Part	Antenna	Tx Frequency (MHz)	Max. Power (W/100MHz)	Max. Power (dBm/100MHz)	Emission Designator	Modulation
	TDD(1CC)	30	Α	27500 - 28350	65.31	48.15	46M6G7D	QPSK
50	TDD(1CC)	30	A	27500 - 28350	63.53	48.03	46M5W7D	16QAM
	TDD(1CC)	30	A	27500 - 28350	65.01	48.13	46M5W7D	64QAM
	TDD(1CC)	30	A	27500 - 28350	61.09	47.86	95M0G7D	QPSK
100	TDD(1CC)	30	A	27500 - 28350	59.70	47.76	94M5W7D	16QAM
100	TDD(1CC)	30	A	27500 - 28350	60.12	47.79	94M6W7D	64QAM
	TDD(2CC)	30	A	27500 - 28350	58.61	47.68	95M4G7D	QPSK
50	TDD(2CC)	30	A	27500 - 28350	58.34	47.66	95M5W7D	16QAM
	TDD(2CC)	30	A	27500 - 28350	59.02	47.71	95M5W7D	64QAM
	TDD(8CC)	30	A	27500 - 28350	37.58	45.75	786MG7D	QPSK
100	TDD(8CC)	30	A	27500 - 28350	36.22	45.59	787MW7D	16QAM
100	TDD(8CC)	30	A	27500 - 28350	36.22	45.59	786MW7D	64QAM
	TDD(1CC)	30	B	27500 - 28350	59.16	47.72	46M4G7D	QPSK
50	TDD(1CC)	30	B	27500 - 28350	57.68	47.61	46M0W7D	16QAM
00	TDD(1CC)	30	B	27500 - 28350	58.75	47.69	46M2W7D	64QAM
	TDD(1CC)	30	B	27500 - 28350	59.43	47.74	94M4G7D	QPSK
100	TDD(1CC)	30	B	27500 - 28350	58.75	47.69	94M3W7D	16QAM
100	TDD(1CC)	30	B	27500 - 28350	59.57	47.75	94M7W7D	64QAM
	TDD(2CC)	30	B	27500 - 28350	61.66	47.90	95M5G7D	QPSK
50	TDD(2CC)	30	B	27500 - 28350	61.09	47.86	95M5W7D	16QAM
50	TDD(2CC)	30	B	27500 - 28350	60.67	47.83	95M5W7D	64QAM
	TDD(8CC)	30	B	27500 - 28350	36.06	45.57	786MG7D	QPSK
100	TDD(8CC)	30	B	27500 - 28350	36.06	45.57	787MW7D	16QAM
100	TDD(8CC)	30	B	27500 - 28350	36.06	45.57	786MW7D	64QAM
	TDD(1CC)	30	C	27500 - 28350	62.23	47.94	46M3G7D	QPSK
50	TDD(1CC)	30	C	27500 - 28350	61.24	47.87	46M0W7D	16QAM
00	TDD(1CC)	30	C	27500 - 28350	61.24	47.87	46M0W7D	64QAM
	TDD(1CC)	30	C	27500 - 28350	63.97	48.06	94M4G7D	QPSK
100	TDD(1CC)	30	C	27500 - 28350	62.81	47.98	94M4W7D	16QAM
100	TDD(1CC)	30	C	27500 - 28350	63.68	48.04	94M5W7D	64QAM
	TDD(2CC)	30	C	27500 - 28350	64.42	48.09	95M3G7D	QPSK
50	TDD(2CC)	30	C	27500 - 28350	63.10	48.00	95M4W7D	16QAM
50	TDD(2CC)	30	C	27500 - 28350	61.66	47.90	95M4W7D	64QAM
	TDD(8CC)	30	C	27500 - 28350	36.39	45.61	786MG7D	QPSK
100	TDD(8CC)	30	C	27500 - 28350	36.31	45.60	787MW7D	16QAM
100	TDD(8CC)	30	C	27500 - 28350	35.73	45.53	786MW7D	64QAM
	TDD(1CC)	30	D	27500 - 28350	61.80	47.91	46M5G7D	QPSK
50	TDD(1CC)	30	D	27500 - 28350	59.02	47.71	46M2W7D	16QAM
50	TDD(1CC)	30	D	27500 - 28350	60.95	47.85	46M2W7D	64QAM
	TDD(1CC)	30	D	27500 - 28350	55.98	47.48	94M9G7D	QPSK
100	TDD(1CC)	30	D	27500 - 28350	55.21	47.40	94M5W7D	16QAM
100	TDD(1CC)	30	D	27500 - 28350	55.85	47.47	94M6W7D	64QAM
	TDD(1CC)	30	D	27500 - 28350	62.52	47.96	95M6G7D	QPSK
50	TDD(2CC)	30	D	27500 - 28350	61.66	47.90	95M5W7D	16QAM
50	TDD(2CC)	30	D	27500 - 28350	61.38	47.88	95M5W7D	64QAM
	TDD(2CC)	30	D	27500 - 28350	35.40	47.88	786MG7D	QPSK
100	TDD(8CC)	30	D	27500 - 28350	35.40	45.49	787MW7D	16QAM
100	· · · · /	30	D					
	TDD(8CC)	30	U	27500 - 28350	36.73	45.65	786MW7D	64QAM

EUT Overview for Antenna A, B, C, and D

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 2 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit	Page 3 of 469
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Bandwidth	vidth FCC Rule			Tx Frequency	EIRP Density		Emission	
(MHz)	Mode	Part	Antenna	(MHz)	Max. Power (W/100MHz)	Max. Power (dBm/100MHz)	Designator	Modulation
	TDD(1CC)	30	A+C	27500 - 28350	127.54	51.06	46M6G7D	QPSK
50	TDD(1CC)	30	A+C	27500 - 28350	124.77	50.96	46M5W7D	16QAM
	TDD(1CC)	30	A+C	27500 - 28350	126.25	51.01	46M5W7D	64QAM
	TDD(1CC)	30	A+C	27500 - 28350	125.07	50.97	95M0G7D	QPSK
100	TDD(1CC)	30	A+C	27500 - 28350	122.51	50.88	94M5W7D	16QAM
	TDD(1CC)	30	A+C	27500 - 28350	123.80	50.93	94M6W7D	64QAM
	TDD(2CC)	30	A+C	27500 - 28350	123.03	50.90	95M4G7D	QPSK
50	TDD(2CC)	30	A+C	27500 - 28350	121.44	50.84	95M5W7D	16QAM
	TDD(2CC)	30	A+C	27500 - 28350	120.68	50.82	95M5W7D	64QAM
	TDD(8CC)	30	A+C	27500 - 28350	73.98	48.69	786MG7D	QPSK
100	TDD(8CC)	30	A+C	27500 - 28350	72.53	48.61	787MW7D	16QAM
	TDD(8CC)	30	A+C	27500 - 28350	71.95	48.57	786MW7D	64QAM
	TDD(1CC)	30	B+D	27500 - 28350	120.96	50.83	46M4G7D	QPSK
50	TDD(1CC)	30	B+D	27500 - 28350	116.70	50.67	46M0W7D	16QAM
	TDD(1CC)	30	B+D	27500 - 28350	119.70	50.78	46M2W7D	64QAM
	TDD(1CC)	30	B+D	27500 - 28350	115.40	50.62	94M4G7D	QPSK
100	TDD(1CC)	30	B+D	27500 - 28350	113.96	50.57	94M3W7D	16QAM
	TDD(1CC)	30	B+D	27500 - 28350	115.41	50.62	94M7W7D	64QAM
	TDD(2CC)	30	B+D	27500 - 28350	124.18	50.94	95M5G7D	QPSK
50	TDD(2CC)	30	B+D	27500 - 28350	122.75	50.89	95M5W7D	16QAM
	TDD(2CC)	30	B+D	27500 - 28350	122.05	50.87	95M5W7D	64QAM
	TDD(8CC)	30	B+D	27500 - 28350	71.46	48.54	786MG7D	QPSK
100	TDD(8CC)	30	B+D	27500 - 28350	72.03	48.58	787MW7D	16QAM
	TDD(8CC)	30	B+D	27500 - 28350	72.79	48.62	786MW7D	64QAM

EUT Overview for Antenna A + C and B + D

Bandwidth		FCC Rule		Tx Frequency	EIRP	Density	Emission	
(MHz) Mc	Mode	Part	Antenna	(MHz)	Max. Power (W/100MHz)	Max. Power (dBm/100MHz)	Designator	Modulation
	TDD(1CC)	30	A+B+C+D	27500 - 28350	248.50	53.95	46M6G7D	QPSK
50	TDD(1CC)	30	A+B+C+D	27500 - 28350	241.46	53.83	46M5W7D	16QAM
	TDD(1CC)	30	A+B+C+D	27500 - 28350	245.95	53.91	46M5W7D	64QAM
	TDD(1CC)	30	A+B+C+D	27500 - 28350	240.47	53.81	95M0G7D	QPSK
100	TDD(1CC)	30	A+B+C+D	27500 - 28350	236.47	53.74	94M5W7D	16QAM
	TDD(1CC)	30	A+B+C+D	27500 - 28350	239.21	53.79	94M7W7D	64QAM
	TDD(2CC)	30	A+B+C+D	27500 - 28350	247.21	53.93	95M5G7D	QPSK
50	TDD(2CC)	30	A+B+C+D	27500 - 28350	244.19	53.88	95M5W7D	16QAM
	TDD(2CC)	30	A+B+C+D	27500 - 28350	242.73	53.85	95M5W7D	64QAM
	TDD(8CC)	30	A+B+C+D	27500 - 28350	145.43	51.63	786MG7D	QPSK
100	TDD(8CC)	30	A+B+C+D	27500 - 28350	144.56	51.60	787MW7D	16QAM
	TDD(8CC)	30	A+B+C+D	27500 - 28350	144.74	51.61	786MW7D	64QAM

EUT Overview for Antenna A + B + C + D

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 4 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit	Page 4 of 469
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## **1.0 INTRODUCTION**

### 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

### 1.2 PCTEST KOREA Test Location

These measurement tests were conducted at the PCTEST KOREA CO., LTD. facility located at (#1407) 13, Heungdeok 1-ro, Giheung-gu, Yongin-si, Gyeonggi-do 16954, Korea.

### 1.3 Test Facility / Accreditations

### Measurements were performed at PCTEST KOREA Lab located in Yongin-si, Gyeonggi, Korea.

- PCTEST KOREA is an ISO 17025:2005 accredited test facility under the National Institute of Standards and Technology (NIST) with Certificate number 600143-0 for Specific Absorption Rate (SAR), where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST KOREA facility is accredited and designated in accordance with the provision of Radio Wave Act and International Standard ISO/IEC 17025:2017 under the National Radio Research Agency.
  - Designation Number: KR0169
  - Test Firm Registration Number: 417945

Scope	FCC Rule Parts	Maximum Assessed Frequency in MHz
Intentional Radiators	FCC Part 15, Subpart C	220,000
U-NII without DFS Intentional Radiators	FCC Part 15, Subpart E	40,000
U-NII with DFS Intentional Radiators	FCC Part 15, Subpart E	40,000
UWB Intentional Radiators	FCC Part 15, Subpart F	200,000
Commercial Mobile Services	Part 22 (cellular), Part 24, Part 25 (below 3 GHz), Part 27	220,000
General Mobile Radio Service	Part 22 (non-cellular), Part 90 (below 3GHz), Part 95 (below 3GHz), Part 97 (below 3GHz), Part 101 (below 3GHz)	220,000
Citizens Broadband Radio Services	Part 96	220,000
Microwave and Millimeter Bands Radio Services	Part 25 (below 3GHz), Part 30, Part 74, Part 90 (above 3 GHz), Part 95 (above 3 GHz), Part 97 (above 3 GHz), Part 101	220,000
RF Exposure		6,000
Signal Boosters	Part 20, Part 90	220,000

FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 5 of 469
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# 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

This device supports 1 to 2 component carriers(contiguous/non-contiguous) of 50 MHz bandwidth, 1 to 8 component carriers(contiguous/non-contiguous) of 100 MHz bandwidth and 2 to 8 component carriers(contiguous/non-contiguous) of mixed bandwidth (50 MHz+100 MHz).

The Equipment Under Test (EUT) is the **Samsung 5G Access Unit FCC ID: A3LAT1K04-B10**. The test data contained in this report pertains only to the emissions due to the EUT's 5G mmWave function.

The present document shall be constructed per the guidelines found in KDB 484596 D01 "Referencing Test Data" v01 which can be referred from 10.0 Appendix KDB 484596.

The EUT operates as a 4X4 MIMO system that consists of four antenna arrays (denoted herein as "Antenna A", "Antenna B", "Antenna C" and "Antenna D". Each of the four antenna arrays has 256 antenna elements for a total of 1024 antenna elements. Of the 4 antenna arrays, Antenna A and Antenna C have the same polarization (135 degrees from horizontal) and Antenna B and Antenna D have the same polarization (45 degrees from horizontal). Beamforming is used with Antenna A and Antenna C and it is also used with Antenna B and Antenna D. Signal correlation is possible between the outputs of all four antenna arrays.

This unit is powered by a nominal AC voltage source.

See Section 3.2 for the antenna polarization of the 5G Access Unit and the measurement antenna.

Test Device Serial No.: S616627399

### 2.2 Device Capabilities

This device contains the following capabilities:

TDD of mmWave

### 2.3 Test Configuration

The EUT was tested per the guidance of ANSI C63.26-2015 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated tests.

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 6 of 469
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		
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BW	Configuration	Channel	СС	Frequency [MHz]
		Low	CC0	27525.30
	1CC	Mid	CC0	27925.02
		High	CC0	28324.98
		Low	CC0	27525.30
	contiguous 2CC	LOW	CC1	27575.28
		Mid	CC0	27900.00
			CC1	27949.98
50 MHz		High	CC0	28275.00
			CC1	28324.98
		Low	CC0	27525.30
			CC1	28275.00
	Non-contiguous 2CC	Mid	CC0	27550.20
	200	IVIIQ	CC1	28299.90
		High	CC0	27575.28
		High	CC1	28324.98

Table 2-1. Declared of EUT configuration Frequency list for 50 MHz BW Mode

BW	Configuration	Channel	CC	Frequency [MHz]
	aantiquaya	Low	CC0	27550.02
	contiguous 1CC	Mid	CC0	27925.02
		High	CC0	28300.02
		1	CC0	27550.02
		Low	CC1	27649.98
	contiguous	NA:-I	CC0	27875.04
	2CC	Mid	CC1	27975.00
			CC0	28200.06
		High	CC1	28300.02
			CC0	27550.02
		Low	CC1	27649.98
			CC2	27749.94
	contiguous	Mid	CC0	27825.06
	3CC		CC1	27925.02
			CC2	28024.98
		High	CC0	28100.10
			CC1	28200.06
100 MHz			CC2	28300.02
		Low	CC0	27550.02
			CC1	27649.98
			CC2	27749.94
			CC3	27849.90
			CC0	27775.08
	contiguous		CC1	27875.04
	4CC	Mid	CC2	27975.00
			CC3	28074.96
			CC0	28000.14
			CC1	28100.10
		High	CC2	28200.06
			CC3	28300.02
			CC0	27550.02
	contiguous		CC1	27649.98
	5ČC	Low	CC2	27649.98
			CC3	27849.90
	PCTEST	MEASUREMENT REPORT		Approved by:
FCC ID: A3LAT1K04-B10	Proud to be part of @ element	(CERTIFICATION)	SAMSUNG	Quality Manager
Test Report S/N: 8K20090901-02-R2.A3L		JT Type: Access Unit		Page 7 of 469
	00,00,2020 00,2020 00			PK OB 16 00 Pov 03



FCC ID: A3LAT1K04-B10	PCTEST Proud to be port of @vietnest	MEASUREMENT REPORT (CERTIFICATION) UT Type:	CC3 CC4	27949.86 Approved by: Quality Manager
			CC4	27949.86
			663	
				27849.90
	8CC	Low	CC2	27749.94
	contiguous		CC1	27649.98
		1	CC0	27550.02
			CC6	28300.02
			CC5	28200.06
			CC4	28100.10
		High	CC3	28000.14
			CC2	27900.18
			CC1	27800.22
			CC0	27700.26
			CC6	28224.90
			CC5	28124.98
			CC4	28024.98
	7CC	Mid	CC3	27925.02
	contiguous		CC2	27825.06
			CC1	27725.10
			CC0	27625.14
			CC6	28149.78
			CC5	28049.82
			CC4	27949.86
		Low	CC3	27849.90
			CC2	27749.94
			CC1	27649.98
		1	CC0	27550.02
			CC5	28300.02
			CC4	28200.06
		High	CC3	28100.10
		High	CC2	28000.14
			CC1	27900.18
			CC0	27800.22
			CC5	28174.92
			CC4	28074.96
	6CC	Mid	CC3	27975.00
	contiguous	Mid	CC2	27875.04
			CC1	27775.08
			CC0	27675.12
			CC5	28049.82
			CC4	27949.86
		Low	CC3	27849.90
			CC2	27749.94
			CC1	27649.98
			CC0	27550.02
			CC4	28300.02
			CC3	28200.06
		High	CC2	28100.10
			CC1	28000.14
	5CC		CC0	27900.18
	contiguous		CC4	28124.94
			CC3	28024.98
		Mid	CC2	27925.02
			CC1	27825.06
			CC0	27725.10
			CC4	27949.86
			CC0	27725.10

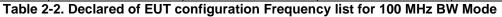


			CC5	28049.82
			CC6	28149.78
			CC7	28249.74
			CC0	27575.16
			CC1	27675.12
			CC2	27775.08
		Mid	CC3	27875.04
	a se a l'		CC4	27975.00
	contiguous		CC5	28074.96
	8ČC		CC6	28174.92
			CC7	28274.88
			CC0	27600.30
			CC1	27700.26
			CC2	27800.22
		High	CC3	27900.18
		i i i	CC4	28000.14
			CC5	28100.10
			CC6	28200.06
			CC7	28300.02
		Low	CC0	27550.02
	Non-contiguous		CC1	28249.74
	2CC	Mid	CC0	27575.16
			CC1	28274.88
		High	CC0	27600.30
		3	CC1	28300.02
			CC0	27550.02
		Low	CC1	27899.88
	Non continues		CC2	28249.74
N	Non-contiguous	N/: -1	CC0	27575.16
	3CC	Mid	CC1 CC2	27925.02
			CC0	<u>28274.88</u> 27600.30
		Lliah	CC0 CC1	27600.30
		High	CC2	28300.02
		+	CC2	27550.02
			CC0 CC1	27550.02 27783.30
		Low	CC2	28016.52
			CC3	28016.52
		<b>├</b>	CC0	27575.16
	Non-contiguous		CC1	27808.44
	4CC	Mid	CC2	28041.66
			CC3	28274.88
			CC0	27600.30
			CC1	27833.58
		High	CC2	28066.80
			CC3	28300.02
		+	CC0	27550.02
			CC1	27724.92
		Low	CC2	27899.88
	Non-contiguous		CC3	28074.84
	5CC		CC4	28249.74
		<u> </u>	CC0	27575.16
			CC1	27750.06
		Mid	CC2	27925.02
			CC3	28099.98
				Approved by:
FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAM SUN G	Quality Manager
Test Report S/N:	Test Dates: EU	ЛТ Туре:		
8K20090901-02-R2.A3L		Access Unit		Page 9 of 469
2020 PCTEST.	· •			PK-QP-16-09 Rev.02

PK-QP-16-09 Rev.02



		CC4	28274.88
		CC0	27600.30
		CC1	27775.20
	High	CC2	27950.16
	1.1.9.1	CC3	28125.06
		CC4	28300.02
		CC0	27550.02
		CC1	27689.94
		CC2	27829.92
	Low	CC3	27969.90
		CC4	28109.82
		CC5	28249.74
		CC0	27575.16
		CC1	27715.08
Non-contiguous		CC2	27855.06
6CC	Mid	CC3	27995.04
		CC4	28134.96
		CC5	28274.88
		CC0	27600.30
		CC1	27740.22
		CC2	27880.20
	High	CC3	28020.18
		CC4	28160.10
		CC5	28300.02
		CC0	27550.02
		CC1	27666.60
		CC2	27783.24
	Low	CC3	27899.88
	2000	CC4	28016.52
		CC5	28133.16
		CC6	28249.74
		CC0	27575.16
		CC1	27691.74
Non-contiguous		CC2	27808.38
7CC	Mid	CC3	27925.02
100	IVIIU	CC4	28041.66
		CC5	28158.30
		CC6	28274.88
		CC0	27600.30
		CC1	27716.88
		CC2	27833.52
	High	CC3	27833.52 27950.16
	i iigii	CC4	28066.80
		CC5	28183.44
		CC5 CC6	
Table 2-2 Declared of FU			28300.02



FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 10 of 100	
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 10 of 469	
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BW	Configuration	Channel	CC	Frequency [MHz]
			50 MHz	Bandwidth
			CC0	27525.30
		Low	100 MHz	Bandwidth
			CC0	27600.30
	contiguous			Bandwidth
	50 MHz 1CC		CC0	27850.02
	100 MHz 1CC	Mid		Bandwidth
	100 101 12 100		CC0	27925.02
				Bandwidth
		High	CC0	28225.02
				Bandwidth
			CC0	28300.02
				Bandwidth
			CC0	27525.30
		Low	CC1	27575.28
			100 MHz	Bandwidth
			CC0	27650.28
				Bandwidth
	contiguous		CC0	27850.02
	50 MHz 2CC	Mid	CC1	27900.00
				Bandwidth
	100 MHz 1CC			
			CC0	27975.00
				Bandwidth
		High	CC0	28175.04
			CC1	28225.02
50 MHz			100 MHz	Bandwidth
+ 100 MHz			CC0	28300.02
		Low	50 MHz	Bandwidth
			CC0	27525.30
				Bandwidth
			CC0	27600.30
			CC1	27700.26
				Bandwidth
	contiguous	Mid	CC0	27825.00
	50 MHz 1CC			Bandwidth
	100 MHz 2CC		CC0	27900.00
			CC1	27999.96
		High		Bandwidth
			CC0	28125.06
			100 MHz	Bandwidth
			CC0	28200.06
			CC1	28300.02
		1 1		Bandwidth
			CC0	27525.30
			CC0	27575.28
		Low		
				Bandwidth
	contiguous		CC0	27650.28
	50 MHz 2CC	ļ	CC1	27750.24
	100 MHz 2CC			Bandwidth
			CC0	27800.04
		Mid	CC1	27850.02
			100 MHz	Bandwidth
			CC0	27925.02
		1	~~~	
	CTEST	MEASUREMENT REPORT	SAMSUNG	Approved by:
FCC ID: A3LAT1K04-B10	Presed to b	(CEDTIEICATION)	on in o o it is	
	Proud to be part of relement	(CERTIFICATION)		Quality Manager
FCC ID: A3LAT1K04-B10 Test Report S/N: 8K20090901-02-R2.A3L	Test Dates: EU	(CERTIFICATION) IT Type: Access Unit		Quality Manager Page 11 of 469

PK-QP-16-09 Rev.02



4			004	00004.00
			CC1	28024.98
			50 MHz B	
			CC0	28075.08
			CC1	28125.06
		High	100 MHz E	
			CC0	28200.06
			CC1	
				28300.02
			50 MHz B	
			CC0	27525.30
		Low	100 MHz E	
		Low	CC0	27600.30
			CC1	27700.26
			CC2	27800.22
			50 MHz B	
	contiguous		CC0	27775.02
	50 MHz 1CC	Mid	100 MHz E	
	100 MHz 3CC	Initia	CC0	27850.02
	100 10112 300		CC1	27949.98
			CC2	28049.94
			50 MHz B	
			CC0	28025.10
		High	100 MHz E	
			CC0	28100.10
			CC1	28200.06
			CC2	28300.02
			50 MHz B	andwidth
50 MHz			CC0	27525.30
+		Low	CC1	27575.28
100 MHz			100 MHz E	
			CC0	27650.28
			CC1	27750.24
			CC2	27850.20
			50 MHz B	andwidth
		Mid	CC0	27750.06
	contiguous		CC1	27800.04
	50 MHz 2CC		100 MHz E	
	100 MHz 3CC		CC0	27875.04
	100 101 12 000			
			CC1	27975.00
			CC2	28074.96
			50 MHz B	
			CC0	27975.12
			CC1	28025.10
		High	100 MHz E	Bandwidth
		<u>9</u>	CC0	28100.10
			CC1	28200.06
			CC1 CC2	
				28300.02
			50 MHz B	
			CC0	27525.30
			100 MHz E	Bandwidth
	contiguous	Low	CC0	27600.30
	50 MHz 1CC		CC1	27700.26
	100 MHz 4CC		CC2	27800.22
			CC3	
				27900.18
		Mid	50 MHz B	
		IVIIG	CC0	27725.04
	A DCTEST	MEASUREMENT REPORT		Approved by:
FCC ID: A3LAT1K04-B10	Proud to be part of @ element	(CERTIFICATION)	SAMSUNG	Quality Manager
Test Report S/N:	Test Dates: E	EUT Type:		
8K20090901-02-R2.A3L				Page 12 of 469
OD ZUUMUMUH-UZ-RZASI	09/10/2020-10/08/2020 5	G Access Unit		
2020 PCTEST.				PK-QP-16-09 Rev.02



FCC ID: A3LAT1K04-B10 Test Report S/N:	contiguous 50 MHz 1CC 100 MHz 5CC	Low	100 MHz E CC0 CC1 CC2 CC3 CC4 50 MHz B CC0 CC1 CC2 CC3 CC4 CC2 CC3 CC4 50 MHz B CC0 CC4 50 MHz B CC0 100 MHz E	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth 27675.00 3andwidth 27750.00 27849.96 27949.92 28049.88 28149.84 andwidth 27825.18
	50 MHz 1CC	Mid	CC0 CC1 CC2 CC3 CC4 50 MHz B CC0 100 MHz B CC0 CC1 CC2 CC3 CC3 CC4 50 MHz B CC0	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth 27675.00 3andwidth 27750.00 27849.96 27949.92 28049.88 28149.84 andwidth 27825.18 3andwidth
	50 MHz 1CC	Mid	CC0 CC1 CC2 CC3 CC4 50 MHz B CC0 100 MHz B CC0 CC1 CC2 CC3 CC3 CC4 50 MHz B	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth 27675.00 3andwidth 27750.00 27849.96 27949.92 28049.88 28149.84 andwidth
	50 MHz 1CC		CC0 CC1 CC2 CC3 CC4 50 MHz B CC0 100 MHz E CC0 CC1 CC2 CC2 CC3 CC4	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth 27675.00 3andwidth 27750.00 27849.96 27949.92 28049.88 28149.84
	50 MHz 1CC		CC0 CC1 CC2 CC3 CC4 50 MHz B CC0 100 MHz B CC0 CC1 CC1 CC2 CC3	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth 27675.00 3andwidth 27750.00 27849.96 27949.92 28049.88
	50 MHz 1CC		CC0 CC1 CC2 CC3 CC4 50 MHz B CC0 100 MHz E CC0 CC1 CC1 CC2	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth 27675.00 3andwidth 27750.00 27849.96 27949.92
	50 MHz 1CC		CC0 CC1 CC2 CC3 CC4 50 MHz B CC0 100 MHz E CC0 CC0	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth 27675.00 3andwidth 27750.00 27849.96
	50 MHz 1CC		CC0 CC1 CC2 CC3 CC4 50 MHz B CC0 100 MHz E CC0	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth 27675.00 Bandwidth 27750.00
	50 MHz 1CC	Low	CC0 CC1 CC2 CC3 CC4 50 MHz B CC0 100 MHz E	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth 27675.00 Bandwidth
	50 MHz 1CC	Low	CC0 CC1 CC2 CC3 CC4 50 MHz B CC0	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth 27675.00
		Low	CC0 CC1 CC2 CC3 CC4 50 MHz B	27600.30 27700.26 27800.22 27900.18 28000.14 andwidth
		Low	CC0 CC1 CC2 CC3 CC4	27600.30 27700.26 27800.22 27900.18 28000.14
		Low	CC0 CC1 CC2 CC3	27600.30 27700.26 27800.22 27900.18
		Low	CC0 CC1 CC2	27600.30 27700.26 27800.22
		Low	CC0 CC1	27600.30 27700.26
		Low	CC0	27600.30
				Condwidth
				27525.30
			50 MHz B	
			CC3	28300.02
			CC1 CC2	28100.10 28200.06
			CC0 CC1	28000.14
		High		
50 MHz + 100 MHz			100 MHz E	
			CC0 CC1	27875.16 27925.14
			50 MHz B	
				28124.88
			CC3	
	50 MHz 2CC 100 MHz 4CC		CC2	28024.92
		Mid	CC0 CC1	27924.96
			CC0	27825.00
	contiguous		100 MHz E	
			CC1	27750.00
			CC0	27700.02
			50 MHz B	
			CC3	27950.16
			CC2	27850.20
			CC1	27750.24
		Low	CC0	27650.28
			100 MHz E	
			CC1	27575.28
			CC0	27525.30
			50 MHz B	
			CC3	28300.02
			CC2	28200.06
			CC1	28100.10
		High	CC0	28000.14
			100 MHz E	
			CC0	27925.14
			50 MHz B	
			CC3	28099.92
			CC2	27999.96
			CC1	27900.00
			CC0	27800.04
			100 MHz E	Bandwidth



50 MHz         - <th>14         10         06         02         30         28         24         20         16         12         04         02         98</th>	14         10         06         02         30         28         24         20         16         12         04         02         98
50 MHz	10 06 02 30 28 28 24 20 16 12 04 02 98
50 MHz	06 02 30 28 28 24 20 16 12 04 02 98
50 MHz	06 02 30 28 28 24 20 16 12 04 02 98
50 MHz         CC4         28300           50 MHz Bandwidth         CC0         27525           CC1         27575         100 MHz Bandwidth           CC2         27850         CC2         27850           CC3         27950         CC2         27650           CC4         28050         CC2         27650           CC4         28050         CC2         27650           CC4         28050         CC1         27750           CC0         27650         CC1         27750           CC0         27650         CC1         27750           CC0         27650         CC1         27750           CC1         277700         100 MHz Bandwidth         CC2         27974           CC2         27974         CC3         28074         CC4         28174           100 MHz         High         CC0         27775         CC1         27825           50 MHz         High         CC0         27900         CC4         28100           CC3         28000         CC2         28100         CC3         28200         CC4         28300           CC3         28100         CC2         28100         C	02 30 28 28 24 20 16 12 04 02 98
50 MHz         50 MHz Bandwidth           CC0         27525           CC1         27575           100 MHz Bandwidth         CC0           CC1         27750           CC2         27850           CC3         27950           CC4         28050           CC4         28050           CC1         27770           CC2         27874           CC0         27650           CC1         27770           CC1         27770           100 MHz Bandwidth         CC0           CC1         27770           100 MHz Bandwidth         CC2           CC2         27974           CC3         28074           CC4         28174           CC2         27975           CC1         27775           CC2         27974           CC3         28074           CC4         28174           S0 MHz         100 MHz Bandwidth           +         High         CC0         27775           CC1         27825         100 MHz Bandwidth           CC2         28100         CC1         28000           CC2	30 28 28 24 20 16 12 04 02 02 98
50 MHz          CC0         27525           CC1         27575         100 MHz Bandwidth           CC2         27850         CC1         27750           CC2         27850         CC2         27850           CC4         28050         CC1         27770           CC0         27650         CC1         27770           CC0         27650         CC1         27770           CC0         27775         CC1         27770           100 MHz 2CC         Mid         CC0         27775           100 MHz 5CC         Mid         CC2         27974           CC3         28074         CC2         27974           CC3         28074         CC4         28174           CC4         28174         CC0         27775           CC1         27825         100 MHz Bandwidth         CC1           CC2         27990         CC1         280074           CC1         27825         100 MHz Bandwidth         CC2           CC2         28100         CC2         28100           CC2         28100         CC1         28000           CC2         28100         CC2         28100<	28 28 24 20 16 12 04 02 02 98
50 MHz         +         High         CC1         27575           100 MHz Bandwidth         CC0         27650           CC1         27750         CC1         27750           CC2         27850         CC2         27850           CC4         28050         CC2         27650           CC1         27770         CC4         28050           CC1         27770         CC1         27770           CC1         27770         CC1         27770           CC1         27770         CC1         27770           CC1         27770         CC1         27825           S0 MHz SCC         Mid         CC2         27974           CC2         27974         CC2         27974           CC3         28074         CC4         28174           S0 MHz         High         CC0         27775           CC1         27825         CC1         27825           S0 MHz         High         CC0         277900           CC2         28100         CC2         28100           CC2         28100         CC2         28100           CC2         28100         CC4         28300	28 28 24 20 16 12 04 02 02 98
50 MHz         +         High         100 MHz Bandwidth           50 MHz         CC0         27650           50 MHz         00 CC3         27950           100 MHz 5CC         S0 MHz 2C1         27650           100 MHz 5CC         Mid         CC0         27650           100 MHz 5CC         Mid         CC1         27700           100 MHz 5CC         Mid         CC0         27775           100 MHz 5CC         Mid         CC1         27874           100 MHz 5CC         CC1         27874         CC2         28074           100 MHz 5CC         Mid         CC2         27974           100 MHz 5CC         CC1         27874         CC2         28074           100 MHz 5CC         Mid         CC2         27974           100 MHz 5CC         CC1         27825         28074           100 MHz 8andwidth         CC0         27890           100 MHz         High         CC0         27890           100 MHz 8andwidth         CC1         28000         27255           100 MHz 8andwidth         CC1         28000         28200           100 MHz 8andwidth         CC2         28100         28200	28 24 20 16 12 04 02 02 98
Low         CC0         27650           CC1         27750         CC2         27850           CC3         27950         CC4         28050           CC4         28050         CC1         27770           CC0         27650         CC4         28050           S0 MHz Bandwidth         CC0         27650         CC1         27770           100 MHz 2CC         Mid         CC0         27775         CC1         27874           100 MHz 5CC         Mid         CC0         27775         CC1         27874           CC2         27974         CC2         27974         CC2         27974           CC3         28074         CC4         28174         CC4         28174           S0 MHz         High         CC0         27775         CC1         27825           100 MHz 8andwidth         CC0         27775         CC1         27825           100 MHz         High         CC0         27900         CC1         27825           100 MHz         GC0         27900         CC1         27825         CC1         27825           100 MHz         GC0         27900         CC1         27825         CC1	24 20 16 12 04 02 02 98
Contiguous         CC1         27750           CC2         27850         CC3         27950           CC4         28050         CC4         28050           CC1         27700         CC1         27700           S0 MHz 2CC         Mid         CC0         27650           100 MHz 5CC         Mid         CC0         27775           CC1         27700         CC1         27700           100 MHz 5CC         Mid         CC2         27974           CC2         27974         CC2         28074           CC4         28174         CC2         28174           CC1         27825         CC1         27825           50 MHz         High         CC0         27775           CC1         27825         CC1         27825           50 MHz         High         CC0         27900           CC1         27825         CC1         28000           CC2         28100         CC1         28200           CC2         28100         CC2         28100           CC2         28100         CC2         28100           CC2         28100         CC2         28100 <t< td=""><td>24 20 16 12 04 02 02 98</td></t<>	24 20 16 12 04 02 02 98
50 MHz         -         CC2         27850           50 MHz 2CC         Mid         CC4         28050           100 MHz 5CC         CC1         27700           100 MHz 5CC         Mid         CC0         27650           CC1         27700         CC1         27700           100 MHz 5CC         Mid         CC0         27775           CC1         27874         CC2         27974           CC2         27974         CC3         28074           CC4         28174         CC4         28174           50 MHz         -         50 MHz Bandwidth         CC0         27775           CC1         27825         CC1         27825         28074           100 MHz         High         CC0         27775         CC1         27825           50 MHz         High         CC0         27900         CC1         28200           CC1         282800         CC1         28200         CC2         28100         CC3         28200           CC2         28100         CC4         28300         S0 MHz Bandwidth         CC2         28100           CC3         28200         CC4         28300         CC4	20 16 12 04 02 02 98
50 MHz	16 12 04 02 02 98
50 MHz         +         Kid         CC3         27950           50 MHz 2CC         Mid         CC0         27650           100 MHz 5CC         Mid         CC0         27775           100 MHz 5CC         Mid         CC1         27774           CC2         27974         CC2         27974           CC3         28074         CC2         27974           CC4         28174         CC3         28074           CC4         28174         CC0         27775           S0 MHz         High         CC0         27775           CC1         27825         100 MHz Bandwidth         CC1           CC1         27825         CC1         27825           100 MHz         High         CC0         27900           CC1         27825         28004         CC1         28000           CC2         28100         CC1         28000         CC2         28100           CC3         28200         CC4         28300         CC4         28300           CC3         28200         CC4         28300         CC4         28300           CC4         28300         CC4         28300         CC4	16 12 04 02 02 98
Contiguous         S0 MHz Bandwidth           50 MHz 2CC         Mid         CC0         27650           100 MHz 5CC         Mid         CC0         27775           100 MHz 5CC         Mid         CC1         27775           100 MHz 5CC         Mid         CC2         27974           CC1         27874         CC2         27974           CC2         27974         CC2         28074           CC2         27775         CC1         27825           50 MHz         +         50 MHz Bandwidth         CC0         27775           50 MHz         +         High         CC0         27900           100 MHz         CC1         27825         100 MHz Bandwidth           CC1         27825         CC1         28000           CC2         28100         CC2         28100           CC2         28100         CC3         28200           CC4         28300         CC4         28300           CC3         28200         CC4         28300           CC4         28300         CC4         28300           CC4         28300         CC4         28300           CC4         28300 <td>12 04 02 02 98</td>	12 04 02 02 98
50 MHz Bandwidth           Contiguous           50 MHz 2CC           100 MHz 5CC           Mid           CC1           27775           100 MHz 5CC           Mid           CC1           27874           CC2           CC3           28074           CC4           28174           CC0           27775           CC1           27874           CC2           27974           CC3           28074           CC4           28174           C0           27775           CC1           27775           CC1           27775           CC1           27825           100 MHz           High           CC0           27900           CC1           28000           CC2           28100           CC2           CC3           28200           CC4           28300           CC4           28000	04 02 02 98
contiguous         Mid         CC0         27650           50 MHz 2CC         Mid         CC1         27770           100 MHz 5CC         CC1         27874           CC2         27974         CC2         27974           CC3         28074         CC4         28174           CC0         27775         CC1         27825           50 MHz	02 02 98
Contiguous         Mid         CC1         27700           50 MHz 2CC         Mid         CC0         27775           100 MHz 5CC         CC1         27874           CC2         27974         CC2         27974           CC3         28074         CC4         28174           CC4         28174         CC1         27755           50 MHz         50 MHz Bandwidth         CC0         27775           CC1         27825         CC1         27825           50 MHz         High         CC0         27900           100 MHz         CC1         28000         CC1         28000           CC2         28100         CC2         28100           CC1         28000         CC2         28100           CC2         28100         CC2         28100           CC2         28100         CC2         28100           CC2         28100         CC2         28100           CC3         28200         CC4         28300           CC4         28300         S0 MHz Bandwidth         CC0           CC0         27525         S0 MHz Bandwidth         S0 MHz Bandwidth	02 02 98
50 MHz 2CC 100 MHz 5CC         Mid         100 MHz Bandwidth CC0         27775 CC1         27874 CC2         CC2         27974 CC3         28074 CC4         28174 CC4         28174 CC1         27755 CC1         27775 CC1         27775 CC1         27775 CC1         27825         CC1         27825         28000 CC2         28000 CC2         28100 CC2         28100 CC2         28100 CC2         28100 CC2         28100 CC2         28100 CC2         28200 CC4         28300 CC4         28300 CC4         28300 CC4         28300 CC4         28300 CC4         28300 CC4         28300 CC4         27525         28200 CC4         27525         2755        2	02 98
50 MHz 2CC 100 MHz 5CC         Mid         CC0         27775           CC1         27874         CC2         27974           CC3         28074         CC4         28174           CC4         28174         CC0         27775           S0 MHz         50 MHz Bandwidth         CC0         27775           S0 MHz         High         CC0         27775           CC1         27825         CC1         27825           S0 MHz         High         CC0         27900           CC1         28000         CC1         28000           CC2         28100         CC2         28100           CC2         28100         CC2         28100           CC2         28100         CC2         28100           CC2         28100         CC4         28300           CC4         28300         S0 MHz Bandwidth         S0 MHz Bandwidth	98
50 MHz         100 MHz 5CC         CC1         27874           CC2         27974         CC2         28074           CC4         28174         CC4         28174           CC0         27775         CC1         27825           S0 MHz         +         High         CC0         277900           100 MHz         High         CC0         27900           CC1         28000         CC1         28000           CC2         28100         CC2         28100           CC3         28200         CC4         28300           CC4         28300         S0 MHz Bandwidth         CC0         27525	98
50 MHz         CC2         27974           +         50 MHz Bandwidth         CC4         28174           100 MHz         CC0         27775           CC1         27825         CC1         27825           100 MHz         High         CC0         27900           CC2         28100         CC1         28000           CC2         28100         CC2         28100           CC2         28100         CC2         28100           CC3         28200         CC4         28300           CC4         28300         S0 MHz Bandwidth         CC0         27525	
50 MHz         CC3         28074           +         50 MHz Bandwidth         50 MHz Bandwidth           100 MHz         CC1         27825           100 MHz         100 MHz Bandwidth         CC1           CC1         27900         27900           CC2         28100         CC2           CC3         28200         CC4           CC4         28300         CC4           CC3         28200         CC4           CC4         28300         CC4           CC4         28300         CC4           CC0         27525         CC4	94
50 MHz         CC3         28074           +         50 MHz Bandwidth         50 MHz Bandwidth           100 MHz         CC1         27825           100 MHz         100 MHz Bandwidth         CC1           CC1         27900         27900           CC2         28100         CC2           CC3         28200         CC4           CC4         28300         CC4           CC3         28200         CC4           CC4         28300         CC4           CC0         27525         CC4	
50 MHz         50 MHz Bandwidth           +         100 MHz Bandwidth           100 MHz         CC0         27775           CC1         27825           CC1         27825           CC1         27800           CC1         28000           CC2         28100           CC3         28200           CC4         28300           50 MHz Bandwidth         CC3           CC3         28200           CC4         28300           CC4         28300           CC4         28300           CC4         28300           CC4         28300           CC4         28300	
50 MHz         50 MHz Bandwidth           50 MHz         CC0         27775           50 MHz         100 MHz Bandwidth         27825           100 MHz         100 MHz Bandwidth         CC0         27900           100 MHz         CC1         28000         CC2         28100           CC3         28200         CC4         28300           50 MHz Bandwidth         CC0         27525	
50 MHz         High         CC0         27775           50 MHz         100 MHz Bandwidth         27825           100 MHz         CC0         27900           100 MHz         CC1         28000           CC2         28100         CC3         28200           CC4         28300         50 MHz Bandwidth           CC0         27525         27525	50
50 MHz         High         CC1         27825           100 MHz         High         CC0         27900           100 MHz         CC1         28000           CC2         28100         CC3         28200           CC4         28300         CC4         28300           50 MHz Bandwidth         CC0         27525	20
50 MHz         100 MHz Bandwidth           +         High         CC0         27900           100 MHz         CC1         28000         CC2         28100           CC3         28200         CC4         28300           CC4         28300         50 MHz Bandwidth           CC0         27525         27525	
+ 100 MHz High CC0 27900 CC1 28000 CC2 28100 CC3 28200 CC4 28300 CC4 28300 CC4 28300 CC4 27525	18
100 MHz CC1 28000 CC2 28100 CC3 28200 CC4 28300 CC4 28300 50 MHz Bandwidth CC0 27525	
CC2         28100           CC3         28200           CC4         28300           50 MHz Bandwidth         CC0           CC0         27525	18
CC3         28200           CC4         28300           50 MHz Bandwidth         CC0         27525	14
CC3         28200           CC4         28300           50 MHz Bandwidth         CC0         27525	10
CC4         28300           50 MHz Bandwidth         CC0         27525	
50 MHz Bandwidth CC0 27525	
CC0 27525	02
	20
	30
CC0 27600	
Low CC1 27700	26
CC2 27800	22
CC3 27900	
CC4 28000	
CC5 28100	
50 MHz Bandwidth	10
	00
	JZ
50 MHz 1CC 100 MHz Bandwidth	
100 MHz 6CC CC0 27700	
Mid CC1 27799	
CC2 27899	94
CC3 27999	90
CC4 28099	
CC5 28199	
50 MHz Bandwidth	
	82
High 100 MHz Bandwidth	82
CC0 27800	82 22
CC1 27900	82 22 22
	82 22 22
FCC ID: A3LAT1K04-B10 Provide to be part of @ memory (CERTIFICATION) MEASUREMENT REPORT (CERTIFICATION) Approved Quality Ma	82 22 22 18
Fast Datas: EUT Type:	82 22 22 18 by:
Bits Report S/N:         Test Dates:         EOT Type:         Page 14 o           3K20090901-02-R2.A3L         09/10/2020-10/08/2020         5G Access Unit         Page 14 o	82 22 22 18 by: nager
8K20090901-02-R2.A3L 09/10/2020-10/08/2020 5G ACCess Unit 2020 PCTEST. PK-C	82 22 22 18 by: nager



			CC0	27525.30
			CC1	27575.28
				Bandwidth
		Low	CC0	27650.28
		2011	CC1	27750.24
			CC2	27850.20
	contiguous		CC3	27950.16
			CC4	28050.12
			CC5	28150.08
				Bandwidth
			CC0	27600.06
			CC1	27650.04
				Bandwidth
	50 MHz 2CC	Mid	CC0 CC1	27725.04
	100 MHz 6CC		CC1 CC2	27825.00 27924.96
			CC3	28024.92
			CC4	28124.88
50 MHz + 100 MHz			CC5	28224.84
				Bandwidth
			CC0	27675.24
			CC1	27725.22
				Bandwidth
			CC0	27800.22
		High	CC1	27900.18
			CC2	28000.14
			CC3	28100.10
			CC4	28200.06
			CC5	28300.02
		Low		Bandwidth
			CC0	27525.30
				Bandwidth
	Non-contiguous		CC0	28249.74
				Bandwidth
	50 MHz 1CC	Mid	CC0	27550.02
	50 MHz 1CC 100 MHz 1CC	NIG		Bandwidth
			CC0	28274.46
				Bandwidth
		High	CC0	27575.58
				Bandwidth
		+		28300.02
				Bandwidth
			CC0	27525.30
	Non continues	Low	CC1	27887.52
	Non-contiguous 50 MHz 2CC		<u>100 MHz</u> CC0	Bandwidth 28249.74
	100 MHz 1CC			Bandwidth
		Mid	CC0 CC1	27550.02
				27912.24 Bandwidth
FCC ID: A3LAT1K04-B10			SAMSUNG	Approved by:
	Proud to be part of () element	(CERTIFICATION)		Quality Manager
Test Report S/N:	Test Dates: El	JT Type:		



			CC0	28274.46
			50 MHz Ba	ndwidth
			CC0	27575.58
		High	CC1	27937.80
			100 MHz Ba	
			CC0	28300.02
			50 MHz Ba	
			CC0	27525.30
		Low	100 MHz Ba	Indwidth
l			CC0	27887.52
			CC1	28249.74
			50 MHz Bai	
	Non-contiguous	—	CC0	27550.02
		N 4: -1		
	50 MHz 1CC	Mid	100 MHz Ba	
	100 MHz 2CC		CC0	27912.24
			CC1	28274.46
			50 MHz Bai	ndwidth
			CC0	27575.58
		High	100 MHz Ba	
			CC0	27937.80
			CC1	28300.02
			50 MHz Bar	
			CC0	27525.30
		Low	CC1	27766.80
50 MHz + 100 MHz			100 MHz Ba	Indwidth
			CC0	28008.30
			CC1	28249.74
			50 MHz Bai	
			CC0	27550.02
100 10112	Non-contiguous			
	50 MHz 2CC 100 MHz 2CC	Mid	CC1	27791.52
			100 MHz Ba	
			CC0	28033.02
			CC1	28274.46
			50 MHz Ba	ndwidth
		High	CC0	27575.58
			CC1	27817.08
			100 MHz Ba	
			CC0	28058.58
			CC1	28300.02
			50 MHz Bai	ndwidth
			CC0	27525.30
			100 MHz Ba	
		Low	CC0	27766.80
			CC1	28008.30
			CC2	
				28249.74
	Non-contiguous		50 MHz Bai	
	50 MHz 1CC		CC0	27550.02
	100 MHz 3CC	Mid	100 MHz Ba	Indwidth
		Mid	CC0	27791.52
			CC1	28033.02
			CC2	28274.46
		<u> </u>		
			50 MHz Bai	
		High	CC0	27575.58
		·	100 MHz Ba	
			CC0	27817.08
				Approved by:
FCC ID: A3LAT1K04-B10		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	
Tool Dana - ( O/b):				Quality Manager
Test Report S/N:		JT Type:		Page 16 of 469
8K20090901-02-R2.A3L © 2020 PCTEST.	09/10/2020-10/08/2020 50	Access Unit		PK-QP-16-09 Rev.02
UZUZU PUTEST.				PK-QP-16-09 KeV.02



Proud to be part of element			CC1	20050 50
			CC1 CC2	28058.58 28300.02
			50 MHz B	
			CC0	27525.30
			CC1	27706.38
		Low	100 MHz B	
			CC0	27887.52
			CC1	28068.66
			CC2	28249.74
			50 MHz Ba	
			CC0	27550.44
	Non-contiguous		CC1	27731.52
	50 MHz 2CC	Mid	100 MHz B	
	100 MHz 3CC		CC0	27912.66
			CC1	28093.80
			CC2	28274.88
			50 MHz Ba	
			CC0	27575.58
			CC1	27756.66
		High	100 MHz B	
			CC0	27937.80
			CC1	28118.94
			CC2	28300.02
			50 MHz Ba	
			CC0	27525.30
			100 MHz B	
50 MHz + 100 MHz		Low	CC0	27706.38
			CC1	27887.52
			CC2	28068.66
			CC3	28249.74
			50 MHz Ba	
			CC0	27550.02
	Non-contiguous		100 MHz B	
	50 MHz 1CC	Mid	CC0	27731.10
	100 MHz 4CC		CC1	27912.24
			CC2	28093.38
			CC3	28274.46
			50 MHz Ba	
			CC0	27575.58
			100 MHz B	
		High	CC0	27756.66
			CC1	27937.80
			CC2	28118.94
			CC3	28300.02
			50 MHz Ba	
			CC0	27525.30
			CC1	27670.20
			100 MHz B	
	Non-contiguous	Low	CC0	27815.10
	50 MHz 2CC		CC1	27960.00
	100 MHz 4CC		CC2	28104.90
			CC3	28249.74
			50 MHz Ba	
		Mid	CC0	27550.02
			CC1	27694.92
		· · · · · · · · · · · · · · · · · · ·		
FCC ID: A3LAT1K04-B10		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by:
Test Report S/N:	,	Т Туре:		Quality Manager
8K20090901-02-R2.A3L		Access Unit		Page 17 of 469
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Test Report S/N:	Test Dates: EU	Т Туре:		
FCC ID: A3LAT1K04-B10	Proud to be part of ( element	(CERTIFICATION)	SAMSUNG	Quality Manager
	CTEST	MEASUREMENT REPORT	SAMSUNG	Approved by:
			CC4	28274.46
			CC3	28153.68
			CC2	28032.96
			CC1	27912.24
		Mid	CC0	27791.52
			100 MHz Ba	
			CC1	27670.80
	100 MHz 5CC		CC0	27550.02
	50 MHz 2CC		50 MHz Ba	
	Non-contiguous		CC4	28249.74
			CC3	28128.96
			CC2	28008.24
			CC1	27887.52
		Low	CC0	27766.80
			100 MHz Ba	
			CC1	27646.08
				27525.30
			50 MHz Ba	
			CC4	28300.02
			CC3	28155.18
			CC2	28010.28
		High	CC1	27865.38
		High	CC0	27720.48
			100 MHz Ba	
			CC0	27575.58
			50 MHz Ba	
100 MHz			CC4	28274.46
+			CC3	28129.62
50 MHz			CC2	27984.72
	100 MHz 5CC		CC1	27839.82
	50 MHz 1CC	Mid	CC0	27694.92
	Non-contiguous		100 MHz Ba	
				27550.02
			50 MHz Ba	
			CC4	28104.90
			CC3	28104.90
			CC2	27960.00
		Low	CC1	27815.10
			CC0	27670.20
			100 MHz Ba	
			CC0	27525.3
			50 MHz Ba	ndwidth
			CC3	28300.02
			CC2	28155.18
			CC1	28010.28
		High	CC0	27865.38
		Llink	100 MHz Ba	
			CC1	27720.48
		1	CC0	27575.58
			50 MHz Ba	
			CC3	28274.46
			CC2	28129.62
			CC1	27984.72
			CC0	27839.82
			100 MHz Ba	



Non-contiguous 50 MHz 2CC 100 MHz 6CC	Low	CC5 50 MHz Ba CC0 CC1	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth 27625.02 27700.02	
50 MHz 2CC 100 MHz 6CC	Mid	CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC4           CC5           50 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC0           CC1           C00 MHz Ba           CC0           CC1           CC0           CC1           CC0           CC1           CC2           CC3           CC3           CC4	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth 27625.02 27700.02 andwidth 27799.98 27899.94 27999.90 28099.86 28199.82 Approved by:	
50 MHz 2CC 100 MHz 6CC	Mid	CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC4           CC5           50 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC0           CC1           C00 MHz Ba           CC0           CC1           CC0           CC1           CC0           CC1           CC2           CC3           CC3           CC4	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth 27625.02 27700.02 andwidth 27799.98 27899.94 27999.90 28099.86 28199.82	
50 MHz 2CC		CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC4           CC5           50 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC0           CC1           CC0           CC1           CC2           CC3	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth 27625.02 27700.02 andwidth 27799.98 27899.94 27999.90 28099.86	
50 MHz 2CC		CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC4           CC5           50 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC0           CC1           CC0           CC1           CC0           CC1	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth 27625.02 27700.02 andwidth 27799.98 27899.94 27999.90	
50 MHz 2CC		CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth 27625.02 27700.02 andwidth 27799.98 27899.94	
50 MHz 2CC		CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth 27625.02 27700.02 andwidth 27799.98	
50 MHz 2CC		CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           100 MHz Ba           CC0	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth 27625.02 27700.02 andwidth 27799.98	
50 MHz 2CC		CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           C00           CC1	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth 27625.02 27700.02 andwidth	
50 MHz 2CC	Low	CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC0           CC1           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba           CC0           CC1	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth 27625.02 27700.02	
50 MHz 2CC	Low	CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC2           CC3           CC4           CC5           50 MHz Ba	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74 indwidth	
50 MHz 2CC	Low	CC5         50 MHz Ba           CC0         CC1           100 MHz Ba         CC0           CC1         CC1           CC2         CC3           CC4         CC5	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 28100.10 28249.74	
	Low	CC5         50 MHz Ba           CC0         CC1           CC0         CC0           CC0         CC1           CC0         CC1           CC1         CC2           CC2         CC3           CC4         CC4	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18 27900.18 28100.10	
Non-contiguous	Low	CC5         50 MHz Ba           CC0         CC1           100 MHz Ba         CC0           CC1         CC1           CC0         CC1           CC1         CC2           CC2         CC3	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18 27900.18	
	Low	CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1           CC0           CC1           CC0           CC1	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22 27900.18	
	Low	CC5           50 MHz Ba           CC0           CC1           100 MHz Ba           CC0           CC1	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26 27800.22	
	Low	CC5 50 MHz Ba CC0 CC1 100 MHz Ba CC0	28300.02 indwidth 27525.30 27600.30 andwidth 27700.26	
		CC5 50 MHz Ba CC0 CC1 100 MHz Ba	28300.02 indwidth 27525.30 27600.30 andwidth	
		CC5 50 MHz Ba CC0 CC1	28300.02 indwidth 27525.30 27600.30	
		CC5 50 MHz Ba CC0	28300.02 indwidth 27525.30	
		CC2         27937.80           CC3         28058.52           CC4         28179.24           CC5         28300.02           50 MHz Bandwidth           CC0         27525.30		
		CC5	28300.02	
		CC5	28300.02	
		CC2		
	High	CC1	27817.08	
		CC0	27696.36	
		100 MHz Ba		
		CC0	27575.58	
		50 MHz Ba		
	CC4 CC5	28274.46		
		CC4	28153.68	
		CC3	28032.96	
100 MHz 6CC		CC2	27912.24	
50 MHz 1CC	Mid	CC1	27791.52	
Non-contiguous		CC0	27670.80	
		100 MHz Ba		
		CC0	27550.02	
		50 MHz Ba		
		CC5	28249.74	
		CC4	28128.96	
		CC3	28008.24	
		CC2	27887.52	
	Low	CC1	27766.80	
		CC0	27646.08	
		100 MHz Ba		
		CC0	27525.30	
		CC4	28300.02	
			28179.24	
			28058.52	
			27937.80	
	High		27817.08	
			27696.36	
			27575.58	
		50 MHz Ba	ndwidth	
	50 MHz 1CC	Non-contiguous 50 MHz 1CC Mid 100 MHz 6CC	High         CC0           High         CC1           100 MHz B:         CC1           CC2         CC3           CC4         CC0           CC0         CC4           Low         CC0           CC0         CC2           CC0         CC3           CC0         CC0           CC0         CC0           CC0         CC1           CC0         CC1           CC0         CC3           CC1         CC2           CC3         CC0           CC1         CC3           CC1         CC3           CC1         CC3           CC1         CC3           CC1         CC1           CC1         CC1           CC1         CC1           CC1         CC3           CC1         CC1           CC1         CC3           CC2         CC3           CC1         CC2           CC3         CC1           CC1         CC3           CC2         CC3           CC4         CC3           CC0         CC1           C	



		CC5	28274.82
		50 MHz	Bandwidth
		CC0	27725.22
		CC1	27800.22
50 MHz		100 MHz Bandwidth	
+	High	CC0	27900.18
100 MHz	High	CC1	28000.14
		CC2	28100.10
		CC3	28200.06
		CC4	28300.02
		CC5	28300.02

Table 2-3. Declared of EUT configuration Frequency list for 50 MHz + 100 MHz BW Mode

# 2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 20 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit	Page 20 of 469
0120030301 02 112://OE	03/10/2020 10/00/2020		



## 3.0 DESCRIPTION OF TESTS

### 3.1 Measurement Procedure

The measurement procedures described in the document titled "American National Standard for Compliance Testing of Transmitter Used in Licensed Radio Service" (ANSI C63.26-2015) and the guidance provided in KDB 842590 D01 v01r01 were used in the measurement of the EUT.

### 3.2 Radiated Power and Radiated Spurious Emissions

§30.202, §30.203, §30.404, §30.405

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for Final measurement and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a  $8.5 \text{ m}(L) \times 6.1 \text{ m}(W) \times 5.6 \text{ m}(H)$  elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1 GHz. For measurements below 1 GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80 cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5 m.

Made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5 m for measurements above 1 GHz.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable. The measurement antenna is in the far field of the EUT per formula  $2D^2/\lambda$  where D is the larger between the dimension of the measurement antenna and the transmitting antenna of the EUT. In this case, "D" is the largest dimension of the measurement antenna. The EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

Frequency Range [GHz]	Wavelength [cm]	Far Field Distance [m]	Measurements Distance [m]
18 to 40	0.749	3.19	3.19
40 to 60	0.500	1.39	3.19
60 to 90	0.333	0.91	3.19
90 to 100	0.214	0.58	2.00

Table 3-1. Far-Field Distance & Measurement Distance per Frequency Range

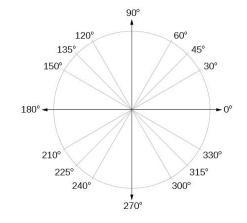
Radiated power levels are investigated with the receive antenna horizontally and vertically polarized. Additionally, the receive antenna was rotated on various angles to investigate worst case emissions on each EUT antenna array. The EUT antenna array polarization and horn antennas angle are denoted as follows:

FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 21 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 21 of 469
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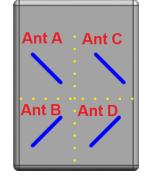
### Horn antenna at 135 degrees







### 5G Access Unit Antenna Array Polarization



The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions' occupied bandwidth. The EIRP is calculated from the raw power level measured with the spectrum analyzer using the formulas shown below.

### **Effective Isotropic Radiated Power Sample Calculation**

The measured e.i.r.p is converted to E-field in V/m. Then the distance correction is applied before converted back to calculated e.i.r.p.as explained in KDB 971168 D01 D01 v03r01.

	= 65.42 dBm e.i.r.p.
	= 10*log((101.39 V/m * 3.19 m)^2/30) + 30 dB
e.i.r.p. [dBm]	= 10*log((E-Field*D <sub>m</sub> )^2/30) + 30 dB
	= 10^(160.12/20)/1000000 = 101.39 V/m
	= -5.28 dBm + (47.07 dB/m + 11.33 dB) + 107 = 160.12 dBuV/m
Field Strength [dB $\mu$ V/m]	= Measured Value [dBm] + AFCL [dB/m] + 107

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 22 of 469
© 2020 PCTEST.	•			PK-QP-16-09 Rev.02



# Sample MIMO e.i.r.p. Calculation:

The e.i.r.p at Antenna A, Antenna B, Antenna C and Antenna D were first measured individually. The measured values were then summed in linear power units then converted back to dBm for the co-polarized antennas.

Conversion to linear value	= 10^(e.i.r.p/10) = 10^(47.67/10) = 58479 mW
MIMO e.i.r.p.	= e.i.r.p.A + e.i.r.p.c
	= 58479 mW + 53088 mW
	= 10*log(111567 mW)
	= 50.48 dBm
For summation across all anten	inas,
MIMO e.i.r.p.	= e.i.r.p. <sub>A</sub> + e.i.r.p. <sub>B</sub> + e.i.r.p.c + e.i.r.p. <sub>D</sub>
	= 58479 mW + 54576 mW + 53088 mW + 52360 mW
	= 10*log(218503 mW)

= 53.39 dBm

FCC ID: A3LAT1K04-B10		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 23 of 469
© 2020 PCTEST.		•		PK-QP-16-09 Rev.02



## 4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the  $U_{CISPR}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (±dB)
Conducted Bench Top Measurements	2.51
Radiated Disturbance (<1 GHz)	3.29
Radiated Disturbance (>1 GHz)	4.94

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 24 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 24 of 469
2 2020 PCTEST.				PK-QP-16-09 Rev.02



# 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacture	Model	Description	Cal Date	Cal interval	Cal Due	Serial Number
Rohde & Schwarz	FSW43	Signal & Spectrum Analyzer	09/17/2020	Annual	09/16/2021	101250
KIKISUI	PWR1201ML	DC POWER SUPPLY	05/20/2020	Annual	05/19/2021	ZL000973
SUKSAN TECHNOLOGY	SE-CT-10	Temperature Chamber	09/17/2020	Annual	09/16/2021	191021
Schwarzbeck	VULB9162	Broadband TRILOG Antenna	07/09/2019	Biennial	07/08/2021	9162-217
Sunol sciences	DRH-118	Horn Antenna	08/09/2019	Biennial	08/08/2021	A102416-1
Schwarzbeck	BBHA 9170	Horn Antenna	09/02/2020	Biennial	09/01/2022	1037
MIWV	261F-25/387	Horn Antenna	06/10/2020	Annual	06/09/2021	2019
MIWV	261U-25/383	Horn Antenna	06/01/2020	Annual	05/31/2021	2019
MIWV	261G-25/387	Horn Antenna	06/10/2020	Annual	06/09/2021	-
Radiometer Physics	FS-Z140	Harmonic Mixer	03/13/2020	Annual	03/12/2021	101135
Radiometer Physics	FS-Z60	Harmonic Mixer	03/13/2020	Annual	03/12/2021	100981
Rohde & Schwarz	FS-Z90	Harmonic Mixer	10/23/2019	Annual	10/22/2020	101860

Table 5-1. Test Equipment

### Notes:

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 05 at 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 25 of 469
© 2020 PCTEST.	•	•		PK-QP-16-09 Rev.02



# 6.0 SAMPLE CALCULATIONS

### **Emission Designator**

### **QPSK Modulation**

### Emission Designator = 80M0G7D

BW = 800 MHz

- G = Phase Modulation
- 7 = Quantized/Digital Info
- D = Data transmission, telemetry, telecommand

### **QAM Modulation**

#### Emission Designator = 80M2W7D

BW = 802 MHz W = Amplitude/Angle Modulated 7 = Quantized/Digital Info D = Data transmission, telemetry, telecommand

FCC ID: A3LAT1K04-B10		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 26 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 26 of 469
© 2020 PCTEST.		•		PK-QP-16-09 Rev.02



# 7.0 TEST RESULTS

### 7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LAT1K04-B00
FCC Classification:	Part 30 Fixed Transmitter (5GB)
Mode(s):	TDD

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	RADIATED	PASS	Section 7.2
30.202	EIRP Density	EIRP Density of 75 dBm/100 MHz		PASS	Section 7.3
2.1046	RF Output Power	N/A		PASS	Section 7.4
2.1051 30.203	Out-of-Band Spurious Emissions	-13 dBm/MHz		PASS	Section 7.5
2.1051 30.203	Out-of-Band Emissions at the Band Edge	-13 dBm/MHz for all out-of-band emissions, -5 dBm/MHz from the band edge up to 10 % of the channel BW		PASS	Section 7.6
2.1055	Frequency Stability	Fundamental emissions stay within authorized frequency block		PASS	Section 7.7

Table 7-1. Summary of Radiated Test Results

#### Notes:

- 1) All modes of operation and modulations were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) Per 2.1057(a)(3), spurious emissions were investigated up to 100 GHz for n261.
- 3) All radiated emission measurements at the band edge are converted to an equivalent conductive power by subtracting the known antenna gain from the EIRP measured at each frequency of interest. These emissions are compared to the 30.203 spurious emission limits as conductive power levels.
- 4) The radiated RF output power and all out-of-band emissions in the spurious domain are evaluated to the EIRP limits.
- 5) The fundamental band consists of 1 8 component carriers, referred as "CC" in this report. Lowest frequency CC is CC0 and highest frequency CC is CC7.
- 6) In the following tables, the term "CCs Active" refers to which component carrier is transmitting for a particular test.
- 7) CCs active 0, 4, 7 = 1 Components Carriers Active, 0-7 = 8 Component Carriers Active. 0-7(NC) = 8 Noncontiguous Component Carriers Active. Each component carrier's bandwidth is either of 50 MHz or 100 MHz.
- A3LAT1K04-B10 test result is referenced from A3LAT1K04-B00 test result which only AC and DC power supply type. Power condition is not affected to RF specification which had been checked from manufacturer and testing laboratory in PCTEST.

FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 07 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 27 of 469
© 2020 PCTEST.	•	•		PK-QP-16-09 Rev.02



# 7.2 Occupied Bandwidth §2.1049

### **Test Overview**

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

#### Test Procedure Used

ANSI C63.25-2015 Section 5.4.3 KDB 842590 D01 v01r01 Section 4.3

#### **Test Settings**

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 5 % of the expected OBW
- 3. VBW  $\geq$  3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within 1 5 % of the

99 % occupied bandwidth observed in Step 7

#### Test Notes

A3LAT1K04-B10 test result is referenced as A3LAT1K04-B00 result which only difference of power type as AC and DC which supply condition no affect to RF specification.

FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 29 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 28 of 469
© 2020 PCTEST.				PK-QP-16-09 Rev.02



# 7.2.1 Antenna A Occupied Bandwidth

EUT Operating	Antenna	Configuration	CCs Active	Channel	Modulation	OBW [MHz]
		1CC	0	Mid	QPSK	46.64
		1CC	0	Mid	16QAM	46.51
50 MHz		1CC	0	Mid	64QAM	46.58
		2CC	0-1	Mid	QPSK	95.48
		2CC	0-1	Mid	16QAM	95.59
	А	2CC	0-1	Mid	64QAM	95.52
	A	1CC	0	Mid	QPSK	95.06
		1CC	0	Mid	16QAM	94.52
100 MH-		1CC	0	Mid	64QAM	94.60
100 MHz		8CC	0-7	Mid	QPSK	786.63
		8CC	0-7	Mid	16QAM	787.72
		8CC	0-7	Mid	64QAM	786.29

 Table 7-2.
 Antenna A Occupied Bandwidth Summary Data

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 29 of 469
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		
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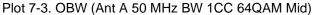


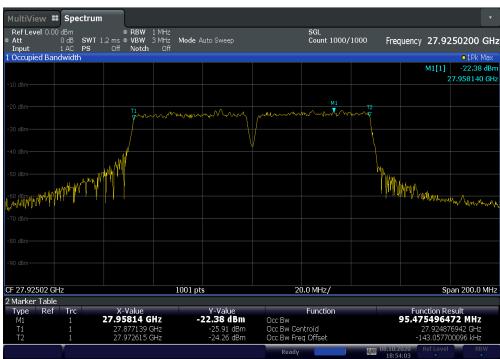
### Plot 7-2. OBW (Ant A 50 MHz BW 1CC 16QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 30 of 469
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#### Plot 7-4. OBW (Ant A 50 MHz BW 2CC QPSK Mid)

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Test Report S/N:	Test Dates:	EUT Type:		Dage 21 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 31 of 469
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#### ACLRResults



ACLRResults





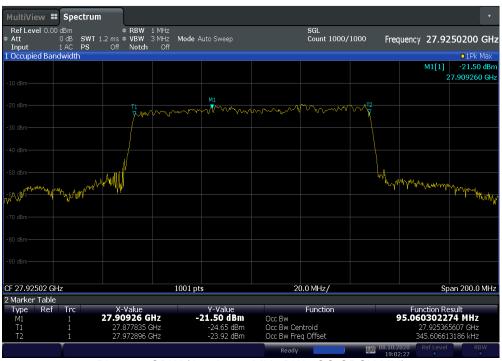
#### MultiView 📰 Spectrum Ref Level 0.00 dBm • RBW 1 MHz • Att 0.dB SWT 1.2 ms • VBW 3 MHz Mode Auto Sweep Input 1.AC PS Off Notch Off 1 1 Occupied Bandwidth 0 0 0 0 0 0 SGL Count 1000/1000 Frequency 27.9250200 GHz M1[1] -23.57 dBm 27.889910 GHz An c MMPANINA CF 27.92502 GHz 1001 pts 20.0 MHz/ Span 200.0 MHz 2 Marker Table X-Value 27.88991 GHz Ref Trc Y-Value -23.57 dBm Function Function Result 95.523199259 MHz Туре M1 T1 T2 Occ Bw Occ Bw Centroid Occ Bw Freq Offset 27.877069 GHz 27.972592 GHz 27.924830612 GHz -189.388277 kHz -24.69 dBm -25.26 dBm

#### Plot 7-6. OBW (Ant A 50 MHz BW 2CC 64QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 22 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 32 of 469
© 2020 PCTEST				PK-OP-16-09 Rev 02



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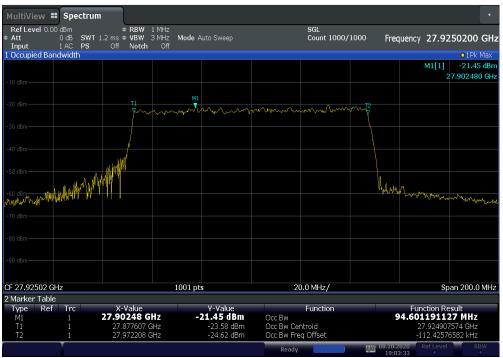


#### MultiView 📰 Spectrum Ref Level 0.00 dBm • RBW 1 MHz • Att 0 dB SWT 1.2 ms • VBW 3 MHz Mode Auto Sweep Input 1.AC PS Off Notch Off 1 Occupied Bandwidth SGL Count 1000/1000 Frequency 27.9250200 GHz M1[1] -21.17 dBm 27.898890 GHz M1 and the second second second My hup man have all CF 27.92502 GHz 1001 pts 20.0 MHz/ Span 200.0 MHz 2 Marker Table Ref Trc X-Value 27.89889 GHz Function Function Result 94.521751044 MHz Туре Y-Value -21.17 dBm M1 T1 T2 Occ Bw Occ Bw Centroid Occ Bw Freq Offset 27.924943271 GHz -76.729264034 kHz -24.95 dBm -23.93 dBm 27.877682 GHz 27.972204 GHz

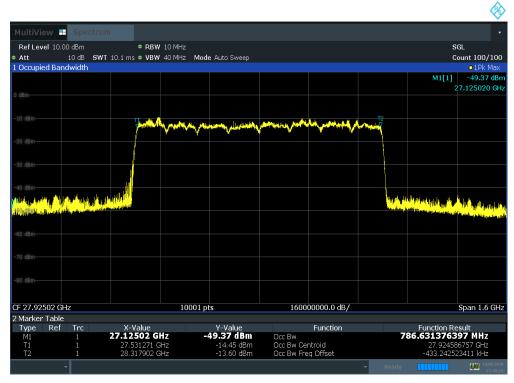
#### Plot 7-8. OBW (Ant A 100 MHz BW 1CC 16QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 00 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 33 of 469
© 2020 PCTEST.		•		PK-QP-16-09 Rev.02





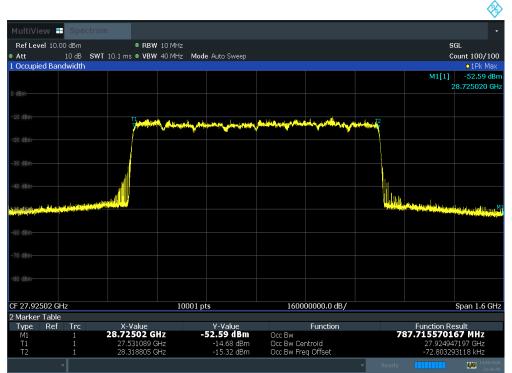


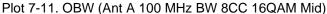


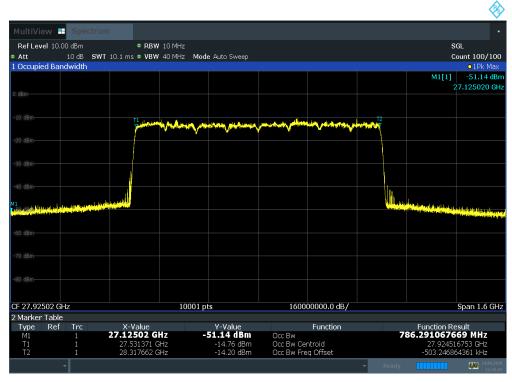
Plot 7-10. OBW (Ant A 100 MHz BW 8CC QPSK Mid)

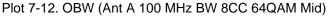
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Test Report S/N:	Test Dates:	EUT Type:		Dega 24 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 34 of 469
© 2020 PCTEST		•		PK-OP-16-09 Rev 02











FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 05 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 35 of 469
© 2020 PCTEST.	-	•		PK-QP-16-09 Rev.02



# 7.2.2 Antenna B Occupied Bandwidth

EUT Operating	Antenna	Configuration	CCs Active	Channel	Modulation	OBW [MHz]
		1CC	0	Mid	QPSK	46.40
		1CC	0	Mid	16QAM	46.04
50 MHz		1CC	0	Mid	64QAM	46.21
		2CC	0-1	Mid	QPSK	95.57
		2CC	0-1	Mid	16QAM	95.52
	——————————————————————————————————————	2CC	0-1	Mid	64QAM	95.57
		1CC	0	Mid	QPSK	94.48
		1CC	0	Mid	16QAM	94.37
100 MHz		1CC	0	Mid	64QAM	94.71
		8CC	0-7	Mid	QPSK	786.09
		8CC	0-7	Mid	16QAM	787.19
		8CC	0-7	Mid	64QAM	786.23

 Table 7-3. Antenna B Occupied Bandwidth Summary Data

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 26 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit	Page 36 of 469	
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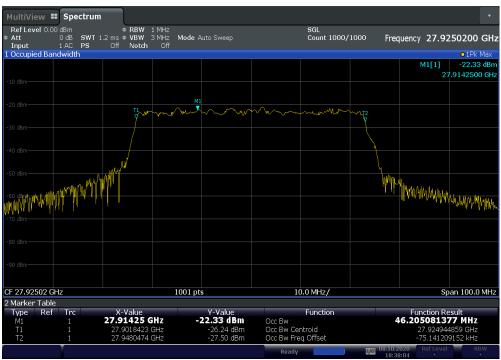




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Test Report S/N:	Test Dates:	EUT Type:		Dama 07 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 37 of 469
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Plot 7-15. OBW (Ant B 50 MHz BW 1CC 64QAM Mid)

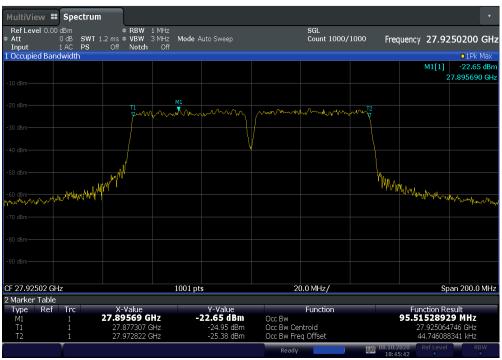
#### MultiView 📰 Spectrum Ref Level 0.00 dBm • RBW 1 MHz • Att 0.dB SWT 1.2 ms • VBW 3 MHz Mode Auto Sweep Input 1.AC PS Off Notch Off 1 1 Occupied Bandwidth 0 0 0 0 0 0 SGL Count 1000/1000 Frequency 27.9250200 GHz M1[1] -22.17 dBm 27.968710 GHz M1 T1 V which was MM CF 27.92502 GHz 1001 pts 20.0 MHz/ Span 200.0 MHz 2 Marker Table Function Result 95.574067081 MHz X-Value 27.96871 GHz Ref Trc Function Туре Y-Value -22.17 dBm M1 T1 T2 Occ Bw Occ Bw Centroid Occ Bw Freq Offset 27.877227 GHz 27.972801 GHz -25.70 dBm -24.75 dBm 27.925013636 GHz -6.364110893 kHz

Plot 7-16. OBW (Ant B 50 MHz BW 2CC QPSK Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 00 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 38 of 469
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ACLRResults



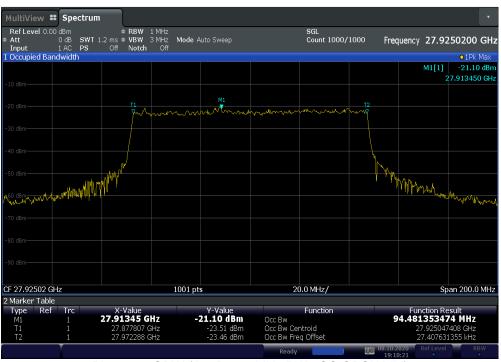


#### MultiView 📰 Spectrum Ref Level 0.00 dBm • RBW 1 MHz • Att 0.dB SWT 1.2 ms • VBW 3 MHz Mode Auto Sweep Input 1.AC PS Off Notch Off 1 1 Occupied Bandwidth 0 0 0 0 0 0 SGL Count 1000/1000 Frequency 27.9250200 GHz M1[1] -24.24 dBm 27.949360 GHz M1 √%~ mn My My May more CF 27.92502 GHz 1001 pts 20.0 MHz/ Span 200.0 MHz 2 Marker Table X-Value 27.94936 GHz Function Result 95.565163244 MHz Ref Trc Y-Value -24.24 dBm Function Туре Occ Bw Occ Bw Centroid Occ Bw Freq Offset M1 T1 T2 27.924871086 GHz -148.914470406 kHz 27.877089 GHz 27.972654 GHz -24.26 dBm -25.04 dBm

## Plot 7-18. OBW (Ant B 50 MHz BW 2CC 64QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 39 of 469
© 2020 PCTEST.		•		PK-QP-16-09 Rev.02





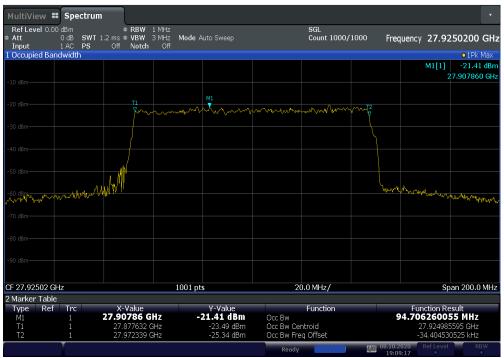
Plot 7-19. OBW (Ant B 100 MHz BW 1CC QPSK Mid)

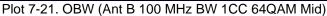
#### ACLRResults MultiView 📰 Spectrum Ref Level 0.00 dBm • RBW 1 MHz • Att 0.dB SWT 1.2 ms • VBW 3 MHz Mode Auto Sweep Input 1.AC PS Off Notch Off 1 1 Occupied Bandwidth 0 0 0 0 0 0 SGL Count 1000/1000 Frequency 27.9250200 GHz M1[1] -22.78 dBn 27.918040 GHz M1 den many with merthem Mount CF 27.92502 GHz 1001 pts 20.0 MHz/ Span 200.0 MHz 2 Marker Table X-Value 27.91804 GHz Function Result 94.37049633 MHz 27.924957182 GHz -62.818405235 kHz Ref Trc Y-Value -22.78 dBm Function Туре M1 T1 T2 Occ Bw Occ Bw Centroid Occ Bw Freq Offset 27.877772 GHz 27.972142 GHz -23.73 dBm -23.93 dBm

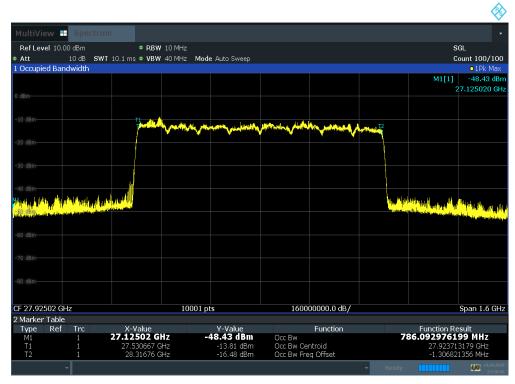
Plot 7-20. OBW (Ant B 100 MHz BW 1CC 16QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 40 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 40 of 469
© 2020 PCTEST		•		PK-OP-16-09 Rev 02





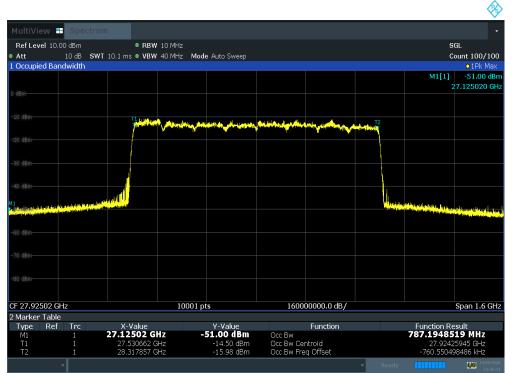




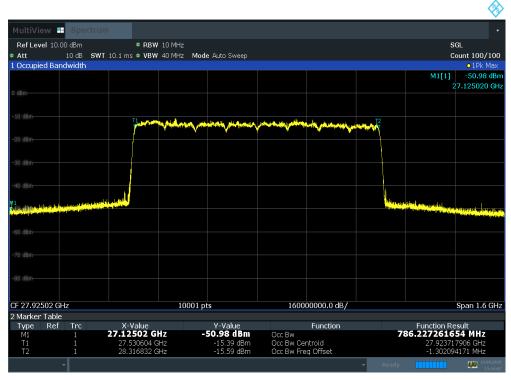
Plot 7-22. OBW (Ant B 100 MHz BW 8CC QPSK Mid)

FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 44 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 41 of 469
© 2020 PCTEST.		•		PK-QP-16-09 Rev.02





Plot 7-23. OBW (Ant B 100 MHz BW 8CC 16QAM Mid)



Plot 7-24. OBW (Ant B 100 MHz BW 8CC 64QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 42 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 42 of 469
© 2020 PCTEST				PK-OP-16-09 Rev 02



# 7.2.3 Antenna C Occupied Bandwidth

EUT Operating	Antenna	Configuration	CCs Active	Channel	Modulation	OBW [MHz]
		1CC	0	Mid	QPSK	46.36
		1CC	0	Mid	16QAM	46.03
		1CC	0	Mid	64QAM	46.05
50 MHz		2CC	0-1	Mid	QPSK	95.33
	C	2CC	0-1	Mid	16QAM	95.46
		2CC	0-1	Mid	64QAM	95.48
		1CC	0	Mid	QPSK	94.47
		1CC	0	Mid	16QAM	94.45
100 MILI-		1CC	0	Mid	64QAM	94.57
100 MHz		8CC	0-7	Mid	QPSK	786.94
		8CC	0-7	Mid	16QAM	787.68
		8CC	0-7	Mid	64QAM	786.62

 Table 7-4. Antenna C Occupied Bandwidth Summary Data

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 42 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 43 of 469
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## Plot 7-26. OBW (Ant C 50 MHz BW 1CC 16QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 44 at 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 44 of 469
© 2020 PCTEST				PK-OP-16-09 Rev 02





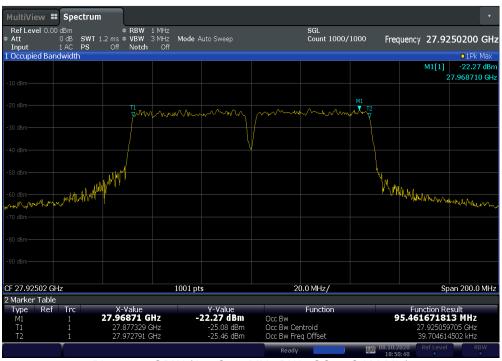




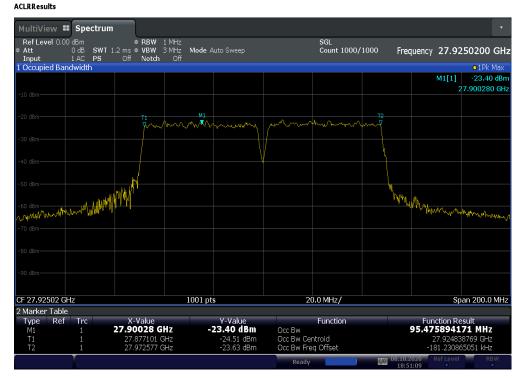
Plot 7-28. OBW (Ant C 50 MHz BW 2CC QPSK Mid)

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 45 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 45 of 469
© 2020 PCTEST				PK-OP-16-09 Rev 02





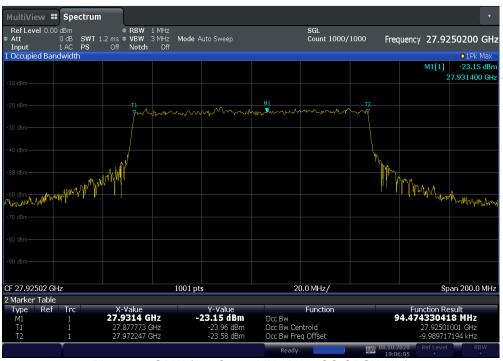




## Plot 7-30. OBW (Ant C 50 MHz BW 2CC 64QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 46 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 46 of 469
© 2020 PCTEST		•		PK-OP-16-09 Rev 02







#### ACLRResults MultiView 📰 Spectrum SGL Count 1000/1000 Frequency 27.9250200 GHz 1 Occupied Bandwidth M1[1] -23.61 dBn 27.936390 GHz which you way way to 4 April monortent MAMAN CF 27.92502 GHz 1001 pts 20.0 MHz/ Span 200.0 MHz 2 Marker Table X-Value 27.93639 GHz 27.877747 GHz 27.972202 GHz Function Result 94.454643543 MHz 27.924974518 GHz -45.481944664 kHz Ref Trc Y-Value -23.61 dBm Function Type M1 T1 T2 Occ Bw Occ Bw Centroid Occ Bw Freq Offset -25.30 dBm -23.43 dBm

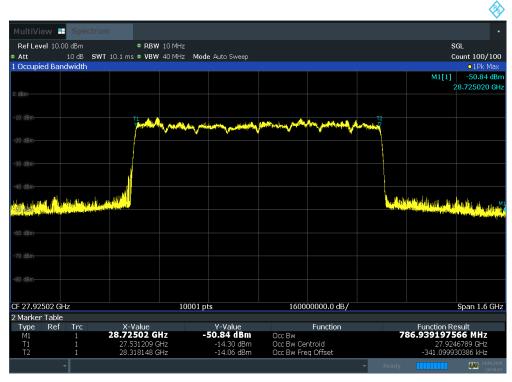
Plot 7-32. OBW (Ant C 100 MHz BW 1CC 16QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 47 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 47 of 469
© 2020 PCTEST.	•			PK-QP-16-09 Rev.02





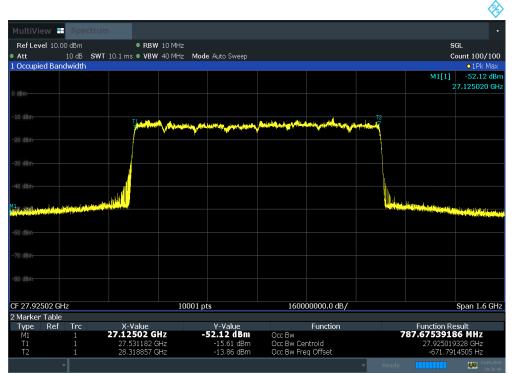




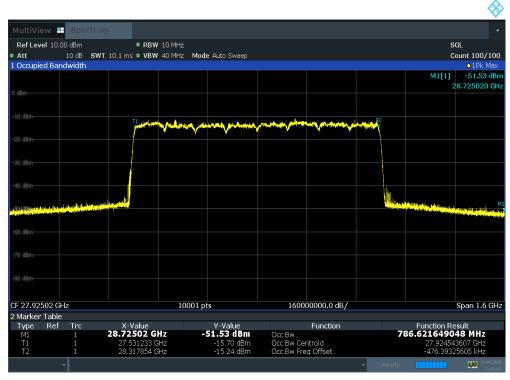
Plot 7-34. OBW (Ant C 100 MHz BW 8CC QPSK Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 40 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 48 of 469
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Plot 7-36. OBW (Ant C 100 MHz BW 8CC 64QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 40 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 49 of 469
© 2020 PCTEST		•		PK-QP-16-09 Rev 02



# 7.2.4 Antenna D Occupied Bandwidth

EUT Operating	Antenna	Configuration	CCs Active	Channel	Modulation	OBW [MHz]
		1CC	0	Mid	QPSK	46.54
		1CC	0	Mid	16QAM	46.21
50 MHz		1CC	0	Mid	64QAM	46.25
		2CC	0-1	Mid	QPSK	95.67
	D	2CC	0-1	Mid	16QAM	95.58
		2CC	0-1	Mid	64QAM	95.54
		1CC	0	Mid	QPSK	94.91
		1CC	0	Mid	16QAM	94.50
100 MHz		1CC	0	Mid	64QAM	94.61
	8CC	0-7	Mid	QPSK	786.63	
	8CC	0-7	Mid	16QAM	787.48	
		8CC	0-7	Mid	64QAM	786.40

Table 7-5. Antenna D Occupied Bandwidth Summary Data

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 50 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit	Page 50 of 469
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# Plot 7-38. OBW (Ant D 50 MHz BW 1CC 16QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 51 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 51 of 469
© 2020 PCTEST.	•			PK-QP-16-09 Rev.02





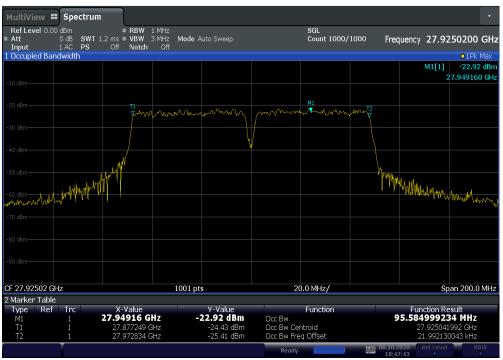
Plot 7-39. OBW (Ant D 50 MHz BW 1CC 64QAM Mid)



Plot 7-40. OBW (Ant D 50 MHz BW 2CC QPSK Mid)

FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 52 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 52 of 469
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#### ACLRResults MultiView 📰 Spectrum SGL Count 1000/1000 Frequency 27.9250200 GHz 1 Occupied Bandwidth M1[1] -22.21 dBn 27.932000 GHz Martinganter 10 dBm Allow All Martin CF 27.92502 GHz 1001 pts 20.0 MHz/ Span 200.0 MHz 2 Marker Table Y-Value -22.21 dBm Function Result 95.539135238 MHz 27.92483213 GHz -187.870094902 kHz Trc Function Туре Ref X-Value 27.932 GHz Occ Bw Occ Bw Centroid Occ Bw Freq Offset M1 T1 T2 27.877063 GHz 27.972602 GHz -24.27 dBm -24.62 dBm

## Plot 7-42. OBW (Ant D 50 MHz BW 2CC 64QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 50 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 53 of 469
© 2020 PCTEST.	•			PK-QP-16-09 Rev.02



ACLRResults



Plot 7-43. OBW (Ant D 100 MHz BW 1CC QPSK Mid)

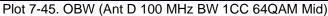
#### MultiView 📰 Spectrum RefLevel 0.00 dBm RBW 1 MHz Att 0 dB SWT 1.2 ms VBW 3 MHz Mode Auto Sweep Input 1 AC PS Off Notch Off Off Input 1 AC PS Off Notch Off Input 1 AC PS Off Notch Off Input <t SGL Count 1000/1000 Frequency 27.9250200 GHz 1 Occupied Bandwidth M1[1] -23.40 dBm 27.955140 GHz T1 📶 mm P Warmen Manager My Human Manus Man Age CF 27.92502 GHz 1001 pts 20.0 MHz/ Span 200.0 MHz 2 Marker Table Function Result 94.497699044 MHz 27.924938935 GHz -81.064753761 kHz Ref Trc Y-Value -23.40 dBm Function Туре X-Value 27.95514 GHz M1 T1 T2 Occ Bw Occ Bw Centroid Occ Bw Freq Offset 27.87769 GHz 27.972188 GHz -25.62 dBm -24.25 dBm

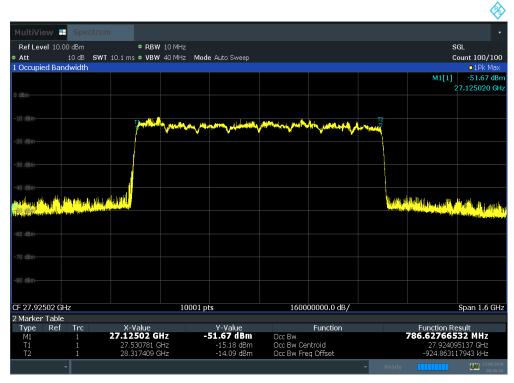
Plot 7-44. OBW (Ant D 100 MHz BW 1CC 16QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 54 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 54 of 469
© 2020 PCTEST.				PK-QP-16-09 Rev.02





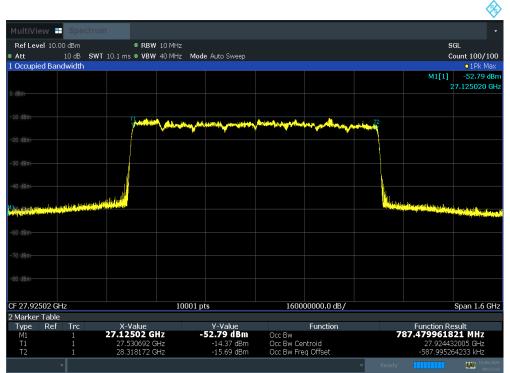




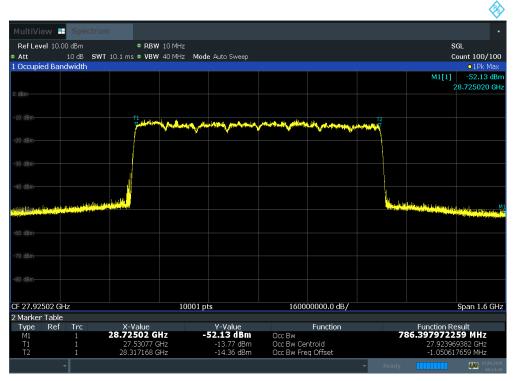
Plot 7-46. OBW (Ant D 100 MHz BW 8CC QPSK Mid)

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dana 55 at 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 55 of 469
© 2020 PCTEST.		•		PK-QP-16-09 Rev.02









Plot 7-48. OBW (Ant D 100 MHz BW 8CC 64QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga EC of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 56 of 469
© 2020 PCTEST				PK-OP-16-09 Rev 02



# 7.3 Equivalent Isotropic Radiated Power (EIRP) Density §2.1046 §30.202

## **Test Overview**

Equivalent Isotropic Radiated Power (EIRP) measurements are performed using broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

# The average power of the sum of all antenna elements is limited to an equivalent isotopically radiated power (EIRP) density of +75 dBm / 100 MHz.

#### **Test Procedures Used**

ANSI C63.26-2015 Section 5.2.4.4.1 ANSI C63.26-2015 Section 6.4 KDB 842590 D01 v01r01 Section 4.2

#### **Test Settings**

- 1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
- 2. RBW = 1 5 % of the expected OBW
- 3. VBW  $\geq$  3 x RBW
- 4. Span = 2x to 3x the OBW
- 5. No. of sweep points  $\geq$  2 x span / RBW
- 6. Detector = RMS
- 7. The integration bandwidth was roughly set equal to the measured (EIRP) Density of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
- 8. Trace mode = trace averaging (RMS) over 100 sweeps
- 9. The trace was allowed to stabilize

FCC ID: A3LAT1K04-B10	PCTEST. Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 57 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 57 of 469
© 2020 PCTEST.	-			PK-QP-16-09 Rev.02



#### Test Notes

- 1) The EUT was tested while positioned upright and mounted on a mast at 1.5 m height. The worst case emissions are reported with the EUT in this fixed position and with the modulations and active component carriers shown in the tables below.
- 2) The EIRP measurements of the co-polarized antenna arrays (Antenna A/C and Antenna B/D) were added together to address MIMO concerns referenced in ANSI C63.26-2015 Section 6.4.
- 3) Elements within the same antenna array are correlated to produce beamforming array gain.
- 4) Measurements were taken in the far field of the mmWave signal based on the formula:  $R \ge 2D^2/wavelength$ .
- 5) The test case with 1 CC and 8 CC active, was selected for the worst case emission testing as it created the highest EIRP within 50 MHz, 100 MHz, and 50 MHz + 100 MHz Mixed bandwidth.
- 6) The average EIRP reported below is calculate per formula specified in d) of ANSI C63.26-2015 Section 5.2.7:

EIRP (dBm) = E (dBuV/m) +  $20\log(D) - 104.8$ ; where D is the measurement distance (in the far field region) in m.

For this section, all EIRP density measurements were performed at a distance of 3.19 m, so, the effective correction is:

EIRP (dBm) = E (dBuV/m) - 94.72 dB

= Analyzer Level (dBm) + AFCL (dB/m) + 107 dB - 94.72 dB

= Analyzer Level (dBm) + AFCL (dB/m) + 12.28

\*AFCL (dB/m) contains measurement antenna factor(dB/m) and cable loss(dB) as below:

Frequency	Antenna Factor	Cable loss	AFCL
[GHz]	[dB/m]	[dB]	[dB]
27.5	39.54	5.83	45.37
27.93	39.53	5.93	45.46
28.35	39.74	6.07	45.81

#### Table 7-6. Adopted AFCL value in the calculation

7) For channel bandwidths less than 100 MHz BW the EIRP must be reduced proportionally and lineary based on the bandwidth relative to 100 MHz according to §30.202 Power limits.

For 50 MHz BW operation RBW scaling factor, Scaling Factor (dB) =  $10\log(BW_1/BW_2) = 10*\log(100/50)$ = 3.01 dB

- Mixed test mode has been re-calculated for 50 MHz BW with scaling factor(3.01 dB). Thus, 50 MHz and 100 MHz BW carriers are compared and reported.
- 8) The angle of the horn antenna was rotated to maximize and find the worst case emissions. Worst case EIRP is reported below.
- 9) A3LAT1K04-B10 test result is referenced as A3LAT1K04-B00 result which only difference of power type as AC and DC which supply condition no affect to RF specification.

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 59 of 460	
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 58 of 469	
© 2020 PCTEST.		•		PK-QP-16-09 Rev.02	



# 7.3.1 Antenna A EIRP Density

Bandwidth [MHz]	Configuration	Cha nnel	CCs active	Modulation	Horn Angle [degrees]	Horn Height [cm]	Turntable Azimuth [degrees]	Analyzer Level [dBm]	AFCL [dBm]	Average e.i.r.p. PSD [dBm/100MHz]	PSD Limit [dBm/100MHz]	Margin [dB]
		Low	0	QPSK	135.0	156	54	-12.99	45.37	47.67	75.00	27.33
	1 CC	Low	0	16QAM	135.0	156	54	-13.10	45.37	47.56	75.00	27.44
		Low	0	64QAM	135.0	156	54	-12.99	45.37	47.67	75.00	27.33
		Low	0-1	QPSK	135.0	156	54	-12.85	45.37	47.81	75.00	27.19
	2 CC	Low	0-1	16QAM	135.0	156	54	-12.83	45.37	47.83	75.00	27.17
		Low	0-1	64QAM	135.0	156	54	-12.83	45.37	47.83	75.00	27.17
		Mid	4	QPSK	135.0	156	54	-13.14	45.46	47.61	75.00	27.39
	1 CC	Mid	4	16QAM	135.0	156	54	-13.31	45.46	47.44	75.00	27.56
50		Mid	4	64QAM	135.0	156	54	-13.17	45.46	47.58	75.00	27.42
50		Mid	0-1	QPSK	135.0	156	54	-13.12	45.46	47.63	75.00	27.37
	2 CC	Mid	0-1	16QAM	135.0	156	54	-13.09	45.46	47.66	75.00	27.34
		Mid	0-1	64QAM	135.0	156	54	-13.05	45.46	47.7	75.00	27.30
		High	7	QPSK	135.0	156	54	-12.95	45.81	48.15	75.00	26.85
	1 CC	High	7	16QAM	135.0	156	54	-13.07	45.81	48.03	75.00	26.97
		High	7	64QAM	135.0	156	54	-12.97	45.81	48.13	75.00	26.87
		High	0-1	QPSK	135.0	156	54	-12.86	45.81	45.94	75.00	26.76
	2 CC	High	0-1	16QAM	135.0	156	54	-12.95	45.81	46.01	75.00	26.85
		High	0-1	64QAM	135.0	156	54	-12.94	45.81	46.03	75.00	26.84
		Low	0	QPSK	135.0	156	54	-9.98	45.37	47.67	75.00	27.33
	1 CC	Low	0	16QAM	135.0	156	54	-10.05	45.37	47.60	75.00	27.40
		Low	0	64QAM	135.0	156	54	-9.99	45.37	47.66	75.00	27.34
100		Low	0-7	QPSK	135.0	156	54	-12.01	45.37	45.64	75.00	29.36
	8 CC	Low	0-7	16QAM	135.0	156	54	-12.06	45.37	45.59	75.00	29.41
		Low	0-7	64QAM	135.0	156	54	-12.06	45.37	45.59	75.00	29.41
	1 CC	Mid	4	QPSK	135.0	156	54	-10.50	45.46	47.24	75.00	27.76
FCC ID: A3	FCC ID: A3LAT1K04-B10						AMSUNG	Approved by: Quality Manag				
Test Report 8K20090901	t <b>S/N:</b> 1-02-R2.A3L		<b>Dates:</b> )/2020-10		EUT Type: G Access U	nit					Page 59 of 46	9 6-09 Rev.02



	no pe bru o 🖨 element	-										
		Mid	4	16QAM	135.0	156	54	-10.11	45.46	47.63	75.00	27.37
		Mid	4	64QAM	135.0	156	54	-10.04	45.46	47.70	75.00	27.30
		Mid	0-7	QPSK	135.0	156	54	-11.99	45.46	45.75	75.00	29.25
	8 CC	Mid	0-7	16QAM	135.0	156	54	-12.24	45.46	45.50	75.00	29.50
		Mid	0-7	64QAM	135.0	156	54	-12.18	45.46	45.56	75.00	29.44
		High	7	QPSK	135.0	156	54	-10.23	45.81	47.86	75.00	27.14
	1 CC	High	7	16QAM	135.0	156	54	-10.33	45.81	47.76	75.00	27.24
		High	7	64QAM	135.0	156	54	-10.3	45.81	47.79	75.00	27.21
100	2 CC	High	0-1	QPSK	135.0	156	54	-10.21	45.81	47.88	75.00	27.12
	3 CC	High	0-2	QPSK	135.0	156	54	-9.78	45.81	48.31	75.00	26.69
	4 CC	High	0-3	QPSK	135.0	156	54	-9.61	45.81	48.48	75.00	26.52
	5 CC	High	0-4	QPSK	135.0	156	54	-10.45	45.81	47.64	75.00	27.36
	6 CC	High	0-5	QPSK	135.0	156	54	-11.26	45.81	46.83	75.00	28.17
	7 CC	High	0-6	QPSK	135.0	156	54	-11.94	45.81	46.15	75.00	28.85
		High	0-7	QPSK	135.0	156	54	-12.79	45.81	45.94	75.00	29.70
	8 CC	High	0-7	16QAM	135.0	156	54	-12.53	45.81	46.01	75.00	29.44
		High	0-7	64QAM	135.0	156	54	-12.73	45.81	46.03	75.00	29.64
	50 M 1CC + 100 M 1CC	High	0-1	QPSK	135.0	156	54	-9.79	45.81	48.30	75.00	26.70
	50 M 2CC + 100 M 1CC	High	0-2	QPSK	135.0	156	54	-9.89	45.81	48.20	75.00	26.80
	50 M 1CC + 100 M 2CC	High	0-2	QPSK	135.0	156	54	-10.08	45.81	48.01	75.00	26.99
	50 M 2CC + 100 M 2CC	High	0-3	QPSK	135.0	156	54	-10.29	45.81	47.80	75.00	27.20
50 MHz +	50 M 1CC + 100 M 3CC	High	0-3	QPSK	135.0	156	54	-9.95	45.81	48.14	75.00	26.86
100 MHz Mix	50 M 2CC + 100 M 3CC	High	0-4	QPSK	135.0	156	54	-10.24	45.81	47.85	75.00	27.15
	50 M 1CC + 100 M 4CC	High	0-4	QPSK	135.0	156	54	-10.60	45.81	47.49	75.00	27.51
	50 M 2CC + 100 M 4CC	High	0-5	QPSK	135.0	156	54	-11.08	45.81	47.01	75.00	27.99
	50 M 1CC + 100 M 5CC	High	0-5	QPSK	135.0	156	54	-11.60	45.81	46.49	75.00	28.51
	50 M 2CC + 100 M 5CC	High	0-6	QPSK	135.0	156	54	-11.77	45.81	46.32	75.00	28.68
FCC ID: A3	LAT1K04-B10	<u></u>	PCT Proud to be	EST <sup>*</sup> part of element		SUREME	NT REPOR CATION)	Г	Ś	AMSUNG	Approved by Quality Manag	
-	St Report S/N:         Test Dates:         EUT Type:           20090901-02-R2.A3L         09/10/2020-10/08/2020         5G Access Unit					Page 60 of 46	9					

8K20090901-02-R2.A3L 09/10/2020-10/08/2020 5G Access Unit

PK-QP-16-09 Rev.02

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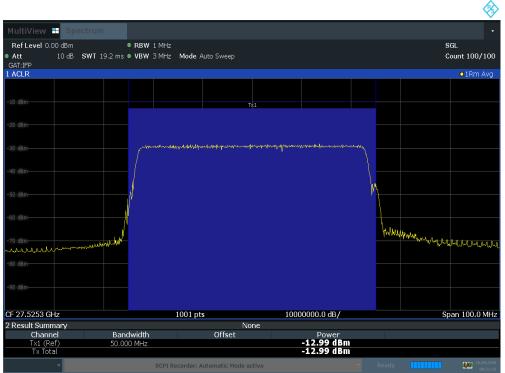


50 MHz +	50 M 1CC + 100 M 6CC	High	0-6	QPSK	135.0	156	54	-11.56	45.81	46.53	75.00	28.47
100 MHz Mix	50 M 2CC + 100 M 6CC	High	0-7	QPSK	135.0	155	54	-12.54	45.81	45.55	75.00	29.45

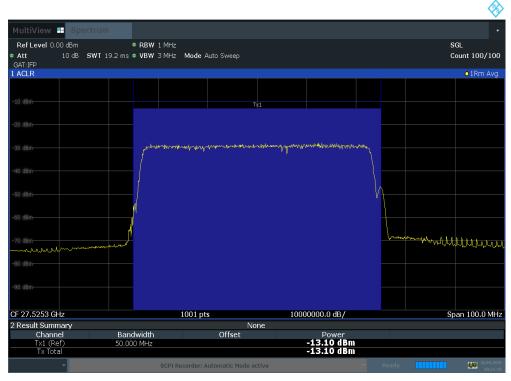
Table 7-7. Antenna A EIRP Density Summary Data

FCC ID: A3LAT1K04-B10	Proved to be part of (® element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 61 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 61 of 469
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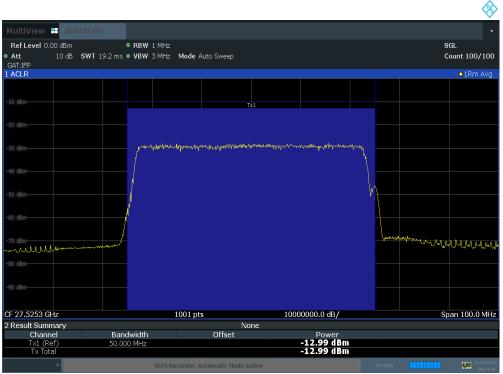
Plot 7-49. EIRP Density (Ant A 50 MHz BW 1CC QPSK Low)



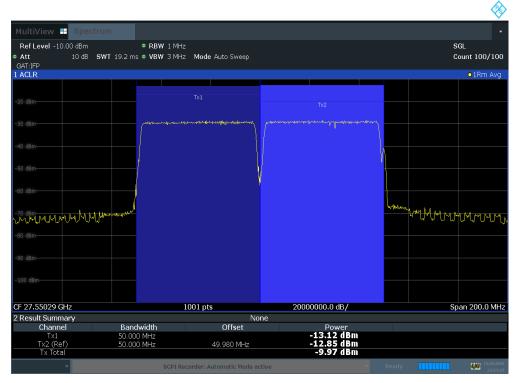
Plot 7-50. EIRP Density (Ant A 50 MHz BW 1CC 16QAM Low)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 62 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 62 of 469
© 2020 PCTEST		•		PK-OP-16-09 Rev 02





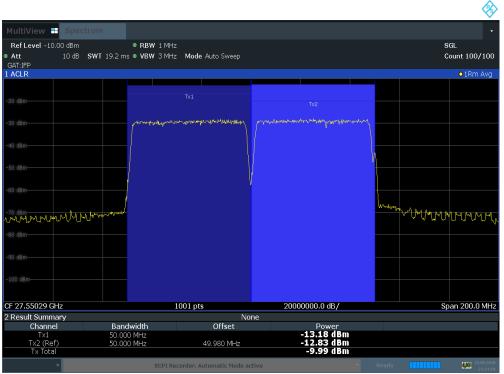
Plot 7-51. EIRP Density (Ant A 50 MHz BW 1CC 64QAM Low)



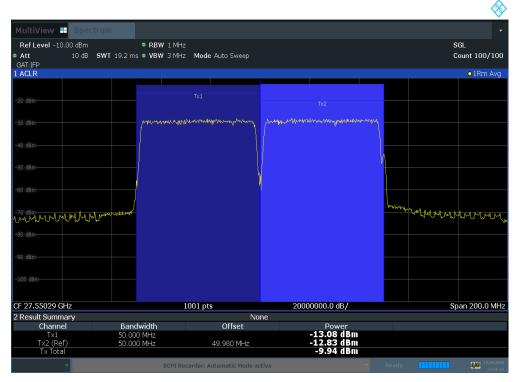
Plot 7-52. EIRP Density (Ant A 50 MHz BW 2CC QPSK Low)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 62 of 460	
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 63 of 469	
© 2020 PCTEST		•		PK-OP-16-09 Rev 02	





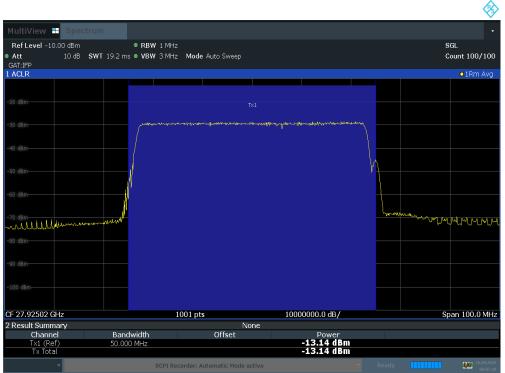
Plot 7-53. EIRP Density (Ant A 50 MHz BW 2CC 16QAM Low)



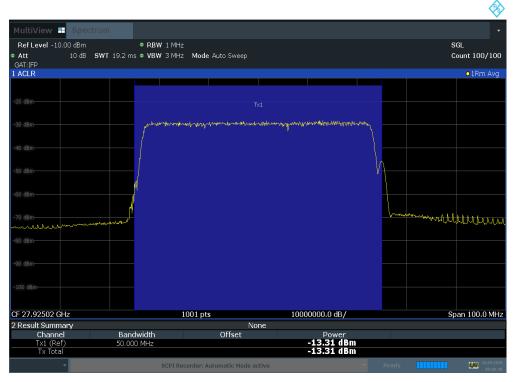
Plot 7-54. EIRP Density (Ant A 50 MHz BW 2CC 64QAM Low)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 64 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 64 of 469
© 2020 PCTEST				PK-OP-16-09 Rev 02





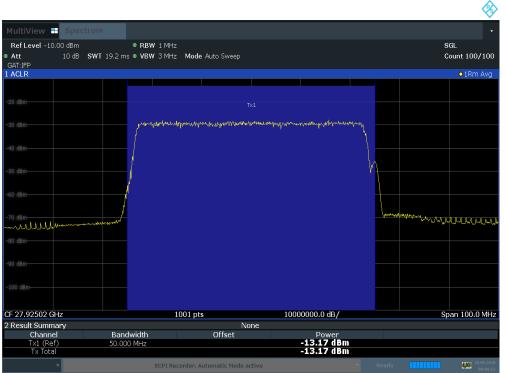
Plot 7-55. EIRP Density (Ant A 50 MHz BW 1CC QPSK Mid)



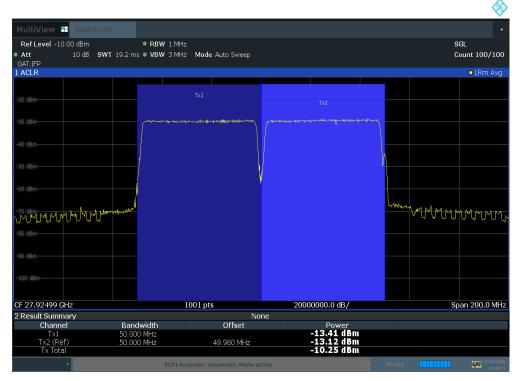
Plot 7-56. EIRP Density (Ant A 50 MHz BW 1CC 16QAM Mid)

FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage CE of 400	
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 65 of 469	
© 2020 PCTEST	•	•		PK-OP-16-09 Rev 02	





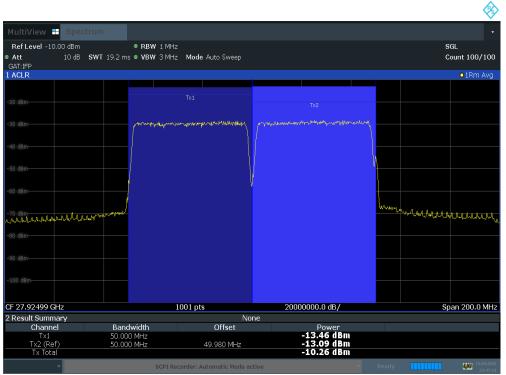
Plot 7-57. EIRP Density (Ant A 50 MHz BW 1CC 64QAM Mid)



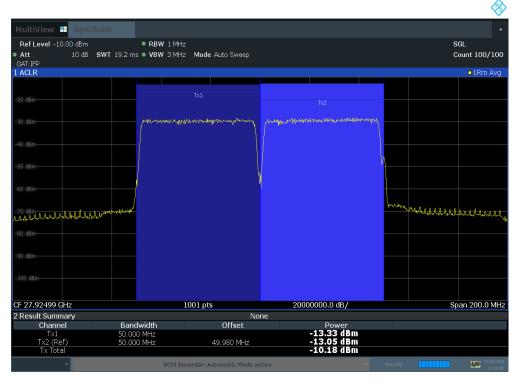
Plot 7-58. EIRP Density (Ant A 50 MHz BW 2CC QPSK Mid)

FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 66 at 460	
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 66 of 469	
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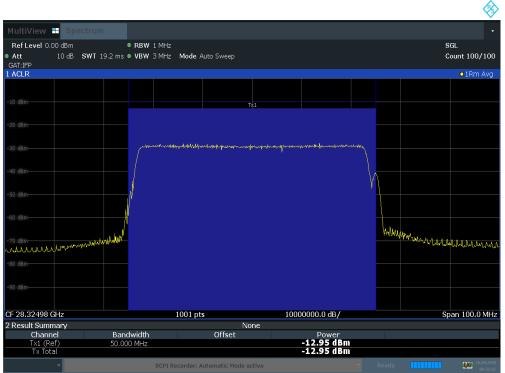
Plot 7-59. EIRP Density (Ant A 50 MHz BW 2CC 16QAM Mid)



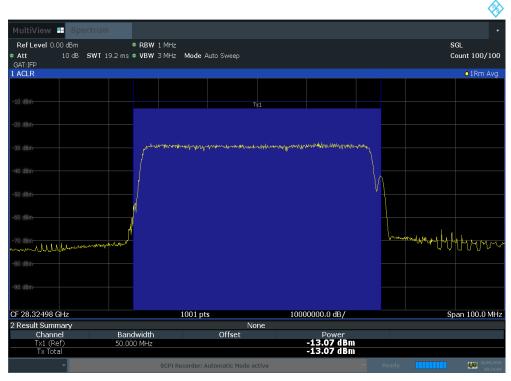
Plot 7-60. EIRP Density (Ant A 50 MHz BW 2CC 64QAM Mid)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 67 of 460	
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 67 of 469	
© 2020 PCTEST				PK-OP-16-09 Rev 02	





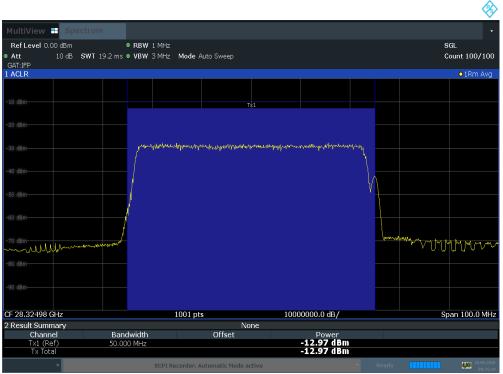
Plot 7-61. EIRP Density (Ant A 50 MHz BW 1CC QPSK High)



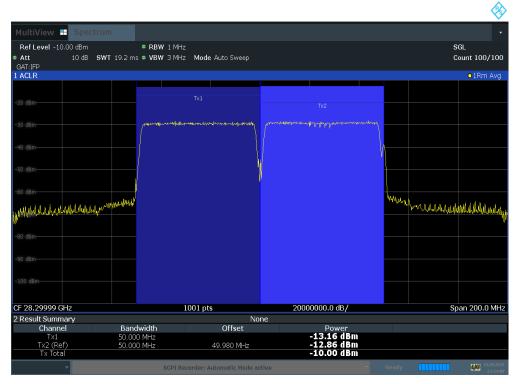
Plot 7-62. EIRP Density (Ant A 50 MHz BW 1CC 16QAM High)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 68 of 460	
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 68 of 469	
© 2020 PCTEST				PK-OP-16-09 Rev 02	





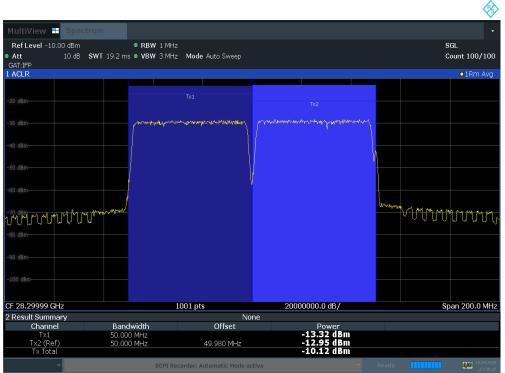
Plot 7-63. EIRP Density (Ant A 50 MHz BW 1CC 64QAM High)



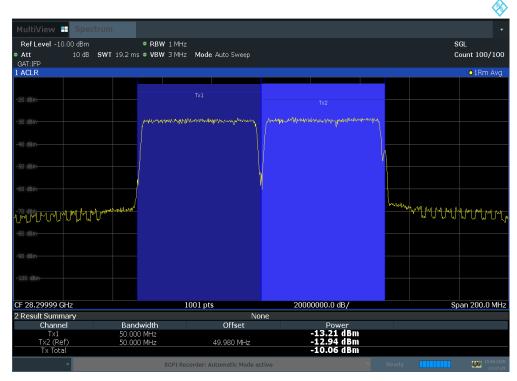
Plot 7-64. EIRP Density (Ant A 50 MHz BW 2CC QPSK High)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 60 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 69 of 469
© 2020 PCTEST		•		PK-OP-16-09 Rev 02





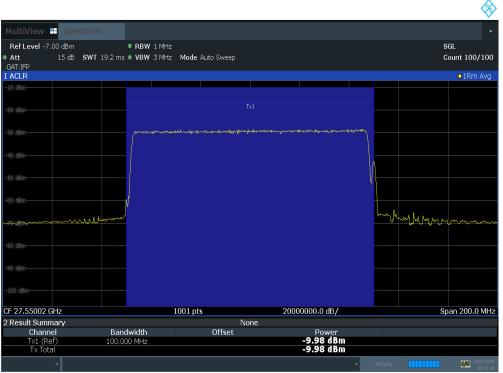
Plot 7-65. EIRP Density (Ant A 50 MHz BW 2CC 16QAM High)



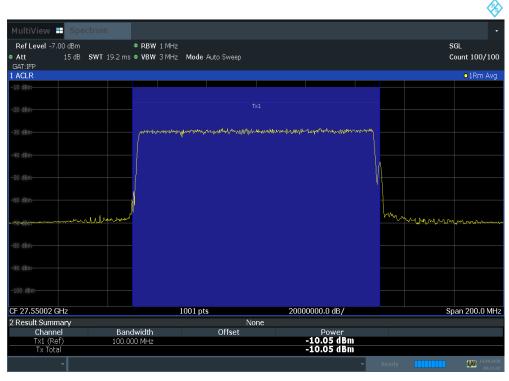
Plot 7-66. EIRP Density (Ant A 50 MHz BW 2CC 64QAM High)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 70 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 70 of 469
© 2020 PCTEST				PK-OP-16-09 Rev 02





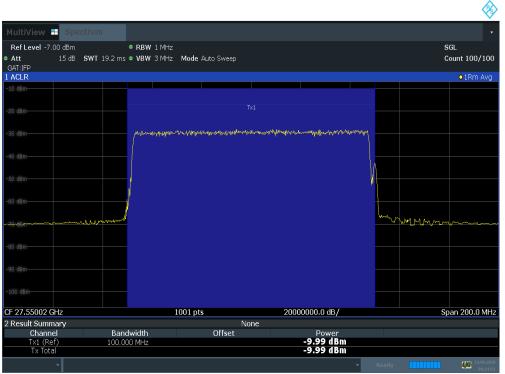
Plot 7-67. EIRP Density (Ant A 100 MHz BW 1CC QPSK Low)



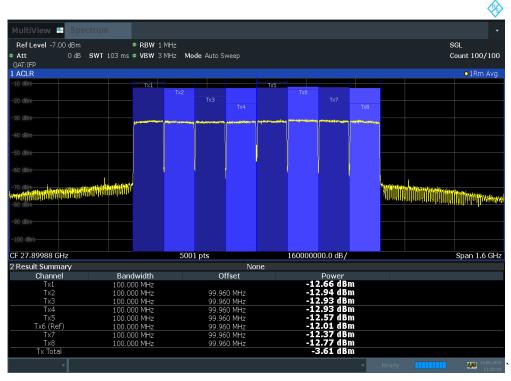
Plot 7-68. EIRP Density (Ant A 100 MHz BW 1CC 16QAM Low)

FCC ID: A3LAT1K04-B10	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 71 of 100
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 71 of 469
© 2020 PCTEST.	•	•		PK-QP-16-09 Rev.02





Plot 7-69. EIRP Density (Ant A 100 MHz BW 1CC 64QAM Low)



Plot 7-70. EIRP Density (Ant A 100 MHz BW 8CC QPSK Low)

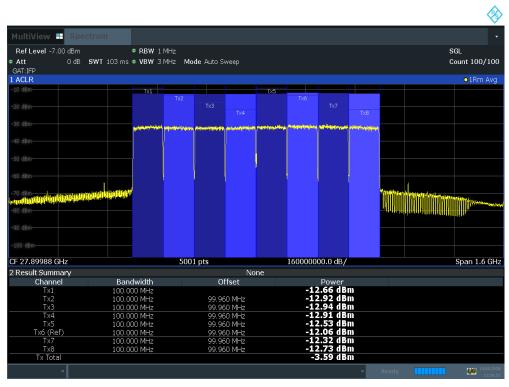
FCC ID: A3LAT1K04-B10	PCTEST Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 70 of 400
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 72 of 469
© 2020 PCTEST	•	•		PK-QP-16-09 Rev 02



tefLevel -7.00 dBm	RBW 3										SGL
tt OdB SWT T:IFP	103 ms • VBW 3	3 MHz Mo	ode Auto S	weep							Count 100/
CLR											<b>○</b> 1Rm /
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dBm dBm Might Might Might Might Might Might dBm											
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dBm- dBm- ann an	Bandwidth	500		Na	one	1600000	00.0 dB/ Power				
dBm dBm dBm dBm dBm 27.89988 GHz esult Summary Channel Tx1	Bandwidth 100.000 MHz	500				-12	Power 2.72 dB				
18m 18m 18m 18m 27.89988 GHz esult Summary Channel Tx1 Tx2	Bandwidth 100.000 MHz 100.000 MHz	500	O 99.96	ffset 50 MHz		-1:	Power 2.72 dB 2.97 dB	m			
dBm dBm dBm dBm dBm dBm z7.899888 GHz esult Summary Channel Tx1 Tx2 Tx2 Tx3	Bandwidth 100.000 MHz 100.000 MHz	500	<b>O</b> 99.96 99.96	ffset 50 MHz 50 MHz		-1 -1 -1	Power 2.72 dB 2.97 dB 2.92 dB	m m			
dBm dBm dBm dBm 27.89988 GHz esult Summary Channel T×1 T×2 T×3 T×4	Bandwidth 100.000 MHz 100.000 MHz 100.000 MHz 100.000 MHz	500	99.96 99.96 99.96	ffset 50 MHz 50 MHz 50 MHz		-12 -12 -12 -12	Power 2.72 dB 2.97 dB 2.92 dB 2.89 dB	m m m			
dBm dBm dBm dBm dBm dBm dBm z7.89988 GHz esult Summary Channel Tx1 Tx2 Tx3 Tx4 Tx5	Bandwidth 100.000 MHz 100.000 MHz 100.000 MHz 100.000 MHz 100.000 MHz	500	99.96 99.96 99.96 99.96 99.96	ffset 50 MHz 50 MHz 50 MHz 50 MHz		-1 -1 -1 -1 -1	Power 2.72 dB 2.97 dB 2.92 dB 2.89 dB 2.89 dB 2.56 dB	m m m m			
dBm dBm dBm dBm 27.89988 GHz esult Summary Channel T×1 T×2 T×3 T×4	Bandwidth 100.000 MHz 100.000 MHz 100.000 MHz 100.000 MHz	500	99.96 99.96 99.96 99.96 99.96 99.96	ffset 50 MHz 50 MHz 50 MHz		-12 -12 -12 -12 -12 -12	Power 2.72 dB 2.97 dB 2.92 dB 2.89 dB	m m <u> </u>			

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Plot 7-71. EIRP Density (Ant A 100 MHz BW 8CC 16QAM Low)



Plot 7-72. EIRP Density (Ant A 100 MHz BW 8CC 64QAM Low)

FCC ID: A3LAT1K04-B10	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 72 of 460
8K20090901-02-R2.A3L	09/10/2020-10/08/2020	5G Access Unit		Page 73 of 469
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