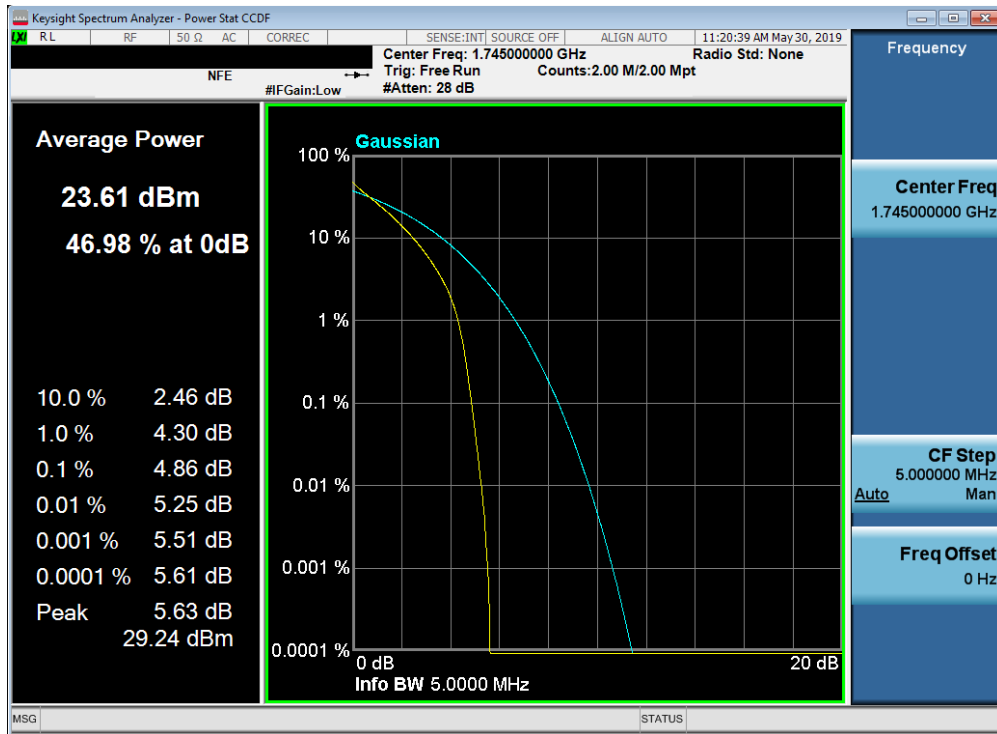
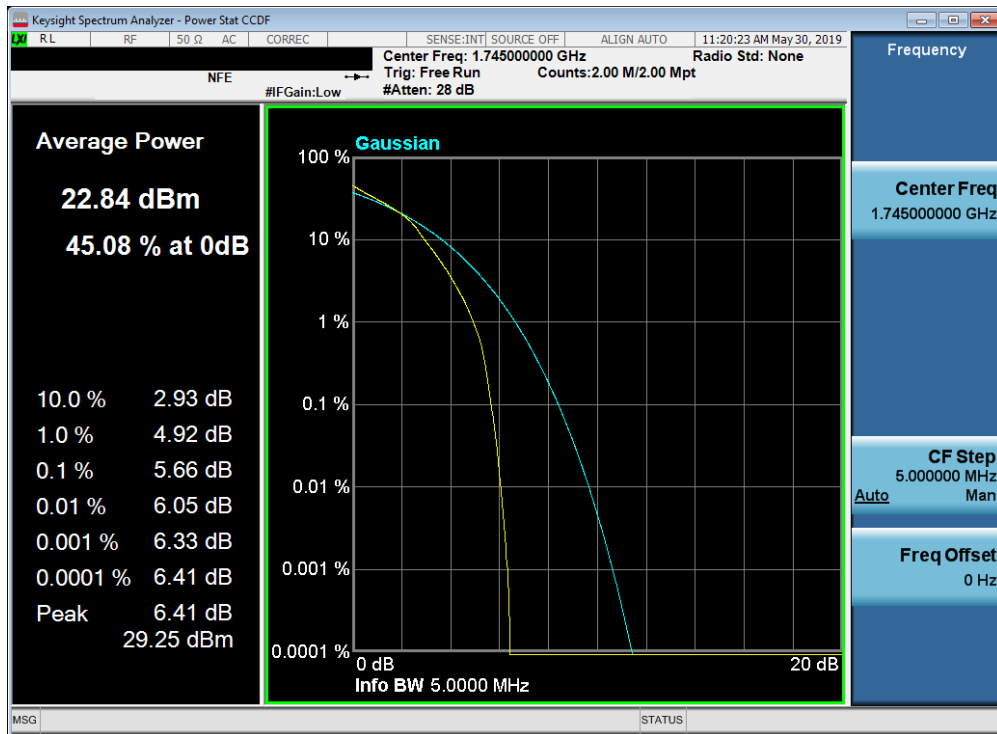


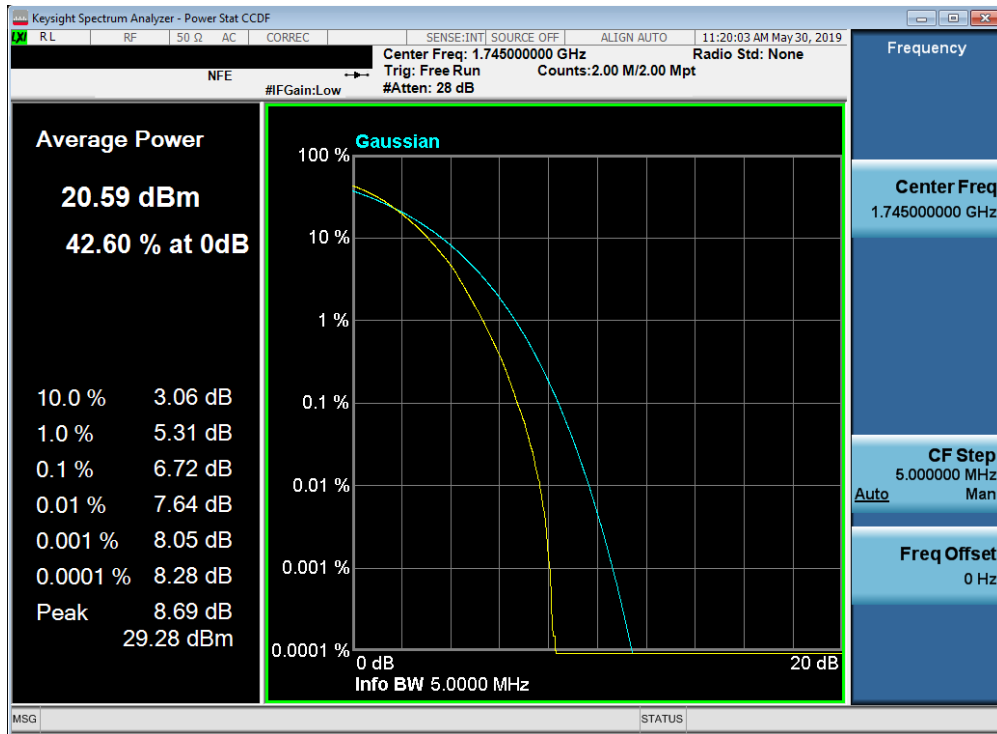


Plot 7-372. PAR Plot (Band 66/4 – 5.0MHz QPSK - Full RB Configuration)

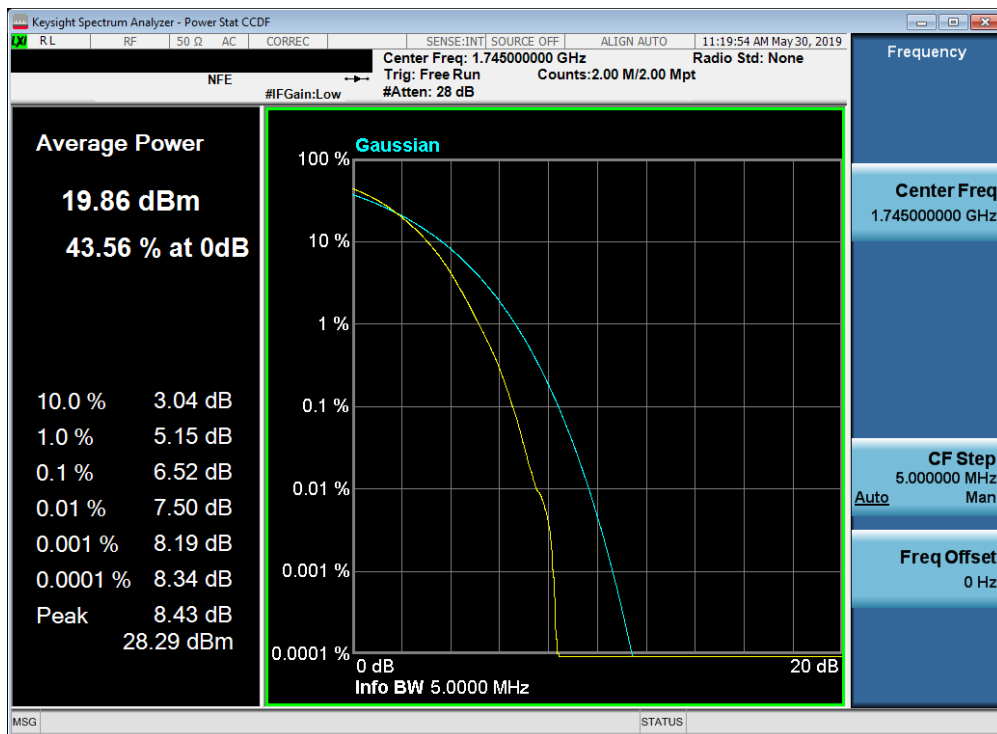


Plot 7-373. PAR Plot (Band 66/4 – 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 213 of 331

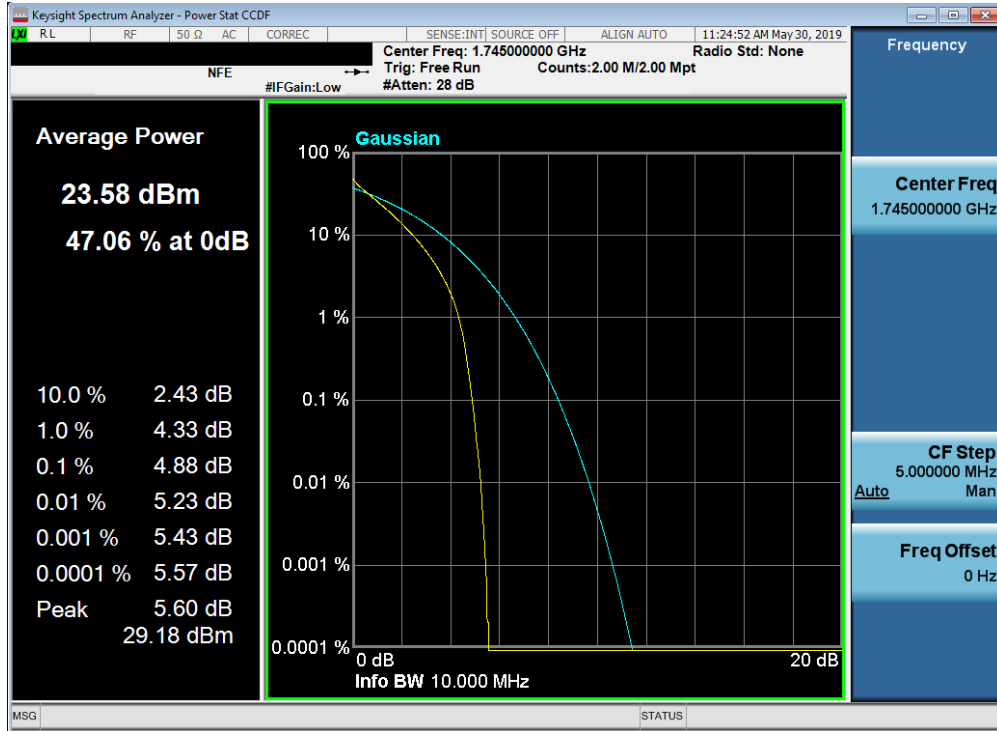


Plot 7-374. PAR Plot (Band 66/4 – 5.0MHz 64-QAM - Full RB Configuration)

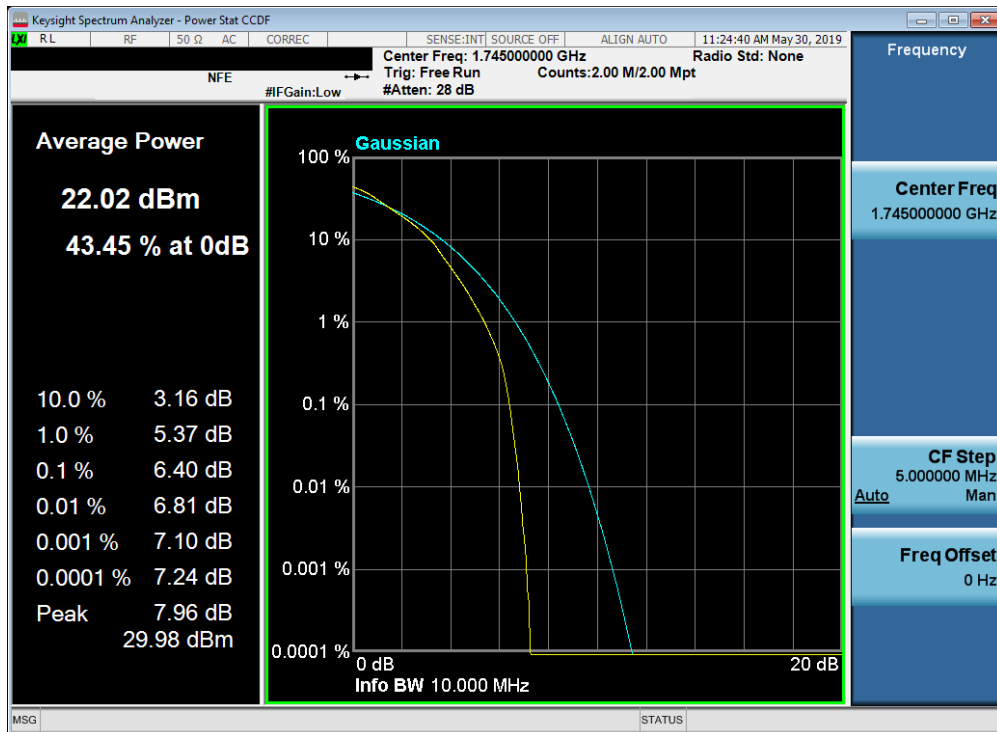


Plot 7-375. PAR Plot (Band 66/4 – 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 214 of 331

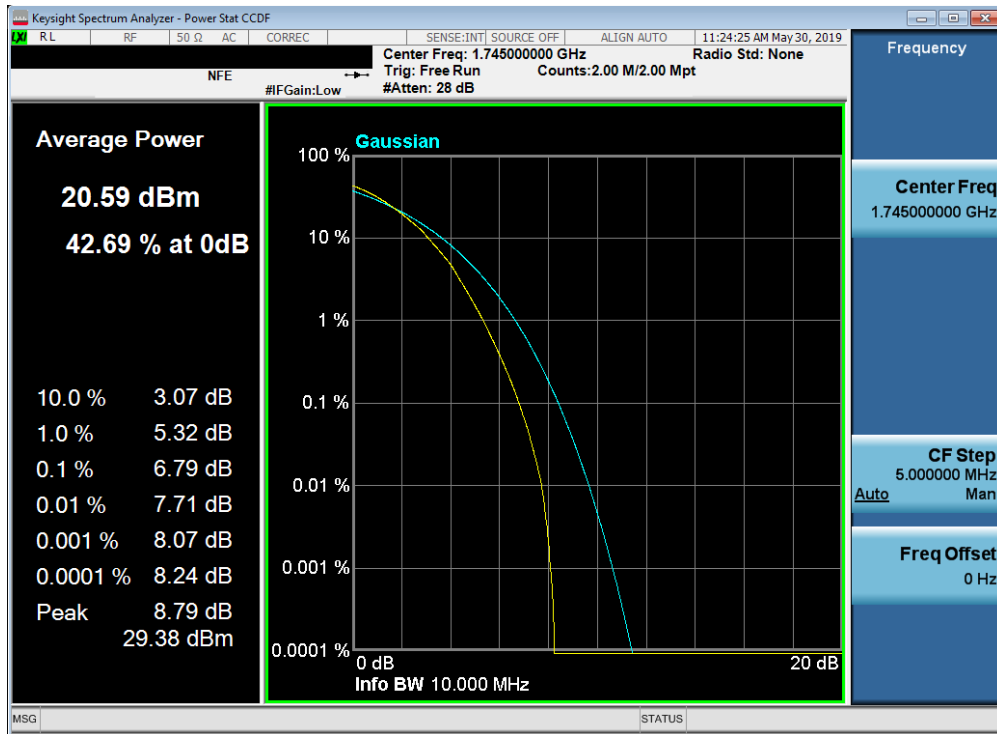


Plot 7-376. PAR Plot (Band 66/4 – 10.0MHz QPSK - Full RB Configuration)

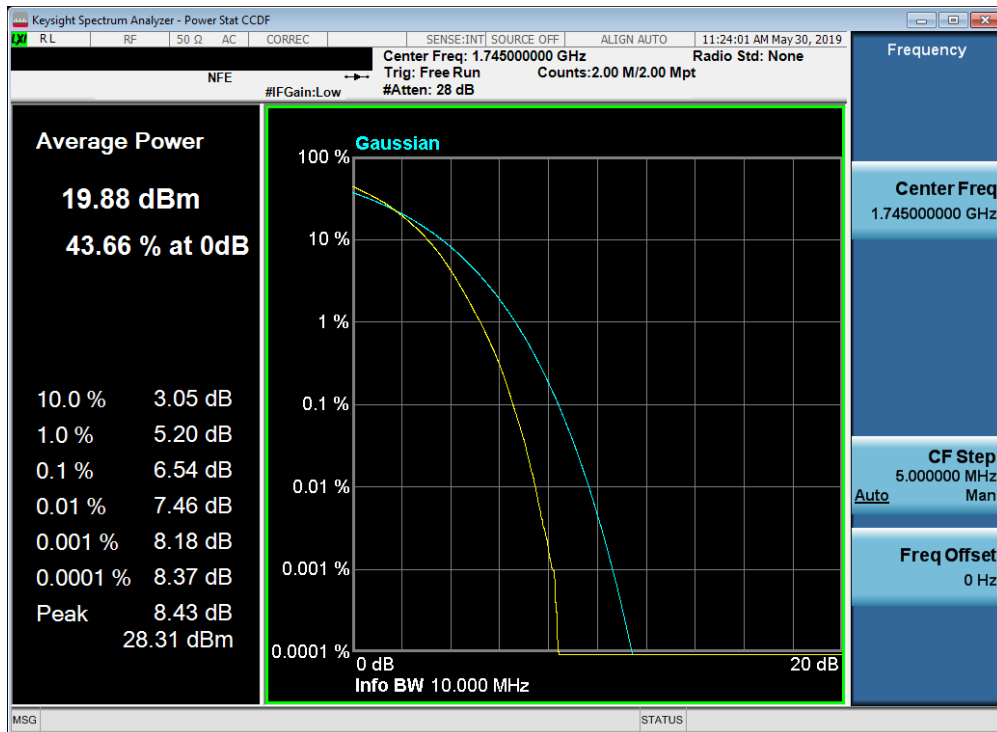


Plot 7-377. PAR Plot (Band 66/4 – 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 215 of 331

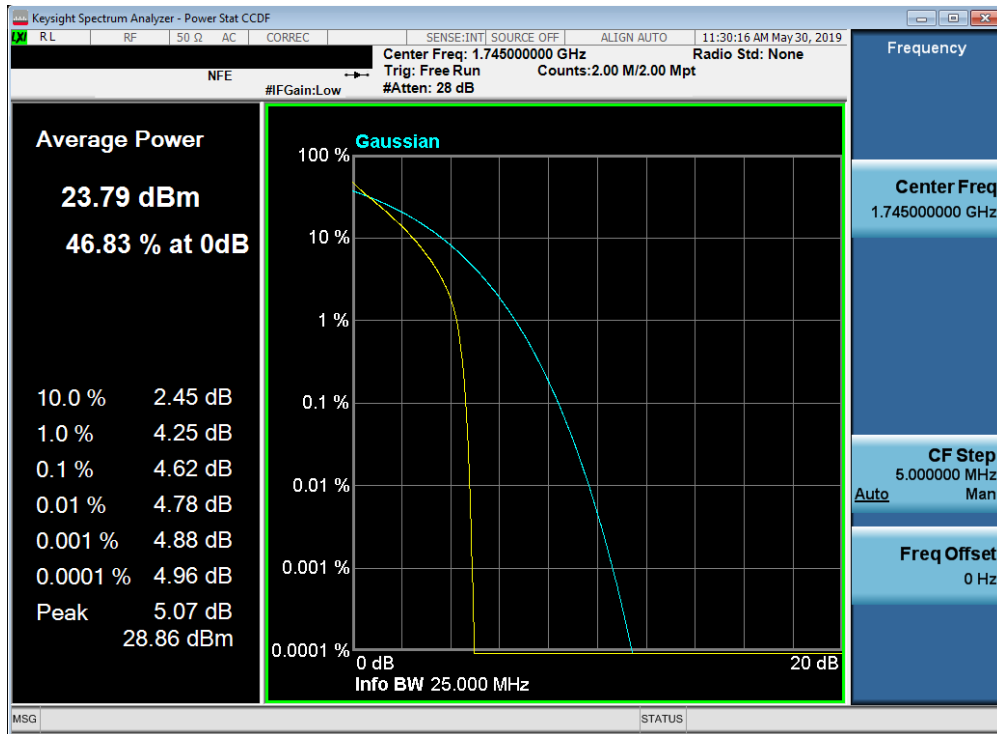


Plot 7-378. PAR Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

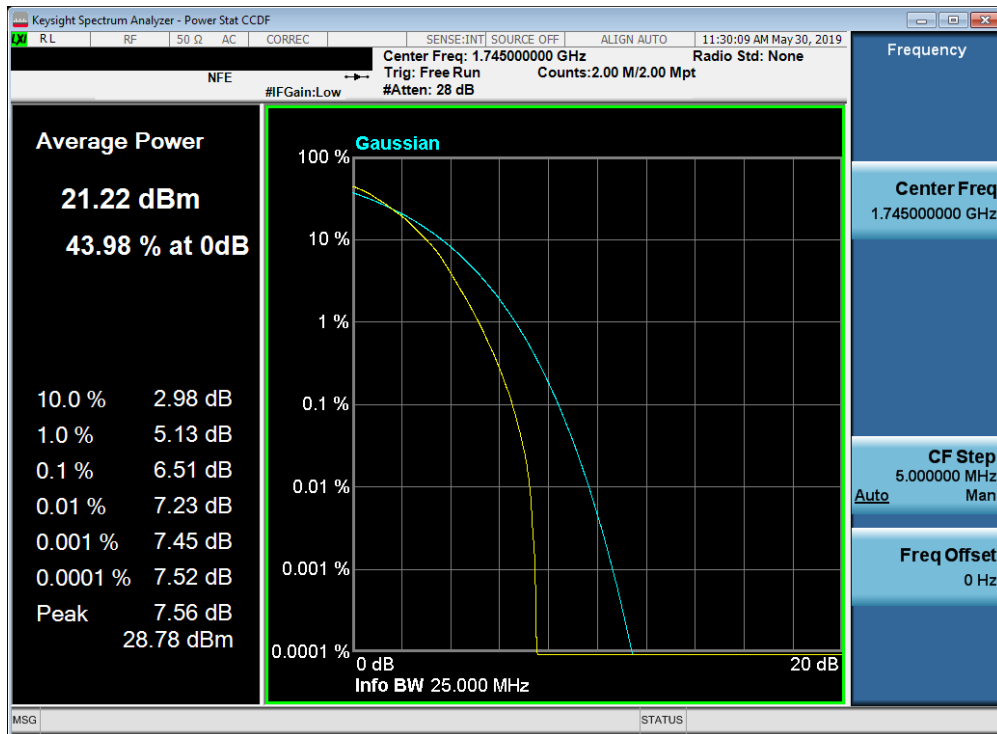


Plot 7-379. PAR Plot (Band 66/4 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 216 of 331

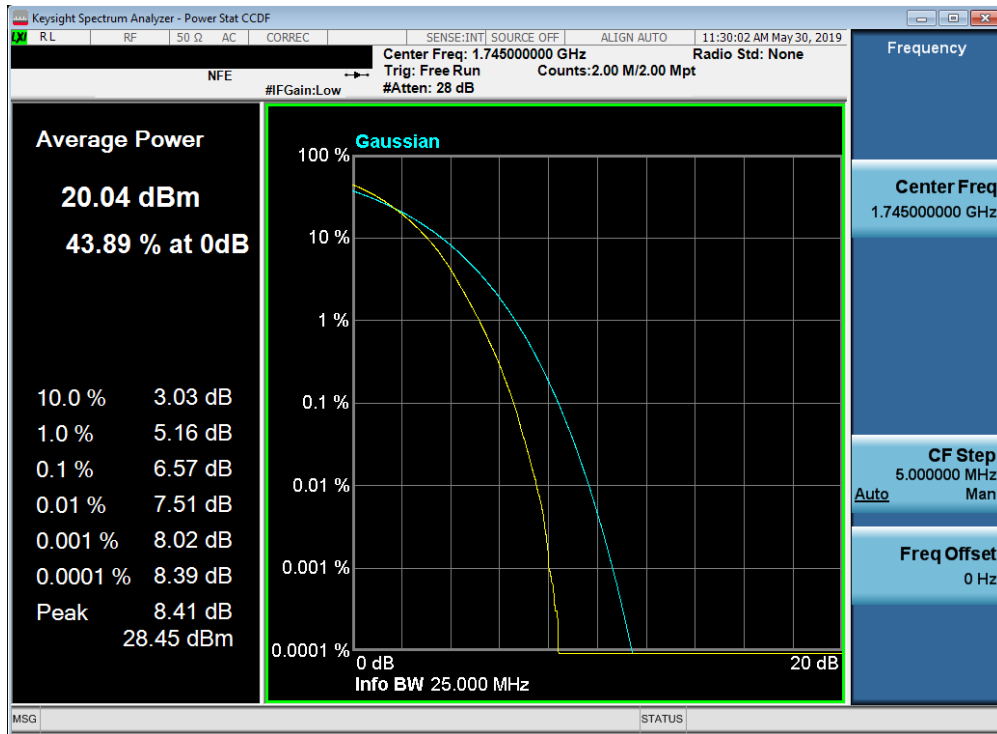


Plot 7-380. PAR Plot (Band 66/4 – 15.0MHz QPSK - Full RB Configuration)

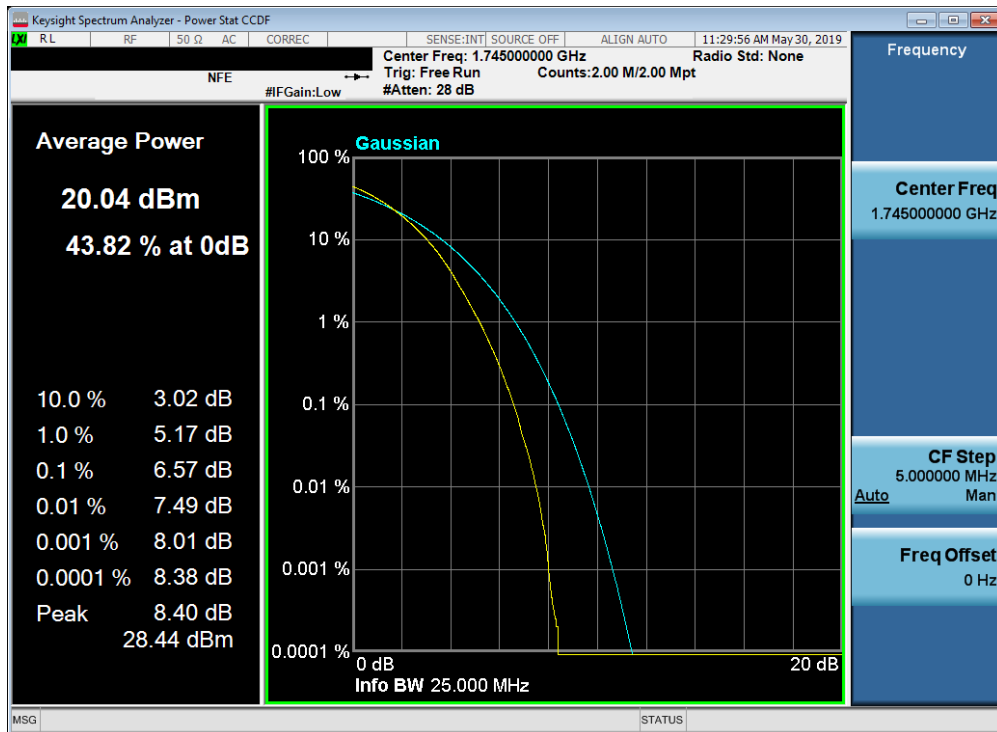


Plot 7-381. PAR Plot (Band 66/4 – 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 217 of 331

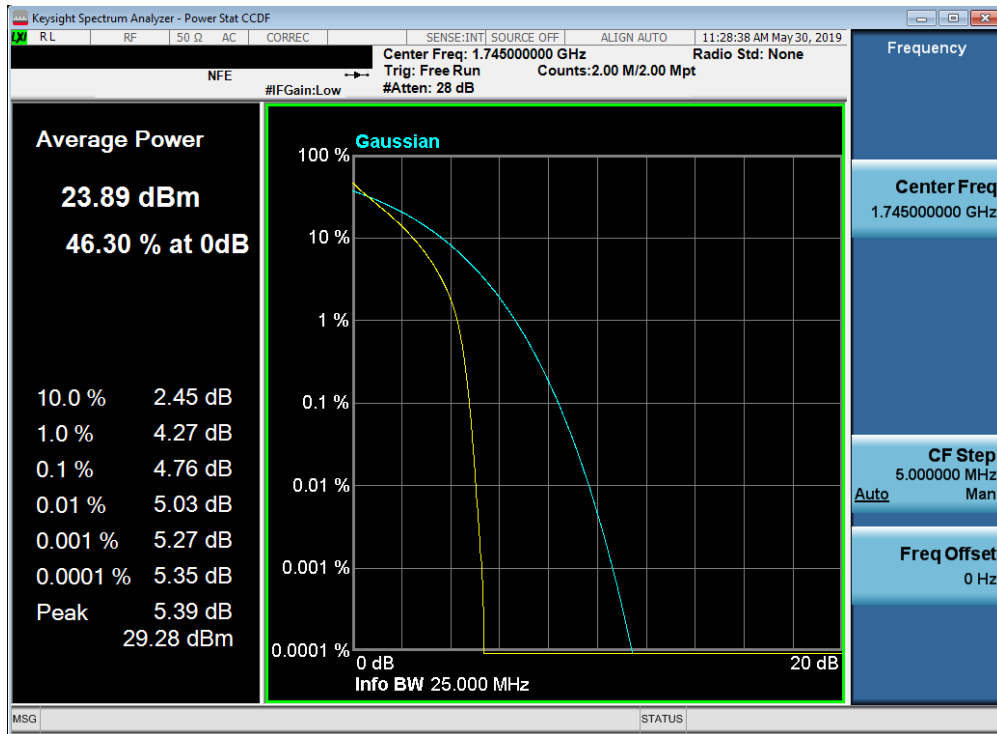


Plot 7-382. PAR Plot (Band 66/4 – 15.0MHz 64-QAM - Full RB Configuration)

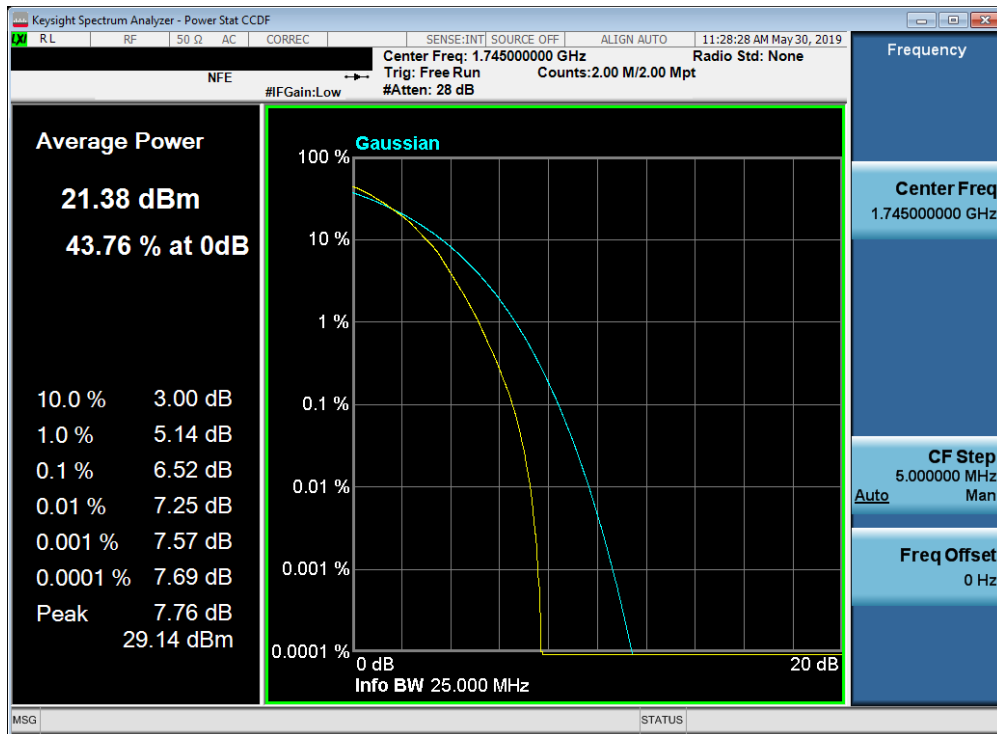


Plot 7-383. PAR Plot (Band 66/4 – 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 218 of 331

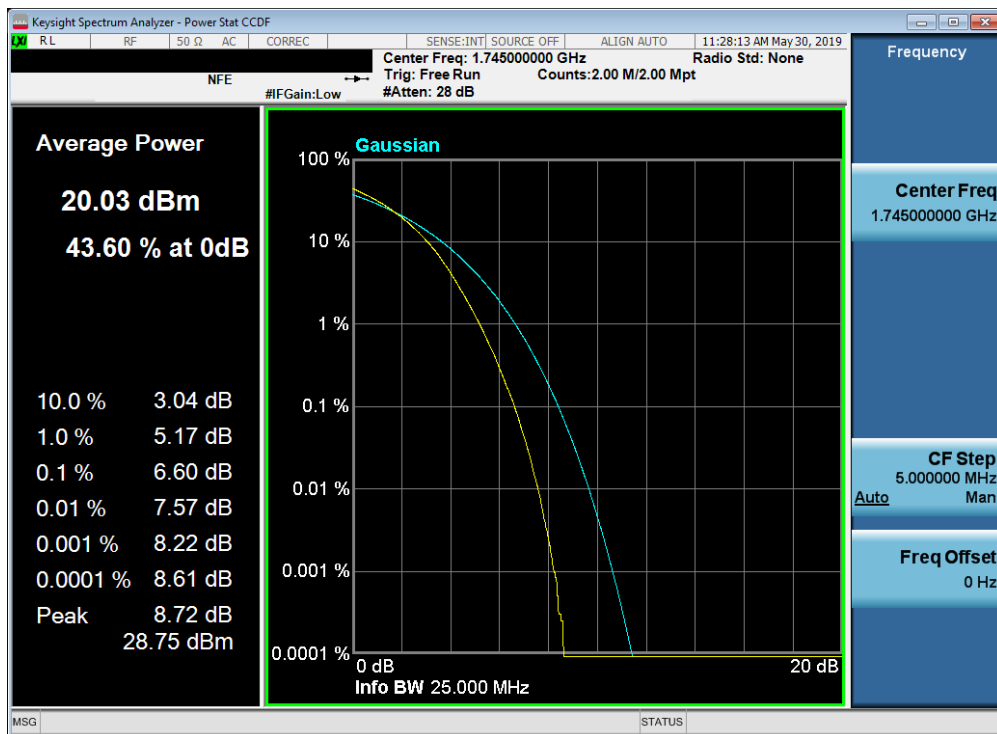
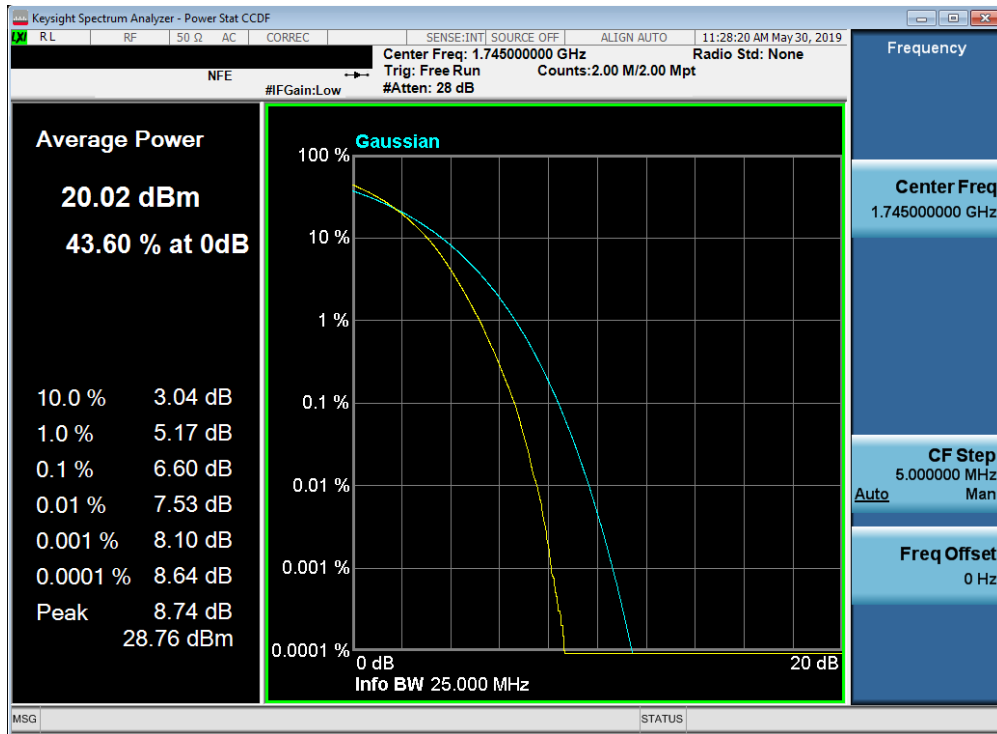


Plot 7-384. PAR Plot (Band 66/4 – 20.0MHz QPSK - Full RB Configuration)



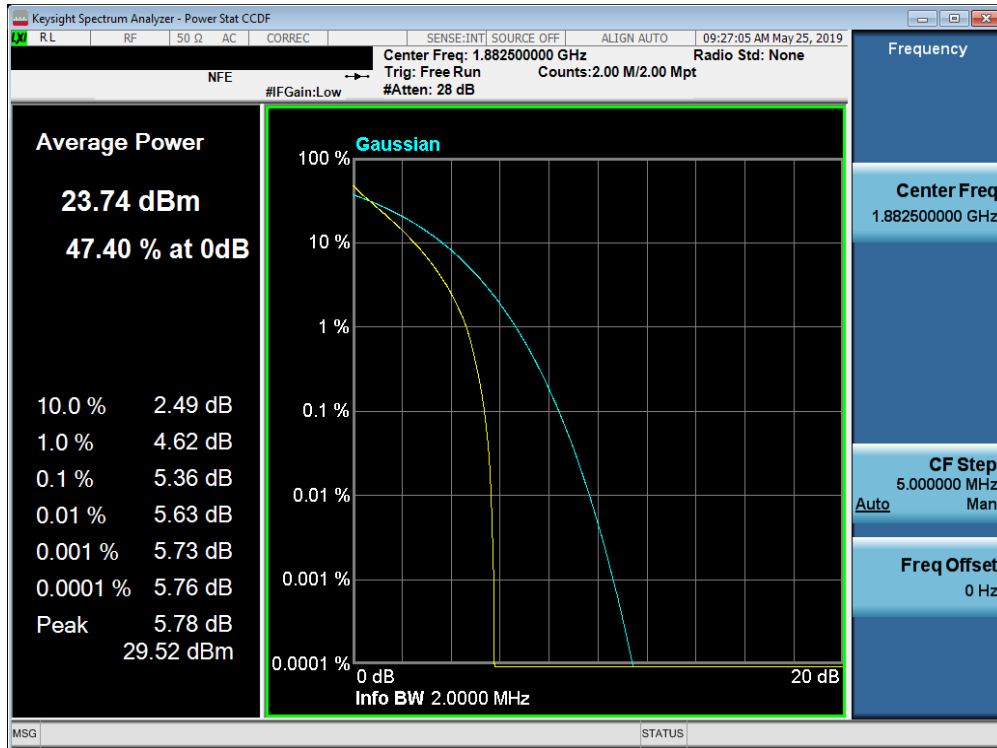
Plot 7-385. PAR Plot (Band 66/4 – 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 219 of 331

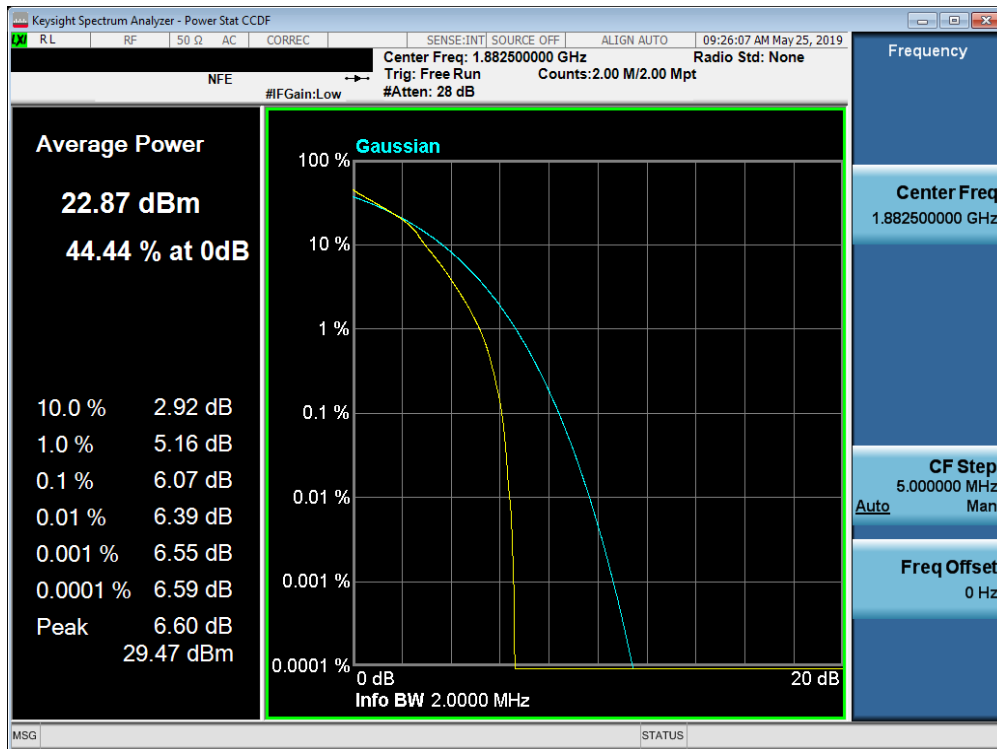


FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 220 of 331

Band 25/2

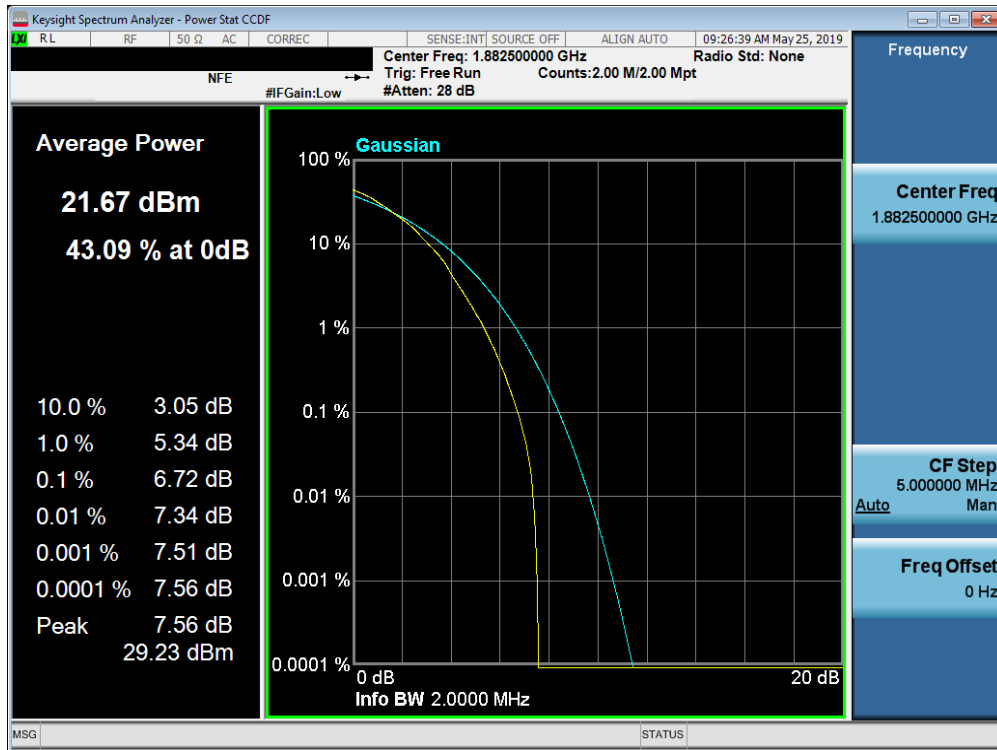


Plot 7-388. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

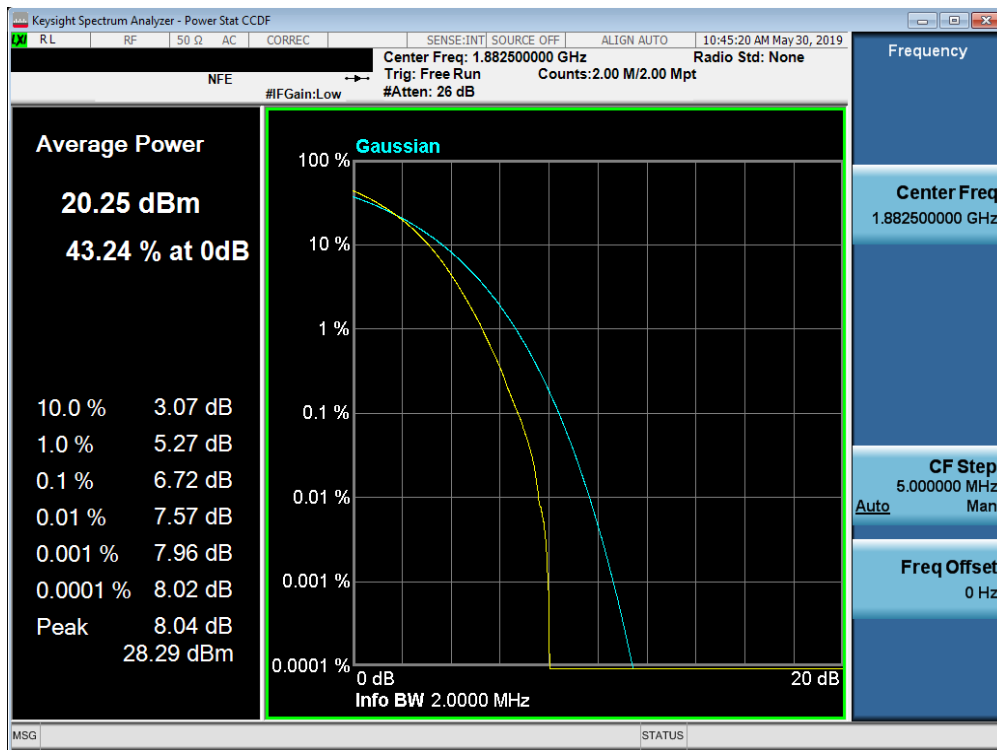


Plot 7-389. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 221 of 331

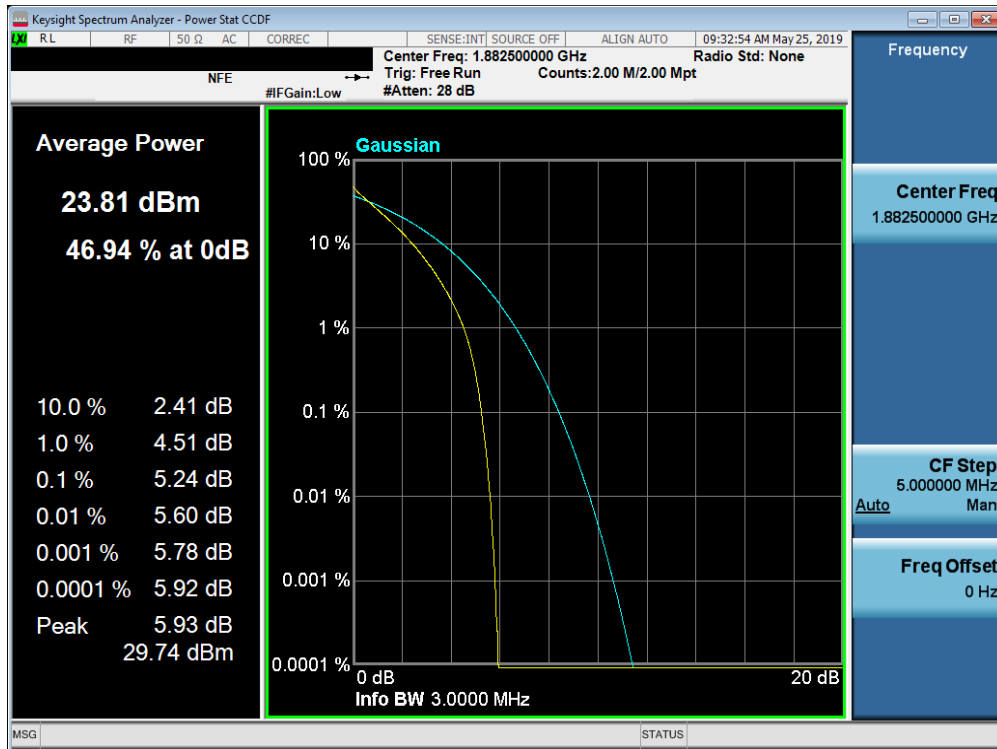


Plot 7-390. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

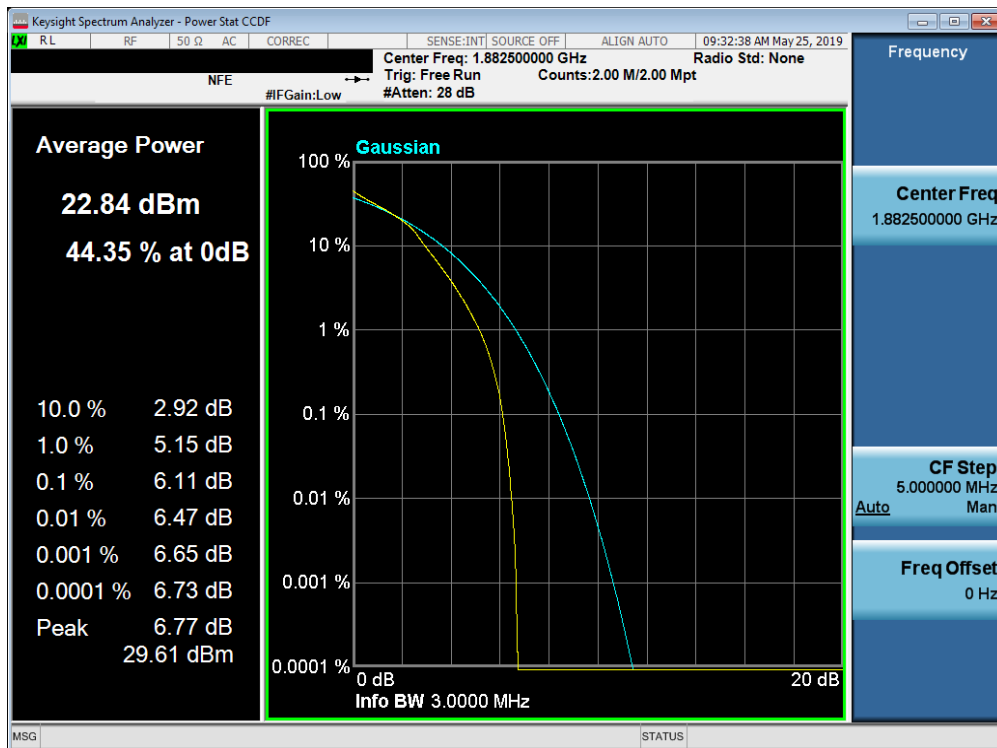


Plot 7-391. PAR Plot (Band 25/2 - 1.4MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 222 of 331

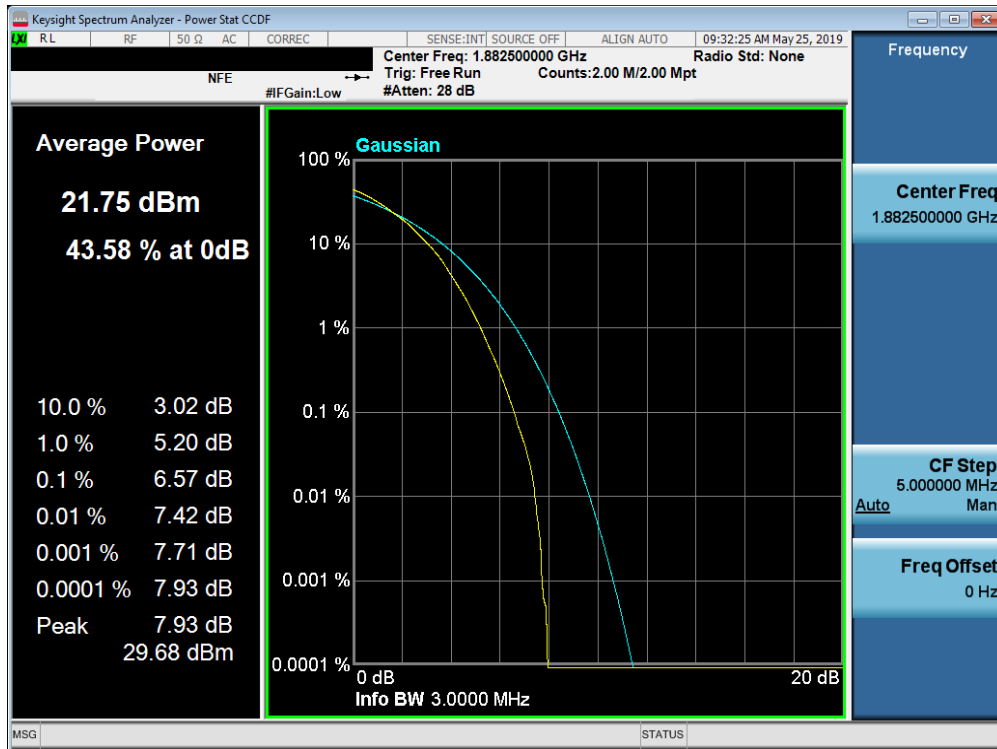


Plot 7-392. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

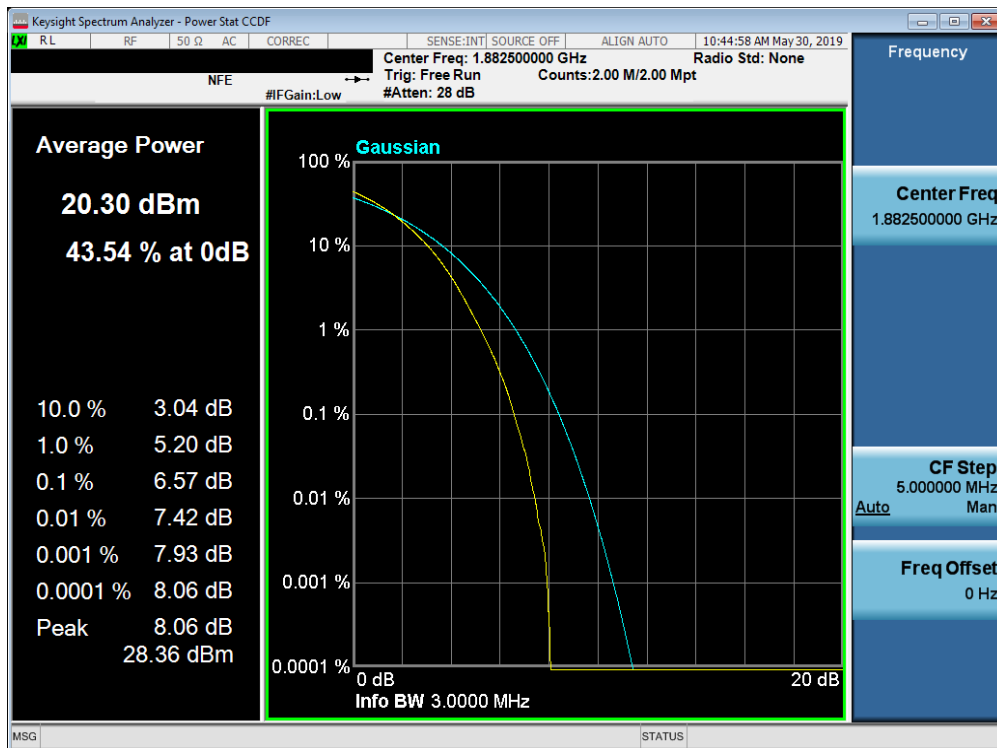


Plot 7-393. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 223 of 331

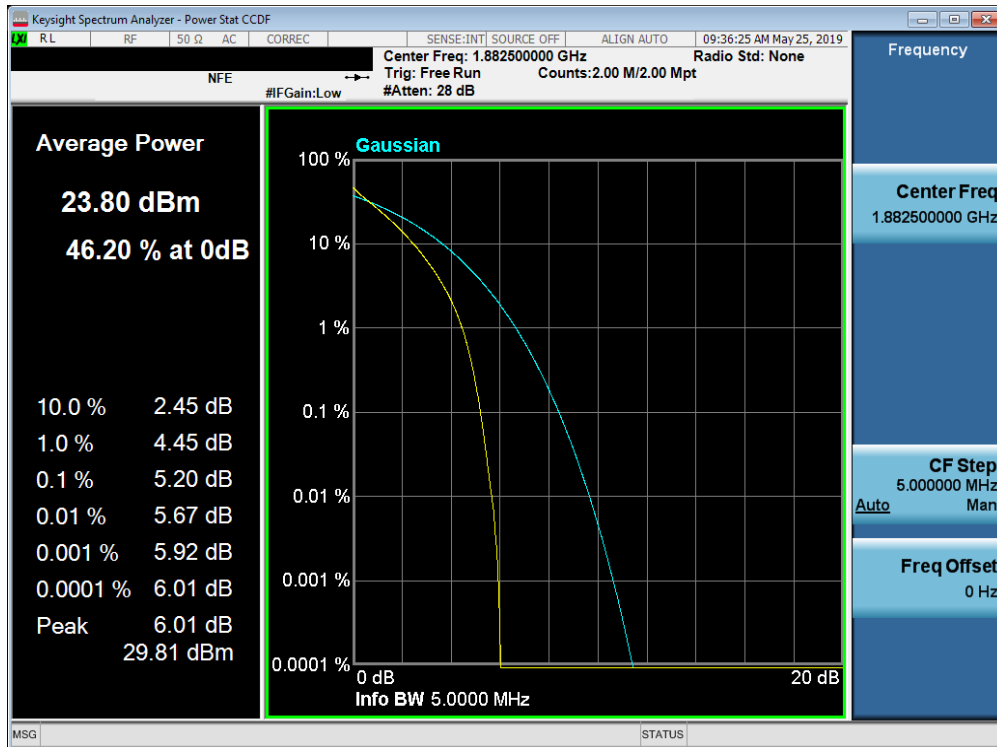


Plot 7-394. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

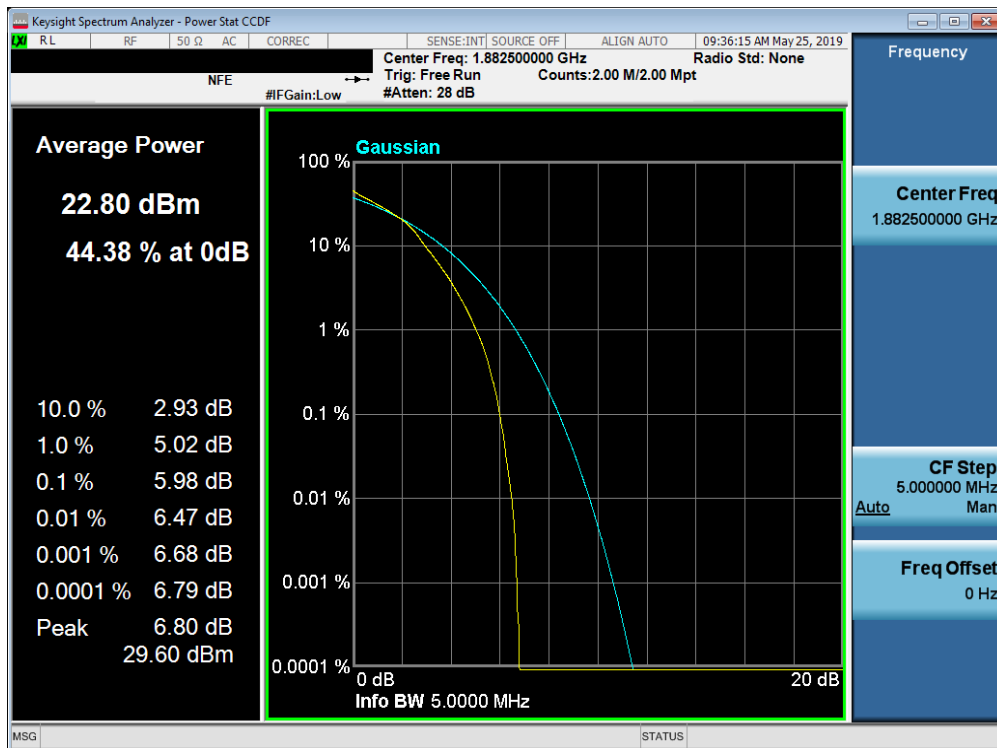


Plot 7-395. PAR Plot (Band 25/2 - 3.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 224 of 331

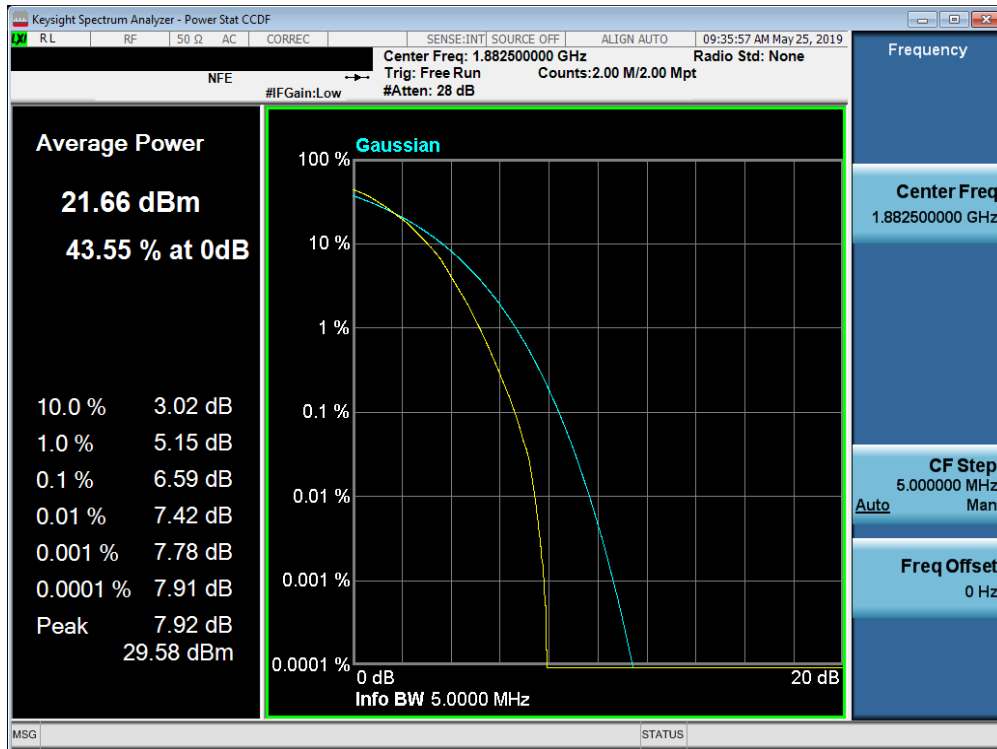


Plot 7-396. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

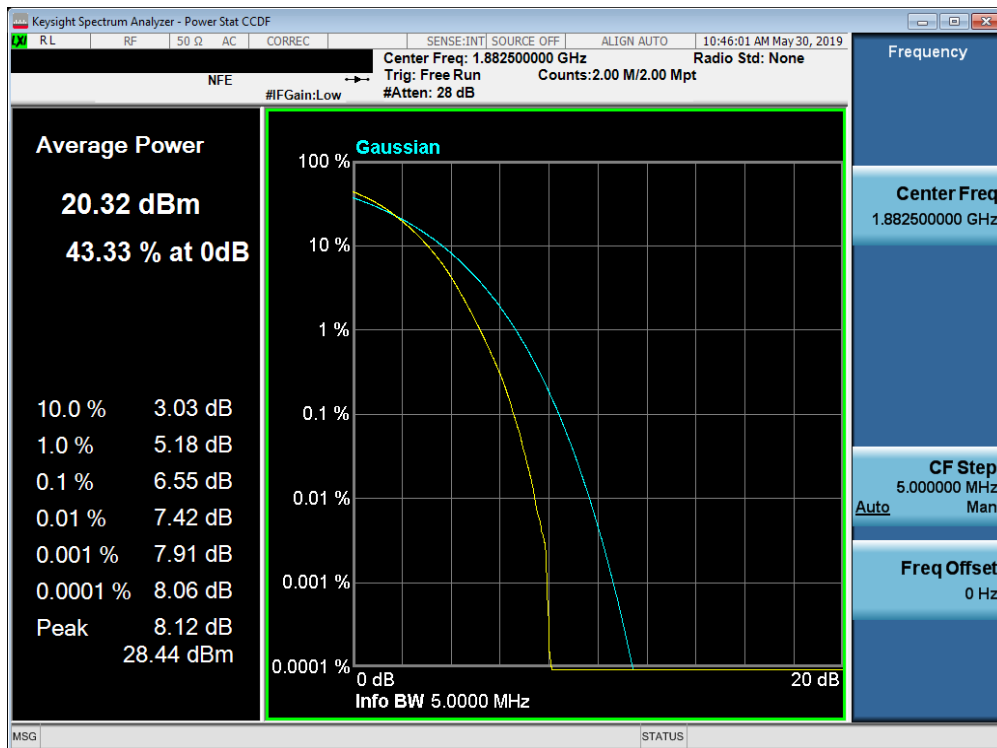


Plot 7-397. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 225 of 331

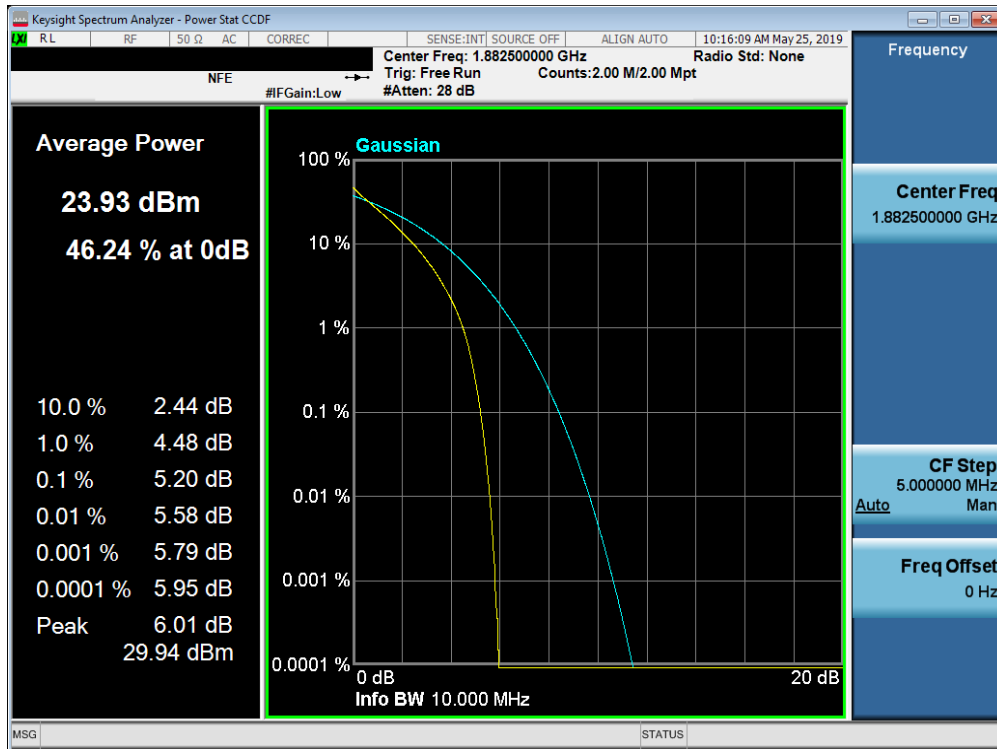


Plot 7-398. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

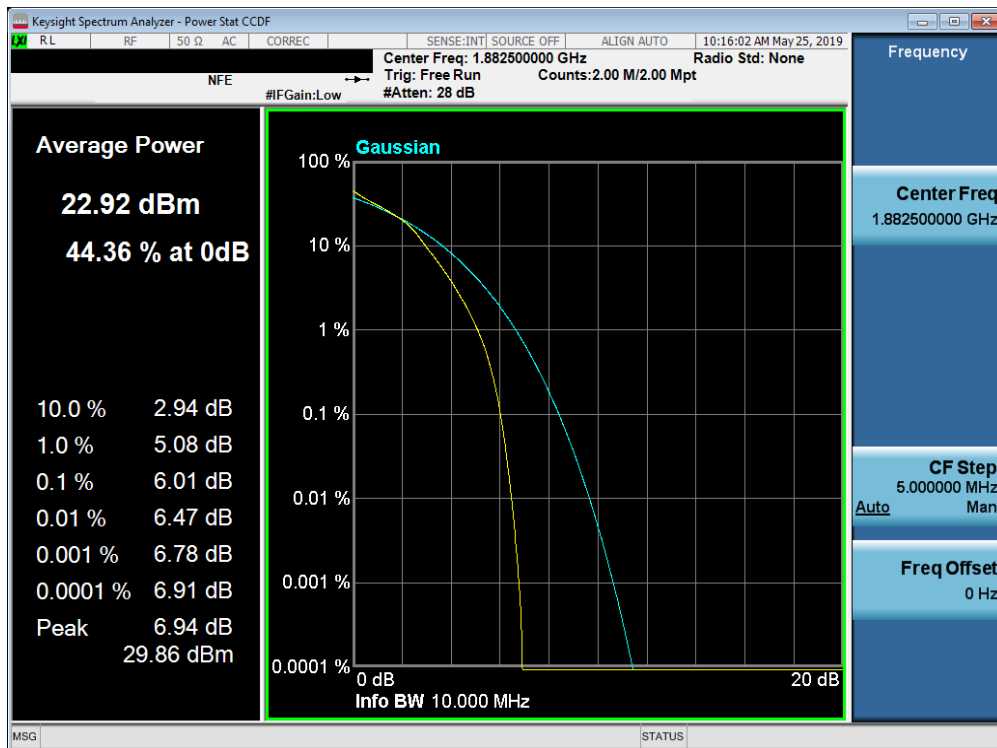


Plot 7-399. PAR Plot (Band 25/2 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 226 of 331

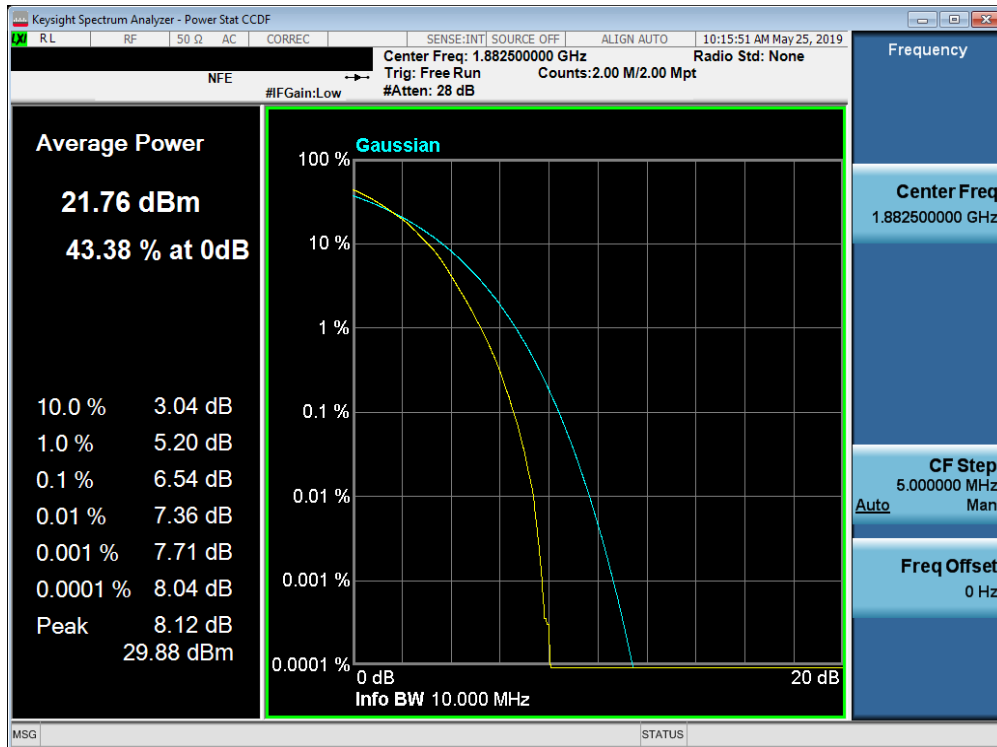


Plot 7-400. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

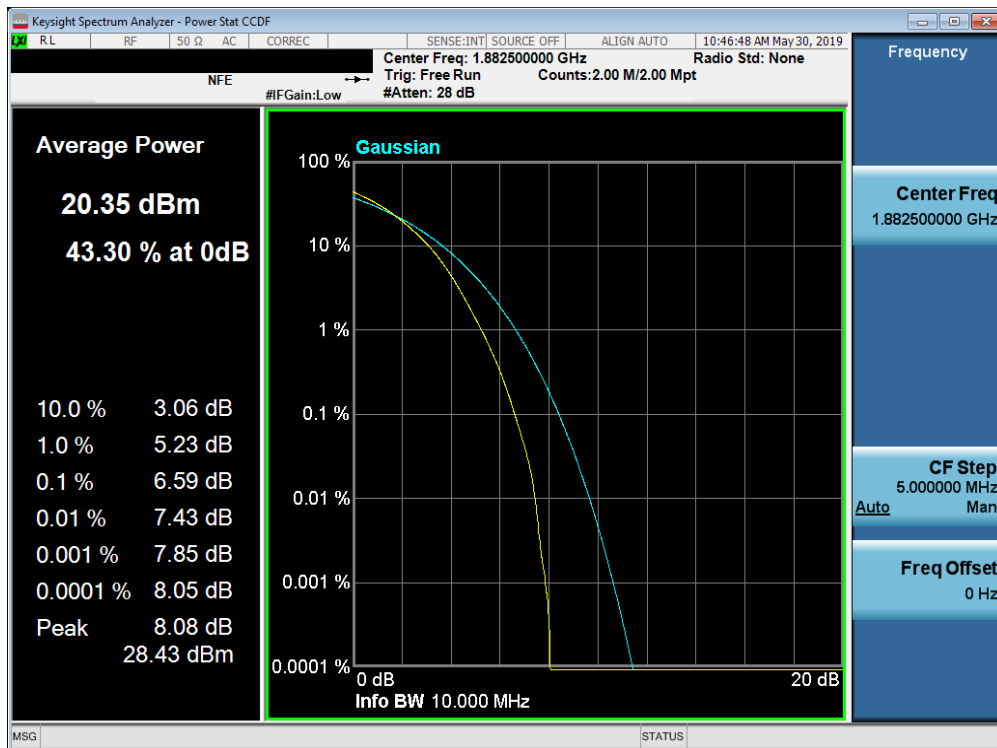


Plot 7-401. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 227 of 331

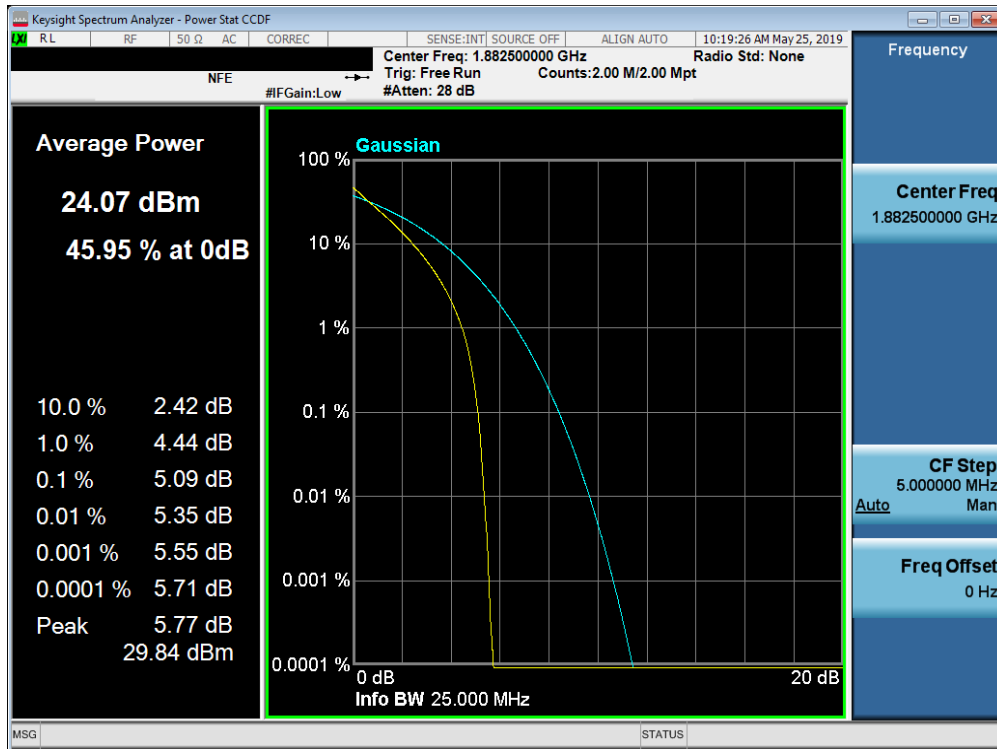


Plot 7-402. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

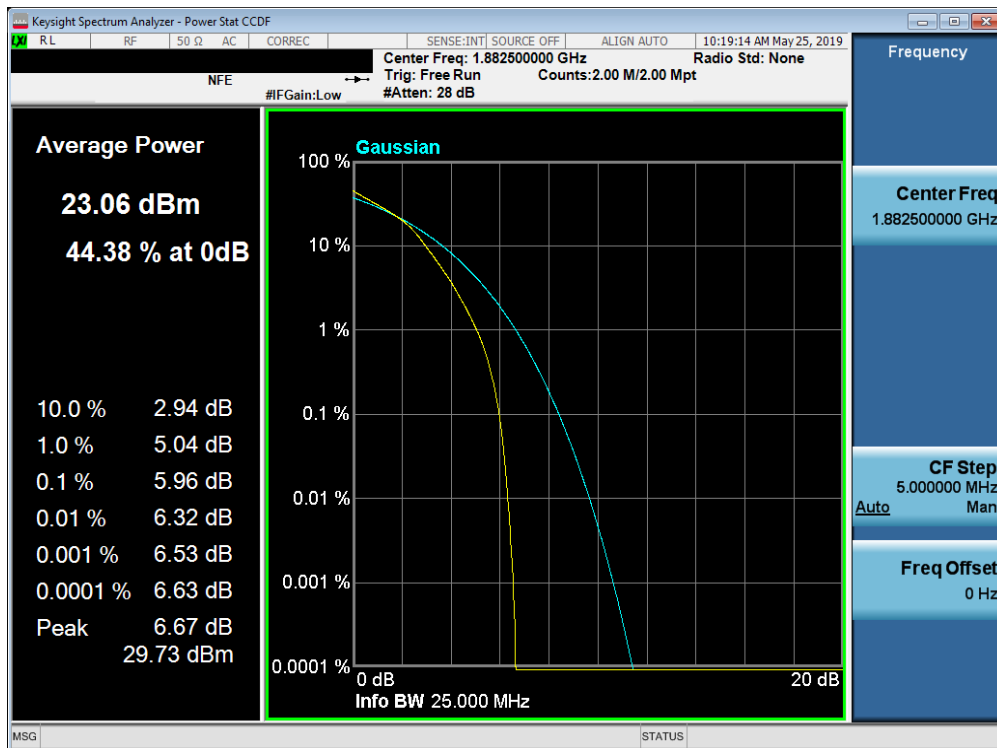


Plot 7-403. PAR Plot (Band 25/2 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 228 of 331

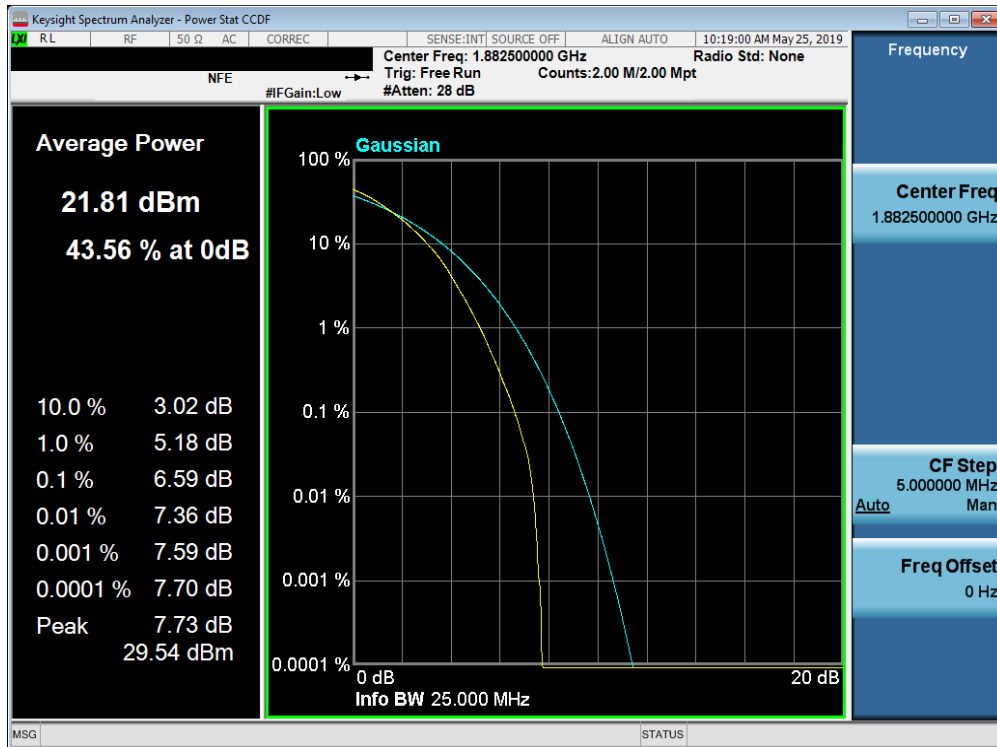


Plot 7-404. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

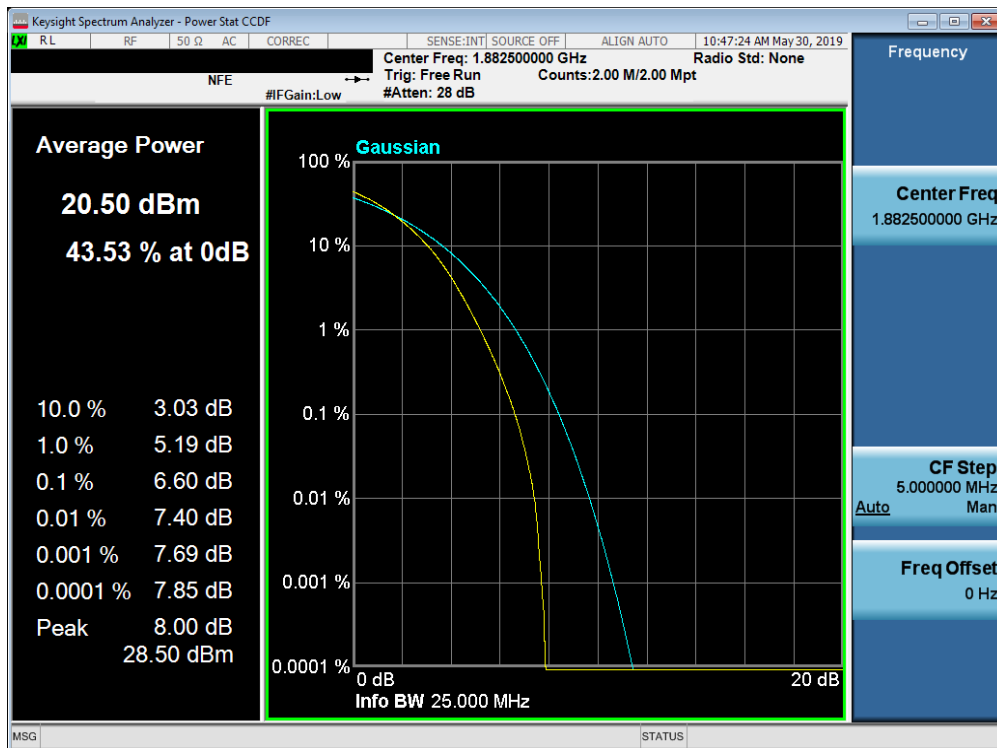


Plot 7-405. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 229 of 331

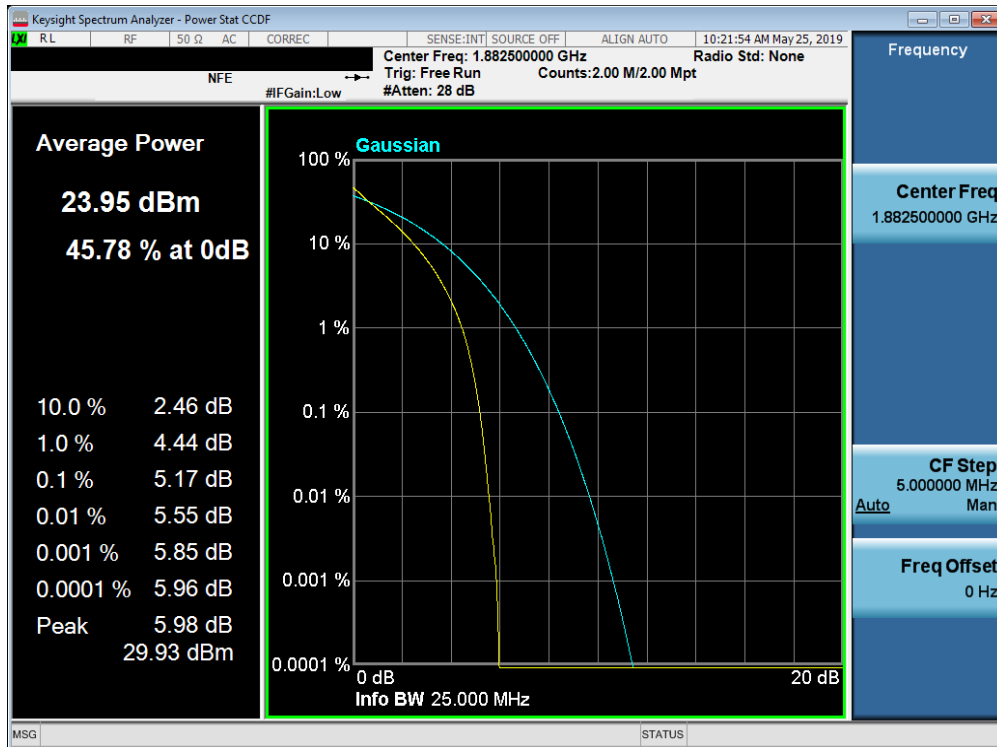


Plot 7-406. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

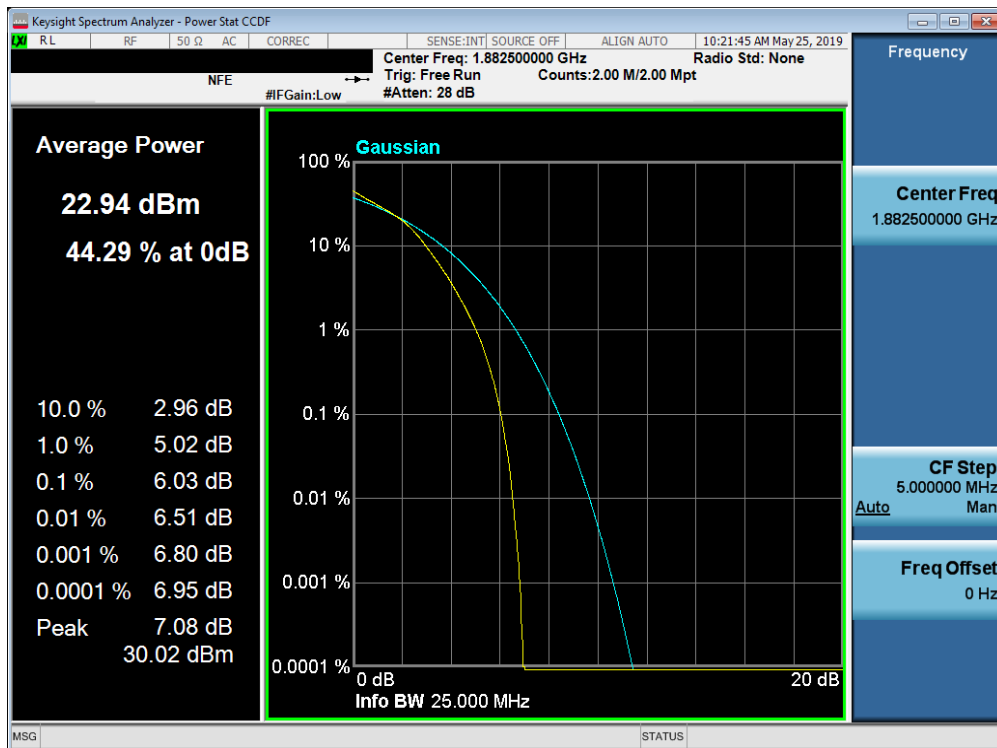


Plot 7-407. PAR Plot (Band 25/2 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 230 of 331

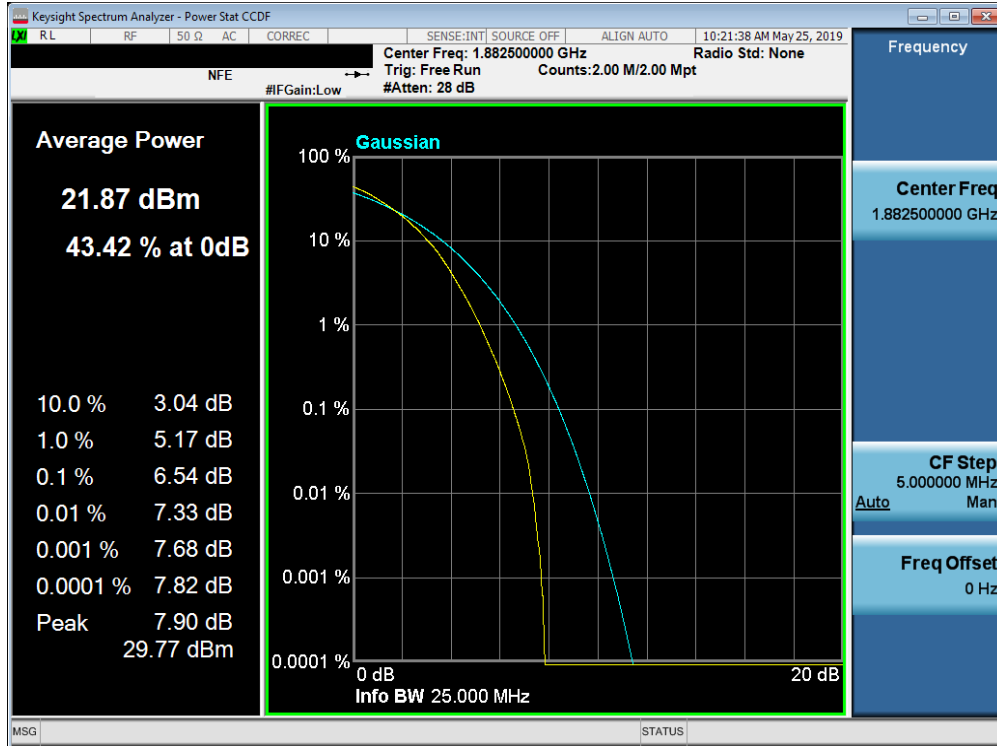


Plot 7-408. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

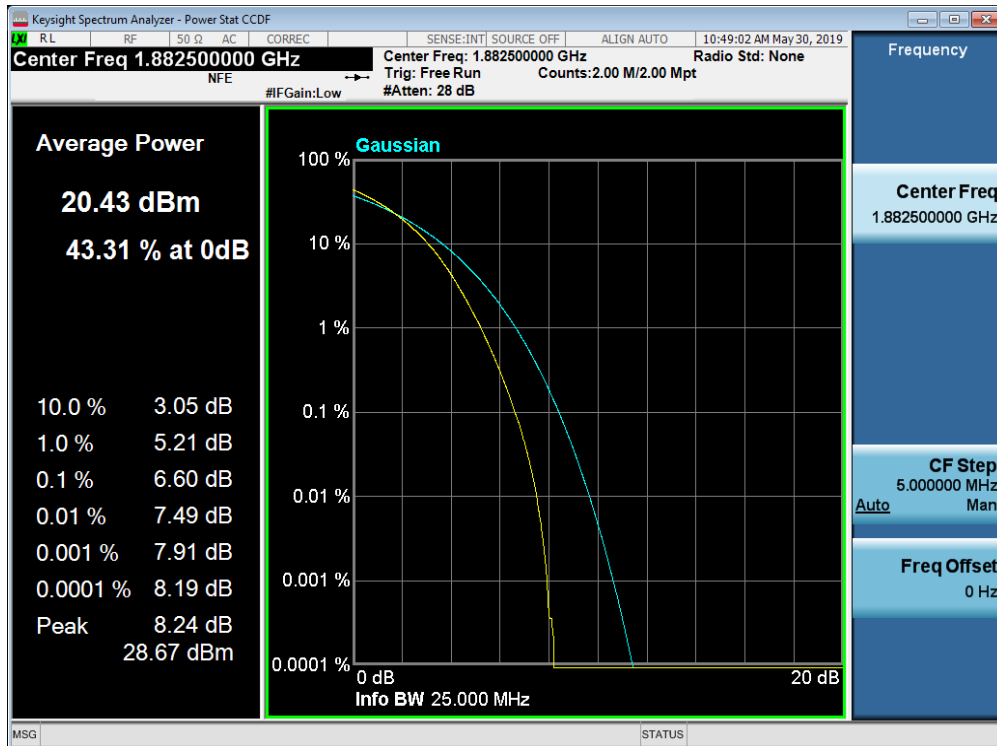


Plot 7-409. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-410. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)



Plot 7-411. PAR Plot (Band 25/2 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 232 of 331

7.6 Additional Maximum Power Reduction (A-MPR)

§2.1046

Test Overview

A-MPR is implemented in this device when operating at Power Class 2 in LTE Band 41 per the A-MPR specification in 3GPP TS 36.101. The conducted powers are shown herein to cover the different A-MPR levels specified in the standard. Measurement equipment was set up with triggering/gating on the spectrum analyzer such that powers were measured only during the on-time of the signal.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.2.2

Test Settings

1. Span = 2 x OBW to 3 x OBW
2. RBW = 1% to 5% of the OBW
3. Number of measurement points in sweep $\geq 2 \times \text{span} / \text{RBW}$
4. Sweep = auto-couple (less than transmission burst duration)
5. Detector = RMS (power)
6. Trigger was set to enable power measurements only on full power bursts
7. Trace was allowed to stabilize
8. Spectrum analyzer's "Channel Power" function was used to compute the power by integrating the spectrum across the OBW of the signal

Test Setup

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

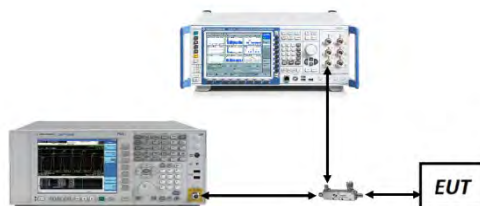


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

None.

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Test Case	NS	MCC	MNC	Channel BW [MHz]	Channel Number	Channel Frequency [MHz]	Modulation	RB Size	RB Offset	MPR [dB]	A-MPR [dB]	Measured Power [dBm]
1	01	312	530	5	39675	2498.5	QPSK	1	0	0	≤ 3	25.01
							16-QAM	1	0	≤ 1		24.33
							64-QAM	1	0	≤ 2		23.09
							256-QAM	1	0	≤ 4		20.09
2				5	39675	2498.5	QPSK	1	9	0	0	26.34
							16-QAM	1	9	≤ 1		25.69
							64-QAM	1	9	≤ 2		24.55
							256-QAM	1	9	≤ 4		22.50
3				10	39700	2501	QPSK	1	0	0	≤ 5	25.53
							16-QAM	1	0	≤ 1		25.47
							64-QAM	1	0	≤ 2		23.59
							256-QAM	1	0	≤ 4		22.38
4				10	39700	2501	QPSK	20	0	0	≤ 2	25.06
							16-QAM	20	0	≤ 1		24.09
							64-QAM	20	0	≤ 2		22.73
							256-QAM	20	0	≤ 4		21.08
5				10	39700	2501	QPSK	50	0	0	≤ 3	23.97
							16-QAM	50	0	≤ 1		22.96
							64-QAM	50	0	≤ 2		21.98
							256-QAM	50	0	≤ 4		19.95
6				10	39700	2501	QPSK	25	20	0	≤ 1	25.72
							16-QAM	25	20	≤ 1		24.76
							64-QAM	25	20	≤ 2		22.87
							256-QAM	25	20	≤ 4		21.92
7				10	39700	2501	QPSK	1	36	0	0	26.78
							16-QAM	1	36	≤ 1		26.04
							64-QAM	1	36	≤ 2		23.97
							256-QAM	1	36	≤ 4		22.88
8				15	39725	2503.5	QPSK	1	0	0	≤ 5	26.52
							16-QAM	1	0	≤ 1		25.84
							64-QAM	1	0	≤ 2		23.71
							256-QAM	1	0	≤ 4		22.47
9				15	39725	2503.5	QPSK	20	0	0	≤ 2	25.08
							16-QAM	20	0	≤ 1		23.92
							64-QAM	20	0	≤ 2		23.15
							256-QAM	20	0	≤ 4		21.08
10				15	39725	2503.5	QPSK	75	0	0	≤ 4	22.97
							16-QAM	75	0	≤ 1		21.97
							64-QAM	75	0	≤ 2		21.00
							256-QAM	75	0	≤ 4		19.00
11				15	39725	2503.5	QPSK	50	15	0	≤ 3	23.99
							16-QAM	50	15	≤ 1		22.99
							64-QAM	50	15	≤ 2		21.99
							256-QAM	50	15	≤ 4		20.00
12				15	39725	2503.5	QPSK	1	60	0	0	27.15
							16-QAM	1	60	≤ 1		26.44
							64-QAM	1	60	≤ 2		24.26
							256-QAM	1	60	≤ 4		22.95
13				20	39750	2506	QPSK	1	0	0	≤ 5	23.01
							16-QAM	1	0	≤ 1		21.98
							64-QAM	1	0	≤ 2		20.96
							256-QAM	1	0	≤ 4		18.96
14				20	39750	2506	QPSK	20	0	0	≤ 2	25.09
							16-QAM	20	0	≤ 1		24.11
							64-QAM	20	0	≤ 2		22.77
							256-QAM	20	0	≤ 4		21.07
15				20	39750	2506	QPSK	100	0	0	≤ 4	22.97
							16-QAM	100	0	≤ 1		21.96
							64-QAM	100	0	≤ 2		20.97
							256-QAM	75	21	≤ 4		18.95
16				20	39750	2506	QPSK	75	24	0	≤ 3	23.98
							16-QAM	75	24	≤ 1		22.96
							64-QAM	75	24	≤ 2		21.97
							256-QAM	75	24	≤ 4		19.95
17				20	39750	2506	QPSK	1	77	0	0	27.49
							16-QAM	1	77	≤ 1		26.66
							64-QAM	1	77	≤ 2		24.55
							256-QAM	1	77	≤ 4		24.57
19	01	001	01	5	39675	2498.5	QPSK	1	0	0	0	26.18
							16-QAM			≤ 1		25.49
							64-QAM			≤ 2		23.51
							256-QAM			≤ 4		22.34

Table 7-3. A-MPR Conducted Power Measurements

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 234 of 331

7.7 Uplink Carrier Aggregation

§27.53(m)

Test Overview

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

For Band 5 and 66, the minimum permissible attenuation level of any spurious emission is $43 + 10\log_{10}(P_{[Watts]})$.

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

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

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

Test Setup

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

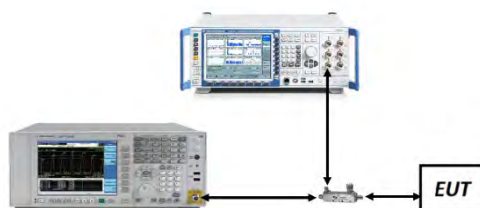


Figure 7-6. Test Instrument & Measurement Setup

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 235 of 331

Test Notes

1. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-503 and 7-504 below, with both carriers set to transmit using 1RB.
2. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 236 of 331

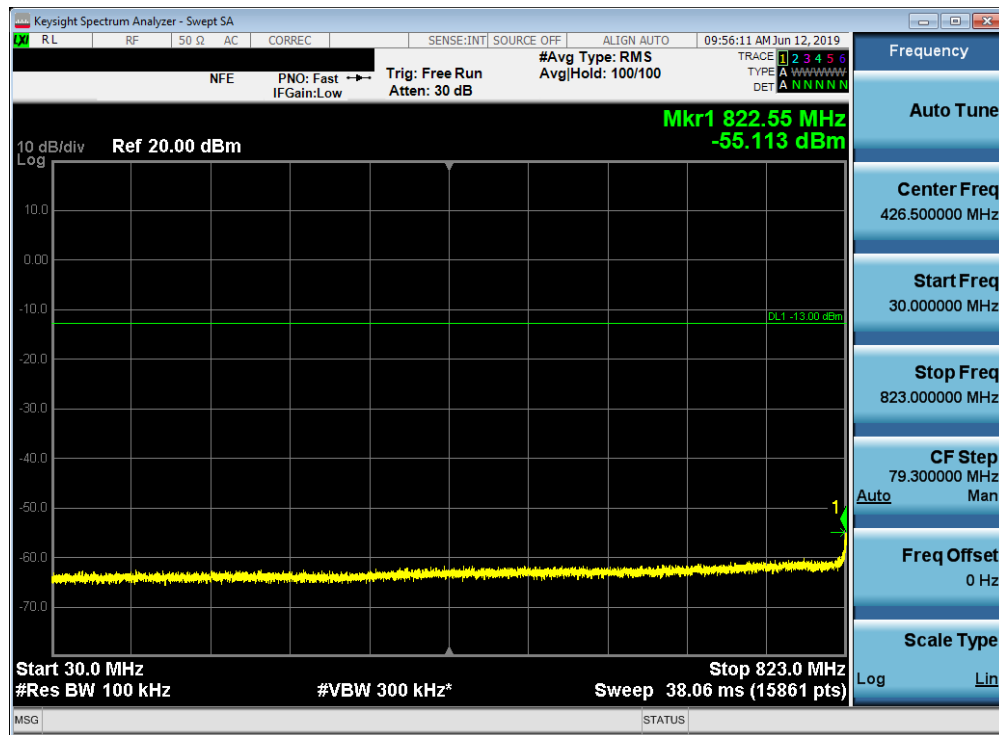
Uplink CA Configuration 5B

Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.15
Max	LTE B5	10	20525	836.5	QPSK	1	49	LTE B5	5	20597	843.7	QPSK	1	0	25.11
Max	LTE B5	10	20600	844	QPSK	1	0	LTE B5	10	20501	834.1	QPSK	1	49	24.73

Table 7-4. Conducted Powers (B5 –PCC RB Size 1 Offset Max SCC: RB Size1 Offset 0)

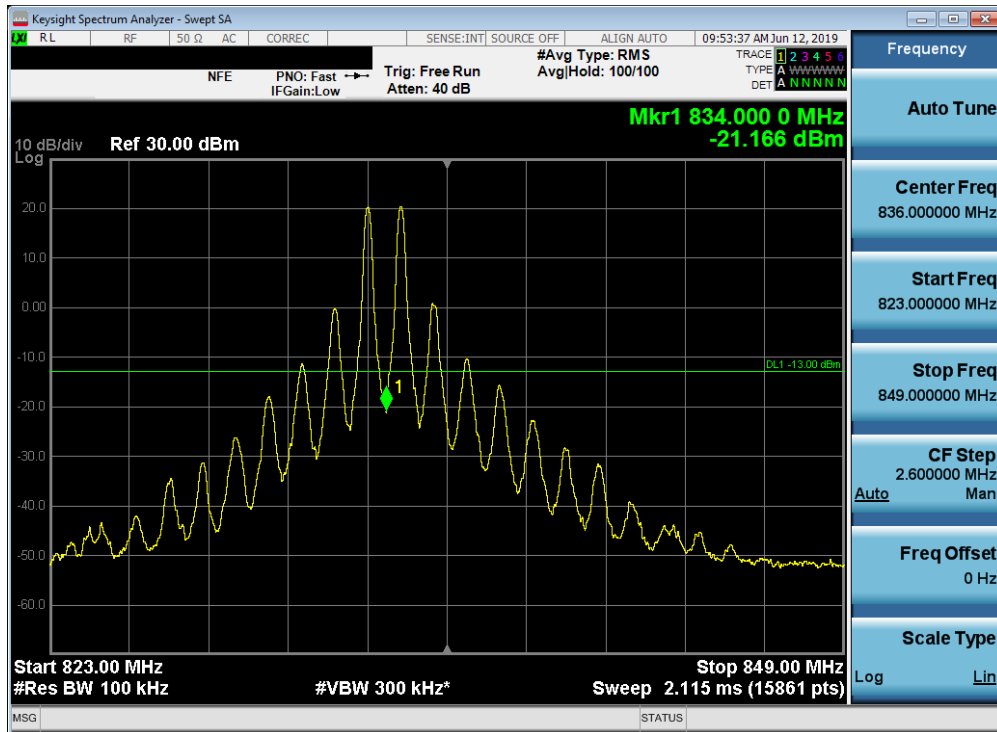
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B5	10	20450	829	QPSK	50	0	LTE B5	10	20549	838.9	QPSK	50	0	23.43
Max	LTE B5	10	20450	829	16-QAM	50	0	LTE B5	10	20549	838.9	16-QAM	50	0	22.47
Max	LTE B5	10	20450	829	64-QAM	50	0	LTE B5	10	20549	838.9	64-QAM	50	0	22.39
Max	LTE B5	10	20450	829	256-QAM	50	0	LTE B5	10	20549	838.9	256-QAM	50	0	20.43

Table 7-5. Conducted Powers (B5 with Various Combinations for 10MHz Channel Bandwidth)

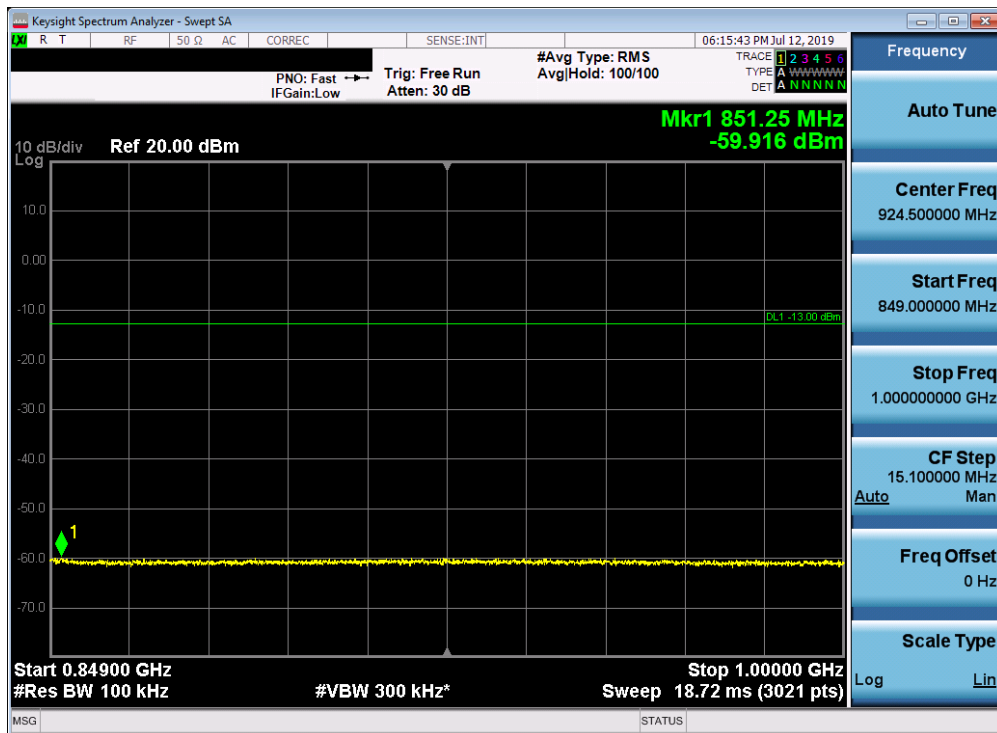


Plot 7-412. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

FCC ID: A3LSMN970U			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 237 of 331		



Plot 7-413. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

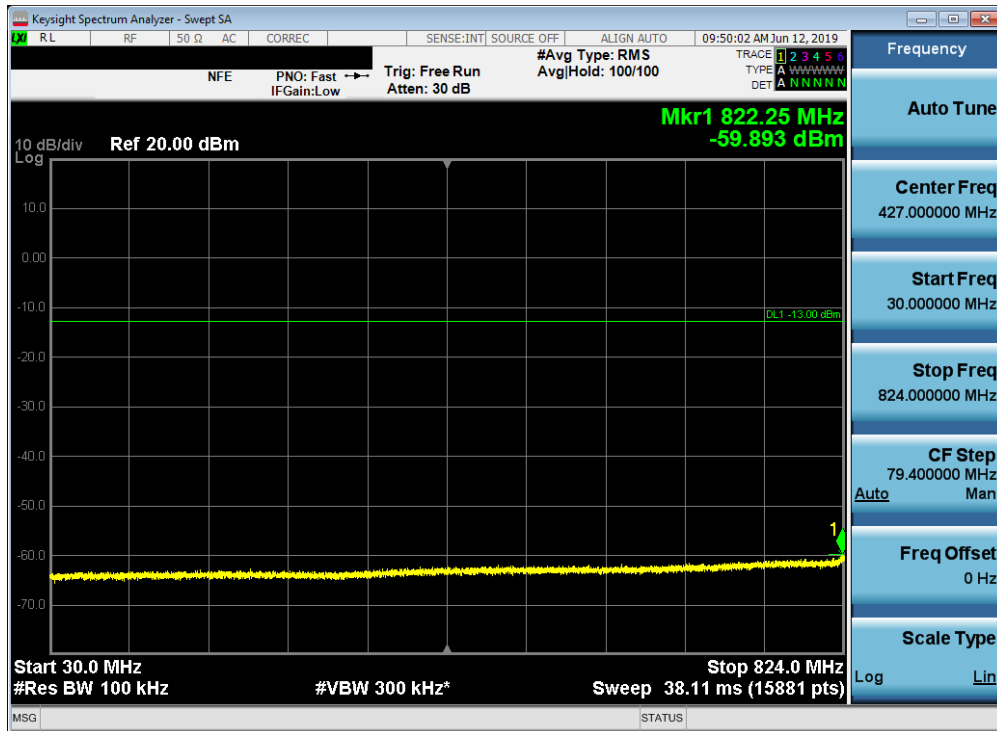


Plot 7-414. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 238 of 331

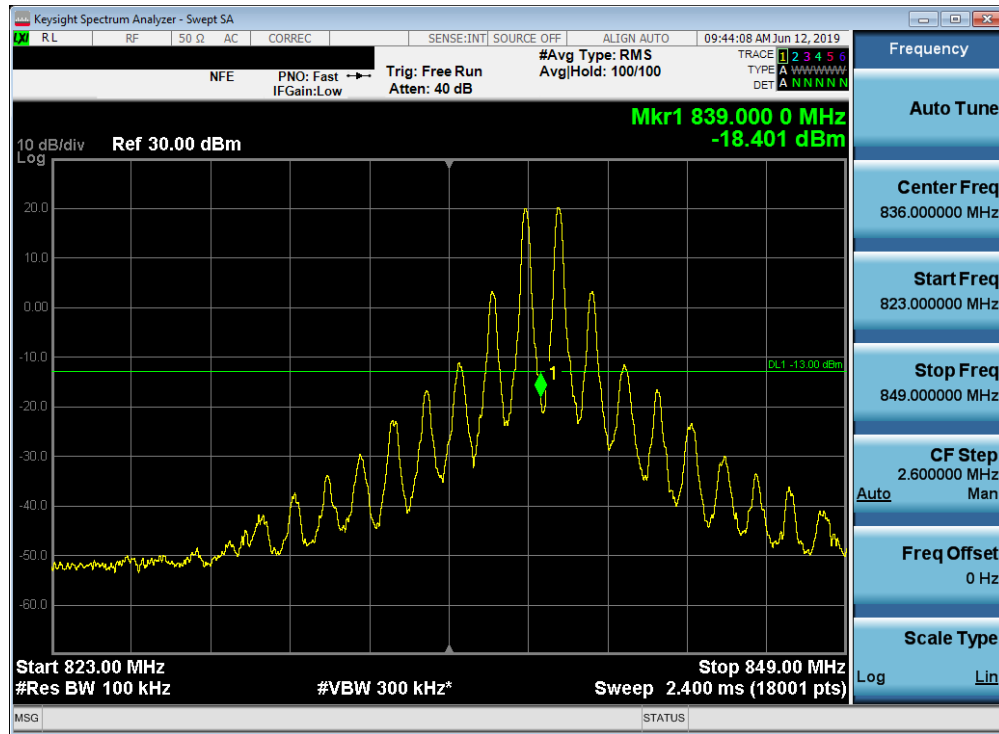


Plot 7-415. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

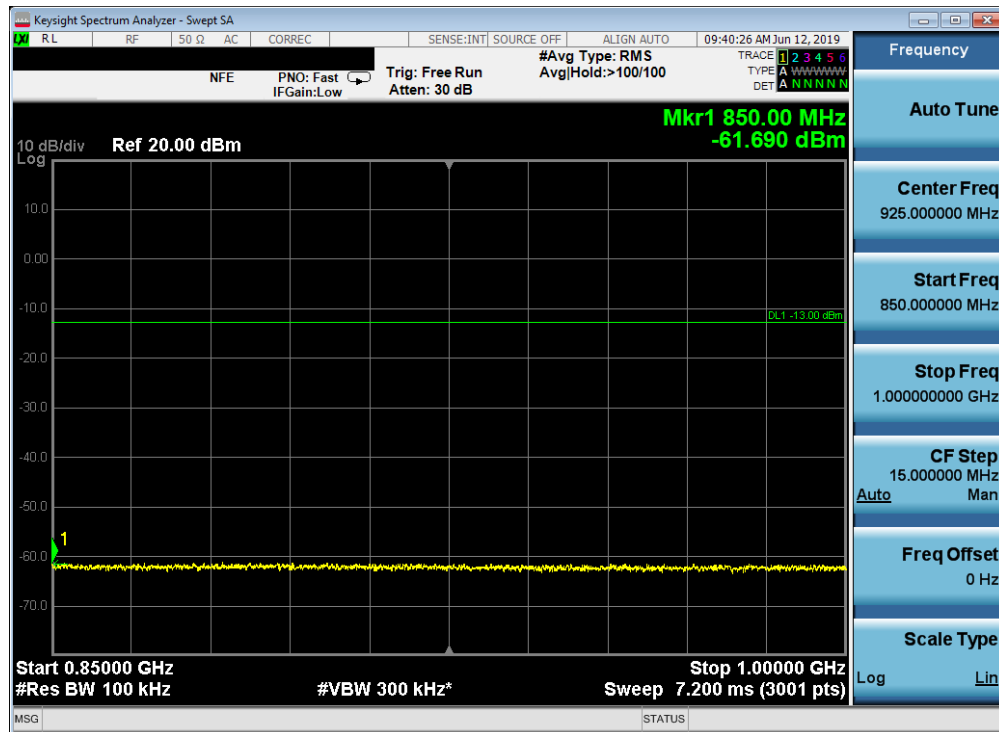


Plot 7-416. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – High Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 239 of 331

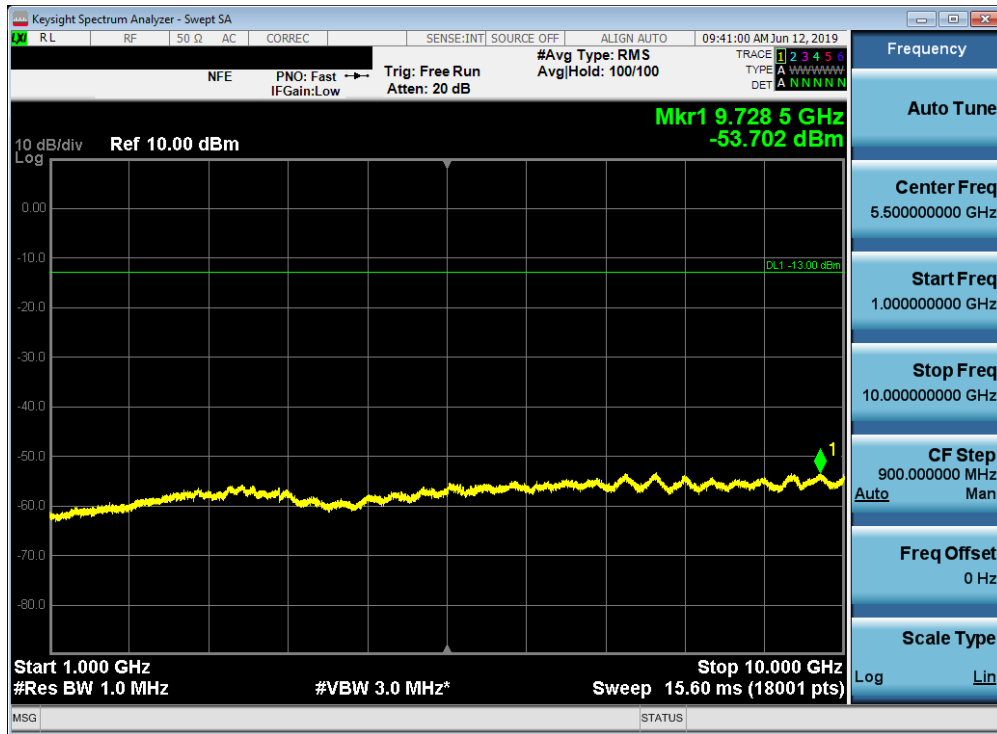


Plot 7-417. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – High Channel)

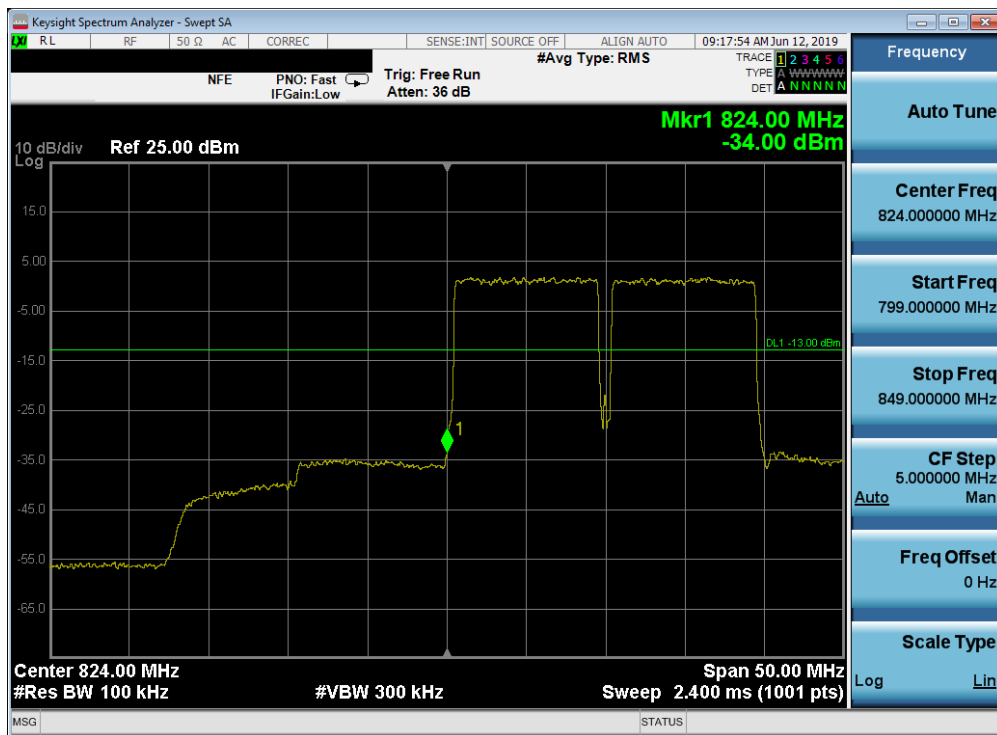


Plot 7-418. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – High Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 240 of 331

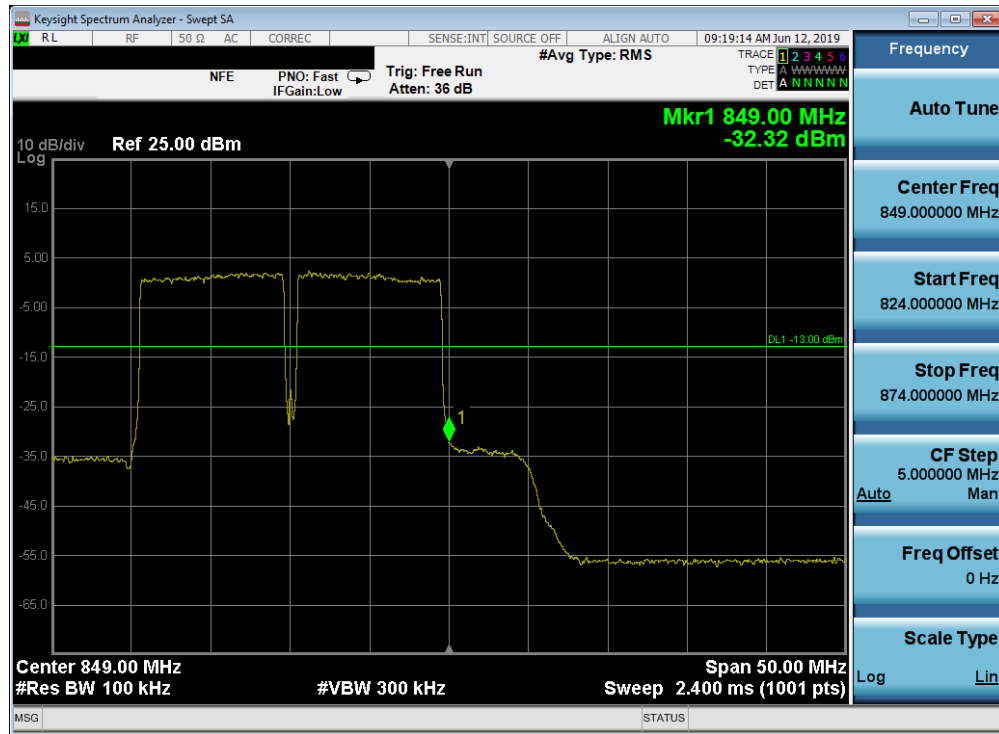


Plot 7-419. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - PCC 1/49 SCC 1/0 - High Channel)



Plot 7-420. Lower Band Edge Plot (Band 5- QPSK - PCC: 10 MHz SCC:10 MHz - Full RB)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 241 of 331



Plot 7-421.Upper Band Edge Plot (Band 5- QPSK – PCC: 10 MHz SCC:10 MHz – Full RB)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 242 of 331

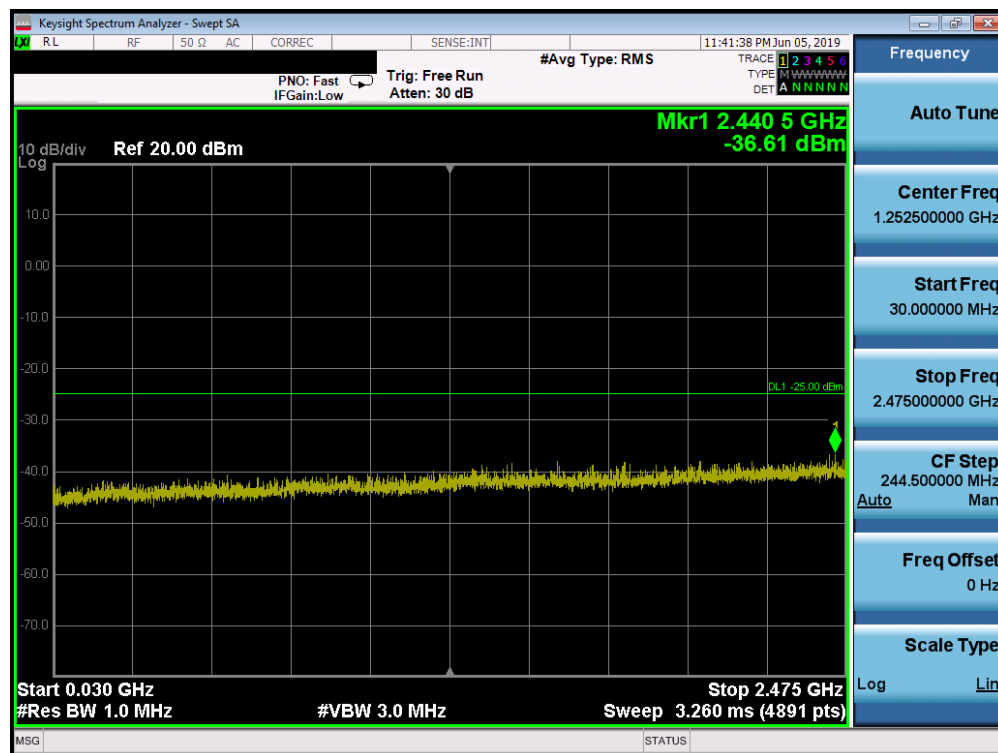
Uplink CA Configuration 41 (PC2)

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	27.45
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	27.47
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	26.98

Table 7-6. Conducted Powers (B41 PC2 –20MHz + 20MHz Channel Bandwidth- PCC/SCC: 1RB)

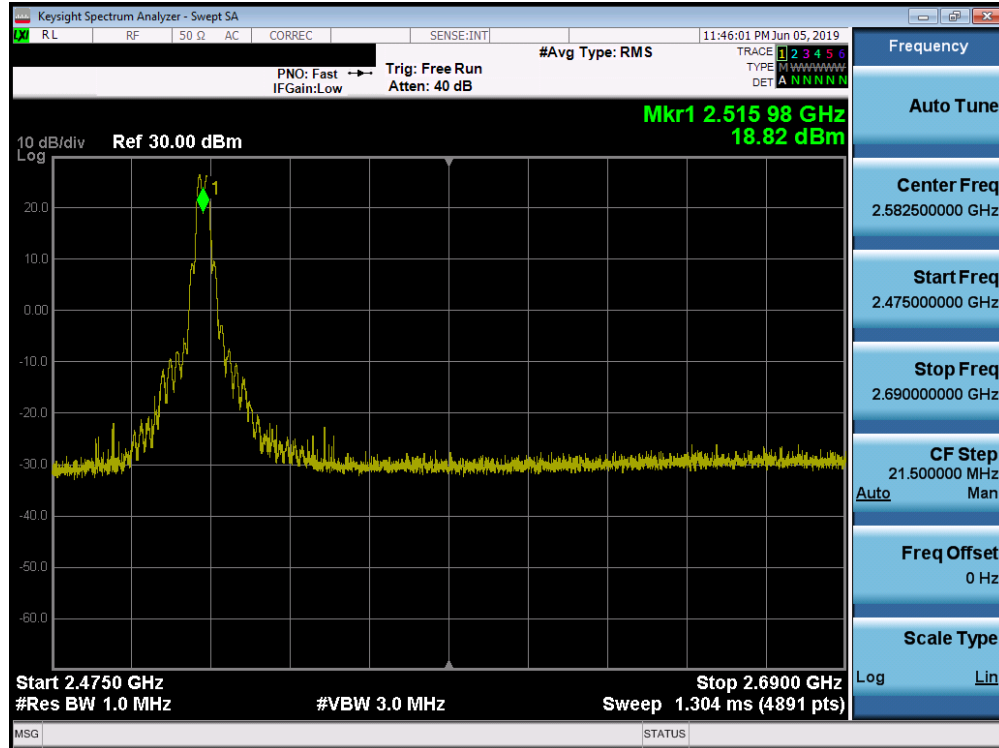
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	25.74
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	24.69
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	23.89
Max	LTE B41	20	39750	2506	256-QAM	100	0	LTE B41	20	39948	2525.8	256-QAM	100	0	22.92

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

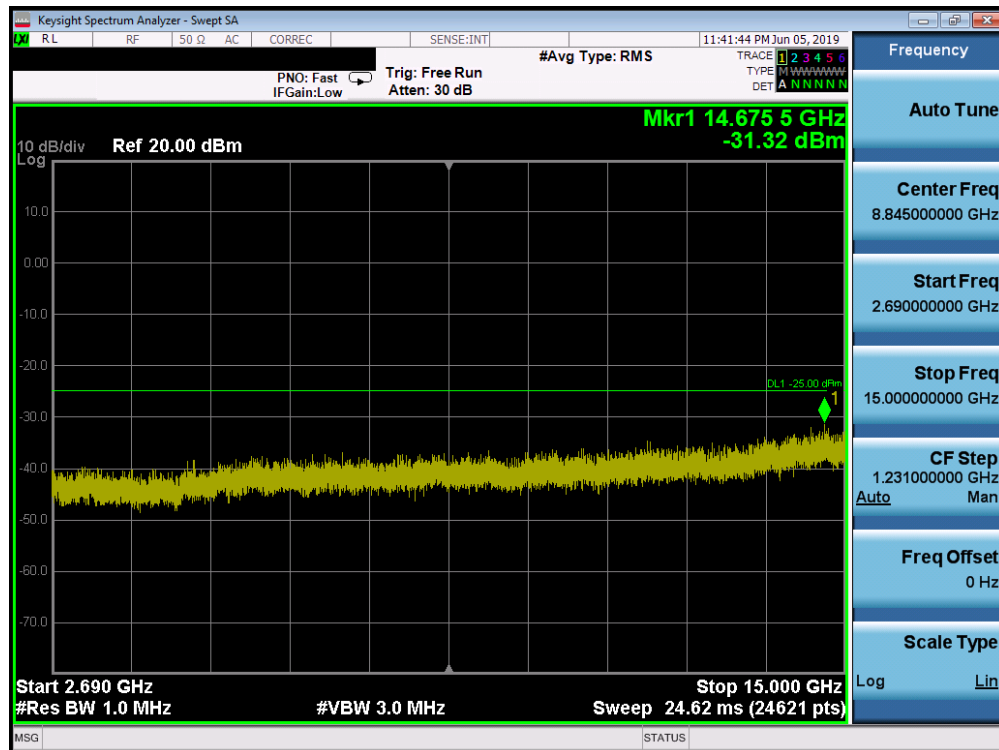


Plot 7-422. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset			Page 243 of 331

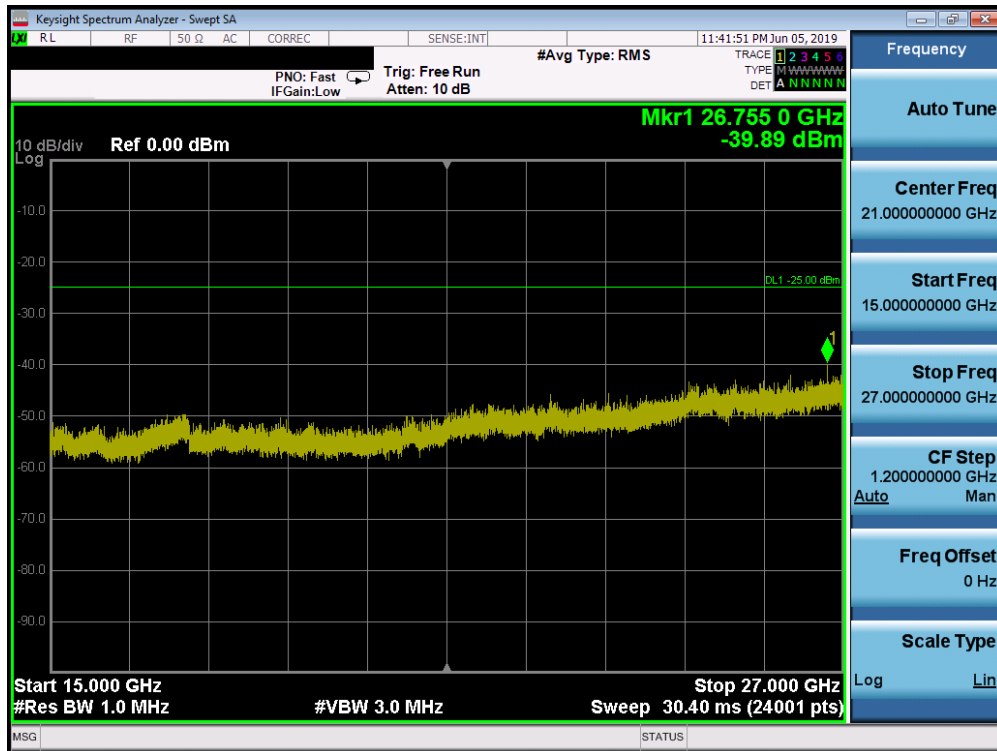


Plot 7-423. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

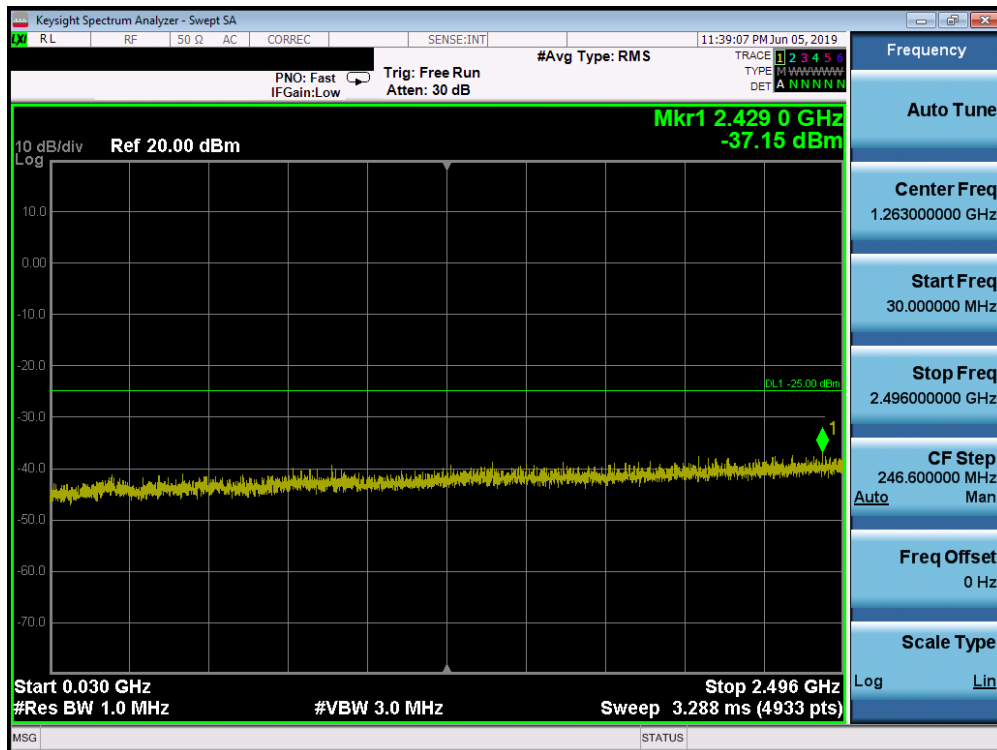


Plot 7-424. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 244 of 331

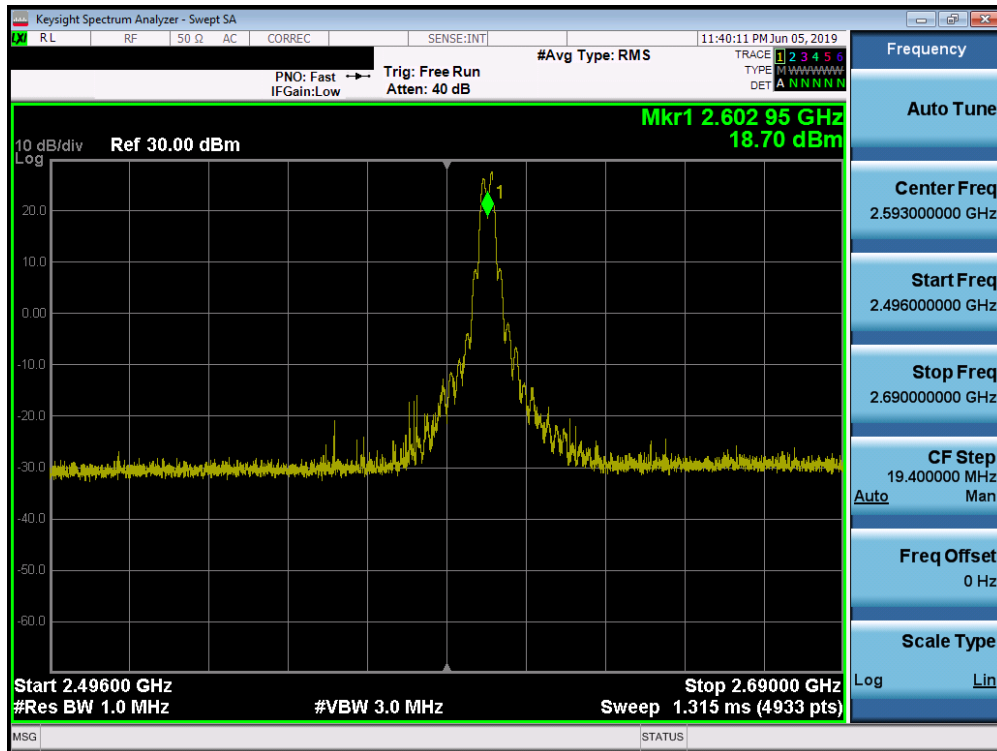


Plot 7-425. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

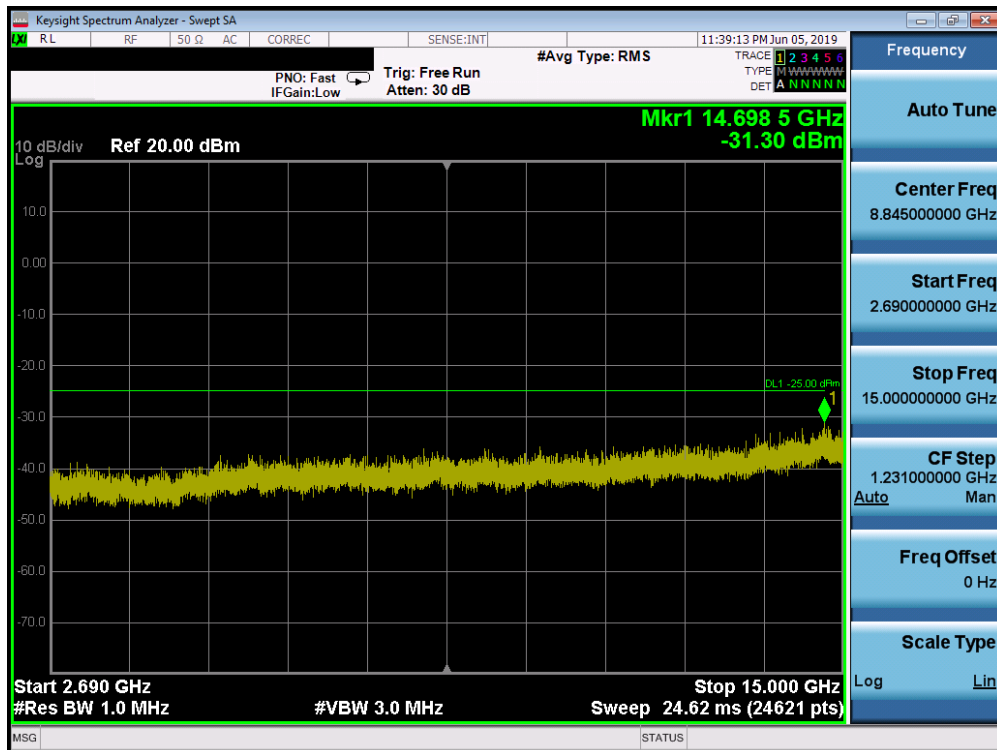


Plot 7-426. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 245 of 331

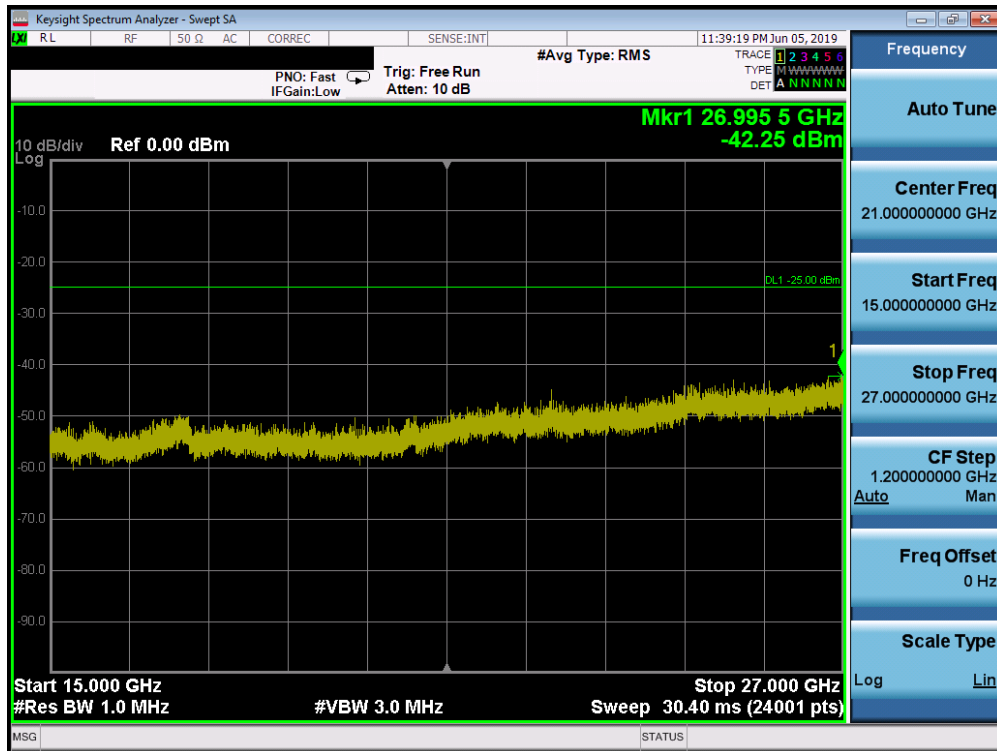


Plot 7-427. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

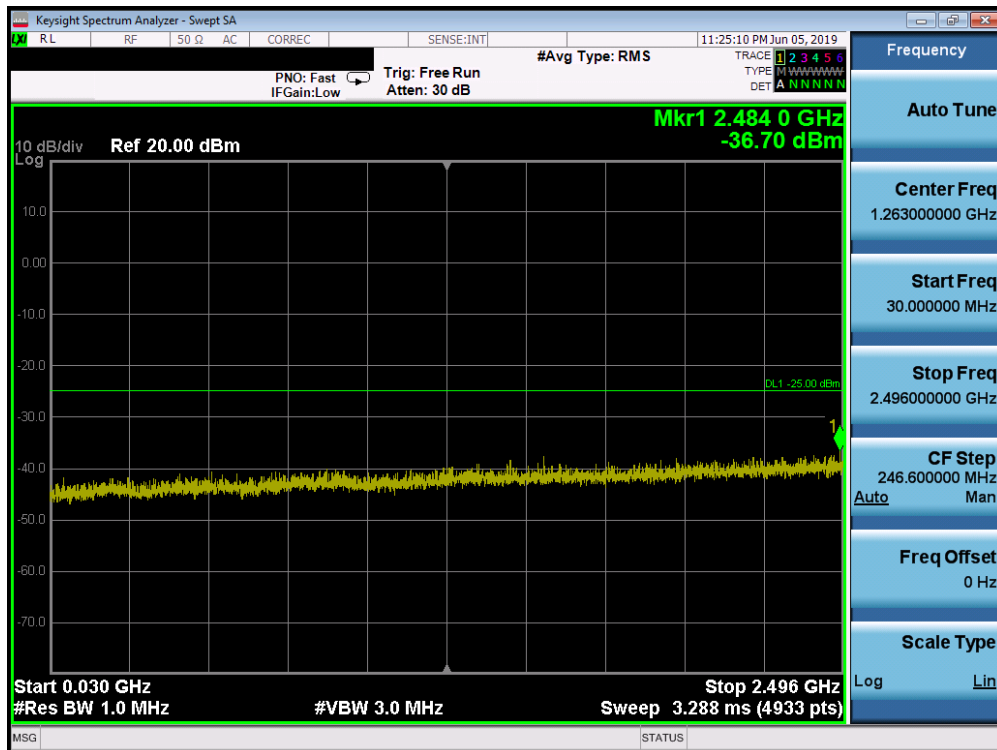


Plot 7-428. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 246 of 331

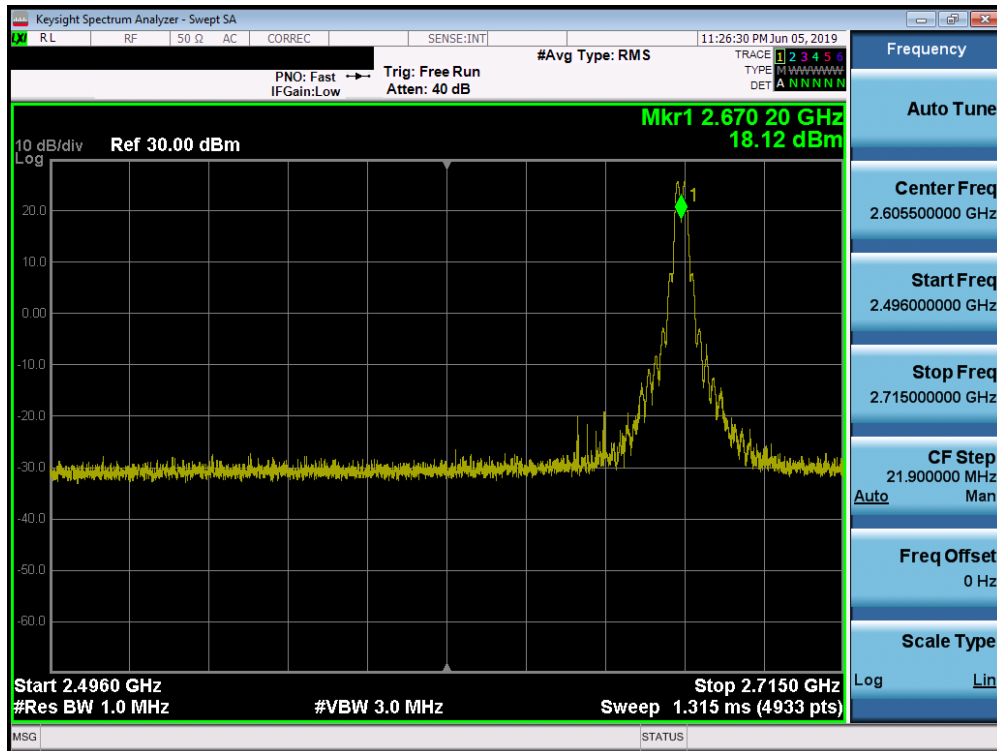


Plot 7-429. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

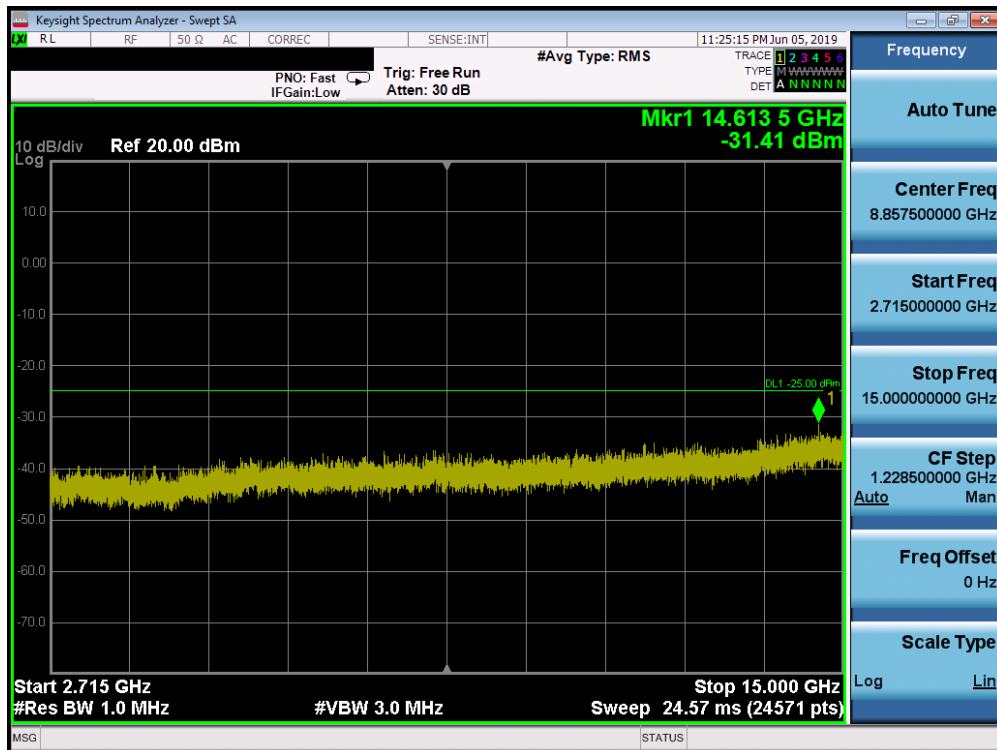


Plot 7-430. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 247 of 331

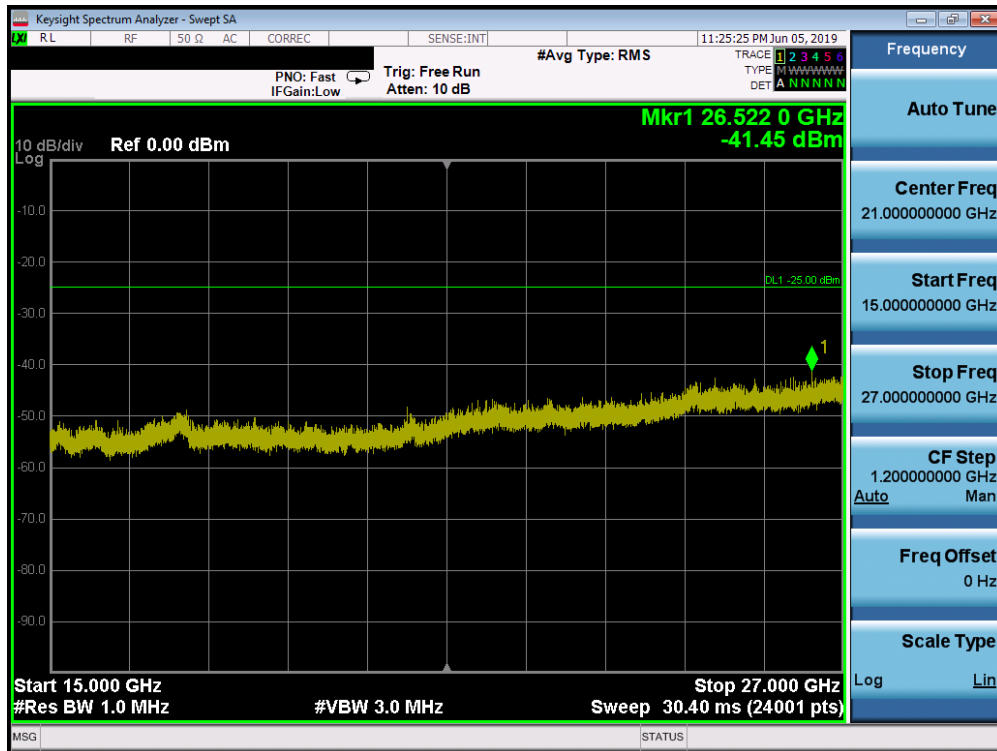


Plot 7-431. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

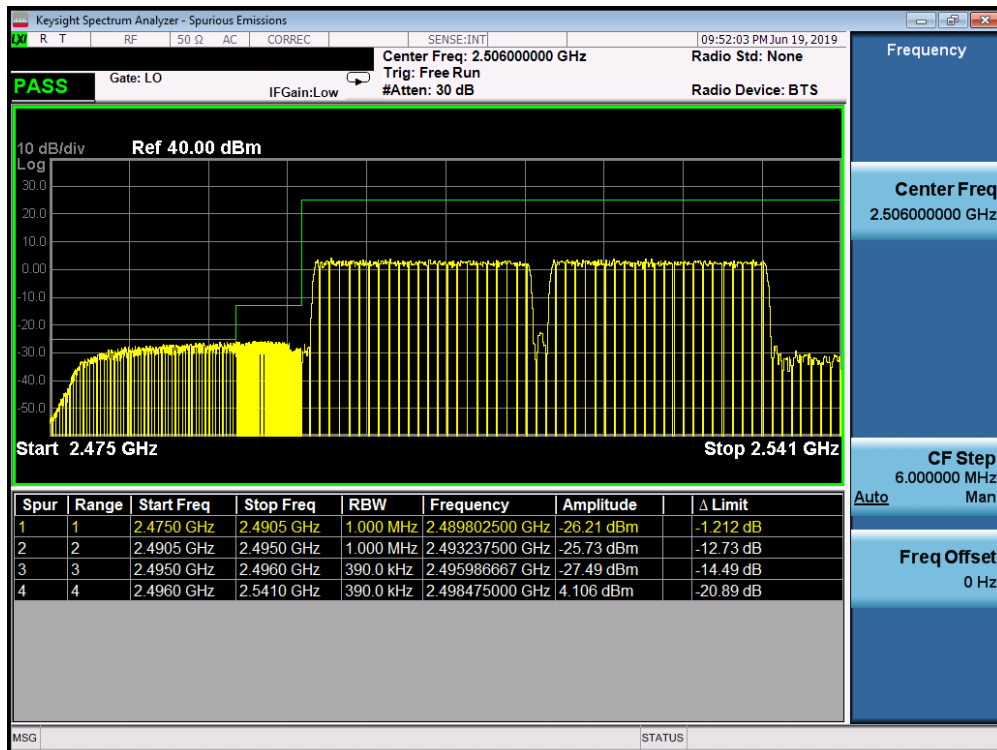


Plot 7-432. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 248 of 331

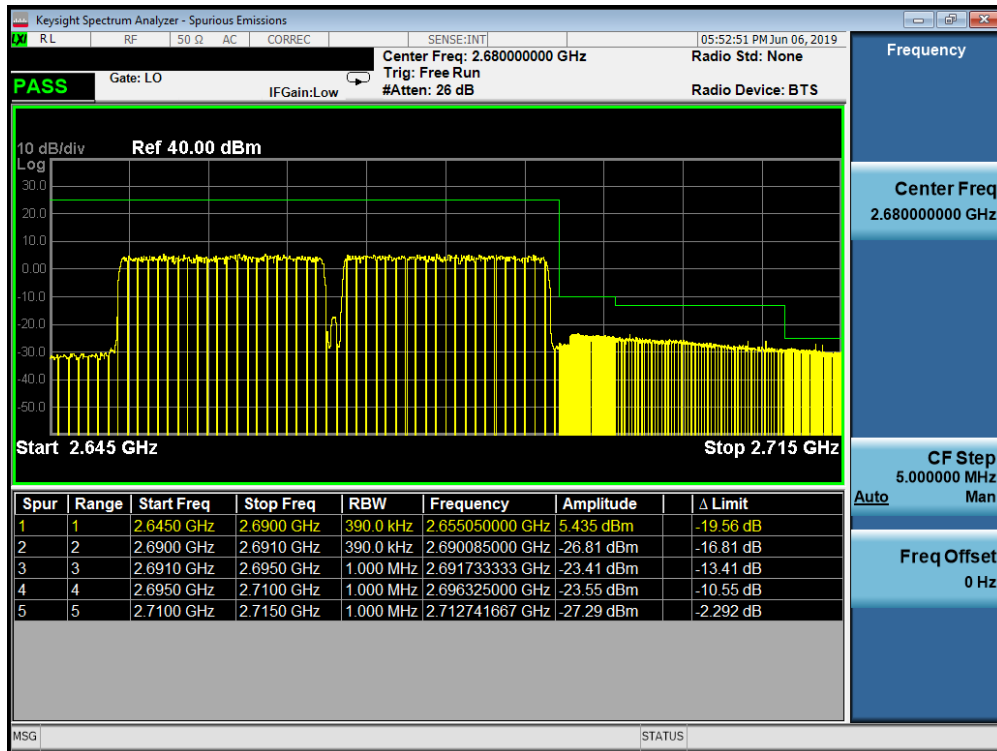


Plot 7-433. Conducted Spurious Plot (Band 41 PC2 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)



Plot 7-434. Lower ACP Plot (Band 41 PC2- QPSK – PCC: 20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 249 of 331



Plot 7-435. Upper ACP Plot (Band 41 PC2- QPSK – PCC: 20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMN970U	MEASUREMENT REPORT (CERTIFICATION) 			Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 250 of 331

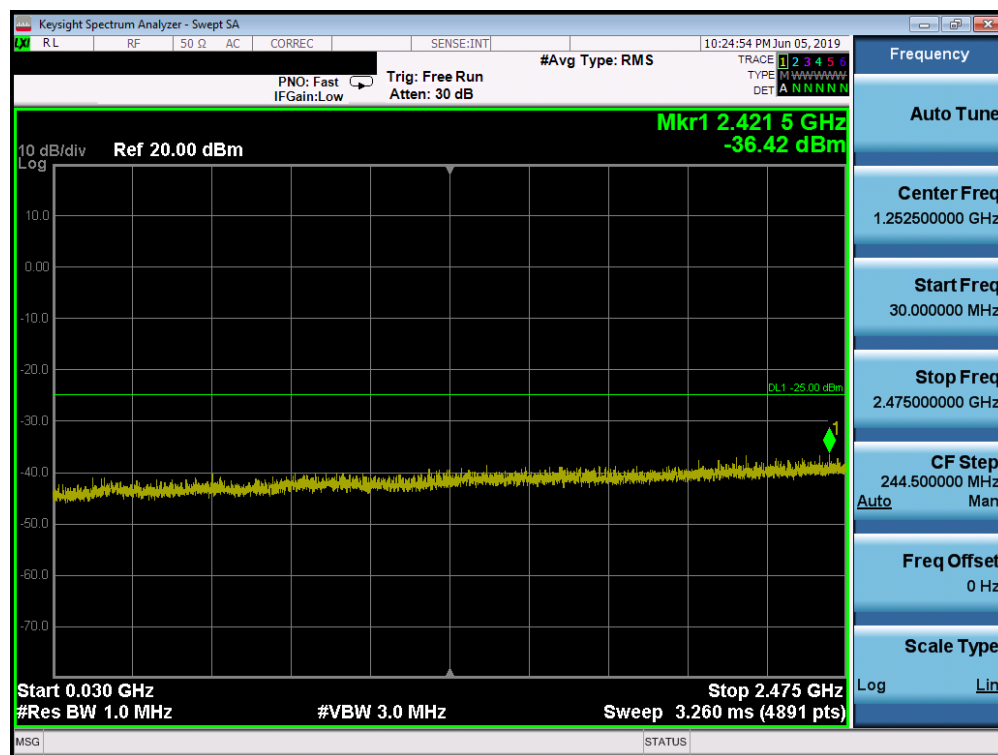
Uplink CA Configuration 41 (PC3)

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	24.72
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	24.96
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	24.35

Table 7-8. Conducted Powers (B41 PC3 –20MHz + 20MHz Channel Bandwidth- PCC/SCC: 1RB)

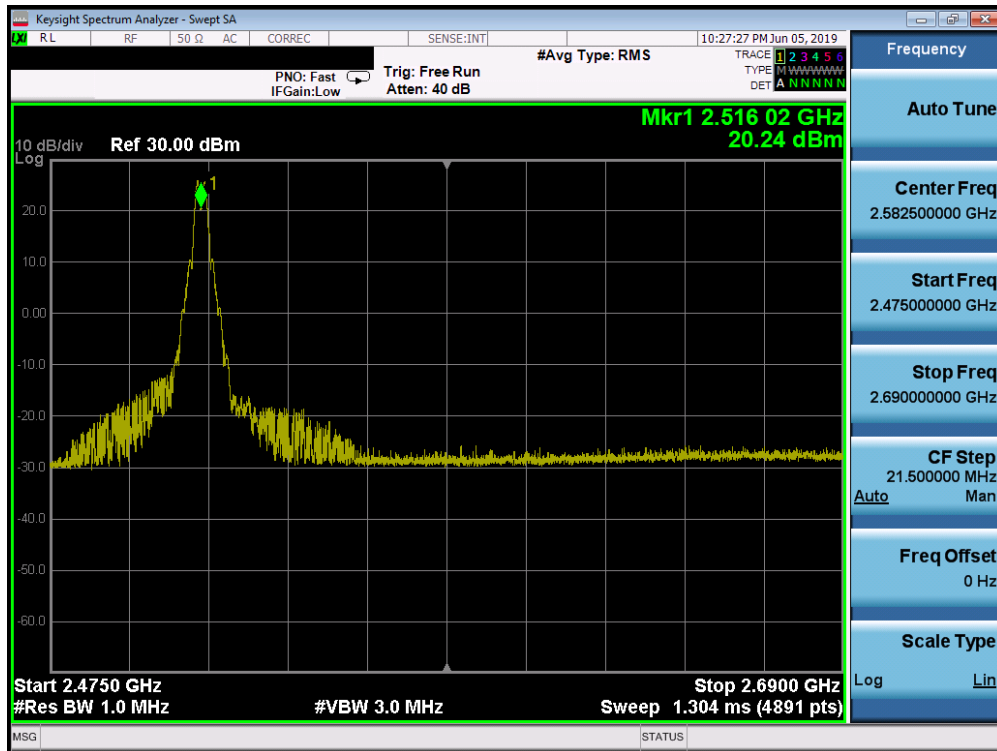
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	23.73
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	22.81
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	22.79
Max	LTE B41	20	39750	2506	256-QAM	100	0	LTE B41	20	39948	2525.8	256-QAM	100	0	20.83

Table 7-9. Conducted Powers (B41 PC3 with Various Combinations for 20MHz + 20MHz Channel Bandwidth)

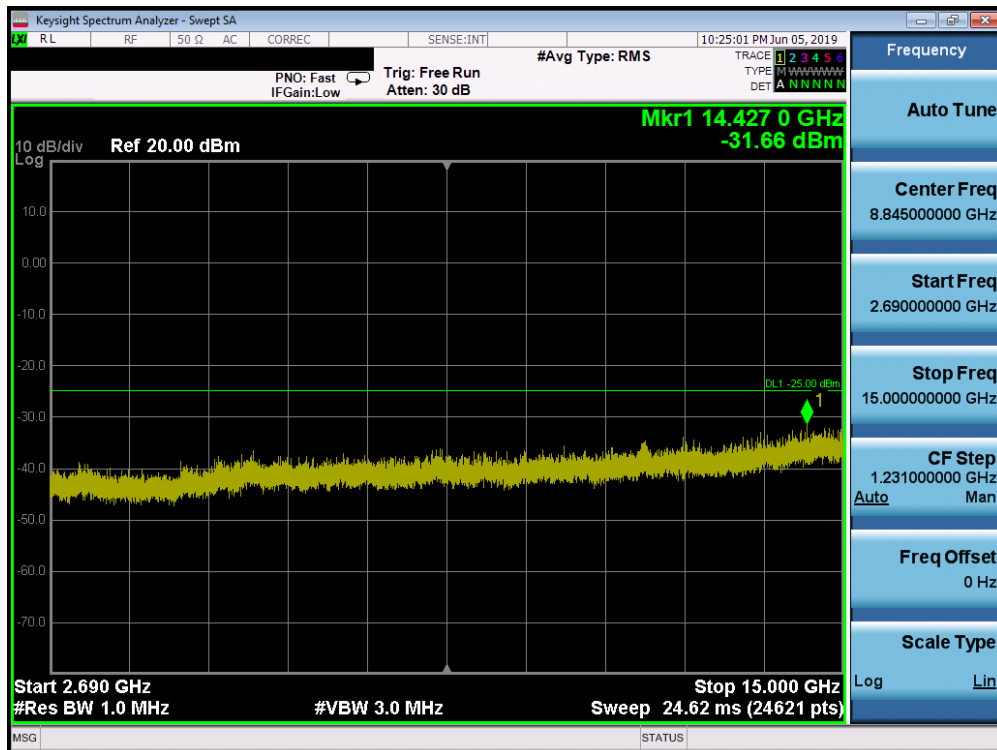


Plot 7-436. Conducted Spurious Plot (Band 41 PC3 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 251 of 331

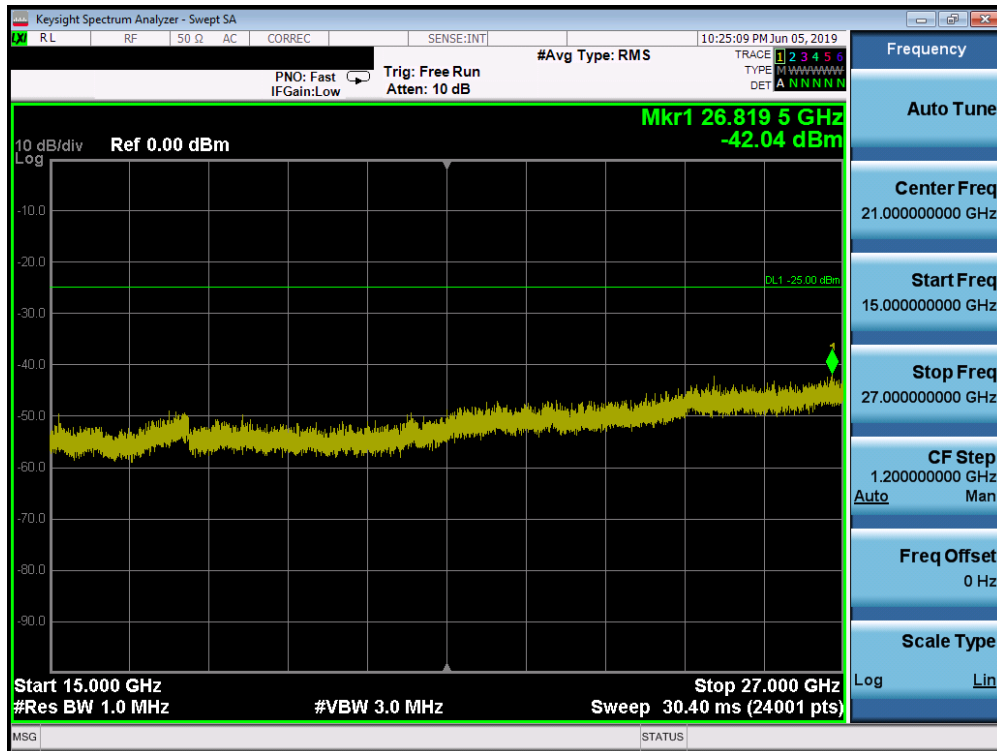


Plot 7-437. Conducted Spurious Plot (Band 41 PC3 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

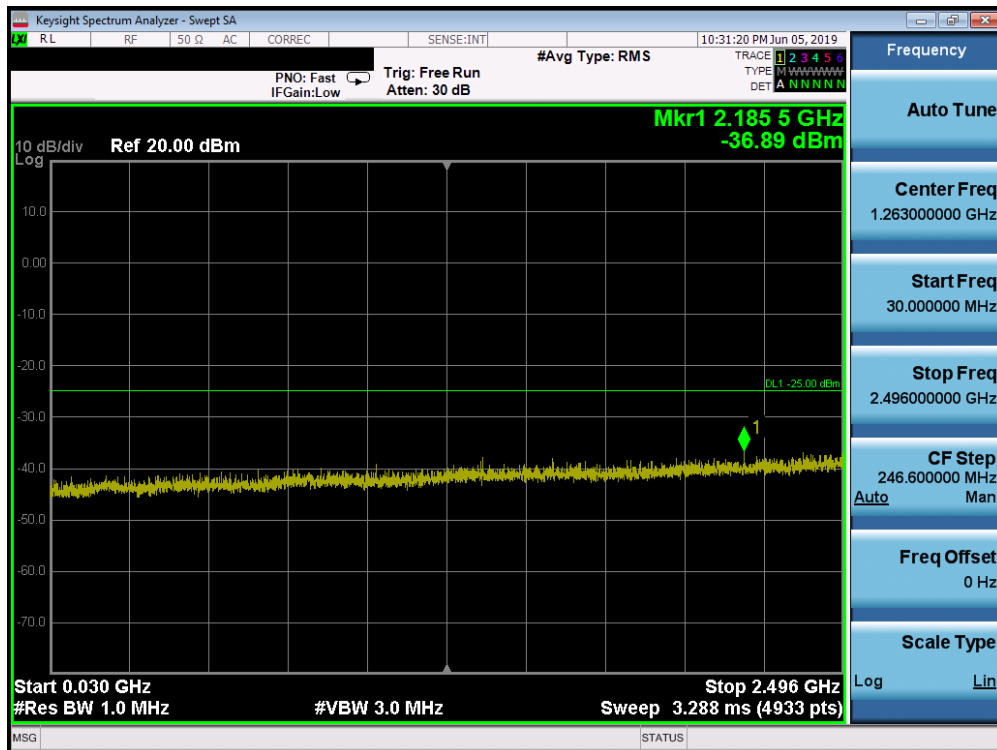


Plot 7-438. Conducted Spurious Plot (Band 41 PC3 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 252 of 331

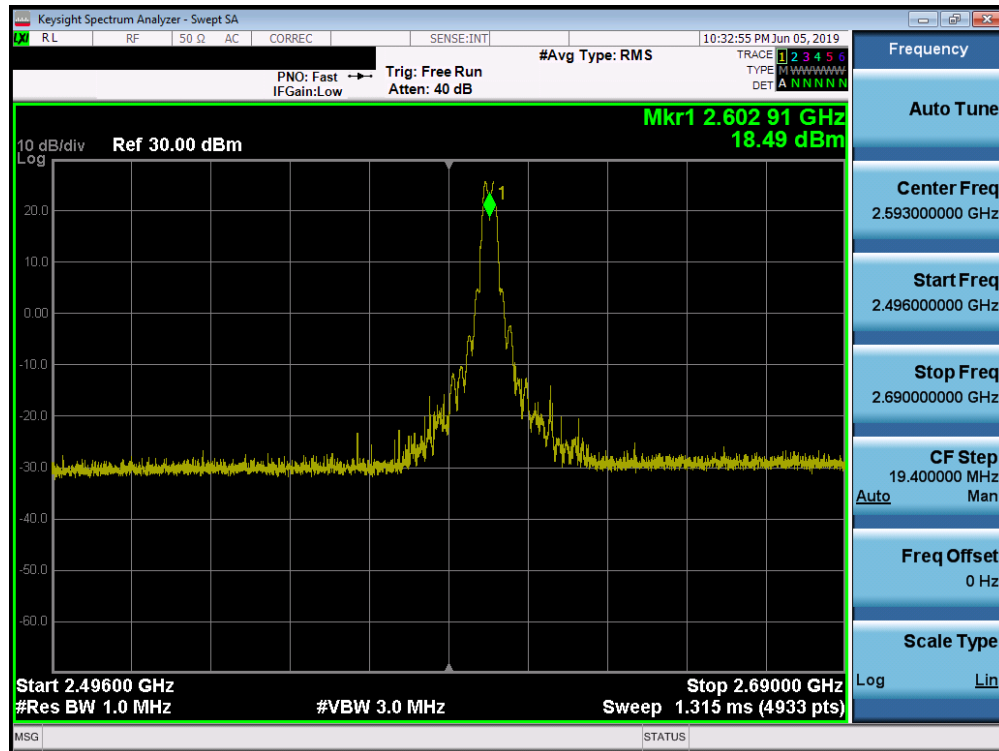


Plot 7-439. Conducted Spurious Plot (Band 41 PC3 - 20.0MHz QPSK - PCC 1/99 SCC 1/0 - Low Channel)

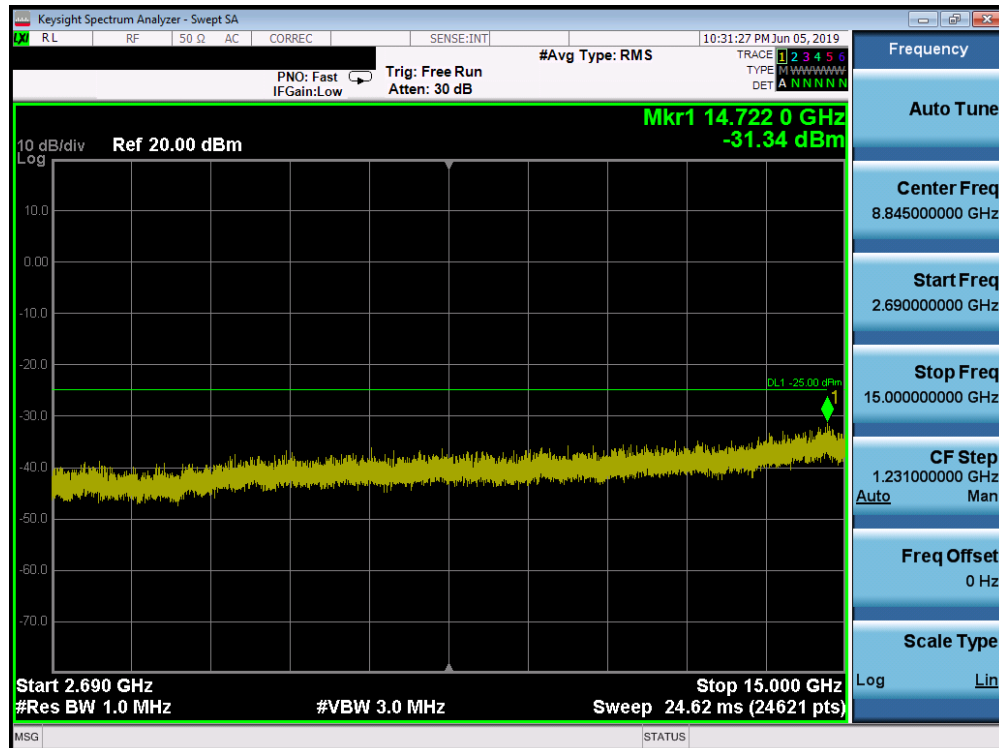


Plot 7-440. Conducted Spurious Plot (Band 41 PC3 - 20.0MHz QPSK - PCC 1/99 SCC 1/0 - Mid Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 253 of 331

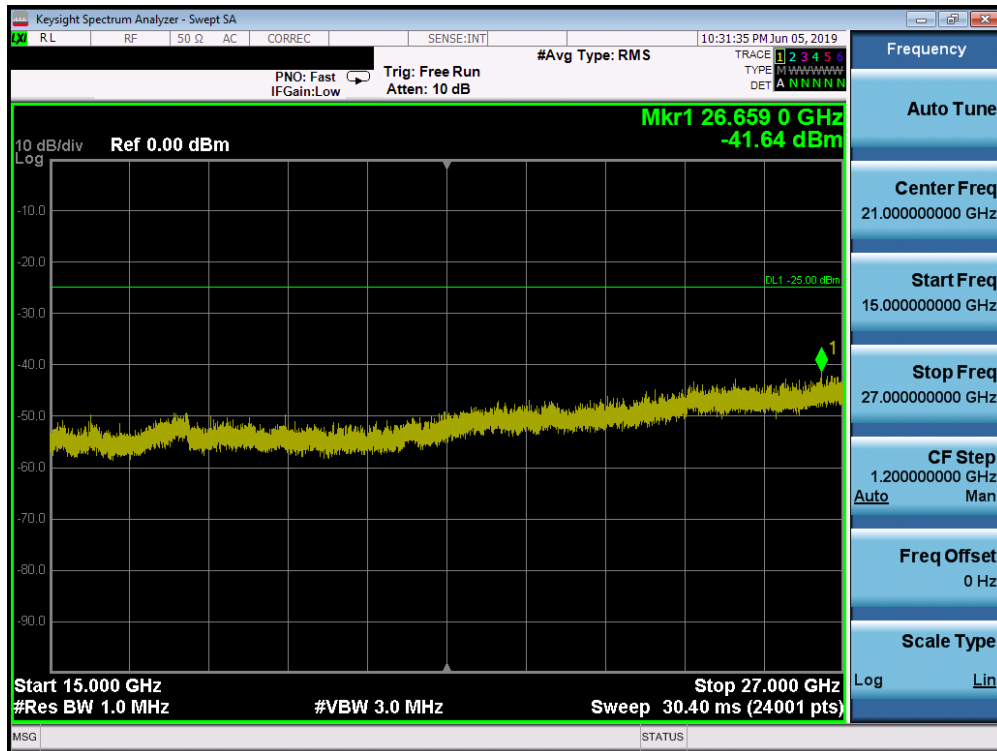


Plot 7-441. Conducted Spurious Plot (Band 41 PC3 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

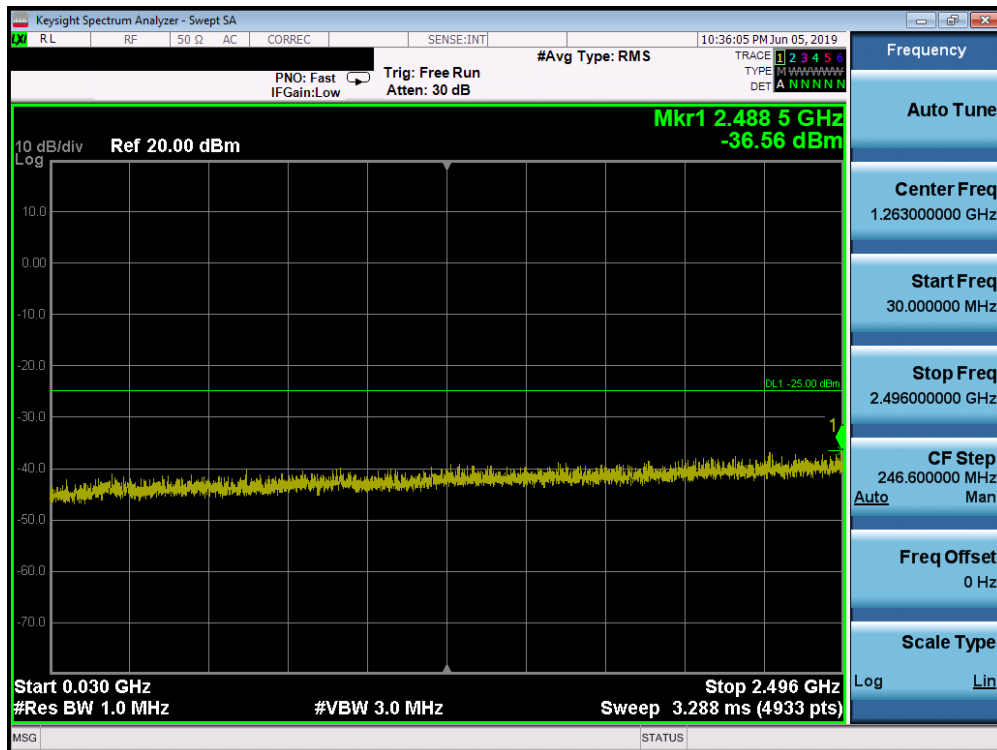


Plot 7-442. Conducted Spurious Plot (Band 41 PC3 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 254 of 331

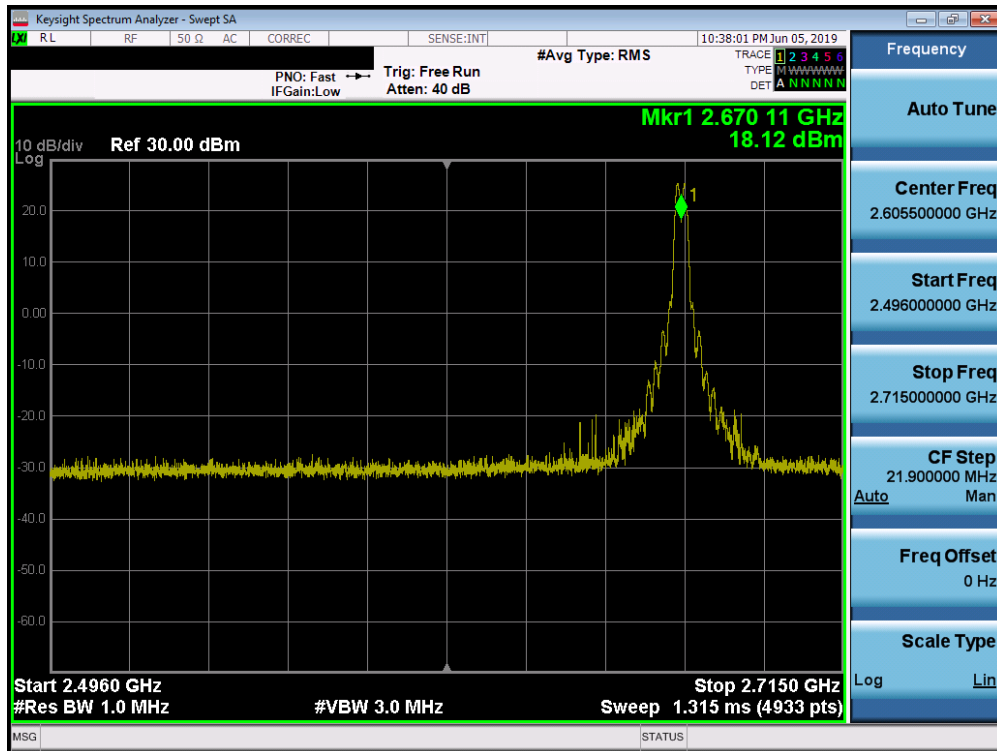


Plot 7-443. Conducted Spurious Plot (Band 41 PC3 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

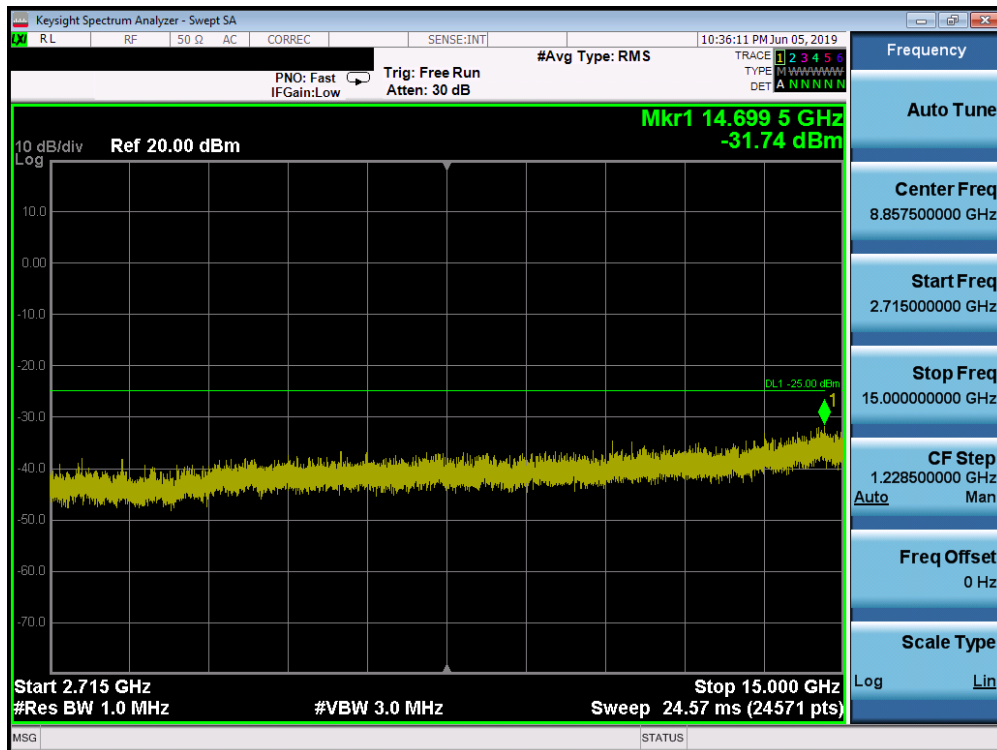


Plot 7-444. Conducted Spurious Plot (Band 41 PC3 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 255 of 331

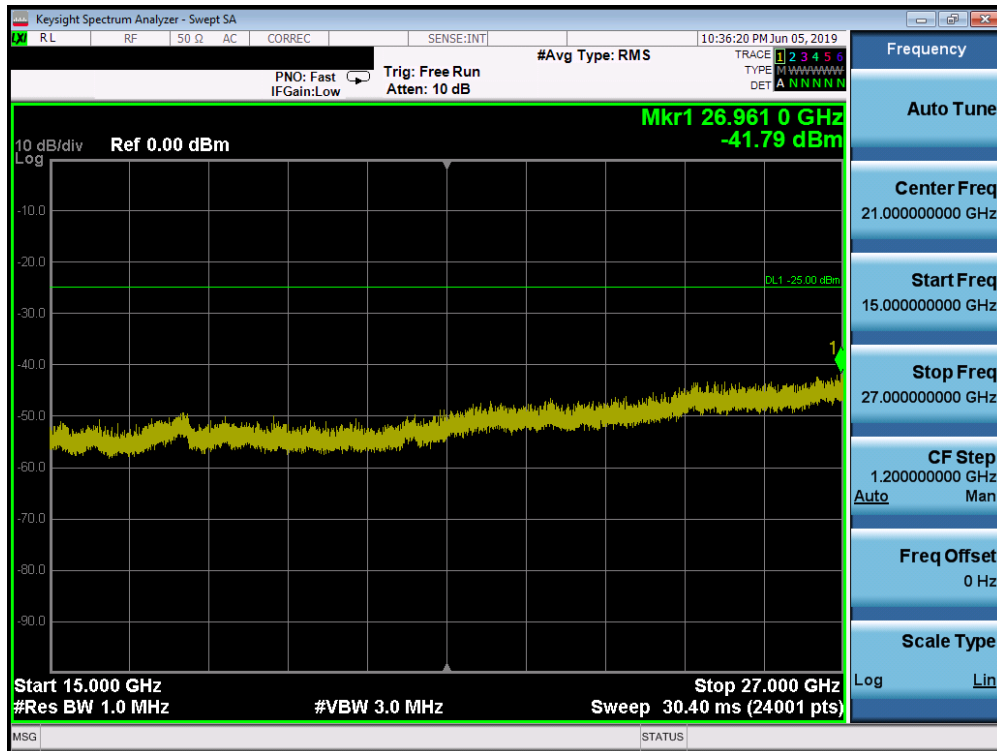


Plot 7-445. Conducted Spurious Plot (Band 41 PC3 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

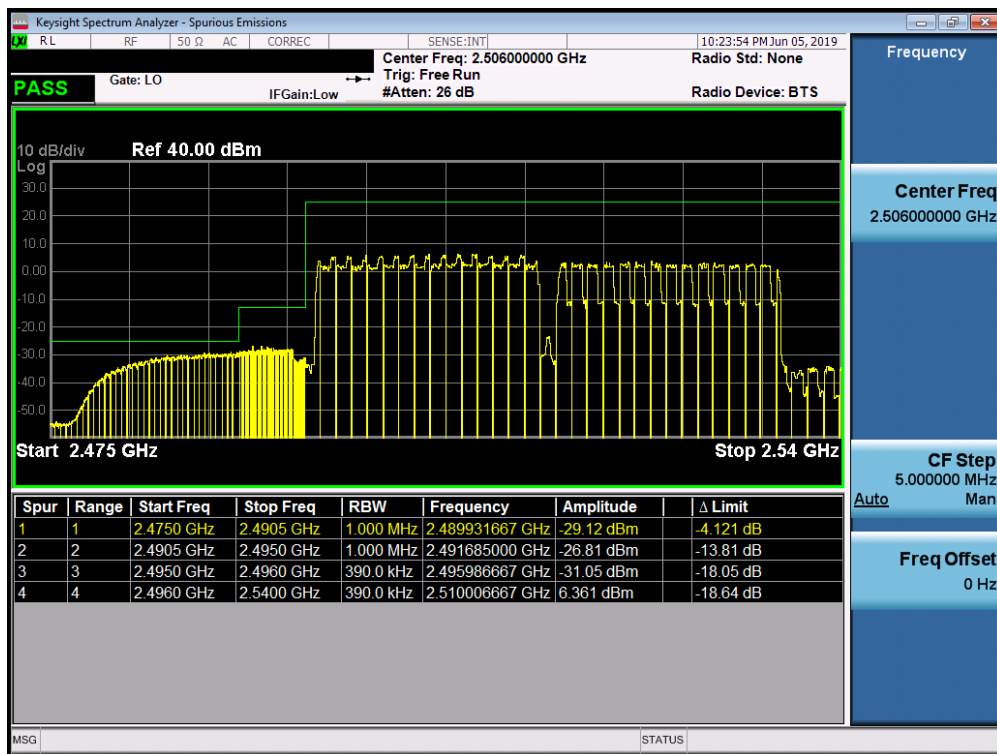


Plot 7-446. Conducted Spurious Plot (Band 41 PC3 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 256 of 331

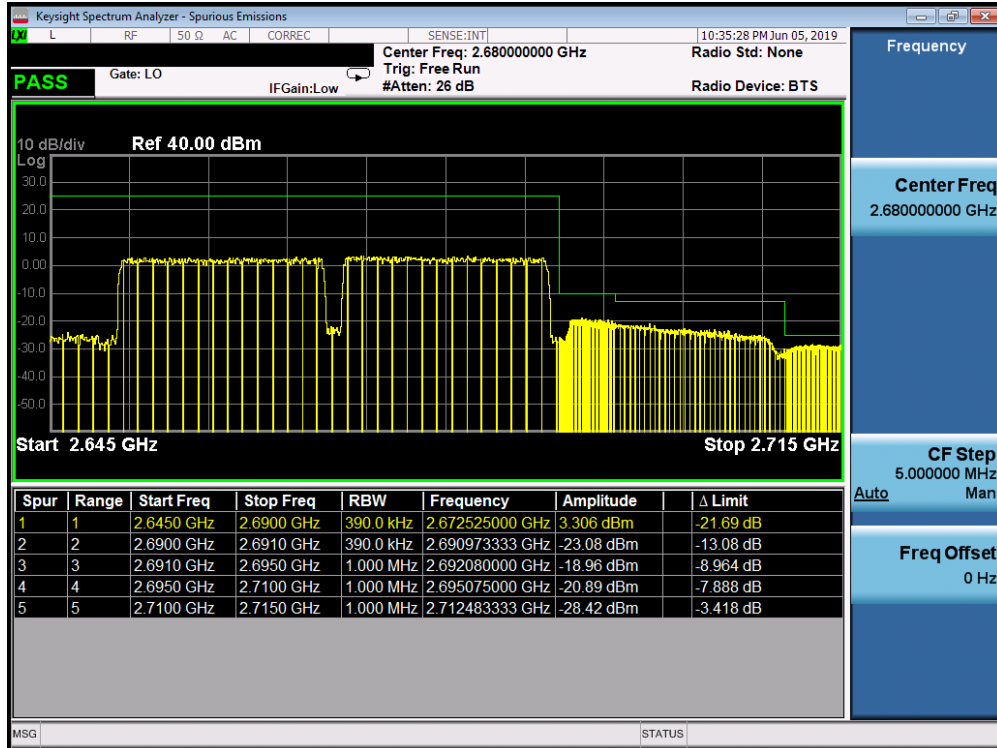


Plot 7-447. Conducted Spurious Plot (Band 41 PC3 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)



Plot 7-448. Lower ACP Plot (Band 41 PC3- QPSK – PCC: 20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 257 of 331



Plot 7-449. Upper ACP Plot (Band 41 PC3- QPSK – PCC: 20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 258 of 331

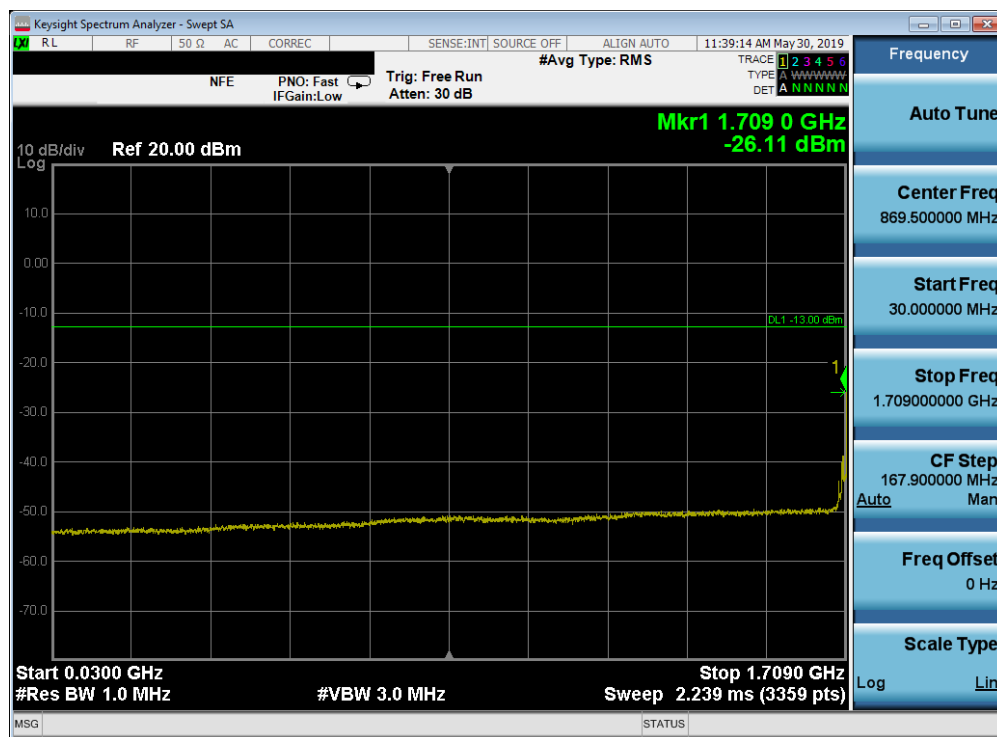
Uplink CA Configuration 66B/C

Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	20	132270	1739.8	QPSK	1	0	22.81
Max	LTE B66	20	132322	1745	QPSK	1	99	LTE B66	20	132520	1764.8	QPSK	1	0	23.48
Max	LTE B66	20	132572	1770	QPSK	1	0	LTE B66	20	132374	1750.2	QPSK	1	99	24.02

Table 7-10. Conducted Powers (B66 –20MHz + 20MHz Channel Bandwidth- PCC/SCC: 1RB)

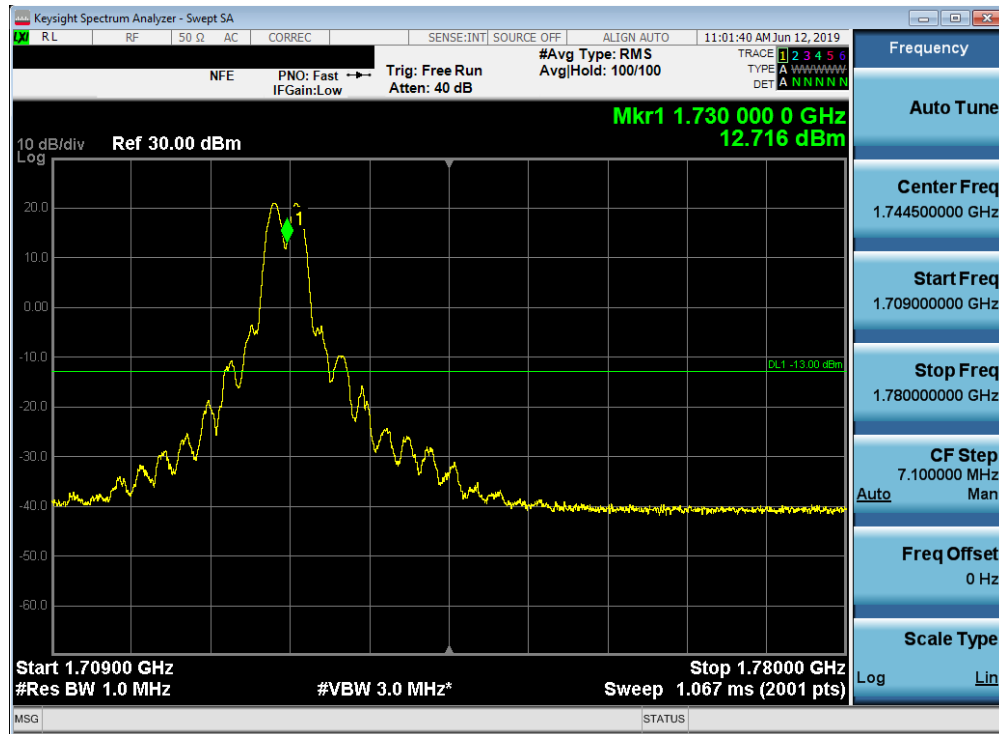
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B66	20	132322	1745	QPSK	100	0	LTE B66	20	132520	1764.8	QPSK	100	0	22.68
Max	LTE B66	20	132322	1745	16-QAM	100	0	LTE B66	20	132520	1764.8	16-QAM	100	0	21.75
Max	LTE B66	20	132322	1745	64-QAM	100	0	LTE B66	20	132520	1764.8	64-QAM	100	0	21.05
Max	LTE B66	20	132322	1745	256-QAM	100	0	LTE B66	20	132520	1764.8	256-QAM	100	0	19.76

Table 7-11. Conducted Powers (B66 with Various Combinations for 20MHz + 20MHz Channel Bandwidth)

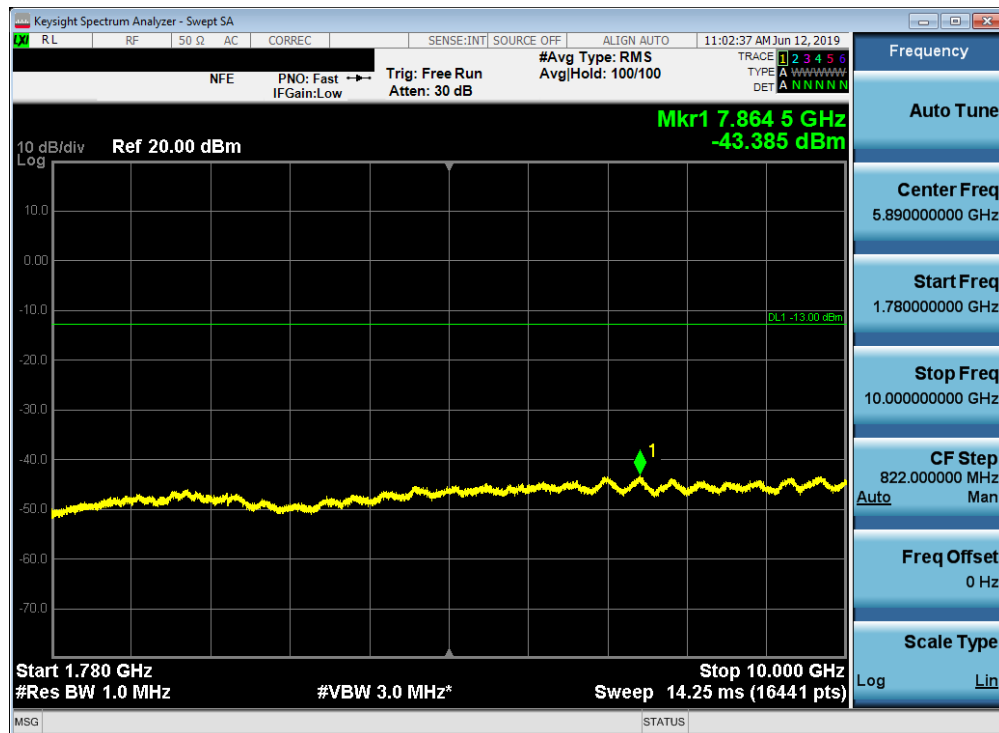


Plot 7-450. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset			Page 259 of 331

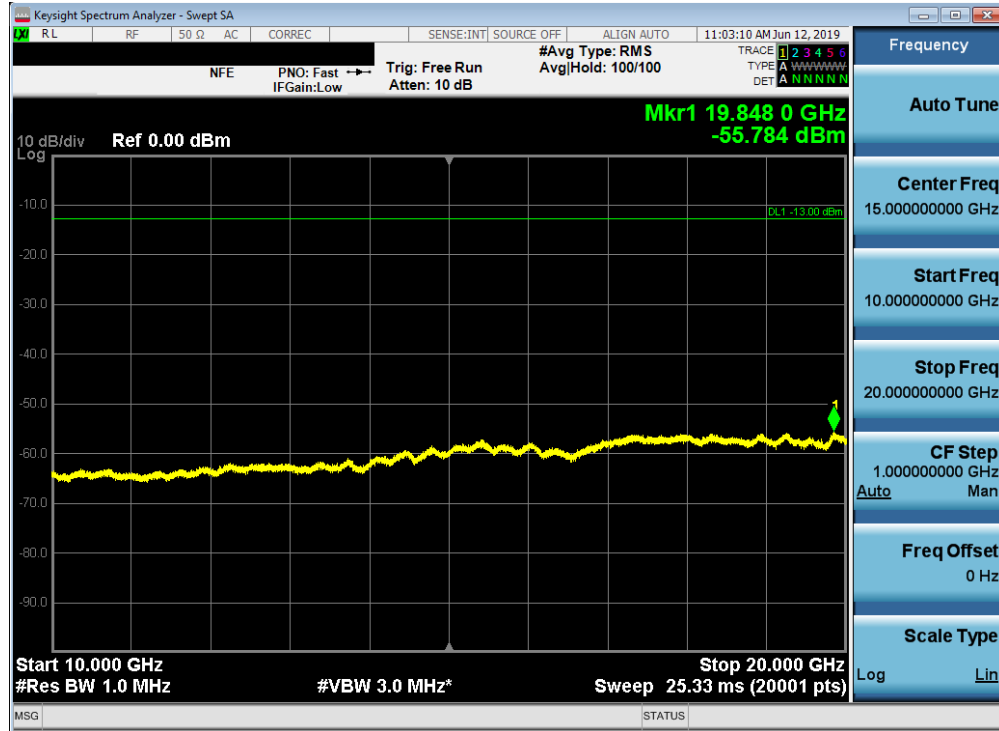


Plot 7-451. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – High Channel)

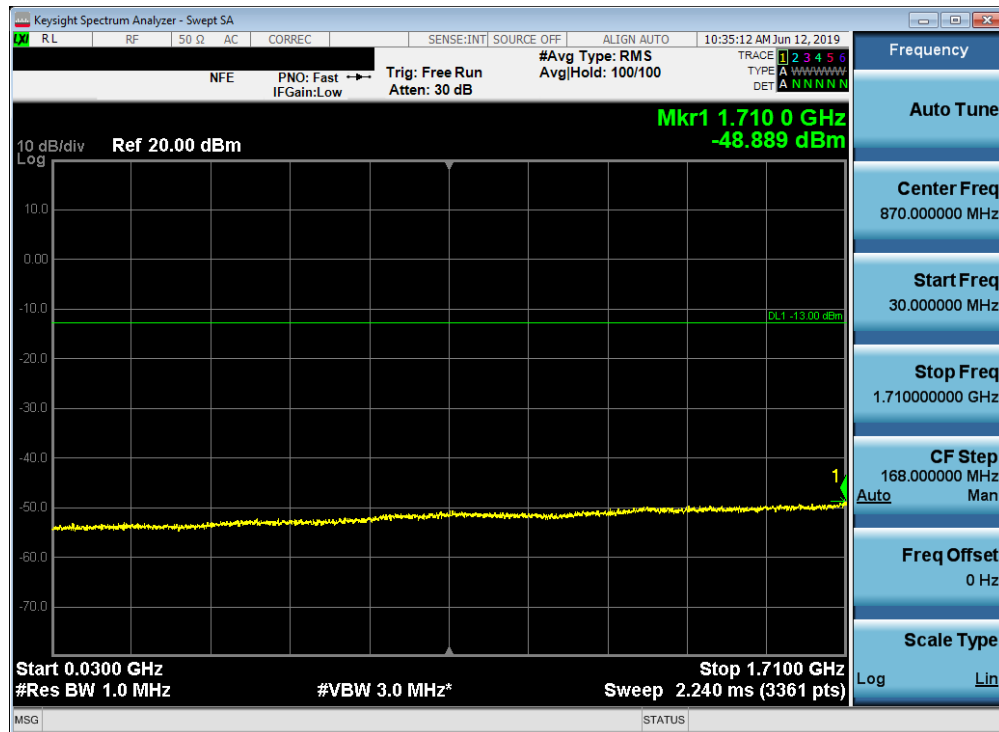


Plot 7-452. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 260 of 331

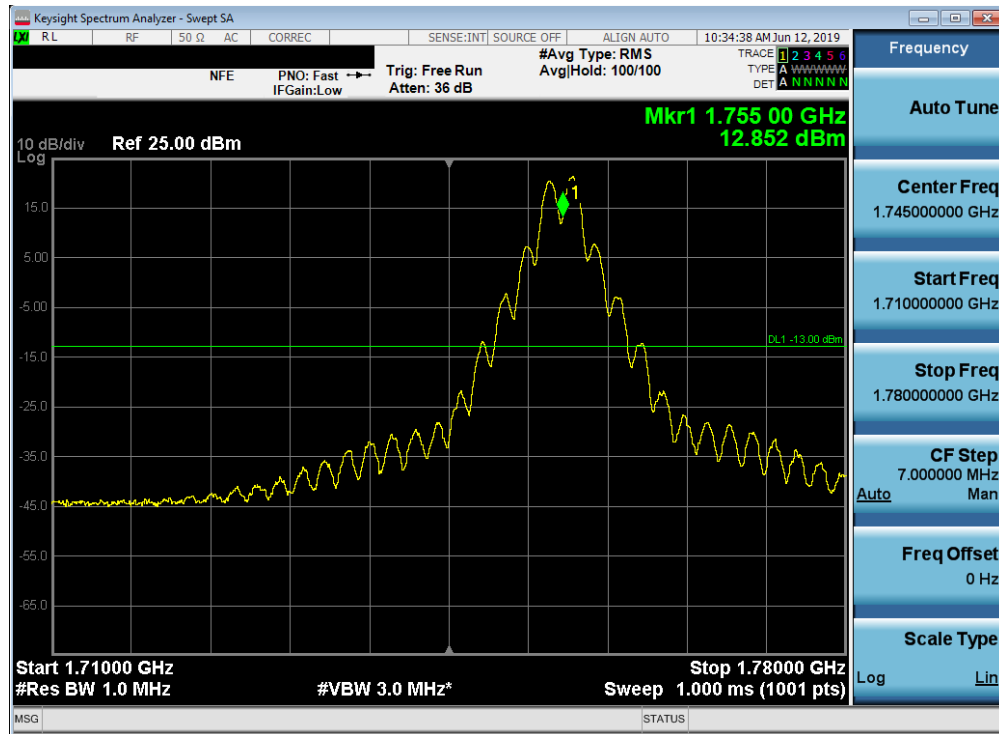


Plot 7-453. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

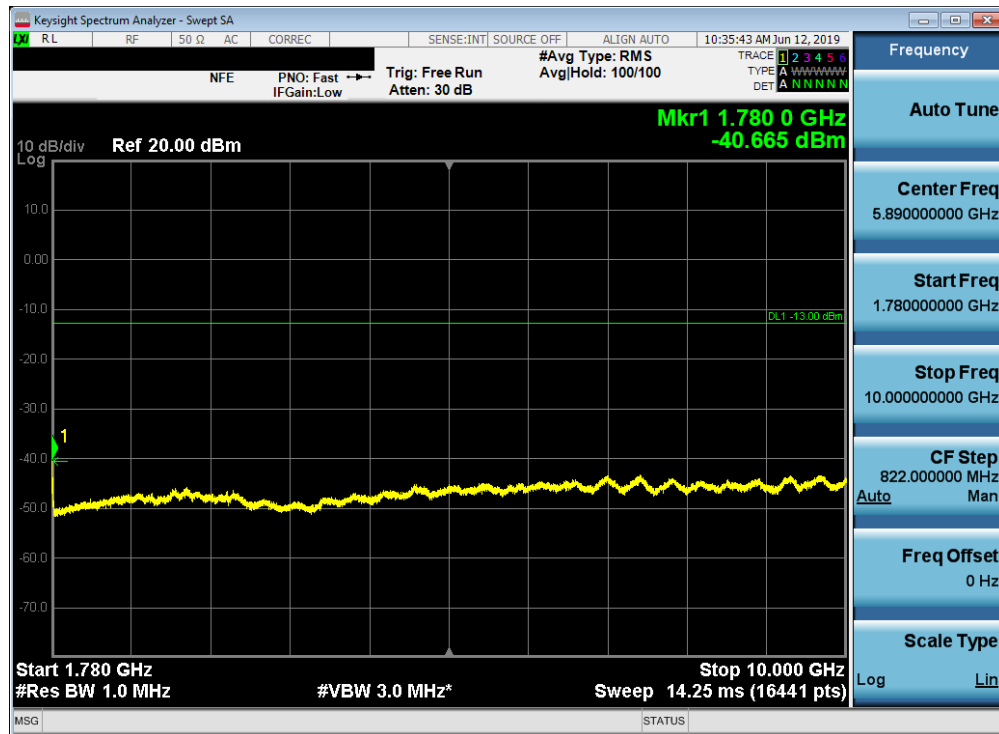


Plot 7-454. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 261 of 331

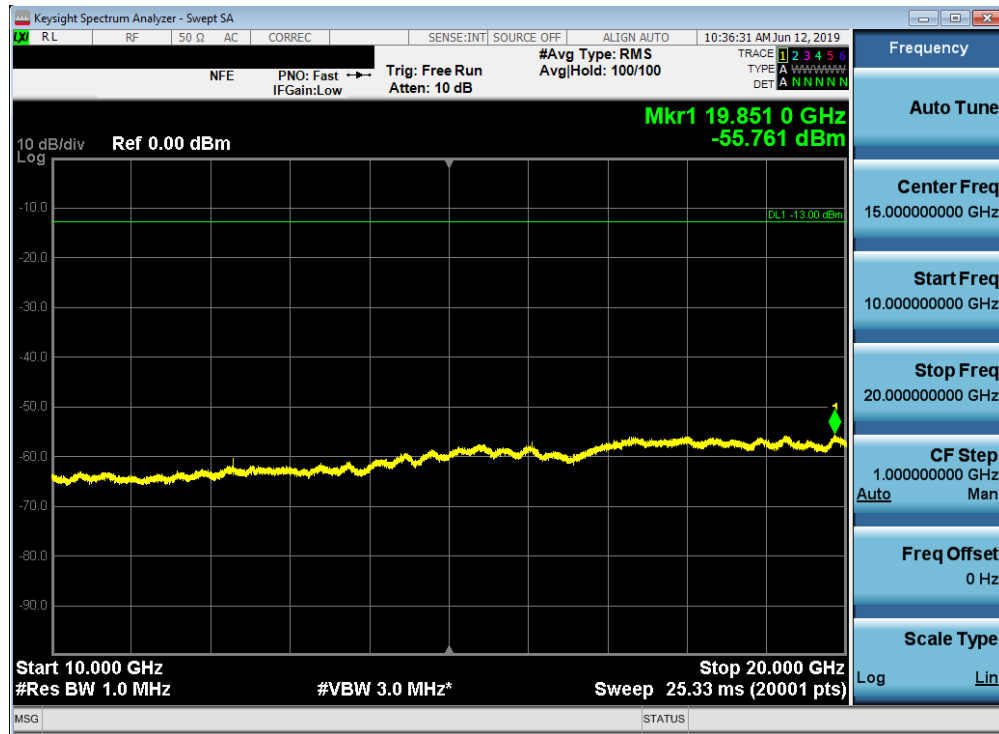


Plot 7-455. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

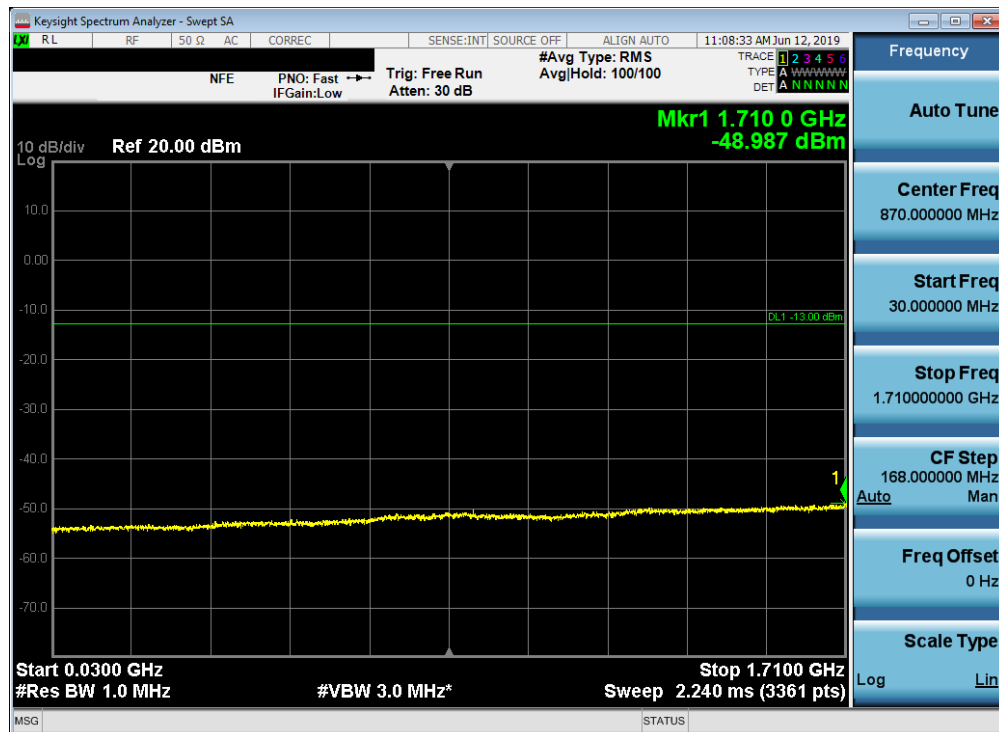


Plot 7-456. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 262 of 331

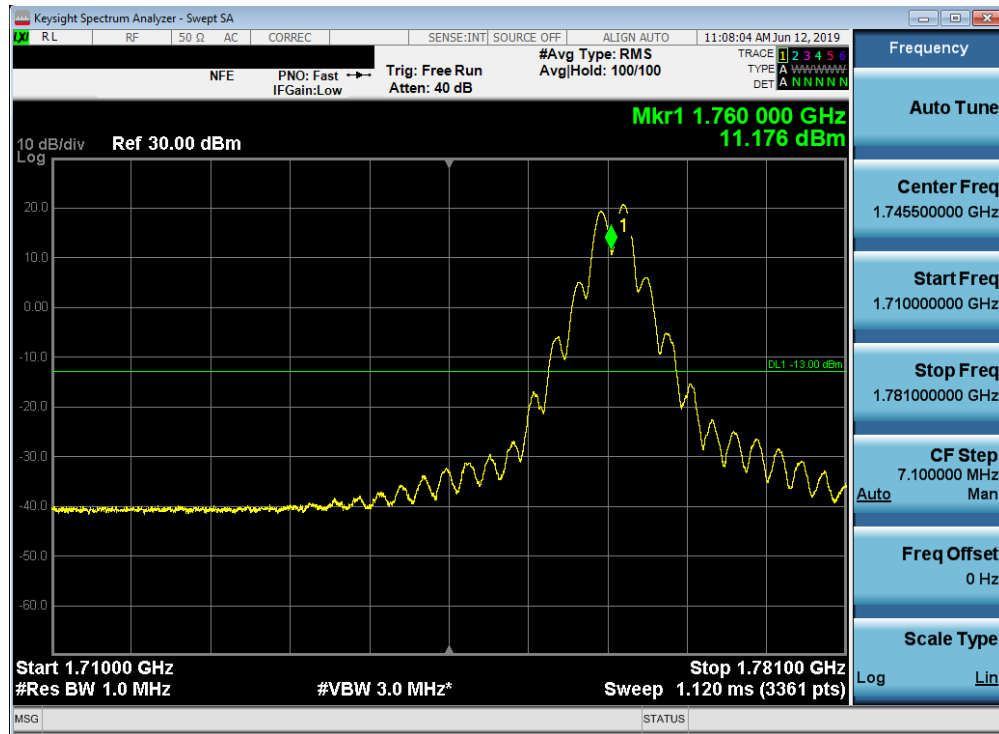


Plot 7-457. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

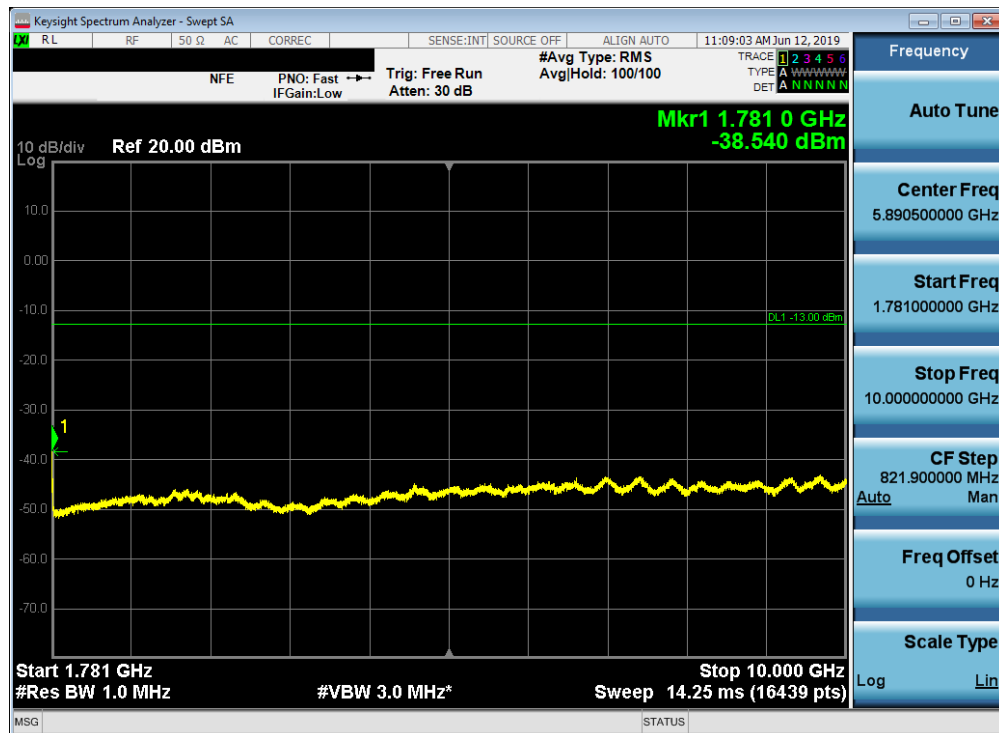


Plot 7-458. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 263 of 331

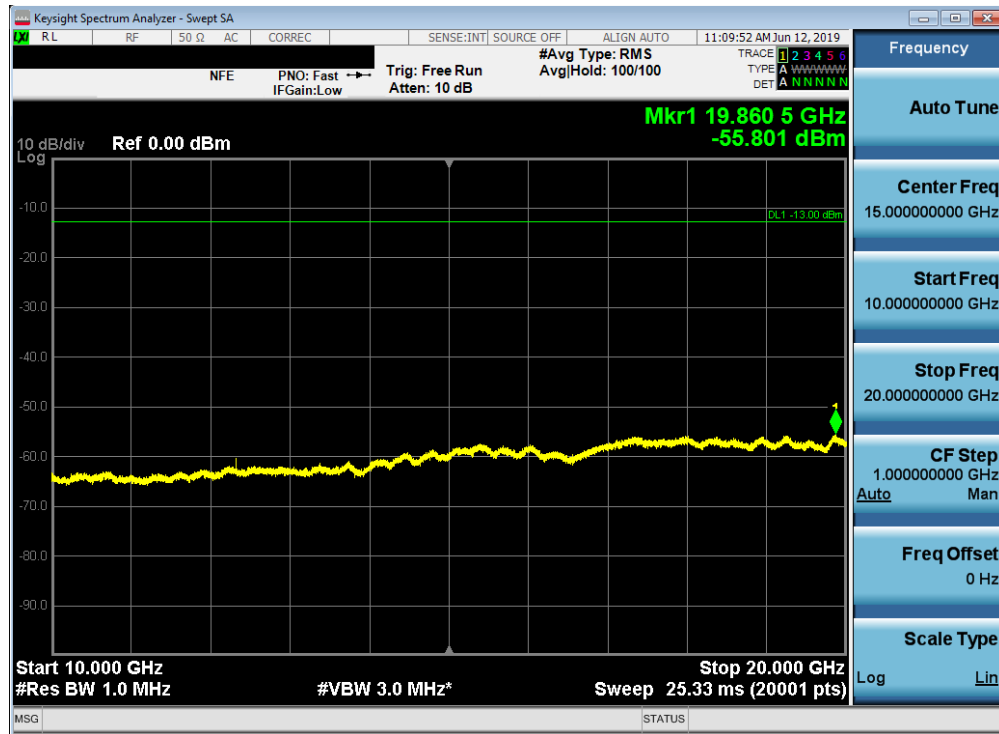


Plot 7-459. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

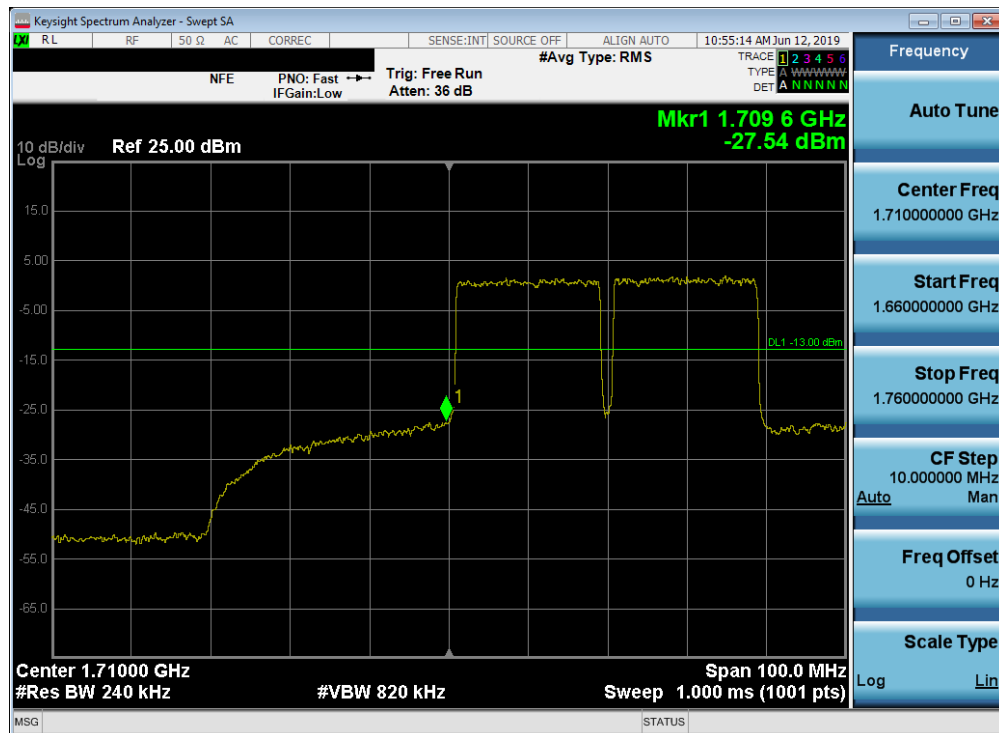


Plot 7-460. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 264 of 331

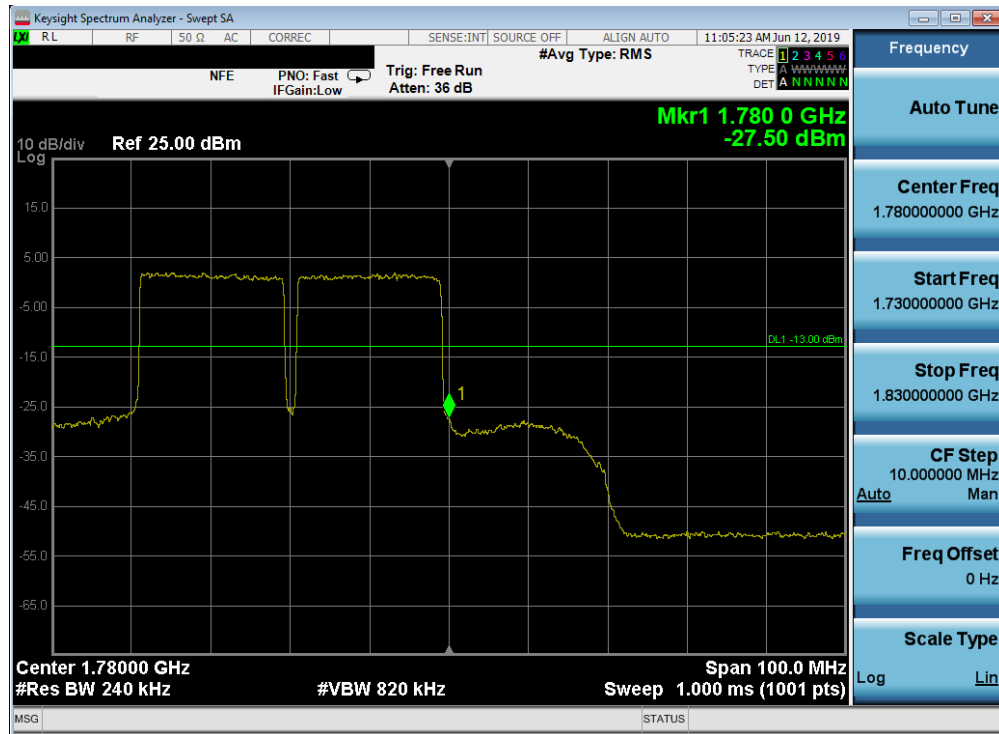


Plot 7-461. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)



Plot 7-462. Lower Band Edge Plot (Band 66 - QPSK – PCC: 20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 265 of 331



Plot 7-463. Upper Band Edge Plot (Band 66- QPSK – PCC: 20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 266 of 331

7.8 Radiated Power (ERP/EIRP)

Test Overview

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

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

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

FCC ID: A3LSMN970U		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.

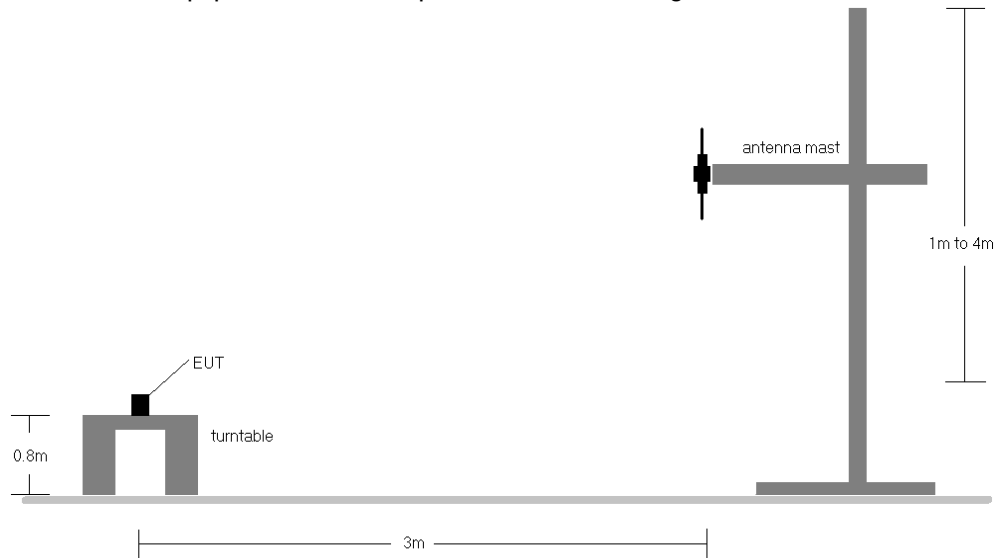


Figure 7-7. Radiated Test Setup <1GHz

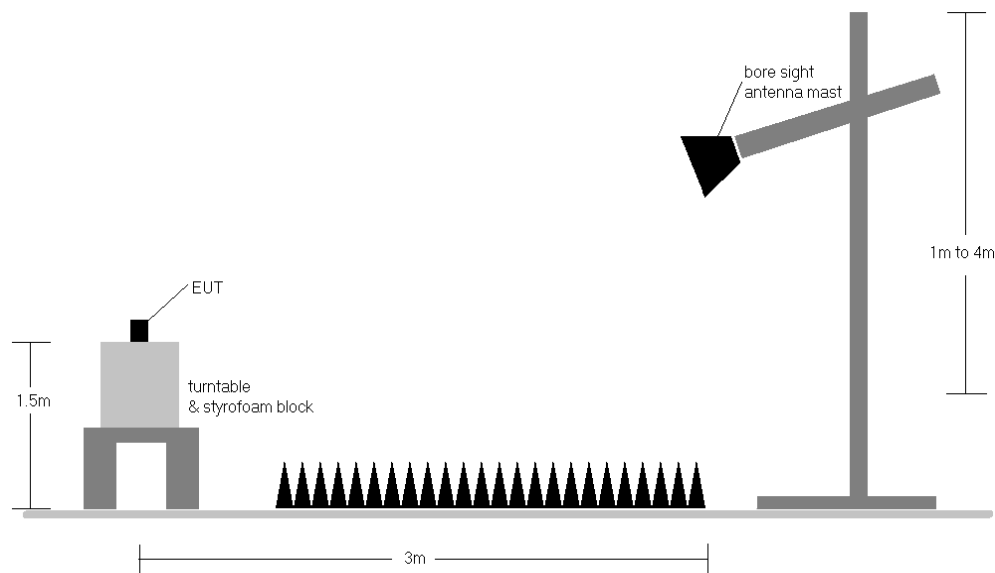


Figure 7-8. Radiated Test Setup >1GHz

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: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 268 of 331

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	104	223	1 / 0	17.63	3.75	19.23	0.084	34.77	-15.54
680.50	5	QPSK	V	102	253	1 / 24	18.28	4.20	20.33	0.108	34.77	-14.44
695.50	5	QPSK	V	102	223	1 / 24	17.67	4.50	20.02	0.100	34.77	-14.75
680.50	5	16-QAM	V	102	253	1 / 24	18.08	4.20	20.13	0.103	34.77	-14.64
680.50	5	64-QAM	V	102	253	1 / 24	17.73	4.20	19.78	0.095	34.77	-14.99
680.50	5	256-QAM	V	100	253	1 / 24	15.63	4.20	17.68	0.059	34.77	-17.09
668.00	10	QPSK	V	101	212	1 / 0	18.09	3.80	19.74	0.094	34.77	-15.03
680.50	10	QPSK	V	100	253	1 / 49	18.43	4.20	20.48	0.112	34.77	-14.29
693.00	10	QPSK	V	101	223	1 / 49	17.82	4.40	20.07	0.102	34.77	-14.70
680.50	10	16-QAM	V	100	253	1 / 49	18.23	4.20	20.28	0.107	34.77	-14.49
680.50	10	64-QAM	V	100	253	1 / 49	17.71	4.20	19.76	0.095	34.77	-15.01
680.50	10	256-QAM	V	100	253	1 / 49	15.63	4.20	17.68	0.059	34.77	-17.09
670.50	15	QPSK	V	100	212	1 / 0	18.07	3.90	19.82	0.096	34.77	-14.95
680.50	15	QPSK	V	100	253	1 / 74	18.61	4.20	20.66	0.116	34.77	-14.11
690.50	15	QPSK	V	100	223	1 / 74	18.02	4.40	20.27	0.106	34.77	-14.50
680.50	15	16-QAM	V	100	253	1 / 74	18.52	4.20	20.57	0.114	34.77	-14.20
680.50	15	64-QAM	V	100	253	1 / 74	18.14	4.20	20.19	0.104	34.77	-14.58
680.50	15	256-QAM	V	100	253	1 / 74	15.63	4.20	17.68	0.059	34.77	-17.09
673.00	20	QPSK	V	100	211	1 / 0	18.08	4.00	19.93	0.098	34.77	-14.84
680.50	20	QPSK	V	100	253	1 / 99	18.63	4.20	20.68	0.117	34.77	-14.09
688.00	20	QPSK	V	100	213	1 / 99	18.04	4.40	20.29	0.107	34.77	-14.48
680.50	20	16-QAM	V	100	253	1 / 99	18.51	4.20	20.56	0.114	34.77	-14.21
680.50	20	64-QAM	V	100	253	1 / 99	18.09	4.20	20.14	0.103	34.77	-14.63
673.00	20	256-QAM	V	100	211	1 / 0	16.15	4.00	18.00	0.063	34.77	-16.77
680.50	20	QPSK	H	135	270	1 / 99	16.74	3.20	17.79	0.060	34.77	-16.98
680.50	20 (WCP)	QPSK	V	182	259	1 / 99	12.20	4.20	14.25	0.027	34.77	-20.52

Table 7-12. ERP Data (Band 71)

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 269 of 331

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	102	310	1 / 5	19.20	4.50	21.55	0.143	34.77	-13.22
707.50	1.4	QPSK	V	100	315	1 / 5	18.64	4.60	21.09	0.129	34.77	-13.68
715.30	1.4	QPSK	V	102	315	1 / 5	19.22	4.63	21.70	0.148	34.77	-13.07
715.30	1.4	16-QAM	V	102	315	1 / 5	18.48	4.63	20.96	0.125	34.77	-13.81
715.30	1.4	64-QAM	V	102	315	1 / 5	16.93	4.63	19.41	0.087	34.77	-15.36
699.70	1.4	256-QAM	V	102	310	1 / 5	16.61	4.50	18.96	0.079	34.77	-15.81
700.50	3	QPSK	V	100	308	1 / 14	19.21	4.55	21.61	0.145	34.77	-13.16
707.50	3	QPSK	V	100	312	1 / 14	19.04	4.60	21.49	0.141	34.77	-13.28
714.50	3	QPSK	V	101	318	1 / 14	19.20	4.60	21.65	0.146	34.77	-13.12
714.50	3	16-QAM	V	101	318	1 / 14	17.87	4.60	20.32	0.108	34.77	-14.45
714.50	3	64-QAM	V	101	318	1 / 14	17.26	4.60	19.71	0.094	34.77	-15.06
700.50	3	256-QAM	V	100	308	1 / 14	16.52	4.55	18.92	0.078	34.77	-15.85
701.50	5	QPSK	V	100	310	1 / 24	19.30	4.60	21.75	0.150	34.77	-13.02
707.50	5	QPSK	V	100	314	1 / 24	18.65	4.60	21.10	0.129	34.77	-13.67
713.50	5	QPSK	V	101	320	1 / 24	19.34	4.60	21.79	0.151	34.77	-12.98
713.50	5	16-QAM	V	101	320	1 / 24	18.65	4.60	21.10	0.129	34.77	-13.67
713.50	5	64-QAM	V	101	320	1 / 24	17.59	4.60	20.04	0.101	34.77	-14.73
701.50	5	256-QAM	V	100	310	1 / 24	16.46	4.60	18.91	0.078	34.77	-15.86
704.00	10	QPSK	V	100	300	1 / 49	19.15	4.50	21.50	0.141	34.77	-13.27
707.50	10	QPSK	V	100	314	1 / 49	18.61	4.60	21.06	0.128	34.77	-13.71
711.00	10	QPSK	V	101	318	1 / 49	19.36	4.60	21.81	0.152	34.77	-12.96
711.00	10	16-QAM	V	101	318	1 / 49	18.65	4.60	21.10	0.129	34.77	-13.67
711.00	10	64-QAM	V	101	318	1 / 49	17.72	4.60	20.17	0.104	34.77	-14.60
704.00	10	256-QAM	V	100	300	1 / 49	16.70	4.50	19.05	0.080	34.77	-15.72
711.00	10	QPSK	H	289	294	1 / 49	17.76	3.70	19.31	0.085	34.77	-15.46
711.00	10 (WCP)	QPSK	V	179	243	1 / 49	13.28	4.60	15.73	0.037	34.77	-19.04

Table 7-13. ERP Data (Band 12)

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 270 of 331

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	V	165	236	1 / 24	15.34	5.70	18.89	0.077	34.77	-15.88
782.00	5	QPSK	V	166	235	1 / 24	15.36	5.80	19.01	0.080	34.77	-15.76
784.50	5	QPSK	V	166	234	1 / 24	15.37	5.80	19.02	0.080	34.77	-15.75
784.50	5	16-QAM	V	166	234	1 / 24	14.59	5.80	18.24	0.067	34.77	-16.53
784.50	5	64-QAM	V	166	234	1 / 24	14.11	5.80	17.76	0.060	34.77	-17.01
784.50	5	256-QAM	V	166	234	1 / 24	11.11	5.80	14.76	0.030	34.77	-20.01
782.00	10	QPSK	V	165	236	1 / 49	15.39	5.80	19.04	0.080	34.77	-15.73
782.00	10	16-QAM	V	165	236	1 / 49	14.63	5.80	18.28	0.067	34.77	-16.49
782.00	10	64-QAM	V	165	236	1 / 49	14.14	5.80	17.79	0.060	34.77	-16.98
782.00	10	256-QAM	V	165	236	1 / 49	11.46	5.80	15.11	0.032	34.77	-19.66
10.00	QPSK	V	H	241	280	1 / 49	12.32	5.80	15.97	0.040	34.77	-18.80
10.00	QPSK (WCP)	V	V	139	348	1 / 49	9.15	5.80	12.80	0.019	34.77	-21.97

Table 7-14. ERP Data (Band 13)

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 271 of 331

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	133	256	1 / 5	15.55	6.30	19.70	0.093	38.45	-18.75
836.50	1.4	QPSK	V	142	253	1 / 5	15.34	6.40	19.59	0.091	38.45	-18.86
848.30	1.4	QPSK	V	144	256	1 / 5	15.38	6.50	19.73	0.094	38.45	-18.72
848.30	1.4	16-QAM	V	144	256	1 / 5	14.90	6.50	19.25	0.084	38.45	-19.20
848.30	1.4	64-QAM	V	144	256	1 / 5	14.50	6.50	18.85	0.077	38.45	-19.60
836.50	1.4	256-QAM	V	142	253	1 / 5	12.87	6.40	17.12	0.052	38.45	-21.33
825.50	3	QPSK	V	135	256	1 / 14	15.38	6.30	19.53	0.090	38.45	-18.92
836.50	3	QPSK	V	142	256	1 / 14	15.30	6.40	19.55	0.090	38.45	-18.90
847.50	3	QPSK	V	145	256	1 / 14	15.50	6.50	19.85	0.097	38.45	-18.60
847.50	3	16-QAM	V	145	256	1 / 14	14.98	6.50	19.33	0.086	38.45	-19.12
847.50	3	64-QAM	V	145	256	1 / 14	15.21	6.50	19.56	0.090	38.45	-18.89
836.50	3	256-QAM	V	142	256	1 / 14	12.87	6.40	17.12	0.052	38.45	-21.33
826.50	5	QPSK	V	133	256	1 / 24	15.45	6.30	19.60	0.091	38.45	-18.85
836.50	5	QPSK	V	142	256	1 / 24	15.25	6.40	19.50	0.089	38.45	-18.95
846.50	5	QPSK	V	142	256	1 / 24	15.69	6.50	20.04	0.101	38.45	-18.41
846.50	5	16-QAM	V	142	256	1 / 24	15.18	6.50	19.53	0.090	38.45	-18.92
846.50	5	64-QAM	V	142	256	1 / 24	14.81	6.50	19.16	0.082	38.45	-19.29
836.50	5	256-QAM	V	142	256	1 / 24	12.87	6.40	17.12	0.052	38.45	-21.33
829.00	10	QPSK	V	135	256	1 / 49	15.09	6.30	19.24	0.084	38.45	-19.21
836.50	10	QPSK	V	144	256	1 / 49	15.50	6.40	19.75	0.094	38.45	-18.70
844.00	10	QPSK	V	142	253	1 / 49	15.68	6.40	19.93	0.098	38.45	-18.52
844.00	10	16-QAM	V	142	253	1 / 49	15.29	6.40	19.54	0.090	38.45	-18.91
844.00	10	64-QAM	V	142	253	1 / 49	14.79	6.40	19.04	0.080	38.45	-19.41
836.50	10	256-QAM	V	144	256	1 / 49	13.01	6.40	17.26	0.053	38.45	-21.19

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

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 272 of 331

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]
831.50	15	QPSK	V	135	255	1 / 0	15.50	6.35	19.70	0.093	38.45	-18.75	21.85
836.50	15	QPSK	V	144	254	1 / 74	15.61	6.40	19.86	0.097	38.45	-18.59	22.01
841.50	15	QPSK	V	142	253	1 / 74	15.84	6.40	20.09	0.102	38.45	-18.36	22.24
841.50	15	16-QAM	V	142	253	1 / 74	15.41	6.40	19.66	0.092	38.45	-18.79	21.81
841.50	15	64-QAM	V	142	253	1 / 74	15.15	6.40	19.40	0.087	38.45	-19.05	21.55
836.50	15	256-QAM	V	144	254	1 / 74	13.02	6.40	17.27	0.053	38.45	-21.18	19.42
841.50	15	QPSK	H	108	302	1 / 74	13.96	6.60	18.41	0.069	38.45	-20.04	20.56
841.50	15 (WCP)	QPSK	V	161	75	1 / 74	11.08	6.40	15.33	0.034	38.45	-23.12	17.48

Table 7-16. ERP Data (Band 26)

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 273 of 331

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	102	356	1 / 5	13.29	9.44	22.73	0.187	30.00	-7.27
1745.00	1.4	QPSK	V	100	354	1 / 0	14.36	9.23	23.59	0.229	30.00	-6.41
1779.30	1.4	QPSK	V	102	356	1 / 0	11.86	9.26	21.12	0.129	30.00	-8.88
1745.00	1.4	16-QAM	V	100	354	1 / 0	13.59	9.23	22.82	0.191	30.00	-7.18
1745.00	1.4	64-QAM	V	100	354	1 / 0	11.92	9.23	21.15	0.130	30.00	-8.85
1745.00	1.4	256-QAM	V	100	354	1 / 0	9.30	9.23	18.53	0.071	30.00	-11.47
1711.50	3	QPSK	V	100	356	1 / 14	13.26	9.44	22.70	0.186	30.00	-7.30
1745.00	3	QPSK	V	100	356	1 / 0	14.36	9.23	23.59	0.229	30.00	-6.41
1778.50	3	QPSK	V	102	356	1 / 0	11.92	9.26	21.18	0.131	30.00	-8.82
1745.00	3	16-QAM	V	100	356	1 / 0	13.62	9.23	22.85	0.193	30.00	-7.15
1745.00	3	64-QAM	V	100	356	1 / 0	12.01	9.23	21.24	0.133	30.00	-8.76
1745.00	3	256-QAM	V	100	356	1 / 0	9.19	9.23	18.42	0.070	30.00	-11.58
1712.50	5	QPSK	V	101	354	1 / 24	13.18	9.43	22.61	0.182	30.00	-7.39
1745.00	5	QPSK	V	100	354	1 / 0	14.44	9.23	23.67	0.233	30.00	-6.33
1777.50	5	QPSK	V	101	254	1 / 0	12.02	9.26	21.28	0.134	30.00	-8.72
1745.00	5	16-QAM	V	100	354	1 / 0	13.28	9.23	22.51	0.178	30.00	-7.49
1745.00	5	64-QAM	V	100	354	1 / 0	11.42	9.23	20.65	0.116	30.00	-9.35
1745.00	5	256-QAM	V	100	354	1 / 0	9.30	9.23	18.53	0.071	30.00	-11.47
1715.00	10	QPSK	V	100	352	1 / 49	13.28	9.42	22.70	0.186	30.00	-7.30
1745.00	10	QPSK	V	102	353	1 / 0	14.23	9.23	23.46	0.222	30.00	-6.54
1775.00	10	QPSK	V	102	353	1 / 0	11.90	9.25	21.16	0.130	30.00	-8.84
1745.00	10	16-QAM	V	102	353	1 / 0	12.84	9.23	22.07	0.161	30.00	-7.93
1745.00	10	64-QAM	V	102	353	1 / 0	11.94	9.23	21.17	0.131	30.00	-8.83
1745.00	10	256-QAM	V	102	353	1 / 0	8.78	9.23	18.01	0.063	30.00	-11.99
1717.50	15	QPSK	V	101	353	1 / 74	13.56	9.40	22.96	0.198	30.00	-7.04
1745.00	15	QPSK	V	100	356	1 / 0	14.45	9.23	23.68	0.233	30.00	-6.32
1772.50	15	QPSK	V	101	353	1 / 0	12.21	9.25	21.46	0.140	30.00	-8.54
1745.00	15	16-QAM	V	100	356	1 / 0	13.32	9.23	22.55	0.180	30.00	-7.45
1745.00	15	64-QAM	V	100	356	1 / 0	11.51	9.23	20.74	0.119	30.00	-9.26
1745.00	15	256-QAM	V	100	356	1 / 0	9.28	9.23	18.51	0.071	30.00	-11.49
1720.00	20	QPSK	V	100	354	1 / 99	13.27	9.38	22.65	0.184	30.00	-7.35
1745.00	20	QPSK	V	100	356	1 / 0	14.06	9.23	23.29	0.213	30.00	-6.71
1770.00	20	QPSK	V	102	356	1 / 0	12.35	9.24	21.59	0.144	30.00	-8.41
1745.00	20	16-QAM	V	100	356	1 / 0	13.39	9.23	22.62	0.183	30.00	-7.38
1745.00	20	64-QAM	V	100	356	1 / 0	11.63	9.23	20.86	0.122	30.00	-9.14
1745.00	20	256-QAM	V	100	356	1 / 0	9.29	9.23	18.52	0.071	30.00	-11.48
15.00	15	QPSK	H	133	322	1 / 0	13.06	9.11	22.17	0.165	30.00	-7.83
15.00	15 (WCP)	QPSK	V	100	220	1 / 0	8.40	9.23	17.63	0.058	30.00	-12.37

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

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 274 of 331

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	102	355	1 / 0	13.44	9.88	23.31	0.214	33.01	-9.70
1882.50	1.4	QPSK	V	102	240	1 / 0	12.64	10.12	22.76	0.189	33.01	-10.25
1914.30	1.4	QPSK	V	105	354	1 / 0	12.56	10.34	22.90	0.195	33.01	-10.11
1850.70	1.4	16-QAM	V	102	355	1 / 0	12.22	9.88	22.09	0.162	33.01	-10.92
1850.70	1.4	64-QAM	V	102	355	1 / 0	11.14	9.88	21.01	0.126	33.01	-12.00
1882.50	1.4	256-QAM	V	102	240	1 / 5	8.98	10.12	19.10	0.081	33.01	-13.91
1851.50	3	QPSK	V	101	348	1 / 0	13.42	9.88	23.30	0.214	33.01	-9.71
1882.50	3	QPSK	V	100	242	1 / 0	12.70	10.12	22.82	0.192	33.01	-10.19
1913.50	3	QPSK	V	105	355	1 / 0	12.42	10.33	22.75	0.188	33.01	-10.26
1851.50	3	16-QAM	V	101	348	1 / 0	12.29	9.88	22.17	0.165	33.01	-10.84
1851.50	3	64-QAM	V	101	348	1 / 0	11.22	9.88	21.10	0.129	33.01	-11.91
1882.50	3	256-QAM	V	100	242	1 / 14	8.89	10.12	19.01	0.080	33.01	-14.00
1852.50	5	QPSK	V	101	356	1 / 0	13.53	9.89	23.42	0.220	33.01	-9.59
1882.50	5	QPSK	V	101	239	1 / 0	12.81	10.12	22.93	0.196	33.01	-10.08
1912.50	5	QPSK	V	101	356	1 / 0	12.40	10.33	22.73	0.187	33.01	-10.28
1852.50	5	16-QAM	V	101	356	1 / 0	12.76	9.89	22.65	0.184	33.01	-10.36
1852.50	5	64-QAM	V	101	356	1 / 0	11.37	9.89	21.26	0.134	33.01	-11.75
1882.50	5	256-QAM	V	101	239	1 / 24	8.94	10.12	19.06	0.081	33.01	-13.95
1855.00	10	QPSK	V	100	355	1 / 0	13.47	9.91	23.38	0.218	33.01	-9.63
1882.50	10	QPSK	V	100	245	1 / 0	12.69	10.12	22.81	0.191	33.01	-10.20
1910.00	10	QPSK	V	105	355	1 / 0	12.60	10.31	22.91	0.195	33.01	-10.10
1855.00	10	16-QAM	V	100	355	1 / 0	12.30	9.91	22.21	0.166	33.01	-10.80
1855.00	10	64-QAM	V	100	355	1 / 0	11.22	9.91	21.13	0.130	33.01	-11.88
1882.50	10	256-QAM	V	100	245	1 / 49	8.97	10.12	19.09	0.081	33.01	-13.92
1857.50	15	QPSK	V	101	352	1 / 0	13.46	9.93	23.39	0.218	33.01	-9.62
1882.50	15	QPSK	V	101	240	1 / 0	13.04	10.12	23.16	0.207	33.01	-9.85
1907.50	15	QPSK	V	105	354	1 / 0	12.87	10.30	23.17	0.207	33.01	-9.84
1857.50	15	16-QAM	V	101	352	1 / 0	12.23	9.93	22.16	0.164	33.01	-10.85
1857.50	15	64-QAM	V	101	352	1 / 0	11.21	9.93	21.14	0.130	33.01	-11.87
1882.50	15	256-QAM	V	101	240	1 / 74	8.89	10.12	19.01	0.080	33.01	-14.00
1860.00	20	QPSK	V	100	351	1 / 0	13.53	9.95	23.48	0.223	33.01	-9.53
1882.50	20	QPSK	V	100	239	1 / 0	12.89	10.12	23.01	0.200	33.01	-10.00
1905.00	20	QPSK	V	105	354	1 / 0	13.02	10.28	23.30	0.214	33.01	-9.71
1860.00	20	16-QAM	V	100	351	1 / 0	12.90	9.95	22.85	0.193	33.01	-10.16
1860.00	20	64-QAM	V	100	351	1 / 0	11.75	9.95	21.70	0.148	33.01	-11.31
1882.50	20	256-QAM	V	100	239	1 / 99	8.86	10.12	18.98	0.079	33.01	-14.03
1860.00	20	QPSK	H	100	220	1 / 0	11.93	10.12	22.05	0.160	33.01	-10.96
1860.00	20 (WCP)	QPSK	H	111	326	1 / 0	8.28	9.95	18.23	0.067	33.01	-14.78

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

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 275 of 331

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	H	115	191	1 / 0	11.05	10.31	21.36	0.137	23.98	-2.62
2312.50	5	QPSK	H	102	190	1 / 0	11.07	10.31	21.38	0.137	23.98	-2.60
2312.50	5	16-QAM	H	102	190	1 / 0	10.09	10.31	20.40	0.110	23.98	-3.58
2312.50	5	64-QAM	H	102	190	1 / 0	8.11	10.31	18.42	0.069	23.98	-5.56
2307.50	5	256-QAM	H	115	191	1 / 0	5.99	10.31	16.30	0.043	23.98	-7.68
2310.00	10	QPSK	H	110	197	1 / 0	10.91	10.31	21.22	0.132	23.98	-2.76
2310.00	10	16-QAM	H	110	197	1 / 0	9.92	10.31	20.23	0.105	23.98	-3.75
2310.00	10	64-QAM	H	110	197	1 / 0	7.69	10.31	18.00	0.063	23.98	-5.98
2310.00	10	256-QAM	H	110	197	1 / 0	5.96	10.31	16.27	0.042	23.98	-7.71
2312.50	5	QPSK	V	102	300	1 / 0	9.65	10.22	19.87	0.097	23.98	-4.11
2312.50	5 (WCP)	QPSK	H	119	180	1 / 0	9.55	10.31	19.86	0.097	23.98	-4.12

Table 7-19. EIRP Data (Band 30)

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 276 of 331

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	114	28	1 / 0	16.97	9.43	26.40	0.437	33.01	-6.61
2593.00	5	QPSK	H	104	33	1 / 24	16.71	9.55	26.26	0.423	33.01	-6.75
2687.50	5	QPSK	H	109	51	1 / 24	16.57	9.82	26.39	0.435	33.01	-6.62
2498.50	5	16-QAM	H	114	28	1 / 0	16.19	9.43	25.62	0.365	33.01	-7.39
2498.50	5	64-QAM	H	114	28	1 / 0	15.19	9.43	24.62	0.290	33.01	-8.39
2498.50	5	256-QAM	H	114	28	1 / 0	14.43	9.43	23.86	0.243	33.01	-9.15
2501.00	10	QPSK	H	117	31	1 / 49	16.40	9.43	25.83	0.383	33.01	-7.18
2593.00	10	QPSK	H	100	38	1 / 0	16.96	9.55	26.51	0.448	33.01	-6.50
2685.00	10	QPSK	H	104	41	1 / 0	16.33	9.82	26.15	0.412	33.01	-6.86
2593.00	10	16-QAM	H	100	38	1 / 0	16.18	9.55	25.73	0.374	33.01	-7.28
2593.00	10	64-QAM	H	100	38	1 / 0	14.94	9.55	24.49	0.281	33.01	-8.52
2593.00	10	256-QAM	H	100	38	1 / 0	14.18	9.55	23.73	0.236	33.01	-9.28
2503.50	15	QPSK	H	102	231	1 / 74	16.78	9.43	26.21	0.418	33.01	-6.80
2593.00	15	QPSK	H	100	217	1 / 74	16.57	9.55	26.12	0.410	33.01	-6.89
2682.50	15	QPSK	H	105	214	1 / 74	16.18	9.83	26.01	0.399	33.01	-7.00
2503.50	15	16-QAM	H	102	231	1 / 74	16.00	9.43	25.43	0.349	33.01	-7.58
2503.50	15	64-QAM	H	102	231	1 / 74	13.79	9.43	23.22	0.210	33.01	-9.79
2503.50	15	256-QAM	H	102	231	1 / 74	13.03	9.43	22.46	0.176	33.01	-10.55
2506.00	20	QPSK	H	119	215	1 / 99	15.97	9.42	25.39	0.346	33.01	-7.62
2593.00	20	QPSK	H	140	209	1 / 99	16.78	9.55	26.33	0.430	33.01	-6.68
2680.00	20	QPSK	H	121	221	1 / 0	15.67	9.83	25.50	0.355	33.01	-7.51
2593.00	20	16-QAM	H	140	209	1 / 99	16.00	9.55	25.55	0.359	33.01	-7.46
2593.00	20	64-QAM	H	140	209	1 / 0	13.72	9.55	23.27	0.213	33.01	-9.74
2680.00	20	256-QAM	H	121	221	1 / 0	12.75	9.83	22.58	0.181	33.01	-10.43
2593.00	10	QPSK	V	159	227	1 / 0	14.99	9.56	24.55	0.285	33.01	-8.46
2593.00	10 (WCP)	QPSK	H	108	210	1 / 0	12.80	9.55	22.35	0.172	33.01	-10.66

Table 7-20. EIRP Data (Band 41 PC2)

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 277 of 331

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	118	212	1 / 24	12.32	9.43	21.76	0.150	33.01	-11.25
2593.00	5	QPSK	H	108	227	1 / 24	13.03	9.55	22.58	0.181	33.01	-10.43
2687.50	5	QPSK	H	118	228	1 / 24	12.43	9.82	22.25	0.168	33.01	-10.76
2593.00	5	16-QAM	H	108	227	1 / 0	12.05	9.55	21.60	0.145	33.01	-11.41
2593.00	5	64-QAM	H	108	227	12 / 6	11.20	9.55	20.75	0.119	33.01	-12.26
2687.50	5	256-QAM	H	118	228	25 / 0	9.12	9.82	18.94	0.078	33.01	-14.07
2501.00	10	QPSK	H	119	218	1 / 49	12.27	9.43	21.70	0.148	33.01	-11.31
2593.00	10	QPSK	H	104	224	1 / 49	13.29	9.55	22.84	0.192	33.01	-10.17
2685.00	10	QPSK	H	124	230	1 / 49	12.57	9.82	22.39	0.173	33.01	-10.62
2593.00	10	16-QAM	H	104	224	1 / 0	12.51	9.55	22.06	0.161	33.01	-10.95
2593.00	10	64-QAM	H	104	224	25 / 12	11.51	9.55	21.06	0.128	33.01	-11.95
2685.00	10	256-QAM	H	124	230	50 / 0	9.02	9.82	18.84	0.077	33.01	-14.17
2503.50	15	QPSK	H	120	215	1 / 74	12.36	9.43	21.79	0.151	33.01	-11.22
2593.00	15	QPSK	H	104	225	1 / 74	13.15	9.55	22.70	0.186	33.01	-10.31
2682.50	15	QPSK	H	123	225	1 / 74	12.50	9.83	22.33	0.171	33.01	-10.68
2593.00	15	16-QAM	H	104	225	1 / 0	12.56	9.55	22.11	0.163	33.01	-10.90
2593.00	15	64-QAM	H	104	225	36 / 18	11.46	9.55	21.01	0.126	33.01	-12.00
2682.50	15	256-QAM	H	123	225	75 / 0	8.93	9.83	18.76	0.075	33.01	-14.25
2506.00	20	QPSK	H	119	214	1 / 99	12.72	9.42	22.14	0.164	33.01	-10.87
2593.00	20	QPSK	H	104	224	1 / 99	13.61	9.55	23.16	0.207	33.01	-9.85
2680.00	20	QPSK	H	123	229	1 / 99	13.14	9.83	22.97	0.198	33.01	-10.04
2593.00	20	16-QAM	H	104	224	1 / 0	13.03	9.55	22.58	0.181	33.01	-10.43
2680.00	20	64-QAM	H	123	229	50 / 25	10.98	9.83	20.81	0.121	33.01	-12.20
2680.00	20	256-QAM	H	123	229	100 / 0	8.91	9.83	18.74	0.075	33.01	-14.27
2593.00	20	QPSK	V	350	324	1 / 99	13.02	9.56	22.58	0.181	33.01	-10.43
2593.00	20 (WCP)	QPSK	H	108	350	1 / 99	10.57	9.55	20.12	0.103	33.01	-12.89

Table 7-21. EIRP Data (Band 41 PC3/ 38)

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 278 of 331

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	145	208	1 / 24	11.66	9.43	21.09	0.128	33.01	-11.92
2535.00	5	QPSK	H	102	214	1 / 0	10.16	9.39	19.55	0.090	33.01	-13.46
2567.50	5	QPSK	H	107	195	1 / 24	10.74	9.45	20.19	0.105	33.01	-12.82
2502.50	5	16-QAM	H	145	208	1 / 24	8.76	9.43	18.19	0.066	33.01	-14.82
2502.50	5	64-QAM	H	145	208	1 / 24	10.79	9.43	20.22	0.105	33.01	-12.79
2535.00	5	256-QAM	H	102	214	1 / 24	8.32	9.39	17.71	0.059	33.01	-15.30
2505.00	10	QPSK	H	145	210	1 / 49	11.60	9.43	21.03	0.127	33.01	-11.98
2535.00	10	QPSK	H	108	215	1 / 0	11.10	9.39	20.49	0.112	33.01	-12.52
2565.00	10	QPSK	H	108	190	1 / 49	10.98	9.44	20.42	0.110	33.01	-12.59
2505.00	10	16-QAM	H	145	210	1 / 49	9.63	9.43	19.06	0.081	33.01	-13.95
2505.00	10	64-QAM	H	145	210	1 / 49	9.97	9.43	19.40	0.087	33.01	-13.61
2535.00	10	256-QAM	H	108	215	1 / 49	8.95	9.39	18.34	0.068	33.01	-14.67
2507.50	15	QPSK	H	142	205	1 / 74	11.69	9.42	21.11	0.129	33.01	-11.90
2535.00	15	QPSK	H	100	205	1 / 0	11.60	9.39	20.99	0.126	33.01	-12.02
2562.50	15	QPSK	H	102	195	1 / 74	11.16	9.43	20.59	0.115	33.01	-12.42
2507.50	15	16-QAM	H	142	205	1 / 74	10.29	9.42	19.71	0.094	33.01	-13.30
2507.50	15	64-QAM	H	142	205	1 / 74	9.40	9.42	18.82	0.076	33.01	-14.19
2535.00	15	256-QAM	H	100	205	1 / 74	9.20	9.39	18.59	0.072	33.01	-14.42
2510.00	20	QPSK	H	143	206	1 / 99	11.48	9.42	20.90	0.123	33.01	-12.11
2535.00	20	QPSK	H	101	212	1 / 0	11.75	9.39	21.14	0.130	33.01	-11.87
2560.00	20	QPSK	H	106	193	1 / 99	11.01	9.42	20.43	0.110	33.01	-12.58
2535.00	20	16-QAM	H	101	212	1 / 0	11.08	9.39	20.47	0.112	33.01	-12.54
2535.00	20	64-QAM	H	101	212	1 / 0	9.79	9.39	19.18	0.083	33.01	-13.83
2535.00	20	256-QAM	H	101	212	1 / 99	9.33	9.39	18.72	0.075	33.01	-14.29
20.00	20	QPSK	V	346	309	1 / 0	9.90	9.38	19.28	0.085	33.01	-13.73
20.00	20 (WCP)	QPSK	H	117	302	1 / 0	7.44	9.39	16.83	0.048	33.01	-16.18

Table 7-22. EIRP Data (Band 7)

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 279 of 331

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: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 280 of 331

Test Setup

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

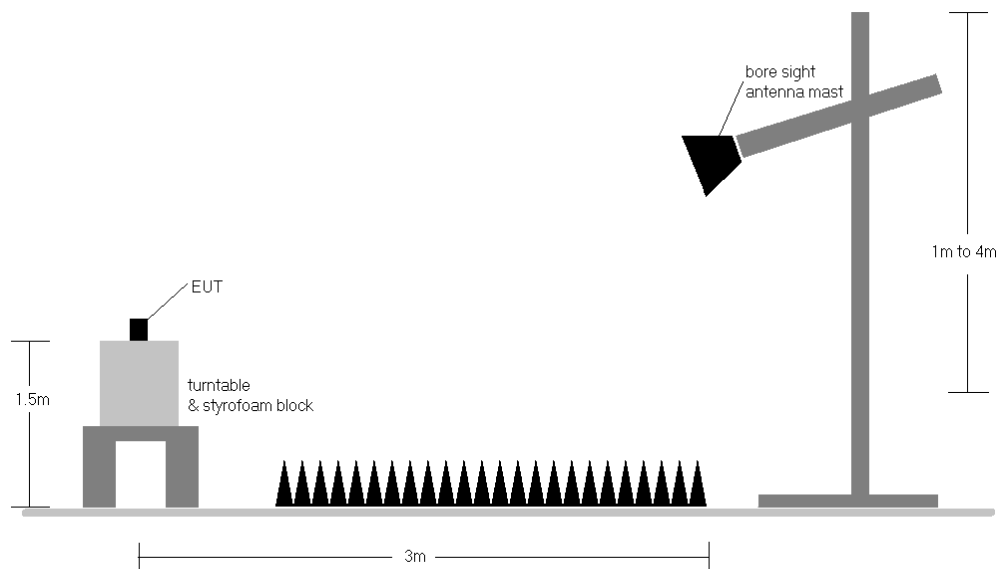


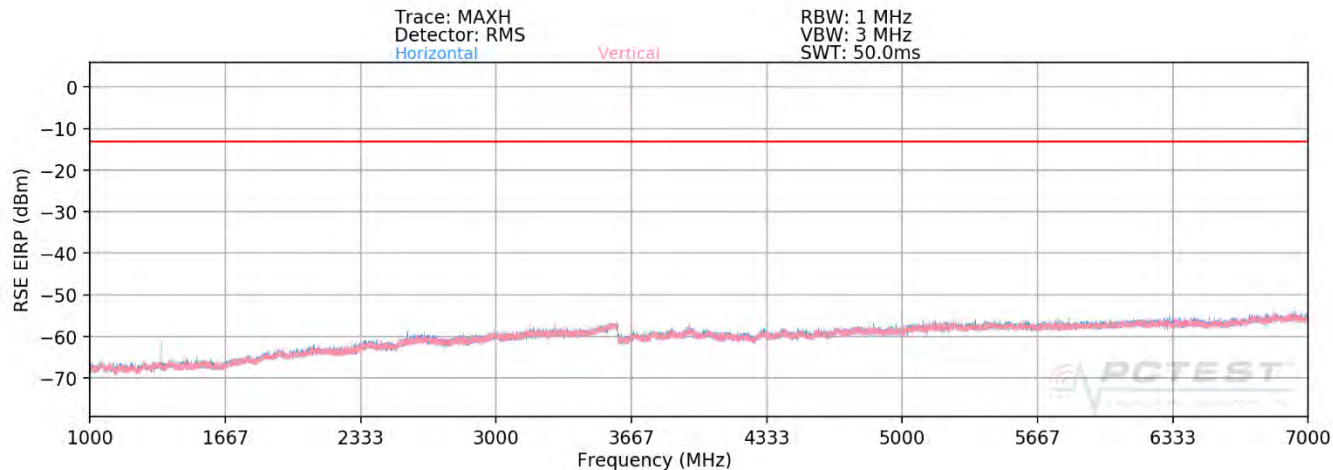
Figure 7-9. Test Instrument & Measurement Setup

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: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 71



Plot 7-464. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY: 665.50 MHz
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]
1331.00	H	163	57	-65.75	2.72	-63.02	-50.0
1996.50	H	134	108	-63.30	2.60	-60.70	-47.7
2662.00	H	-	-	-67.74	4.43	-63.31	-50.3
3327.50	H	-	-	-68.58	6.02	-62.57	-49.6

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

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset			Page 282 of 331

OPERATING FREQUENCY: 680.50 MHz
 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]
1361.00	H	115	67	-64.60	2.88	-61.73	-48.7
2041.50	H	149	103	-62.98	2.73	-60.26	-47.3
2722.00	H	-	-	-67.73	4.63	-63.11	-50.1
3402.50	H	-	-	-68.77	6.26	-62.51	-49.5

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

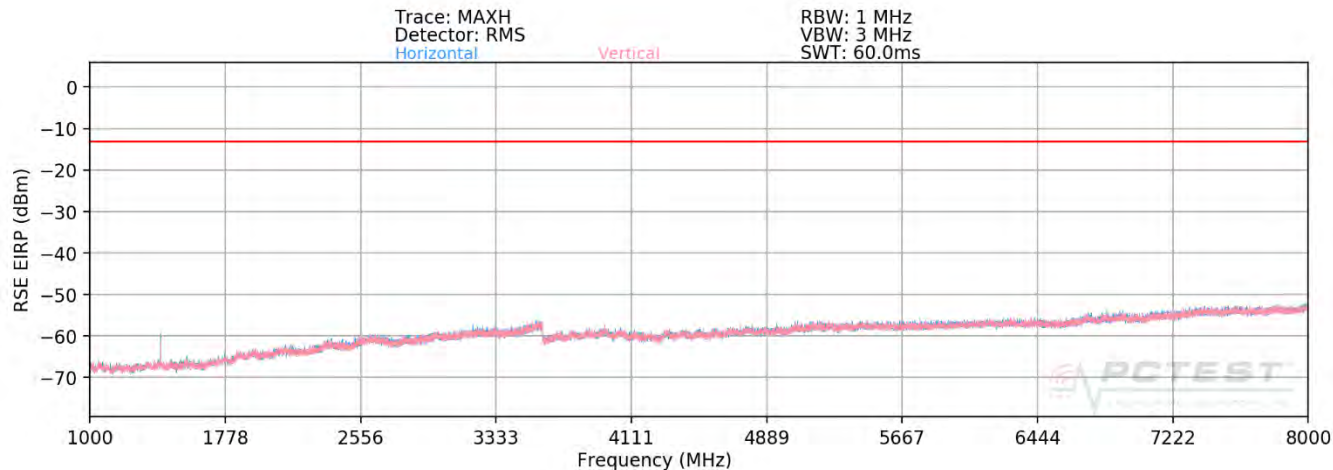
OPERATING FREQUENCY: 695.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
1391.00	H	151	62	-61.93	2.38	-59.55	-46.6
2086.50	H	161	110	-65.24	2.92	-62.33	-49.3
2782.00	H	-	-	-67.52	4.64	-62.88	-49.9
3477.50	H	-	-	-69.35	6.41	-62.94	-49.9

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

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 283 of 331

Band 12



Plot 7-465. 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	140	57	-59.78	2.30	-57.48	-44.5
2112.00	H	132	104	-63.27	3.12	-60.14	-47.1
2816.00	H	-	-	-68.01	4.82	-63.19	-50.2
3520.00	H	-	-	-68.30	6.48	-61.82	-48.8

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

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset			Page 284 of 331

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	138	59	-61.15	2.39	-58.76	-45.8
2122.50	H	121	101	-60.86	3.14	-57.71	-44.7
2830.00	H	-	-	-68.13	4.87	-63.26	-50.3
3537.50	H	-	-	-67.90	6.45	-61.44	-48.4

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

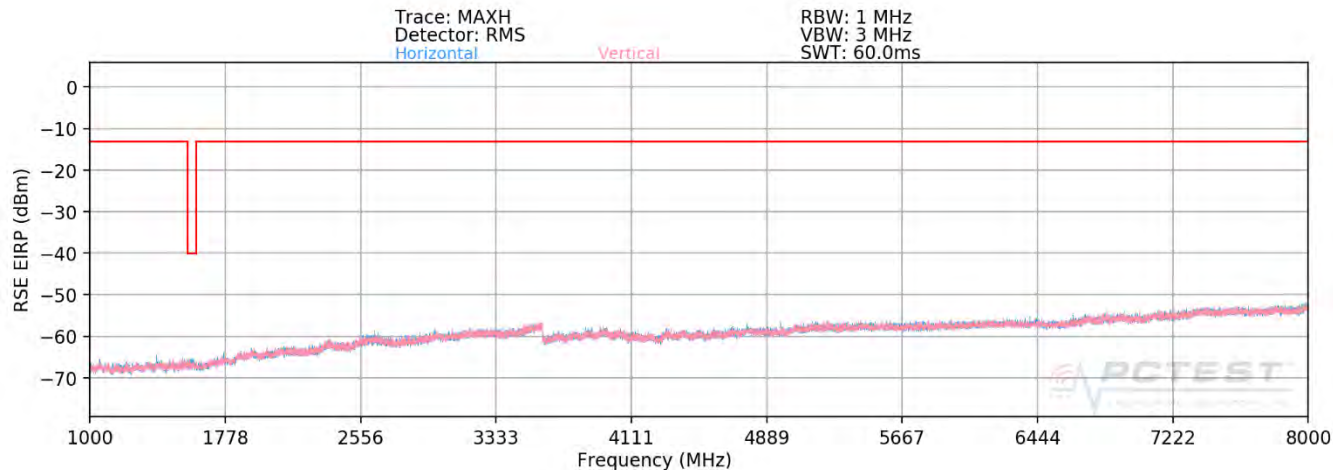
OPERATING FREQUENCY: 711.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	152	36	-61.03	2.53	-58.50	-45.5
2133.00	H	113	101	-63.35	3.11	-60.24	-47.2
2844.00	H	-	-	-68.50	4.91	-63.60	-50.6
3555.00	H	-	-	-68.71	6.46	-62.26	-49.3

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

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 285 of 331

Band 13



Plot 7-466. 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	V	134.00	16.00	-47.61	3.64	-43.97	-31.0
3128.00	V	-	-	-55.63	5.73	-49.89	-36.9
3910.00	V	-	-	-55.01	7.25	-47.75	-34.8

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

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 286 of 331

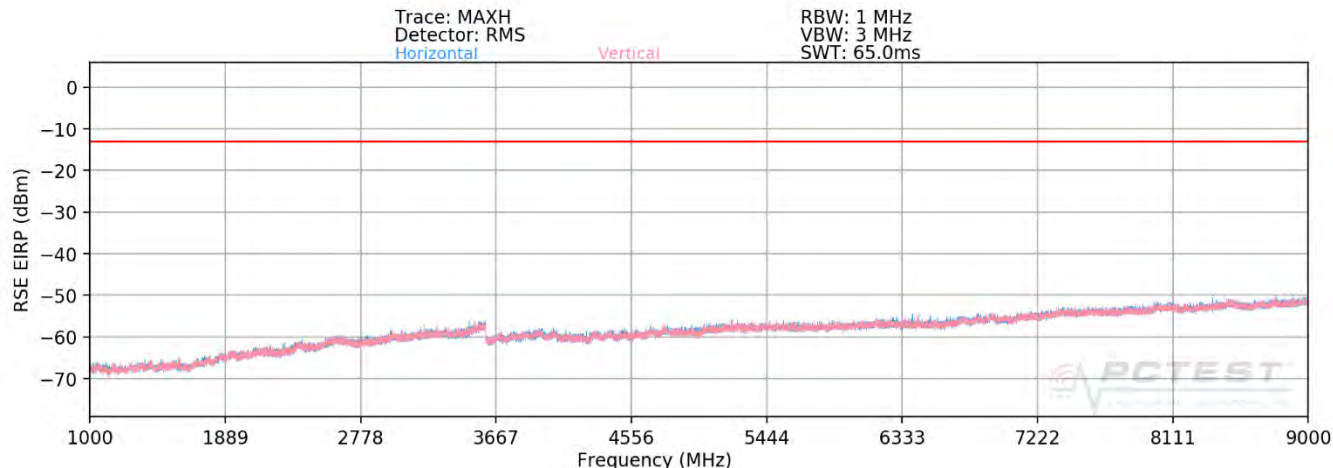
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	V	400	123	-62.34	2.93	-59.41	-19.4

Table 7-30. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 287 of 331

Band 26/5



Plot 7-467. 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	V	112	210	-65.02	3.12	-61.90	-48.9
2487.00	V	222	324	-64.01	3.87	-60.14	-47.1
3316.00	V	-	-	-70.43	6.02	-64.41	-51.4
4145.00	V	-	-	-71.31	7.79	-63.52	-50.5

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

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 288 of 331

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	V	140	31	-64.80	3.10	-61.70	-48.7
2509.50	V	145	300	-62.23	4.02	-58.22	-45.2
3346.00	V	-	-	-70.47	6.03	-64.45	-51.4
4182.50	V	-	-	-71.68	7.79	-63.89	-50.9

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

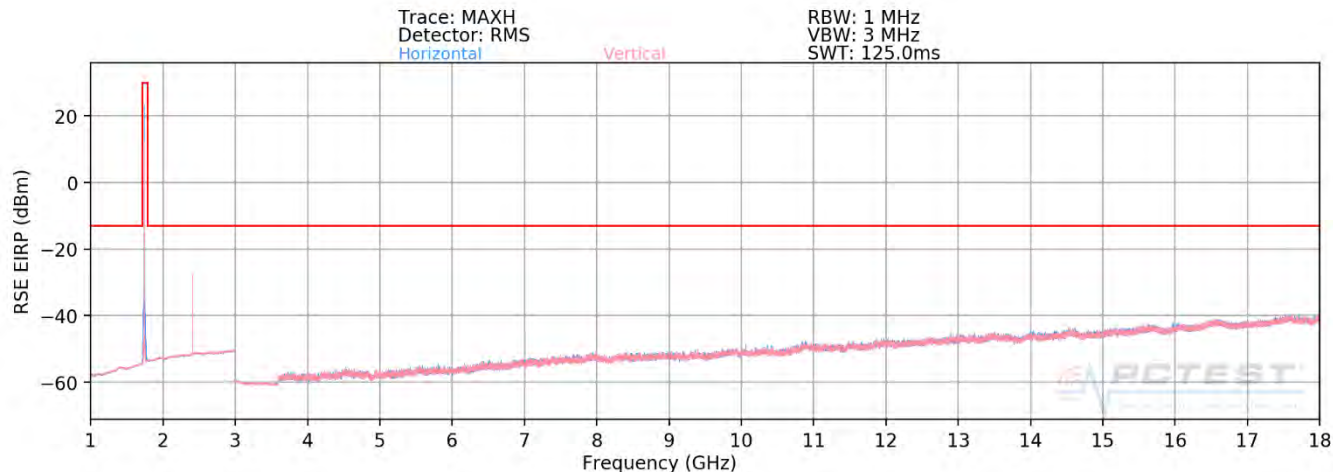
OPERATING FREQUENCY: 844.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	V	152	132	-65.40	3.15	-62.25	-49.3
2532.00	V	167	271	-63.21	4.07	-59.13	-46.1
3376.00	V	-	-	-71.04	6.10	-64.94	-51.9
4220.00	V	-	-	-71.68	7.82	-63.86	-50.9

Table 7-33. Radiated Spurious Data (Band 26/5 – High Channel)

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 289 of 331

Band 66/4



Plot 7-468. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY: 1717.50 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 15.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3435.00	V	-	-	-68.19	6.28	-61.91	-48.9
5152.50	V	169	171	-67.14	8.98	-58.16	-45.2
6870.00	V	121	197	-63.92	9.42	-54.50	-41.5
8587.50	V	137	141	-64.73	9.62	-55.11	-42.1
10305.00	V	135	169	-53.96	9.56	-44.40	-31.4
12022.50	V	-	-	-59.91	9.24	-50.66	-37.7
13740.00	V	-	-	-57.08	8.72	-48.36	-35.4

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

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset			Page 290 of 331

OPERATING FREQUENCY: 1745.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	V	-	-	-68.38	6.47	-61.91	-48.9
5235.00	V	186	179	-67.54	8.97	-58.57	-45.6
6980.00	V	237	158	-63.83	9.23	-54.60	-41.6
8725.00	V	134	137	-63.82	9.59	-54.23	-41.2
10470.00	V	255	193	-53.35	9.43	-43.92	-30.9
12215.00	V	-	-	-60.78	9.17	-51.62	-38.6
13960.00	V	-	-	-57.29	8.59	-48.70	-35.7

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

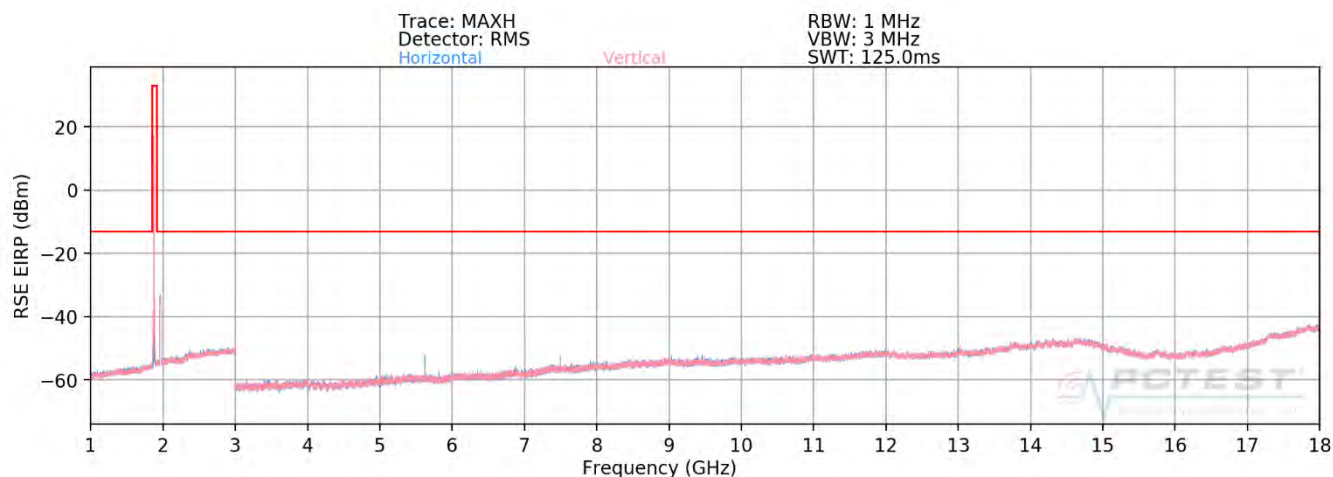
OPERATING FREQUENCY: 1772.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3545.00	V	-	-	-65.86	6.45	-59.41	-46.4
5317.50	V	175	175	-64.12	9.09	-55.02	-42.0
7090.00	V	230	160	-57.96	9.17	-48.79	-35.8
8862.50	V	-	-	-56.06	9.57	-46.49	-33.5
10635.00	V	247	187	-49.98	9.55	-40.43	-27.4
12407.50	V	-	-	-55.09	9.11	-45.98	-33.0

Table 7-36. Radiated Spurious Data (Band 66/4 – High Channel)

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset	Page 291 of 331

Band 25/2



Plot 7-469. 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	H	-	-	-70.83	6.90	-63.93	-50.9
5580.00	H	331	49	-61.74	9.06	-52.68	-39.7
7440.00	H	301	8	-61.95	9.26	-52.69	-39.7
9300.00	H	270	327	-65.72	9.40	-56.32	-43.3
11160.00	H	400	14	-62.70	9.46	-53.23	-40.2
13020.00	H	228	83	-62.50	8.72	-53.78	-40.8
14880.00	H	-	-	-60.36	8.68	-51.68	-38.7
16740.00	H	-	-	-61.70	8.34	-53.36	-40.4

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

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset			Page 292 of 331

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	H	-	-	-70.63	6.94	-63.68	-50.7
5647.50	H	346	51	-61.36	9.17	-52.19	-39.2
7530.00	H	255	9	-64.83	9.31	-55.53	-42.5
9412.50	H	350	339	-66.20	9.50	-56.69	-43.7
11295.00	H	360	10	-63.96	9.49	-54.47	-41.5
13177.50	H	244	31	-60.01	8.73	-51.28	-38.3
15060.00	H	-	-	-62.23	8.89	-53.35	-40.3
16942.50	H	-	-	-60.97	8.59	-52.38	-39.4

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

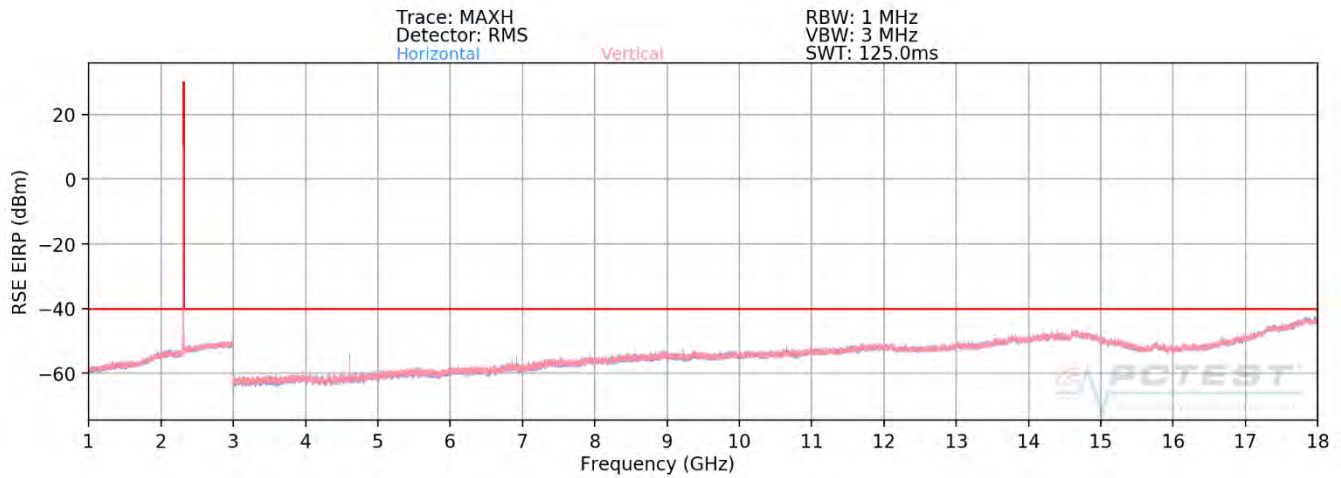
OPERATING FREQUENCY: 1905.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	H	-	-	-70.76	7.07	-63.69	-50.7
5715.00	H	344	48	-61.18	9.04	-52.14	-39.1
7620.00	H	266	338	-64.76	9.27	-55.49	-42.5
9525.00	H	400	14	-64.17	9.46	-54.72	-41.7
11430.00	H	400	9	-63.29	9.49	-53.80	-40.8
13335.00	H	245	29	-59.48	8.76	-50.72	-37.7
15240.00	H	-	-	-62.69	8.63	-54.06	-41.1
17145.00	H	-	-	-60.22	8.33	-51.89	-38.9

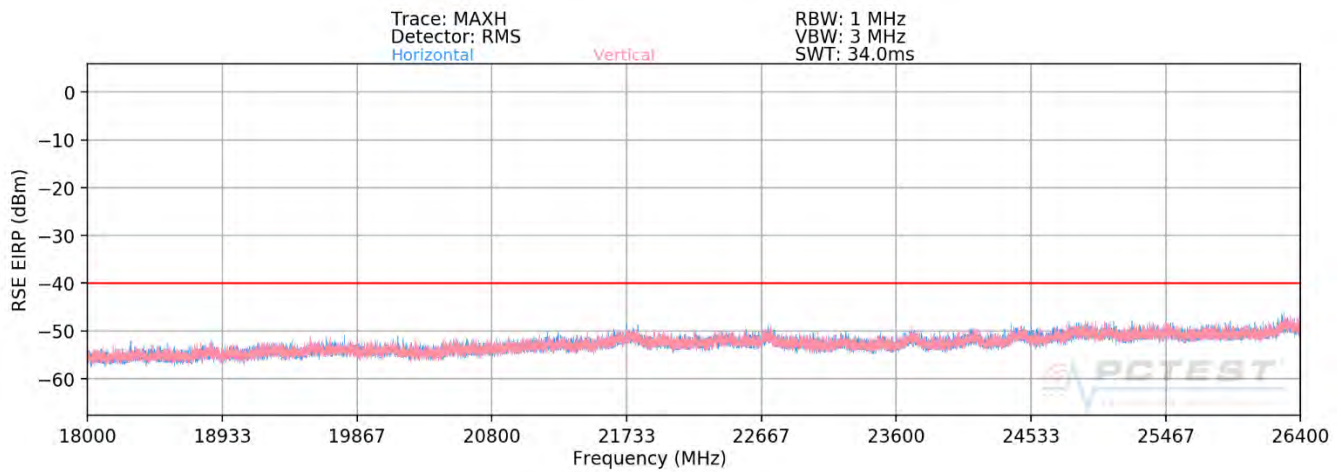
Table 7-39. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 293 of 331

Band 30



Plot 7-470. Radiated Spurious Plot above 1GHz (Band 30)



Plot 7-471. Radiated Spurious Plot 18GHz – 26.5 GHz (Band 30)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 294 of 331

OPERATING FREQUENCY: 2307.50 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]
4615.00	H	100	340	-62.09	8.41	-53.68	-13.7
6922.50	H	-	-	-66.96	9.39	-57.57	-17.6
9230.00	H	228	358	-54.35	9.47	-44.88	-4.9
11537.50	H	-	-	-59.80	9.47	-50.33	-10.3
13845.00	H	-	-	-55.98	8.77	-47.22	-7.2

Table 7-40. Radiated Spurious Data (Band 30 – Low Channel)

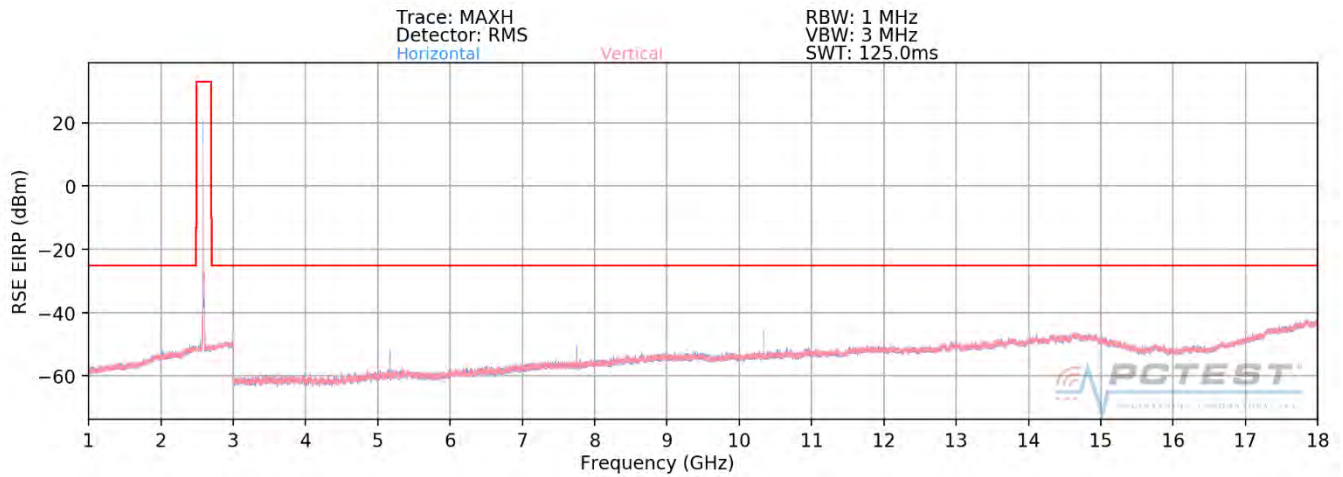
OPERATING FREQUENCY: 2312.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -40 dBm

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	285	23	-59.07	8.43	-50.64	-10.6
6937.50	H	-	-	-66.76	9.38	-57.38	-17.4
9250.00	H	237	301	-60.90	9.45	-51.45	-11.4
11562.50	H	-	-	-59.24	9.44	-49.80	-9.8
13875.00	H	-	-	-55.76	8.72	-47.04	-7.0

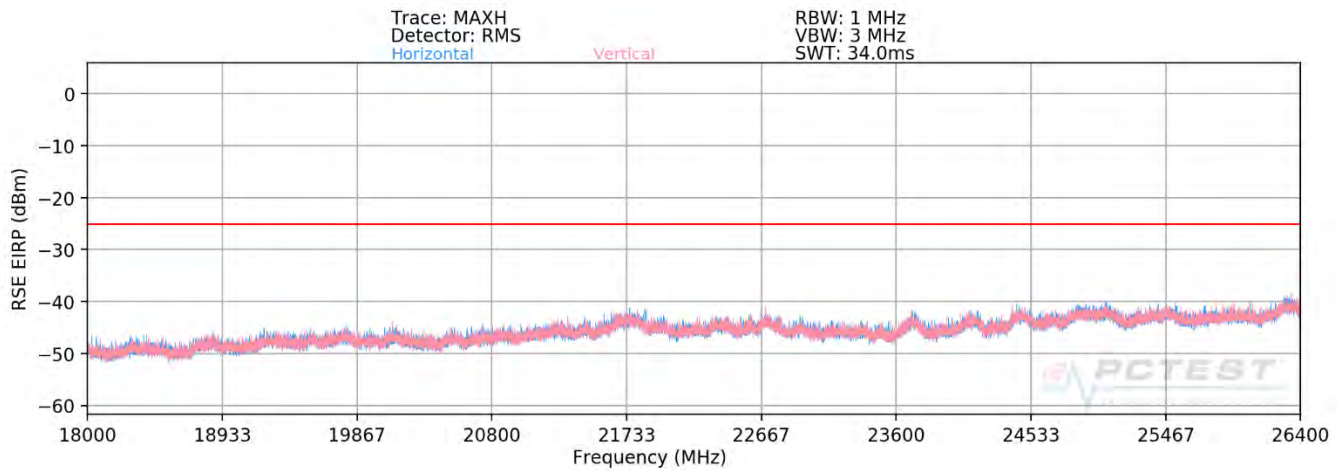
Table 7-41. Radiated Spurious Data (Band 30 – High Channel)

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 295 of 331

Band 41 PC2



Plot 7-472. Radiated Spurious Plot above 1GHz (Band 41 PC2)



Plot 7-473. Radiated Spurious Plot 18GHz - 26.5 GHz (Band 41 PC2)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 296 of 331

OPERATING FREQUENCY: 2505.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 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]
5010.00	H	115	28	-51.48	8.78	-42.69	-17.7
7515.00	H	139	327	-55.48	9.31	-46.18	-21.2
10020.00	H	321	351	-49.12	9.78	-39.33	-14.3
12525.00	H	160	65	-61.04	8.80	-52.24	-27.2
15030.00	H	125	8	-57.42	8.89	-48.54	-23.5
17535.00	H	-	-	-55.86	7.78	-48.07	-23.1

Table 7-42. Radiated Spurious Data (Band 41 PC2 – Low Channel)

OPERATING FREQUENCY: 2593.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	244	324	-60.88	9.03	-51.85	-26.8
7779.00	H	146	336	-60.63	9.29	-51.34	-26.3
10372.00	H	244	27	-49.71	9.50	-40.21	-15.2
12965.00	H	400	5	-61.83	8.75	-53.07	-28.1
15558.00	H	234	23	-58.71	8.47	-50.24	-25.2

Table 7-43. Radiated Spurious Data (Band 41 PC2 – Mid Channel)

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 297 of 331

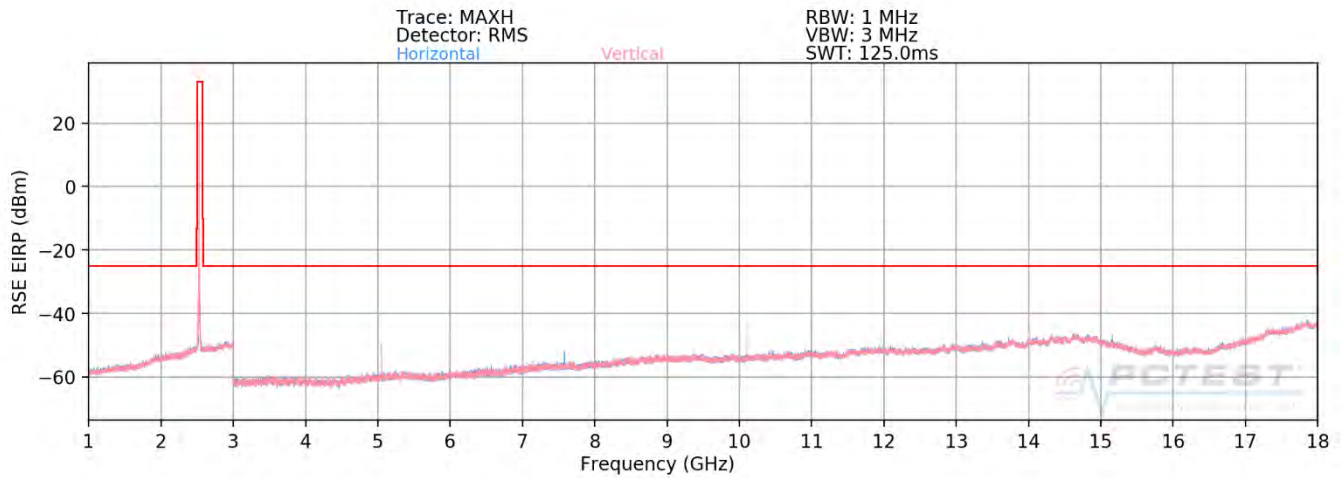
OPERATING FREQUENCY: 2685.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

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]
5370.00	H	319	340	-61.52	8.99	-52.53	-27.5
8055.00	H	207	327	-58.88	9.35	-49.53	-24.5
10740.00	H	233	31	-50.39	9.39	-40.99	-16.0
13425.00	H	-	-	-60.67	8.67	-52.00	-27.0
16110.00	H	133	280	-58.92	8.46	-50.46	-25.5

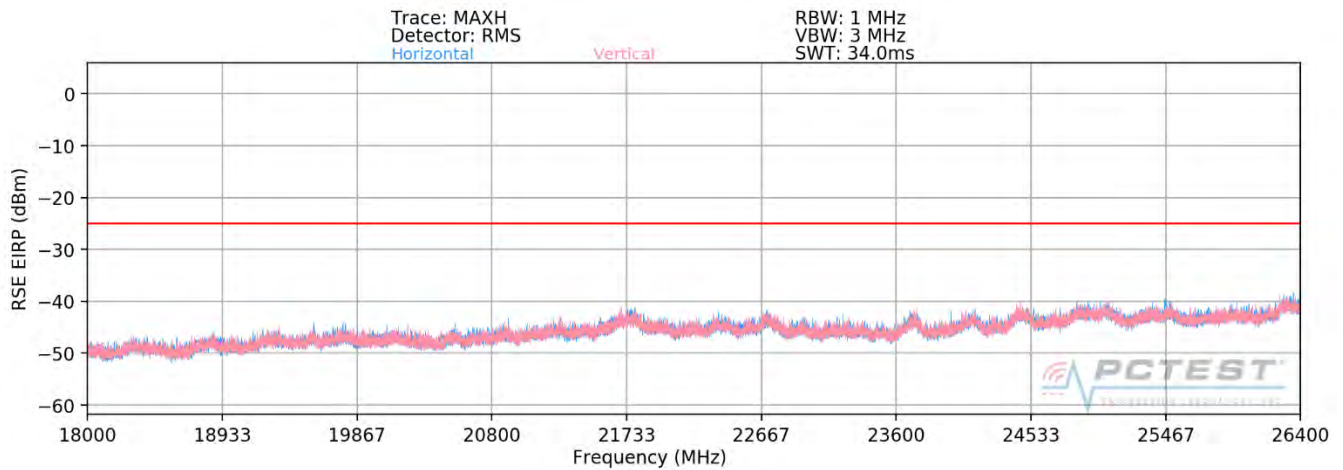
Table 7-44. Radiated Spurious Data (Band 41 PC2 – High Channel)

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 298 of 331

Band 7



Plot 7-474. Radiated Spurious Plot above 1GHz (Band 7)



Plot 7-475. Radiated Spurious Plot 18GHz – 26.5 GHz (Band 7)

FCC ID: A3LSMN970U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 299 of 331

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	322	319	-51.18	8.78	-42.39	-17.4
7530.00	H	363	338	-62.22	9.31	-52.92	-27.9
10040.00	H	319	353	-52.34	9.78	-42.55	-17.6
12550.00	H	-	-	-65.11	8.80	-56.31	-31.3
15060.00	H	192	68	-56.42	8.89	-47.54	-22.5
17570.00	H	-	-	-57.90	7.78	-50.11	-25.1

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

OPERATING FREQUENCY: 2535.00 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]
5070.00	H	113	330	-53.08	8.89	-44.19	-19.2
7605.00	H	337	321	-62.24	9.25	-52.99	-28.0
10140.00	H	309	345	-54.43	9.75	-44.68	-19.7
12675.00	H	-	-	-64.87	8.89	-55.98	-31.0
15210.00	H	244	3	-57.45	8.73	-48.72	-23.7
17745.00	H	-	-	-56.50	7.71	-48.79	-23.8

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

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 300 of 331

OPERATING FREQUENCY: 2560.00 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]
5120.00	H	112	41	-58.35	8.91	-49.44	-24.4
7680.00	H	147	334	-64.30	9.28	-55.03	-30.0
10240.00	H	342	27	-54.00	9.66	-44.34	-19.3
12800.00	H	-	-	-64.79	8.87	-55.92	-30.9
15360.00	H	364	297	-56.11	8.44	-47.67	-22.7
17920.00	H	-	-	-56.37	7.70	-48.68	-23.7

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

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 301 of 331

7.10 Uplink Carrier Aggregation Radiated Measurements

§2.1053

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 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. 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: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 302 of 331

Test Setup

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

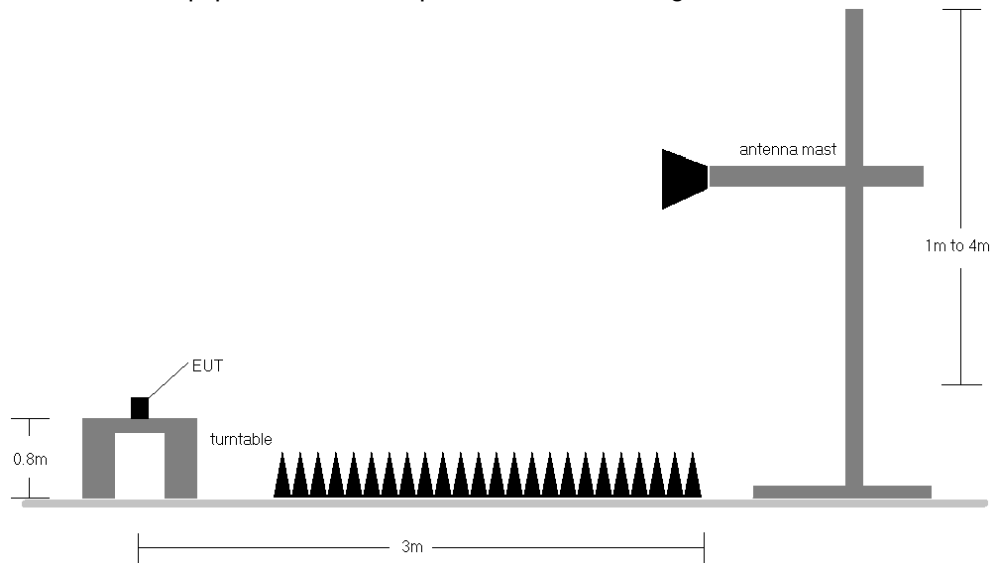


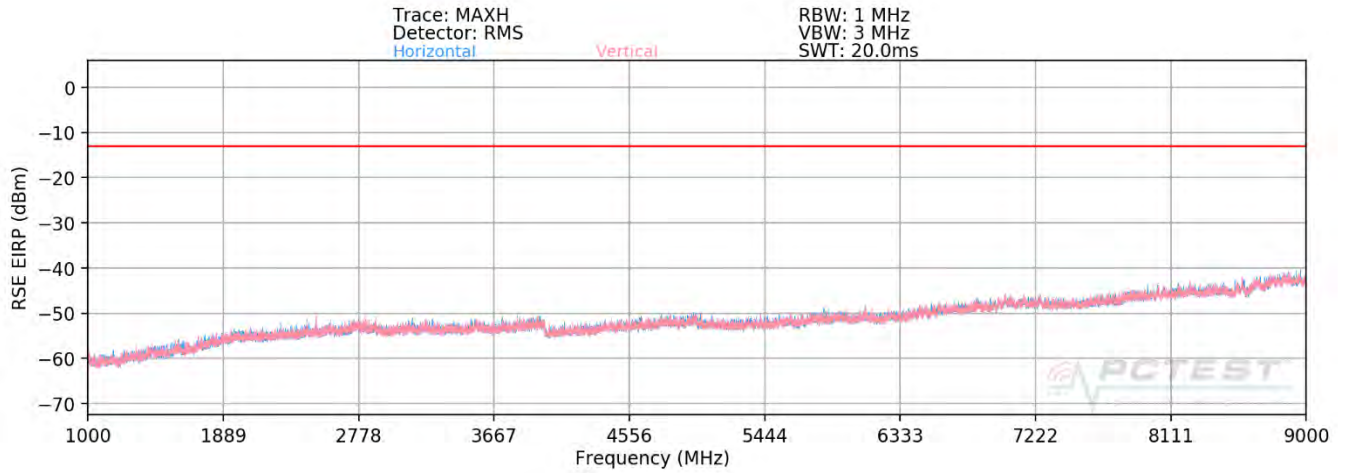
Figure 7-10. Test Instrument & Measurement Setup

Test Notes

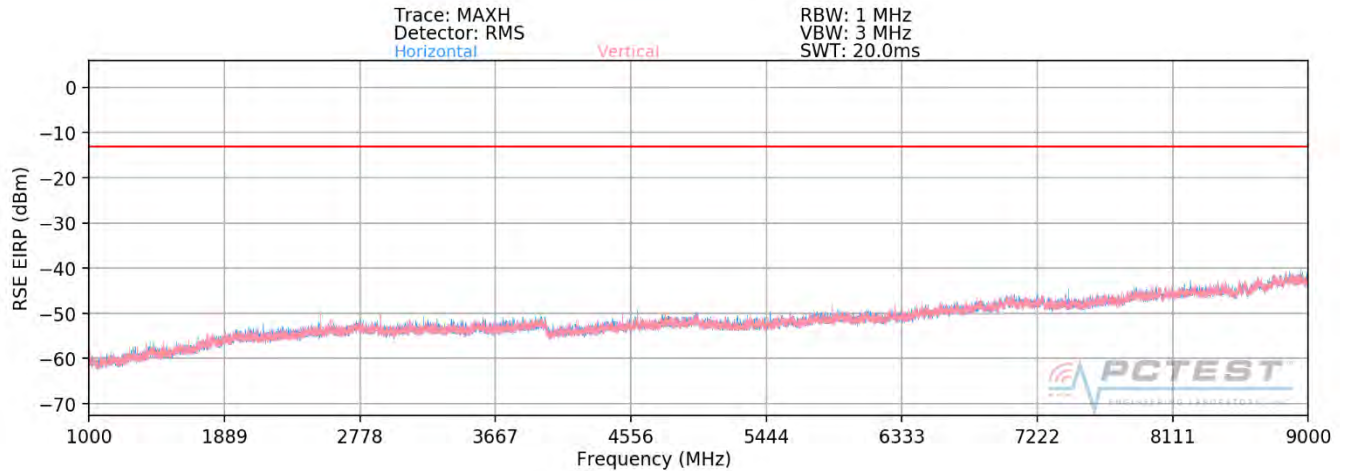
- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with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

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ULCA Band 5



Plot 7-476. Radiated Spurious Plot above 1GHz (ULCA Band 5 Low Channel – PCC/SCC: 1RB)



Plot 7-477. Radiated Spurious Plot above 1GHz (ULCA Band 5 High Channel – PCC/SCC: 1RB)

FCC ID: A3LSMN970U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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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	V	136	310	-74.80	9.55	-65.25	-52.2
2487.00	V	132	36	-66.60	9.45	-57.15	-44.1
3316.00	V	323	306	-67.68	7.44	-60.24	-47.2
4145.00	V	-	-	-69.46	8.05	-61.40	-48.4
4974.00	V	-	-	-70.64	10.65	-59.99	-47.0

Table 7-48. Radiated Spurious Plot (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0- Low Channel)

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	V	-	-	-75.55	9.52	-66.03	-53.0
2532.00	V	111	8	-66.64	9.40	-57.24	-44.2
3376.00	V	177	114	-68.79	7.31	-61.49	-48.5
4220.00	V	-	-	-70.20	8.34	-61.86	-48.9
5064.00	V	-	-	-71.25	10.92	-60.33	-47.3

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

FCC ID: A3LSMN970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1905220084-03.A3L	Test Dates: 05/22 - 07/10/2019	EUT Type: Portable Handset		Page 305 of 331