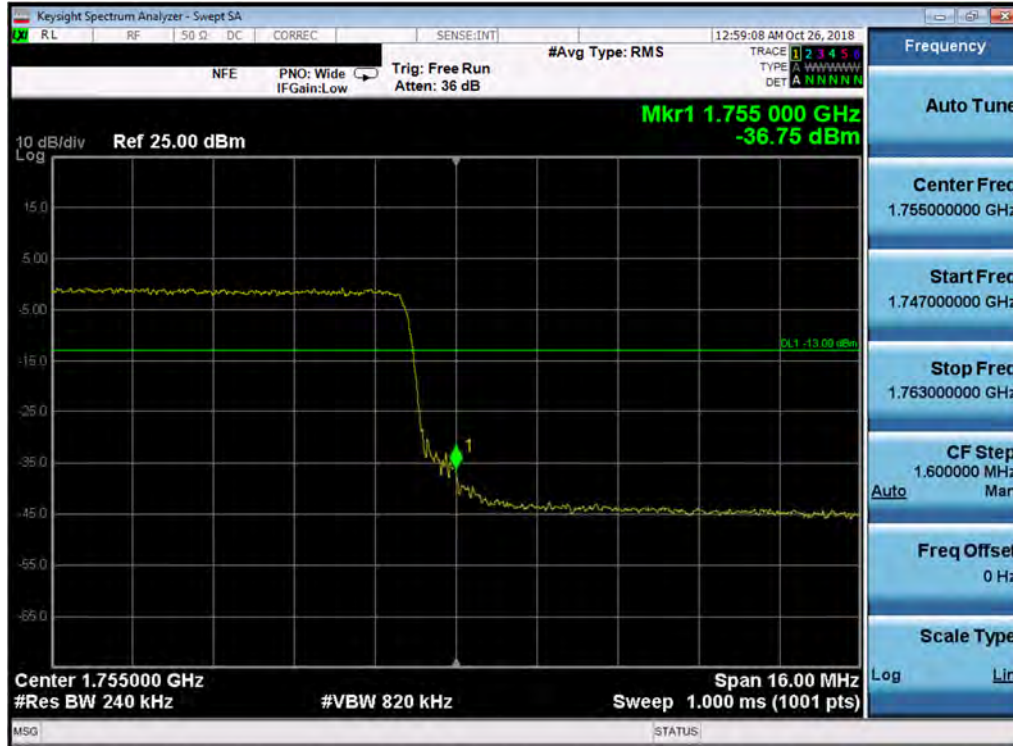
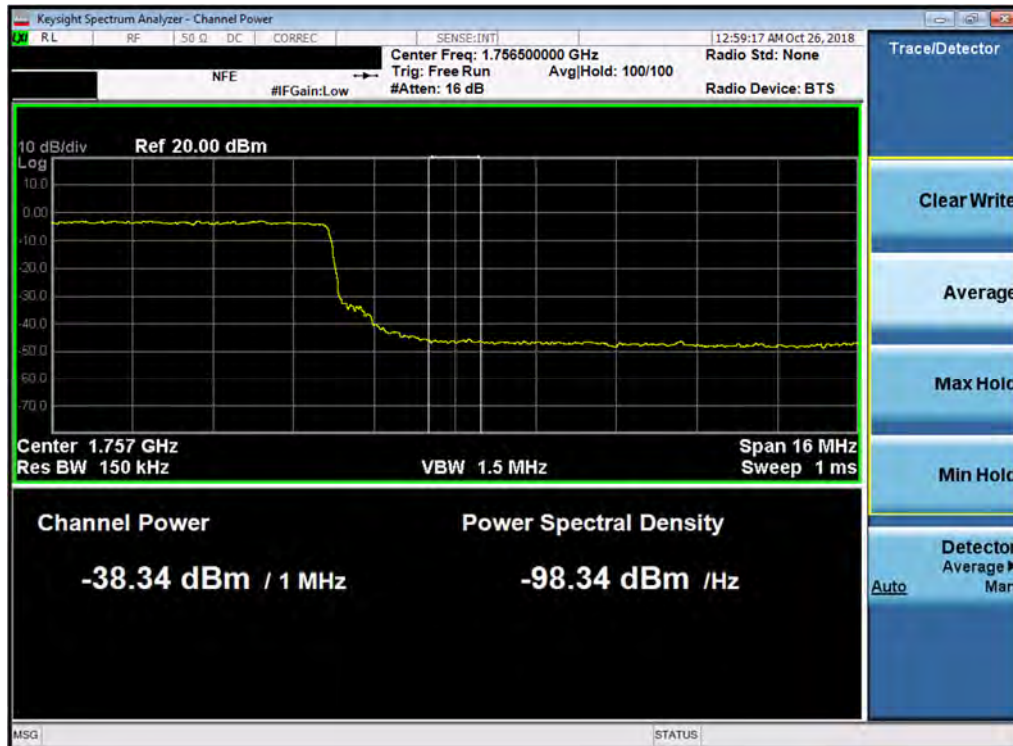




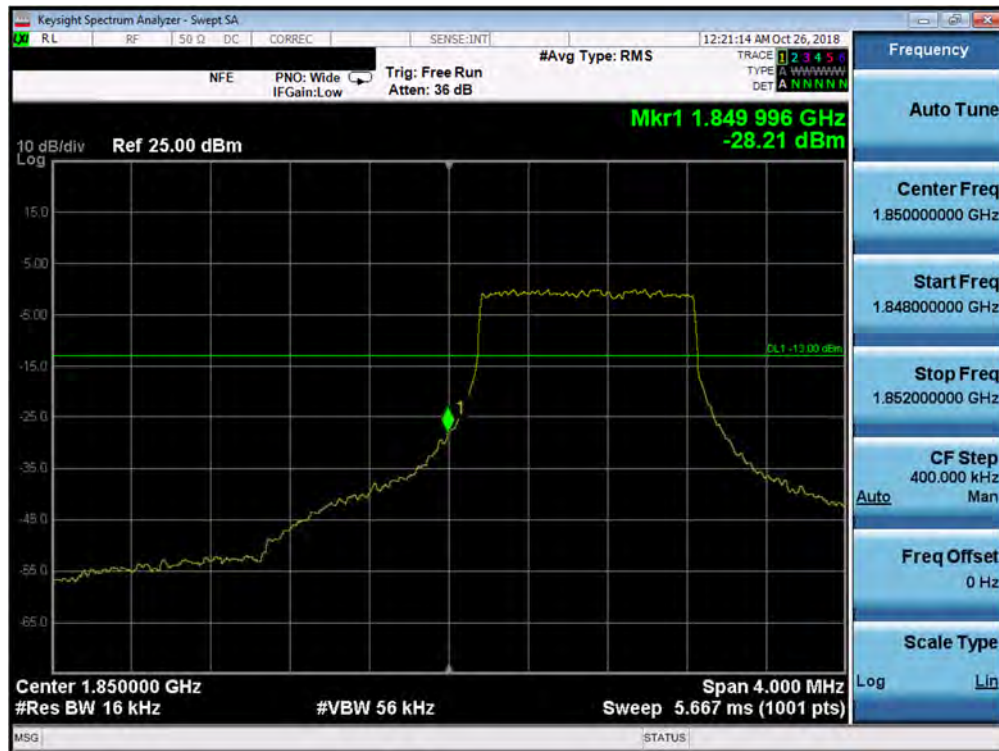
Plot 7-132. Upper Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)



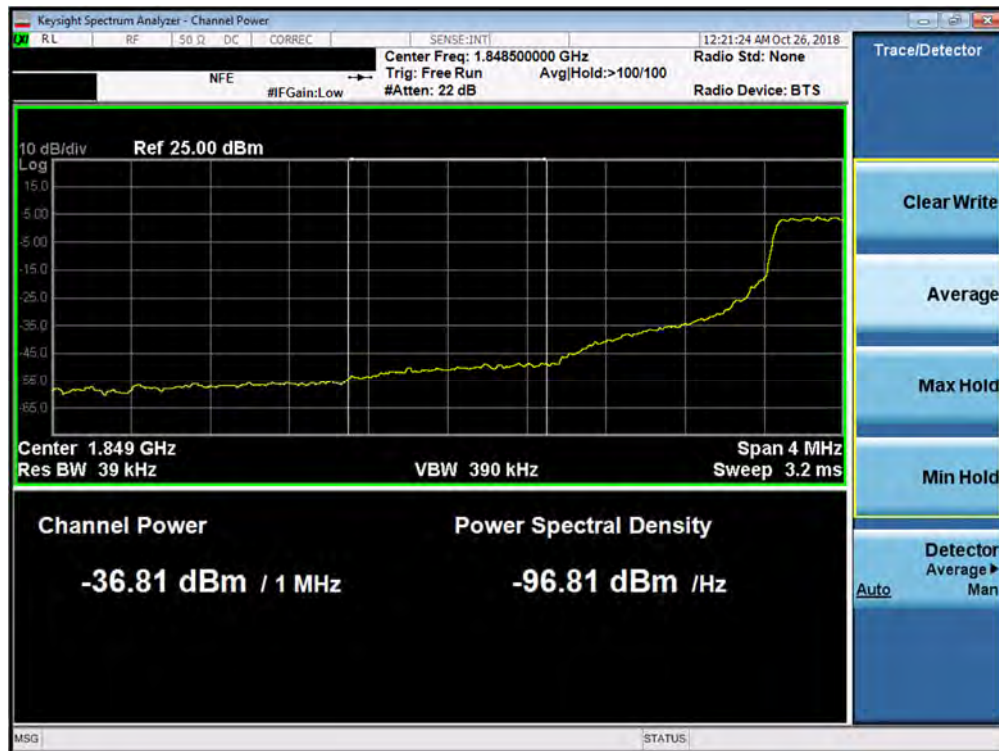
Plot 7-133. Upper Extended Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 88 of 147

Band 2



Plot 7-134. Lower Band Edge Plot (Band 2 – 1.4MHz QPSK - Full RB Configuration)

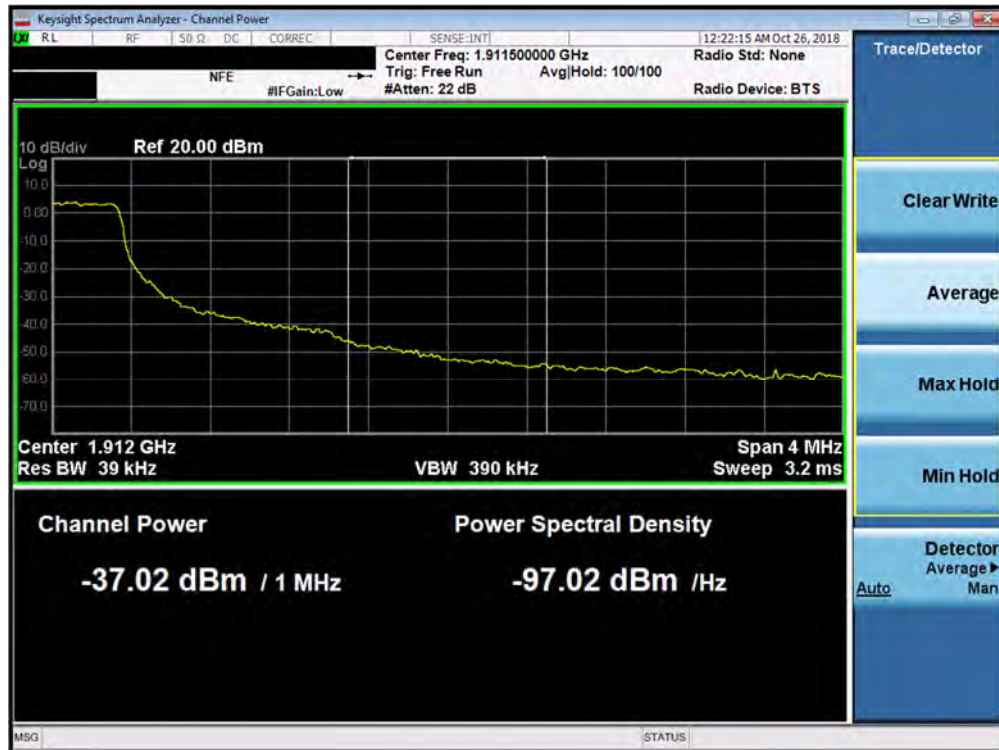


Plot 7-135. Lower Extended Band Edge Plot (Band 2 – 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 89 of 147

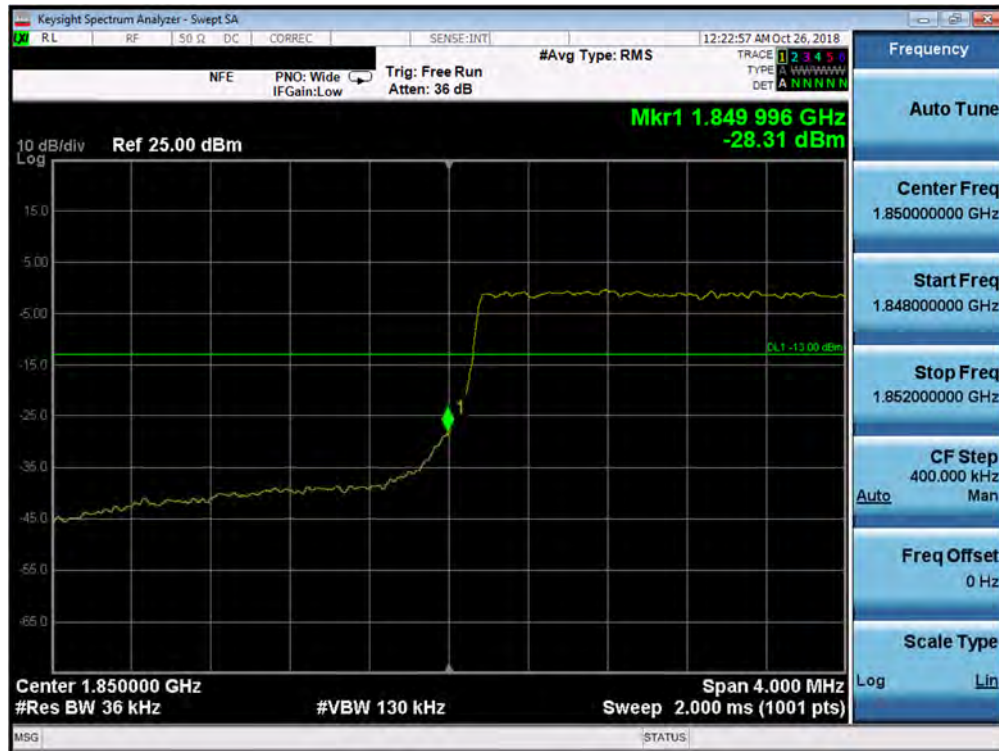


Plot 7-136. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-137. Upper Extended Band Edge Plot (Band 2 – 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 90 of 147



Plot 7-138. Lower Band Edge Plot (Band 2 –3.0MHz QPSK - Full RB Configuration)

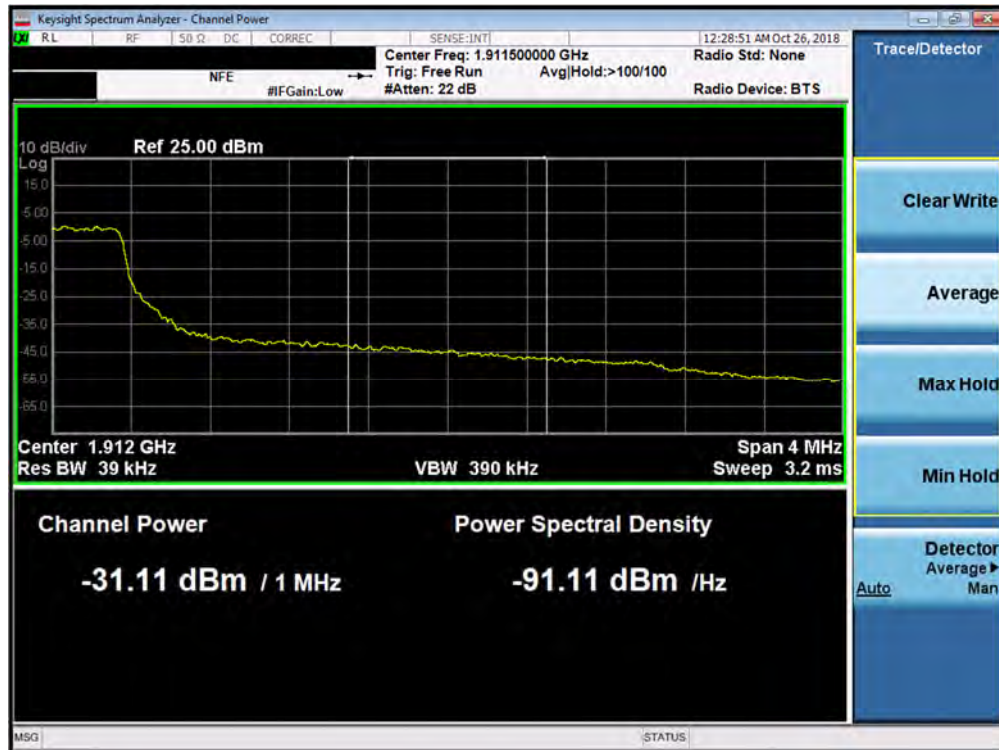


Plot 7-139. Lower Extended Band Edge Plot (Band 2 – 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 91 of 147

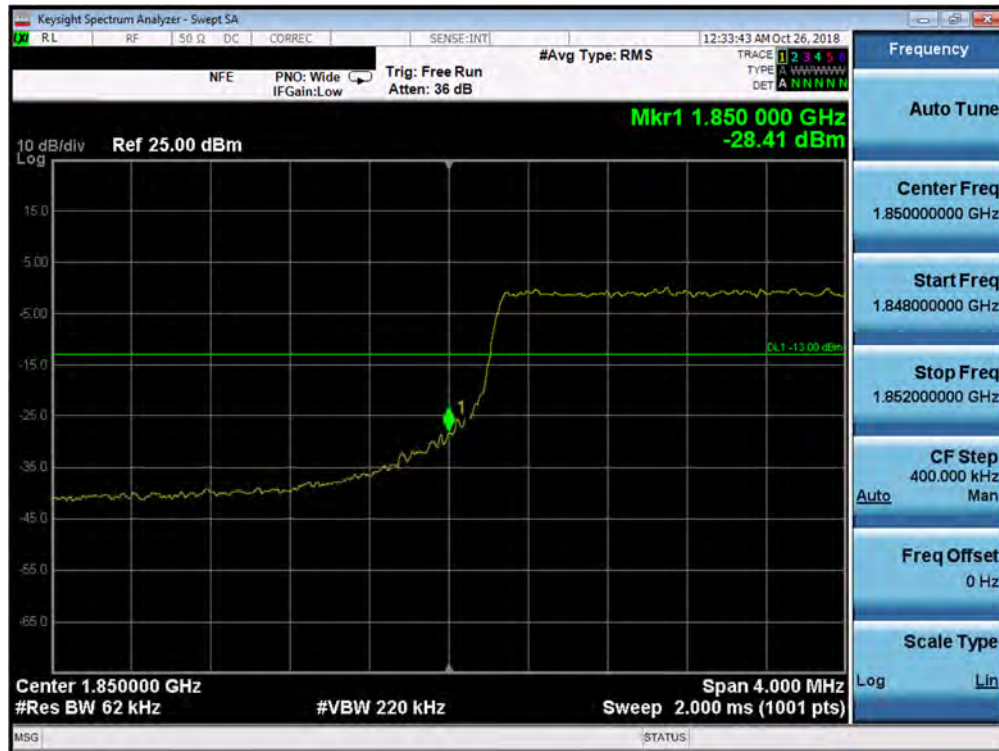


Plot 7-140. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

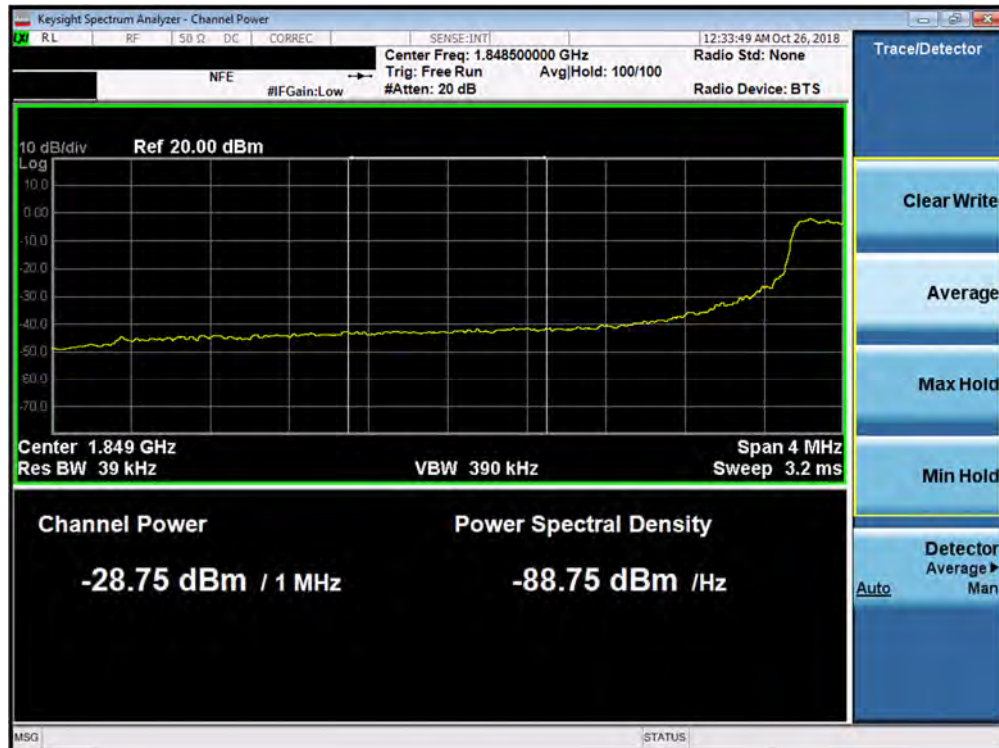


Plot 7-141. Upper Extended Band Edge Plot (Band 2 – 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 92 of 147



Plot 7-142. Lower Band Edge Plot (Band 2 – 5.0MHz QPSK - Full RB Configuration)

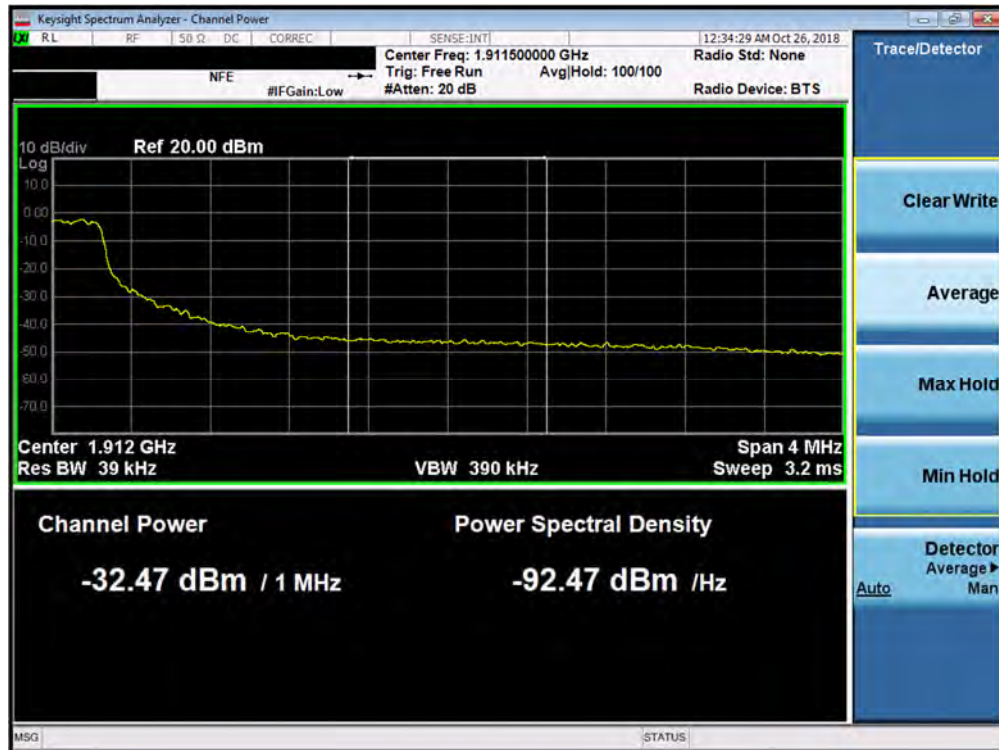


Plot 7-143. Lower Extended Band Edge Plot (Band 2 – 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 93 of 147

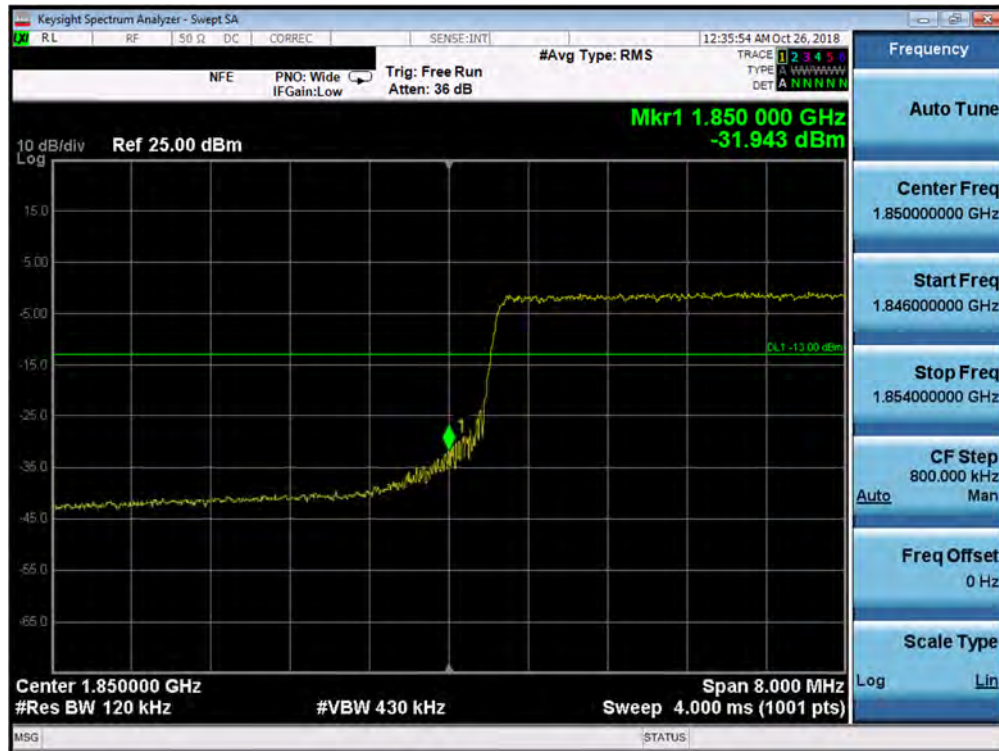


Plot 7-144. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

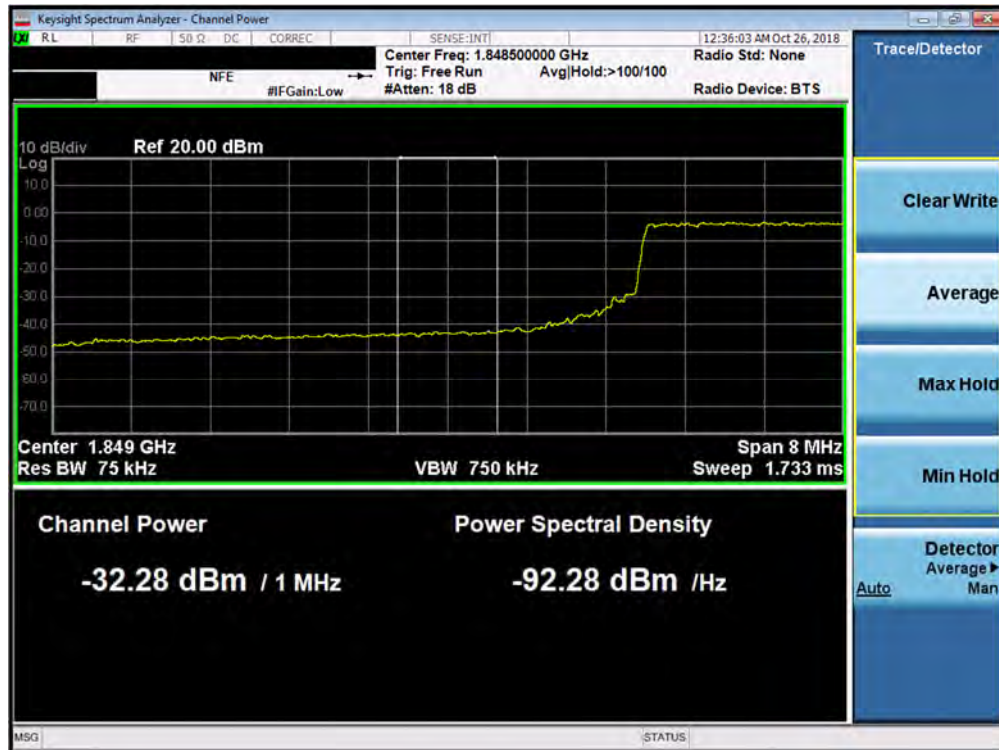


Plot 7-145. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 94 of 147

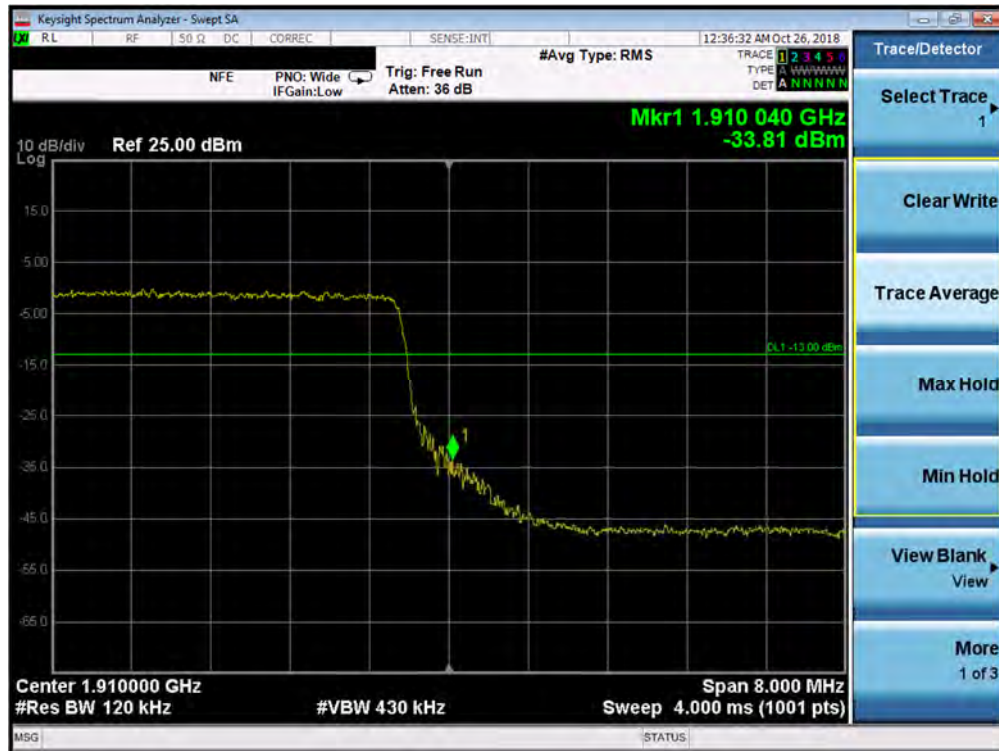


Plot 7-146. Lower Band Edge Plot (Band 2 –10.0MHz QPSK - Full RB Configuration)

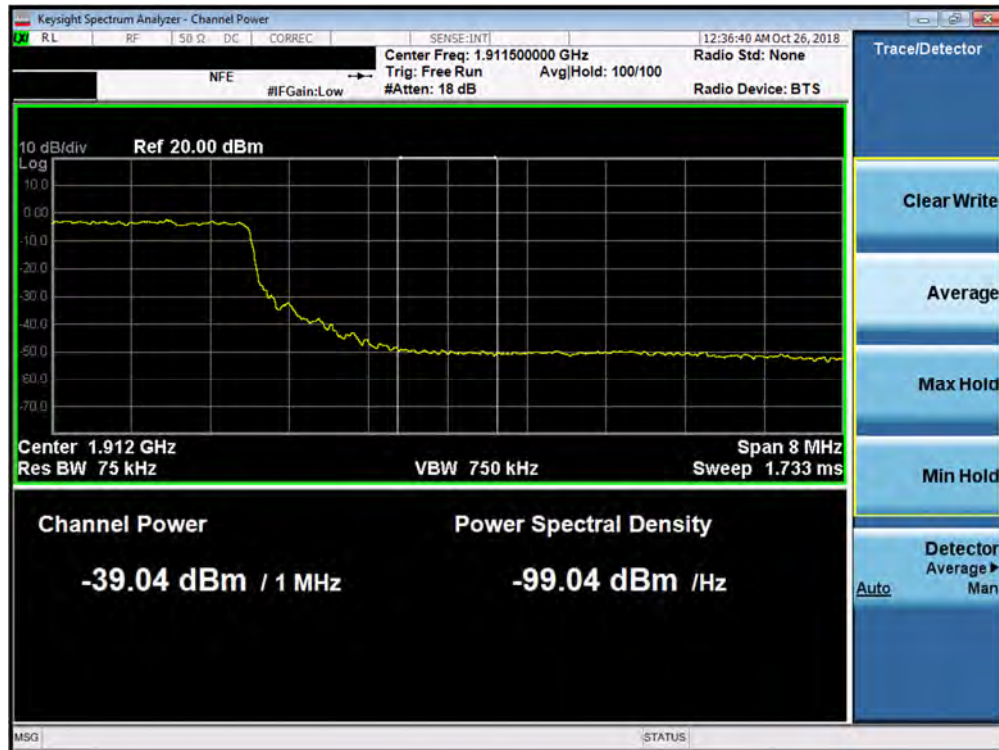


Plot 7-147. Lower Extended Band Edge Plot (Band 2 – 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 95 of 147

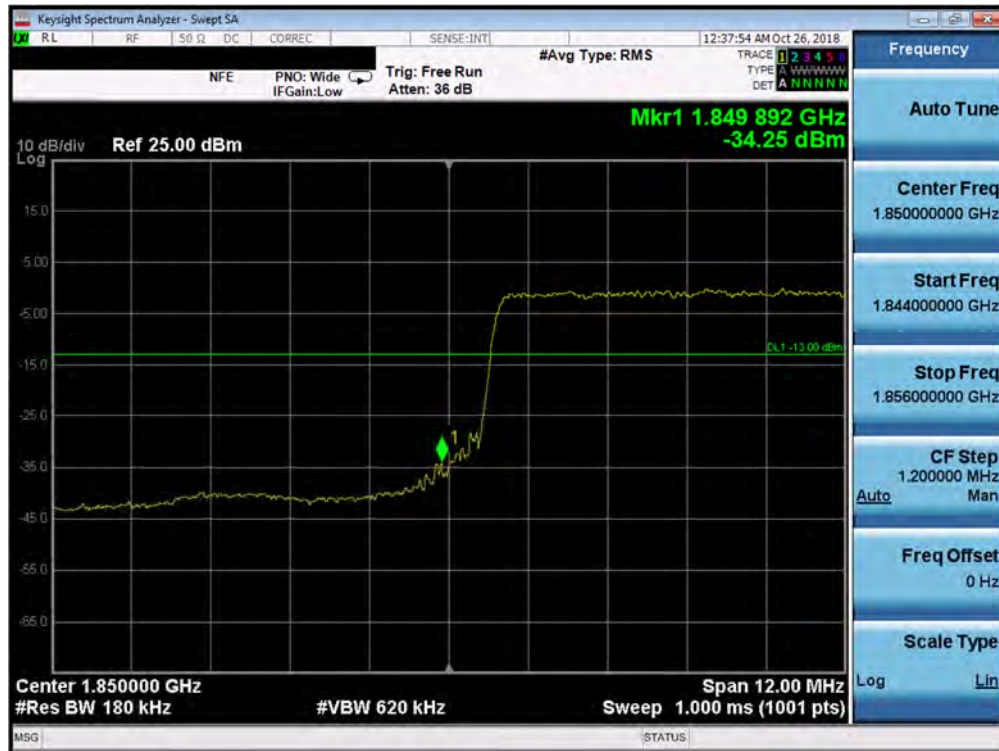


Plot 7-148. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

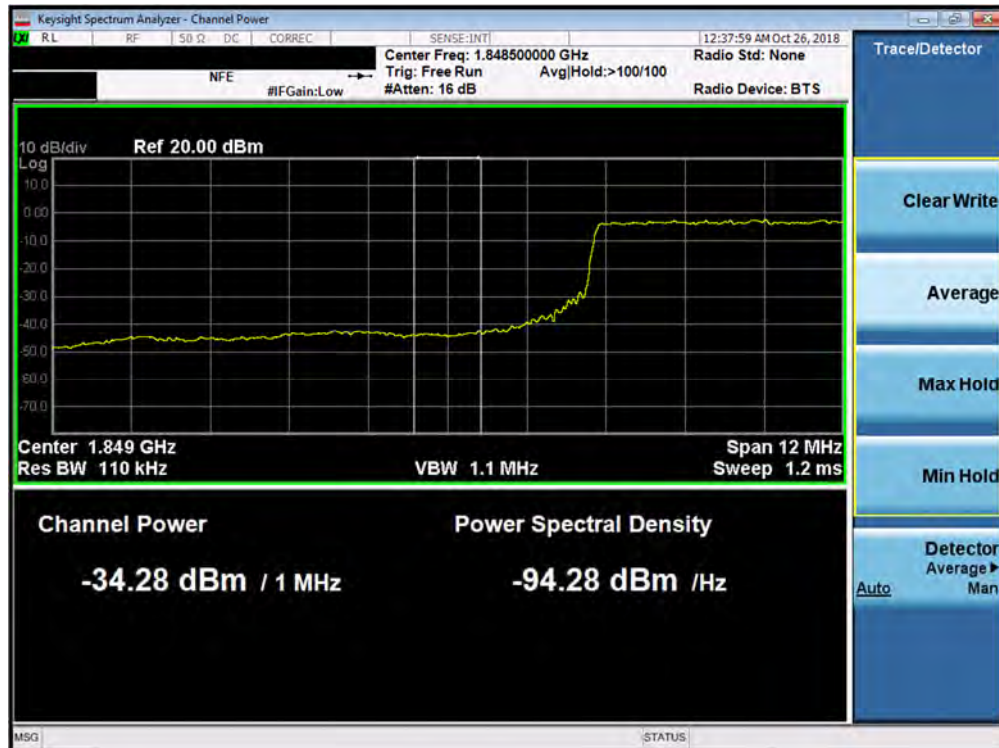


Plot 7-149. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 96 of 147



Plot 7-150. Lower Band Edge Plot (Band 2 –15.0MHz QPSK - Full RB Configuration)

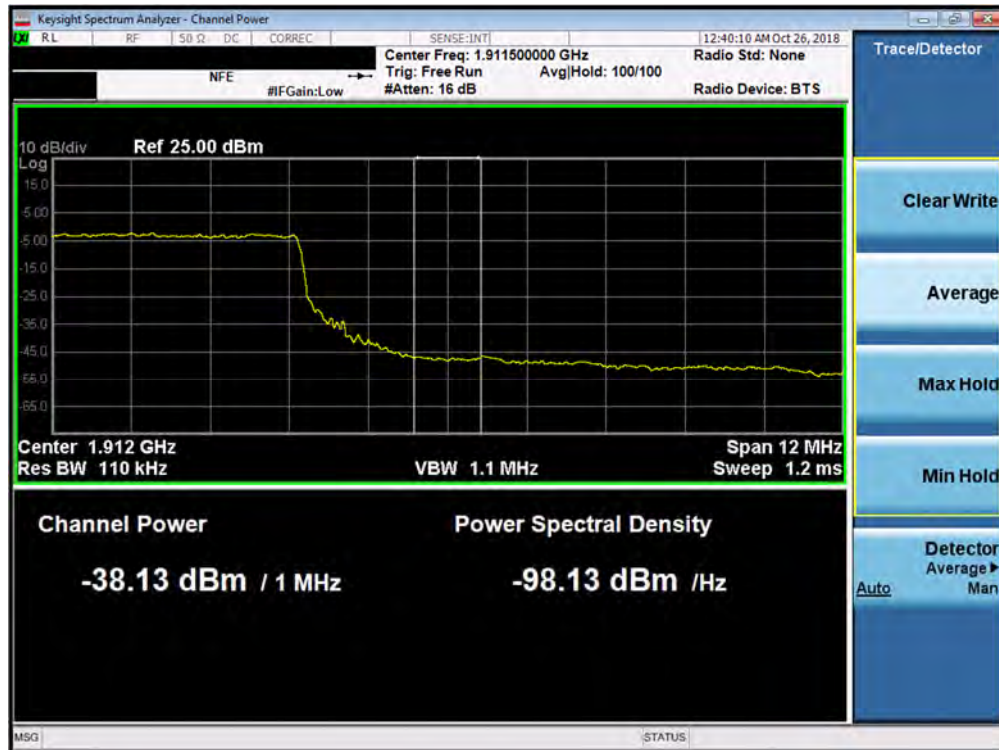


Plot 7-151. Lower Extended Band Edge Plot (Band 2 – 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 97 of 147

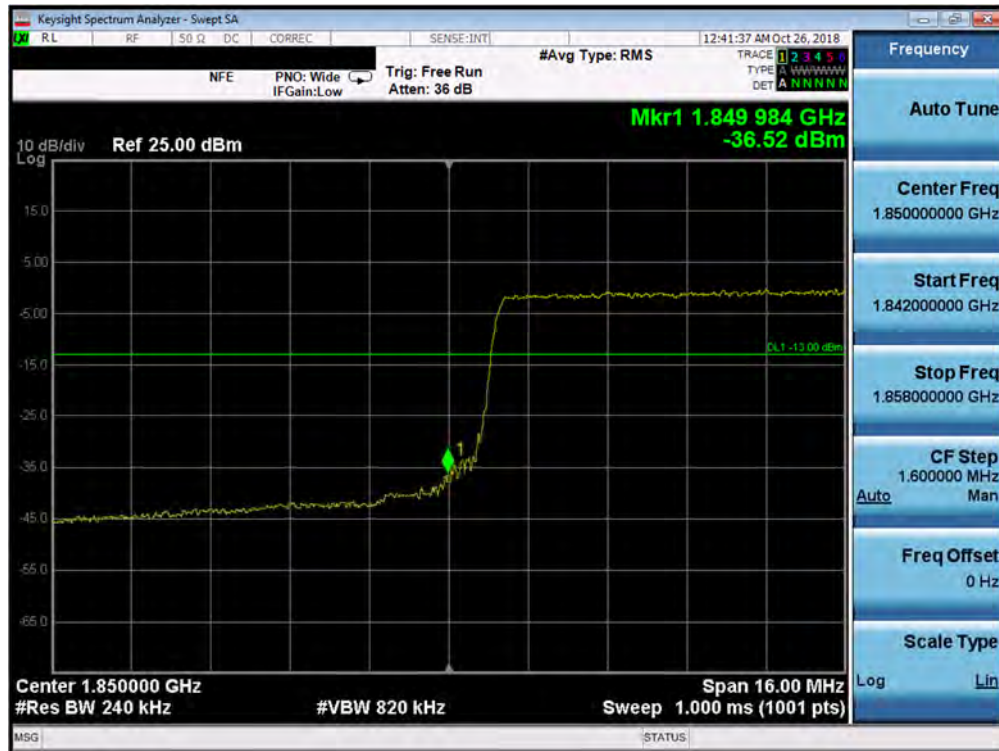


Plot 7-152. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

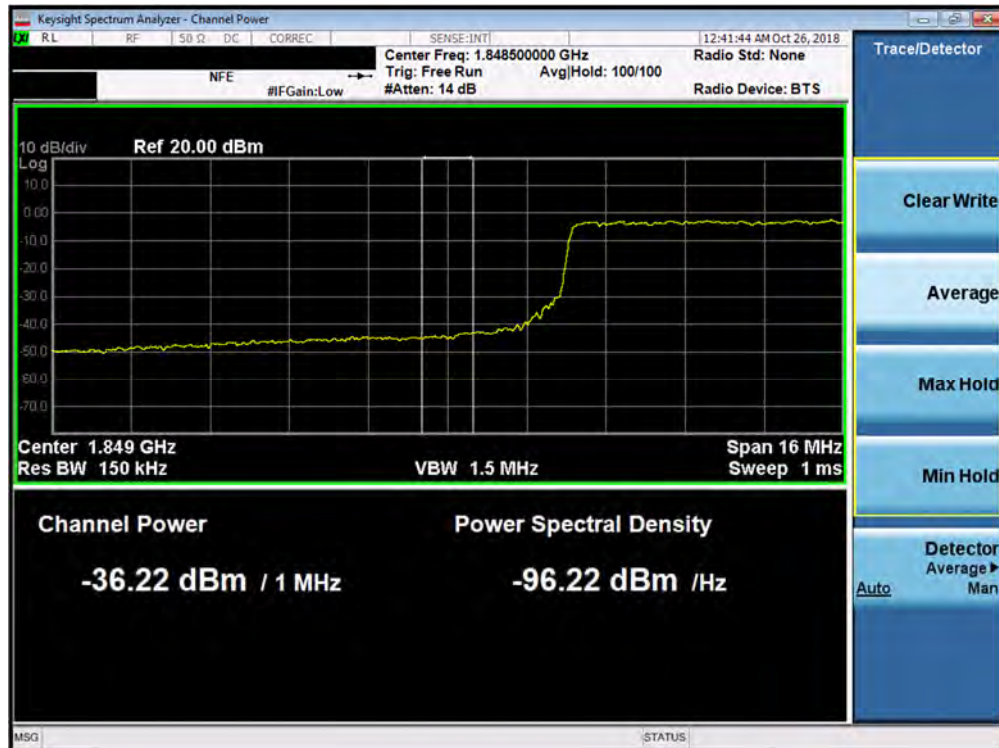


Plot 7-153. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 98 of 147



Plot 7-154. Lower Band Edge Plot (Band 2 – 20.0MHz QPSK - Full RB Configuration)

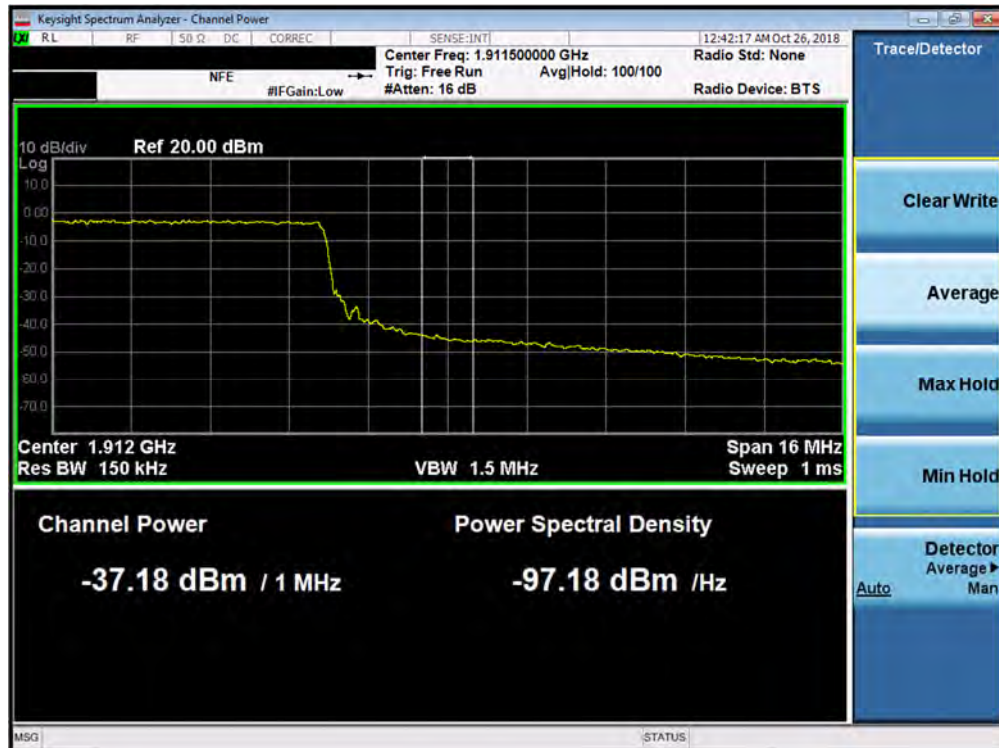


Plot 7-155. Lower Extended Band Edge Plot (Band 2 – 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 99 of 147



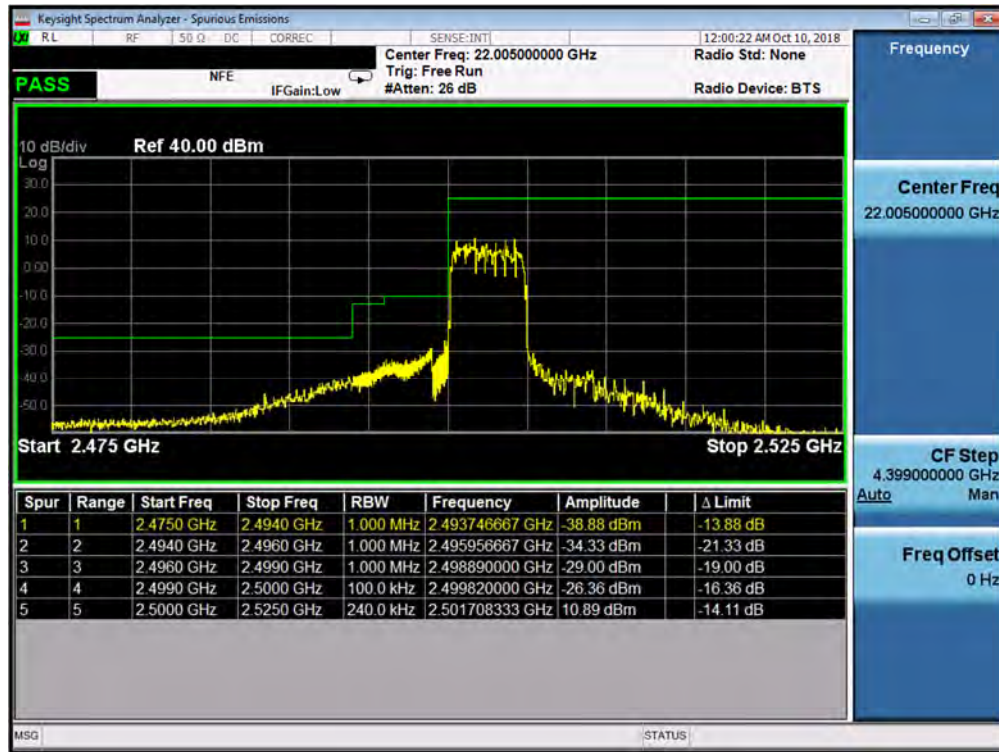
Plot 7-156. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



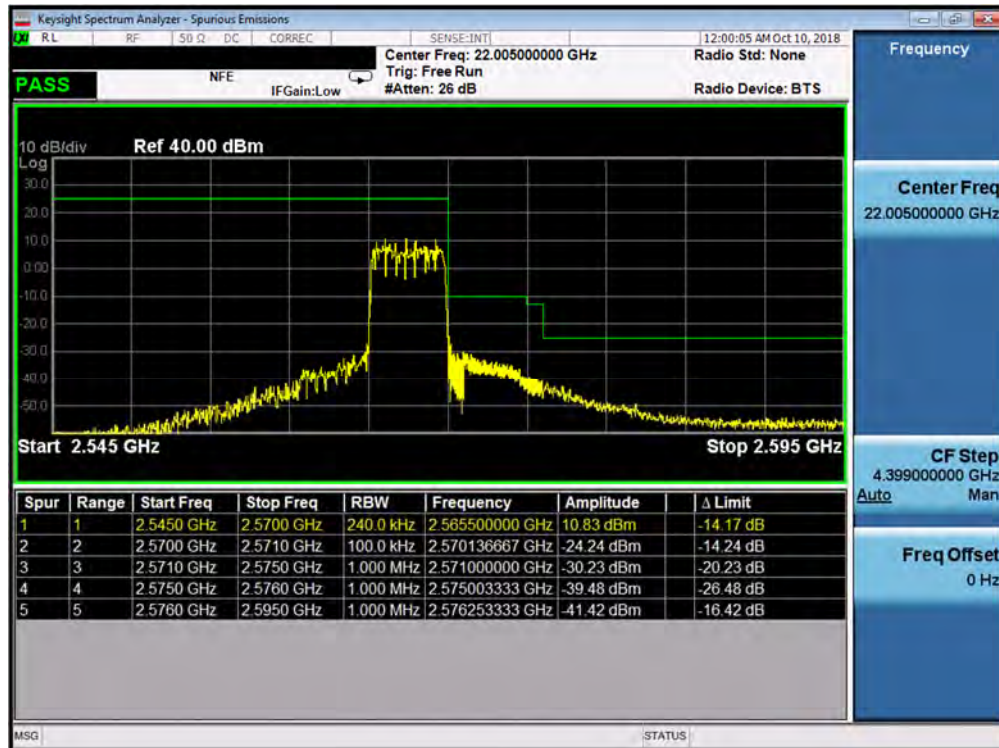
Plot 7-157. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 100 of 147

Band 7

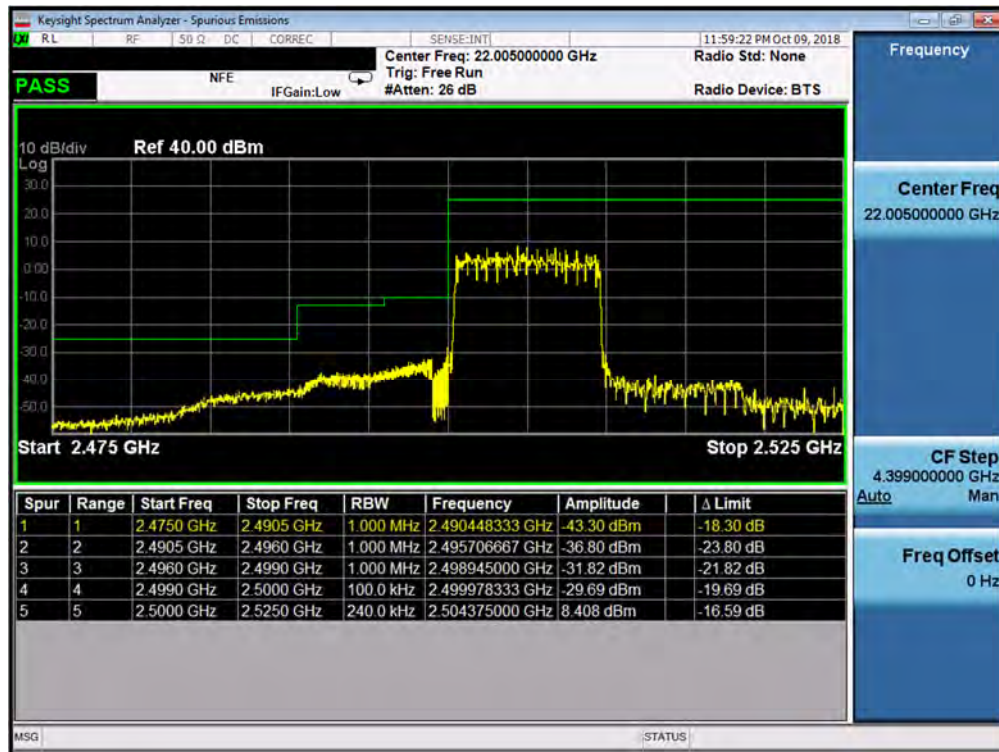


Plot 7-158. Lower ACP Plot (Band 7 - 5.0MHz QPSK - RB Size 25)

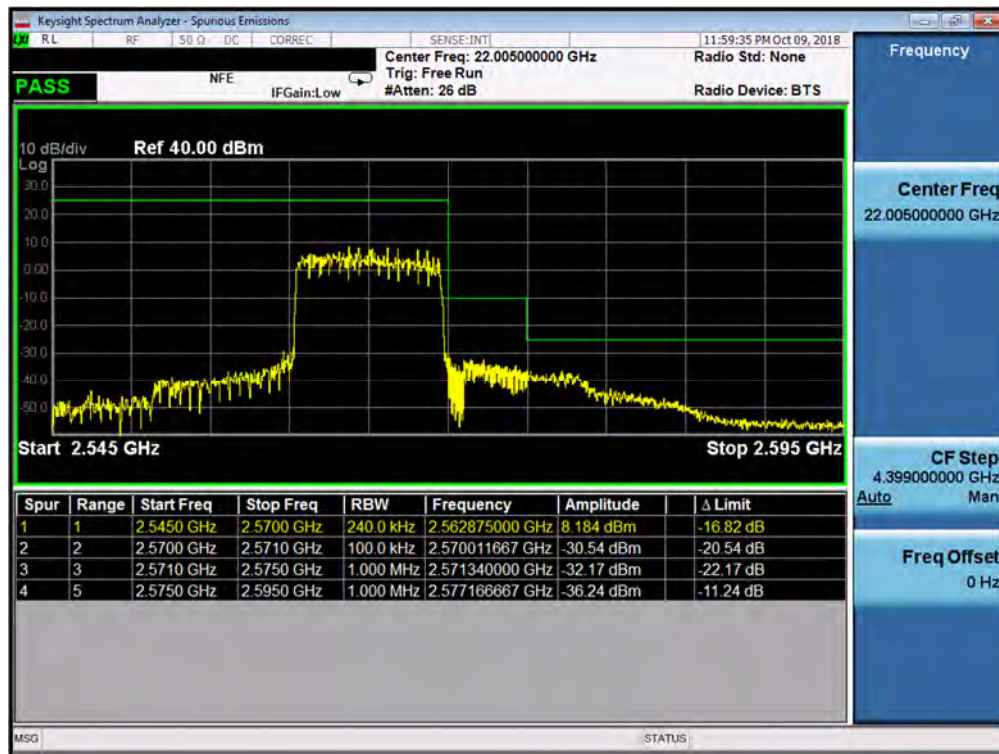


Plot 7-159. Upper ACP Plot (Band 7 - 5.0MHz QPSK - RB Size 25)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 101 of 147

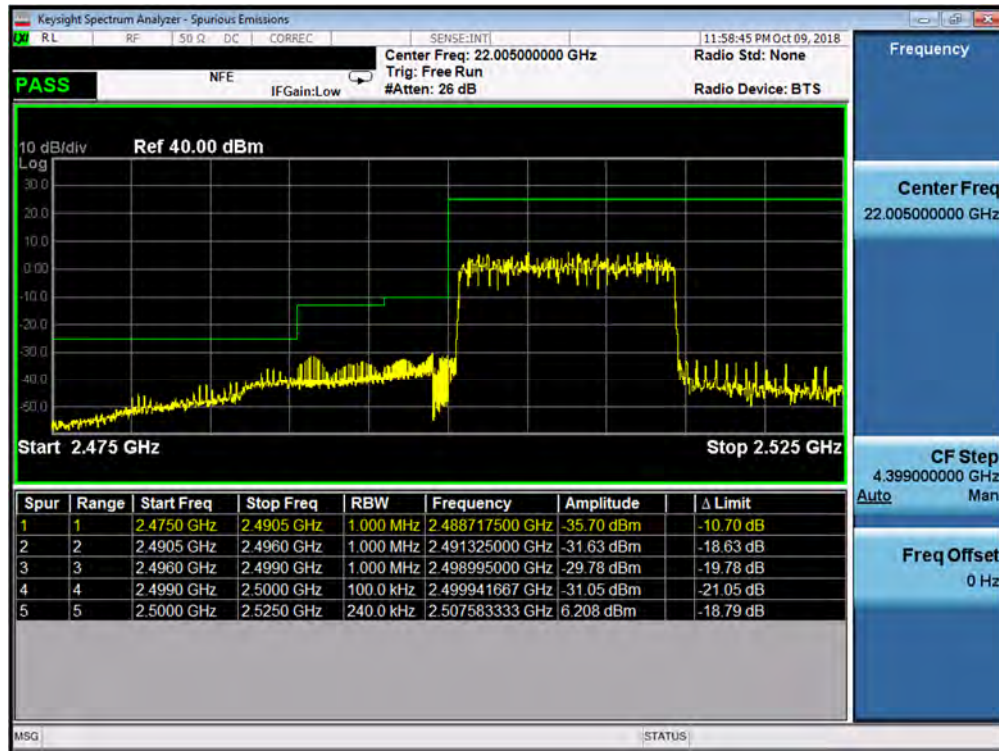


Plot 7-160. Lower ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 50)

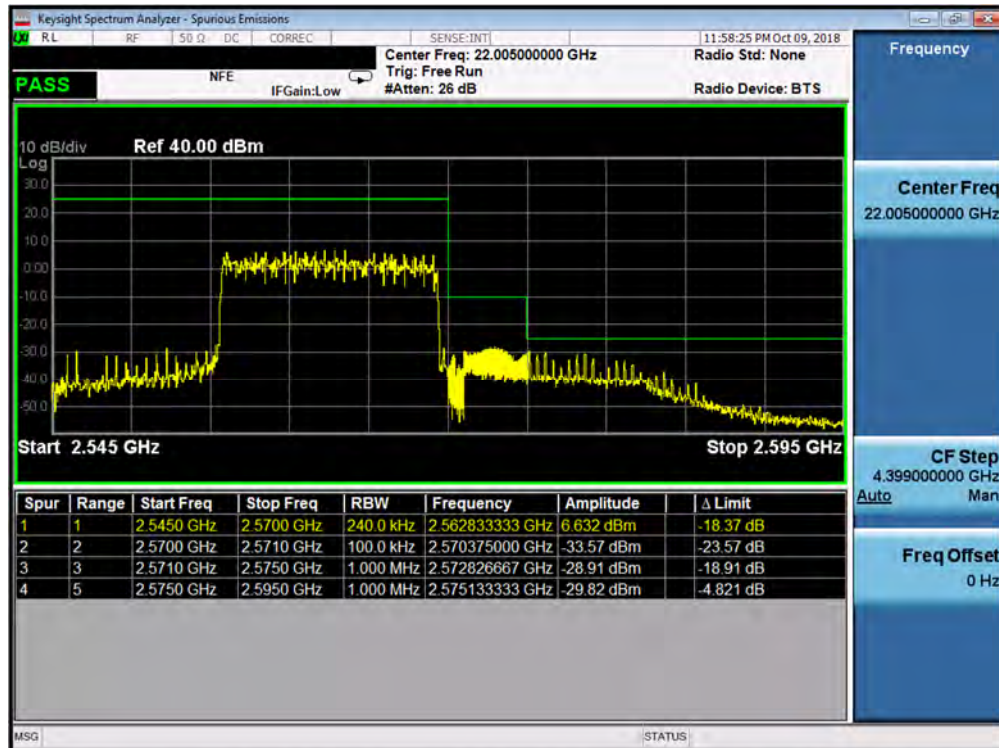


Plot 7-161. Upper ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 50)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 102 of 147

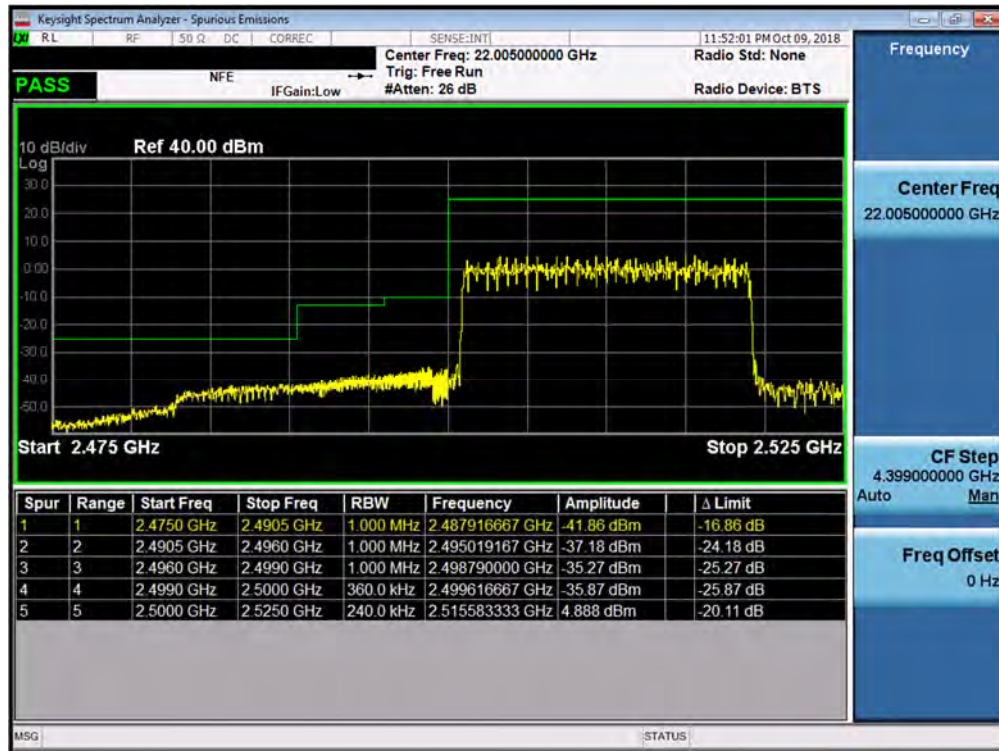


Plot 7-162. Lower ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 75)

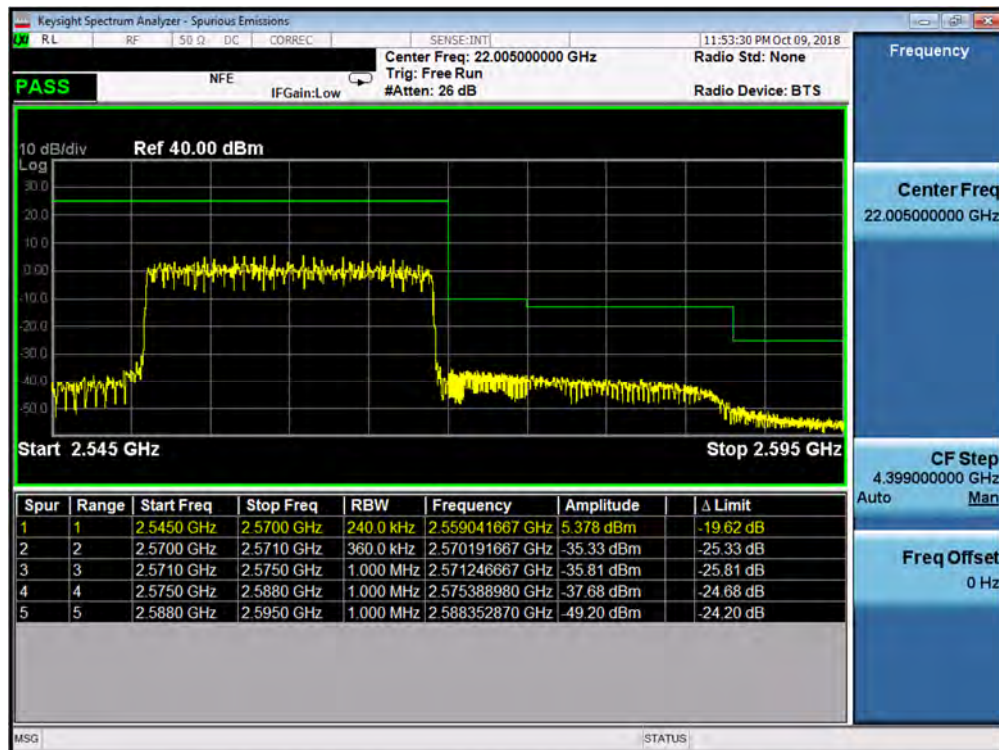


Plot 7-163. Upper ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 75)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 103 of 147



Plot 7-164. Lower ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 100)



Plot 7-165. Upper ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 100)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 104 of 147

7.5 Peak-Average Ratio

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7.1

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW $\geq$ OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.

Test Setup

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



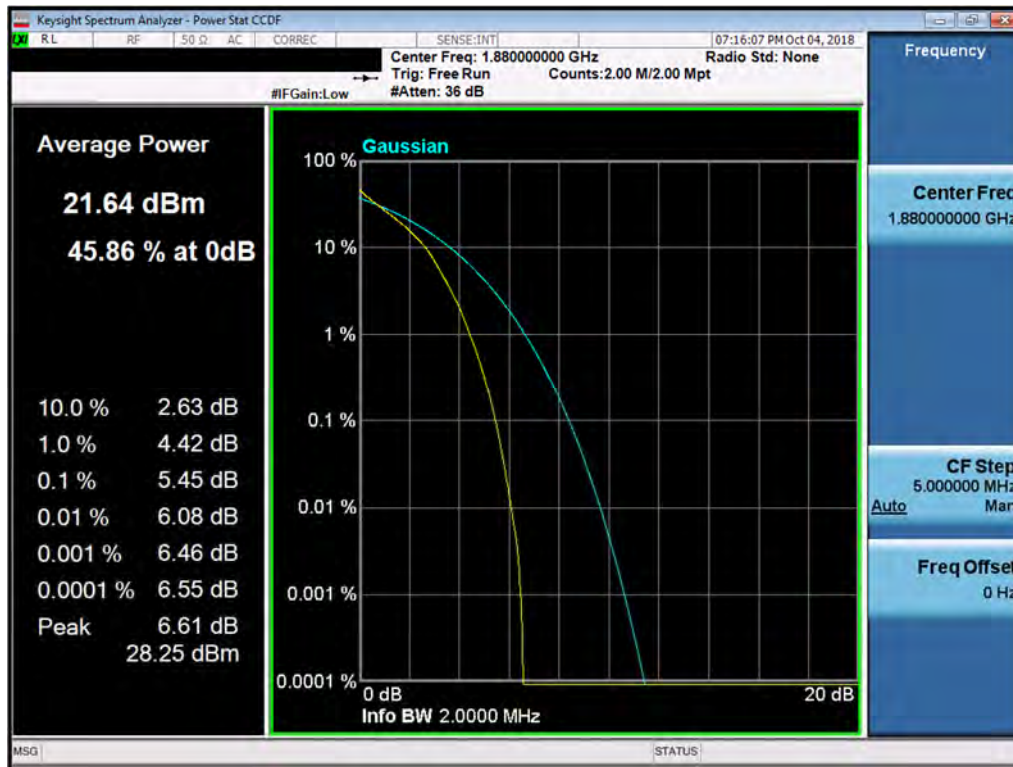
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

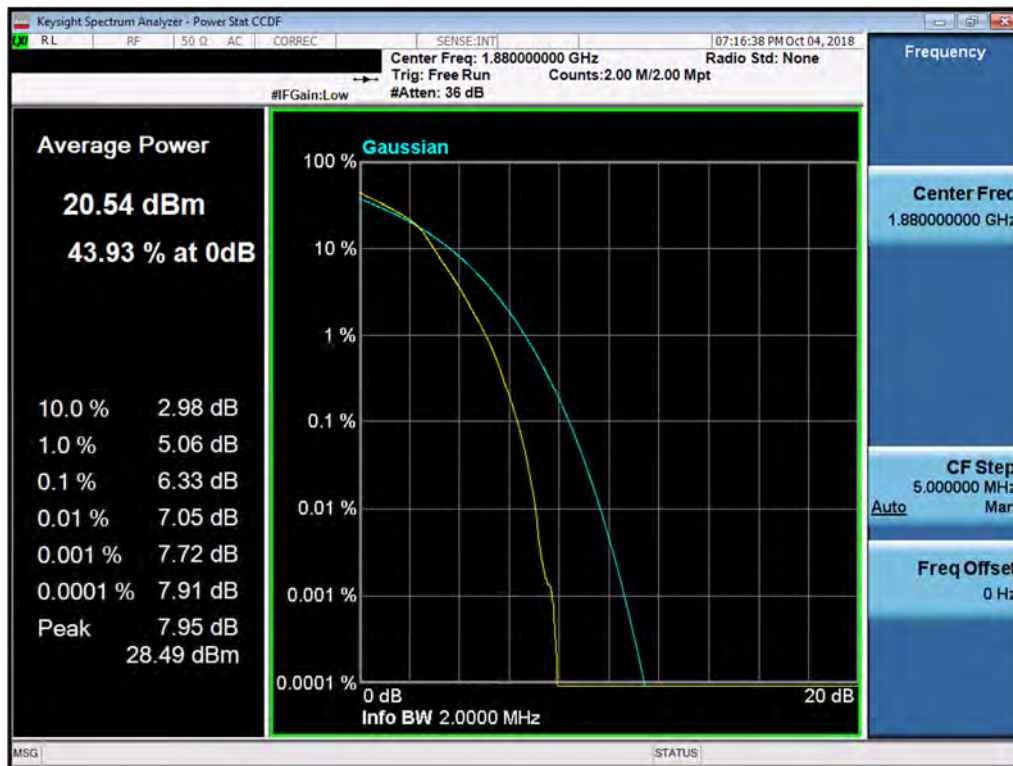
None.

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 105 of 147

Band 2

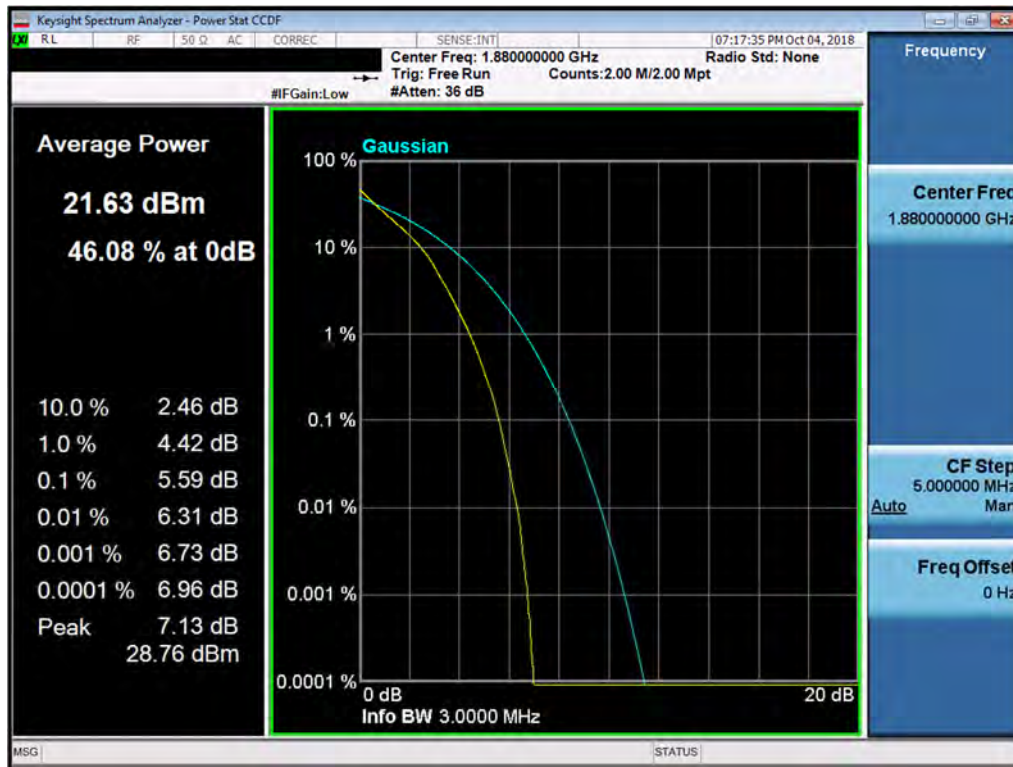


Plot 7-166. PAR Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

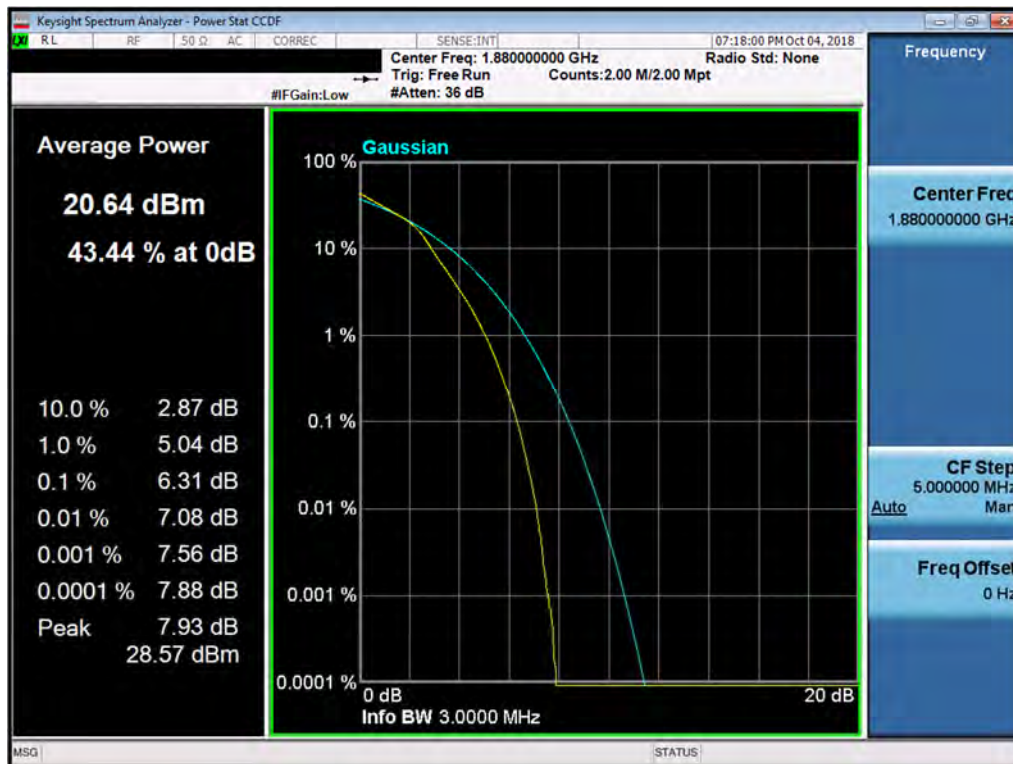


Plot 7-167. PAR Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 106 of 147

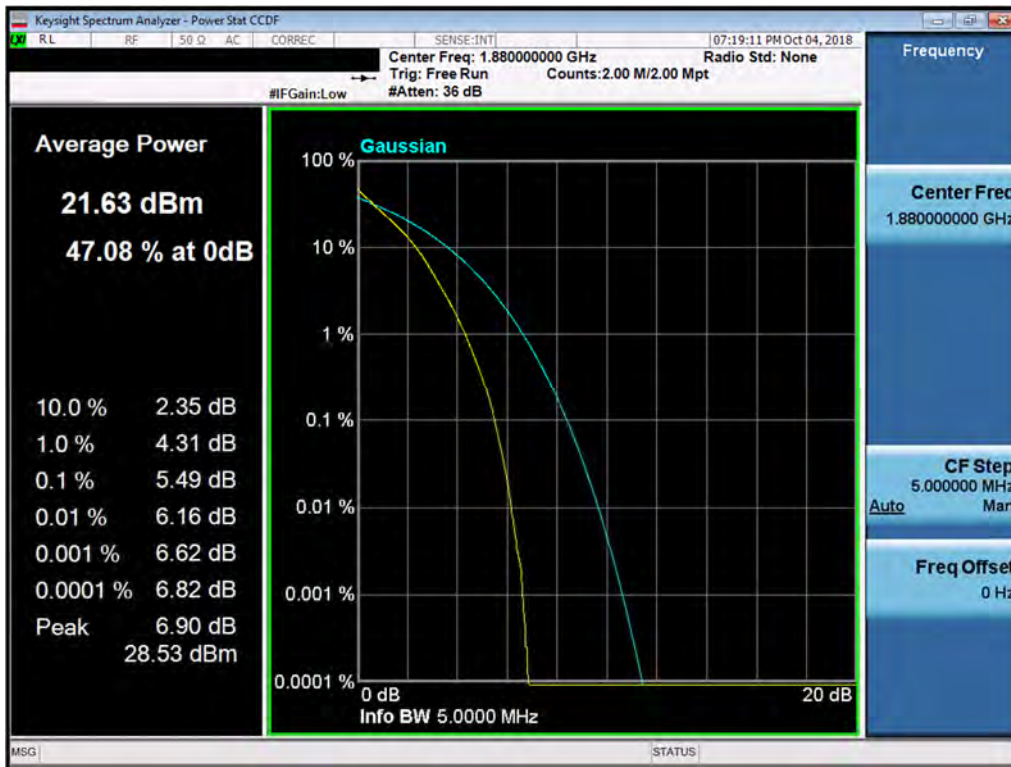


Plot 7-168. PAR Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

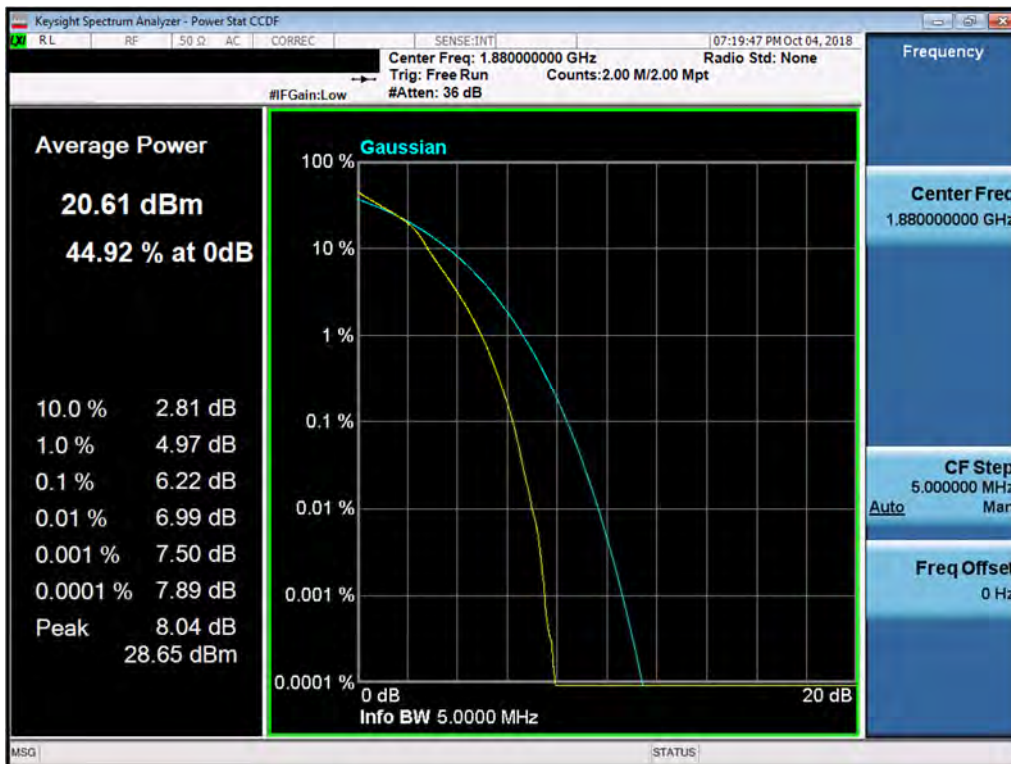


Plot 7-169. PAR Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 107 of 147

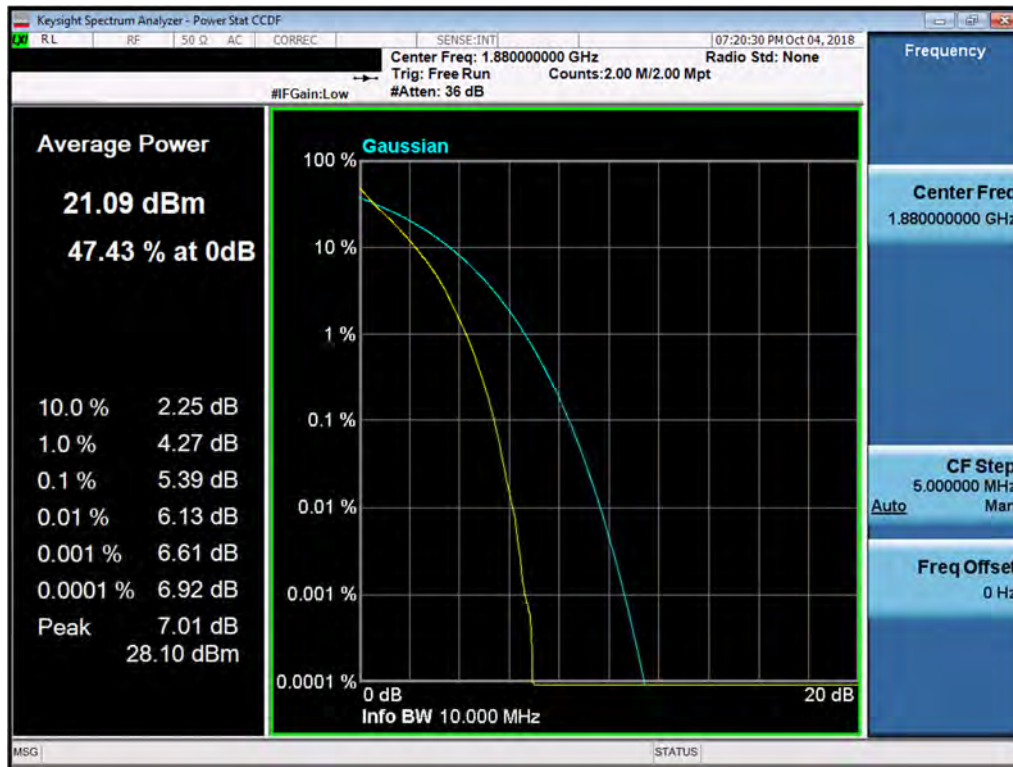


Plot 7-170. PAR Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

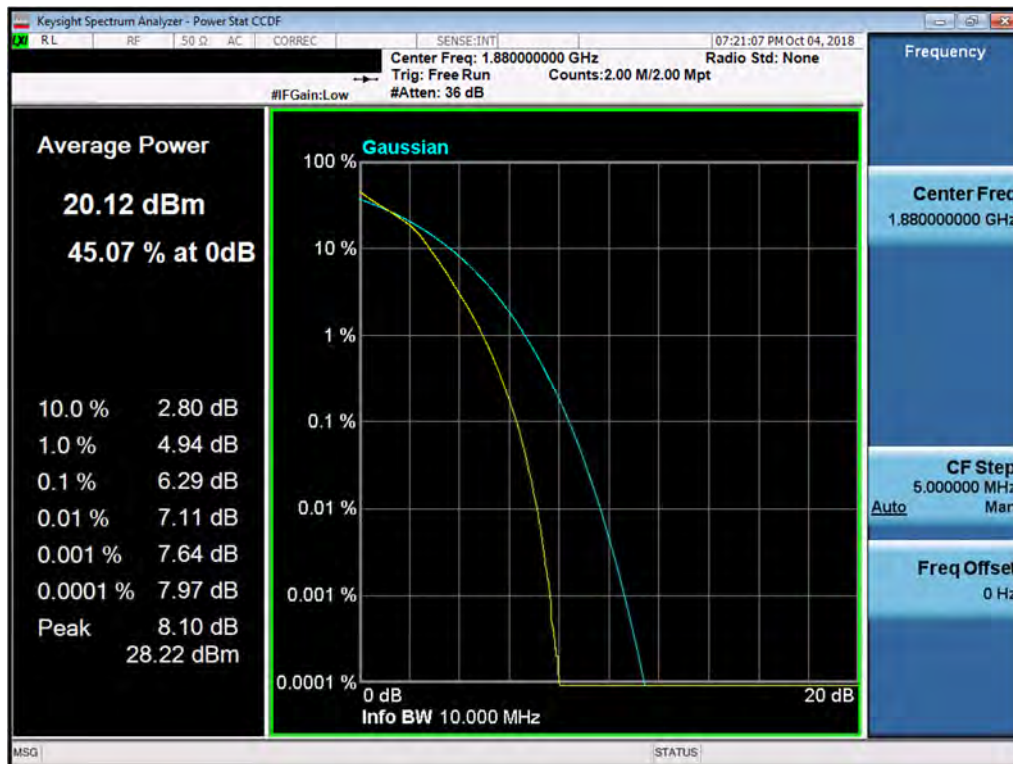


Plot 7-171. PAR Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 108 of 147

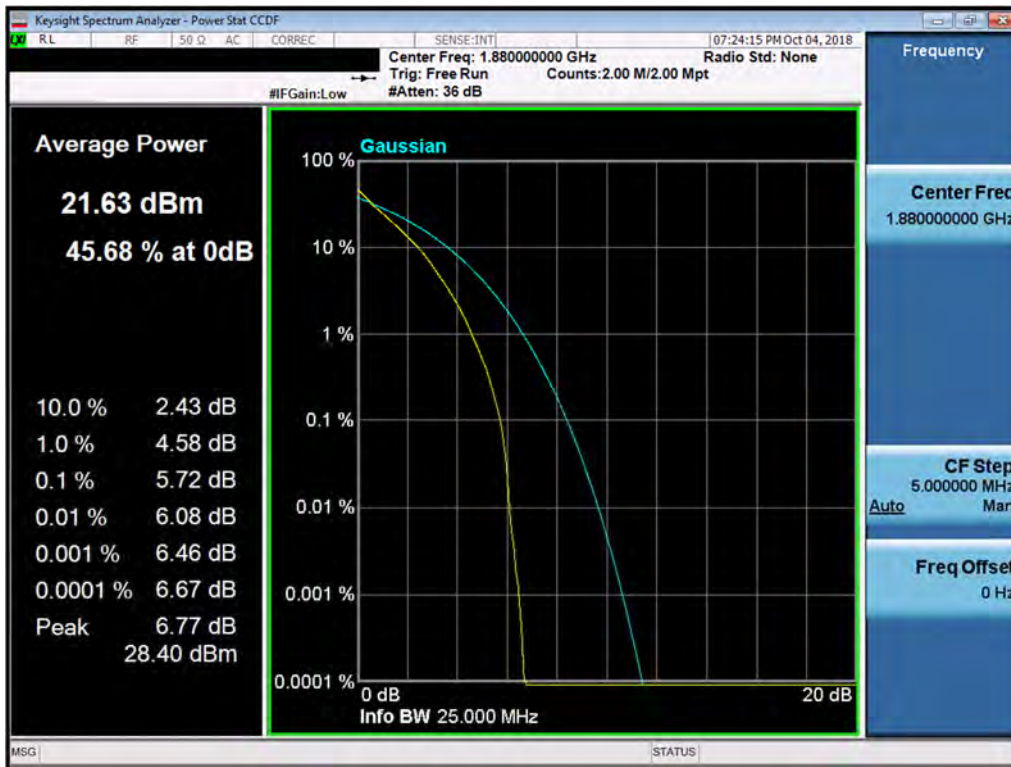


Plot 7-172. PAR Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

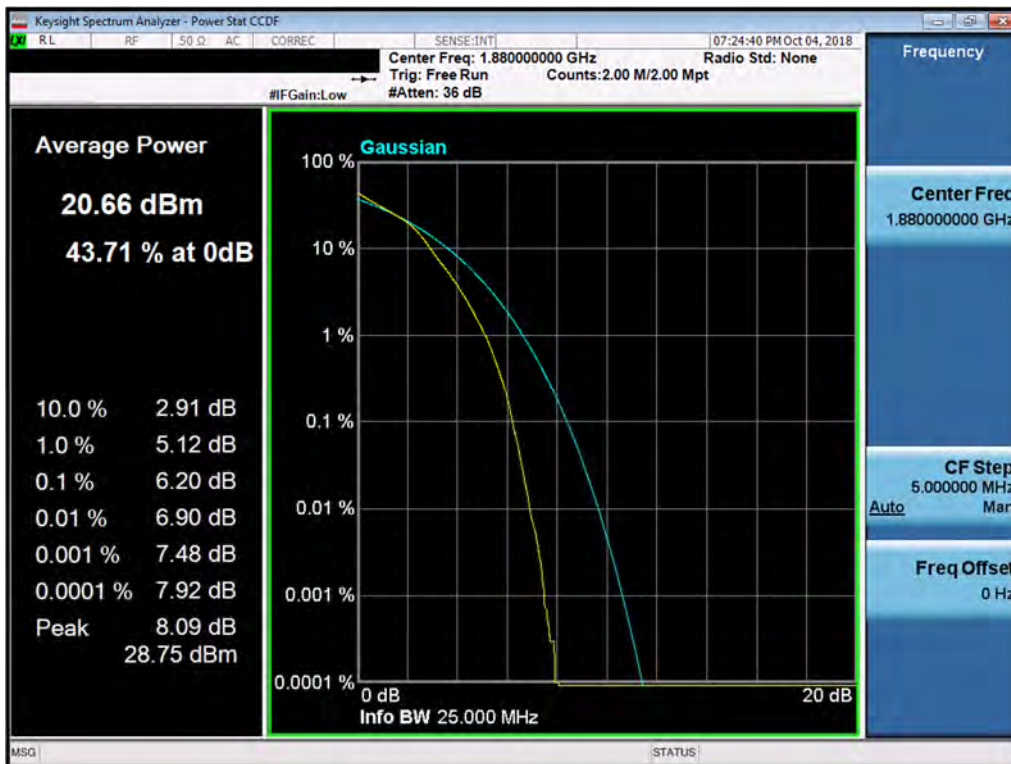


Plot 7-173. PAR Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 109 of 147

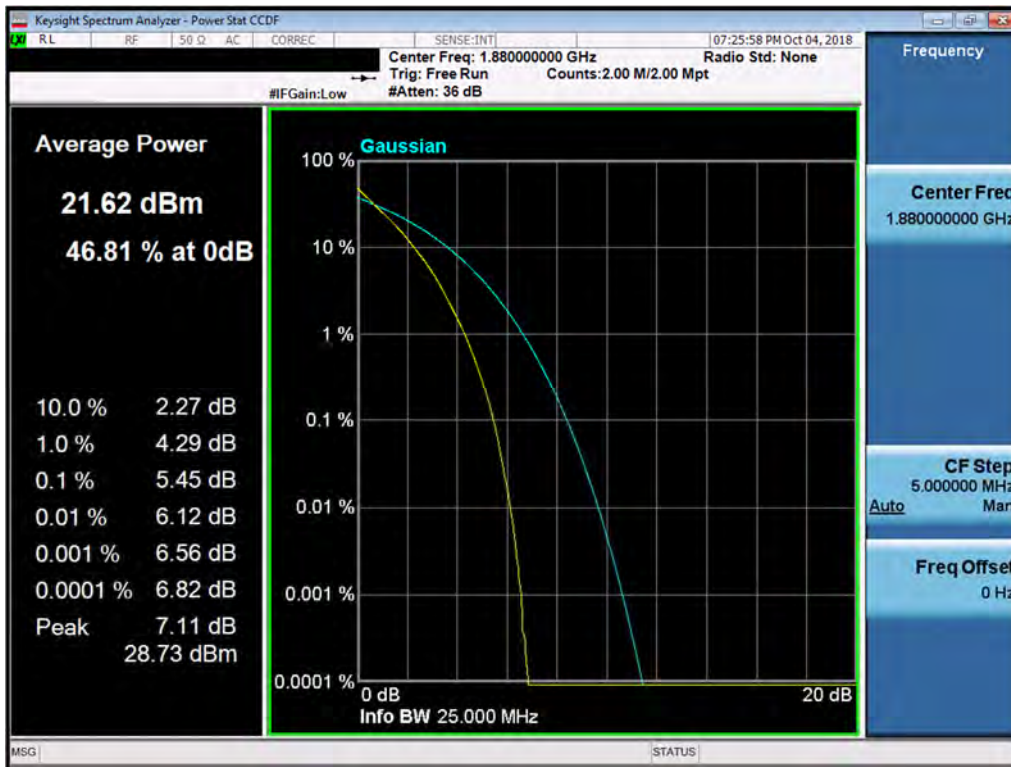


Plot 7-174. PAR Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

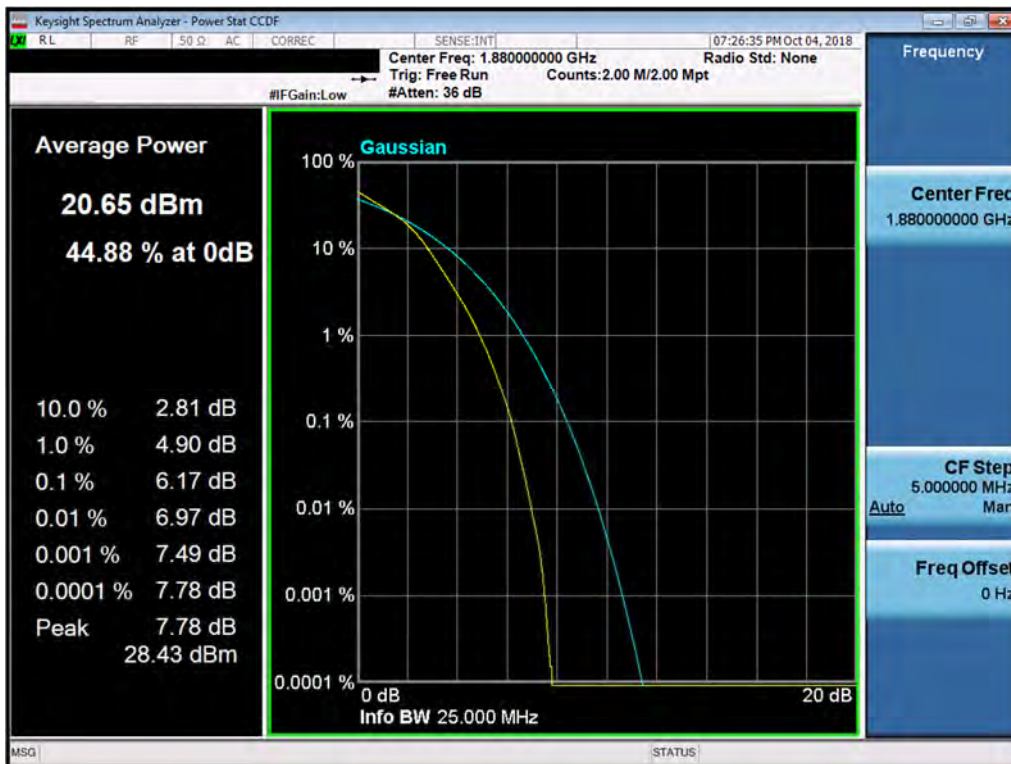


Plot 7-175. PAR Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 110 of 147



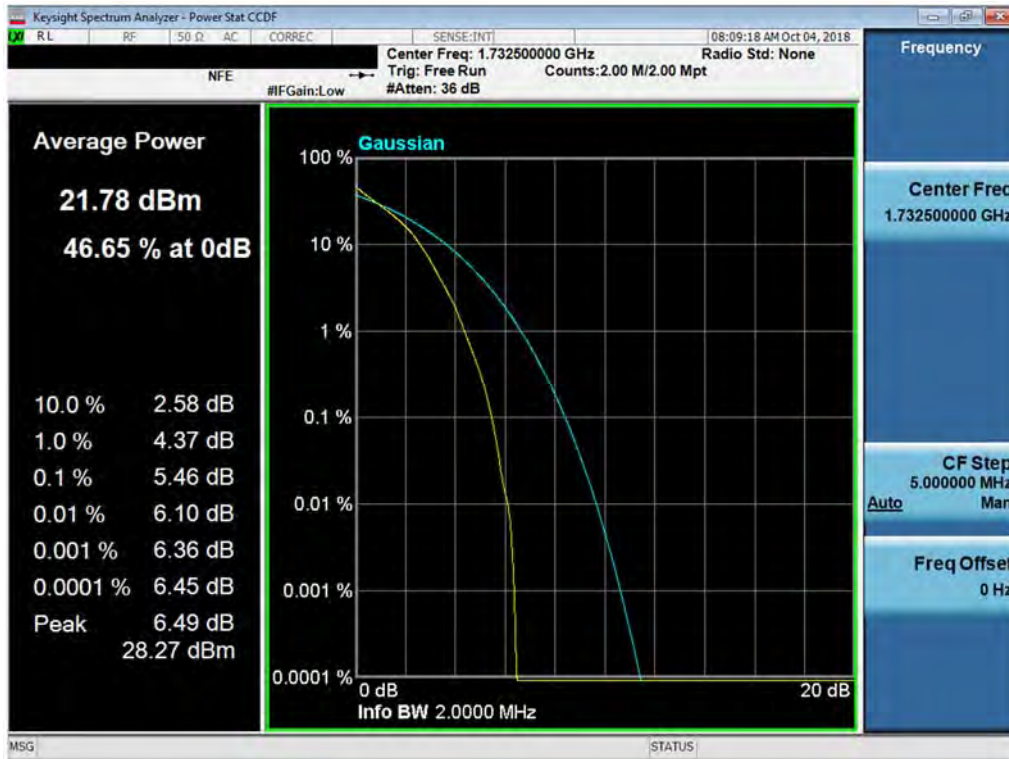
Plot 7-176. PAR Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



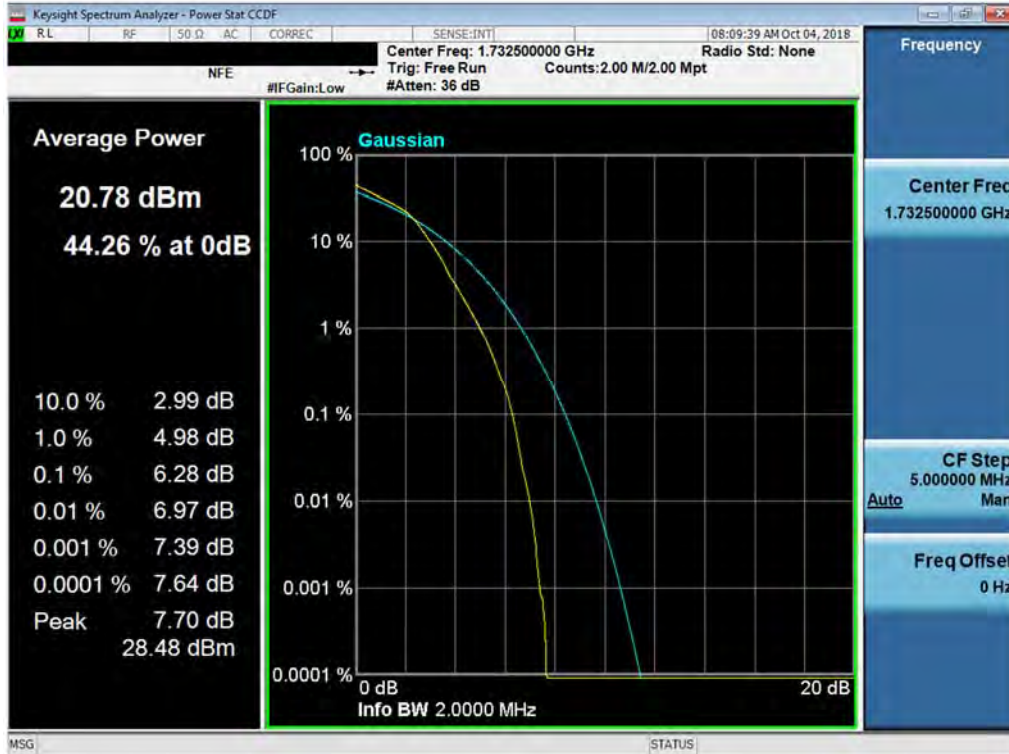
Plot 7-177. PAR Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 111 of 147

Band 4

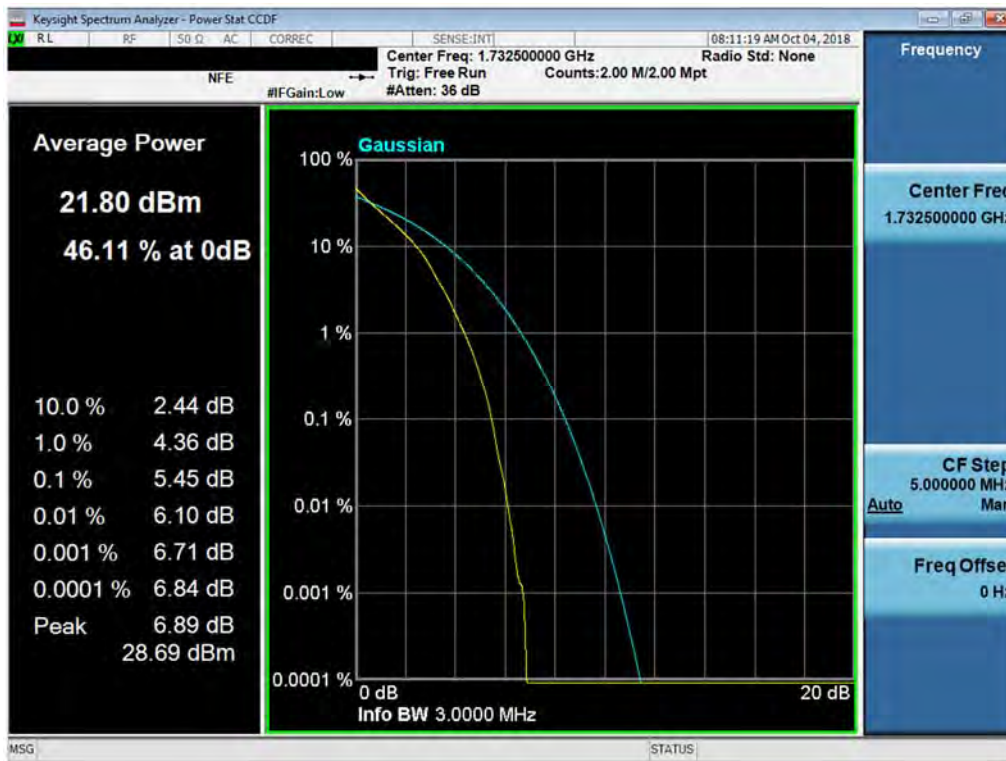


Plot 7-178. PAR Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)

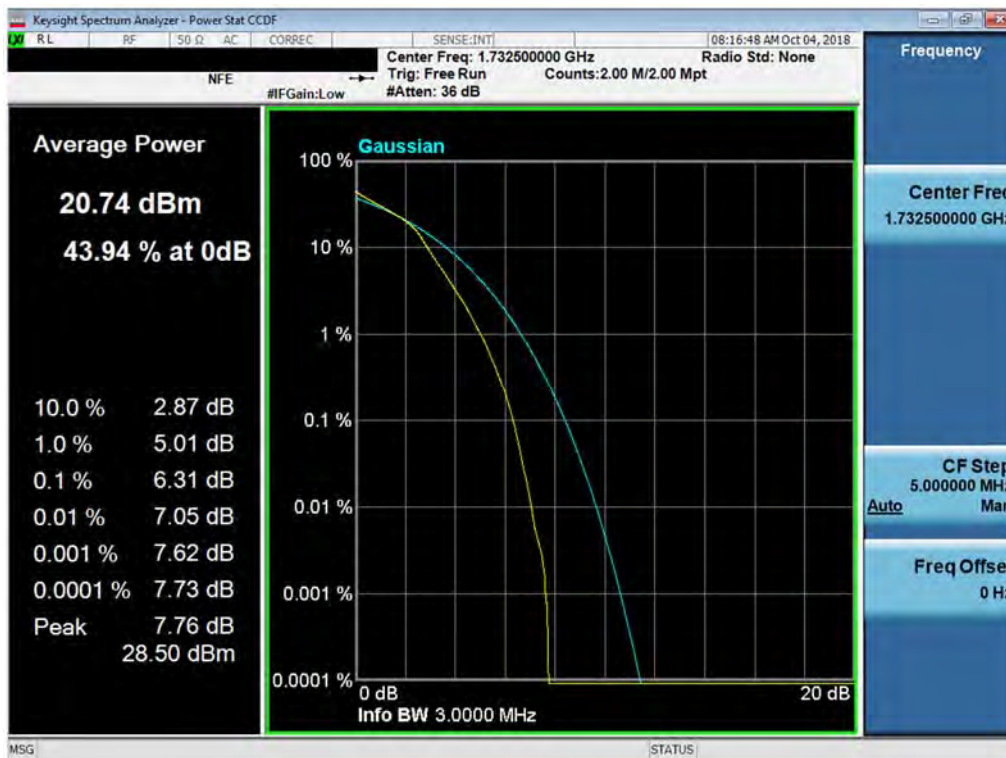


Plot 7-179. PAR Plot (Band 4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 112 of 147

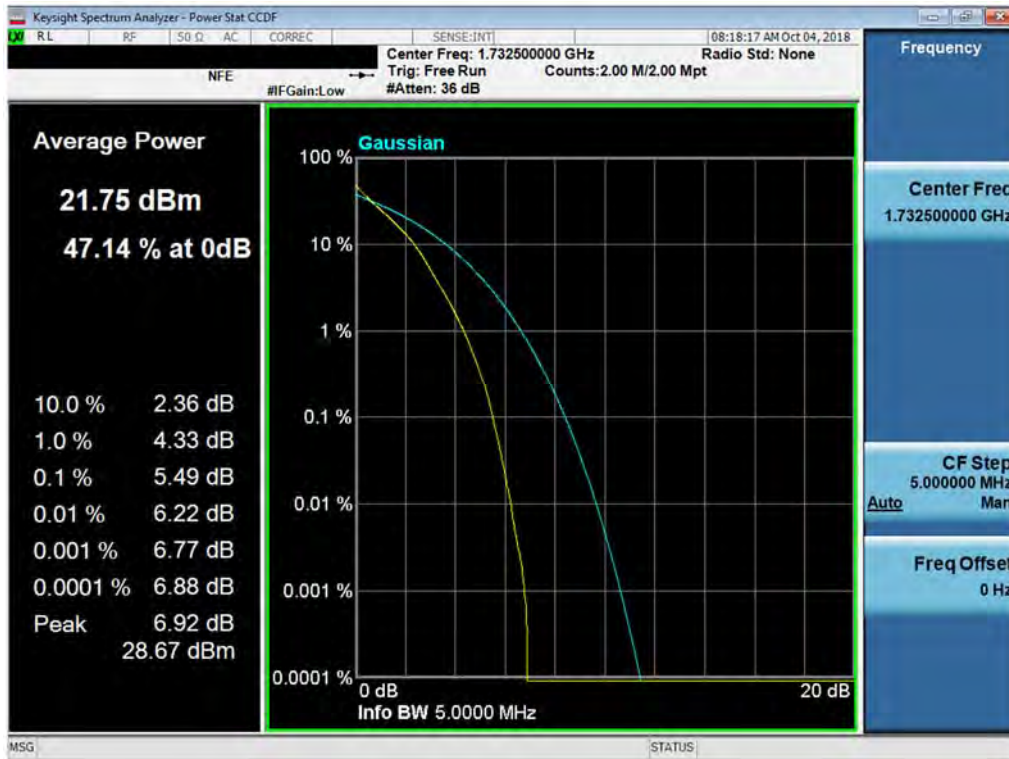


Plot 7-180. PAR Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)

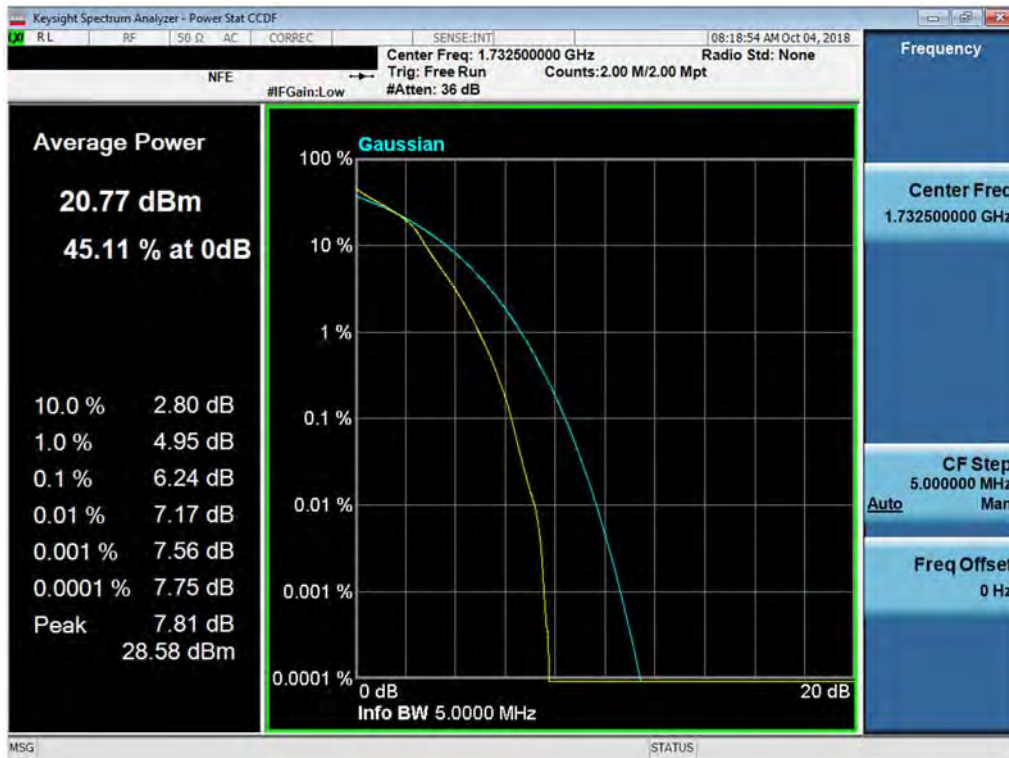


Plot 7-181. PAR Plot (Band 4 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 113 of 147

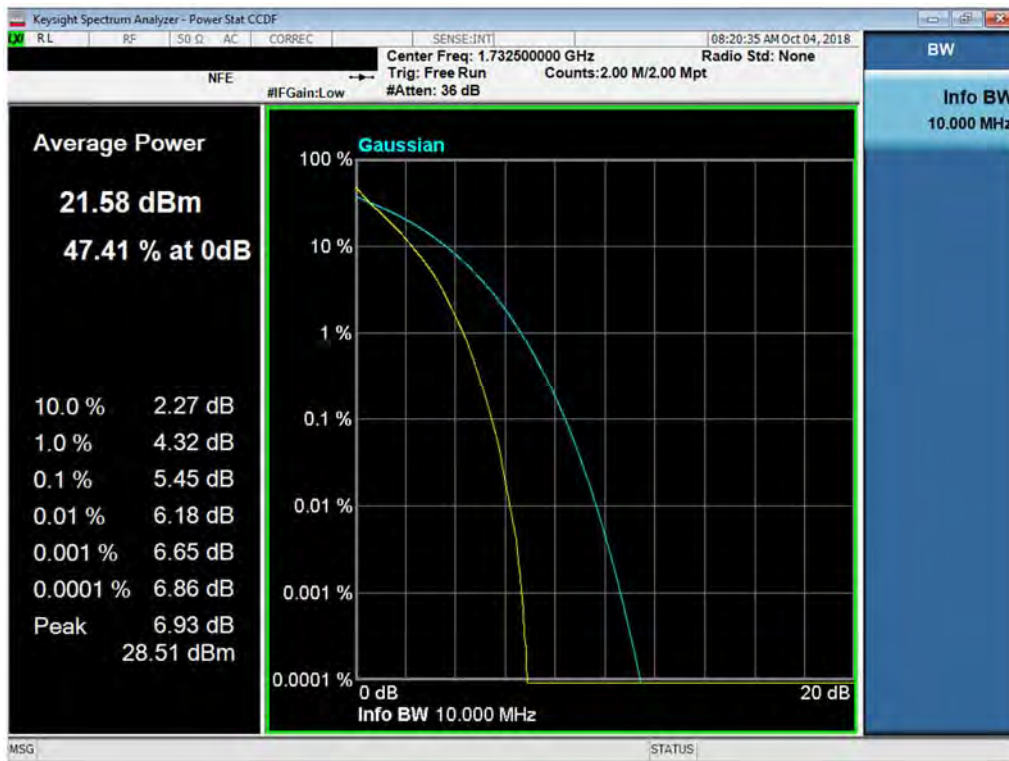


Plot 7-182. PAR Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)

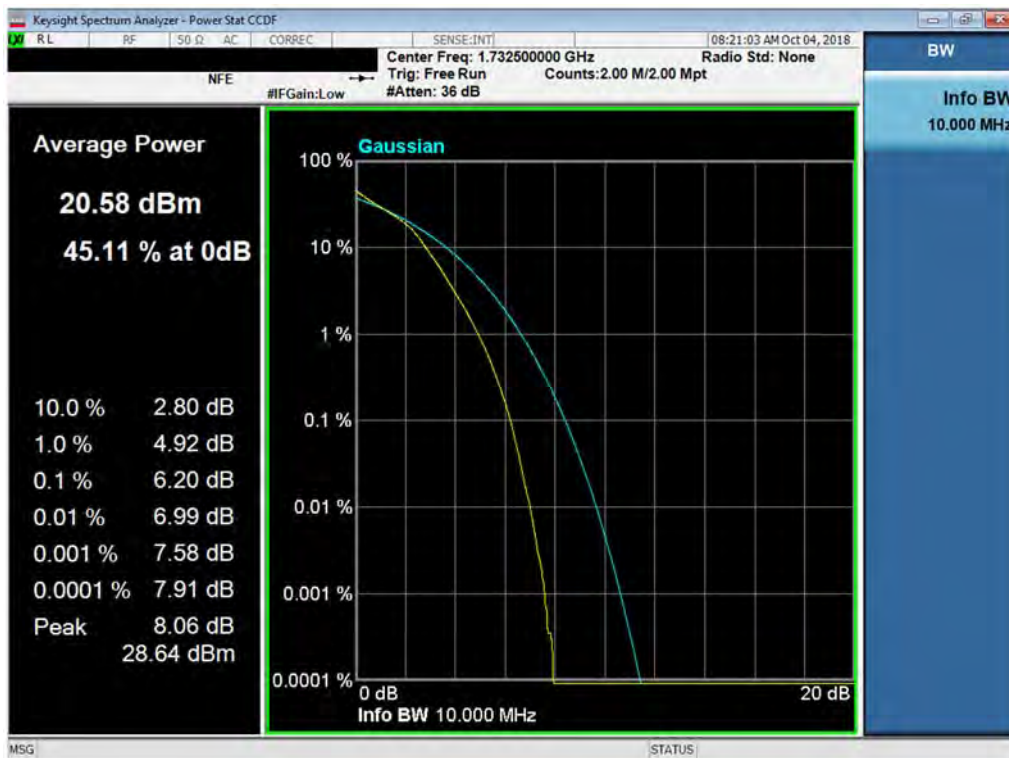


Plot 7-183. PAR Plot (Band 4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 114 of 147

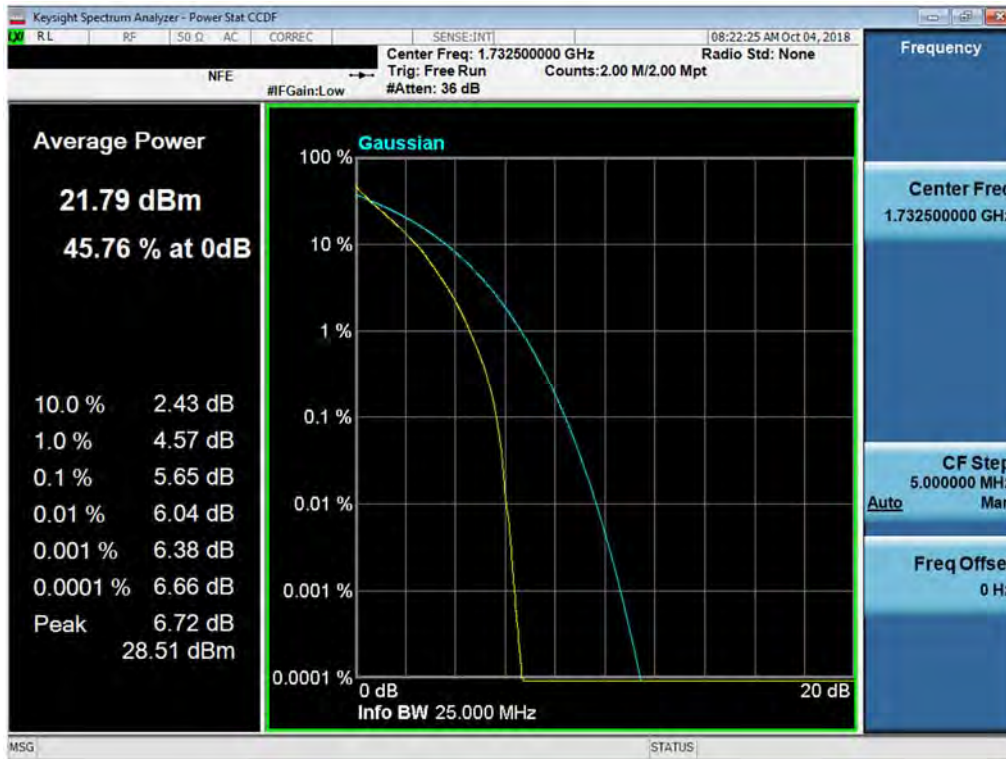


Plot 7-184. PAR Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

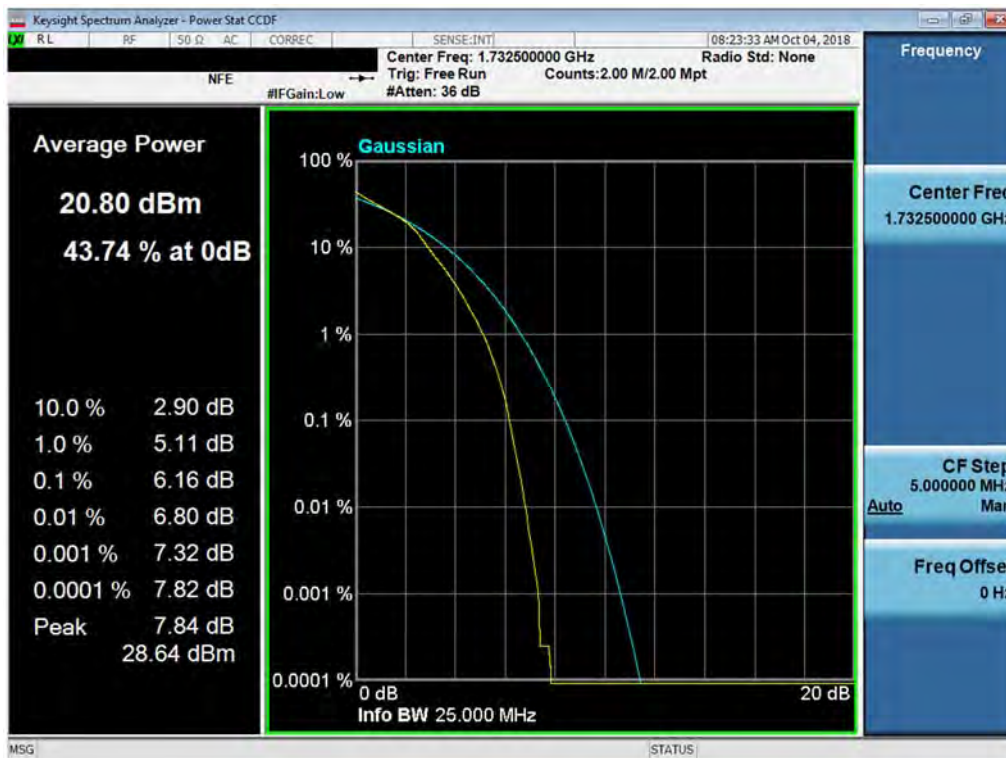


Plot 7-185. PAR Plot (Band 4 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 115 of 147

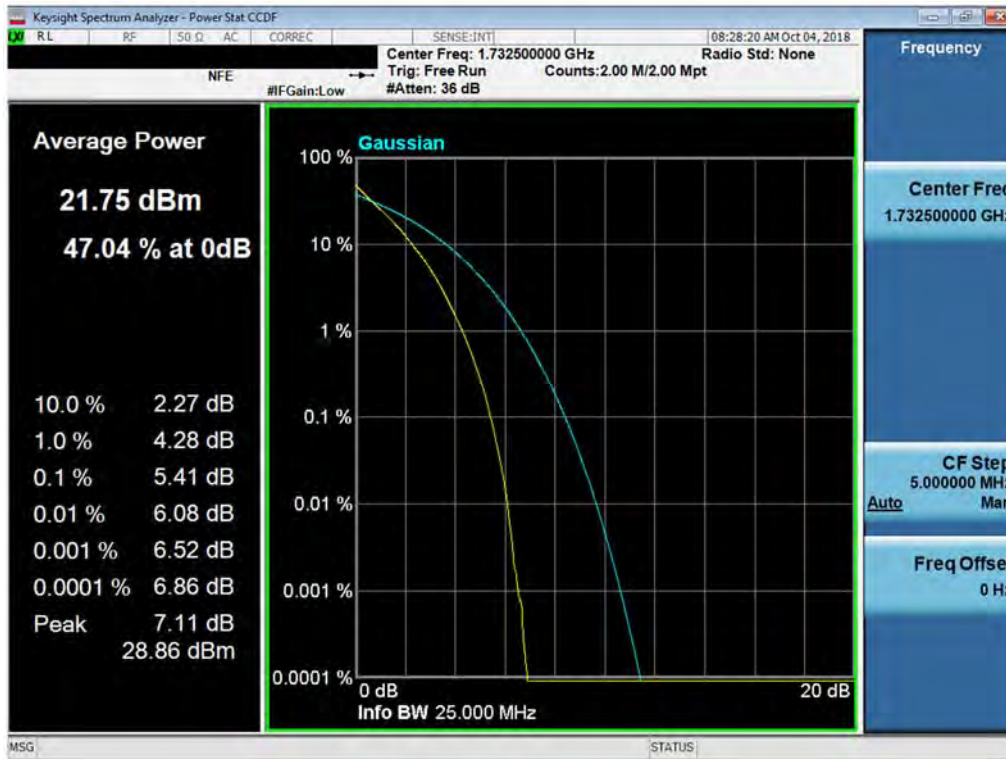


Plot 7-186. PAR Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)

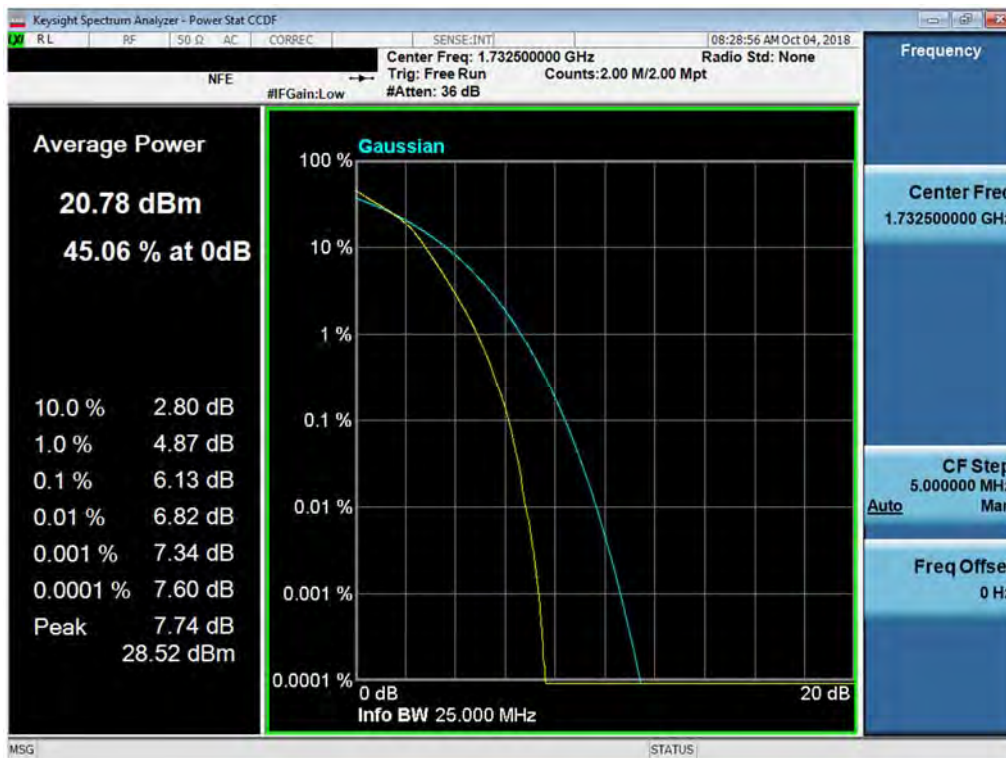


Plot 7-187. PAR Plot (Band 4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 116 of 147



Plot 7-188. PAR Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-189. PAR Plot (Band 4 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 117 of 147

7.6 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

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: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 118 of 147

Test Setup

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

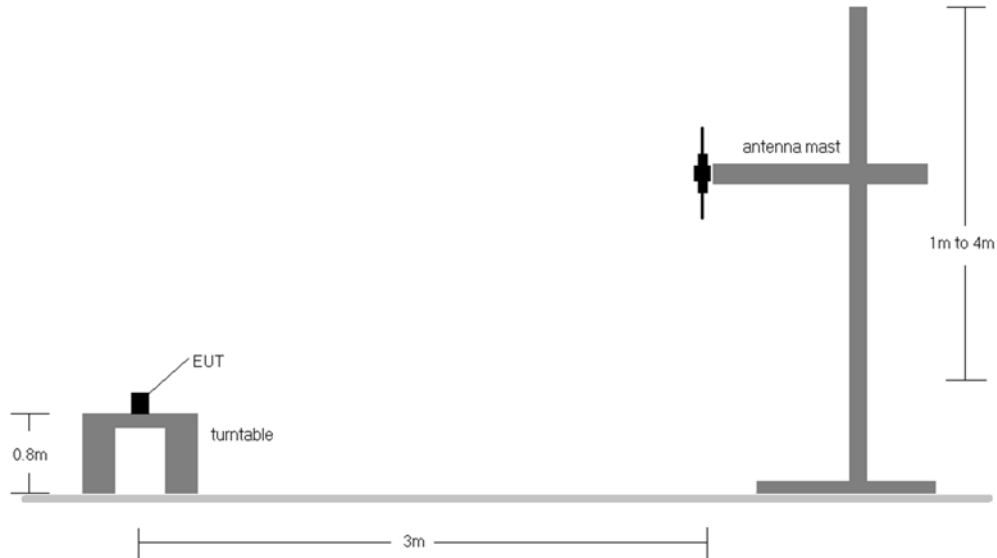


Figure 7-5. Radiated Test Setup <1GHz

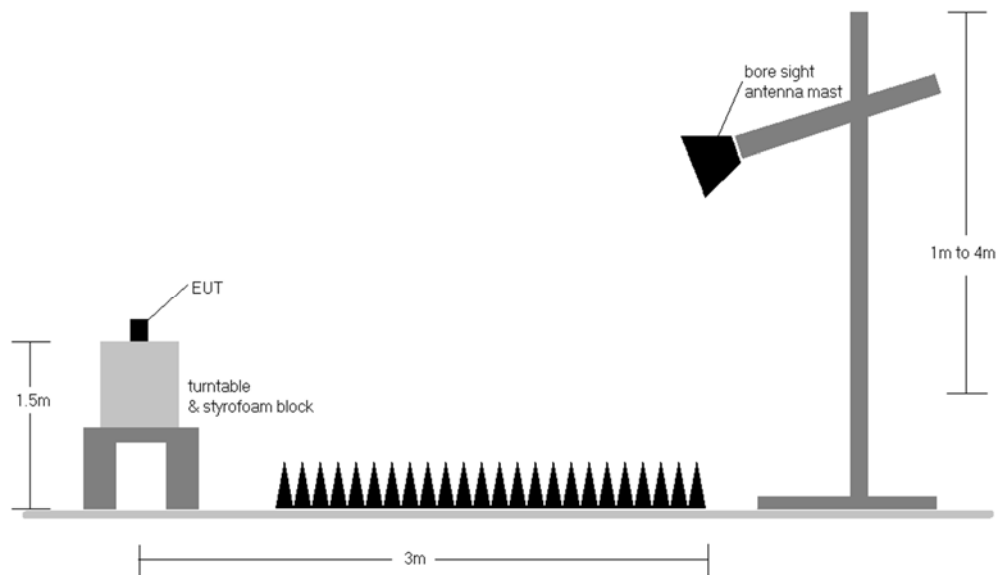


Figure 7-6. Radiated Test Setup >1GHz

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 119 of 147

7.6.1 Radiated Power (ERP/EIRP)

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]
699.70	1.4	QPSK	H	150	3	1 / 0	18.74	1.10	17.69	0.059	34.77	-17.08	19.84	0.096	36.99	-17.15
707.50	1.4	QPSK	H	150	12	1 / 0	17.81	1.13	16.79	0.048	34.77	-17.98	18.94	0.078	36.99	-18.05
715.30	1.4	QPSK	H	150	356	1 / 5	18.36	1.16	17.37	0.055	34.77	-17.40	19.52	0.090	36.99	-17.47
699.70	1.4	16-QAM	H	150	3	1 / 0	16.62	1.10	15.57	0.036	34.77	-19.20	17.72	0.059	36.99	-19.27
700.50	3	QPSK	H	150	350	1 / 0	18.75	1.10	17.70	0.059	34.77	-17.07	19.85	0.097	36.99	-17.14
707.50	3	QPSK	H	150	6	1 / 0	17.94	1.13	16.92	0.049	34.77	-17.85	19.07	0.081	36.99	-17.92
714.50	3	QPSK	H	150	350	1 / 0	18.46	1.16	17.47	0.056	34.77	-17.30	19.62	0.092	36.99	-17.37
700.50	3	16-QAM	H	150	350	1 / 0	16.73	1.10	15.68	0.037	34.77	-19.09	17.83	0.061	36.99	-19.16
701.50	5	QPSK	H	150	356	1 / 0	19.05	1.11	18.01	0.063	34.77	-16.77	20.16	0.104	36.99	-16.83
707.50	5	QPSK	H	150	23	1 / 0	17.81	1.13	16.79	0.048	34.77	-17.98	18.94	0.078	36.99	-18.05
713.50	5	QPSK	H	150	356	1 / 0	18.79	1.15	17.79	0.060	34.77	-16.98	19.94	0.099	36.99	-17.05
701.50	5	16-QAM	H	150	356	1 / 0	16.68	1.11	15.64	0.037	34.77	-19.14	17.79	0.060	36.99	-19.20
704.00	10	QPSK	H	150	357	1 / 0	18.71	1.12	17.68	0.059	34.77	-17.09	19.83	0.096	36.99	-17.16
707.50	10	QPSK	H	150	5	1 / 0	18.27	1.13	17.25	0.053	34.77	-17.52	19.40	0.087	36.99	-17.59
711.00	10	QPSK	H	150	358	1 / 0	18.65	1.14	17.64	0.058	34.77	-17.13	19.79	0.095	36.99	-17.20
704.00	10	16-QAM	H	150	357	1 / 0	16.63	1.12	15.60	0.036	34.77	-19.17	17.75	0.060	36.99	-19.24
701.50	5	QPSK	V	150	351	1 / 0	18.42	1.13	17.40	0.055	34.77	-17.37	19.55	0.090	36.99	-17.44

Table 7-3. ERP Data (Band 12)

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	V	150	356	1 / 5	22.57	1.50	21.92	0.156	38.45	-16.53	24.07	0.255	40.61	-16.54
836.50	1.4	QPSK	V	150	2	1 / 5	22.40	1.50	21.75	0.150	38.45	-16.70	23.90	0.246	40.61	-16.71
848.30	1.4	QPSK	V	150	3	1 / 0	22.06	1.50	21.41	0.138	38.45	-17.04	23.56	0.227	40.61	-17.05
824.70	1.4	16-QAM	V	150	356	1 / 5	20.50	1.50	19.85	0.097	38.45	-18.60	22.00	0.158	40.61	-18.61
825.50	3	QPSK	V	150	350	1 / 14	14.92	1.50	14.27	0.027	38.45	-24.18	16.42	0.044	40.61	-24.19
836.50	3	QPSK	V	150	356	1 / 14	22.44	1.50	21.79	0.151	38.45	-16.66	23.94	0.248	40.61	-16.67
847.50	3	QPSK	V	150	358	1 / 0	21.66	1.50	21.01	0.126	38.45	-17.44	23.16	0.207	40.61	-17.45
825.50	3	16-QAM	V	150	350	1 / 14	20.55	1.50	19.90	0.098	38.45	-18.55	22.05	0.160	40.61	-18.56
826.50	5	QPSK	V	150	355	1 / 24	22.76	1.50	22.11	0.163	38.45	-16.34	24.26	0.267	40.61	-16.35
836.50	5	QPSK	V	150	354	1 / 24	22.60	1.50	21.95	0.157	38.45	-16.50	24.10	0.257	40.61	-16.51
846.50	5	QPSK	V	150	354	1 / 24	22.57	1.50	21.92	0.156	38.45	-16.53	24.07	0.255	40.61	-16.54
826.50	5	16-QAM	V	150	355	1 / 24	20.83	1.50	20.18	0.104	38.45	-18.27	22.33	0.171	40.61	-18.28
829.00	10	QPSK	V	150	347	1 / 49	22.74	1.50	22.09	0.162	38.45	-16.36	24.24	0.266	40.61	-16.37
836.50	10	QPSK	V	150	359	1 / 0	22.60	1.50	21.95	0.157	38.45	-16.50	24.10	0.257	40.61	-16.51
844.00	10	QPSK	V	150	356	1 / 0	22.72	1.50	22.07	0.161	38.45	-16.38	24.22	0.264	40.61	-16.39
829.00	10	16-QAM	V	150	347	1 / 49	20.83	1.50	20.18	0.104	38.45	-18.27	22.33	0.171	40.61	-18.28
826.50	5	QPSK	H	150	79	1 / 24	18.77	1.50	18.12	0.065	38.45	-20.33	20.27	0.106	40.61	-20.34

Table 7-4. ERP Data (Band 5)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 120 of 147

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	150	150	1 / 0	17.27	5.56	22.83	0.192	30.00	-7.17
1732.50	1.4	QPSK	H	150	262	1 / 0	16.93	5.41	22.34	0.171	30.00	-7.66
1754.30	1.4	QPSK	H	150	350	1 / 5	16.46	5.26	21.72	0.149	30.00	-8.28
1710.70	1.4	16-QAM	H	150	150	1 / 0	15.33	5.56	20.89	0.123	30.00	-9.11
1711.50	3	QPSK	H	150	350	1 / 0	17.41	5.55	22.96	0.198	30.00	-7.04
1732.50	3	QPSK	H	150	263	1 / 0	17.02	5.41	22.43	0.175	30.00	-7.57
1753.50	3	QPSK	H	150	356	1 / 14	16.60	5.26	21.86	0.154	30.00	-8.14
1711.50	3	16-QAM	H	150	350	1 / 0	15.25	5.55	20.80	0.120	30.00	-9.20
1712.50	5	QPSK	H	150	348	1 / 0	17.19	5.55	22.74	0.188	30.00	-7.26
1732.50	5	QPSK	H	150	359	1 / 0	16.89	5.41	22.30	0.170	30.00	-7.70
1752.50	5	QPSK	H	150	351	1 / 24	16.84	5.27	22.11	0.163	30.00	-7.89
1712.50	5	16-QAM	H	150	348	1 / 0	15.41	5.55	20.96	0.125	30.00	-9.04
1715.00	10	QPSK	H	150	6	1 / 0	17.30	5.53	22.83	0.192	30.00	-7.17
1732.50	10	QPSK	H	150	349	1 / 0	17.05	5.41	22.46	0.176	30.00	-7.54
1750.00	10	QPSK	H	150	359	1 / 0	16.76	5.29	22.05	0.160	30.00	-7.95
1715.00	10	16-QAM	H	150	6	1 / 0	14.99	5.53	20.52	0.113	30.00	-9.48
1717.50	15	QPSK	H	150	3	1 / 0	17.33	5.51	22.84	0.192	30.00	-7.16
1732.50	15	QPSK	H	150	352	1 / 0	17.14	5.41	22.55	0.180	30.00	-7.45
1747.50	15	QPSK	H	150	356	1 / 0	16.82	5.31	22.13	0.163	30.00	-7.87
1717.50	15	16-QAM	H	150	3	1 / 0	15.04	5.51	20.55	0.114	30.00	-9.45
1720.00	20	QPSK	H	150	358	1 / 0	17.07	5.49	22.56	0.180	30.00	-7.44
1732.50	20	QPSK	H	150	346	1 / 0	17.14	5.41	22.55	0.180	30.00	-7.45
1745.00	20	QPSK	H	150	354	1 / 0	17.03	5.32	22.35	0.172	30.00	-7.65
1732.50	20	16-QAM	H	150	346	1 / 0	15.11	5.41	20.52	0.113	30.00	-9.48
1711.50	3	QPSK	V	150	352	1 / 0	14.64	5.55	20.19	0.105	30.00	-9.81

Table 7-5. EIRP Data (Band 4)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 121 of 147

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	V	150	358	1 / 0	18.11	4.82	22.93	0.196	33.01	-10.08
1880.00	1.4	QPSK	V	150	353	1 / 0	15.58	4.74	20.32	0.108	33.01	-12.69
1909.30	1.4	QPSK	V	150	359	1 / 0	14.72	4.68	19.40	0.087	33.01	-13.61
1850.70	1.4	16-QAM	V	150	358	1 / 0	16.82	4.82	21.64	0.146	33.01	-11.37
1851.50	3	QPSK	V	150	9	1 / 0	18.45	4.82	23.27	0.212	33.01	-9.74
1880.00	3	QPSK	V	150	350	1 / 0	15.69	4.74	20.43	0.110	33.01	-12.58
1908.50	3	QPSK	V	150	355	1 / 0	14.86	4.68	19.54	0.090	33.01	-13.47
1851.50	3	16-QAM	V	150	9	1 / 0	16.87	4.82	21.69	0.147	33.01	-11.32
1852.50	5	QPSK	V	150	4	1 / 0	18.24	4.81	23.05	0.202	33.01	-9.96
1880.00	5	QPSK	V	150	356	1 / 0	15.91	4.74	20.65	0.116	33.01	-12.36
1907.50	5	QPSK	V	150	358	1 / 0	14.84	4.68	19.52	0.090	33.01	-13.49
1852.50	5	16-QAM	V	150	4	1 / 0	16.58	4.81	21.39	0.138	33.01	-11.62
1855.00	10	QPSK	V	150	10	1 / 0	18.13	4.81	22.94	0.197	33.01	-10.07
1880.00	10	QPSK	V	150	358	1 / 0	16.24	4.74	20.98	0.125	33.01	-12.03
1905.00	10	QPSK	V	150	0	1 / 0	14.96	4.68	19.64	0.092	33.01	-13.37
1855.00	10	16-QAM	V	150	10	1 / 0	16.54	4.81	21.35	0.136	33.01	-11.66
1857.50	15	QPSK	V	150	5	1 / 0	18.25	4.80	23.05	0.202	33.01	-9.96
1880.00	15	QPSK	V	150	356	1 / 0	16.59	4.74	21.33	0.136	33.01	-11.68
1902.50	15	QPSK	V	150	3	1 / 0	15.54	4.69	20.23	0.105	33.01	-12.78
1857.50	15	16-QAM	V	150	5	1 / 0	16.05	4.80	20.85	0.122	33.01	-12.16
1860.00	20	QPSK	V	150	8	1 / 0	17.99	4.79	22.78	0.190	33.01	-10.23
1880.00	20	QPSK	V	150	350	1 / 0	16.63	4.74	21.37	0.137	33.01	-11.64
1900.00	20	QPSK	V	150	352	1 / 0	15.44	4.69	20.13	0.103	33.01	-12.88
1860.00	20	16-QAM	V	150	8	1 / 0	16.36	4.79	21.15	0.130	33.01	-11.86
1851.50	3	QPSK	H	150	357	1 / 0	17.54	4.82	22.36	0.172	33.01	-10.65

Table 7-6. EIRP Data (Band 2)

FCC ID: A3LSMJ260AZ	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset	Page 122 of 147

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	150	129	1 / 24	17.41	5.74	23.15	0.207	33.01	-9.86
2535.00	5	QPSK	H	150	126	1 / 24	18.03	5.86	23.89	0.245	33.01	-9.12
2567.50	5	QPSK	H	150	113	1 / 0	18.00	5.98	23.98	0.250	33.01	-9.03
2535.00	5	16-QAM	H	150	126	1 / 24	16.96	5.86	22.82	0.191	33.01	-10.19
2505.00	10	QPSK	H	150	352	1 / 49	17.48	5.75	23.23	0.210	33.01	-9.78
2535.00	10	QPSK	H	150	120	1 / 0	17.78	5.86	23.64	0.231	33.01	-9.37
2565.00	10	QPSK	H	150	115	1 / 0	17.89	5.97	23.86	0.243	33.01	-9.15
2565.00	10	16-QAM	H	150	115	1 / 0	16.91	5.97	22.88	0.194	33.01	-10.13
2507.50	15	QPSK	H	150	139	1 / 74	17.93	5.76	23.69	0.234	33.01	-9.32
2535.00	15	QPSK	H	150	123	1 / 74	18.14	5.86	24.00	0.251	33.01	-9.01
2562.50	15	QPSK	H	150	120	1 / 0	17.74	5.96	23.70	0.235	33.01	-9.31
2535.00	15	16-QAM	H	150	123	1 / 74	17.03	5.86	22.89	0.195	33.01	-10.12
2510.00	20	QPSK	H	150	129	1 / 99	17.59	5.77	23.36	0.217	33.01	-9.65
2535.00	20	QPSK	H	150	115	1 / 99	18.16	5.86	24.02	0.252	33.01	-8.99
2560.00	20	QPSK	H	150	239	1 / 0	17.83	5.95	23.78	0.239	33.01	-9.23
2535.00	20	16-QAM	H	150	115	1 / 99	16.91	5.86	22.77	0.189	33.01	-10.24
2535.00	20	QPSK	V	150	38	1 / 99	11.26	5.86	17.12	0.052	33.01	-15.89

Table 7-7. EIRP Data (Band 7)

FCC ID: A3LSMJ260AZ	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset	Page 123 of 147

7.7 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: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 124 of 147

Test Setup

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

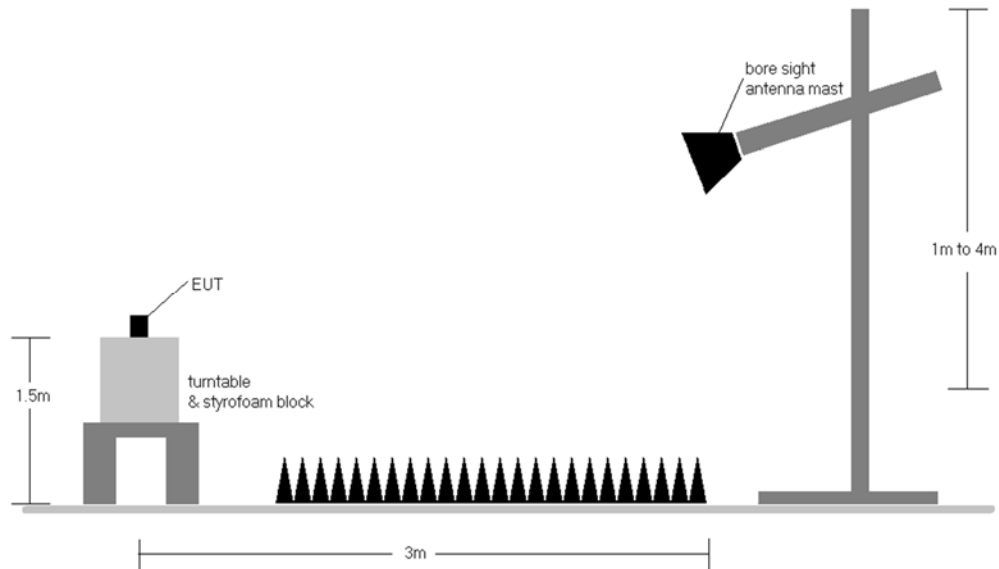


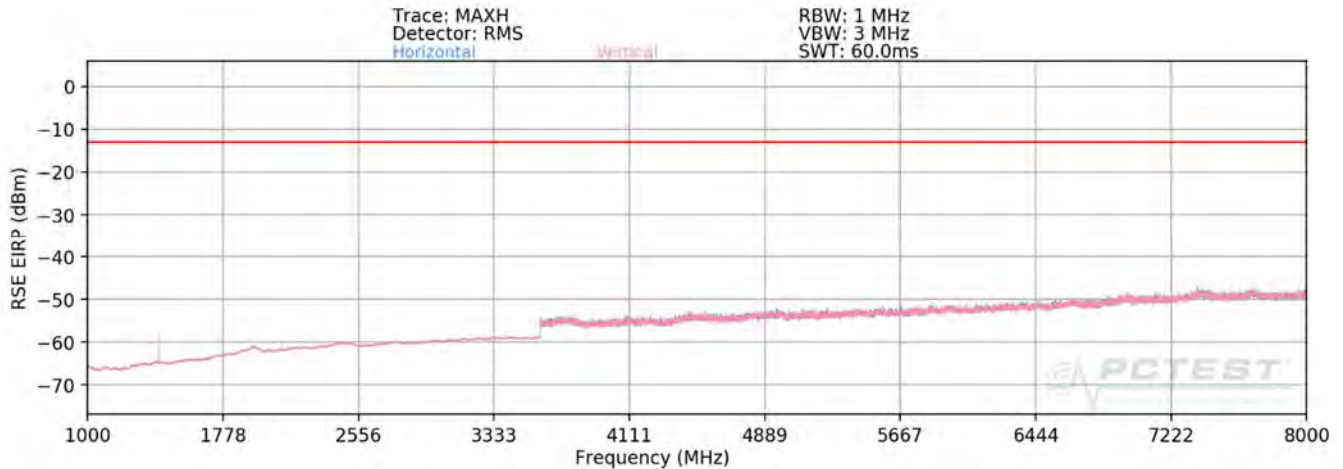
Figure 7-7. Test Instrument & Measurement Setup

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: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 125 of 147

Band 12



Plot 7-190. Radiated Spurious Plot above 1GHz (Band 12)

OPERATING FREQUENCY: 701.50 MHz
CHANNEL: 23035
MODULATION SIGNAL: QPSK
BANDWIDTH: 5.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1403.00	H	224	149	-71.95	4.39	-67.55	-54.6
2104.50	H	109	169	-66.95	5.27	-61.69	-48.7
2806.00	H	-	-	-74.99	6.98	-68.01	-55.0

Table 7-8. Radiated Spurious Data (Band 12 – Low Channel)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 126 of 147

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	H	112	208	-72.64	4.56	-68.08	-55.1
2122.50	H	110	128	-64.74	5.31	-59.43	-46.4
2830.00	H	392	169	-74.25	7.02	-67.24	-54.2
3537.50	H	-	-	-73.31	8.52	-64.79	-51.8

Table 7-9. Radiated Spurious Data (Band 12 – Mid Channel)

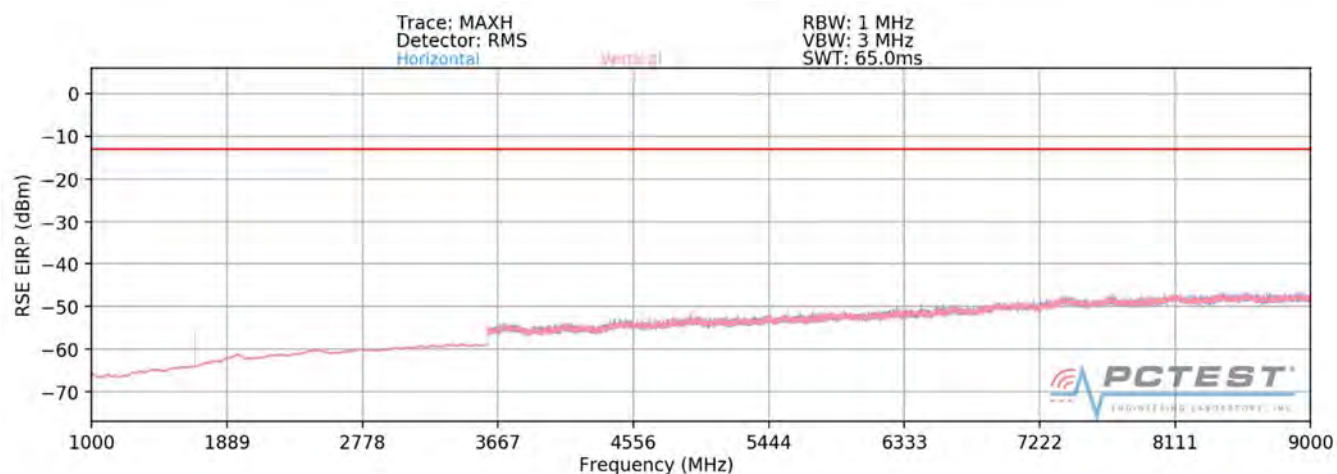
OPERATING FREQUENCY: 713.50 MHz
 CHANNEL: 23155
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1427.00	H	394	132	-73.89	4.72	-69.17	-56.2
2140.50	H	248	120	-63.83	5.35	-58.48	-45.5
2854.00	H	-	-	-74.21	7.05	-67.16	-54.2

Table 7-10. Radiated Spurious Data (Band 12 – High Channel)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 127 of 147

Band 5



Plot 7-191. Radiated Spurious Plot above 1GHz (Band 5)

OPERATING FREQUENCY: 826.50 MHz
CHANNEL: 20425
MODULATION SIGNAL: QPSK
BANDWIDTH: 5.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1653.00	H	264	166	-64.10	3.61	-60.50	-47.5
2479.50	H	359	350	-65.30	4.23	-61.07	-48.1
3306.00	H	-	-	-67.28	5.80	-61.48	-48.5

Table 7-11. Radiated Spurious Data (Band 5 – Low Channel)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 128 of 147

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 20525
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	136	346	-61.87	3.62	-58.25	-45.3
2509.50	H	109	140	-66.16	4.33	-61.83	-48.8
3346.00	H	-	-	-66.82	5.92	-60.90	-47.9

Table 7-12. Radiated Spurious Data (Band 5 – Mid Channel)

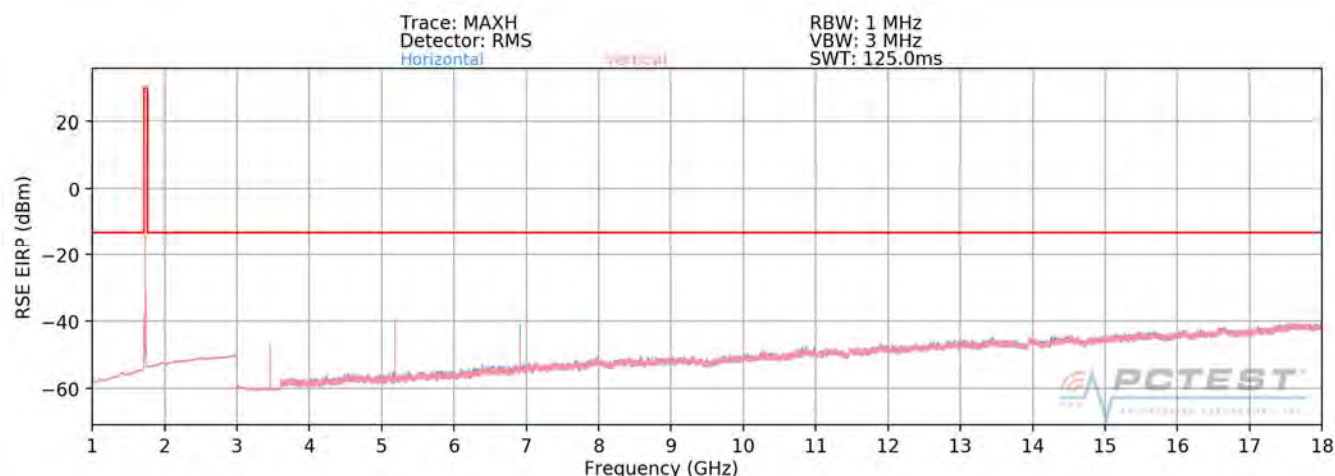
OPERATING FREQUENCY: 846.50 MHz
 CHANNEL: 20625
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1693.00	H	101	21	-57.38	3.63	-53.75	-40.7
2539.50	H	196	326	-66.31	4.52	-61.79	-48.8

Table 7-13. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 129 of 147

Band 4



Plot 7-192. Radiated Spurious Plot above 1GHz (Band 4)

OPERATING FREQUENCY: 1711.50 MHz
CHANNEL: 19965
MODULATION SIGNAL: QPSK
BANDWIDTH: 3.0 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]
3423.00	V	159	315	-46.83	6.20	-40.63	-27.6
5134.50	V	192	13	-52.65	8.66	-43.99	-31.0
6846.00	V	362	21	-51.43	8.77	-42.65	-29.7
8557.50	V	127	2	-66.29	9.12	-57.16	-44.2
10269.00	V	168	73	-60.93	9.64	-51.30	-38.3
11980.50	V	-	-	-62.57	9.30	-53.27	-40.3
13692.00	V	-	-	-62.07	9.02	-53.04	-40.0

Table 7-14. Radiated Spurious Data (Band 4 – Low Channel)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset			Page 130 of 147

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 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]
3465.00	V	208	329	-51.74	6.27	-45.47	-32.5
5197.50	V	169	11	-49.53	8.71	-40.82	-27.8
6930.00	V	286	3	-52.02	8.72	-43.31	-30.3
8662.50	V	166	364	-66.63	9.27	-57.36	-44.4
10395.00	V	167	82	-62.93	9.61	-53.32	-40.3
12127.50	V	-	-	-63.79	9.16	-54.63	-41.6
13860.00	V	-	-	-61.13	9.00	-52.13	-39.1

Table 7-15. Radiated Spurious Data (Band 4 – Mid Channel)

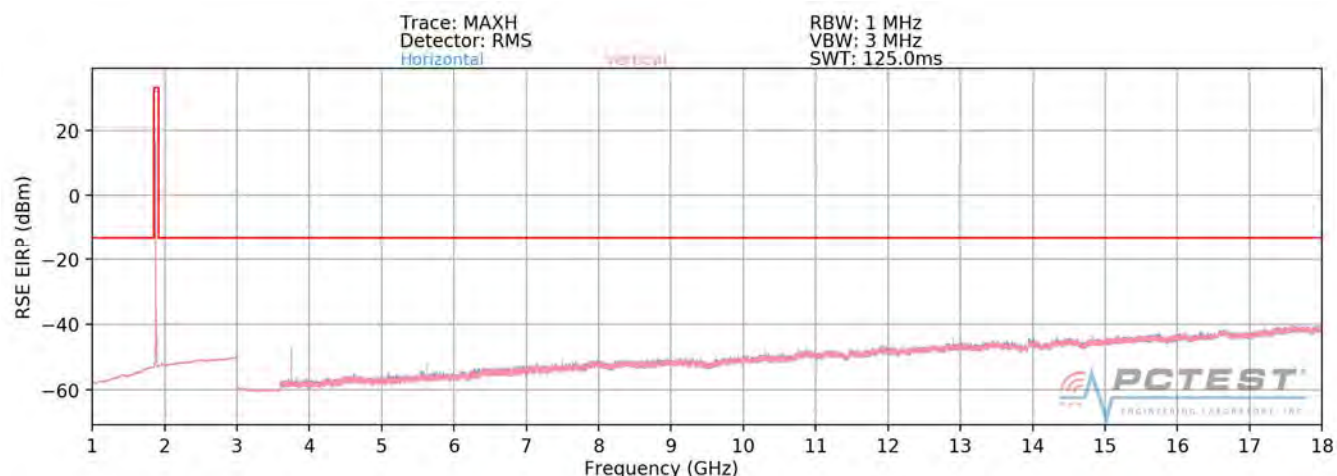
OPERATING FREQUENCY: 1753.50 MHz
 CHANNEL: 20385
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
3507.00	V	223	323	-54.71	6.34	-48.36	-35.4
5260.50	V	204	3	-52.20	8.72	-43.48	-30.5
7014.00	V	333	8	-53.29	8.75	-44.54	-31.5
8767.50	V	152	358	-66.48	9.49	-56.98	-44.0
10521.00	V	370	14	-63.95	9.61	-54.34	-41.3
12274.50	V	-	-	-62.96	9.08	-53.88	-40.9
14028.00	V	-	-	-61.95	8.90	-53.05	-40.1

Table 7-16. Radiated Spurious Data (Band 4 – High Channel)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 131 of 147

Band 2



Plot 7-193. Radiated Spurious Plot above 1GHz (Band 2)

OPERATING FREQUENCY: 1851.50 MHz
CHANNEL: 18615
MODULATION SIGNAL: QPSK
BANDWIDTH: 3.0 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]
3703.00	V	124	129	-56.27	6.56	-49.70	-36.7
5554.50	V	118	345	-54.62	8.72	-45.90	-32.9
7406.00	V	342	18	-61.82	8.41	-53.41	-40.4
9257.50	V	-	-	-67.77	9.45	-58.32	-45.3
11109.00	V	-	-	-65.60	9.31	-56.29	-43.3

Table 7-17. Radiated Spurious Data (Band 2 – Low Channel)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset			Page 132 of 147

OPERATING FREQUENCY: 1880.00 MHz
CHANNEL: 18900
MODULATION SIGNAL: QPSK
BANDWIDTH: 3.0 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]
3760.00	V	122	131	-56.34	6.67	-49.67	-36.7
5640.00	V	123	347	-60.43	8.81	-51.62	-38.6
7520.00	V	336	14	-64.14	8.48	-55.66	-42.7
9400.00	V	-	-	-66.52	9.32	-57.20	-44.2
11280.00	V	-	-	-64.98	9.24	-55.74	-42.7

Table 7-18. Radiated Spurious Data (Band 2 – Mid Channel)

OPERATING FREQUENCY: 1908.50 MHz
CHANNEL: 19185
MODULATION SIGNAL: QPSK
BANDWIDTH: 3.0 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]
3817.00	V	143	128	-56.56	6.98	-49.58	-36.6
5725.50	V	350	350	-56.38	8.77	-47.61	-34.6
7634.00	V	330	272	-65.99	8.53	-57.46	-44.5
9542.50	V	135	84	-65.54	9.42	-56.12	-43.1
11451.00	V	-	-	-64.30	9.17	-55.13	-42.1
13359.50	V	-	-	-63.04	8.87	-54.17	-41.2

Table 7-19. Radiated Spurious Data (Band 2 – High Channel)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 133 of 147

Band 7



Plot 7-194. Radiated Spurious Plot above 1GHz (Band 7)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	108	344	-57.86	8.56	-49.30	-24.3
7530.00	H	277	18	-58.35	8.46	-49.89	-24.9
10040.00	H	277	359	-56.24	9.85	-46.39	-21.4
12550.00	H	-	-	-59.48	9.06	-50.43	-25.4

Table 7-20. Radiated Spurious Data (Band 7 – Low Channel)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset			Page 134 of 147

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	H	115	42	-58.56	8.60	-49.96	-25.0
7605.00	H	222	19	-60.65	8.48	-52.16	-27.2
10140.00	H	245	350	-56.32	9.78	-46.54	-21.5
12675.00	H	-	-	-59.02	9.08	-49.94	-24.9
25350.00	V	-	-	-66.98	12.03	-54.95	-29.9

Table 7-21. Radiated Spurious Data (Band 7 – Mid Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	H	106	151	-58.45	8.66	-49.79	-24.8
7680.00	H	263	329	-59.13	8.58	-50.55	-25.6
10240.00	H	223	342	-54.09	9.65	-44.43	-19.4
12800.00	H	-	-	-58.54	9.07	-49.47	-24.5

Table 7-22. Radiated Spurious Data (Band 7 – High Channel)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 135 of 147

7.8 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: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 136 of 147

Band 12 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz
 CHANNEL: 23790
 REFERENCE VOLTAGE: 4.21 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.21	+ 20 (Ref)	707,499,938	-62	-0.0000088
100 %		- 30	707,500,339	339	0.0000479
100 %		- 20	707,500,042	42	0.0000059
100 %		- 10	707,500,058	58	0.0000082
100 %		0	707,500,117	117	0.0000165
100 %		+ 10	707,499,568	-432	-0.0000611
100 %		+ 20	707,499,984	-16	-0.0000023
100 %		+ 30	707,500,329	329	0.0000465
100 %		+ 40	707,499,892	-108	-0.0000153
100 %		+ 50	707,499,895	-105	-0.0000148
BATT. ENDPOINT	3.62	+ 20	707,499,901	-99	-0.0000140

Table 7-23. 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: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 137 of 147

Band 12 Frequency Stability Measurements

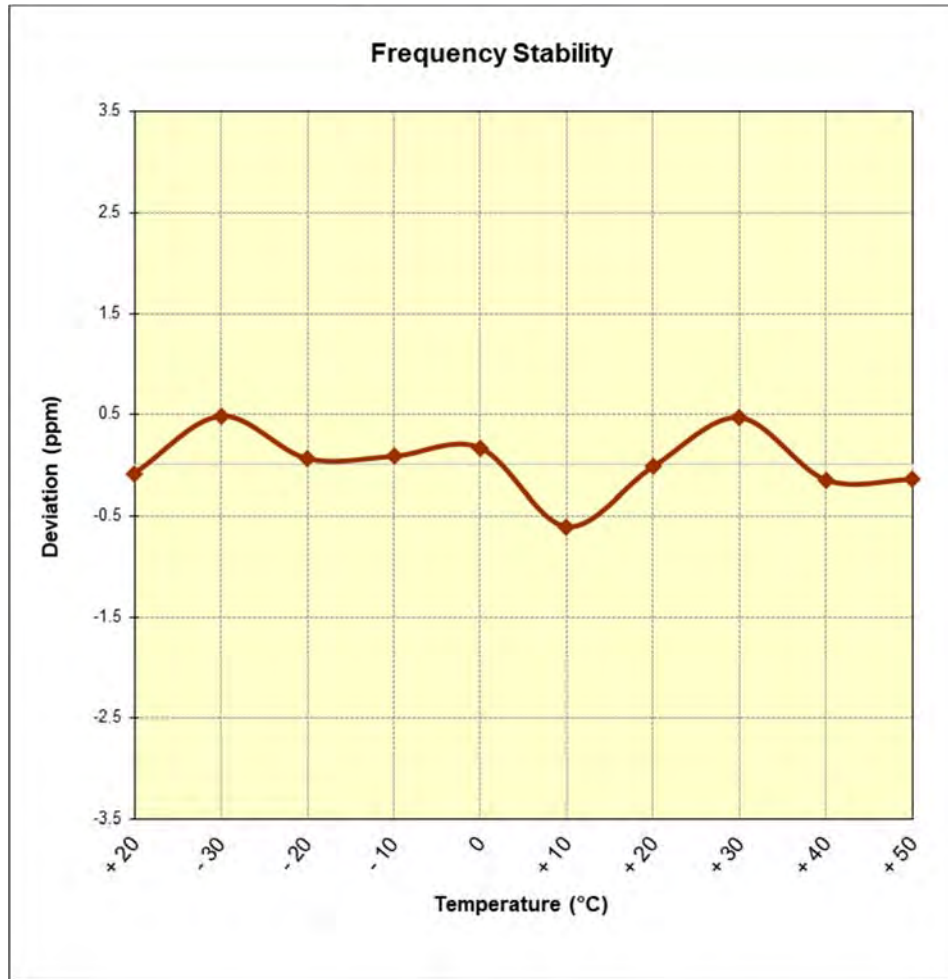


Figure 7-8. Frequency Stability Graph (Band 12)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 138 of 147

Band 5 Frequency Stability Measurements

OPERATING FREQUENCY: 836,500,000 Hz
 CHANNEL: 20525
 REFERENCE VOLTAGE: 4.21 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.21	+ 20 (Ref)	836,499,761	-239	-0.0000286
100 %		- 30	836,500,399	399	0.0000477
100 %		- 20	836,500,094	94	0.0000112
100 %		- 10	836,500,256	256	0.0000306
100 %		0	836,500,022	22	0.0000026
100 %		+ 10	836,499,933	-67	-0.0000080
100 %		+ 20	836,500,060	60	0.0000072
100 %		+ 30	836,500,277	277	0.0000331
100 %		+ 40	836,499,839	-161	-0.0000192
100 %		+ 50	836,499,762	-238	-0.0000285
BATT. ENDPOINT	3.62	+ 20	836,500,005	5	0.0000006

Table 7-24. Frequency Stability Data (Band 5)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 139 of 147

Band 5 Frequency Stability Measurements

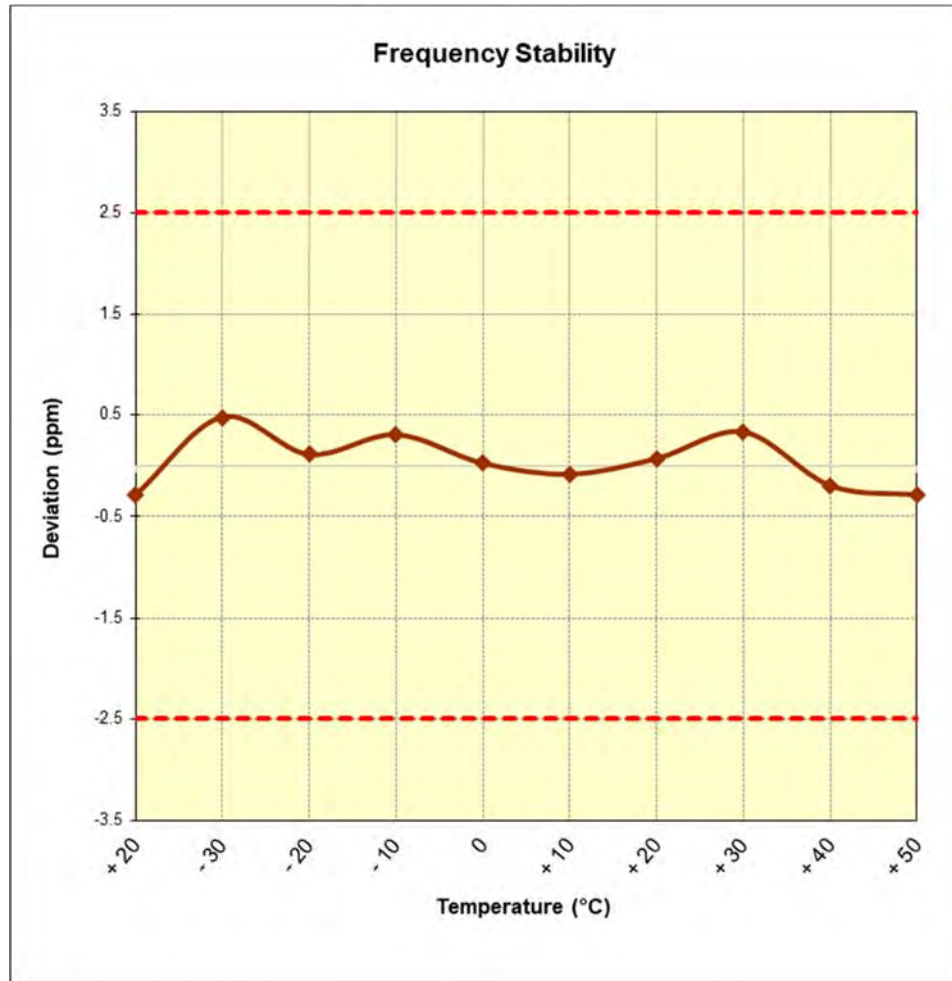


Figure 7-9. Frequency Stability Graph (Band 5)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset	Page 140 of 147	

Band 4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,732,500,000 Hz
 CHANNEL: 20175
 REFERENCE VOLTAGE: 4.21 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.21	+ 20 (Ref)	1,732,500,202	202	0.0000117
100 %		- 30	1,732,499,997	-3	-0.0000002
100 %		- 20	1,732,500,226	226	0.0000130
100 %		- 10	1,732,500,306	306	0.0000177
100 %		0	1,732,500,027	27	0.0000016
100 %		+ 10	1,732,499,671	-329	-0.0000190
100 %		+ 20	1,732,500,288	288	0.0000166
100 %		+ 30	1,732,499,991	-9	-0.0000005
100 %		+ 40	1,732,500,299	299	0.0000173
100 %		+ 50	1,732,499,953	-47	-0.0000027
BATT. ENDPOINT	3.62	+ 20	1,732,499,744	-256	-0.0000148

Table 7-25. Frequency Stability Data (Band 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: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset	Page 141 of 147	

Band 4 Frequency Stability Measurements

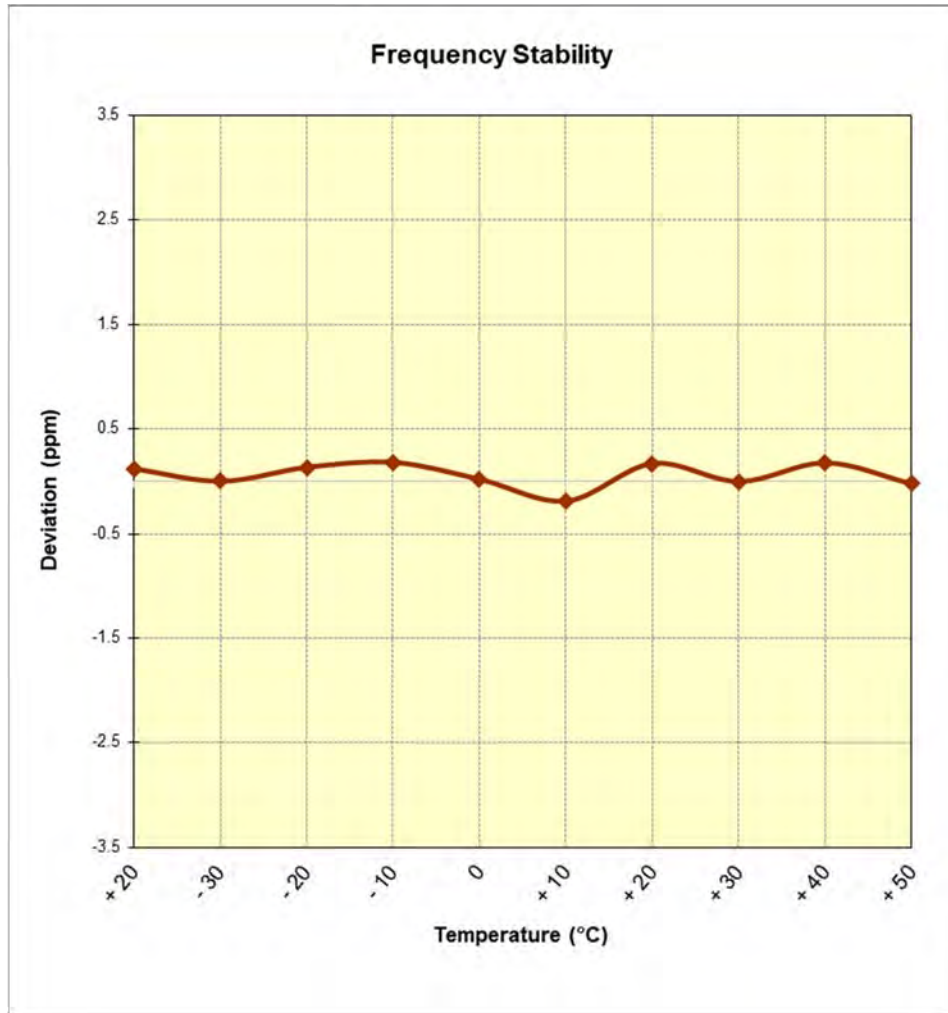


Figure 7-10. Frequency Stability Graph (Band 4)

FCC ID: A3LSMJ260AZ	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 142 of 147

Band 2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,880,000,000 Hz
 CHANNEL: 18900
 REFERENCE VOLTAGE: 4.21 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.21	+ 20 (Ref)	1,879,999,621	-379	-0.0000202
100 %		- 30	1,880,000,018	18	0.0000010
100 %		- 20	1,879,999,857	-143	-0.0000076
100 %		- 10	1,879,999,961	-39	-0.0000021
100 %		0	1,879,999,873	-127	-0.0000068
100 %		+ 10	1,879,999,944	-56	-0.0000030
100 %		+ 20	1,880,000,206	206	0.0000110
100 %		+ 30	1,879,999,887	-113	-0.0000060
100 %		+ 40	1,879,999,811	-189	-0.0000101
100 %		+ 50	1,879,999,888	-112	-0.0000060
BATT. ENDPOINT	3.62	+ 20	1,880,000,014	14	0.0000007

Table 7-26. Frequency Stability Data (Band 2)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 143 of 147

Band 2 Frequency Stability Measurements

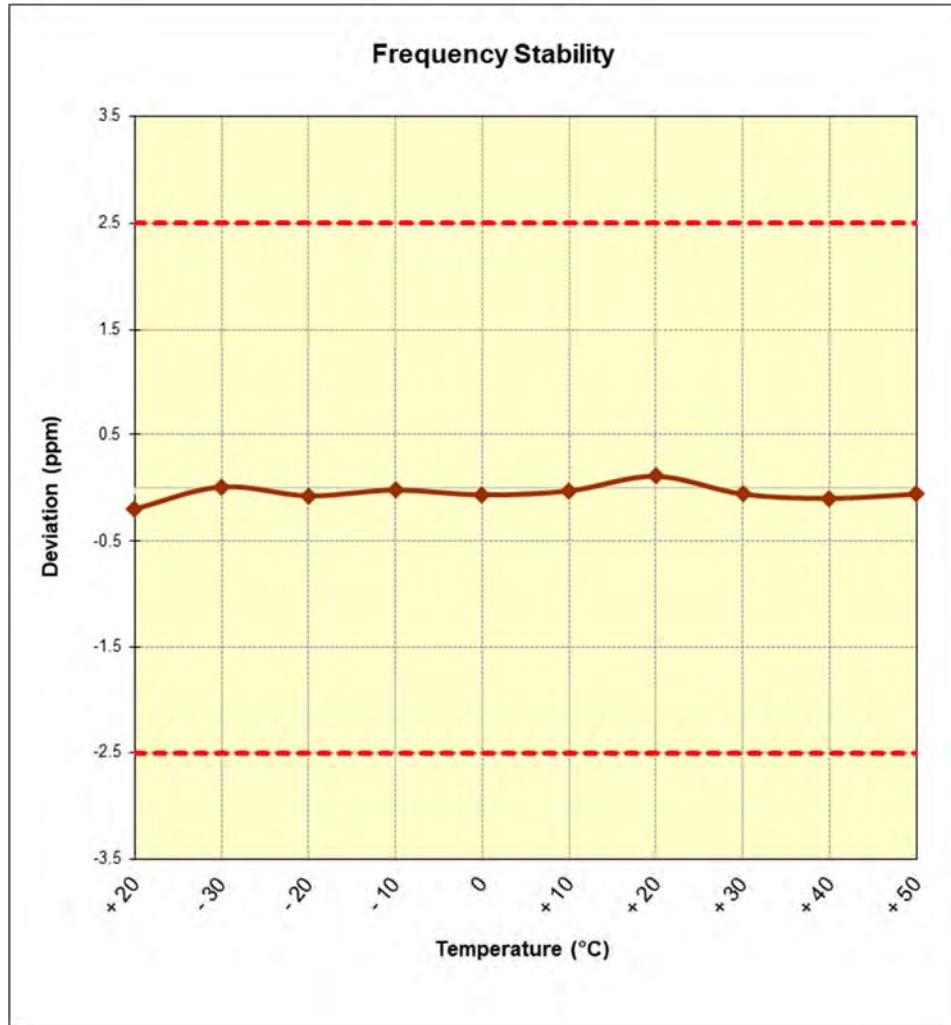


Figure 7-11. Frequency Stability Graph (Band 2)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset	Page 144 of 147	

Band 7 Frequency Stability Measurements

OPERATING FREQUENCY: 2,535,000,000 Hz
 CHANNEL: 21100
 REFERENCE VOLTAGE: 4.21 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.21	+ 20 (Ref)	2,534,999,697	-303	-0.0000120
100 %		- 30	2,534,999,806	-194	-0.0000077
100 %		- 20	2,535,000,164	164	0.0000065
100 %		- 10	2,535,000,208	208	0.0000082
100 %		0	2,534,999,857	-143	-0.0000056
100 %		+ 10	2,535,000,307	307	0.0000121
100 %		+ 20	2,535,000,008	8	0.0000003
100 %		+ 30	2,534,999,990	-10	-0.0000004
100 %		+ 40	2,535,000,286	286	0.0000113
100 %		+ 50	2,534,999,849	-151	-0.0000060
BATT. ENDPOINT		+ 20	2,534,999,675	-325	-0.0000128

Table 7-27. 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: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset	Page 145 of 147	

Band 7 Frequency Stability Measurements

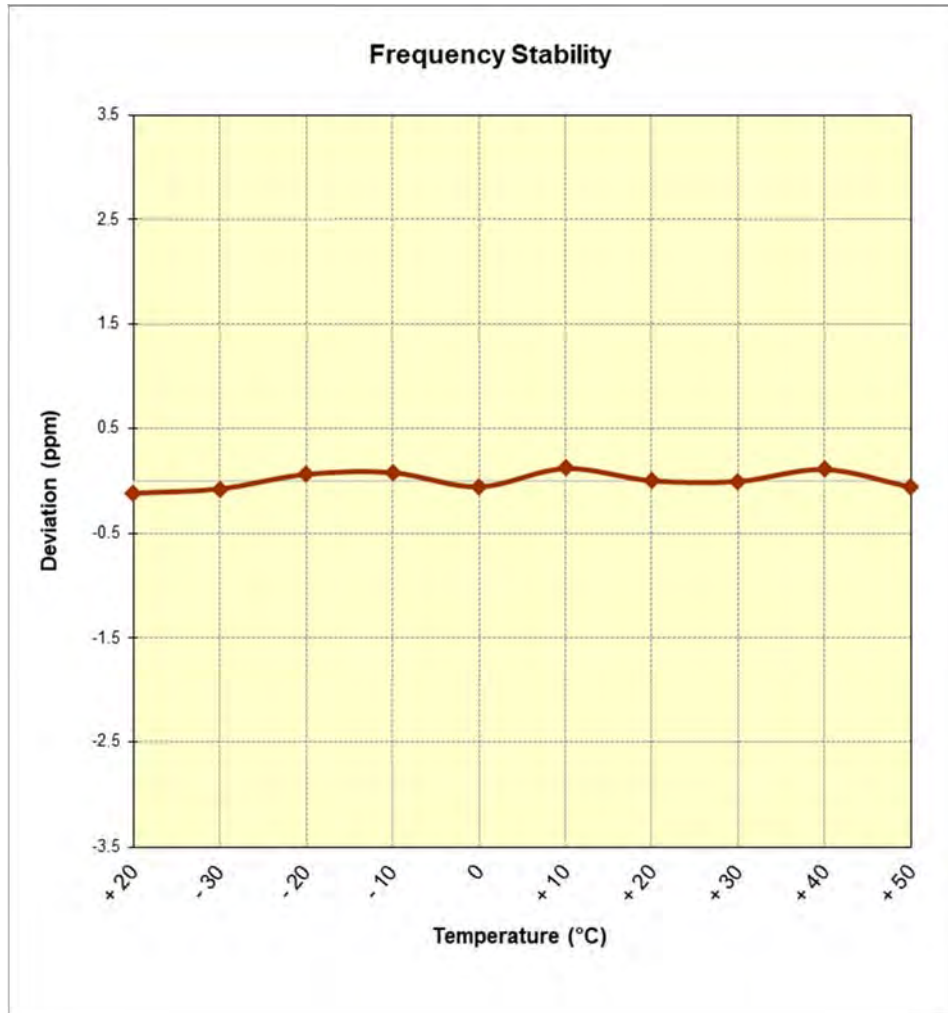


Figure 7-12. Frequency Stability Graph (Band 7)

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 146 of 147

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMJ260AZ** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

FCC ID: A3LSMJ260AZ		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1809210180-03-R1.A3L	Test Dates: 9/21 - 10/26/2018	EUT Type: Portable Handset		Page 147 of 147