

## PCTEST

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# DATA REFERENCE REPORT

**PART 27** 

Applicant Name:	Date of Testing:
Apple Inc.	12/15/2020 - 02/27/2021
One Apple Park Way	Test Site/Location:
Cupertino, CA 95014	PCTEST Lab. Morgan Hill, CA, USA
United States	Test Report Serial No.:
	1C2101020006-06-R1.BCG
FCC ID:	BCGA2461

		DOOAZHUI
Applicant Name: Apple Inc.	Applicant Name:	Apple Inc.

Reference Model:	A2379
Variant Model:	A2461, A2462
EUT Type:	Tablet Device
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part:	27
Test Procedure(s):	ANSI C63.26-2015, TIA-603-E-2016, KDB 971168 D01 v03r01

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: 1C2101020006-06-R1.BCG Report SNs) supersedes and replaces the previously issued test report 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.

Randy Ortanez President



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## 1.0 INTRODUCTION

#### 1.1 Scope

Per manufacturer declaration, there are two tablet device models, A2379 and A2461(A2462), with high degree of similarity, reference model FCC ID: BCGA2379 and variant model **FCC ID: BCGA2461**. The reference model supports mmWave operations, while the variant model has the mmWave components/antennas removed. Both models share the same material, form factor, circuit design, and components, including antennas and their locations. The reference and variant models use the same power tables and have same tune-up tolerances.

Per FCC approved Data Referencing Test Plan, testing was done fully on the reference model FCC ID: BCGA2379, while radiated spot-check verification has been performed on variant model **FCC ID: BCGA2461**. Additionally, due to Antenna 4a location being close to the depopulated mmWave components, full radiated testing has been done for all supported technologies on Antenna 4a. Spot-check measurements were conducted, all measurements were investigated and found to be within acceptable tolerance.

Equipment Class	Reference Model FCC ID	Reference Report	Report Title
PCE	BCGA2379	1C2101020005-05-R2.BCG	RF Part 27b Test Report
	Table 1.1 Defe	ranaa Madal Dataila	

Table 1-1. Reference Model Details

Reference model FCC ID: BCGA2379 test report has been included in Appendix A

## 1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST. facility located at 18855 Adams Court, Morgan Hill, CA 95037. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

### 1.3 Test Facility / Accreditations

- PCTEST is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.02 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- PCTEST facility is a registered (22831) test laboratory with the site description on file with ISED.

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## 2.0 PRODUCT INFORMATION

#### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Tablet Device FCC ID:BCGA2461**. The test data contained in this report pertains only to the emissions due to the EUT's licensed transmitters that operate under the provisions of Part 27.

Test Device Serial No.: JP76RWY2XR, XW3JN32D9W

#### 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (FR1), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE1M, LE2M, HDR4, HDR8), WPT

This device supports BT Beamforming

This device supports simultaneous transmission operations, which allows for multiple transmitters to transmit simultaneously on the same antenna. The table below shows all configurations possible.

	Simultaneous	WLAN	Bluetooth	GSM / WCDMA	LTE / FR1 NR		UNII	
Antenna	Tx Config	802.11 b/g/n/ax	BDR, EDR, HDR4/8, LE1/2M	Mid Band	Mid Band	High Band	Ultra High Band	802.11 a/n/ac/ax
2a	Config 1	✓	×	×	×	×	~	×
2a	Config 2	*	✓	×	×	×	~	×
4a	Config 3	✓	×	×	×	×	~	×
4a	Config 4	×	✓	×	×	×	~	×
4b	Config 5	*	×	✓	×	×	×	$\checkmark$
4b	Config 6	×	×	×	✓	*	×	✓
4b	Config 7	×	×	×	×	$\checkmark$	×	$\checkmark$

Table 2-1. Simultaneous Transmission Configurations

✓ = Support; × = Not Support

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## 2.3 Antenna Description

Frequency	Antenna Gain (dBi)					
[MHz]	Antenna 3	Antenna 1	Antenna 4b	Antenna 4a	Antenna 2b	Antenna 2a
LTE Band 30	-2.6	-0.4	-0.5	N/A	-0.9	N/A
LTE Band 7	-1.7	-2.3	-2.0	N/A	-1.9	N/A
LTE Band 41	0.9	1.3	-1.9	N1/A	-1.6	N/A
NR Band n41	1.3	0.9	-1.6	N/A	-1.9	IN/A
NR Band n77	-1.3	1.3	N/A	1.4	N/A	0.4

Following antenna gains provided by manufacturer were used for the testing.

Table 2-2. Highest Antenna Gain

## 2.4 Test Support Equipment

1	Apple MacBook Pro	Model:	A2141	S/N:	C02DV7VKMD6T
	w/AC/DC Adapter	Model:	A2166	S/N:	N/A
2	Apple USB-C Cable	Model:	Chimp	S/N:	420A57
3	USB-C Cable	Model:	A146	S/N:	N/A
	w/ AC Adapter	Model:	A2305	S/N:	N/A
4	Apple Pencil	Model:	N/A	S/N:	GQXYGSXBJKM9
5	DC Power Supply	Model:	KPS3010D	S/N:	N/A

Table 2-3. Test Support Equipment

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## 2.5 Test Configuration

The EUT was tested per the guidance of ANSI C63.26 2015, TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated emissions tests.

For emissions from 1GHz – 18GHz, low, mid, and high channels were tested with highest power and worst case configuration. The emissions below 1GHz and above 18GHz were tested with the highest transmitting power and the worst case channel.

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report.

Per FCC Approved Data Referencing Test Plan, Antenna 4a radiated testing and spot-check measurements have been conducted and reported. Spot-check Test Plan can be referred to below Table 2-4.

Technology	Test Case	FCC ID: BCGA2461		
realinelogy		Mode	Channel	
GSM, WCDMA, LTE, FR1 Single Carrier & IntraBand ULCA	Radiated Spurious Emissions	Antenna 3 LTE Band 5, 2, 7 Max BW, 1RB, QPSK	М	

Table 2-4. FCC Approved Spot-Check Test Plan

Output powers were measured and confirmed to be consistent between Reference and Variant models prior to testing.

#### 2.6 Software and Firmware

The test was conducted with firmware version 18E20700y installed on the EUT.

#### 2.7 EMI Suppression Device(s)/Modifications

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

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## 3.0 DESCRIPTION OF TESTS

#### 3.1 Measurement Procedure

The measurement procedures described in the document titled "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI C63.26-2015/TIA-603-E-2016) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

#### 3.2 Radiated Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements 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 6m x 5.2m 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 1GHz. For measurements below 1GHz, 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 80cm 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 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

For radiated spurious emissions measurements and calculations, conversion method is used per the formulas in KDB 971168 Section 5.8.4. Field Strength (EIRP) is calculated using the following formulas:

 $E_{[dB\mu V/m]} = Measured amplitude level_{[dBm]} + 107 + Cable Loss_{[dB]} + Antenna Factor_{[dB/m]}$ 

And

 $EIRP_{[dBm]} = E_{[dB\mu V/m]} + 20logD - 104.8;$ 

Where D is the measurement distance in meters.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014.

Per KDB 414788 D01 v01r01, radiated emission test sites other than open-field test sites (e.g., shielded anechoic chambers), may be employed for emission measurements below 30MHz if characterized so that the measurements correspond to those obtained at an open-field test site. To determine test site equivalency, a reference sample transmitting at 149kHz was measured on an open field test site (asphalt with no ground plane) and then measured in the 3m semi-anechoic chamber. A calibrated 60cm loop antenna was used while the reference device was rotated through the X, Y and Z axis in order to capture the worst case level. A maximum deviation of 2.77dB at 149kHz was measured when comparing the 3 meter semi-anechoic chamber to the open field site.

Radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI C63.26 and TIA-603-E-2016.

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# 4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.23-2012. 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)
Radiated Disturbance (<30MHz)	4.06
Radiated Disturbance (30MHz-1GHz)	4.30
Radiated Disturbance (1-18GHz)	4.78
Radiated Disturbance (>18GHz)	4.79

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# 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.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent Technologies	N9030A	PXA Signal Analyzer (3Hz - 26.5 GHz)	7/24/2020	Annual	7/24/2021	MY55330128
Keysight Technology	N9040B	UXA Signal Analyzer	12/19/2020	Annual	12/19/2021	MY57212015
Keysight Technology	E7515B	UXM 5G Wireless Test Platform	11/14/2020	Annual	11/14/2021	MY60192562
ATM	180-442A-KF	20dB Nominal Gain Horn Antenna	8/11/2020	Annual	8/11/2021	T058701-01
ESPEC	SU-241	Tabletop Temperature Chamber	9/28/2020	Annual	9/28/2021	92009574
ETS-Lindgren	3142E	BiConiLog Antenna (30MHz - 6GHz)	9/15/2020	Annual	9/15/2021	208204
ETS-Lindgren	3117	Double Ridged Guide Antenna (1-18 GHz)	4/21/2020	Annual	4/21/2021	205956
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	7/15/2020	Annual	7/15/2021	102356
Rohde & Schwarz	TS-PR18	Pre-Amplifier (1GHz - 18GHz)	12/3/2020	Annual	12/3/2021	101648
Rohde & Schwarz	ESW26	EMI Test Receiver	6/8/2020	Annual	6/8/2021	101299
Rohde & Schwarz	ESW44	EMI Test Receiver	8/6/2020	Annual	8/6/2021	101668
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	10/13/2020	Annual	10/13/2021	161616
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/16/2020	Annual	4/16/2021	166869
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	4/23/2020	Annual	4/23/2021	100052
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Antenna (400MHz-18GHz)	10/2/2020	Annual	10/2/2021	101063
Rohde & Schwarz	HFH2-Z2	Loop Antenna	3/12/2020	Annual	3/12/2021	100546

Table 5-1. Test Equipment

#### Notes:

1. 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.

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## 6.0 SAMPLE CALCULATIONS

#### **Spurious Radiated Emission**

#### Example: Spurious emission at 3700.40 MHz

The receive spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3700.40 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.50 dBm so this harmonic was 25.50 dBm -(-24.80) = 50.3 dBc.

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# 7.0 TEST RESULTS (SPOT-CHECK DATA)

## 7.1 Summary

Company Name:	<u>Apple Inc.</u>
FCC ID:	BCGA2461
FCC Classification:	PCS Licensed Transmitter (PCB)
Mode(s):	<u>LTE</u>

		Test	Configurati	ons		Reference Model	Variant model		
Technology	Test	Modulation	BW / RB	Channel	Measurement Frequency	FCC ID: BCGA2379	FCC ID: BCGA2461	Delta	
	Description	Description	Config	Channel	[MHz]	Average [dBm]	Average [dBm]	Average [dB]	
LTE Band 7	Radiated Spurious Emissions	QPSK	20MHz / 1/50 RB	М	5070	-58.56	-59.35	0.79	

Table 7-1. Worst Case Spot-Check Results

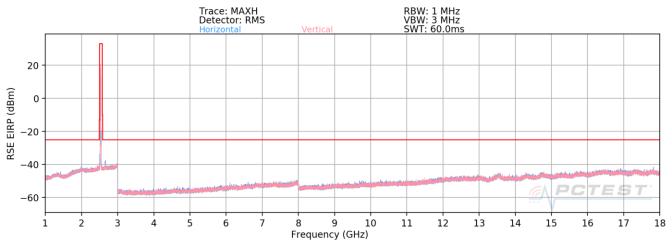
Spot-checks were conducted, all measurements were investigated and found to be within acceptable tolerance in accordance with FCC Approved Data Referencing Test Plan.

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## 7.2 Radiated Spurious Emissions §2.1053, 27.53(a), §2.1053, 27.53(m)

#### LTE Band 7





Bandwidth (MHz):	20
Frequency (MHz):	2535.0
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5070.0	-	-	-	-78.45	7.36	35.91	-59.35	-25.00	-34.35
7605.0	-	-	-	-79.87	11.44	38.57	-56.69	-25.00	-31.69
10140.0	-	-	-	-80.69	14.78	41.09	-54.16	-25.00	-29.16

Table 7-2. Radiated Spurious Data (LTE Band 7 – Mid Channel)

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# 8.0 CONCLUSION

The spot-check data measured for variant model **FCC ID: BCGA2461** is in tolerance with reference model FCC ID: BCGA2379 per FCC Approved Data Referencing Test Plan.

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# 9.0 APPENDIX A: REFERENCE MODEL TEST REPORT

Attached is the test report (1C2101020005-05-R2.BCG) from reference model FCC ID: BCGA2379, which includes referenced data results.

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## **PCTEST**

18855 Adams Court, Morgan Hill, CA 95037 USA Tel. 410.290.6652 / Fax 410.290.6654 http://www.pctest.com



# PART 27 MEASUREMENT REPORT

#### **Applicant Name:**

Apple Inc. One Apple Park Way Cupertino, CA 95014 United States

#### Date of Testing:

12/15/2020 - 02/27/2021 Test Site/Location: PCTEST Lab. Morgan Hill, CA, USA Test Report Serial No.: 1C2101020005-05-R2.BCG

FCC ID:	BCGA2379
Applicant Name:	Apple Inc.

Application Type: Model: EUT Type: FCC Classification: FCC Rule Part: Test Procedure(s): Certification A2379 Tablet Device PCS Licensed Transmitter (PCB) 27 ANSI C63.26-2015, TIA-603-E-2016, KDB 971168 D01 v03r01

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: 1C2101020005-05-R2.BCG Report SNs) supersedes and replaces the previously issued test report 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.

Randy Ortanez President



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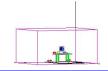


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# **PART 27 MEASUREMENT REPORT**



Tx Frequency Community EIRP Emission						RP	Emicaian
Mode	Bandwidth	Modulation	Range [MHz]	OBW [MHz]	Max. Power		Designator
		ODCK	2310.0	0.0400	[W]	[dBm]	
		QPSK 16QAM	2310.0	9.0126 9.0184	0.184	22.64 22.70	9M01G7W 9M02D7W
	10 MHz	64QAM	2310.0	8.9975	0.166	22.70	9M02D7W
		256QAM	2310.0	9.0087	0.103	20.13	9M01D7W
LTE Band 30		QPSK	2307.5 - 2312.5	4.5565	0.186	22.70	4M56G7W
		16QAM	2307.5 - 2312.5	4.5260	0.186	22.70	4M53D7W
	5 MHz	64QAM	2307.5 - 2312.5	4.5500	0.195	22.89	4M55D7W
		256QAM	2307.5 - 2312.5	4.5208	0.122	20.87	4M52D7W
		QPSK	2510.0 - 2560.0	18.0090	0.251	24.00	18M0G7W
	20 MHz	16QAM	2510.0 - 2560.0	17.9920	0.229	23.60	18M0D7W
	-	64QAM	2510.0 - 2560.0	17.9340	0.198	22.97	17M9D7W
-		256QAM	2510.0 - 2560.0	17.9660	0.091	19.61 24.00	18M0D7W
		QPSK 16QAM	2507.5 - 2562.5 2507.5 - 2562.5	13.5140 13.4940	0.251	23.30	13M5G7W 13M5D7W
	15 MHz	64QAM	2507.5 - 2562.5	13.4940	0.214	22.72	13M5D7W
		256QAM	2507.5 - 2562.5	13.4830	0.100	19.99	13M5D7W
LTE Band 7		QPSK	2505.0 - 2565.0	8.9893	0.251	24.00	8M99G7W
		16QAM	2505.0 - 2565.0	8.9952	0.224	23.50	9M00D7W
	10 MHz	64QAM	2505.0 - 2565.0	8.9986	0.197	22.94	9M00D7W
		256QAM	2505.0 - 2565.0	8.9897	0.100	20.02	8M99D7W
Γ		QPSK	2502.5 - 2567.5	4.5545	0.251	24.00	4M55G7W
	5 MHz	16QAM	2502.5 - 2567.5	4.5181	0.229	23.60	4M52D7W
		64QAM	2502.5 - 2567.5	4.5377	0.200	23.01	4M54D7W
		256QAM	2502.5 - 2567.5	4.5283	0.092	19.63	4M53D7W
		QPSK	2506.0 - 2680.0	17.9530	0.685	28.36	18M0G7W
	20 MHz	16QAM 64QAM	2506.0 - 2680.0 2506.0 - 2680.0	17.9610 17.9740	0.615	27.89 26.79	18M0D7W 18M0D7W
		256QAM	2506.0 - 2680.0	17.9440	0.478	23.99	17M9D7W
-		QPSK	2503.5 - 2682.5	13.5370	0.701	28.46	13M5G7W
		16QAM	2503.5 - 2682.5	13.5080	0.600	27.78	13M5D7W
	15 MHz	64QAM	2503.5 - 2682.5	13.4830	0.505	27.03	13M5D7W
TE Dead 44 (DCO)		256QAM	2503.5 - 2682.5	13.5450	0.265	24.24	13M5D7W
LTE Band 41 (PC2)		QPSK	2501.0 - 2685.0	9.0493	0.706	28.49	9M05G7W
	10 MHz	16QAM	2501.0 - 2685.0	9.0258	0.587	27.69	9M03D7W
	10 10112	64QAM	2501.0 - 2685.0	9.0209	0.491	26.91	9M02D7W
_		256QAM	2501.0 - 2685.0	9.0185	0.239	23.79	9M02D7W
		QPSK	2498.5 - 2687.5	4.5340	0.665	28.23	4M53G7W
	5 MHz	16QAM	2498.5 - 2687.5	4.5147	0.594	27.74	4M51D7W
		64QAM 256QAM	2498.5 - 2687.5 2498.5 - 2687.5	4.5274 4.5361	0.522 0.258	27.18 24.12	4M53D7W 4M54D7W
		QPSK	2506.0 - 2680.0	17.9530	0.250	26.60	18M0G7W
		16QAM	2506.0 - 2680.0	17.9610	0.378	25.77	18M0D7W
	20 MHz	64QAM	2506.0 - 2680.0	17.9740	0.295	24.70	18M0D7W
		256QAM	2506.0 - 2680.0	17.9440	0.134	21.27	17M9D7W
ſ		QPSK	2503.5 - 2682.5	13.5370	0.451	26.54	13M5G7W
	15 MHz	16QAM	2503.5 - 2682.5	13.5080	0.342	25.34	13M5D7W
		64QAM	2503.5 - 2682.5	13.4830	0.297	24.73	13M5D7W
LTE Band 41 (PC3)		256QAM	2503.5 - 2682.5	13.5450	0.132	21.22	13M5D7W
		QPSK	2501.0 - 2685.0	9.0493	0.457	26.60	9M05G7W
	10 MHz	16QAM	2501.0 - 2685.0	9.0258	0.352	25.46	9M03D7W
		64QAM 256QAM	2501.0 - 2685.0	9.0209	0.296	24.72	9M02D7W
ŀ		256QAM QPSK	2501.0 - 2685.0 2498.5 - 2687.5	9.0185 4.5340	0.135 0.457	21.30 26.60	9M02D7W 4M53G7W
		16QAM	2498.5 - 2687.5	4.5340	0.457	25.42	4M51D7W
	5 MHz	64QAM	2498.5 - 2687.5	4.5274	0.348	24.94	4M53D7W
		256QAM	2498.5 - 2687.5	4.5361	0.132	21.19	4M54D7W
	QPSK	2510.0 - 2560.0	37.5560	0.251	24.00	37M6G7W	
LILCALTE Bood 7	20 . 20 .	16QAM	2510.0 - 2560.0	37.6260	0.149	21.73	37M6D7W
ULCA LTE Band 7	17 20 + 20 MHz	64QAM	2510.0 - 2560.0	37.5930	0.144	21.58	37M6D7W
		256QAM	2510.0 - 2560.0	37.5850	0.071	18.53	37M6D7W
		QPSK	2506.0 - 2680.0	37.5670	0.776	28.90	37M6G7W
	20 +20 MHz	16QAM	2506.0 - 2680.0	37.6270	0.461	26.64	37M6D7W
ULCA LTE Band 41(PC2)		64QAM	2506.0 - 2680.0	37.5530	0.456	26.59	37M6D7W
ULCA LTE Band 41(PC2)	20 +20 IVIH2				0.234	23.69	37M6D7W
ULCA LTE Band 41(PC2)	20 +20 MHZ	256QAM	2506.0 - 2680.0	37.5840			
ULCA LTE Band 41(PC2)	20 +20 MHz	256QAM QPSK	2506.0 - 2680.0	37.5670	0.457	26.60	37M6G7W
ULCA LTE Band 41(PC2) ULCA LTE Band 41(PC3)	20 + 20 MHz	256QAM QPSK 16QAM	2506.0 - 2680.0 2506.0 - 2680.0	37.5670 37.6270	0.457 0.261	26.60 24.16	37M6G7W 37M6D7W
		256QAM QPSK	2506.0 - 2680.0	37.5670	0.457	26.60	37M6G7W

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Mode         Bandwith         Modulation         Kr Progent/K2 Renge (HK2)         OEW (HK1 0         Mixe Four Mixe Four Mixe (HBR)         Mixe Four Mixe Four Mixe Four Mixe (HBR)         Mixe Four Mixe Four Mixe Four Mixe (HBR)         Mixe Four	EIRP					
mt2 BPSK         2560 - 2640.0         96 7800         0.655         28.40         c           100 MHz         CPSK         2546.0 - 2640.0         97.4706         0.656         28.17         5           100 MHz         2560.2460.0         97.6907         0.560         28.40         5           2660.2460.0         97.6480         0.556         28.17         5           98.0 MHz         248.0         25410.2645.0         67.0448         28.40         28.44         28.44         28.44 <t< th=""><th>Bandy</th><th>· · · OBWIMH711</th><th>Bandwidth</th><th></th><th></th><th>Emission</th></t<>	Bandy	· · · OBWIMH711	Bandwidth			Emission
OPEK         2540.0         97.4706         0.656         28.17         5           160.Miz         2560.0         97.6512         0.441         26.45         5           90.Miz         2560.0         97.6512         0.441         26.45         5           90.Miz         2560.0         97.6440         0.7464         0.653         28.40         2           90.Miz         160.Mit         2561.0         67.6040         0.624         0.625         28.40         2           90.Miz         160.Mit         2561.0         97.676         0.635         28.40         2         <		ange [MHz]				Designator
Income         OPEK         254:60 - 2640.0         97.4706         0.0566         28.17         5           640.4M         25460 - 2640.0         97.6542         0.441         26.45         5           90.Metz         640.4M         25460 - 2640.0         97.6440         0.261         28.16 <td< td=""><td></td><td>46.0 - 2640.0 96.7880</td><td></td><td>0.692</td><td>28.40</td><td>96M8G7W</td></td<>		46.0 - 2640.0 96.7880		0.692	28.40	96M8G7W
NR Band n41(PC2)         640.4M         2546.0.2640.0         97.654.2         0.441         29.416         29.416           192.8PSK         2541.0.2645.0         85.854.0         0.674         29.29         6           190.M4z         190.2MK         2541.0.2645.0         87.637.6         0.633         28.40         6           640.2MM         2541.0.2645.0         87.537.6         0.635         28.40         2         28.40				0.656	28.17	97M5G7W
NR Band n41(PC2)         2860 AM         2846 0         2846 0         924480         0.281         24.16         5           90 MHz         160AM         2541 0         2850 0         0.652         28.40         8           90 MHz         160AM         2541 0         2850 0         75.518         0.032         28.40         8           640AM         2541 0         2850 0         77.518         0.032         28.40         7           2860AM         2541 0         2850 0         77.518         0.032         28.40         7           0P5K         2580 0         77.514         0.694         27.81         7         6         7.7581         0.694         27.81         7           60 MHz         160AM         2580 0         26500         77.7581         0.824         28.40         7           702 P5K         2580 0         26800         58.095         0.6977         28.31         6           90 MHz         160AM         2530 0         26800         58.1947         0.446         26.449         6           90 P5K         2521 0         26800         9.6930         28.39         4         160AM         2510         28.99         24.44	100 1	46.0 - 2640.0 97.6097	100 MHz	0.580	27.63	97M6D7W
m2 BPSK         2410         0.948.0         97.0424         0.952         28.40         E           90 MHz         160AM         25410         265.0         87.5176         0.635         28.03         E           90 MHz         160AM         25410         265.0         87.559         0.235         28.03         E           90 MHz         160AM         25410         265.0         87.559         0.235         28.40         E           90 MHz         160AM         2560         265.00         77.591         0.654         22.84.01         E           90 MHz         160AM         2560         2680.0         77.1575         0.452         28.46         E           90 MHz         160AM         2560         2680.0         56.1560         0.677         28.4         E         1.028.4         26.0         260.0         56.056         0.677         28.4         E         2.260.2 480.0         56.056         0.677         28.4         1.6         2.8         2.4         1.6         2.8         2.4         1.6         0.256         2.7         2.8         4.6         2.5         2.8         4.6         2.5         2.8         4.6         2.5         2.8		46.0 - 2640.0 97.6542		0.441	26.45	97M7D7W
90 MHz         OPSK         2541.0         264.00         87.6024         0.692         234.00         E           640AM         2541.0         265.00         87.5176         0.632         234.00         E           640AM         2541.0         265.00         87.539         0.431         226.34         E           90 MHz         640AM         256.00         77.0210         0.692         224.09         E           90 MHz         160AM         235.00         265.00         77.1678         0.254         22.63.0         2         2         2         3         3         2         2         3         3         2         3         3         2         3         3         2         3				0.261		97M4D7W
90 MHz         160AM         25410 - 26450         97.5176         0.635         230.3         £           90 MHz         2600AM         25410 - 26450         97.6505         0.256         24.00         £           90 MHz         772 BF5K         2560 - 25600         77.7581         0.084         223.53         7           90 MHz         160AM         2550 - 25600         77.7581         0.084         223.53         7           640AM         2550 - 25600         77.7581         0.0842         22.84.0         7           640AM         2550 - 25600         77.7581         0.0812         22.84.0         16           640AM         2550 - 25600         58.0556         0.670         27.92         16           60 MHz         160AM         2550 - 25600         58.0556         0.670         27.82         16           60 AM2         2560 - 25600         45.0550         46.0560         0.662         2.84.0         16           72 BF5K         25610 - 26700         38.0550         0.668         2.83.7         4         4         4.04.0         2.210 - 26650         47.7280         0.417         2.82.0         4         4.04.0         2.20.0         2.80.0         2.80.0		41.0 - 2645.0 85.8540		0.674	28.29	85M9G7W
640AM         2541028450.         87.5349         0.431         22.34.8         8           2860AM         2541028450.         87.6505         0.256         24.09         8           0.P5K         2580028500.         77.0210         0.092         22.840         7           160AM         2580028500.         77.5581         0.694         22.835         7           2860AM         2526028600.         56.1950         0.6924         24.04         7           2860AM         2526028600.         56.1950         0.6924         24.04         7           172.BFSK         2526028600.         56.1950         0.6020         2.83         4           600AHz         2526026600.         56.1950         0.6020         2.83         4           600AHz         25202660.         56.1046         0.602         2.83         4           600AHz         2521.0-2665.0         47.6090         0.602         2.83         4           600AHZ         2521.0-2665.0         47.6090         0.602         2.84         4           600AM         2521.0-2665.0         47.6090         0.602         2.84         4           600AM         2521.0-2665.0         47.		41.0 - 2645.0 87.6024		0.692	28.40	87M6G7W
Image: NR Band n41(PC2)         2560AM         2560 - 2850.0         77.0210         0.092         28.400         2           0PSK         2550.0         2560.0         275.551         0.0924         28.35         7           16QAM         2550.0         2550.0         77.551         0.0924         28.36         7           16QAM         2550.0         2560.0         77.736         0.432         28.31         6           12BPSK         2526.0         2660.0         58.1950         0.692         28.40         7           12BPSK         2526.0         2660.0         58.036         0.672         28.31         6           0PSK         2526.0         2660.0         58.126         0.602         27.92         5           250MHz         160AM         2556.0         2600.0         58.126         0.262         28.40         4           0PSK         2521.0         2665.0         40.092         28.41         4         4           150AM         2561.0         2670.0         38.034         0.092         28.40         4           160AM         2561.0         2670.0         38.034         0.092         28.41         2           160A	90 N	41.0 - 2645.0 87.5176	90 MHz	0.635	28.03	87M5D7W
NR Band n41(PC2)         11/2 BPSK         2560.0.2850.0         77.5444         0.6844         22.835         7           NR Band n41(PC2)         64QAM         2536.0.2850.0         77.5361         0.6044         22.816         7           NR Band n41(PC2)         77.584         0.604         22.81         7         77.1678         0.6244         22.81         7           100 MHz         600AM         2556.0.2660.0         58.056         0.662         28.40         5         77.1678         0.624         24.40         7           100 AM         2556.0.2660.0         58.0356         0.662         27.92         5         6         64.0AM         2556.0.2660.0         58.1247         0.446         28.40         6           100 AM         2551.0.2665.0         47.0860         0.6990         28.40         6         28.40         6         28.40         6         28.40         6         28.60         47.2880         0.6992         28.40         6         28.414         5         28.60         4         7.900         0.417         28.20         28.40         29.55         27.75         4         64QAM         2561.0.2670.0         38.096         28.414         29.55         28.414         28.55<		41.0 - 2645.0 87.5349		0.431	26.34	87M5D7W
NR Band n41(PC2)         00 M+z         100 M+z         100 M+z         100 M+z         100 M+z         100 M+z         100 M+z           NR Band n41(PC2)         60 M+z         12860 A         2586 0 - 2860 A         77.7581         0.0254         22.04 A         12           00 M+z         1280 A         2556 0 - 2860 A         58.056         0.622         28.40         12           00 M+z         160 AM         2526 0 - 2860 C         58.026         0.620         22.92         12           00 M+z         160 AM         2526 0 - 2860 C         58.026         0.620         22.92         12           00 PSK         2521 0 - 2865 C         48.000         0.620         22.93         14         12           00 PSK         2521 0 - 2865 C         47.728         0.529         24.14         12           00 PSK         2521 0 - 2865 C         47.728         0.595         27.75         4           00 PSK         2510 0 - 2870 O         38.0344         0.692         28.40         4           100 M+z         190 AM         2516 0 - 2870 O         38.036         0.437         28.40         3           20 M+z         160 AM         2561 0 - 2870 O         38.036         0.437		41.0 - 2645.0 87.6505		0.256	24.09	87M7D7W
80 MHz         16QAM         2556 0.2850.0         77.5551         0.644         27.81         2           NR Band n41(PC2)         172 BFSK         2256 0.2860.0         77.1678         0.432         22.86         7           00 MHz         172 BFSK         2256 0.2860.0         58.1950         0.692         28.40         2           00 MHz         16QAM         2526 0.2860.0         58.1247         0.446         25.49         2           60 MHz         16QAM         2526 0.2660.0         58.1247         0.446         24.44         2         2         28.40         4         2         28.40         4         2         28.40         4         2         28.40         4         2         28.40         4         25.60         27.75         4         4         26.00         28.37         2         28.40         4         25.60         27.75         4         2.56.0         22.80         4         25.60         2.20         28.37         2         28.40         3         2.26.40         3         2.26.40         3         2.26.40         3         2.26.40         3         2.26.40         3         2.26.40         3         2.26.40         3         2.26.40         3.		36.0 - 2650.0 77.0210		0.692	28.40	77M0G7W
94QAM         2550.010         77.7365         0.432         29.36         7           72850AM         2580.0         2860.0         58.1950         0.692         28.40         7           0         0.751.6         0.254.4         28.04         7         7         1678         0.254.4         28.41         5           0         0.771.678         0.602         28.31         5         28.31         5         28.31         5         28.31         5         28.32         28.31         5         28.32         4         4         4         4         4         4.40         4.41         4.41         4.41         4.41         4.41         4         4.41				0.684	28.35	77M6G7W
NR Band n41(PC2)         2560.2880.0         77.1678         0.264         24.04         7           NR Band n41(PC2)         60 MHz         702 BPSK         2556.0.2880.0         58.0536         0.677         28.31         5           60 MHz         604AM         2526.0.2880.0         58.0206         0.660.0         27.92         6           60 MHz         702 BPSK         2526.0.2880.0         58.0206         0.660.0         22.83         4           702 BPSK         2521.0.2865.0         47.0680         0.692         22.84.0         4           704 PPSK         2521.0.2865.0         47.7080         0.6417         22.80         4           704 PPSK         251.0.2867.0         37.900         0.417         22.80         4           704 PPSK         251.0.2867.0         37.900         0.417         22.80         4           40 MHz         160AM         251.0.2870.0         37.900         0.418         28.94         2           704 PPSK         251.0.2870.0         37.919         0.249         23.96         2         2         23.94         1         2         2.96         2         2.96         1         2         2.96         1         2.96         2	80 N	36.0 - 2650.0 77.5581	80 MHz	0.604	27.81	77M6D7W
NR Band n41(PC2)         172 BPSK         25260 - 2860.0         98.01950         0.692         22.400         5           60 MHz         160AM         25260 - 2860.0         58.0206         0.620         27.92         5           640AM         25260 - 2860.0         58.0206         0.620         27.92         5           70 PSK         25260 - 2860.0         58.0206         0.620         28.94         4           70 PSK         25210 - 2865.0         47.0630         0.692         28.94         4           70 PSK         25210 - 2865.0         47.6233         0.595         27.75         4           70 PSK         25210 - 2865.0         47.6233         0.262         28.40         4           70 PSK         25210 - 2867.0         37.905         0.688         28.7         3           70 PSK         2516 0- 2870.0         37.945         0.680         28.7         3           70 PSK         2516 0- 2870.0         37.917         0.244         28.06         28.00         18.328         0.433         28.42         3           70 MHz         160AM         2560 - 2800.0         17.9540         0.646         28.01         1           70 MHz         160AM						77M7D7W
NR Band n41(PC2)         60 MHz         QPSK         256.0 - 2860.0         58.0536         0.677         28.31         52           160AM         2560.0 - 2860.0         58.1247         0.446         256.49         5           250QAM         2520.0 - 2660.0         58.0256         0.2800         0.680         22.39         4           100         MHz         160AM         2521.0 - 2665.0         47.0680         0.692         22.40         4           101         MHz         160AM         2521.0 - 2665.0         47.7680         0.695         27.75         4           102         PSK         2521.0 - 2665.0         47.7000         0.417         22.80         4           104         PSK         251.0 - 267.00         35.7860         0.688         28.37         3           104         MHz         160AM         2516.0 - 267.00         37.0440         0.646         28.10         1           104         MHz         160AM         2516.0 - 267.00         37.9494         0.646         28.10         1           100 MHz         160AM         256.0 - 2680.0         18.3739         0.637         22.66         1           20 MHz         160AM         256.0 - 2680.0						77M2D7W
NR Band n41(PC2)         60 MHz         160 AM         2560 - 2860.0         58.1247         0.446         26.49         5           2560 AM         25260 - 2860.0         58.1247         0.446         26.49         5           7280 AM         25260 - 2860.0         58.0285         0.259         24.14         5           72 BPSK         2521 - 2865.0         47.080         0.692         28.40         4           160 AM         2521 - 2865.0         47.7580         0.695         27.75         4           160 AM         2521 - 2865.0         47.7520         0.688         28.37         3           160 AM         2521 - 2865.0         47.7520         0.688         28.37         3           160 AM         2516 - 2870.0         35.7960         0.688         28.37         3           160 AM         2516 - 2870.0         38.096         0.433         28.42         3           20 MHz         160 AM         2516 - 2870.0         38.096         0.433         28.42         3           100 MHz         160 AM         2560 - 2880.0         18.379         0.647         28.64         1           100 MHz         160 AM         2560 - 2880.0         18.3526         0.457<						58M2G7W
Head Mill         2560 - 2860 0         58.1247         0.446         22.49         2           128 PSK         2521 - 2665 0         46.0030         0.680         28.39         4           128 PSK         2521 0 - 2665 0         47.0630         0.680         28.39         4           128 PSK         2521 0 - 2665 0         47.0630         0.692         28.40         4           128 PSK         2521 0 - 2665 0         47.0630         0.595         27.75         4           128 PSK         251 0 - 2665 0         47.083         0.250         23.88         4           128 PSK         251 0 - 2670 0         38.0344         0.682         28.40         3           140 MHz         160AM         251 0 - 2670 0         37.9790         0.434         23.86         3           20 MHz         160AM         251 0 - 2670 0         37.9790         0.249         23.96         3           20 MHz         160AM         2560 - 2880 0         18.3799         0.637         28.04         1           20 MHz         160AM         2560 - 2880 0         18.3399         0.422         28.66         1           20 MHz         100 MHz         160AM         2560 - 2880 0         18.33						58M1G7W
NR Band n41(PC3)         2560.0M         2521.0         2680.0         68.0296         0.259         24.14         9           0PSK         2521.0         2685.0         47.080         0.680         28.39         4           50 MHz         160AM         2521.0         2685.0         47.7288         0.595         27.75         4           640AM         2521.0         2685.0         47.6253         0.689         28.39         4           2560AM         2516.0         27.00         33.094         0.692         28.40         3           40 MHz         160AM         2516.0         270.0         33.094         0.692         28.47         1           40 MHz         160AM         2516.0         270.0         33.094         0.692         28.40         1           40 MHz         160AM         2516.0         270.0         33.094         0.692         28.40         1           20 MHz         160AM         2560.0         18.373         0.637         28.44         1           20 MHz         160AM         2506.0         280.0         18.339         0.422         26.26         1           20 MHz         160AM         2560.0         266.0 <td>PC2) 60 N</td> <td></td> <td>60 MHz</td> <td></td> <td></td> <td>58M0D7W</td>	PC2) 60 N		60 MHz			58M0D7W
mi2 BPSK         2521.0         2665.0         46.0090         0.690         28.39         4           50 MHz         GQPSK         2521.0         2665.0         47.7800         0.417         26.20         4           640AM         2521.0         2665.0         47.7800         0.417         26.20         4           40 MHz         251.0         265.0         47.7900         0.417         26.20         4           40 MHz         160AM         251.0         265.0         47.623         0.250         22.840         3           40 MHz         160AM         2516.0         2670.0         33.0944         0.692         22.840         3           40 MHz         160AM         2516.0         2670.0         33.0945         0.438         26.42         3           20 MHz         160AM         2506.0         2670.0         33.0945         0.438         26.42         3           20 MHz         160AM         2506.0         2680.0         11.3526         0.576         27.60         1           20 MHz         160AM         2506.0         2680.0         18.359         0.422         26.26         1           20 MHz         160AM         2546.0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>58M1D7W</td>						58M1D7W
OPSK         2521.0         2665.0         47.6880         0.692         28.40         4           50 MHz         16QAM         2521.0         2865.0         47.7286         0.595         27.75         4           64QAM         2521.0         2865.0         47.6253         0.250         23.98         4           72 BPSK         2516.0         267.00         33.0344         0.692         28.40         2           40 MHz         16QAM         2516.0         267.00         33.0344         0.692         28.40         2           40 MHz         16QAM         2516.0         267.00         33.0944         0.692         28.40         2           40 MHz         16QAM         2516.0         267.00         33.0944         0.692         28.40         2           20 MHz         16QAM         2516.0         267.00         37.9179         0.249         23.96         2           20 MHz         16QAM         2506.0         280.00         18.3329         0.637         28.04         1           20 MHz         16QAM         2560.0         2840.0         97.890         0.442         256.0         256.0         26.0         26.0         26.0         26.0						58M0D7W
50 M+z         160AM         2521.0 - 2665.0         47.7288         0.595         27.75         4           640AM         2521.0 - 2665.0         47.7290         0.417         26.04         23.98         4           772 BPSK         2516.0 - 2670.0         35.7960         0.688         28.37         2           40 M+z         160AM         2516.0 - 2670.0         33.0344         0.692         28.40         2           40 M+z         160AM         2516.0 - 2670.0         37.9245         0.590         27.71         2           40 M+z         160AM         2516.0 - 2670.0         37.9178         0.249         23.96         2           20 M+z         160AM         2506.0 - 2680.0         18.359         0.637         28.04         1           20 M+z         160AM         2506.0 - 2680.0         18.359         0.457         26.62         1           20 M+z         160AM         2506.0 - 2680.0         18.359         0.457         26.62         1           20 M+z         160AM         2560.0 - 2640.0         97.6097         0.457         26.60         1           20 M+z         160AM         2540.0 - 264.0         97.6097         0.256         260         2						46M0G7W
Image: Second			50 M -			47M7G7W
2560AM         2521.0         2665.0         47.6253         0.250         23.98         4           072 BPSK         2516.0         2670.0         36.7360         0.688         28.37         3           40 MHz         160.04M         2516.0         2670.0         37.9245         0.590         27.71         3           2560AM         2516.0         2670.0         37.9179         0.249         23.86         3           2560AM         2516.0         2670.0         37.9179         0.244         23.86         3           20 MHz         160.AM         2506.0         2880.0         18.3526         0.576         27.60         1           20 MHz         160.AM         2506.0         2880.0         18.3526         0.576         27.60         1           20 MHz         2560.AM         2560.0         18.352         0.252         24.07         1           100 MHz         160.AM         2560.0         18.352         0.252         25.46         5           100 MHz         160.AM         2546.0         2640.0         97.460         0.457         26.60         5           2560.AM         2546.0         2640.0         97.480         0.477	50 N		50 MHz			47M7D7W
Image Number         Image Number<						47M8D7W
A0 MHz         QPSK         2516.0         280.04         0.692         28.40         3           40 MHz         16QAM         2516.0         2670.0         38.0095         0.438         26.42         3           2560AM         2516.0         2670.0         38.0095         0.438         26.42         3           71/2 BPSK         2506.0         2680.0         11.8373         0.637         28.04         1           20 MHz         16QAM         2506.0         2680.0         18.373         0.637         28.04         1           20 MHz         16QAM         2506.0         2680.0         18.373         0.637         28.04         1           40 MHz         2560.0         2680.0         18.3299         0.422         26.26         1           40 AM         2506.0         2680.0         18.2832         0.255         24.07         1           40 DMHz         16QAM         2546.0         2640.0         97.4706         0.454         2.66.0         2           100 MHz         16QAM         2546.0         2640.0         97.4700         0.457         26.60         2           100 MHz         16QAM         2541.0         2640.0         97						47M6D7W
40 MHz         16QAM         2516.0 - 2670.0         37.9245         0.590         27.71         3           64QAM         2516.0 - 2670.0         38.0095         0.438         26.42         3           2560.0 M2         2516.0 - 2670.0         7.9179         0.249         23.366         3           20 MHz         20 MHz         2506.0 - 2680.0         18.3739         0.637         28.04         1           QPSK         2506.0 - 2680.0         18.3226         0.576         27.60         1           16QAM         2506.0 - 2680.0         18.3292         0.422         26.26         1           16QPSK         2546.0 - 2640.0         96.780         0.454         26.67         2           100 MHz         16QAM         2546.0 - 2640.0         97.6097         0.352         25.46         2           100 MHz         16QAM         2546.0 - 2640.0         97.6097         0.352         25.46         2           100 MHz         16QAM         2541.0 - 2645.0         87.517         0.405         26.00         8           100 MHz         16QAM         2541.0 - 2645.0         87.517         0.405         26.00         8           100 MHz         16QAAM         2541.0 -						35M8G7W 38M0G7W
Bit Mark	40.1					
NR Band n41(PC3)         256QAM         2516.0 - 2670.0         37.9179         0.249         23.96         3           0PSK         2506.0 - 2680.0         17.954.0         0.646         28.04         1           20 MHz         16QAM         2506.0 - 2680.0         18.3739         0.637         28.04         1           20 MHz         16QAM         2506.0 - 2680.0         18.3526         0.576         27.60         1           256QAM         2506.0 - 2680.0         18.2832         0.255         24.07         1           256QAM         2560.0 - 2640.0         97.6907         0.352         25.46         5           QPSK         2546.0 - 2640.0         97.6907         0.352         25.46         5           256QAM         2540.0 - 2640.0         97.6480         0.172         22.36         5           90 MHz         16QAM         2541.0 - 2645.0         87.5176         0.4057         26.60         8           90 MHz         16QAM         2541.0 - 2645.0         87.5176         0.405         26.07         8           90 MHz         16QAM         2541.0 - 2645.0         87.5176         0.405         26.07         8           90 MHz         16QAM         253	40 IV		40 MHZ			37M9D7W
m/2 BPSK         2506.0 - 2680.0         17.9540         0.646         28.10         1           20 MHz         16QAM         2506.0 - 2680.0         18.3526         0.576         27.60         1           20 MHz         16QAM         2506.0 - 2680.0         18.3599         0.422         26.26         1           64QAM         2506.0 - 2680.0         18.3599         0.454         26.57         2         6           7/2 BPSK         2564.0 - 2640.0         97.4706         0.454         26.60         2         6           100 MHz         16QAM         2546.0 - 2640.0         97.6542         0.290         24.63         5           256QAM         2546.0 - 2640.0         97.6542         0.290         24.63         5           20 PSK         2541.0 - 2645.0         87.6504         0.457         26.60         6           20 PSK         2541.0 - 2645.0         87.6504         0.457         26.60         6           20 PSK         2541.0 - 2645.0         87.5176         0.405         26.07         6           20 PSK         2550.0         77.581         0.369         25.68         7           2560AM         251.0 - 2650.0         77.581         0.457					-	38M0D7W 37M9D7W
QPSK         2566.0         2680.0         18.3739         0.637         28.04         1           20 MHz         16QAM         2506.0         2680.0         18.3539         0.422         22.66         1           2560AM         2506.0         2680.0         18.2832         0.255         24.07         1           2560AM         2560.0         2680.0         18.2832         0.255         24.07         1           100 MHz         16QAM         2546.0         2640.0         97.6997         0.352         25.66         2           100 MHz         16QAM         2546.0         2640.0         97.6997         0.352         22.66         1           100 MHz         16QAM         2546.0         2640.0         97.6997         0.352         22.66         2           256QAM         2564.0         2640.0         97.6997         0.352         22.66         2           20 PISK         2560AM         2564.0         2640.0         97.6997         0.352         22.66         2           20 MHz         16QAM         2541.0         2645.0         87.5176         0.4057         26.60         7           20 MHz         16QAM         2541.0						
20 MHz         16QAM         2506.0 - 2680.0         18.3526         0.576         27.60         1           266QAM         2506.0 - 2680.0         18.3599         0.422         26.26         1           100 MHz         17/2 BPSK         2546.0 - 2640.0         96.7880         0.454         26.57         9           100 MHz         16QAM         2546.0 - 2640.0         97.706         0.457         26.60         9           100 MHz         64QAM         2546.0 - 2640.0         97.697         0.352         25.64         9           100 MHz         64QAM         2546.0 - 2640.0         97.697         0.352         25.66         9           100 MHz         16QAM         2546.0 - 2640.0         97.642         0.290         24.63         9           100 MHz         16QAM         2541.0 - 2645.0         87.6024         0.457         26.60         8           90 MHz         16QAM         2541.0 - 2645.0         87.5076         0.4057         26.60         7           90 MHz         16QAM         2536.0 - 2650.0         77.7584         0.4477         26.51         7           90 MHz         16QAM         2536.0 - 2650.0         77.7584         0.4477         26.60						18M0G7W 18M4G7W
Image: NR Band n41(PC3)         64QAM         2506.0.2680.0         18.3599         0.422         26.26         1           100 MHz         100 FPsK         2566.0.2680.0         96.7880         0.454         26.57         9           100 MHz         16QAM         2546.0.2640.0         97.4706         0.457         26.60         5           100 MHz         16QAM         2546.0.2640.0         97.6097         0.352         25.46         9           64QAM         2546.0.2640.0         97.6097         0.352         25.66         9           64QAM         2546.0.2640.0         97.6097         0.352         25.66         9           90 MHz         16QAM         2541.0.2645.0         87.6024         0.457         26.60         8           90 MHz         16QAM         2541.0.2645.0         87.5349         0.293         24.66         8           90 MHz         16QAM         2541.0.2645.0         87.5349         0.293         24.66         8           90 MHz         16QAM         2536.0-2650.0         77.0210         0.457         26.60         7           16QAM         2536.0-2650.0         77.0210         0.457         26.60         7           80 MHz	20 1		20 MHz			18M4D7W
NR Band n41(PC3)         256QAM         2506.0 - 2680.0         18.2832         0.255         24.07         1           100 MHz         100 MHz         QPSK         2546.0 - 2640.0         97.4706         0.454         225.6         9           100 MHz         16QAM         2546.0 - 2640.0         97.6706         0.457         25.60         9           100 MHz         16QAM         2546.0 - 2640.0         97.642         0.290         24.63         9           100 MHz         256QAM         2546.0 - 2640.0         97.642         0.290         24.63         9           100 MHz         16QAM         2546.0 - 2640.0         97.642         0.0457         26.60         8           100 MHz         16QAM         2541.0 - 2645.0         87.5176         0.457         26.60         8           16QAM         2541.0 - 2645.0         87.5176         0.447         26.51         7           16QAM         2536.0 - 265.0         77.524         0.447         26.51         7           16QAM         2536.0 - 265.0         77.581         0.369         25.68         7           16QAM         2536.0 - 265.0         77.1678         0.111         22.34         7           16QAM	2010		20 MHz			18M4D7W
Inf2 BPSK         2546.0 - 2640.0         96.7880         0.454         26.57         9           100 MHz         QPSK         2546.0 - 2640.0         97.4706         0.457         26.60         5           16QAM         2546.0 - 2640.0         97.6097         0.352         25.46         5           64QAM         2546.0 - 2640.0         97.6097         0.352         25.66         5           256QAM         2546.0 - 2640.0         97.480         0.172         22.36         5           256QAM         2541.0 - 2645.0         87.6024         0.457         26.60         6           90 MHz         16QAM         2541.0 - 2645.0         87.5049         0.293         24.66         6           90 MHz         16QAM         2541.0 - 2645.0         87.5349         0.293         24.66         7           16QAM         2536.0 - 2650.0         77.70210         0.457         26.60         7           16QAM         2536.0 - 2650.0         77.584         0.447         25.61         7           16QAM         2536.0 - 2650.0         77.1678         0.171         22.34         7           256QAM         2526.0 - 2660.0         58.1950         0.457         26.60         5 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>18M3D7W</td>						18M3D7W
NR Band n41(PC3)         QPSK         2546.0 - 2640.0         97.4706         0.457         26.60         9           NR Band n41(PC3)         100 MHz         16QAM         2546.0 - 2640.0         97.6542         0.290         24.63         9           100 MHz         64QAM         2546.0 - 2640.0         97.6542         0.290         24.63         9           100 MHz         77.5540.0         97.6542         0.290         24.63         9           100 MHz         2560AM         2546.0 - 2640.0         97.6542         0.457         26.60         8           100 MHz         16QAM         2541.0 - 2645.0         87.6549         0.457         26.60         8           100 MHz         16QAM         2541.0 - 2645.0         87.6505         0.182         22.59         8           100 MHz         16QAM         2536.0 - 2650.0         77.5844         0.447         26.60         7           0 PSK         2536.0 - 2650.0         77.5844         0.447         26.61         7           10QAM         2536.0 - 2650.0         77.1678         0.171         22.34         7           16QAM         2526.0 - 2660.0         58.1950         0.457         26.60         5						96M8G7W
I00 MHz         16QAM         2546.0 - 2640.0         97.6097         0.352         25.46         9           64QAM         2546.0 - 2640.0         97.642         0.290         24.63         9           2560AM         2546.0 - 2640.0         97.6480         0.172         22.36         9           90 MHz         16QAM         2541.0 - 2645.0         88.8540         0.457         26.60         8           90 MHz         16QAM         2541.0 - 2645.0         87.6024         0.457         26.60         8           90 MHz         16QAM         2541.0 - 2645.0         87.6055         0.182         22.59         8           90 MHz         16QAM         2541.0 - 2645.0         87.6055         0.182         22.59         8           90 MHz         16QAM         2541.0 - 2645.0         87.6055         0.182         22.59         8           70 PSK         2536.0 - 2650.0         77.584         0.447         26.61         7           80 MHz         16QAM         2536.0 - 2650.0         77.7365         0.282         24.50         7           256QAM         2526.0 - 2660.0         58.1950         0.457         26.60         5           16QAM         2526.0 - 2660.0						97M5G7W
Image: NR Band n41(PC3)         64QAM         2546.0 - 2640.0         97.6542         0.290         24.63         9           90 MHz         2560AM         2564.0 - 2640.0         97.4480         0.172         22.36         9           90 MHz         QPSK         2541.0 - 2645.0         87.6024         0.457         26.60         8           90 MHz         16QAM         2541.0 - 2645.0         87.5176         0.405         26.07         8           90 MHz         16QAM         2541.0 - 2645.0         87.5349         0.293         24.66         8           256QAM         2560AM         2541.0 - 2650.0         77.0210         0.457         26.60         7           80 MHz         16QAM         2536.0 - 2650.0         77.7055         0.282         24.50         7           80 MHz         16QAM         2536.0 - 2650.0         77.71678         0.171         22.34         7           2256QAM         2536.0 - 2660.0         58.1950         0.457         26.60         5           60 MHz         16QAM         2536.0 - 2660.0         58.1950         0.457         26.60         5           60 MHz         16QAM         2526.0 - 2660.0         58.1247         0.275         24.40 <td>100 1</td> <td></td> <td>100 MHz</td> <td></td> <td></td> <td>97M6D7W</td>	100 1		100 MHz			97M6D7W
NR Band n41(PC3)         60 MHz         256QAM         2546.0 - 2640.0         97.4480         0.172         22.36         9           90 MHz         16QAM         2541.0 - 2645.0         85.8540         0.457         26.60         8           90 MHz         16QAM         2541.0 - 2645.0         87.6024         0.457         26.60         8           90 MHz         16QAM         2541.0 - 2645.0         87.5349         0.293         24.66         8           256QAM         2541.0 - 2645.0         87.5349         0.293         24.66         7           256QAM         2560.0         77.581         0.457         26.60         7           QPSK         2536.0 - 2650.0         77.581         0.369         25.61         7           256QAM         2536.0 - 2650.0         77.7584         0.447         26.61         7           2560AM         2536.0 - 2660.0         58.1950         0.457         26.60         5           60 MHz         16QAM         2526.0 - 2660.0         58.0206         0.376         25.75         5           64QAM         2526.0 - 2660.0         58.0206         0.457         26.60         25         5         4           90 MHz <t< td=""><td>1001</td><td></td><td>100 111 12</td><td></td><td></td><td>97M7D7W</td></t<>	1001		100 111 12			97M7D7W
m/2 BPSK         2541.0 - 2645.0         85.8540         0.457         26.60         8           90 MHz         16QAM         2541.0 - 2645.0         87.6024         0.457         26.60         8           90 MHz         16QAM         2541.0 - 2645.0         87.5176         0.405         26.07         8           90 MHz         256QAM         2541.0 - 2645.0         87.6505         0.182         22.59         8           70 PSK         2536.0 - 2650.0         77.0210         0.457         26.60         7           90 MHz         16QAM         2536.0 - 2650.0         77.0210         0.457         26.60         7           80 MHz         16QAM         2536.0 - 2650.0         77.7365         0.282         24.50         7           16QAM         2536.0 - 2650.0         77.7365         0.282         24.50         7           256QAM         2536.0 - 2660.0         58.0536         0.457         26.60         5           QPSK         2526.0 - 2660.0         58.026         0.454         26.57         5           60 MHz         16QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           16QAM         2526.0 - 2660.0         58.0						97M4D7W
NR Band n41(PC3)         60 MHz         QPSK         2541.0 - 2645.0         87.6024         0.457         26.60         8           90 MHz         16QAM         2541.0 - 2645.0         87.5176         0.405         26.07         8           64QAM         2541.0 - 2645.0         87.5349         0.293         24.66         8           256QAM         2541.0 - 2645.0         87.6505         0.182         22.59         8           702 BPSK         2536.0 - 2650.0         77.0210         0.457         26.60         7           QPSK         2536.0 - 2650.0         77.5844         0.447         26.51         7           64QAM         2536.0 - 2650.0         77.1678         0.171         22.34         7           7256QAM         2536.0 - 2660.0         58.1950         0.457         26.60         5           90 MHz         16QAM         2526.0 - 2660.0         58.0266         0.376         25.75         5           64QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           90 MHz         16QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           90 MHz         60 MHz         2526.0 - 2660.0						85M9G7W
64QAM         2541.0 - 2645.0         87.5349         0.293         24.66         8           256QAM         2541.0 - 2645.0         87.6505         0.182         22.59         8           7/2 BPSK         2536.0 - 2650.0         77.0210         0.457         26.60         7           QPSK         2536.0 - 2650.0         77.5844         0.447         26.51         7           16QAM         2536.0 - 2650.0         77.5844         0.447         26.51         7           256QAM         2536.0 - 2650.0         77.5841         0.369         25.68         7           64QAM         2536.0 - 2650.0         77.1678         0.171         22.34         7           256QAM         2536.0 - 2660.0         58.1950         0.457         26.60         5           QPSK         2526.0 - 2660.0         58.0206         0.376         22.45         5           QPSK         2526.0 - 2660.0         58.0206         0.376         22.40         5           256QAM         2526.0 - 2660.0         58.0206         0.376         22.40         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           256QAM         2521.0 - 2665.				0.457		87M6G7W
64QAM         2541.0 - 2645.0         87.5349         0.293         24.66         8           256QAM         2541.0 - 2645.0         87.6505         0.182         22.59         8           7/2 BPSK         2536.0 - 2650.0         77.0210         0.457         26.60         7           QPSK         2536.0 - 2650.0         77.5844         0.447         26.51         7           16QAM         2536.0 - 2650.0         77.5844         0.447         26.56         7           256QAM         2536.0 - 2650.0         77.5844         0.447         26.56         7           256QAM         2536.0 - 2650.0         77.1678         0.171         22.34         7           256QAM         2536.0 - 2660.0         58.1950         0.457         26.60         5           QPSK         2526.0 - 2660.0         58.0266         0.376         25.75         5           GAQAM         2526.0 - 2660.0         58.0265         0.176         22.46         5           16QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           250 MHz         16QAM	90 N	41.0 - 2645.0 87.5176	90 MHz	0.405	26.07	87M5D7W
m/2 BPSK         2536.0 - 2650.0         77.0210         0.457         26.60         7           QPSK         2536.0 - 2650.0         77.5844         0.447         26.51         7           80 MHz         16QAM         2536.0 - 2650.0         77.5844         0.447         26.51         7           64QAM         2536.0 - 2650.0         77.5581         0.369         25.68         7           256QAM         2536.0 - 2650.0         77.1678         0.171         22.34         7           256QAM         2526.0 - 2660.0         58.1950         0.457         26.60         5           QPSK         2526.0 - 2660.0         58.0536         0.454         26.57         5           64QAM         2526.0 - 2660.0         58.1247         0.275         24.40         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           256QAM         2526.0 - 2665.0         47.6680         0.446         26.49         4           40 MHz         16QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           40 MHz         256QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4 </td <td></td> <td>41.0 - 2645.0 87.5349</td> <td></td> <td>0.293</td> <td>24.66</td> <td>87M5D7W</td>		41.0 - 2645.0 87.5349		0.293	24.66	87M5D7W
NR Band n41(PC3)         QPSK         2536.0 - 2650.0         77.5844         0.447         26.51         7           NR Band n41(PC3)         60 MHz         16QAM         2536.0 - 2650.0         77.15785         0.369         25.68         7           NR Band n41(PC3)         77/2 BPSK         2526.0 - 2660.0         77.1678         0.171         22.34         7           NR Band n41(PC3)         60 MHz         16QAM         2526.0 - 2660.0         58.1950         0.457         26.60         5           QPSK         2526.0 - 2660.0         58.0536         0.454         26.57         5           QPSK         2526.0 - 2660.0         58.0295         0.176         22.440         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           256QAM         2521.0 - 2665.0         47.6680         0.446         26.49         4           40 MHz         16QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4		41.0 - 2645.0 87.6505		0.182	22.59	87M7D7W
80 MHz         16QAM         2536.0 - 2650.0         77.5581         0.369         25.68         7           64QAM         2536.0 - 2650.0         77.7365         0.282         24.50         7           256QAM         2536.0 - 2650.0         77.1678         0.171         22.34         7           256QAM         2536.0 - 2660.0         58.1950         0.457         26.60         5           QPSK         2526.0 - 2660.0         58.0526         0.454         26.57         5           GQAM         2526.0 - 2660.0         58.0206         0.376         25.75         5           64QAM         2526.0 - 2660.0         58.0205         0.176         22.46         5           64QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           64QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           772 BPSK         2521.0 - 2665.0         47.6680         0.446         26.49         4           40 MHz         16QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           40 MHz         266QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4 <td></td> <td>36.0 - 2650.0 77.0210</td> <td></td> <td>0.457</td> <td>26.60</td> <td>77M0G7W</td>		36.0 - 2650.0 77.0210		0.457	26.60	77M0G7W
80 MHz         16QAM         2536.0 - 2650.0         77.5581         0.369         25.68         7           64QAM         2536.0 - 2650.0         77.7365         0.282         24.50         7           256QAM         2536.0 - 2650.0         77.1678         0.171         22.34         7           256QAM         2536.0 - 2660.0         58.1950         0.457         26.60         5           QPSK         2526.0 - 2660.0         58.0526         0.454         26.57         5           GQAM         2526.0 - 2660.0         58.0206         0.376         25.75         5           64QAM         2526.0 - 2660.0         58.0205         0.176         22.46         5           64QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           64QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           772 BPSK         2521.0 - 2665.0         47.6680         0.446         26.49         4           40 MHz         16QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           40 MHz         266QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4 <td></td> <td></td> <td></td> <td></td> <td></td> <td>77M6G7W</td>						77M6G7W
NR Band n41(PC3)         256QAM         2536.0 - 2650.0         77.1678         0.171         22.34         7           NR Band n41(PC3)         60 MHz         m/2 BPSK         2526.0 - 2660.0         58.1950         0.457         26.60         5           G0 MHz         60 MHz         2526.0 - 2660.0         58.0206         0.376         25.75         5           G4QAM         2526.0 - 2660.0         58.0206         0.376         22.40         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           50 MHz         64QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           64QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           64QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           64QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4           40 MHz         16QAM         2516.0 - 2670	80 N	36.0 - 2650.0 77.5581	80 MHz	0.369	25.68	77M6D7W
m/2 BPSK         2526.0 - 2660.0         58.1950         0.457         26.60         5           NR Band n41(PC3)         60 MHz         16QAM         2526.0 - 2660.0         58.0536         0.454         26.57         5           60 MHz         16QAM         2526.0 - 2660.0         58.0206         0.376         25.75         5           64QAM         2526.0 - 2660.0         58.0206         0.376         22.75         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           256QAM         2526.0 - 2665.0         46.0090         0.457         26.60         4           50 MHz         16QAM         2521.0 - 2665.0         47.6880         0.446         26.49         4           50 MHz         16QAM         2521.0 - 2665.0         47.7090         0.287         24.58         4           40 MHz         16QAM         2521.0 - 2665.0         47.7090         0.287         24.58         4           40 MHz         16QAM         251.0 - 2667.0         37.960         0.457         26.60         3           40 MHz         16QAM         251.6 - 2670.0         38.0344         0.457         26.60         3           40 A		36.0 - 2650.0 77.7365		0.282	24.50	77M7D7W
NR Band n41(PC3)         QPSK         2526.0 - 2660.0         58.0536         0.454         26.57         5           60 MHz         16QAM         2526.0 - 2660.0         58.0206         0.376         25.75         5           64QAM         2526.0 - 2660.0         58.0206         0.376         25.75         5           64QAM         2526.0 - 2660.0         58.0295         0.176         22.40         5           256QAM         2526.0 - 2665.0         46.0090         0.457         26.60         5           7/2 BPSK         2521.0 - 2665.0         47.6680         0.446         26.49         4           QPSK         2521.0 - 2665.0         47.7288         0.359         25.55         4           64QAM         2521.0 - 2665.0         47.7283         0.178         22.50         4           256QAM         2521.0 - 2665.0         47.623         0.178         22.50         4           256QAM         2521.0 - 2665.0         47.623         0.178         22.50         4           40 MHz         16QAM         2521.0 - 2665.0         47.623         0.178         22.50         4           40 MHz         16QAM         2516.0 - 2670.0         38.0344         0.457         <		36.0 - 2650.0 77.1678		0.171	22.34	77M2D7W
NR Band n41(PC3)         60 MHz         16QAM         2526.0 - 2660.0         58.0206         0.376         25.75         5           64QAM         2526.0 - 2660.0         58.1247         0.275         24.40         5           256QAM         2526.0 - 2660.0         58.1247         0.275         24.40         5           7/2 BPSK         2526.0 - 2660.0         58.0295         0.176         22.46         5           7/2 BPSK         2521.0 - 2665.0         46.0090         0.457         26.60         4           90 MHz         16QAM         2521.0 - 2665.0         47.7688         0.359         25.55         4           16QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           256QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           256QAM         2521.0 - 2665.0         47.7288         0.359         22.50         4           40 MHz         16QAM         2521.0 - 2667.0         35.7960         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         37.9245         0.394         25.95         3           40 MHz         16QAM         2516.0 - 2670.0		26.0 - 2660.0 58.1950		0.457	26.60	58M2G7W
64QAM         2526.0 - 2660.0         58.1247         0.275         24.40         5           256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           7/2 BPSK         2521.0 - 2665.0         46.0090         0.457         26.60         4           0PSK         2521.0 - 2665.0         47.6680         0.446         26.49         4           16QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           26QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           64QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           256QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           256QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4           256QAM         2516.0 - 2670.0         35.7960         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         37.9245         0.394         25.95         3           40 AHz         256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3				0.454	26.57	58M1G7W
256QAM         2526.0 - 2660.0         58.0295         0.176         22.46         5           π/2 BPSK         2521.0 - 2665.0         46.0090         0.457         26.60         4           GPSK         2521.0 - 2665.0         47.6680         0.446         26.49         4           16QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           64QAM         2521.0 - 2665.0         47.7283         0.178         22.50         4           256QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4           256QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4           40 MHz         16QAM         2516.0 - 2670.0         35.7960         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         38.0344         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3	PC3) 60 N		60 MHz			58M0D7W
π/2 BPSK         2521.0 - 2665.0         46.0090         0.457         26.60         4           QPSK         2521.0 - 2665.0         47.6680         0.446         26.49         4           50 MHz         16QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           64QAM         2521.0 - 2665.0         47.7283         0.178         22.50         4           256QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4           40 MHz         16QAM         2516.0 - 2670.0         35.7960         0.457         26.60         3           40 MHz         2516.0 - 2670.0         38.0344         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         38.095         0.297         24.72         3           40 MHz         256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           40 AMHz         256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           40 QPSK         2506.0 - 2680.0         17.9540         0.412         26.15         1           40 QPSK         2506.0 - 2680.0         17.9540         <		26.0 - 2660.0 58.1247			24.40	58M1D7W
QPSK         2521.0 - 2665.0         47.6680         0.446         26.49         4           50 MHz         16QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           64QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           256QAM         2521.0 - 2665.0         47.7090         0.287         24.58         4           256QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4           40 MHz         16QAM         2516.0 - 2670.0         35.7960         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         38.0344         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         38.095         0.297         24.72         3           40 AM+z         256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           64QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           256QAM         2516.0 - 2680.0         17.9540         0.412         26.15         1           QPSK         2506.0 - 2680.0         18.3739         0.427						58M0D7W
50 MHz         16QAM         2521.0 - 2665.0         47.7288         0.359         25.55         4           64QAM         2521.0 - 2665.0         47.7900         0.287         24.58         4           256QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4           40 MHz         10 QPSK         2516.0 - 2670.0         35.7960         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         38.0344         0.457         26.60         3           40 MHz         2516.0 - 2670.0         38.0344         0.457         26.60         3           26QAM         2516.0 - 2670.0         38.0095         0.297         24.72         3           256QAM         2516.0 - 2670.0         38.0095         0.297         24.72         3           256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           256QAM         2516.0 - 2680.0         17.9540         0.412         26.15         1           QPSK         2506.0 - 2680.0         18.3739         0.427         26.30         1						46M0G7W
64QAM         2521.0 - 2665.0         47.7900         0.287         24.58         4           256QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4           40 MHz         11/2 BPSK         2516.0 - 2670.0         35.7960         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         38.0344         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         37.9245         0.394         25.95         3           256QAM         2516.0 - 2670.0         38.0095         0.297         24.72         3           256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           256QAM         2516.0 - 2680.0         17.9540         0.412         26.15         1           QPSK         2506.0 - 2680.0         18.3739         0.427         26.30         1						47M7G7W
256QAM         2521.0 - 2665.0         47.6253         0.178         22.50         4           π/2 BPSK         2516.0 - 2670.0         35.7960         0.457         26.60         3           40 MHz         QPSK         2516.0 - 2670.0         38.0344         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         37.9245         0.394         25.95         3           40 MHz         256QAM         2516.0 - 2670.0         37.9245         0.394         25.95         3           256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           26QPSK         2506.0 - 2680.0         17.9540         0.412         26.15         1           QPSK         2506.0 - 2680.0         18.3739         0.427         26.30         1	50 N		50 MHz	1		47M7D7W
π/2 BPSK         2516.0 - 2670.0         35.7960         0.457         26.60         3           40 MHz         QPSK         2516.0 - 2670.0         38.0344         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         37.9245         0.394         25.95         3           64QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           17/2 BPSK         2506.0 - 2680.0         17.9540         0.412         26.15         1           QPSK         2506.0 - 2680.0         18.3739         0.427         26.30         1						47M8D7W
QPSK         2516.0 - 2670.0         38.0344         0.457         26.60         3           40 MHz         16QAM         2516.0 - 2670.0         37.9245         0.394         25.95         3           64QAM         2516.0 - 2670.0         38.0095         0.297         24.72         3           256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           π/2 BPSK         2506.0 - 2680.0         17.9540         0.412         26.15         1           QPSK         2506.0 - 2680.0         18.3739         0.427         26.30         1						47M6D7W
40 MHz         16QAM         2516.0 - 2670.0         37.9245         0.394         25.95         3           64QAM         2516.0 - 2670.0         38.0095         0.297         24.72         3           256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           π/2 BPSK         2506.0 - 2680.0         17.9540         0.412         26.15         1           QPSK         2506.0 - 2680.0         18.3739         0.427         26.30         1						35M8G7W
64QAM         2516.0 - 2670.0         38.0095         0.297         24.72         3           256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           π/2 BPSK         2506.0 - 2680.0         17.9540         0.412         26.15         1           QPSK         2506.0 - 2680.0         18.3739         0.427         26.30         1						38M0G7W
256QAM         2516.0 - 2670.0         37.9179         0.170         22.29         3           π/2 BPSK         2506.0 - 2680.0         17.9540         0.412         26.15         1           QPSK         2506.0 - 2680.0         18.3739         0.427         26.30         1	40 N		40 MHz			37M9D7W
π/2 BPSK         2506.0 - 2680.0         17.9540         0.412         26.15         1           QPSK         2506.0 - 2680.0         18.3739         0.427         26.30         1						38M0D7W
QPSK 2506.0 - 2680.0 18.3739 0.427 26.30 1						37M9D7W
						18M0G7W
20 MHz 16QAM 2506.0 - 2680.0 18.3526 0.366 25.63 1						18M4G7W
	20 N		20 MHz			18M4D7W
						18M4D7W 18M3D7W

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					EI	RP	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	OBW [MHz]	Max. Power	Max. Power	Emission Designato
					[W]	[dBm]	•
		π/2 BPSK	3750.0 - 3930.0	97.0390	0.663	28.22	97M0G7W
	100 141	QPSK	3750.0 - 3930.0	98.0530	0.648	28.12	98M1G7W
	100 MHz	16QAM	3750.0 - 3930.0	98.0157	0.562	27.50	98M0D7W
		64QAM	3750.0 - 3930.0	97.9589 98.1624	0.449	26.52	98M0D7W
		256QAM	3750.0 - 3930.0		0.304	24.82	98M2D7W
		π/2 BPSK	3745.0 - 3935.0 2745.0 - 2025.0	86.0410 87.9228	0.672	28.27 28.17	86M0G7W
	90 MHz	QPSK 16QAM	3745.0 - 3935.0		0.656	28.17	87M9G7W
	90 IVIEZ	64QAM	3745.0 - 3935.0	88.0183 88.0493			88M0D7W
		256QAM	3745.0 - 3935.0 3745.0 - 3935.0	87.8378	0.475	26.77 25.00	88M0D7W 87M8D7W
		π/2 BPSK	3740.0 - 3930.0	77.5290	0.682	28.34	77M5G7W
		QPSK	3740.0 - 3940.0	77.8898	0.687	28.37	77M9G7W
	80 MHz	16QAM	3740.0 - 3940.0	77.9693	0.564	27.51	78M0D7W
	00 1011 12	64QAM	3740.0 - 3940.0	78.2644	0.462	26.64	78M3D7W
		256QAM	3740.0 - 3940.0	77.6152	0.306	24.86	77M6D7W
		π/2 BPSK	3730.0 - 3950.0	58.2210	0.684	28.35	58M2G7W
		QPSK	3730.0 - 3950.0	58.1542	0.692	28.40	58M2G7W
NR Band n77(PC2)	60 MHz	16QAM	3730.0 - 3950.0	58.3769	0.569	27.55	58M4D7W
	00 101 12	64QAM	3730.0 - 3950.0	58.2977	0.475	26.77	58M3D7W
		256QAM	3730.0 - 3950.0	58.1900	0.316	24.99	58M2D7W
		π/2 BPSK	3725.0 - 3955.0	45.9860	0.673	28.28	46M0G7W
		QPSK	3725.0 - 3955.0	47.8724	0.675	28.30	47M9G7W
	50 MHz	16QAM	3725.0 - 3955.0	47.9847	0.577	27.61	48M0D7W
		64QAM	3725.0 - 3955.0	47.8859	0.454	26.57	47M9D7W
		256QAM	3725.0 - 3955.0	47.7363	0.312	24.94	47M7D7W
		π/2 BPSK	3720.0 - 3960.0	35.9720	0.674	28.29	36M0G7W
		QPSK	3720.0 - 3960.0	38.1523	0.642	28.08	38M2G7W
	40 MHz	16QAM	3720.0 - 3960.0	38.0732	0.577	27.61	38M1D7W
		64QAM	3720.0 - 3960.0	38.2371	0.457	26.59	38M2D7W
		256QAM	3720.0 - 3960.0	37.9988	0.310	24.91	38M0D7W
	20 MHz	π/2 BPSK	3710.0 - 3970.0	17.9950	0.642	28.08	18M0G7W
		QPSK	3710.0 - 3970.0	18.4324	0.623	27.95	18M4G7W
		16QAM	3710.0 - 3970.0	18.3980	0.531	27.25	18M4D7W
		64QAM	3710.0 - 3970.0	18.4433	0.426	26.29	18M4D7W
		256QAM	3710.0 - 3970.0	18.3291	0.300	24.77	18M3D7W
		π/2 BPSK	3750.0 - 3930.0	97.0390	0.511	27.08	97M0G7W
		QPSK	3750.0 - 3930.0	98.0530	0.513	27.10	98M1G7W
	100 MHz	16QAM	3750.0 - 3930.0	98.0157	0.389	25.90	98M0D7W
	100 101 12	64QAM	3750.0 - 3930.0	97.9589	0.280	24.48	98M0D7W
		256QAM	3750.0 - 3930.0	98.1624	0.176	22.46	98M2D7W
		π/2 BPSK	3745.0 - 3935.0	86.0410	0.495	26.95	86M0G7W
		QPSK	3745.0 - 3935.0	87.9228	0.499	26.98	87M9G7W
	90 MHz	16QAM	3745.0 - 3935.0	88.0183	0.389	25.90	88M0D7W
	30 1011 12	64QAM	3745.0 - 3935.0	88.0493	0.283	24.52	88M0D7W
		256QAM	3745.0 - 3935.0	87.8378	0.203	22.36	87M8D7W
		π/2 BPSK	3740.0 - 3940.0	77.5290	0.498	26.97	77M5G7W
		QPSK	3740.0 - 3940.0	77.8898	0.498	27.07	77M9G7W
	80 MHz	16QAM	3740.0 - 3940.0	77.9693	0.303	26.07	78M0D7W
	00 WII IZ	64QAM	3740.0 - 3940.0	78.2644	0.404	24.33	78M3D7W
		256QAM	3740.0 - 3940.0	77.6152	0.171	22.33	77M6D7W
		π/2 BPSK	3730.0 - 3950.0	58.2210	0.513	27.10	58M2G7W
		QPSK	3730.0 - 3950.0	58.1542	0.495	26.94	58M2G7W
NR Band n77(PC3)	60 MHz	16QAM	3730.0 - 3950.0	58.3769	0.435	25.76	58M4D7W
	00.00	64QAM	3730.0 - 3950.0	58.2977	0.267	24.27	58M3D7W
		256QAM	3730.0 - 3950.0	58.1900	0.169	22.28	58M2D7W
		π/2 BPSK	3725.0 - 3955.0	45.9860	0.507	27.05	46M0G7W
		QPSK	3725.0 - 3955.0	47.8724	0.500	26.99	47M9G7W
	50 MHz	16QAM	3725.0 - 3955.0	47.9847	0.383	25.83	48M0D7W
		64QAM	3725.0 - 3955.0	47.8859	0.259	24.13	47M9D7W
		256QAM	3725.0 - 3955.0	47.7363	0.165	22.16	47M7D7W
		π/2 BPSK	3720.0 - 3960.0	35.9720	0.482	26.83	36M0G7W
		QPSK	3720.0 - 3960.0	38.1523	0.481	26.82	38M2G7W
	40 MHz	16QAM	3720.0 - 3960.0	38.0732	0.375	25.74	38M1D7W
		64QAM	3720.0 - 3960.0	38.2371	0.259	24.13	38M2D7W
		256QAM	3720.0 - 3960.0	37.9988	0.259	22.27	38M0D7W
		π/2 BPSK	3720.0 - 3960.0	17.9950	0.479	26.80	18M0G7W
		QPSK	3710.0 - 3970.0	18.4324	0.479	26.68	18M4G7W
			0110.0 - 0010.0	10.4024	0.400	20.00	- UNHGI W
	20 MH-		3710.0 - 3070.0	18 3080	0 376	25.76	181/1071/1
	20 MHz	16QAM 64QAM	3710.0 - 3970.0 3710.0 - 3970.0	18.3980 18.4433	0.376	25.76 24.27	18M4D7W 18M4D7W

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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 Test Location

These measurement tests were conducted at the PCTEST. facility located at 18855 Adams Court, Morgan Hill, CA 95037. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

#### **1.3 Test Facility / Accreditations**

- PCTEST is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.02 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- PCTEST facility is a registered (22831) test laboratory with the site description on file with ISED.

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## 2.0 PRODUCT INFORMATION

#### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Tablet Device FCC ID:BCGA2379**. The test data contained in this report pertains only to the emissions due to the EUT's licensed transmitters that operate under the provisions of Part 27.

Test Device Serial No.: H4MTX492NT, NN63X069PP

#### 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (FR1/FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE1M, LE2M, HDR4, HDR8), WPT

This device supports BT Beamforming

LTE Band 41 and FR1 Band n41 support NS04 for Antenna 3, Antenna 1, Antenna 4b, and Antenna 2b.

This device supports simultaneous transmission operations, which allows for multiple transmitters to transmit simultaneously on the same antenna. The table below shows all configurations possible.

	Simultaneous	WLAN	Bluetooth	GSM / WCDMA		LTE / FR1 NR		UNII
Antenna	Tx Config	802.11 b/g/n/ax	BDR, EDR, HDR4/8, LE1/2M	Mid Band	Mid Band	High Band	Ultra High Band	802.11 a/n/ac/ax
2a	Config 1	✓	×	×	×	×	~	×
2a	Config 2	×	✓	×	×	×	✓	×
4a	Config 3	✓	×	×	×	×	✓	×
4a	Config 4	×	✓	×	×	×	✓	×
4b	Config 5	×	×	✓	×	×	×	✓
4b	Config 6	*	×	×	✓	×	×	✓
4b	Config 7	×	×	×	×	$\checkmark$	×	$\checkmark$

Table 2-1. Simultaneous Transmission Configurations

 $\checkmark$  = Support; \* = Not Support

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## 2.3 Antenna Description

Frequency	Antenna Gain (dBi)							
[MHz]	Antenna 3	Antenna 1	Antenna 4b	Antenna 4a	Antenna 2b	Antenna 2a		
LTE Band 30	-2.6	-0.4	-0.5	N/A	-0.9	N/A		
LTE Band 7	-1.7	-2.3	-2.0	N/A	-1.9	N/A		
LTE Band 41	0.9	1.3	-1.9	N1/A	-1.6	N1/A		
NR Band n41	1.3	0.9	-1.6	N/A	-1.9	N/A		
NR Band n77	-1.3	1.3	N/A	1.4	N/A	0.4		

Following antenna gains provided by manufacturer were used for the testing.

Table 2-2. Highest Antenna Gain

### 2.4 Test Support Equipment

	•		-		•
1	Apple MacBook Pro	Model:	A2141	S/N:	C02DV7VKMD6T
	w/AC/DC Adapter	Model:	A2166	S/N:	N/A
2	Apple USB-C Cable	Model:	Chimp	S/N:	420A57
3	USB-C Cable	Model:	A146	S/N:	N/A
	w/ AC Adapter	Model:	A2305	S/N:	N/A
4	Apple Pencil	Model:	N/A	S/N:	GQXYGSXBJKM9
5	DC Power Supply	Model:	KPS3010D	S/N:	N/A
			Comment Family		

Table 2-3. Test Support Equipment

### 2.5 Test Configuration

The EUT was tested per the guidance of ANSI C63.26 2015, TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

For emissions from 1GHz – 18GHz, low, mid, and high channels were tested with highest power and worst case configuration. The emissions below 1GHz and above 18GHz were tested with the highest transmitting power and the worst case channel.

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report.

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All possible simultaneous transmission configurations have been investigated and the worst case config has been reported.

Description	LTE (Band 41)	UNII (11ax)
Antenna	Antenna 4b	Antenna 4b
Channel	41490	36
Operating Frequency (MHz)	2680	5180
Mode/Modulation	QPSK/1RB/20MHz	11ax/RU26/Index 0

Table 2-4. Worst Case Simultaneous Transmission Configuration

#### 2.6 Software and Firmware

The test was conducted with firmware version 18E20700y installed on the EUT.

### 2.7 EMI Suppression Device(s)/Modifications

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

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## 3.0 DESCRIPTION OF TESTS

#### 3.1 Evaluation Procedure

The measurement procedures described in the "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI C63.26 2015, TIA-603-E-2016) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

### 3.2 Radiated Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements 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 6m x 5.2m 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 1GHz. For measurements below 1GHz, 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 80cm 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 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

For radiated spurious emissions measurements and calculations, conversion method is used per the formulas in KDB 971168 Section 5.8.4. Field Strength (EIRP) is calculated using the following formulas:

 $E_{[dB\mu V/m]} = Measured amplitude level_{[dBm]} + 107 + Cable Loss_{[dB]} + Antenna Factor_{[dB/m]}$ And

 $EIRP_{[dBm]} = E_{[dB\mu V/m]} + 20logD - 104.8;$ 

Where D is the measurement distance in meters.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014.

Per KDB 414788 D01 v01r01, radiated emission test sites other than open-field test sites (e.g., shielded anechoic chambers), may be employed for emission measurements below 30MHz if characterized so that the measurements correspond to those obtained at an open-field test site. To determine test site equivalency, a reference sample transmitting at 149kHz was measured on an open field test site (asphalt with no ground plane) and then measured in the 3m semi-anechoic chamber. A calibrated 60cm loop antenna was used while the reference device was rotated through the X, Y and Z axis in order to capture the worst case level. A maximum deviation of 2.77dB at 149kHz was measured when comparing the 3 meter semi-anechoic chamber to the open field site.

Radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI C63.26 and TIA-603-E-2016.

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# 4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.23-2012. 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	1.65
Radiated Disturbance (<30MHz)	4.06
Radiated Disturbance (30MHz-1GHz)	4.30
Radiated Disturbance (1-18GHz)	4.78
Radiated Disturbance (>18GHz)	4.79

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# 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.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent Technologies	N9030A	PXA Signal Analyzer (3Hz - 26.5 GHz)	7/24/2020	Annual	7/24/2021	MY55330128
Keysight Technology	N9040B	UXA Signal Analyzer	12/19/2020	Annual	12/19/2021	MY57212015
Keysight Technology	E7515B	UXM 5G Wireless Test Platform	11/14/2020	Annual	11/14/2021	MY60192562
ATM	180-442A-KF	20dB Nominal Gain Horn Antenna	8/11/2020	Annual	8/11/2021	T058701-01
ESPEC	SU-241	Tabletop Temperature Chamber	9/28/2020	Annual	9/28/2021	92009574
ETS-Lindgren	3142E	BiConiLog Antenna (30MHz - 6GHz)	9/15/2020	Annual	9/15/2021	208204
ETS-Lindgren	3117	Double Ridged Guide Antenna (1-18 GHz)	4/21/2020	Annual	4/21/2021	205956
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	7/15/2020	Annual	7/15/2021	102356
Rohde & Schwarz	TS-PR18	Pre-Amplifier (1GHz - 18GHz)	12/3/2020	Annual	12/3/2021	101648
Rohde & Schwarz	ESW26	EMI Test Receiver	6/8/2020	Annual	6/8/2021	101299
Rohde & Schwarz	ESW44	EMI Test Receiver	8/6/2020	Annual	8/6/2021	101668
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	10/13/2020	Annual	10/13/2021	161616
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/16/2020	Annual	4/16/2021	166869
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	4/23/2020	Annual	4/23/2021	100052
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Antenna (400MHz-18GHz)	10/2/2020	Annual	10/2/2021	101063
Rohde & Schwarz	HFH2-Z2	Loop Antenna	3/12/2020	Annual	3/12/2021	100546

Table 5-1. Test Equipment List

#### Notes:

1. 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.

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# 6.0 SAMPLE CALCULATIONS

#### **Emission Designator**

#### **π/2 BPSK / QPSK Modulation**

Emission Designator = 8M62G7W BW = 8.62 MHz G = Phase Modulation 7 = Quantized/Digital Info W = Combination of Any

#### **QAM Modulation**

Emission Designator = 8M45D7W BW = 8.45 MHz W = Amplitude/Angle Modulated 7 = Quantized/Digital Info W = Combination of Any

#### **Spurious Radiated Emission**

#### Example: Spurious emission at 3700.40 MHz

The receive spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3700.40 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.50 dBm so this harmonic was 25.50 dBm -(-24.80) = 50.3 dBc.

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#### **TEST RESULTS** 7.0

#### 7.1 Summary

Company Name:	Apple Inc.
FCC ID:	BCGA2379
FCC Classification:	PCS Licensed Transmitter (PCB)
Mode(s):	LTE/NR/ULCA

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
	Occupied Bandw idth	2.1049	N/A	N/A	Section 7.2
	Conducted Band Edge / Spurious Emissions (LTE Band 30)	2.1051, 27.53(a)	Undesirable emissions must meet the limits detailed in 27.53(a)	PASS	Sections 7.3, 7.4
	Conducted Band Edge / Spurious Emissions (LTE Band 7)			PASS	Sections 7.3, 7.4
	Conducted Band Edge / Spurious Emissions (LTE Band 41)	2.1051, 27.53(m)	Undesirable emissions must meet the limits detailed in	PASS	Sections 7.3, 7.4
	Conducted Band Edge / Spurious Emissions (NR Band n41)	2.1031, 27.33(11)	27.53(m)	PASS	Sections 7.3, 7.4
	Conducted Band Edge / Spurious Emissions (NR Band n77)			PASS	Sections 7.3, 7.4
CONDUCTED	Transmitter Conducted Output Pow er	2.1046	WA	N/A	See RF Exposure Report
CONDUCTED	Additional Maximum Pow er Reduction (A-MPR)	2.1046	N⁄A	N/A	Section 7.5
	Effective Radiated Pow er / Equivalent Isotropic Radiated Pow er (LTE Band 30)	27.50(a)(3)	< 0.25 Watts max. EIRP	PASS	Section 7.6
	Effective Radiated Pow er / Equivalent Isotropic Radiated Pow er (LTE Band 7)		< 2 Watts max. EIRP	PASS	Section 7.6
	Effective Radiated Pow er / Equivalent Isotropic Radiated Pow er (LTE Band 41)	27.50(h)(2)		PASS	Section 7.6
	Effective Radiated Pow er / Equivalent Isotropic Radiated Pow er (NR Band n41)			PASS	Section 7.6
	Effective Radiated Pow er / Equivalent Isotropic Radiated Pow er (NR Band n77)			PASS	Section 7.6
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block over the temperature and voltage range as tested	PASS	Section 7.8
	Radiated Spurious Emissions (LTE Band 30)	2.1053, 27.53(a)	> 70 + 10log10(P[Watts])	PASS	Section 7.7
RADIATED	Radiated Spurious Emissions (LTE Band 7)		Undesirable emissions must meet the limits detailed in 27.53(m)	PASS	Section 7.7
NADIATED	Radiated Spurious Emissions (LTE Band 41)	2.1053.27.53(m)		PASS	Section 7.7
	Radiated Spurious Emissions (NR Band n41)			PASS	Section 7.7

#### Table 7-1. Summary of Test Results

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#### Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) All conducted emissions measurements are performed with automated test software to capture the corresponding plots necessary to show compliance. The measurement software utilized are PCTEST 2G/3G Automation Version 4.5 and LTE Automation Version 5.3.

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# 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 percent 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. All ports were tested and only the worst case data were reported.

#### Test Procedure Used

KDB 971168 D01 v03r01 - Section 4.2

#### Test Settings

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB 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 Setup

The EUT and measurement equipment were set up as shown in the diagram below.

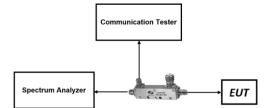


Figure 7-1. Test Instrument & Measurement Setup

#### Test Notes

- 1. Uplink carrier aggregation for LTE Band 7 is only supported in this EUT while operating in Power Class 3.
- 2. Uplink carrier aggregation for LTE Band 41 is supported in this EUT while operating in Power Class 2 and Power Class 3.

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## Band 30



Plot 7-1. Occupied Bandwidth Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-2. Occupied Bandwidth Plot (Band 30 - 10.0MHz 16-QAM - Full RB Configuration)

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Plot 7-3. Occupied Bandwidth Plot (Band 30 - 10.0MHz 64-QAM - Full RB Configuration)



Plot 7-4. Occupied Bandwidth Plot (Band 30 - 10.0MHz 256-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied BW	1				
<b>ΙΧΙ RE 50 Ω AC</b>	Tri		z Radio old: 100/100	3:35 PM Dec 04, 2020 Std: None	Trace/Detector
	#IFGain:Low #A	tten: 36 dB	Radio	Device: BTS	
10 dB/div Ref 40.00 dBn	1				
30.0 20.0					Clear Write
10.0					
-10.0 -20.0 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~			w And Marine	Average
-30.0 -40.0 -50.0					Max Hold
Center 2.31 GHz Res BW 120 kHz		#VBW 390 kHz		oan 12.5 MHz Sweep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	34.9 dBn	n	
4.	5565 MHz				Detector Peak▶
Transmit Freq Error	1.407 kHz	% of OBW Po	wer 99.00 %	6	Auto <u>Man</u>
x dB Bandwidth	5.044 MHz	x dB	-26.00 di	3	
MSG			STATUS		

Plot 7-5. Occupied Bandwidth Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



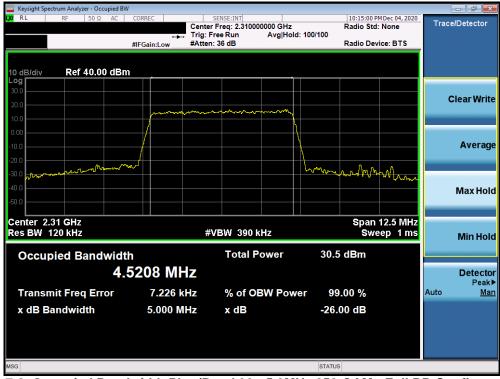
Plot 7-6. Occupied Bandwidth Plot (Band 30 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2379	POLTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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Keysight Spectrum Analyzer - Occupied BV					
LXI RL RF 50Ω AC		SENSE:INT Freq: 2.310000000 GHz	10:14:45 PM Radio Std:	1Dec 04, 2020	Trace/Detector
	🛶 Trig: F	ree Run Avg Hold: 1			
	#IFGain:Low #Atten	: 36 dB	Radio Devi	ce: BTS	
10 dB/div Ref 40.00 dBn	n	••_			
30.0					
20.0		Amarchan and and a			Clear Write
10.0	for the second s	marchart			
0.00	/				
-10.0					Average
	~				g.
-20.0 marine Mar			Maria Marian M	Jar mar mar you	
-40.0					
-50.0					Max Hold
-50.0					
Center 2.31 GHz				12.5 MHz	
Res BW 120 kHz	#	VBW 390 kHz	Swe	ep 1 ms	Min Hold
Occupied Bandwidt	h	Total Power	32.7 dBm		
			52.7 GBII		
4.	5500 MHz				Detector Peak▶
Transmit Freg Error	1.059 kHz	% of OBW Power	99.00 %		Auto Man
x dB Bandwidth	5.027 MHz	x dB	-26.00 dB		
X dB Bandwidth	5.027 MHZ	хав	-20.00 aB		
MSG			STATUS		

Plot 7-7. Occupied Bandwidth Plot (Band 30 - 5.0MHz 64-QAM - Full RB Configuration)

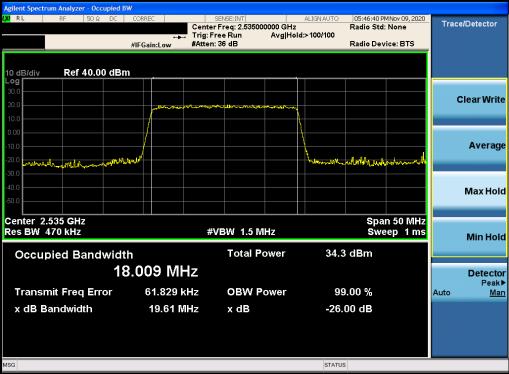


Plot 7-8. Occupied Bandwidth Plot (Band 30 - 5.0MHz 256-QAM - Full RB Configuration)

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## LTE Band 7



Plot 7-9. Occupied Bandwidth Plot (LTE Band 7 - 20MHz QPSK - Full RB Configuration)

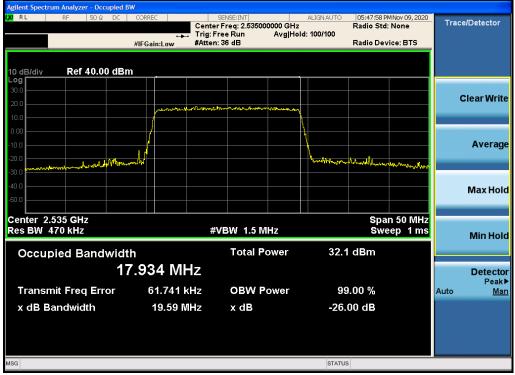


Plot 7-10. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 16-QAM - Full RB Configuration)

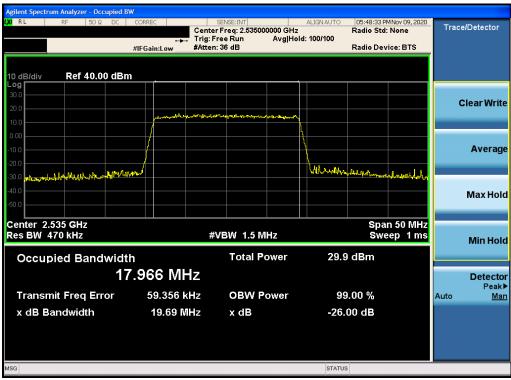
FCC ID: BCGA2379	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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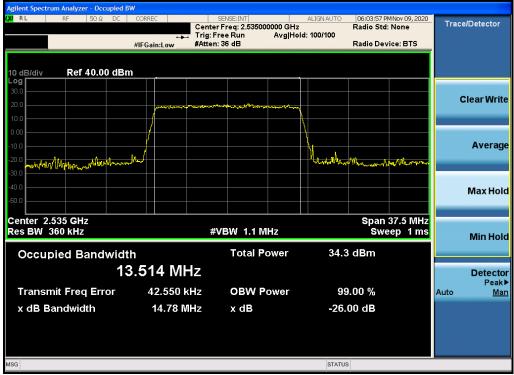
Plot 7-11. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 64-QAM - Full RB Configuration)



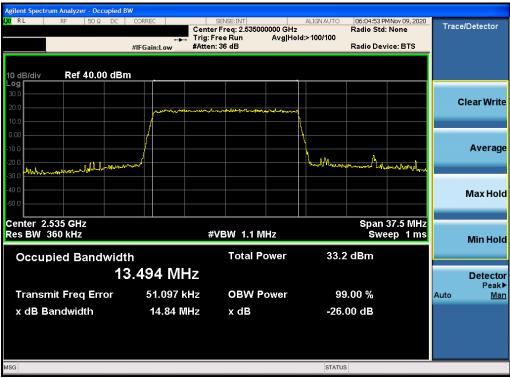
Plot 7-12. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 256-QAM - Full RB Configuration)

FCC ID: BCGA2379	PCTEST ' Proud to be port of @ element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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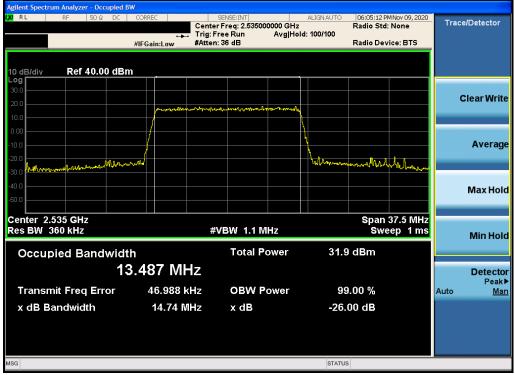
Plot 7-13. Occupied Bandwidth Plot (LTE Band 7 - 15MHz QPSK - Full RB Configuration)



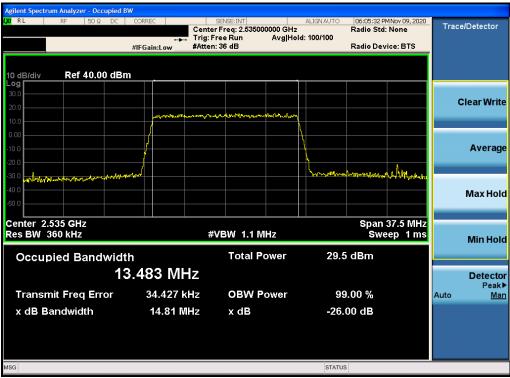
Plot 7-14. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 16-QAM - Full RB Configuration)

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Plot 7-15. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 64-QAM - Full RB Configuration)



Plot 7-16. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 256-QAM - Full RB Configuration)

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Agilent Spectrum Analyzer - Occupie					
<mark>(X)</mark> RL   RF   50 Ω DI	C CORREC	SENSE:INT Center Freg: 2.53500	ALIGN AUTO	06:41:50 PMNov 09, 202 Radio Std: None	Trace/Detector
	- <b>-</b>	Trig: Free Run	Avg Hold:>100/100		
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	_
10 dB/div Ref 40.00 d	IBm				
Log 30.0					
20.0					Clear Write
10.0	hand				
0.00			N N		
	/				Average
-10.0	0.			0	Ű
-20.0 Row White Marketon	Auguran and and and and and and and and and a		and the first	why more and the second	N
-30.0					
-40.0					Max Hold
-50.0					
Center 2.535 GHz				Span 25 MH	z
Res BW 240 kHz		#VBW 750 k	Hz	Sweep 1 m	
					MITTOU
Occupied Bandwi	idth	Total P	ower 33.	8 dBm	
	8.9893 MF	z			Detector
				0.00 %	Peak►
Transmit Freq Error	48.699 k	Hz OBW P	ower 9	9.00 %	Auto <u>Man</u>
x dB Bandwidth	9.864 M	Hz xdB	-26	.00 dB	
MSG			STATL	JS	

Plot 7-17. Occupied Bandwidth Plot (LTE Band 7 - 10MHz QPSK - Full RB Configuration)



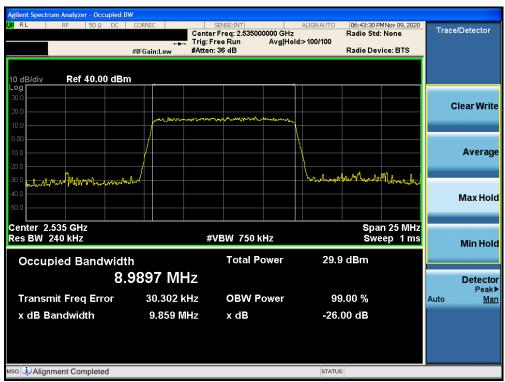
Plot 7-18. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2379	PCTEST ' Proud to be port of @ element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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D dB/div         Ref 40.00 dE           09	#IFGain:Low	#Atten: 36 dB			Radio Dev			
D.0 D.0 D.0		warman						
	/		many				С	lear Writ
0.0								Averag
D.O Margaraharaharaharaharaharaharaharaharaha	Mult			What have no	montration	mound		
D.0								Max Hol
enter 2.535 GHz es BW 240 kHz		#VBW 7501			Swe	n 25 MHz ep 1 ms		Min Ho
Occupied Bandwic	<sup>dth</sup> 3.9986 MH	Total P Z	ower	32.1	dBm			Detect
Transmit Freq Error x dB Bandwidth	33.547 ki 9.961 Mi		ower		.00 % 00 dB		Auto	Peak <u>Ma</u>

Plot 7-19. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 64-QAM - Full RB Configuration)



Plot 7-20. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 256-QAM - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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Agilent Spectrum Analyzer - Occupied						
<mark>(X)</mark> RL RF 50Ω DC	CORREC	SENSE:INT Center Freg: 2.53500	ALIGN AU	TO 06:52:19 P Radio Std:	MNov 09, 2020	Trace/Detector
	- <b>-</b>	Trig: Free Run	Avg Hold: 100/100	)		
	#IFGain:Low	#Atten: 36 dB		Radio Dev	rice: BTS	
10 dB/div Ref 40.00 dE	3m					
30.0						
20.0						Clear Write
10.0		and a start of the second se				
0.00	/		<u>\</u>			
-10.0						Average
20.0					B	,
-30.0 ml hour hours	~~~~~~		այգո	M. M. Man	monshr	
-40.0						
-50.0						Max Hold
30.0						
Center 2.535 GHz					12.5 MHz	
Res BW 120 kHz		#VBW 390 k	Hz	Swe	eep 1 ms	Min Hold
Occupied Bandwic	ith	Total P	ower 3	3.8 dBm		
4	.5545 M⊦	1Z				Detector Peak▶
Transmit Freq Error	10.663 k	Hz OBW P	ower	99.00 %		Auto Man
x dB Bandwidth	5.007 M	Hz xdB	_	26.00 dB		
	5.007 1		-,	20.00 00		
MSG			SI	ATUS		

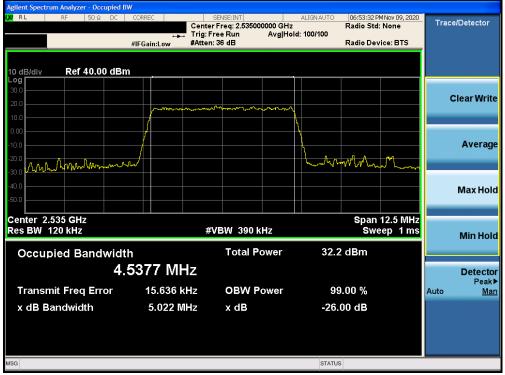
Plot 7-21. Occupied Bandwidth Plot (LTE Band 7 - 5MHz QPSK - Full RB Configuration)



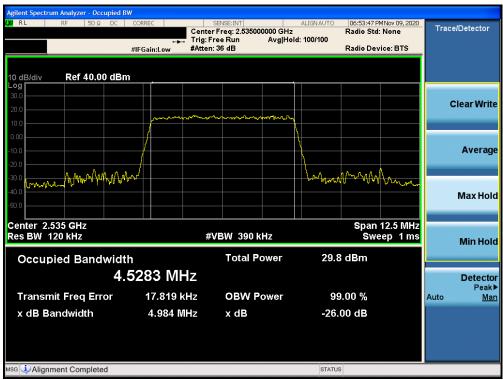
Plot 7-22. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 16-QAM - Full RB Configuration)

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Plot 7-23. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 64-QAM - Full RB Configuration)

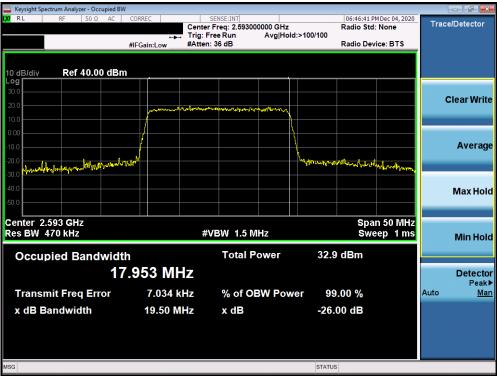


Plot 7-24. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 256-QAM - Full RB Configuration)

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## LTE Band 41



Plot 7-25. Occupied Bandwidth Plot (LTE Band 41 - 20MHz QPSK - Full RB Configuration)



Plot 7-26. Occupied Bandwidth Plot (LTE Band 41 - 20MHz 16-QAM - Full RB Configuration)

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200       Image: Constraint of the second of t	Keysight Spectrum Analyzer - Occupied BV	N				
#IFGain:Low       #Atten: 36 dB       Radio Device: BTS         10 dB/div       Ref 40.00 dBm       Image: Clear Write         200       Image: Clear Write       Image: Clear Write         200       Image: Clear Write       Image: Clear Write         100       Image: Clear Write       Image: Clear Write         200       Image: Clear Write       Image: Clear Write         201       Image: Clear Write       Image: Clear Write         202       Image: Clear Write       Image: Clear Write <t< td=""><td><b>ΙΧΙ </b>RF 50 Ω AC</td><td>Center</td><td>Freq: 2.593000000 GHz</td><td>Radio Std</td><td></td><td>Trace/Detector</td></t<>	<b>ΙΧΙ </b> RF 50 Ω AC	Center	Freq: 2.593000000 GHz	Radio Std		Trace/Detector
Log       Image: Clear Write         200       Image: Clear Write         200       Image: Clear Write         100       Image: Clear Write         200       Image: Clear Write         100       Image: Clear Write         200       Image: Clear Write         201       Image: Clear Write         202       Image: Clear Write <td< td=""><td></td><td></td><td></td><td></td><td>rice: BTS</td><td></td></td<>					rice: BTS	
Log       Image: Clear Write         200       Image: Clear Write         200       Image: Clear Write         100       Image: Clear Write         200       Image: Clear Write         100       Image: Clear Write         200       Image: Clear Write         201       Image: Clear Write         202       Image: Clear Write <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td></td<>						
300       3		n				
200       Image: Constraint of the second of t						
100       1	20.0					Clear Write
0.00       0.00		and	vener when all wounded			
10.0       Image: Constraint of the second of			\			
20.0 20.0						Average
30.0       Image: Marked and Marked a	20.0			10. ba		
40.0       40.0       Max Hold         40.0       Max Hold         50.0       Max Hold         Center 2.593 GHz Res BW 470 kHz       Span 50 MHz Sweep 1 ms         Occupied Bandwidth 17.974 MHz       Total Power       31.2 dBm         Detector Peak       Detector Auto       Max Hold	30 0 - alm lalle marked Wy tom	www.		March Ward and the La		
Span 50 MHz       Span 50 MHz         Center 2.593 GHz       #VBW 1.5 MHz         Res BW 470 kHz       #VBW 1.5 MHz         Occupied Bandwidth       Total Power         17.974 MHz       Detector         Transmit Freq Error       -12.956 kHz       % of OBW Power       99.00 %					Nert Writige	
Center 2.593 GHz Res BW 470 kHz       Span 50 MHz Sweep 1 ms       Min Hold         Occupied Bandwidth       Total Power       31.2 dBm         17.974 MHz       Detector Peak ►         Transmit Freq Error       -12.956 kHz       % of OBW Power       99.00 %						Max Hold
Res BW     470 kHz     #VBW     1.5 MHz     Sweep     1 ms       Occupied Bandwidth     Total Power     31.2 dBm       17.974 MHz     Detector       Transmit Freq Error     -12.956 kHz     % of OBW Power     99.00 %						
Occupied Bandwidth Total Power 31.2 dBm 17.974 MHz Detector Transmit Freq Error -12.956 kHz % of OBW Power 99.00 %						
Detector         Detector         Peak         Transmit Freq Error       -12.956 kHz       % of OBW Power       99.00 %       Auto       Man	Res BW 470 kHz	#	VBW 1.5 MHz	Swe	eep 1 ms	Min Hold
17.974 MHz Transmit Freq Error -12.956 kHz % of OBW Power 99.00 % Auto Man	Occupied Bandwidt	h	Total Power	31.2 dBm		
Transmit Freq Error -12.956 kHz % of OBW Power 99.00 %						Detector
		.3/4 MINZ				Detector Peak►
x dB Bandwidth 19.54 MHz x dB -26.00 dB	Transmit Freq Error	-12.956 kHz	% of OBW Pow	er 99.00 %		Auto <u>Man</u>
	x dB Bandwidth	19.54 MHz	x dB	-26.00 dB		
MSG STATUS	MSG			STATUS		

Plot 7-27. Occupied Bandwidth Plot (LTE Band 41 - 20MHz 64-QAM - Full RB Configuration)



Plot 7-28. Occupied Bandwidth Plot (LTE Band 41 - 20MHz 256-QAM - Full RB Configuration)

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Keysight Spectrum Analyzer - Occupied	BW				
LX RL RF 50Ω AC		SENSE:INT er Freg: 2.593000000 GHz	07:09:09 Radio St	PM Dec 04, 2020 d: None	Trace/Detector
	+++ Trig:	Free Run Avg Hold	I: 100/100	vice: BTS	
,	#IFGain:Low #Atte	en: 36 dB	Radio De	VICE: BIS	
10 dB/div Ref 35.00 dE	3m				
25.0					
15.0	per monoment	mon man man			Clear Write
5.00					
-5.00	/				
-15.0					Average
-25.0 moundarilland	Unow		hand have have have have have have have have	mandulation	Ű
-35.0					
-45.0					
-55.0					Max Hold
-33.0					
Center 2.593 GHz				1 37.5 MHz	
Res BW 360 kHz	-	#VBW 1.1 MHz	Sw	eep 1 ms	Min Hold
Occupied Bandwid	ith	Total Power	33.2 dBm		
			00.2 4811		
1	3.537 MHz				Detector Peak▶
Transmit Freq Error	17.574 kHz	% of OBW Pow	er 99.00 %		Auto <u>Man</u>
x dB Bandwidth	14.90 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-29. Occupied Bandwidth Plot (LTE Band 41 - 15MHz QPSK - Full RB Configuration)



Plot 7-30. Occupied Bandwidth Plot (LTE Band 41 - 15MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW					- <b>.</b>
🗱 RL RF 50Ω AC CO		SENSE:INT Freg: 2.593000000 GHz	07:10:46 Radio St	PM Dec 04, 2020	Trace/Detector
	Trig: F	ree Run Avg Hol	d: 100/100		
#IF	Gain:Low #Atten:	: 36 dB	Radio D	evice: BTS	
10 dB/div Ref 40.00 dBm					
Log 30.0					
20.0					Clear Write
10.0		and a second second			
0.00					
-10.0			N I		Average
					Arteruge
-20.0 -30.0 What have a star from a second and a second			Later and the constant	Mr. (Mr. 1.1	
				է <sup>,</sup> II ՝ Նրաթրեր (ենլել	
-40.0					Max Hold
-50.0					
Center 2.593 GHz			Spar	n 37.5 MHz	
Res BW 360 kHz	#\	/BW 1.1 MHz		veep 1 ms	Min Hold
		Total Power	31.2 dBm		
Occupied Bandwidth		Total Power	31.2 dBm		
13.4	83 MHz				Detector
Transmit Freg Error	-5.005 kHz	% of OBW Pow	ver 99.00 %		Peak⊅ Auto Mar
x dB Bandwidth	14.76 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-31. Occupied Bandwidth Plot (LTE Band 41 - 15MHz 64-QAM - Full RB Configuration)



Plot 7-32. Occupied Bandwidth Plot (LTE Band 41 - 15MHz 256-QAM - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BW						-	- F 🗙
LX/ RL RF 50Ω AC	CORREC	SENSE:INT er Freg: 2.593000000 GH	7	07:28:39 Pf Radio Std:	1 Dec 04, 2020	Tracel	Detector
	Trig:	Free Run Avg H	old: 100/100				
	#IFGain:Low #Atte	en: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm Log			-,,				
30.0							
20.0		-				CI	ear Write
10.0	m		~				
0.00			$\lambda$				
-10.0							Average
	Am		Marth an an a	1			<b>g</b> .
-20.0 Jan Markow Markow - 30.0			1. 1040 - 010 (4)	harmathalliken	v~v~vmw		
-40.0							
-50.0							Max Hold
-30.0							
Center 2.593 GHz					n 25 MHz		
Res BW 240 kHz		#VBW 750 kHz		Swe	ep 1 ms		Min Hold
Occupied Bandwidth		Total Power	33.3	dBm			
			00.0	abiii			
9.0	0493 MHz						Detector Peak►
Transmit Freq Error	-6.233 kHz	% of OBW Po	ower 99.	.00 %		Auto	Man
x dB Bandwidth	9.914 MHz	x dB	-26 (	00 dB			
	5.514 MITZ	A UD	-20.0				
			07/				
MSG			STATUS				

Plot 7-33. Occupied Bandwidth Plot (LTE Band 41 - 10MHz QPSK - Full RB Configuration)



Plot 7-34. Occupied Bandwidth Plot (LTE Band 41 - 10MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BV	V				
LXI RL RF 50Ω AC	CORREC	SENSE:INT Freq: 2.593000000 GHz	07:30:03 Pf Radio Std:	1Dec 04, 2020 None	Trace/Detector
	Trig:	Free Run Avg Hold:	100/100		
	#IFGain:Low #Atter	n: 36 dB	Radio Dev	ice: BTS	
10 dB/div Ref 40.00 dBr	n				
Log 30.0					
20.0					Clear Write
10.0	m	1 de margan and a second			
0.00					
-10.0					Average
	. /	l l l l l l l l l l l l l l l l l l l			
-20.0 MMM Long MMMMMM			and many of the state of the second	Mrin	
-40.0					
					Max Hold
-50.0					
Center 2.593 GHz			Spa	n 25 MHz	
Res BW 240 kHz	#	VBW 750 kHz	Swe	ep 1 ms	Min Hold
Occurried Denducid		Total Power	31.1 dBm		
Occupied Bandwidt		TOTALLEOME	51.1 UBIII		
9.	0209 MHz				Detector
Transmit Freg Error	12.465 kHz	% of OBW Powe	r 99.00 %		Peak▶ Auto Man
x dB Bandwidth	9.909 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-35. Occupied Bandwidth Plot (LTE Band 41 - 10MHz 64-QAM - Full RB Configuration)



Plot 7-36. Occupied Bandwidth Plot (LTE Band 41 - 10MHz 256-QAM - Full RB Configuration)

FCC ID: BCGA2379	Proved to be part of (8) element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager	
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Plot 7-37. Occupied Bandwidth Plot (LTE Band 41 - 5MHz QPSK - Full RB Configuration)



Plot 7-38. Occupied Bandwidth Plot (LTE Band 41 - 5MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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Plot 7-39. Occupied Bandwidth Plot (LTE Band 41 - 5MHz 64-QAM - Full RB Configuration)



Plot 7-40. Occupied Bandwidth Plot (LTE Band 41 - 5MHz 256-QAM - Full RB Configuration)

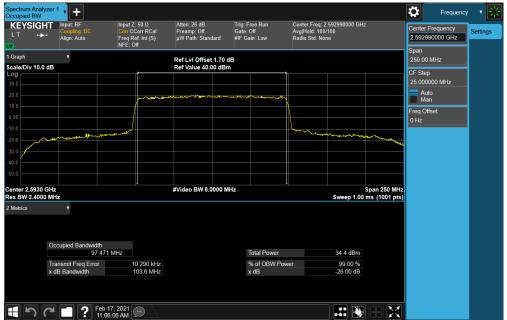
FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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## NR Band n41

vsight Spectrum Analyzer - Occupied BW							
T RF 50 Ω DC COREC SENSE:INT	ALIGN AUTO	Center Freq: 2.593000000 GHz Trig: Free Run			Radio Std: None	01:40:42 PM Jan 29, 2021	Trace/Detect
	#IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Hold: 100/100		Radio Device: BTS		
Bldiv Ref 40.00 dBm							
							ClearW
	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	^				
							Aver
							Aver
	{			}			
							MaxH
				Juntary and a start			
a second and a s					-	~~~~	
						- Walter	Min
							Dete
							Pe
ter 2.5930 GHz BW 2.4 MHz		#VBW 8 MHz				Span 250.0 MHz Sweep 1 ms	
ccupied Bandwidth Total Po	wer 35.3 dBm						
96.788 MHz							
	W Power 99.00 %						
dB Bandwidth 102.5 MHz x dB	-26.00 dB						
	-20.00 dB						

Plot 7-41. Occupied Bandwidth Plot (NR Band n41 - 100MHz DFT-s-OFDM π/2 BPSK - Full RB Configuration)



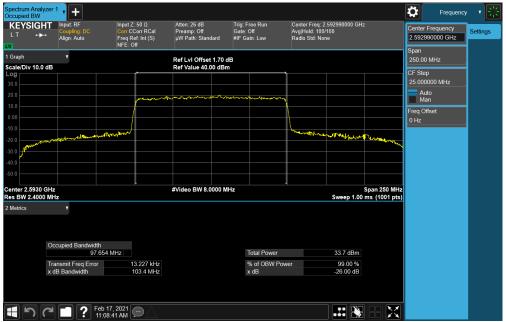
Plot 7-42. Occupied Bandwidth Plot (NR Band n41 - 100MHz CP-OFDM QPSK - Full RB Configuration)

FCC ID: BCGA2379	PCTEST <sup>6</sup> Pread to be part of (*) element	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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KEYSIG ⊥⊺ ⊶		Input Ζ: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off μW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Free Avg Hold:> Radio Std:			Center Frequency 2.592990000 GHz Span	Settings
Graph	7		Ref LvI Offset 1.70					250.00 MHz	
ale/Div 10.0			Ref Value 40.00 dBr	n				CF Step 25.000000 MHz	
			a Too the second and a second as	ور و المراود و المراجع م	~			Auto Man	
								Freq Offset 0 Hz	
D.0		and the second s			mander	mennen	~~~.h.		
0.0									
D.0 D.0									
nter 2.5930 s BW 2.400			#Video BW 8.0000 M	Hz	1		Span 250 MHz ms (1001 pts)		
<b>Vetrics</b>	Occupied Bandwidth     97 61	0 MHz		Total Power		34 4 dBm			
	Transmit Freq Error	-21.018 kHz		% of OBW P	ower	99.00 %			
	x dB Bandwidth	103.5 MHz		x dB		-26.00 dB			

Plot 7-43. Occupied Bandwidth Plot (NR Band n41 - 100MHz CP-OFDM 16-QAM - Full RB Configuration)



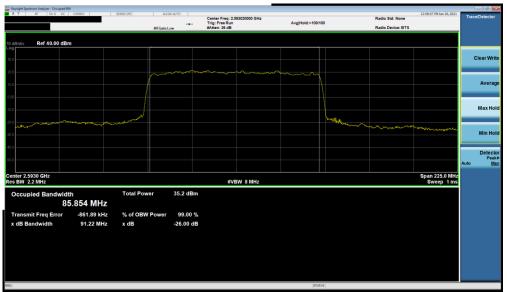
Plot 7-44. Occupied Bandwidth Plot (NR Band n41 - 100MHz CP-OFDM 64-QAM - Full RB Configuration)

FCC ID: BCGA2379	PCTEST Proud to be part of @ stement	PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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KEYSIG ∟⊺ ↔		Input Ζ: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off μW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: Avg Hold:>10 Radio Std: N		2	enter Frequency 2.592990000 GHz pan	Settings
Graph cale/Div 10.0	T		Ref LvI Offset 1.70 Ref Value 30.00 dB					50.00 MHz	
			Ret value 30.00 dB	m				F Step 5.000000 MHz	
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Magn. merkinselende	-			Auto Man	
								req Offset ) Hz	
0.0	and a second a second a second a second a second a second a	have and the former of the second			Wandhartoning	Valuenninnellunge	1 - Marcol Wald		
0.0									
nter 2.5930 s BW 2.400			#Video BW 8.0000 M	MHz		Spa Sweep 1.00 ms	n 250 MHz (1001 pts)		
Metrics	Occupied Bandwidth     97.44	8 MHz		Total Power		31.1 dBm			
	Transmit Freq Error x dB Bandwidth	1.905 kHz 103.4 MHz		% of OBW P x dB	ower	99.00 % -26.00 dB			

Plot 7-45. Occupied Bandwidth Plot (NR Band n41 - 100MHz CP-OFDM 256-QAM - Full RB Configuration)



Plot 7-46. Occupied Bandwidth Plot (NR Band n41 - 90MHz DFT-s-OFDM π/2 BPSK - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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	HT Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off μW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq Avg Hold: 11 Radio Std: N		2	Center Frequency 2.592990000 GHz Span	Settings
Graph	•		Ref LvI Offset 1.70					225.00 MHz	
ale/Div 10.			Ref Value 40.00 dB	m				CF Step 22.500000 MHz	
			and the second second	the shower was	~			Auto Man	
								Freq Offset 0 Hz	
0.0	we algue a company	an mark			Leenen	manlandow	Mangerman		
0.0									
D.0									
nter 2.5930 s BW 2.200		<u> </u>	#Video BW 8.0000 N	MHz	4		Span 225 MHz ms (1001 pts)		
Metrics	Occupied Bandwidth     87 602			Total Power		34.3 dBm			
	Transmit Freg Error	2 MHZ 36.378 kHz		% of OBW P	ower	34.3 dBm 99.00 %			
	x dB Bandwidth	92.99 MHz		x dB	onei	-26.00 dB			
	X GD Dandwiddin								

Plot 7-47. Occupied Bandwidth Plot (NR Band n41 - 90MHz CP-OFDM QPSK - Full RB Configuration)



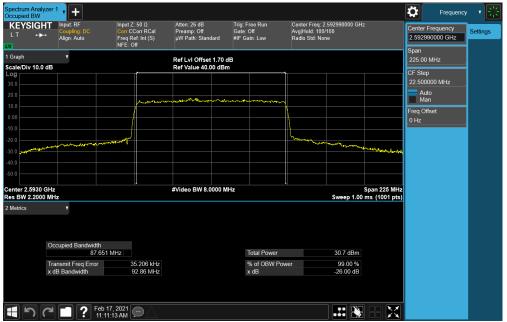
Plot 7-48. Occupied Bandwidth Plot (NR Band n41 - 90MHz CP-OFDM 16-QAM - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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	HT Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off μW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq Avg Hold: 10 Radio Std: N		2	Center Frequency 2.592990000 GHz Span	Settings
Graph	•		Ref LvI Offset 1.70					225.00 MHz	
ale/Div 10.	0 dB		Ref Value 40.00 dBr	m	<b>`</b> 1			CF Step	
0.0								22.500000 MHz	
			and the state of t	-				Auto Man	
					1			Freq Offset	
		/I						0 Hz	
		- sound			Marthangen	alare a			
).0	Mar and the second					the second s	all way - and and party and a		
nter 2.5930		•	#Video BW 8.0000 N	MHz	*		Span 225 MHz		
s BW 2.200	00 MHz					Sweep 1.00	ms (1001 pts)		
Metrics	Occupied Bandwidth     87.535	5 MHz		Total Power		33.6 dBm			
	Transmit Freq Error	6.914 kHz		% of OBW Po	wer	99.00 %			
	x dB Bandwidth	92.85 MHz		x dB		-26.00 dB			

Plot 7-49. Occupied Bandwidth Plot (NR Band n41 - 90MHz CP-OFDM 64-QAM - Full RB Configuration)



Plot 7-50. Occupied Bandwidth Plot (NR Band n41 - 90MHz CP-OFDM 256-QAM - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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rsight Spectrum Analyzer - Occupied BW T RF 50 Ω DC CORREC	SENSE:INT	ALIGN AUTO						01:21:17 PM Jan 29, 2021	
			Center Freq: 2.59 Trig: Free Run	3020000 GHz	Avg Hold: 100/10		Radio Std: None		Trace/Detect
	#1F	Gain:Low	#Atten: 36 dB		Avginola: 100/10	<i>u</i>	Radio Device: BTS		
B/div Ref 40.00 dBm									
									Clear W
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Lann				
	1								Ave
									Max
									mux
	mont					Lannan			
								alle allere	Min
									MILL
									Dete
									Auto
ter 2.5930 GHz								Span 200.0 MHz Sweep 1 ms	
BW 1.8 MHz			#VB	W 6 MHz				Sweep 1 ms	
ccupied Bandwidth	Total Power	35.5 dBm	1						
77.021 MHz									
ransmit Freq Error -466.03 kHz	% of OBW Por								
dB Bandwidth 81.42 MHz	x dB	-26.00 dE	3						

Plot 7-51. Occupied Bandwidth Plot (NR Band n41 - 80MHz DFT-s-OFDM π/2 BPSK - Full RB Configuration)



Plot 7-52. Occupied Bandwidth Plot (NR Band n41 - 80MHz CP-OFDM QPSK - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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LT +>-	T Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off µW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 2.59299 Avg Hold:>100/100 Radio Std: None	90000 GHz	Center Frequency 2.592990000 GHz Span	Settings
Graph cale/Div 10.0 d	T IB		Ref LvI Offset 1.70 Ref Value 40.00 dBr				200.00 MHz	
.og 30.0			Kei value 40.00 uBi				CF Step 20.000000 MHz	
20.0				~~~~lemento-uteraural			Auto	
10.0							Freq Offset 0 Hz	
	menter all and the little	water			have a management was	man and had a see	0 Hz	
20.0 <mark>مىلىرلىس</mark> 30.0						A state of the state of the state		
40.0 50.0								
Center 2.5930 G	iHz		#Video BW 6.0000 N	IHz .		Span 200 MHz		
Res BW 1.8000	MHz				Sw	eep 1.00 ms (1001 pts)		
2 Metrics	Occupied Bandwidth 77.558	MHz		Total Power	33	3.8 dBm		
	Transmit Freq Error	-1.023 kHz		% of OBW Pow		99.00 %		
	x dB Bandwidth	82.01 MHz		x dB	.2	6.00 dB		

Plot 7-53. Occupied Bandwidth Plot (NR Band n41 - 80MHz CP-OFDM 16-QAM - Full RB Configuration)



Plot 7-54. Occupied Bandwidth Plot (NR Band n41 - 80MHz CP-OFDM 64-QAM - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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.T + <b>→</b>	Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω <mark>Corr</mark> CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off µW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 2. Avg Hold: 100/1 Radio Std: None			Center Frequency 2.592990000 GHz Span	Settings
Graph ale/Div 10.0	T.		Ref LvI Offset 1.70 d Ref Value 30.00 dBn					200.00 MHz	
pg		ſ	Ref value 30.00 dBh		Ì			CF Step	
		الدي المسيان المراسم	Around and a court and all	mont and the second				20.000000 MHz	
								Man	
00								Freq Offset	
								0 Hz	
	withanowerstand	was a for the second			and marked and and and and and and and and and an	Wartheasterner			
							Warmen Hollen Bruch		
nter 2.5930	GHz		#Video BW 6.0000 M	H7			Span 200 MHz		
s BW 1.8000			#VILEO DVV 0.0000 IN	112			ms (1001 pts)		
letrics	Occupied Bandwidth     77.16	8 MHz		Total Power		30.3 dBm			
	Transmit Freq Error	31.614 kHz		% of OBW Po	wer	99.00 %			
	x dB Bandwidth	82.08 MHz		x dB		-26.00 dB			

Plot 7-55. Occupied Bandwidth Plot (NR Band n41 - 80MHz CP-OFDM 256-QAM - Full RB Configuration)



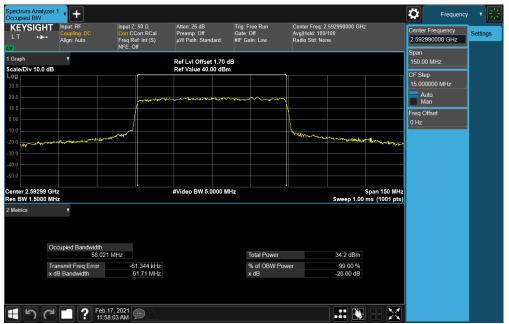
Plot 7-56. Occupied Bandwidth Plot (NR Band n41 - 60MHz DFT-s-OFDM π/2 BPSK - Full RB Configuration)

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KEYSIG ⊥⊺ ⊶		Input Ζ: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off μW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq Avg Hold:>1 Radio Std: N		Center Frequency 2.592990000 GHz Span	Settings
Graph	•		Ref LvI Offset 1.70				150.00 MHz	
ale/Div 10.	0 dB		Ref Value 40.00 dB	m			CF Step 15.000000 MHz	
		Junow	-and the second the second	and a survey of the survey	~		Auto Man	
0.0							Freq Offset 0 Hz	
).0 ).0	manhan All manada	2 Wardward			Mandhore	Mahalener	Ann-om	
D.0								
nter 2.5929 s BW 1.500			#Video BW 5.0000 N	۸Hz	1	Span 1 Sweep 1.00 ms (10	50 MHz	
Metrics	'							
	Occupied Bandwidth 58.054	4 MHz		Total Power		33.8 dBm		
	Transmit Freq Error x dB Bandwidth	-31.764 kHz 61.84 MHz		% of OBW P x dB	ower	99.00 % -26.00 dB		

Plot 7-57. Occupied Bandwidth Plot (NR Band n41 - 60MHz CP-OFDM QPSK - Full RB Configuration)



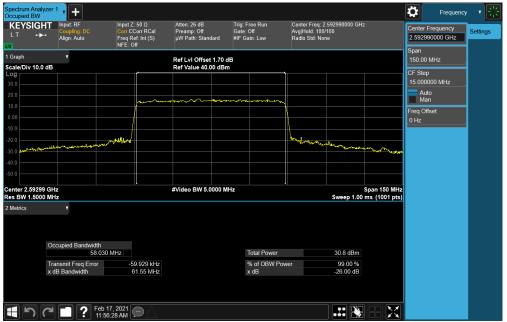
Plot 7-58. Occupied Bandwidth Plot (NR Band n41 - 60MHz CP-OFDM 16-QAM - Full RB Configuration)

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KEYSIG ⊥⊺ ⊶		Input Z: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off μW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 2 Avg Hold: 100 Radio Std: No			Center Frequency 2.592990000 GHz Span	Settings
Graph	•		Ref LvI Offset 1.70					150.00 MHz	
cale/Div 10.	0 dB	f	Ref Value 40.00 dBr	n				CF Step	
								15.000000 MHz	
		menne	a company and the second se	mile in the second	~			Auto Man	
		/			N			Freq Offset	
								0 Hz	
	ىر مىر مىسىيە مەلىرىدىدىدىدىدىدىدىدىدىدىدىدىدىدىدىدىدىدى	hard and have a start of the second start of t			Mullimmenter	mandamara			
).0 .0	and a state of the second						and the work		
0.0									
0.0									
enter 2.5929 as BW 1.500			#Video BW 5.0000 N	lHz		Sp Sweep 1.00 ms	an 150 MHz s (1001 pts)		
Metrics	Occupied Bandwidth     58.12	5 MHz		Total Power		33.5 dBm			
	Transmit Freq Error	-155.46 kHz		% of OBW P	ower	99.00 %			
	x dB Bandwidth	61.69 MHz		x dB		-26.00 dB			

Plot 7-59. Occupied Bandwidth Plot (NR Band n41 - 60MHz CP-OFDM 64-QAM - Full RB Configuration)



Plot 7-60. Occupied Bandwidth Plot (NR Band n41 - 60MHz CP-OFDM 256-QAM - Full RB Configuration)

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IB/div Ref 40.00 dBm		SENSE:INT	ALIGN AUTO	Center Freq: 2.5 Trig: Free Run ≇Atten: 36 dB	93020000 GHz	Avg Hold>1	00/100		Radio Std: None Radio Device: BTS	10:04:46 AM Jan 29, 2021	Trace/Detect
											Clear W
							Ì				Aver
											MaxH
and the second states of the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	and and a start of the start of						March a frequence	······································	and have a far a second of the	Min H
											Dete Pe Auto
nter 2.59302 GHz BW 1.2 MHz					3W 4 MHz					Span 125.0 MHz Sweep 1 ms	
Occupied Bandwidth 46	.009 MHz	Total Power	35.1 dB	lm							
ransmit Freq Error	-919.19 kHz	% of OBW Po									
dB Bandwidth	48.75 MHz	x dB	-26.00 0	18							

Plot 7-61. Occupied Bandwidth Plot (NR Band n41 - 50MHz DFT-s-OFDM π/2 BPSK - Full RB Configuration)



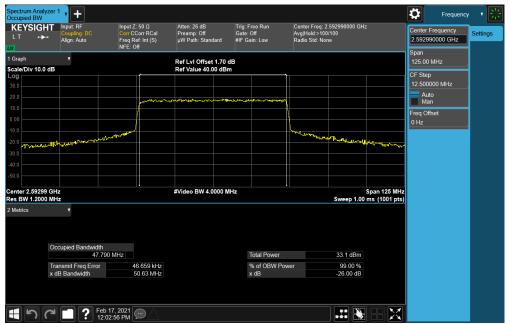
Plot 7-62. Occupied Bandwidth Plot (NR Band n41 - 50MHz CP-OFDM QPSK - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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KEYSIGI ∟⊺ ↔		Input Ζ: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off μW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 2 Avg Hold:>100 Radio Std: Nor			Center Frequency 2.592990000 GHz Span	Settings
Graph			Ref LvI Offset 1.70					125.00 MHz	
ale/Div 10.0	) dB		Ref Value 40.00 dBr	n	1			CF Step	
								12.500000 MHz	
		mannen						Auto Man	
		/						Freq Offset	
								0 Hz	
).0		~~~~			han and any low	- Martin	ee-levo goo		
0.0									
0.0									
nter 2.5929 s BW 1.200			#Video BW 4.0000 N	IHz		Sp Sweep 1.00 ms	an 125 MHz		
Metrics	▼ Occupied Bandwidth								
	47.72	29 MHz		Total Power		34.0 dBm			
	Transmit Freq Error	-26.160 kHz		% of OBW Po	wer	99.00 %			
	x dB Bandwidth	50.66 MHz		x dB		-26.00 dB			

Plot 7-63. Occupied Bandwidth Plot (NR Band n41 - 50MHz CP-OFDM 16-QAM - Full RB Configuration)



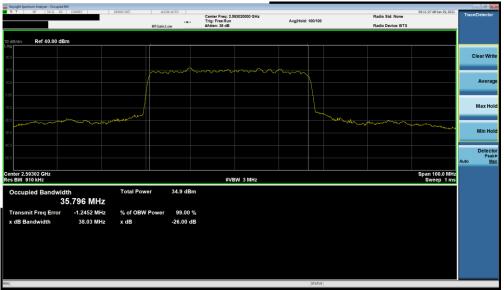
Plot 7-64. Occupied Bandwidth Plot (NR Band n41 - 50MHz CP-OFDM 64-QAM - Full RB Configuration)

FCC ID: BCGA2379		PART 27 MEASUREMENT REPORT	Approved by: Quality Manager
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LT +)	HT Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off μW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 2 Avg Hold: 100, Radio Std: Nor		2	enter Frequency 2.592990000 GHz pan	Settings
Graph	7		Ref LvI Offset 1.70					25.00 MHz	
ale/Div 10.0			Ref Value 30.00 dBr					F Step 2.500000 MHz	
			er and the second second	munterthe	~			Auto Man	
							c	req Offset ) Hz	
).0 ).0 <b></b>	men manual all	v mall			martin	han mar	-		
1.0 1.0									
nter 2.5929 s BW 1.200			#Video BW 4.0000 N	IHz	•	Spar Sweep 1.00 ms	n 125 MHz (1001 pts)		
<b>Netrics</b>	<ul> <li>Occupied Bandwidth</li> </ul>								
		5 MHz		Total Power		30.4 dBm			
	Transmit Freq Error x dB Bandwidth	-29.491 kHz 50.46 MHz		% of OBW P x dB	ower	99.00 % -26.00 dB			

Plot 7-65. Occupied Bandwidth Plot (NR Band n41 - 50MHz CP-OFDM 256-QAM - Full RB Configuration)



Plot 7-66. Occupied Bandwidth Plot (NR Band n41 - 40MHz DFT-s-OFDM π/2 BPSK - Full RB Configuration)

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KEYSIG LT ↔		Input Ζ: 50 Ω Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Atten: 26 dB Preamp: Off μW Path: Standard	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq Avg Hold:>1 Radio Std: M	: 2.592990000 GH 100/100 None		Center Frequency 2.592990000 GHz Span	Settings
Graph	v		Ref LvI Offset 1.70					100.00 MHz	
ale/Div 10.0	0 dB		Ref Value 40.00 dBr	m	<b>`</b>			CF Step	
								10.000000 MHz	
			a gran warmen and and					Auto Man	
					<u> </u>			Freq Offset	
								0 Hz	
	-	encoder			wyenger	manylananyman			
0.0 Jayletono						and and the second second and	4-lata manager		
nter 2.5929	9 GHz	ł	#Video BW 3.0000 N	//Hz	+		Span 100 MHz		
s BW 910.0	10 kHz					Sweep 1.00	ms (1001 pts)		
Metrics	Occupied Bandwidth     38 034	4 MHz		Total Power		33.6 dBm			
	Transmit Freq Error	32.036 kHz		% of OBW Po	wer	99.00 %			
	x dB Bandwidth	40.44 MHz		x dB		-26.00 dB			

Plot 7-67. Occupied Bandwidth Plot (NR Band n41 - 40MHz CP-OFDM QPSK - Full RB Configuration)



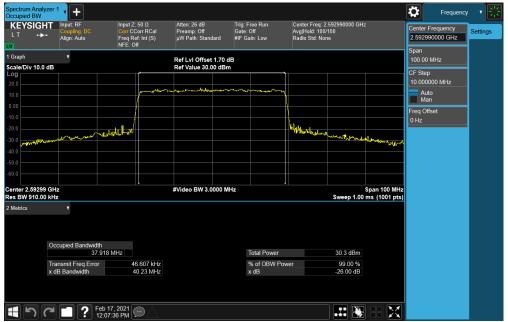
Plot 7-68. Occupied Bandwidth Plot (NR Band n41 - 40MHz CP-OFDM 16-QAM - Full RB Configuration)

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Plot 7-69. Occupied Bandwidth Plot (NR Band n41 - 40MHz CP-OFDM 64-QAM - Full RB Configuration)



Plot 7-70. Occupied Bandwidth Plot (NR Band n41 - 40MHz CP-OFDM 256-QAM - Full RB Configuration)

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yright Spettrum Analyser - Occupied BW Υ RP 50 Ω DC CORREC SENSE:	INT ALION AUTO Center Freq: 2.593020000 GHz → Trig: Free Run #FGain:low → Atten: 38 dB	Avg Hold: 100/100	08:50:30 AM Jan 29, 202 Radio Std: None Radio Device: BTS	Trace/Detecto
Eldiv Ref 40.00 dBm				Clear W
		~~~~		Aver
to an about the same				Max H
and and any transforming the set of the set			- And the second se	Min H
				Deter Pe Auto
	#VBW 1.5 MH; otal Power 34.6 dBm		Span 50.00 MH Sweep 1 m	2
	of OBW Power 99.00 % dB -26.00 dB			

Plot 7-71. Occupied Bandwidth Plot (NR Band n41 - 20MHz DFT-s-OFDM π/2 BPSK - Full RB Configuration)



Plot 7-72. Occupied Bandwidth Plot (NR Band n41 - 20MHz CP-OFDM QPSK - Full RB Configuration)

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	Align: Auto	Corr CCorr RCal Freq Ref: Int (S) NFE: Off	Preamp: Off µW Path: Standard	Gate: O #IF Gair		Avg Hold: 100/ Radio Std: Nor			Center Frequency 2.592990000 GHz Span	Settings
Graph	•		Ref LvI Offset 1.7						50.000 MHz	
ale/Div 10.0 dl	3		Ref Value 40.00 d	Bm					CF Step	
									5.000000 MHz	
			mon and the man	~~~_{MM~~~~*	many				Auto Man	
		/			h				Freq Offset	
						~			0 Hz	
	Mar	webnille w				- and a partie	ᠬᠬ᠆ᢑᡰᠰᡡ	home .		
.0										
0.0										
0.0										
nter 2.59299 G s BW 470.00 k			#Video BW 1.5000	MHz			Sweep 1.00	Span 50 MHz ms (1001 pts)		
letrics (	▼ Decupied Bandwidth									
	18.353	MHz		To	tal Power		33.1 dBm			
	Transmit Freq Error dB Bandwidth	-508 Hz 21.18 MHz		% x (	of OBW Pow JB	er	99.00 % -26.00 dB			

Plot 7-73. Occupied Bandwidth Plot (NR Band n41 - 20MHz CP-OFDM 16-QAM - Full RB Configuration)



Plot 7-74. Occupied Bandwidth Plot (NR Band n41 - 20MHz CP-OFDM 64-QAM - Full RB Configuration)

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Graph         V           Graph		Ref Lvi Offset 1. Ref Value 30.00			hard all and a features of the	and the second s		Span 50.000 MH CF Step 5.000000 N Auto Man Freq Offset 0 Hz	MHz	
O O O O O O O O O O O O O O					han all and a free	and the second s	~	5.000000 M Auto Man Freq Offset		
00 00 00 00 00 00 00 00 00 00 00 00 00		#Video BW 1.500	00 MHz		han all and a free	a have a second		5.000000 M Auto Man Freq Offset		
000 000 000 000 000 000 000 000		#Video BW 1.500	00 MHz		har the same	and the second second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Man Freq Offset		
0 0 0 0 0 0 0 0 0 0 0 0 0 0		#Video BW 1.500	00 MHz		hand all and a feature	and the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Freq Offset		
0 0 0 0 0 0 0 0 0 0 0 0 0 0		#Video BW 1.500	00 MHz		hard all and a large and a	the man we	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
ter 2.59299 GHz 5 BW 470.00 kHz		#Video BW 1.500	D0 MHz			Me mar - 4	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
ter 2.59299 GHz 5 BW 470.00 kHz		#Video BW 1.500	D0 MHz				- wayer	-		
0 0 1ter 2.59299 GHz 5 BW 470.00 kHz		#Video BW 1.500	00 MHz							
0 nter 2.59299 GHz 5 BW 470.00 kHz		#Video BW 1.500	00 MHz							
nter 2.59299 GHz s BW 470.00 kHz		#Video BW 1.500	00 MHz							
s BW 470.00 kHz		#Video BW 1.500	0 MHz							
s BW 470.00 kHz		#video Bw 1.500					Span 50 MHz			
letrics v						Sweep 1.00	ms (1001 pts)			
Occupied Bandwidth 18.283 M	IHz		Tot	al Power		29.8 dBm				
Transmit Freq Error	-3.010 kHz			of OBW Powe	ver	99.00 %				
x dB Bandwidth	19.88 MHz		x d	В		-26.00 dB				

Plot 7-75. Occupied Bandwidth Plot (NR Band n41 - 20MHz CP-OFDM 256-QAM - Full RB Configuration)

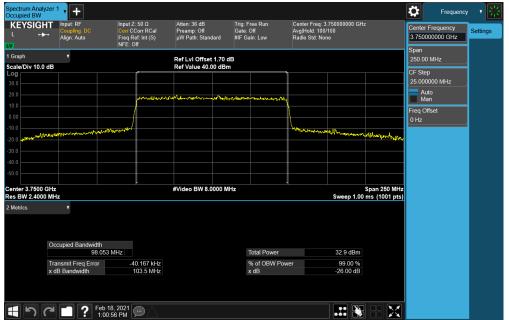
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## NR Band n77

night Spectrum Analyzer - Occupied BW						
L RF 50 D DC CORREC SENSE:INT	ALIGN AUTO	Center Freq: 3.840000000 GHz		Radio	03:12:19 PM Feb 03, 2021 Std: None	Trace/Detecto
	#IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Hold: 100/100	Radio	Device: BTS	
B/div Ref 40.00 dBm						
						ClearV
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m	mannen			
						Ave
			i i i i i i i i i i i i i i i i i i i			Ave
			L.			Max
north Manager				~~~	men marken was a second	max
						Min
						Dete
						P
er 3.8400 GHz BW 2.4 MHz		#VBW 8 MHz			Span 250.0 MHz Sweep 1 ms	
					oncep 1 ms	
	al Power 38.1 dBn	n				
97.039 MHz						
ansmit Freq Error -500.77 kHz % o	f OBW Power 99.00 %	6				
dB Bandwidth 102.5 MHz x d	3 -26.00 dB	3				
			<b>K</b> STATUS			

Plot 7-76. Occupied Bandwidth Plot (NR Band n77 - 100MHz DFT-s-OFDM π/2 BPSK - Full RB Configuration)



Plot 7-77. Occupied Bandwidth Plot (NR Band n77 - 100MHz CP-OFDM QPSK - Full RB Configuration)

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