

PCTEST

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MEASUREMENT REPORT

LTE

Applicant Name:

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

Date of Testing: 07/16/2020 - 09/08/2020 Test Site/Location: PCTEST Lab. Morgan Hill, CA, USA Test Report Serial No.: 1C2004270030-03.BCG

FCC ID:

BCGA2072

APPLICANT:

Apple Inc.

Application Type: Model: EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Certification A2072, A2325 Tablet Device PCS Licensed Transmitter (PCB) 22, 24, & 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.

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



FCC ID: BCGA2072	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 4 af 000	
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MEASUREMENT REPORT



FCC Part 22, 24, & 27

		ERP EIRP			RP			
LTE	FCC Rule				Mar David		Emission	Modulation
LIE	Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	Designator	wodulation
			(00)	(UBIII)	(vv)	(UBIII)	Ū	
Band 12	27	699.7 - 715.3	0.133	21.25	0.219	23.40	1M11G7W	QPSK
Band 12	27	699.7 - 715.3	0.106	20.24	0.173	22.39	1M11D7W	16QAM
Band 12	27	699.7 - 715.3	0.088	19.46	0.145	21.61	1M11D7W	64QAM
Band 12	27	700.5 - 714.5	0.133	21.25	0.219	23.40	2M72G7W	QPSK
Band 12	27	700.5 - 714.5	0.113	20.54	0.186	22.69	2M73D7W	16QAM
Band 12	27	700.5 - 714.5	0.090	19.52	0.147	21.67	2M72D7W	64QAM
Band 12	27	701.5 - 713.5	0.133	21.25	0.219	23.40	4M55G7W	QPSK
Band 12	27	701.5 - 713.5	0.115	20.59	0.188	22.74	4M55D7W	16QAM
Band 12	27	701.5 - 713.5	0.087	19.38	0.142	21.53	4M55D7W	64QAM
Band 12	27	704 - 711	0.133	21.25	0.219	23.40	9M04G7W	QPSK
Band 12	27	704 - 711	0.115	20.61	0.189	22.76	9M04D7W	16QAM
Band 12	27	704 - 711	0.089	19.48	0.146	21.63	9M05D7W	64QAM
Band 17	27	706.5 - 713.5	0.133	21.25	0.219	23.40	4M55G7W	QPSK
Band 17	27	706.5 - 713.5	0.113	20.52	0.185	22.67	4M55D7W	16QAM
Band 17	27	706.5 - 713.5	0.089	19.50	0.146	21.65	4M55D7W	64QAM
Band 17	27	709 - 711	0.133	21.25	0.219	23.40	9M04G7W	QPSK
Band 17	27	709 - 711	0.119	20.77	0.196	22.92	9M04D7W	16QAM
Band 17	27	709 - 711	0.091	19.58	0.149	21.73	9M05D7W	64QAM
Band 13	27	779.5 - 784.5	0.133	21.25	0.219	23.40	4M56G7W	QPSK
Band 13	27	779.5 - 784.5	0.112	20.48	0.183	22.63	4M55D7W	16QAM
Band 13	27	779.5 - 784.5	0.089	19.50	0.146	21.65	4M55D7W	64QAM
Band 13	27	782	0.133	21.25	0.219	23.40	9M01G7W	QPSK
Band 13	27	782	0.121	20.81	0.198	22.96	9M03D7W	16QAM
Band 13	27	782	0.094	19.72	0.154	21.87	9M00D7W	64QAM
Band 5	22H	824.7 - 848.3	0.153	21.85	0.251	24.00	1M11G7W	QPSK
Band 5	22H	824.7 - 848.3	0.125	20.96	0.205	23.11	1M11D7W	16QAM
Band 5	22H	824.7 - 848.3	0.105	20.21	0.172	22.36	1M11D7W	64QAM
Band 5	22H	825.5 - 847.5	0.153	21.85	0.251	24.00	2M73G7W	QPSK
Band 5	22H	825.5 - 847.5	0.132	21.21	0.217	23.36	2M73D7W	16QAM
Band 5	22H	825.5 - 847.5	0.100	20.02	0.165	22.17	2M73D7W	64QAM
Band 5	22H	826.5 - 846.5	0.153	21.85	0.251	24.00	4M54G7W	QPSK
Band 5	22H	826.5 - 846.5	0.129	21.12	0.212	23.27	4M55D7W	16QAM
Band 5	22H	826.5 - 846.5	0.102	20.08	0.167	22.23	4M55D7W	64QAM
Band 5	22H	829 - 844	0.153	21.85	0.251	24.00	9M06G7W	QPSK
Band 5	22H	829 - 844	0.132	21.19	0.216	23.34	9M05D7W	16QAM
Band 5	22H	829 - 844	0.103	20.13	0.169	22.28	9M05D7W	64QAM
Band 26	22H	824.7 - 848.3	0.153	21.85	0.251	24.00	1M11G7W	QPSK
Band 26	22H	824.7 - 848.3	0.124	20.92	0.203	23.07	1M11D7W	16QAM
Band 26	22H	824.7 - 848.3	0.100	20.02	0.165	22.17	1M11D7W	64QAM
Band 26	22H	825.5 - 847.5	0.153	21.85	0.251	24.00	2M73G7W	QPSK
Band 26	22H	825.5 - 847.5	0.136	21.33	0.223	23.48	2M73D7W	16QAM
Band 26	22H	825.5 - 847.5	0.100	20.00	0.164	22.15	2M73D7W	64QAM
Band 26	22H	826.5 - 846.5	0.153	21.85	0.251	24.00	4M54G7W	QPSK
Band 26	22H	826.5 - 846.5	0.135	21.30	0.221	23.45	4M55D7W	16QAM
Band 26	22H	826.5 - 846.5	0.101	20.06	0.166	22.21	4M55D7W	64QAM
Band 26	22H	829 - 844	0.153	21.85	0.251	24.00	9M06G7W	QPSK
Band 26	22H	829 - 844	0.127	21.03	0.208	23.18	9M05D7W	16QAM
Band 26	22H	829 - 844	0.104	20.15	0.170	22.30	9M05D7W	64QAM
			verview			00		

EUT Overview (Low Band)

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			EI	RP		
LTE	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
Band 4	27	1710.7 - 1754.3	0.343	25.35	1M11G7W	QPSK
Band 4	27	1710.7 - 1754.3	0.276	24.41	1M11D7W	16QAM
Band 4	27	1710.7 - 1754.3	0.235	23.71	1M11D7W	64QAM
Band 4	27	1711.5 - 1753.5	0.330	25.19	2M73G7W	QPSK
Band 4	27	1711.5 - 1753.5	0.285	24.55	2M73D7W	16QAM
Band 4	27	1711.5 - 1753.5	0.218	23.39	2M75D7W	64QAM
Band 4 Band 4	27 27	1712.5 - 1752.5 1712.5 - 1752.5	0.343	25.35 24.66	4M53G7W 4M54D7W	QPSK 16QAM
Band 4	27	1712.5 - 1752.5	0.292	23.56	4M54D7W	64QAM
Band 4	27	1715 - 1750	0.340	25.31	9M07G7W	QPSK
Band 4	27	1715 - 1750	0.305	24.84	9M05D7W	16QAM
Band 4	27	1715 - 1750	0.224	23.51	9M08D7W	64QAM
Band 4	27	1717.5 - 1747.5	0.343	25.35	13M6G7W	QPSK
Band 4	27	1717.5 - 1747.5	0.283	24.52	13M6D7W	16QAM
Band 4	27	1717.5 - 1747.5	0.225	23.53	13M6D7W	64QAM
Band 4	27	1720 - 1745	0.343	25.35	18M1G7W	QPSK
Band 4	27	1720 - 1745	0.297	24.73	18M1D7W	16QAM
Band 4	27	1720 - 1745	0.224	23.51	18M1D7W	64QAM
Band 66	27	1710.7 - 1779.3	0.343	25.35	1M11G7W	QPSK 160AM
Band 66	27	<u>1710.7 - 1779.3</u> 1710.7 - 1779.3	0.279	24.45	1M11D7W	16QAM 64QAM
Band 66 Band 66	27 27	1710.7 - 1779.3 1711.5 - 1778.5	0.235 0.337	23.71 25.28	1M11D7W 2M73G7W	QPSK
Band 66	27	1711.5 - 1778.5	0.337	25.28	2M73G7W 2M73D7W	16QAM
Band 66	27	1711.5 - 1778.5	0.219	23.37	2M75D7W	64QAM
Band 66	27	1712.5 - 1777.5	0.343	25.35	4M53G7W	QPSK
Band 66	27	1712.5 - 1777.5	0.298	24.74	4M54D7W	16QAM
Band 66	27	1712.5 - 1777.5	0.228	23.57	4M54D7W	64QAM
Band 66	27	1715 - 1775	0.343	25.35	9M07G7W	QPSK
Band 66	27	1715 - 1775	0.303	24.82	9M05D7W	16QAM
Band 66	27	1715 - 1775	0.236	23.72	9M08D7W	64QAM
Band 66	27	1717.5 - 1772.5	0.343	25.35	13M6G7W	QPSK
Band 66	27	1717.5 - 1772.5	0.275	24.40	13M6D7W	16QAM
Band 66	27	1717.5 - 1772.5	0.228	23.57	13M6D7W	64QAM
Band 66	27	1720 - 1770	0.343	25.35	18M1G7W	QPSK
Band 66 Band 66	27 27	<u>1720 - 1770</u> 1720 - 1770	0.293	24.67	18M1D7W 18M1D7W	16QAM 64QAM
Band 2	27 24E	1850.7 - 1909.3	0.232	23.66 25.30	1M10G7W	QPSK
Band 2	24L 24E	1850.7 - 1909.3	0.295	23.30	1M10D7W	16QAM
Band 2	24E	1850.7 - 1909.3	0.230	23.61	1M10D7W	64QAM
Band 2	24E	1851.5 - 1908.5	0.339	25.30	2M72G7W	QPSK
Band 2	24E	1851.5 - 1908.5	0.293	24.67	2M72D7W	16QAM
Band 2	24E	1851.5 - 1908.5	0.227	23.56	2M72D7W	64QAM
Band 2	24E	1852.5 - 1907.5	0.339	25.30	4M56G7W	QPSK
Band 2	24E	1852.5 - 1907.5	0.288	24.60	4M54D7W	16QAM
Band 2	24E	1852.5 - 1907.5	0.225	23.53	4M53D7W	64QAM
Band 2	24E	1855 - 1905	0.339	25.30	9M06G7W	QPSK
Band 2	24E	1855 - 1905	0.285	24.55	9M05D7W	16QAM
Band 2	24E 24E	1855 - 1905 1857.5 - 1902.5	0.228	23.58 25.30	9M02D7W 13M6G7W	64QAM QPSK
Band 2 Band 2	24E 24E	1857.5 - 1902.5	0.339	25.30	13M6D7W	16QAM
Band 2	24L 24E	1857.5 - 1902.5	0.224	23.50	13M6D7W	64QAM
Band 2	24L 24E	1860 - 1900	0.339	25.30	18M1G7W	QPSK
Band 2	24E	1860 - 1900	0.281	24.49	18M0D7W	16QAM
Band 2	24E	1860 - 1900	0.219	23.41	18M1D7W	64QAM
Band 25	24E	1850.7 - 1914.3	0.339	25.30	1M10G7W	QPSK
Band 25	24E	1850.7 - 1914.3	0.292	24.66	1M10D7W	16QAM
Band 25	24E	1850.7 - 1914.3	0.241	23.82	1M10D7W	64QAM
Band 25	24E	1851.5 - 1913.5	0.339	25.30	2M72G7W	QPSK
Band 25	24E	1851.5 - 1913.5	0.294	24.68	2M72D7W	16QAM
Band 25	24E	1851.5 - 1913.5	0.222	23.46 25.30	2M72D7W 4M56G7W	64QAM
Band 25 Band 25	24E 24E	1852.5 - 1912.5 1852.5 - 1912.5	0.339	25.30	4M54D7W	QPSK 16QAM
Band 25 Band 25	24E 24E	1852.5 - 1912.5	0.288	23.60	4M53D7W	64QAM
Band 25	24L 24E	1855 - 1910	0.339	25.30	9M06G7W	QPSK
Band 25	24E	1855 - 1910	0.292	24.66	9M05D7W	16QAM
Band 25	24E	1855 - 1910	0.229	23.59	9M02D7W	64QAM
Band 25	24E	1857.5 - 1907.5	0.339	25.30	13M6G7W	QPSK
Band 25	24E	1857.5 - 1907.5	0.284	24.54	13M6D7W	16QAM
Band 25	24E	1857.5 - 1907.5	0.229	23.59	13M6D7W	64QAM
Band 25	24E	1860 - 1905	0.339	25.30	18M1G7W	QPSK
Band 25	24E	1860 - 1905	0.299	24.76	18M0D7W	16QAM
Band 25	24E	1860 - 1905	0.250	23.98	18M1D7W	64QAM

EUT Overview (Mid Bands)

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			EI	RP		
LTE	FCC Rule	Tx Frequency (MHz)	Max. Power	Max. Power	Emission	Modulation
	Part		(W)	(dBm)	Designator	Woodaaton
			. ,	. ,		
Band 30	27	2307.5 - 2312.5	0.200	23.00	4M55G7W	QPSK
Band 30	27	2307.5 - 2312.5	0.173	22.38	4M53D7W	16QAM
Band 30	27	2307.5 - 2312.5	0.142	21.51	4M53D7W	64QAM
Band 30	27	2310	0.200	23.00	9M06G7W	QPSK
Band 30	27	2310	0.178	22.51	9M06D7W	16QAM
Band 30	27	2310	0.140	21.46	9M04D7W	64QAM
Band 7	27	2502.5 - 2567.5	0.335	25.25	4M54G7W	QPSK
Band 7	27	2502.5 - 2567.5	0.284	24.54	4M52D7W	16QAM
Band 7	27	2502.5 - 2567.5	0.222	23.46	4M53D7W	64QAM
Band 7	27	2505 - 2565	0.335	25.25	9M08G7W	QPSK
Band 7	27	2505 - 2565	0.288	24.59	9M04D7W	16QAM
Band 7	27	2505 - 2565	0.220	23.42	9M04D7W	64QAM
Band 7	27	2507.5 - 2562.5	0.335	25.25	13M6G7W	QPSK
Band 7	27	2507.5 - 2562.5	0.270	24.31	13M6D7W	16QAM
Band 7	27	2507.5 - 2562.5	0.219	23.41	13M5D7W	64QAM
Band 7	27	2510 - 2560	0.335	25.25	18M1G7W	QPSK
Band 7	27	2510 - 2560	0.281	24.49	18M1D7W	16QAM
Band 7	27	2510 - 2560	0.221	23.45	18M1D7W	64QAM
Band 41 (PC2)	27	2498.5 - 2687.5	0.653	28.15	4M56G7W	QPSK
Band 41 (PC2)	27	2498.5 - 2687.5	0.564	27.51	4M56D7W	16QAM
Band 41 (PC2)	27	2498.5 - 2687.5	0.457	26.60	4M55D7W	64QAM
Band 41 (PC2)	27	2501 - 2685	0.653	28.15	9M07G7W	QPSK
Band 41 (PC2)	27	2501 - 2685	0.551	27.41	9M10D7W	16QAM
Band 41 (PC2)	27	2501 - 2685	0.455	26.58	9M08D7W	64QAM
Band 41 (PC2)	27	2503.5 - 2682.5	0.652	28.14	13M5G7W	QPSK
Band 41 (PC2)	27	2503.5 - 2682.5	0.569	27.55	13M6D7W	16QAM
Band 41 (PC2)	27	2503.5 - 2682.5	0.444	26.47	13M5D7W	64QAM
Band 41 (PC2)	27	2506 - 2680	0.635	28.03	18M1G7W	QPSK
Band 41 (PC2)	27	2506 - 2680	0.540	27.32	18M1D7W	16QAM
Band 41 (PC2)	27	2506 - 2680	0.439	26.42	18M1D7W	64QAM
Band 41 (PC3)	27	2498.5 - 2687.5	0.335	25.25	4M56G7W	QPSK
Band 41 (PC3)	27	2498.5 - 2687.5	0.271	24.33	4M56D7W	16QAM
Band 41 (PC3)	27	2498.5 - 2687.5	0.216	23.34	4M55D7W	64QAM
Band 41 (PC3)	27	2501 - 2685	0.335	25.25	9M07G7W	QPSK
Band 41 (PC3)	27	2501 - 2685	0.286	24.56	9M10D7W	16QAM
Band 41 (PC3)	27	2501 - 2685	0.229	23.60	9M08D7W	64QAM
Band 41 (PC3)	27	2503.5 - 2682.5	0.335	25.25	13M5G7W	QPSK
Band 41 (PC3)	27	2503.5 - 2682.5	0.269	24.29	13M6D7W	16QAM
Band 41 (PC3)	27	2503.5 - 2682.5	0.224	23.51	13M5D7W	64QAM
Band 41 (PC3)	27	2506 - 2680	0.335	25.25	18M1G7W	QPSK
Band 41 (PC3)	27	2506 - 2680	0.278	24.44	18M1D7W	16QAM
Band 41 (PC3)	27	2506 - 2680	0.221	23.44	18M1D7W	64QAM
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EUT Overview (High Bands)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
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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 17025-2005 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: BCGA2072**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: DLXD101FQ8MX, DLXD100MQ8MX, DLX018400MYPWT71Q, DLX019300F7PWTJ1L

2.2 Device Capabilities

This device contains the following capabilities:

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

This device supports BT Beamforming

LTE Band 12 (698 - 716 MHz) overlaps the entire frequency range of LTE Band 17 (704 - 716 MHz). Therefore, test data provided in this report covers Band 17 as well as Band 12.

LTE Band 26 (814.7 – 849 MHz) overlaps the entire frequency range of LTE Band 5 (824 – 849 MHz). Therefore, test data provided in this report covers Band 5 and the portion of Band 26 subject to Part 22.

LTE Band 66 (1710 - 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.

LTE Band 25 (1850 - 1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 - 1910 MHz). Therefore, test data provided in this report covers Band 2 as well as Band 25.

LTE Band 41 supports NS04 for Antenna 4, Antenna 2a, Antenna 1a and Antenna 3a.

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.

Antenna	Simultaneous Tx	WLAN	Bluetooth	LTE / GSM / WCDMA	UNII
	Config	802.11 b/g/n/ax	BDR, EDR, HDR4/8, LE	Mid band/ High band	802.11 a/n/ac/ax
10	Config 1	√	×	√	×
1a	Config 2	×	✓	√	×
2a	Config 3	×	×	✓	\checkmark
3a	Config 4	\checkmark	×	\checkmark	×
	Config 5	×	\checkmark	\checkmark	×

Table 2-1. Simultaneous Transmission Configurations

 \checkmark = Support; * = Not Support

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2.3 Antenna Description

Following antennas were used for the testing.

Frequency	Antenna Gain (dBi)				
[MHz]	Antenna 4	Antenna 3b	Antenna 2a	Antenna 1a	Antenna 3a
650-800	-2.1	-3.1	N/A	N/A	N/A
820-960	-1.5	-1.6	N/A	N/A	N/A
1700-1800	0.6	N/A	-2.0	0.5	-3.1
1820-2100	-0.2	N/A	-1.2	0.8	-4.1
2300-2320	0.0	N/A	-0.7	0.5	-3.3
2400-2700	0.1	N/A	0.9	1.0	-1.7

Table 2-2. Highest Antenna Gain

2.4 **Test Support Equipment**

		· ·			
1	Apple MacBook	Model:	A1398	S/N:	C2QKP008F6F3
	w/AC/DC Adapter	Model:	A1435	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:	GQX91220J13LL6U7AS
5	DC Power Supply	Model:	KPS3010D	S/N:	N/A
	Table 2-	3. Test Si	ipport Equ	ipment	List

Table 2-3. Test Support Equipment List

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 Zorientation (portrait) during the testing. Only the worst case emissions were reported in this test report.

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

Per Data Re-use KDB guidance, conducted measurement data in this report was reused from model A2324 while radiated measurement data were spotchecked and confirmed to be within tolerance defined in the KDB.

Description	LTE (Band 41)	Bluetooth LE
Antenna	Antenna 1a	Antenna 1a
Channel	39750	19
Operating Frequency (MHz)	2506	2440
Mode/Modulation	QPSK/1RB/20MHz	1M/ePA

Table 2-4. Worst Case Simultaneous Transmission Configuration

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2.6 Software and Firmware

The test was conducted with firmware version 18A325 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. Per the guidelines of KDB 412172 D01 v01r01, radiated power levels are measured using the following formula:

ERP or EIRP = $P_T + G_T - L_C$

Where P_T is the transmitter output power, expressed in dBm, G_T is the gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP), and L_C signal attenuation in the connecting cable between the transmitter and antenna in dB.

Per the guidance of ANSI C63.26-2015 and TIA-603-E-2016, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

 $P_{d [dBm]} = P_{g [dBm]} - cable loss [dB] + antenna gain [dBd/dBi]$

Where, P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to P_g [dBm] – cable loss [dB].

The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10log₁₀(Power [Watts]). For Band 7 and 41, the calculated P_d levels are compared to the absolute spurious emission limit of -25dBm which is equivalent to the required minimum attenuation of 55 + 10log₁₀(Power [Watts]). For Band 30 the calculated P_d levels are compared to the absolute spurious emission limit of -40dBm which is equivalent to the required minimum attenuation of 70 + 10log₁₀(Power [Watts]).

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.

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4.0 MEASUREMENT UNCERTAINTY

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

Contribution	Expanded Uncertainty (±dB)
Conducted Bench Top Measurements	1.30
Radiated Disturbance (<1GHz)	4.15
Radiated Disturbance (>1GHz)	4.59
Radiated Disturbance (>18GHz)	4.96

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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	3Hz-44GHz PXA Signal Analyzer	3/4/2020	Annual	3/4/2021	MY49430244
ATM	180-442A-KF	20dB Nominal Gain Horn Antenna	10/29/2019	Annual	10/29/2020	T058701-02
ESPEC	SU-241	Tabletop Temperature Chamber	9/3/2019	Annual	9/3/2020	92009574
ETS-Lindgren	3142E-PA	Pre-Amplifier (30MHz - 6GHz)	9/19/2019	Annual	9/19/2020	213236
ETS-Lindgren	3142E	BiConiLog Antenna (30MHz - 6GHz)	1/6/2020	Annual	1/6/2021	224569
ETS-Lindgren	3117	Double Ridged Guide Antenna (1-18 GHz)	4/21/2020	Annual	4/21/2021	205956
Rohde & Schwarz	FSV40	Signal Analyzer (10Hz-40GHz)	3/2/2020	Annual	3/2/2021	101619
Rohde & Schwarz	ESW26	EMI Test Receiver	6/1/2020	Annual	6/1/2021	101299
Rohde & Schwarz	ESW44	EMI Test Receiver	9/13/2019	Annual	9/13/2020	101570
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	11/16/2019	Annual	11/16/2020	164715
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/16/2020	Annual	4/16/2021	166869
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	9/19/2019	Annual	9/19/2020	100051
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Antenna (400MHz-18GHz)	11/14/2019	Annual	11/14/2020	101057
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.
- 2. All testing was performed before the calibration due date.

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6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7W

LTE BW = 8.62 MHz G = Phase Modulation 7 = Quantized/Digital Info W = Combination of Any

QAM Modulation

Emission Designator = 8M45D7W

LTE BW = 8.45 MHz D = Amplitude/Angle Modulated 7 = Quantized/Digital Info W = Combination of Any

Spurious Radiated Emission – LTE Band

Example: Middle Channel LTE Mode 2nd Harmonic (1564 MHz)

The average 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 1564 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm - (-24.80).

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7.0 TEST RESULTS

7.1 Summary

Company Name:	Apple Inc.
FCC ID:	BCGA2072
FCC Classification:	PCS Licensed Transmitter (PCB)
Mode(s):	LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A		N/A	Section 7.2
2.1051 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Out of Band Emissions	> 43 + 10 log ₁₀ (P[Watts]) at Band Edge and for all out-of- band emissions			Section 7.3, 7.4
27.53(m)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3, 7.4
27.53(a)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(a)			Section 7.3, 7.4
24.232(d) 27.50(d)(5)	Peak-Average Ratio	< 13 dB			Section 7.5
2.1046	Transmitter Conducted Output Power	N/A	CONDUCTED	PASS	See RF Exposure Report
2.1046	Additional Maximum Power Reduction (A-MPR)	N/A			Section 7.6
27.53(m)	Uplink Carrier Aggregation	Undesirable emissions much meet the limits pdetailed in 27.53(m)			Section 7.7, 7.10
2.1055 22.355 24.235 27.54	Frequency Stability	< 2.5 ppm (Part 22) and fundamental emissions stay within authorized frequency block (Part 24, 27)			Section 7.10.3

Table 7-1. Summary of Conducted Test Results

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FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 26/5)	< 7 Watts max. ERP			Section 7.8
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 12/17, 13)	< 3 Watts max. ERP			Section 7.8
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 25/2, 7, 41)	< 2 Watts max. EIRP	CONDUCTED		Section 7.8
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 66/4)	< 1 Watts max. EIRP			Section 7.8
27.50(a)(3) 27.50(d)(5)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP		PASS	Section 7.8
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions	> 43 + 10 log ₁₀ (P[Watts]) for all out-of-band emissions			Section 7.9
27.53(f)	Undesirable Emissions (Band 13)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz	RADIATED		Section 7.9
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10 log ₁₀ (P[Watts])			Section 7.9
27.53(m)	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.9

Table 7-2. Summary of Conducted/Radiated Test Results

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 (Sections 7.2, 7.3, 7.4, 7.5) 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) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "LTE Automation," Version 5.3.

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7.2 Occupied Bandwidth

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.

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. All ports were tested and only the worst case data were reported.
- 2. Following data were re-used from model A2324 per Data Re-use KDB guidance defined by the FCC.

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			Occupied BW
LTE	BW (MHz)	Modulation	[kHz]
			נוארובן
Band 12	1.4	QPSK	1111.1
Band 12	1.4	16QAM	1112.7
Band 12	1.4	64QAM	1110.9
Band 12	3	QPSK	2722.4
Band 12	3	16QAM	2731.9
Band 12	3	64QAM	2721.7
Band 12	5	QPSK	4550.7
Band 12	5	16QAM	4550.0
Band 12	5	64QAM	4547.6
Band 12	10	QPSK	9037.3
Band 12	10	16QAM	9037.4
Band 12	10	64QAM	9047.9
Band 17	5	QPSK	4550.7
Band 17	5	16QAM	4550.0
Band 17	5	64QAM	4547.6
Band 17 Band 17	10	QPSK	9037.3
Band 17	10	16QAM	9037.4
Band 17 Band 17	10	64QAM	9047.9
Band 17 Band 13	5	QPSK	4561.8
Band 13	5	16QAM	4548.3
Band 13 Band 13	5	64QAM	4548.6
Band 13 Band 13	10	QPSK	
			9006.9
Band 13	10	16QAM	9031.0
Band 13	10	64QAM	8995.4
Band 5	1.4	QPSK	1105.5
Band 5	1.4	16QAM	1110.9
Band 5	1.4	64QAM	1109.1
Band 5	3	QPSK	2733.6
Band 5	3	16QAM	2727.6
Band 5	3	64QAM	2726.7
Band 5	5	QPSK	4543.6
Band 5	5	16QAM	4553.5
Band 5	5	64QAM	4550.7
Band 5	10	QPSK	9055.9
Band 5	10	16QAM	9047.3
Band 5	10	64QAM	9053.5
Band 26	1.4	QPSK	1105.5
Band 26	1.4	16QAM	1110.9
Band 26	1.4	64QAM	1109.1
Band 26	3	QPSK	2733.6
Band 26	3	16QAM	2727.6
Band 26	3	64QAM	2726.7
Band 26	5	QPSK	4543.6
Band 26	5	16QAM	4553.5
Band 26	5	64QAM	4550.7
Band 26	10	QPSK	9055.9
Band 26	10	16QAM	9047.3
Band 26	10	64QAM	9053.5

Table 7-3. Occupied Band Width Results (Low Bands)

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LTE	BW (MHz)	Modulation	Occupied BW [kHz]
Band 4	1.4	QPSK	1106.3
Band 4	1.4	16QAM	1106.7
Band 4	1.4	64QAM	1114.0
Band 4	3	QPSK	2730.1
Band 4 Band 4	3	16QAM 64QAM	2726.8 2746.7
Band 4	5	QPSK	4534.7
Band 4	5	16QAM	4535.0
Band 4	5	64QAM	4543.5
Band 4	10	QPSK	9067.8
Band 4	10	16QAM	9050.7
Band 4	10	64QAM	9076.6
Band 4 Band 4	15 15	QPSK 16QAM	13590.0 13592.0
Band 4	15	64QAM	13605.0
Band 4	20	QPSK	18099.0
Band 4	20	16QAM	18085.0
Band 4	20	64QAM	18102.0
Band 66	1.4	QPSK	1106.3
Band 66	1.4	16QAM	1106.7
Band 66	1.4	64QAM	1114.0
Band 66 Band 66	3	QPSK 16QAM	2730.1 2726.8
Band 66	3	64QAM	2746.7
Band 66	5	QPSK	4534.7
Band 66	5	16QAM	4535.0
Band 66	5	64QAM	4543.5
Band 66	10	QPSK	9067.8
Band 66	10	16QAM	9050.7
Band 66 Band 66	<u>10</u> 15	64QAM QPSK	9076.6 13590.0
Band 66	15	16QAM	13592.0
Band 66	15	64QAM	13605.0
Band 66	20	QPSK	18099.0
Band 66	20	16QAM	18085.0
Band 66	20	64QAM	18102.0
Band 2	1.4	QPSK	1104.8
Band 2 Band 2	1.4 1.4	16QAM 64QAM	1104.9 1101.9
Band 2	3	QPSK	2723.6
Band 2	3	16QAM	2719.6
Band 2	3	64QAM	2719.1
Band 2	5	QPSK	4563.8
Band 2	5	16QAM	4538.4
Band 2	5	64QAM	4534.9
Band 2	10 10	QPSK 160AM	9058.4
Band 2 Band 2	10	16QAM 64QAM	9048.6 9020.5
Band 2	15	QPSK	13624.0
Band 2	15	16QAM	13566.0
Band 2	15	64QAM	13568.0
Band 2	20	QPSK	18080.0
Band 2	20	16QAM	18045.0
Band 2 Band 25	20	64QAM	18052.0 1104.8
Band 25 Band 25	1.4 1.4	QPSK 16QAM	1104.8
Band 25	1.4	64QAM	1101.9
Band 25	3	QPSK	2723.6
Band 25	3	16QAM	2719.6
Band 25	3	64QAM	2719.1
Band 25	5	QPSK 1604M	4563.8
Band 25	5	16QAM	4538.4 4534.9
Band 25 Band 25	5 10	64QAM QPSK	4534.9 9058.4
Band 25	10	16QAM	9048.6
Band 25	10	64QAM	9020.5
Band 25	15	QPSK	13624.0
Band 25	15	16QAM	13566.0
Band 25	15	64QAM	13568.0
Band 25	20	QPSK 1604M	18080.0
Band 25	20	16QAM	18045.0
Band 25	20	64QAM	18052.0

 Band 25
 20
 64QAM
 18052.0

 Table 7-4. Occupied Band Width Results (Mid Bands)

FCC ID: BCGA2072	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 19 of 200
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LTE	BW (MHz)	Modulation	Occupied BW [kHz]
Band 30	5	QPSK	4548.3
Band 30	5	16QAM	4525.4
Band 30	5	64QAM	4534.7
Band 30	10	QPSK	9061.5
Band 30	10	16QAM	9063.5
Band 30	10	64QAM	9039.3
Band 7	5	QPSK	4543.0
Band 7	5	16QAM	4520.2
Band 7	5	64QAM	4526.4
Band 7	10	QPSK	9079.2
Band 7	10	16QAM	9038.6
Band 7	10	64QAM	9042.2
Band 7	15	QPSK	13618.0
Band 7	15	16QAM	13589.0
Band 7	15	64QAM	13529.0
Band 7	20	QPSK	18118.0
Band 7	20	16QAM	18062.0
Band 7	20	64QAM	18055.0
Band 41	5	QPSK	4560.0
Band 41	5	16QAM	4558.6
Band 41	5	64QAM	4554.7
Band 41	10	QPSK	9071.5
Band 41	10	16QAM	9095.2
Band 41	10	64QAM	9081.2
Band 41	15	QPSK	13518.0
Band 41	15	16QAM	13580.0
Band 41	15	64QAM	13502.0
Band 41	20	QPSK	18102.0
Band 41	20	16QAM	18101.0
Band 41	20	64QAM	18077.0

Table 7-5. Occupied Band Width Results (High Bands)

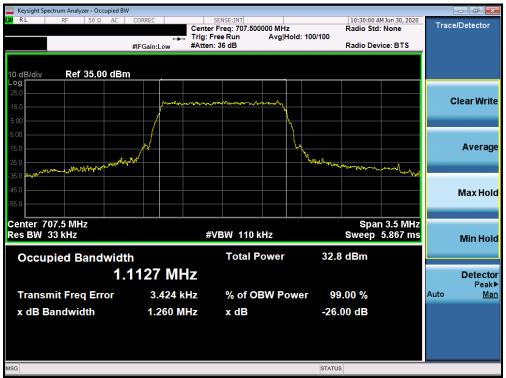
FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 10 of 200
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Band 12/17



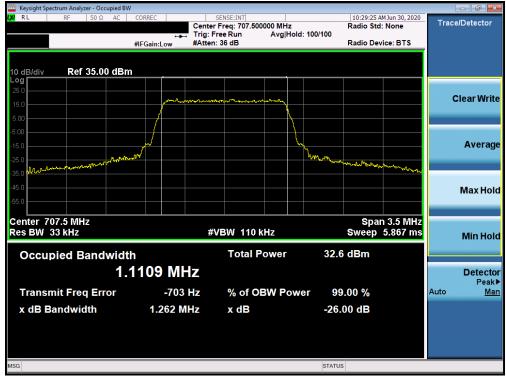
Plot 7-1. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-2. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 20 of 280
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Plot 7-3. Occupied Bandwidth Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)



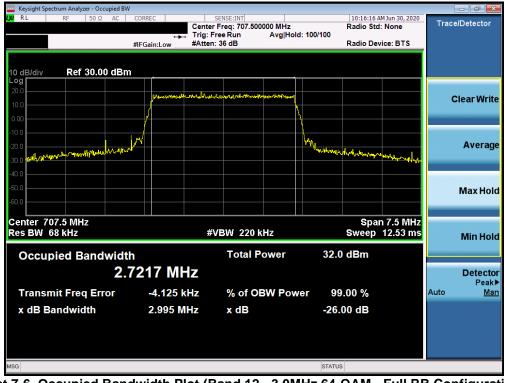
Plot 7-4. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	Poud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 01 of 000	
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Keysight Spectrum Analyzer - Occupied BW						ð 🗙
LXI RL RF 50Ω AC	CORREC	SENSE:INT r Freq: 707.500000 MHz	10:15:46	AM Jun 30, 2020	Trace/Dete	ctor
	Trig: I	Free Run Avg Hold	: 100/100			
	#IFGain:Low #Atter	n: 36 dB	Radio De	vice: BTS		
10 dB/div Ref 30.00 dBm						
Log						
20.0	provide and the second s	and the second second second second			Clear	Write
10.0						
0.00						
-10.0						
-20.0			Multimerical malines		Av	erage
-30.0 - Jase Martin and Contraction			and and controller free to	4 Maradle maker		
-40.0						
-50.0						
-60.0					Max	(Hold
-50.0						_
Center 707.5 MHz			Spa	n 7.5 MHz		
Res BW 68 kHz	#	VBW 220 kHz	Sweep	12.53 ms	Mir	1 Hold
			00 (I D			
Occupied Bandwidt	h	Total Power	32.4 dBm			
2.	7319 MHz				De	tector
						Peak▶
Transmit Freq Error	-23 Hz	% of OBW Powe	er 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	3.017 MHz	x dB	-26.00 dB			
MSG			STATUS			

Plot 7-5. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-6. Occupied Bandwidth Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dawa 00 at 000		
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Plot 7-7. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)



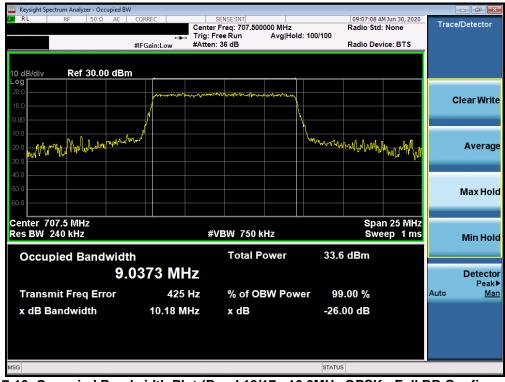
Plot 7-8. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 af 000		
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Keysight Spectrum Analyzer - Occupied BW					
IX RL RF 50Ω AC	Trig: F	SENSE:INT r Freq: 707.500000 MHz Free Run Avg Hold:> n: 36 dB	Radio Std		Trace/Detector
10 dB/div Ref 40.00 dBm					
30.0 20.0	man	mapping and and a			Clear Write
10.0					Average
-10.0 -20.0 -30.0 Amar Mar Mar Mar Mar			mmary hur hour	maga	Average
-40.0					Max Hold
Center 707.5 MHz Res BW 120 kHz	#	VBW 390 kHz		12.5 MHz eep 1 ms	Min Hold
Occupied Bandwidth		Total Power	31.5 dBm		
4.5 Transmit Freg Error	5476 MHz -1.535 kHz	% of OBW Powe	r 99.00 %		Detector Peak► Auto <u>Man</u>
x dB Bandwidth	4.983 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-9. Occupied Bandwidth Plot (Band 12/17 - 5.0MHz 64-QAM - Full RB Configuration)



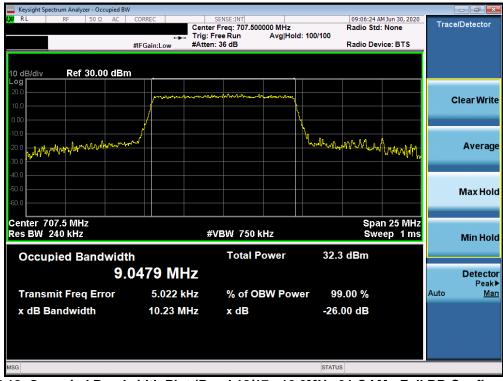
Plot 7-10. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 04 af 000		
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Keysight Spectrum Analyzer - Occupied BW					
<mark>ιχα</mark> RL RF 50Ω AC	Center	SENSE:INT Freq: 707.500000 MHz	Ra	19:06:55 AM Jun 30, 2020 adio Std: None	Trace/Detector
		ree Run Avg Hol : 36 dB	ld: 100/100 Ra	adio Device: BTS	
10 dB/div Ref 30.00 dBm					
20.0					
10.0	mannethereder	ware when the and the second			Clear Write
0.00			\		
-10.0					
-10.0 -20.0 Marin Marin Marine	ι _Μ .		whent	month when it do	Average
-30.0				A FRANCE	
-40.0					
-50.0					Max Hold
-60.0					
Center 707.5 MHz				Span 25 MHz	
Res BW 240 kHz	#\	VBW 750 kHz		Sweep 1 ms	Min Hold
Occupied Bandwidth		Total Power	32.9 d	Bm	
	374 MHz				Detector
9.0					Detector Peak▶
Transmit Freq Error	210 Hz	% of OBW Pov	ver 99.00	0%	Auto <u>Man</u>
x dB Bandwidth	10.12 MHz	x dB	-26.00	dB	
MSG			STATUS		

Plot 7-11. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)

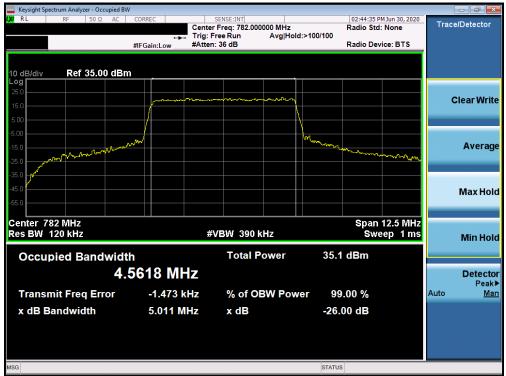


Plot 7-12. Occupied Bandwidth Plot (Band 12/17 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dawa 05 at 000		
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Band 13



Plot 7-13. Occupied Bandwidth Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-14. Occupied Bandwidth Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 26 of 389
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Keysight Spectrum Analyzer - Occupied B ¹	W						- # X
<mark>(X)</mark> RL RF 50Ω AC	CORREC	SENSE:INT Center Freg: 782.00	000 MHz	02:54:14 PM Radio Std:	1Jun 30, 2020	Trace	/Detector
	• • •	Trig: Free Run	Avg Hold: 100	0/100			
	#IFGain:Low	#Atten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 35.00 dBr	m						
25.0							
15.0	m	and the second s				c	lear Write
5.00							
-5.00	. 0.		VA /	Marman			
-15.0	Mu -			WW WWW A A.			Average
-5.00 -15.0 -25.0 -35.0				10030	ununu		
-35.0							
-45.0							Max Hold
-55.0							
Center 782 MHz Res BW 120 kHz		#VBW 3901	/ U 7	Span Swa	12.5 MHz ep 1 ms		
Res DW 120 KHZ		#4044 3901	ΔΠZ	Swe	ep mis		Min Hold
Occupied Bandwid	th	Total F	ower	32.8 dBm			
	5486 MH	-					Detector
4.	3400 IVI LI	2					Peak ►
Transmit Freq Error	4.482 kH	z % of O	BW Power	99.00 %		Auto	Man
x dB Bandwidth	5.536 MH	z xdB		-26.00 dB			
	5.550 Mil						
MSG				STATUS			

Plot 7-15. Occupied Bandwidth Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-16. Occupied Bandwidth Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 07 of 000		
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Keysight Spectrum Analyzer - Occupied BW	V				
(X) RL RF 50Ω AC	Center	SENSE:INT Freq: 782.000000 MHz ree Run Avg Hold : 36 dB	Radio Std		Trace/Detector
10 dB/div Ref 25.00 dBn	n				
15.0 5.00 -5.00	phagener and a second				Clear Write
-15.0 -25.0 -35.0			Saddelador have the work the work	Mr.m.w.	Average
-45.0					Max Hold
Center 782 MHz Res BW 240 kHz		VBW 750 kHz Total Power		n 25 MHz eep 1 ms	Min Hold
	0310 MHz				Detector Peak►
Transmit Freq Error x dB Bandwidth	38.216 kHz 10.11 MHz	% of OBW Powe	er 99.00 % -26.00 dB		Auto <u>Man</u>
MSG			STATUS		

Plot 7-17. Occupied Bandwidth Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-18. Occupied Bandwidth Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 af 000		
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Band 26/5



Plot 7-19. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-20. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 20 of 280
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Plot 7-21. Occupied Bandwidth Plot (Band 26/5 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-22. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dawa 00 at 000		
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Keysight Spectrum Analyzer - Occupied B\	N					
LX RL RF 50 Ω AC	CORREC	SENSE:INT SOUR				Trace/Detector
		Center Freq: 836.500 Trig: Free Run		Radio Std: No	one	
		Atten: 36 dB		Radio Device	: BTS	
10 dB/div Ref 40.00 dBr	n					
Log						
30.0						
20.0						Clear Write
10.0	function		and the second sec			
	/		l N			
0.00						
-10.0	\sim					Average
-20.0 martin martin martin	···		- www	monton	Den Area	
-30.0					Conta Material	
-40.0						Maylad
-50.0						Max Hold
-50.0						
Center 836.500 MHz				Span 7.5	00 MHz	
Res BW 68 kHz		#VBW 220 k	Hz	Sweep		Min Hold
						Minitiona
Occupied Bandwidt	th	Total P	ower 33	.0 dBm		
2	7276 MHz					Detector
Z.						Peak►
Transmit Freq Error	-1.579 kH	z % of O	3W Power 9	99.00 %	AL	ito <u>Man</u>
	0.000 1411					
x dB Bandwidth	3.020 MH	z xdB	-2	6.00 dB		
MSG			STAT	rus		
			0.11			

Plot 7-23. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 16-QAM - Full RB Configuration)



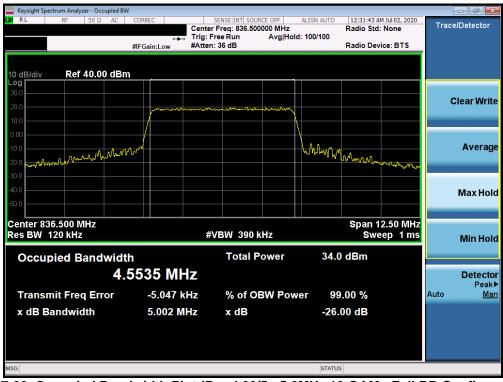
Plot 7-24. Occupied Bandwidth Plot (Band 26/5 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 04 af 000		
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Keysight Spectrum Analyzer - Occupied BW							×
XV RL RF 50Ω AC	CORREC	SENSE:INT SOURC		AUTO 12:29:18 Radio St	AM Jul 02, 2020 d: None	Trace/Detecto	or
		Totas Francis Barrow	Avg Hold: 100		vice: BTS		
	#IFGain:Low	#Atten: 36 dB		Radio De	VICE: DIS		
10 dB/div Ref 40.00 dBm							
30.0						Clear W	luit .
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-			Clearw	ritte
10.0			h				-
0.00							
-10.0				- Martin Marine		Aver	ag
-20.0 Anthe Ampres -20.0				- marken hand	mm		
30.0							
-40.0						Max H	lol
-50.0							
Center 836.500 MHz				Snan	12.50 MHz		
Res BW 120 kHz		#VBW 390 kl	Hz		eep 1 ms	Min H	lol
Occupied Bandwidt		Total Po	ower	34.3 dBm			
4.	5436 MH	z				Detec	
Transmit Freq Error	-3.851 k	Hz % of OB	W Power	99.00 %			eak Ma
x dB Bandwidth	5.006 M			-26.00 dB		-	
	5.000 M			-20.00 dB			
ISG				074710			
50				STATUS			

Plot 7-25. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-26. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 af 000			
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🔤 Keysight Spectrum Analyzer - Occupied BW						
LXI RE 50 Ω AC	CORREC	SENSE:INT SOURCE OFF		12:35:33 AM Ju		Trace/Detector
		nter Freq: 836.500000 Mi g: Free Run Avg	⊓z Hold: 100/100	Radio Std: No	ne	
		tten: 36 dB		Radio Device:	BTS	
10 dB/div Ref 40.00 dBm						
30.0						
20.0						Clear Write
10.0			~~~			
	1		\mathbf{N}			
0.00						
-10.0 -20.0	her		marina	burning		Average
-20.0 ch m harman m v v				and ready and	holm.	
-30.0					- W PWZ	
-40.0						Max Hold
-50.0						Max Hold
-30.0						
Center 836.500 MHz				Span 12.5	0 MHz	
Res BW 120 kHz		#VBW 390 kHz		Sweep		Min Hold
						Militiona
Occupied Bandwidt	h	Total Power	r 33.0	dBm		
4	5507 MHz					Detector
						Peak►
Transmit Freq Error	-3.848 kHz	% of OBW P	ower 99	.00 %	Au	to <u>Man</u>
x dB Bandwidth	5.203 MHz	x dB	26 (00 dB		
	5.205 MHZ	Xub	-20.0	JU UB		
MSG			STATUS			

Plot 7-27. Occupied Bandwidth Plot (Band 26/5 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-28. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 at 000		
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Keysight Spectrum Analyzer - Occupied BW	V				
KL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF		3:24 PM Jul 01, 2020	Trace/Detector
		er Freq: 836.500000 MHz Free Run Avg Ho	Radi Id: 100/100	o Std: None	
		n: 36 dB		o Device: BTS	
10 dB/div Ref 40.00 dBn Log					
30.0					
20.0					Clear Write
	for the second second second	manderation			
10.0					
0.00			4		
-10.0					Average
-20.0 multon and marine	·••·		www.w.d.lama	will full two on a	
-30.0				1	
-40.0					Max Hold
-50.0					
Center 836.50 MHz			- Cn	an 25.00 MHz	
Res BW 240 kHz	4	≠VBW 750 kHz		Sweep 1 ms	
Res BW 240 KH2	,	FVDVV 7 JO KHZ		Sweep This	Min Hold
Occupied Bandwidt	h	Total Power	33.2 dBr	n	
			o one dibr		
9.	0473 MHz				Detector
	540 U		00.00		Peak▶ Auto Man
Transmit Freq Error	519 Hz	% of OBW Pov	ver 99.00 9	/o	Auto <u>Man</u>
x dB Bandwidth	10.11 MHz	x dB	-26.00 d	В	
MSG			STATUS		

Plot 7-29. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 16-QAM - Full RB Configuration)

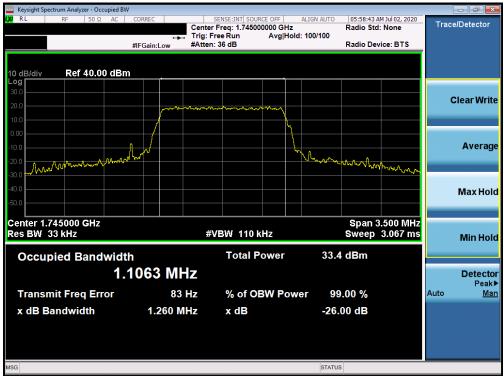


Plot 7-30. Occupied Bandwidth Plot (Band 26/5 - 10.0MHz 64-QAM - Full RB Configuration)

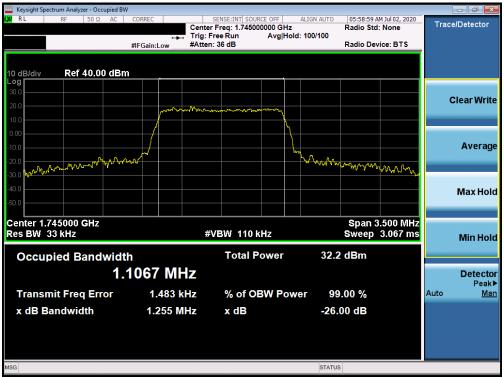
FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 04 af 000		
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Band 66/4



Plot 7-31. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-32. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 25 of 200
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Plot 7-33. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)



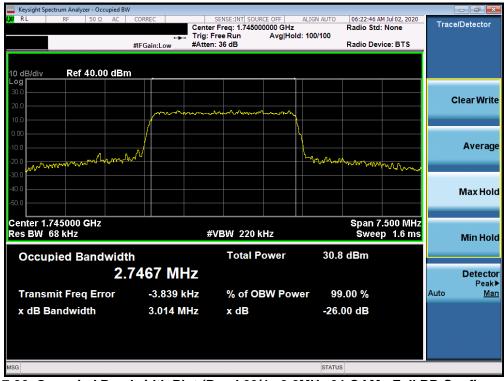
Plot 7-34. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 36 of 389
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Keysight Spectrum Analyzer - Occupied BW									
XX RL RF 50Ω AC CC	ORREC		SE:INT SOUR		ALIGN AUTO	06:22:36 A Radio Std	M Jul 02, 2020	Trace	e/Detector
	- -	Trig: Free	Run		d: 100/100				
#I	Gain:Low	#Atten: 36	dB			Radio Dev	lice: BTS		
10 dB/div Ref 40.00 dBm Log									
30.0									
20.0								Ċ	Clear Write
10.0	mont	mar Maralla	~						
0.00	/				\				
-10.0									Average
-20,0 NA Nava Amar	4				W manuf	Mmm			J
-20.0 monor Alla and and and and and and and and and an					<u> </u>		Monorpo		
-40.0									
-50.0									Max Hold
Center 1.745000 GHz							.500 MHz		
ResBW 68 kHz		#VB	W 220 k	Hz		Swee	p 1.6 ms		Min Hold
Occupied Bandwidth			Total P	ower	31	9 dBm			
			1 Ottal 1		51.				
2.72	268 MH	Z							Detector Peak▶
Transmit Freq Error	-1.920 kl	Hz	% of OE	BW Pow	ver 9	9.00 %		Auto	Man
x dB Bandwidth	3.034 MI	Hz	x dB		-26	.00 dB			
MSG					STATU	s			

Plot 7-35. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-36. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dama 07 of 000			
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Keysight Spectrum Analyzer - Occupied BW							di 🗙
KM RL RF 50Ω AC	CORREC	SENSE:INT SOUR Center Freg: 1.74500		AUTO 06:36:18 AM Radio Std:	1 Jul 02, 2020	Trace/D	etector
		Trig: Free Run	Avg Hold: 100/		None		
	#IFGain:Low	#Atten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 40.00 dBm							
Log							
30.0						010	ar Write
20.0	mananan	www.www.www.	sherrow and			Cie	ar write
10.0							
0.00			<u> </u>				
-10.0	{						Average
-20.0 portal and a man man month and	V		wh	home and			weruge
				handdowynarany	MMMALIA		
-30.0							
-40.0						N	lax Hold
-50.0							
Center 1.745000 GHz					2.50 MHz		
Res BW 120 kHz		#VBW 390 k	(HZ	swe	ep 1 ms	N	/lin Hold
Occupied Bandwidt	•	Total P	ower	33.0 dBm			
				oolo abiii			
4.5	5347 MHz	2				[Detector
Transmit Frag Emer	-202 H	- % of O	BW Power	99.00 %		Auto	Peak▶ Man
Transmit Freq Error			BW Fower			Adio	ivian
x dB Bandwidth	4.989 MH	z xdB		-26.00 dB			
				074710			
MSG				STATUS			

Plot 7-37. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



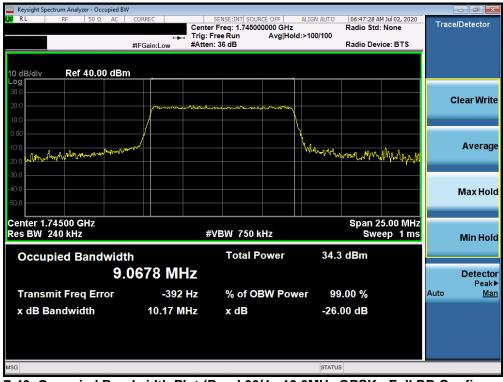
Plot 7-38. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 at 000			
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Image: Ward of the second	ctor
Trig: Free Run Avg Hold: 100/100	
In Gameen and a second se	
10 dB/div Ref 30.00 dBm	
10.0 Clear	Write
200 approximation Av	
200 Landon and the second seco	erage
-30.0	
-40.0	
-50.0	Hold
-60.0	noiu
Center 1.745000 GHz Span 12.50 MHz	
Res BW 120 kHz #VBW 390 kHz Sweep 1 ms	Hold
	nona
Occupied Bandwidth Total Power 31.6 dBm	
4.5435 MHz	tector
	Peak▶
Transmit Freq Error -544 Hz % of OBW Power 99.00 % Auto	Man
x dB Bandwidth 4.979 MHz x dB -26.00 dB	
MSG STATUS	

Plot 7-39. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-40. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 at 000			
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Keysight Spectrum Analyzer - Occupied B\	V				- ē ×
LX1 RE 50 Ω AC		SENSE:INT SOURCE OFF	Radio Sto	AM Jul 02, 2020 1: None	Trace/Detector
	#IFGain:Low #Atter	n:36 dB Avg Ho	ld: 100/100 Radio De	vice: BTS	
10 dB/div Ref 40.00 dBr	n				
Log 30.0					
20.0					Clear Write
10.0	mannel	and a second sec			
0.00	/		l l		
-10.0					Average
-20.0 monor harring long the work	W/m		When the second second	mal she sh	
-30.0				1.111100.0	
-40.0					Max Hold
-50.0					Maxilola
Center 1.74500 GHz Res BW 240 kHz	#	VBW 750 kHz		25.00 MHz eep 1 ms	
	"			сер тпіз	Min Hold
Occupied Bandwidt	h	Total Power	32.6 dBm		
9.	0507 MHz				Detector
					Peak►
Transmit Freq Error	-11.878 kHz	% of OBW Pov			Auto <u>Man</u>
x dB Bandwidth	10.24 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-41. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)



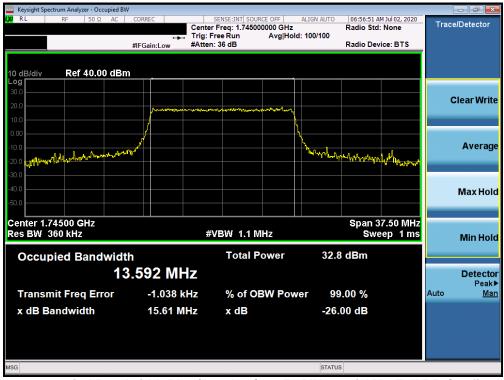
Plot 7-42. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dama 40 at 200			
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Plot 7-43. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



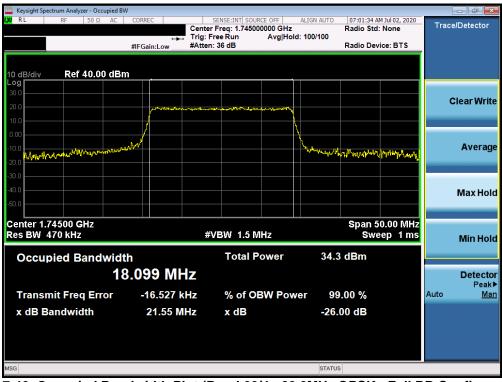
Plot 7-44. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dama 44 af 000			
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Keysight Spectrum Analyzer - Occupied E	3W				
KI RE 50 Ω AC		SENSE:INT SOURCE OFF		2 AM Jul 02, 2020	Trace/Detector
		r Freq: 1.745000000 GHz Free Run Avg Hol	Radio S Id: 100/100	td: None	
		: 36 dB		evice: BTS	
10 dB/div Ref 40.00 dB Log	<u> </u>				
30.0					
20.0					Clear Write
	Contraction of the second second	lander the second and			
10.0					
0.00	/		<u>\</u>		
-10.0	huder		Math No. 1		Average
-10.0 -20.0 min Why be with a month of the			Maluer margine for the staffer	MINN WIND	
-30.0					
-40.0					Max Hold
-50.0					
				07.50 8411-	
Center 1.74500 GHz Res BW 360 kHz	-44	VBW 1.1 MHz		37.50 MHz veep 1 ms	
Res BW 300 KHZ	#		51	veep 1 ms	Min Hold
Occupied Bandwid	th	Total Power	32.1 dBm		
		Fottal Fower	52. F GDIII		
1	3.605 MHz				Detector
	5 070 1 1				Peak
Transmit Freq Error	-5.372 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Mar</u>
x dB Bandwidth	15.45 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-45. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)



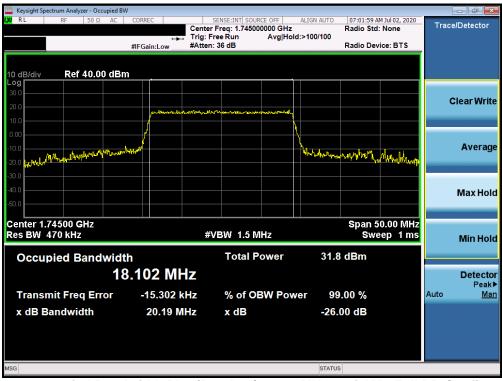
Plot 7-46. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:	Dama 40 af 200			
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Keysight Spectrum Analyzer - Occupied BW							- 6
X/RL RF 50Ω AC C	CORREC	SENSE:INT SOURCE OFF	ALIGN AUTO	07:01:48 AM	1 Jul 02, 2020	Trace	/Detector
			12 Hold: 100/100	Radio Sta:	None		
#	IFGain:Low #At	tten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 40.00 dBm							
Log							
30.0						~	lear Write
20.0	Materia	adysic farmer and the for the	*~~			Ľ	icai wiiic
10.0							
0.00	/		<u> </u>				
-10.0	,f		<u> </u>				Average
-10.0 -20.0 millionarith for hour with the second second	- ²⁴		Mary of the work	WHALLAND	Hold March 1 100 1		
					- V - Q 10 Q-		
-30.0							
-40.0							Max Hold
-50.0							
Center 1.74500 GHz				Cnon F			
Res BW 470 kHz		#VBW 1.5 MHz			0.00 MHz ep 1 ms		
Res BW 410 RHZ				OWC	ертпіз		Min Hold
Occupied Bandwidth		Total Power	32.6	i dBm			
18.	085 MHz						Detector Peak▶
Transmit Freq Error	-11.884 kHz	% of OBW P	ower 99	.00 %		Auto	Peak ₽ <u>Man</u>
x dB Bandwidth	20.45 MHz	x dB	26	00 dB			
	20.45 10112	хub	-20.	00 UB			
MSG			STATUS	3			

Plot 7-47. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)

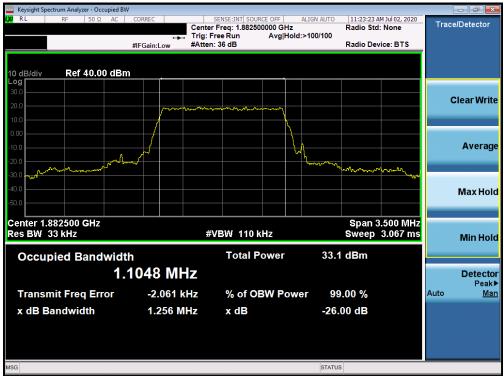


Plot 7-48. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	D 40 (000	
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Band 25/2



Plot 7-49. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-50. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 44 of 200
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Plot 7-51. Occupied Bandwidth Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-52. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dawa 45 at 200
1C2004270030-03.BCG	07/16/2020 - 09/08/2020	Tablet Device	Page 45 of 389
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Keysight Spectrum Analyzer - Occupied BW					
LXVI RL RF 50Ω AC	+++ Trig		Hz Radio Hold: 100/100	5:19 AM Jul 02, 2020 Std: None	Trace/Detector
	#IFGain:Low #At	ten: 36 dB	Radio	Device: BTS	
10 dB/div Ref 30.00 dBm	<u> </u>				
20.0		Non to and - Anno			Clear Write
10.0					Clear write
-10.0					
-20.0	\mathcal{M}		Mar Marine Marin	m hand mar	Average
-36.6				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
-40.0					
-60.0					Max Hold
Center 1.882500 GHz			Spa	an 7.500 MHz	
Res BW 68 kHz		#VBW 220 kHz		weep 1.6 ms	Min Hold
Occupied Bandwidt	h	Total Power	31.3 dBn	า	
2.7	7196 MHz				Detector Peak▶
Transmit Freq Error	823 Hz	% of OBW P	ower 99.00 %	6	Auto <u>Man</u>
x dB Bandwidth	2.995 MHz	x dB	-26.00 di	3	
MSG			STATUS		

Plot 7-53. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)



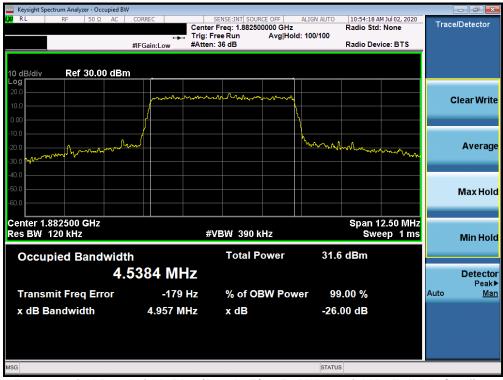
Plot 7-54. Occupied Bandwidth Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	D 40 4000	
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Keysight Spectrum Analyzer - Occupied BW					
LX/RL RF 50Ω AC	CORREC Cen	SENSE:INT SOURCE OFF ter Freg: 1.882500000 GHz		AM Jul 02, 2020	Trace/Detector
		:FreeRun Avg Ho en:36 dB	ld: 100/100 Radio De	evice: BTS	
	#IFGain:Low #Att		Kadio Br	EVICE. DTS	
10 dB/div Ref 30.00 dBm					
Log					
20.0	por monormour on	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Clear Write
10.0					
0.00					
-10.0 -20.0	1		marker		_
-20.0 min My What have a			with the second	مرا ^{مر} سرسر سر	Average
-30.0					
-40.0					
-50.0					Max Hold
-60.0					
Center 1.882500 GHz			Snan	12.50 MHz	
Res BW 120 kHz		#VBW 390 kHz		/eep 1 ms	Min Hold
		Total Power	33.7 dBm		
Occupied Bandwidth		rotar Power	33.7 UBM		
4.5	5638 MHz				Detector
Transmit Freq Error	10.327 kHz	% of OBW Pov	wer 99.00 %		Peak▶ Auto <u>Man</u>
x dB Bandwidth	5.013 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-55. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



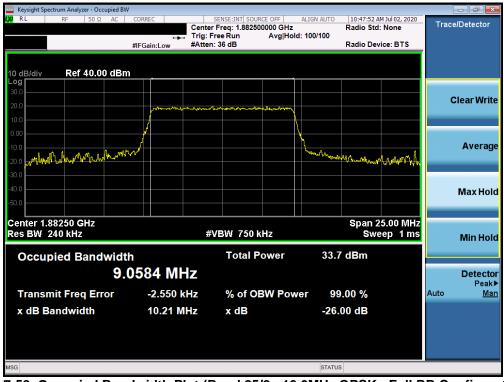
Plot 7-56. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dana 47 af 000
1C2004270030-03.BCG	07/16/2020 - 09/08/2020	Tablet Device	Page 47 of 389
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Keysight Spectrum Analyzer - Occupied B	W				
LXI RL RF 50 Ω AC	CORREC	SENSE:INT SOURCE OFF		M Jul 02, 2020	Trace/Detector
	++- Trig:	Free Run Avg Hol	d: 100/100		
	#IFGain:Low #Atte	en: 36 dB	Radio Dev	vice: BTS	
10 dB/div Ref 30.00 dB	m				
20.0					
10.0	manner	veron how monthly			Clear Write
0.00					
-10.0					
-10.0	~~		Mr. M. Andrew		Average
-20.0			· Curil and Buddy hallow	romanin	Average
-30.0					
-40.0					
-50.0					Max Hold
-60.0					
Center 1.882500 GHz				2.50 MHz	
Res BW 120 kHz		#VBW 390 kHz		eep 1 ms	
					Min Hold
Occupied Bandwid	th	Total Power	30.7 dBm		
4	.5349 MHz				Detector
					Peak►
Transmit Freq Error	-641 Hz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	4.980 MHz	x dB	-26.00 dB		
N90			074710		
MSG			STATUS		

Plot 7-57. Occupied Bandwidth Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-58. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	D 40 (000	
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Keysight Spectrum Analyzer - Occupied BW	1						- 6 🗙
LXX RL RF 50Ω AC		SENSE:INT SOURCE OFF r Freq: 1.882500000 GHz Free Run Avg Ho	ALIGN AUTO	10:48:11 A Radio Std:	M Jul 02, 2020 None	Trace/	Detector
	#IFGain:Low #Atter	n: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm	1						
Log 30.0							
20.0						C	ear Write
10.0	and all and the second	manalation of the manager of the					
0.00			\				
-10.0	/		<u>к</u> - Қ				Average
-20.0 morenny holy March March March	<u>,</u> ^		Volution	mounth	nether at the se		
-30.0					a monenenenenen		
-40.0							Max Hold
-50.0							
Center 1.88250 GHz				Span 2	5.00 MHz		
Res BW 240 kHz	#	VBW 750 kHz			ep 1ms		Min Hold
Occupied Bandwidt	h	Total Power	31.9) dBm			
	0486 MHz						Detector
							Peak▶
Transmit Freq Error	5.118 kHz	% of OBW Pov	ver 99	0.00 %		Auto	Man
x dB Bandwidth	10.20 MHz	x dB	-26.	00 dB			
MSG			STATUS	5			

Plot 7-59. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)



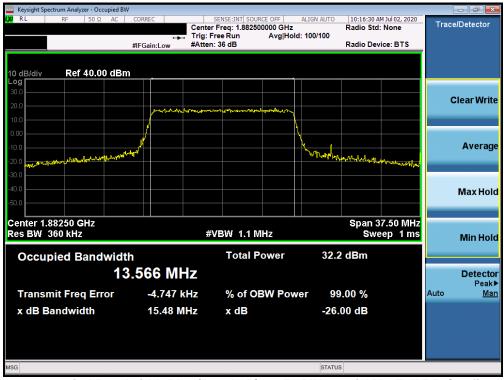
Plot 7-60. Occupied Bandwidth Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	D 40 (000	
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Plot 7-61. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-62. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 50 at 200	
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Plot 7-63. Occupied Bandwidth Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-64. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 54 af 200
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Keysight Spectrum Analyzer - Occupied BV	V				
LXX RL RF 50Ω AC		SENSE:INT SOURCE OFF	ALIGN AUTO 10:09:36 Radio S	AM Jul 02, 2020	Trace/Detector
			Id: 100/100	a: None	
		: 36 dB		evice: BTS	
10 dB/div Ref 40.00 dBn	n				
Log					
30.0					
20.0	- Mileson homeson home	monorthand			Clear Write
10.0					
0.00	/		<u>۲</u>		
-10.0	<i>x</i>		.		Average
1 to an adam that about the	140 ¹⁰		www.Williamonalechiller	holen at al	Average
-20.0					
-30.0					
-40.0					Max Hold
-50.0					
Center 1.88250 GHz				50.00 MHz	
Res BW 470 kHz	#\	VBW 1.5 MHz	SV	veep 1ms	Min Hold
Occupied Rendwidt	h	Total Power	32.9 dBm		
Occupied Bandwidt		rotarrower	52.9 UBIII		
18	3.045 MHz				Detector
Tana a sasit Fara a Fara a	C C C D 1-11-		00.00.0/		Peak▶ Auto Man
Transmit Freq Error	-6.652 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	19.94 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-65. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-66. Occupied Bandwidth Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

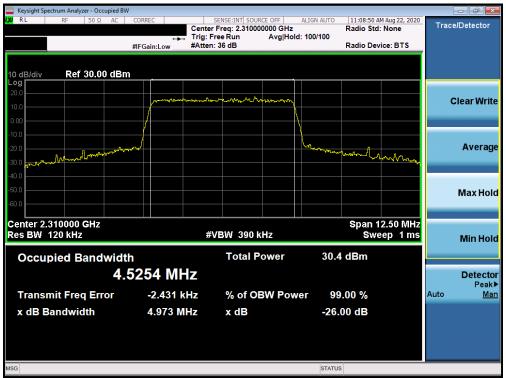
FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 50 af 200
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Band 30



Plot 7-67. Occupied Bandwidth Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-68. Occupied Bandwidth Plot (Band 30 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 52 of 200
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🧫 Keysight Spectrum Analyzer - Occupied BW					- 6 -
LXI RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF		08:32 AM Aug 22, 2020	Trace/Detector
	Trig	g: Free Run Avg H	lold: 100/100		
	#IFGain:Low #At	ten: 36 dB	Rad	io Device: BTS	
10 dB/div Ref 30.00 dBm	· · · · · · · · · · · · · · · · · · ·		-		
20.0					
10.0		·····	γ		Clear Write
0.00	/		<u> </u>		
-10.0					
-20.0	เกิง		Malala	0	Average
-30.0 Junion Anton Surtend	<u> </u>		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	manhaman	
-40.0					
-50.0					
-60.0					Max Hold
-50.0					
Center 2.310000 GHz			S	oan 12.50 MHz	
Res BW 120 kHz		#VBW 390 kHz		Sweep 1 ms	Min Hold
	-	Total Power	29.1 dB	m	
Occupied Bandwidt		Total Fower	29.1 00		
4.9	5347 MHz				Detector
Transmit Freq Error	-3.923 kHz	% of OBW Po	ower 99.00	%	Peak▶ Auto Man
x dB Bandwidth	4.984 MHz	x dB	-26.00 c	В	
MSG			STATUS		

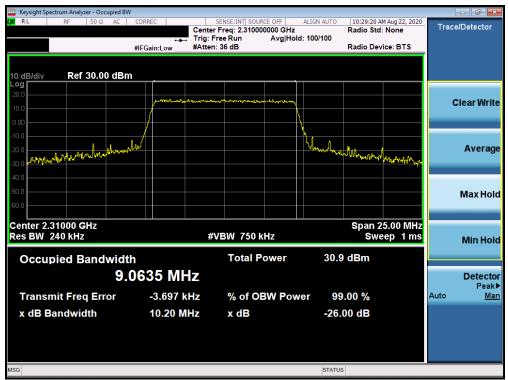
Plot 7-69. Occupied Bandwidth Plot (Band 30 - 5.0MHz 64-QAM - Full RB Configuration)



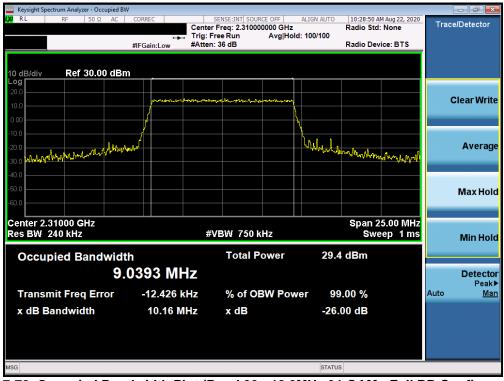
Plot 7-70. Occupied Bandwidth Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 54 of 200
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Plot 7-71. Occupied Bandwidth Plot (Band 30 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-72. Occupied Bandwidth Plot (Band 30 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 55 af 200
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Band 7



Plot 7-73. Occupied Bandwidth Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-74. Occupied Bandwidth Plot (Band 7 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 56 of 280
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Plot 7-75. Occupied Bandwidth Plot (Band 7 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-76. Occupied Bandwidth Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 57 of 202
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Keysight Spectrum Analyzer - Occupied BW					
XX RL RF 50Ω AC	CORREC	SENSE:INT SOURCE OFF		01:53:14 PM Jul 02, 2020 adio Std: None	Trace/Detector
			Hold: 100/100	adio Sta: None	
#	#FGain:Low #At	ten: 36 dB	Ra	adio Device: BTS	
10 dB/div Ref 40.00 dBm					
Log					
30.0					Clear Write
20.0	AT Mark Marken Marken	warden and many and should be a fearly	~		Clear Wille
10.0					
0.00	_/		<u>\</u>		
-10.0	M I		<u>ا</u>		Average
a second as well as	V		monorm	Auge miles	
Child Phylle And Least				and the start of the start of the	
-30.0					
-40.0					Max Hold
-50.0					
				Data 25 00 Mills	
Center 2.53500 GHz Res BW 240 kHz		#VBW 750 kHz		Span 25.00 MHz Sweep 1 ms	
Res BW 240 KHz		#VDVV / JUKIZ		Sweep This	Min Hold
Occupied Bandwidth		Total Power	31.9 d	Bm	
9.0	386 MHz				Detector Peak▶
Transmit Freq Error	-1.334 kHz	% of OBW P	ower 99.00	0 %	Auto <u>Man</u>
	40.47 MU-	v dD	26.00	dD	
x dB Bandwidth	10.17 MHz	x dB	-26.00	ab	
MSG			STATUS		

Plot 7-77. Occupied Bandwidth Plot (Band 7 - 10.0MHz 16-QAM - Full RB Configuration)



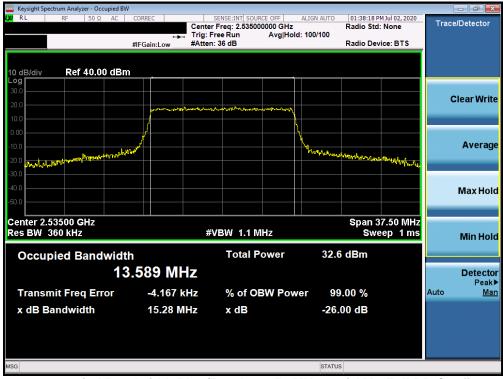
Plot 7-78. Occupied Bandwidth Plot (Band 7 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dana 50 at 200	
1C2004270030-03.BCG	07/16/2020 - 09/08/2020	Tablet Device	Page 58 of 389	
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Plot 7-79. Occupied Bandwidth Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)



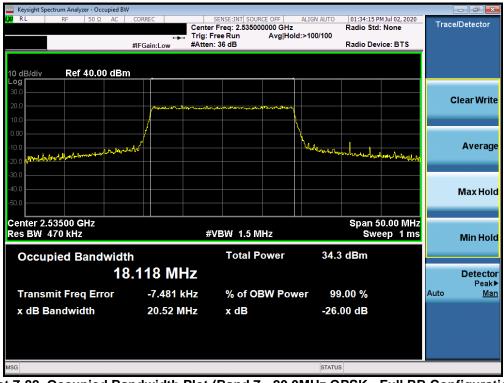
Plot 7-80. Occupied Bandwidth Plot (Band 7 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 50 at 200	
1C2004270030-03.BCG	07/16/2020 - 09/08/2020	Tablet Device	Page 59 of 389	
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Plot 7-81. Occupied Bandwidth Plot (Band 7 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-82. Occupied Bandwidth Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 60 at 000	
1C2004270030-03.BCG	07/16/2020 - 09/08/2020	Tablet Device	Page 60 of 389	
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Keysight Spectrum Analyzer - Occupied B	W				
LXI RL RF 50 Ω AC	CORREC	SENSE:INT SOURCE OFF		M Jul 02, 2020	Trace/Detector
			Id: 100/100	. None	
	#IFGain:Low #Atte	n: 36 dB	Radio Dev	vice: BTS	
10 dB/div Ref 40.00 dB	m				
Log					
30.0					Clear Write
20.0	المرجومة والالبان ويواسيه وال	warman and an and a start of the start of th			
10.0					
0.00			¥.		
-10.0			<u> </u>		Average
-20.0 North Marting Marting Marting Marting	wher ^{it}		"Way of the and the second of the	Autor Land	J
-20.0 Nilphora Marghal Ale Marghal Marghal - 30.0				an naterity that	
-40.0					Max Hold
-50.0					
Center 2.53500 GHz			Snan /	50.00 MHz	
Res BW 470 kHz	2	≠VBW 1.5 MHz		eep 1 ms	
	"				Min Hold
Occupied Bandwid	th	Total Power	32.4 dBm		
	8.062 MHz				Detector
					Detector Peak▶
Transmit Freq Error	-22.372 kHz	% of OBW Pov	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	20.16 MHz	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-83. Occupied Bandwidth Plot (Band 7 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-84. Occupied Bandwidth Plot (Band 7 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 64 af 000	
1C2004270030-03.BCG	07/16/2020 - 09/08/2020	Tablet Device	Page 61 of 389	
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Band 41



Plot 7-85. Occupied Bandwidth Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)



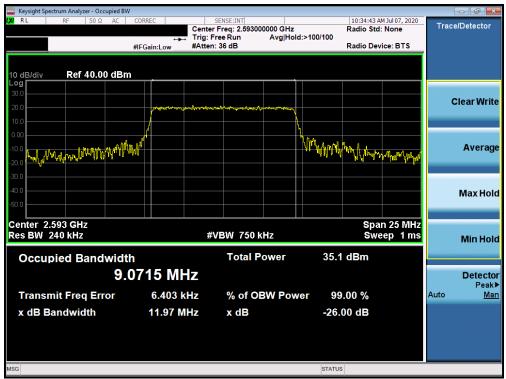
Plot 7-86. Occupied Bandwidth Plot (Band 41 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 62 of 200
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Keysight Spectrum Analyzer - Occupied BW	1						
XX RL RF 50Ω AC	CORREC	SENSE:INT	0000 GHz	10:40:59 AM Radio Std:	1 Jul 07, 2020	Trace	/Detector
	1	Trig: Free Run	Avg Hold: 100/	/100			
	#IFGain:Low #	Atten: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 40.00 dBm	n j						
30.0							
						c	lear Write
20.0	man	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m				
10.0							
0.00							
-10.0	₩₽		1. Mari	America Am			Average
-10.0 -20.0 mmm MMM MMMMMMMMMMMMMMMMMMMMMMMMMMMM				Mm Marson and	m top 1		
-30.0							
-40.0							Max Hold
-50.0							Maxilola
Center 2.593 GHz					2.5 MHz		
Res BW 120 kHz		#VBW 390 k	Hz	Swe	ep 1 ms		Min Hold
Occupied Bandwidt	h	Total P	ower	33.2 dBm		_	
4.9	5547 MHz	4					Detector Peak▶
Transmit Freq Error	-9.566 kH	z % of OE	3W Power	99.00 %		Auto	reak ₽ <u>Man</u>
x dB Bandwidth	5.634 MH	z xdB		-26.00 dB			
	5.034 WH	2 X UB		-20.00 aB			
MSG				STATUS			

Plot 7-87. Occupied Bandwidth Plot (Band 41 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-88. Occupied Bandwidth Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	POTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 60 af 800	
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Plot 7-89. Occupied Bandwidth Plot (Band 41 - 10.0MHz 16-QAM - Full RB Configuration)



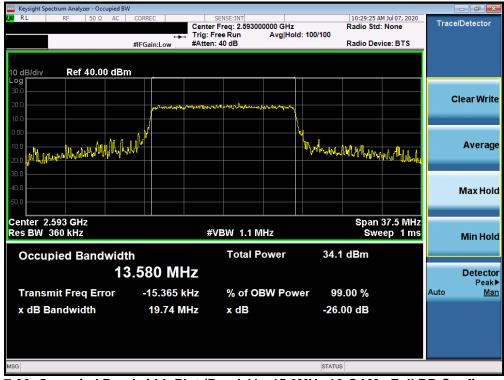
Plot 7-90. Occupied Bandwidth Plot (Band 41 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 64 at 200	
1C2004270030-03.BCG	07/16/2020 - 09/08/2020	Tablet Device	Page 64 of 389	
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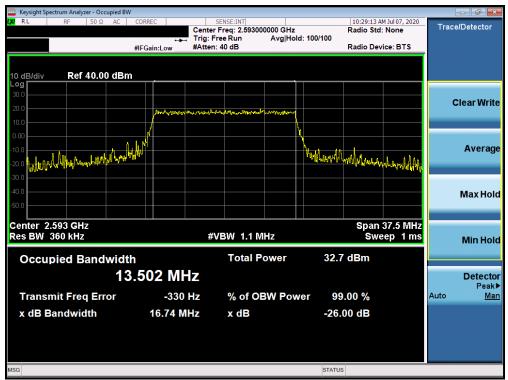
Plot 7-91. Occupied Bandwidth Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)



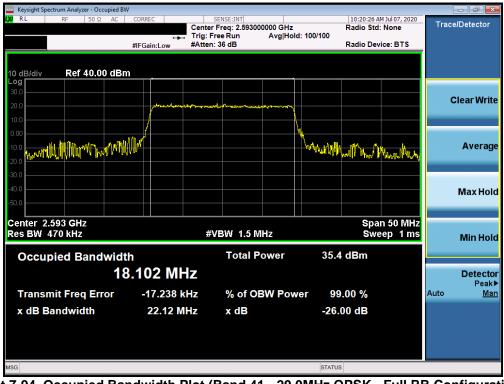
Plot 7-92. Occupied Bandwidth Plot (Band 41 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: BCGA2072	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 05 af 000	
1C2004270030-03.BCG	07/16/2020 - 09/08/2020	Tablet Device	Page 65 of 389	
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Plot 7-93. Occupied Bandwidth Plot (Band 41 - 15.0MHz 64-QAM - Full RB Configuration)



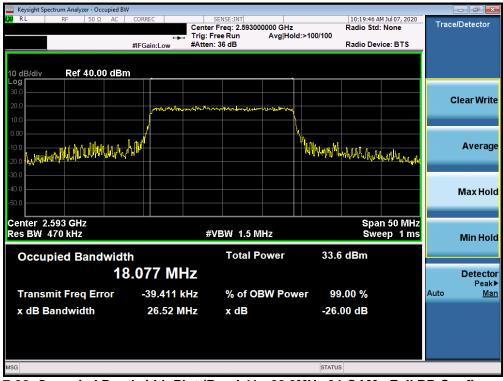
Plot 7-94. Occupied Bandwidth Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 af 000	
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Keysight Spectrum Analyzer - Occupied BW					
	Trig: I	SENSE:INT r Freq: 2.593000000 GHz Free Run Avg Ho n: 36 dB	R Id: 100/100	10:20:07 AM Jul 07, 2020 adio Std: None adio Device: BTS	Trace/Detector
	Firealli.cow #/ teel			dulo Devide. Dito	
10 dB/div Ref 40.00 dBm					
30.0					
20.0	NN Warden termine	eren and the second second			Clear Write
10.0					
0.00	fk /		المراطرية	11. n mb	
-10.0 -20.0 MALOWALLANDAR MAN	<mark>ep</mark> .		a shara alfalla	home the state of	Average
-20.0					
-40.0					Max Hold
-50.0					Max Hold
Center 2.593 GHz				Cnon 50 MHz	
Res BW 470 kHz	#	VBW 1.5 MHz		Span 50 MHz Sweep 1 ms	Min Hold
Occurried Develoyidth		Total Power	34.6 d	Pm	MITTOIL
Occupied Bandwidth		TOTALEOWEI	54.0 u	ып	
18.	101 MHz				Detector Peak▶
Transmit Freq Error	-9.672 kHz	% of OBW Pov	wer 99.0	0 %	Auto <u>Man</u>
x dB Bandwidth	25.87 MHz	x dB	-26.00	dB	
MSG			STATUS		

Plot 7-95. Occupied Bandwidth Plot (Band 41 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-96. Occupied Bandwidth Plot (Band 41 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dama 07 af 000	
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7.3 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration.

The minimum permissible attenuation level of any spurious emission is $43 + 10 \log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

For Band 30, the minimum permissible attenuation level of any spurious emission <2288MHz and >2365MHz is 70 + 10 log10(P[Watts]).

For Band 7 and 41, the minimum permissible attenuation level of any spurious emission is $55 + 10 \log_{10}(P_{[Watts]})$.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

Test Settings

- 1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

- 1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
- 2. All ports were tested and only the worst case data were reported.
- 3. Following data were re-used from model A2324 per Data Re-use KDB guidance defined by the FCC.

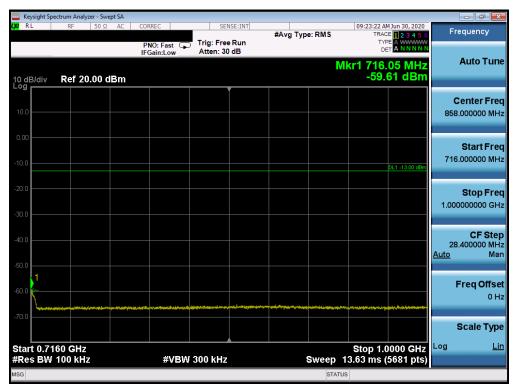
FCC ID: BCGA2072	POLICE ST°	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 69 of 200
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Band 12/17

🔤 Keysight Spectrum Ana	lyzer - Swept SA					
LXURL RF	50 Ω AC	CORREC	Trig: Free Run	#Avg Type: RMS	09:21:24 AM Jun 30, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Ref 2	0.00 dBm	IFGain:Low	Atten: 30 dB	Μ	lkr1 696.90 MHz -51.15 dBm	Auto Tune
10.0						Center Fred 363.950000 MHz
-10.0					DL1 -13.00 dBm	Start Free 30.000000 MH:
-20.0						Stop Free 697.900000 MH
-40.0					1	CF Stej 66.790000 MH <u>Auto</u> Ma
60.0		for coming the second states		an a		Freq Offse 0 H
-70.0						Scale Type
Start 30.0 MHz #Res BW 100 kH	Iz	#VBW	/ 300 kHz	Sweep 3	Stop 697.9 MHz 2.06 ms (13359 pts)	
MSG				STATU	IS	

Plot 7-97. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-98. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: BCGA2072	PCTEST° Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage CO of 200
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	ght Spect	rum Analy.	zer - Swej	pt SA										
L <mark>XI</mark> RL		RF	50 Ω	AC	CORREC		SE	NSE:INT	#Avg Type	RMS	TRAC	M Jun 30, 2020 E 1 2 3 4 5 6	Fr	equency
					PNO: F IFGain:	ast 🖵 .ow	#Atten: 3							A
10 dB/e	div	Ref 0.	00 dB	m						Mł	r1 9.97 -43.	4 5 GHz 08 dBm		Auto Tune
								Ĭ						enter Freq
-10.0												DL1 -13.00 dBm	5.500	0000000 GHz
-20.0 —														Start Freq
-30.0													1.000	0000000 GHz
												1.		
-40.0				, ma			~~~	-					10.000	Stop Freq
-50.0	مغور بيني معرفي م													
-60.0													900	CF Step
-70.0													<u>Auto</u>	Man
													-	Freq Offset
-80.0														0 Hz
-90.0														Scale Type
											8 4 40		Log	Lin
Start #Res			z		-	≠vbw	3.0 MHz		S	weep 15	.60 ms (1	.000 GHz 8001 pts)	109	
MSG										STATUS				

Plot 7-99. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



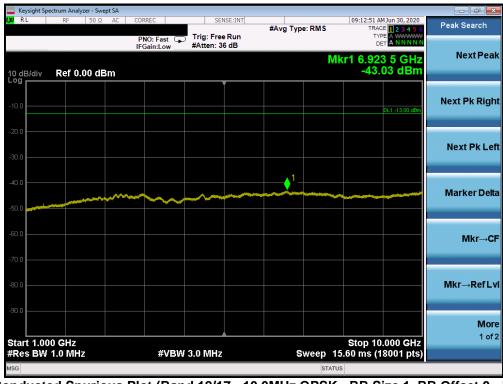
Plot 7-100. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2072	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 70 of 000
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	Spectrum Analyzer -									
L <mark>XI</mark> RL	RF 50	Ω AC	CORREC	SEN	SE:INT	#Avg Type	e: RMS		1 Jun 30, 2020 E 1 2 3 4 5 6	Frequency
10 dB/div	 Ref 20.00) dBm	PNO: Fast IFGain:Low	Trig: Free Atten: 30				TYF DE kr1 716.		Auto Tune
10.0										Center Freq 858.000000 MHz
-10.0									DL1 -13.00 dBm	Start Freq 716.000000 MHz
-20.0										Stop Freq 1.000000000 GHz
-40.0										CF Step 28.400000 MHz <u>Auto</u> Man
-60.0	ىرىنى بىرىنى		gester gran and star on prov	agan mili angan terse yang terse alka	Transing Ling Amily & Marcela	seesen tij sie oor at stype	9649-1979-0-1212-1-4999)*14.0	Yelangelitango pana tenggangkepte	nanudika kanaturikita	Freq Offset 0 Hz
										Scale Type
	7160 GHz W 100 kHz		#VBW	300 kHz		;	Sweep 1	Stop 1.0 3.63 ms (000 GHz 5681 pts)	Log <u>Lin</u>
MSG							STATUS	3		

Plot 7-101. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



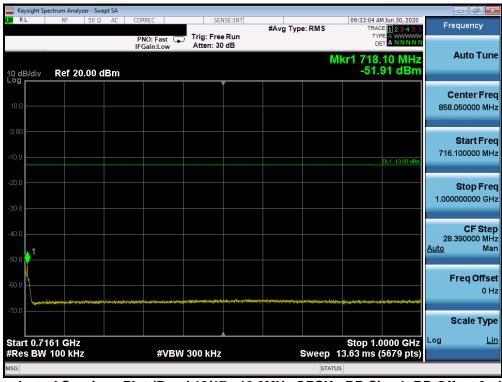
Plot 7-102. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:	Dama 74 af 000				
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	ectrum Analyzer - Swept SA					
LXU RL	RF 50 Ω AC	CORREC	SENSE:INT	#Avg Type: RMS	09:32:27 AM Jun 30, 2020 TRACE 1 2 3 4 5 6	Frequency
10 dB/div	Ref 20.00 dBm		Trig: Free Run Atten: 30 dB		Ikr1 696.90 MHz -62.23 dBm	Auto Tune
10.0						Center Freq 364.000000 MHz
-10.0					DL1 -13.00 dBm	Start Freq 30.000000 MHz
-20.0						Stop Freq 698.000000 MHz
-40.0						CF Step 66.800000 MHz <u>Auto</u> Man
-60.0				en anderen with the first of the second second	1	Freq Offset 0 Hz
						Scale Type
Start 30.0 #Res BW		#VBW 3	00 kHz	Sweep 3	Stop 698.0 MHz 32.06 ms (13361 pts)	Log <u>Lin</u>
MSG				STAT	US	

Plot 7-103. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-104. Conducted Spurious Plot (Band 12/17 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2072	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:	Dana 70 af 000				
1C2004270030-03.BCG	07/16/2020 - 09/08/2020	Tablet Device	Page 72 of 389				
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