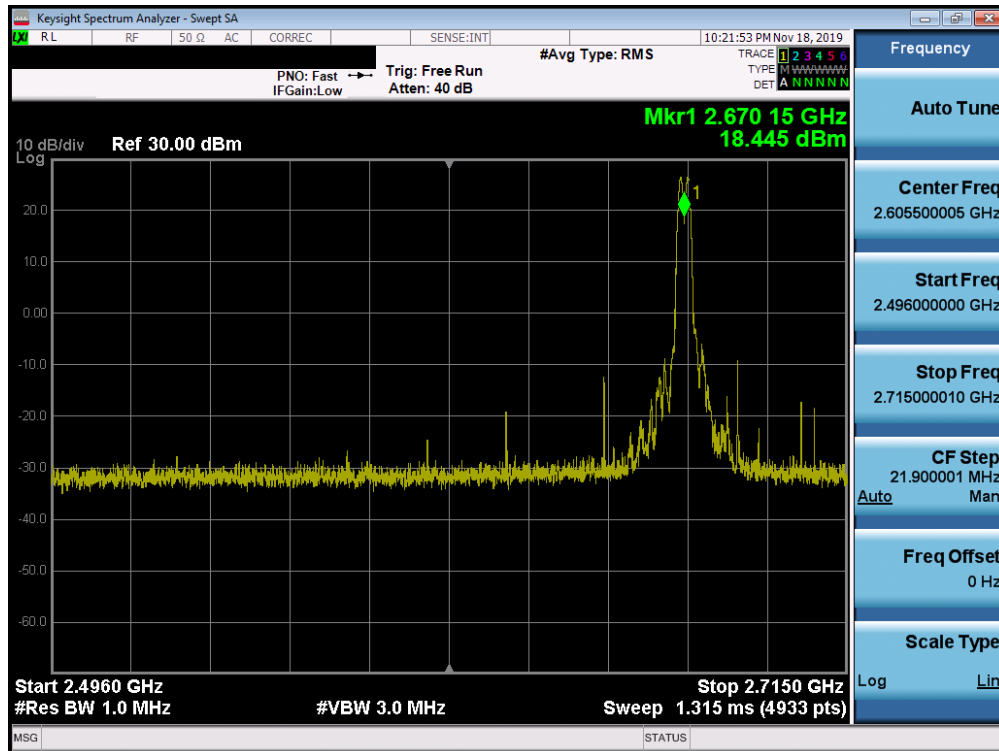
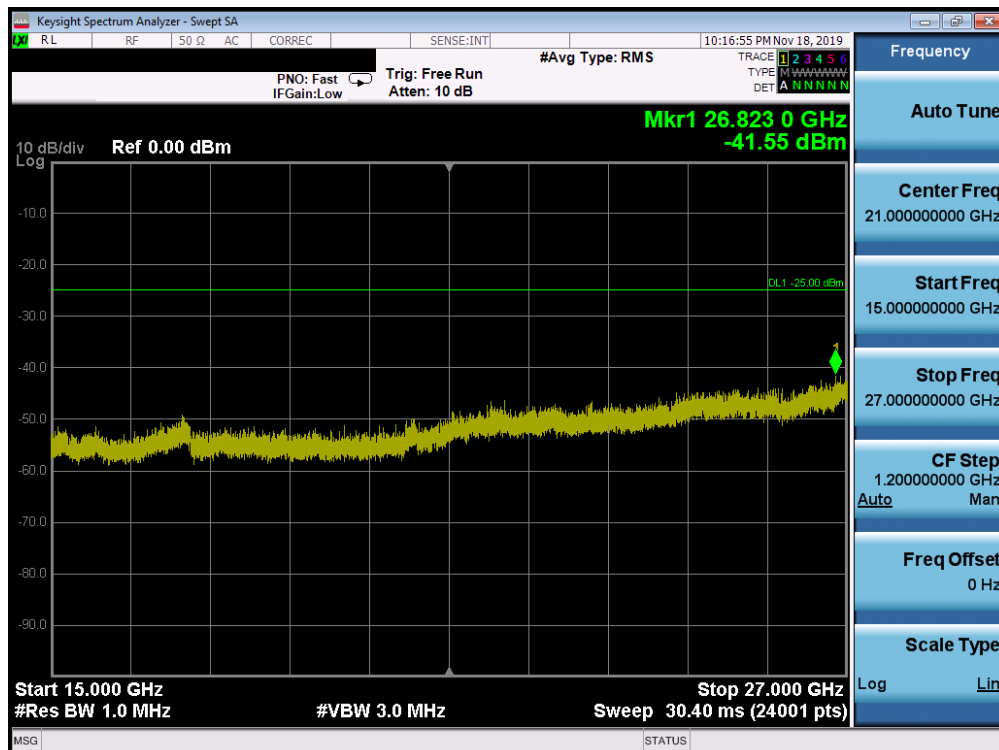




Plot 7-473. Conducted Spurious Plot (Band 41 (PC3) – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)



Plot 7-474. Conducted Spurious Plot (Band 41 (PC3) – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 273 of 487

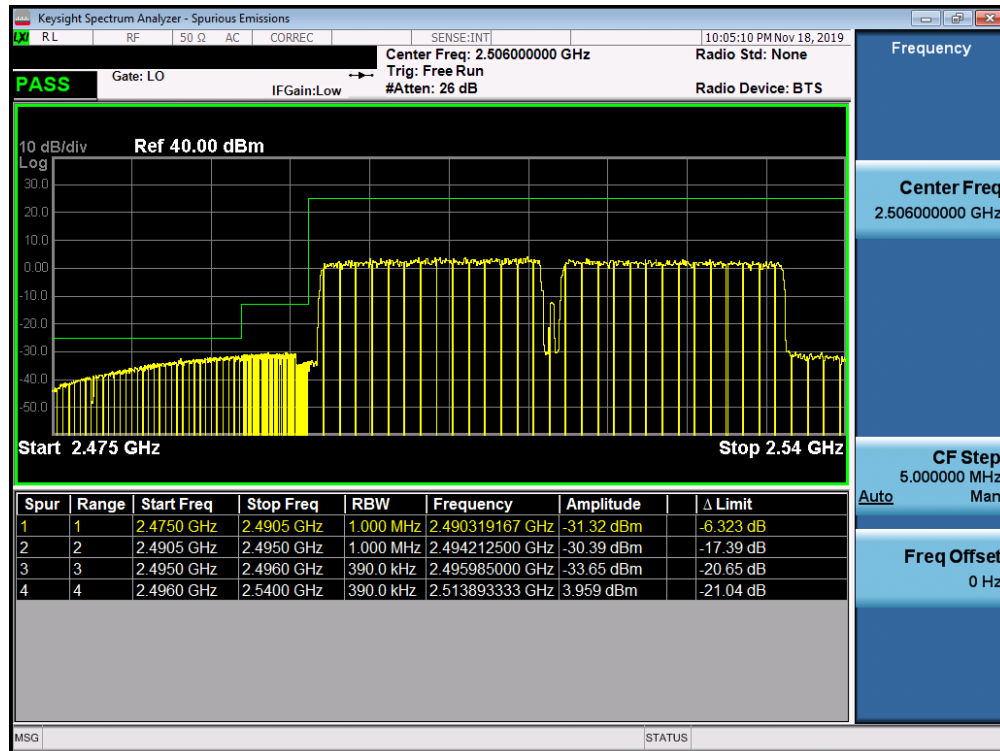


Table 7-475. Lower ACP Plot (Band 41 (PC3) QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

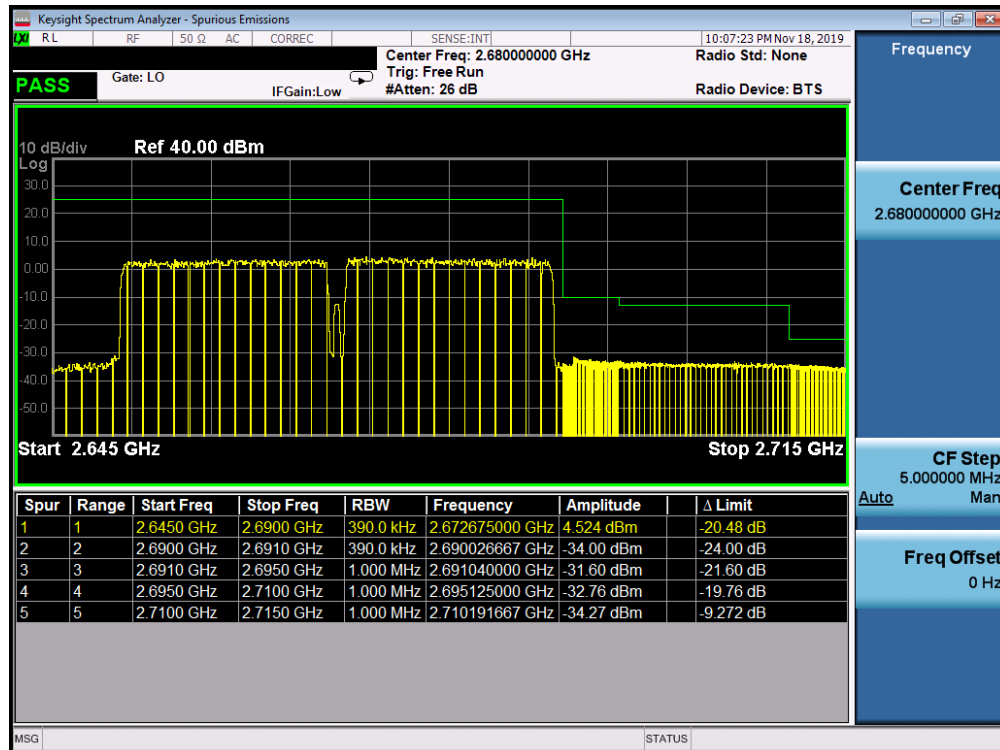


Table 7-476. Upper ACP Plot (Band 41 (PC3) QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset			Page 274 of 487

Uplink CA Configuration B41 (PC2)

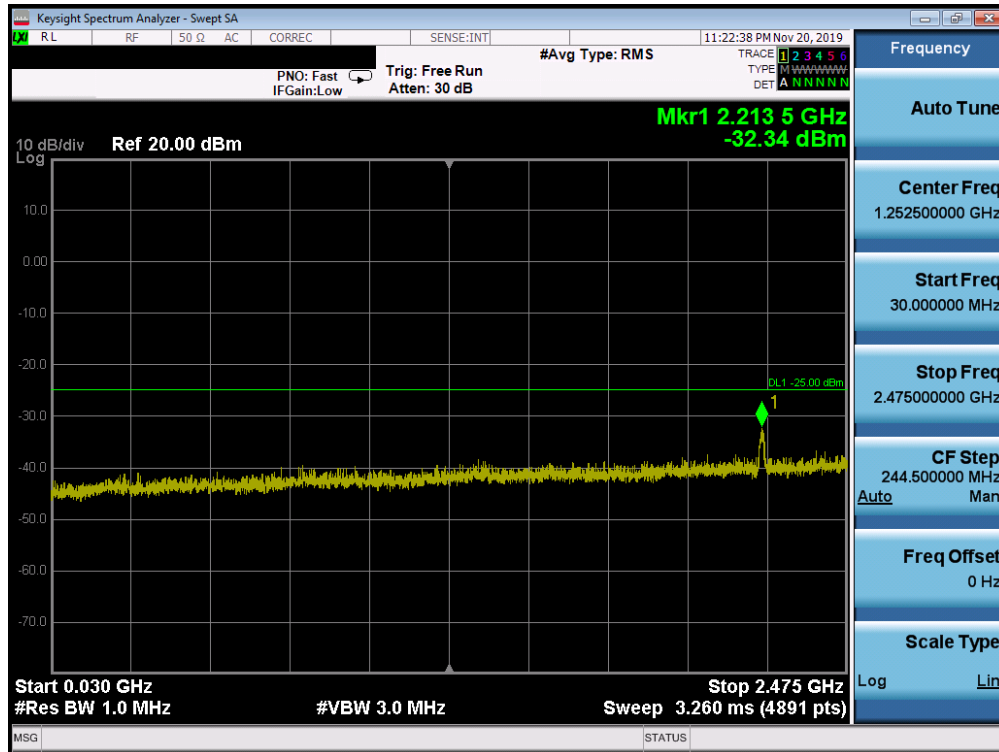
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	26.20
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	26.66
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	26.11

Table 7-10. Conducted Powers (B41 (PC2) - 20MHz + 20MHz Channel Bandwidth - PCC/SCC: 1RB)

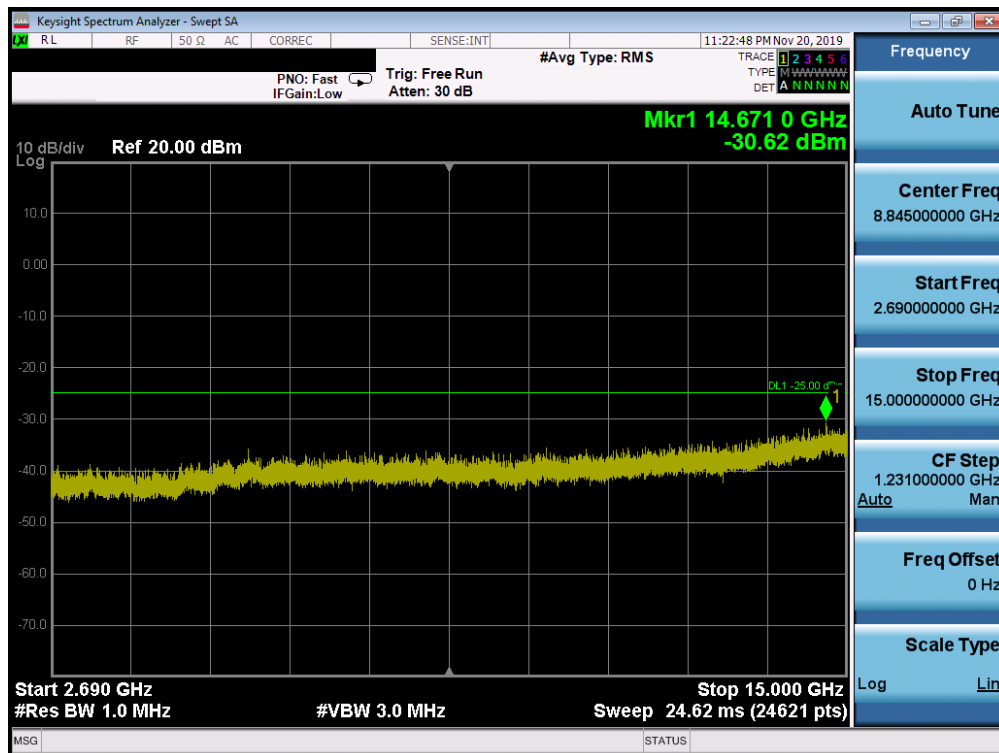
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	20	40620	2593	QPSK	100	0	LTE B41	20	40818	2612.8	QPSK	100	0	24.37
Max	LTE B41	20	40620	2593	16-QAM	100	0	LTE B41	20	40818	2612.8	16-QAM	100	0	23.34
Max	LTE B41	20	40620	2593	64-QAM	100	0	LTE B41	20	40818	2612.8	64-QAM	100	0	22.36
Max	LTE B41	20	40620	2593	256-QAM	100	0	LTE B41	20	40818	2612.8	256-QAM	100	0	20.46

Table 7-11. Conducted Powers (B41 (PC2) with Various Combinations for 20MHz + 20MHz Channel Bandwidth)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 275 of 487

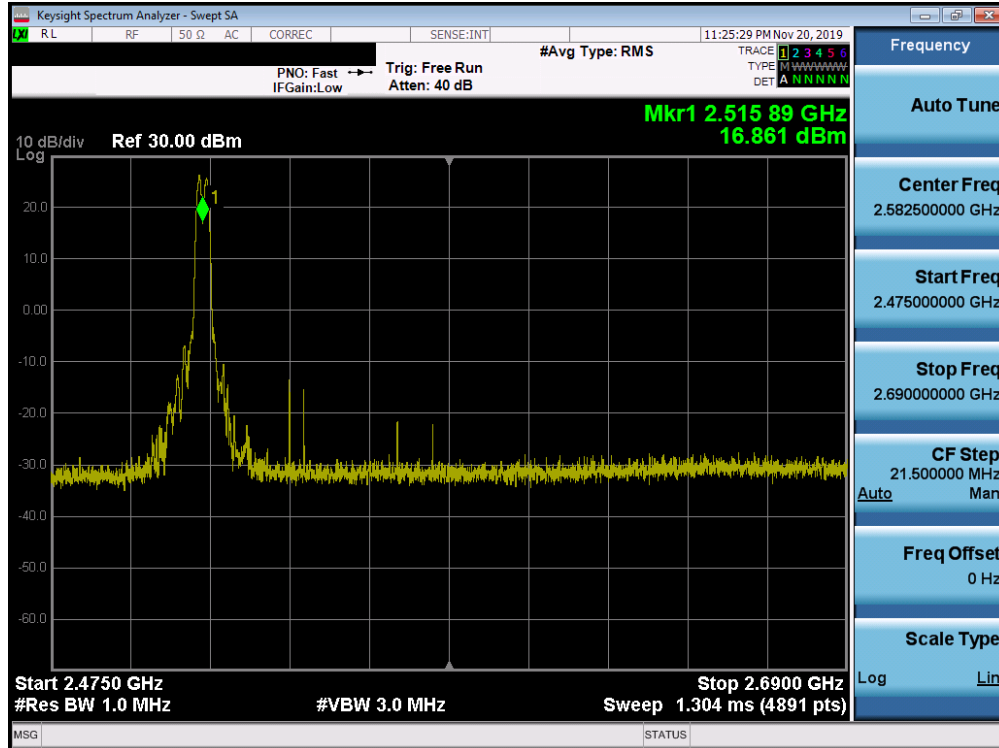


Plot 7-477. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

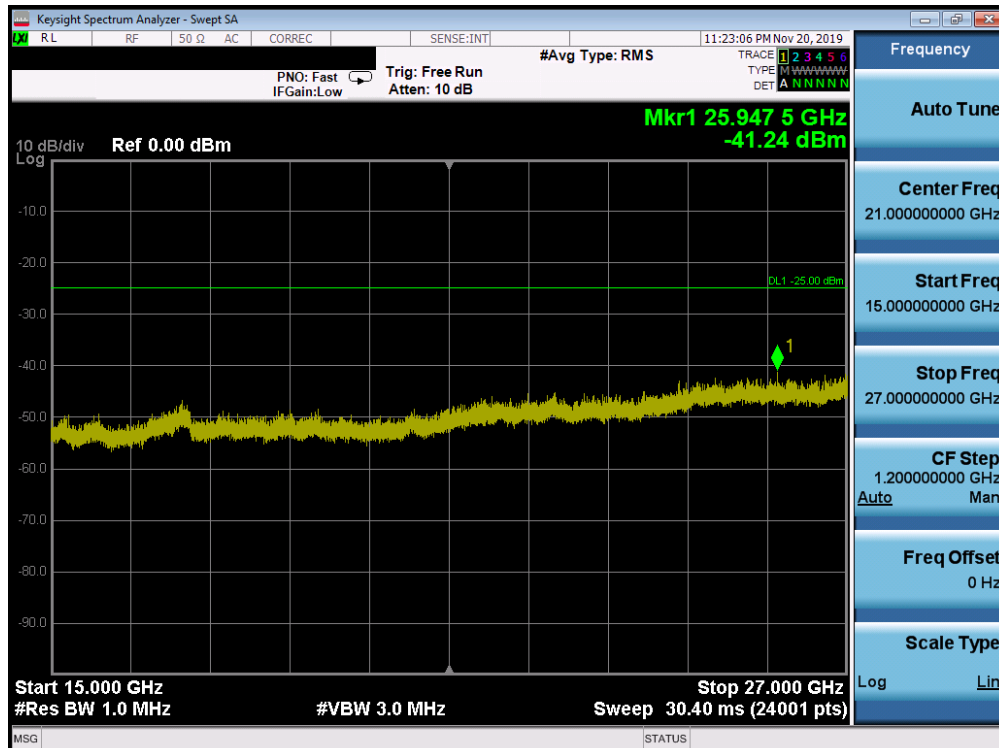


Plot 7-478. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 276 of 487

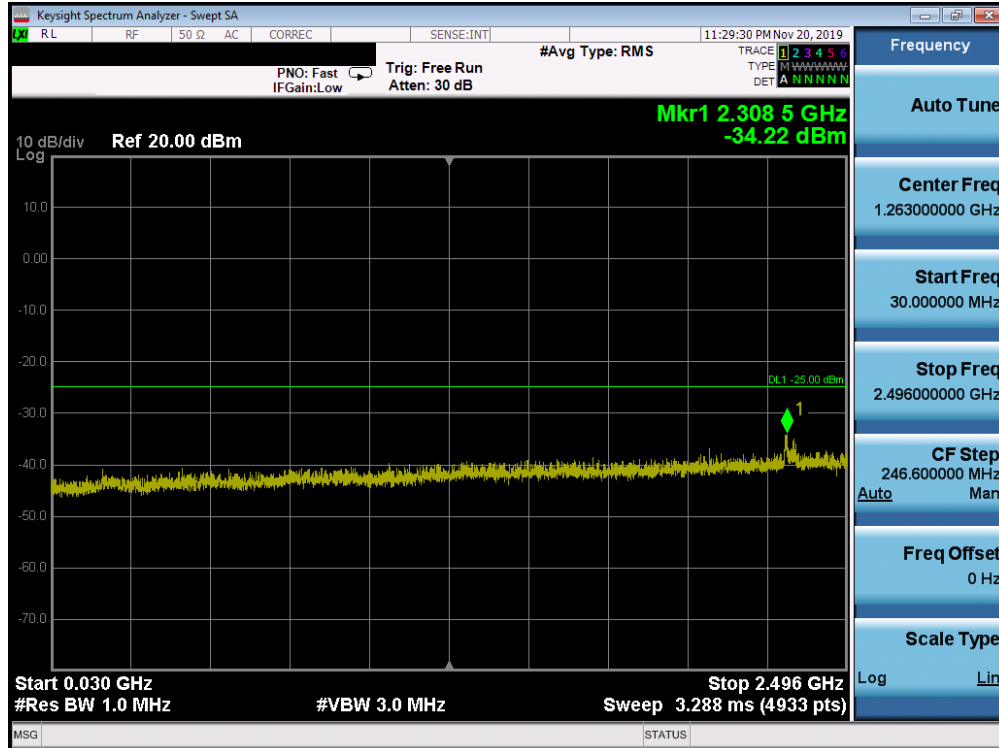


Plot 7-479. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

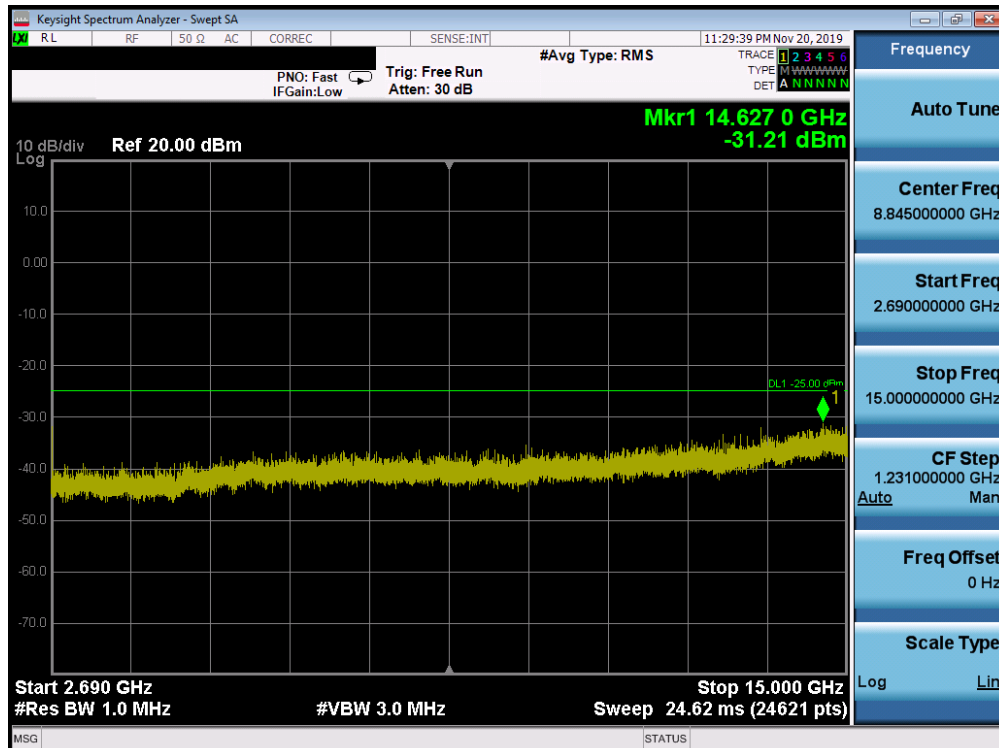


Plot 7-480. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 277 of 487

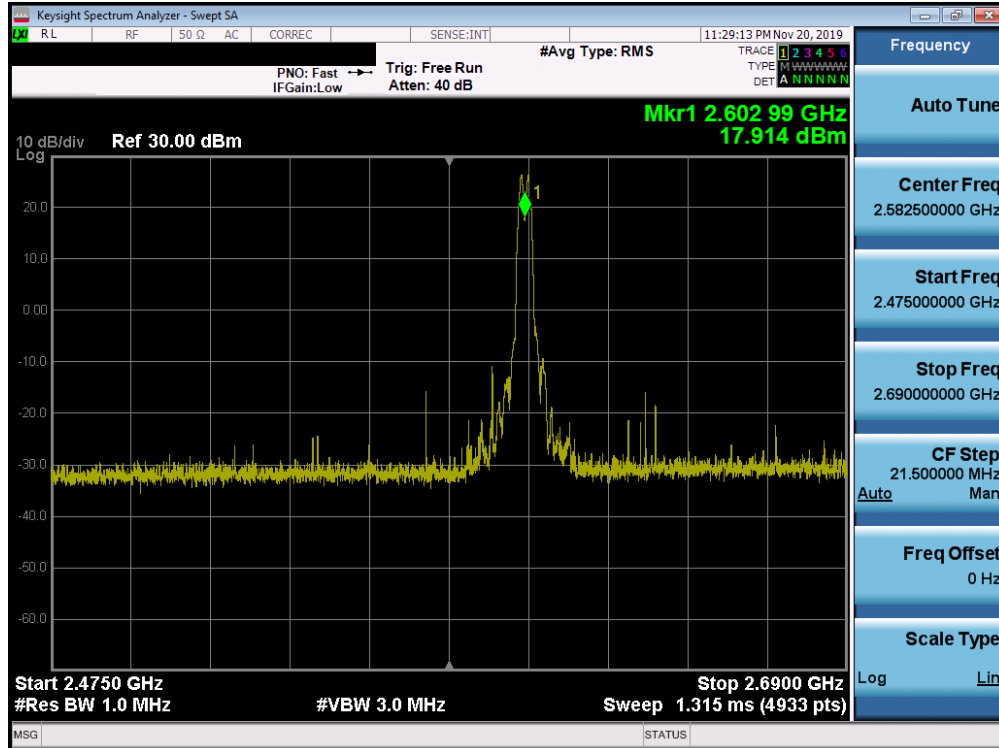


Plot 7-481. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

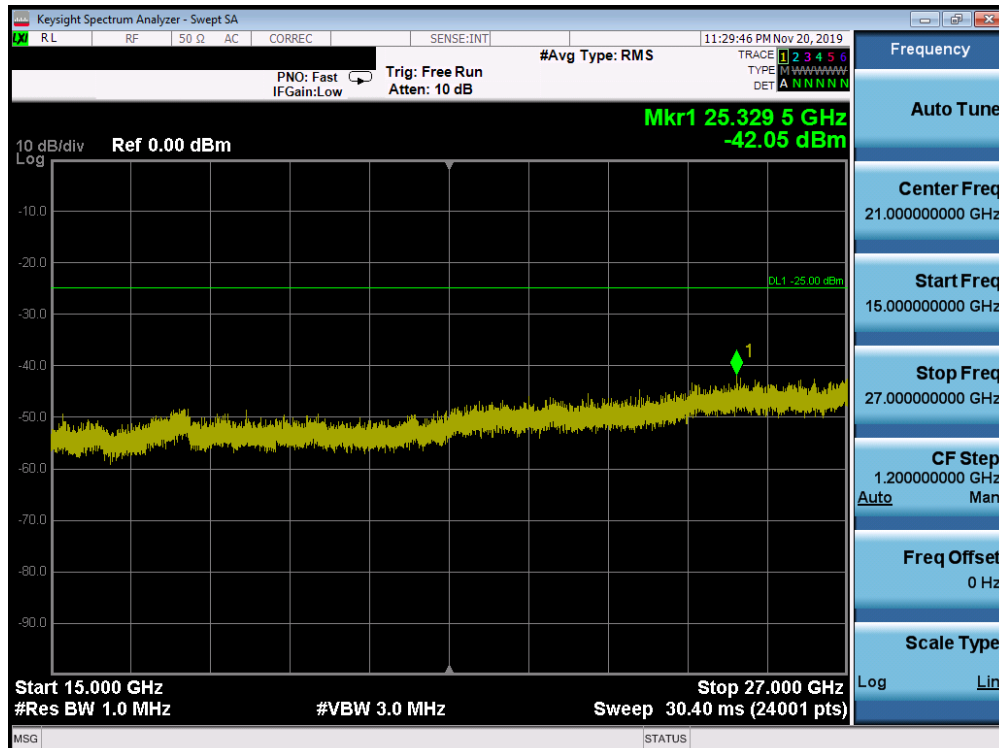


Plot 7-482. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 278 of 487

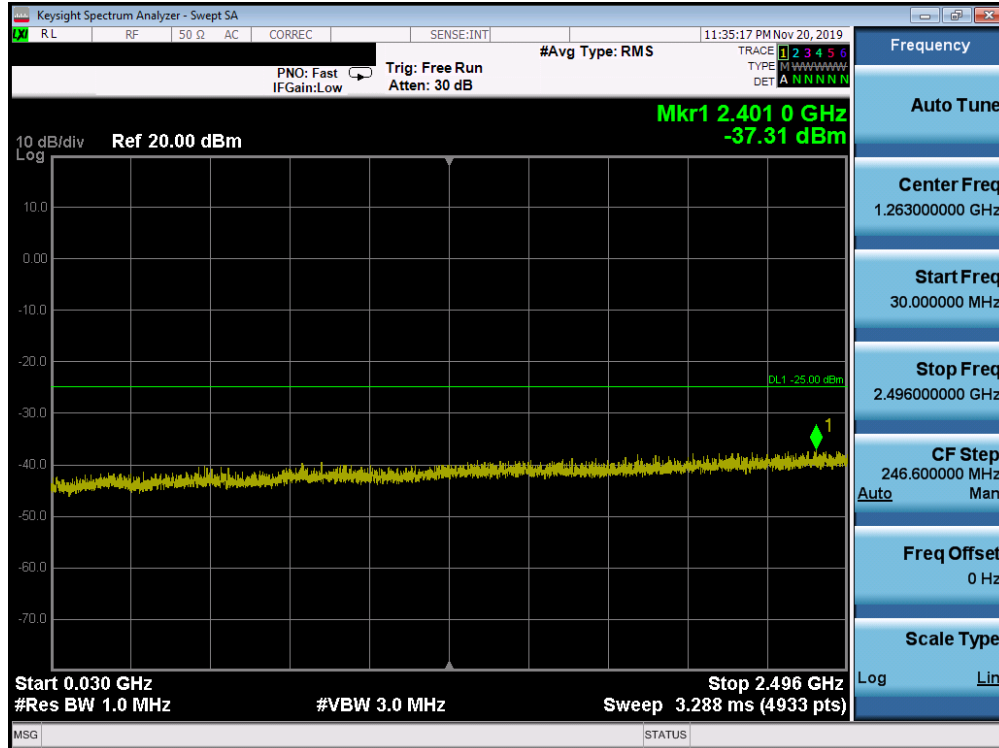


Plot 7-483. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

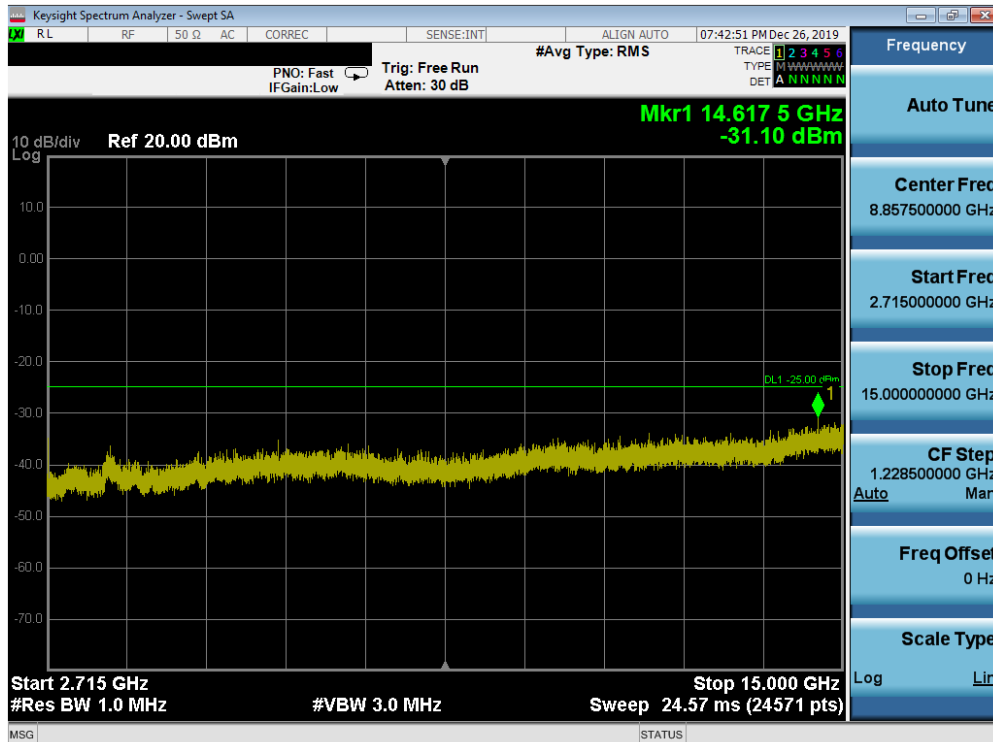


Plot 7-484. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 279 of 487

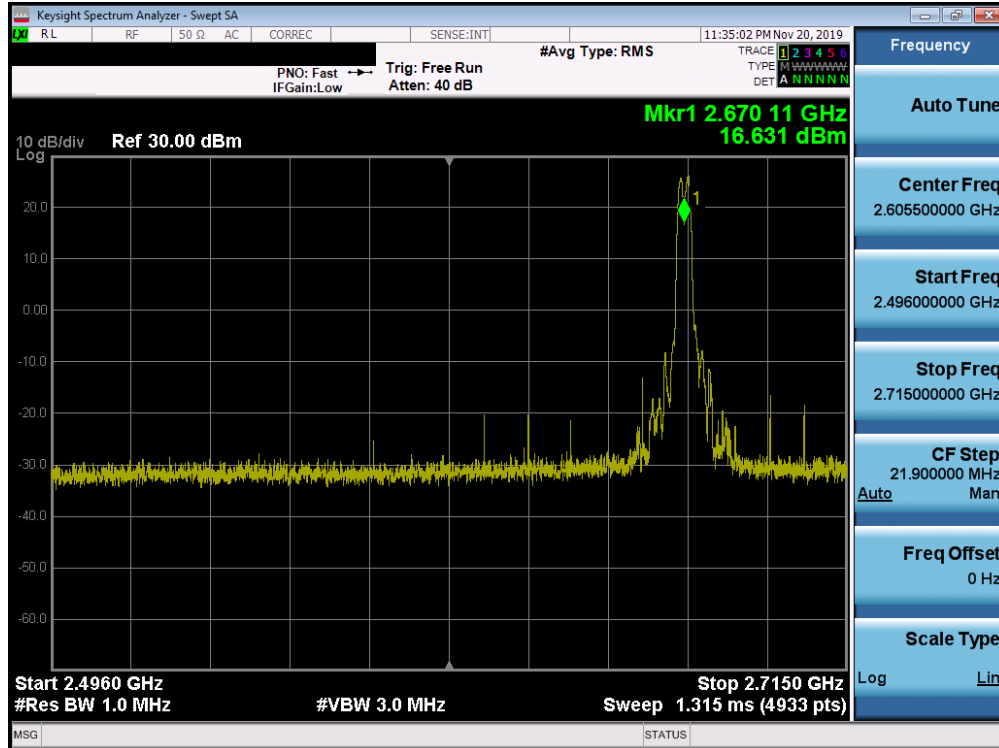


Plot 7-485. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

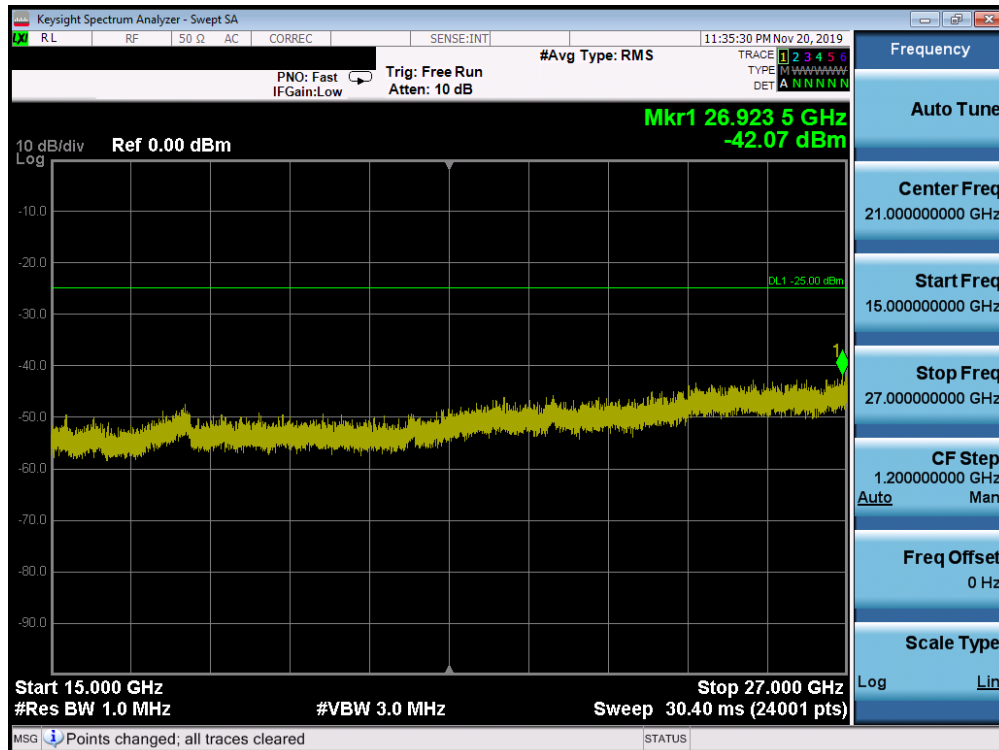


Plot 7-486. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 280 of 487



Plot 7-487. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)



Plot 7-488. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 281 of 487

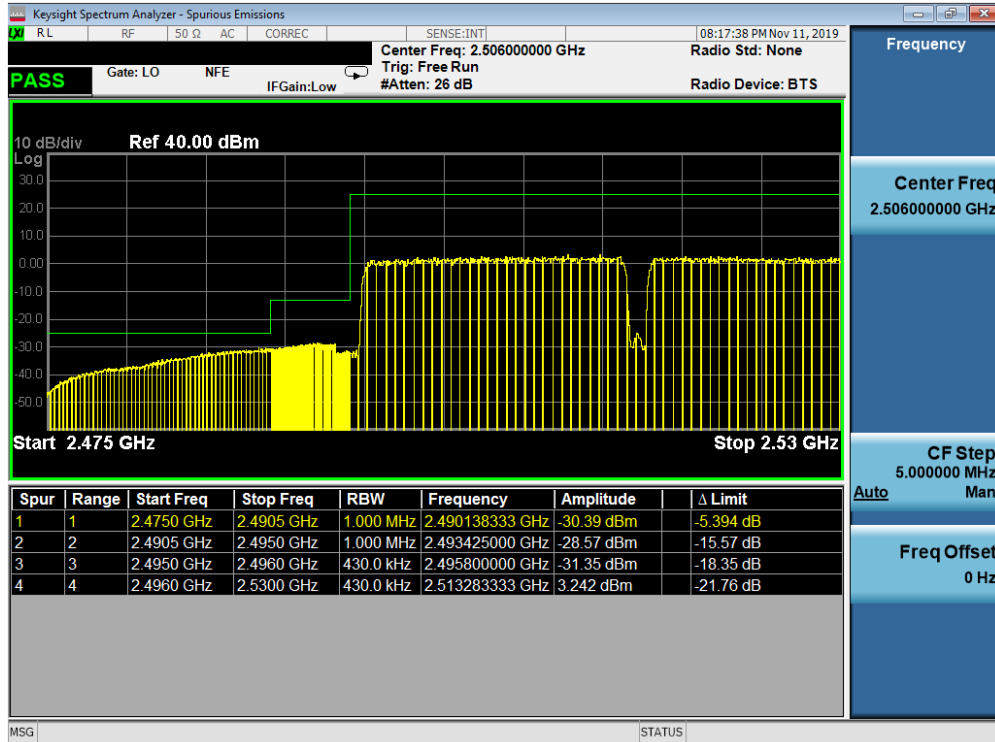


Table 7-489. Lower ACP Plot (Band 41 (PC2) QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

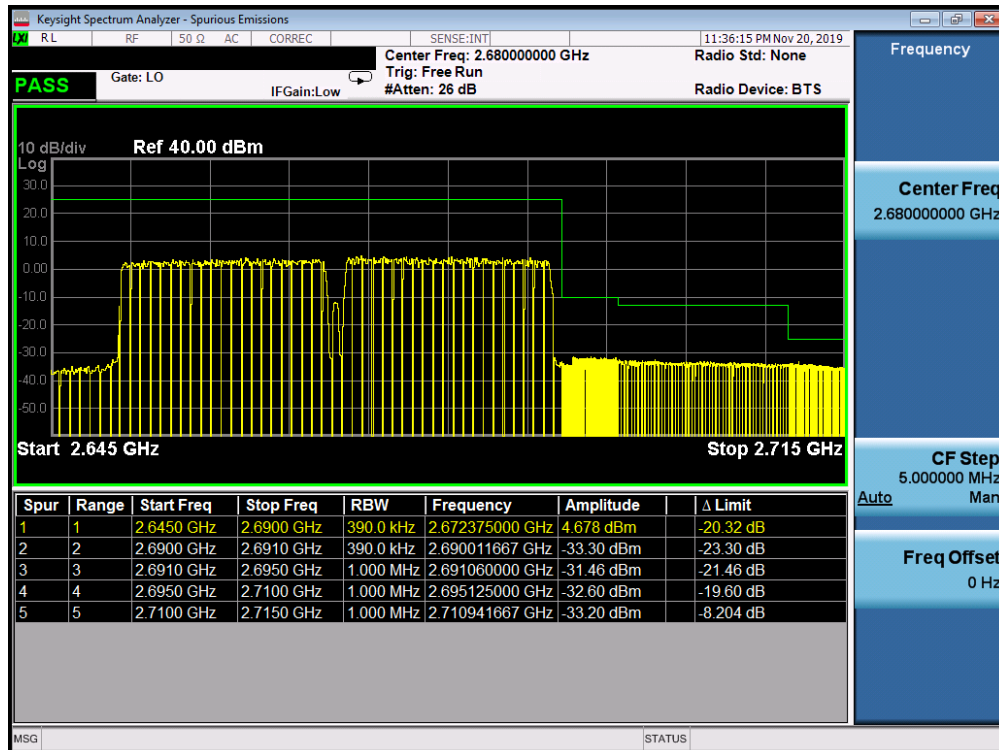


Table 7-490. Upper ACP Plot (Band 41 (PC2) QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 282 of 487

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. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
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". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

FCC ID: A3LSMG981U		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.

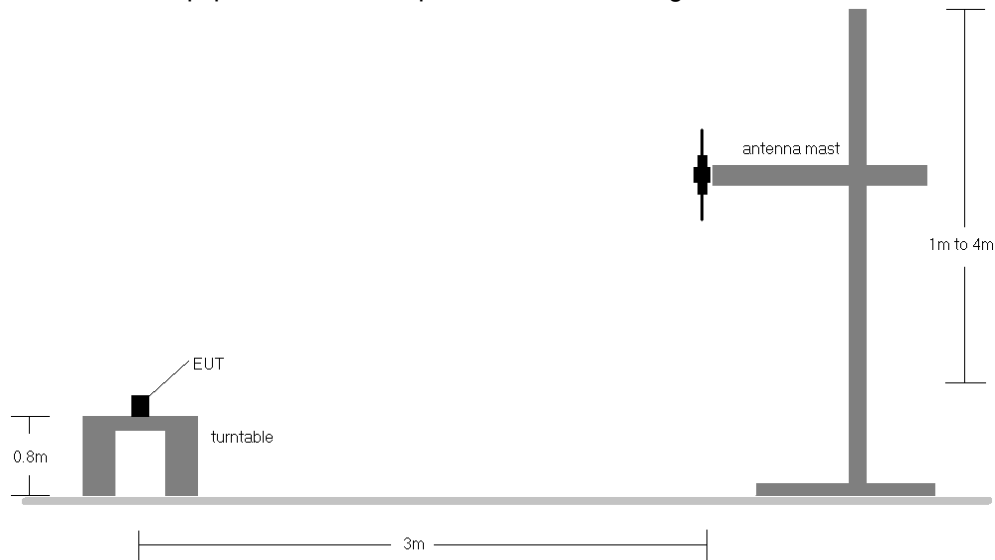


Figure 7-7. Radiated Test Setup <1GHz

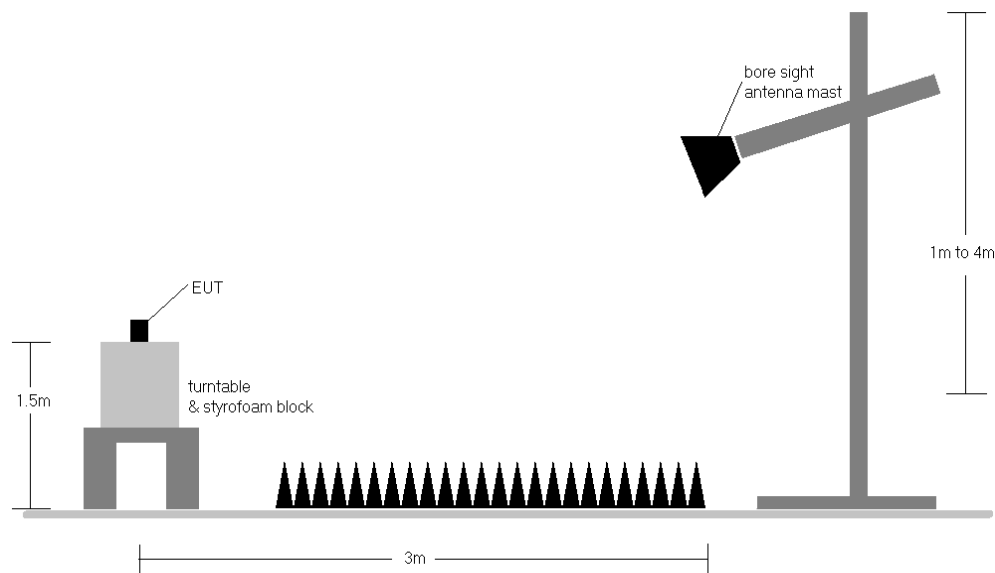


Figure 7-8. Radiated Test Setup >1GHz

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: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 284 of 487

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	V	185	330	1 / 0	15.10	3.75	18.85	0.077	34.77	-15.92
680.50	5	QPSK	V	148	289	1 / 0	14.29	4.20	18.49	0.071	34.77	-16.28
695.50	5	QPSK	V	198	319	1 / 0	13.83	4.50	18.33	0.068	34.77	-16.44
665.50	5	16-QAM	V	185	330	1 / 0	14.46	3.75	18.21	0.066	34.77	-16.56
665.50	5	64-QAM	V	185	330	1 / 0	13.36	3.75	17.11	0.051	34.77	-17.66
665.50	5	256-QAM	V	185	330	1 / 0	10.25	3.75	14.00	0.025	34.77	-20.77
668.00	10	QPSK	V	185	330	1 / 0	14.99	3.80	18.79	0.076	34.77	-15.98
680.50	10	QPSK	V	148	289	1 / 0	14.50	4.20	18.70	0.074	34.77	-16.07
693.00	10	QPSK	V	198	319	1 / 0	14.03	4.40	18.43	0.070	34.77	-16.34
668.00	10	16-QAM	V	185	330	1 / 0	14.58	3.80	18.38	0.069	34.77	-16.39
668.00	10	64-QAM	V	185	330	1 / 0	13.35	3.80	17.15	0.052	34.77	-17.62
668.00	10	256-QAM	V	185	330	1 / 0	10.07	3.80	13.87	0.024	34.77	-20.90
670.50	15	QPSK	V	185	330	1 / 0	14.76	3.90	18.66	0.073	34.77	-16.11
680.50	15	QPSK	V	148	289	1 / 0	14.67	4.20	18.87	0.077	34.77	-15.90
690.50	15	QPSK	V	198	319	1 / 0	14.30	4.40	18.70	0.074	34.77	-16.07
680.50	15	16-QAM	V	148	289	1 / 0	14.08	4.20	18.28	0.067	34.77	-16.49
680.50	15	64-QAM	V	148	289	1 / 0	13.13	4.20	17.33	0.054	34.77	-17.44
680.50	15	256-QAM	V	148	289	1 / 0	9.66	4.20	13.86	0.024	34.77	-20.91
673.00	20	QPSK	V	185	330	1 / 0	16.23	4.00	18.08	0.064	34.77	-16.69
680.50	20	QPSK	V	148	289	1 / 0	16.69	4.20	18.74	0.075	34.77	-16.03
688.00	20	QPSK	V	198	319	1 / 0	16.01	4.40	18.26	0.067	34.77	-16.51
680.50	20	16-QAM	V	148	289	1 / 0	15.94	4.20	17.99	0.063	34.77	-16.78
680.50	20	64-QAM	V	148	289	1 / 0	14.88	4.20	16.93	0.049	34.77	-17.84
680.50	20	256-QAM	V	148	289	1 / 0	11.30	4.20	13.35	0.022	34.77	-21.42
680.50	15	QPSK	H	294	278	1 / 0	15.34	4.20	17.39	0.055	34.77	-17.38
680.50	15 (WCP)	QPSK	V	294	278	1 / 0	12.69	4.20	16.89	0.049	34.77	-17.88

Table 7-12. ERP Data (Band 71)

FCC ID: A3LSMG981U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 285 of 487

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	V	166	284	1 / 5	16.52	4.50	18.87	0.077	34.77	-15.90
707.50	1.4	QPSK	V	159	284	1 / 5	16.52	4.60	18.97	0.079	34.77	-15.80
715.30	1.4	QPSK	V	153	269	1 / 0	16.53	4.63	19.01	0.080	34.77	-15.76
715.30	1.4	16-QAM	V	153	269	1 / 0	15.95	4.63	18.43	0.070	34.77	-16.34
715.30	1.4	64-QAM	V	153	269	1 / 0	14.69	4.63	17.17	0.052	34.77	-17.60
715.30	1.4	256-QAM	V	153	269	1 / 0	11.72	4.63	14.20	0.026	34.77	-20.57
700.50	3	QPSK	V	164	284	1 / 14	16.52	4.55	18.92	0.078	34.77	-15.85
707.50	3	QPSK	V	164	284	1 / 14	16.57	4.60	19.02	0.080	34.77	-15.75
714.50	3	QPSK	V	148	269	1 / 0	16.70	4.60	19.15	0.082	34.77	-15.62
714.50	3	16-QAM	V	148	269	1 / 0	16.12	4.60	18.57	0.072	34.77	-16.20
714.50	3	64-QAM	V	148	269	1 / 0	14.86	4.60	17.31	0.054	34.77	-17.46
714.50	3	256-QAM	V	148	269	1 / 0	11.89	4.60	14.34	0.027	34.77	-20.43
701.50	5	QPSK	V	164	284	1 / 24	14.31	4.60	18.91	0.078	34.77	-15.86
707.50	5	QPSK	V	148	269	1 / 24	14.36	4.60	18.96	0.079	34.77	-15.81
713.50	5	QPSK	V	169	222	1 / 0	14.45	4.60	19.05	0.080	34.77	-15.72
713.50	5	16-QAM	V	169	222	1 / 0	13.87	4.60	18.47	0.070	34.77	-16.30
713.50	5	64-QAM	V	169	222	1 / 0	12.61	4.60	17.21	0.053	34.77	-17.56
713.50	5	256-QAM	V	169	222	1 / 0	9.64	4.60	14.24	0.027	34.77	-20.53
704.00	10	QPSK	V	166	288	1 / 49	16.61	4.50	18.96	0.079	34.77	-15.81
707.50	10	QPSK	V	169	284	1 / 49	16.55	4.60	19.00	0.079	34.77	-15.77
711.00	10	QPSK	V	169	284	1 / 0	17.41	4.60	19.86	0.097	34.77	-14.91
711.00	10	16-QAM	V	169	284	1 / 0	15.87	4.60	18.32	0.068	34.77	-16.45
711.00	10	64-QAM	V	169	284	1 / 0	14.73	4.60	17.18	0.052	34.77	-17.59
711.00	10	256-QAM	V	169	284	1 / 0	11.44	4.60	13.89	0.024	34.77	-20.88
711.00	10	QPSK	H	281	274	1 / 0	17.30	4.60	19.75	0.094	34.77	-15.02
711.00	10 (WCP)	QPSK	V	226	249	1 / 0	16.64	4.60	19.09	0.081	34.77	-15.68

Table 7-13. ERP Data (Band 12)

FCC ID: A3LSMG981U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 286 of 487

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	133	284	1 / 24	14.09	5.80	17.74	0.059	34.77	-17.03
782.00	5	QPSK	H	136	280	1 / 24	14.59	5.80	18.24	0.067	34.77	-16.53
784.50	5	QPSK	H	136	280	1 / 24	14.80	5.90	18.55	0.072	34.77	-16.22
784.50	5	16-QAM	H	136	280	1 / 24	14.12	5.90	17.87	0.061	34.77	-16.90
784.50	5	64-QAM	H	136	280	1 / 24	12.95	5.90	16.70	0.047	34.77	-18.07
784.50	5	256-QAM	H	136	280	1 / 24	9.86	5.90	13.61	0.023	34.77	-21.16
782.00	10	QPSK	H	136	285	1 / 49	14.11	5.80	17.76	0.060	34.77	-17.01
782.00	10	16-QAM	H	136	285	1 / 49	13.49	5.80	17.14	0.052	34.77	-17.63
782.00	10	64-QAM	H	136	285	1 / 49	12.39	5.80	16.04	0.040	34.77	-18.73
782.00	10	256-QAM	H	136	285	1 / 49	9.29	5.80	12.94	0.020	34.77	-21.83
784.50	5	QPSK	V	158	318	1 / 24	13.98	5.80	17.63	0.058	34.77	-17.14
784.50	5 (WCP)	QPSK	V	271	246	1 / 24	12.93	5.90	16.68	0.047	34.77	-18.09

Table 7-14. ERP Data (Band 13)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 287 of 487

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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	216	261	1 / 0	13.69	6.70	18.24	0.067	38.45	-20.21	20.39	0.109	40.61	-20.22
836.50	1.4	QPSK	H	222	263	1 / 0	13.56	6.70	18.11	0.065	38.45	-20.34	20.26	0.106	40.61	-20.35
848.30	1.4	QPSK	H	216	305	1 / 5	13.58	6.70	18.13	0.065	38.45	-20.32	20.28	0.107	40.61	-20.33
824.70	1.4	16-QAM	H	216	261	1 / 0	12.96	6.70	17.51	0.056	38.45	-20.94	19.66	0.092	40.61	-20.95
824.70	1.4	64-QAM	H	216	261	1 / 0	11.78	6.70	16.33	0.043	38.45	-22.12	18.48	0.070	40.61	-22.13
824.70	1.4	256-QAM	H	216	261	1 / 0	8.63	6.70	13.18	0.021	38.45	-25.27	15.33	0.034	40.61	-25.28
825.50	3	QPSK	H	216	261	1 / 0	13.68	6.70	18.23	0.067	38.45	-20.22	20.38	0.109	40.61	-20.23
836.50	3	QPSK	H	222	263	1 / 7	13.71	6.70	18.26	0.067	38.45	-20.19	20.41	0.110	40.61	-20.20
847.50	3	QPSK	H	216	305	1 / 0	13.70	6.65	18.20	0.066	38.45	-20.25	20.35	0.108	40.61	-20.26
836.50	3	16-QAM	H	222	263	1 / 7	12.98	6.70	17.53	0.057	38.45	-20.92	19.68	0.093	40.61	-20.93
836.50	3	64-QAM	H	222	263	1 / 7	11.80	6.70	16.35	0.043	38.45	-22.10	18.50	0.071	40.61	-22.11
836.50	3	256-QAM	H	222	263	1 / 7	8.65	6.70	13.20	0.021	38.45	-25.25	15.35	0.034	40.61	-25.26
826.50	5	QPSK	H	216	256	1 / 12	13.65	6.70	18.20	0.066	38.45	-20.25	20.35	0.108	40.61	-20.26
836.50	5	QPSK	H	219	259	1 / 24	13.64	6.70	18.19	0.066	38.45	-20.26	20.34	0.108	40.61	-20.27
846.50	5	QPSK	H	204	301	1 / 24	13.76	6.60	18.21	0.066	38.45	-20.24	20.36	0.109	40.61	-20.25
846.50	5	16-QAM	H	204	301	1 / 24	13.03	6.60	17.48	0.056	38.45	-20.97	19.63	0.092	40.61	-20.98
846.50	5	64-QAM	H	204	301	1 / 24	11.85	6.60	16.30	0.043	38.45	-22.15	18.45	0.070	40.61	-22.16
846.50	5	256-QAM	H	204	301	1 / 24	8.70	6.60	13.15	0.021	38.45	-25.30	15.30	0.034	40.61	-25.31
829.00	10	QPSK	H	215	256	1 / 49	13.87	6.70	18.42	0.070	38.45	-20.03	20.57	0.114	40.61	-20.04
836.50	10	QPSK	H	222	249	1 / 0	13.65	6.70	18.20	0.066	38.45	-20.25	20.35	0.108	40.61	-20.26
844.00	10	QPSK	H	204	287	1 / 0	13.77	6.60	18.22	0.066	38.45	-20.23	20.37	0.109	40.61	-20.24
829.00	10	16-QAM	H	215	256	1 / 49	13.14	6.70	17.69	0.059	38.45	-20.76	19.84	0.096	40.61	-20.77
829.00	10	64-QAM	H	215	256	1 / 49	11.96	6.70	16.51	0.045	38.45	-21.94	18.66	0.073	40.61	-21.95
829.00	10	256-QAM	H	215	256	1 / 49	8.81	6.70	13.36	0.022	38.45	-25.09	15.51	0.036	40.61	-25.10
829.00	10	QPSK	V	100	287	1 / 49	13.53	6.70	18.08	0.064	38.45	-20.37	20.23	0.105	40.61	-20.38
829.00	10 (WCP)	QPSK	V	102	333	1 / 49	12.51	6.70	17.06	0.051	38.45	-21.39	19.21	0.083	40.61	-21.40

Table 7-15. ERP Data (Band 26/5)

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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
831.50	15	QPSK	H	203	276	1 / 74	13.68	6.70	18.23	0.067	38.45	-20.22	20.38	0.109	40.61	-20.23
836.50	15	QPSK	H	214	280	1 / 0	13.62	6.70	18.17	0.066	38.45	-20.28	20.32	0.108	40.61	-20.29
841.50	15	QPSK	H	212	295	1 / 0	13.86	6.60	18.31	0.068	38.45	-20.14	20.46	0.111	40.61	-20.15
841.50	15	16-QAM	H	212	295	1 / 0	13.02	6.60	17.47	0.056	38.45	-20.98	19.62	0.092	40.61	-20.99
841.50	15	64-QAM	H	212	295	1 / 0	11.86	6.60	16.31	0.043	38.45	-22.14	18.46	0.070	40.61	-22.15
836.50	15	256-QAM	H	214	280	1 / 0	8.32	6.70	12.87	0.019	38.45	-25.58	15.02	0.032	40.61	-25.59

Table 7-16. ERP Data (Band 26)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 288 of 487

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	V	150	315	1 / 0	14.19	9.35	23.54	0.226	30.00	-6.46
1745.00	1.4	QPSK	V	164	300	1 / 0	14.32	9.11	23.43	0.220	30.00	-6.57
1779.30	1.4	QPSK	V	165	357	1 / 2	14.43	9.17	23.60	0.229	30.00	-6.40
1779.30	1.4	16-QAM	V	165	357	1 / 2	13.16	9.17	22.33	0.171	30.00	-7.67
1779.30	1.4	64-QAM	V	165	357	1 / 2	12.37	9.17	21.54	0.143	30.00	-8.46
1779.30	1.4	256-QAM	V	165	357	1 / 2	9.05	9.17	18.22	0.066	30.00	-11.78
1711.50	3	QPSK	V	154	301	1 / 14	14.38	9.34	23.72	0.236	30.00	-6.28
1745.00	3	QPSK	V	159	300	1 / 7	14.56	9.11	23.67	0.233	30.00	-6.33
1778.50	3	QPSK	V	158	304	1 / 0	14.32	9.17	23.49	0.223	30.00	-6.51
1711.50	3	16-QAM	V	154	301	1 / 14	13.11	9.34	22.45	0.176	30.00	-7.55
1711.50	3	64-QAM	V	154	301	1 / 14	12.32	9.34	21.66	0.147	30.00	-8.34
1711.50	3	256-QAM	V	154	301	1 / 14	9.00	9.34	18.34	0.068	30.00	-11.66
1712.50	5	QPSK	V	157	309	1 / 0	14.18	9.34	23.52	0.225	30.00	-6.48
1745.00	5	QPSK	V	164	307	1 / 0	14.50	9.11	23.61	0.230	30.00	-6.39
1777.50	5	QPSK	V	157	322	1 / 0	14.34	9.16	23.50	0.224	30.00	-6.50
1745.00	5	16-QAM	V	164	307	1 / 0	13.23	9.11	22.34	0.171	30.00	-7.66
1745.00	5	64-QAM	V	164	307	1 / 0	12.44	9.11	21.55	0.143	30.00	-8.45
1745.00	5	256-QAM	V	164	307	1 / 0	9.12	9.11	18.23	0.067	30.00	-11.77
1715.00	10	QPSK	V	160	326	1 / 25	14.09	9.32	23.41	0.219	30.00	-6.59
1745.00	10	QPSK	V	149	347	1 / 25	14.44	9.11	23.55	0.226	30.00	-6.45
1775.00	10	QPSK	V	162	318	1 / 25	14.33	9.16	23.49	0.223	30.00	-6.51
1745.00	10	16-QAM	V	149	347	1 / 25	13.17	9.11	22.28	0.169	30.00	-7.72
1745.00	10	64-QAM	V	149	347	1 / 25	12.38	9.11	21.49	0.141	30.00	-8.51
1745.00	10	256-QAM	V	149	347	1 / 25	9.06	9.11	18.17	0.066	30.00	-11.83
1717.50	15	QPSK	V	167	318	1 / 36	14.32	9.30	23.62	0.230	30.00	-6.38
1745.00	15	QPSK	V	169	330	1 / 36	14.72	9.11	23.83	0.242	30.00	-6.17
1772.50	15	QPSK	V	169	324	1 / 0	14.74	9.15	23.89	0.245	30.00	-6.11
1772.50	15	16-QAM	V	169	324	1 / 0	13.47	9.15	22.62	0.183	30.00	-7.38
1772.50	15	64-QAM	V	169	324	1 / 0	12.68	9.15	21.83	0.152	30.00	-8.17
1772.50	15	256-QAM	V	169	324	1 / 0	9.36	9.15	18.51	0.071	30.00	-11.49
1720.00	20	QPSK	V	173	329	1 / 99	14.61	9.28	23.89	0.245	30.00	-6.11
1745.00	20	QPSK	V	158	328	1 / 0	14.81	9.11	23.92	0.247	30.00	-6.08
1770.00	20	QPSK	V	173	318	1 / 0	13.90	9.14	23.04	0.201	30.00	-6.96
1745.00	20	16-QAM	V	158	328	1 / 0	13.78	9.11	22.89	0.194	30.00	-7.11
1745.00	20	64-QAM	V	158	328	1 / 0	12.55	9.11	21.66	0.147	30.00	-8.34
1745.00	20	256-QAM	V	158	328	1 / 0	9.47	9.11	18.58	0.072	30.00	-11.42
1745.00	20	QPSK	H	241	65	1 / 0	14.36	9.11	23.47	0.222	30.00	-6.53
1745.00	20 (WCP)	QPSK	V	184	59	1 / 0	13.17	9.11	22.28	0.169	30.00	-7.72

Table 7-17. EIRP Data (Band 66/4)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 289 of 487

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	149	320	1 / 0	14.79	9.88	24.67	0.293	33.01	-8.34
1882.50	1.4	QPSK	V	162	314	1 / 5	14.45	10.12	24.57	0.286	33.01	-8.44
1914.30	1.4	QPSK	V	154	329	1 / 5	14.32	10.34	24.66	0.292	33.01	-8.35
1850.70	1.4	16-QAM	V	149	320	1 / 0	14.18	9.88	24.06	0.255	33.01	-8.95
1850.70	1.4	64-QAM	V	149	320	1 / 0	13.15	9.88	23.03	0.201	33.01	-9.98
1850.70	1.4	256-QAM	V	149	320	1 / 0	9.96	9.88	19.84	0.096	33.01	-13.17
1851.50	3	QPSK	V	154	308	1 / 14	14.81	9.88	24.69	0.294	33.01	-8.32
1882.50	3	QPSK	V	156	326	1 / 7	14.48	10.12	24.60	0.288	33.01	-8.41
1913.50	3	QPSK	V	149	328	1 / 14	14.29	10.33	24.62	0.290	33.01	-8.39
1851.50	3	16-QAM	V	154	308	1 / 14	14.20	9.88	24.08	0.256	33.01	-8.93
1851.50	3	64-QAM	V	154	308	1 / 14	13.17	9.88	23.05	0.202	33.01	-9.96
1851.50	3	256-QAM	V	154	308	1 / 14	9.98	9.88	19.86	0.097	33.01	-13.15
1852.50	5	QPSK	V	150	308	1 / 24	14.64	9.89	24.53	0.284	33.01	-8.48
1882.50	5	QPSK	V	164	317	1 / 24	14.57	10.12	24.69	0.294	33.01	-8.32
1912.50	5	QPSK	V	149	328	1 / 24	14.23	10.33	24.56	0.286	33.01	-8.45
1882.50	5	16-QAM	V	164	317	1 / 24	10.01	10.12	20.13	0.103	33.01	-12.88
1882.50	5	64-QAM	V	164	317	1 / 24	8.98	10.12	19.10	0.081	33.01	-13.91
1882.50	5	256-QAM	V	164	317	1 / 24	5.79	10.12	15.91	0.039	33.01	-17.10
1855.00	10	QPSK	V	156	309	1 / 25	14.76	9.91	24.67	0.293	33.01	-8.34
1882.50	10	QPSK	V	159	322	1 / 49	14.48	10.12	24.60	0.288	33.01	-8.41
1910.00	10	QPSK	V	156	327	1 / 49	14.35	10.31	24.66	0.292	33.01	-8.35
1855.00	10	16-QAM	V	156	309	1 / 25	14.15	9.91	24.06	0.255	33.01	-8.95
1855.00	10	64-QAM	V	156	309	1 / 25	13.12	9.91	23.03	0.201	33.01	-9.98
1855.00	10	256-QAM	V	156	309	1 / 25	9.93	9.91	19.84	0.096	33.01	-13.17
1857.50	15	QPSK	V	149	329	1 / 36	14.74	9.93	24.67	0.293	33.01	-8.34
1882.50	15	QPSK	V	159	322	1 / 74	14.56	10.12	24.68	0.294	33.01	-8.33
1907.50	15	QPSK	V	149	319	1 / 74	14.37	10.30	24.67	0.293	33.01	-8.34
1882.50	15	16-QAM	V	159	322	1 / 74	13.95	10.12	24.07	0.255	33.01	-8.94
1882.50	15	64-QAM	V	159	322	1 / 74	12.92	10.12	23.04	0.201	33.01	-9.97
1882.50	15	256-QAM	V	159	322	1 / 74	9.73	10.12	19.85	0.097	33.01	-13.16
1860.00	20	QPSK	V	151	332	1 / 0	14.56	9.95	24.51	0.282	33.01	-8.50
1882.50	20	QPSK	V	166	318	1 / 99	14.37	10.12	24.49	0.281	33.01	-8.52
1905.00	20	QPSK	V	143	331	1 / 0	14.24	10.28	24.52	0.283	33.01	-8.49
1882.50	20	16-QAM	V	166	318	1 / 99	13.79	10.12	23.91	0.246	33.01	-9.10
1882.50	20	64-QAM	V	166	318	1 / 99	12.76	10.12	22.88	0.194	33.01	-10.13
1882.50	20	256-QAM	V	166	318	1 / 99	9.57	10.12	19.69	0.093	33.01	-13.32
1851.50	3	QPSK	H	164	278	1 / 14	13.32	9.88	23.20	0.209	33.01	-9.81
1851.50	3 (WCP)	QPSK	V	169	222	1 / 14	14.17	9.88	24.05	0.254	33.01	-8.96

Table 7-18. EIRP Data (Band 25/2)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 290 of 487

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	V	147	263	1 / 12	12.49	10.23	22.72	0.187	23.98	-1.26
2312.50	5	QPSK	V	147	263	1 / 12	12.45	10.21	22.66	0.185	23.98	-1.32
2307.50	5	16-QAM	V	147	263	1 / 12	11.69	10.23	21.92	0.156	23.98	-2.06
2307.50	5	64-QAM	V	147	263	1 / 12	10.74	10.23	20.97	0.125	23.98	-3.01
2307.50	5	256-QAM	V	147	263	1 / 12	8.91	10.23	19.14	0.082	23.98	-4.84
2310.00	10	QPSK	V	147	263	1 / 25	12.36	10.22	22.58	0.181	23.98	-1.40
2310.00	10	16-QAM	V	147	263	1 / 25	11.56	10.22	21.78	0.151	23.98	-2.20
2310.00	10	64-QAM	V	147	263	1 / 25	10.61	10.22	20.83	0.121	23.98	-3.15
2310.00	10	256-QAM	V	147	263	1 / 25	9.58	10.22	19.80	0.095	23.98	-4.18
2307.50	5	QPSK	H	246	259	1 / 12	11.77	10.23	22.00	0.158	23.98	-1.98
2307.50	5 (WCP)	QPSK	H	248	263	1 / 12	11.48	10.23	21.71	0.148	23.98	-2.27

Table 7-19. EIRP Data (Band 30)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 291 of 487

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	189	206	1 / 0	13.68	9.43	23.11	0.205	33.01	-9.90
2535.00	5	QPSK	H	186	222	1 / 0	13.85	9.39	23.24	0.211	33.01	-9.77
2567.50	5	QPSK	H	174	204	1 / 49	13.66	9.45	23.11	0.205	33.01	-9.90
2535.00	5	16-QAM	H	186	222	1 / 0	13.72	9.39	23.11	0.205	33.01	-9.90
2535.00	5	64-QAM	H	186	222	1 / 0	12.76	9.39	22.15	0.164	33.01	-10.86
2535.00	5	256-QAM	H	186	222	1 / 0	9.34	9.39	18.73	0.075	33.01	-14.28
2505.00	10	QPSK	H	190	189	1 / 0	13.73	9.43	23.16	0.207	33.01	-9.85
2535.00	10	QPSK	H	184	187	1 / 0	13.72	9.39	23.11	0.205	33.01	-9.90
2565.00	10	QPSK	H	183	201	1 / 49	13.73	9.44	23.17	0.207	33.01	-9.84
2565.00	10	16-QAM	H	183	201	1 / 49	13.60	9.44	23.04	0.201	33.01	-9.97
2565.00	10	64-QAM	H	183	201	1 / 49	12.64	9.44	22.08	0.161	33.01	-10.93
2565.00	10	256-QAM	H	183	201	1 / 49	9.22	9.44	18.66	0.073	33.01	-14.35
2507.50	15	QPSK	H	187	191	1 / 74	14.17	9.42	23.59	0.229	33.01	-9.42
2535.00	15	QPSK	H	180	188	1 / 36	13.73	9.39	23.12	0.205	33.01	-9.89
2562.50	15	QPSK	H	174	189	1 / 36	13.78	9.43	23.21	0.209	33.01	-9.80
2507.50	15	16-QAM	H	187	191	1 / 74	14.04	9.42	23.46	0.222	33.01	-9.55
2507.50	15	64-QAM	H	187	191	1 / 74	13.08	9.42	22.50	0.178	33.01	-10.51
2507.50	15	256-QAM	H	187	191	1 / 74	9.66	9.42	19.08	0.081	33.01	-13.93
2510.00	20	QPSK	H	196	195	1 / 0	12.79	9.42	22.21	0.166	33.01	-10.80
2535.00	20	QPSK	H	183	195	1 / 99	13.30	9.39	22.69	0.186	33.01	-10.32
2560.00	20	QPSK	H	181	199	1 / 0	13.29	9.42	22.71	0.187	33.01	-10.30
2560.00	20	16-QAM	H	181	199	1 / 0	12.62	9.42	22.04	0.160	33.01	-10.97
2560.00	20	64-QAM	H	181	199	1 / 0	11.37	9.42	20.79	0.120	33.01	-12.22
2560.00	20	256-QAM	H	181	199	1 / 0	8.27	9.42	17.69	0.059	33.01	-15.32
2507.50	15	QPSK	V	144	317	1 / 74	13.03	9.42	22.45	0.176	33.01	-10.56
2507.50	15 (WCP)	QPSK	V	159	327	1 / 74	12.44	9.42	21.86	0.153	33.01	-11.15

Table 7-20. EIRP Data (Band 7)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 292 of 487

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]
2498.50	5	QPSK	H	192	203	1 / 24	15.85	9.43	25.28	0.337	33.01	-7.73
2593.00	5	QPSK	H	216	178	1 / 24	15.72	9.55	25.27	0.337	33.01	-7.74
2687.50	5	QPSK	H	186	201	1 / 0	15.50	9.82	25.32	0.340	33.01	-7.69
2687.50	5	16-QAM	H	186	201	1 / 0	13.23	9.82	23.05	0.202	33.01	-9.96
2687.50	5	64-QAM	H	186	201	1 / 0	10.35	9.82	20.17	0.104	33.01	-12.84
2687.50	5	256-QAM	H	186	201	1 / 0	4.86	9.82	14.68	0.029	33.01	-18.33
2501.00	10	QPSK	H	184	176	1 / 0	15.86	9.43	25.29	0.338	33.01	-7.72
2593.00	10	QPSK	H	218	184	1 / 0	15.79	9.55	25.34	0.342	33.01	-7.67
2685.00	10	QPSK	H	203	203	1 / 0	15.55	9.82	25.37	0.344	33.01	-7.64
2685.00	10	16-QAM	H	203	203	1 / 0	13.28	9.82	23.10	0.204	33.01	-9.91
2685.00	10	64-QAM	H	203	203	1 / 0	10.40	9.82	20.22	0.105	33.01	-12.79
2685.00	10	256-QAM	H	203	203	1 / 0	4.91	9.82	14.73	0.030	33.01	-18.28
2503.50	15	QPSK	H	181	189	1 / 36	15.80	9.43	25.23	0.333	33.01	-7.78
2593.00	15	QPSK	H	200	190	1 / 0	15.79	9.55	25.34	0.342	33.01	-7.67
2682.50	15	QPSK	H	184	207	1 / 74	15.57	9.83	25.40	0.347	33.01	-7.61
2682.50	15	16-QAM	H	184	207	1 / 74	13.30	9.83	23.13	0.206	33.01	-9.88
2682.50	15	64-QAM	H	184	207	1 / 74	10.42	9.83	20.25	0.106	33.01	-12.76
2682.50	15	256-QAM	H	184	207	1 / 74	4.93	9.83	14.76	0.030	33.01	-18.25
2506.00	20	QPSK	H	188	193	1 / 0	15.99	9.42	25.41	0.348	33.01	-7.60
2593.00	20	QPSK	H	207	192	1 / 99	11.83	9.55	21.38	0.138	33.01	-11.63
2680.00	20	QPSK	H	194	200	1 / 99	12.05	9.83	21.88	0.154	33.01	-11.13
2506.00	20	16-QAM	H	188	193	1 / 0	12.89	9.42	22.31	0.170	33.01	-10.70
2506.00	20	64-QAM	H	188	193	1 / 0	13.11	9.42	22.53	0.179	33.01	-10.48
2506.00	20	256-QAM	H	188	193	1 / 0	10.50	9.42	19.92	0.098	33.01	-13.09
2506.00	20	QPSK	V	357	258	1 / 0	12.93	9.42	22.35	0.172	33.01	-10.66
2506.00	20 (WCP)	QPSK	V	328	249	1 / 0	11.83	9.42	21.25	0.133	33.01	-11.76

Table 7-21. EIRP Data (Band 41 – PC2)

FCC ID: A3LSMG981U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 293 of 487

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]
2498.50	5	QPSK	H	177	206	1 / 0	13.69	9.43	23.12	0.205	33.01	-9.89
2593.00	5	QPSK	H	112	189	1 / 0	13.55	9.55	23.10	0.204	33.01	-9.91
2687.50	5	QPSK	H	106	204	1 / 12	13.16	9.82	22.98	0.199	33.01	-10.03
2498.50	5	16-QAM	H	177	206	1 / 0	12.49	9.43	21.92	0.156	33.01	-11.09
2498.50	5	64-QAM	H	177	206	1 / 0	12.07	9.43	21.50	0.141	33.01	-11.51
2498.50	5	256-QAM	H	177	206	1 / 0	8.35	9.43	17.78	0.060	33.01	-15.23
2501.00	10	QPSK	H	177	206	1 / 0	13.68	9.43	23.11	0.205	33.01	-9.90
2593.00	10	QPSK	H	112	189	1 / 25	13.57	9.55	23.12	0.205	33.01	-9.89
2685.00	10	QPSK	H	106	204	1 / 25	13.20	9.82	23.02	0.200	33.01	-9.99
2593.00	10	16-QAM	H	112	189	1 / 25	12.37	9.55	21.92	0.156	33.01	-11.09
2593.00	10	64-QAM	H	112	189	1 / 25	11.95	9.55	21.50	0.141	33.01	-11.51
2593.00	10	256-QAM	H	112	189	1 / 25	8.23	9.55	17.78	0.060	33.01	-15.23
2503.50	15	QPSK	H	179	208	1 / 0	13.83	9.43	23.26	0.212	33.01	-9.75
2593.00	15	QPSK	H	113	190	1 / 36	13.73	9.55	23.28	0.213	33.01	-9.73
2682.50	15	QPSK	H	107	201	1 / 36	13.27	9.83	23.10	0.204	33.01	-9.91
2593.00	15	16-QAM	H	113	190	1 / 36	12.53	9.55	22.08	0.161	33.01	-10.93
2593.00	15	64-QAM	H	113	190	1 / 36	12.11	9.55	21.66	0.147	33.01	-11.35
2593.00	15	256-QAM	H	113	190	1 / 36	8.39	9.55	17.94	0.062	33.01	-15.07
2506.00	20	QPSK	H	188	195	1 / 99	13.27	9.42	22.69	0.186	33.01	-10.32
2593.00	20	QPSK	H	107	193	1 / 0	13.63	9.55	23.18	0.208	33.01	-9.83
2680.00	20	QPSK	H	101	192	1 / 0	13.27	9.83	23.10	0.204	33.01	-9.91
2593.00	20	16-QAM	H	107	193	1 / 0	12.43	9.55	21.98	0.158	33.01	-11.03
2593.00	20	64-QAM	H	107	193	1 / 0	12.01	9.55	21.56	0.143	33.01	-11.45
2593.00	20	256-QAM	H	107	193	1 / 0	8.29	9.55	17.84	0.061	33.01	-15.17
2593.00	15	QPSK	V	138	315	1 / 36	13.37	9.55	22.92	0.196	33.01	-10.09
2593.00	15 (WCP)	H	V	156	277	1 / 36	13.50	9.55	23.05	0.202	33.01	-9.96

Table 7-22. EIRP Data (Band 41 – PC3)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 294 of 487

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: A3LSMG981U		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.

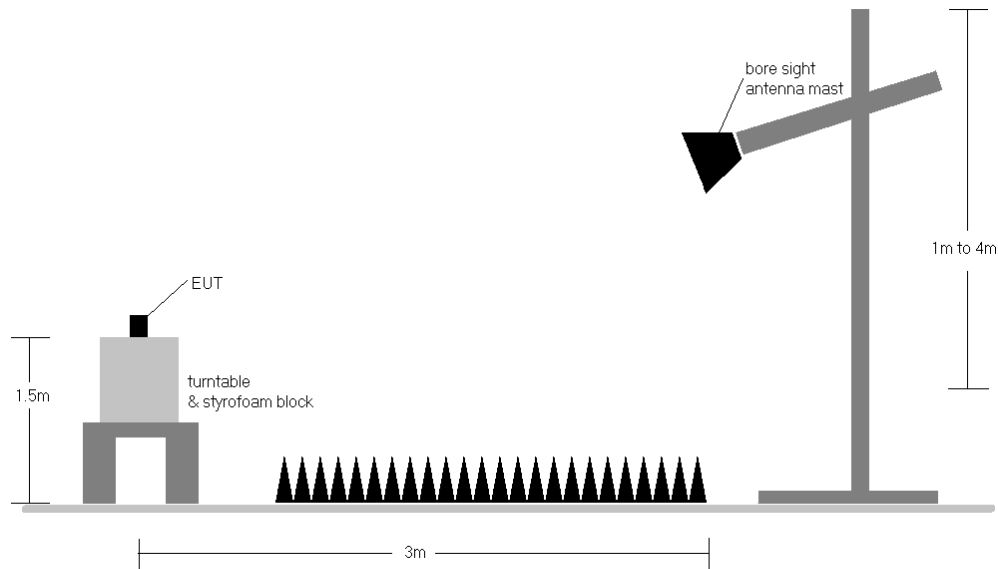


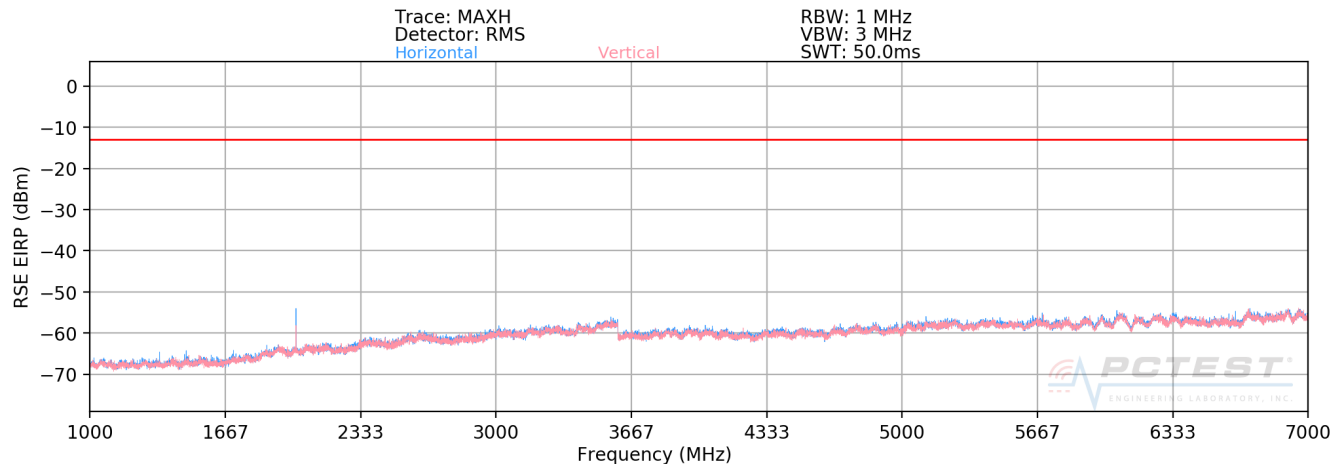
Figure 7-9. Test Instrument & Measurement Setup

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: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 71



Plot 7-491. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY: 673.00 MHz
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	163	186	-69.46	7.47	-61.99	-49.0
2019.00	H	153	201	-62.95	8.68	-54.26	-41.3
2692.00	H	-	-	-75.27	9.99	-65.28	-52.3

Table 7-23. Radiated Spurious Data (Band 71 – Low Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 297 of 487

OPERATING FREQUENCY: 680.50 MHz
 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	146	181	-73.20	7.48	-65.71	-52.7
2041.50	H	152	226	-73.76	8.76	-64.99	-52.0
2722.00	H	-	-	-76.05	10.08	-65.97	-53.0

Table 7-24. Radiated Spurious Data (Band 71 – Mid Channel)

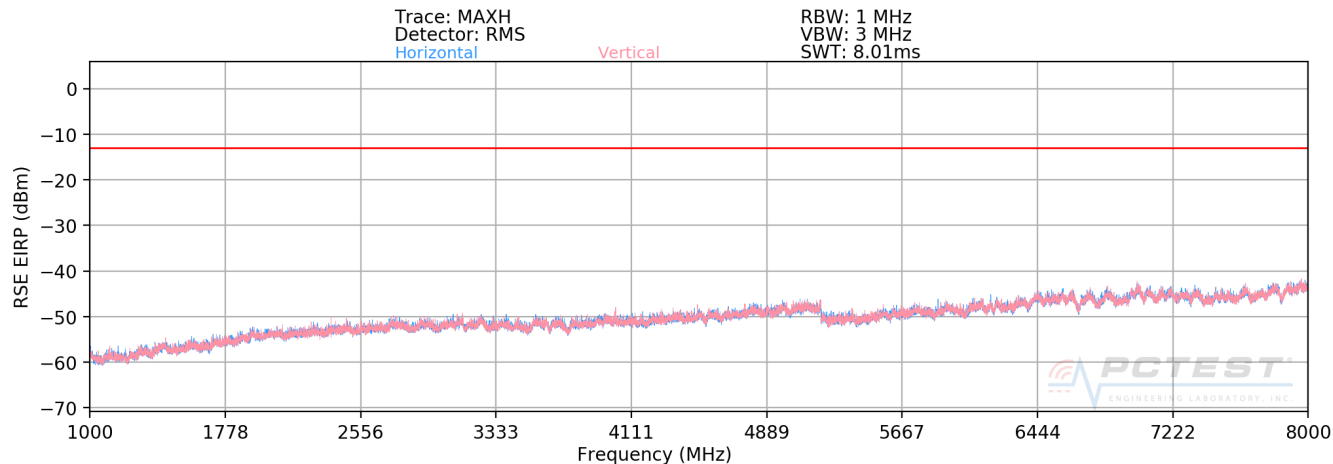
OPERATING FREQUENCY: 688.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	236	21	-73.09	7.46	-65.62	-52.6
2064.00	H	223	8	-68.86	8.80	-60.05	-47.1
2752.00	H	-	-	-75.99	10.17	-65.82	-52.8

Table 7-25. Radiated Spurious Data (Band 71 – High Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 298 of 487

Band 12



Plot 7-492. Radiated Spurious Plot above 1GHz (Band 12)

OPERATING FREQUENCY: 704.00 MHz
 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]
1408.00	H	-	-	-66.91	7.54	-59.37	-46.4
2112.00	H	-	-	-69.40	8.85	-60.55	-47.5
2816.00	H	-	-	-67.80	10.12	-57.68	-44.7

Table 7-26. Radiated Spurious Data (Band 12 – Low Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 299 of 487

OPERATING FREQUENCY: 707.50 MHz
 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]
1415.00	H	149	16	-67.19	7.63	-59.56	-46.6
2122.50	H	-	-	-68.52	8.86	-59.66	-46.7
2830.00	H	-	-	-67.57	10.10	-57.47	-44.5

Table 7-27. Radiated Spurious Data (Band 12 – Mid Channel)

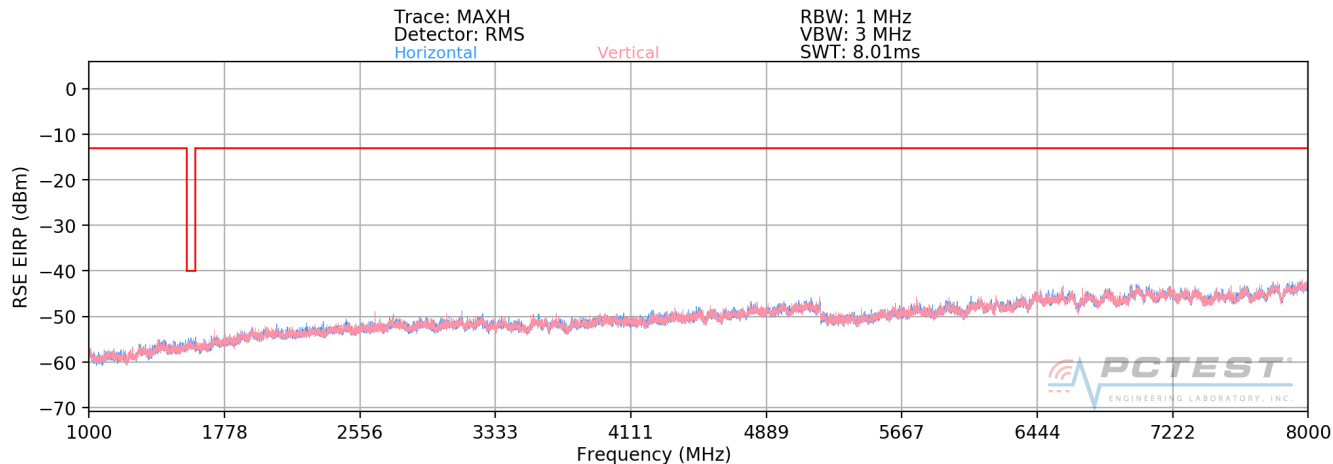
OPERATING FREQUENCY: 711.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
1422.00	H	-	-	-69.36	7.72	-61.64	-48.6
2133.00	H	-	-	-69.69	8.87	-60.81	-47.8
2844.00	H	-	-	-67.72	10.07	-57.65	-44.7

Table 7-28. Radiated Spurious Data (Band 12 – High Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 300 of 487

Band 13



Plot 7-493. Radiated Spurious Plot above 1GHz (Band 13)

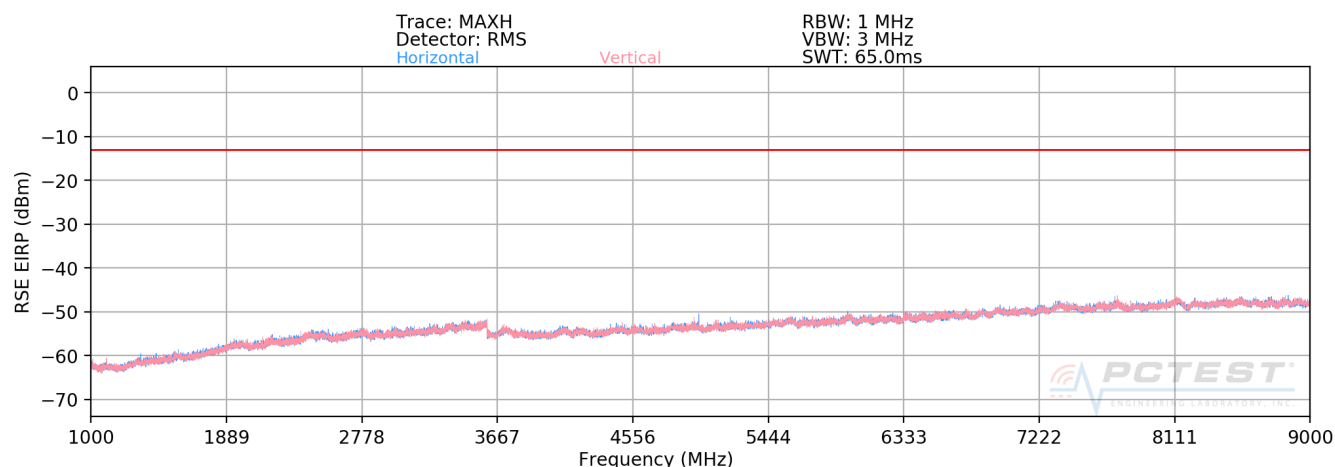
OPERATING FREQUENCY: 782.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
2346.00	H	-	-	-70.03	9.43	-60.60	-47.6
3128.00	H	111	34	-57.39	9.34	-48.05	-35.0
3910.00	H	-	-	-71.02	9.37	-61.65	-48.6

Table 7-29. Radiated Spurious Data (Band 13 – Mid Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 301 of 487

Band 26/5



Plot 7-494. Radiated Spurious Plot above 1GHz (Band 26/5)

OPERATING FREQUENCY: 829.00 MHz

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	-	-	-63.55	8.95	-54.60	-41.6
2487.00	H	-	-	-61.95	9.73	-52.22	-39.2
3316.00	H	-	-	-63.07	9.59	-53.48	-40.5

Table 7-30. Radiated Spurious Data (Band 26/5 – Low Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 302 of 487

OPERATING FREQUENCY: 836.50 MHz
 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	-	-	-65.85	8.95	-56.90	-43.9
2509.50	H	182	128	-52.91	9.75	-43.16	-30.2
3346.00	H	-	-	-62.38	9.60	-52.78	-39.8

Table 7-31. Radiated Spurious Data (Band 26/5 – Mid Channel)

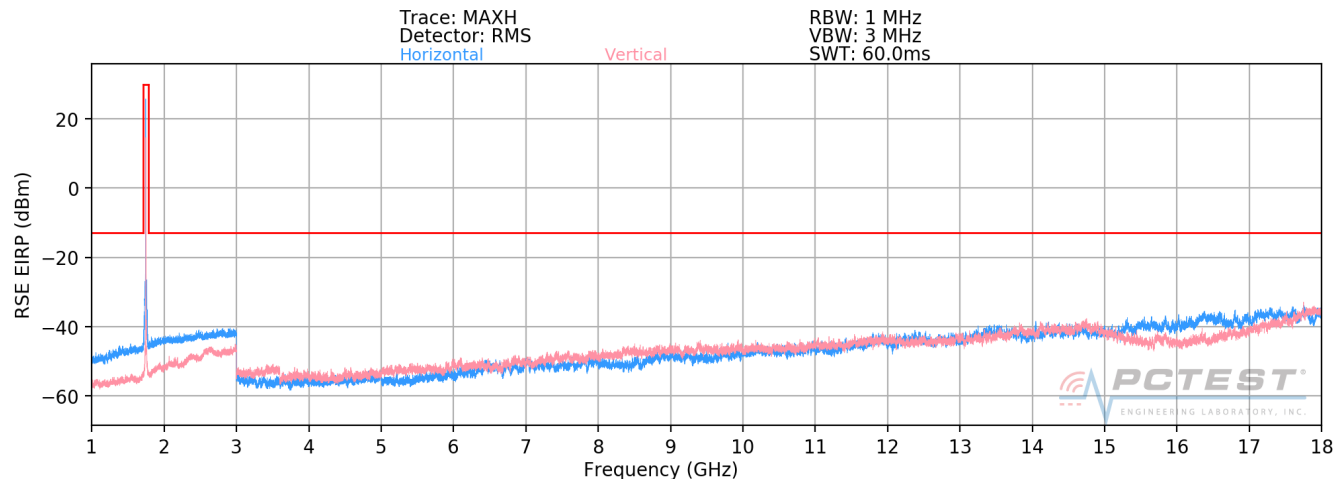
OPERATING FREQUENCY: 844.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	-	-	-65.52	8.95	-56.57	-43.6
2532.00	H	126	222	-55.92	9.75	-46.17	-33.2
3376.00	H	-	-	-61.90	9.67	-52.23	-39.2

Table 7-32. Radiated Spurious Data (Band 26/5 – High Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 303 of 487

Band 66/4



Plot 7-495. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY: 1720.00 MHz
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	V	229	304	-61.43	9.84	-51.58	-38.6
5160.00	V	302	154	-61.10	10.71	-50.39	-37.4
6880.00	V	-	-	-59.65	11.68	-47.97	-35.0

Table 7-33. Radiated Spurious Data (Band 66/4 – Low Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 304 of 487

OPERATING FREQUENCY: 1745.00 MHz
 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	V	207	109	-60.12	9.91	-50.20	-37.2
5235.00	V	191	300	-61.10	10.73	-50.37	-37.4
6980.00	V	-	-	-58.50	11.82	-46.68	-33.7

Table 7-34. Radiated Spurious Data (Band 66/4 – Mid Channel)

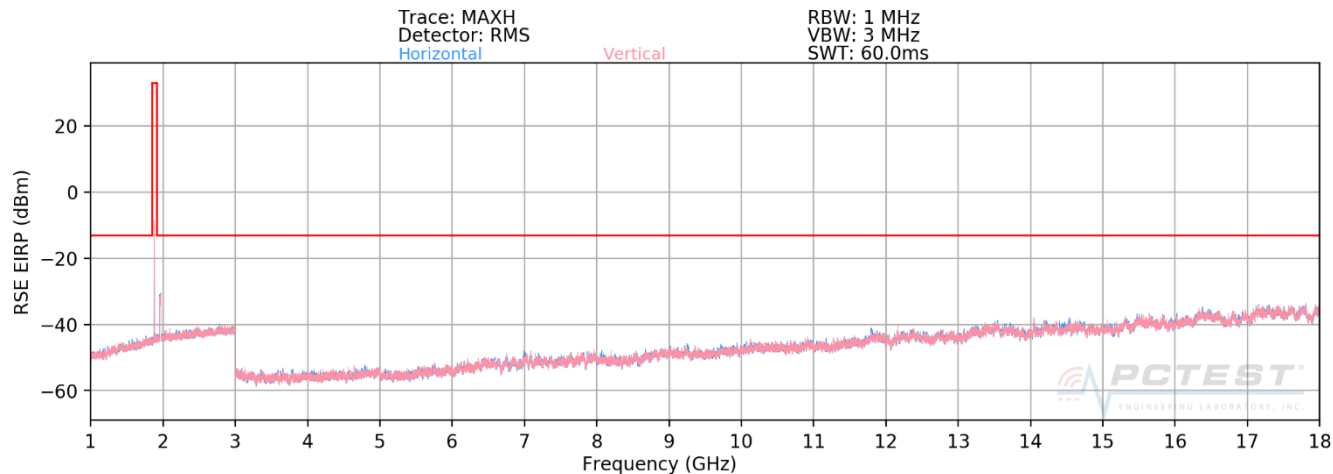
OPERATING FREQUENCY: 1770.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	V	210	123	-60.56	9.89	-50.67	-37.7
5310.00	V	180	289	-60.86	10.69	-50.18	-37.2
7080.00	V	-	-	-58.66	11.79	-46.87	-33.9

Table 7-35. Radiated Spurious Data (Band 66/4 – High Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 305 of 487

Band 25/2



Plot 7-496. Radiated Spurious Plot above 1GHz (Band 25/2)

OPERATING FREQUENCY: 1860.00 MHz
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]
3720.00	V	-	-	-62.08	9.51	-52.57	-39.6
5580.00	V	-	-	-61.73	10.99	-50.75	-37.7
7440.00	V	-	-	-58.98	10.99	-47.99	-35.0

Table 7-36. Radiated Spurious Data (Band 25/2 – Low Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 306 of 487

OPERATING FREQUENCY: 1882.50 MHz
 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]
3765.00	V	-	-	-61.68	9.36	-52.32	-39.3
5647.50	V	-	-	-62.08	11.19	-50.89	-37.9
7530.00	V	-	-	-58.91	11.13	-47.78	-34.8

Table 7-37. Radiated Spurious Data (Band 25/2 – Mid Channel)

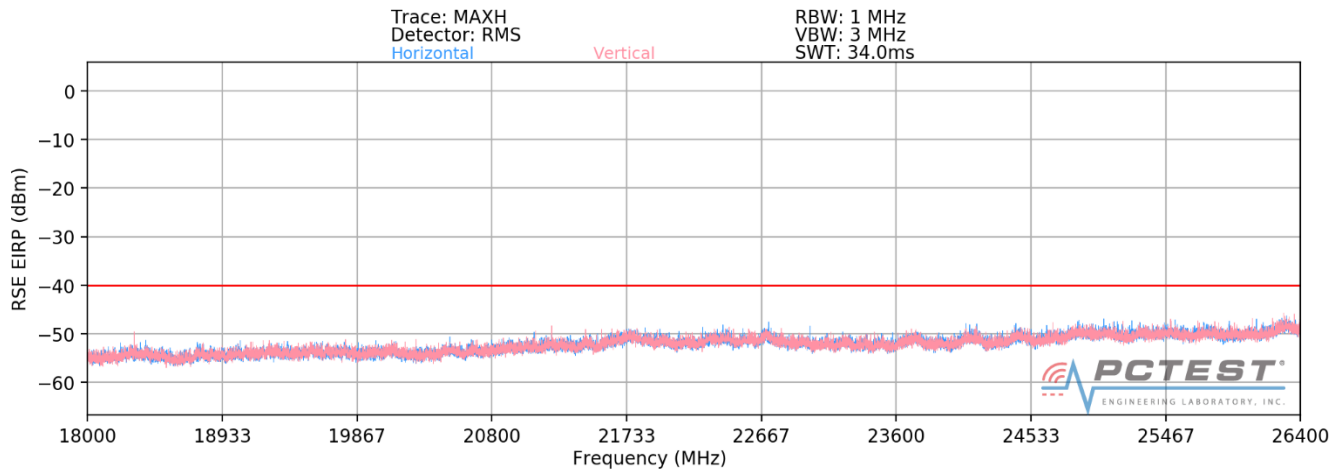
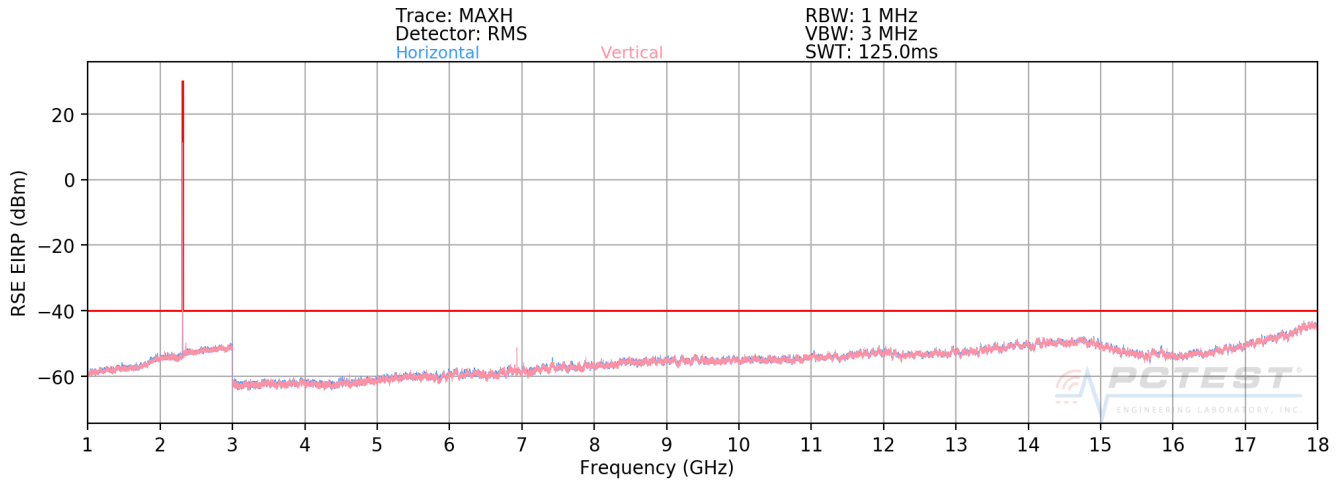
OPERATING FREQUENCY: 1905.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
3810.00	V	-	-	-60.66	9.29	-51.37	-38.4
5715.00	V	-	-	-62.20	11.35	-50.85	-37.9
7620.00	V	-	-	-57.13	11.29	-45.84	-32.8

Table 7-38. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 307 of 487

Band 30



FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 308 of 487

OPERATING FREQUENCY: 2312.50 MHz
 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	102	73	-62.72	10.92	-51.81	-11.8
6937.50	H	101	73	-54.97	11.74	-43.23	-3.2
9250.00	H	-	-	-65.18	11.62	-53.56	-13.6

Table 7-39. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY: 2312.50 MHz
 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	104	88	-63.68	10.92	-52.77	-12.8
6937.50	H	113	78	-56.71	11.74	-44.97	-5.0
9250.00	H	-	-	-65.63	11.62	-54.01	-14.0

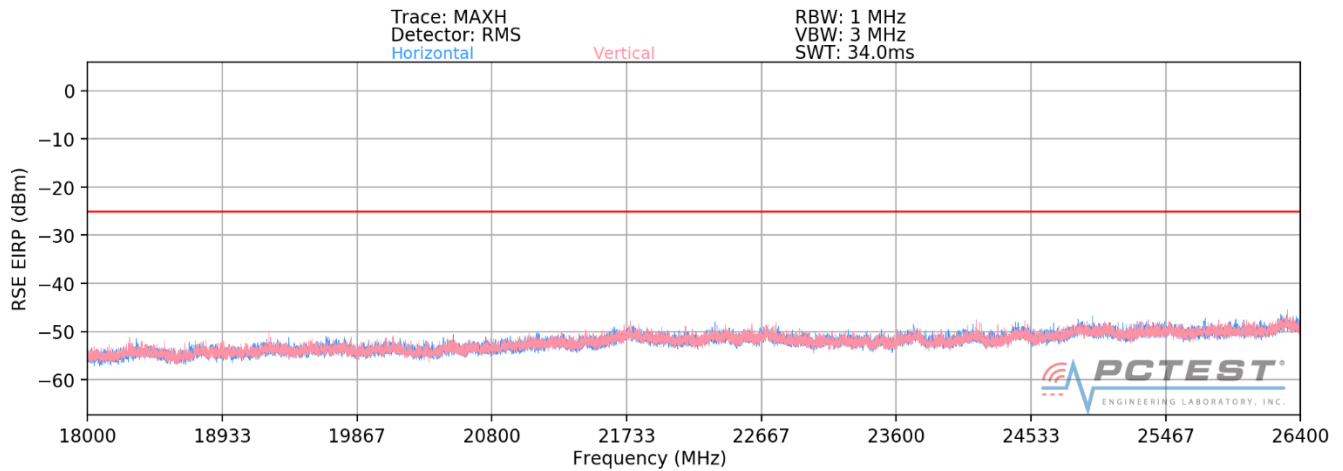
Table 7-40. Radiated Spurious Data with WCP (Band 30 – MID Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 309 of 487

Band 7



Plot 7-499. Radiated Spurious Plot 1GHz - 18GHz (Band 7)



Plot 7-500. Radiated Spurious Plot 18GHz - 26.5GHz (Band 7)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 310 of 487

OPERATING FREQUENCY: 2507.50 MHz
 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	102	64	-57.90	10.88	-47.02	-22.0
7522.50	H	399	15	-64.22	11.13	-53.09	-28.1
10030.00	H	102	358	-64.76	11.99	-52.77	-27.8
12537.50	H	-	-	-65.21	13.56	-51.65	-26.7

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

OPERATING FREQUENCY: 2535.00 MHz
 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	120	122	-59.06	10.75	-48.31	-23.3
7605.00	H	102	26	-66.08	11.25	-54.83	-29.8
10140.00	H	101	349	-62.83	12.07	-50.76	-25.8
12675.00	H	251	54	-61.65	13.66	-47.99	-23.0
15210.00	H	-	-	-62.73	14.71	-48.03	-23.0

Table 7-42. Radiated Spurious Data (Band 7 – Mid Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 311 of 487

OPERATING FREQUENCY: 2562.50 MHz
 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	124	128	-58.68	10.68	-48.00	-23.0
7687.50	H	102	279	-65.06	11.39	-53.67	-28.7
10250.00	H	251	329	-62.29	12.18	-50.10	-25.1
12812.50	H	-	-	-64.63	13.50	-51.13	-26.1

Table 7-43. Radiated Spurious Data (Band 7 – High Channel)

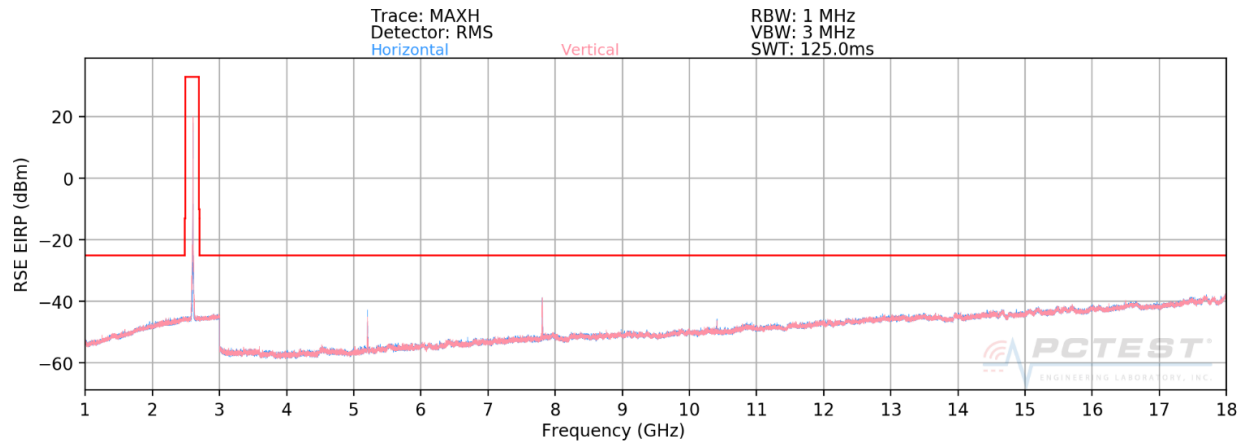
OPERATING FREQUENCY: 2507.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

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	119	156	-60.29	10.68	-49.61	-24.6
7577.50	H	204	159	-66.86	11.39	-55.47	-30.5
10140.00	H	244	333	-60.00	12.18	-47.81	-22.8
12702.50	H	-	-	-65.27	13.50	-51.77	-26.8

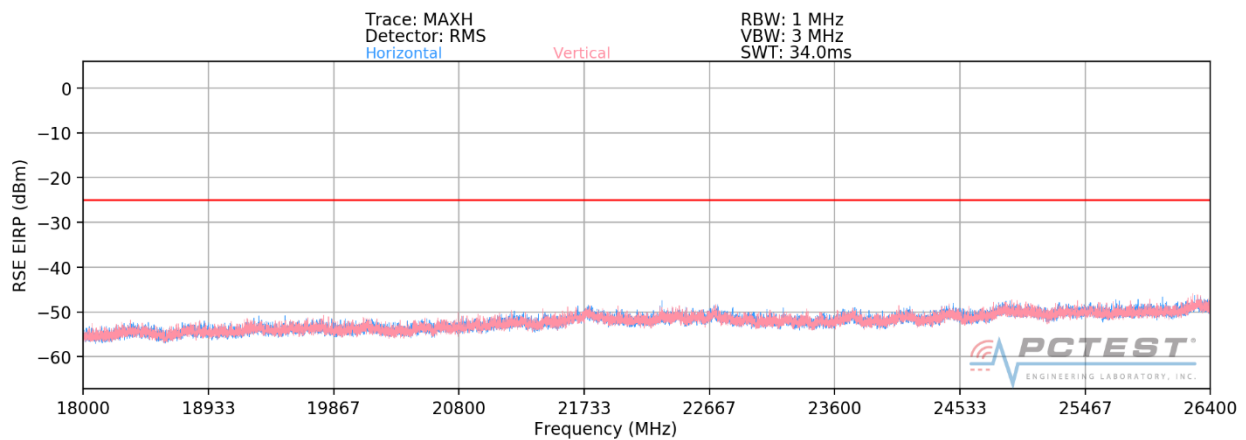
Table 7-44. Radiated Spurious Data with WCP (Band 7 – Low Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 312 of 487

Band 41 PC2



Plot 7-501. Radiated Spurious Plot 1GHz - 18GHz (Band 41 PC2)



Plot 7-502. Radiated Spurious Plot 18GHz - 26.5GHz (Band 41 PC2)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 313 of 487

OPERATING FREQUENCY: 2506.00 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]
5012.00	V	157	137	-54.31	10.88	-43.43	-18.4
7518.00	V	120	212	-39.40	11.13	-28.27	-3.3
10024.00	V	123	66	-49.91	11.99	-37.92	-12.9
12530.00	V	136	21	-57.25	13.56	-43.69	-18.7
15036.00	V	-	-	-57.75	13.58	-44.17	-19.2

Table 7-45. Radiated Spurious Data (Band 41 PC2 – Low Channel)

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	V	120	39	-48.21	10.74	-37.46	-12.5
7779.00	V	123	187	-39.64	11.44	-28.20	-3.2
10372.00	V	131	258	-54.65	12.42	-42.23	-17.2
12965.00	V	-	-	-54.30	13.29	-41.01	-16.0
15558.00	V	-	-	-52.79	16.33	-36.47	-11.5

Table 7-46. Radiated Spurious Data (Band 41 PC2 – Mid Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 314 of 487

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	V	109	50	-48.88	10.70	-38.18	-13.2
8040.00	V	130	172	-42.68	11.16	-31.52	-6.5
10720.00	V	105	301	-55.64	12.59	-43.05	-18.0
13400.00	V	-	-	-51.99	12.59	-39.40	-14.4
16080.00	V	-	-	-53.16	16.68	-36.48	-11.5

Table 7-47. Radiated Spurious Data (Band 41 PC2 – High Channel)

OPERATING FREQUENCY: 2506.00 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]
5012.00	V	125	41	-49.07	10.90	-38.17	-13.2
7518.00	V	120	190	-40.59	11.11	-29.48	-4.5
10024.00	V	119	247	-53.90	11.99	-41.91	-16.9
12530.00	V	-	-	-55.52	13.56	-41.96	-17.0
15036.00	V	-	-	-52.50	13.51	-39.00	-14.0

Table 7-48. Radiated Spurious Data with WCP (Band 41 PC2 – Low Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 315 of 487

7.10 Uplink Carrier Aggregation Radiated Measurements

\$2.1053, \$27.53(m)

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: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 316 of 487

Test Setup

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

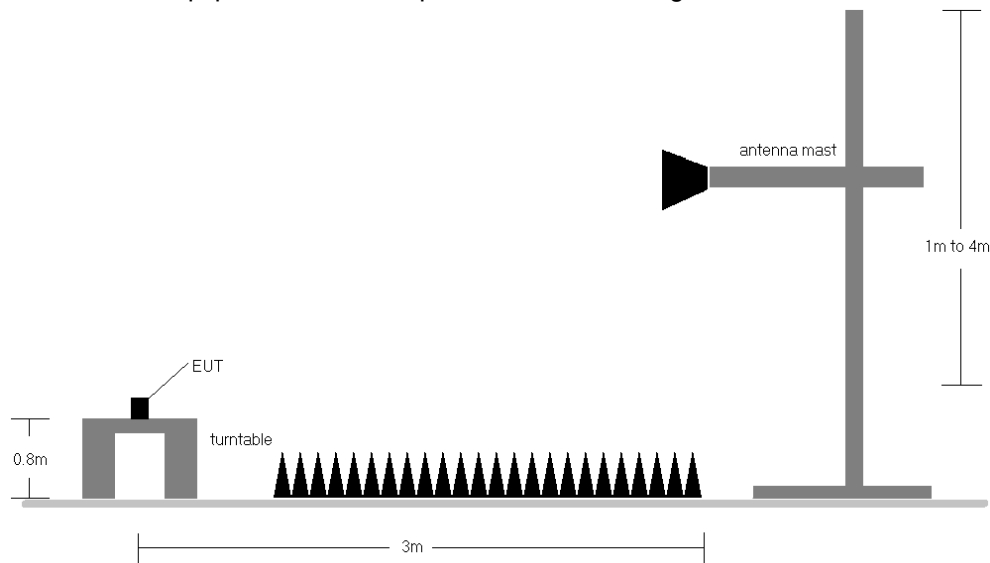


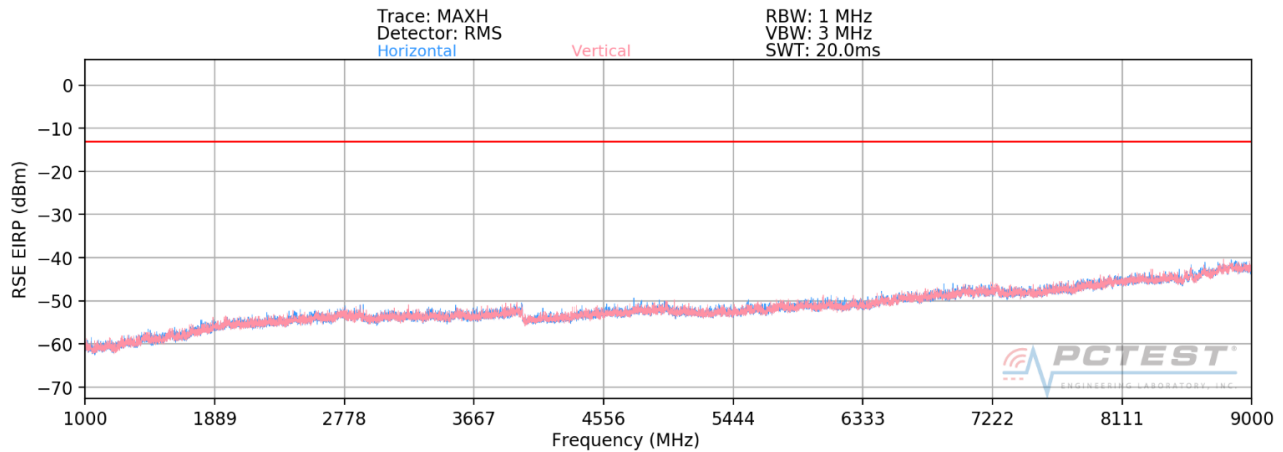
Figure 7-10. Test Instrument & Measurement Setup

Test Notes

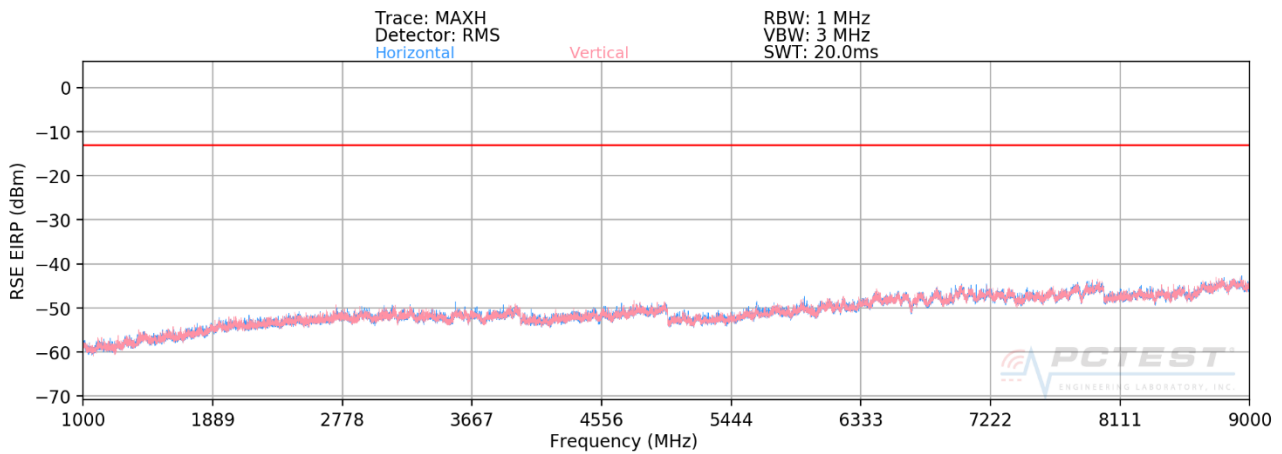
- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with 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.
- 6) No significant emissions were found as a result of two uplink carriers operating contiguously.

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 317 of 487

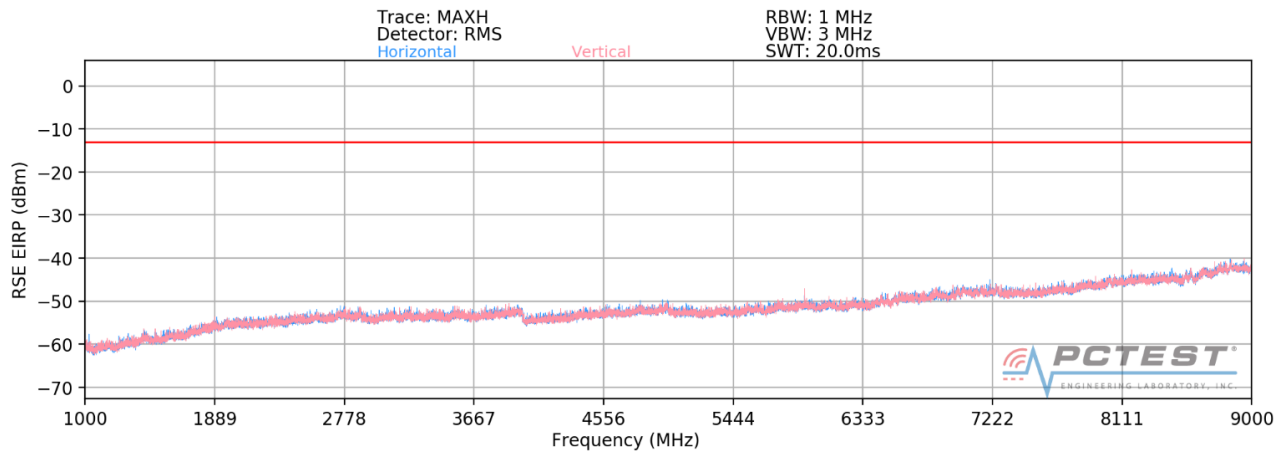
ULCA Band 5



Plot 7-503. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 Low Channel – PCC/SCC: 1RB)



Plot 7-504. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 Mid Channel – PCC/SCC: 1RB)



Plot 7-505. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 High Channel – PCC/SCC: 1RB)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 318 of 487

OPERATING FREQUENCY (PCC): 829.00 MHz
 OPERATING FREQUENCY (SCC): 838.90 MHz
 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	-	-	-56.96	3.12	-53.84	-40.8
2487.00	H	-	-	-55.34	3.87	-51.47	-38.5
3316.00	H	-	-	-55.07	6.01	-49.06	-36.1

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

OPERATING FREQUENCY (PCC): 836.50 MHz
 OPERATING FREQUENCY (SCC): 843.70 MHz
 CHANNEL (PCC): 20525
 CHANNEL (SCC): 20597
 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	-	-	-57.81	3.12	-54.69	-41.7
2509.50	H	-	-	-54.58	3.87	-50.71	-37.7
3346.00	H	-	-	-54.81	6.01	-48.80	-35.8

Plot 7-506. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Mid Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 319 of 487

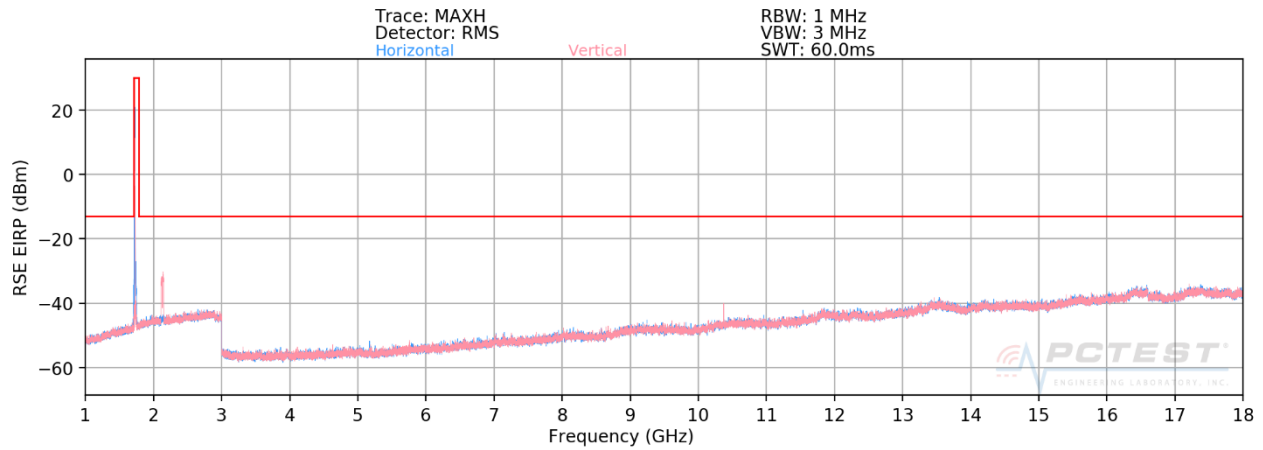
OPERATING FREQUENCY (PCC): 844.00 MHz
 OPERATING FREQUENCY (SCC): 834.10 MHz
 CHANNEL (PCC): 20600
 CHANNEL (SCC): 20501
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	-	-	-58.49	3.18	-55.31	-42.3
2532.00	H	109	55	-54.95	4.10	-50.85	-37.8
3376.00	H	-	-	-57.44	6.15	-51.29	-38.3

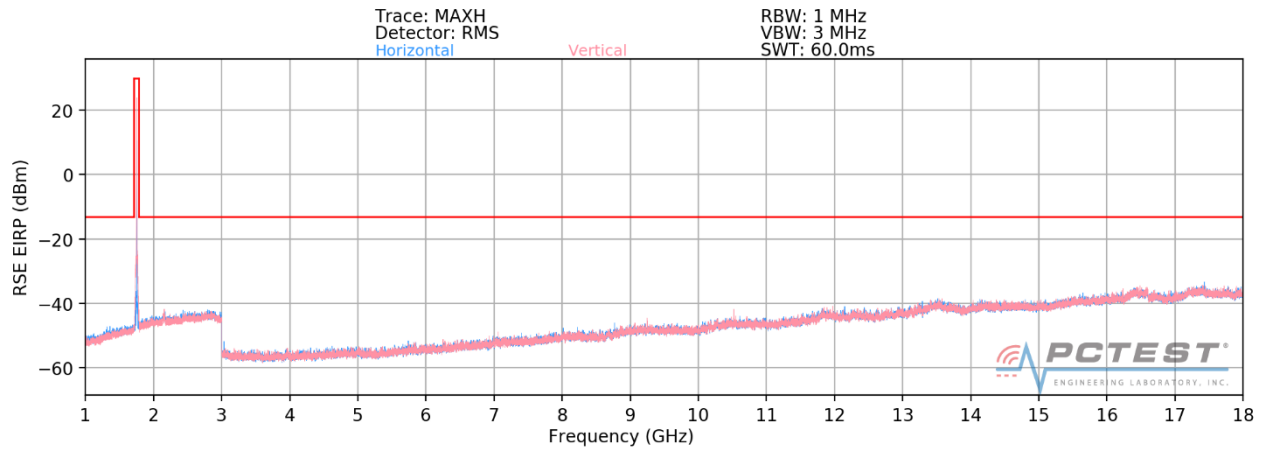
Plot 7-50. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – High Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 320 of 487

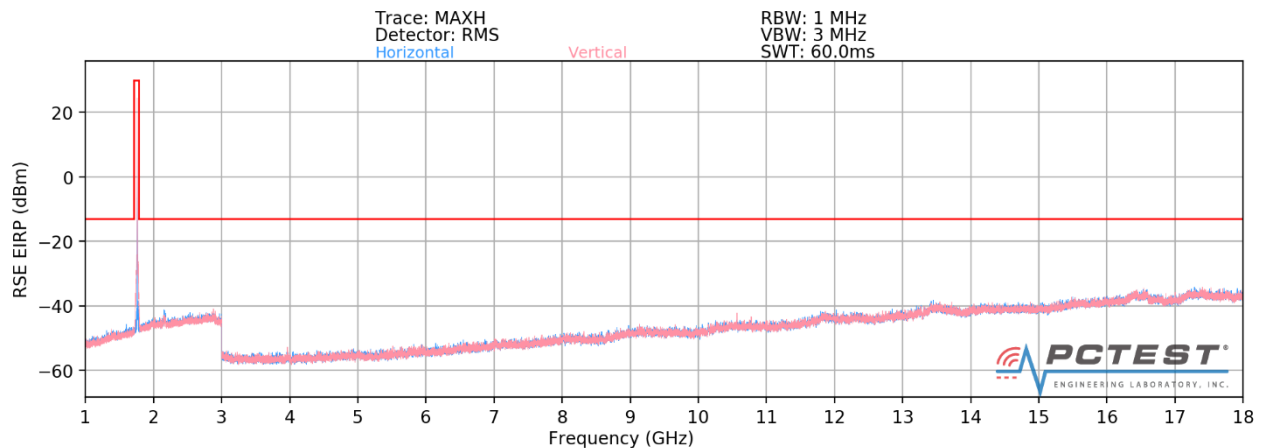
ULCA Band 66



Plot 7-507. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 66 Low Channel – PCC/SCC: 1RB)



Plot 7-508. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 66 Mid Channel – PCC/SCC: 1RB)



Plot 7-509. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 66 High Channel – PCC/SCC: 1RB)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 321 of 487

OPERATING FREQUENCY (PCC): 1720.00 MHz
 OPERATING FREQUENCY (SCC): 1739.80 MHz
 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	V	-	-	-58.19	6.28	-51.91	-38.9
5160.00	V	-	-	-60.94	8.98	-51.96	-39.0
6880.00	V	-	-	-56.63	9.42	-47.21	-34.2

Plot 7-51. 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 MHz
 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	V	-	-	-57.19	6.47	-50.72	-37.7
5235.00	V	-	-	-59.79	8.97	-50.82	-37.8
6980.00	V	-	-	-55.76	9.23	-46.54	-33.5

Plot 7-52. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 322 of 487

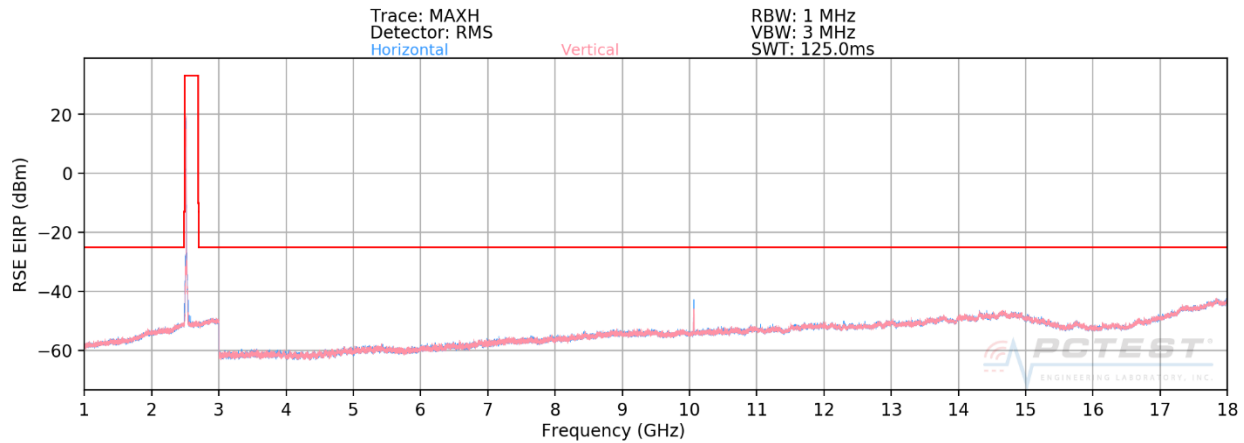
OPERATING FREQUENCY (PCC): 1770.00 MHz
 OPERATING FREQUENCY (SCC): 1750.20 MHz
 CHANNEL (PCC): 132572
 CHANNEL (SCC): 132374
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	V	-	-	-57.84	6.45	-51.39	-38.4
5310.00	V	-	-	-59.29	9.09	-50.20	-37.2

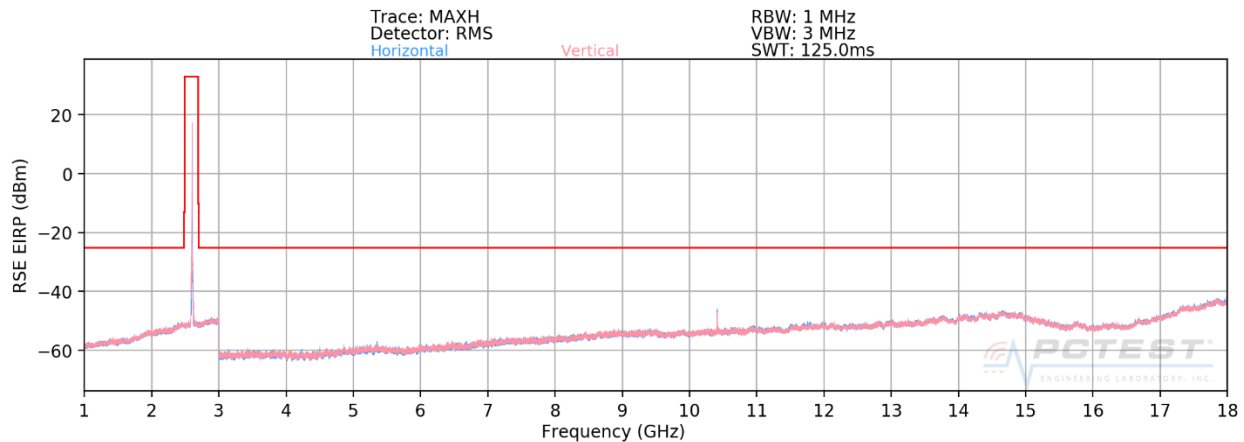
Plot 7-53. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 323 of 487

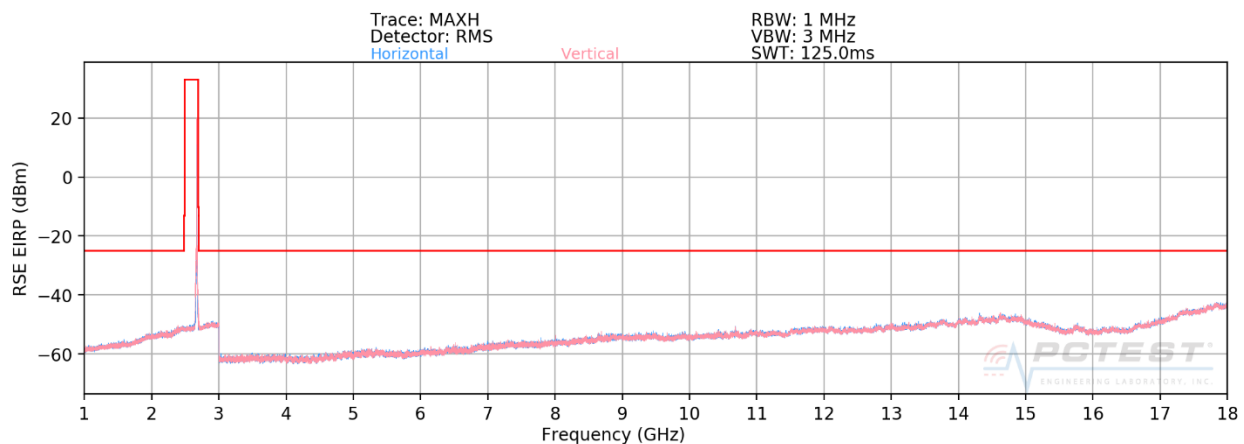
ULCA Band 41 (PC2)



Plot 7-510. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC2) Low Channel – PCC/SCC: 1RB)

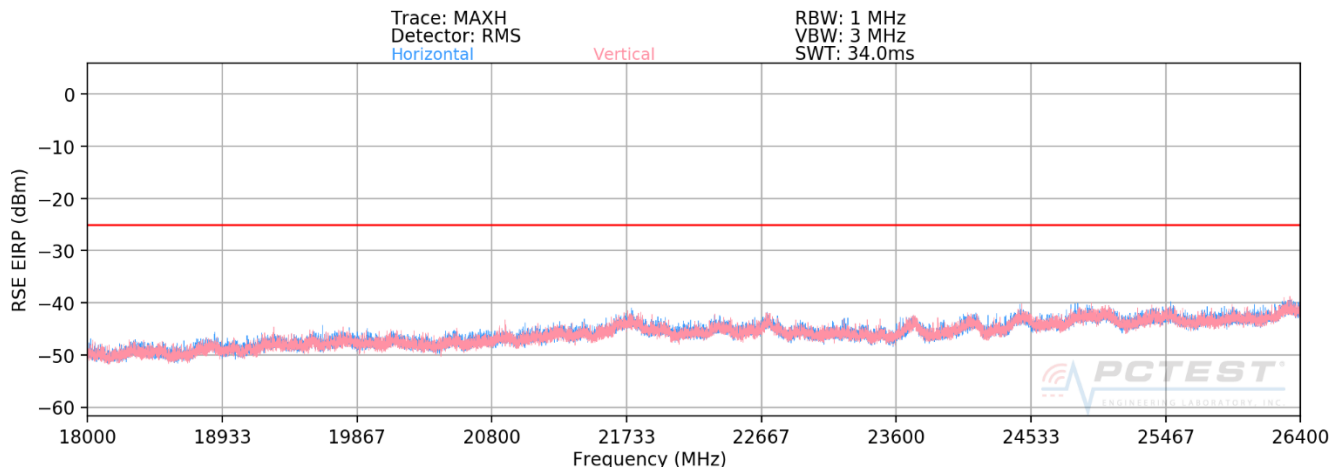


Plot 7-511. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC2) Mid Channel – PCC/SCC: 1RB)



Plot 7-512. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC2) High Channel – PCC/SCC: 1RB)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 324 of 487



Plot 7-513. Radiated Spurious Plot 18GHz – 26.5GHz (ULCA Band 41 (PC2))

OPERATING FREQUENCY (PCC):	2506.00	MHz
OPERATING FREQUENCY (SCC):	2525.80	MHz
CHANNEL (PCC):	39750	
CHANNEL (SCC):	39948	
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]
5012.00	V	101	277	-46.69	8.75	-37.93	-12.9
7518.00	V	100	211	-50.15	9.32	-40.83	-15.8
10024.00	V	103	60	-54.94	9.80	-45.14	-20.1
12530.00	V	190	164	-45.73	8.87	-36.86	-11.9

Plot 7-54. Radiated Spurious Data (ULCA B41 (PC2) PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 325 of 487

OPERATING FREQUENCY (PCC): 2593.00 MHz
 OPERATING FREQUENCY (SCC): 2612.80 MHz
 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	V	123	326	-42.60	8.70	-33.90	-8.9
7779.00	V	102	157	-40.24	8.69	-31.55	-6.5
10372.00	V	100	97	-49.05	9.62	-39.42	-14.4
12965.00	V	100	36	-41.54	8.99	-32.55	-7.6
15558.00	V	101	32	-45.00	8.32	-36.68	-11.7

Plot 7-55. Radiated Spurious Data (ULCA B41 (PC2) PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

OPERATING FREQUENCY (PCC): 2680.00 MHz
 OPERATING FREQUENCY (SCC): 2660.20 MHz
 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	V	118	28	-46.36	8.70	-37.66	-12.7
8040.00	V	113	154	-41.32	8.95	-32.36	-7.4
10720.00	V	100	26	-45.15	9.32	-35.83	-10.8
13400.00	V	100	181	-39.36	8.77	-30.58	-5.6

Plot 7-56. Radiated Spurious Data (ULCA B41 (PC2) PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 326 of 487

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: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 327 of 487

Band 71 Frequency Stability Measurements

TESTING FREQUENCY: 680,500,000 Hz
 CHANNEL: 23790
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	- 30	680,500,070	70	0.0000103
100 %		- 20	680,500,085	85	0.0000125
100 %		- 10	680,500,017	17	0.0000025
100 %		0	680,500,052	52	0.0000076
100 %		+ 10	680,499,872	-128	-0.0000188
100 %		+ 20	680,500,051	51	0.0000075
100 %		+ 30	680,500,016	16	0.0000024
100 %		+ 40	680,499,818	-182	-0.0000267
100 %		+ 50	680,500,205	205	0.0000301
ATT. ENDPOINT	2.76	+ 20	680,500,090	90	0.0000132

Table 7-57. 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: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 328 of 487

Band 71 Frequency Stability Measurements

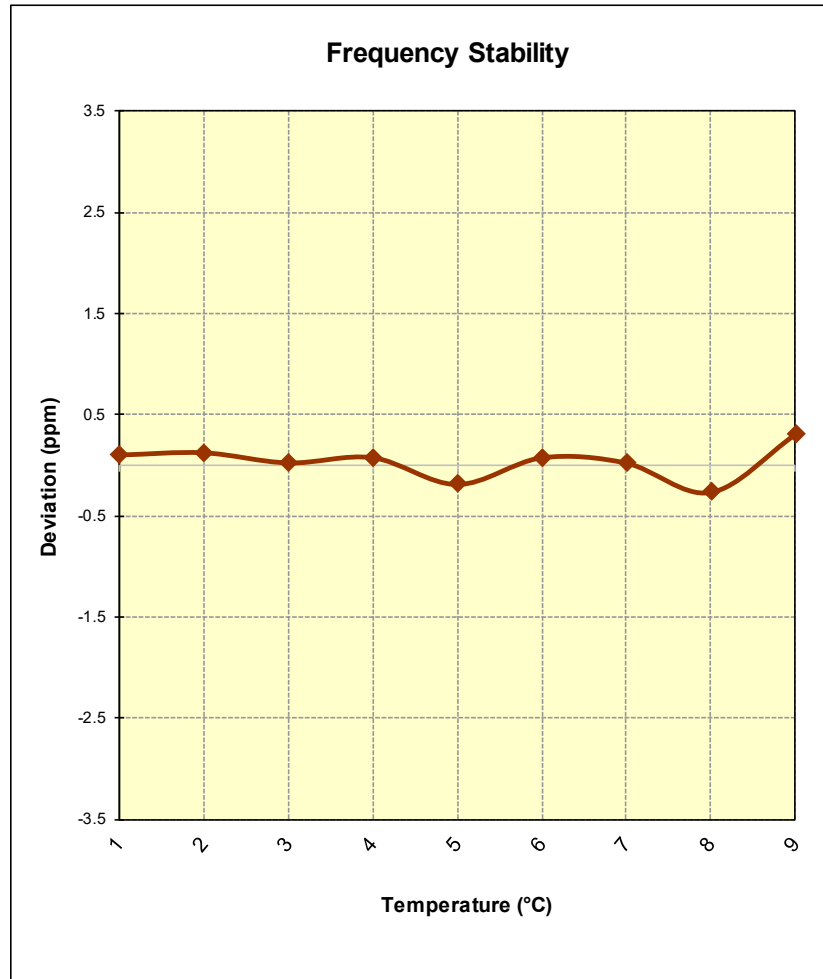


Figure 7-11. Frequency Stability Graph (Band 71)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 329 of 487

Band 12 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz
 CHANNEL: 23790
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	- 30	707,500,100	100	0.0000141
100 %		- 20	707,500,238	238	0.0000336
100 %		- 10	707,499,902	-98	-0.0000139
100 %		0	707,500,051	51	0.0000072
100 %		+ 10	707,499,775	-225	-0.0000318
100 %		+ 20	707,500,168	168	0.0000237
100 %		+ 30	707,500,031	31	0.0000044
100 %		+ 40	707,499,991	-9	-0.0000013
100 %		+ 50	707,500,040	40	0.0000057
BATT. ENDPOINT	2.76	+ 20	707,499,702	-298	-0.0000421

Table 7-58. 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: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 330 of 487

Band 12 Frequency Stability Measurements

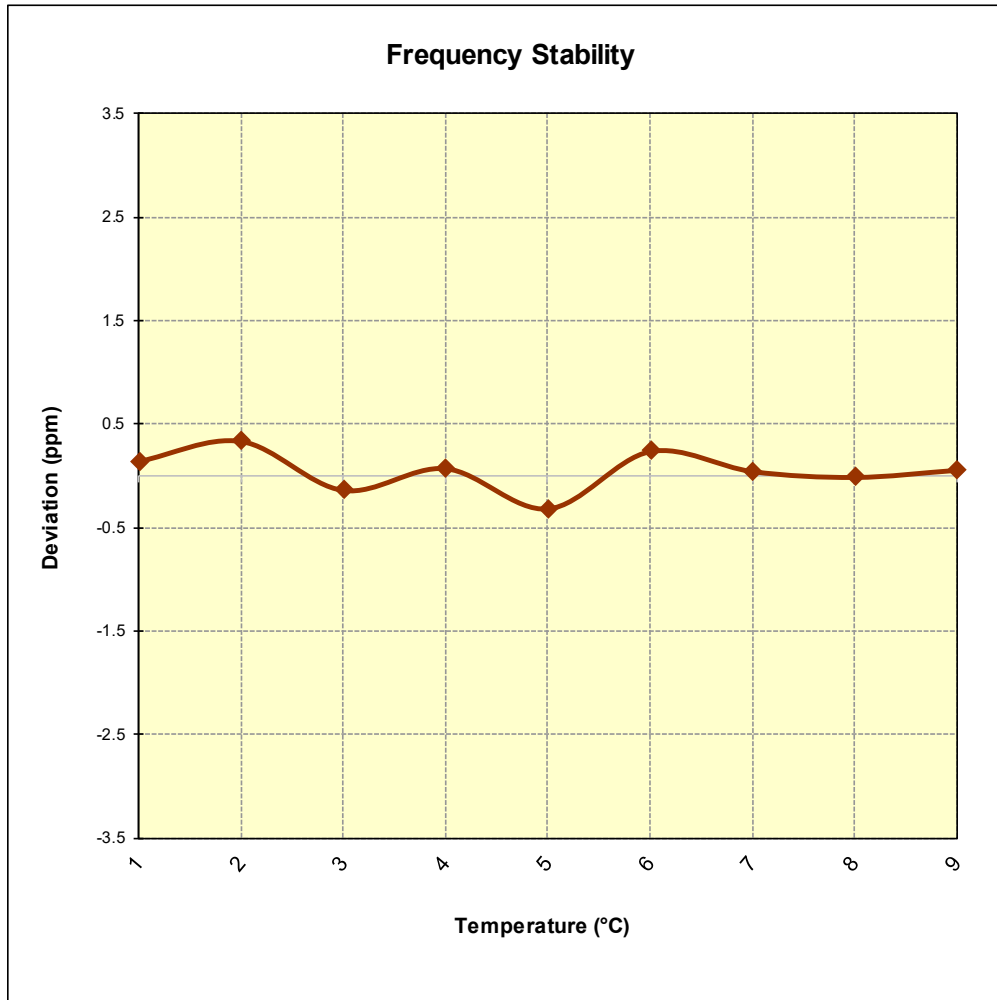


Figure 7-12. Frequency Stability Graph (Band 12)

FCC ID: A3LSMG981U		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: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	- 30	781,999,854	-146	-0.0000187
100 %		- 20	781,999,945	-55	-0.0000070
100 %		- 10	782,000,275	275	0.0000352
100 %		0	782,000,201	201	0.0000257
100 %		+ 10	781,999,838	-162	-0.0000207
100 %		+ 20	782,000,093	93	0.0000119
100 %		+ 30	782,000,205	205	0.0000262
100 %		+ 40	781,999,772	-228	-0.0000292
100 %		+ 50	781,999,980	-20	-0.0000026
BATT. ENDPOINT	2.76	+ 20	782,000,164	164	0.0000210

Table 7-59. 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: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 332 of 487

Band 13 Frequency Stability Measurements

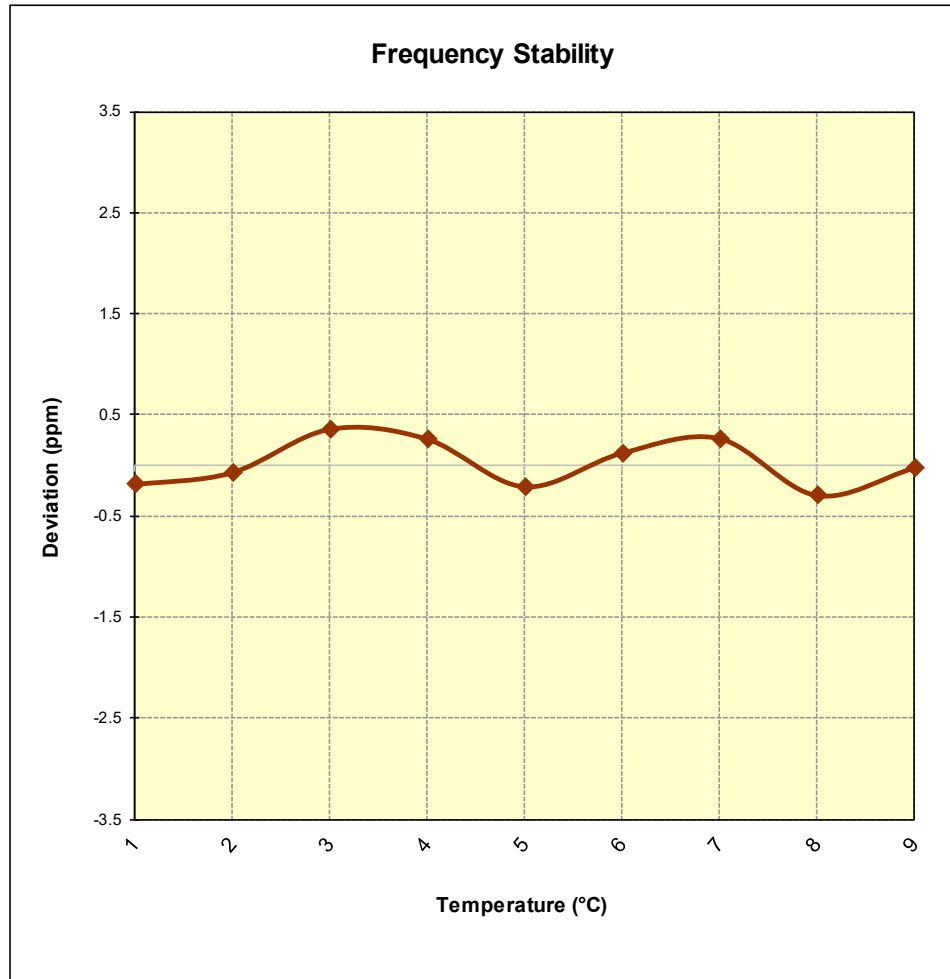


Figure 7-13. Frequency Stability Graph (Band 13)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 333 of 487

Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY: 831,500,000 Hz
 CHANNEL: 26865
 REFERENCE VOLTAGE: 3.80 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	- 30	831,500,062	62	0.0000075
100 %		- 20	831,500,307	307	0.0000369
100 %		- 10	831,500,116	116	0.0000140
100 %		0	831,499,886	-114	-0.0000137
100 %		+ 10	831,499,652	-348	-0.0000419
100 %		+ 20	831,500,394	394	0.0000474
100 %		+ 30	831,500,179	179	0.0000215
100 %		+ 40	831,500,348	348	0.0000419
100 %		+ 50	831,500,159	159	0.0000191
BATT. ENDPOINT	2.76	+ 20	831,499,912	-88	-0.0000106

Table 7-60. Frequency Stability Data (Band 26/5)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 334 of 487

Band 26/5 Frequency Stability Measurements

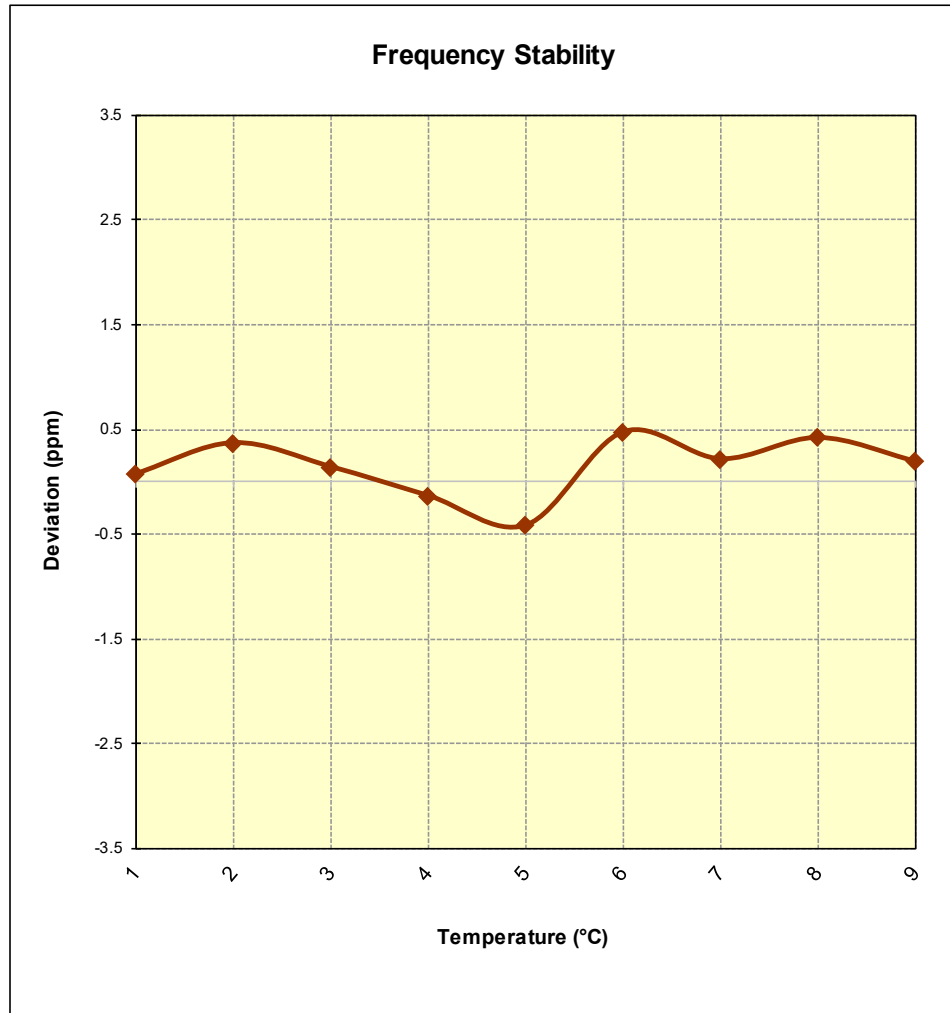


Figure 7-14. Frequency Stability Graph (Band 26/5)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 335 of 487

Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz
 CHANNEL: 132322
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	- 30	1,745,000,126	126	0.0000072
100 %		- 20	1,744,999,918	-82	-0.0000047
100 %		- 10	1,745,000,173	173	0.0000099
100 %		0	1,745,000,235	235	0.0000135
100 %		+ 10	1,745,000,034	34	0.0000019
100 %		+ 20	1,744,999,944	-56	-0.0000032
100 %		+ 30	1,745,000,064	64	0.0000037
100 %		+ 40	1,744,999,981	-19	-0.0000011
100 %		+ 50	1,745,000,111	111	0.0000064
BATT. ENDPOINT	2.76	+ 20	1,744,999,973	-27	-0.0000015

Table 7-61. 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: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset	Page 336 of 487	

Band 66/4 Frequency Stability Measurements

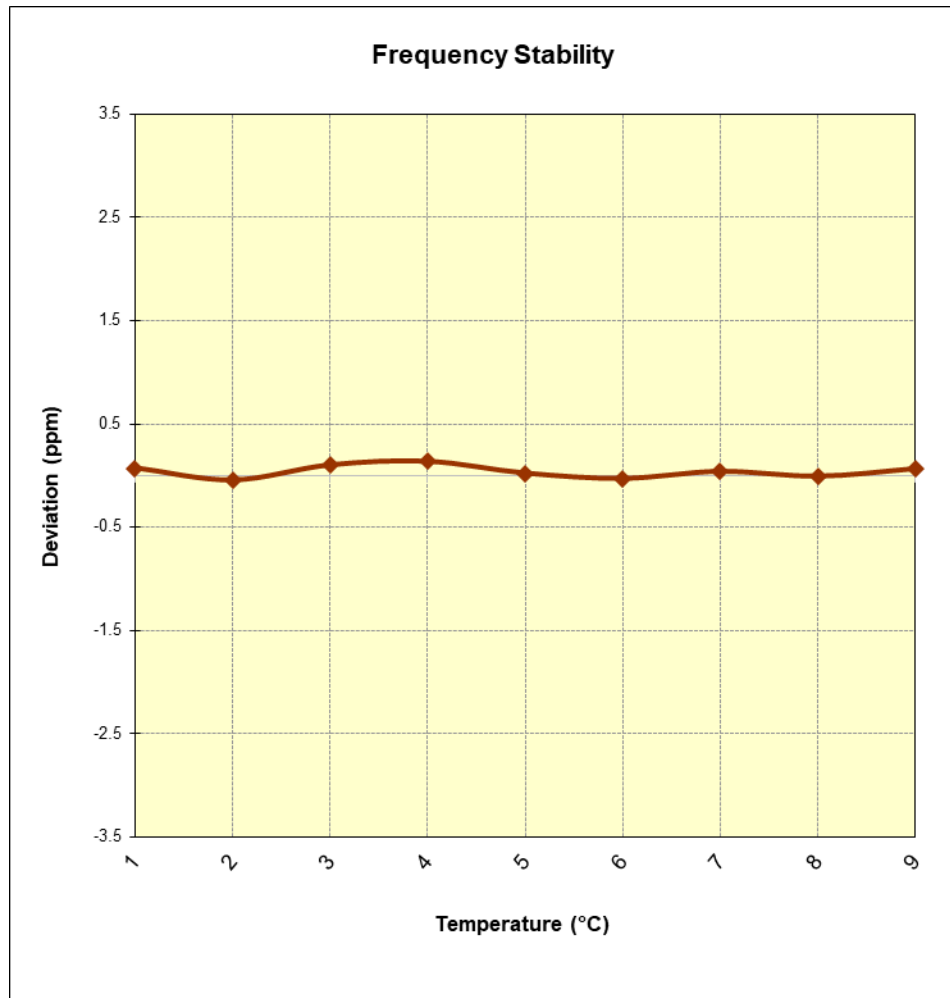


Figure 7-15. Frequency Stability Graph (Band 66/4)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 337 of 487

Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,882,500,000 Hz
 CHANNEL: 26365
 REFERENCE VOLTAGE: 3.80 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	- 30	1,882,499,924	-76	-0.0000040
100 %		- 20	1,882,500,157	157	0.0000083
100 %		- 10	1,882,499,952	-48	-0.0000025
100 %		0	1,882,500,242	242	0.0000129
100 %		+ 10	1,882,500,079	79	0.0000042
100 %		+ 20	1,882,500,033	33	0.0000018
100 %		+ 30	1,882,499,656	-344	-0.0000183
100 %		+ 40	1,882,499,702	-298	-0.0000158
100 %		+ 50	1,882,500,366	366	0.0000194
BATT. ENDPOINT	2.76	+ 20	1,882,499,907	-93	-0.0000049

Table 7-62. Frequency Stability Data (Band 25/2)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 338 of 487

Band 25/2 Frequency Stability Measurements

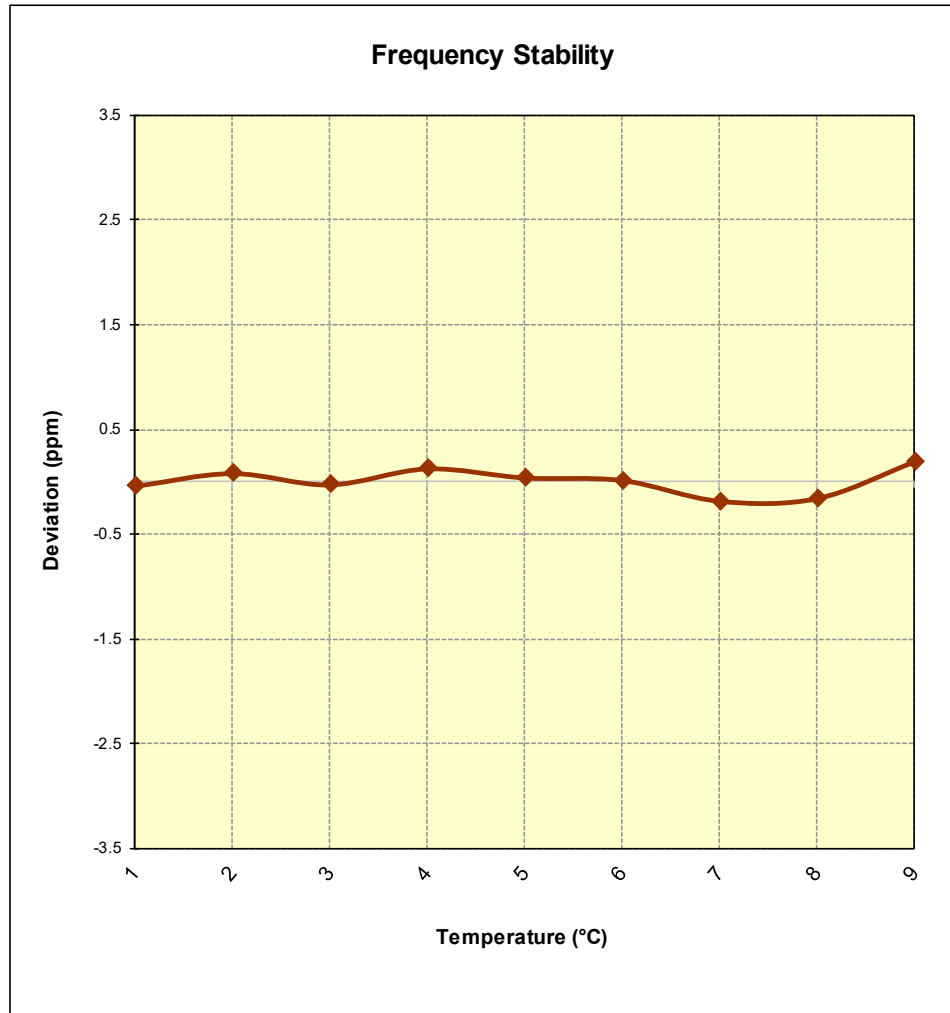


Figure 7-16. Frequency Stability Graph (Band 25/2)

FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 339 of 487

Band 30 Frequency Stability Measurements

OPERATING FREQUENCY: 2,310,000,000 Hz
 CHANNEL: 27710
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	- 30	2,309,999,604	-396	-0.0000171
100 %		- 20	2,309,999,934	-66	-0.0000029
100 %		- 10	2,309,999,597	-403	-0.0000174
100 %		0	2,309,999,797	-203	-0.0000088
100 %		+ 10	2,309,999,683	-317	-0.0000137
100 %		+ 20	2,309,999,884	-116	-0.0000050
100 %		+ 30	2,309,999,999	-1	0.0000000
100 %		+ 40	2,309,999,940	-60	-0.0000026
100 %		+ 50	2,309,999,921	-79	-0.0000034
BATT. ENDPOINT	2.76	+ 20	2,309,999,861	-139	-0.0000060

Table 7-63. 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.

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Band 30 Frequency Stability Measurements

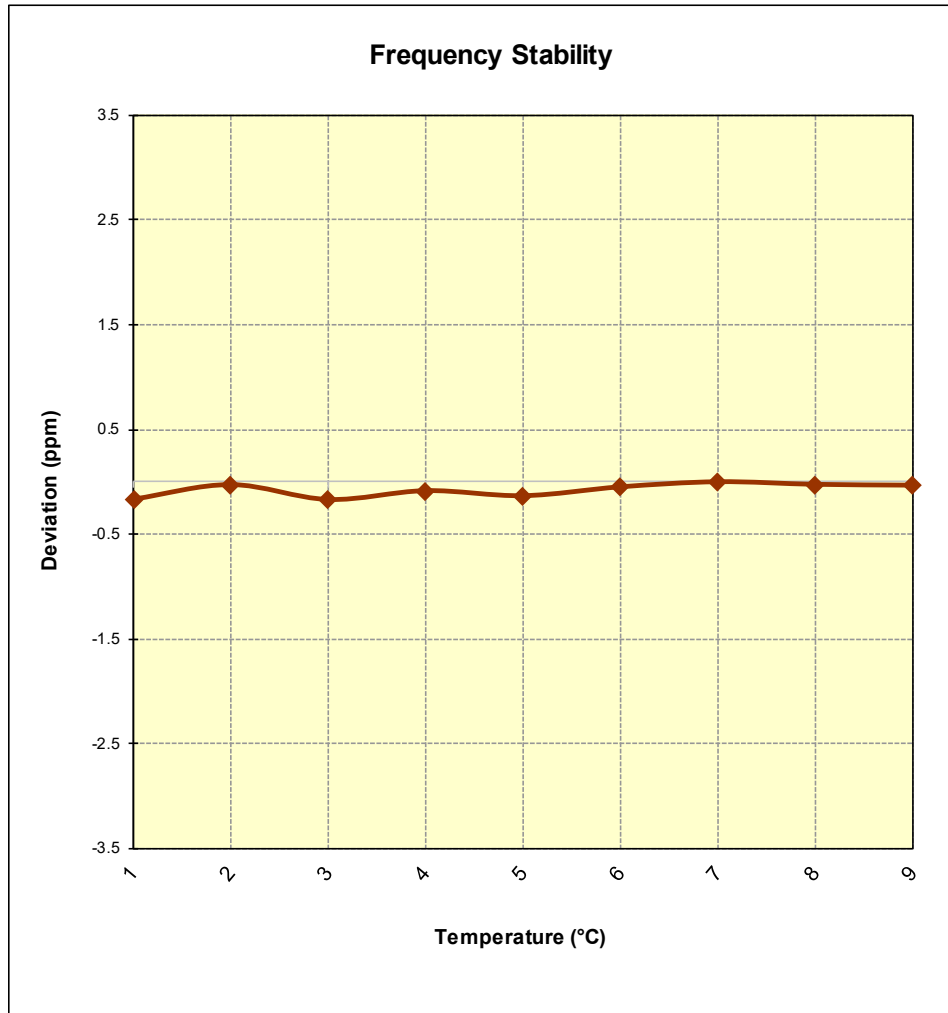


Figure 7-17. Frequency Stability Graph (Band 30)

FCC ID: A3LSMG981U		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: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	- 30	2,535,000,058	58	0.0000023
100 %		- 20	2,534,999,776	-224	-0.0000088
100 %		- 10	2,535,000,033	33	0.0000013
100 %		0	2,535,000,026	26	0.0000010
100 %		+ 10	2,535,000,035	35	0.0000014
100 %		+ 20	2,535,000,082	82	0.0000032
100 %		+ 30	2,534,999,973	-27	-0.0000011
100 %		+ 40	2,535,000,191	191	0.0000075
100 %		+ 50	2,534,999,552	-448	-0.0000177
BATT. ENDPOINT	2.76	+ 20	2,534,999,873	-127	-0.0000050

Table 7-64. 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: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 7 Frequency Stability Measurements

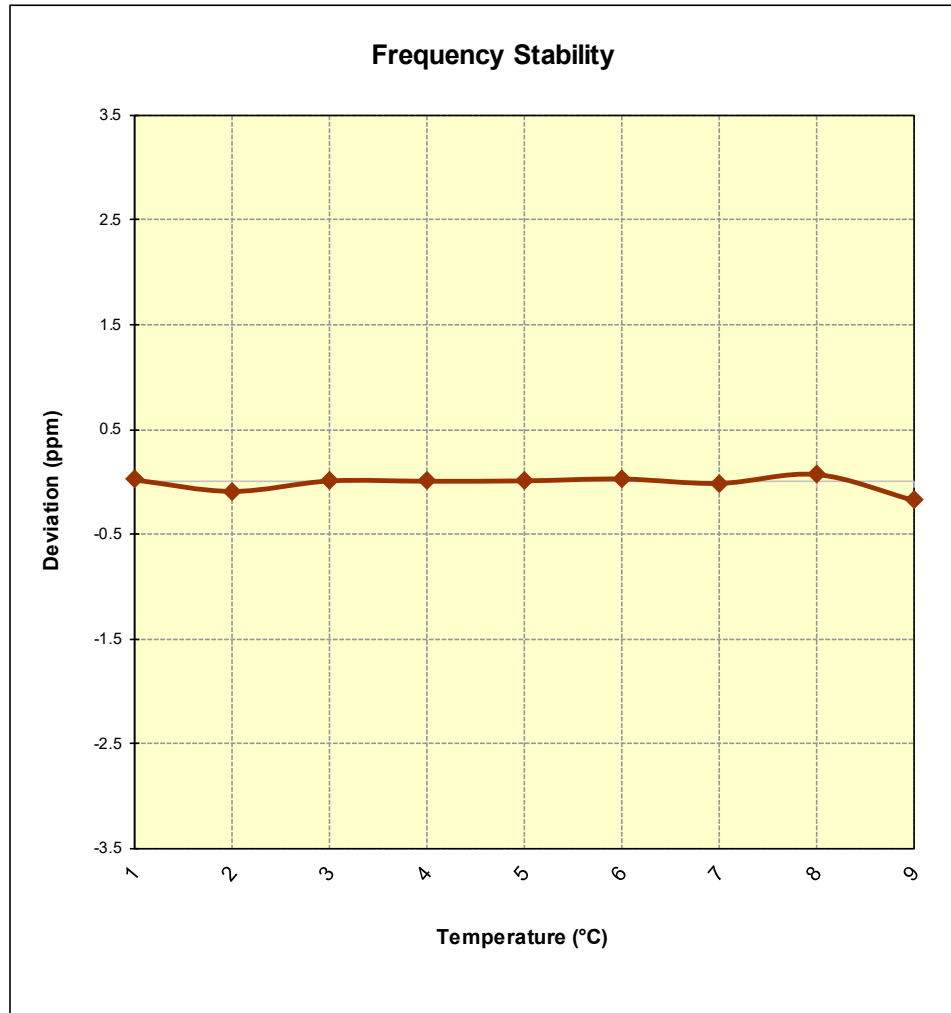


Figure 7-18. Frequency Stability Graph (Band 7)

FCC ID: A3LSMG981U		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: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	- 30	2,593,000,350	350	0.0000135
100 %		- 20	2,593,000,059	59	0.0000023
100 %		- 10	2,592,999,702	-298	-0.0000115
100 %		0	2,593,000,132	132	0.0000051
100 %		+ 10	2,593,000,273	273	0.0000105
100 %		+ 20	2,593,000,396	396	0.0000153
100 %		+ 30	2,593,000,048	48	0.0000019
100 %		+ 40	2,592,999,900	-100	-0.0000039
100 %		+ 50	2,593,000,351	351	0.0000135
BATT. ENDPOINT	2.76	+ 20	2,592,999,972	-28	-0.0000011

Table 7-65. 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.

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Band 41 Frequency Stability Measurements

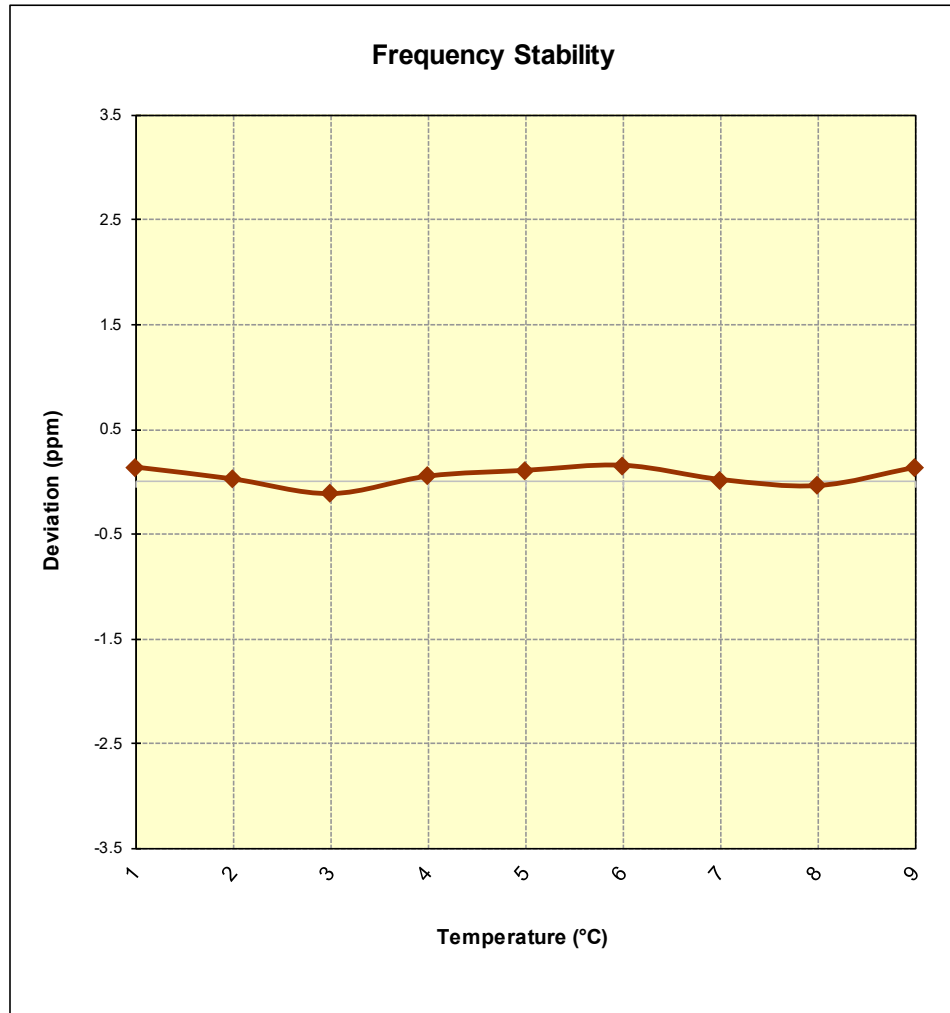


Figure 7-19. Frequency Stability Graph (Band 41)

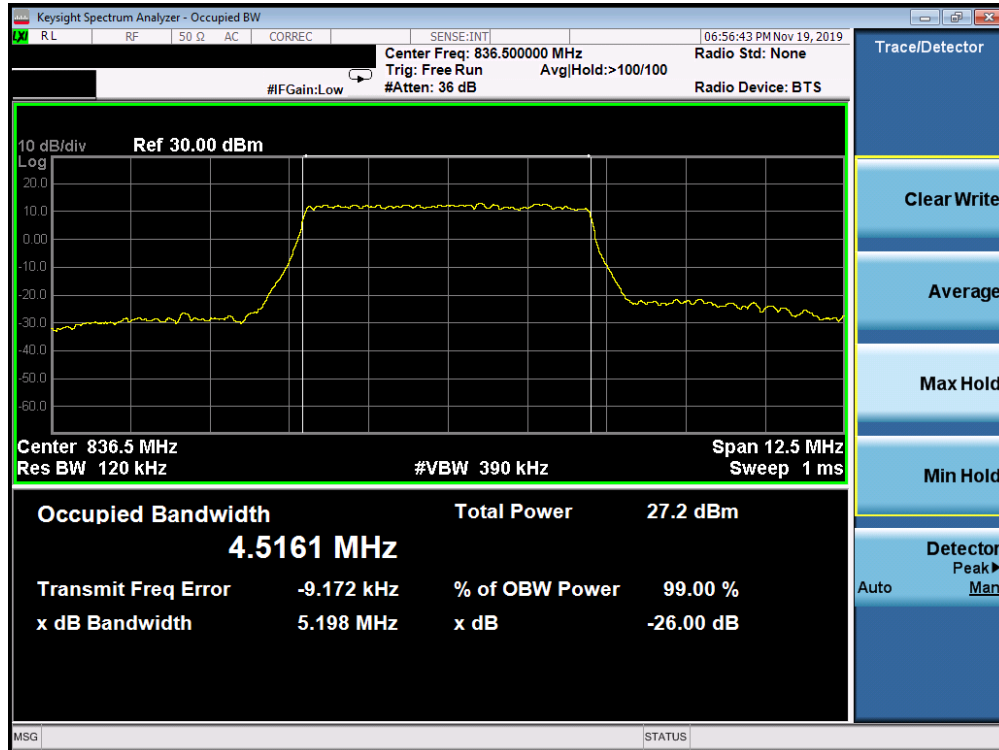
FCC ID: A3LSMG981U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.12 Sub 6GHz NR / EN-DC Test Results

Occupied Bandwidth

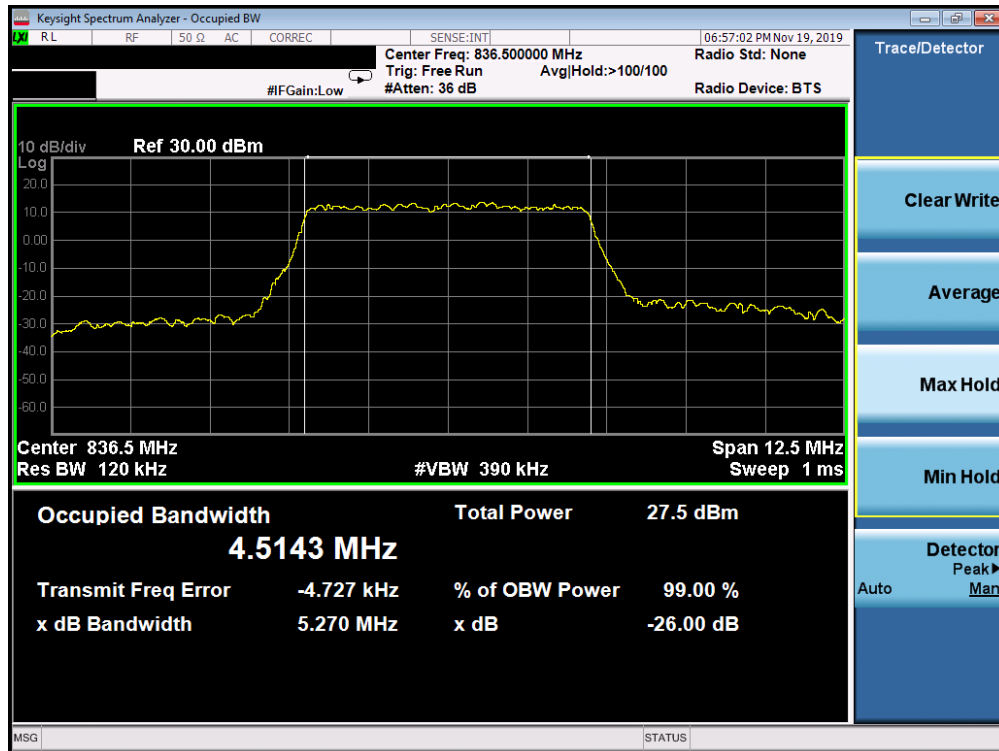
All SCS's and Waveforms (CP-OFDM vs DFT-s OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

NR Band n5

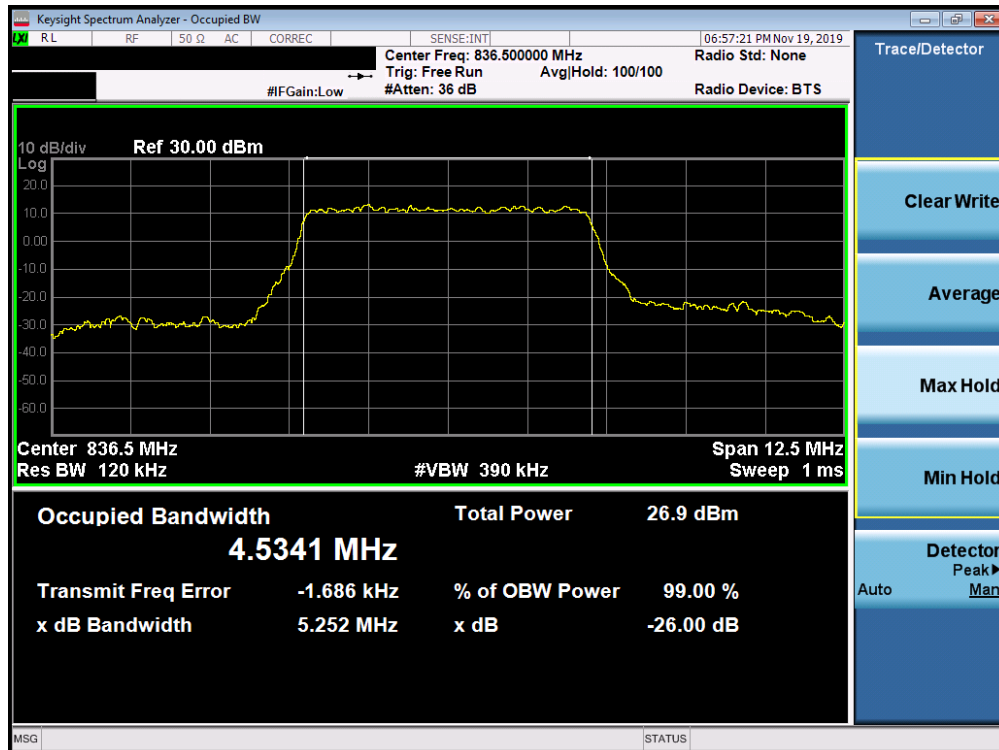


Plot 7-514. Occupied Bandwidth Plot (n5 5MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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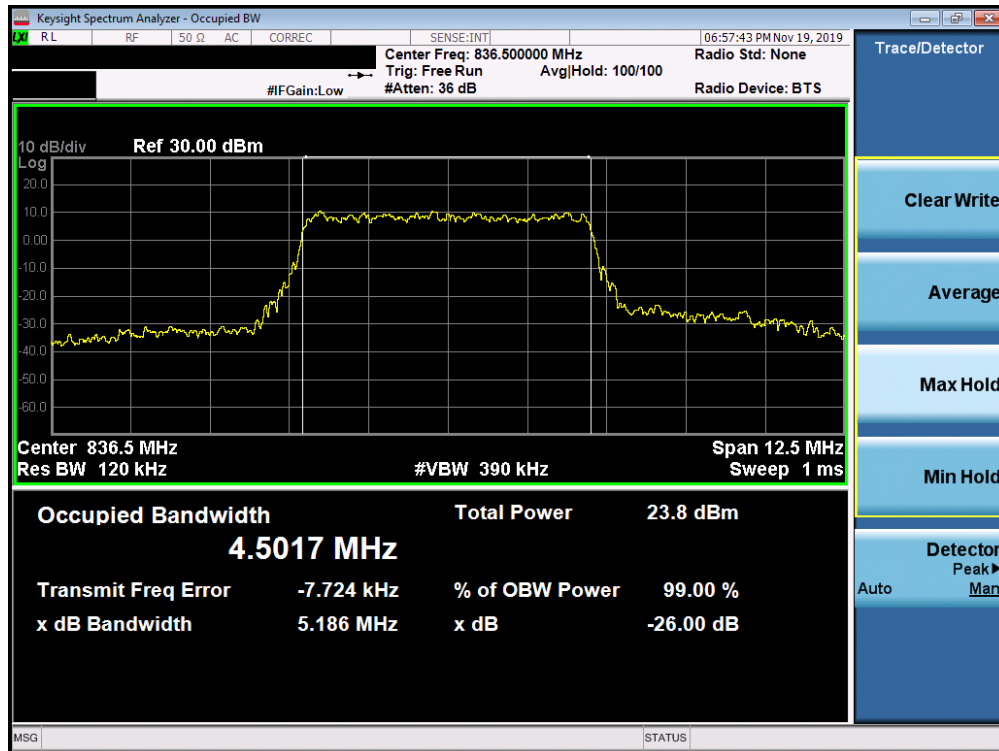


Plot 7-515. Occupied Bandwidth Plot (n5 5MHz 16QAM-CP-OFDM - Full RB Configuration)

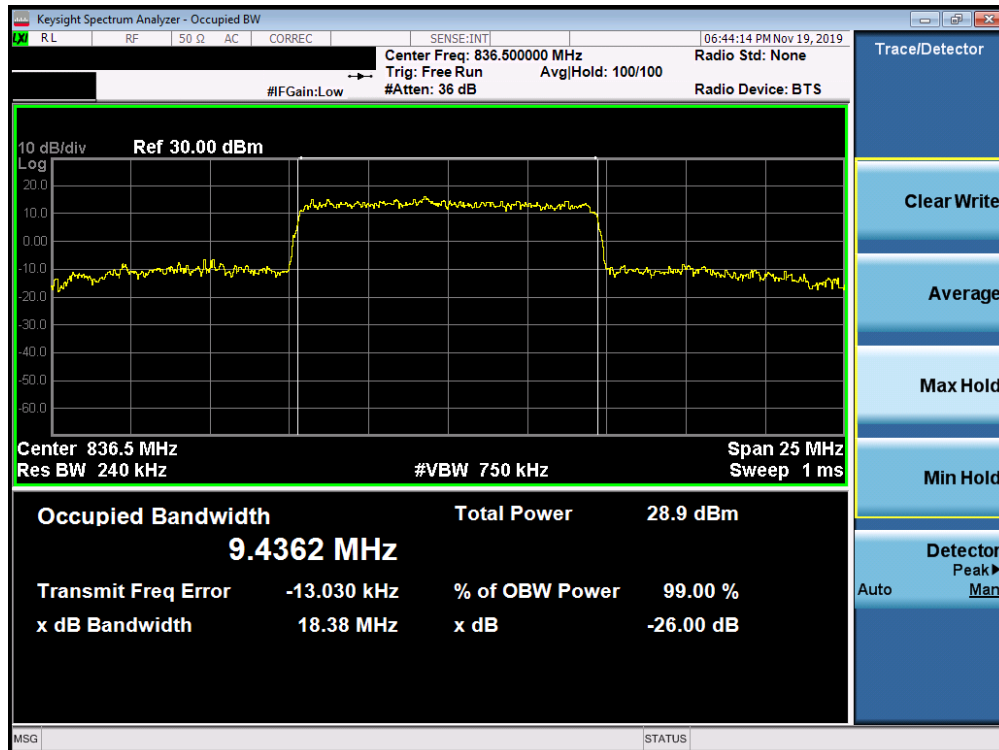


Plot 7-516. Occupied Bandwidth Plot (n5 5MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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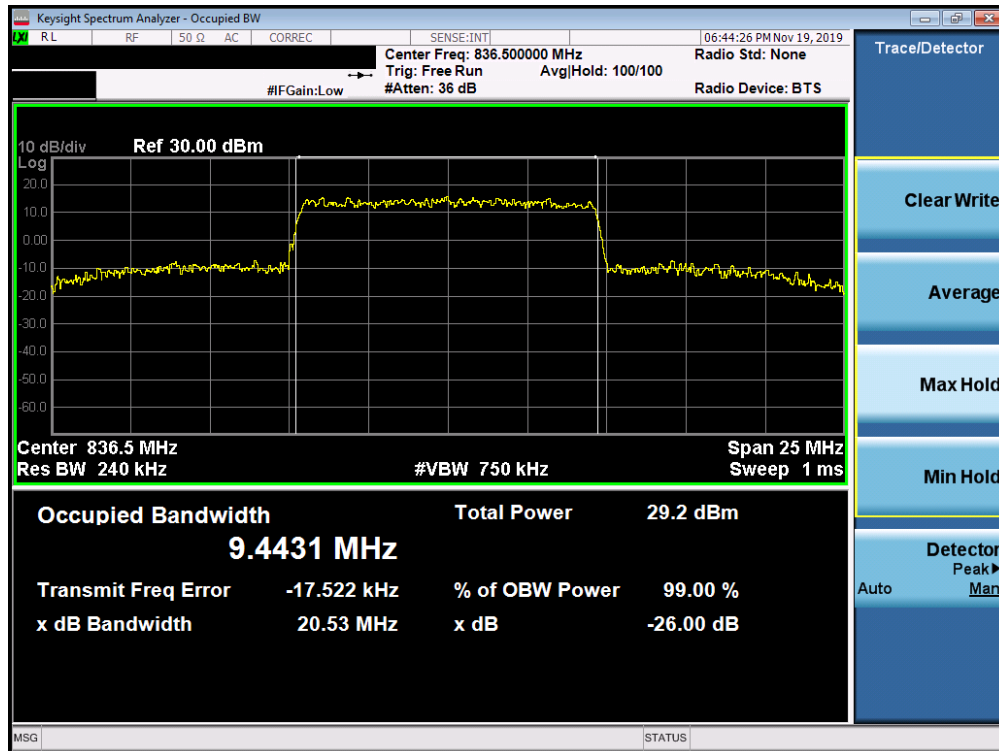


Plot 7-517. Occupied Bandwidth Plot (n5 5MHz 256QAM-CP-OFDM - Full RB Configuration)

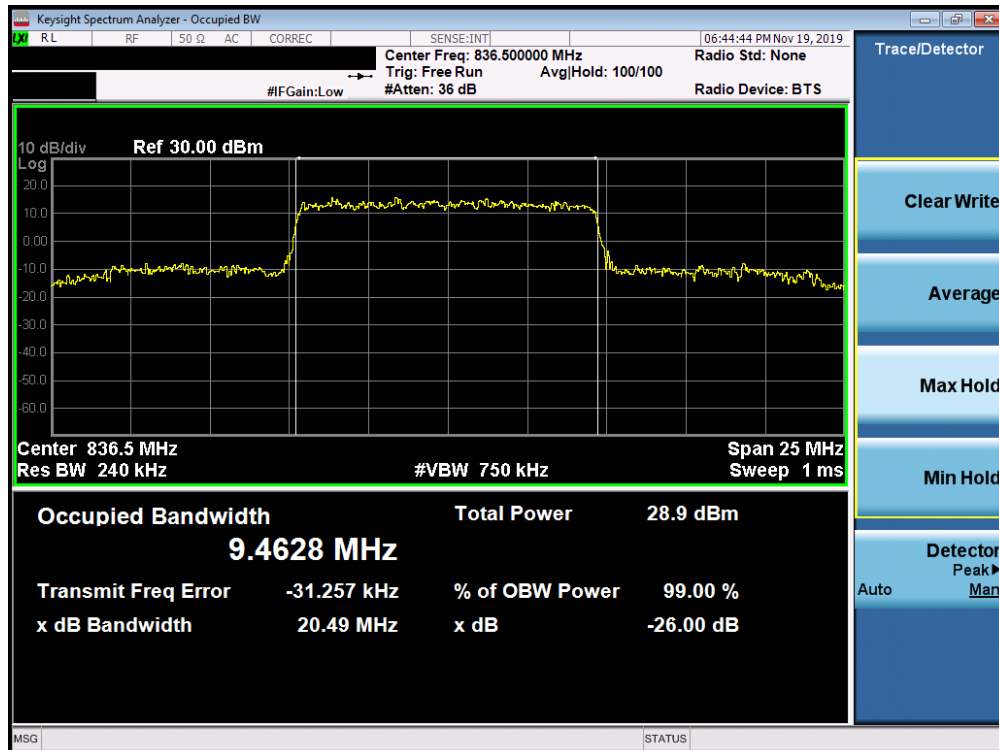


Plot 7-518. Occupied Bandwidth Plot (n5 10MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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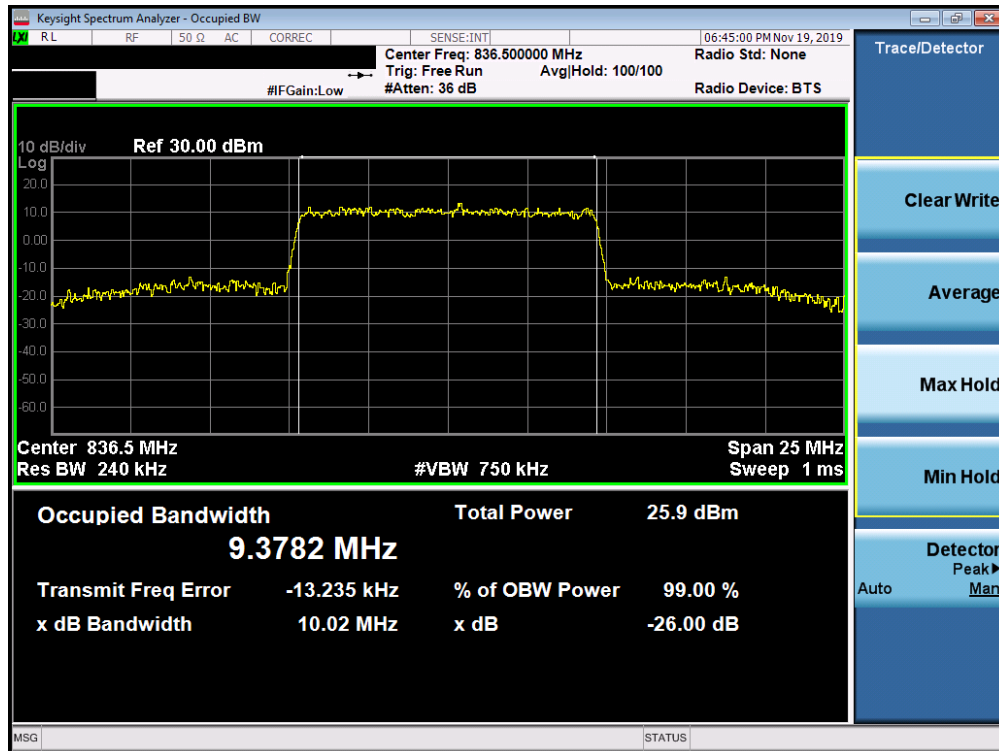


Plot 7-519. Occupied Bandwidth Plot (n5 10MHz 16QAM-CP-OFDM - Full RB Configuration)

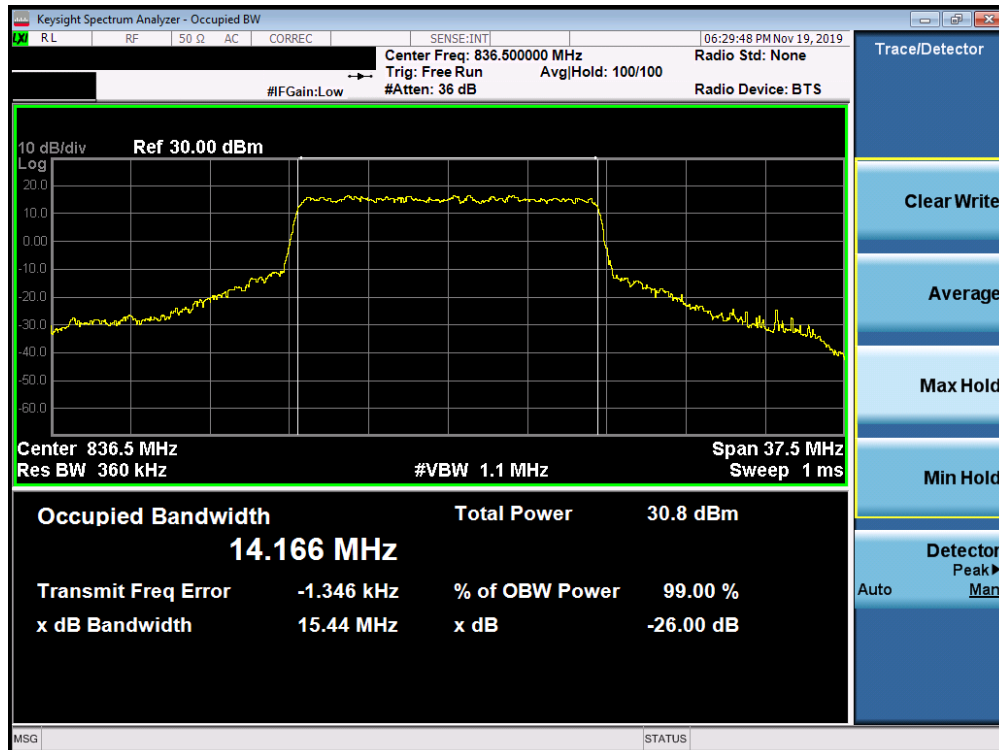


Plot 7-520. Occupied Bandwidth Plot (n5 10MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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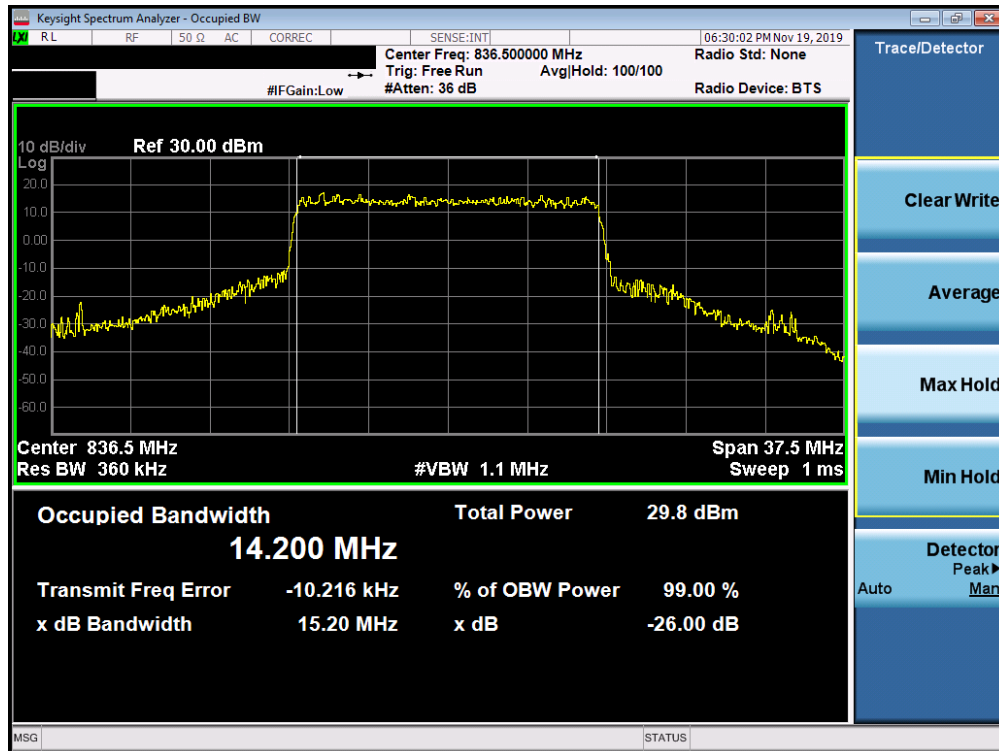


Plot 7-521. Occupied Bandwidth Plot (n5 10MHz 256QAM-CP-OFDM - Full RB Configuration)

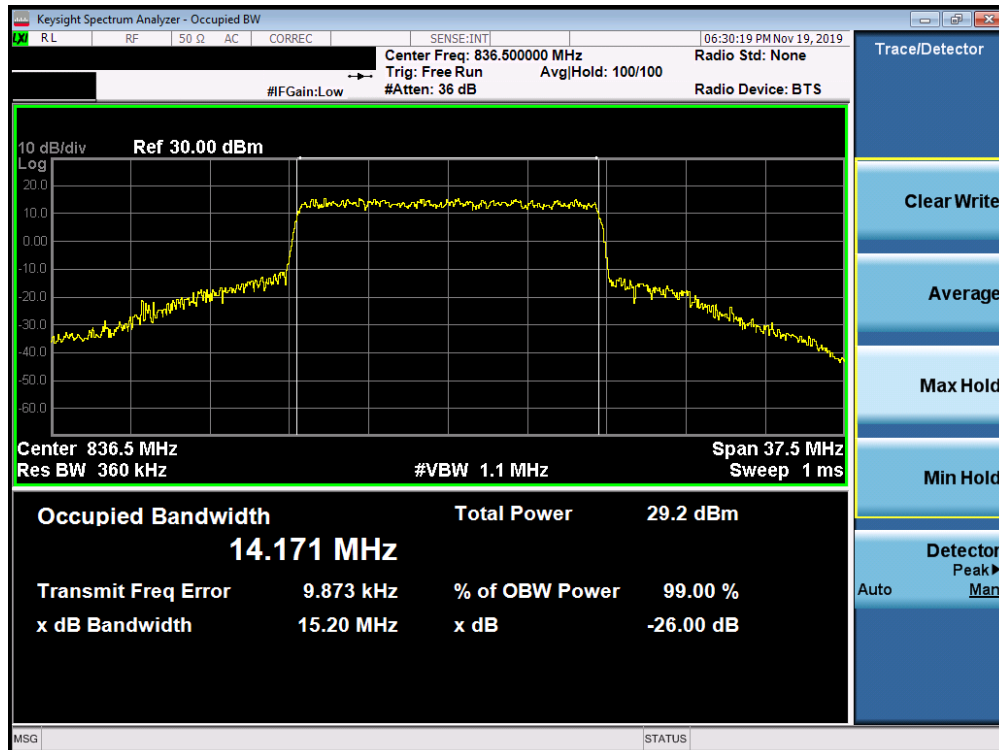


Plot 7-522. Occupied Bandwidth Plot (n5 15MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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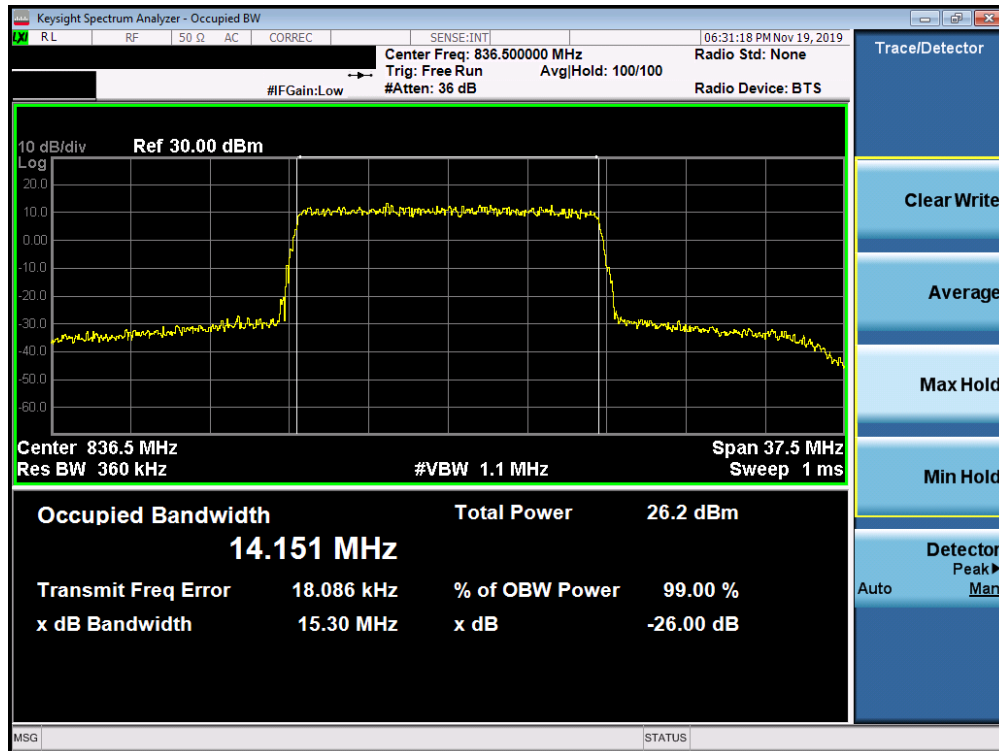


Plot 7-523. Occupied Bandwidth Plot (n5 15MHz 16QAM-CP-OFDM - Full RB Configuration)

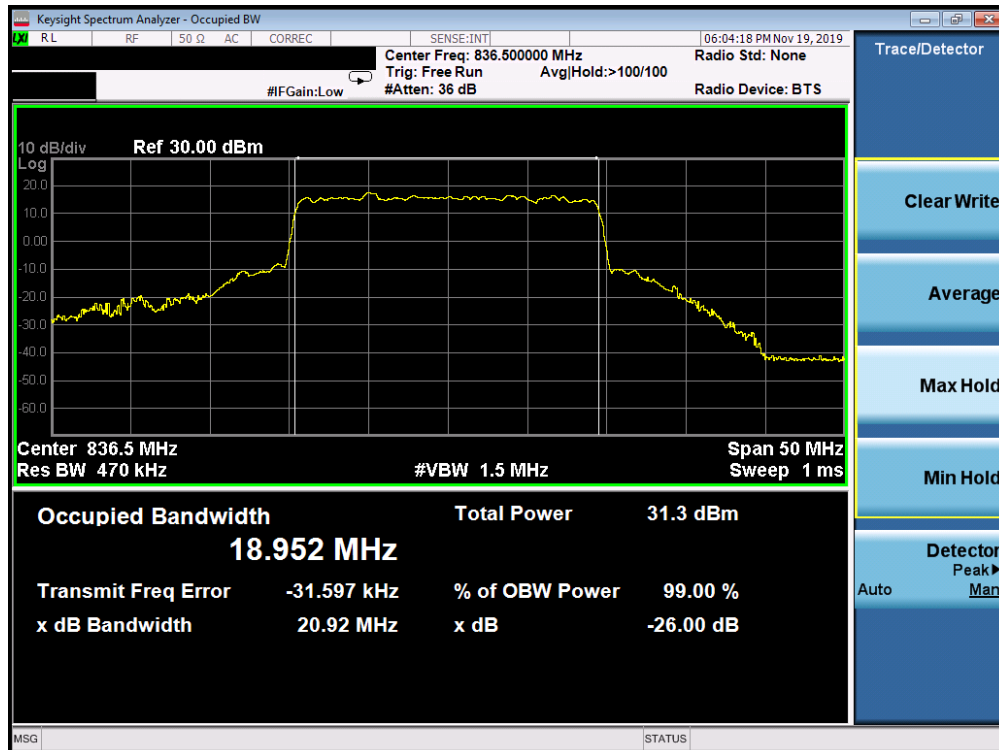


Plot 7-524. Occupied Bandwidth Plot (n5 15MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 351 of 487

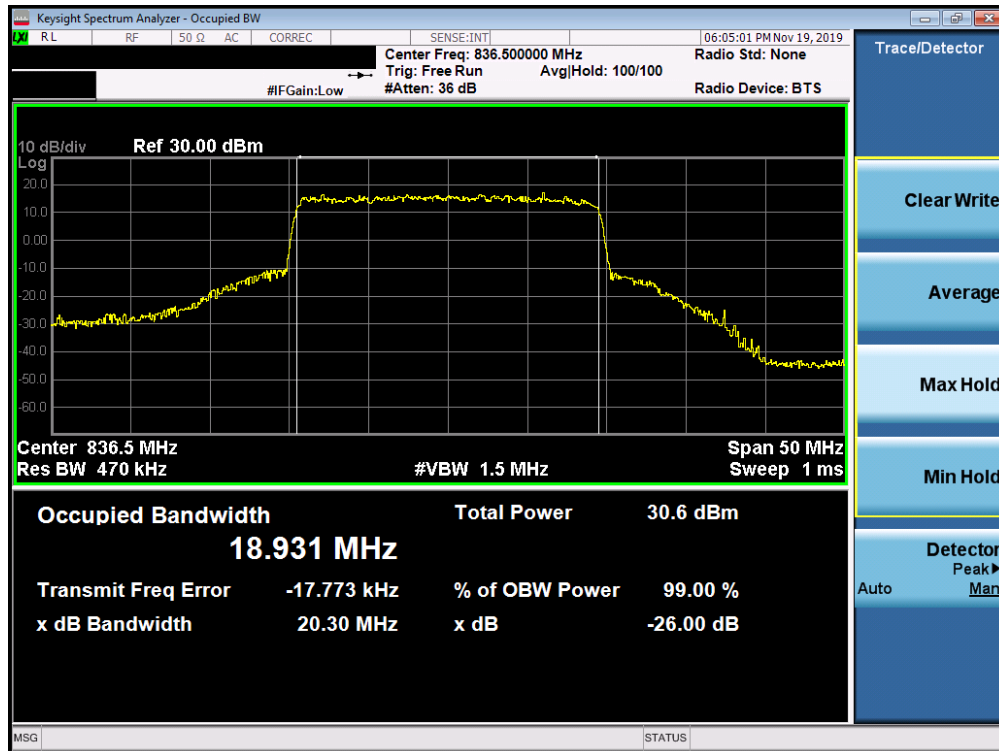


Plot 7-525. Occupied Bandwidth Plot (n5 15MHz 256QAM-CP-OFDM - Full RB Configuration)

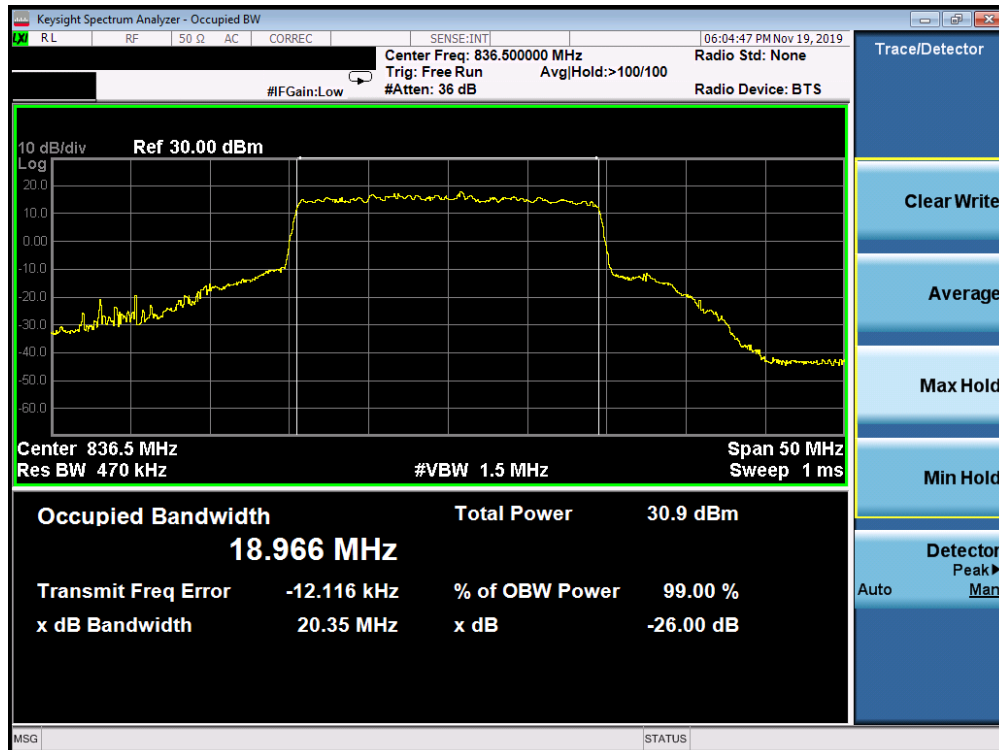


Plot 7-526. Occupied Bandwidth Plot (n5 20MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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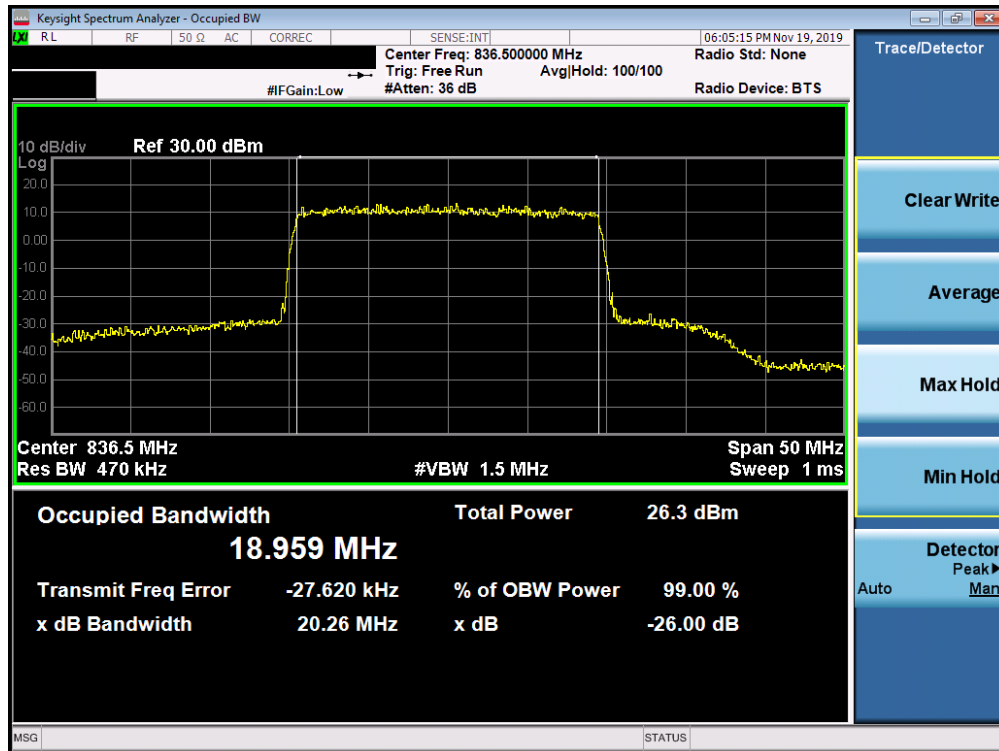


Plot 7-527. Occupied Bandwidth Plot (n5 20MHz 16QAM-CP-OFDM - Full RB Configuration)



Plot 7-528. Occupied Bandwidth Plot (n5 20MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-529. Occupied Bandwidth Plot (n5 20MHz 256QAM-CP-OFDM - Full RB Configuration)

FCC ID: A3LSMG981U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220165-03.A3L	Test Dates: 10/22 - 1/04/2020	EUT Type: Portable Handset		Page 354 of 487