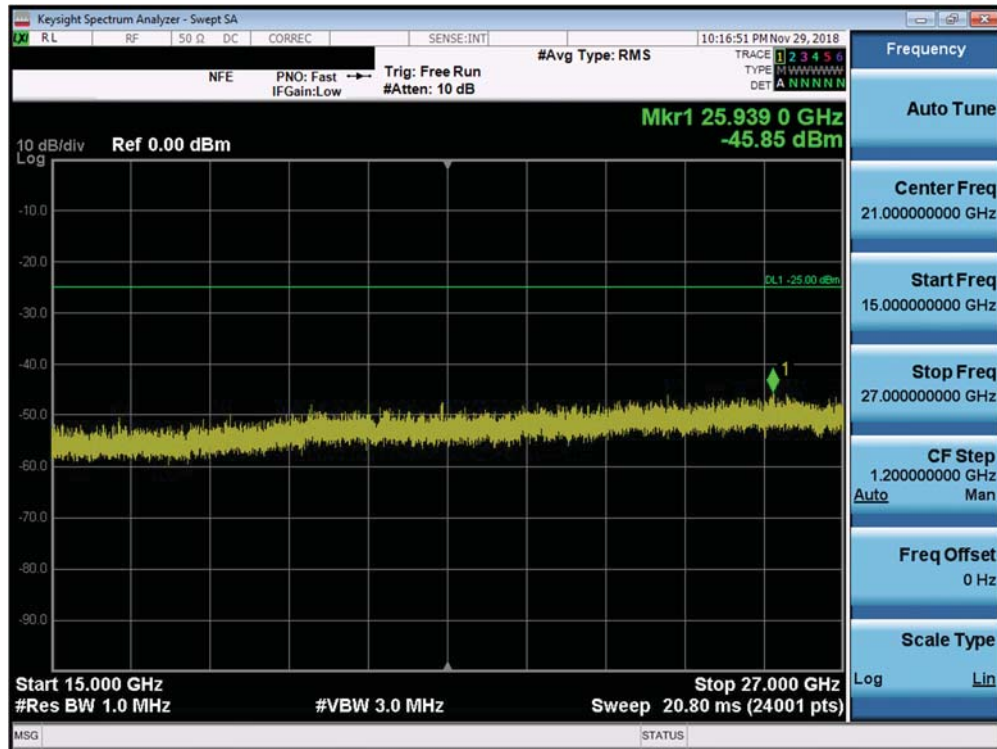
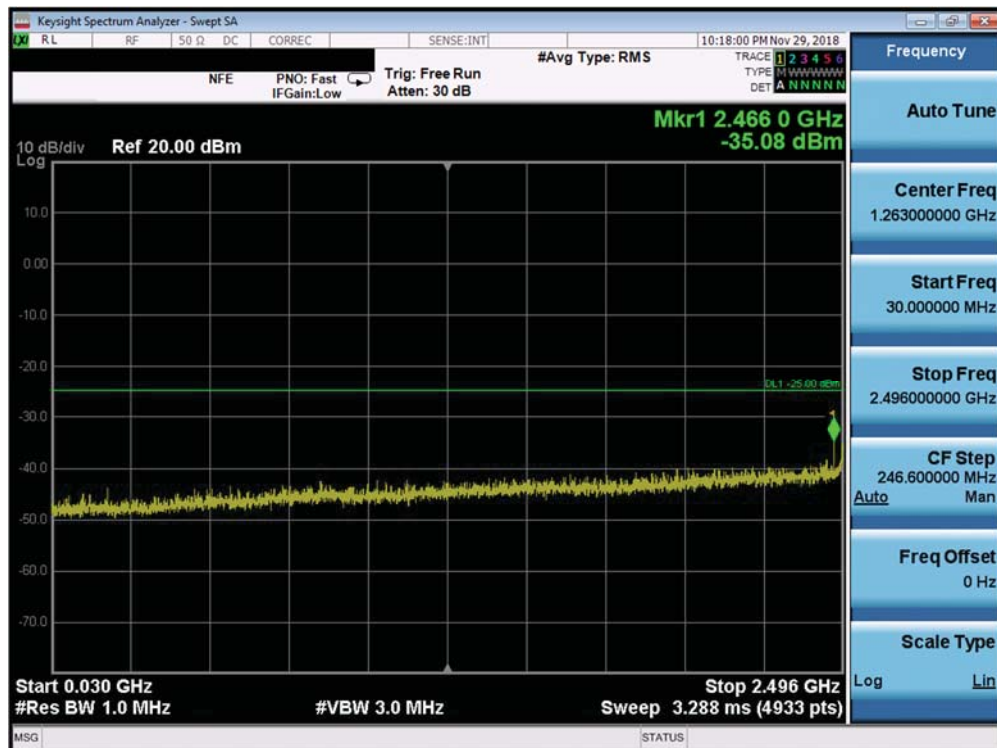


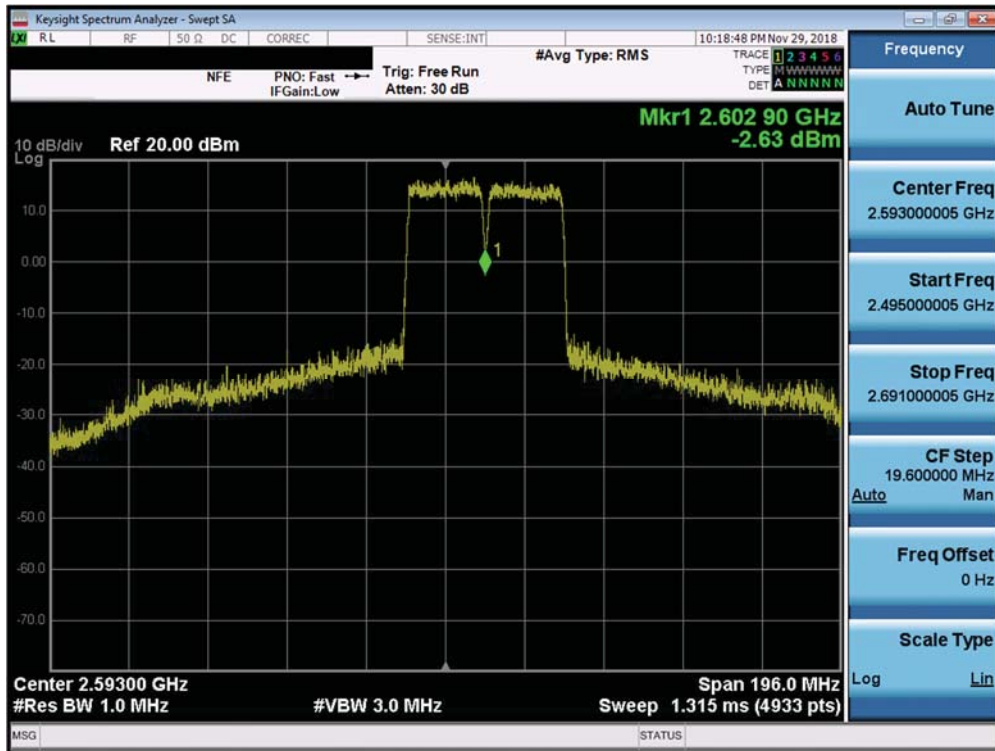


Plot 7-489. Conducted Spurious Plot (Band 41 – PC3 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

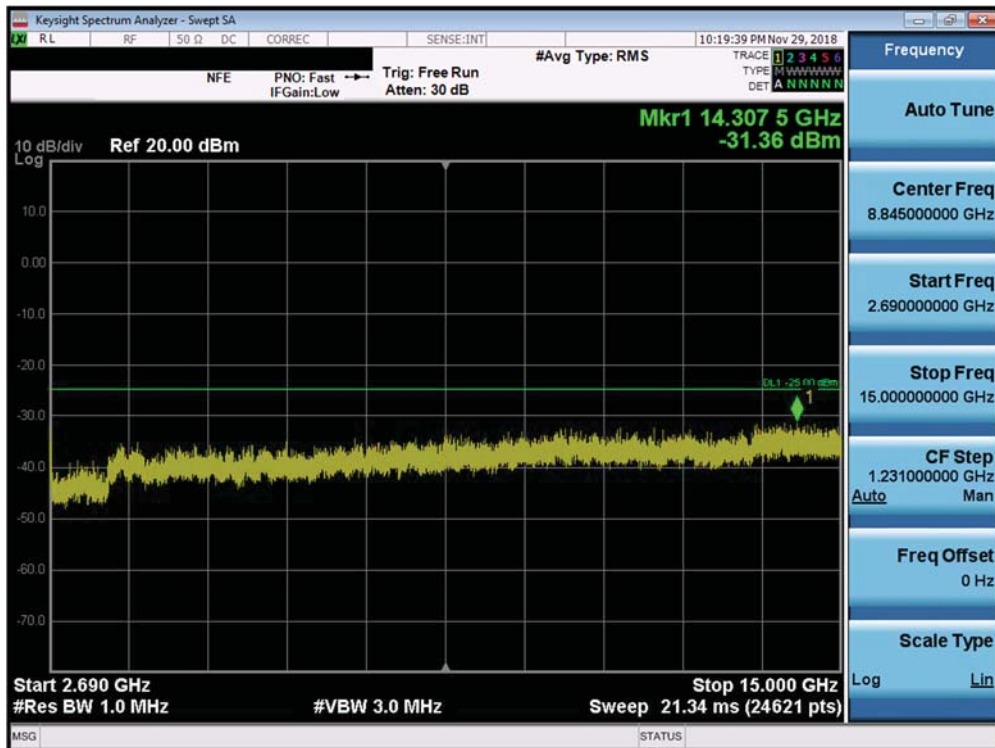


Plot 7-490. Conducted Spurious Plot (Band 41 – PC3 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 279 of 391

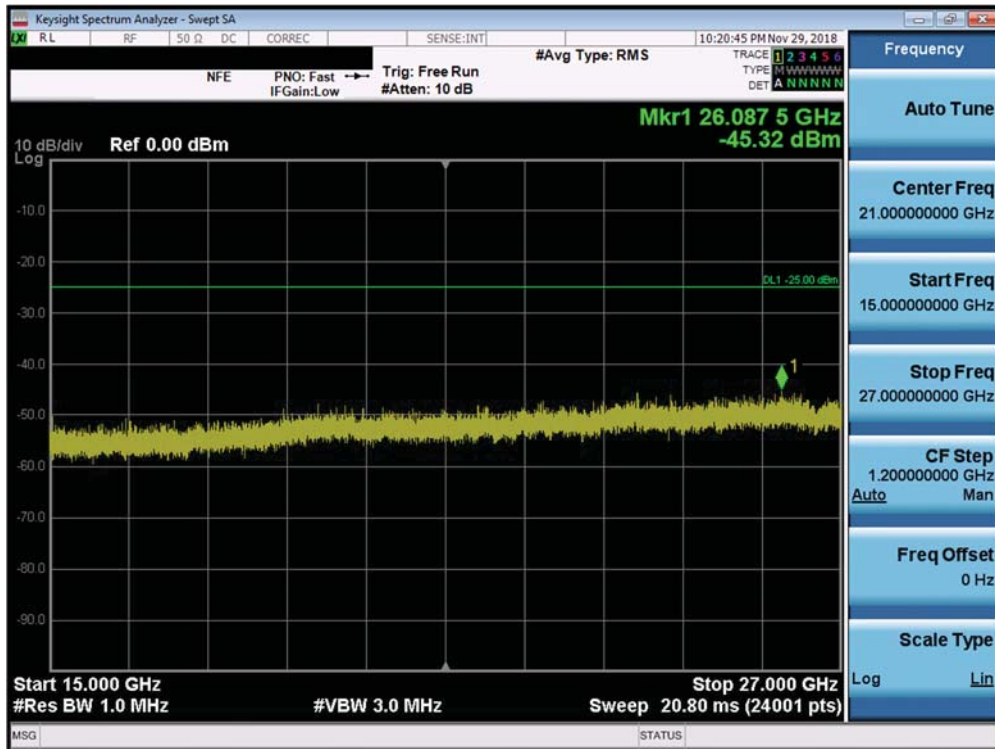


Plot 7-491. Conducted Spurious Plot (Band 41 – PC3 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

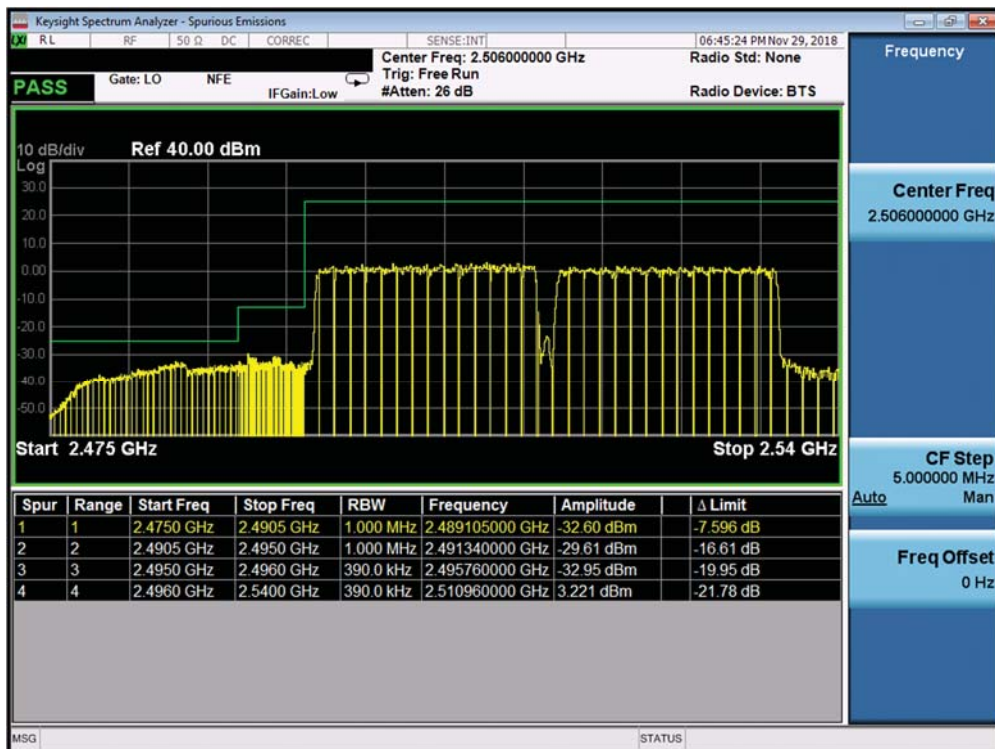


Plot 7-492. Conducted Spurious Plot (Band 41 – PC3 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 280 of 391

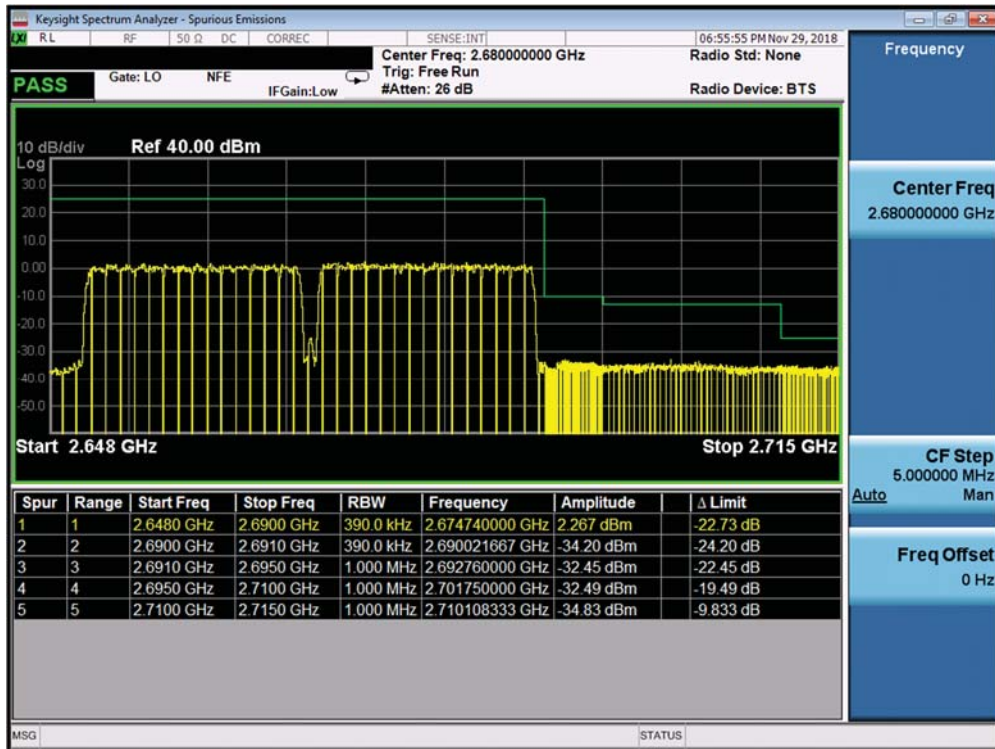


Plot 7-493. Conducted Spurious Plot (Band 41 – PC3 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-494. Lower Band Edge Plot (Band 41 QPSK – PC3 – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 281 of 391



Plot 7-495. Upper Band Edge Plot (Band 41 QPSK – PC3 – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG970U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 282 of 391

Uplink CA Cofiguration 5B

Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B5	3	20415	825.5	QPSK	1	14	LTE B5	5	20454	829.4	QPSK	1	0	24.77
Max	LTE B5	5	20425	826.5	QPSK	1	24	LTE B5	3	20464	830.4	QPSK	1	0	24.81
Max	LTE B5	5	20425	826.5	QPSK	1	24	LTE B5	10	20497	833.7	QPSK	1	0	25.58
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	5	20522	836.2	QPSK	1	0	25.64
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.76
Max	LTE B5	3	20525	836.5	QPSK	1	14	LTE B5	5	20564	840.4	QPSK	1	0	24.60
Max	LTE B5	5	20525	836.5	QPSK	1	24	LTE B5	3	20564	840.4	QPSK	1	0	24.67
Max	LTE B5	5	20525	836.5	QPSK	1	24	LTE B5	10	20597	843.7	QPSK	1	0	25.69
Max	LTE B5	10	20525	836.5	QPSK	1	49	LTE B5	5	20597	843.7	QPSK	1	0	25.69
Max	LTE B5	3	20635	847.5	QPSK	1	0	LTE B5	5	20596	843.6	QPSK	1	24	23.94
Max	LTE B5	5	20625	846.5	QPSK	1	0	LTE B5	3	20586	842.6	QPSK	1	14	24.32
Max	LTE B5	5	20625	846.5	QPSK	1	0	LTE B5	10	20553	839.3	QPSK	1	49	25.61
Max	LTE B5	10	20600	844	QPSK	1	0	LTE B5	5	20528	836.8	QPSK	1	24	25.61
Max	LTE B5	10	20600	844	QPSK	1	0	LTE B5	10	20501	834.1	QPSK	1	49	25.72

Table 7-8. Conducted Powers (B5 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

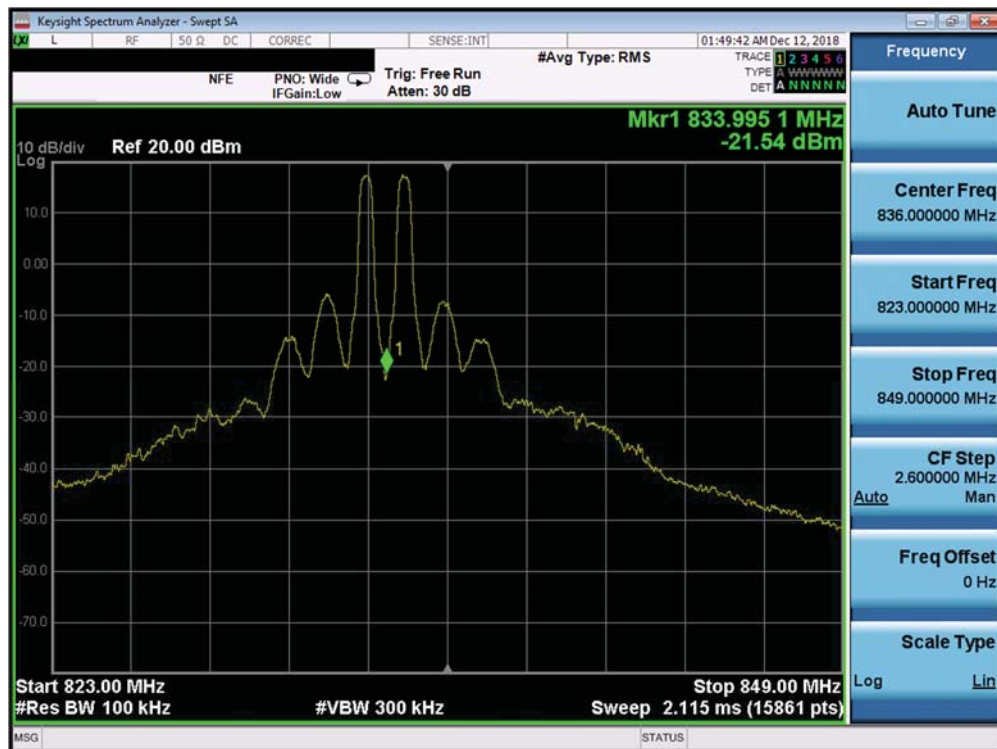
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B5	10	20450	829	QPSK	1	0	LTE B5	10	20549	838.9	QPSK	1	0	18.17
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	49	18.25
Max	LTE B5	10	20450	829	QPSK	1	0	LTE B5	10	20549	838.9	QPSK	1	49	17.80
Max	LTE B5	10	20450	829	QPSK	1	25	LTE B5	10	20549	838.9	QPSK	1	25	18.32
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.76
Max	LTE B5	10	20450	829	QPSK	50	0	LTE B5	10	20549	838.9	QPSK	50	0	24.47
Max	LTE B5	10	20450	829	16-QAM	50	0	LTE B5	10	20549	838.9	16-QAM	50	0	23.85
Max	LTE B5	10	20450	829	64-QAM	50	0	LTE B5	10	20549	838.9	64-QAM	50	0	23.22
Max	LTE B5	10	20450	829	256-QAM	50	0	LTE B5	10	20549	838.9	256-QAM	50	0	21.46

Table 7-9. Conducted Powers (B5 with Various Combinations for 10MHz Channel Bandwidth)

FCC ID: A3LSMG970U			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 283 of 391	

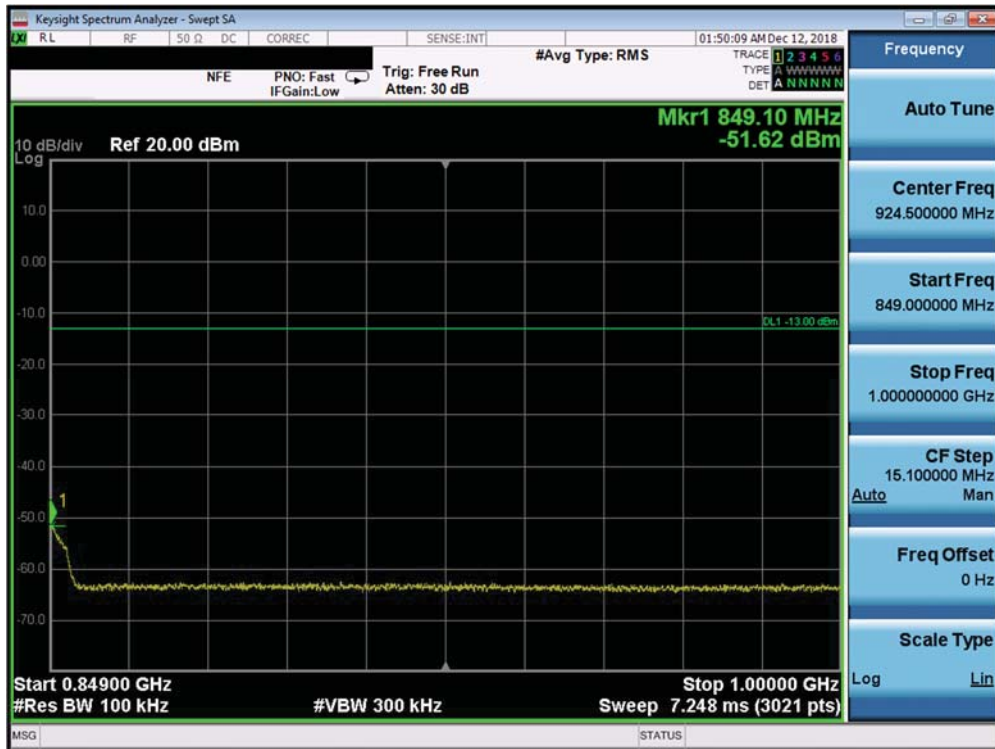


Plot 7-496. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

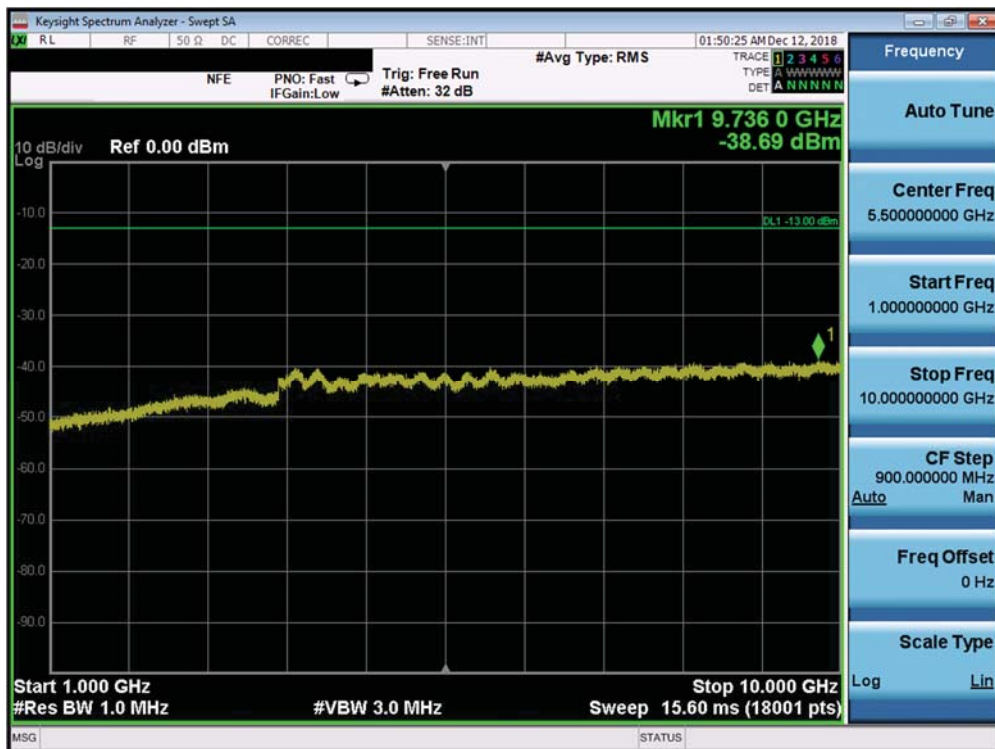


Plot 7-497. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 284 of 391



Plot 7-498. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)



Plot 7-499. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 285 of 391

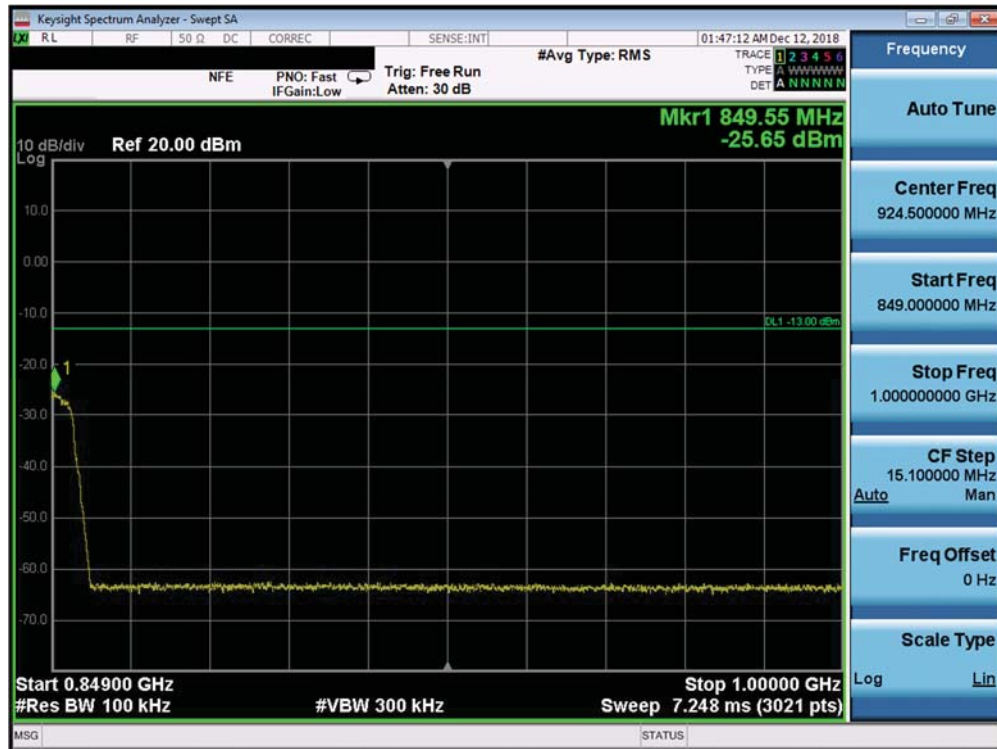


Plot 7-500. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

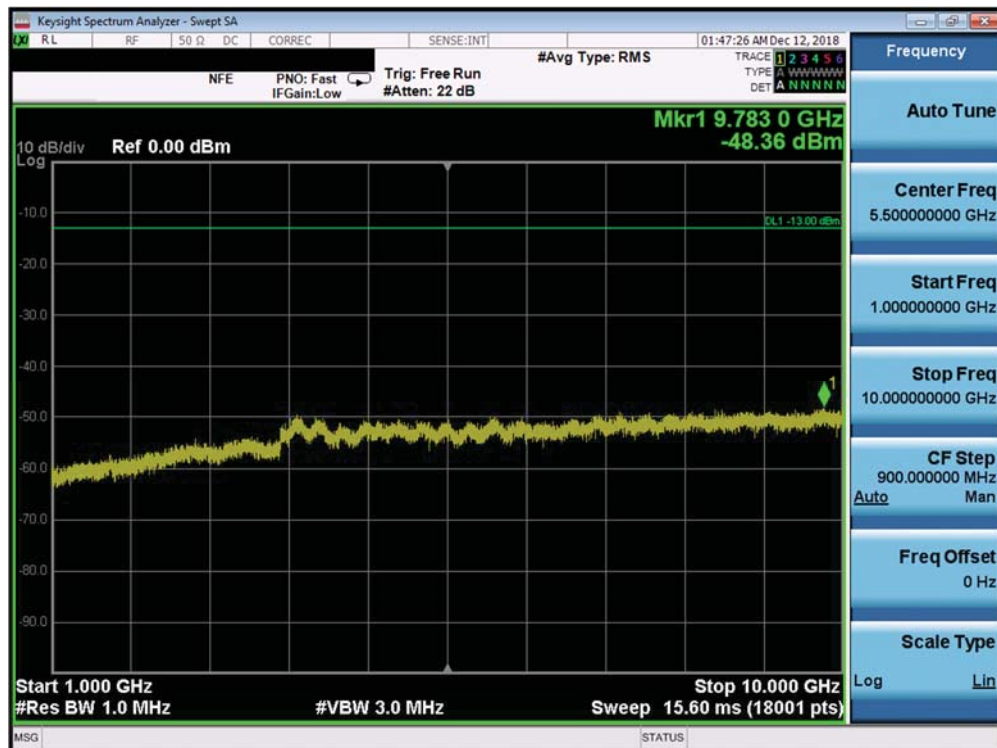


Plot 7-501. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 286 of 391

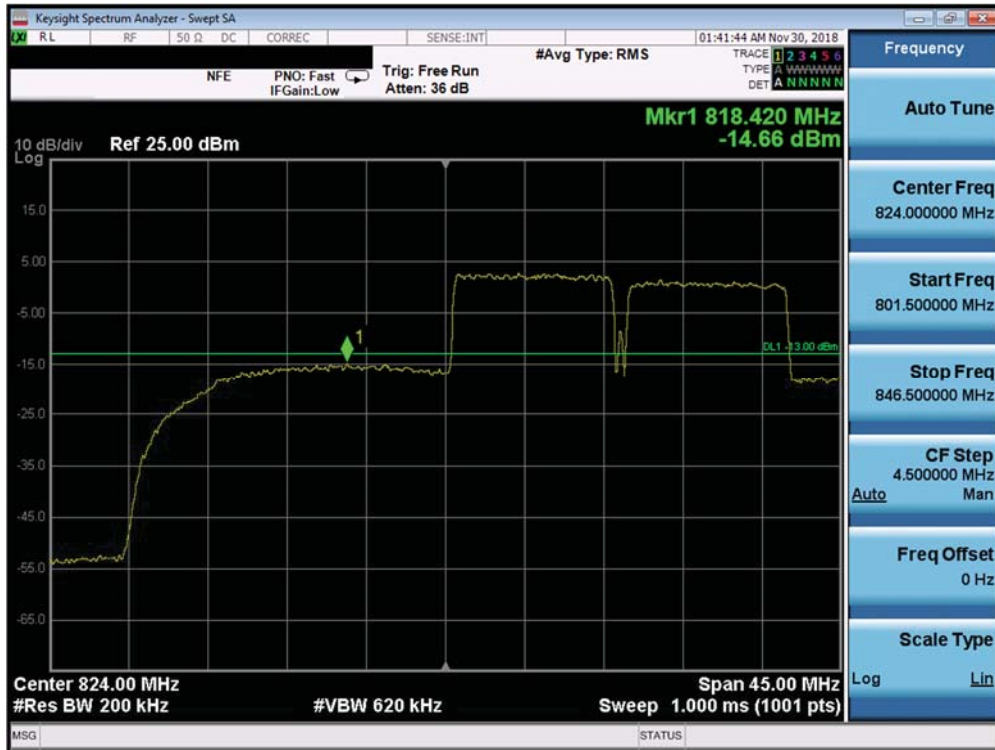


Plot 7-502. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)



Plot 7-503. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 287 of 391



Plot 7-504. Lower Band Edge Plot (Band 5 QPSK – PCC:10 MHz SCC:10 MHz – Full RB)



Plot 7-505. Upper Band Edge Plot (Band 5 QPSK – PCC:10 MHz SCC:10 MHz – Full RB)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 288 of 391

Uplink CA Cofiguration 66B

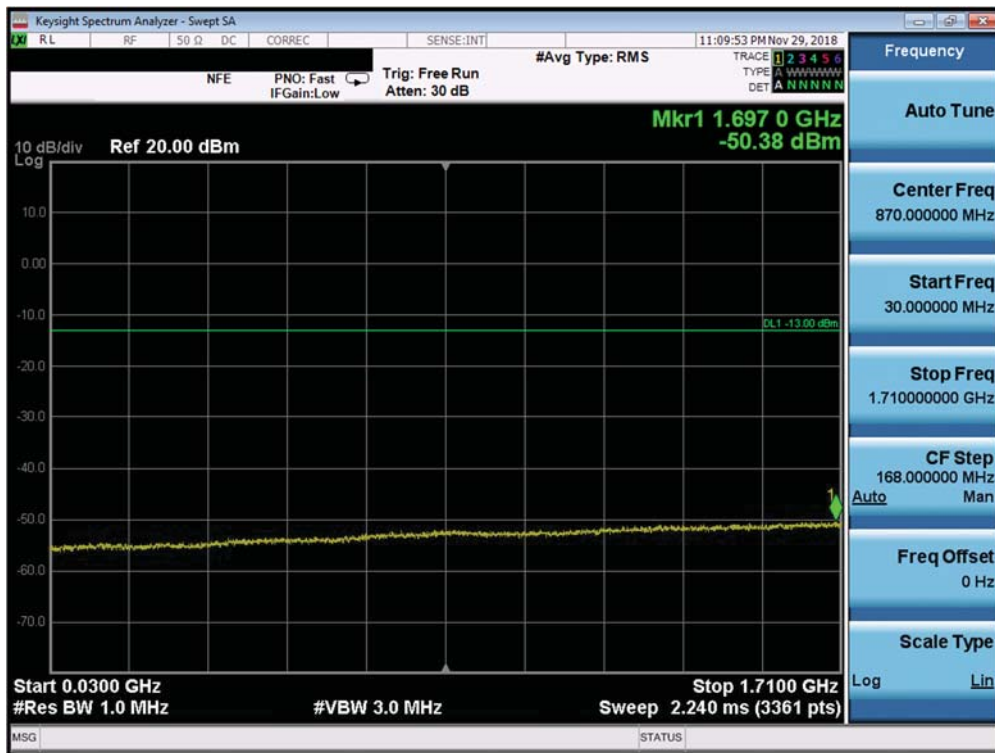
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B66	5	131997	1712.5	QPSK	1	24	LTE B66	5	132045	1717.3	QPSK	1	0	23.22
Max	LTE B66	5	131997	1712.5	QPSK	1	24	LTE B66	10	132069	1719.7	QPSK	1	0	23.78
Max	LTE B66	5	131997	1712.5	QPSK	1	24	LTE B66	15	132090	1721.8	QPSK	1	0	24.22
Max	LTE B66	10	132022	1715	QPSK	1	49	LTE B41	5	132094	1722.2	QPSK	1	0	24.12
Max	LTE B66	10	132022	1715	QPSK	1	49	LTE B41	10	132121	1724.9	QPSK	1	0	23.88
Max	LTE B66	15	132047	1717.5	QPSK	1	74	LTE B66	5	132140	1726.8	QPSK	1	0	24.21
Max	LTE B66	5	132322	1745	QPSK	1	24	LTE B66	5	132370	1749.8	QPSK	1	0	23.55
Max	LTE B66	5	132322	1745	QPSK	1	24	LTE B66	10	132394	1752.2	QPSK	1	0	23.26
Max	LTE B66	5	132322	1745	QPSK	1	24	LTE B66	15	132415	1754.3	QPSK	1	0	24.08
Max	LTE B66	10	132322	1745	QPSK	1	49	LTE B66	5	132394	1752.2	QPSK	1	0	24.26
Max	LTE B66	10	132322	1745	QPSK	1	49	LTE B66	10	132421	1754.9	QPSK	1	0	24.21
Max	LTE B66	15	132322	1745	QPSK	1	74	LTE B66	5	132415	1754.3	QPSK	1	0	24.81
Max	LTE B66	5	132647	1777.5	QPSK	1	0	LTE B66	5	132599	1772.7	QPSK	1	24	23.01
Max	LTE B66	5	132647	1777.5	QPSK	1	0	LTE B66	10	132575	1770.3	QPSK	1	49	24.12
Max	LTE B66	5	132647	1777.5	QPSK	1	0	LTE B66	15	132554	1768.2	QPSK	1	74	24.20
Max	LTE B66	10	132622	1775	QPSK	1	0	LTE B66	5	132550	1767.8	QPSK	1	24	24.22
Max	LTE B66	10	132622	1775	QPSK	1	0	LTE B66	10	132523	1765.1	QPSK	1	49	24.61
Max	LTE B66	15	132597	1772.5	QPSK	1	0	LTE B66	5	132504	1763.2	QPSK	1	24	24.88

Table 7-10. Conducted Powers (B66 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

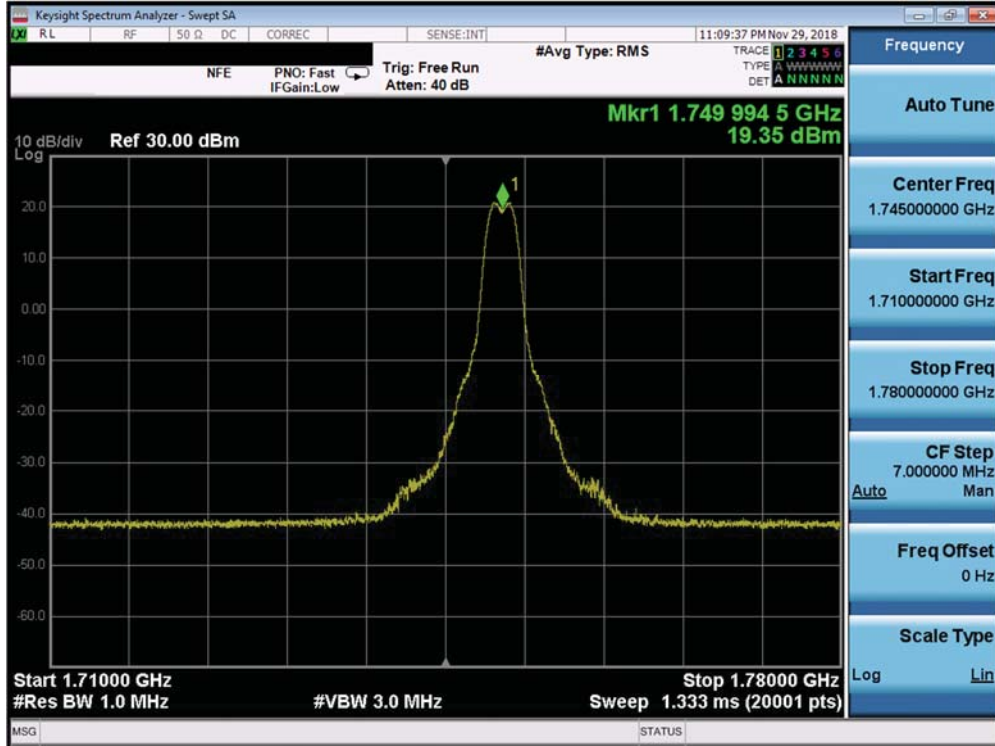
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B66	15	132047	1717.5	QPSK	1	0	LTE B66	5	132140	1726.8	QPSK	1	0	16.89
Max	LTE B66	15	132047	1717.5	QPSK	1	73	LTE B66	5	132140	1726.8	QPSK	1	24	16.87
Max	LTE B66	15	132047	1717.5	QPSK	1	0	LTE B66	5	132140	1726.8	QPSK	1	24	16.89
Max	LTE B66	15	132047	1717.5	QPSK	1	38	LTE B66	5	132140	1726.8	QPSK	1	13	16.87
Max	LTE B66	15	132047	1717.5	QPSK	1	73	LTE B66	5	132140	1726.8	QPSK	1	0	24.21
Max	LTE B66	15	132047	1717.5	QPSK	75	0	LTE B66	5	132140	1726.8	QPSK	25	0	23.55
Max	LTE B66	15	132047	1717.5	16-QAM	75	0	LTE B66	5	132140	1726.8	16-QAM	25	0	22.43
Max	LTE B66	15	132047	1717.5	64-QAM	75	0	LTE B66	5	132140	1726.8	64-QAM	25	0	21.89
Max	LTE B66	15	132047	1717.5	256-QAM	75	0	LTE B66	5	132140	1726.8	256-QAM	25	0	19.49

Table 7-11. Conducted Powers (B66 with Various Combinations for 15MHz + 5MHz Channel Bandwidth)

FCC ID: A3LSMG970U			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset			Page 289 of 391

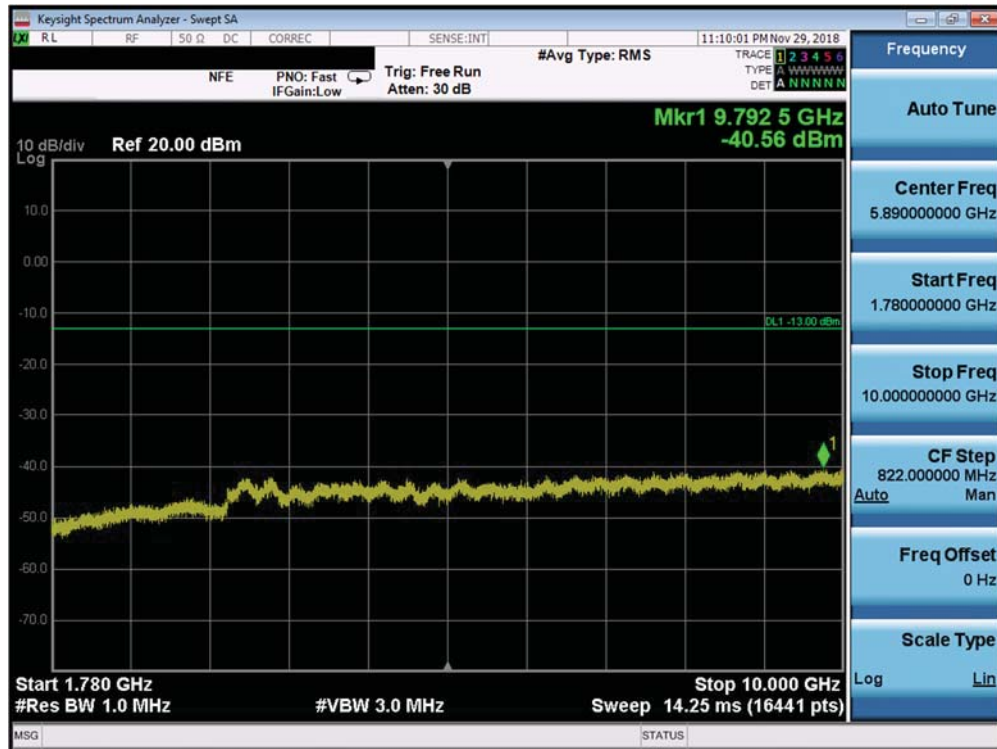


Plot 7-506. Conducted Spurious Plot (Band 66 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

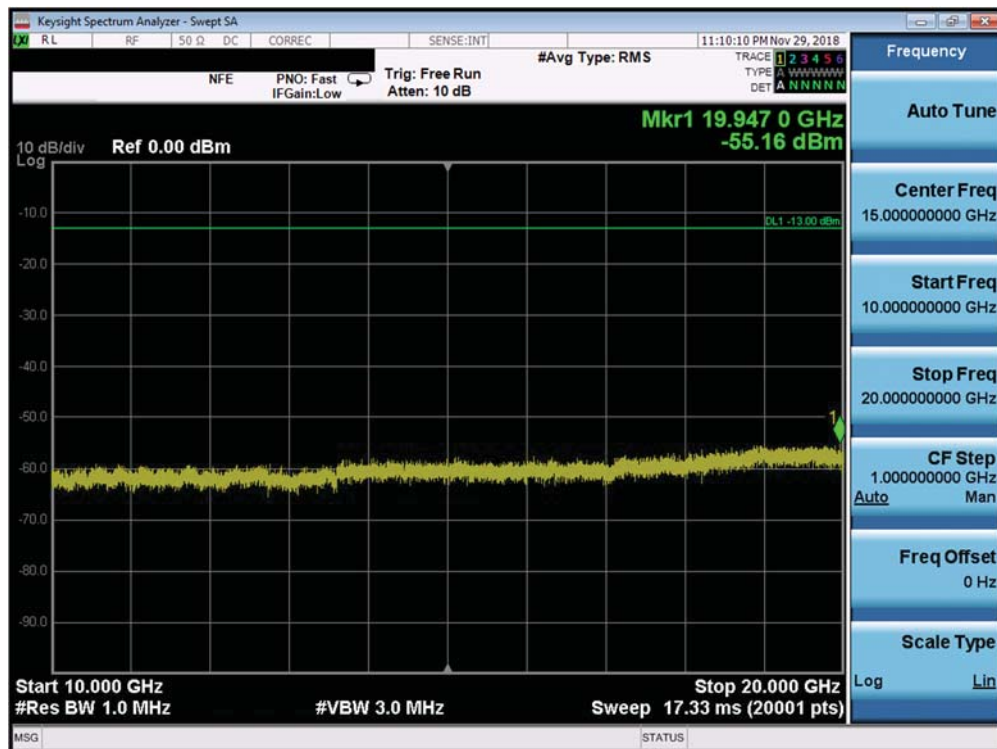


Plot 7-507. Conducted Spurious Plot (Band 66 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 290 of 391

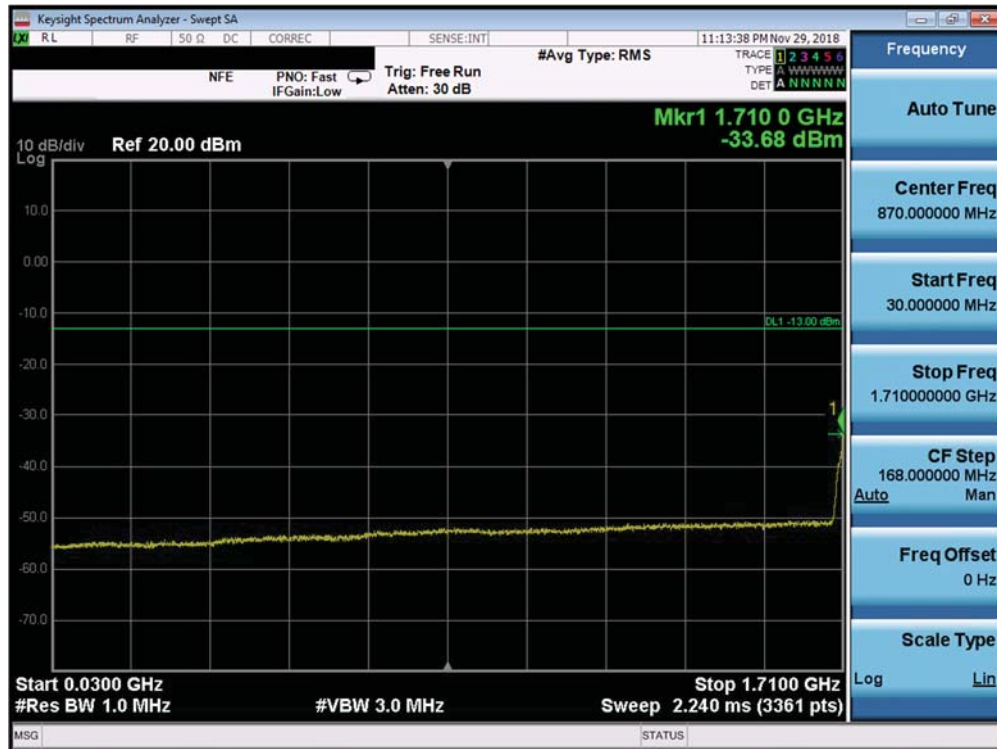


Plot 7-508. Conducted Spurious Plot Band 66 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

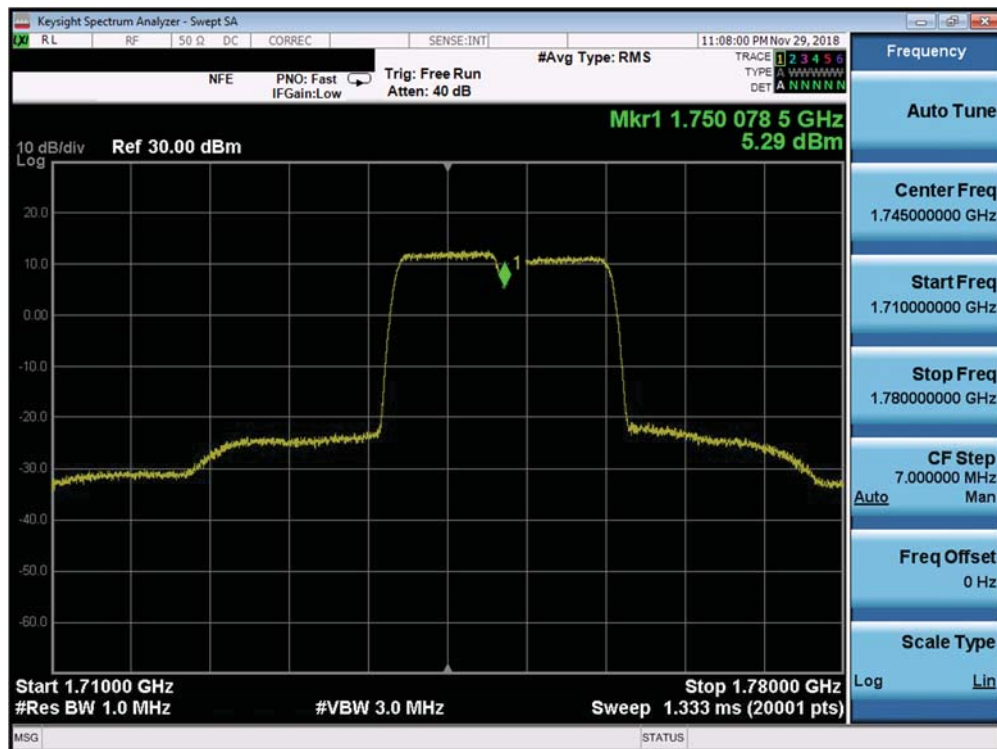


Plot 7-509. Conducted Spurious Plot Band 66 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 291 of 391

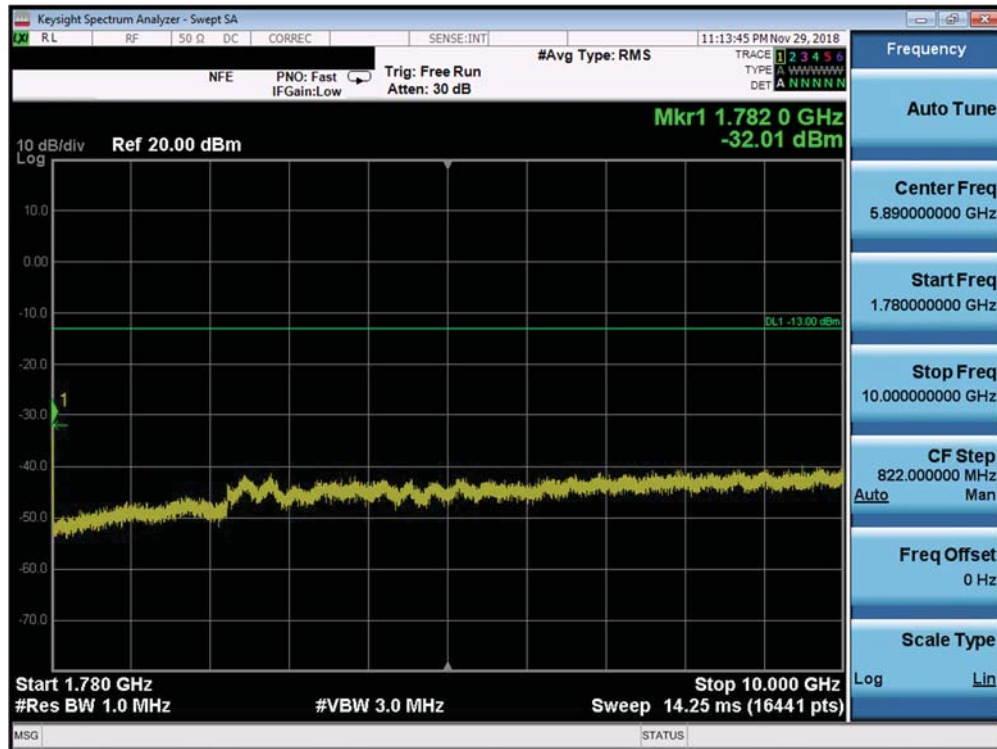


Plot 7-510. Conducted Spurious Plot (Band 66 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

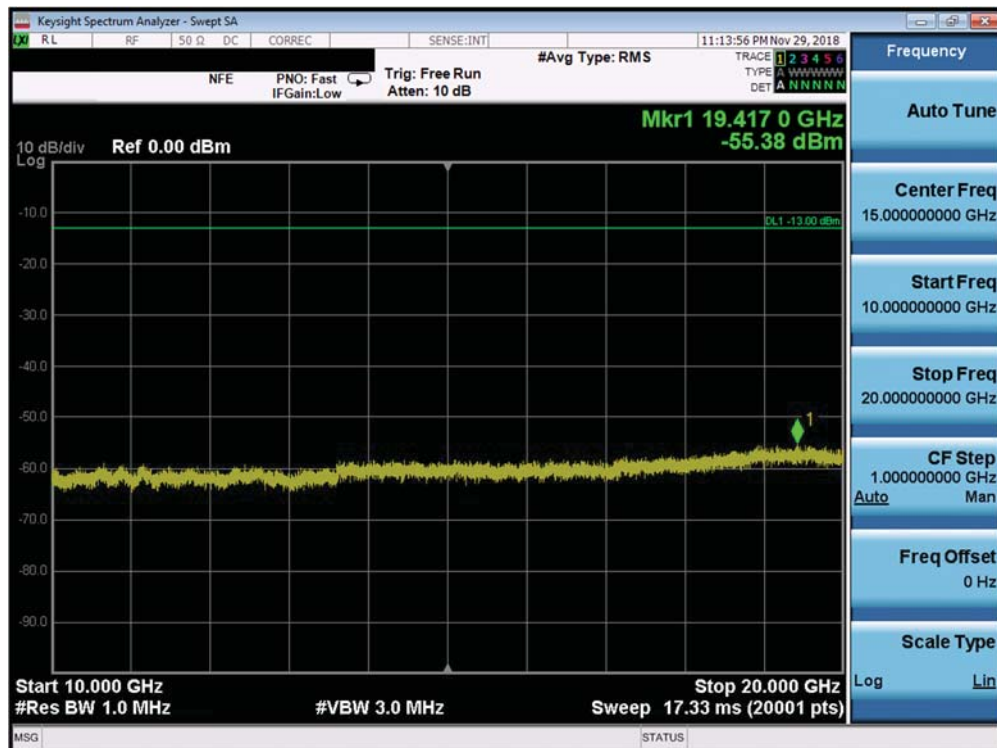


Plot 7-511. Conducted Spurious Plot (Band 66 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 292 of 391



Plot 7-512. Conducted Spurious Plot (Band 66 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

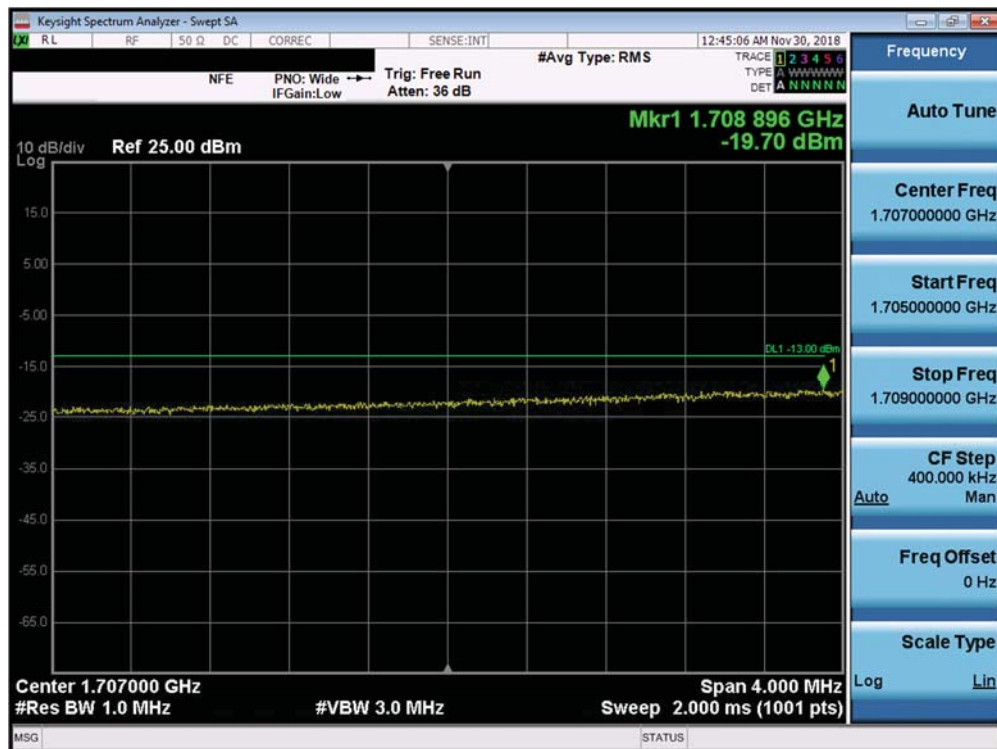


Plot 7-513. Conducted Spurious Plot (Band 66 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 293 of 391



Plot 7-514. Lower Band Edge Plot (Band 66 QPSK – PCC:15 MHz SCC:5 MHz – Full RB)

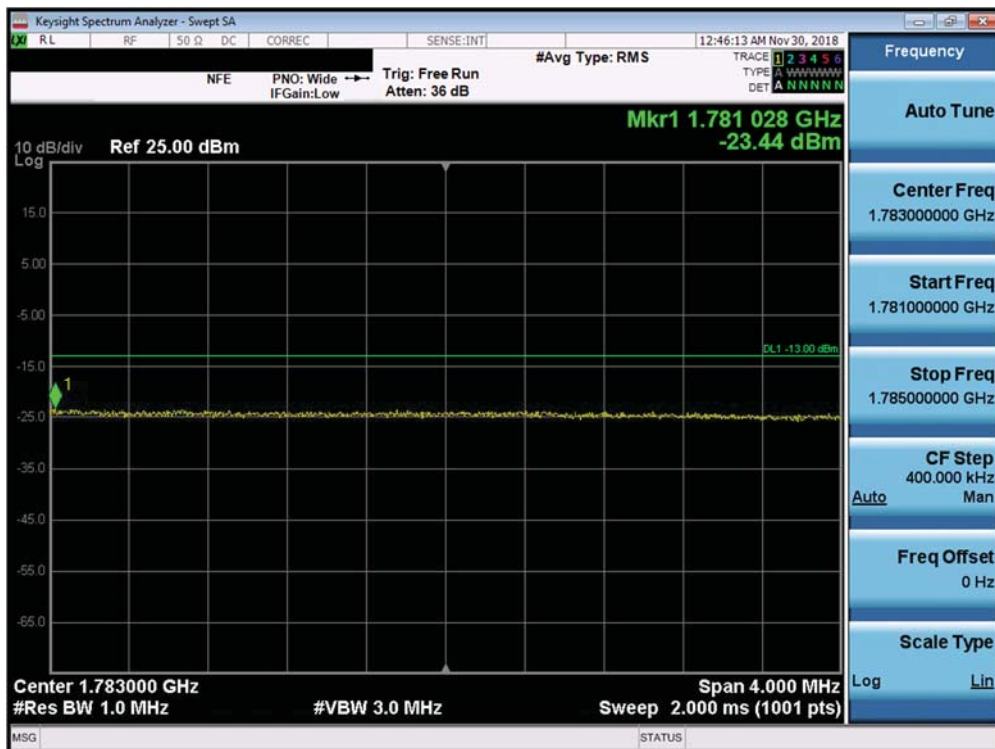


Plot 7-515. Extended Lower Band Edge Plot (Band 66 QPSK – PCC:15 MHz SCC:5 MHz – Full RB)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 294 of 391



Plot 7-516. Upper Band Edge Plot (Band 66 QPSK – PCC:15 MHz SCC:5 MHz – Full RB)



Plot 7-517. Extended Upper Band Edge Plot (Band 66 QPSK – PCC:15 MHz SCC:5 MHz – Full RB)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 295 of 391

Uplink CA Cofiguration 66C

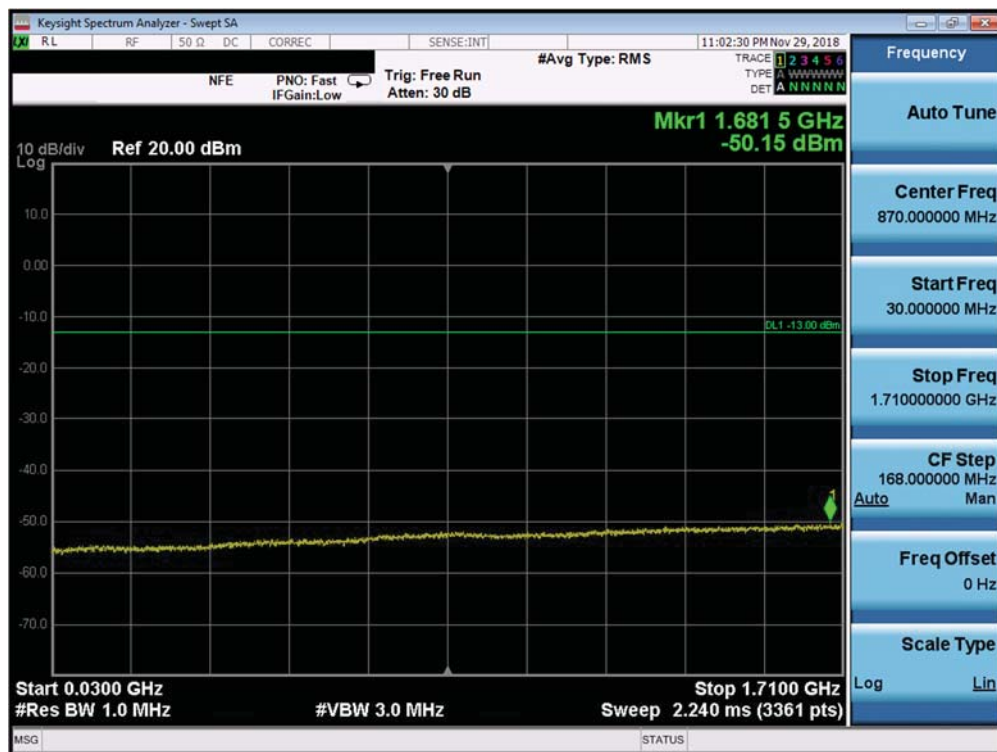
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B66	5	131997	1712.5	QPSK	1	24	LTE B66	20	132114	1724.2	QPSK	1	0	24.19
Max	LTE B66	10	132022	1715	QPSK	1	49	LTE B66	15	132142	1727	QPSK	1	0	24.08
Max	LTE B66	10	132022	1715	QPSK	1	49	LTE B66	20	132166	1729.4	QPSK	1	0	24.16
Max	LTE B66	15	132047	1717.5	QPSK	1	74	LTE B66	10	132167	1729.5	QPSK	1	0	23.44
Max	LTE B66	15	132047	1717.5	QPSK	1	74	LTE B66	15	132197	1732.5	QPSK	1	0	24.39
Max	LTE B66	15	132047	1717.5	QPSK	1	74	LTE B66	20	132218	1734.6	QPSK	1	0	24.02
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	5	132189	1731.7	QPSK	1	0	24.11
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	10	132216	1734.4	QPSK	1	0	23.16
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	15	132243	1737.1	QPSK	1	0	23.87
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	20	132270	1739.8	QPSK	1	0	24.68
Max	LTE B66	5	132322	1745	QPSK	1	24	LTE B66	20	132439	1756.7	QPSK	1	0	23.76
Max	LTE B66	10	132322	1745	QPSK	1	49	LTE B66	15	132442	1757	QPSK	1	0	23.68
Max	LTE B66	10	132322	1745	QPSK	1	49	LTE B66	20	132466	1759.4	QPSK	1	0	23.18
Max	LTE B66	15	132322	1745	QPSK	1	74	LTE B66	10	132442	1757	QPSK	1	0	24.28
Max	LTE B66	15	132322	1745	QPSK	1	74	LTE B66	15	132472	1760	QPSK	1	0	24.17
Max	LTE B66	15	132322	1745	QPSK	1	74	LTE B66	20	132493	1762.1	QPSK	1	0	24.05
Max	LTE B66	20	132322	1745	QPSK	1	99	LTE B66	5	132439	1756.7	QPSK	1	0	24.59
Max	LTE B66	20	132322	1745	QPSK	1	99	LTE B66	10	132466	1759.4	QPSK	1	0	23.34
Max	LTE B66	20	132322	1745	QPSK	1	99	LTE B66	15	132493	1762.1	QPSK	1	0	24.22
Max	LTE B66	20	132322	1745	QPSK	1	99	LTE B66	20	132520	1764.8	QPSK	1	0	24.56
Max	LTE B66	5	132647	1777.5	QPSK	1	0	LTE B66	20	132530	1765.8	QPSK	1	99	24.05
Max	LTE B66	10	132622	1775	QPSK	1	0	LTE B66	15	132502	1763	QPSK	1	74	24.27
Max	LTE B66	10	132622	1775	QPSK	1	0	LTE B66	20	132478	1760.6	QPSK	1	99	24.21
Max	LTE B66	15	132597	1772.5	QPSK	1	0	LTE B66	10	132477	1760.5	QPSK	1	49	24.22
Max	LTE B66	15	132597	1772.5	QPSK	1	0	LTE B66	15	132447	1757.5	QPSK	1	74	23.82
Max	LTE B66	15	132597	1772.5	QPSK	1	0	LTE B66	20	132426	1755.4	QPSK	1	99	23.72
Max	LTE B66	20	132572	1770	QPSK	1	0	LTE B66	5	132455	1758.3	QPSK	1	24	24.28
Max	LTE B66	20	132572	1770	QPSK	1	0	LTE B66	10	132428	1755.6	QPSK	1	49	23.97
Max	LTE B66	20	132572	1770	QPSK	1	0	LTE B66	15	132401	1752.9	QPSK	1	74	24.07
Max	LTE B66	20	132572	1770	QPSK	1	0	LTE B66	20	132374	1750.2	QPSK	1	99	24.64

Table 7-12. Conducted Powers (B66 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

FCC ID: A3LSMG970U			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 296 of 391	

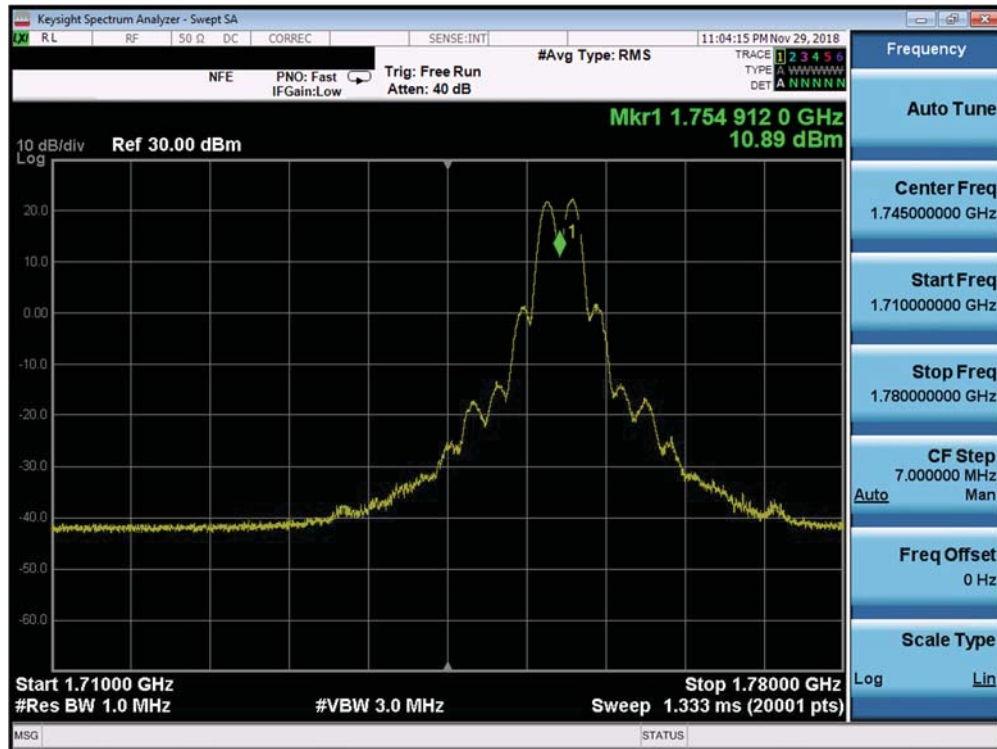
Power State	PCC							SCC							Power
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B66	20	132072	1720	QPSK	1	0	LTE B66	20	132270	1739.8	QPSK	1	0	19.92
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	20	132270	1739.8	QPSK	1	99	20.29
Max	LTE B66	20	132072	1720	QPSK	1	0	LTE B66	20	132270	1739.8	QPSK	1	99	18.85
Max	LTE B66	20	132072	1720	QPSK	1	50	LTE B66	20	132270	1739.8	QPSK	1	50	20.16
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	20	132270	1739.8	QPSK	1	0	24.68
Max	LTE B66	20	132072	1720	QPSK	100	0	LTE B66	20	132270	1739.8	QPSK	100	0	23.52
Max	LTE B66	20	132072	1720	16-QAM	100	0	LTE B66	20	132270	1739.8	16-QAM	100	0	22.27
Max	LTE B66	20	132072	1720	64-QAM	100	0	LTE B66	20	132270	1739.8	64-QAM	100	0	21.41
Max	LTE B66	20	132072	1720	64-QAM	100	0	LTE B66	20	132270	1739.8	256-QAM	100	0	19.16

Table 7-13. Conducted Powers (B66 with Various Combinations for 20MHz + 20MHz Channel Bandwidth)

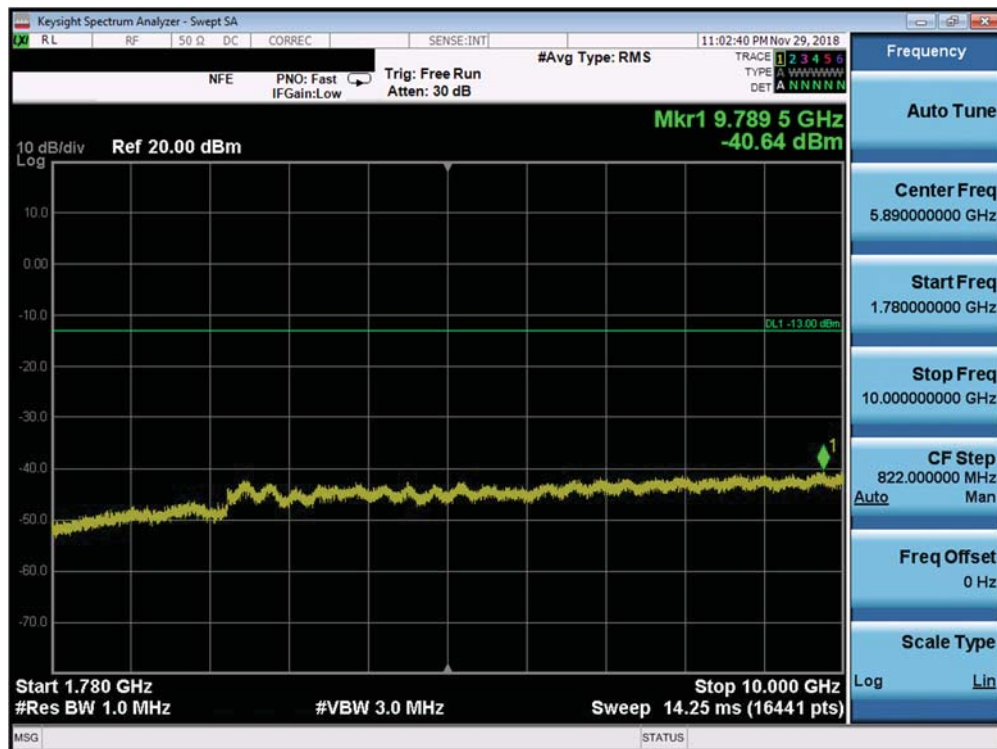


Plot 7-518. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 297 of 391

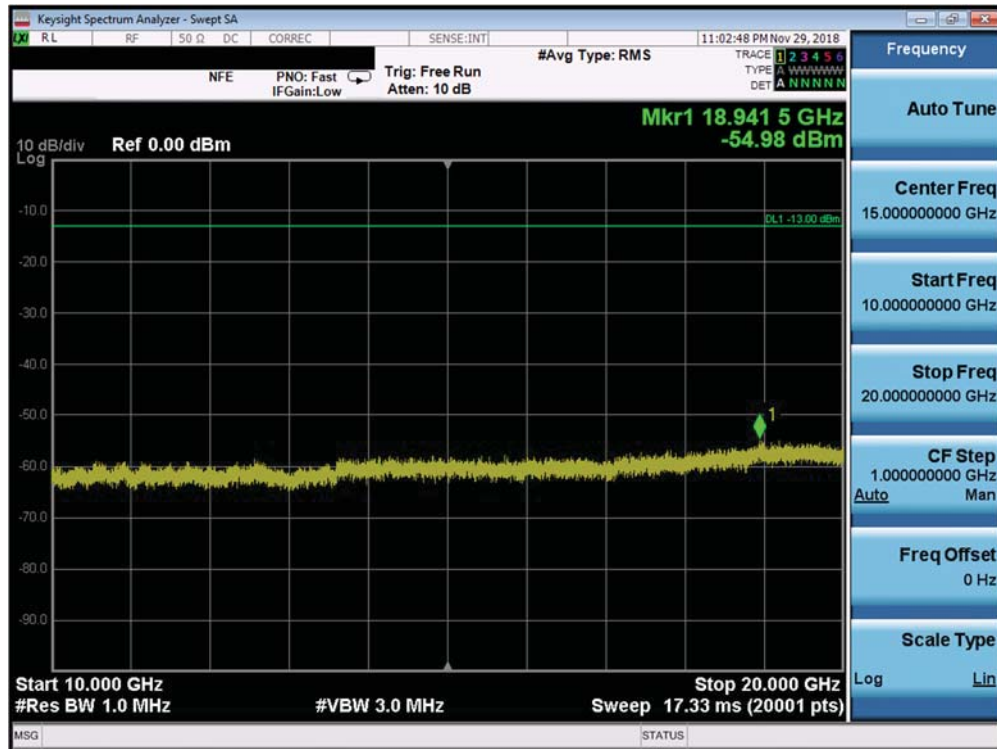


Plot 7-519. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

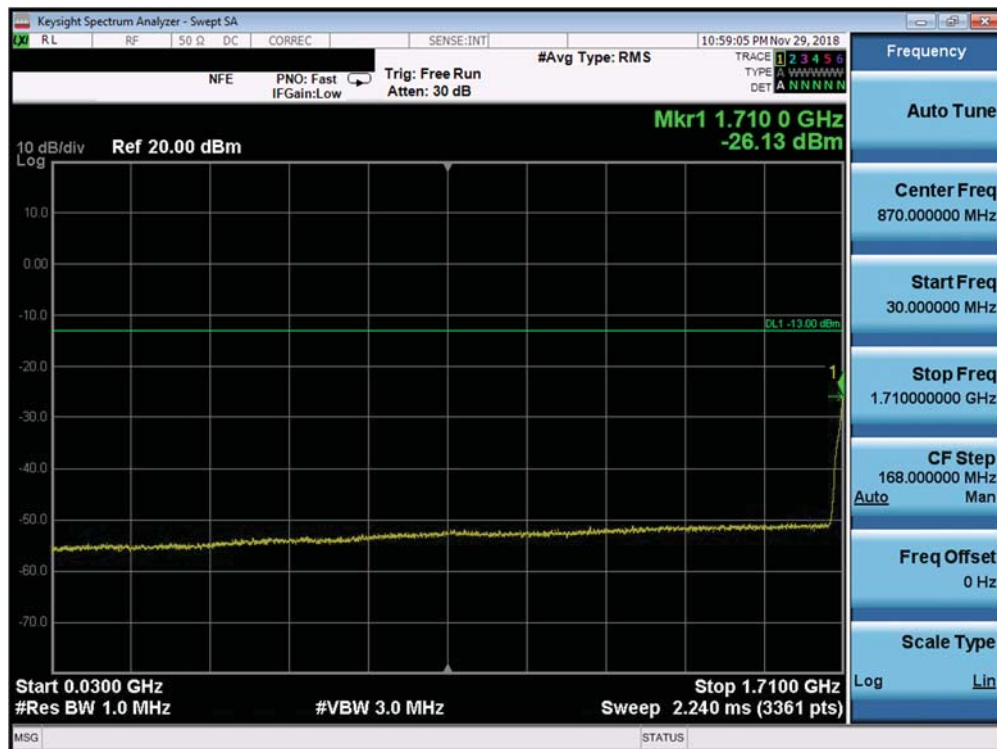


Plot 7-520. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 298 of 391

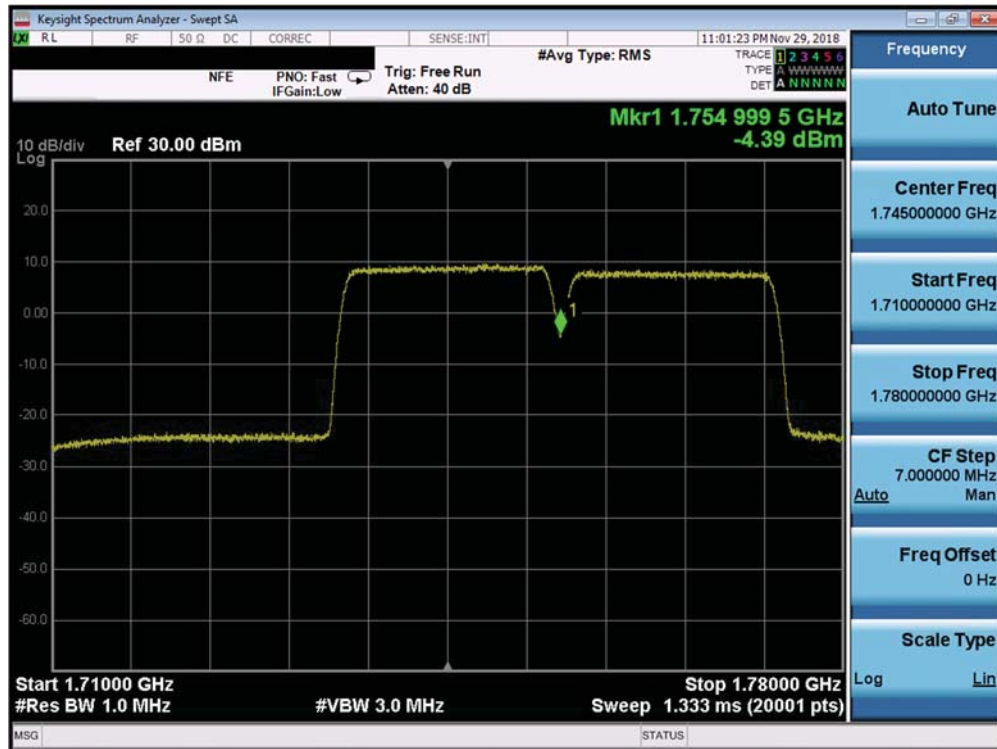


Plot 7-521. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

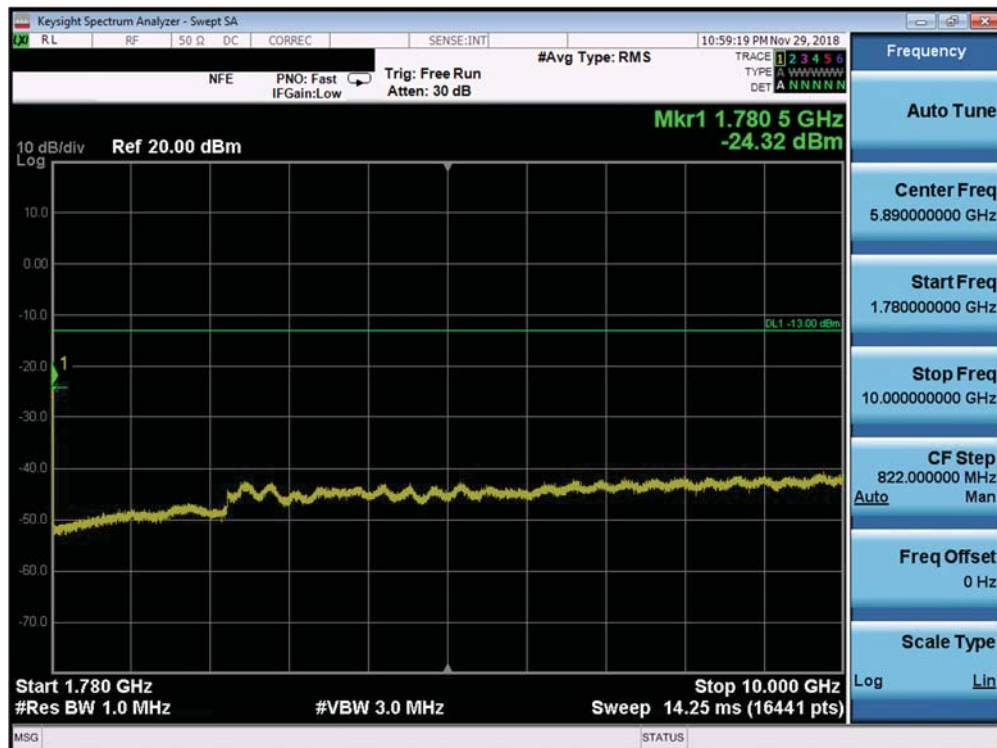


Plot 7-522. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 299 of 391

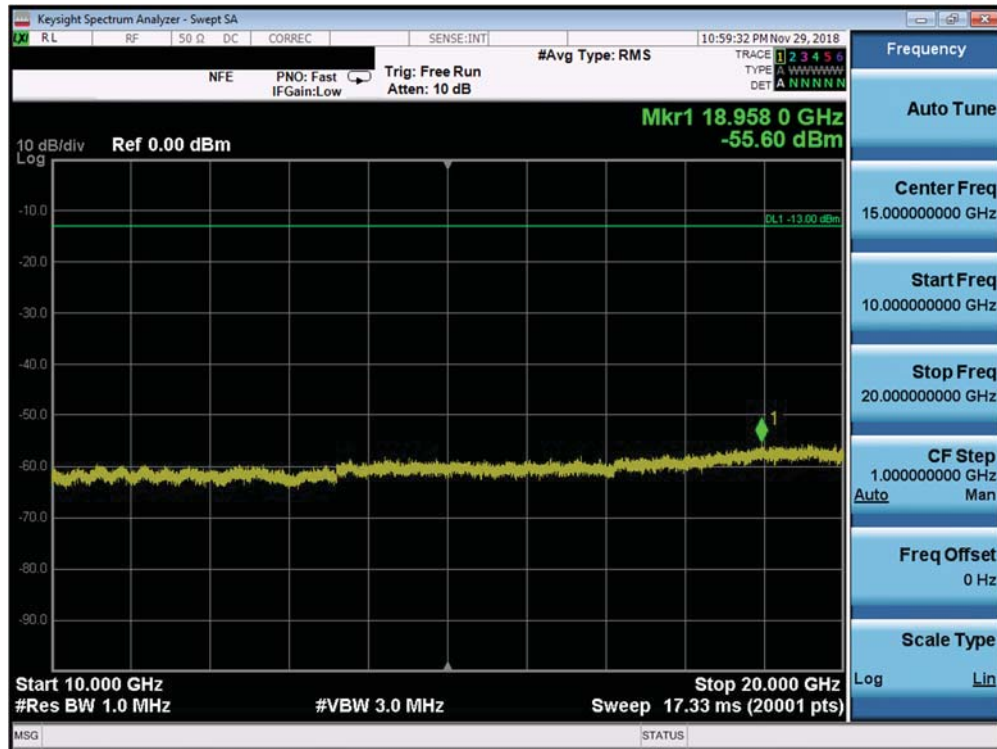


Plot 7-523. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

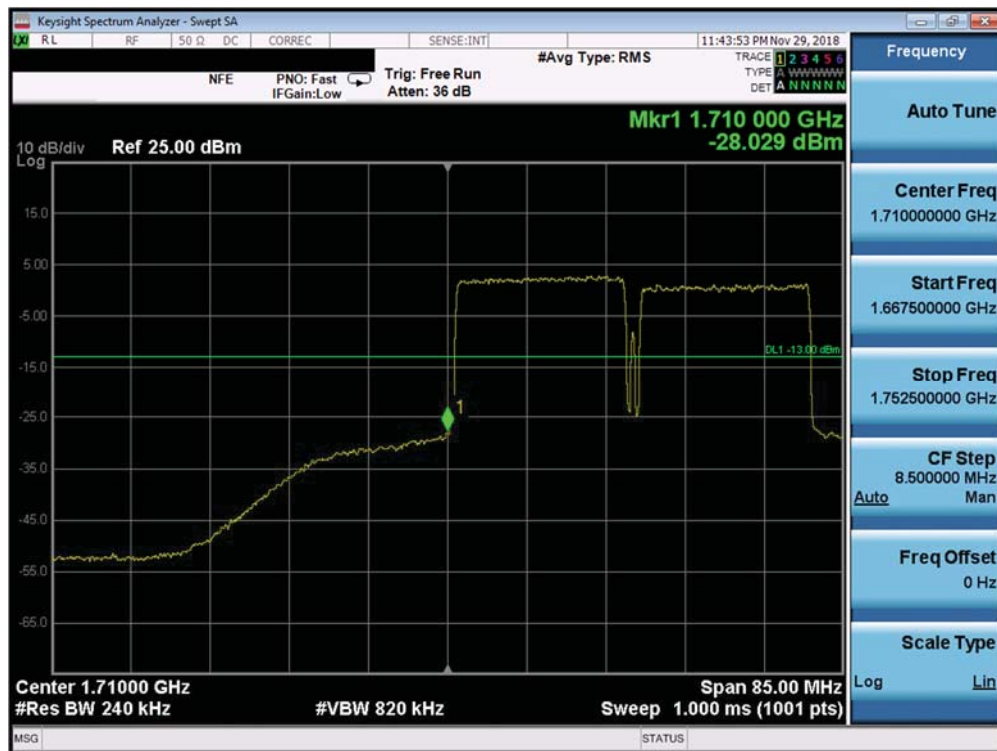


Plot 7-524. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 300 of 391

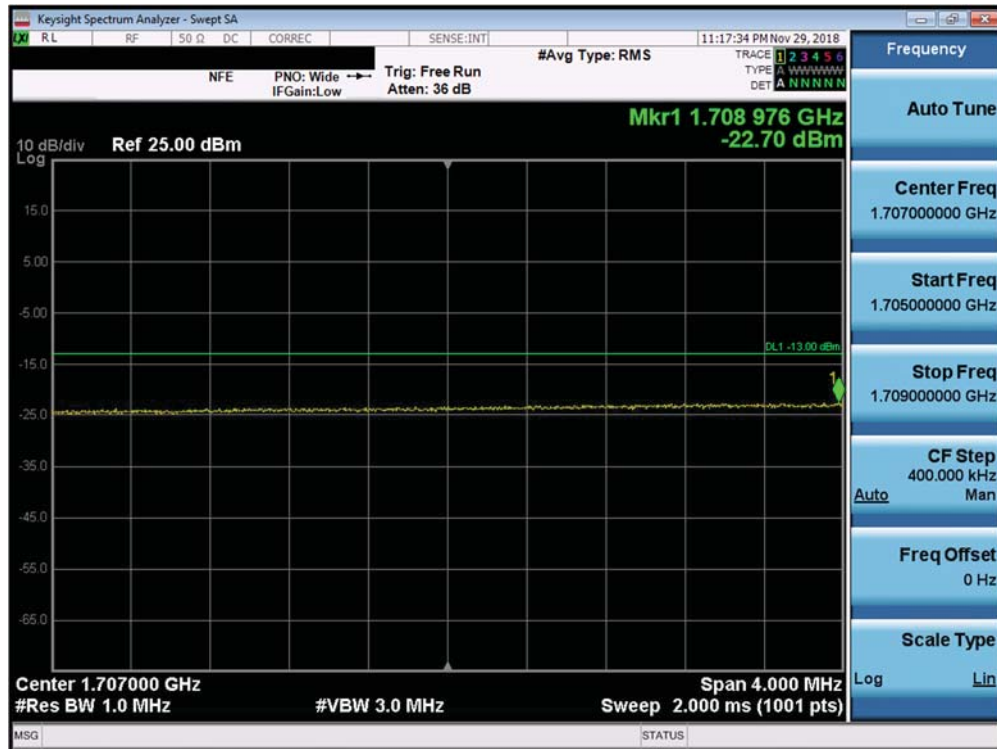


Plot 7-525. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-526. Lower Band Edge Plot (Band 66 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 301 of 391

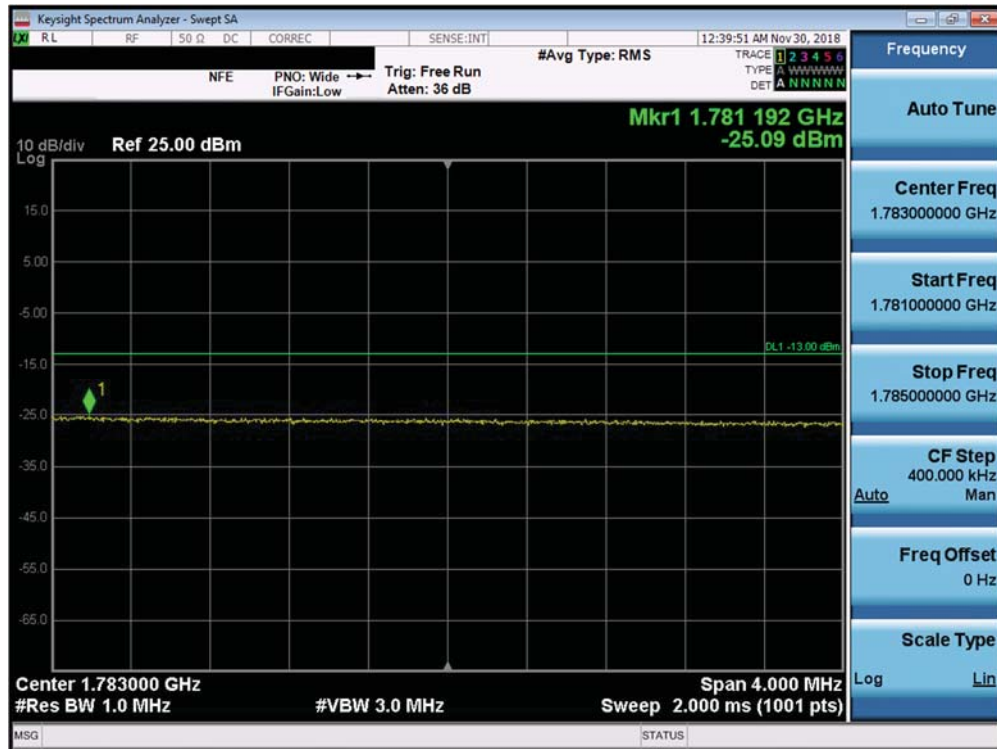


Plot 7-527. Extended Lower Band Edge Plot (Band 66 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)



Plot 7-528. Upper Band Edge Plot (Band 66 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 302 of 391



Plot 7-529. Extended Upper Band Edge Plot (Band 66 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 303 of 391

7.8 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Test Setup

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

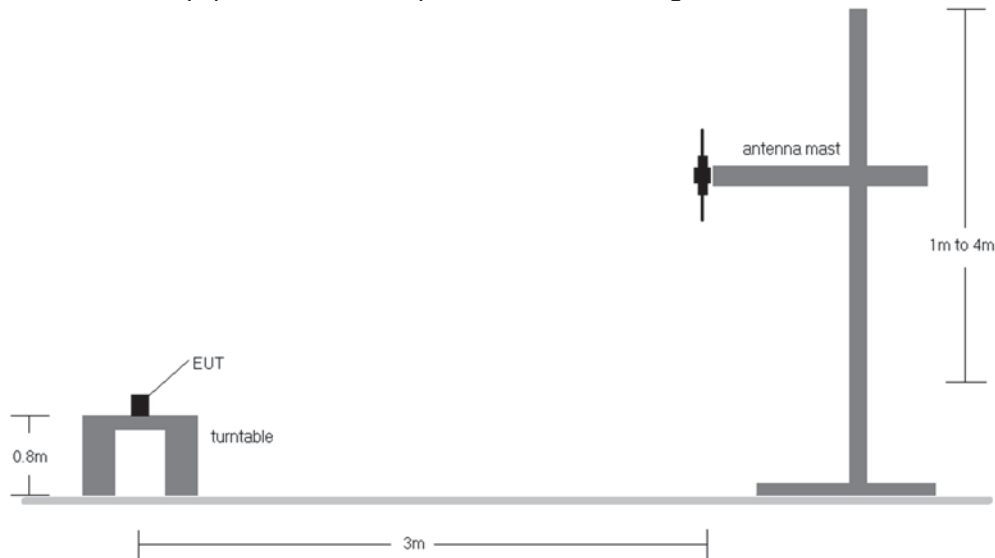


Figure 7-7. Radiated Test Setup <1GHz

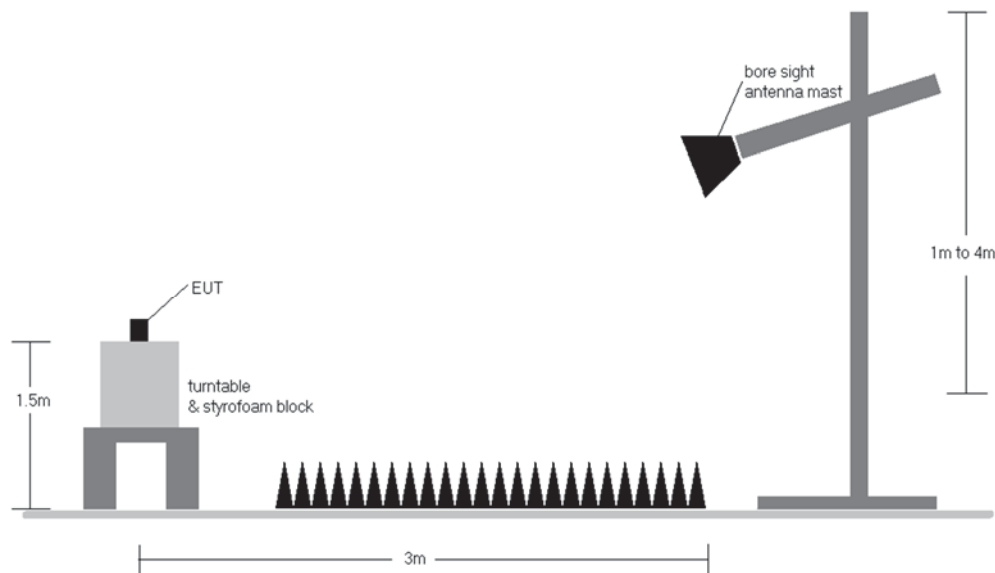


Figure 7-8. Radiated Test Setup >1GHz

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 305 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
665.50	5	QPSK	H	110	53	1 / 0	20.11	3.84	21.80	0.151	34.77	-12.98
680.50	5	QPSK	H	110	53	1 / 0	20.06	3.91	21.82	0.152	34.77	-12.95
695.50	5	QPSK	H	110	53	1 / 24	19.91	3.98	21.74	0.149	34.77	-13.03
680.50	5	16-QAM	H	110	53	1 / 0	19.13	3.91	20.89	0.123	34.77	-13.88
680.50	5	64-QAM	H	110	53	1 / 0	18.58	3.91	20.34	0.108	34.77	-14.43
665.50	5	256-QAM	H	110	53	1 / 24	17.03	3.84	18.72	0.074	34.77	-16.06
668.00	10	QPSK	H	108	55	1 / 49	20.36	3.85	22.06	0.161	34.77	-12.71
680.50	10	QPSK	H	108	55	1 / 0	19.90	3.91	21.66	0.146	34.77	-13.11
693.00	10	QPSK	H	108	55	1 / 0	19.05	3.97	20.87	0.122	34.77	-13.90
668.00	10	16-QAM	H	108	55	1 / 49	19.83	3.85	21.53	0.142	34.77	-13.24
668.00	10	64-QAM	H	108	55	1 / 49	19.07	3.85	20.77	0.119	34.77	-14.00
668.00	10	256-QAM	H	108	55	1 / 49	16.46	3.85	18.16	0.065	34.77	-16.61
670.50	15	QPSK	H	104	57	1 / 74	20.96	3.86	22.67	0.185	34.77	-12.10
680.50	15	QPSK	H	104	57	1 / 0	20.27	3.91	22.03	0.160	34.77	-12.74
690.50	15	QPSK	H	104	57	1 / 0	19.94	3.96	21.75	0.149	34.77	-13.03
670.50	15	16-QAM	H	104	57	1 / 74	19.88	3.86	21.59	0.144	34.77	-13.18
670.50	15	64-QAM	H	104	57	1 / 74	19.48	3.86	21.19	0.132	34.77	-13.58
670.50	15	256-QAM	H	104	57	1 / 74	16.98	3.86	18.69	0.074	34.77	-16.08
673.00	20	QPSK	H	104	57	1 / 99	19.83	3.87	21.55	0.143	34.77	-13.22
680.50	20	QPSK	H	104	57	1 / 99	19.69	3.91	21.45	0.140	34.77	-13.32
688.00	20	QPSK	H	104	57	1 / 0	19.61	3.94	21.40	0.138	34.77	-13.37
673.00	20	16-QAM	H	104	57	1 / 0	18.63	3.87	20.35	0.108	34.77	-14.42
673.00	20	64-QAM	H	104	57	1 / 0	17.84	3.87	19.56	0.090	34.77	-15.21
673.00	20	256-QAM	H	104	57	1 / 0	14.99	3.87	16.71	0.047	34.77	-18.06
670.50	15	QPSK	V	240	21	1 / 74	10.13	3.86	11.84	0.015	34.77	-22.93
670.50	15 (WCP)	QPSK	H	110	57	1 / 74	18.11	3.86	19.82	0.096	34.77	-14.95

Table 7-14. ERP Data (Band 71)

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 306 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	150	16	1 / 5	20.67	1.10	19.62	0.092	34.77	-15.15
707.50	1.4	QPSK	H	150	57	1 / 5	21.29	1.13	20.27	0.106	34.77	-14.50
715.30	1.4	QPSK	H	150	31	1 / 0	20.68	1.16	19.69	0.093	34.77	-15.08
707.50	1.4	16-QAM	H	150	57	1 / 5	20.19	1.13	19.17	0.083	34.77	-15.60
707.50	1.4	64-QAM	H	150	57	1 / 5	19.31	1.13	18.29	0.067	34.77	-16.48
707.50	1.4	256-QAM	H	150	57	1 / 5	17.67	1.13	16.65	0.046	34.77	-18.12
700.50	3	QPSK	H	150	54	1 / 0	20.54	1.10	19.49	0.089	34.77	-15.28
707.50	3	QPSK	H	150	54	1 / 14	21.04	1.13	20.02	0.100	34.77	-14.75
714.50	3	QPSK	H	150	54	1 / 0	21.05	1.16	20.06	0.101	34.77	-14.71
707.50	3	16-QAM	H	150	54	1 / 14	20.05	1.13	19.03	0.080	34.77	-15.74
707.50	3	64-QAM	H	150	54	1 / 14	18.93	1.13	17.91	0.062	34.77	-16.86
707.50	3	256-QAM	H	150	54	1 / 14	17.29	1.13	16.27	0.042	34.77	-18.50
701.50	5	QPSK	H	150	349	1 / 0	20.44	1.11	19.40	0.087	34.77	-15.38
707.50	5	QPSK	H	150	19	1 / 0	20.76	1.13	19.74	0.094	34.77	-15.03
713.50	5	QPSK	H	150	51	1 / 0	20.06	1.15	19.06	0.081	34.77	-15.71
707.50	5	16-QAM	H	150	19	1 / 0	19.83	1.13	18.81	0.076	34.77	-15.96
707.50	5	64-QAM	H	150	19	1 / 0	18.80	1.13	17.78	0.060	34.77	-16.99
707.50	5	256-QAM	H	150	19	1 / 24	17.16	1.13	16.14	0.041	34.77	-18.63
704.00	10	QPSK	H	150	1	1 / 49	20.06	1.12	19.03	0.080	34.77	-15.74
707.50	10	QPSK	H	150	1	1 / 49	20.93	1.13	19.91	0.098	34.77	-14.86
711.00	10	QPSK	H	150	10	1 / 49	21.04	1.14	20.03	0.101	34.77	-14.74
707.50	10	16-QAM	H	150	1	1 / 49	19.87	1.13	18.85	0.077	34.77	-15.92
707.50	10	64-QAM	H	150	1	1 / 49	18.90	1.13	17.88	0.061	34.77	-16.89
707.50	10	256-QAM	H	150	1	1 / 49	17.26	1.13	16.24	0.042	34.77	-18.53
707.50	1.4	QPSK	V	150	92	1 / 5	19.07	1.13	18.05	0.064	34.77	-16.72
707.50	1.4 (WCP)	QPSK	H	234	79	1 / 5	15.02	4.22	17.09	0.051	34.77	-17.68

Table 7-15. ERP Data (Band 12)

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 307 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	150	3	1 / 24	21.31	1.72	20.88	0.123	34.77	-13.89
782.00	5	QPSK	H	150	363	1 / 24	21.22	1.73	20.80	0.120	34.77	-13.97
784.50	5	QPSK	H	150	3	1 / 24	21.56	1.74	21.15	0.130	34.77	-13.62
779.50	5	16-QAM	H	150	3	1 / 24	20.28	1.72	19.85	0.097	34.77	-14.92
782.00	5	16-QAM	H	150	363	1 / 24	20.00	1.73	19.58	0.091	34.77	-15.19
784.50	5	16-QAM	H	150	3	1 / 24	20.83	1.74	20.42	0.110	34.77	-14.35
784.50	5	64-QAM	H	150	3	1 / 24	19.61	1.74	19.20	0.083	34.77	-15.57
784.50	5	256-QAM	H	150	3	1 / 24	17.01	1.74	16.60	0.046	34.77	-18.17
782.00	10	QPSK	H	150	351	1 / 49	21.42	1.73	21.00	0.126	34.77	-13.77
782.00	10	16-QAM	H	150	351	1 / 49	20.57	1.73	20.15	0.104	34.77	-14.62
782.00	10	64-QAM	H	150	351	1 / 49	19.73	1.73	19.31	0.085	34.77	-15.46
782.00	10	256-QAM	H	150	351	1 / 49	16.72	1.73	16.30	0.043	34.77	-18.47
784.50	5	QPSK	V	150	284	1 / 24	20.44	1.74	20.03	0.101	34.77	-14.74
784.50	5 (WCP)	QPSK	H	150	353	1 / 24	21.17	1.74	20.76	0.119	34.77	-14.01

Table 7-16. ERP Data (Band 13)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 308 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	150	354	1 / 5	21.21	1.65	20.71	0.118	38.45	-17.75
836.50	1.4	QPSK	H	150	354	1 / 0	21.59	1.57	21.01	0.126	38.45	-17.44
848.30	1.4	QPSK	H	150	354	1 / 0	19.93	1.50	19.28	0.085	38.45	-19.17
836.50	1.4	16-QAM	H	150	354	1 / 5	20.75	1.57	20.17	0.104	38.45	-18.28
836.50	1.4	64-QAM	H	150	354	1 / 5	19.76	1.57	19.18	0.083	38.45	-19.27
836.50	1.4	256-QAM	H	150	354	1 / 5	17.06	1.57	16.48	0.044	38.45	-21.97
825.50	3	QPSK	H	150	358	1 / 14	21.20	1.64	20.69	0.117	38.45	-17.76
836.50	3	QPSK	H	150	358	1 / 14	21.56	1.57	20.98	0.125	38.45	-17.47
847.50	3	QPSK	H	150	358	1 / 0	20.62	1.51	19.98	0.099	38.45	-18.47
836.50	3	16-QAM	H	150	358	1 / 14	20.62	1.57	20.04	0.101	38.45	-18.41
836.50	3	64-QAM	H	150	358	1 / 14	19.80	1.57	19.22	0.084	38.45	-19.23
836.50	3	256-QAM	H	150	358	1 / 14	16.89	1.57	16.31	0.043	38.45	-22.14
826.50	5	QPSK	H	150	0	1 / 24	21.32	1.63	20.80	0.120	38.45	-17.65
836.50	5	QPSK	H	150	0	1 / 24	21.68	1.57	21.10	0.129	38.45	-17.35
846.50	5	QPSK	H	150	0	1 / 0	21.13	1.51	20.49	0.112	38.45	-17.96
836.50	5	16-QAM	H	150	0	1 / 24	20.99	1.57	20.41	0.110	38.45	-18.04
836.50	5	64-QAM	H	150	0	1 / 24	19.71	1.57	19.13	0.082	38.45	-19.32
836.50	5	256-QAM	H	150	0	1 / 24	16.91	1.57	16.33	0.043	38.45	-22.12
829.00	10	QPSK	H	150	184	1 / 49	21.75	1.62	21.22	0.132	38.45	-17.23
836.50	10	QPSK	H	150	184	1 / 0	21.92	1.57	21.34	0.136	38.45	-17.11
844.00	10	QPSK	H	150	184	1 / 0	21.93	1.53	21.31	0.135	38.45	-17.14
829.00	10	16-QAM	H	150	184	1 / 49	21.09	1.62	20.56	0.114	38.45	-17.89
836.50	10	64-QAM	H	150	184	1 / 49	19.64	1.57	19.06	0.081	38.45	-19.39
836.50	10	256-QAM	H	150	184	1 / 49	16.90	1.57	16.32	0.043	38.45	-22.13
836.50	10	QPSK	V	150	102	1 / 0	20.06	1.57	19.48	0.089	38.45	-18.97
836.50	10 (WCP)	QPSK	H	150	353	1 / 0	21.84	1.57	21.26	0.134	38.45	-17.19

Table 7-17. ERP Data (Band 26/5)

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 309 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
831.50	15	QPSK	H	150	3	1 / 74	21.76	1.60	21.21	0.132	38.45	-17.24
836.50	15	QPSK	H	150	3	1 / 0	21.64	1.57	21.06	0.128	38.45	-17.39
841.50	15	QPSK	H	150	3	1 / 0	21.84	1.54	21.23	0.133	38.45	-17.22
831.50	15	16-QAM	H	150	3	1 / 74	20.96	1.60	20.41	0.110	38.45	-18.04
841.50	15	64-QAM	H	150	3	1 / 74	19.72	1.54	19.11	0.082	38.45	-19.34
841.50	15	256-QAM	H	150	3	1 / 74	16.86	1.54	16.25	0.042	38.45	-22.20

Table 7-18. ERP Data (Band 26)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 310 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	130	34	1 / 0	14.33	8.16	22.49	0.177	30.00	-7.51
1745.00	1.4	QPSK	H	130	34	1 / 0	14.81	8.18	22.99	0.199	30.00	-7.01
1779.30	1.4	QPSK	H	130	34	1 / 0	14.67	8.21	22.88	0.194	30.00	-7.12
1745.00	1.4	16-QAM	H	130	34	1 / 0	14.19	8.18	22.37	0.173	30.00	-7.63
1745.00	1.4	64-QAM	H	130	34	1 / 0	12.62	8.18	20.80	0.120	30.00	-9.20
1745.00	1.4	256-QAM	H	130	34	1 / 0	10.15	8.18	18.33	0.068	30.00	-11.67
1711.50	3	QPSK	H	130	161	1 / 0	14.39	8.16	22.55	0.180	30.00	-7.45
1745.00	3	QPSK	H	130	161	1 / 0	14.33	8.18	22.51	0.178	30.00	-7.49
1778.50	3	QPSK	H	130	161	1 / 0	14.26	8.21	22.47	0.176	30.00	-7.53
1711.50	3	16-QAM	H	130	161	1 / 0	14.24	8.16	22.40	0.174	30.00	-7.60
1711.50	3	64-QAM	H	130	161	1 / 0	12.69	8.16	20.85	0.122	30.00	-9.15
1711.50	3	256-QAM	H	130	161	1 / 0	9.73	8.16	17.89	0.061	30.00	-12.11
1712.50	5	QPSK	H	128	24	1 / 0	14.13	8.16	22.29	0.169	30.00	-7.71
1745.00	5	QPSK	H	128	24	1 / 24	14.07	8.18	22.25	0.168	30.00	-7.75
1777.50	5	QPSK	H	166	28	1 / 24	14.33	8.20	22.53	0.179	30.00	-7.47
1777.50	5	16-QAM	H	166	28	1 / 24	13.26	8.20	21.46	0.140	30.00	-8.54
1777.50	5	64-QAM	H	166	28	1 / 24	12.63	8.20	20.83	0.121	30.00	-9.17
1777.50	5	256-QAM	H	166	28	1 / 24	9.73	8.20	17.93	0.062	30.00	-12.07
1715.00	10	QPSK	H	133	117	1 / 0	14.07	8.16	22.23	0.167	30.00	-7.77
1745.00	10	QPSK	H	133	117	1 / 49	14.27	8.18	22.45	0.176	30.00	-7.55
1775.00	10	QPSK	H	133	117	1 / 49	14.50	8.20	22.70	0.186	30.00	-7.30
1775.00	10	16-QAM	H	133	117	1 / 49	13.67	8.20	21.87	0.154	30.00	-8.13
1775.00	10	64-QAM	H	133	117	1 / 49	13.00	8.20	21.20	0.132	30.00	-8.80
1775.00	10	256-QAM	H	133	117	1 / 49	9.99	8.20	18.19	0.066	30.00	-11.81
1717.50	15	QPSK	H	113	219	1 / 0	14.42	8.16	22.58	0.181	30.00	-7.42
1745.00	15	QPSK	H	113	219	1 / 74	13.60	8.18	21.78	0.151	30.00	-8.22
1772.50	15	QPSK	H	113	219	1 / 74	14.54	8.20	22.74	0.188	30.00	-7.26
1717.50	15	16-QAM	H	113	219	1 / 0	14.28	8.16	22.44	0.176	30.00	-7.56
1772.50	15	64-QAM	H	113	219	1 / 74	12.84	8.20	21.04	0.127	30.00	-8.96
1772.50	15	256-QAM	H	113	219	1 / 74	9.94	8.20	18.14	0.065	30.00	-11.86
1720.00	20	QPSK	H	127	204	1 / 99	13.29	8.17	21.46	0.140	30.00	-8.54
1745.00	20	QPSK	H	127	204	1 / 99	13.41	8.18	21.59	0.144	30.00	-8.41
1770.00	20	QPSK	H	127	204	1 / 99	14.23	8.19	22.42	0.175	30.00	-7.58
1770.00	20	16-QAM	H	127	204	1 / 99	13.17	8.19	21.36	0.137	30.00	-8.64
1770.00	20	64-QAM	H	127	204	1 / 99	12.53	8.19	20.72	0.118	30.00	-9.28
1770.00	20	256-QAM	H	127	204	1 / 99	9.66	8.19	17.85	0.061	30.00	-12.15
1745.00	1	QPSK	V	133	216	1 / 0	14.70	8.18	22.88	0.194	30.00	-7.12
1745.00	1.4 (WCP)	QPSK	H	127	21	1 / 0	14.24	8.18	22.42	0.175	30.00	-7.58

Table 7-19. EIRP Data (Band 66/4)

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 311 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	V	150	255	1 / 5	13.68	8.37	22.05	0.160	33.01	-10.96
1882.50	1.4	QPSK	V	150	255	1 / 5	13.96	8.41	22.37	0.173	33.01	-10.64
1914.30	1.4	QPSK	V	150	255	1 / 0	12.93	8.46	21.39	0.138	33.01	-11.62
1882.50	1.4	16-QAM	V	150	255	1 / 5	13.05	8.41	21.46	0.140	33.01	-11.55
1882.50	1.4	64-QAM	V	150	255	1 / 5	12.41	8.41	20.82	0.121	33.01	-12.19
1882.50	1.4	256-QAM	V	150	255	1 / 5	9.65	8.41	18.06	0.064	33.01	-14.95
1851.50	3	QPSK	V	153	256	1 / 0	13.60	8.37	21.97	0.157	33.01	-11.04
1882.50	3	QPSK	V	150	256	1 / 14	13.72	8.41	22.13	0.163	33.01	-10.88
1913.50	3	QPSK	V	150	256	1 / 0	12.60	8.46	21.06	0.128	33.01	-11.95
1882.50	3	16-QAM	V	150	256	1 / 14	12.93	8.41	21.34	0.136	33.01	-11.67
1882.50	3	64-QAM	V	150	256	1 / 14	12.22	8.41	20.63	0.116	33.01	-12.38
1882.50	3	256-QAM	V	150	256	1 / 14	9.41	8.41	17.82	0.061	33.01	-15.19
1852.50	5	QPSK	V	153	255	1 / 0	13.84	8.37	22.21	0.166	33.01	-10.80
1882.50	5	QPSK	V	153	255	1 / 24	13.72	8.41	22.13	0.163	33.01	-10.88
1912.50	5	QPSK	V	153	255	1 / 0	12.72	8.46	21.18	0.131	33.01	-11.83
1852.50	5	16-QAM	V	153	255	1 / 0	13.04	8.37	21.41	0.138	33.01	-11.60
1882.50	5	64-QAM	V	153	255	1 / 24	12.17	8.41	20.58	0.114	33.01	-12.43
1882.50	5	256-QAM	V	153	255	1 / 24	9.28	8.41	17.69	0.059	33.01	-15.32
1855.00	10	QPSK	V	153	260	1 / 0	13.35	8.37	21.72	0.149	33.01	-11.29
1882.50	10	QPSK	V	153	260	1 / 49	13.97	8.41	22.38	0.173	33.01	-10.63
1910.00	10	QPSK	V	153	260	1 / 0	13.32	8.45	21.77	0.150	33.01	-11.24
1882.50	10	16-QAM	V	153	260	1 / 49	13.13	8.41	21.54	0.143	33.01	-11.47
1882.50	10	64-QAM	V	153	260	1 / 49	12.42	8.41	20.83	0.121	33.01	-12.18
1882.50	10	256-QAM	V	153	260	1 / 49	9.57	8.41	17.98	0.063	33.01	-15.03
1857.50	15	QPSK	V	147	234	1 / 0	13.36	8.38	21.74	0.149	33.01	-11.27
1882.50	15	QPSK	V	147	234	1 / 74	14.41	8.41	22.82	0.192	33.01	-10.19
1907.50	15	QPSK	V	147	234	1 / 0	13.42	8.45	21.87	0.154	33.01	-11.14
1882.50	15	16-QAM	V	147	234	1 / 74	13.57	8.41	21.98	0.158	33.01	-11.03
1882.50	15	64-QAM	V	147	234	1 / 74	12.86	8.41	21.27	0.134	33.01	-11.74
1882.50	15	256-QAM	V	147	234	1 / 74	9.94	8.41	18.35	0.068	33.01	-14.66
1860.00	20	QPSK	V	147	233	1 / 99	14.05	8.38	22.43	0.175	33.01	-10.58
1882.50	20	QPSK	V	147	233	1 / 99	14.18	8.41	22.59	0.182	33.01	-10.42
1905.00	20	QPSK	V	147	233	1 / 99	14.05	8.45	22.50	0.178	33.01	-10.51
1882.50	20	16-QAM	V	147	233	1 / 99	13.43	8.41	21.84	0.153	33.01	-11.17
1882.50	20	64-QAM	V	147	233	1 / 99	12.68	8.41	21.09	0.129	33.01	-11.92
1882.50	20	256-QAM	V	147	233	1 / 99	9.87	8.41	18.28	0.067	33.01	-14.73
1882.50	15	QPSK	H	147	234	1 / 74	13.68	8.41	22.09	0.162	33.01	-10.92
1882.50	15 (WCP)	QPSK	H	148	7	1 / 74	7.10	8.41	15.51	0.036	33.01	-17.50

Table 7-20. EIRP Data (Band 25/2)

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 312 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	H	111	120	1 / 0	14.50	7.90	22.40	0.174	23.98	-1.58
2312.50	5	QPSK	H	111	120	1 / 0	14.41	7.90	22.31	0.170	23.98	-1.67
2307.50	5	16-QAM	H	111	120	1 / 0	13.78	7.90	21.68	0.147	23.98	-2.30
2307.50	5	64-QAM	H	111	120	1 / 0	12.93	7.90	20.83	0.121	23.98	-3.15
2307.50	5	256-QAM	H	111	120	1 / 0	10.10	7.90	18.00	0.063	23.98	-5.98
2310.00	10	QPSK	H	144	137	1 / 49	14.19	7.90	22.09	0.162	23.98	-1.89
2310.00	10	16-QAM	H	144	137	1 / 49	13.40	7.90	21.30	0.135	23.98	-2.68
2310.00	10	64-QAM	H	144	137	1 / 49	12.64	7.90	20.54	0.113	23.98	-3.44
2310.00	10	256-QAM	H	144	137	1 / 49	9.75	7.90	17.65	0.058	23.98	-6.33
2307.50	5	QPSK	H	111	120	1 / 0	13.50	7.90	21.40	0.138	23.98	-2.58
2307.50	5 (WCP)	QPSK	H	150	56	1 / 0	13.56	7.90	21.46	0.140	23.98	-2.52

Table 7-21. EIRP Data (Band 30)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 313 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	V	101	278	1 / 0	10.79	7.89	18.68	0.074	33.01	-14.33
2535.00	5	QPSK	V	107	271	1 / 24	12.18	7.83	20.01	0.100	33.01	-13.00
2567.50	5	QPSK	V	101	282	1 / 24	10.86	7.76	18.62	0.073	33.01	-14.39
2535.00	5	16-QAM	V	107	271	1 / 24	10.86	7.83	18.69	0.074	33.01	-14.32
2535.00	5	64-QAM	V	107	271	1 / 24	8.96	7.83	16.79	0.048	33.01	-16.22
2535.00	5	256-QAM	V	107	271	1 / 24	7.20	7.83	15.03	0.032	33.01	-17.98
2505.00	10	QPSK	V	121	284	1 / 49	10.13	7.89	18.02	0.063	33.01	-14.99
2535.00	10	QPSK	V	107	271	1 / 49	12.19	7.83	20.02	0.100	33.01	-12.99
2565.00	10	QPSK	V	130	275	1 / 49	11.57	7.77	19.34	0.086	33.01	-13.67
2535.00	10	16-QAM	V	107	271	1 / 49	10.84	7.83	18.67	0.074	33.01	-14.34
2535.00	10	64-QAM	V	107	271	1 / 49	8.73	7.83	16.56	0.045	33.01	-16.45
2535.00	10	256-QAM	V	107	271	1 / 49	6.99	7.83	14.82	0.030	33.01	-18.19
2507.50	15	QPSK	V	124	257	1 / 74	12.12	7.88	20.00	0.100	33.01	-13.01
2535.00	15	QPSK	V	109	271	1 / 74	11.91	7.83	19.74	0.094	33.01	-13.27
2562.50	15	QPSK	V	126	273	1 / 74	11.49	7.77	19.26	0.084	33.01	-13.75
2535.00	15	16-QAM	V	109	271	1 / 74	10.52	7.83	18.35	0.068	33.01	-14.66
2535.00	15	64-QAM	V	109	271	1 / 74	8.58	7.83	16.41	0.044	33.01	-16.60
2535.00	15	256-QAM	V	109	271	1 / 74	6.78	7.83	14.61	0.029	33.01	-18.40
2510.00	20	QPSK	V	124	259	1 / 99	11.32	7.88	19.20	0.083	33.01	-13.81
2535.00	20	QPSK	V	164	276	1 / 0	12.32	7.83	20.15	0.103	33.01	-12.86
2560.00	20	QPSK	V	120	282	1 / 0	11.61	7.78	19.39	0.087	33.01	-13.62
2535.00	20	16-QAM	V	164	276	1 / 0	10.91	7.83	18.74	0.075	33.01	-14.27
2535.00	20	64-QAM	V	164	276	1 / 0	8.88	7.83	16.71	0.047	33.01	-16.30
2535.00	20	256-QAM	V	164	276	1 / 99	6.92	7.83	14.75	0.030	33.01	-18.26
2535.00	20	QPSK	H	116	41	1 / 0	11.66	7.83	19.49	0.089	33.01	-13.52
2535.00	20 (WCP)	QPSK	H	103	236	1 / 0	10.73	7.83	18.56	0.072	33.01	-14.45

Table 7-22. EIRP Data (Band 7 Ant A)

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 314 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	141	102	1 / 0	12.39	7.89	20.28	0.107	33.01	-12.73
2535.00	5	QPSK	H	141	102	1 / 0	12.34	7.83	20.17	0.104	33.01	-12.84
2567.50	5	QPSK	H	141	102	1 / 0	11.97	7.76	19.73	0.094	33.01	-13.28
2502.50	5	16-QAM	H	141	102	1 / 0	11.64	7.89	19.53	0.090	33.01	-13.48
2502.50	5	64-QAM	H	141	102	1 / 0	10.69	7.89	18.58	0.072	33.01	-14.43
2502.50	5	256-QAM	H	141	102	1 / 0	7.73	7.89	15.62	0.037	33.01	-17.39
2505.00	10	QPSK	H	144	143	1 / 0	12.99	7.89	20.88	0.122	33.01	-12.13
2535.00	10	QPSK	H	144	143	1 / 0	12.17	7.83	20.00	0.100	33.01	-13.01
2565.00	10	QPSK	H	144	143	1 / 49	12.60	7.77	20.37	0.109	33.01	-12.64
2505.00	10	16-QAM	H	144	143	1 / 0	12.21	7.89	20.10	0.102	33.01	-12.91
2505.00	10	64-QAM	H	144	143	1 / 0	11.33	7.89	19.22	0.084	33.01	-13.79
2505.00	10	256-QAM	H	144	143	1 / 0	8.38	7.89	16.27	0.042	33.01	-16.74
2507.50	15	QPSK	H	138	56	1 / 0	13.34	7.88	21.22	0.133	33.01	-11.79
2535.00	15	QPSK	H	138	56	1 / 0	12.95	7.83	20.78	0.120	33.01	-12.23
2562.50	15	QPSK	H	138	56	1 / 0	12.32	7.77	20.09	0.102	33.01	-12.92
2507.50	15	16-QAM	H	138	56	1 / 0	12.51	7.88	20.39	0.110	33.01	-12.62
2507.50	15	64-QAM	H	138	56	1 / 0	11.79	7.88	19.67	0.093	33.01	-13.34
2507.50	15	256-QAM	H	138	56	1 / 0	8.83	7.88	16.71	0.047	33.01	-16.30
2510.00	20	QPSK	H	153	244	1 / 0	12.11	7.88	19.99	0.100	33.01	-13.02
2535.00	20	QPSK	H	153	244	1 / 0	11.73	7.83	19.56	0.090	33.01	-13.45
2560.00	20	QPSK	H	153	244	1 / 0	11.79	7.78	19.57	0.090	33.01	-13.44
2510.00	20	16-QAM	H	153	244	1 / 0	10.99	7.88	18.87	0.077	33.01	-14.14
2510.00	20	64-QAM	H	153	244	1 / 0	10.50	7.88	18.38	0.069	33.01	-14.63
2510.00	20	256-QAM	H	153	244	1 / 0	7.40	7.88	15.28	0.034	33.01	-17.73
2507.50	15	QPSK	V	147	66	1 / 0	12.00	7.88	19.88	0.097	33.01	-13.13
2507.50	15 (WCP)	QPSK	H	220	311	1 / 0	12.98	7.88	20.86	0.122	33.01	-12.15

Table 7-23. EIRP Data (Band 7 ANT B)

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 315 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	141	69	1 / 0	17.93	7.89	25.82	0.382	33.01	-7.19
2593.00	5	QPSK	H	101	77	1 / 0	18.89	7.71	26.60	0.457	33.01	-6.41
2687.50	5	QPSK	H	122	104	1 / 0	17.60	7.52	25.12	0.325	33.01	-7.89
2593.00	5	16-QAM	H	101	77	1 / 0	17.80	7.71	25.51	0.355	33.01	-7.50
2593.00	5	64-QAM	H	101	77	1 / 0	17.17	7.71	24.88	0.307	33.01	-8.13
2593.00	5	256-QAM	H	101	77	1 / 0	14.51	7.71	22.21	0.166	33.01	-10.80
2505.00	10	QPSK	H	138	66	1 / 0	18.04	7.89	25.93	0.392	33.01	-7.08
2593.00	10	QPSK	H	101	76	1 / 0	18.88	7.71	26.59	0.456	33.01	-6.42
2685.00	10	QPSK	H	122	104	1 / 49	17.59	7.53	25.11	0.324	33.01	-7.90
2593.00	10	16-QAM	H	101	76	1 / 0	17.51	7.71	25.22	0.333	33.01	-7.79
2593.00	10	64-QAM	H	101	76	1 / 0	15.99	7.71	23.70	0.235	33.01	-9.31
2593.00	10	256-QAM	H	101	76	1 / 0	14.32	7.71	22.03	0.159	33.01	-10.98
2507.50	15	QPSK	H	109	72	1 / 74	18.40	7.88	26.29	0.425	33.01	-6.72
2593.00	15	QPSK	H	133	76	1 / 0	18.44	7.71	26.15	0.412	33.01	-6.86
2682.50	15	QPSK	H	158	106	1 / 0	17.76	7.53	25.29	0.338	33.01	-7.72
2507.50	15	16-QAM	H	109	72	1 / 0	17.02	7.88	24.90	0.309	33.01	-8.11
2593.00	15	64-QAM	H	133	76	1 / 0	16.64	7.71	24.35	0.272	33.01	-8.66
2593.00	15	256-QAM	H	133	76	1 / 0	14.09	7.71	21.80	0.151	33.01	-11.21
2510.00	20	QPSK	H	109	71	1 / 0	16.98	7.88	24.86	0.306	33.01	-8.16
2593.00	20	QPSK	H	106	72	1 / 0	18.08	7.71	25.78	0.379	33.01	-7.23
2680.00	20	QPSK	H	147	88	1 / 0	16.97	7.54	24.51	0.282	33.01	-8.50
2593.00	20	16-QAM	H	106	72	1 / 0	17.36	7.71	25.07	0.321	33.01	-7.94
2593.00	20	64-QAM	H	106	72	1 / 0	16.39	7.71	24.10	0.257	33.01	-8.91
2593.00	20	256-QAM	H	106	72	1 / 0	13.96	7.71	21.67	0.147	33.01	-11.34
2593.00	5	QPSK	V	106	94	1 / 0	15.97	7.71	23.68	0.233	33.01	-9.33
2593.00	5 (WCP)	QPSK	H	119	139	1 / 0	15.84	7.71	23.55	0.226	33.01	-9.46

Table 7-24. EIRP Data (Band 41 PC2)

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 316 of 391

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	117	156	1 / 0	13.70	8.52	22.22	0.167	33.01	-10.79
2593.00	5	QPSK	H	117	156	1 / 24	13.60	8.54	22.14	0.164	33.01	-10.87
2687.50	5	QPSK	H	101	144	1 / 0	14.07	8.83	22.90	0.195	33.01	-10.11
2687.50	5	16-QAM	H	101	144	1 / 0	13.33	8.83	22.16	0.164	33.01	-10.85
2502.50	5	64-QAM	H	117	156	1 / 0	11.57	8.52	20.09	0.102	33.01	-12.92
2593.00	5	256-QAM	H	117	156	1 / 0	9.42	8.54	17.96	0.063	33.01	-15.05
2505.00	10	QPSK	H	147	143	1 / 49	13.29	8.51	21.80	0.151	33.01	-11.21
2593.00	10	QPSK	H	147	143	1 / 49	14.29	8.54	22.83	0.192	33.01	-10.18
2685.00	10	QPSK	H	101	143	1 / 0	14.30	8.82	23.12	0.205	33.01	-9.89
2593.00	10	16-QAM	H	147	143	1 / 49	13.44	8.54	21.98	0.158	33.01	-11.03
2593.00	10	64-QAM	H	147	143	1 / 0	12.57	8.54	21.11	0.129	33.01	-11.90
2593.00	10	256-QAM	H	147	143	1 / 0	9.92	8.54	18.46	0.070	33.01	-14.55
2507.50	15	QPSK	H	142	144	1 / 74	13.99	8.50	22.49	0.178	33.01	-10.52
2593.00	15	QPSK	H	152	148	1 / 0	14.21	8.54	22.75	0.188	33.01	-10.26
2682.50	15	QPSK	H	145	122	1 / 0	13.50	8.82	22.32	0.171	33.01	-10.69
2507.50	15	16-QAM	H	142	144	1 / 74	13.33	8.50	21.83	0.153	33.01	-11.18
2593.00	15	64-QAM	H	152	148	1 / 0	12.40	8.54	20.94	0.124	33.01	-12.07
2593.00	15	256-QAM	H	152	148	1 / 0	9.81	8.54	18.35	0.068	33.01	-14.66
2510.00	20	QPSK	H	145	165	1 / 0	12.59	8.50	21.09	0.129	33.01	-11.92
2593.00	20	QPSK	H	141	155	1 / 0	13.75	8.54	22.29	0.170	33.01	-10.72
2680.00	20	QPSK	H	137	167	1 / 0	12.67	8.82	21.49	0.141	33.01	-11.53
2593.00	20	16-QAM	H	141	155	1 / 0	12.98	8.54	21.52	0.142	33.01	-11.49
2593.00	20	64-QAM	H	141	155	1 / 0	12.04	8.54	20.58	0.114	33.01	-12.43
2593.00	20	256-QAM	H	141	155	1 / 0	9.61	8.54	18.15	0.065	33.01	-14.86
2685.00	10	QPSK	V	182	200	1 / 0	12.00	8.54	20.54	0.113	33.01	-12.47
2685.00	10 (WCP)	QPSK	H	150	356	1 / 0	11.10	8.54	19.64	0.092	33.01	-13.37

Table 7-25. EIRP Data (Band 41 PC3)

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 317 of 391

7.9 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 318 of 391

Test Setup

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

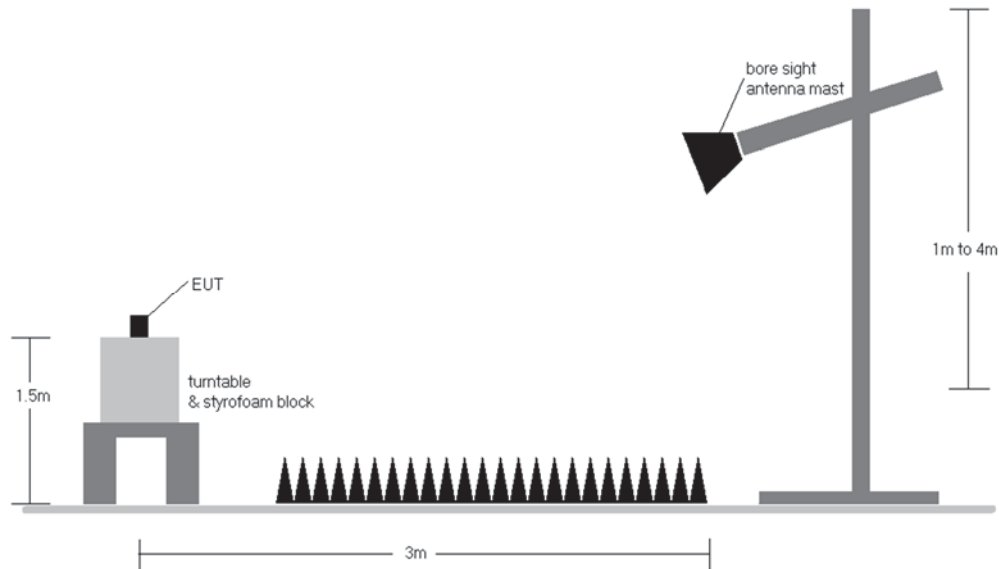


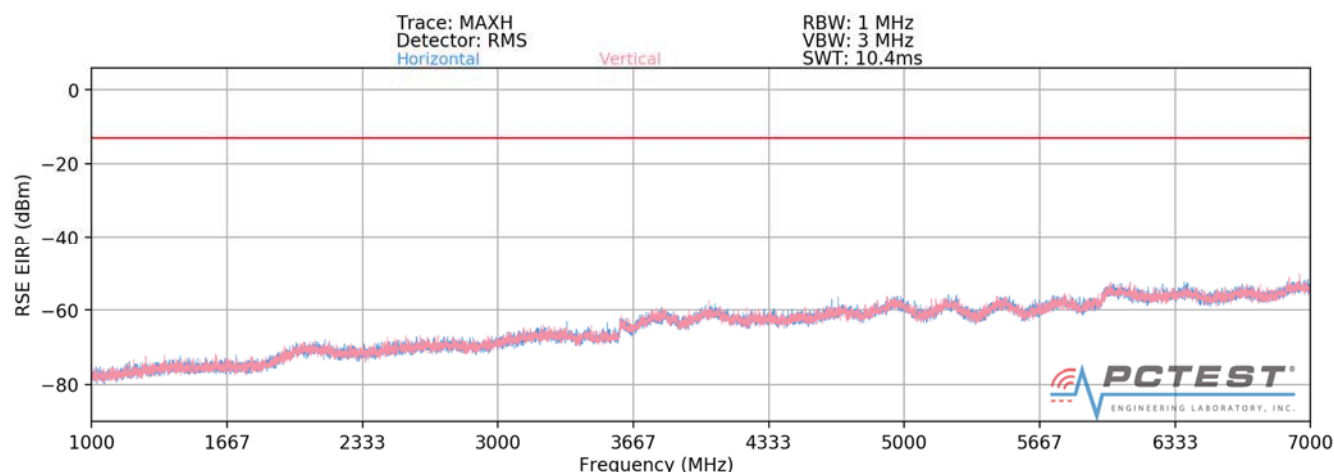
Figure 7-9. Test Instrument & Measurement Setup

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 319 of 391

Band 71



Plot 7-530. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY: 673.00 MHz
CHANNEL: 133222
MODULATION SIGNAL: QPSK
BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1346.00	H	103	166	-66.25	3.15	-63.10	-50.1
2019.00	H	163	178	-65.04	3.52	-61.52	-48.5
2692.00	H	-	-	-66.27	4.77	-61.50	-48.5
3365.00	H	-	-	-66.37	6.00	-60.38	-47.4

Table 7-26. Radiated Spurious Data (Band 71 – Low Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 320 of 391

OPERATING FREQUENCY: 680.50 MHz
 CHANNEL: 133297
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1361.00	H	165	174	-63.32	3.04	-60.28	-47.3
2041.50	H	273	157	-64.99	3.49	-61.50	-48.5
2722.00	H	-	-	-66.76	4.83	-61.93	-48.9
3402.50	H	-	-	-66.69	6.16	-60.53	-47.5

Table 7-27. Radiated Spurious Data (Band 71 – Mid Channel)

OPERATING FREQUENCY: 688.00 MHz
 CHANNEL: 133372
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1376.00	H	155	136	-67.84	2.88	-64.96	-52.0
2064.00	H	153	183	-61.10	3.50	-57.60	-44.6
2752.00	H	-	-	-66.68	4.88	-61.80	-48.8
3440.00	H	-	-	-67.47	6.22	-61.25	-48.3

Table 7-28. Radiated Spurious Data (Band 71 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 321 of 391

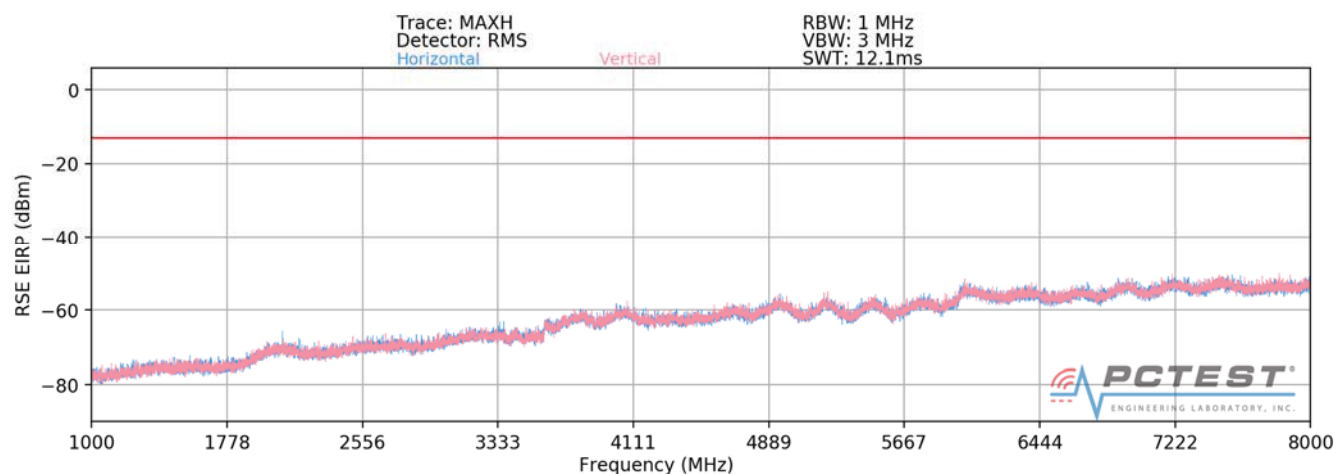
OPERATING FREQUENCY: 688.00 MHz
 CHANNEL: 133372
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1376.00	H	343	161	-69.00	2.88	-66.12	-53.1
2064.00	H	149	180	-64.61	3.50	-61.11	-48.1
2752.00	H	-	-	-66.64	4.88	-61.76	-48.8
3440.00	H	-	-	-67.42	6.22	-61.20	-48.2

Table 7-29. Radiated Spurious Data with WCP (Band 71 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 322 of 391

Band 12



Plot 7-531. Radiated Spurious Plot above 1GHz (Band 12)

OPERATING FREQUENCY: 699.70 MHz

CHANNEL: 23017

MODULATION SIGNAL: QPSK

BANDWIDTH: 1.4 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1399.40	H	220	168	-68.22	7.44	-60.79	-47.8
2099.10	H	204	161	-69.64	8.83	-60.81	-47.8
2798.80	H	-	-	-76.22	10.15	-66.08	-53.1
3498.50	H	-	-	-73.62	9.92	-63.70	-50.7

Table 7-30. Radiated Spurious Data (Band 12 – Low Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 323 of 391

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	H	295	175	-70.58	7.63	-62.95	-49.9
2122.50	H	155	185	-70.54	8.86	-61.68	-48.7
2830.00	H	-	-	-76.32	10.10	-66.23	-53.2
3537.50	H	-	-	-73.27	9.90	-63.37	-50.4

Table 7-31. Radiated Spurious Data (Band 12 – Mid Channel)

OPERATING FREQUENCY: 715.30 MHz
 CHANNEL: 23173
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1430.60	H	152	178	-68.46	7.83	-60.63	-47.6
2145.90	H	149	138	-71.42	8.89	-62.53	-49.5
2861.20	H	-	-	-75.75	10.04	-65.71	-52.7
3576.50	H	-	-	-72.95	9.93	-63.02	-50.0

Table 7-32. Radiated Spurious Data (Band 12 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 324 of 391

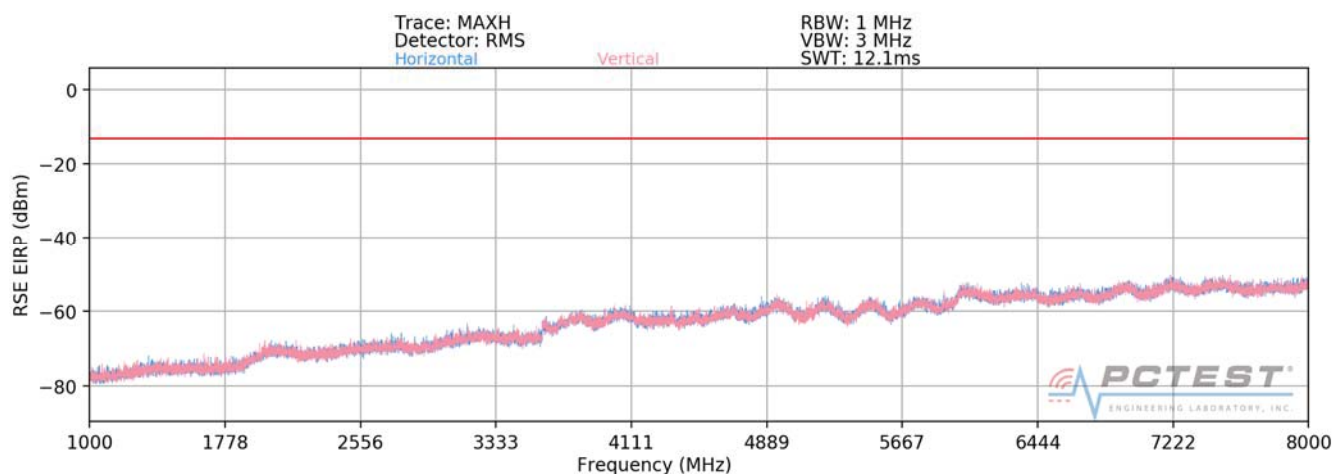
OPERATING FREQUENCY: 715.30 MHz
 CHANNEL: 23173
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1430.60	H	140	172	-70.82	7.83	-62.99	-50.0
2145.90	H	-	-	-76.16	8.89	-67.27	-54.3
2861.20	H	-	-	-75.73	10.04	-65.69	-52.7

Table 7-33. Radiated Spurious Data with WCP (Band 12 –High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 325 of 391

Band 13



Plot 7-532. Radiated Spurious Plot above 1GHz (Band 13)

OPERATING FREQUENCY: 779.50 MHz
CHANNEL: 23205
MODULATION SIGNAL: QPSK
BANDWIDTH: 5.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2338.50	H	195	119	-76.49	9.47	-67.02	-54.0
3118.00	H	-	-	-73.85	9.35	-64.49	-51.5
3897.50	H	-	-	-71.72	9.35	-62.37	-49.4

Table 7-34. Radiated Spurious Data (Band 13 – Low Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 326 of 391

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	115	130	-75.38	9.43	-65.95	-52.9
3128.00	H	-	-	-73.80	9.34	-64.46	-51.5
3910.00	H	-	-	-72.04	9.37	-62.67	-49.7

Table 7-35. Radiated Spurious Data (Band 13 – Mid Channel)

OPERATING FREQUENCY: 784.50 MHz
 CHANNEL: 23255
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2353.50	H	151	125	-74.92	9.41	-65.51	-52.5
3138.00	H	-	-	-73.63	9.33	-64.30	-51.3
3922.50	H	-	-	-72.14	9.40	-62.74	-49.7

Table 7-36. Radiated Spurious Data (Band 13 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 327 of 391

MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.00 MHz
 DISTANCE: 3 meters
 NARROWBAND EMISSION LIMIT: -50 dBm
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1559.00	H	124	182	-73.69	8.51	-65.18	-25.2
1564.00	H	118	174	-74.47	8.53	-65.94	-25.9
1569.00	H	197	179	-78.27	8.55	-69.72	-29.7

Table 7-37. Radiated Spurious Data (Band 13 – 1559 -1610MHz Band)

OPERATING FREQUENCY: 779.50 MHz
 CHANNEL: 23205
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2338.50	H	-	-	-74.93	9.47	-65.46	-52.5
3118.00	H	-	-	-73.55	9.35	-64.19	-51.2

Table 7-38. Radiated Spurious Data with WCP (Band 13 – Low Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 328 of 391

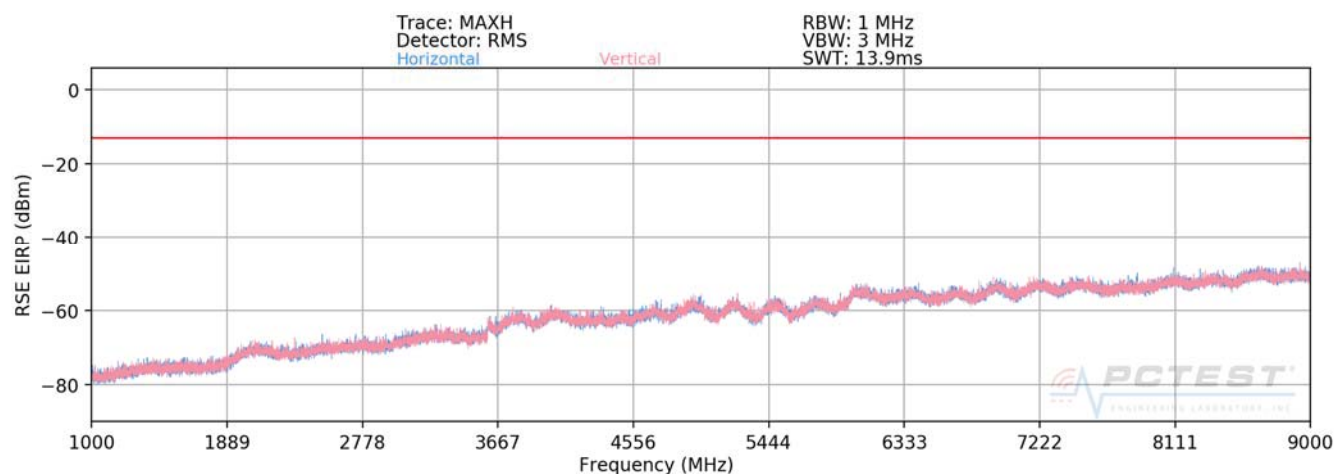
MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.00 MHz
 DISTANCE: 3 meters
 NARROWBAND EMISSION LIMIT: -50 dBm
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1559.00	H	125	199	-77.80	8.51	-69.29	-29.3

Table 7-39. Radiated Spurious Data with WCP (Band 13 – 1559 -1610MHz Band)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 329 of 391

Band 26/5



Plot 7-533. Radiated Spurious Plot above 1GHz (Band 26/5)

OPERATING FREQUENCY: 829.00 MHz
CHANNEL: 26840
MODULATION SIGNAL: QPSK
BANDWIDTH: 10.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	H	226	187	-63.57	8.95	-54.62	-41.6
2487.00	H	-	-	-61.38	9.70	-51.68	-38.7
3316.00	H	-	-	-62.14	9.59	-52.55	-39.5

Table 7-40. Radiated Spurious Data (Band 26/5 – Low Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 330 of 391

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	226	194	-64.59	8.95	-55.63	-42.6
2509.50	H	-	-	-63.17	9.75	-53.42	-40.4

Table 7-41. Radiated Spurious Data (Band 26/5 – Mid Channel)

OPERATING FREQUENCY: 844.00 MHz
 CHANNEL: 26990
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	H	174	200	-64.18	8.95	-55.23	-42.2
2532.00	H	-	-	-63.07	9.75	-53.32	-40.3

Table 7-42. Radiated Spurious Data (Band 26/5 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 331 of 391

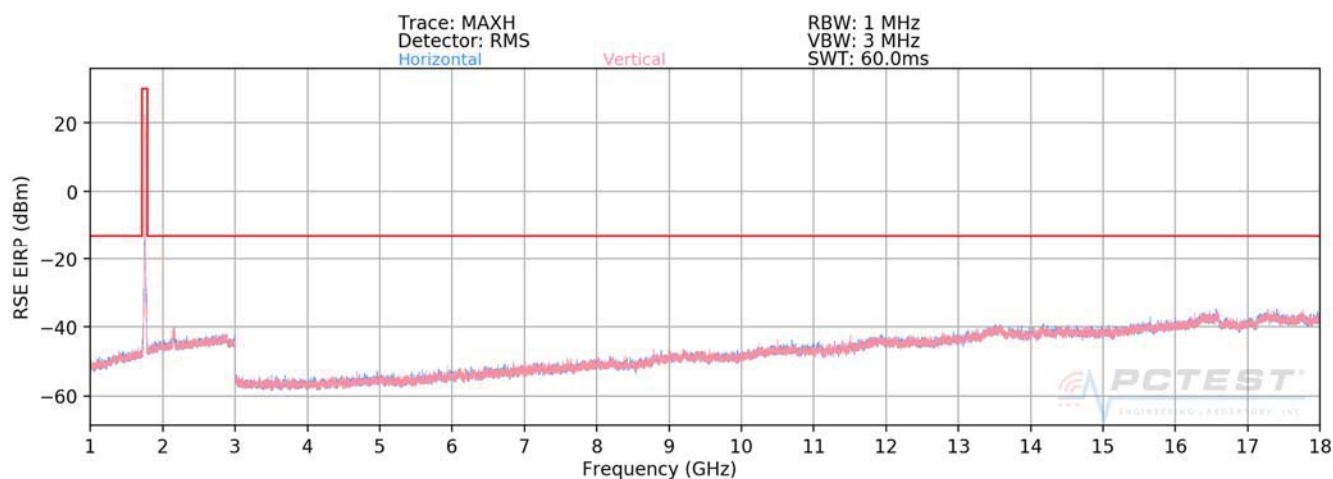
OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	-	-	-63.77	8.95	-54.81	-41.8
2509.50	H	-	-	-60.06	9.75	-50.31	-37.3
3346.00	H	-	-	-57.19	9.60	-47.58	-34.6

Table 7-43. Radiated Spurious Data with WCP (Band 26/5 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 332 of 391

Band 66/4



Plot 7-534. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY: 1710.70 MHz
CHANNEL: 19957
MODULATION SIGNAL: QPSK
BANDWIDTH: 1.4 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3421.40	H	138	205	-60.83	9.82	-51.01	-38.0
5132.10	H	-	-	-62.93	10.69	-52.24	-39.2
6842.80	H	-	-	-59.46	11.64	-47.82	-34.8

Table 7-44. Radiated Spurious Data (Band 66/4 – Low Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 333 of 391

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3465.00	H	-	-	-61.82	9.88	-51.95	-38.9
5197.50	H	-	-	-62.76	10.76	-52.00	-39.0
6930.00	H	-	-	-60.37	11.74	-48.63	-35.6

Table 7-45. Radiated Spurious Data (Band 66/4 – Mid Channel)

OPERATING FREQUENCY: 1754.30 MHz
 CHANNEL: 20393
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3508.60	H	-	-	-62.04	9.92	-52.12	-39.1
5262.90	H	-	-	-62.77	10.71	-52.06	-39.1

Table 7-46. Radiated Spurious Data (Band 66/4 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 334 of 391

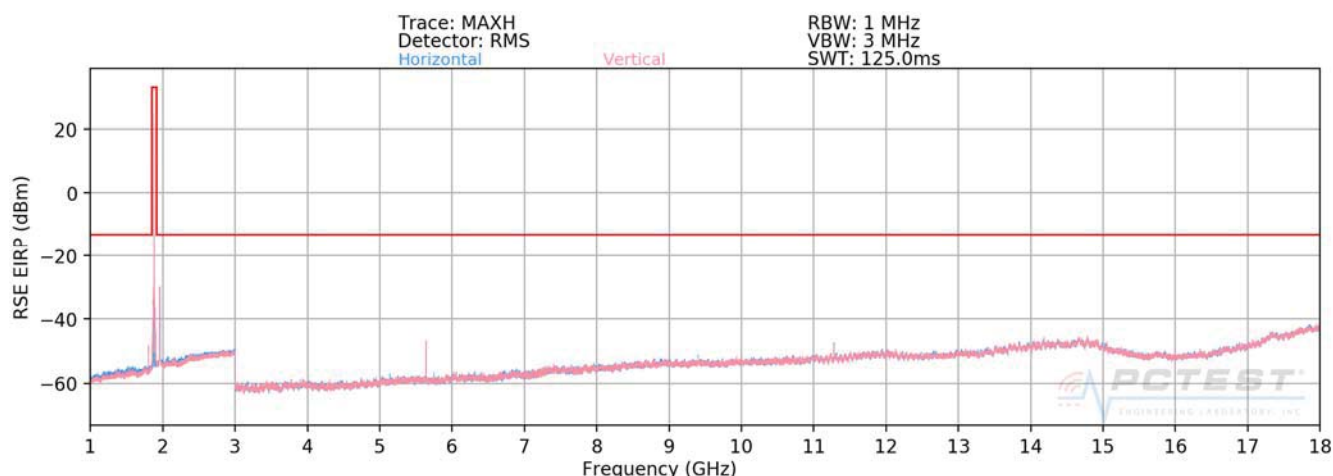
OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3465.00	H	198	196	-52.45	9.88	-42.58	-29.6
5197.50	H	-	-	-61.31	10.76	-50.55	-37.5
6930.00	H	-	-	-58.10	11.74	-46.36	-33.4

Table 7-47. Radiated Spurious Data with WCP (Band 66/4 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 335 of 391

Band 25/2



Plot 7-535. Radiated Spurious Plot above 1GHz (Band 25/2)

OPERATING FREQUENCY: 1857.50 MHz
CHANNEL: 26115
MODULATION SIGNAL: QPSK
BANDWIDTH: 15.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3715.00	H	-	-	-71.72	9.53	-62.19	-49.2
5572.50	H	111	42	-69.90	10.97	-58.92	-45.9
7430.00	H	123	336	-67.48	10.98	-56.50	-43.5
9287.50	H	116	45	-66.73	11.61	-55.12	-42.1
11145.00	H	243	359	-63.88	12.73	-51.15	-38.1
13002.50	H	-	-	-64.46	13.24	-51.23	-38.2
14860.00	H	-	-	-61.49	12.57	-48.92	-35.9

Table 7-48. Radiated Spurious Data (Band 25/2 – Low Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset			Page 336 of 391

OPERATING FREQUENCY: 1882.50 MHz
 CHANNEL: 26365
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	-	-	-65.47	9.37	-56.10	-43.1
5647.50	H	117	176	-57.46	11.17	-46.29	-33.3
7530.00	H	-	-	-61.03	11.11	-49.92	-36.9
9412.50	H	101	143	-57.74	11.57	-46.17	-33.2
11295.00	H	232	172	-53.02	12.72	-40.30	-27.3
13177.50	H	-	-	-56.03	13.15	-42.88	-29.9

Table 7-49. Radiated Spurious Data (Band 25/2 – Mid Channel)

OPERATING FREQUENCY: 1907.50 MHz
 CHANNEL: 26615
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3815.00	H	-	-	-64.86	9.29	-55.58	-42.6
5722.50	H	131	172	-63.12	11.33	-51.79	-38.8
7630.00	H	-	-	-61.29	11.26	-50.03	-37.0
9537.50	H	114	179	-59.66	11.70	-47.96	-35.0
11445.00	H	-	-	-58.26	12.84	-45.43	-32.4
13352.50	H	-	-	-55.83	12.81	-43.02	-30.0

Table 7-50. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 337 of 391

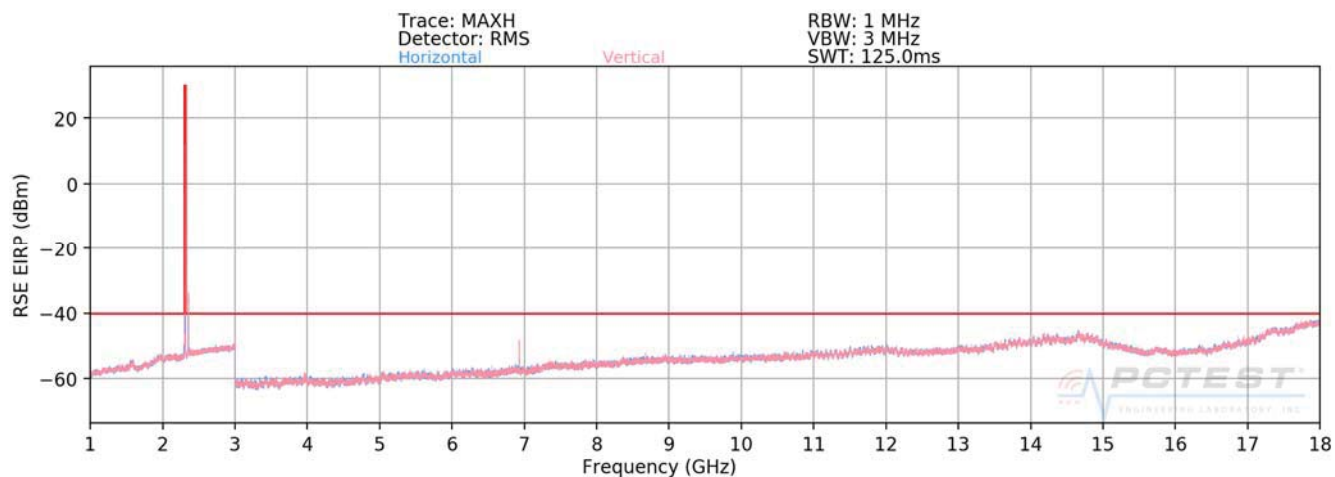
OPERATING FREQUENCY: 1882.50 MHz
 CHANNEL: 26365
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	126	49	-60.09	9.37	-50.72	-37.7
5647.50	H	-	-	-60.48	11.17	-49.31	-36.3
7530.00	H	-	-	-55.81	11.11	-44.70	-31.7
9412.50	H	190	192	-54.73	11.57	-43.16	-30.2
11295.00	H	188	165	-52.29	12.72	-39.57	-26.6
13177.50	H	-	-	-50.72	13.15	-37.57	-24.6

Table 7-51. Radiated Spurious Data with WCP (Band 25/2 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 338 of 391

Band 30



Plot 7-536. Radiated Spurious Plot above 1GHz (Band 30)

OPERATING FREQUENCY: 2307.50 MHz
CHANNEL: 27685
MODULATION SIGNAL: QPSK
BANDWIDTH: 5.0 MHz
DISTANCE: 3 meters
LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	H	119	16	-64.45	10.91	-53.54	-13.5
6922.50	H	261	60	-67.73	11.73	-56.00	-16.0
9230.00	H	393	270	-67.16	11.61	-55.55	-15.5
11537.50	H	-	-	-66.08	12.72	-53.35	-13.4
13845.00	H	-	-	-60.63	12.01	-48.62	-8.6

Table 7-52. Radiated Spurious Data (Band 30 – Low Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 339 of 391

OPERATING FREQUENCY: 2310.00 MHz
 CHANNEL: 27710
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	H	120	16	-63.40	10.92	-52.49	-12.5
6930.00	H	257	65	-69.51	11.74	-57.76	-17.8
9240.00	H	-	-	-67.55	11.62	-55.93	-15.9
11550.00	H	-	-	-65.54	12.72	-52.83	-12.8

Table 7-53. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY: 2312.50 MHz
 CHANNEL: 27685
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4625.00	H	119	18	-63.50	10.92	-52.58	-12.6
6937.50	H	125	55	-69.54	11.75	-57.79	-17.8
9250.00	H	398	318	-67.55	11.63	-55.92	-15.9
11562.50	H	-	-	-64.80	12.71	-52.09	-12.1
13875.00	H	-	-	-62.05	11.98	-50.07	-10.1

Table 7-54. Radiated Spurious Data (Band 30 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 340 of 391

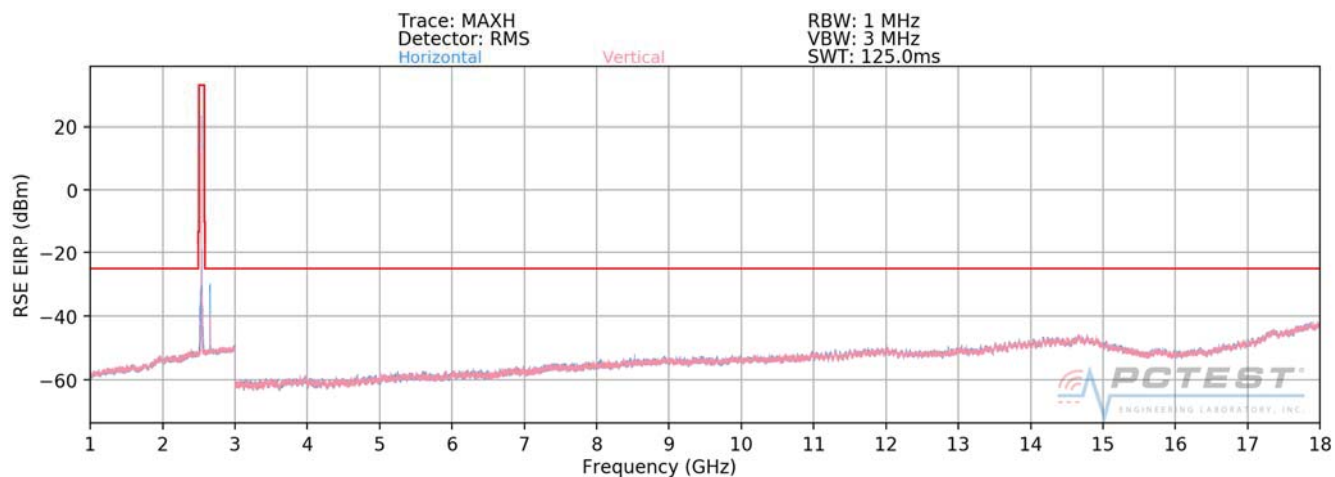
OPERATING FREQUENCY: 2310.00 MHz
 CHANNEL: 27710
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	H	255	330	-69.60	10.92	-58.69	-18.7
6927.50	H	-	-	-70.93	11.74	-59.18	-19.2
9235.00	H	-	-	-67.39	11.62	-55.77	-15.8

Table 7-55. Radiated Spurious Data with WCP (Band 30 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 341 of 391

Band 7 (ANT B)



Plot 7-537. Radiated Spurious Plot above 1GHz (Band 7 ANT B)

OPERATING FREQUENCY: 2507.50 MHz
CHANNEL: 20825
MODULATION SIGNAL: QPSK
BANDWIDTH: 15.0 MHz
DISTANCE: 3 meters
LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5015.00	H	-	-	-61.07	8.56	-52.51	-27.5
7522.50	H	-	-	-55.83	8.48	-47.35	-22.4
10030.00	H	-	-	-55.12	9.85	-45.27	-20.3

Table 7-56. Radiated Spurious Data (Band 7 ANT B – Low Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset			Page 342 of 391

OPERATING FREQUENCY: 2535.00 MHz
 CHANNEL: 21100
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	H	-	-	-60.49	8.60	-51.89	-26.9
7605.00	H	-	-	-55.98	8.48	-47.50	-22.5

Table 7-57. Radiated Spurious Data (Band 7 ANT B – Mid Channel)

OPERATING FREQUENCY: 2562.50 MHz
 CHANNEL: 21375
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5125.00	H	-	-	-60.99	8.66	-52.33	-27.3
7687.50	H	-	-	-56.30	8.58	-47.72	-22.7

Table 7-58. Radiated Spurious Data (Band 7 ANT B – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 343 of 391

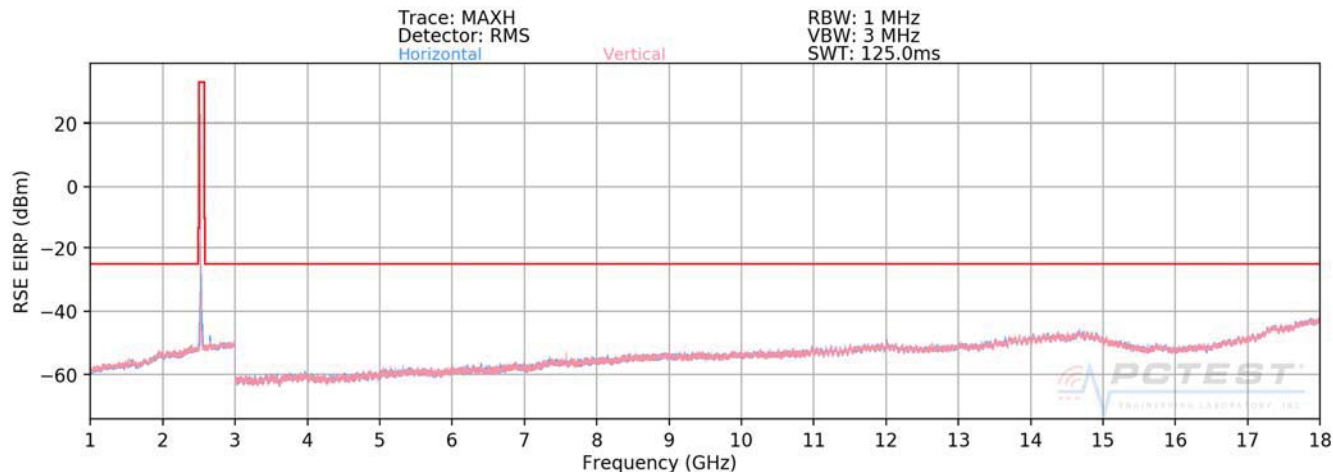
OPERATING FREQUENCY: 2535.00 MHz
 CHANNEL: 20825
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	H	125	105	-69.40	10.75	-58.65	-33.6
7605.00	H	131	341	-67.77	11.25	-56.52	-31.5
10140.00	H	-	-	-66.78	12.07	-54.71	-29.7
12675.00	H	-	-	-65.83	13.66	-52.17	-27.2

Table 7-59. Radiated Spurious Data with WCP (Band 7 ANT B – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 344 of 391

Band 7 Ant A



Plot 7-538. Radiated Spurious Plot above 1GHz (Band 7 Ant A)

OPERATING FREQUENCY: 2510.00 MHz
CHANNEL: 20850
MODULATION SIGNAL: QPSK
BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	293	328	-59.11	8.78	-50.33	-25.3
7527.50	H	303	30	-63.46	9.31	-54.16	-29.2
10035.00	H	-	-	-63.81	9.79	-54.02	-29.0
12542.50	H	-	-	-58.86	8.83	-50.03	-25.0

Table 7-60. Radiated Spurious Data (Band 7 Ant A – Low Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 345 of 391

OPERATING FREQUENCY: 2535.00 MHz
 CHANNEL: 21100
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	H	281	326	-58.17	8.89	-49.28	-24.3
7605.00	H	221	21	-63.80	9.25	-54.54	-29.5
10140.00	H	-	-	-63.43	9.75	-53.68	-28.7
12675.00	H	-	-	-59.47	8.89	-50.58	-25.6

Table 7-61. Radiated Spurious Data (Band 7 Ant A – Mid Channel)

OPERATING FREQUENCY: 2560.00 MHz
 CHANNEL: 21350
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	H	101	326	-57.98	8.91	-49.07	-24.1
7682.50	H	278	346	-64.20	9.27	-54.93	-29.9
10245.00	H	276	368	-61.82	9.65	-52.17	-27.2
12807.50	H	-	-	-58.32	8.89	-49.43	-24.4
15370.00	H	-	-	-55.14	8.42	-46.72	-21.7

Table 7-62. Radiated Spurious Data (Band 7 Ant A – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 346 of 391

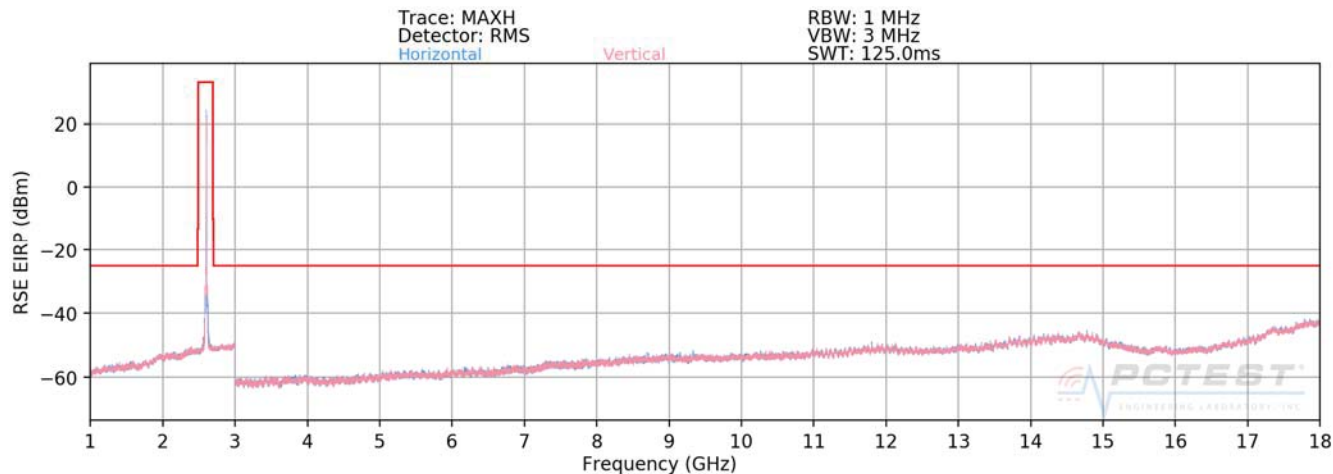
OPERATING FREQUENCY: 2560.00 MHz
 CHANNEL: 21350
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	H	101	236	-63.96	8.91	-55.05	-30.0
7655.00	H	238	335	-65.15	9.27	-55.88	-30.9
10190.00	H	-	-	-62.51	9.65	-52.86	-27.9
12725.00	H	-	-	-58.38	8.89	-49.49	-24.5

Table 7-63. Radiated Spurious Data with WCP (Band 7 Ant A – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 347 of 391

Band 41 (PC2)



Plot 7-539. Radiated Spurious Plot above 1GHz (Band 41 PC2)

OPERATING FREQUENCY: 2510.00 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	-	-	-64.34	10.88	-53.46	-28.5
7530.00	H	116	35	-59.09	11.13	-47.96	-23.0
10040.00	H	-	-	-56.45	11.99	-44.47	-19.5

Table 7-64. Radiated Spurious Data (Band 41 PC2 – Low Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset			Page 348 of 391

OPERATING FREQUENCY: 2593.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	-	-	-64.34	10.74	-53.60	-28.6
7779.00	H	-	-	-58.87	11.44	-47.43	-22.4
10372.00	H	-	-	-56.11	12.42	-43.69	-18.7

Table 7-65. Radiated Spurious Data (Band 41 PC2 – Mid Channel)

OPERATING FREQUENCY: 2680.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	-	-	-63.29	10.70	-52.59	-27.6
8040.00	H	-	-	-58.98	11.16	-47.82	-22.8
10720.00	H	-	-	-57.14	12.59	-44.54	-19.5

Table 7-66. Radiated Spurious Data (Band 41 PC2 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 349 of 391

OPERATING FREQUENCY: 2510.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	181	39	-67.47	10.88	-56.59	-31.6
7530.00	H	131	342	-62.41	11.13	-51.28	-26.3
10040.00	H	139	5	-63.91	11.99	-51.93	-26.9
12550.00	H	-	-	-64.68	13.56	-51.12	-26.1
15060.00	H	-	-	-62.94	13.58	-49.37	-24.4

Table 7-67. Radiated Spurious Data with WCP (Band 41 PC2 – Low Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 350 of 391

7.10 Uplink Carrier Aggregation Radiated Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. No. of sweep points $\geq 2 \times$ span / RBW
4. Detector = RMS
5. Trace mode = trace average for continuous emissions, max hold for pulse emissions
6. The trace was allowed to stabilize

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 351 of 391	

Test Setup

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

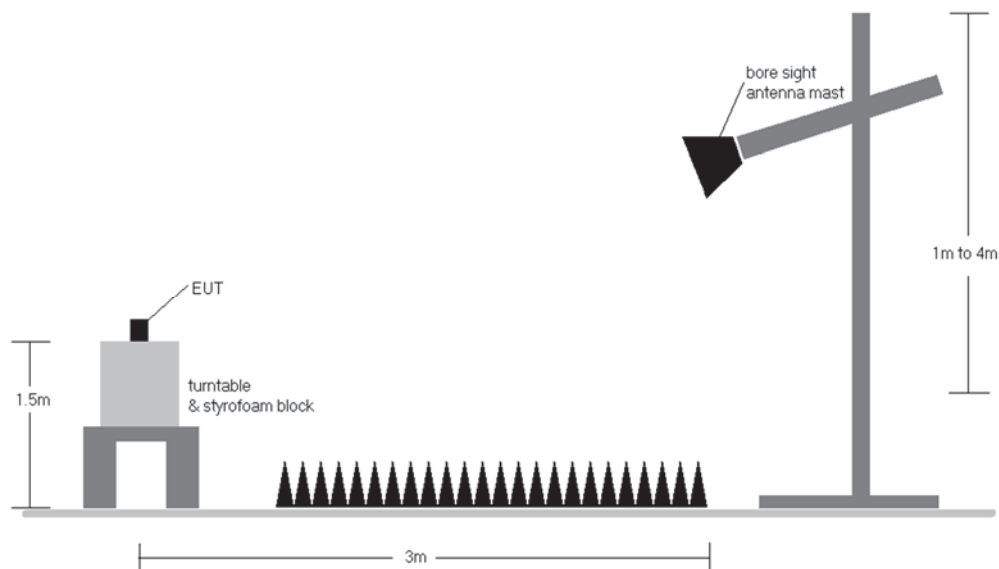


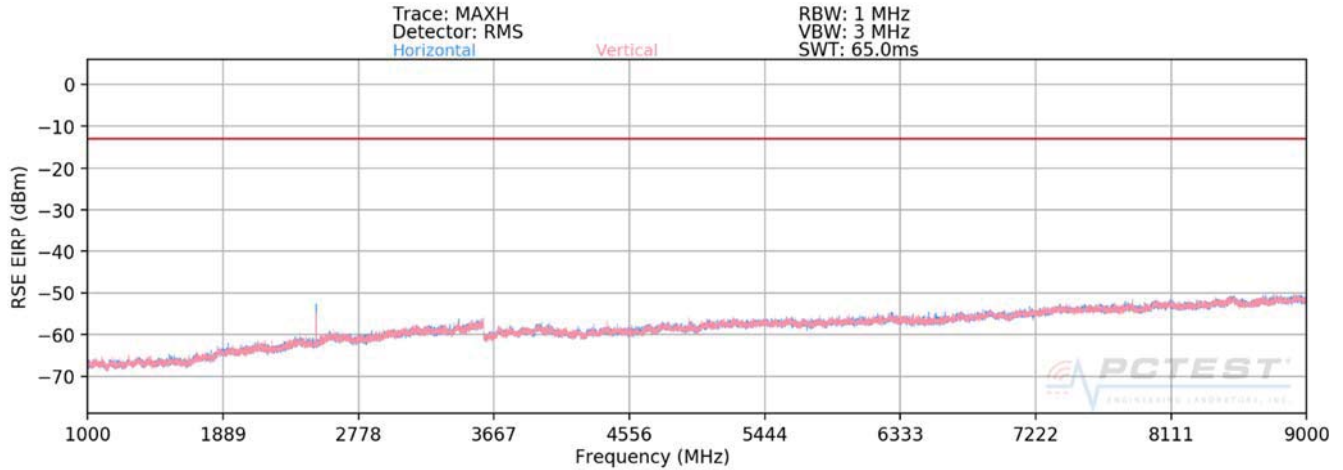
Figure 7-10. Test Instrument & Measurement Setup

Test Notes

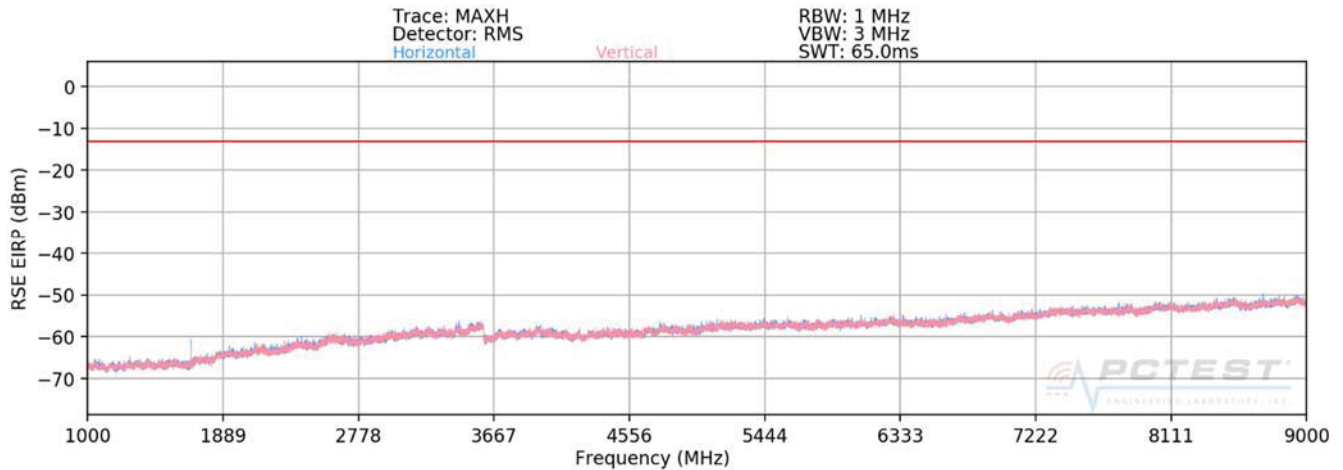
- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 352 of 391

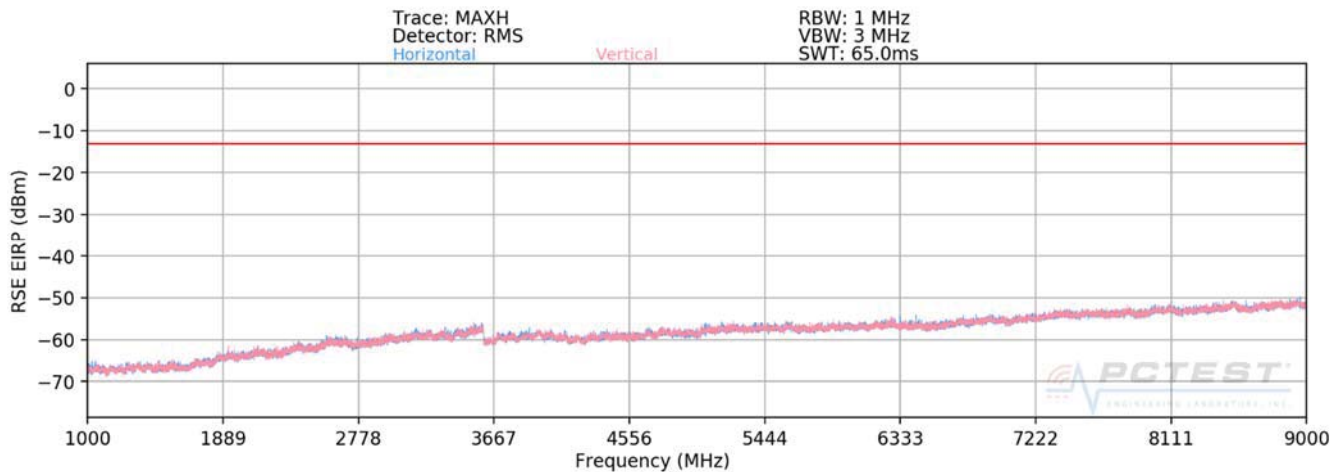
Uplink CA Configuration 5B



Plot 7-540. Radiated Spurious Plot (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)

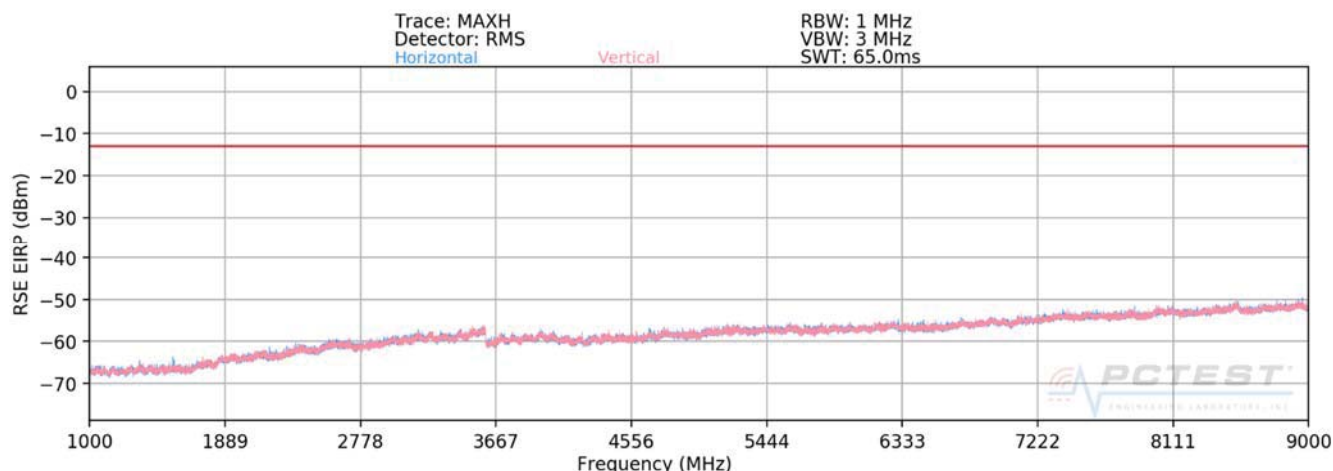


Plot 7-541. Radiated Spurious Plot (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – High Channel)



Plot 7-542. Radiated Spurious Plot (ULCA B5 PCC: RB 50 Offset 0, SCC: RB 50 Offset 0 – Low Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 353 of 391



Plot 7-543. Radiated Spurious Plot (ULCA B5 PCC: RB 50 Offset 0, SCC: RB 50 Offset 0 – High Channel)

OPERATING FREQUENCY (PCC): 829.00 MHz
 OPERATING FREQUENCY (SCC): 844.00
 CHANNEL (PCC): 20450
 CHANNEL (SCC): 20549
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	H	239	212	-67.60	3.61	-63.99	-51.0
2487.00	H	177	86	-60.11	4.25	-55.87	-42.9
3316.00	H	-	-	-66.97	5.83	-61.14	-48.1
4145.00	H	-	-	-67.72	7.66	-60.06	-47.1

Table 7-68. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset			Page 354 of 391

OPERATING FREQUENCY (PCC): 844.00 MHz
 OPERATING FREQUENCY (SCC): 834.10
 CHANNEL (PCC): 20600
 CHANNEL (SCC): 20501
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	H	140	213	-66.58	3.63	-62.96	-50.0
2532.00	H	133	39	-59.89	4.47	-55.42	-42.4
3376.00	H	-	-	-66.85	6.05	-60.80	-47.8
4220.00	H	-	-	-68.36	7.75	-60.61	-47.6

Table 7-69. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – High Channel)

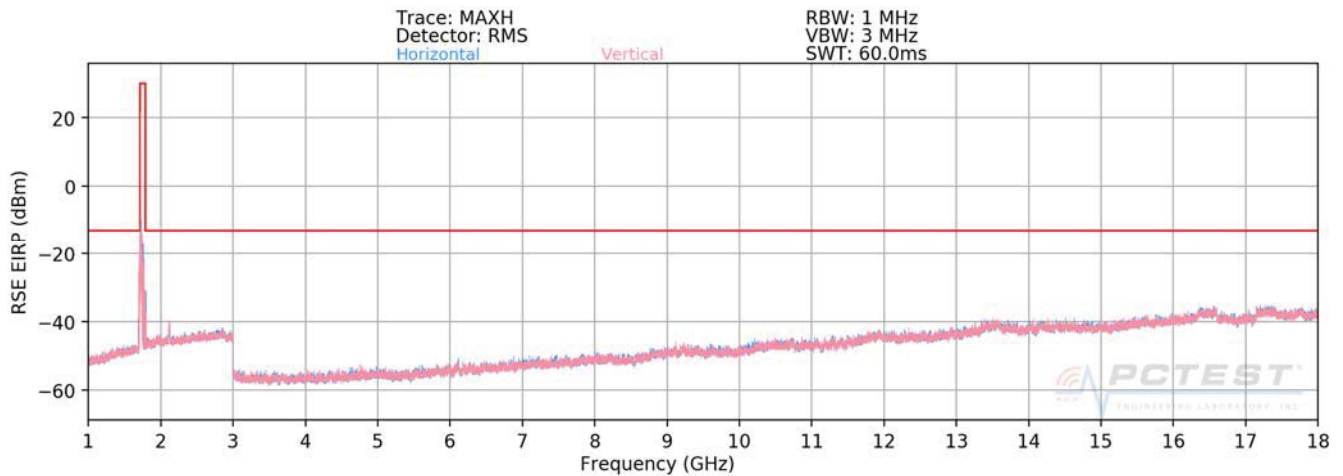
OPERATING FREQUENCY (PCC): 844.00 MHz
 OPERATING FREQUENCY (SCC): 834.10
 CHANNEL (PCC): 20600
 CHANNEL (SCC): 20501
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	H	228	187	-66.96	3.63	-63.34	-50.3
2532.00	H	-	-	-66.54	4.47	-62.07	-49.1
3376.00	H	-	-	-66.89	6.05	-60.84	-47.8

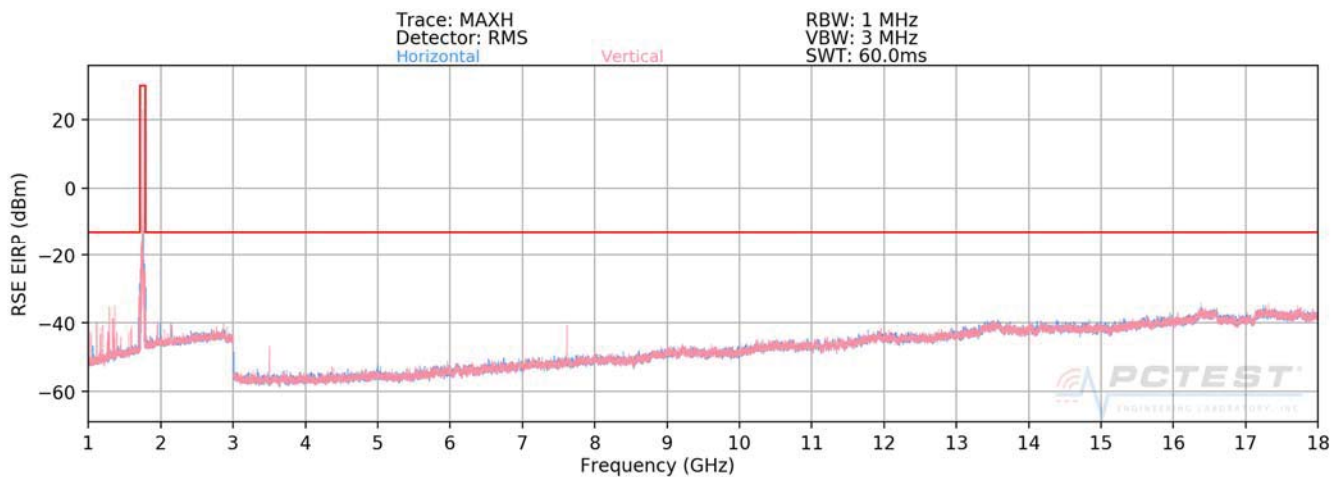
Table 7-70. Radiated Spurious Data with WCP (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 355 of 391

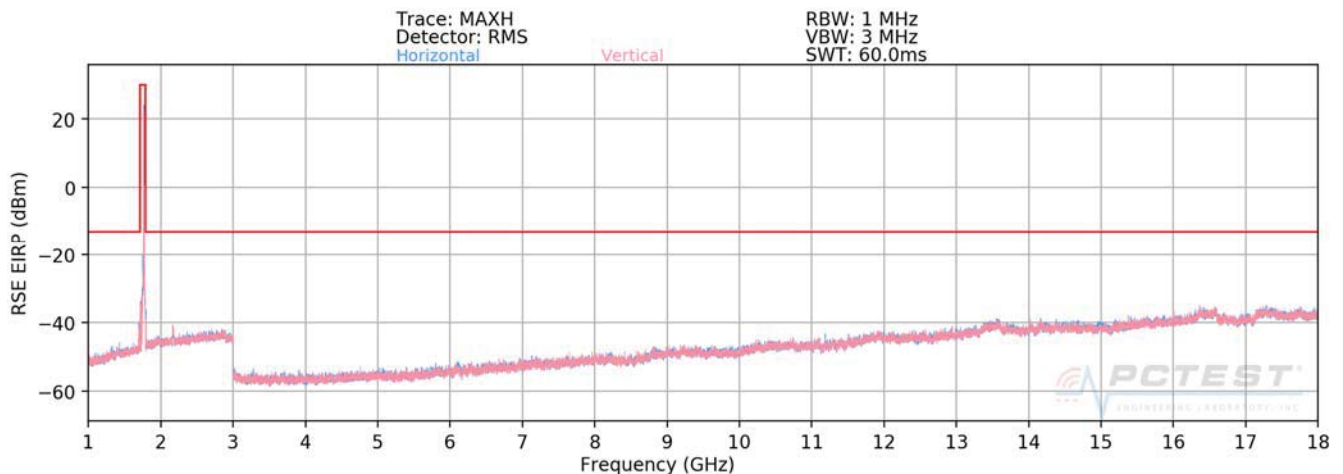
Uplink CA Configuration 66B



Plot 7-544. Radiated Spurious Plot (ULCA B66 PCC: RB 1 Offset 74, SCC: RB 1 Offset 0 – Low Channel)

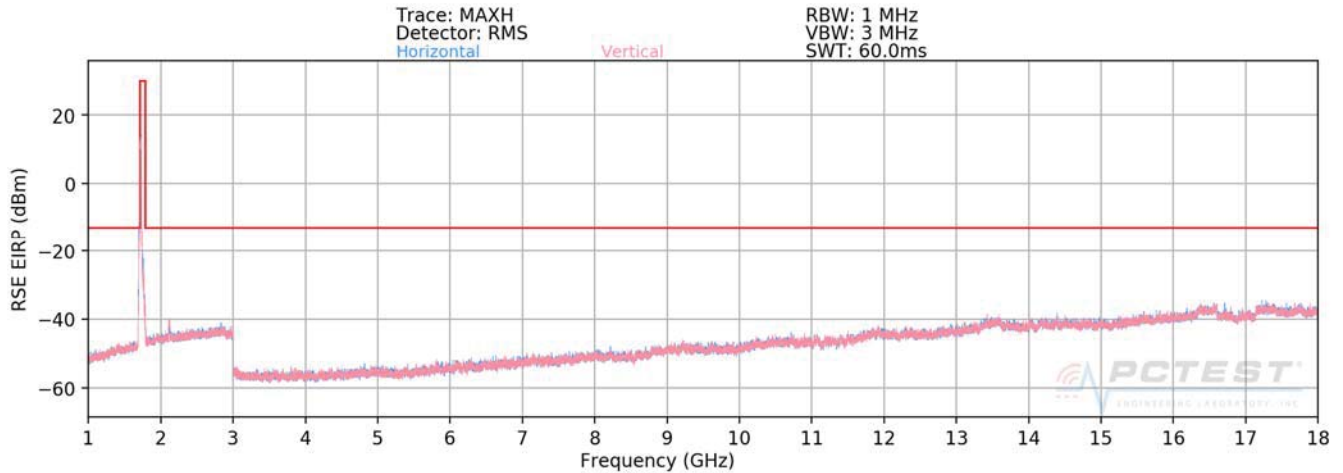


Plot 7-545. Radiated Spurious Plot (ULCA B66 PCC: RB 1 Offset 74, SCC: RB 1 Offset 0 – Mid Channel)

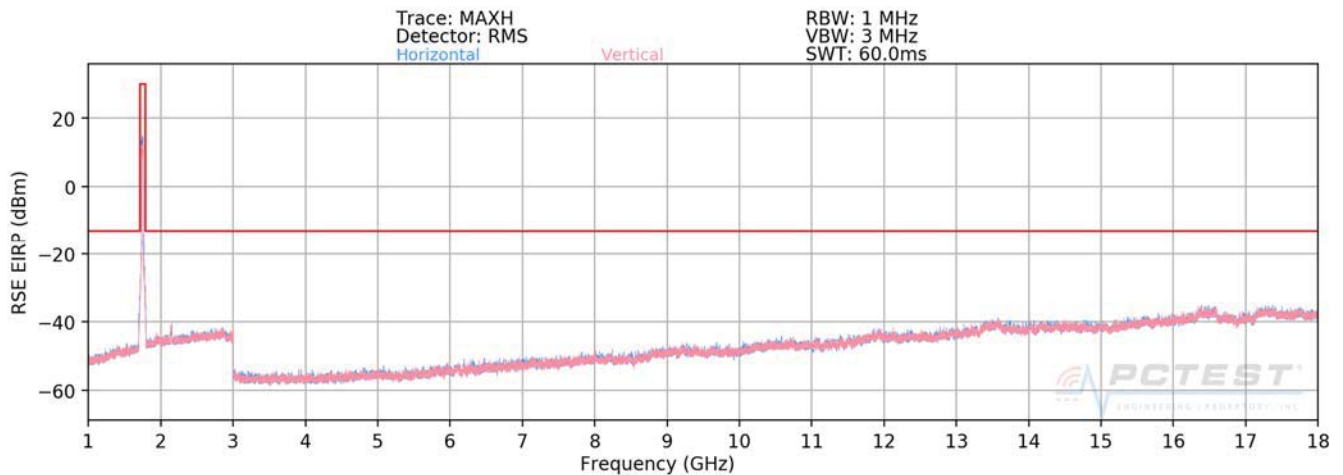


Plot 7-546. Radiated Spurious Plot (ULCA B66 PCC: RB 1 Offset 0, SCC: RB 1 Offset 24 – High Channel)

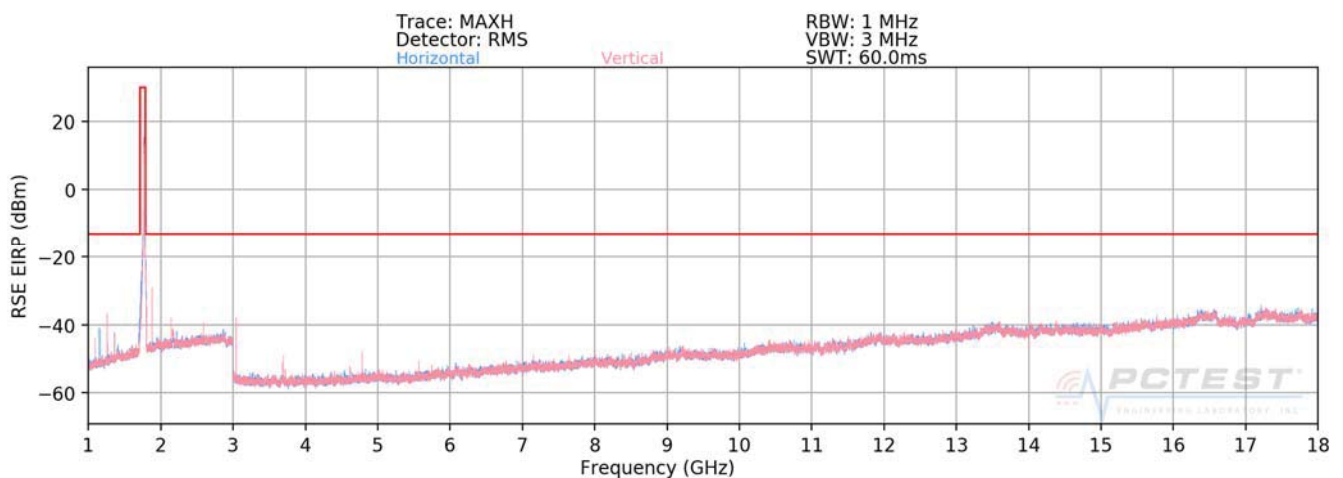
FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 356 of 391



Plot 7-547. Radiated Spurious Plot (ULCA B66 PCC: RB 75 Offset 0, SCC: RB 25 Offset 0 – Low Channel)



Plot 7-548. Radiated Spurious Plot (ULCA B66 PCC: RB 75 Offset 0, SCC: RB 25 Offset 0 – Mid Channel)



Plot 7-549. Radiated Spurious Plot (ULCA B66 PCC: RB 75 Offset 0, SCC: RB 25 Offset 0 – High Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 357 of 391

OPERATING FREQUENCY (PCC): 1717.50 MHz
 OPERATING FREQUENCY (SCC): 1726.80
 CHANNEL (PCC): 132047
 CHANNEL (SCC): 132140
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3435.00	H	127	120	-70.66	9.84	-60.82	-47.8
5152.50	H	-	-	-71.98	10.70	-61.28	-48.3
6870.00	H	120	22	-63.99	11.67	-52.32	-39.3
8587.50	H	-	-	-66.96	11.10	-55.86	-42.9
10305.00	H	-	-	-67.40	12.37	-55.03	-42.0

Table 7-71. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 74, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC): 1745.00 MHz
 OPERATING FREQUENCY (SCC): 1754.30
 CHANNEL (PCC): 172322
 CHANNEL (SCC): 132415
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	-	-	-72.48	9.91	-62.57	-49.6
5235.00	H	-	-	-71.93	10.73	-61.20	-48.2
6980.00	H	113	21	-67.56	11.82	-55.74	-42.7
8725.00	H	112	213	-65.82	11.00	-54.82	-41.8
10470.00	H	-	-	-67.39	12.58	-54.80	-41.8
12215.00	H	-	-	-64.88	13.11	-51.77	-38.8

Table 7-72. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 74, SCC: RB 1 Offset 0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 358 of 391

OPERATING FREQUENCY (PCC): 1772.50 MHz
 OPERATING FREQUENCY (SCC): 1763.20
 CHANNEL (PCC): 132597
 CHANNEL (SCC): 132504
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3545.00	H	148	42	-68.58	9.89	-58.69	-45.7
5317.50	H	-	-	-71.69	10.69	-61.00	-48.0
7090.00	H	148	17	-68.10	11.77	-56.33	-43.3
8862.50	H	111	220	-62.80	11.01	-51.79	-38.8
10635.00	H	-	-	-66.31	12.57	-53.74	-40.7
12407.50	H	-	-	-65.57	13.45	-52.12	-39.1

Table 7-73. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 0, SCC: RB 1 Offset 24 – High Channel)

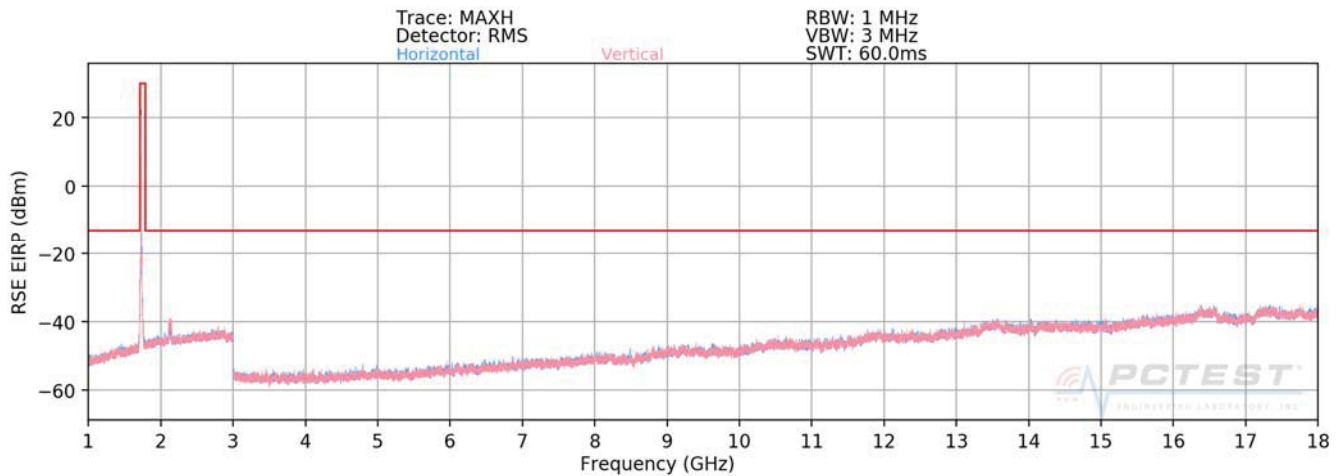
OPERATING FREQUENCY (PCC): 1772.50 MHz
 OPERATING FREQUENCY (SCC): 1763.20
 CHANNEL (PCC): 132597
 CHANNEL (SCC): 132504
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3545.00	H	307	105	-60.03	9.89	-50.14	-37.1
5317.50	H	-	-	-71.90	10.69	-61.21	-48.2
7090.00	H	216	348	-67.55	11.77	-55.78	-42.8
8862.50	H	114	55	-60.47	11.01	-49.46	-36.5
10635.00	H	179	38	-65.06	12.57	-52.49	-39.5
12407.50	H	-	-	-65.62	13.45	-52.17	-39.2
14180.00	H	-	-	-59.93	11.52	-48.41	-35.4

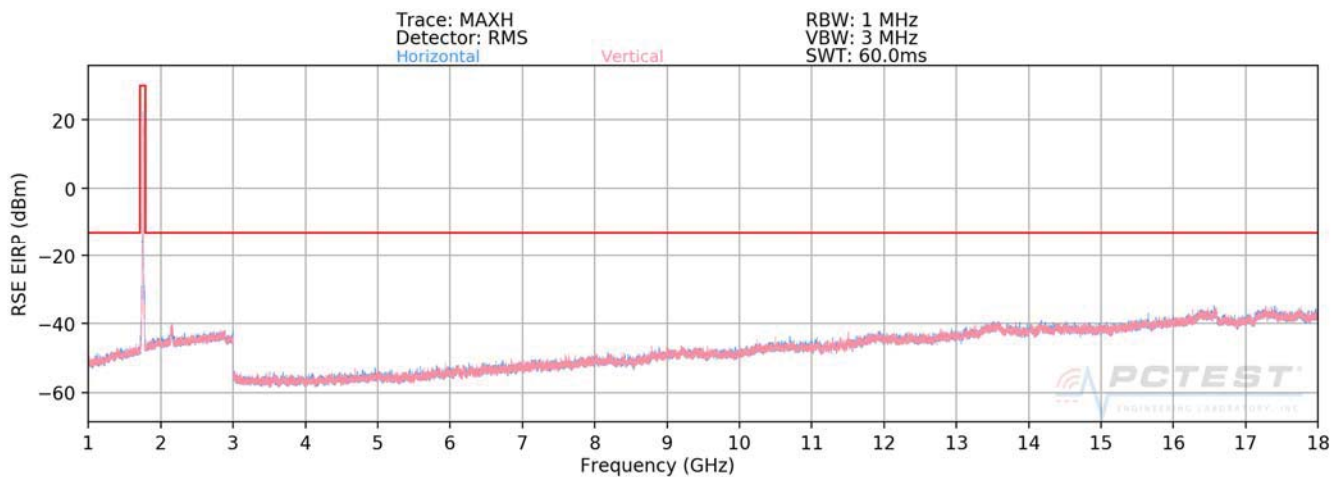
Table 7-74. Radiated Spurious Data with WCP (ULCA B66 PCC: RB 1 Offset 0, SCC: RB 1 Offset 24 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 359 of 391

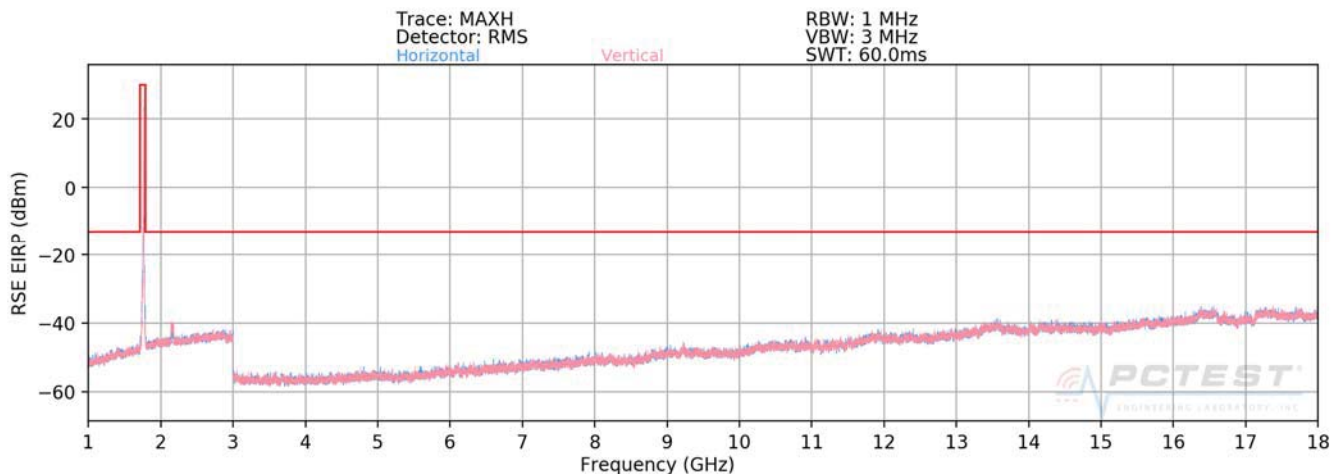
Uplink CA Configuration 66C



Plot 7-550. Radiated Spurious Plot (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

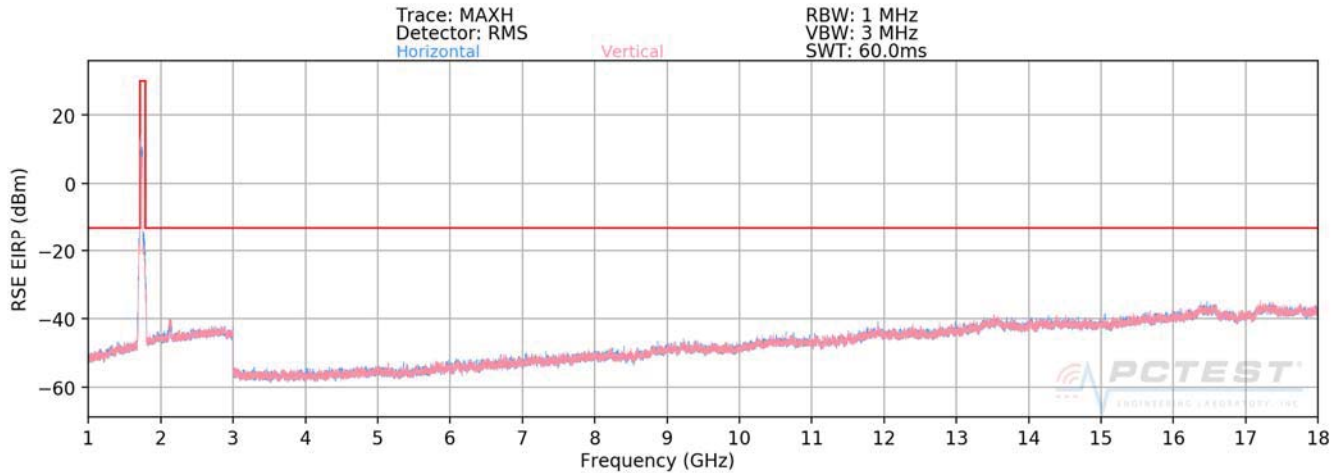


Plot 7-551. Radiated Spurious Plot (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

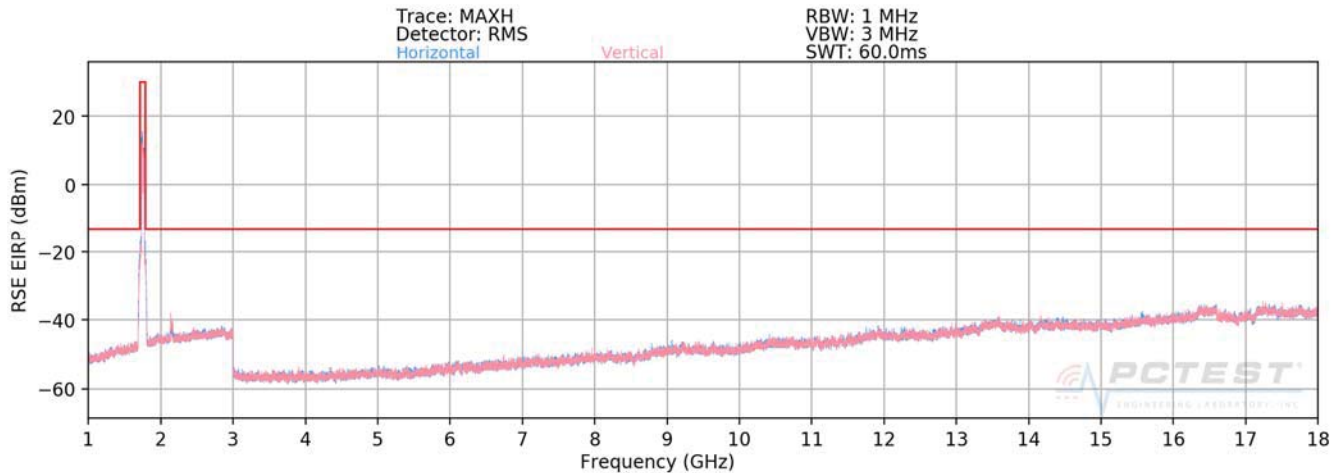


Plot 7-552. Radiated Spurious Plot (ULCA B66 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

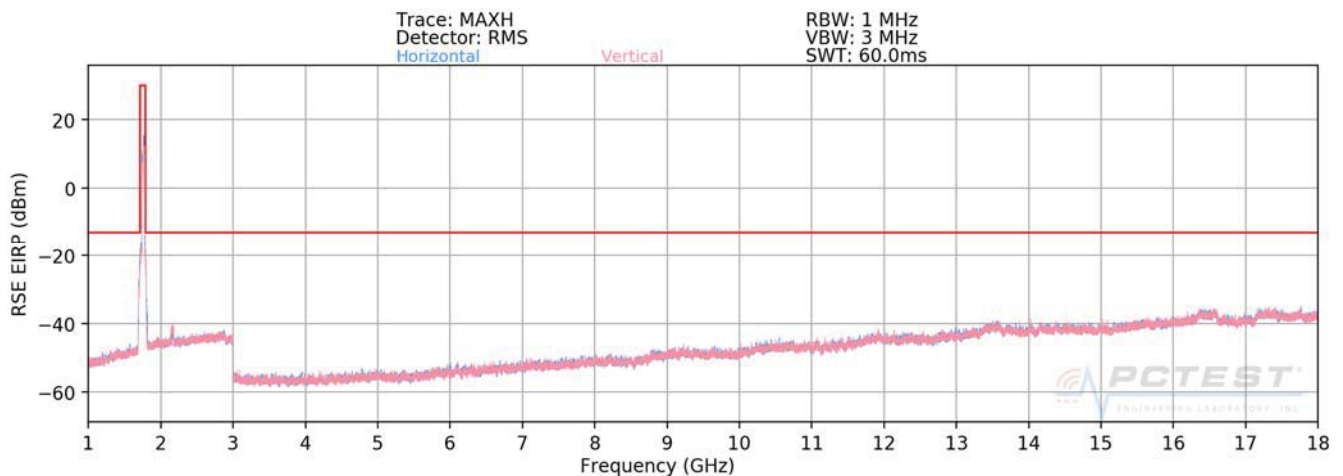
FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 360 of 391



Plot 7-553. Radiated Spurious Plot (ULCA B66 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Low Channel)



Plot 7-554. Radiated Spurious Plot (ULCA B66 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Mid Channel)



Plot 7-555. Radiated Spurious Plot (ULCA B66 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – High Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 361 of 391

OPERATING FREQUENCY (PCC): 1720.00 MHz
 OPERATING FREQUENCY (SCC): 1739.80
 CHANNEL (PCC): 132072
 CHANNEL (SCC): 132270
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	H	-	-	-72.56	9.84	-62.72	-49.7
5160.00	H	-	-	-71.69	10.71	-60.98	-48.0
6880.00	H	111	228	-66.11	11.68	-54.42	-41.4
8600.00	H	-	-	-66.61	11.08	-55.53	-42.5
10320.00	H	-	-	-67.18	12.38	-54.80	-41.8

Table 7-75. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC): 1745.00 MHz
 OPERATING FREQUENCY (SCC): 1764.80
 CHANNEL (PCC): 132322
 CHANNEL (SCC): 132520
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	-	-	-72.33	9.91	-62.42	-49.4
5235.00	H	-	-	-71.82	10.73	-61.09	-48.1
6980.00	H	150	22	-67.26	11.82	-55.44	-42.4
8725.00	H	118	222	-64.50	11.00	-53.50	-40.5
10470.00	H	-	-	-67.31	12.58	-54.72	-41.7
12215.00	H	-	-	-64.62	13.11	-51.51	-38.5

Table 7-76. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 362 of 391

OPERATING FREQUENCY (PCC): 1770.00 MHz
 OPERATING FREQUENCY (SCC): 1750.20
 CHANNEL (PCC): 132572
 CHANNEL (SCC): 132374
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	H	119	216	-72.26	9.89	-62.37	-49.4
5310.00	H	-	-	-71.91	10.69	-61.22	-48.2
7080.00	H	114	23	-66.96	11.79	-55.18	-42.2
8850.00	H	118	221	-64.16	11.00	-53.17	-40.2
10620.00	H	-	-	-66.58	12.58	-54.00	-41.0
12390.00	H	-	-	-66.13	13.33	-52.79	-39.8

Table 7-77. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

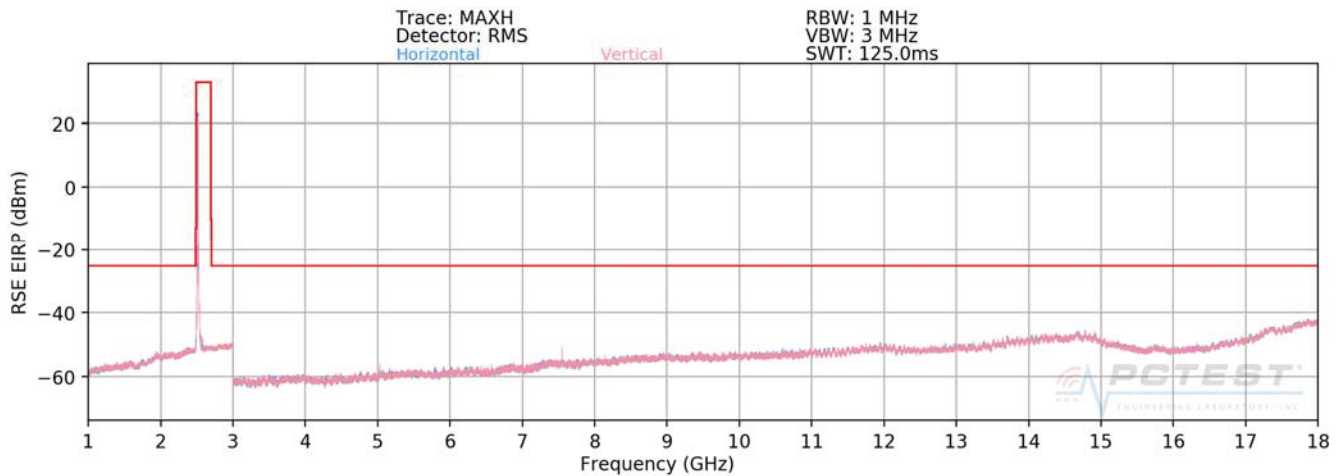
OPERATING FREQUENCY (PCC): 1770.00 MHz
 OPERATING FREQUENCY (SCC): 1750.20
 CHANNEL (PCC): 132572
 CHANNEL (SCC): 132374
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	H	150	195	-66.63	9.89	-56.74	-43.7
5310.00	H	-	-	-71.76	10.69	-61.07	-48.1
7080.00	H	158	15	-67.84	11.79	-56.06	-43.1
8850.00	H	113	125	-63.33	11.00	-52.34	-39.3
10620.00	H	-	-	-66.64	12.58	-54.06	-41.1
12390.00	H	-	-	-66.12	13.33	-52.78	-39.8

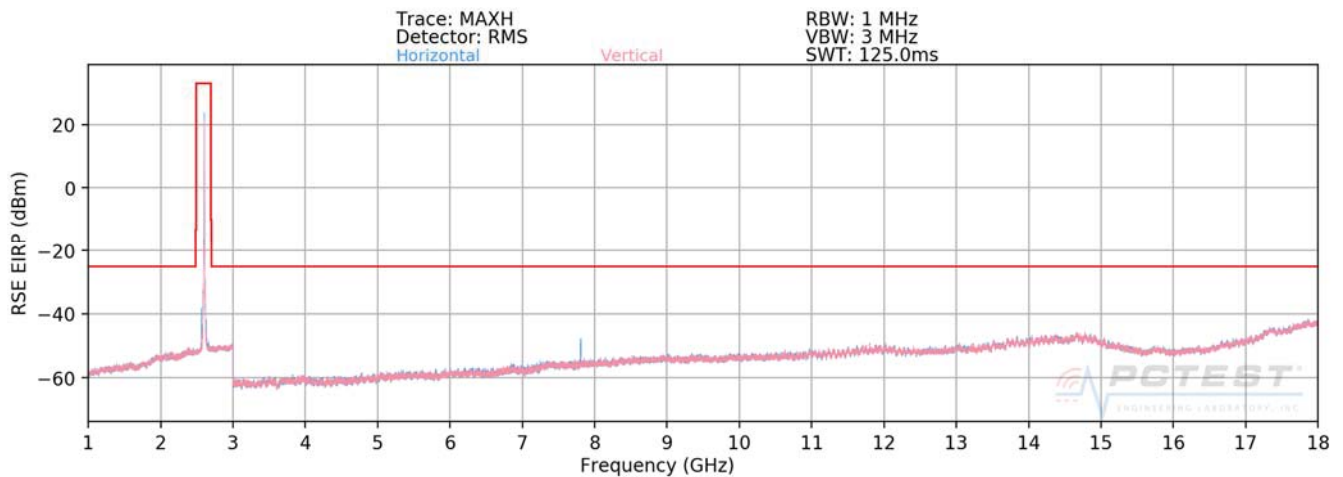
Table 7-78. Radiated Spurious Data with WCP (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 363 of 391

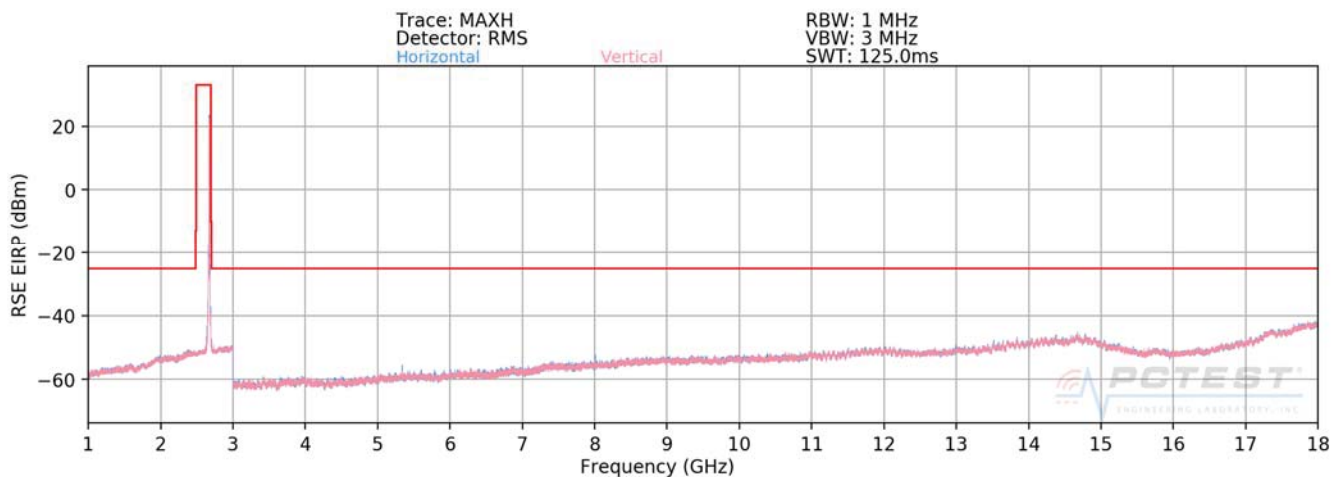
Uplink CA Configuration 41C (PC2)



Plot 7-556. Radiated Spurious Plot (ULCA B41 PC2 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

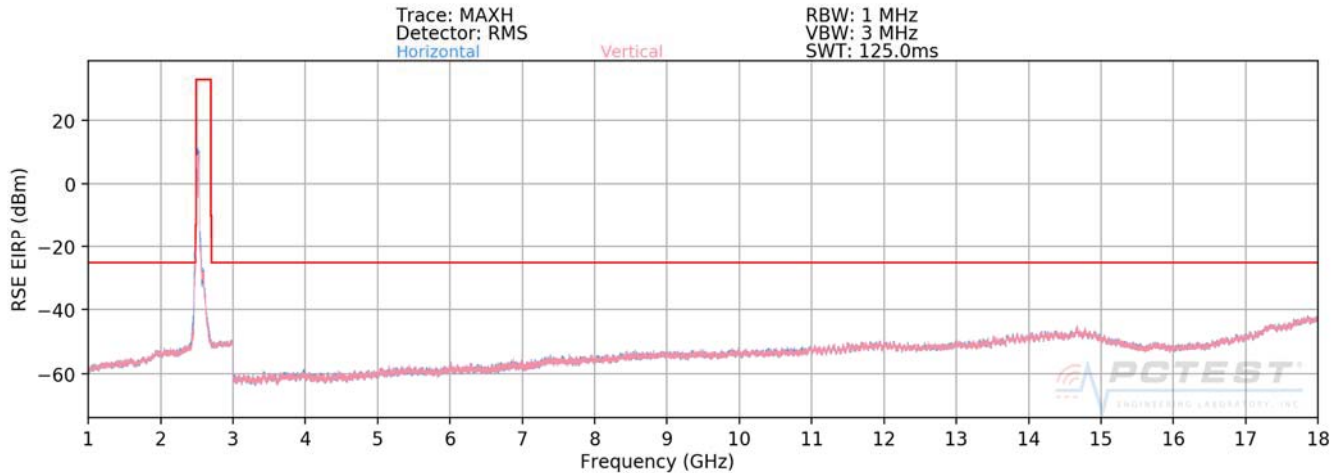


Plot 7-557. Radiated Spurious Plot (ULCA B41 PC2 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

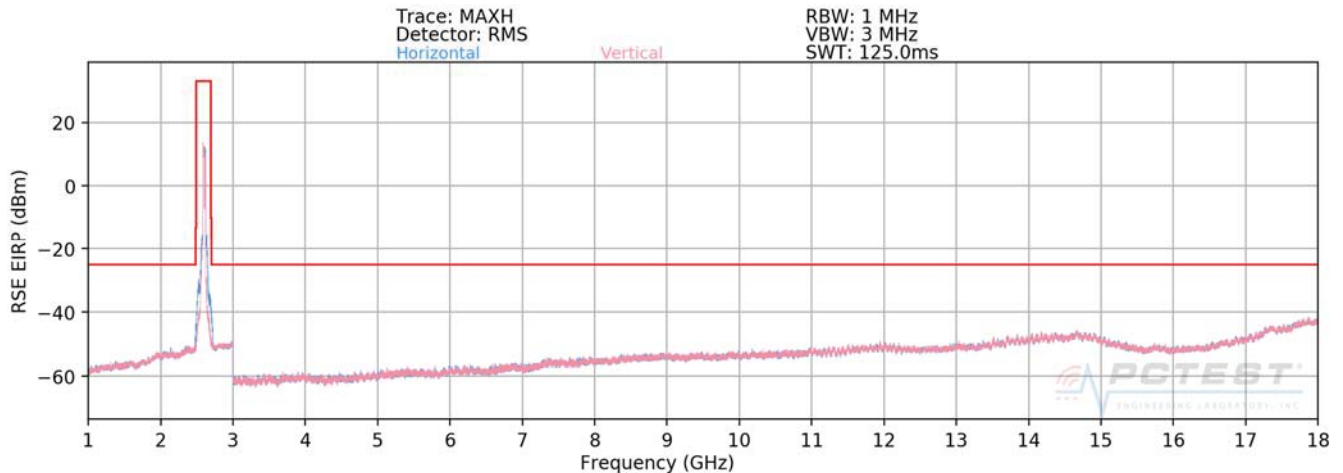


Plot 7-558. Radiated Spurious Plot (ULCA B41 PC2 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

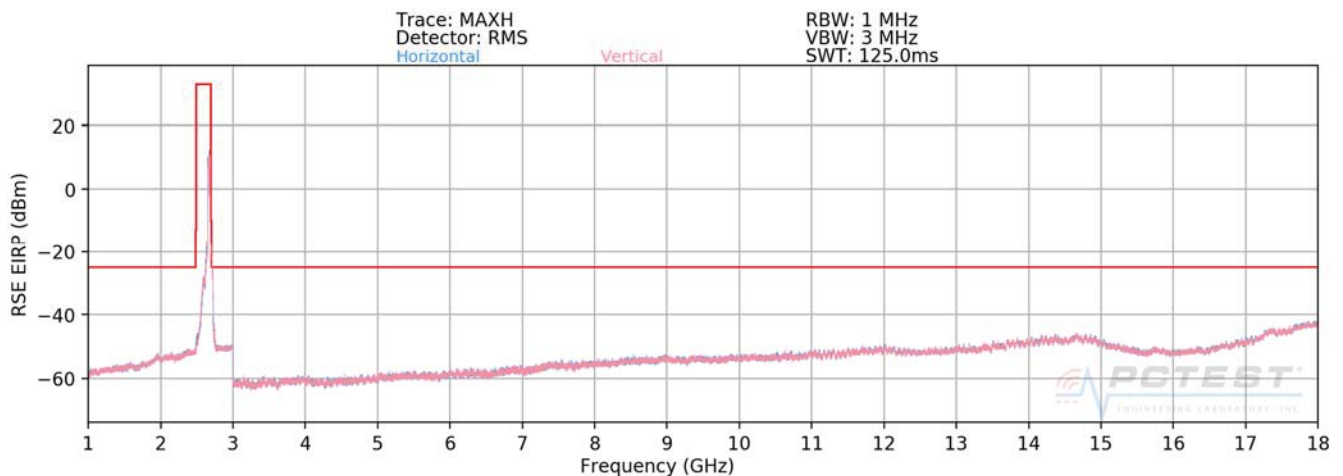
FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 364 of 391



Plot 7-559. Radiated Spurious Plot (ULCA B41 PC2 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Low Channel)



Plot 7-560. Radiated Spurious Plot (ULCA B41 PC2 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Mid Channel)



Plot 7-561. Radiated Spurious Plot (ULCA B41 PC2 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – High Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 365 of 391

OPERATING FREQUENCY (PCC): 2510.00 MHz
 OPERATING FREQUENCY (SCC): 2598.80
 CHANNEL (PCC): 39790
 CHANNEL (SCC): 39988
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	121	15	-61.34	8.56	-52.78	-27.8
7521.00	H	205	257	-59.07	8.46	-50.62	-25.6
10022.00	H	-	-	-66.49	9.85	-56.64	-31.6

Table 7-79. Radiated Spurious Data (ULCA B41 PC2 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC): 2593.00 MHz
 OPERATING FREQUENCY (SCC): 2612.80
 CHANNEL (PCC): 40620
 CHANNEL (SCC): 40818
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	117	348	-60.90	8.70	-52.20	-27.2
7779.00	H	197	243	-58.81	8.69	-50.13	-25.1
10372.00	H	-	-	-65.35	9.62	-55.72	-30.7

Table 7-80. Radiated Spurious Data (ULCA B41 PC2 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 366 of 391

OPERATING FREQUENCY (PCC): 2680.00 MHz
 OPERATING FREQUENCY (SCC): 2660.20
 CHANNEL (PCC): 41490
 CHANNEL (SCC): 41292
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	115	35	-57.34	8.70	-48.65	-23.6
8040.00	H	233	249	-50.59	8.95	-41.64	-16.6
10720.00	H	116	284	-55.02	9.32	-45.70	-20.7
13400.00	H	-	-	-61.28	8.77	-52.51	-27.5

Table 7-81. Radiated Spurious Data (ULCA B41 PC2 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

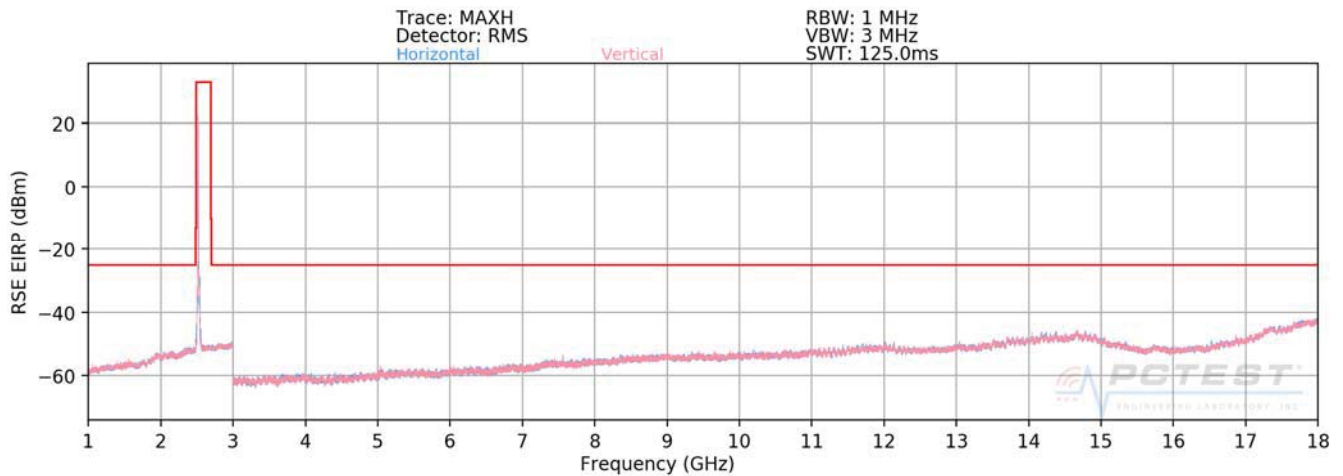
OPERATING FREQUENCY (PCC): 2680.00 MHz
 OPERATING FREQUENCY (SCC): 2660.20
 CHANNEL (PCC): 41490
 CHANNEL (SCC): 41292
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	110	249	-60.82	8.70	-52.13	-27.1
8040.00	H	142	341	-55.61	8.95	-46.66	-21.7
10720.00	H	-	-	-64.44	9.32	-55.12	-30.1

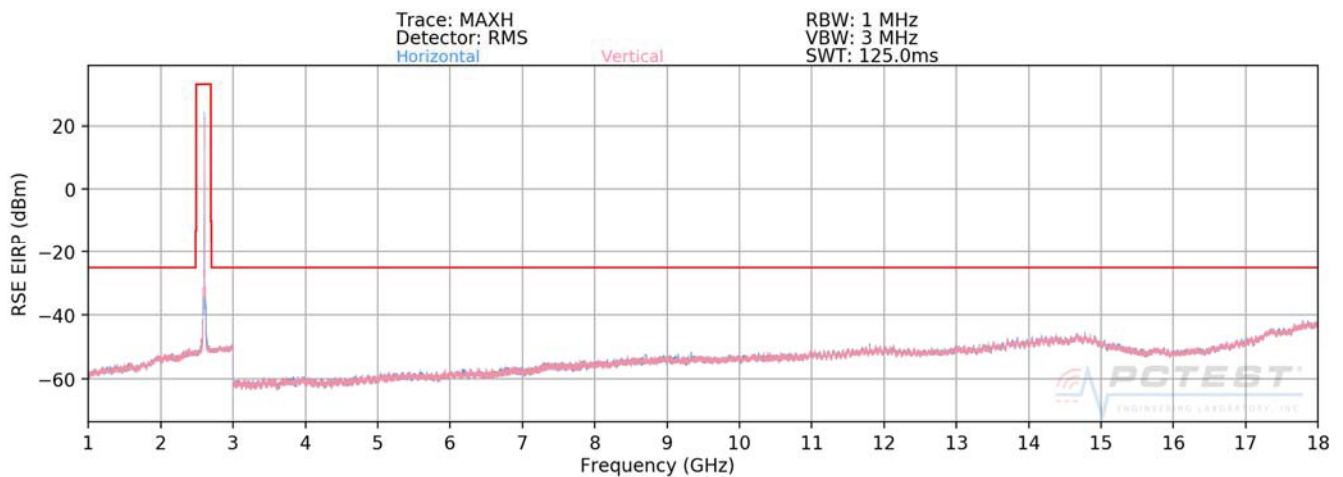
Table 7-82. Radiated Spurious Data with WCP (ULCA B41 PC2 PCC: RB 1 Offset 0, SCC: RB 99 Offset 0 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 367 of 391

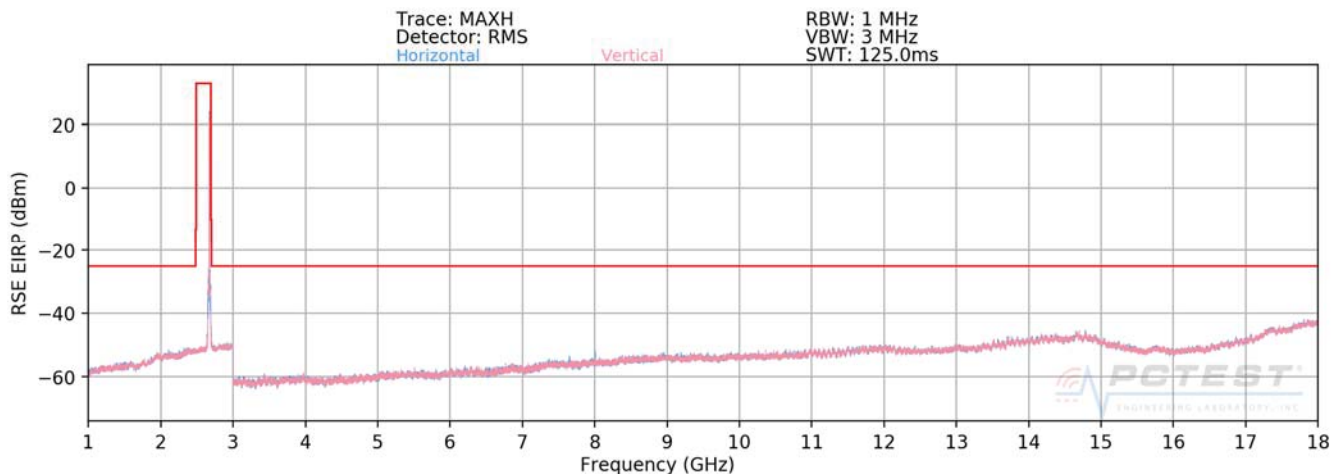
Uplink CA Configuration 41C (PC3)



Plot 7-562. Radiated Spurious Plot (ULCA B41 PC3 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

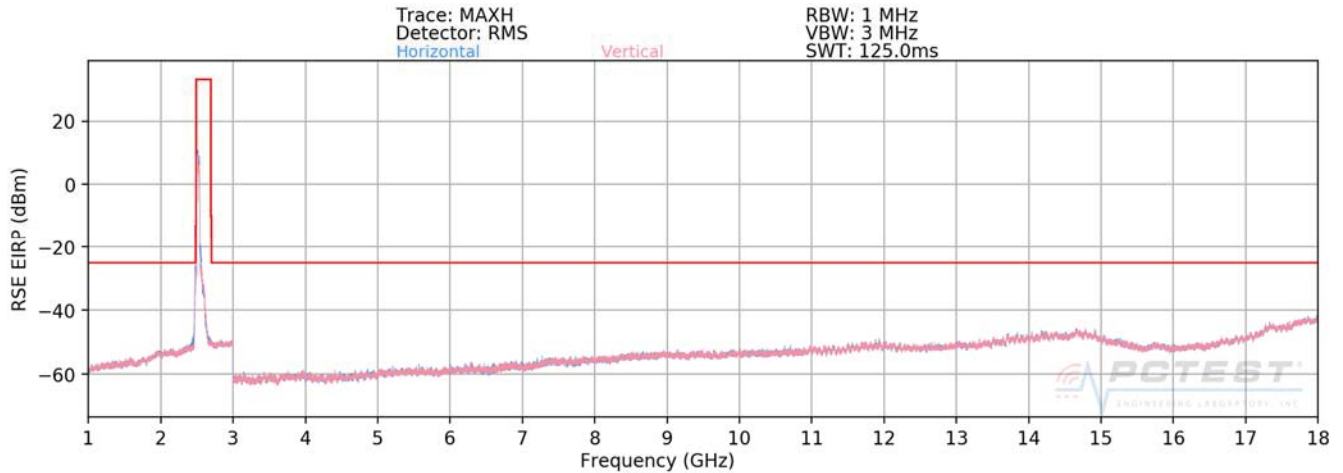


Plot 7-563. Radiated Spurious Plot (ULCA B41 PC3 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

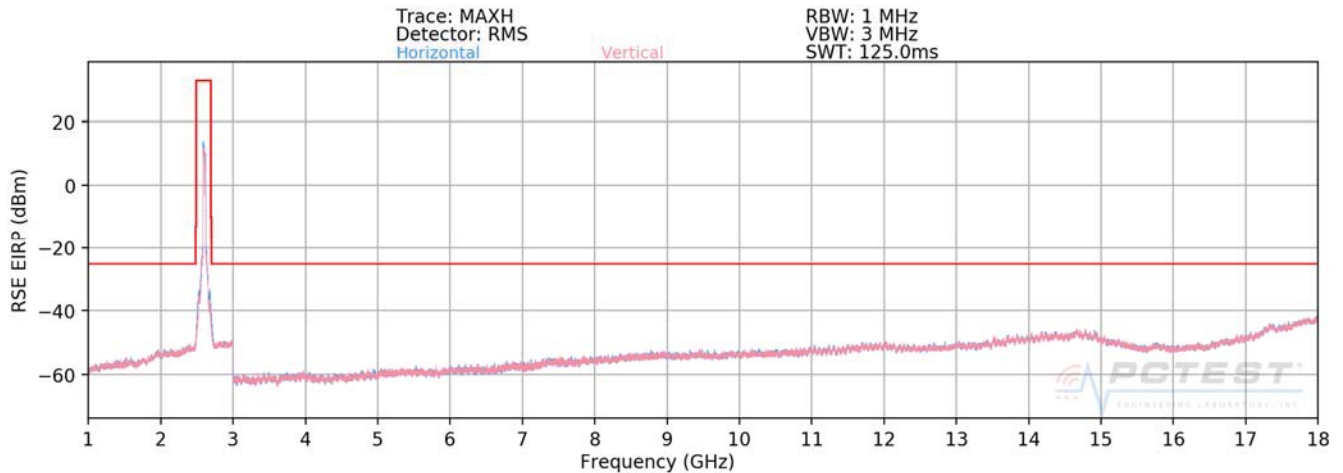


Plot 7-564. Radiated Spurious Plot (ULCA B41 PC3 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

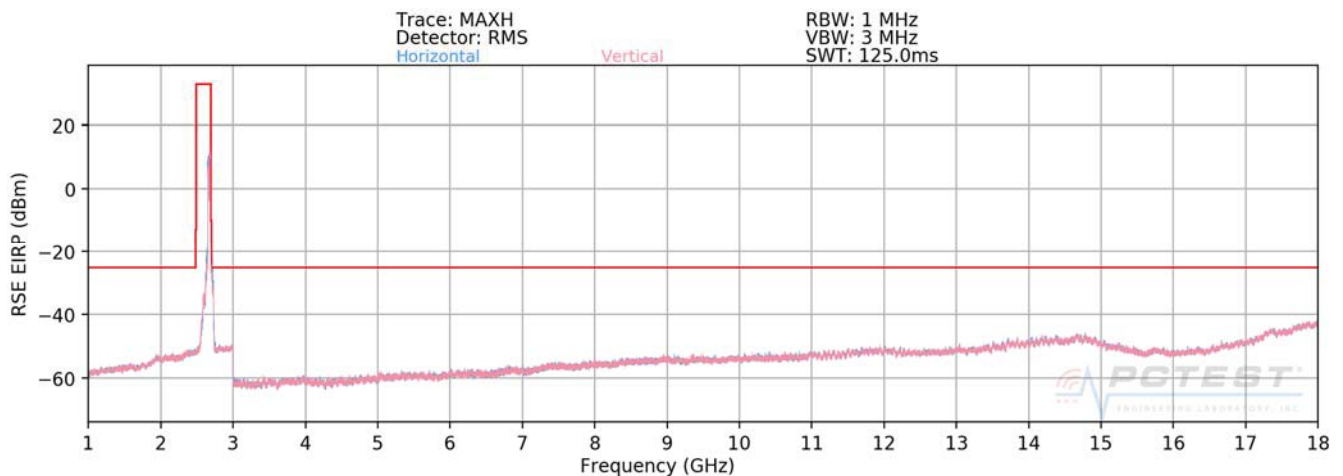
FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 368 of 391



Plot 7-565. Radiated Spurious Plot (ULCA B41 PC3 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Low Channel)



Plot 7-566. Radiated Spurious Plot (ULCA B41 PC3 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Mid Channel)



Plot 7-567. Radiated Spurious Plot (ULCA B41 PC3 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – High Channel)

FCC ID: A3LSMG970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 369 of 391	

OPERATING FREQUENCY (PCC): 2510.00 MHz
 OPERATING FREQUENCY (SCC): 2598.80
 CHANNEL (PCC): 39790
 CHANNEL (SCC): 39988
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	100	7	-64.61	8.56	-56.05	-31.0
7530.00	H	209	349	-58.51	8.46	-50.06	-25.1
10040.00	H	-	-	-60.91	9.85	-51.06	-26.1
12550.00	H	-	-	-57.45	9.06	-48.40	-23.4

Table 7-83. Radiated Spurious Data (ULCA B41 PC3 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC): 2593.00 MHz
 OPERATING FREQUENCY (SCC): 2612.80
 CHANNEL (PCC): 40620
 CHANNEL (SCC): 40818
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	163	326	-62.90	8.70	-54.20	-29.2
7779.00	H	154	345	-60.84	8.69	-52.16	-27.2
10372.00	H	-	-	-61.02	9.62	-51.39	-26.4
12965.00	H	-	-	-56.21	8.99	-47.22	-22.2

Table 7-84. Radiated Spurious Data (ULCA B41 PC3 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 370 of 391

OPERATING FREQUENCY (PCC): 2680.00 MHz
 OPERATING FREQUENCY (SCC): 2660.20
 CHANNEL (PCC): 41490
 CHANNEL (SCC): 41292
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	171	352	-63.78	8.70	-55.08	-30.1
8040.00	H	105	355	-56.38	8.95	-47.42	-22.4
10720.00	H	-	-	-59.40	9.32	-50.08	-25.1
13400.00	H	-	-	-55.90	8.77	-47.12	-22.1

Table 7-85. Radiated Spurious Data (ULCA B41 PC3 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

OPERATING FREQUENCY (PCC): 2680.00 MHz
 OPERATING FREQUENCY (SCC): 2660.20
 CHANNEL (PCC): 41490
 CHANNEL (SCC): 41292
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	144	329	-64.53	8.70	-55.83	-30.8
8040.00	H	111	31	-57.44	8.95	-48.48	-23.5
10720.00	H	-	-	-59.48	9.32	-50.16	-25.2
13400.00	H	-	-	-55.79	8.77	-47.01	-22.0

Table 7-86. Radiated Spurious Data with WCP (ULCA B41 PC3 PCC: RB 1 Offset 0, SCC: RB 99 Offset 0 – High Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.11 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency. For Part 24, Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 71 Frequency Stability Measurements

OPERATING FREQUENCY: 680,500,000 Hz
 CHANNEL: 133297
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	680,499,723	0	0.0000000
100 %		- 30	680,499,870	147	0.0000216
100 %		- 20	680,499,899	176	0.0000259
100 %		- 10	680,500,192	469	0.0000689
100 %		0	680,500,263	540	0.0000794
100 %		+ 10	680,500,228	505	0.0000742
100 %		+ 20	680,499,580	-143	-0.0000210
100 %		+ 30	680,500,183	460	0.0000676
100 %		+ 40	680,499,889	166	0.0000244
100 %		+ 50	680,500,174	451	0.0000663
BATT. ENDPOINT	3.49	+ 20	680,499,713	-10	-0.0000015

Table 7-87. Frequency Stability Data (Band 71)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 71 Frequency Stability Measurements

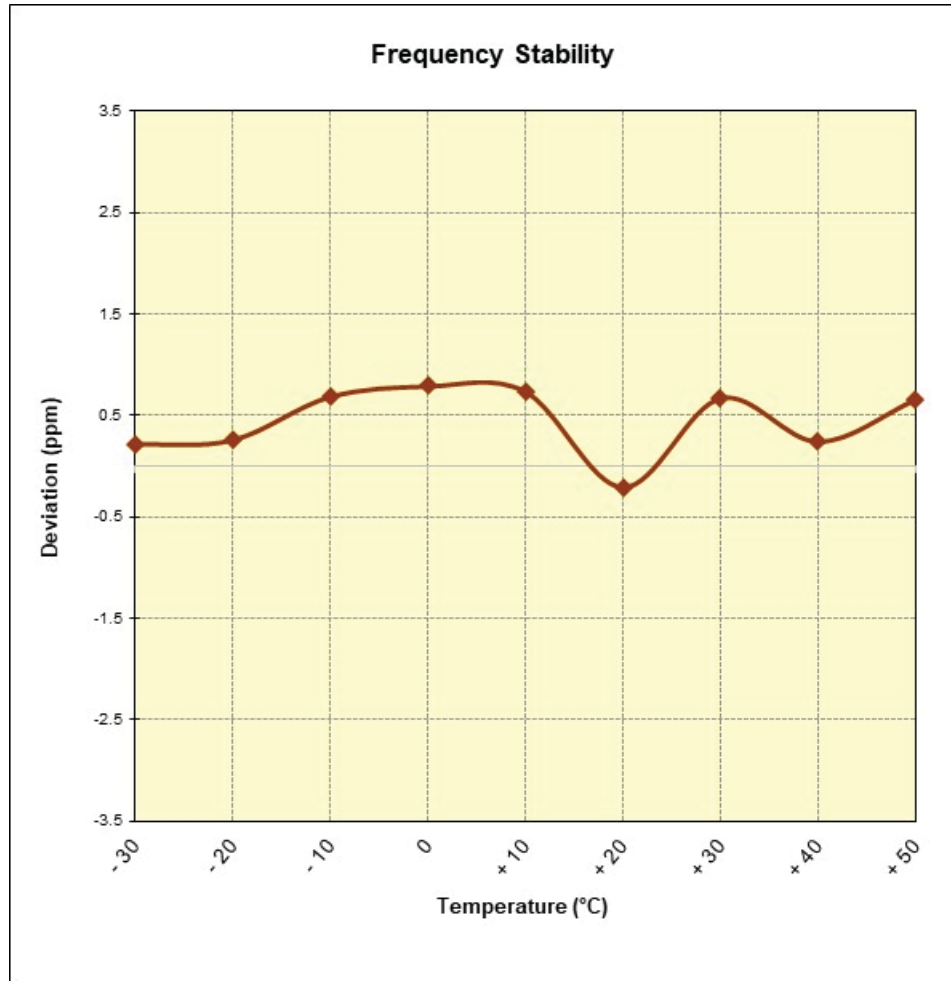


Figure 7-11. Frequency Stability Graph (Band 71)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 374 of 391

Band 12 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz
 CHANNEL: 23790
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	707,500,112	0	0.0000000
100 %		- 30	707,500,385	273	0.0000386
100 %		- 20	707,499,883	-229	-0.0000324
100 %		- 10	707,499,963	-149	-0.0000211
100 %		0	707,500,025	-87	-0.0000123
100 %		+ 10	707,500,135	23	0.0000033
100 %		+ 20	707,500,275	163	0.0000230
100 %		+ 30	707,500,176	64	0.0000090
100 %		+ 40	707,500,231	119	0.0000168
100 %		+ 50	707,499,582	-530	-0.0000749
BATT. ENDPOINT	3.49	+ 20	707,499,701	-411	-0.0000581

Table 7-88. Frequency Stability Data (Band 12)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12 Frequency Stability Measurements

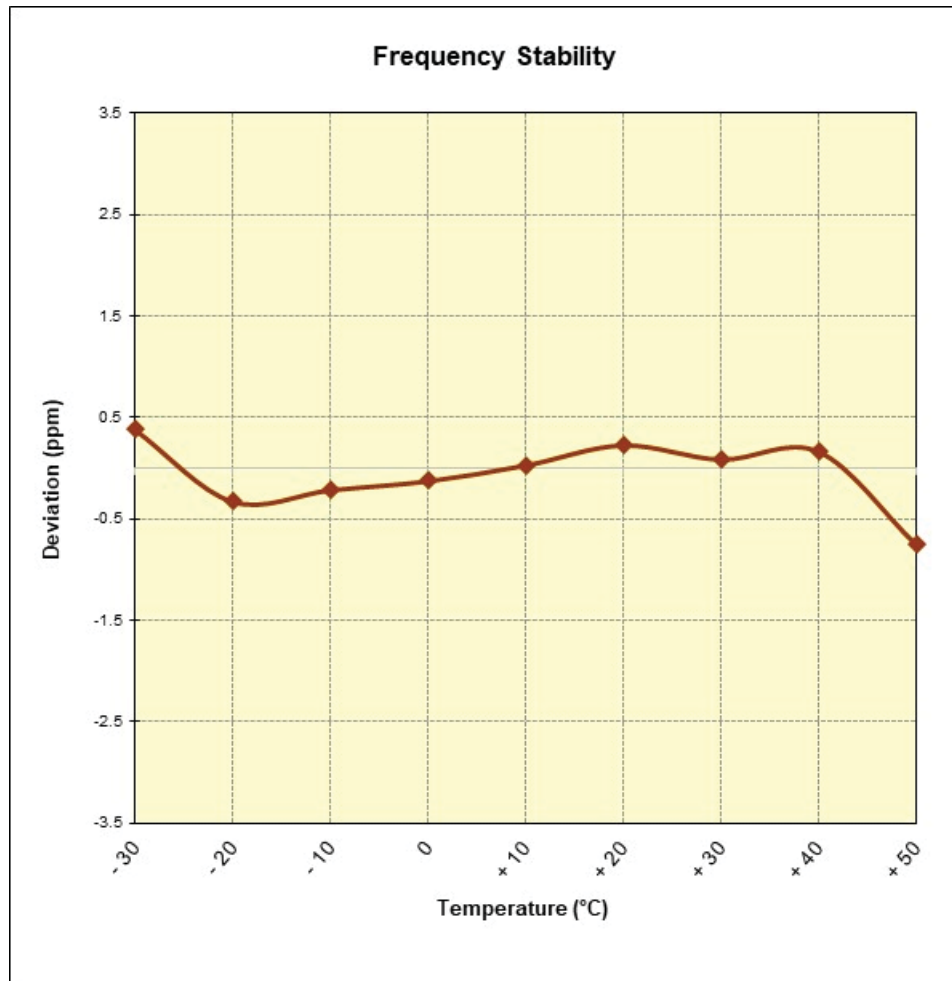


Figure 7-12. Frequency Stability Graph (Band 12)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 13 Frequency Stability Measurements

OPERATING FREQUENCY: 782,000,000 Hz
 CHANNEL: 23230
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	782,000,339	0	0.0000000
100 %		- 30	782,000,169	-170	-0.0000217
100 %		- 20	781,999,905	-434	-0.0000555
100 %		- 10	782,000,263	-76	-0.0000097
100 %		0	781,999,926	-413	-0.0000528
100 %		+ 10	781,999,791	-548	-0.0000701
100 %		+ 20	781,999,977	-362	-0.0000463
100 %		+ 30	781,999,898	-441	-0.0000564
100 %		+ 40	781,999,969	-370	-0.0000473
100 %		+ 50	781,999,891	-448	-0.0000573
BATT. ENDPOINT	3.49	+ 20	782,000,138	-201	-0.0000257

Table 7-89. Frequency Stability Data (Band 13)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 13 Frequency Stability Measurements

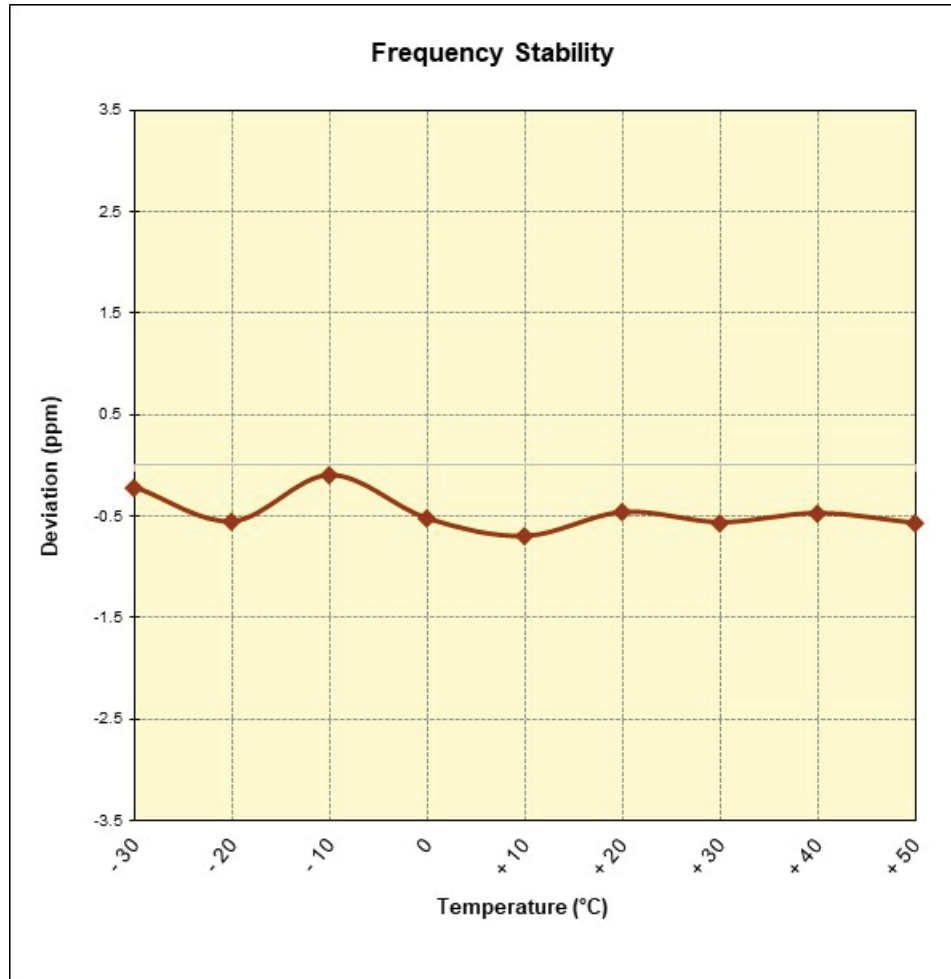


Figure 7-13. Frequency Stability Graph (Band 13)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY: 836,500,000 Hz
 CHANNEL: 20525
 REFERENCE VOLTAGE: 4.34 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	836,500,100	0	0.0000000
100 %		- 30	836,500,140	40	0.0000048
100 %		- 20	836,500,004	-96	-0.0000115
100 %		- 10	836,499,943	-157	-0.0000188
100 %		0	836,499,964	-136	-0.0000163
100 %		+ 10	836,499,881	-219	-0.0000262
100 %		+ 20	836,499,725	-375	-0.0000448
100 %		+ 30	836,500,472	372	0.0000445
100 %		+ 40	836,500,273	173	0.0000207
100 %		+ 50	836,499,930	-170	-0.0000203
BATT. ENDPOINT	3.49	+ 20	836,499,942	-158	-0.0000189

Table 7-90. Frequency Stability Data (Band 26/5)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 26/5 Frequency Stability Measurements

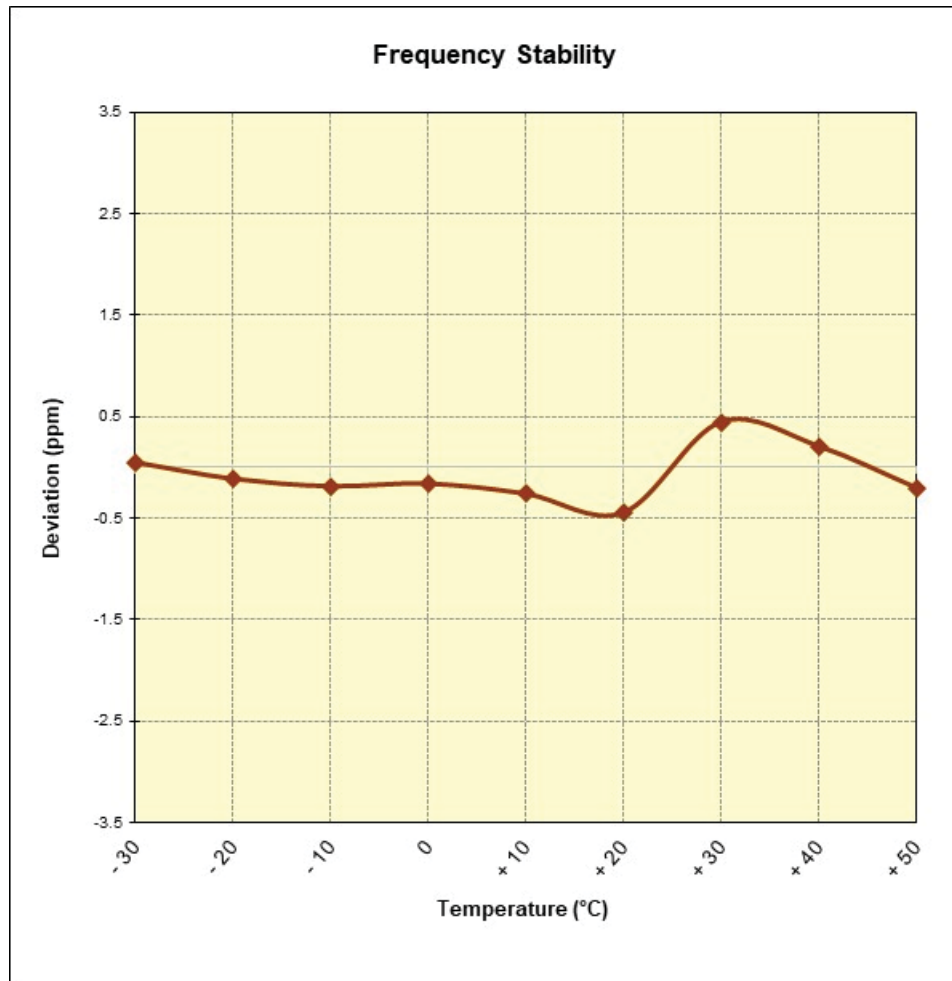


Figure 7-14. Frequency Stability Graph (Band 26/5)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz
 CHANNEL: 132322
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	1,745,000,264	0	0.0000000
100 %		- 30	1,745,000,101	-163	-0.0000093
100 %		- 20	1,744,999,875	-389	-0.0000223
100 %		- 10	1,744,999,809	-455	-0.0000261
100 %		0	1,744,999,932	-332	-0.0000190
100 %		+ 10	1,745,000,103	-161	-0.0000092
100 %		+ 20	1,745,000,040	-224	-0.0000128
100 %		+ 30	1,745,000,192	-72	-0.0000041
100 %		+ 40	1,744,999,994	-270	-0.0000155
100 %		+ 50	1,744,999,961	-303	-0.0000174
BATT. ENDPOINT	3.49	+ 20	1,745,000,166	-98	-0.0000056

Table 7-91. Frequency Stability Data (Band 66/4)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 66/4 Frequency Stability Measurements

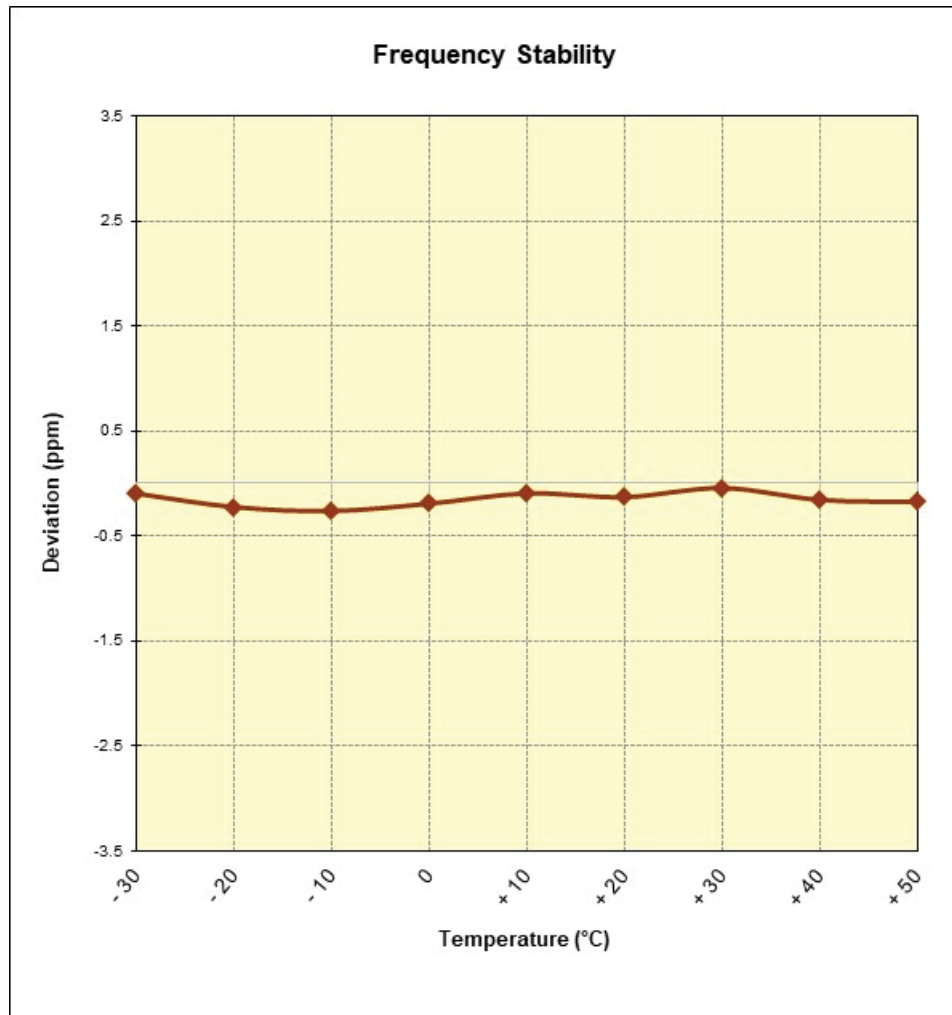


Figure 7-15. Frequency Stability Graph (Band 66/4)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,882,500,000 Hz
 CHANNEL: 26365
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	1,882,499,786	0	0.0000000
100 %		- 30	1,882,499,926	140	0.0000074
100 %		- 20	1,882,499,874	88	0.0000047
100 %		- 10	1,882,500,037	251	0.0000133
100 %		0	1,882,500,008	222	0.0000118
100 %		+ 10	1,882,500,274	488	0.0000259
100 %		+ 20	1,882,500,009	223	0.0000118
100 %		+ 30	1,882,499,852	66	0.0000035
100 %		+ 40	1,882,499,961	175	0.0000093
100 %		+ 50	1,882,499,779	-7	-0.0000004
BATT. ENDPOINT	3.49	+ 20	1,882,499,826	40	0.0000021

Table 7-92. Frequency Stability Data (Band 25/2)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 25/2 Frequency Stability Measurements

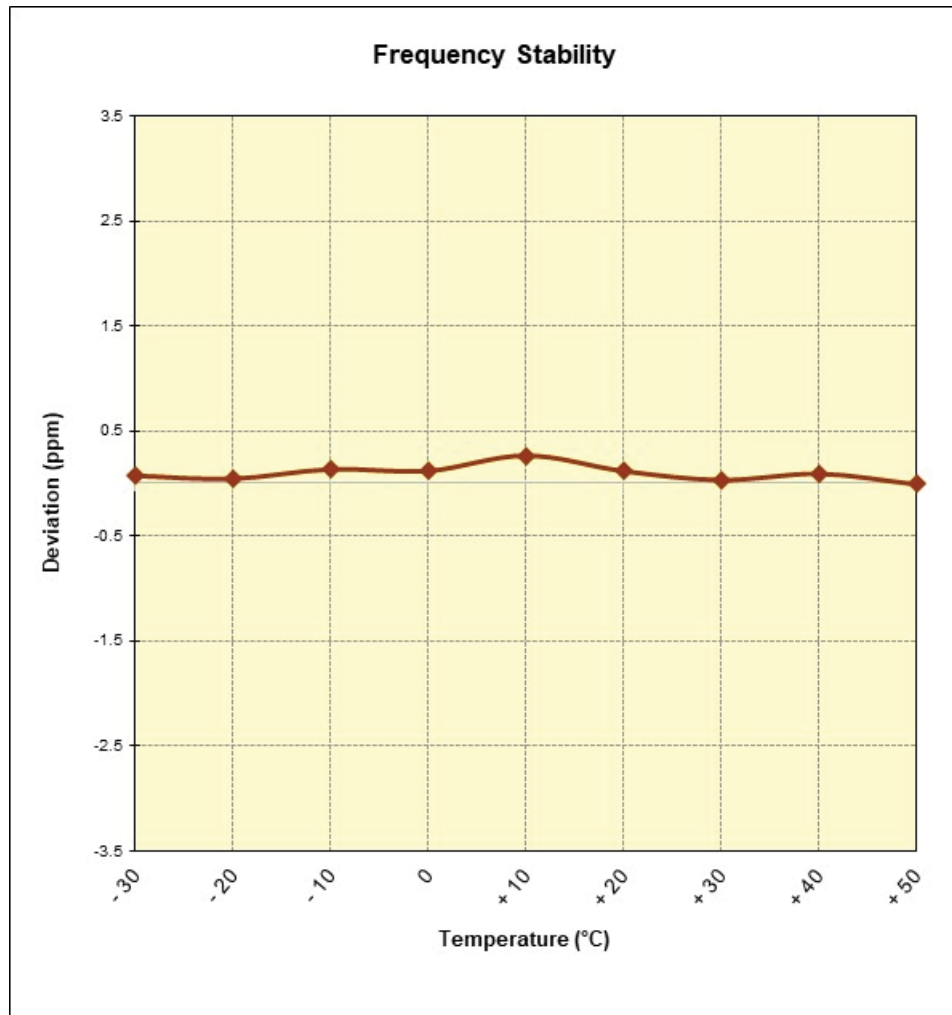


Figure 7-16. Frequency Stability Graph (Band 25/2)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 7 Frequency Stability Measurements

OPERATING FREQUENCY: 2,535,000,000 Hz
 CHANNEL: 21100
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	2,534,999,969	0	0.0000000
100 %		- 30	2,535,000,027	58	0.0000023
100 %		- 20	2,535,000,135	166	0.0000065
100 %		- 10	2,534,999,876	-93	-0.0000037
100 %		0	2,535,000,124	155	0.0000061
100 %		+ 10	2,534,999,720	-249	-0.0000098
100 %		+ 20	2,534,999,813	-156	-0.0000062
100 %		+ 30	2,535,000,385	416	0.0000164
100 %		+ 40	2,535,000,009	40	0.0000016
100 %		+ 50	2,535,000,137	168	0.0000066
BATT. ENDPOINT	3.49	+ 20	2,535,000,215	246	0.0000097

Table 7-93. Frequency Stability Data (Band 7)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 7 Frequency Stability Measurements

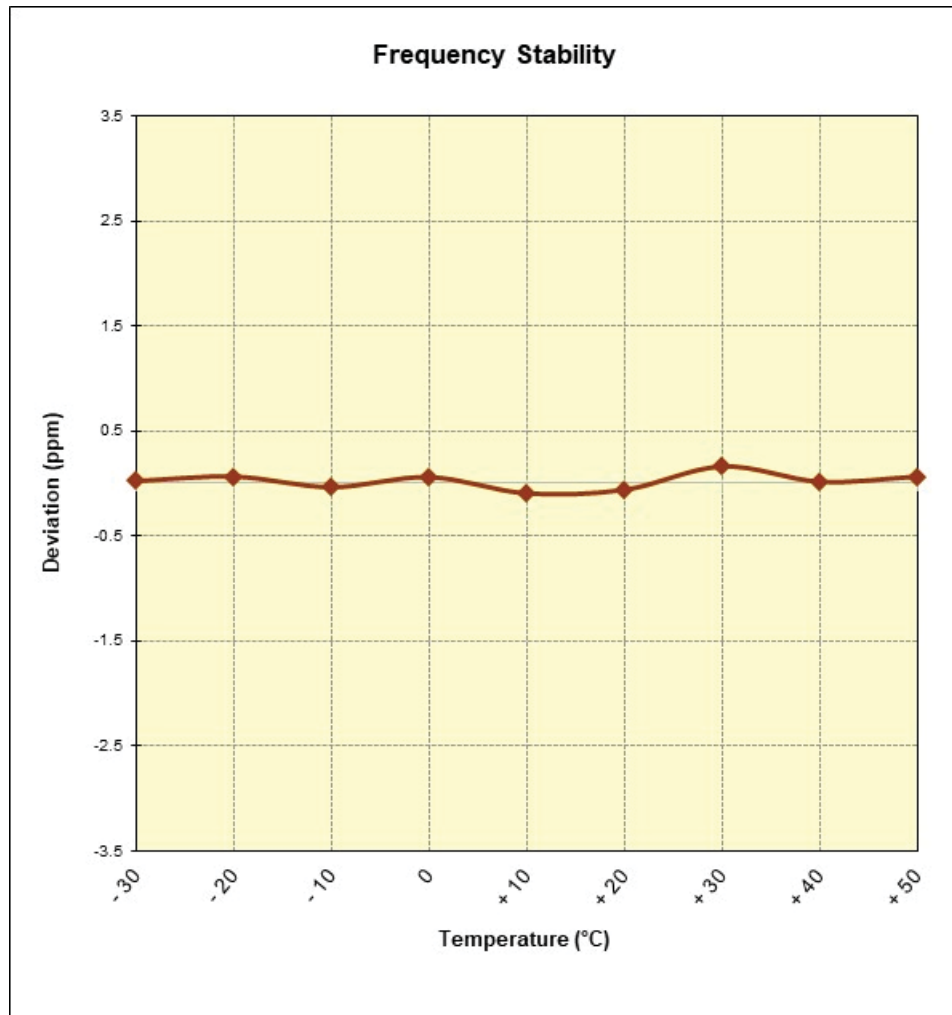


Figure 7-17. Frequency Stability Graph (Band 7)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 30 Frequency Stability Measurements

OPERATING FREQUENCY: 2,310,000,000 Hz
 CHANNEL: 27710
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	2,309,999,903	0	0.0000000
100 %		- 30	2,309,999,814	-89	-0.0000039
100 %		- 20	2,309,999,723	-180	-0.0000078
100 %		- 10	2,310,000,047	144	0.0000062
100 %		0	2,309,999,803	-100	-0.0000043
100 %		+ 10	2,309,999,650	-253	-0.0000110
100 %		+ 20	2,309,999,984	81	0.0000035
100 %		+ 30	2,310,000,002	99	0.0000043
100 %		+ 40	2,310,000,208	305	0.0000132
100 %		+ 50	2,309,999,978	75	0.0000032
BATT. ENDPOINT	3.49	+ 20	2,310,000,103	200	0.0000087

Table 7-94. Frequency Stability Data (Band 30)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 30 Frequency Stability Measurements

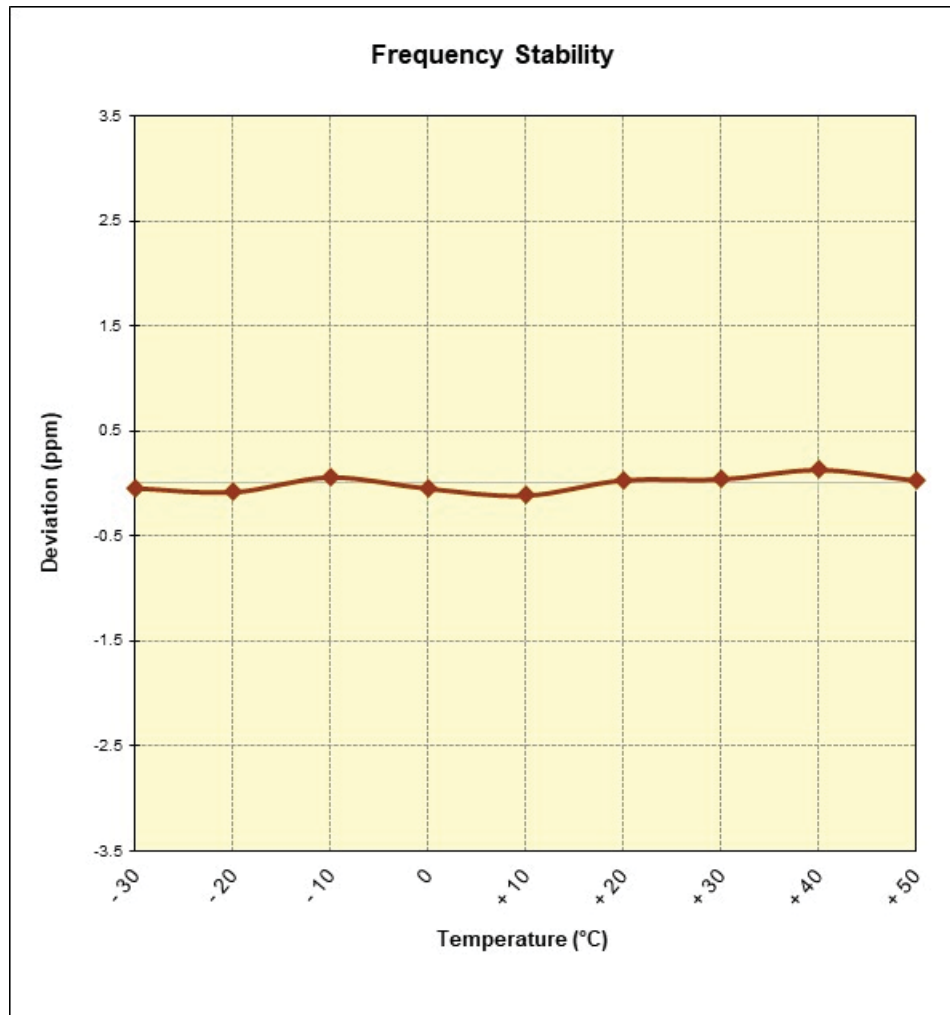


Figure 7-18. Frequency Stability Graph (Band 30)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

OPERATING FREQUENCY: 2,593,000,000 Hz
 CHANNEL: 40620
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	2,593,000,049	0	0.0000000
100 %		- 30	2,593,000,028	-21	-0.0000008
100 %		- 20	2,593,000,213	164	0.0000063
100 %		- 10	2,593,000,341	292	0.0000113
100 %		0	2,593,000,177	128	0.0000049
100 %		+ 10	2,593,000,078	29	0.0000011
100 %		+ 20	2,593,000,279	230	0.0000089
100 %		+ 30	2,592,999,706	-343	-0.0000132
100 %		+ 40	2,593,000,019	-30	-0.0000012
100 %		+ 50	2,592,999,842	-207	-0.0000080
BATT. ENDPOINT	3.49	+ 20	2,592,999,927	-122	-0.0000047

Table 7-95. Frequency Stability Data (Band 41)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

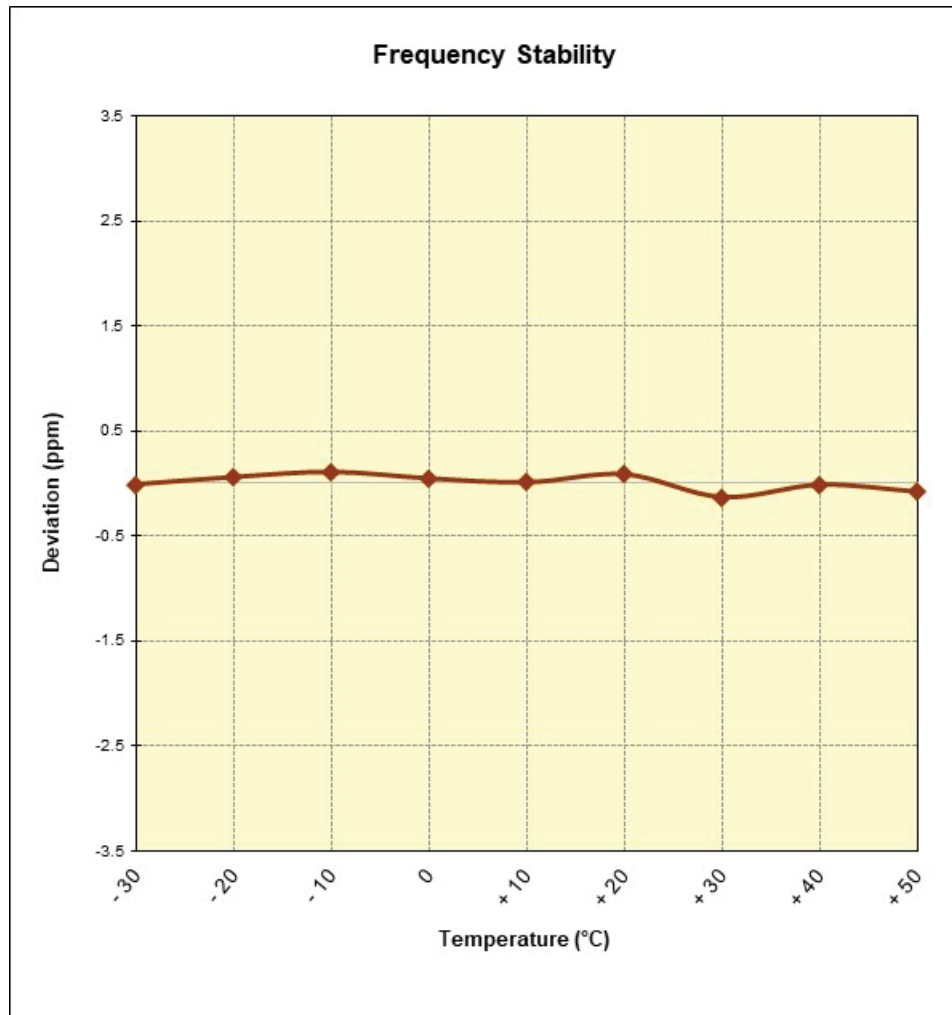


Figure 7-19. Frequency Stability Graph (Band 41)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 390 of 391

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG970U** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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