

PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT

LTE

Applicant Name:

Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea

Date of Testing: 9/21 - 10/26/2018 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M1809210181-03.A3L

FCC ID:

A3LSMJ260T1

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type: Model: EUT Type: FCC Classification: FCC Rule Part(s): Test Procedure(s): Certification SM-J260T1 Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 22, 24, & 27 ANSI C63.26-2015, ANSI/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: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 1 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 1 of 172
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TABLE OF CONTENTS

INTR	ODUCTION	5
1.1	Scope	5
1.2	PCTEST Test Location	5
1.3	Test Facility / Accreditations	5
PRO	DUCT INFORMATION	6
2.1	Equipment Description	6
2.2	Device Capabilities	6
2.3	Test Configuration	6
2.4	EMI Suppression Device(s)/Modifications	6
DESC	CRIPTION OF TESTS	7
3.1	Measurement Procedure	7
3.2	Block C Frequency Range	7
3.3	Block A Frequency Range	7
3.4	Cellular - Base Frequency Blocks	7
3.5	Cellular - Mobile Frequency Blocks	7
3.6	PCS - Base Frequency Blocks	8
3.7	PCS - Mobile Frequency Blocks	8
3.8	AWS - Base Frequency Blocks	8
3.9	AWS - Mobile Frequency Blocks	9
3.10	BRS/EBS Frequency Block	9
3.11	Radiated Power and Radiated Spurious Emissions	11
MEAS	SUREMENT UNCERTAINTY	12
TEST	EQUIPMENT CALIBRATION DATA	13
SAM	PLE CALCULATIONS	14
TEST	RESULTS	15
7.1	Summary	15
7.2	Occupied Bandwidth	17
7.3	Spurious and Harmonic Emissions at Antenna Terminal	46
7.4		
7.5	Peak-Average Ratio	125
7.6	Radiated Power (ERP/EIRP)	138
7.7	Radiated Spurious Emissions Measurements	145
7.8	Frequency Stability / Temperature Variation	159
CON	CLUSION	172
	1.1 1.2 1.3 PROI 2.1 2.2 2.3 2.4 DESC 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11 MEAS TEST SAMI TEST 7.1 7.2 7.3 7.4 7.5 7.6 7.7 7.8	1.2 PCTEST Test Location 1.3 Test Facility / Accreditations PRODUCT INFORMATION

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 2 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 2 of 172	
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MEASUREMENT REPORT



FCC Part 22, 24, & 27

			EF	RP	EI	RP		
Mode	FCC Rule Part	Tx Frequency (MHz)	Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
LTE Band 71	27	665.5 - 695.5	0.064	18.06			4M53G7D	QPSK
LTE Band 71	27	665.5 - 695.5	0.049	16.89			4M55W7D	16QAM
LTE Band 71	27	668 - 693	0.063	17.98			9M02G7D	QPSK
LTE Band 71	27	668 - 693	0.049	16.87			9M03W7D	16QAM
LTE Band 71	27	670.5 - 690.5	0.062	17.93			13M5G7D	QPSK
LTE Band 71	27	670.5 - 690.5	0.046	16.65			13M5W7D	16QAM
LTE Band 71	27	673 - 688	0.064	18.03			18M0G7D	QPSK
LTE Band 71	27	673 - 688	0.050	16.97			18M0W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.059	17.69	0.096	19.84	1M11G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.036	15.57	0.059	17.72	1M12W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.059	17.70	0.097	19.85	2M73G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.037	15.68	0.061	17.83	2M72W7D	16QAM
LTE Band 12	27	701.5 - 713.5	0.063	18.01	0.104	20.16	4M57G7D	QPSK
LTE Band 12	27	701.5 - 713.5	0.037	15.64	0.060	17.79	4M57W7D	16QAM
LTE Band 12	27	704 - 711	0.059	17.68	0.096	19.83	9M01G7D	QPSK
LTE Band 12	27	704 - 711	0.036	15.60	0.060	17.75	9M02W7D	16QAM
LTE Band 5	22H	824.7 - 848.3	0.156	21.92	0.255	24.07	1M10G7D	QPSK
LTE Band 5	22H	824.7 - 848.3	0.097	19.85	0.158	22.00	1M10W7D	16QAM
LTE Band 5	22H	825.5 - 847.5	0.151	21.79	0.248	23.94	2M71G7D	QPSK
LTE Band 5	22H	825.5 - 847.5	0.098	19.90	0.160	22.05	2M70W7D	16QAM
LTE Band 5	22H	826.5 - 846.5	0.163	22.11	0.267	24.26	4M53G7D	QPSK
LTE Band 5	22H	826.5 - 846.5	0.104	20.18	0.171	22.33	4M52W7D	16QAM
LTE Band 5	22H	829 - 844	0.162	22.09	0.266	24.24	9M06G7D	QPSK
LTE Band 5	22H	829 - 844	0.104	20.18	0.171	22.33	9M00W7D	16QAM

EUT Overview (<1GHz)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 2 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 3 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



Mode FCC Rule Part Tx Frequency (MHz) Max. Power (W) Max. Power (dBm) Emission Designator Modulation LTE Band 4/66 27 1710.7 - 1779.3 0.233 23.66 1M11G7D QPSK LTE Band 4/66 27 1711.5 - 1778.5 0.202 23.41 2M72G7D QPSK LTE Band 4/66 27 1711.5 - 1778.5 0.149 21.73 2M72W7D 16QAM LTE Band 4/66 27 1712.5 - 1777.5 0.257 24.10 4M53W7D 16QAM LTE Band 4/66 27 1712.5 - 1777.5 0.273 24.43 13M5G7D QPSK LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1720 - 1770 0.255 24.06 18M0G7D QPSK LTE Band 2				EI	RP		
LTE Band 4/66 27 1710.7 - 1779.3 0.104 20.17 1M10W7D 16QAM LTE Band 4/66 27 1711.5 - 1778.5 0.220 23.41 2M72G7D QPSK LTE Band 4/66 27 1711.5 - 1778.5 0.149 21.73 2M72W7D 16QAM LTE Band 4/66 27 1712.5 - 1777.5 0.275 24.10 4M50G7D QPSK LTE Band 4/66 27 1715.5 - 1777.5 0.243 23.85 9M02G7D QPSK LTE Band 4/66 27 1715.5 - 1772.5 0.218 23.85 9M02G7D QPSK LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1720 - 1770 0.255 24.06 18M0G7D QPSK LTE Band 4/66 27 1720 - 1770 0.197 22.95 18M0W7D 16QAM LTE Band 2 24E 1850.7 - 1909.3 </td <td>Mode</td> <td>FCC Rule Part</td> <td>Tx Frequency (MHz)</td> <td></td> <td></td> <td>Emission Designator</td> <td>Modulation</td>	Mode	FCC Rule Part	Tx Frequency (MHz)			Emission Designator	Modulation
LTE Band 4/66 27 1711.5 - 1778.5 0.220 23.41 2M72G7D QPSK LTE Band 4/66 27 1711.5 - 1778.5 0.149 21.73 2M72W7D 16QAM LTE Band 4/66 27 1712.5 - 1777.5 0.257 24.10 4M50G7D QPSK LTE Band 4/66 27 1712.5 - 1777.5 0.170 22.31 4M53W7D 16QAM LTE Band 4/66 27 1715.5 - 1777.5 0.243 23.85 9M02G7D QPSK LTE Band 4/66 27 1715.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1720 - 1770 0.255 24.06 18M0G7D QPSK LTE Band 4/66 27 1720 - 1770 0.197 22.93 18M0W7D 16QAM LTE Band 2 24E 1850.7 - 1909.3 0.146 21.64 1M10W7D 16QAM LTE Band 2 24E 1850.5 - 1907.5 <td>LTE Band 4/66</td> <td></td> <td>1710.7 - 1779.3</td> <td>0.233</td> <td>23.66</td> <td>1M11G7D</td> <td>QPSK</td>	LTE Band 4/66		1710.7 - 1779.3	0.233	23.66	1M11G7D	QPSK
LTE Band 4/66 27 1711.5 - 1778.5 0.149 21.73 2M72W7D 16QAM LTE Band 4/66 27 1712.5 - 1777.5 0.257 24.10 4M50G7D QPSK LTE Band 4/66 27 1712.5 - 1777.5 0.170 22.31 4M53W7D 16QAM LTE Band 4/66 27 1715 - 1775 0.187 22.72 8M98W7D 16QAM LTE Band 4/66 27 1717.5 - 1772.5 0.278 24.43 13M5G7D QPSK LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1770 0.197 22.95 18M0G7D QPSK LTE Band 4/66 27 1720 - 1770 0.197 22.95 18M0W7D 16QAM LTE Band 2 24E 1850.7 - 1909.3 0.146 21.64 1M10G7D QPSK LTE Band 2 24E 1851.5 - 1907.5 0.202 23.05 4M52G7D QPSK LTE Band 2 24E 1855.5 - 1907.5 <td< td=""><td>LTE Band 4/66</td><td>27</td><td>1710.7 - 1779.3</td><td>0.104</td><td>20.17</td><td>1M10W7D</td><td>16QAM</td></td<>	LTE Band 4/66	27	1710.7 - 1779.3	0.104	20.17	1M10W7D	16QAM
LTE Band 4/66 27 1712.5 - 1777.5 0.257 24.10 4M50G7D QPSK LTE Band 4/66 27 1712.5 - 1777.5 0.170 22.31 4M53W7D 16QAM LTE Band 4/66 27 1715 - 1775 0.243 23.85 9M02G7D QPSK LTE Band 4/66 27 1715 - 1775 0.187 22.72 8M98W7D 16QAM LTE Band 4/66 27 1717.5 - 1772.5 0.278 24.43 13M5G7D QPSK LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1720 - 1770 0.255 24.06 18M0G7D QPSK LTE Band 4/66 27 1720 - 1770 0.197 22.95 18M0W7D 16QAM LTE Band 2 24E 1850.7 - 1909.3 0.146 21.64 1M10W7D 16QAM LTE Band 2 24E 1851.5 - 1908.5 0.212 23.27 2M71G7D QPSK LTE Band 2 24E 1852.5 - 1907.5	LTE Band 4/66		1711.5 - 1778.5	0.220	23.41	2M72G7D	QPSK
LTE Band 4/66 27 1712.5 - 1777.5 0.170 22.31 4M53W7D 16QAM LTE Band 4/66 27 1715 - 1775 0.243 23.85 9M02G7D QPSK LTE Band 4/66 27 1715 - 1775 0.187 22.72 8M98W7D 16QAM LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6G7D QPSK LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1720 - 1770 0.255 24.06 18M0G7D QPSK LTE Band 2 24E 1850.7 - 1909.3 0.196 22.93 1M10G7D QPSK LTE Band 2 24E 1850.7 - 1909.3 0.146 21.64 1M10W7D 16QAM LTE Band 2 24E 1851.5 - 1908.5 0.147 21.69 2M71W7D 16QAM LTE Band 2 24E 1852.5 - 1907.5 0.202 23.05 4M52G7D QPSK LTE Band 2 24E 1855.5 1905	LTE Band 4/66		1711.5 - 1778.5		21.73	2M72W7D	
LTE Band 4/66 27 1715 - 1775 0.243 23.85 9M02G7D QPSK LTE Band 4/66 27 1715 - 1775 0.187 22.72 8M98W7D 16QAM LTE Band 4/66 27 1717.5 - 1772.5 0.278 24.43 13M5G7D QPSK LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1720 - 1770 0.255 24.06 18M0G7D QPSK LTE Band 4/66 27 1720 - 1770 0.197 22.95 18M0W7D 16QAM LTE Band 2 24E 1850.7 - 1909.3 0.196 22.93 1M10G7D QPSK LTE Band 2 24E 1851.5 - 1908.5 0.212 23.27 2M71G7D QPSK LTE Band 2 24E 1851.5 - 1908.5 0.147 21.69 2M71W7D 16QAM LTE Band 2 24E 1852.5 - 1907.5 0.202 23.05 4M53W7D 16QAM LTE Band 2 24E 1852.5 - 1907.5	LTE Band 4/66		1712.5 - 1777.5		24.10	4M50G7D	QPSK
LTE Band 4/66 27 1715 - 1775 0.187 22.72 8M98W7D 16QAM LTE Band 4/66 27 1717.5 - 1772.5 0.278 24.43 13M5G7D QPSK LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1720 - 1770 0.255 24.06 18M0G7D QPSK LTE Band 4/66 27 1720 - 1770 0.197 22.95 18M0W7D 16QAM LTE Band 2 24E 1850.7 - 1909.3 0.196 22.93 1M10G7D QPSK LTE Band 2 24E 1850.7 - 1909.3 0.146 21.64 1M10W7D 16QAM LTE Band 2 24E 1851.5 - 1908.5 0.212 23.27 2M71G7D QPSK LTE Band 2 24E 1852.5 - 1907.5 0.202 23.05 4M52G7D QPSK LTE Band 2 24E 1852.5 - 1907.5 0.202 23.05 4M52G7D QPSK LTE Band 2 24E 1855.5 1902.5 0	LTE Band 4/66	27	1712.5 - 1777.5	0.170	22.31	4M53W7D	16QAM
LTE Band 4/66 27 1717.5 - 1772.5 0.278 24.43 13M5G7D QPSK LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1720 - 1770 0.255 24.06 18M0G7D QPSK LTE Band 2 24E 1850.7 - 1909.3 0.197 22.95 18M0W7D 16QAM LTE Band 2 24E 1850.7 - 1909.3 0.196 22.93 1M10G7D QPSK LTE Band 2 24E 1850.7 - 1909.3 0.146 21.64 1M10W7D 16QAM LTE Band 2 24E 1851.5 - 1908.5 0.212 23.27 2M71G7D QPSK LTE Band 2 24E 1852.5 - 1907.5 0.202 23.05 4M52G7D QPSK LTE Band 2 24E 1855.5 - 1907.5 0.138 21.39 4M53W7D 16QAM LTE Band 2 24E 1855.5 - 1902.5 0.202 23.05 13M5G7D QPSK LTE Band 2 24E 1857.5 - 1902.5	LTE Band 4/66	27	1715 - 1775	0.243	23.85	9M02G7D	QPSK
LTE Band 4/66 27 1717.5 - 1772.5 0.218 23.39 13M6W7D 16QAM LTE Band 4/66 27 1720 - 1770 0.255 24.06 18M0G7D QPSK LTE Band 2 24E 1850.7 - 1909.3 0.197 22.95 18M0W7D 16QAM LTE Band 2 24E 1850.7 - 1909.3 0.196 22.93 1M10G7D QPSK LTE Band 2 24E 1850.7 - 1909.3 0.146 21.64 1M10W7D 16QAM LTE Band 2 24E 1851.5 - 1908.5 0.212 23.27 2M71G7D QPSK LTE Band 2 24E 1851.5 - 1908.5 0.147 21.69 2M71W7D 16QAM LTE Band 2 24E 1852.5 - 1907.5 0.202 23.05 4M52G7D QPSK LTE Band 2 24E 1852.5 - 1907.5 0.138 21.39 4M53W7D 16QAM LTE Band 2 24E 1857.5 - 1902.5 0.202 23.05 13M5G7D QPSK LTE Band 2 24E 1857.5 - 1902.5	LTE Band 4/66	27	1715 - 1775	0.187	22.72	8M98W7D	16QAM
LTE Band 4/66 27 1720 - 1770 0.255 24.06 18M0G7D QPSK LTE Band 4/66 27 1720 - 1770 0.197 22.95 18M0W7D 16QAM LTE Band 2 24E 1850.7 - 1909.3 0.196 22.93 1M10G7D QPSK LTE Band 2 24E 1850.7 - 1909.3 0.146 21.64 1M10W7D 16QAM LTE Band 2 24E 1851.5 - 1908.5 0.212 23.27 2M71G7D QPSK LTE Band 2 24E 1851.5 - 1908.5 0.147 21.69 2M71W7D 16QAM LTE Band 2 24E 1852.5 - 1907.5 0.202 23.05 4M52G7D QPSK LTE Band 2 24E 1855.5 - 1907.5 0.138 21.39 4M53W7D 16QAM LTE Band 2 24E 1855.5 - 1905 0.136 21.35 8M99W7D 16QAM LTE Band 2 24E 1857.5 - 1902.5 0.202 23.05 13M5G7D QPSK LTE Band 2 24E 1857.5 - 1902.5 0.	LTE Band 4/66	27	1717.5 - 1772.5	0.278	24.43	13M5G7D	QPSK
LTE Band 4/66271720 - 17700.19722.9518M0W7D16QAMLTE Band 224E1850.7 - 1909.30.19622.931M10G7DQPSKLTE Band 224E1850.7 - 1909.30.14621.641M10W7D16QAMLTE Band 224E1851.5 - 1908.50.21223.272M71G7DQPSKLTE Band 224E1851.5 - 1908.50.14721.692M71W7D16QAMLTE Band 224E1852.5 - 1907.50.20223.054M52G7DQPSKLTE Band 224E1852.5 - 1907.50.13821.394M53W7D16QAMLTE Band 224E1855 - 19050.19722.949M01G7DQPSKLTE Band 224E1855 - 19050.13621.358M99W7D16QAMLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1860 - 19000.13021.358M99W7D16QAMLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 7272502.5 - 2567.50.25023.984M54G7DQPSKLTE Band 7272505.5 - 25650.24323.869M03G7DQPSKLTE Band 7272505.5 - 25650.24323.869M03G7DQPSK <t< td=""><td>LTE Band 4/66</td><td>27</td><td>1717.5 - 1772.5</td><td>0.218</td><td>23.39</td><td>13M6W7D</td><td>16QAM</td></t<>	LTE Band 4/66	27	1717.5 - 1772.5	0.218	23.39	13M6W7D	16QAM
LTE Band 2 24E 1850.7 - 1909.3 0.196 22.93 1M10G7D QPSK LTE Band 2 24E 1850.7 - 1909.3 0.146 21.64 1M10W7D 16QAM LTE Band 2 24E 1851.5 - 1908.5 0.212 23.27 2M71G7D QPSK LTE Band 2 24E 1851.5 - 1908.5 0.147 21.69 2M71W7D 16QAM LTE Band 2 24E 1852.5 - 1907.5 0.202 23.05 4M52G7D QPSK LTE Band 2 24E 1852.5 - 1907.5 0.138 21.39 4M53W7D 16QAM LTE Band 2 24E 1855.5 - 1905 0.197 22.94 9M01G7D QPSK LTE Band 2 24E 1855.5 - 1905 0.136 21.35 8M99W7D 16QAM LTE Band 2 24E 1857.5 - 1902.5 0.202 23.05 13M5G7D QPSK LTE Band 2 24E 1857.5 - 1902.5 0.202 23.05 13M5G7D QPSK LTE Band 2 24E 1860 - 1900 0.130	LTE Band 4/66	27	1720 - 1770	0.255	24.06	18M0G7D	QPSK
LTE Band 224E1850.7 - 1909.30.14621.641M10W7D16QAMLTE Band 224E1851.5 - 1908.50.21223.272M71G7DQPSKLTE Band 224E1851.5 - 1908.50.14721.692M71W7D16QAMLTE Band 224E1852.5 - 1907.50.20223.054M52G7DQPSKLTE Band 224E1852.5 - 1907.50.13821.394M53W7D16QAMLTE Band 224E1855 - 19050.19722.949M01G7DQPSKLTE Band 224E1855 - 19050.13621.358M99W7D16QAMLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1857.5 - 19050.13621.358M99W7D16QAMLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1860 - 19000.19022.7818M0G7DQPSKLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 7272502.5 - 2567.50.25023.984M54G7DQPSKLTE Band 7272505 - 25650.24323.869M03G7DQPSKLTE Band 7272505 - 25650.24323.869M03G7DQPSKLTE Band 7272505 - 25650.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLT	LTE Band 4/66	27	1720 - 1770	0.197	22.95	18M0W7D	16QAM
LTE Band 224E1851.5 - 1908.50.21223.272M71G7DQPSKLTE Band 224E1851.5 - 1908.50.14721.692M71W7D16QAMLTE Band 224E1852.5 - 1907.50.20223.054M52G7DQPSKLTE Band 224E1852.5 - 1907.50.13821.394M53W7D16QAMLTE Band 224E1855.5 - 19050.19722.949M01G7DQPSKLTE Band 224E1855.5 - 19050.13621.358M99W7D16QAMLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1860 - 19000.19022.7818M0G7DQPSKLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 7272502.5 - 2567.50.25023.984M54G7DQPSKLTE Band 7272505.5 - 25650.24323.869M03G7DQPSKLTE Band 7272505.5 - 25650.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSK <td>LTE Band 2</td> <td>24E</td> <td>1850.7 - 1909.3</td> <td>0.196</td> <td>22.93</td> <td>1M10G7D</td> <td>QPSK</td>	LTE Band 2	24E	1850.7 - 1909.3	0.196	22.93	1M10G7D	QPSK
LTE Band 224E1851.5 - 1908.50.14721.692M71W7D16QAMLTE Band 224E1852.5 - 1907.50.20223.054M52G7DQPSKLTE Band 224E1852.5 - 1907.50.13821.394M53W7D16QAMLTE Band 224E1855 - 19050.19722.949M01G7DQPSKLTE Band 224E1855 - 19050.13621.358M99W7D16QAMLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1867.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1867.5 - 1902.50.12220.8513M5G7DQPSKLTE Band 224E1860 - 19000.19022.7818M0G7DQPSKLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 7272502.5 - 2567.50.25023.984M54G7DQPSKLTE Band 7272502.5 - 2567.50.19122.824M54W7D16QAMLTE Band 7272505 - 25650.24323.869M03G7DQPSKLTE Band 7272505 - 25650.24323.869M04W7D16QAMLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSK<	LTE Band 2	24E	1850.7 - 1909.3	0.146	21.64	1M10W7D	16QAM
LTE Band 224E1852.5 - 1907.50.20223.054M52G7DQPSKLTE Band 224E1852.5 - 1907.50.13821.394M53W7D16QAMLTE Band 224E1855 - 19050.19722.949M01G7DQPSKLTE Band 224E1855 - 19050.13621.358M99W7D16QAMLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1857.5 - 1902.50.12220.8513M5W7D16QAMLTE Band 224E1860 - 19000.19022.7818M0G7DQPSKLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 7272502.5 - 2567.50.25023.984M54G7DQPSKLTE Band 7272502.5 - 2567.50.19122.824M54W7D16QAMLTE Band 7272505 - 25650.24323.869M03G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0217M9G7DQPSK	LTE Band 2	24E	1851.5 - 1908.5	0.212	23.27	2M71G7D	QPSK
LTE Band 224E1852.5 - 1907.50.13821.394M53W7D16QAMLTE Band 224E1855 - 19050.19722.949M01G7DQPSKLTE Band 224E1855 - 19050.13621.358M99W7D16QAMLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1857.5 - 1902.50.12220.8513M5W7D16QAMLTE Band 224E1857.5 - 1902.50.12220.8513M5W7D16QAMLTE Band 224E1860 - 19000.19022.7818M0G7DQPSKLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 7272502.5 - 2567.50.25023.984M54G7DQPSKLTE Band 7272502.5 - 2567.50.19122.824M54W7D16QAMLTE Band 7272505 - 25650.24323.869M03G7DQPSKLTE Band 7272505 - 25650.19422.889M04W7D16QAMLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5W7D16QAMLTE Band 7272507.5 - 2562.50.25224.0217M9G7DQPSKLTE Band 7272507.5 - 2562.50.25224.0217M9G7DQPSK	LTE Band 2	24E	1851.5 - 1908.5	0.147	21.69	2M71W7D	16QAM
LTE Band 224E1855 - 19050.19722.949M01G7DQPSKLTE Band 224E1855 - 19050.13621.358M99W7D16QAMLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1857.5 - 1902.50.12220.8513M5W7D16QAMLTE Band 224E1860 - 19000.19022.7818M0G7DQPSKLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 7272502.5 - 2567.50.25023.984M54G7DQPSKLTE Band 7272502.5 - 2567.50.19122.824M54W7D16QAMLTE Band 7272505 - 25650.24323.869M03G7DQPSKLTE Band 7272505 - 25650.19422.889M04W7D16QAMLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272507.5 - 2562.50.25224.0217M9G7DQPSKLTE Band 7272507.5 - 2560.50.25224.0217M9G7DQPSK <td>LTE Band 2</td> <td>24E</td> <td>1852.5 - 1907.5</td> <td>0.202</td> <td>23.05</td> <td>4M52G7D</td> <td>QPSK</td>	LTE Band 2	24E	1852.5 - 1907.5	0.202	23.05	4M52G7D	QPSK
LTE Band 224E1855 - 19050.13621.358M99W7D16QAMLTE Band 224E1857.5 - 1902.50.20223.0513M5G7DQPSKLTE Band 224E1857.5 - 1902.50.12220.8513M5W7D16QAMLTE Band 224E1860 - 19000.19022.7818M0G7DQPSKLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 7272502.5 - 2567.50.25023.984M54G7DQPSKLTE Band 7272502.5 - 2567.50.19122.824M54W7D16QAMLTE Band 7272505 - 25650.24323.869M03G7DQPSKLTE Band 7272505 - 25650.19422.889M04W7D16QAMLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272510 - 25600.25224.0217M9G7DQPSK <td>LTE Band 2</td> <td>24E</td> <td>1852.5 - 1907.5</td> <td>0.138</td> <td>21.39</td> <td>4M53W7D</td> <td>16QAM</td>	LTE Band 2	24E	1852.5 - 1907.5	0.138	21.39	4M53W7D	16QAM
LTE Band 2 24E 1857.5 - 1902.5 0.202 23.05 13M5G7D QPSK LTE Band 2 24E 1857.5 - 1902.5 0.122 20.85 13M5W7D 16QAM LTE Band 2 24E 1860 - 1900 0.190 22.78 18M0G7D QPSK LTE Band 2 24E 1860 - 1900 0.190 22.78 18M0G7D QPSK LTE Band 2 24E 1860 - 1900 0.130 21.15 17M9W7D 16QAM LTE Band 7 27 2502.5 - 2567.5 0.250 23.98 4M54G7D QPSK LTE Band 7 27 2502.5 - 2567.5 0.191 22.82 4M54W7D 16QAM LTE Band 7 27 2505 - 2565 0.243 23.86 9M03G7D QPSK LTE Band 7 27 2505 - 2565 0.194 22.88 9M04W7D 16QAM LTE Band 7 27 2507.5 - 2562.5 0.251 24.00 13M5G7D QPSK LTE Band 7 27 2507.5 - 2562.5 0.251	LTE Band 2	24E	1855 - 1905	0.197	22.94	9M01G7D	QPSK
LTE Band 224E1857.5 - 1902.50.12220.8513M5W7D16QAMLTE Band 224E1860 - 19000.19022.7818M0G7DQPSKLTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 7272502.5 - 2567.50.25023.984M54G7DQPSKLTE Band 7272502.5 - 2567.50.19122.824M54W7D16QAMLTE Band 7272505 - 25650.24323.869M03G7DQPSKLTE Band 7272505 - 25650.19422.889M04W7D16QAMLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272510 - 25600.25224.0217M9G7DQPSK	LTE Band 2	24E	1855 - 1905	0.136	21.35	8M99W7D	16QAM
LTE Band 2 24E 1860 - 1900 0.190 22.78 18M0G7D QPSK LTE Band 2 24E 1860 - 1900 0.130 21.15 17M9W7D 16QAM LTE Band 7 27 2502.5 - 2567.5 0.250 23.98 4M54G7D QPSK LTE Band 7 27 2502.5 - 2567.5 0.191 22.82 4M54W7D 16QAM LTE Band 7 27 2505 - 2565 0.243 23.86 9M03G7D QPSK LTE Band 7 27 2505 - 2565 0.194 22.88 9M04W7D 16QAM LTE Band 7 27 2507.5 - 2562.5 0.194 22.88 9M04W7D 16QAM LTE Band 7 27 2507.5 - 2562.5 0.194 22.88 9M04W7D 16QAM LTE Band 7 27 2507.5 - 2562.5 0.251 24.00 13M5G7D QPSK LTE Band 7 27 2507.5 - 2562.5 0.195 22.89 13M5W7D 16QAM LTE Band 7 27 2510 - 2560 0.252 2	LTE Band 2	24E	1857.5 - 1902.5	0.202	23.05	13M5G7D	QPSK
LTE Band 224E1860 - 19000.13021.1517M9W7D16QAMLTE Band 7272502.5 - 2567.50.25023.984M54G7DQPSKLTE Band 7272502.5 - 2567.50.19122.824M54W7D16QAMLTE Band 7272505 - 25650.24323.869M03G7DQPSKLTE Band 7272505 - 25650.19422.889M04W7D16QAMLTE Band 7272507 - 25620.19422.889M04W7D16QAMLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272510 - 25600.25224.0217M9G7DQPSK	LTE Band 2	24E	1857.5 - 1902.5	0.122	20.85	13M5W7D	16QAM
LTE Band 7 27 2502.5 - 2567.5 0.250 23.98 4M54G7D QPSK LTE Band 7 27 2502.5 - 2567.5 0.191 22.82 4M54W7D 16QAM LTE Band 7 27 2505 - 2565 0.243 23.86 9M03G7D QPSK LTE Band 7 27 2505 - 2565 0.194 22.88 9M04W7D 16QAM LTE Band 7 27 2507 - 2565 0.194 22.88 9M04W7D 16QAM LTE Band 7 27 2507 - 2562.5 0.251 24.00 13M5G7D QPSK LTE Band 7 27 2507.5 - 2562.5 0.195 22.89 13M5W7D 16QAM LTE Band 7 27 2507.5 - 2562.5 0.195 22.89 13M5W7D 16QAM LTE Band 7 27 2510 - 2560 0.252 24.02 17M9G7D QPSK	LTE Band 2	24E	1860 - 1900	0.190	22.78	18M0G7D	QPSK
LTE Band 7272502.5 - 2567.50.19122.824M54W7D16QAMLTE Band 7272505 - 25650.24323.869M03G7DQPSKLTE Band 7272505 - 25650.19422.889M04W7D16QAMLTE Band 7272507.5 - 2562.50.25124.0013M5G7DQPSKLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272507.5 - 2562.50.19522.8913M5W7D16QAMLTE Band 7272510 - 25600.25224.0217M9G7DQPSK	LTE Band 2	24E	1860 - 1900	0.130	21.15	17M9W7D	16QAM
LTE Band 7 27 2505 - 2565 0.243 23.86 9M03G7D QPSK LTE Band 7 27 2505 - 2565 0.194 22.88 9M04W7D 16QAM LTE Band 7 27 2507.5 - 2562.5 0.251 24.00 13M5G7D QPSK LTE Band 7 27 2507.5 - 2562.5 0.195 22.89 13M5W7D 16QAM LTE Band 7 27 2507.5 - 2562.5 0.195 22.89 13M5W7D 16QAM LTE Band 7 27 2510 - 2560 0.252 24.02 17M9G7D QPSK	LTE Band 7	27	2502.5 - 2567.5	0.250	23.98	4M54G7D	QPSK
LTE Band 7 27 2505 - 2565 0.194 22.88 9M04W7D 16QAM LTE Band 7 27 2507.5 - 2562.5 0.251 24.00 13M5G7D QPSK LTE Band 7 27 2507.5 - 2562.5 0.195 22.89 13M5W7D 16QAM LTE Band 7 27 2507.5 - 2562.5 0.195 22.89 13M5W7D 16QAM LTE Band 7 27 2510 - 2560 0.252 24.02 17M9G7D QPSK	LTE Band 7	27	2502.5 - 2567.5	0.191	22.82	4M54W7D	16QAM
LTE Band 7 27 2507.5 - 2562.5 0.251 24.00 13M5G7D QPSK LTE Band 7 27 2507.5 - 2562.5 0.195 22.89 13M5W7D 16QAM LTE Band 7 27 2510 - 2560 0.252 24.02 17M9G7D QPSK		27	2505 - 2565	0.243	23.86	9M03G7D	QPSK
LTE Band 7 27 2507.5 - 2562.5 0.251 24.00 13M5G7D QPSK LTE Band 7 27 2507.5 - 2562.5 0.195 22.89 13M5W7D 16QAM LTE Band 7 27 2510 - 2560 0.252 24.02 17M9G7D QPSK		27	2505 - 2565	0.194	22.88	9M04W7D	16QAM
LTE Band 7 27 2507.5 - 2562.5 0.195 22.89 13M5W7D 16QAM LTE Band 7 27 2510 - 2560 0.252 24.02 17M9G7D QPSK		27	2507.5 - 2562.5	0.251	24.00	13M5G7D	QPSK
		27	2507.5 - 2562.5	0.195	22.89	13M5W7D	16QAM
LTE Band 7 27 2510 - 2560 0.189 22.77 17M9W7D 16QAM	LTE Band 7		2510 - 2560	0.252	24.02	17M9G7D	QPSK
FUT Overview (>1GHz)	LTE Band 7	27			22.77	17M9W7D	16QAM

EUT Overview (>1GHz)

FCC ID: A3LSMJ260T1	AND ALL THE LANDAU PAL	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dere 4 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 4 of 172	
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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 Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.

- 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 is an ISO 17025-2005 accredited test facility under the National Voluntary Laboratory Accreditation Program (NVLAP) with lab code 100431-0 for Specific Absorption (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 (2451B) test laboratory with the site description on file with ISED.

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage E of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 5 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMJ260T1**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 24723, 24582, 24616, 24673, 32163, 18256, 14503

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 WLAN, Bluetooth (1x, EDR, LE)

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/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.

2.4 EMI Suppression Device(s)/Modifications

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

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 6 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Fage 0 01 172
© 2018 PCTEST Engineering Lab	V 8 5 08/29/2018			



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/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 Block C Frequency Range

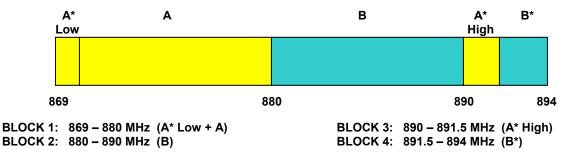
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results do not satisfy the applicable reserve price, the spectrum in the 746-757 MHz and 776-787 MHz bands will instead be made available for assignment at a subsequent auction as follows: (i) Two paired channels of 6 megahertz each available for assignment in Block C1 in the 746-752 MHz and 776-782 MHz bands. (ii) Two paired channels of 5 megahertz each available for assignment in Block C2 in the 752-757 MHz and 782-787 MHz bands.

3.3 Block A Frequency Range

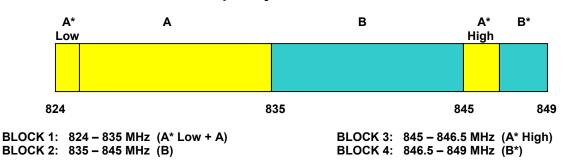
<u>698-746 MHz band</u>. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

Block A: 698-704 MHz and 728-734 MHz; Block B: 704-710 MHz and 734-740 MHz; and Block C: 710-716 MHz and 740-746 MHz.

3.4 Cellular - Base Frequency Blocks

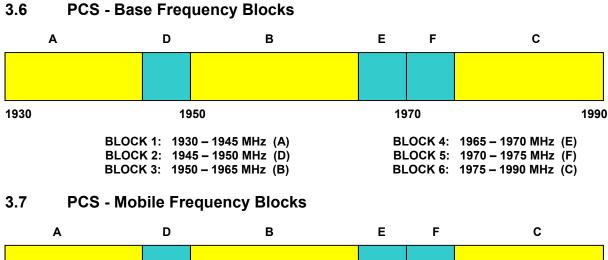


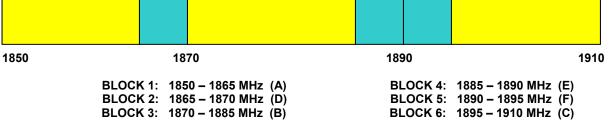
3.5 Cellular - Mobile Frequency Blocks



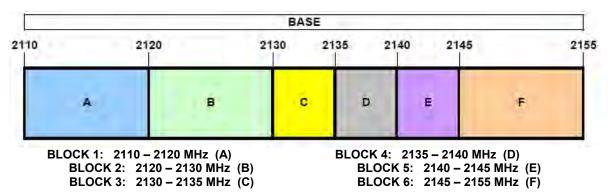
FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 7 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 7 of 172
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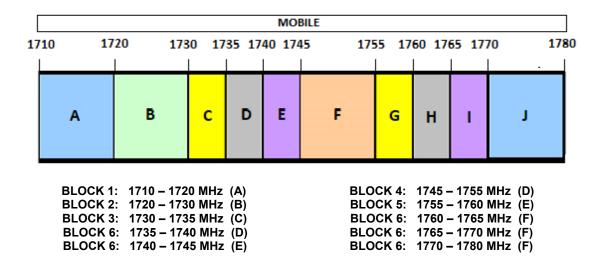
3.8 AWS - Base Frequency Blocks



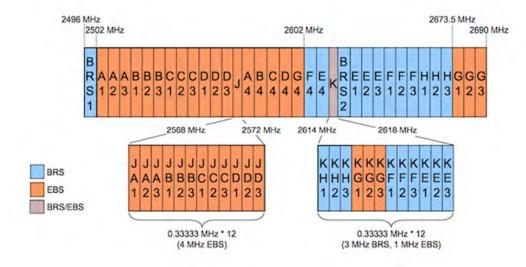
FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 9 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 8 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



3.9 AWS - Mobile Frequency Blocks



3.10 BRS/EBS Frequency Block



FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 0 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 9 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 40 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 10 of 172
2018 PCTEST Engineering Laboratory. Inc.				V 8.5 08/29/2018



3.11 Radiated Power and 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/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:

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]).

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 11 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 11 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



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	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 10 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 12 of 172
© 2018 PCTEST Engineering Laboratory. Inc.				V 8.5 08/29/2018



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
-	LTx1	Licensed Transmitter Cable Set	8/23/2018	Annual	8/23/2019	LTx1
-	LTx2	Licensed Transmitter Cable Set	8/23/2018	Annual	8/23/2019	LTx2
Agilent	N9030A	PXA Signal Analyzer (44GHz)	5/25/2018	Annual	5/25/2019	MY52350166
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2017	Biennial	10/10/2019	121034
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
Emco	3116	Horn Antenna (18 - 40GHz)	6/7/2018	Triennial	6/7/2021	9203-2178
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	12/1/2016	Biennial	12/1/2018	125518
Keysight Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	3/20/2018	Annual	3/20/2019	MY49430494
Keysight Technologies	N9030A	PXA Signal Analyzer	8/6/2018	Annual	8/6/2019	MY54490576
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/30/2018	Annual	3/30/2019	11401010036
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester	11/3/2017	Annual	11/3/2018	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	6/8/2018	Annual	6/8/2019	112347
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/30/2018	Annual	4/30/2019	165450
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	5/21/2018	Annual	5/21/2019	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	8/9/2018	Annual	8/9/2019	100348
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/18/2018	Annual	6/18/2019	102134
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/25/2018	Annual	6/25/2019	102133
Rohde & Schwarz	SMB100A03	SMB100A Signal Generator	5/30/2018	Annual	5/30/2019	180862
Rohde & Schwarz	TC-TA18	Cross-Pol Antenna 400MHz-18GHz	10/30/2017	Annual	10/30/2018	101058
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Test Antenna	7/16/2018	Biennial	7/16/2020	101073
Rohde & Schwarz	TC-TA18	Vivaldi Antenna	8/17/2018	Biennial	8/17/2020	101072
Rohde & Schwarz	TS-PR18	Shielded Filter Unit	7/2/2018	Annual	7/2/2019	102131
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	1/24/2018	Annual	1/24/2019	100040
Rohde & Schwarz	TS-PR40	26.5-40 GHz Pre-Amplifier	1/24/2018	Annual	1/24/2019	100037
Rohde & Schwarz	TS-PR8	Preamplifier-Antenna SYS; 30MHz-8GHz	10/19/2017	Annual	10/19/2018	102324
Seekonk	NC-100	Torque Wrench (8" lb)	5/10/2018	Biennial	5/10/2020	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	A051107

Table 5-1. Test Equipment

Notes:

1. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 12 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 13 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz W = Amplitude/Angle Modulated 7 = Quantized/Digital Info D = Data transmission, telemetry, telecommand

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 analzyer. 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).

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 14 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 14 of 172
2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018



7.0 TEST RESULTS

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LSMJ260T1
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>LTE</u>

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference	
2.1049	Occupied Bandwidth	N/A	CONDUCTED		PASS	Section 7.2
2.1051 2.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Out of Band Emissions	> 43 + 10log ₁₀ (P[Watts]) at Band Edge and for all out-of- band emissions		PASS	Section 7.3, 7.4	
27.53(m)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)		PASS	Section 7.3, 7.4	
27.53(a)	Out of Band Emissions	Undesirable emissions must meet the limits detailed in 27.53(a)		PASS	Section 7.3, 7.4	
24.232(d) 27.50(b)	Peak-Average Ratio	< 13 dB		PASS	Section 7.5	
2.1046	Transmitter Conducted Output Power	N/A		PASS	See RF Exposure Report	
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)		PASS	Section 7.8	

Table 7-1. Summary of Radiated Test Results

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 15 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 15 of 172
© 2018 PCTEST Engineering Laboratory. Inc.				V 8.5 08/29/2018



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 5)	< 7 Watts max. ERP	RADIATED	PASS	Section 7.6
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 12, 71)	< 3 Watts max. ERP		PASS	Section 7.6
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2, 7)	< 2 Watts max. EIRP		PASS	Section 7.6
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts max. EIRP		PASS	Section 7.6
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions (Band 12, 4, 2, 5)	> 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 7.7
27.53(m)	Undesirable Emissions (Band7)	Undesirable emissions must meet the limits detailed in 27.53(m)		PASS	Section 7.7

Table 7-2. Summary of 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 4.8.

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 16 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 16 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



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

None.

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 17 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 17 of 172
2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018





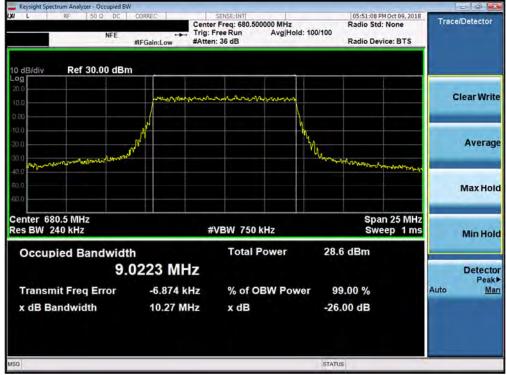
Plot 7-1. Occupied Bandwidth Plot (Band 71 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-2. Occupied Bandwidth Plot (Band 71 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 10 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 18 of 172
2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018





Plot 7-3. Occupied Bandwidth Plot (Band 71 - 10.0MHz QPSK - Full RB Configuration)



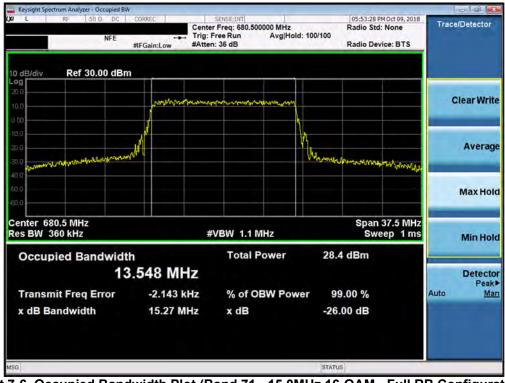
Plot 7-4. Occupied Bandwidth Plot (Band 71 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 10 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 19 of 172
2018 PCTEST Engineering Laboratory, Inc.			V 8.5 08/29/2018	





Plot 7-5. Occupied Bandwidth Plot (Band 71 - 15.0MHz QPSK - Full RB Configuration)



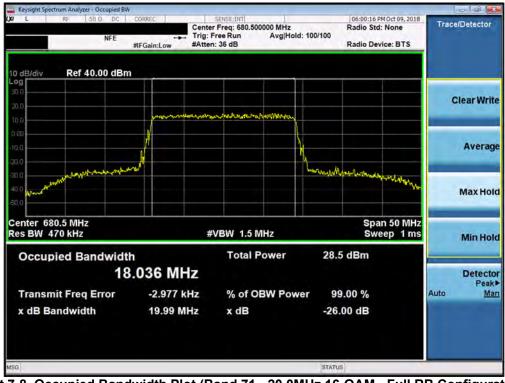
Plot 7-6. Occupied Bandwidth Plot (Band 71 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 20 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 20 of 172
2018 PCTEST Engineering Laboratory, Inc.			V 8.5 08/29/2018	





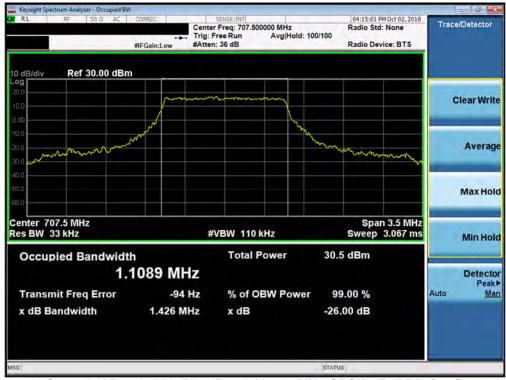
Plot 7-7. Occupied Bandwidth Plot (Band 71 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-8. Occupied Bandwidth Plot (Band 71 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 01 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 21 of 172
© 2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018





Plot 7-9. Occupied Bandwidth Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-10. Occupied Bandwidth Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 00 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 22 of 172
2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018





Plot 7-11. Occupied Bandwidth Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



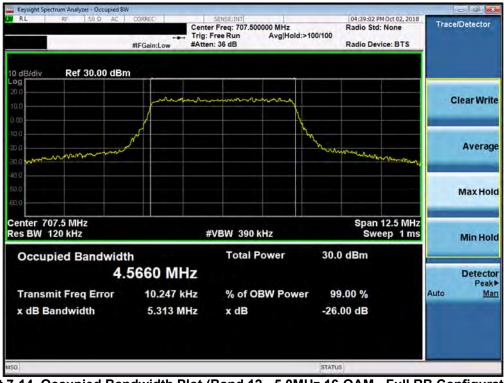
Plot 7-12. Occupied Bandwidth Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 23 of 172
2018 PCTEST Engineering Laboratory, Inc.			V 8.5 08/29/2018	





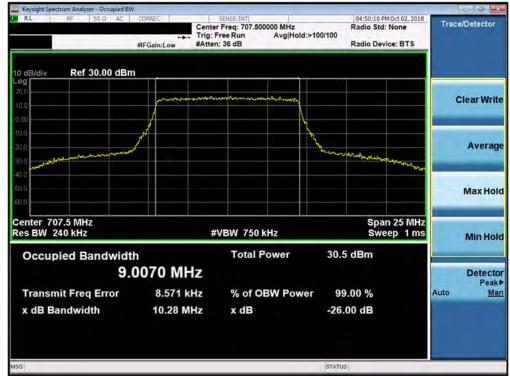
Plot 7-13. Occupied Bandwidth Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-14. Occupied Bandwidth Plot (Band 12 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 24 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 24 of 172
© 2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018





Plot 7-15. Occupied Bandwidth Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)



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

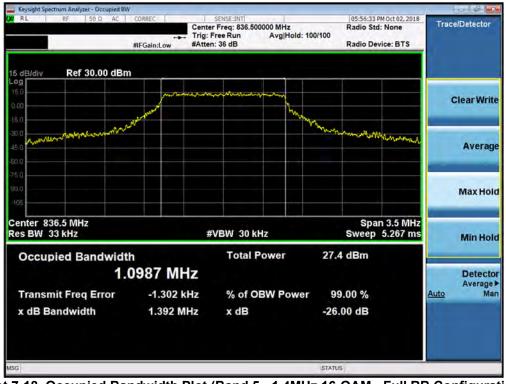
FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 25 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 25 of 172
2 2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018



Band 5



Plot 7-17. Occupied Bandwidth Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-18. Occupied Bandwidth Plot (Band 5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 96 of 179
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 26 of 172
2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018





Plot 7-19. Occupied Bandwidth Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-20. Occupied Bandwidth Plot (Band 5 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 07 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 27 of 172
© 2018 PCTEST Engineering Laboratory, Inc.			V 8.5 08/29/2018	





Plot 7-21. Occupied Bandwidth Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-22. Occupied Bandwidth Plot (Band 5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 00 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 28 of 172
0 2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018





Plot 7-23. Occupied Bandwidth Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-24. Occupied Bandwidth Plot (Band 5 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Degs 20 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 29 of 172
© 2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018





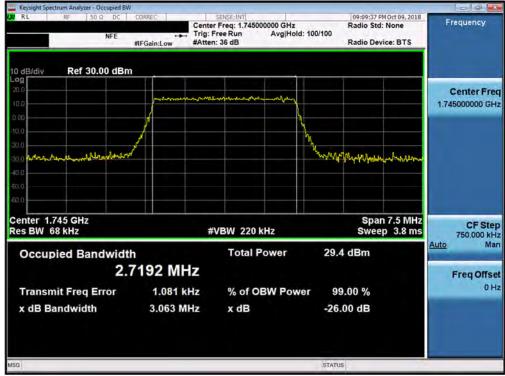
Plot 7-25. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-26. Occupied Bandwidth Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 30 of 172
© 2018 PCTEST Engineering Laboratory, Inc.			V 8.5 08/29/2018	





Plot 7-27. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



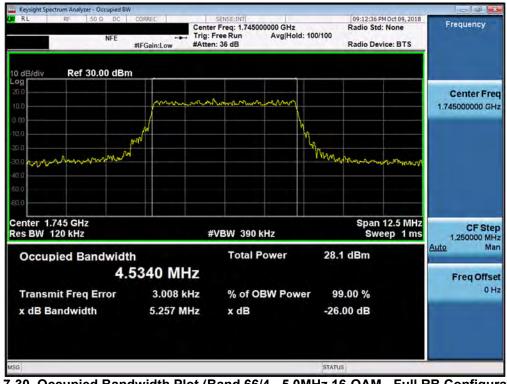
Plot 7-28. Occupied Bandwidth Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dega 21 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset	Page 31 of 172
© 2018 PCTEST Engineering Laboratory, Inc.			V 8.5 08/29/2018





Plot 7-29. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-30. Occupied Bandwidth Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 22 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 32 of 172
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Plot 7-31. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-32. Occupied Bandwidth Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 33 of 172
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Plot 7-33. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-34. Occupied Bandwidth Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 24 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 34 of 172
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Plot 7-35. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-36. Occupied Bandwidth Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)

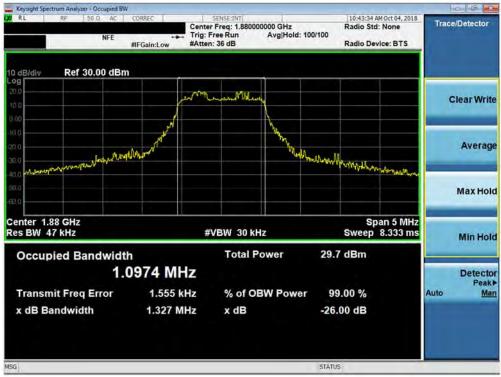
FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 05 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 35 of 172
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Band 2



Plot 7-37. Occupied Bandwidth Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



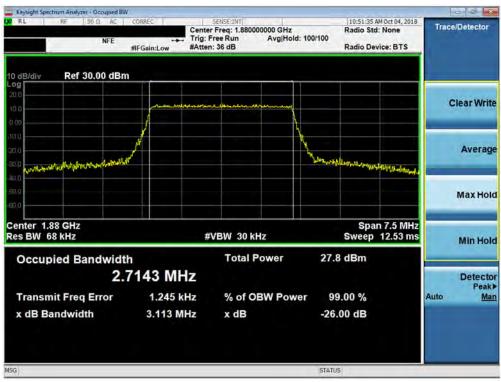
Plot 7-38. Occupied Bandwidth Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 26 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 36 of 172
© 2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018





Plot 7-39. Occupied Bandwidth Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



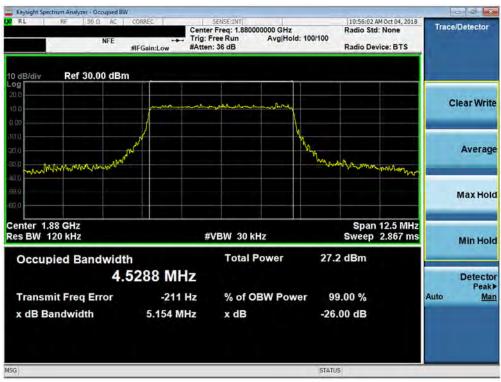
Plot 7-40. Occupied Bandwidth Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 27 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 37 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				





Plot 7-41. Occupied Bandwidth Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



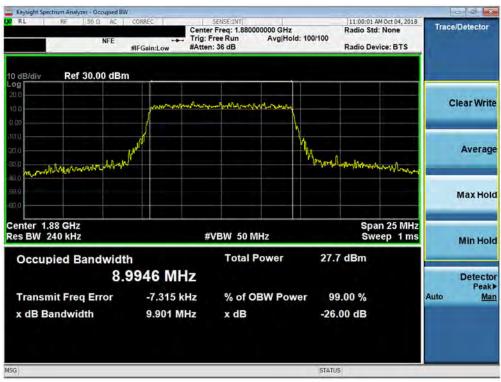
Plot 7-42. Occupied Bandwidth Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 29 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 38 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			





Plot 7-43. Occupied Bandwidth Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



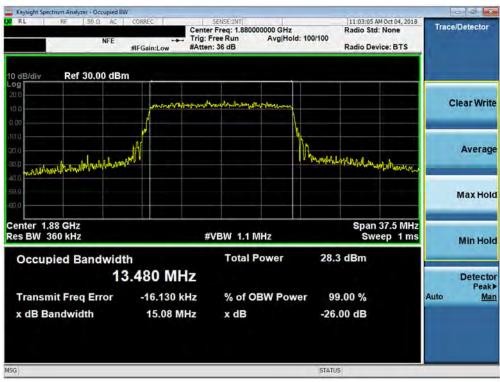
Plot 7-44. Occupied Bandwidth Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 20 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 39 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				





Plot 7-45. Occupied Bandwidth Plot (Band 2 – 15.0MHz QPSK - Full RB Configuration)



Plot 7-46. Occupied Bandwidth Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)

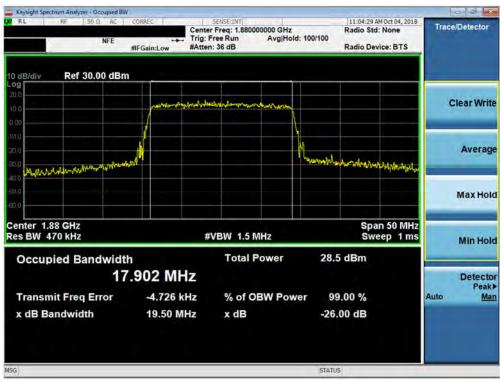
FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 40 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 40 of 172
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Keysight Spectrum Analyzer - Occupied BW						0 G ×
NFE	Trig: 1	SENSE:INT Pr Freq: 1.880000000 C Free Run Avg n: 36 dB	GHz Hold: 100/100	Radio Std		Trace/Detector
10 dB/div Ref 30.00 dBm	front design of some o	ระสะชาวประกรรมสาย 	m			ClearWrite
0.00 	AN		Murrow	thetheliterature	er stalyzen, f	Average
40.0						Max Hold
Center 1.88 GHz Res BW 470 kHz		VBW 1.5 MHz	- 20		n 50 MHz eep 1 ms	Min Hold
Occupied Bandwidth 17. Transmit Freq Error x dB Bandwidth	955 MHz -14.410 kHz 19.91 MHz	% of OBW F	Power 9	9.00 % .00 dB		Detector Peak Auto <u>Mar</u>
SG			STATL	15		

Plot 7-47. Occupied Bandwidth Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-48. Occupied Bandwidth Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 41 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 41 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



Band 7



Plot 7-49. Occupied Bandwidth Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-50. Occupied Bandwidth Plot (Band 7 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 42 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 42 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



α RL RF 50 Ω AC	Trig:	SENSE:INT r Freq: 2.535000000 G Free Run Avg n: 36 dB	6Hz Hold: 100/100	08:12:07 PM Oct Radio Std: Nor Radio Device: I	ne	Trace/Detector
10 dB/div Ref 35.00 dBm -09 25 0 15 0	womanno	marina programme	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Clear Write
500 500 150 250 whythrow which and white the			A Marca	Abertomatik	www	Average
950 950						Max Hold
Center 2.535 GHz Les BW 240 kHz		VBW 750 kHz		Span 23 Sweep		Min Hole
Occupied Bandwidt) 285 MHz	Total Power	28.	7 dBm		Detecto
Transmit Freq Error x dB Bandwidth	-3.560 kHz 10.21 MHz	% of OBW F x dB		9.00 % .00 dB	Au	
SG			STATU	JS		

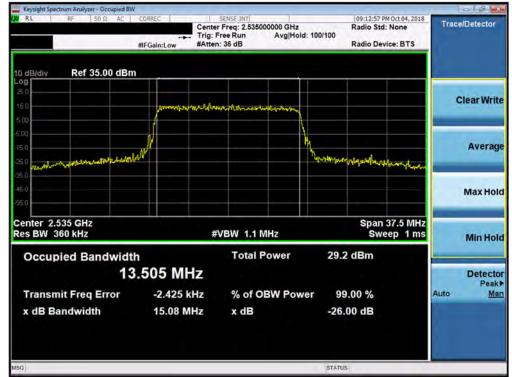
Plot 7-51. Occupied Bandwidth Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-52. Occupied Bandwidth Plot (Band 7 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 42 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 43 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			





Plot 7-53. Occupied Bandwidth Plot (Band 7 – 15.0MHz QPSK - Full RB Configuration)



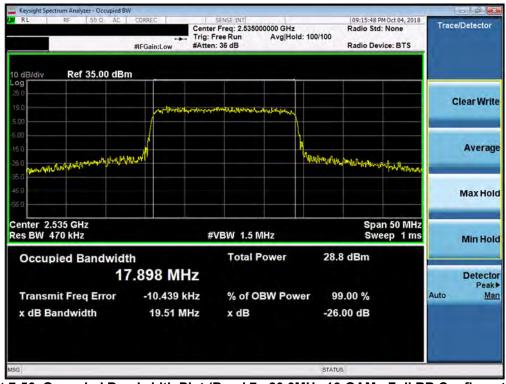
Plot 7-54. Occupied Bandwidth Plot (Band 7 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 11 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 44 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



Keysight Spectrum Analyzer - Occupied BV K RL RF 50 Ω AC	CORREC	SENSE:INT		09:15:19 P	M Oct 04, 2018	- 6 -
	#IFGain:Low #Atten	rr Freq: 2.535000000 GHz Free Run Avg Hd n: 36 dB	d: 100/100	Radio Std Radio Dev		Trace/Detector
10 dB/div Ref 35.00 dBn -og 25 0 15 0		ารระหปัญาญระการราชายากเปลี่ยาญระ				Clear Writ
5.00 5.00 15.0 25.0 	wh		Mongalitie	Artumber free way	whethere	Averag
950 450 550						Max Hol
Center 2.535 GHz Res BW 470 kHz		VBW 1.5 MHz		Swe	n 50 MHz ep 1 ms	Min Hol
Occupied Bandwidt 17	^h 7.890 MHz	Total Power	29.	1 dBm		Detecto
Transmit Freq Error x dB Bandwidth	-10.226 kHz 19.29 MHz	% of OBW Po x dB		9.00 % .00 dB		Auto <u>Ma</u> i
SG			STATU	is		

Plot 7-55. Occupied Bandwidth Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-56. Occupied Bandwidth Plot (Band 7 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 45 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset			
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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 results are reported in this section.

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

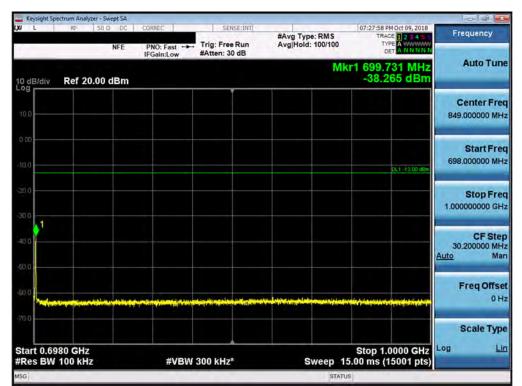
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent 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.

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 46 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018 Portable Handset			Page 46 of 172	
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Keysight Spectrum Analyzer - Swept S		SENSE:INT		07:17:34 PM Oct 09, 2018	
NFI		Trig: Free Run #Atten: 30 dB	#Avg Type: RMS Avg Hold: 100/100	TRACE 23456 TYPE A WWWW DET A NNNNN	Frequency
0 dB/div Ref 20.00 dB	m		Μ	kr1 661.71 MHz -48.272 dBm	Auto Tun
10.0					Center Fre 346.000000 MH
αφο ία σ				0L1 -13 00 dBm	Start Fre 30.000000 MH
30.0					Stop Fre 662.000000 Mi
40.0 50 0				1	CF Ste 63.200000 Mi Auto Mi
60.0	ten fra disserva e da ance a local sen Abber	ni dani a si pada ani ini	a bai na		Freq Offs 01
70,0					Scale Typ
Start 30.0 MHz Res BW 100 kHz	#VBW	300 kHz*	Sweep 30	Stop 662.0 MHz 0.00 ms (15001 pts)	Log L

Plot 7-57. Conducted Spurious Plot (Band 71 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-58. Conducted Spurious Plot (Band 71 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 47 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	0/26/2018 Portable Handset		Page 47 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			





Plot 7-59. Conducted Spurious Plot (Band 71 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-60. Conducted Spurious Plot (Band 71 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dame 49 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	6/2018 Portable Handset		Page 48 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



Keysight Spectrum Analyzer - S		connec I	CONCLUST!		07:34:29 PM Oct 09, 2018	X
CM L KF 30	NFE	PNO: Fast	SENSE:INT Trig: Free Run #Atten: 30 dB	#Avg Type: RMS Avg Hold: 100/100	107:34:29 PM Oct 09, 2018 TRACE 2 3 4 5 6 TYPE A 444444 DET A N N N N	Frequency
10 dB/div Ref 20.00	dBm			M	lkr1 698.302 MHz -39.895 dBm	Auto Tun
10.0						Center Fre 849.000000 MH
α φό - ία σ					OL1 -13 00 dBm	Start Fre 698,000000 MH
30.0						Stop Fre 1.00000000 GH
40.0						CF Ste 30.200000 MH Auto Ma
-60.0 N	n ia preventi n	net and the spectrum	ellynedingun i geografiat yr	etingene han sold tipping an all all any sold tipping and all any sold tipping and all all any sold tipping and a	hendernandelikasi para kana kana kana kana kana kana kana k	Freq Offs 0 F
-70.0 Start 0.6980 GHz #Res BW 100 kHz		#VBW	300 kHz*	Sween	Stop 1.0000 GHz 15.00 ms (15001 pts)	Scale Typ
ASG				STA		

Plot 7-61. Conducted Spurious Plot (Band 71 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



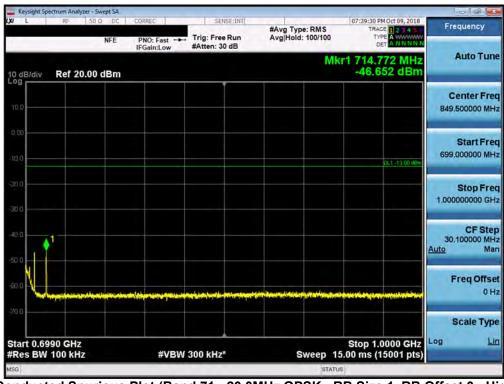
Plot 7-62. Conducted Spurious Plot (Band 71 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 40 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 49 of 172
© 2018 PCTEST Engineering Lal	V 8.5 08/29/2018			



Keysight Spectrum Analyzer - Swi KI L RF 50 Ω		L contest total		07.07.40.040.400.0040	
- 10 Jul	NFE PNO: Fast	SENSE:INT Trig: Free Run #Atten: 30 dB	#Avg Type: RMS Avg Hold: 100/100	07:37:49 PM Oct 09, 2018 TRACE 2 3 4 5 6 TYPE A WWWW DET A NNNN	Frequency
10 dB/div Ref 20.00 d	iBm		Mkr1	661.312 0 MHz -49.442 dBm	Auto Tun
100					Center Fre 346.500000 MH
:ia a				0L1 -13 00 dBm	Start Fre 30,000000 MH
30.0					Stop Fre 663.000000 MH
40.0				1	CF Ste 63.300000 MH Auto Ma
80 0					Freq Offs 0 F
Start 30.0 MHz #Res BW 100 kHz	#\/B\/	300 kHz*	Swaan-21	Stop 663.0 MHz 00 ms (15001 pts)	Scale Typ
WSG	#VDVV	500 KH2	Sweep 51	50 ms (15001 pts)	

Plot 7-63. Conducted Spurious Plot (Band 71 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-64. Conducted Spurious Plot (Band 71 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 50 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	26/2018 Portable Handset		Page 50 of 172
© 2018 PCTEST Engineering Lat	V 8.5 08/29/2018			



Keysight Spectrum Analyzer - Swept SA				1	o Ø ×
L RF 50 Ω DC	PNO: Fast	SENSE:INT	#Avg Type: RMS Avg Hold: 100/100	07:42:16 PM Oct 09, 2018 TRACE 2 3 4 5 6 TYPE A WWWW	Frequency
0 dB/div Ref 20.00 dBm	IFGain:Low	#Atten: 30 dB	M	kr1 9.767 8 GHz -41.050 dBm	Auto Tune
og 10.0					Center Fred 5.500000000 GH;
1.00 a a				0L1 -13 00 dBm	Start Fred 1.000000000 GH;
nο					Stop Fre 10.000000000 GH
σ.ά	m			•••••• ¹	CF Stej 900.000000 MH <u>Auto</u> Ma
0.0					Freq Offse 0 H
tart 1.000 GHz				Stop 10.000 GHz	Scale Type Log <u>Li</u>
Res BW 1.0 MHz	#VBW	3.0 MHz*	Sweep 1	5.00 ms (15001 pts)	

Plot 7-65. Conducted Spurious Plot (Band 71 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

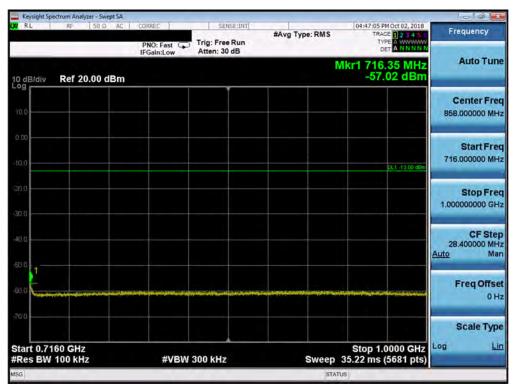
FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 51 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 51 of 172
2018 PCTEST Engineering Laboratory. Inc.				V 8.5 08/29/2018



Band 12



Plot 7-66. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-67. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMJ260T1	AUDITION LANDAL ON	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 52 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	- 10/26/2018 Portable Handset		Page 52 of 172	
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Keysight Spectrum Analyzer - Swe RL RF 50 Ω		SENSE:INT		04:47:25 PM Oct 02, 2018	
	PNO: Fast	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	TRACE 2 2 3 4 5 0 TYPE A WWWW DET A NNNNN	Frequency
0 dB/div Ref 20.00 d	Bm		М	kr1 8.677 0 GHz -44.09 dBm	Auto Tun
i0.0					Center Fre 5.500000000 GH
ia a				0L1 -13 00 dEm	Start Fre 1.000000000 GH
20.0					Stop Fre 10.00000000 GH
40.0				• ¹	CF Ste 900.000000 MH Auto Ma
60.0					Freq Offs 0 H
70.0 Start 1.000 GHz ¢Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 1	Stop 10.000 GHz 5.60 ms (18001 pts)	Scale Typ Log <u>L</u>
156			STAT		-

Plot 7-68. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-69. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 52 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 53 of 172
© 2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018



Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC	CORREC	CONCE-INT.		01.45.50 0000000 3010	
RL KF 50 9 AC	PNO: Fast	SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	04:45:59 PM Oct 02, 2018 TRACE 2 3 4 5 6 TYPE A WANNIN DET A NNNNN	Frequency
10 dB/div Ref 20.00 dBm			M	kr1 717.50 MHz -48.64 dBm	Auto Tun
10.0					Center Free 858.000000 MH
-10.0				0L1 -13 00 dBm	Start Fre 716.000000 MH
30.0					Stop Fre 1.000000000 GH
40.0 50.0					CF Ste 28.400000 MH Auto Ma
50.0 	anan kanan yang salah y	ifet gezof participa ant den fri	alaa ay ina iyo na katalay dahata atalah iyo a	nine national advances from the second s	Freq Offse 0 H
700 Start 0.7160 GHz #Res BW 100 kHz	#VBW	300 kHz	Sweep 3	Stop 1.0000 GHz 35.22 ms (5681 pts)	Scale Typ
ISC			STATU		

Plot 7-70. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-71. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 54 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 54 of 172
© 2018 PCTEST Engineering Laboratory, Inc.				V 8.5 08/29/2018



Keysight Spectrum Analyzer - Swept SA			- @ <mark>*</mark>
RL RF 50Ω AC	CORREC SENSE:INT PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB	04:48:25 PM Oct 0 #Avg Type: RMS TRACE 1 TYPE A DET A	3456 Frequency
10 dB/div Ref 20.00 dBm	I Guineow	Mkr1 697.55 -57.42	MHz Auto Tuno dBm
100			Center Free 364.000000 MH
0 CO		0.1.4	Start Free 30,000000 MH
30.0			Stop Fre 698.000000 MH
40.0			CF Ste 66,800000 MH Auto Ma
60.0	sa pantanan (Angeresian ang a sa pangang ang ang ang ang ang ang ang ang a		1 Freq Offso 0 H
-70.0 Start 30.0 MHz		Stop 698.0	Scale Typ
#Res BW 100 kHz ^{MSG}	#VBW 300 kHz	Sweep 82.83 ms (1336	1 pts)

Plot 7-72. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-73. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage FE of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 55 of 172
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PNO: Fast 😱 IFGain:Low	Trig: Free Run	#Avg Type: RMS	04:49:04 PM Oct 02, 2018 TRACE 1 2 3 4 5 6	Frequency
	Atten: 30 dB		DET A NNNN	
3m		М	kr1 9.418 0 GHz -43.72 dBm	Auto Tuni
				Center Free 5.500000000 GH
			0L1 -13 00 dBm	Start Fre 1.000000000 GH
				Stop Fre 10.000000000 GH
			1	CF Ste 900.000000 MH Auto Ma
				Freq Offso 0 F
	2.0.844		Stop 10.000 GHZ	Scale Typ
		5m 		im -43.72 dBm

Plot 7-74. Conducted Spurious Plot (Band 12 - 5.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

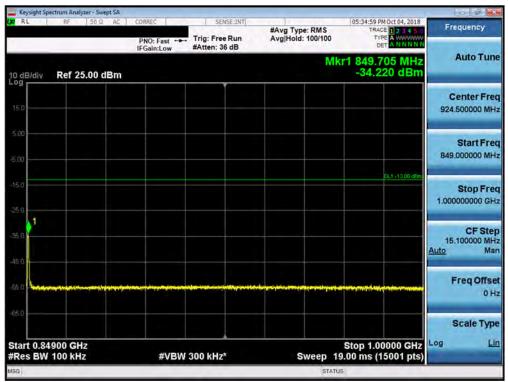
FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 56 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 56 of 172
© 2018 PCTEST Engineering Lab	oratory. Inc.	•		V 8.5 08/29/2018



Band 5

CORREC SENSE:INT	05:33:58 PM Oct 04, 2018	Executionet
PNO: Fast Trig: Free Run IFGain:Low #Atten: 36 dB	#Avg Type: RMS TRACE 2 2 3 4 5 6 Avg Hold: 100/100 Type A	Frequency
	Mkr1 814.49 MHz -37.937 dBm	Auto Tun
		Center Fre 426.500000 MH
		Start Fre 30.000000 MH
	0L1-1300 dBn	Stop Fre 823.000000 Mi
	*	CF Ste 79.300000 Mi <u>Auto</u> Mi
		Freq Offs 01
	Stop 922 0 Mil-	Scale Typ
#VBW 300 kHz*	Sweep 98.00 ms (15001 pts)	
	#Atten: 36 dB	PNO: Fast Trig: Free Run #Atten: 36 dB AvgiHold: 100/100 Trig: Tree Run Det Annum IFGain:Low #Atten: 36 dB Image: Step State Step Step State Step State Step State Step Step State Step State Step Step Step Step Step Step Step St

Plot 7-75. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



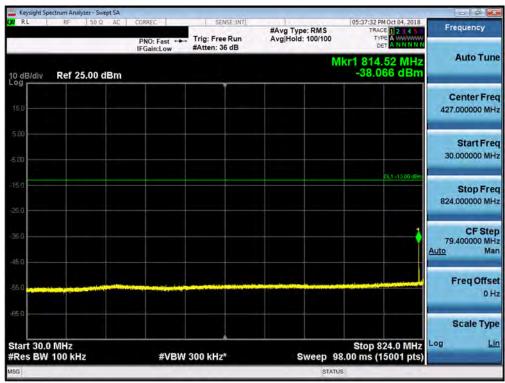
Plot 7-76. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 57 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 57 of 172
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Plot 7-77. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



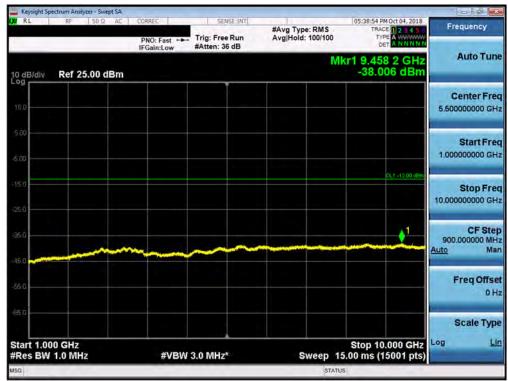
Plot 7-78. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 59 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 58 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



Keysight Spectrum Analyzer - Swept SA					00
XIRL RF 50Ω A	PNO: Fast Trig:	Free Run en: 36 dB	#Avg Type: RMS Avg Hold: 100/100	05:38:04 PM Oct 04, 2018 TRACE 1 2 3 4 5 0 TYPE A WANNIN	Frequency
10 dB/div Ref 25.00 dBn	n		Mk	r1 849.755 MHz -34.205 dBm	Auto Tun
15.0					Center Fre 924.500000 MH
5.00					Start Fre 849.000000 M⊦
25.0				0L1 -13 00 dBm	Stop Fre 1.000000000 GH
45.0					CF Ste 15.100000 Mi Auto Ma
55 0 Augustine of a single difference	instadio para tanàna dia mandri amin'ny sara-	na na tang tang tang tang tang tang tang	a na ang tang tang tang tang tang tang t	nin sanah li kuma sanah fasi nan	Freq Offs 0 F
65 0 Start 0.84900 GHz #Res BW 100 kHz	#VBW 3001	<hz*< td=""><td>Sweep 1</td><td>Stop 1.00000 GHz 9.00 ms (15001 pts)</td><td>Scale Typ</td></hz*<>	Sweep 1	Stop 1.00000 GHz 9.00 ms (15001 pts)	Scale Typ
MSG			STATU		H

Plot 7-79. Conducted Spurious Plot (Band 5 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



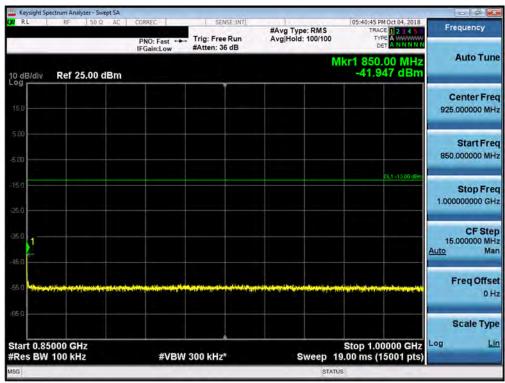
Plot 7-80. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 50 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 59 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



Keysight Spectrum Analyzer - Swept S			
XI RL RF 50Ω A	C CORREC SENSE:INT PNO: Fast Trig: Free Run IFGain:Low #Atten: 36 dB	#Avg Type: RMS TRAC AvgiHold: 100/100 Tr	MOct 04, 2018 Frequency FE A WWWWWW ET A NNNNN
10 dB/div Ref 25.00 dBr		Mkr1 814 -38.6	.58 MHz Auto Tun 17 dBm
15.0			Center Free 427.000000 MH
5.00			Start Fre 30.000000 MH
-15.0			Stop Fre 824.000000 MH
45.0			CF Ste 79.400000 MH Auto Ma
55.0 			Freq Offs 01
^{-65.0} Start 30.0 MHz #Res BW 100 kHz	#VBW 300 kHz*	Stop 8 Sweep 98.00 ms (1	Scale Typ 24.0 MHz Log Li 5001 pts)
MSG		STATUS	

Plot 7-81. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-82. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 60 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 60 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				





Plot 7-83. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dege 61 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 61 of 172	
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Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω DC		SENSE:INT		09:44:57 PM Oct 09, 2018	
NFE	PNO: Fast	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	TRACE 2 3 4 5 0 TYPE A WWWW DET A NNNNN	Frequency
10 dB/div Ref 20.00 dBn			M	kr1 1.702 0 GHz -44.81 dBm	Auto Tun
10.0					Center Fre 869.500000 MH
0.00				0L1 -13 00 dEm	Start Fre 30.000000 MH
30.0					Stop Fre 1.709000000 GH
40.0				1	CF Ste 167.900000 MF Auto Ma
60.0				and a surgering and a property of the second states and a second states and a second states and a second states	Freq Offs 0 F
.70.0					Scale Typ
Start 0.0300 GHz #Res BW 100 kHz	#VBW 3	00 kHz	Sweep	Stop 1.7090 GHz 79.70 ms (3359 pts)	Log L
ISG			STAT	IS	

Plot 7-84. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-85. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 62 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 62 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



RL RE 50.0	DC CORREC	S I S	ENSE:INT	1	09:45:47 PM Oct 09, 2018	
		Fast C Trig: Fre	#A ee Run	vg Type: RMS	TRACE 2 3 4 5 0 TYPE A WWWW DET A NNNNN	Frequency
0 dB/div Ref 0.00 dl	Bm			Mk	r1 19.572 0 GHz -55.96 dBm	Auto Tun
ία ο					0L1 -13 00 dBm	Center Fre 15.000000000 GH
30.0						Start Fre 10.000000000 GH
ια 0 50.0						Stop Fre 20.00000000 GF
70.0		and the second	and the second	and the second		CF Ste 1.000000000 GF Auto Ma
30.0						Freq Offs 01
ant 10.000 GHz Res BW 1.0 MHz		#VBW 3.0 MH		Sweep 4	Stop 20.000 GHz 7.33 ms (20001 pts)	Scale Typ

Plot 7-86. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



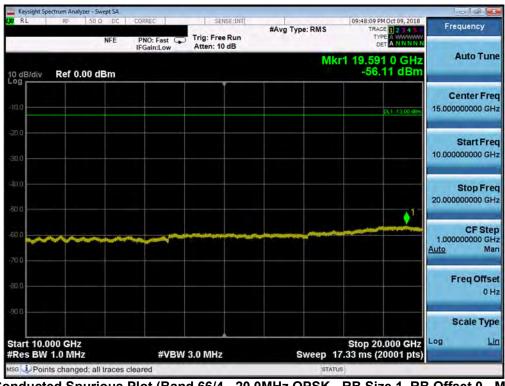
Plot 7-87. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dege 62 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 63 of 172	
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Plot 7-88. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



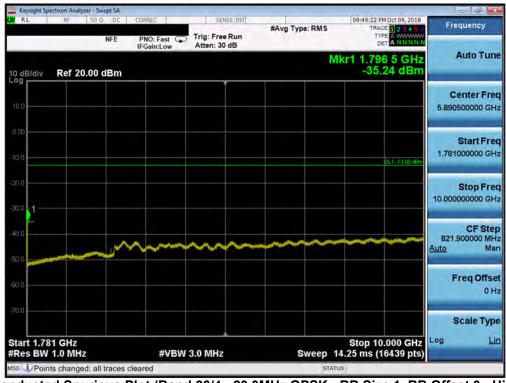
Plot 7-89. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 64 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 64 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



- @ <mark>-</mark> ×					ctrum Analyzer - Swept SA	
Frequency	09:48:58 PM Oct 09, 2018 TRACE 2 3 4 5 0 TYPE A WARNIN DET A NNNNN	#Avg Type: RMS	SENSE:INT Trig: Free Run Atten: 30 dB	PNO: Fast	RF 50 Ω DC NFE	RL
Auto Tune	kr1 1.679 0 GHz -50.29 dBm	М			Ref 20.00 dBm	10 dB/div
Center Free 870.000000 MH						10.0
Start Free 30,000000 MH	0L1 -13 00 dBm					: jà a
Stop Free 1.710000000 GH						200 300
CF Step 168.000000 MH Auto Ma	4					40.0
Freq Offse 0 H	an in single sur its sign of an article service of the service of	ning der zwinnen an gesten bestellten der Können der Bernein einer Pro-	iyayun tiyat qir ^{ki san s} an iya	14		60.0
Scale Type	Stop 1.7100 GHz					Start 0.03
	2.240 ms (3361 pts)	Sweep	3.0 MHz	#VBW 3	1.0 MHz	#Res BW

Plot 7-90. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-91. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 65 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset	le Handset Page	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



Keysight Spectrum Analyzer - Swep		I management			- @ ×
RL RF 50Ω	FE PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run Atten: 10 dB	#Avg Type: RMS	09:49:42 PM Oct 09, 2018 TRACE 2 3 4 5 0 TYPE A WARNAW DET A NNNNN	Frequency
o dB/div Ref 0.00 dB	n		Mk	r1 19.630 5 GHz -55.92 dBm	Auto Tun
ia 0				DL1 -13,00 dBm	Center Free 15.000000000 GH
30.0					Start Fre 10.000000000 GH
40.0					Stop Fre 20.000000000 GH
60.0 70.0	and the second second second		فأحوه فيروا أحرج والمراجع والمراجع والمراجع		CF Ste 1.000000000 GH Auto Ma
30.0					Freq Offs 0 F
Start 10.000 GHz Res BW 1.0 MHz	#\/BW/	3.0 MHz	Sween 1	Stop 20.000 GHz 7.33 ms (20001 pts)	Scale Typ

Plot 7-92. Conducted Spurious Plot (Band 66/4 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dege 66 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 66 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



Band 2

α RL RF 50Ω A	C CORREC	SENSE:INT		07:40:30 PM Oct 04, 2018	Frequency
	PNO: Fast	Trig: Free Run #Atten: 30 dB	#Avg Type: RMS Avg Hold: 100/100	TRACE 2 3 4 5 6 TYPE A WANNAU DET A NNNNN	
0 dB/div Ref 20.00 dBr	n		Mkr	1 1.844 51 GHz -47.451 dBm	Auto Tun
10.0					Center Fre 939.500000 MH
10.0				OL1 -13.03 dBm	Start Fre 30.000000 MH
30.0					Stop Fre 1.849000000 G
40.0				1.	CF Ste 181.900000 Mi Auto M
50.0 		an a			Freq Offs 01
70.0					Scale Typ
Start 0.0300 GHz #Res BW 1.0 MHz	#VBW	3.0 MHz*	Sweep 3.0	Stop 1.8490 GHz 00 ms (15001 pts)	
SG	_	_	STATUS		

Plot 7-93. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



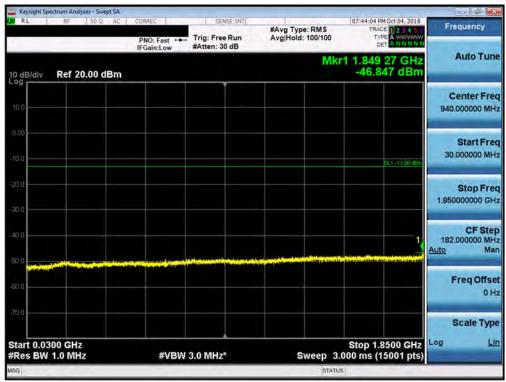
Plot 7-94. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 67 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 67 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



Keysight Spectrum Analyzer - Swept Si			the state of the s	0 8 8
KL RF 50Ω A	C CORREC SENSE:INT PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB	#Avg Type: RMS Avg Hold: 100/100	07:42:23 PM Oct 04, 2018 TRACE 1 2 3 4 5 0 TYPE A WWWWW DET A NNNN	Frequency
10 dB/div Ref 20.00 dBr	n	Mkr	16.995 3 GHz -36.517 dBm	Auto Tune
10.0				Center Fred 15.00000000 GHa
-10.0			DL1 -13 00 dBm	Start Free 10.000000000 GH
-20.0		1		Stop Free 20.000000000 GH
-40.0				CF Stej 1.000000000 GH <u>Auto</u> Ma
-60.0				Freq Offse 0 H
Start 10.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz*	Sweep 25	Stop 20.000 GHz 00 ms (15001 pts)	Scale Type
MSG		STATUS		

Plot 7-95. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



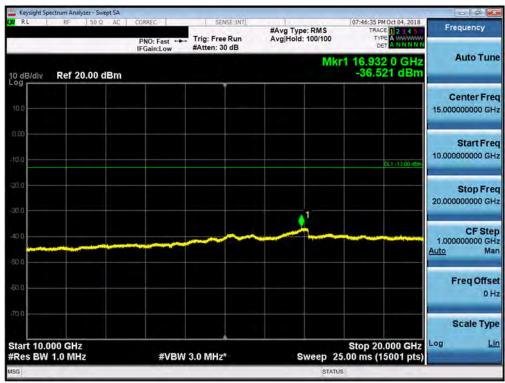
Plot 7-96. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 69 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 68 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



RL RF	50 Q AC	CORREC	SENSE:INT	1	07:45:48 PM Oct 04, 2018	Contraction of the local sector
		PNO: Fast	Trig: Free Run #Atten: 30 dB	#Avg Type: RMS Avg Hold: 100/100	TRACE 1 2 3 4 5 0 TYPE A WARMAN DET A N N N N N	Frequency
O dB/div Ref 20	0.00 dBm			Mkr	1 3.742 210 GHz -42.957 dBm	Auto Tun
10.0						Center Fre 5.957500000 GH
0.00					DL1 +13 00 dBin.	Start Fre 1.915000000 GH
20,0						Stop Fre 10.000000000 GH
40.0	••••••••••••••••••••••••••••••••••••••					CF Ste 808.500000 Mi Auto Ma
60.0						Freq Offs 0 F
70 0 Start 1.915 GHz #Res BW 1.0 MH;		#VD14	3.0 MHz*		Stop 10.000 GHz 4.00 ms (15001 pts)	Scale Typ
ISG		#49944	5.0 10112	Sweep		

Plot 7-97. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-98. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 60 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 69 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



Keysight Spectrum Analyzer - Swept S				o 6 ×
KA RE S0Ω A	PNO: Fast ++ Trig: Free Run IFGain:Low #Atten: 30 dB	#Avg Type: RMS Avg Hold: 100/100	07:47:57 PM Oct 04, 2018 TRACE 2 3 4 5 0 TYPE A COMMANNIAL DET A NNNNN	Frequency
10 dB/div Ref 20.00 dBr	m	Mkr1	1.768 34 GHz -47.340 dBm	Auto Tune
10.0				Center Free 940.000000 MH
0.00			DL1 +13 00 dBm	Start Free 30.000000 MH
-20.0				Stop Free 1.850000000 GH
-40.0				CF Ste 182.000000 MH <u>Auto</u> Ma
-50.0				Freq Offse 0 H
Start 0.0300 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz*	Sweep 3.0	Stop 1.8500 GHz 00 ms (15001 pts)	Scale Type
MSG		STATUS		

Plot 7-99. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-100. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 70 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 70 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC	CORREC	SENSE:INT		07:49:49 PM Oct 04, 2018	- 6 ×
	PNO: Fast	Trig: Free Run #Atten: 30 dB	#Avg Type: RMS Avg Hold: 100/100	TRACE 2 3 4 5 0 TYPE A WWWWW DET A NNNNN	Frequency
0 dB/div Ref 20.00 dBm			Mk	r1 16.992 0 GHz -36.700 dBm	Auto Tune
00					Center Free 15.000000000 GH
0.00				DL1 -13 00 dBm	Start Free 10.000000000 GH
20.0					Stop Fre 20.000000000 GH
407.0 507.0					CF Ste 1.000000000 GH <u>Auto</u> Ma
50.0					Freq Offse 0 F
tart 10.000 GHz Res BW 1.0 MHz	#VBW	3.0 MHz*	Sweep 2	Stop 20.000 GHz 5.00 ms (15001 pts)	Scale Typ Log <u>Li</u>

Plot 7-101. Conducted Spurious Plot (Band 2 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 71 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 71 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



Band 7

Keysight Spectrum Analyzer	0Ω DC CORF	EC I	SENSE:INT	1	02:50:03 AM Oct 25, 2018	
	NFE PN	0: Fast 😱	Trig: Free Run Atten: 30 dB	#Avg Type: RM		Frequency
10 dB/div Ref 20.0	0 dBm				Mkr1 2.457 0 GH: -48.86 dBn	Auto Tur
10.0						Center Fre 1.252500000 GF
0.00 ·10.0						Start Fro 30.000000 Mi
30.0					CL1 -25.00 dB	Stop Fr 2.475000000 G
40 G						CF Sto 244.500000 M <u>Auto</u> M
50.0 50.0	999-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0	an a	يونيونونونونونونونونونونونونونونونونونو			Freq Offs 0
70 0 Start 0.030 GHz Res BW 1.0 MHz		#VBW :	3.0 MHz	Swa	Stop 2.475 GHz ep 3.260 ms (4891 pts	Scale Typ Log j
sg		" En			STATUS	

Plot 7-102. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



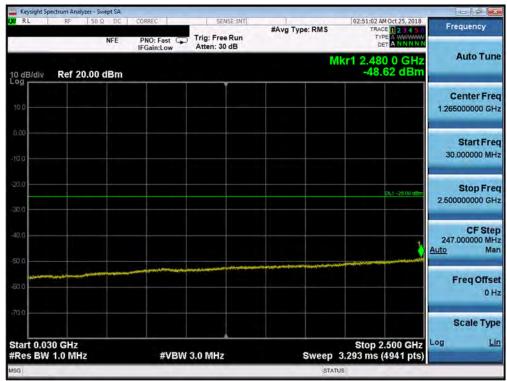
Plot 7-103. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 72 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset	table Handset	
© 2018 PCTEST Engineering Lat	V 8.5 08/29/2018			



Keysight Spectrum Analyzer - Swept SA				08 2
RL RF 50Ω DC	PNO: Fast Trig: Free Run IFGain:Low Atten: 10 dB	#Avg Type: RMS	02:50:39 AM Oct 25, 2018 TRACE 2 3 4 5 0 TYPE A WWWWW DET A NNNN	Frequency
10 dB/div Ref 0.00 dBm		Mk	1 26.537 0 GHz -56.10 dBm	Auto Tune
-10.0				Center Free 21.000000000 GH
30.0			0L1 -25.00 dBm	Start Fre 15.000000000 GH
40.0				Stop Fre 27.000000000 GH
60.0 		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	and the second	CF Ste 1.200000000 GF Auto Ma
80.0				Freq Offse 0 H
Start 15.000 GHz			Stop 27.000 GHz	Scale Typ
#Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 2	0.80 ms (24001 pts)	

Plot 7-104. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



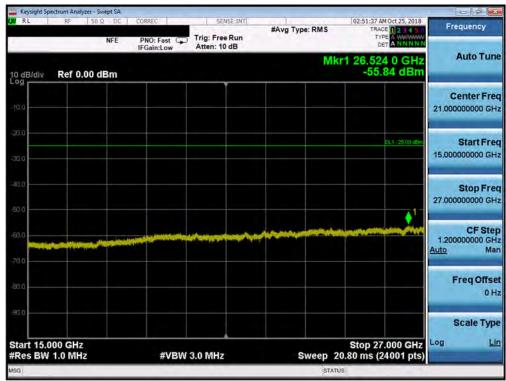
Plot 7-105. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 72 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 73 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



Keysight Spectrum Analyze						o d X
XI RL RF	NFE	PNO: Fast	SENSE:INT Trig: Free Run Atten: 30 dB	#Avg Type: RMS	02:51:17 AM Oct 25, 2018 TRACE 2 3 4 5 0 TYPE A WWWWW DET A NNNNN	Frequency
10 dB/div Ref 20.	00 dBm			M	r1 14.341 5 GHz -42.08 dBm	Auto Tuno
10.0						Center Free 8.785000000 GH
10.0						Start Fre 2.570000000 GH
30.0					0L1 -25.00 dBm	Stop Fre 15.000000000 GH
-40.0	m	voun	~~~~~	-		CF Ste 1.243000000 GH <u>Auto</u> Ma
60.0						Freq Offse 0 H
70.0 Start 2.570 GHz #Res BW 1.0 MHz		#VBW	3.0 MHz	Sweep	Stop 15.000 GHz 21.55 ms (24861 pts)	Scale Typ Log <u>Li</u>
MSG				STAT		

Plot 7-106. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



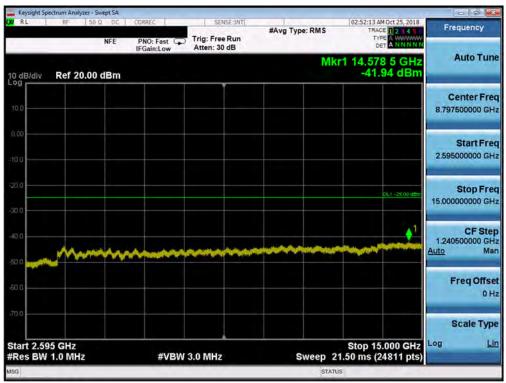
Plot 7-107. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 74 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 74 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



08	Section and and				m Analyzer - Swept SA	
Frequency	02:51:59 AM Oct 25, 2018 TRACE 1 2 3 4 5 0 TYPE A MINNIN DET A NNNNN	#Avg Type: RMS	SENSE:INT Trig: Free Run Atten: 30 dB	PNO: Fast	RF 50 Q DC	XI RL
Auto Tune	kr1 2.449 5 GHz -48.88 dBm	N			ef 20.00 dBm	10 dB/div
Center Fred 1.265000000 GH						10.0
Start Free 30.000000 MH						0:00 -10.0
Stop Fre 2,500000000 GH	DL1 -25.00 d2m					30.0
CF Stej 247.000000 MH Auto Ma	4					-40.0
Freq Offse 0 H		n, ang pang ang tang tang tang tang tang tang ta				50.0
Scale Type	Stop 2.500 GHz					70 0 Start 0.030 (
	3.293 ms (4941 pts)	Sweep	3.0 MHz	#VBW	WHZ	#Res BW 1.0

Plot 7-108. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-109. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 75 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 75 of 172	
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				



nalyzer - Swept SA					- 6 ×
NFE	PNO: Fast	SENSE:INT Trig: Free Run Atten: 10 dB	#Avg Type: RMS	02:52:34 AM Oct 25, 2018 TRACE 2 3 4 5 0 TYPE A HANNAN DET A NNNNN	Frequency
0.00 dBm			N	lkr1 26.556 5 GHz -56.11 dBm	Auto Tune
					Center Free 21.000000000 GH
				01.1 -25.00 dBn	Start Free 15.000000000 GH
					Stop Fre 27.000000000 GH
	antan Milipit ant Managar	and the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		CF Ste 1.200000000 GH <u>Auto</u> Ma
					Freq Offse 0 H
Hz	#\/D\M/			Stop 27.000 GHz	Scale Typ
	NFE 0.00 dBm	NFE PNO: Fast IFGain:Low	NFE PNO: Fast Trig: Free Run Atten: 10 dB	NFE PNO: Fast Trig: Free Run Atten: 10 dB	NFE PNO: Fast Trig: Free Run #Avg Type: RMS TRACE 2.3.4.3.0 0.00 dBm Image: Second sec

Plot 7-110. Conducted Spurious Plot (Band 7 - 20.0MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 76 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 76 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



7.4 Band Edge Emissions at Antenna Terminal

Test Overview

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 results are reported in this section.

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

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

Test Settings

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW \geq 1% of the emission bandwidth
- 4. VBW <u>></u> 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 77 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 77 of 172
© 2018 PCTEST Engineering Lat	V 8.5 08/29/2018			



Test Notes

Per 22.917(b), 24.238(a), 27.53(h) 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 to demonstrate compliance with the out-of-band emissions limit. 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.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

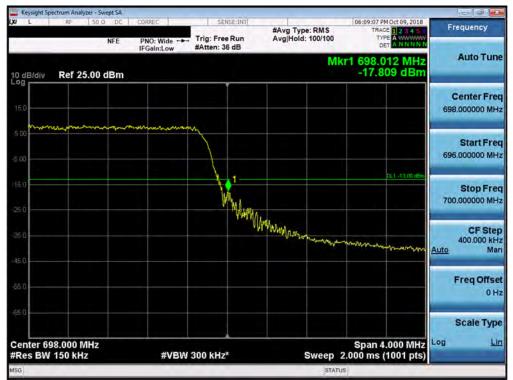
Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P) dB$ on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P) dB$ on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that $43 + 10 \log (P) dB$ on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 79 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 78 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			





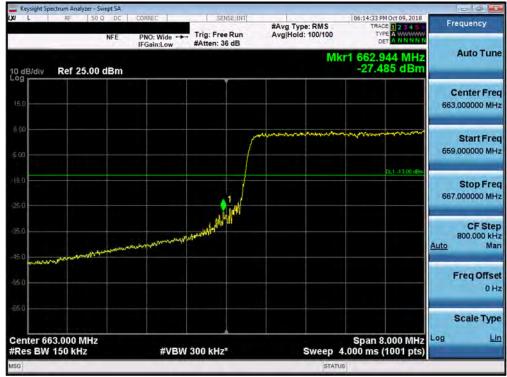
Plot 7-111. Lower Band Edge Plot (Band 71 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-112. Upper Band Edge Plot (Band 71 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 70 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 79 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			





Plot 7-113. Lower Band Edge Plot (Band 71 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-114. Upper Band Edge Plot (Band 71 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 90 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 80 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



CORREC	SENSE:INT		06:22:35 PM Oct 09, 2018	Harrison and the
PNO: Wide	Trig: Free Run	#Avg Type: RMS Avg Hold: 100/100	TRACE 2 3 4 5 0 TYPE A WWWWW DET A NNNNN	Frequency
IFGain:Low	#Atten: 30 dB	Mk		Auto Tun
				Center Free 663.000000 MH
	\int	·····		Start Fre 657,000000 MH
			GL1 -13.00 dBm	Stop Fre 669.000000 MF
, marine	man Al Well			CF Ste 1.200000 MH Auto Ma
				Freq Offs 0 F
				Scale Typ
#VBW	470 kHz*	Sweep 1	Opan 12.00 Minz	Log <u>Li</u>
	PNO: Wide	PNO: Wide Trig: Free Run	PNO: Wide - Trig: Free Run IFGain:Low #Atten: 36 dB Mk	PNO: Wide Free Run #Avg Type: RMS Avg Hold: 100/100 THREE TYPE Avg Hold: 100/100 THREE TYPE Avg Type: RMS TRACE THREE TYPE Avg Type: RMS TRACE THREE TYPE Avg Type: RMS TRACE TYPE TYPE TYPE TRACE

Plot 7-115. Lower Band Edge Plot (Band 71 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-116. Upper Band Edge Plot (Band 71 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 91 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 81 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



X/ L RF 50	Ω DC CORREC	SENSE:INT		06:26:36 PM Oct 09, 2018	
	NFE PNO: Wide	Trig: Free Run #Atten: 36 dB	#Avg Type: RMS Avg[Hold: 100/100	TYPE A WINNIN N	Frequency
10 dB/div Ref 25.00) dBm		Mkr	1 662.840 MHz -33.225 dBm	Auto Tun
15.0					Center Fre 663.000000 MF
5.00		ſ	um and	m	Start Fre 655.000000 MH
15.0				0L1 -13.00 dBm	Stop Fre 671.000000 MF
35.0	munin	- And and a second			CF Ste 1.600000 MH Auto Ma
45.0 55.0 mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	ar hanne				Freq Offs 01
65.0					Scale Typ
Center 663.000 MHz #Res BW 200 kHz		√ 620 kHz*	Sweep 1.	Span 16.00 MHz 000 ms (1001 pts)	Log <u>L</u>
ISG			STATUS		

Plot 7-117. Lower Band Edge Plot (Band 71 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-118. Upper Band Edge Plot (Band 71 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 92 of 172
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 82 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



Band 12



Plot 7-119. Lower Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



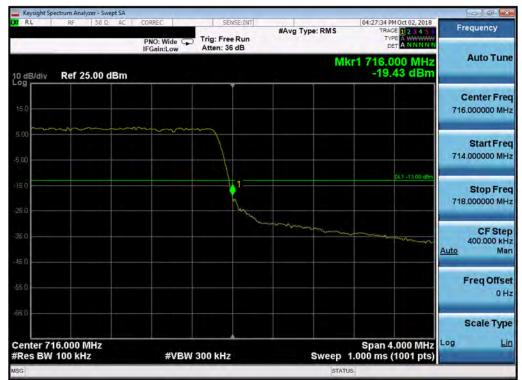
Plot 7-120. Upper Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 92 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 83 of 172	
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RL RF 50Ω AC	CORREC	SENSE:INT		04:27:05 PM Oct 02, 2018	Frequency
	PNO: Wide C	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TYPE A WWWW	
0 dB/div Ref 25.00 dBm			MI	41 697.952 MHz -34.80 dBm	Auto Tur
15.0					Center Fre 698.000000 MH
5.00					Start Fre 696.000000 Mi
50				OL1 -13.00 dBm	Stop Fre 700.000000 Mi
50	m				CF Sto 400.000 k Auto M
5.0					Freq Offs 0
enter 698.000 MHz Res BW 100 kHz	#VBW	300 kHz	Sweep	Span 4.000 MHz 1.000 ms (1001 pts)	Scale Tyj
iG	_		STATL		

Plot 7-121. Lower Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



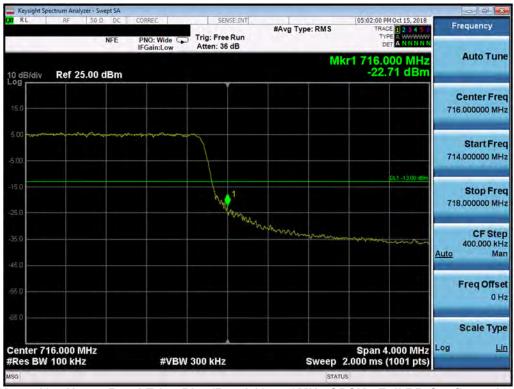
Plot 7-122. Upper Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 04 of 470
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 84 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC	CORREC SENSE:INT	#Avg Type: RMS	04:47:49 PM Oct 02, 2018 TRACE 1 2 3 4 5 0	Frequency
	PNO: Wide C Trig: Free Run IFGain:Low Atten: 36 dB		TYPE A WWWWWW DET A NNNNN	
10 dB/div Ref 25.00 dBm		M	kr1 697.892 MHz -37.71 dBm	Auto Tun
15,0				Center Fre 698.000000 MH
5.00				Start Fre 696.000000 MH
15.0		m	0L1 -13.00 dBm	Stop Fre 700.000000 MH
35 0 45 0		m		CF Ste 400.000 kł Auto Ma
55.0				Freq Offs 0 H
65 0 Center 698.000 MHz #Res BW 100 kHz	#VBW 300 kHz	Swoon	Span 4.000 MHz 1.000 ms (1001 pts)	Scale Typ
50 FRES DW 100 KHZ	#VBW 500 KH2	SWCCP		

Plot 7-123. Lower Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-124. Upper Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 05 of 170
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 85 of 172
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018			



Keysight Spectrum Analyzer - Sw		1			- 6 ×
X RL RF 50 S	NFE PNO: Wide C	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	01:19:01 AM Oct 25, 2018 TRACE 1 2 3 4 5 0 TYPE A WWWWW DET A NNNNN	Frequency
10 dB/div Ref 25.00			м	kr1 697.872 MHz -49.61 dBm	Auto Tune
15.0					Center Free 698.000000 MH
5.00					Start Fre 694.000000 MH
-15.0				OL1 -13.00 wBm	Stop Fre 702.000000 MH
.950		1	1940 best of		CF Ste 800.000 kH Auto Ma
-55.0	and a second and a s	and a second a second a second a second a second a second a			Freq Offse 0 H
Center 698.000 MHz #Res BW 100 kHz	#VBW :	300 kHz	Sweep	Span 8.000 MHz 4.000 ms (1001 pts)	Scale Type Log Li
150			STAT		

Plot 7-125. Lower Band Edge Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-126. Upper Band Edge Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

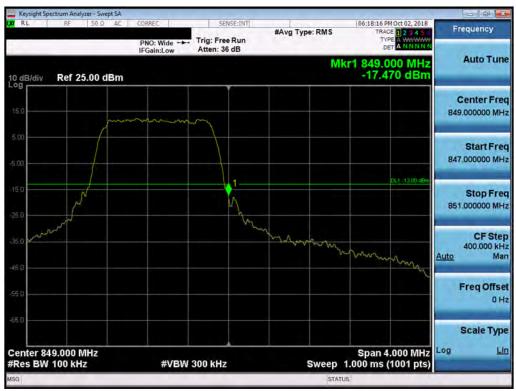
FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 96 of 170	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 86 of 172	
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Band 5

Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC	CORREC	SENSE:INT		06:14:11 PM Oct 02, 2018	00
NE Nº JUX AC	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WALKING	Frequency
dB/div Ref 25.00 dBm			Mk	1 823.988 MHz -15.834 dBm	Auto Tur
5.0		~			Center Fre 824.000000 MH
.00					Start Fr 822.000000 M
50				DL1 -13.00 dBm	Stop Fr 826.000000 M
50	www.			- min	CF St 400.000 k Auto M
5.0					Freq Offs 0
enter 824.000 MHz				Span 4.000 MHz	Scale Tyj
Res BW 100 kHz	#VBW :	300 kHz	Sweep 1	.000 ms (1001 pts)	

Plot 7-127. Lower Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-128. Upper Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 97 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset		Page 87 of 172	
© 2019 DCTEST Engineering Lab	V/ 9 E 09/20/2019				

V 8.5 08/29/2018



Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC	CORREC	SENSE:INT		06:25:08 PM Oct 02, 2018	×
	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A	Frequency
Mkr1 823.996 MHz 10 dB/div Ref 25.00 dBm -18.587 dBm					
15.0					Center Fre 824.000000 MF
5.00		\int			Start Fre 822.000000 MH
250		1		OL1 -13.00 dBm	Stop Fre 826.000000 Mi
45.0	mann	John Market			CF Ste 400.000 ki Auto M
65 0					Freq Offs 01
Senter 824.000 MHz				Span 4.000 MHz	Scale Typ
Res BW 100 kHz	#VBW	300 kHz*	Sweep 1	.000 ms (1001 pts)	

Plot 7-129. Lower Band Edge Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-130. Upper Band Edge Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260T1		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 88 of 172	
1M1809210181-03.A3L	9/21 - 10/26/2018	Portable Handset			
© 2018 PCTEST Engineering Lab	V 8.5 08/29/2018				