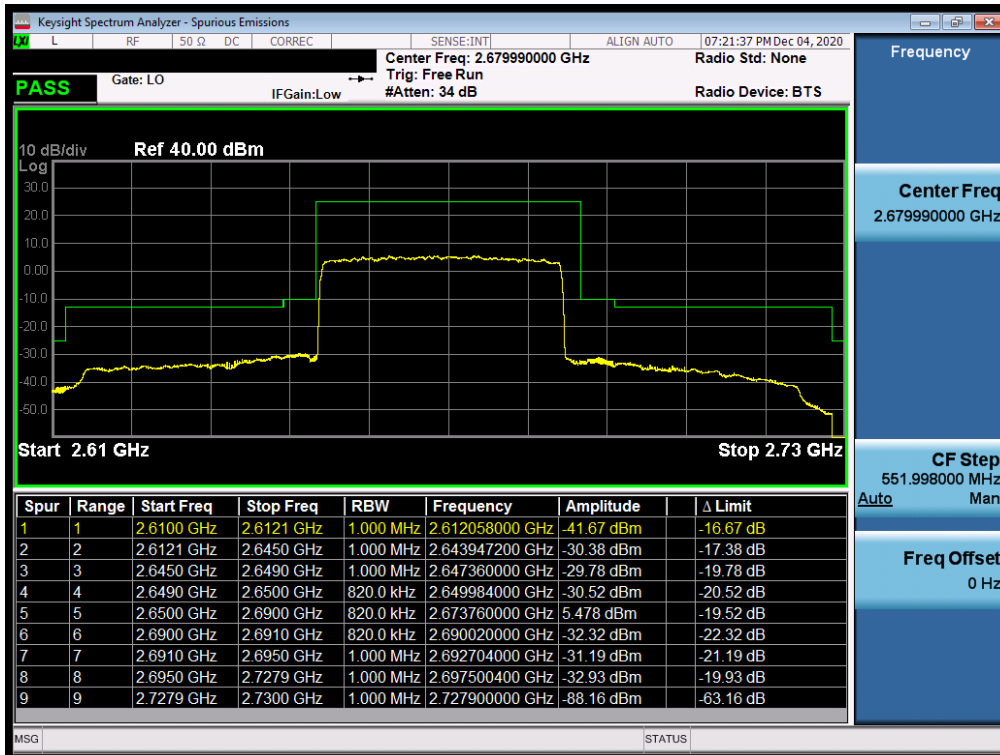
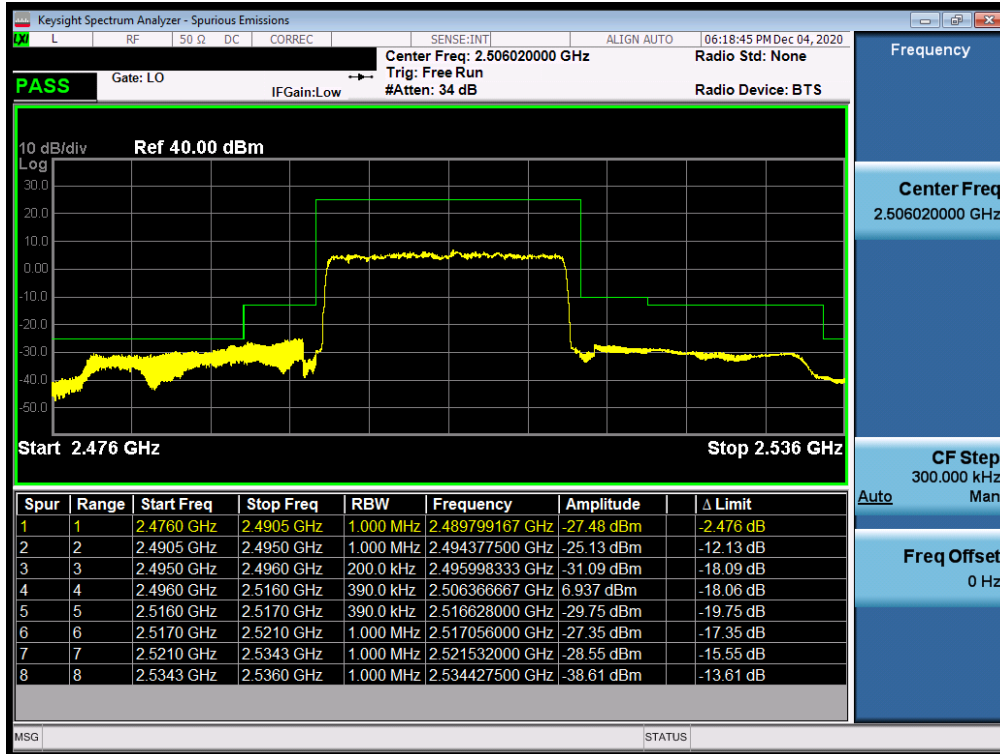


Plot 7-310. Lower ACP Plot (NR Band n41 PC3 – Antenna B - 40MHz CP-OFDM-QPSK – Full RB Configuration)

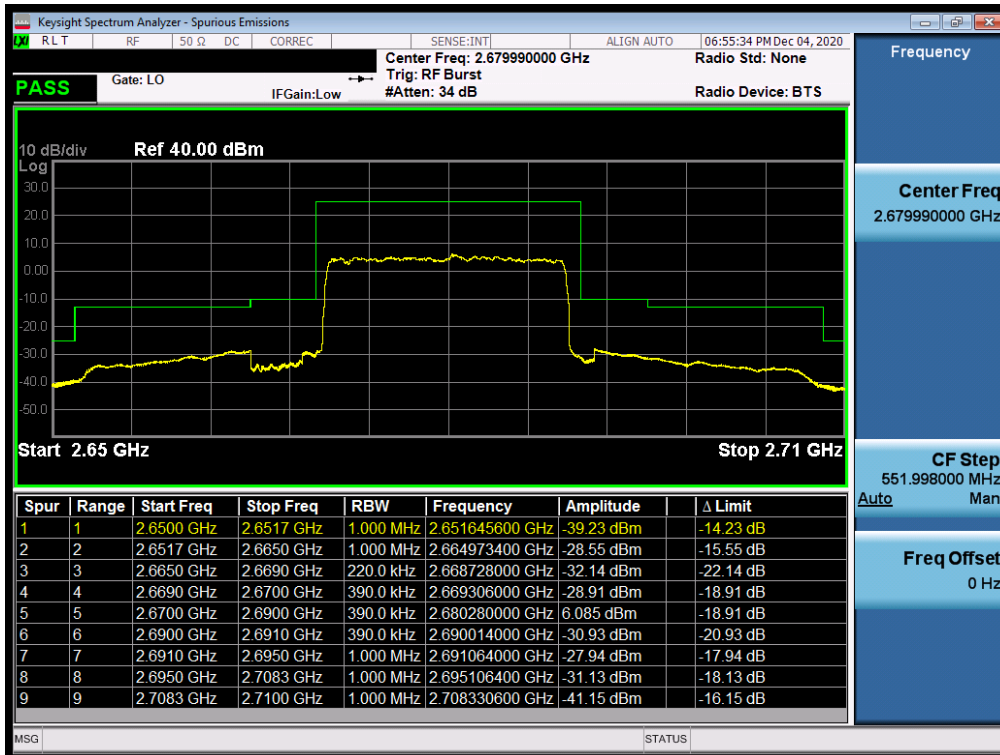


Plot 7-311. Upper ACP Plot (NR Band n41 PC3 – Antenna B - 40MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 182 of 242



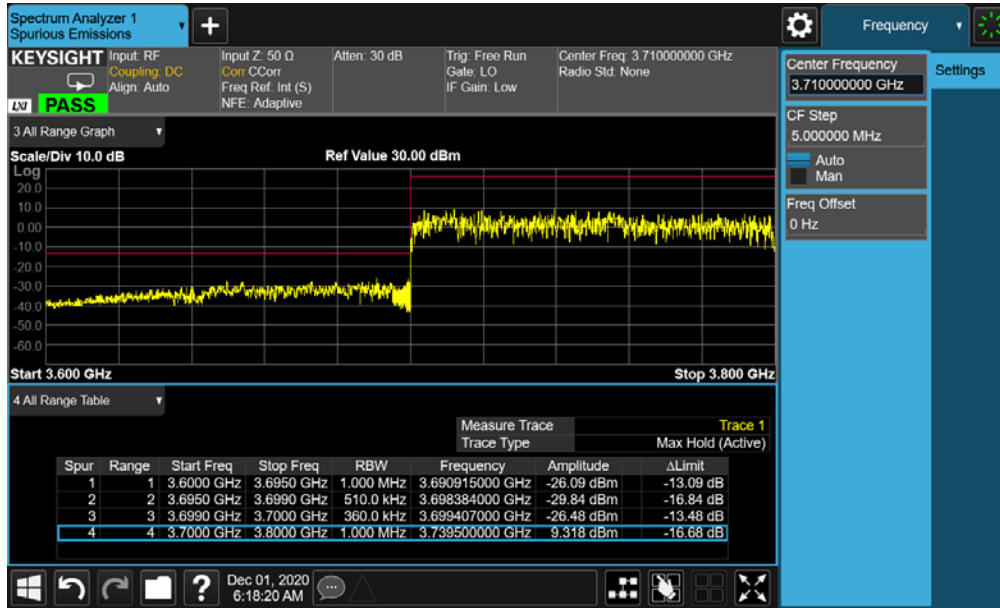
Plot 7-312. Lower ACP Plot (NR Band n41 PC3 – Antenna B - 20MHz CP-OFDM-QPSK – Full RB Configuration)



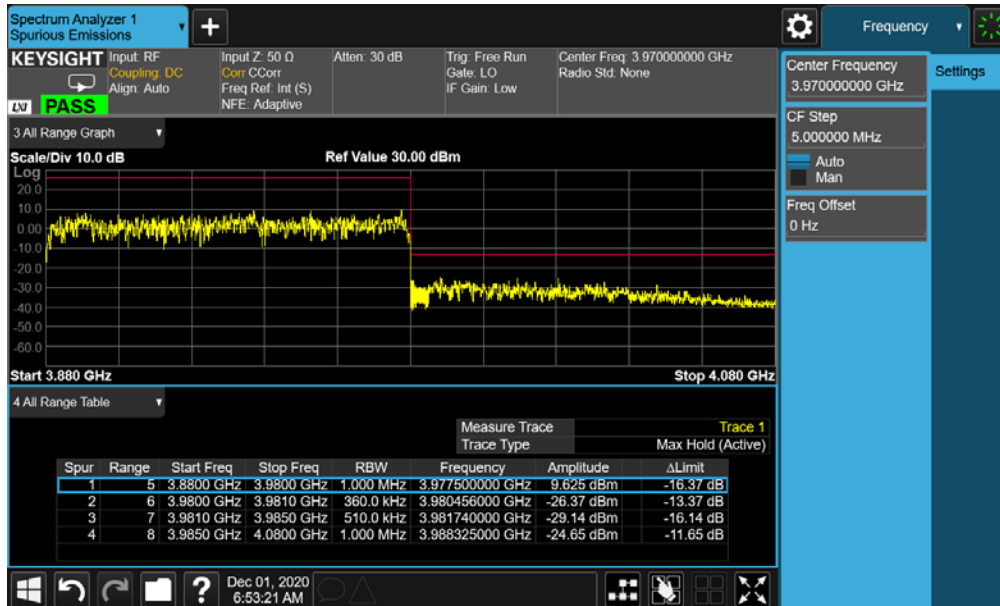
Plot 7-313. Upper ACP Plot (NR Band n41 PC3 – Antenna B - 20MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 183 of 242

NR Band n77

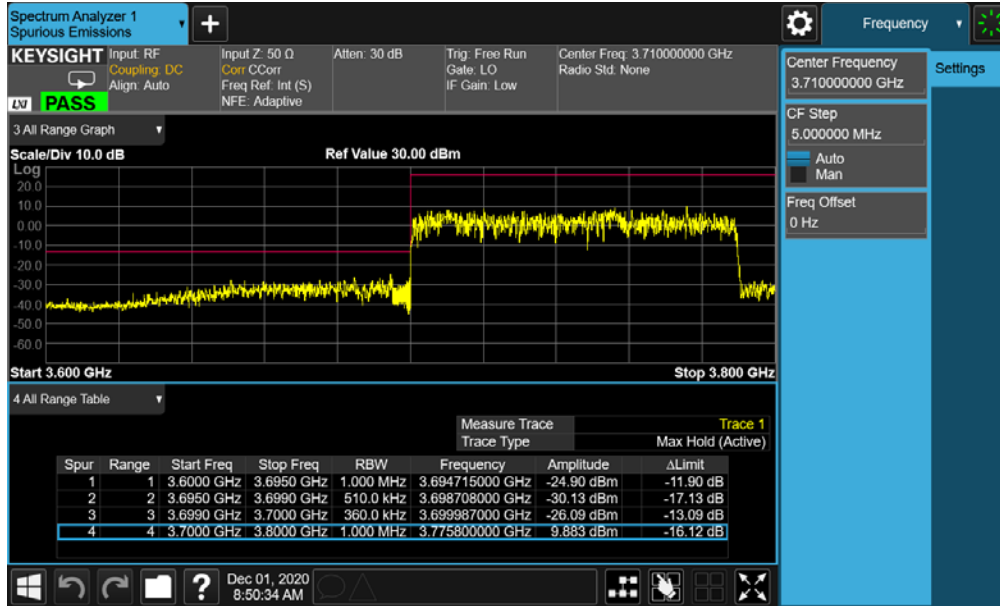


Plot 7-314. Lower ACP Plot (NR Band n77 - 100MHz CP-OFDM-QPSK – Full RB Configuration)

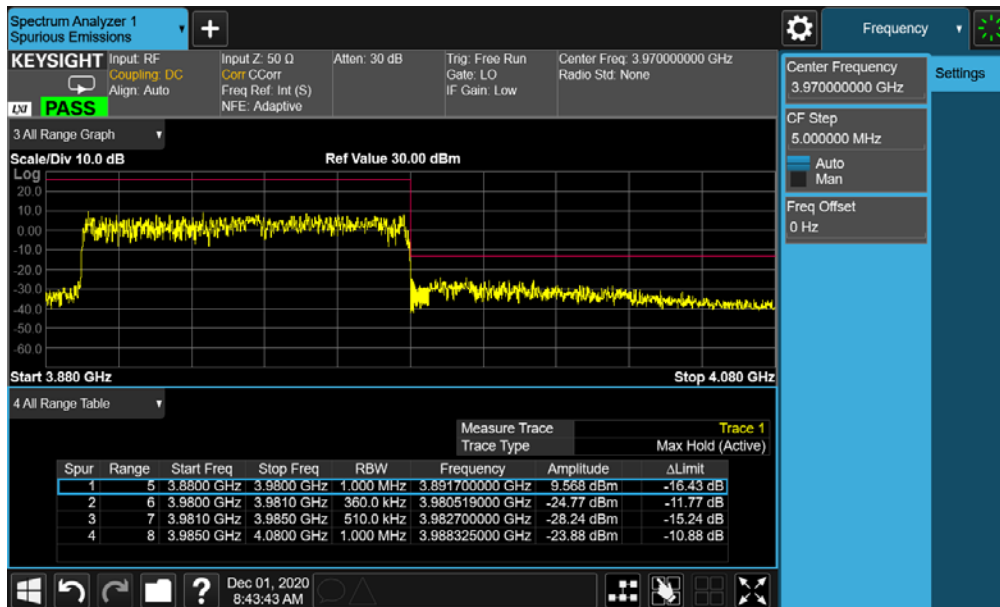


Plot 7-315. Upper ACP Plot (NR Band n77 - 100MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 184 of 242

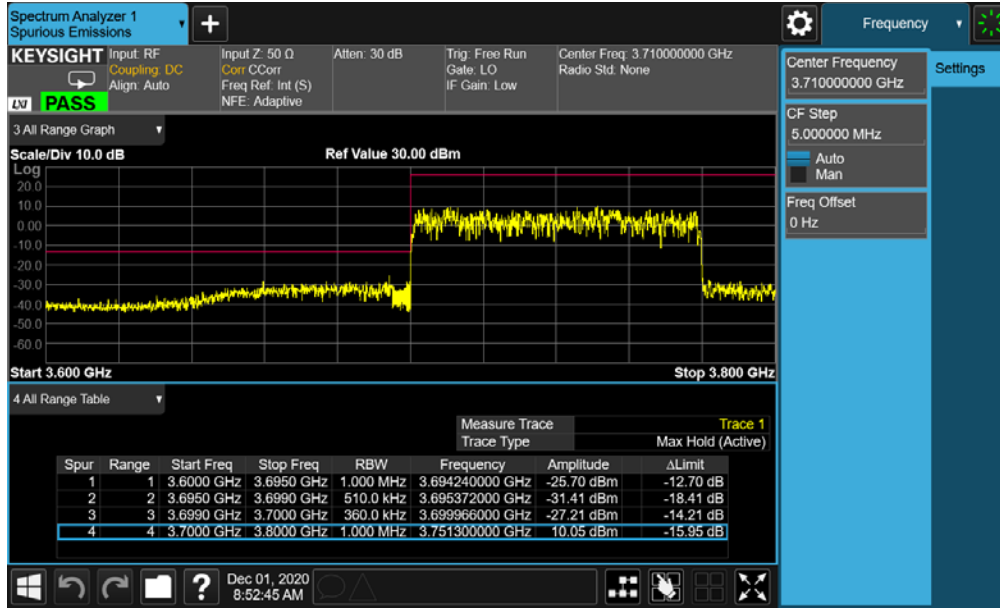


Plot 7-316. Lower ACP Plot (NR Band n77 - 90MHz CP-OFDM-QPSK – Full RB Configuration)

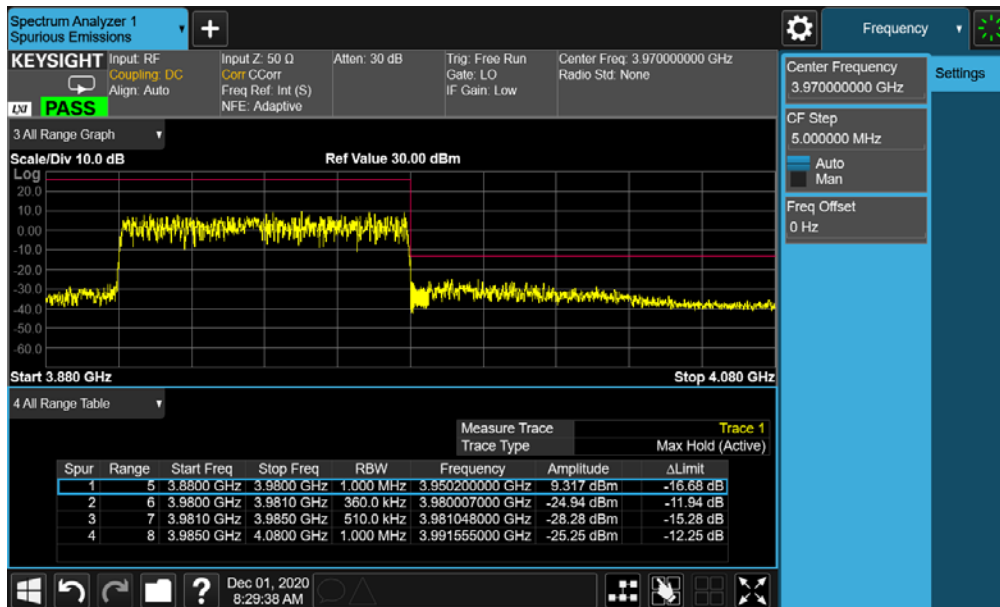


Plot 7-317. Upper ACP Plot (NR Band n77 - 90MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 185 of 242

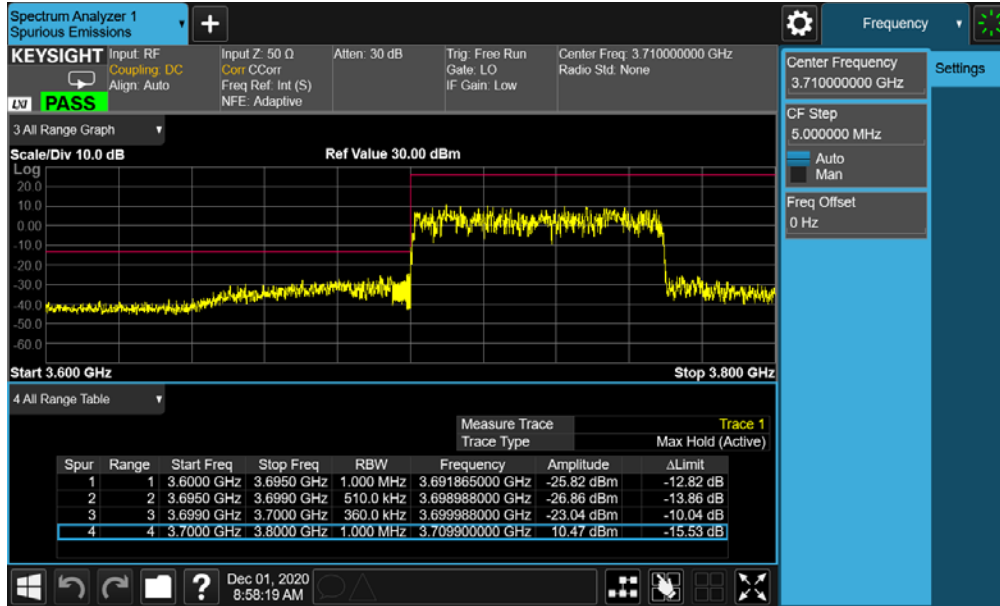


Plot 7-318. Lower ACP Plot (NR Band n77 - 80MHz CP-OFDM-QPSK – Full RB Configuration)

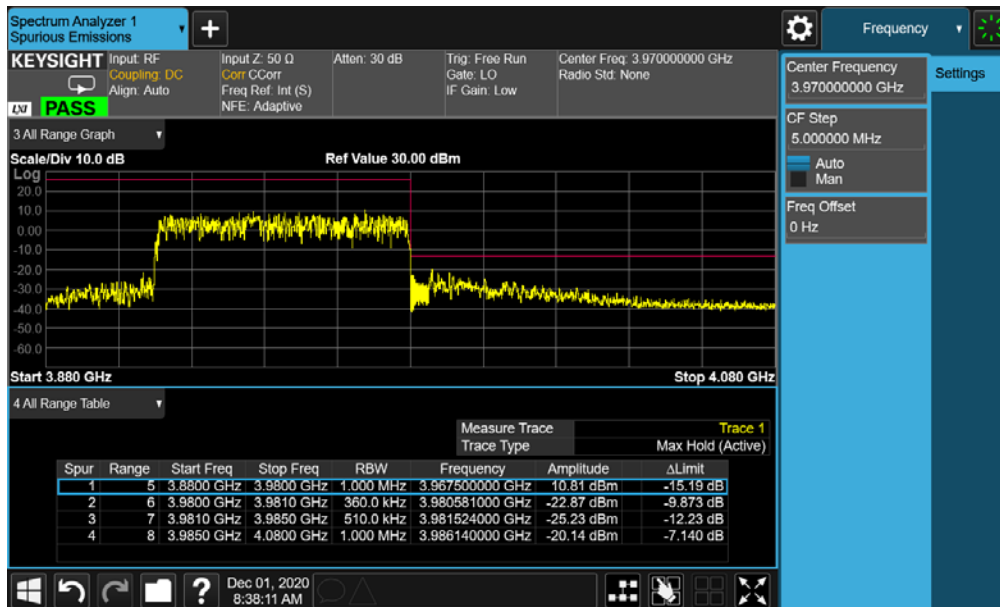


Plot 7-319. Upper ACP Plot (NR Band n77 - 80MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 186 of 242

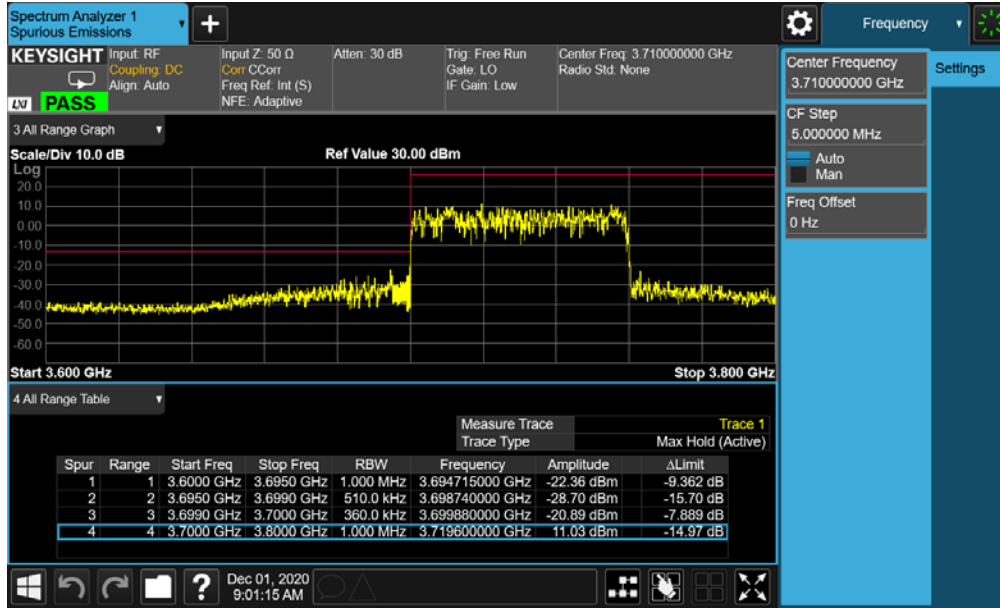


Plot 7-320. Lower ACP Plot (NR Band n77 - 70MHz CP-OFDM-QPSK – Full RB Configuration)



Plot 7-321. Upper ACP Plot (NR Band n77 - 70MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 187 of 242

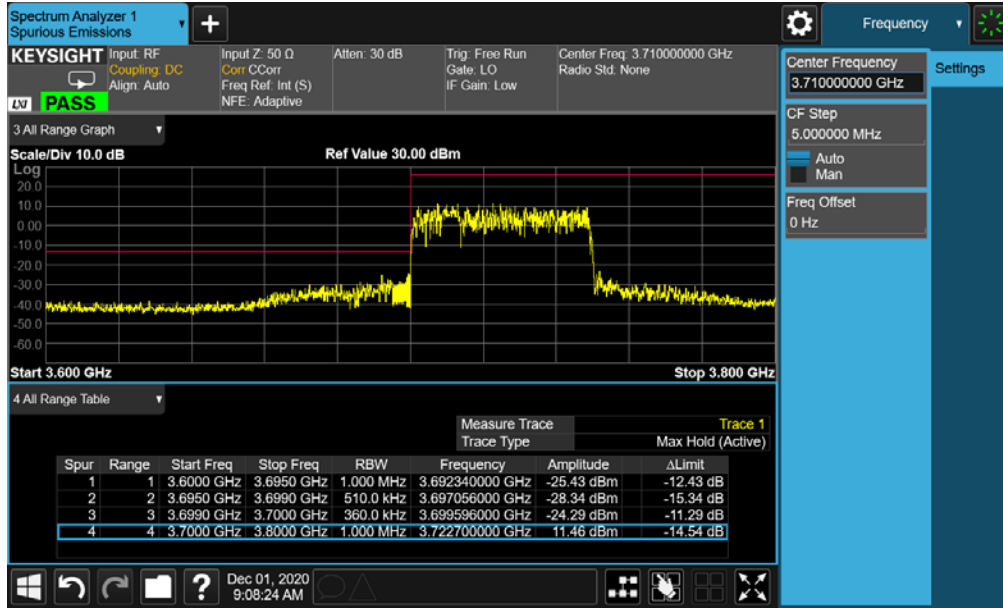


Plot 7-322. Lower ACP Plot (NR Band n77 - 60MHz CP-OFDM-QPSK – Full RB Configuration)



Plot 7-323. Upper ACP Plot (NR Band n77 - 60MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 188 of 242

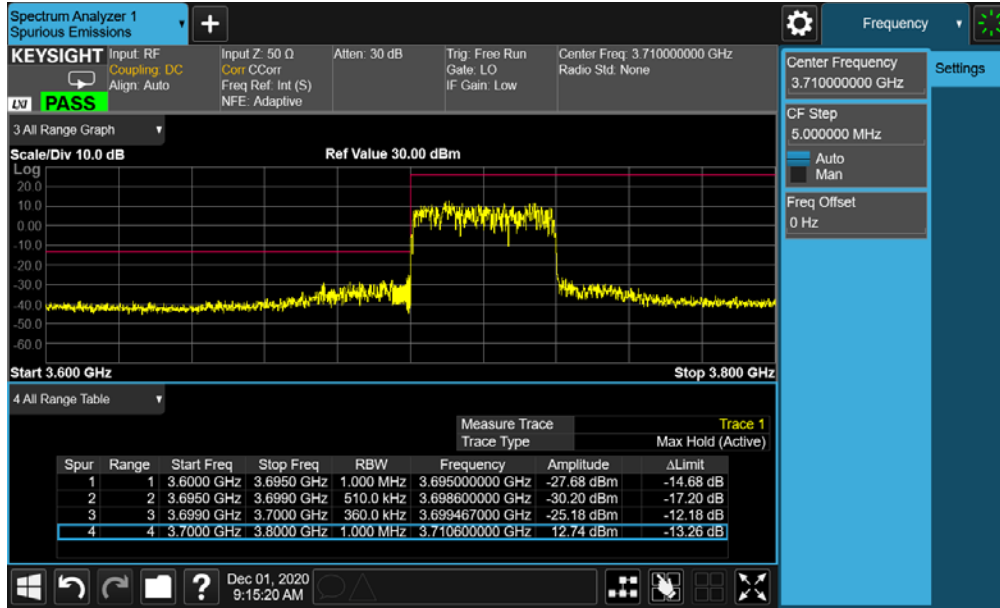


Plot 7-324. Lower ACP Plot (NR Band n77 - 50MHz CP-OFDM-QPSK – Full RB Configuration)



Plot 7-325. Upper ACP Plot (NR Band n77 - 50MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 189 of 242

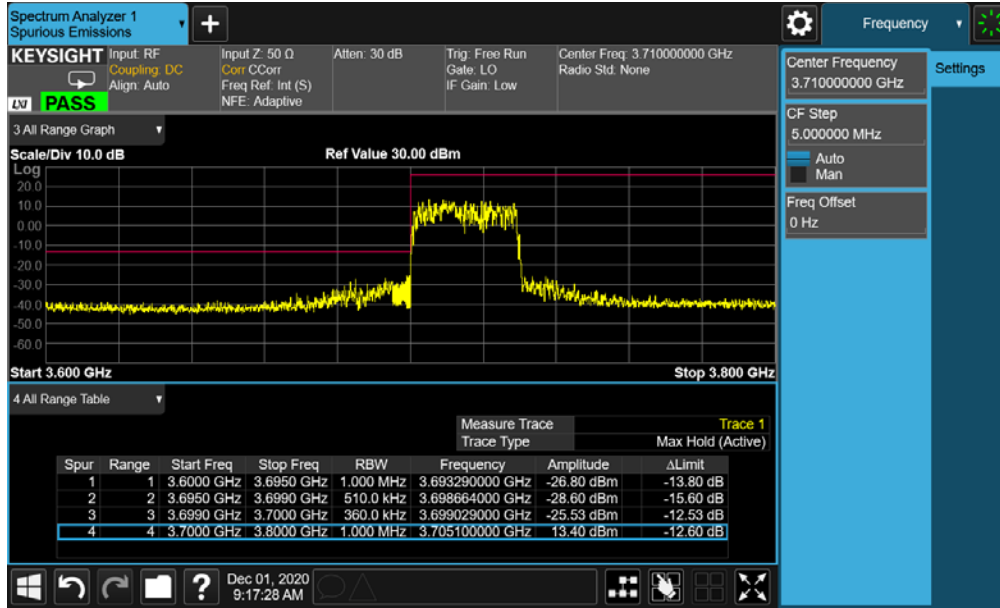


Plot 7-326. Lower ACP Plot (NR Band n77 - 40MHz CP-OFDM-QPSK – Full RB Configuration)

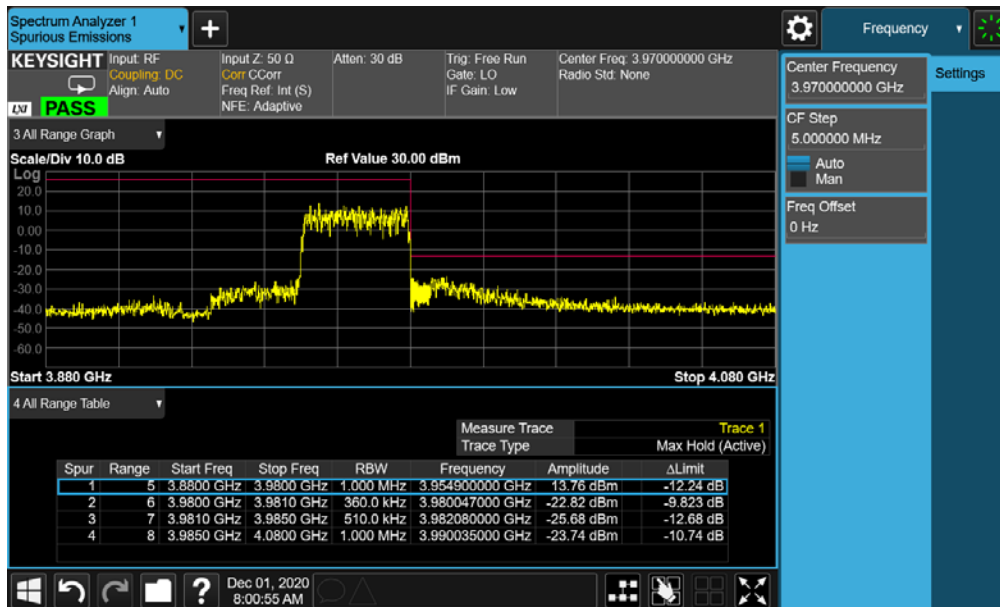


Plot 7-327. Upper ACP Plot (NR Band n77 - 40MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 190 of 242

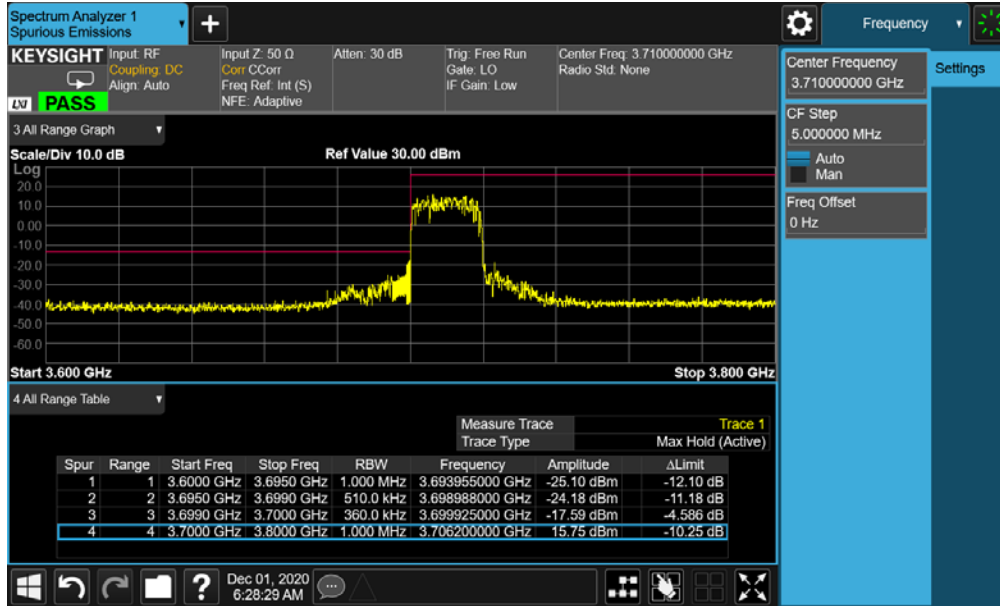


Plot 7-328. Lower ACP Plot (NR Band n77 - 30MHz CP-OFDM-QPSK – Full RB Configuration)

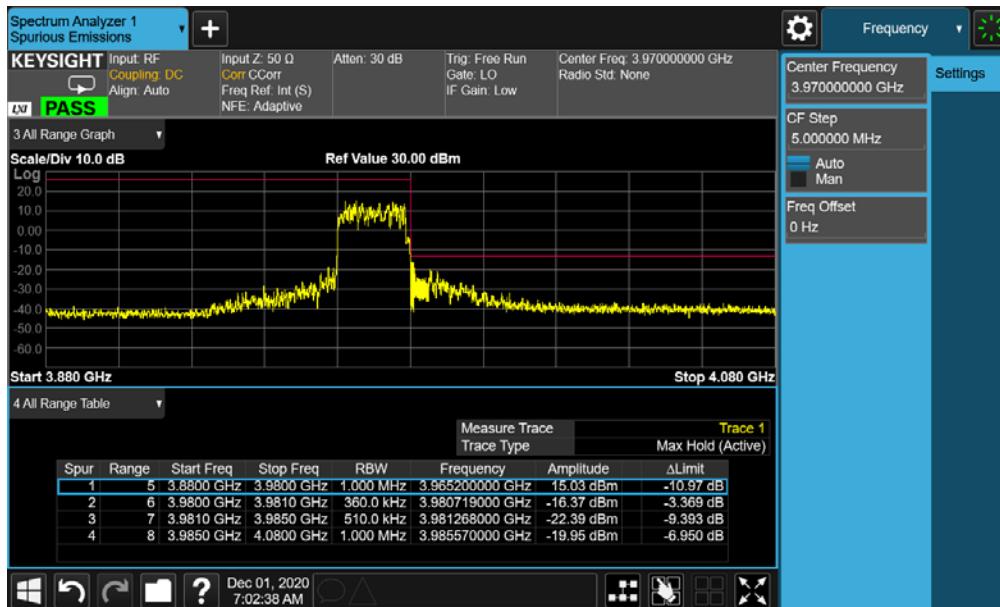


Plot 7-329. Upper ACP Plot (NR Band n77 - 30MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 191 of 242



Plot 7-330. Lower ACP Plot (NR Band n77 - 20MHz CP-OFDM-QPSK – Full RB Configuration)



Plot 7-331. Upper ACP Plot (NR Band n77 - 20MHz CP-OFDM-QPSK – Full RB Configuration)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 192 of 242

7.6 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 41/38 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.

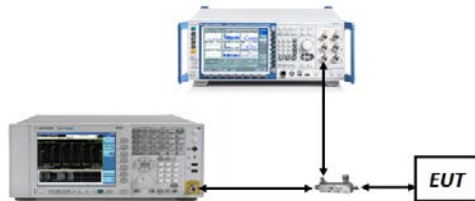






Figure 7-5. Test Instrument & Measurement Setup

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
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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 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.

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Uplink CA Configuration 41C

Power State	Band	Bandwidth (PCC + SCC)	PCC				SCC				ULCA Tx. Power [dBm]																				
			Modulation	UL Channel	UL Frequency	UL # RB	UL RB Offset	Modulation	UL Channel	UL Frequency		UL # RB	UL RB Offset																		
Max	LTE B41 (PC2)	20MHz + 20MHz	QPSK	39750	2506.0	1	99	QPSK	39948	2525.8	1	0	26.95																		
				40620	2593.0	1	99		40818	2612.8	1	0	27.78																		
				41490	2680.0	1	0		41292	2660.2	1	99	27.56																		
			16-QAM	40620	2593	100	0	QPSK	40818	2612.8	100	0	25.55																		
														16-QAM	40818	2612.8	100	0	24.99												
																				64-QAM	40620	2593	100	0	23.97						
																										64-QAM	40818	2612.8	100	0	23.97

Table 7-2. Conducted Powers (B41 with Various Combinations for 20MHz Channel Bandwidth)

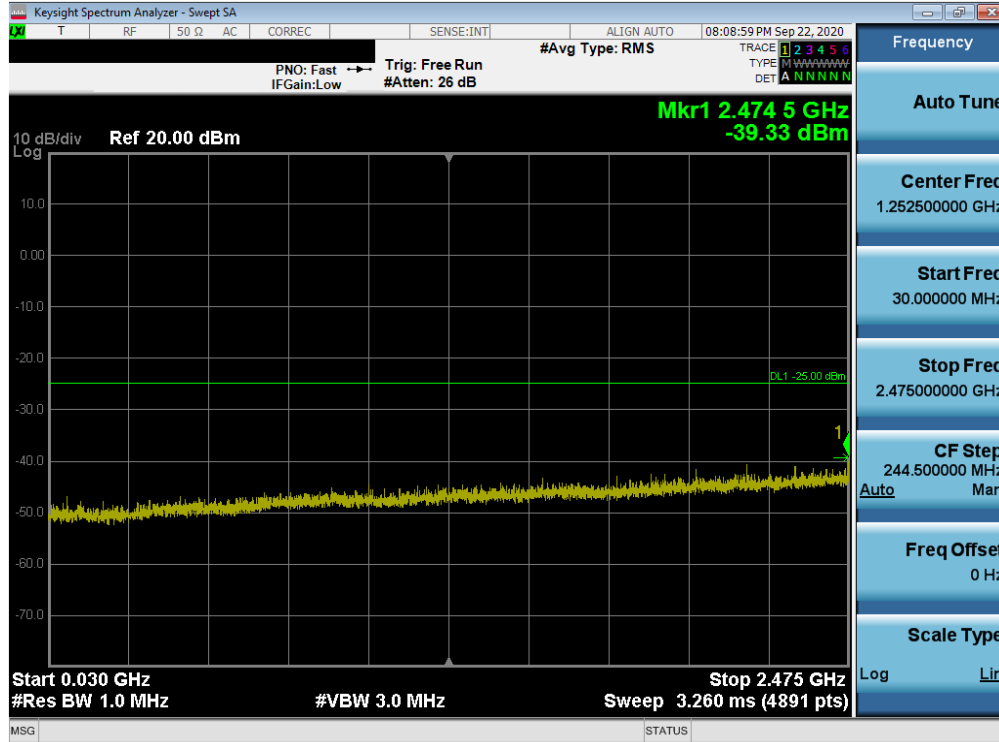


Table 7-332. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

FCC ID: A3LSMG996U		PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
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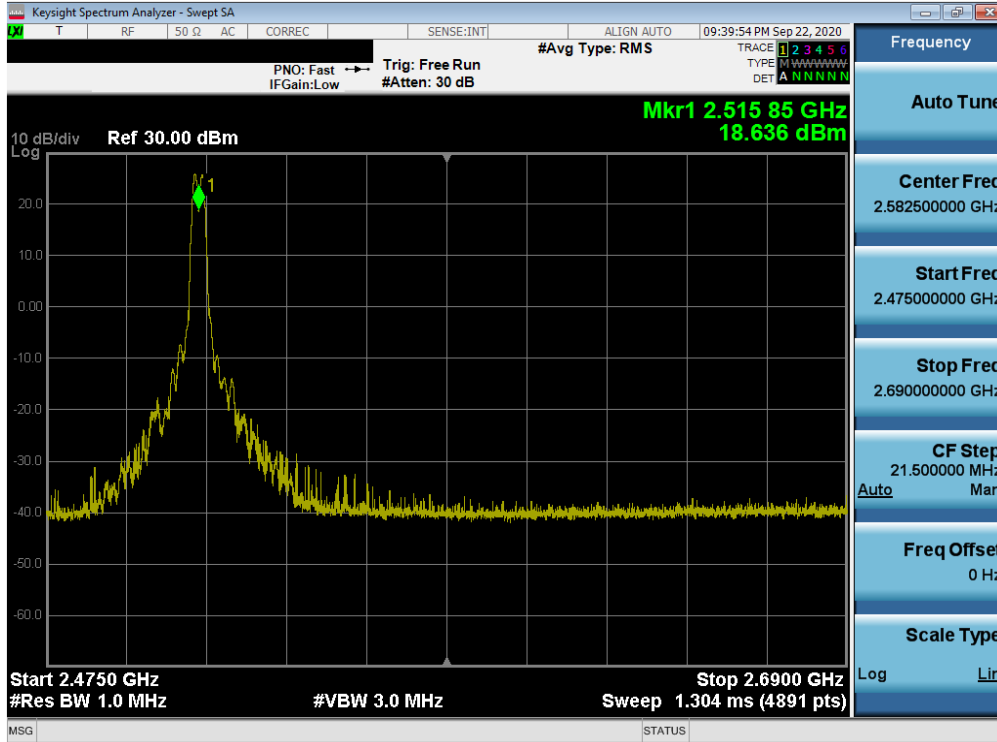


Table 7-333. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

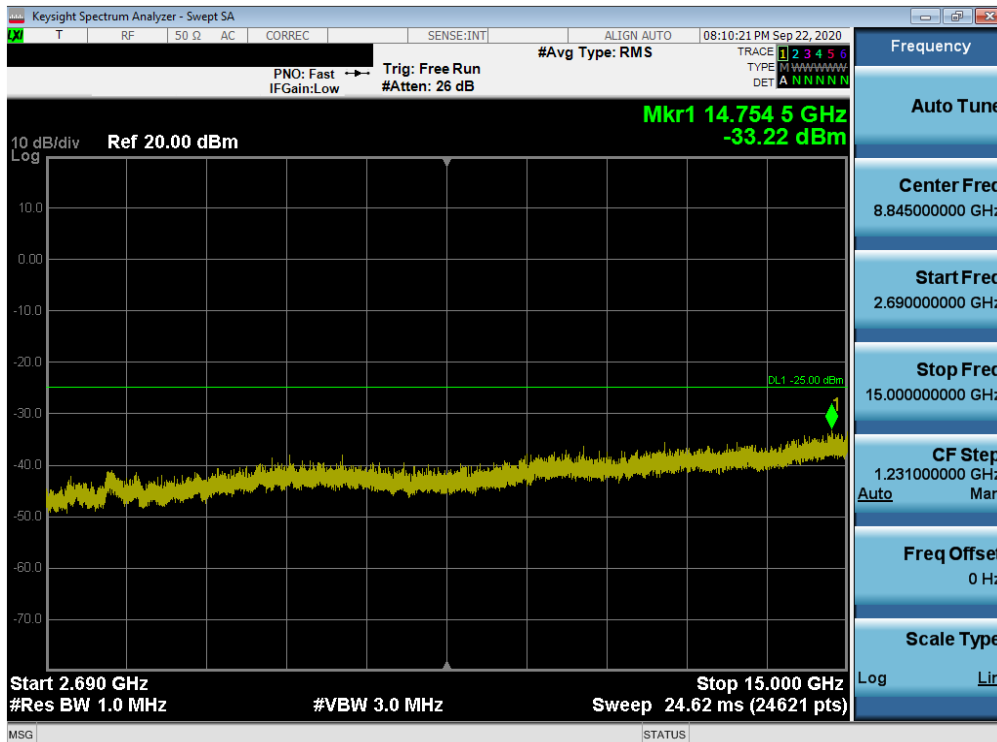


Table 7-334. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 196 of 242

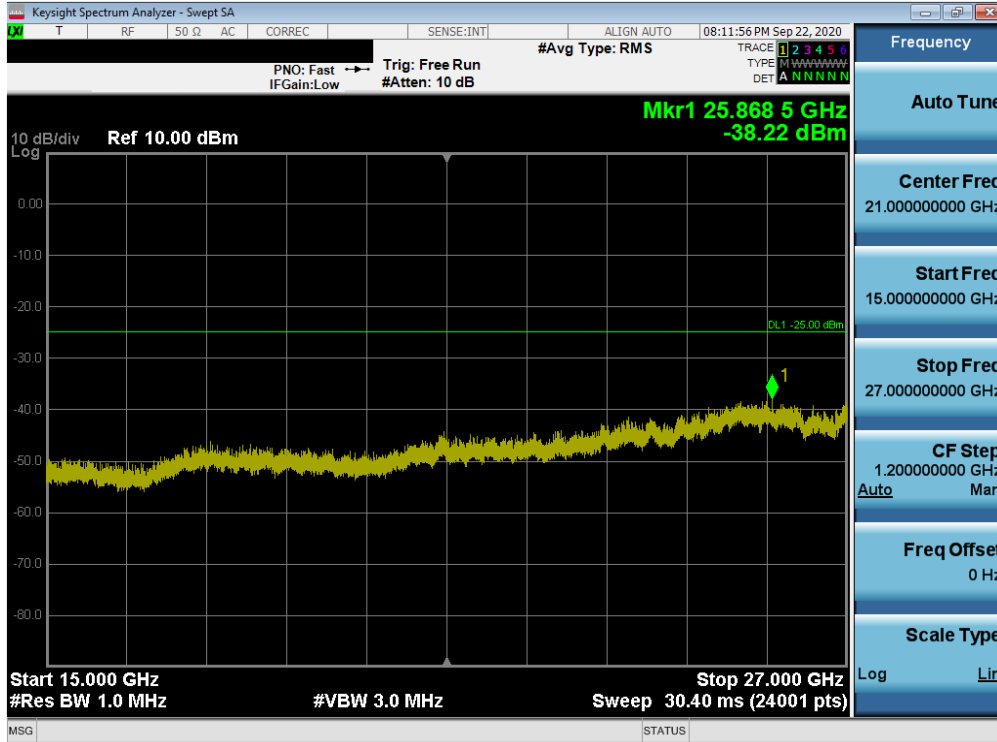


Table 7-335. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

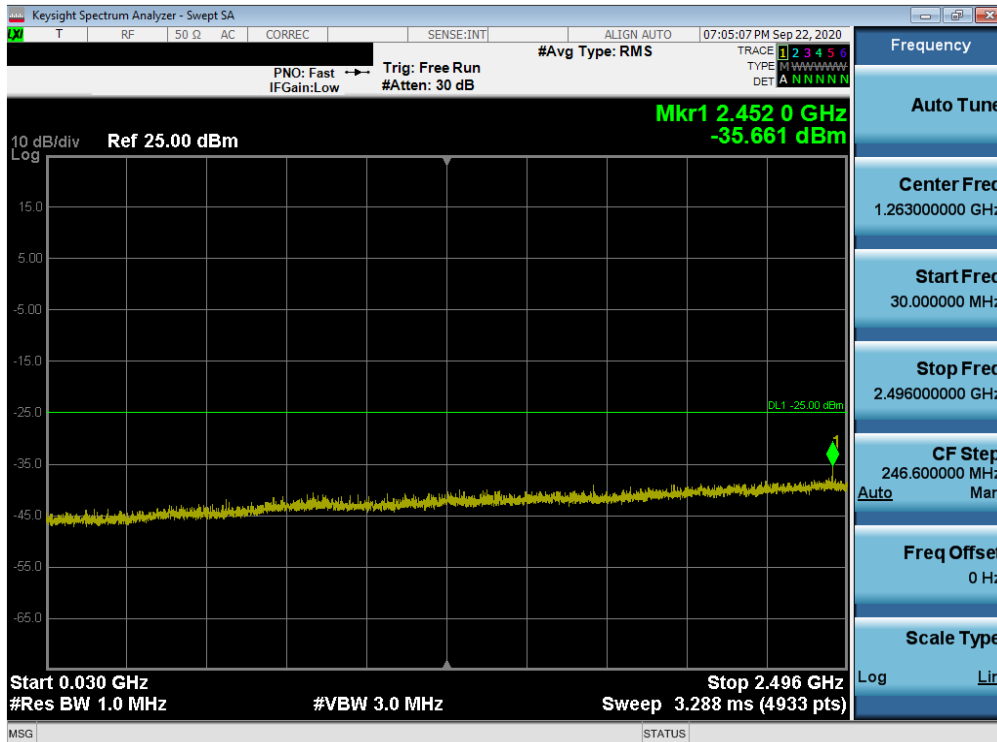


Table 7-336. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Mid Channel)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
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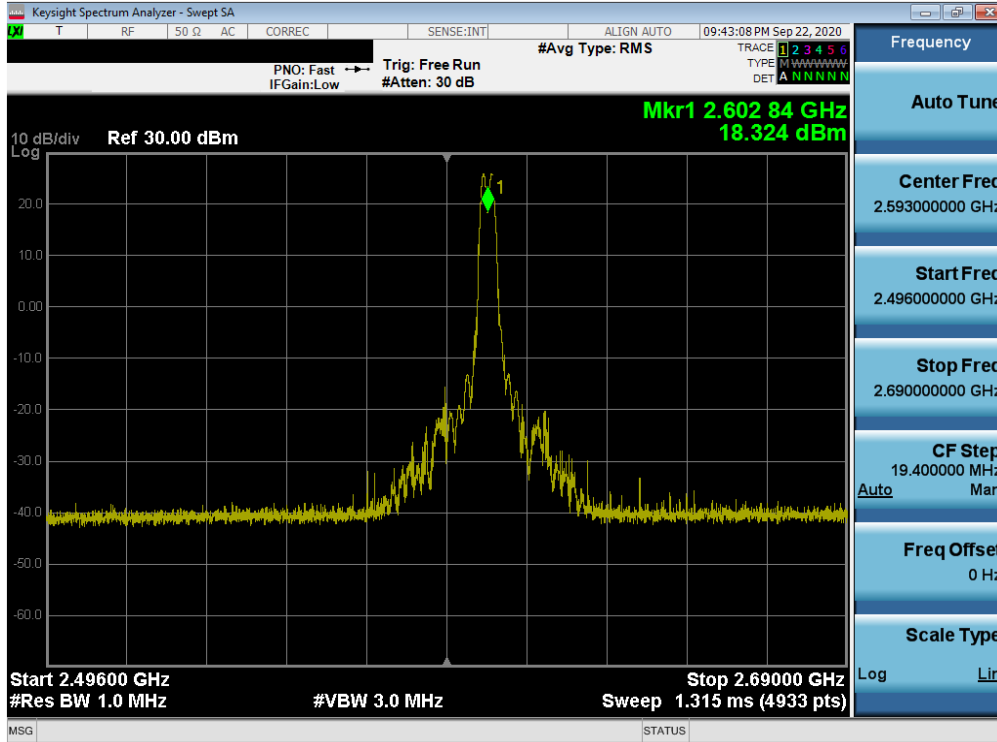


Table 7-337. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Mid Channel)

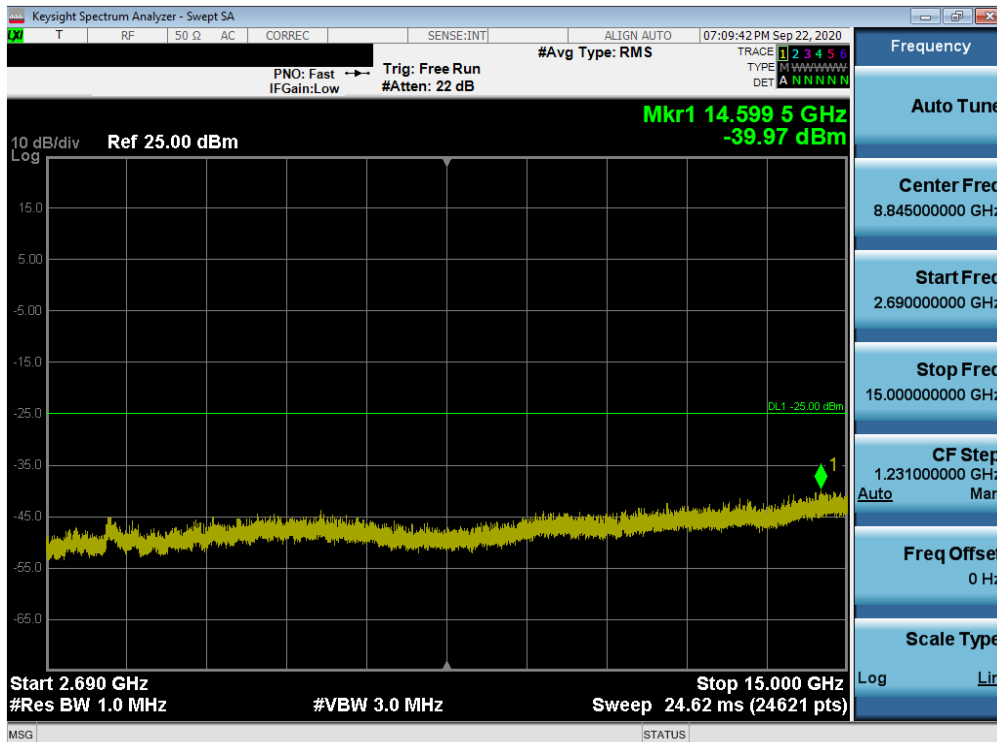


Table 7-338. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Mid Channel)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 198 of 242

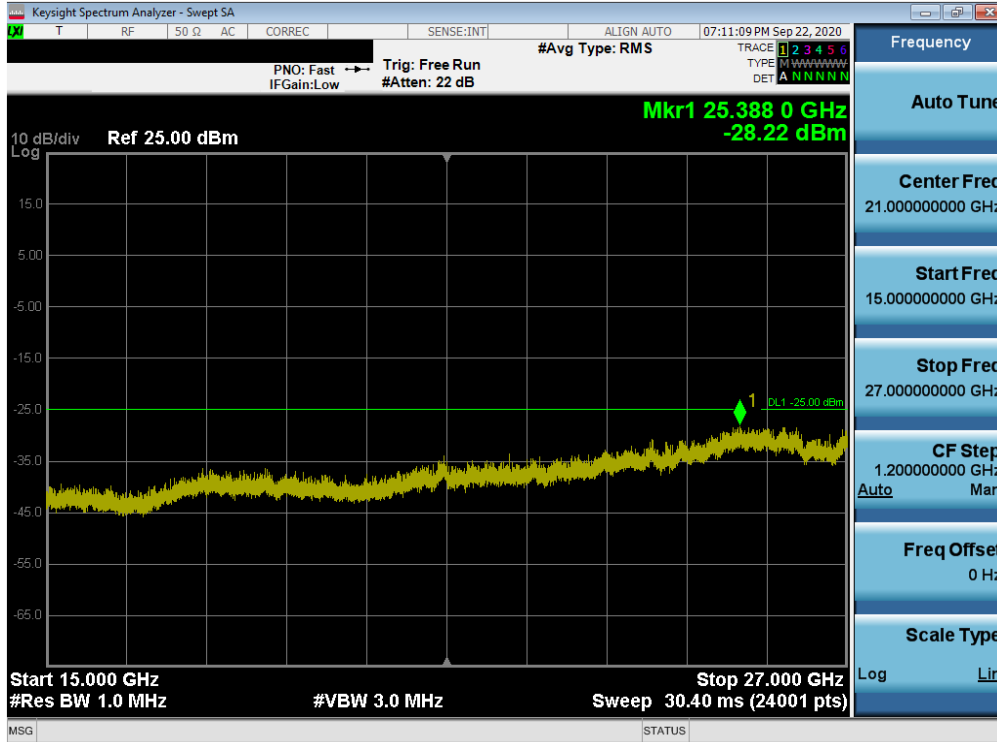


Table 7-339. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Mid Channel)

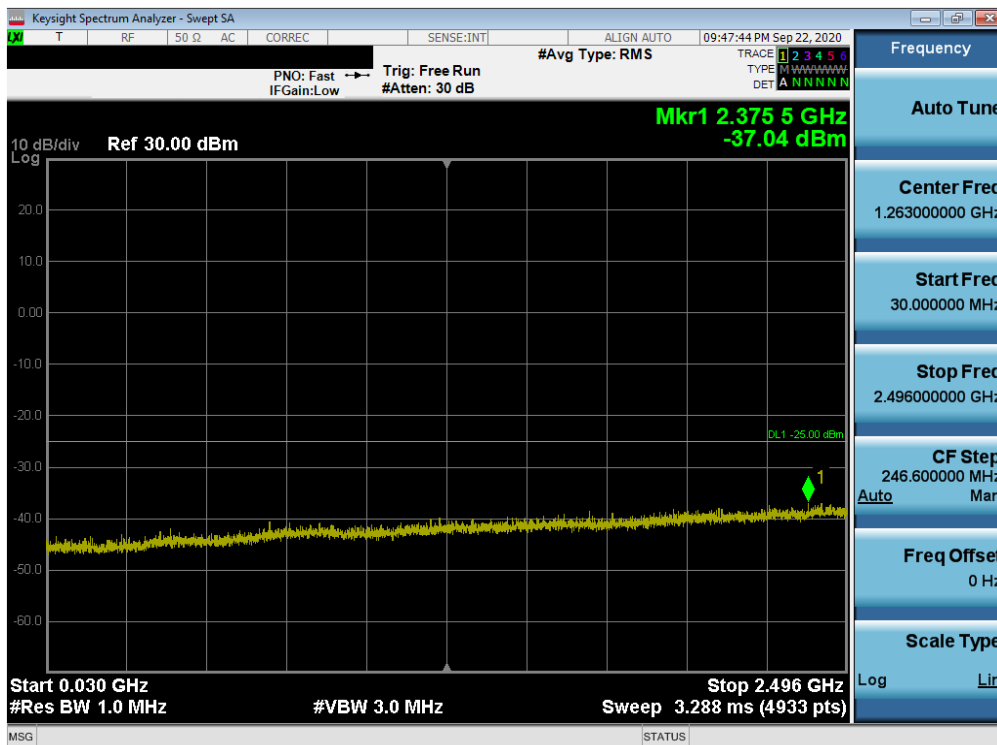


Table 7-340. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – High Channel)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 199 of 242

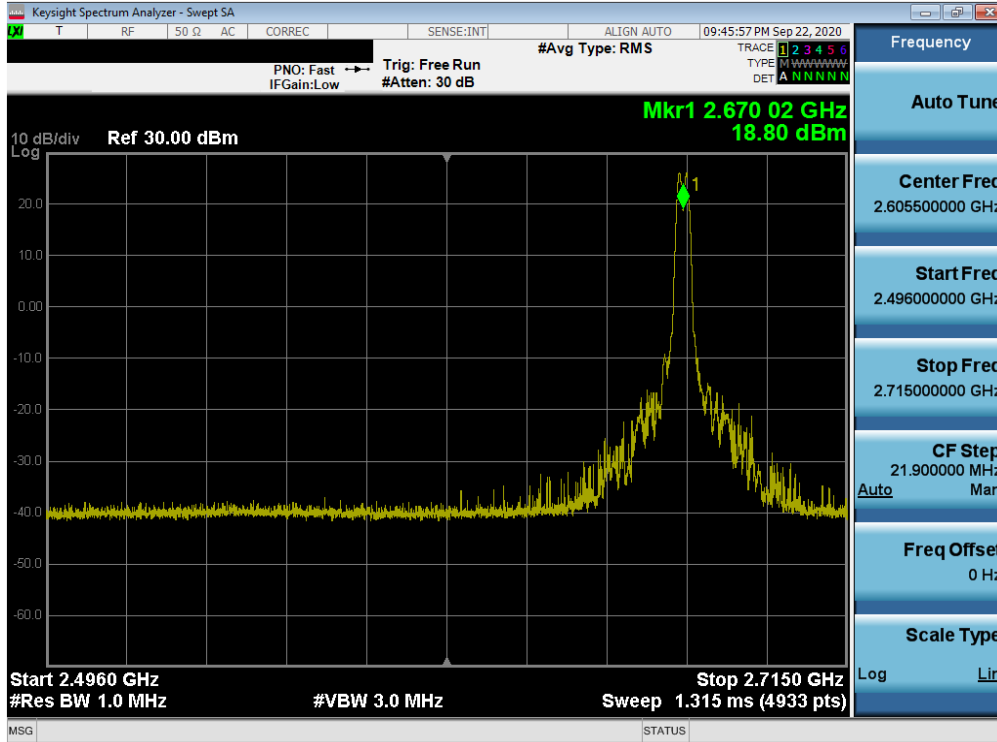


Table 7-341. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – High Channel)

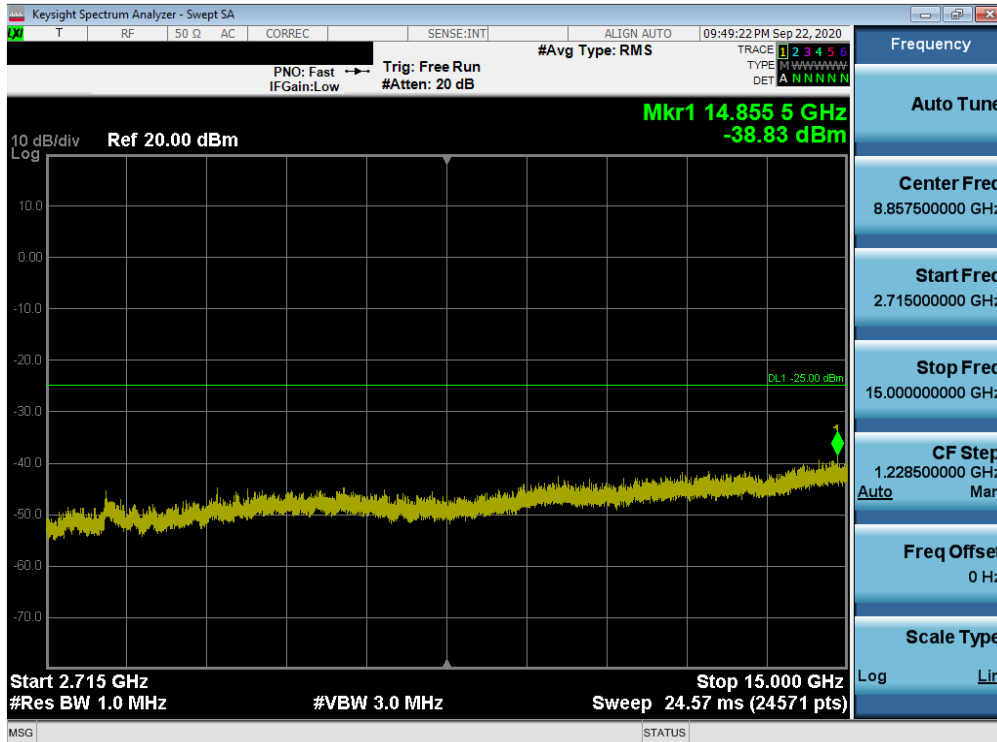


Table 7-342. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – High Channel)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 200 of 242

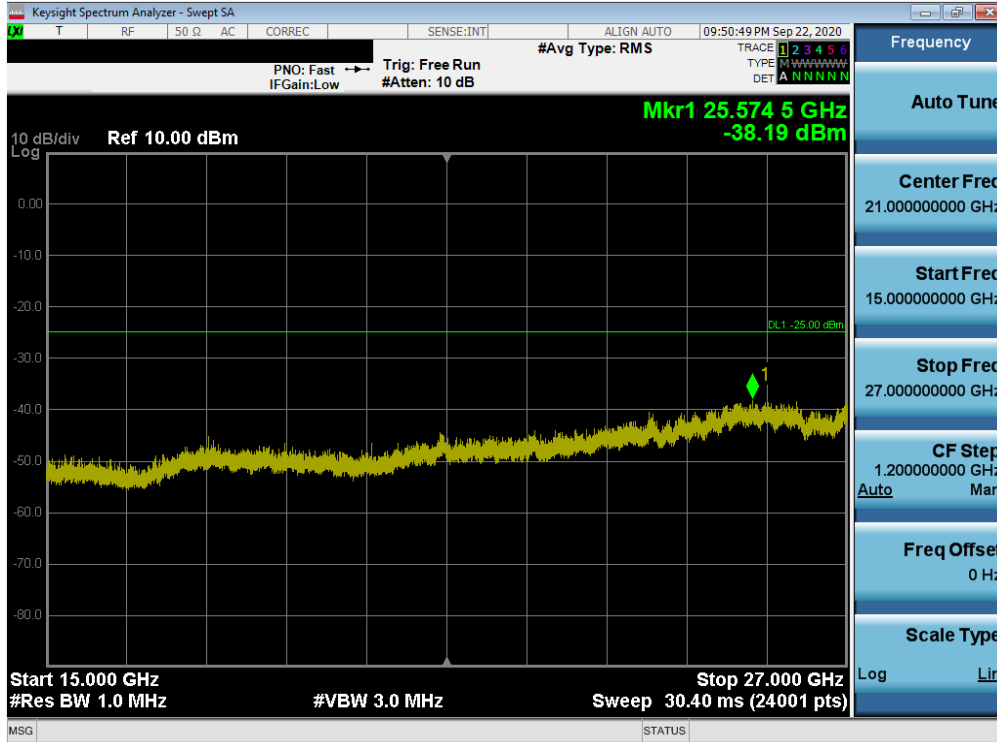


Table 7-343. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – High Channel)

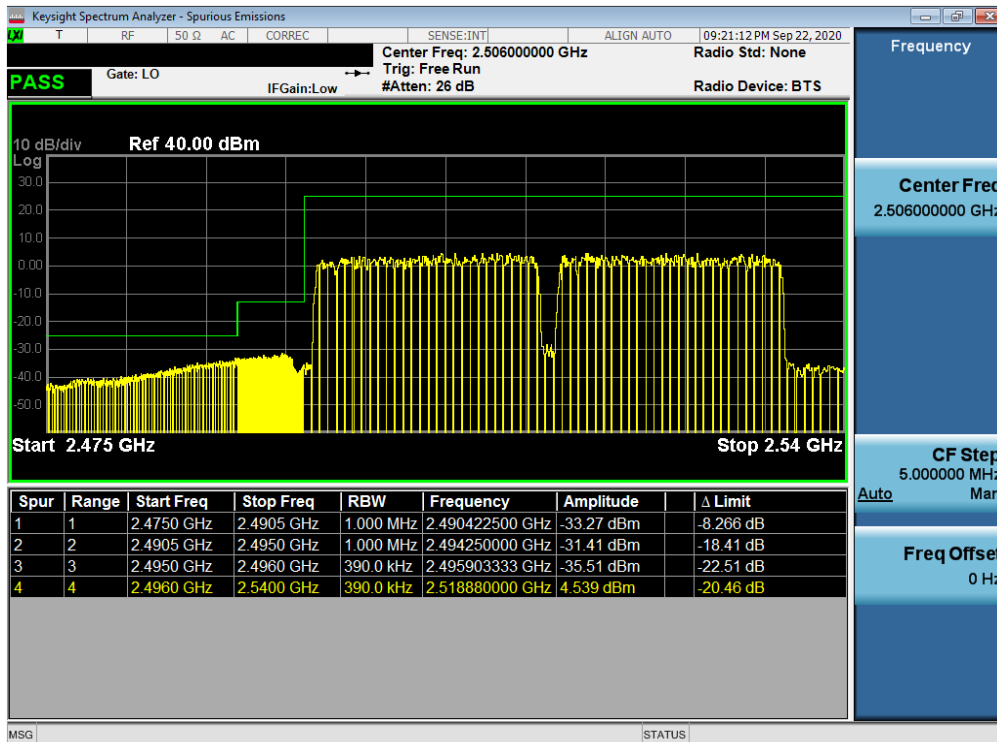


Table 7-344. Lower ACP Plot (Band 41 QPSK – Left Carrier:20 MHz Right Carrier:20 MHz – Full RB)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 201 of 242

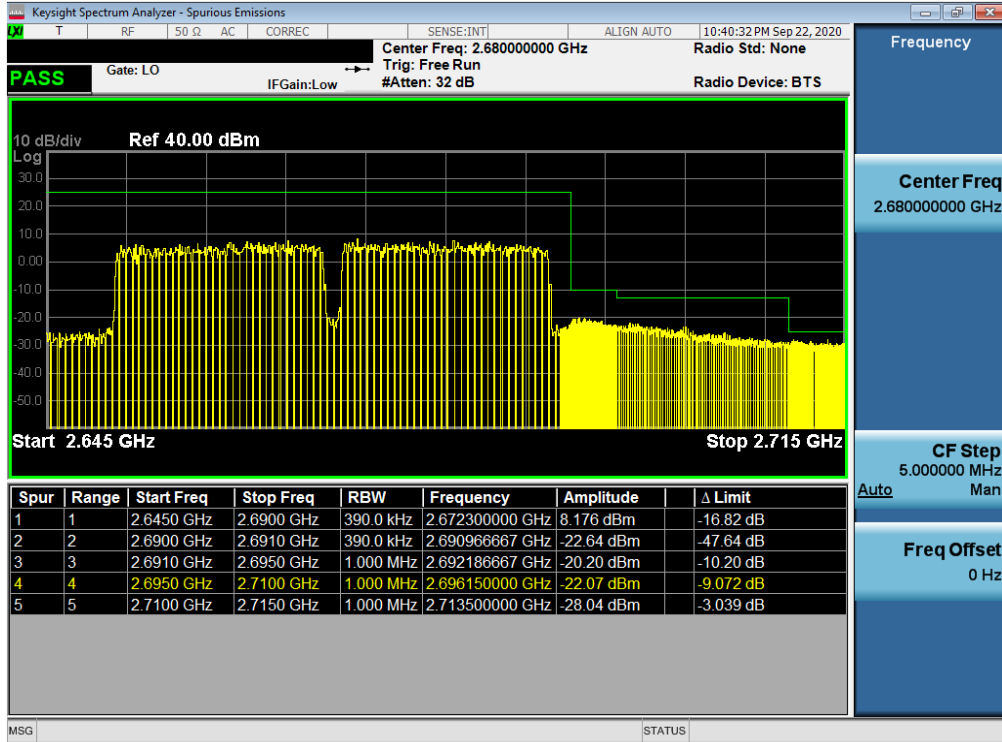


Table 7-345. Upper ACP Plot (Band 41 QPSK – Left Carrier:20 MHz Right Carrier:20 MHz – Full RB)

FCC ID: A3LSMG996U	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset		Page 202 of 242

7.7 Additional Maximum Power Reduction (A-MPR)

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 6.0

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. The 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 7-6. Test Instrument & Measurement Setup



Test Notes

None

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
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Test Case	NS	MCC	MNC	Channel BW [MHz]	Channel Number	Channel Frequency [MHz]	RB Size	RB Offset	A-MPR [dB]	Modulation	MPR [dB]	Measured Power [dBm]		
1	01	312	530	5	39675	2498.5	1	0	3	QPSK	0	24.74		
										16-QAM	1	24.09		
										64-QAM	2	22.75		
										256-QAM	4	19.80		
2				5	39675	2498.5	1	9	0	0	0	QPSK	0	27.28
												16-QAM	1	26.56
												64-QAM	2	24.46
												256-QAM	4	22.85
3				10	39700	2501	1	0	5	0	5	QPSK	0	22.71
												16-QAM	1	22.15
												64-QAM	2	20.76
												256-QAM	4	17.56
4				10	39700	2501	20	0	2	2	2	QPSK	0	24.80
												16-QAM	1	23.85
												64-QAM	2	22.84
												256-QAM	4	20.84
5				10	39700	2501	50	0	3	3	3	QPSK	0	24.78
												16-QAM	1	23.83
												64-QAM	2	22.85
	256-QAM	4	19.90											
6	10	39700	2501	25	20	1	1	1	QPSK	0	25.86			
									16-QAM	1	24.88			
									64-QAM	2	23.64			
									256-QAM	4	22.87			
7	10	39700	2501	1	36	0	0	0	QPSK	0	27.34			
									16-QAM	1	26.60			
									64-QAM	2	24.54			
									256-QAM	4	22.78			
8	15	39725	2503.5	1	0	5	5	5	QPSK	0	22.69			
									16-QAM	1	22.01			
									64-QAM	2	20.68			
									256-QAM	4	17.53			
9	15	39725	2503.5	20	0	2	2	2	QPSK	0	24.73			
									16-QAM	1	23.76			
									64-QAM	2	22.79			
									256-QAM	4	20.71			
10	15	39725	2503.5	75	0	4	4	4	QPSK	0	22.79			
									16-QAM	1	21.83			
									64-QAM	2	20.84			
									256-QAM	4	18.82			
11	15	39725	2503.5	50	15	3	3	3	QPSK	0	23.85			
									16-QAM	1	22.90			
									64-QAM	2	21.94			
									256-QAM	4	19.95			
12	15	39725	2503.5	1	60	0	0	0	QPSK	0	27.40			
									16-QAM	1	26.67			
									64-QAM	2	24.63			
									256-QAM	4	22.89			
13	20	39750	2506	1	0	5	5	5	QPSK	0	22.75			
									16-QAM	1	22.05			
									64-QAM	2	20.71			
									256-QAM	4	17.45			
14	20	39750	2506	20	0	2	2	2	QPSK	0	24.76			
									16-QAM	1	23.78			
									64-QAM	2	22.81			
									256-QAM	4	20.60			
15	20	39750	2506	100	0	4	4	4	QPSK	0	22.78			
									16-QAM	1	21.84			
									64-QAM	2	20.82			
									256-QAM	4	18.84			
16	20	39750	2506	75	24	3	3	3	QPSK	0	23.82			
									16-QAM	1	22.84			
									64-QAM	2	21.91			
									256-QAM	4	19.87			
17	20	39750	2506	1	77	0	0	0	QPSK	0	27.39			
									16-QAM	1	26.66			
									64-QAM	2	24.62			
									256-QAM	4	22.89			
18	01	311	490	5	39675	2498.5	1	0	3	QPSK	0	24.64		
										16-QAM	1	23.98		
										64-QAM	2	22.69		
										256-QAM	4	19.73		
19	01	001	01	5	39675	2498.5	1	0	0	QPSK	0	24.34		
										16-QAM	1	23.68		
										64-QAM	2	22.38		
										256-QAM	4	19.41		

Table 7-346. A-MPR Conducted Power Data (LTE Band 41(PC2))

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7.8 Radiated Power (EIRP)

Test Overview

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 maximum power, and at the appropriate frequencies.



Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer’s “channel power” measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer’s “time domain power” measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW \geq 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points \geq 2 x span / RBW
6. Detector = RMS
7. Trigger is set to “free run” for signals with continuous operation with the sweep times set to “auto”. Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the “gating” function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

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Test Setup

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

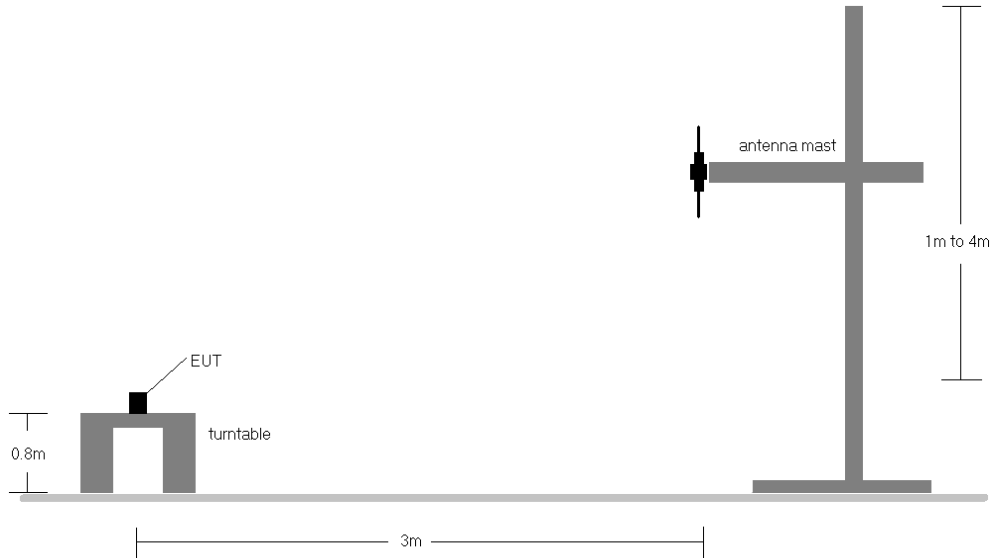


Figure 7-7. Radiated Test Setup <1GHz

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 EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 4) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.



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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
10 MHz	QPSK	2310.0	H	142	370	10.34	1 / 25	12.50	22.84	0.192	23.98	-1.14
	16-QAM	2310.0	H	142	370	10.34	1 / 25	10.74	21.08	0.128	23.98	-2.90
	64-QAM	2310.0	H	142	370	10.34	1 / 0	9.69	20.03	0.101	23.98	-3.95
	256-QAM	2310.0	H	142	370	10.34	1 / 25	7.32	17.66	0.058	23.98	-6.32
5 MHz	QPSK	2307.5	H	142	370	10.33	1/24	12.39	22.72	0.187	23.98	-1.26
		2310.0	H	142	370	10.34	1/12	12.38	22.72	0.187	23.98	-1.26
		2312.5	H	142	370	10.34	1/12	12.53	22.87	0.194	23.98	-1.11
	16-QAM	2312.5	H	142	370	10.34	1/12	10.70	21.04	0.127	23.98	-2.94
	64-QAM	2310.0	H	142	370	10.34	1/12	9.97	20.31	0.107	23.98	-3.67
5 MHz	Opposite Pol.	2310.0	V	145	76	10.25	1 / 25	11.11	21.36	0.137	23.98	-2.62
	WCP	2310.0	H	144	190	10.34	1 / 25	9.86	20.20	0.105	23.98	-3.78

Table 7-347. EIRP Data (LTE Band 30)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	2510.0	H	109	221	9.45	1 / 50	11.64	21.09	0.128	33.01	-11.92
		2535.0	H	138	218	9.42	1 / 99	12.29	21.71	0.148	33.01	-11.30
		2560.0	H	144	249	9.45	1 / 50	11.66	21.11	0.129	33.01	-11.90
	16-QAM	2535.0	H	138	218	9.42	1 / 99	11.68	21.10	0.129	33.01	-11.91
	256-QAM	2535.0	H	138	218	9.42	1 / 99	10.56	19.98	0.100	33.01	-13.03
15 MHz	QPSK	2535.0	H	138	218	9.42	1/36	12.22	21.64	0.146	33.01	-11.37
	16-QAM	2507.5	H	109	221	9.45	1/74	11.62	21.07	0.128	33.01	-11.94
	64-QAM	2535.0	H	138	218	9.42	1/74	10.55	19.97	0.099	33.01	-13.04
10 MHz	256-QAM	2535.0	H	138	218	9.42	1/36	7.28	16.70	0.047	33.01	-16.31
	QPSK	2535.0	H	138	218	9.42	1/49	12.32	21.74	0.149	33.01	-11.27
	16-QAM	2535.0	H	138	218	9.42	1/49	11.80	21.22	0.133	33.01	-11.79
	64-QAM	2535.0	H	138	218	9.42	1/49	10.58	20.00	0.100	33.01	-13.01
	256-QAM	2535.0	H	138	218	9.42	1/25	7.36	16.78	0.048	33.01	-16.23
5 MHz	QPSK	2535.0	H	138	218	9.42	1/24	12.35	21.77	0.150	33.01	-11.24
	16-QAM	2535.0	H	138	218	9.42	1/24	11.71	21.13	0.130	33.01	-11.88
	64-QAM	2535.0	H	138	218	9.42	1/12	10.62	20.04	0.101	33.01	-12.97
	256-QAM	2535.0	H	138	218	9.42	1/12	7.42	16.84	0.048	33.01	-16.17
20 MHz	Opposite Pol.	2535.0	V	396	306	9.41	1 / 99	8.57	17.98	0.063	33.01	-15.03
	WCP	2535.0	H	112	202	9.42	1 / 99	12.10	21.52	0.142	33.01	-11.49

Table 7-348. EIRP Data (LTE Band 7)



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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	2506.0	H	125	215	9.45	1 / 50	13.77	23.22	0.210	33.01	-9.79
		2593.0	H	133	220	9.58	1 / 50	13.87	23.45	0.221	33.01	-9.56
		2680.0	H	130	235	9.86	1 / 50	15.19	25.05	0.320	33.01	-7.96
	16-QAM	2680.0	H	130	235	9.86	1 / 50	13.32	23.18	0.208	33.01	-9.83
	256-QAM	2680.0	H	130	235	9.86	1 / 50	9.78	19.64	0.092	33.01	-13.37
15 MHz	QPSK	2682.5	H	130	235	9.86	1/74	14.91	24.77	0.300	33.01	-8.24
	16-QAM	2682.5	H	130	235	9.86	1/74	13.44	23.30	0.214	33.01	-9.71
	64-QAM	2682.5	H	130	235	9.86	1/74	12.65	22.51	0.178	33.01	-10.50
	256-QAM	2682.5	H	130	235	9.86	1/74	9.74	19.60	0.091	33.01	-13.41
10 MHz	QPSK	2685.0	H	130	235	9.85	1/25	14.96	24.81	0.303	33.01	-8.20
	16-QAM	2685.0	H	130	235	9.85	1/25	13.29	23.14	0.206	33.01	-9.87
	64-QAM	2685.0	H	130	235	9.85	1/25	12.99	22.84	0.192	33.01	-10.17
	256-QAM	2685.0	H	130	235	9.85	50/0	9.81	19.66	0.092	33.01	-13.35
5 MHz	QPSK	2687.5	H	130	235	9.85	1/12	14.85	24.70	0.295	33.01	-8.31
	16-QAM	2687.5	H	130	235	9.85	1/0	12.99	22.84	0.192	33.01	-10.17
	64-QAM	2687.5	H	130	235	9.85	1/0	12.89	22.74	0.188	33.01	-10.27
	256-QAM	2687.5	H	130	235	9.85	25/0	9.90	19.75	0.094	33.01	-13.26
20 MHz	Opposite Pol.	2680.0	V	118	86	9.59	1 / 50	10.24	19.83	0.096	33.01	-13.18
	WCP	2680.0	H	151	198	9.58	1 / 50	10.14	19.72	0.094	33.01	-13.29

Table 7-349. EIRP Data (LTE Band 41(PC2))



Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	2506.0	H	125	25	9.45	1 / 50	11.63	21.08	0.128	33.01	-11.93
		2593.0	H	131	39	9.58	1 / 50	11.73	21.31	0.135	33.01	-11.70
		2680.0	H	113	39	9.86	1 / 50	13.05	22.91	0.196	33.01	-10.10
	16-QAM	2680.0	H	113	39	9.86	1 / 50	11.18	21.04	0.127	33.01	-11.97
	256-QAM	2680.0	H	113	39	9.86	1 / 50	7.64	17.50	0.056	33.01	-15.51
15 MHz	QPSK	2682.5	H	113	39	9.86	1/74	12.78	22.63	0.183	33.01	-10.38
	16-QAM	2682.5	H	113	39	9.86	1/74	11.31	21.16	0.131	33.01	-11.85
	64-QAM	2682.5	H	113	39	9.86	1/74	10.52	20.37	0.109	33.01	-12.64
	256-QAM	2682.5	H	113	39	9.86	1/74	7.61	17.46	0.056	33.01	-15.55
10 MHz	QPSK	2685.0	H	113	39	9.85	1/25	12.82	22.67	0.185	33.01	-10.34
	16-QAM	2685.0	H	113	39	9.85	1/25	11.15	21.00	0.126	33.01	-12.01
	64-QAM	2685.0	H	113	39	9.85	1/25	10.85	20.70	0.118	33.01	-12.31
	256-QAM	2685.0	H	113	39	9.85	50/0	7.67	17.52	0.057	33.01	-15.49
5 MHz	QPSK	2687.5	H	113	39	9.85	1/12	12.72	22.56	0.180	33.01	-10.45
	16-QAM	2687.5	H	113	39	9.85	1/0	10.86	20.70	0.118	33.01	-12.31
	64-QAM	2687.5	H	113	39	9.85	1/0	10.76	20.60	0.115	33.01	-12.41
	256-QAM	2687.5	H	113	39	9.85	25/0	7.77	17.61	0.058	33.01	-15.40
20 MHz	Opposite Pol.	2680.0	V	118	86	9.86	1 / 50	10.24	20.10	0.102	33.01	-12.91
	WCP	2680.0	H	151	198	9.86	1 / 50	10.48	20.34	0.108	33.01	-12.67

Table 7-350. EIRP Data (LTE Band 41(PC3)/38)

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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
10 MHz	$\pi/2$ BPSK	2310.0	H	104	199	10.34	1 / 26	12.45	22.79	0.190	23.98	-1.19
	QPSK	2310.0	H	104	199	10.34	1 / 26	12.13	22.47	0.177	23.98	-1.51
	16-QAM	2310.0	H	104	199	10.34	1 / 26	10.56	20.90	0.123	23.98	-3.08
	64-QAM	2310.0	H	104	199	10.34	1 / 26	9.36	19.70	0.093	23.98	-4.28
	256-QAM	2310.0	H	104	199	10.34	1 / 26	9.23	19.57	0.091	23.98	-4.41
5 MHz	$\pi/2$ BPSK	2310.0	H	104	199	10.34	1 / 23	12.71	23.05	0.202	23.98	-0.93
	QPSK	2307.5	H	104	199	10.33	1 / 23	12.02	22.35	0.172	23.98	-1.63
		2310.0	H	104	199	10.34	1 / 13	12.01	22.35	0.172	23.98	-1.63
		2312.5	H	104	199	10.34	1 / 13	12.16	22.50	0.178	23.98	-1.48
	16-QAM	2312.5	H	104	199	10.34	1 / 13	10.52	20.86	0.122	23.98	-3.12
	64-QAM	2310.0	H	104	199	10.34	1 / 13	9.64	19.98	0.100	23.98	-4.00
	256-QAM	2310.0	H	104	199	10.34	1 / 13	9.33	19.67	0.093	23.98	-4.31
10 MHz	QPSK (CP-OFDM)	2310.0	H	104	199	10.34	1 / 1	10.41	20.75	0.119	23.98	-3.23
	QPSK (Opposite Pol.)	2310.0	V	115	310	10.25	1 / 1	12.52	22.77	0.189	23.98	-1.21
	QPSK (WCP)	2310.0	H	115	216	10.34	1 / 1	7.74	18.08	0.064	23.98	-5.90

Table 7-351. EIRP Data (NR Band n30)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
100 MHz	π/2 BPSK	2546.01	H	151	49	9.41	1 / 137	12.53	21.94	0.156	33.01	-11.07
		2592.99	H	145	50	9.58	1 / 271	11.39	20.97	0.125	33.01	-12.04
		2640.00	H	125	51	9.87	1 / 137	12.20	22.07	0.161	33.01	-10.94
	QPSK	2546.01	H	151	49	9.41	1 / 137	12.45	21.86	0.154	33.01	-11.15
		2592.99	H	145	50	9.58	1 / 271	11.37	20.95	0.124	33.01	-12.06
		2640.00	H	125	51	9.87	1 / 137	12.24	22.11	0.163	33.01	-10.90
	16-QAM	2640.00	H	125	51	9.87	1 / 137	11.48	21.35	0.136	33.01	-11.66
64-QAM	2640.00	H	125	51	9.87	1 / 137	9.77	19.64	0.092	33.01	-13.37	
256-QAM	2640.00	H	125	51	9.87	1 / 137	8.13	18.00	0.063	33.01	-15.01	
90 MHz	π/2 BPSK	2592.99	H	145	50	9.58	1 / 123	11.23	20.81	0.121	33.01	-12.20
	QPSK	2592.99	H	145	50	9.58	1 / 123	10.77	20.35	0.108	33.01	-12.66
	16-QAM	2592.99	H	145	50	9.58	1 / 123	11.62	21.20	0.132	33.01	-11.81
	64-QAM	2592.99	H	145	50	9.58	1 / 123	8.23	17.81	0.060	33.01	-15.20
	256-QAM	2592.99	H	145	50	9.58	1 / 123	8.98	18.56	0.072	33.01	-14.45
80 MHz	π/2 BPSK	2592.99	H	145	50	9.58	1 / 109	9.64	19.22	0.084	33.01	-13.79
	QPSK	2592.99	H	145	50	9.58	1 / 109	10.78	20.36	0.109	33.01	-12.65
	16-QAM	2592.99	H	145	50	9.58	1 / 109	8.59	18.17	0.066	33.01	-14.84
	64-QAM	2592.99	H	145	50	9.58	1 / 109	7.91	17.49	0.056	33.01	-15.52
	256-QAM	2592.99	H	145	50	9.58	1 / 109	8.70	18.28	0.067	33.01	-14.73
60 MHz	π/2 BPSK	2592.99	H	145	50	9.58	1 / 81	10.69	20.27	0.106	33.01	-12.74
	QPSK	2592.99	H	145	50	9.58	1 / 81	10.58	20.16	0.104	33.01	-12.85
	16-QAM	2592.99	H	145	50	9.58	1 / 81	11.96	21.54	0.143	33.01	-11.47
	64-QAM	2592.99	H	145	50	9.58	1 / 81	8.34	17.92	0.062	33.01	-15.09
	256-QAM	2592.99	H	145	50	9.58	1 / 81	8.00	17.58	0.057	33.01	-15.43
50 MHz	π/2 BPSK	2592.99	H	145	50	9.58	1 / 67	11.59	21.17	0.131	33.01	-11.84
	QPSK	2592.99	H	145	50	9.58	1 / 67	10.68	20.26	0.106	33.01	-12.75
	16-QAM	2592.99	H	145	50	9.58	1 / 67	10.22	19.80	0.096	33.01	-13.21
	64-QAM	2592.99	H	145	50	9.58	1 / 67	8.07	17.65	0.058	33.01	-15.36
	256-QAM	2592.99	H	145	50	9.58	1 / 67	9.11	18.69	0.074	33.01	-14.32
40 MHz	π/2 BPSK	2592.99	H	145	50	9.58	1 / 53	10.20	19.78	0.095	33.01	-13.23
	QPSK	2592.99	H	145	50	9.58	1 / 53	10.36	19.94	0.099	33.01	-13.07
	16-QAM	2592.99	H	145	50	9.58	1 / 53	10.23	19.81	0.096	33.01	-13.20
	64-QAM	2592.99	H	145	50	9.58	1 / 53	7.94	17.52	0.057	33.01	-15.49
	256-QAM	2592.99	H	145	50	9.58	1 / 53	7.92	17.50	0.056	33.01	-15.51
30 MHz	π/2 BPSK	2592.99	H	145	50	9.58	1 / 39	10.35	19.93	0.098	33.01	-13.08
	QPSK	2592.99	H	145	50	9.58	1 / 39	11.73	21.31	0.135	33.01	-11.70
	16-QAM	2592.99	H	145	50	9.58	1 / 39	12.37	21.95	0.157	33.01	-11.06
	64-QAM	2592.99	H	145	50	9.58	1 / 39	9.76	19.34	0.086	33.01	-13.67
	256-QAM	2592.99	H	145	50	9.58	1 / 39	8.85	18.43	0.070	33.01	-14.58
20 MHz	π/2 BPSK	2592.99	H	145	50	9.58	1 / 26	11.35	20.93	0.124	33.01	-12.08
	QPSK	2592.99	H	145	50	9.58	1 / 26	10.92	20.50	0.112	33.01	-12.51
	16-QAM	2592.99	H	145	50	9.58	1 / 26	11.34	20.92	0.124	33.01	-12.09
	64-QAM	2592.99	H	145	50	9.58	1 / 26	6.81	16.39	0.044	33.01	-16.62
	256-QAM	2592.99	H	145	50	9.58	1 / 26	6.96	16.54	0.045	33.01	-16.47
100 MHz	QPSK (CP-OFDM)	2640.0	H	125	51	9.87	1 / 137	10.98	20.85	0.122	33.01	-12.16
	QPSK (Opposite Pol.)	2640.0	V	127	308	9.87	1 / 137	12.40	22.27	0.169	33.01	-10.74
	QPSK (WCP)	2640.0	H	198	55	9.87	1 / 137	11.63	21.50	0.141	33.01	-11.51

Table 7-352. EIRP Data (NR Band n41)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
100 MHz	π/2 BPSK	2546.01	H	102	219	9.41	1 / 271	12.17	21.58	0.144	33.01	-11.43
		2592.99	H	126	221	9.58	1 / 271	13.65	23.23	0.210	33.01	-9.78
		2640.00	H	101	223	9.87	1 / 271	13.38	23.25	0.211	33.01	-9.76
	QPSK	2546.01	H	102	219	9.41	1 / 271	11.26	20.67	0.117	33.01	-12.34
		2592.99	H	126	221	9.58	1 / 271	13.54	23.12	0.205	33.01	-9.89
		2640.00	H	101	223	9.87	1 / 271	13.22	23.09	0.204	33.01	-9.92
	16-QAM	2640.00	H	101	223	9.87	1 / 271	12.16	22.03	0.160	33.01	-10.98
64-QAM	2640.00	H	101	223	9.87	1 / 271	10.60	20.47	0.111	33.01	-12.54	
256-QAM	2640.00	H	101	223	9.87	1 / 271	8.45	18.32	0.068	33.01	-14.69	
90 MHz	π/2 BPSK	2644.98	H	101	223	9.90	1 / 243	13.61	23.51	0.224	33.01	-9.50
	QPSK	2644.98	H	101	223	9.90	1 / 243	13.33	23.23	0.210	33.01	-9.78
	16-QAM	2644.98	H	101	223	9.90	1 / 243	11.75	21.65	0.146	33.01	-11.36
	64-QAM	2644.98	H	101	223	9.90	1 / 243	10.55	20.45	0.111	33.01	-12.56
	256-QAM	2644.98	H	101	223	9.90	1 / 243	8.45	18.35	0.068	33.01	-14.66
80 MHz	π/2 BPSK	2649.99	H	101	223	9.93	1 / 215	13.49	23.42	0.220	33.01	-9.59
	QPSK	2649.99	H	101	223	9.93	1 / 215	13.22	23.15	0.207	33.01	-9.86
	16-QAM	2649.99	H	101	223	9.93	1 / 215	12.40	22.33	0.171	33.01	-10.68
	64-QAM	2649.99	H	101	223	9.93	1 / 215	10.51	20.44	0.111	33.01	-12.57
	256-QAM	2649.99	H	101	223	9.93	1 / 215	8.55	18.48	0.070	33.01	-14.53
60 MHz	π/2 BPSK	2659.98	H	101	223	9.91	1 / 160	13.41	23.32	0.215	33.01	-9.69
	QPSK	2659.98	H	101	223	9.91	1 / 160	13.33	23.24	0.211	33.01	-9.77
	16-QAM	2659.98	H	101	223	9.91	1 / 160	12.15	22.06	0.161	33.01	-10.95
	64-QAM	2659.98	H	101	223	9.91	1 / 160	10.38	20.29	0.107	33.01	-12.72
	256-QAM	2659.98	H	101	223	9.91	1 / 160	8.69	18.60	0.072	33.01	-14.41
50 MHz	π/2 BPSK	2664.99	H	101	223	9.90	1 / 131	13.52	23.42	0.220	33.01	-9.59
	QPSK	2664.99	H	101	223	9.90	1 / 131	13.45	23.35	0.216	33.01	-9.66
	16-QAM	2664.99	H	101	223	9.90	1 / 131	12.36	22.26	0.168	33.01	-10.75
	64-QAM	2664.99	H	101	223	9.90	1 / 131	10.53	20.43	0.110	33.01	-12.58
	256-QAM	2664.99	H	101	223	9.90	1 / 131	8.53	18.43	0.070	33.01	-14.58
40 MHz	π/2 BPSK	2670.00	H	101	223	9.89	1 / 104	13.79	23.68	0.233	33.01	-9.33
	QPSK	2670.00	H	101	223	9.89	1 / 104	13.51	23.40	0.219	33.01	-9.61
	16-QAM	2670.00	H	101	223	9.89	1 / 104	12.68	22.57	0.181	33.01	-10.44
	64-QAM	2670.00	H	101	223	9.89	1 / 104	10.70	20.59	0.115	33.01	-12.42
	256-QAM	2670.00	H	101	223	9.89	1 / 104	8.78	18.67	0.074	33.01	-14.34
30 MHz	π/2 BPSK	2674.98	H	101	223	9.88	1 / 76	13.95	23.83	0.242	33.01	-9.18
	QPSK	2674.98	H	101	223	9.88	1 / 76	13.82	23.70	0.234	33.01	-9.31
	16-QAM	2674.98	H	101	223	9.88	1 / 76	12.90	22.78	0.190	33.01	-10.23
	64-QAM	2674.98	H	101	223	9.88	1 / 76	11.09	20.97	0.125	33.01	-12.04
	256-QAM	2674.98	H	101	223	9.88	1 / 76	9.10	18.98	0.079	33.01	-14.03
20 MHz	π/2 BPSK	2679.99	H	101	223	9.86	1 / 50	13.55	23.41	0.219	33.01	-9.60
	QPSK	2679.99	H	101	223	9.86	1 / 50	13.40	23.26	0.212	33.01	-9.75
	16-QAM	2679.99	H	101	223	9.86	1 / 50	12.39	22.25	0.168	33.01	-10.76
	64-QAM	2679.99	H	101	223	9.86	1 / 50	10.38	20.24	0.106	33.01	-12.77
	256-QAM	2679.99	H	101	223	9.86	1 / 50	8.68	18.54	0.071	33.01	-14.47
100 MHz	QPSK (CP-OFDM)	2640.0	H	101	223	9.87	1 / 271	11.10	20.97	0.125	33.01	-12.04
	QPSK (Opposite Pol.)	2640.0	V	303	86	9.68	1 / 271	11.32	21.00	0.126	33.01	-12.01
	QPSK (WCP)	2640.0	H	158	225	9.87	1 / 271	12.44	22.31	0.170	33.01	-10.70

Table 7-3. EIRP Data (NR Band n41 – Ant B)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
100 MHz	π/2 BPSK	3750.00	H	100	217	5.94	1 / 271	12.76	18.70	0.074	30.00	-11.30
		3840.00	H	109	217	5.81	1 / 1	13.79	19.60	0.091	30.00	-10.40
		3930.00	H	100	212	6.21	1 / 1	14.24	20.45	0.111	30.00	-9.55
	QPSK	3750.00	H	100	217	5.94	1 / 271	12.83	18.77	0.075	30.00	-11.23
		3840.00	H	109	217	5.81	1 / 1	13.84	19.65	0.092	30.00	-10.35
		3930.00	H	100	212	6.21	1 / 1	14.22	20.43	0.110	30.00	-9.57
	16-QAM	3930.00	H	100	212	6.21	1 / 1	13.13	19.34	0.086	30.00	-10.66
64-QAM	3930.00	H	100	212	6.21	1 / 1	11.46	17.67	0.059	30.00	-12.33	
256-QAM	3930.00	H	100	212	6.21	1 / 1	9.76	15.97	0.040	30.00	-14.03	
90 MHz	π/2 BPSK	3934.98	H	100	212	6.26	1/61	14.21	20.47	0.111	30.00	-9.53
	QPSK	3934.98	H	100	212	6.21	1/61	14.28	20.49	0.112	30.00	-9.51
	16-QAM	3934.98	H	100	212	6.21	1/61	13.41	19.62	0.092	30.00	-10.38
	64-QAM	3934.98	H	100	212	6.21	1/61	11.50	17.71	0.059	30.00	-12.29
	256-QAM	3934.98	H	100	212	6.21	1/61	10.10	16.31	0.043	30.00	-13.69
80 MHz	π/2 BPSK	3939.99	H	100	212	6.31	1/162	14.29	20.60	0.115	30.00	-9.40
	QPSK	3939.99	H	100	212	6.31	1/162	14.30	20.61	0.115	30.00	-9.39
	16-QAM	3939.99	H	100	212	6.31	1/162	13.36	19.67	0.093	30.00	-10.33
	64-QAM	3939.99	H	100	212	6.31	1/162	11.72	18.03	0.064	30.00	-11.97
	256-QAM	3939.99	H	100	212	6.31	1/162	10.10	16.41	0.044	30.00	-13.59
70 MHz	π/2 BPSK	3945.00	H	100	212	6.36	1/94	13.48	19.84	0.096	30.00	-10.16
	QPSK	3945.00	H	100	212	6.36	1/94	12.41	18.77	0.075	30.00	-11.23
	16-QAM	3945.00	H	100	212	6.36	1/94	12.06	18.42	0.070	30.00	-11.58
	64-QAM	3945.00	H	100	212	6.36	1/94	9.24	15.60	0.036	30.00	-14.40
	256-QAM	3945.00	H	100	212	6.36	1/94	6.91	13.27	0.021	30.00	-16.73
60 MHz	π/2 BPSK	3949.98	H	100	212	6.41	1/81	14.10	20.51	0.113	30.00	-9.49
	QPSK	3949.98	H	100	212	6.41	1/81	14.20	20.61	0.115	30.00	-9.39
	16-QAM	3949.98	H	100	212	6.41	1/81	13.15	19.56	0.090	30.00	-10.44
	64-QAM	3949.98	H	100	212	6.41	1/81	11.28	17.69	0.059	30.00	-12.31
	256-QAM	3840.00	H	109	217	5.81	1/81	10.57	16.38	0.043	30.00	-13.62
50 MHz	π/2 BPSK	3954.99	H	100	212	6.48	1/99	14.11	20.59	0.115	30.00	-9.41
	QPSK	3954.99	H	100	212	6.48	1/99	14.15	20.63	0.116	30.00	-9.37
	16-QAM	3954.99	H	100	212	6.48	1/99	13.16	19.64	0.092	30.00	-10.36
	64-QAM	3954.99	H	100	212	6.48	1/99	11.67	18.15	0.065	30.00	-11.85
	256-QAM	3954.99	H	100	212	6.48	1/99	9.93	16.41	0.044	30.00	-13.59
40 MHz	π/2 BPSK	3960.00	H	100	212	6.56	1/79	14.03	20.59	0.115	30.00	-9.41
	QPSK	3960.00	H	100	212	6.56	1/79	14.09	20.65	0.116	30.00	-9.35
	16-QAM	3960.00	H	100	212	6.56	1/79	13.25	19.81	0.096	30.00	-10.19
	64-QAM	3960.00	H	100	212	6.56	1/79	11.28	17.84	0.061	30.00	-12.16
	256-QAM	3960.00	H	100	212	6.56	1/79	10.08	16.64	0.046	30.00	-13.36
30 MHz	π/2 BPSK	3964.98	H	100	212	6.63	1/58	13.88	20.51	0.113	30.00	-9.49
	QPSK	3964.98	H	100	212	6.63	1/58	13.90	20.53	0.113	30.00	-9.47
	16-QAM	3964.98	H	100	212	6.63	1/58	13.20	19.83	0.096	30.00	-10.17
	64-QAM	3964.98	H	100	212	6.63	1/58	11.48	18.11	0.065	30.00	-11.89
	256-QAM	3964.98	H	100	212	6.63	1/58	9.95	16.58	0.046	30.00	-13.42
20 MHz	π/2 BPSK	3969.99	H	100	212	6.70	1/25	13.84	20.54	0.113	30.00	-9.46
	QPSK	3969.99	H	100	212	6.70	1/25	13.62	20.32	0.108	30.00	-9.68
	16-QAM	3969.99	H	100	212	6.70	1/25	13.08	19.78	0.095	30.00	-10.22
	64-QAM	3969.99	H	100	212	6.70	1/25	10.68	17.38	0.055	30.00	-12.62
	256-QAM	3969.99	H	100	212	6.70	1/25	9.31	16.01	0.040	30.00	-13.99
100 MHz	QPSK (CP-OFDM)	3930.00	H	100	212	6.21	1 / 1	12.79	19.00	0.079	30.00	-11.00
	QPSK (Opposite Pol.)	3930.00	V	394	270	6.65	1 / 1	12.87	19.52	0.090	30.00	-10.48
	QPSK (WCP)	3930.00	H	248	143	6.21	1 / 1	11.09	17.30	0.054	30.00	-12.70

Table 7-353. EIRP Data (NR Band n77)

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7.9 Radiated Spurious Emissions Measurements

Test Overview



Radiated spurious emissions measurements are performed using the field strength conversion method described in KDB 971168 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically 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 maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

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

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Test Setup

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

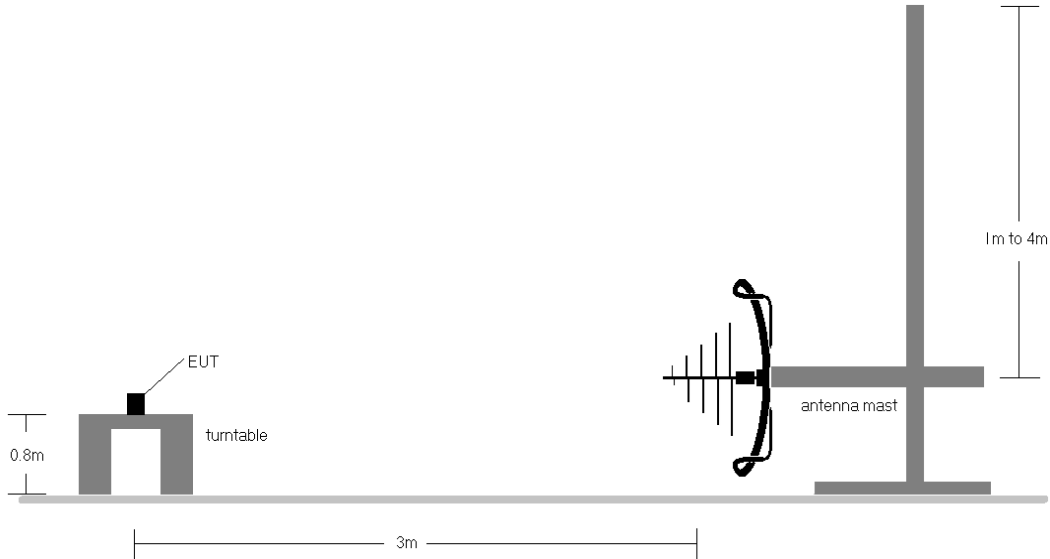


Figure 7-8. Test Instrument & Measurement Setup < 1GHz

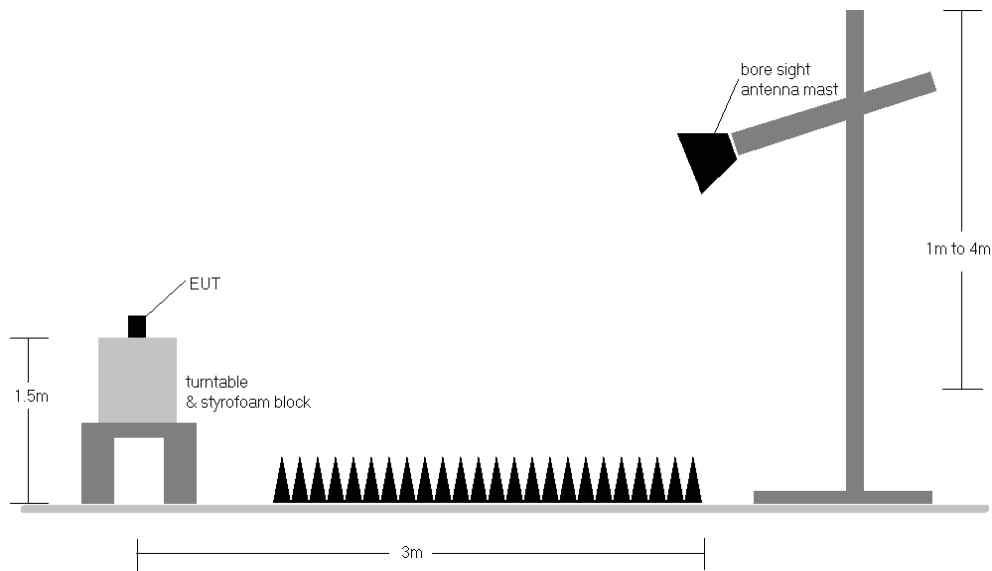




Figure 7-9. Test Instrument & Measurement Setup >1 GHz

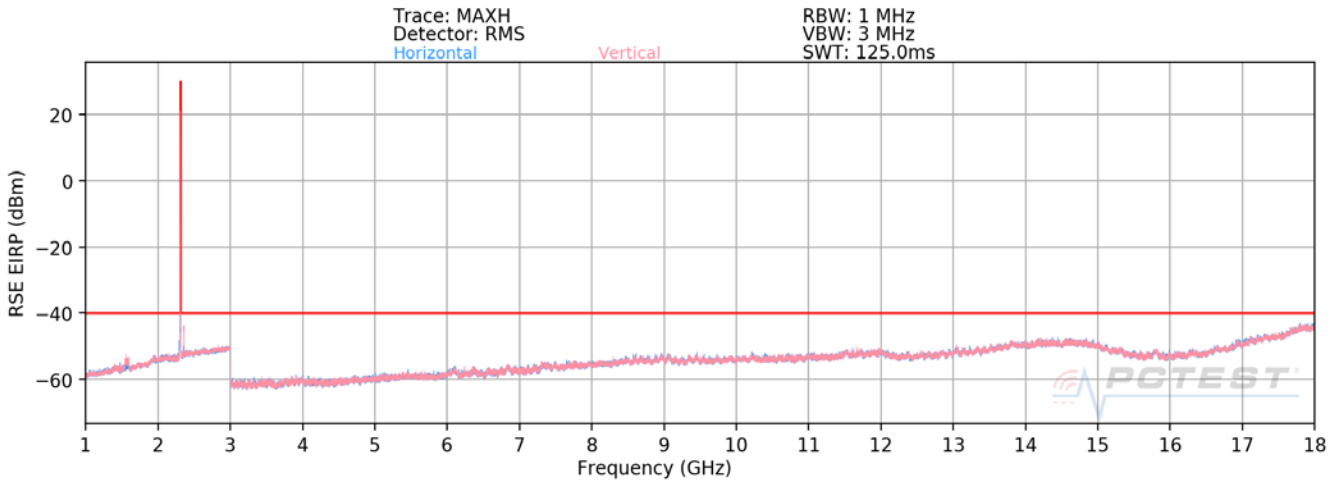
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Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
 - b) $E(\text{dB}\mu\text{V}/\text{m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
 - d) $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V}/\text{m}) + 20\log D - 104.8$; where D is the measurement distance in meters.
- 2) 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.
- 3) This unit was tested with its standard battery.
- 4) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 5) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 6) 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.
- 7) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 8) ULCA 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.
- 9) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.
- 10) Spurious emissions shown in this section are measured while operating in EN-DC mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor). Spurious emissions from the NR carrier device, is subject to the rules under which the NR carrier operates. Spurious emission caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

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LTE Band 30



Plot 7-354. Radiated Spurious Plot (LTE Band 30)

Bandwidth (MHz):	10
Frequency (MHz):	2310.0
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
4620.0	V	113	348	-78.41	3.35	31.94	-63.32	-40.00	-23.32
6930.0	V	-	-	-79.86	7.44	34.58	-60.68	-40.00	-20.68
9240.0	V	-	-	-80.73	10.95	37.22	-58.04	-40.00	-18.04

Table 7-4. Radiated Spurious Data (LTE Band 30 – Mid Channel)

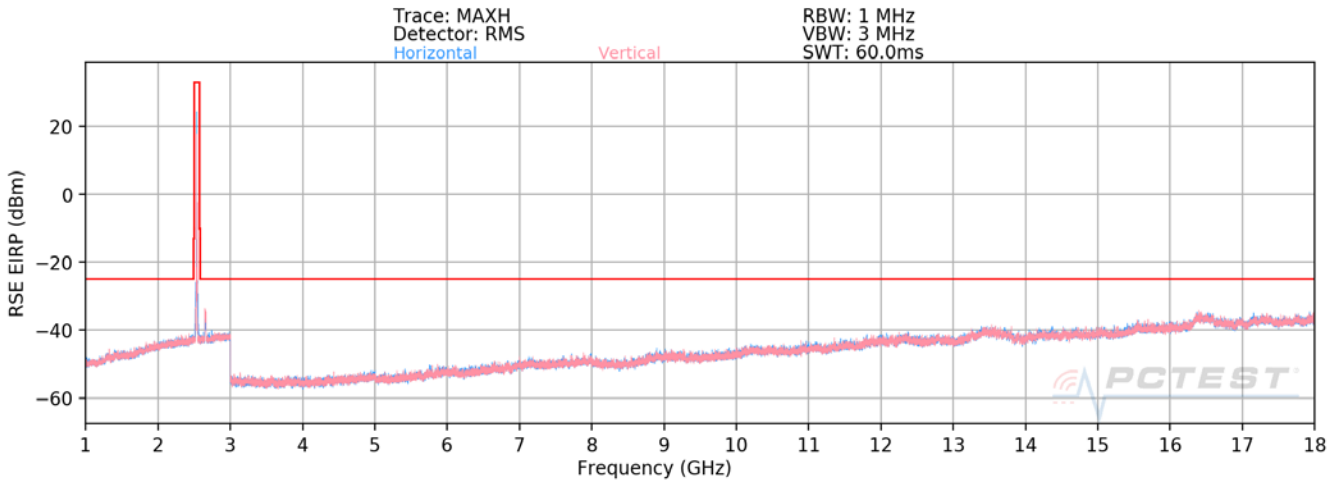
Case:	WCP
Bandwidth (MHz):	10
Frequency (MHz):	2310.0
RB / Offset:	1/25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
4620.0	V	-	-	-79.37	3.35	30.98	-64.28	-40.00	-24.28
6930.0	V	-	-	-79.79	7.44	34.65	-60.61	-40.00	-20.61

Table 7-5. Radiated Spurious Data (LTE Band 30 – WCP)

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LTE Band 7



Plot 7-355. Radiated Spurious Plot (LTE Band 7)

Bandwidth (MHz):	20
Frequency (MHz):	2510.0
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5020.0	V	-	-	-79.22	4.21	31.99	-63.26	-25.00	-38.26
7530.0	V	111	358	-73.41	8.91	42.50	-52.75	-25.00	-27.75
10040.0	V	-	-	-80.75	11.67	37.92	-57.34	-25.00	-32.34
12550.0	V	-	-	-81.89	13.64	38.75	-56.51	-25.00	-31.51

Table 7-6. Radiated Spurious Data (LTE Band 7 – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	2535.0
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5070.0	V	-	-	-79.37	4.32	31.95	-63.31	-25.00	-38.31
7605.0	V	121	357	-72.88	8.84	42.96	-52.29	-25.00	-27.29
10140.0	V	-	-	-81.34	11.60	37.26	-58.00	-25.00	-33.00
12675.0	V	-	-	-82.11	13.54	38.43	-56.82	-25.00	-31.82

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

FCC ID: A3LSMG996U		PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 217 of 242	

Bandwidth (MHz):	20
Frequency (MHz):	2560.0
RB / Offset:	1 / 50



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5120.00	V	-	-	-79.50	4.35	31.85	-63.41	-25.00	-38.41
7680.00	V	120	360	-70.72	9.29	45.57	-49.69	-25.00	-24.69
10240.00	V	-	-	-81.58	12.38	37.80	-57.45	-25.00	-32.45
12800.00	V	-	-	-82.37	14.13	38.76	-56.50	-25.00	-31.50

Table 7-8. Radiated Spurious Data (LTE Band 7 – High Channel)

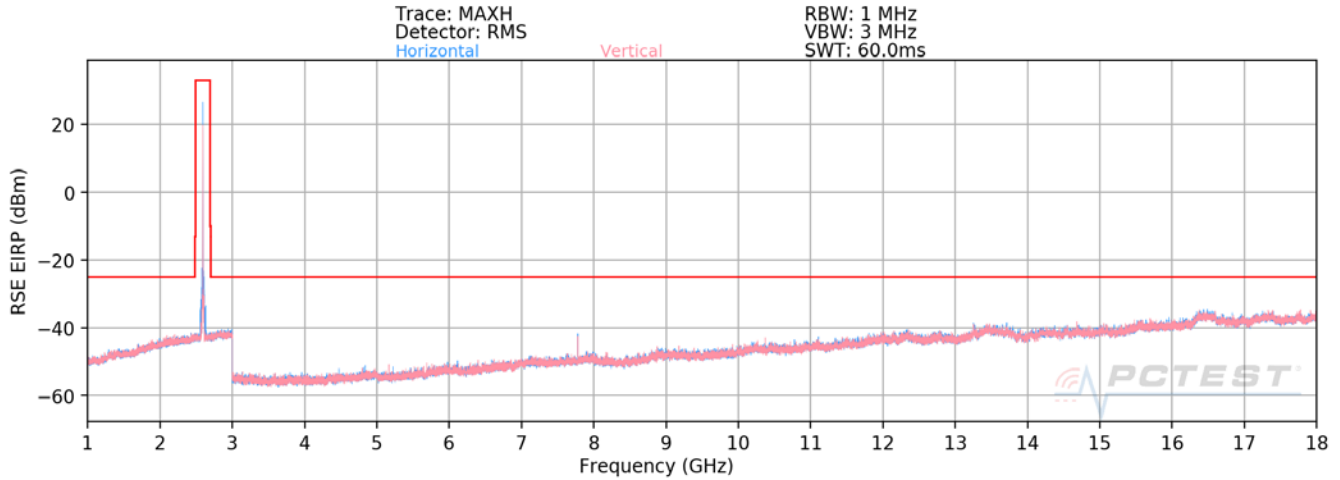
Case:	WCP
Bandwidth (MHz):	20
Frequency (MHz):	2560.0
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5120.0	V	-	-	-79.31	4.35	32.04	-63.22	-25.00	-38.22
7680.0	V	390	62	-74.78	9.29	41.51	-53.75	-25.00	-28.75
10240.0	V	-	-	-81.81	12.38	37.57	-57.68	-25.00	-32.68
12800.0	V	-	-	-82.42	14.13	38.71	-56.55	-25.00	-31.55

Table 7-9. Radiated Spurious Data (LTE Band 7 – WCP)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 218 of 242

LTE Band 41(PC2)



Plot 7-356. Radiated Spurious Plot (LTE Band 41(PC2))

Bandwidth (MHz):	20
Frequency (MHz):	2506.0
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5012.0	V	115	45	-72.34	9.93	44.59	-50.67	-25.00	-25.67
7518.0	V	100	95	-66.26	15.92	56.66	-38.59	-25.00	-13.59
10024.0	V	101	338	-71.98	19.61	54.63	-40.63	-25.00	-15.63
12530.0	V	102	212	-73.62	22.89	56.27	-38.99	-25.00	-13.99
15036.0	V	101	159	-76.49	26.70	57.21	-38.05	-25.00	-13.05
17542.0	V	-	-	-76.53	29.59	60.06	-35.19	-25.00	-10.19

Table 7-10. Radiated Spurious Data (LTE Band 41(PC2) – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	2593.0
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5186.0	V	382	237	-73.05	10.11	44.06	-51.20	-25.00	-26.20
7779.0	V	102	299	-59.34	16.12	63.78	-31.48	-25.00	-6.48
10372.0	V	101	322	-72.61	19.62	54.01	-41.25	-25.00	-16.25
12965.0	V	100	272	-74.89	23.90	56.01	-39.25	-25.00	-14.25
15558.0	V	101	192	-76.34	28.07	58.73	-36.52	-25.00	-11.52



Table 7-11. Radiated Spurious Data (LTE Band 41(PC2) – Mid Channel)

FCC ID: A3LSMG996U	PCTEST <small>Proud to be part of element</small>	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 219 of 242	

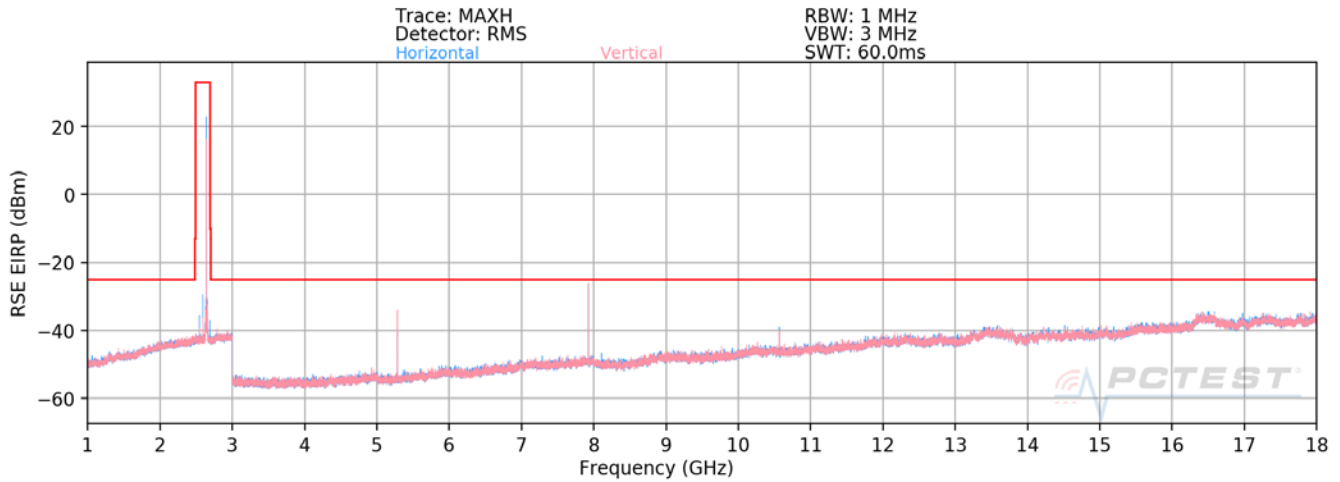
Bandwidth (MHz):	20
Frequency (MHz):	2680.0
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5360.0	V	122	132	-72.58	10.73	45.15	-50.11	-25.00	-25.11
8040.0	V	100	9	-66.84	16.40	56.56	-38.70	-25.00	-13.70
10720.0	V	104	173	-70.39	20.15	56.76	-38.50	-25.00	-13.50
13400.0	V	100	48	-74.24	25.38	58.14	-37.12	-25.00	-12.12
16080.0	V	100	91	-76.78	28.44	58.66	-36.60	-25.00	-11.60

Table 7-12. Radiated Spurious Data (LTE Band 41(PC2) – High Channel)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT 	Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset
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NR Band n41



Plot 7-357. Radiated Spurious Plot (NR Band n41)

Bandwidth (MHz):	100
Frequency (MHz):	2546.01
RB / Offset:	1 / 137

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5092.0	H	255	5	-63.40	10.17	53.77	-51.03	-25.00	-26.03
7638.0	H	224	45	-56.43	15.97	66.54	-38.26	-25.00	-13.26
10184.0	H	330	356	-73.29	19.55	53.26	-51.54	-25.00	-26.54
12730.1	H	-	-	-75.42	23.36	54.94	-49.86	-25.00	-24.86

Table 7-13. Radiated Spurious Data (NR Band n41 – Low Channel)

Bandwidth (MHz):	100
Frequency (MHz):	2592.99
RB / Offset:	1 / 271

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5186.0	H	216	33	-60.54	10.12	56.58	-48.22	-25.00	-23.22
7779.0	H	222	40	-53.81	15.55	68.74	-36.06	-25.00	-11.06
10372.0	H	103	353	-66.81	19.53	59.72	-45.08	-25.00	-20.08
12965.0	H	-	-	-76.76	23.93	54.17	-50.63	-25.00	-25.63
15557.9	H	-	-	-75.08	28.18	60.10	-44.70	-25.00	-19.70



Table 7-14. Radiated Spurious Data (NR Band n41 – Mid Channel)

FCC ID: A3LSMG996U		PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 221 of 242	

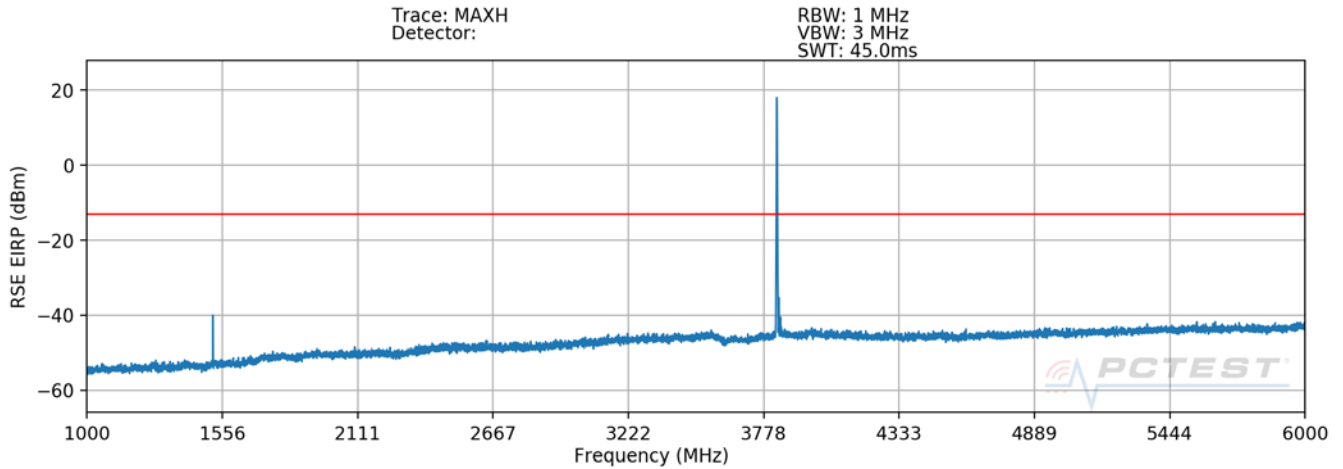
Bandwidth (MHz):	100
Frequency (MHz):	2640.00
RB / Offset:	1 / 137

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.0	H	214	31	-59.22	10.56	58.34	-46.46	-25.00	-21.46
7920.0	H	214	37	-51.76	16.16	71.40	-33.40	-25.00	-8.40
10560.0	H	100	349	-68.17	19.63	58.46	-46.34	-25.00	-21.34
13200.0	H	-	-	-75.91	23.55	54.64	-50.16	-25.00	-25.16
15840.0	H	168	14	-74.81	28.62	60.81	-43.99	-25.00	-18.99

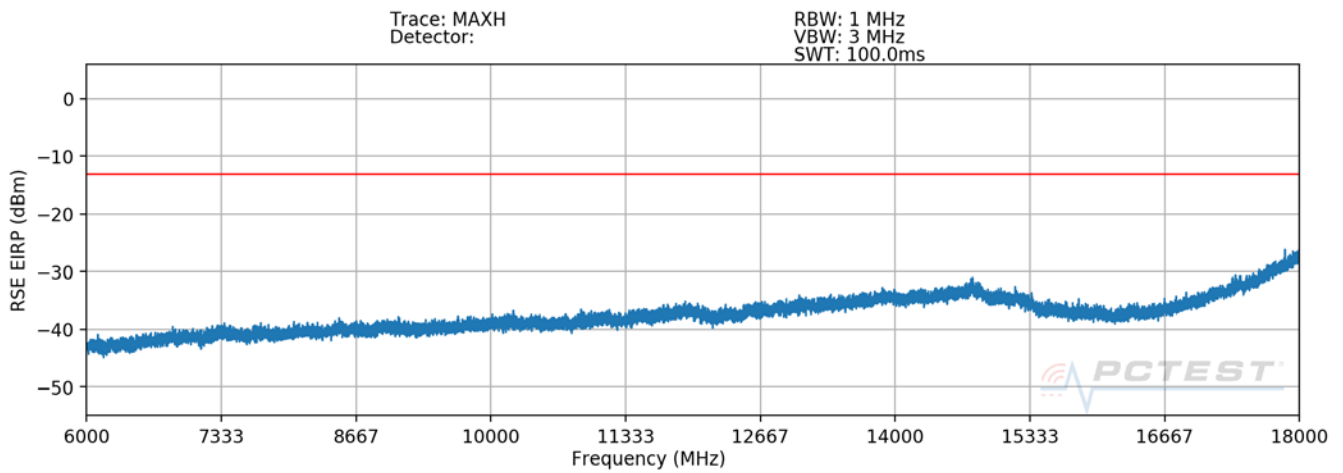
Table 7-15. Radiated Spurious Data (NR Band n41 – High Channel)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT 	Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset
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NR Band n77



Plot 7-358. Radiated Spurious Plot (NR Band n77)



Plot 7-359. Radiated Spurious Plot (NR Band n77)

Bandwidth (MHz):	100
Frequency (MHz):	3750.0
Modulation Signal:	QPSK

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7500.0	H	-	-	-75.54	18.27	49.73	-45.53	-13.00	-32.53
11250.0	H	-	-	-76.14	21.36	52.22	-43.04	-13.00	-30.04
15000.0	H	-	-	-76.02	26.55	57.53	-37.73	-13.00	-24.73

Table 7-16. Radiated Spurious Data (NR Band n77 – Low Channel)

FCC ID: A3LSMG996U	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 223 of 242

Bandwidth (MHz):	100
Frequency (MHz):	3840.0
Modulation Signal:	QPSK



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7336.6	H	-	-	-75.32	18.81	50.49	-44.77	-13.00	-31.77
11495.0	H	-	-	-75.89	22.48	53.59	-41.66	-13.00	-28.66
15327.0	H	-	-	-75.83	25.15	56.32	-38.94	-13.00	-25.94

Table 7-17. Radiated Spurious Data (NR Band n77 – Mid Channel)

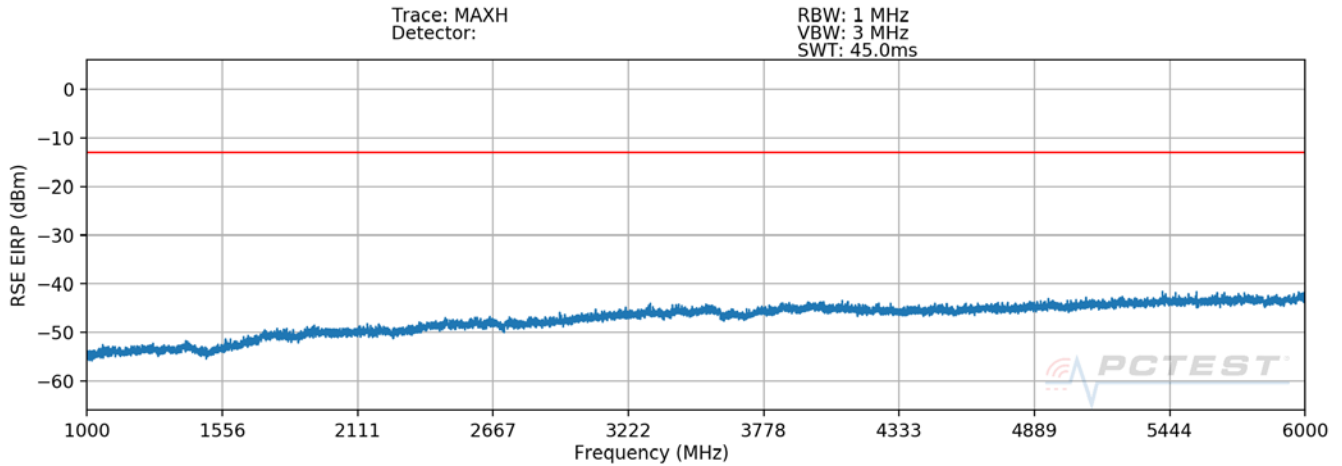
Bandwidth (MHz):	100
Frequency (MHz):	3930.0
Modulation Signal:	QPSK

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7860.00	H	-	-	-75.12	18.49	50.37	-44.89	-13.00	-31.89
11790.00	H	-	-	-76.05	23.25	54.20	-41.06	-13.00	-28.06
15720.00	H	-	-	-75.75	23.86	55.11	-40.15	-13.00	-27.15

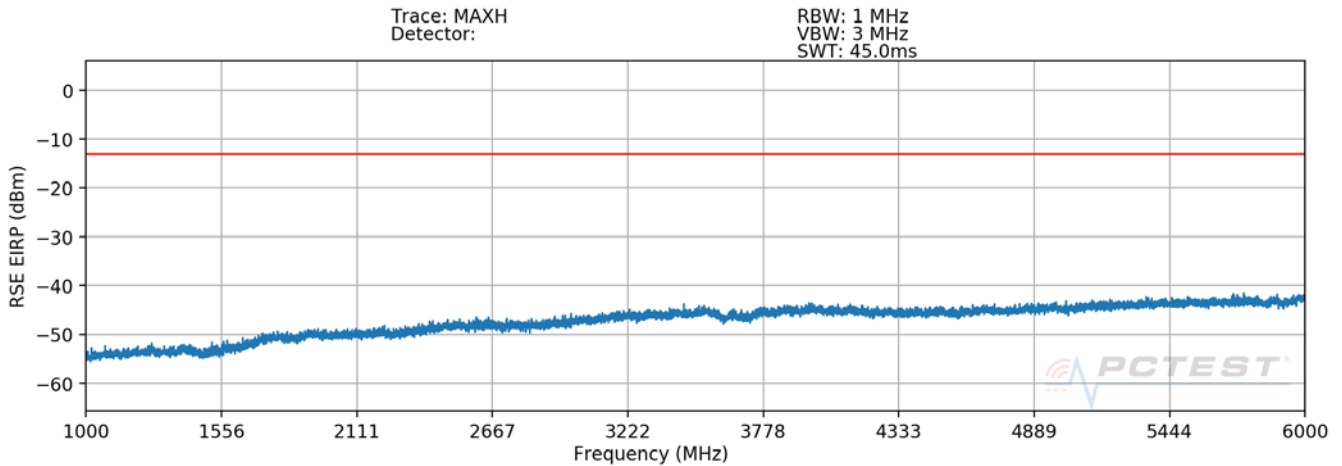
Table 7-18. Radiated Spurious Data (NR Band n77 – High Channel)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 224 of 242

EN-DC – n41 + LTE Band 12



Plot 7-360. Radiated Spurious Plot (n41 + Anchor B12 – EN-DC) – HX





Plot 7-361. Radiated Spurious Plot (n41 + Anchor B12 – EN-DC) – VX

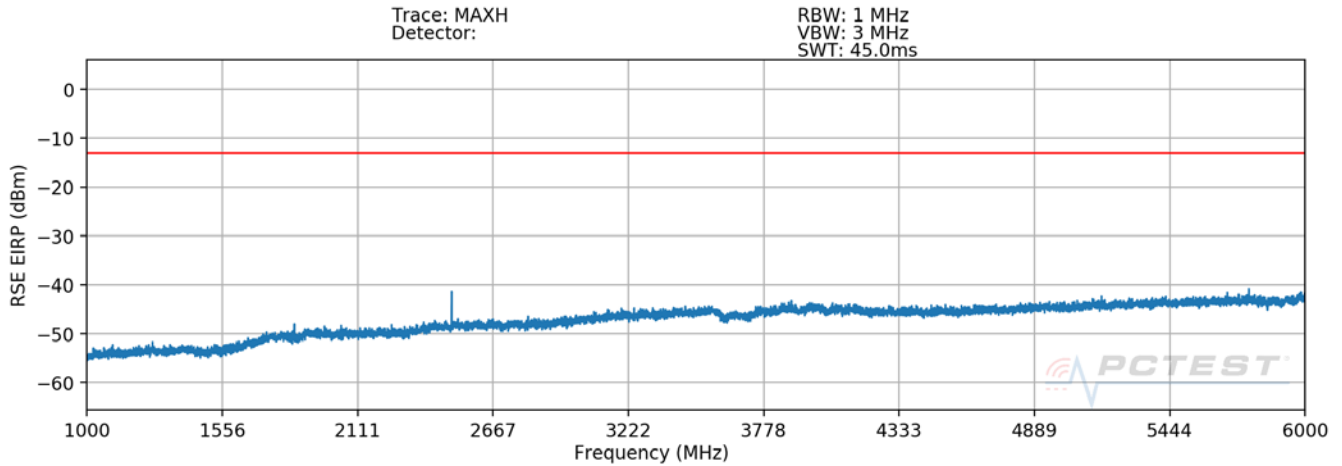
Mode:	EN-DC
Anchor Band:	12

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5186.0	H	-	-	-79.02	4.70	32.68	-62.58	-25.00	-37.58
7779.0	H	-	-	-81.03	8.96	34.93	-60.33	-25.00	-35.33
10372.0	H	-	-	-81.02	12.05	38.03	-57.22	-25.00	-32.22

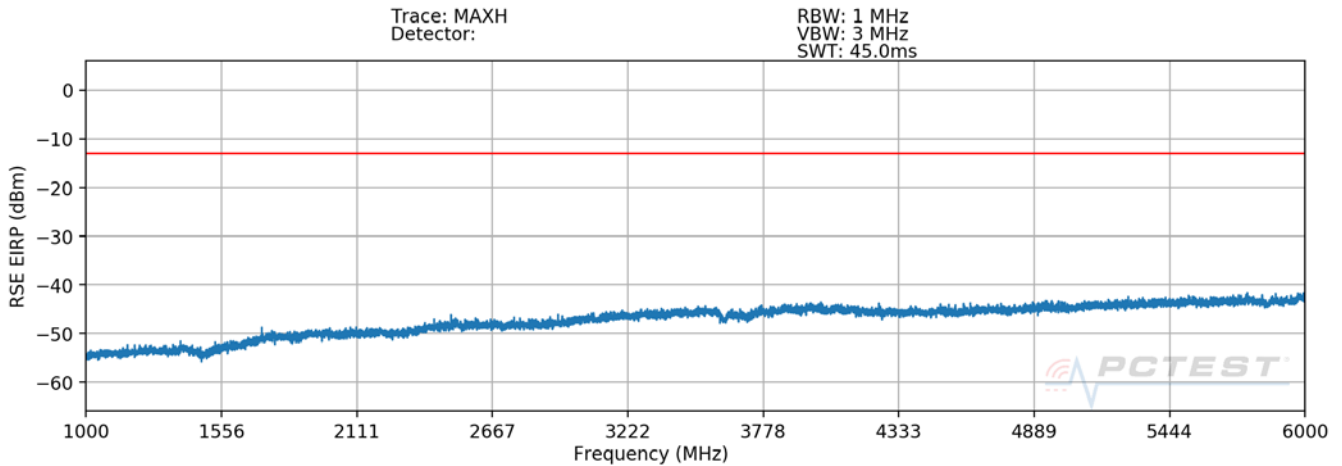
Table 7-19. Radiated Spurious Data (n41 + Anchor B12 – EN-DC)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 225 of 242

EN-DC – n41 + LTE Band 2



Plot 7-362. Radiated Spurious Plot (n41 + Anchor B2 – EN-DC) – HX





Plot 7-363. Radiated Spurious Plot (n41 + Anchor B2 – EN-DC) – VX

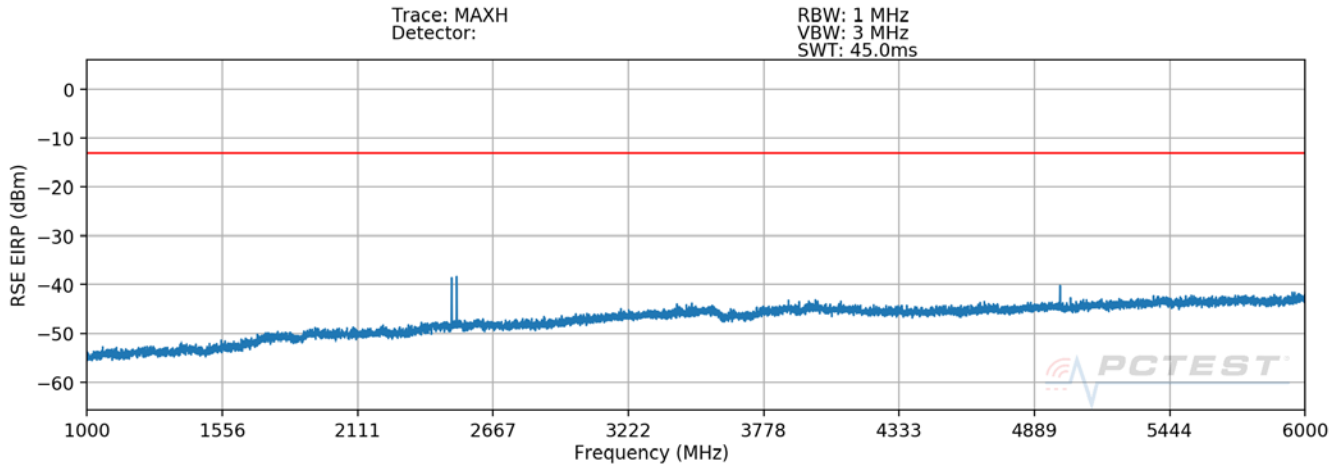
Mode:	EN-DC
Anchor Band:	2

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3703.0	V	-	-	-78.84	2.54	30.70	-64.56	-25.00	-39.56
5554.5	V	357	188	-79.19	4.76	32.57	-62.69	-25.00	-37.69
7406.0	V	-	-	-80.93	8.58	34.65	-60.61	-25.00	-35.61
5186.0	V	-	-	-79.79	4.70	31.91	-63.35	-25.00	-38.35
7779.0	V	-	-	-80.84	8.96	35.12	-60.14	-25.00	-35.14
10372.0	V	-	-	-82.01	12.05	37.04	-58.21	-25.00	-33.21

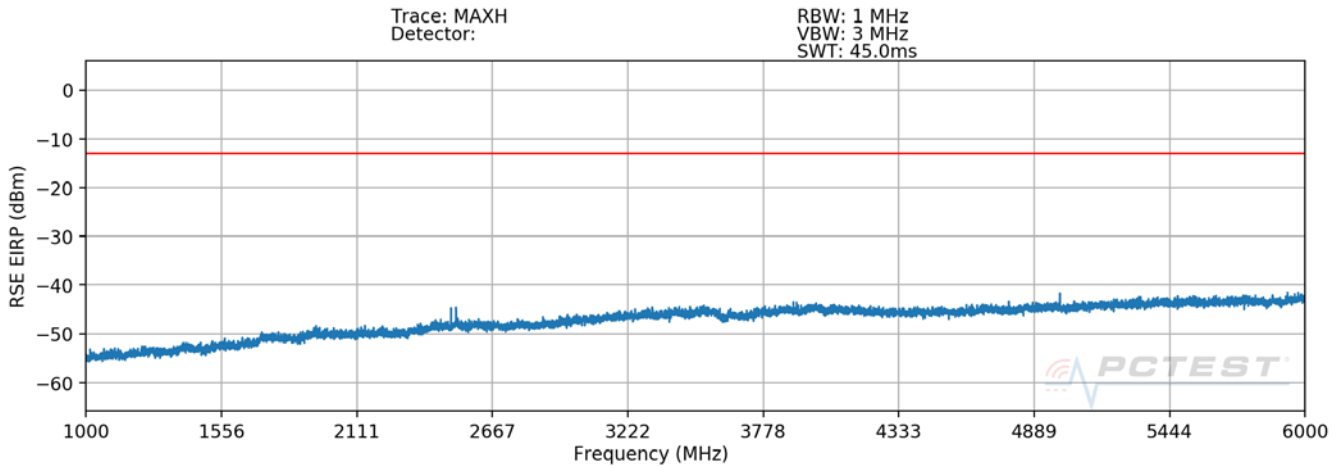
Table 7-20. Radiated Spurious Data (n41 + Anchor B2 – EN-DC)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 226 of 242

EN-DC – n41 + LTE Band 41



Plot 7-364. Radiated Spurious Plot (n41 + Anchor B41 – EN-DC) – HX





Plot 7-365. Radiated Spurious Plot (n41 + Anchor B41 – EN-DC) – VX

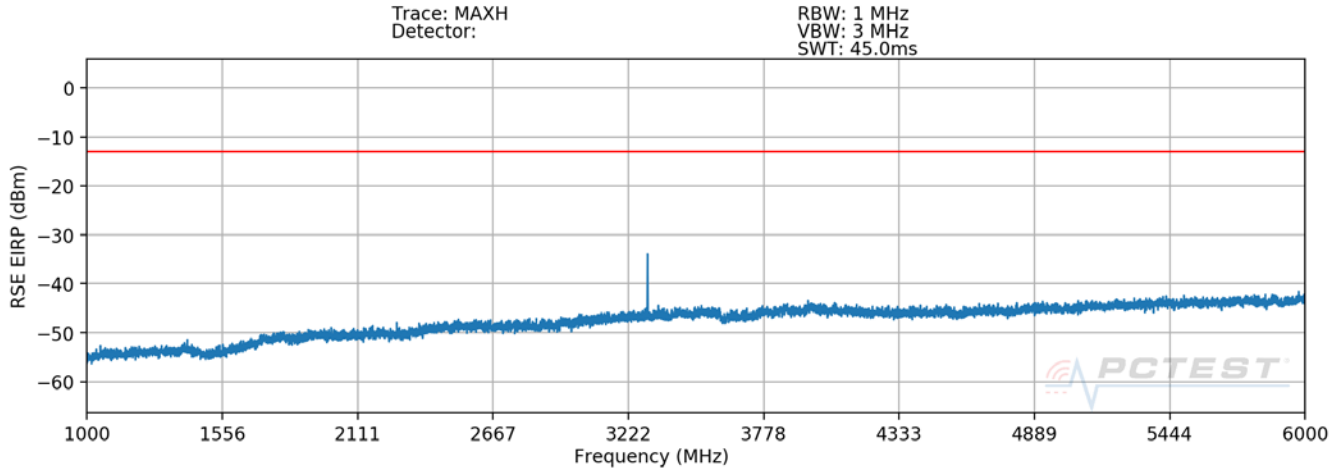
Mode:	EN-DC
Anchor Band:	41

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5360.0	H	-	-	-70.46	4.71	41.25	-54.01	-25.00	-29.01
7779.0	H	-	-	-70.55	8.96	45.41	-49.85	-25.00	-24.85
10372.0	H	-	-	-70.80	12.05	48.25	-47.00	-25.00	-22.00

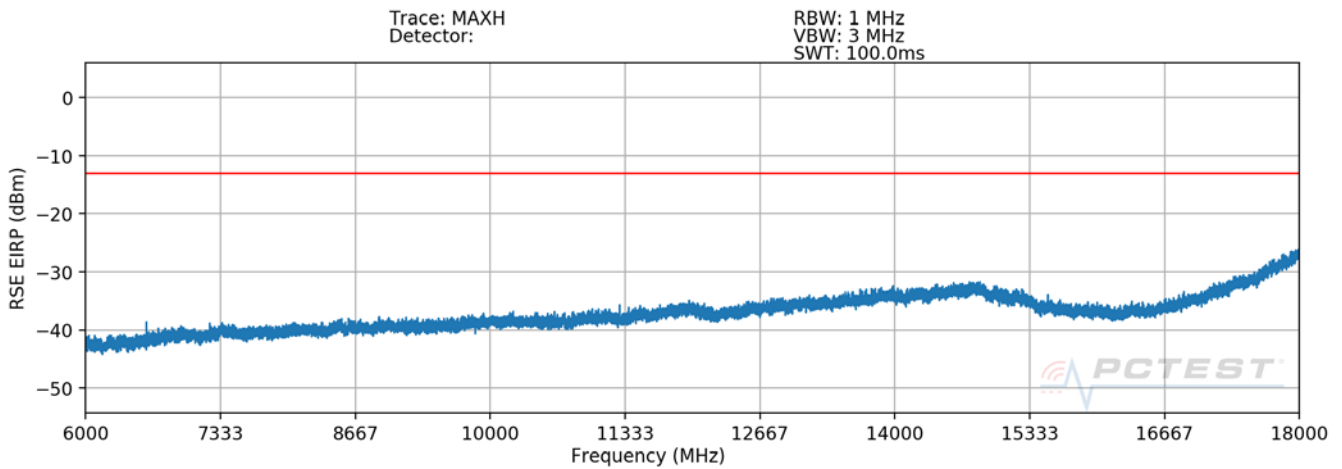
Table 7-21. Radiated Spurious Data (n41 + Anchor B41 – EN-DC)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 227 of 242

EN-DC – n77 + LTE Band 14



Plot 7-366. Radiated Spurious Plot (n77 + Anchor B14 – EN-DC) – HX





Plot 7-367. Radiated Spurious Plot (n77 + Anchor B14 – EN-DC) – VX

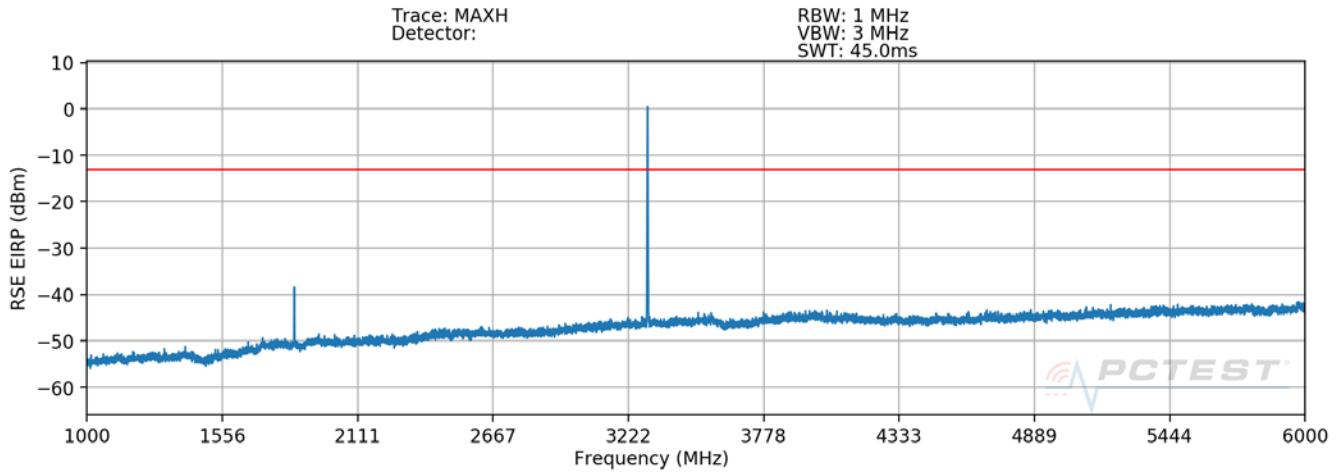
Mode:	EN-DC
Anchor Band:	14

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
6602.0	H	237	98	-71.78	8.47	43.69	-51.57	-13.00	-38.57
9903.0	H	-	-	-79.23	11.45	39.22	-56.03	-13.00	-43.03
13204.0	H	-	-	-79.49	14.71	42.22	-53.04	-13.00	-40.04

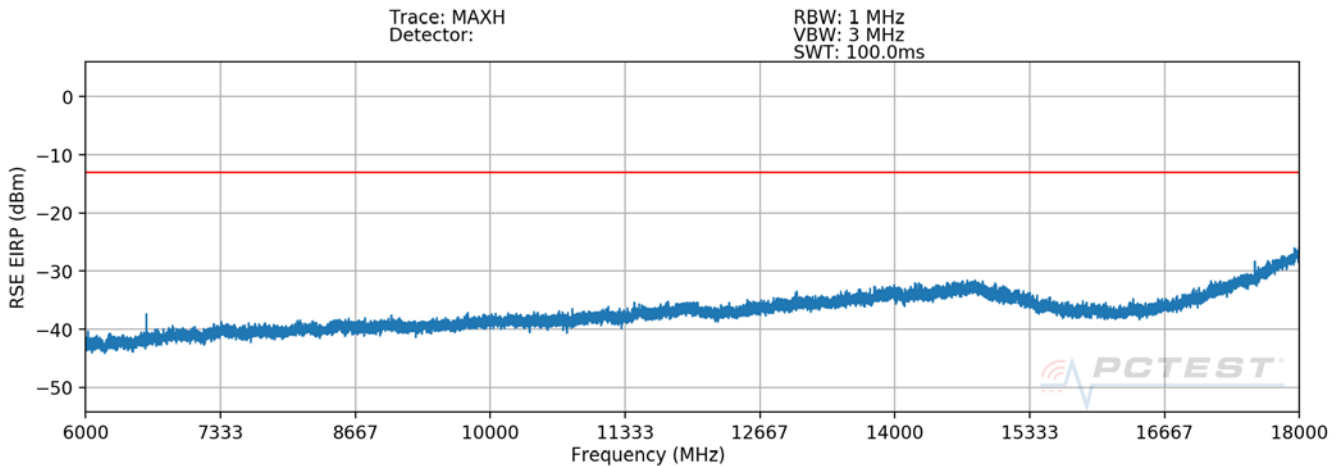
Table 7-22. Radiated Spurious Data (n77 + Anchor B14 – EN-DC)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 228 of 242

EN-DC – n77 + LTE Band 2



Plot 7-368. Radiated Spurious Plot (n77 + Anchor B2 – EN-DC) – HX





Plot 7-369. Radiated Spurious Plot (n77 + Anchor B2 – EN-DC) – VX

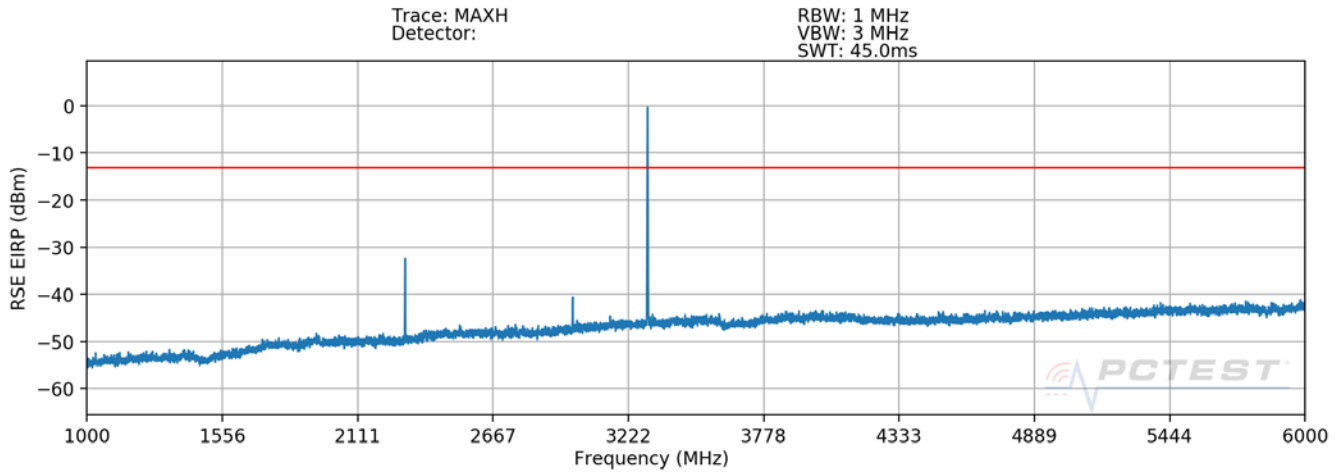
Mode:	EN-DC
Anchor Band:	2

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
6602.0	H	-	-	-77.23	8.47	38.24	-57.02	-13.00	-44.02
9903.0	H	-	-	-79.33	11.45	39.12	-56.13	-13.00	-43.13
13204.0	H	-	-	-78.45	14.71	43.26	-52.00	-13.00	-39.00

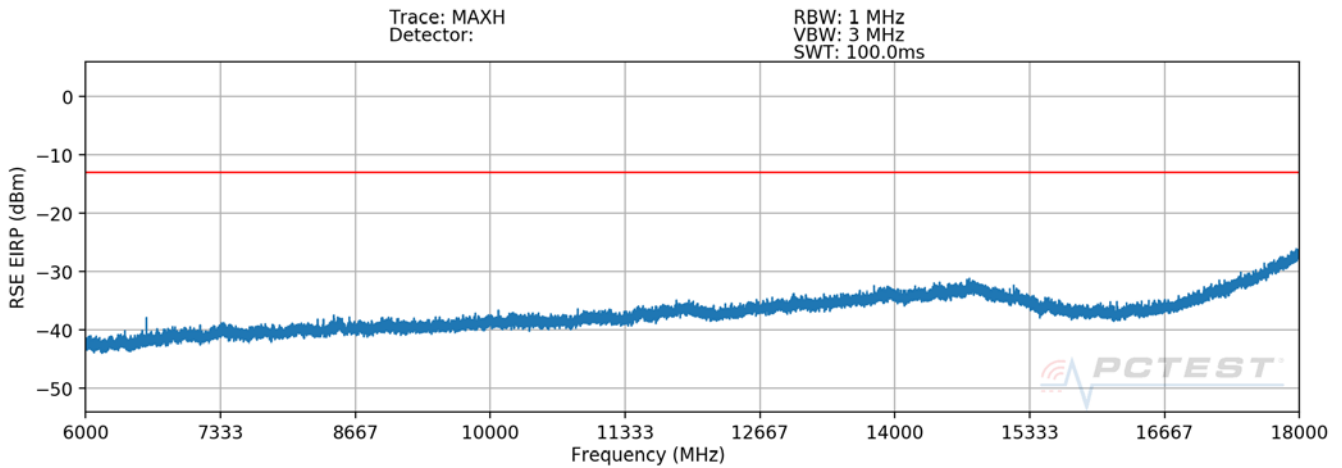
Table 7-23. Radiated Spurious Data (n77 + Anchor B2 – EN-DC)

FCC ID: A3LSMG996U	 PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
Test Report S/N: 1M2009140143-21-R1.A3L	Test Dates: 09/15/2020 – 12/10/2020	EUT Type: Portable Handset	Page 229 of 242

EN-DC – n77 + LTE Band 30



Plot 7-370. Radiated Spurious Plot (n77 + Anchor B30 – EN-DC) – HX





Plot 7-371. Radiated Spurious Plot (n77 + Anchor B30 – EN-DC) – VX

Mode:	EN-DC
Anchor Band:	30

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
2993.50	H	353	328	-64.08	7.05	49.97	-45.29	-40.00	-5.29
11070.00	H	-	-	-78.22	12.41	41.19	-54.07	-40.00	-14.07
14760.00	H	-	-	-78.24	17.64	46.40	-48.86	-40.00	-8.86

Table 7-24. Radiated Spurious Data (n77 + Anchor B30 – EN-DC)

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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 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW \geq 3 x RBW
3. No. of sweep points \geq 2 x 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

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Test Setup

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

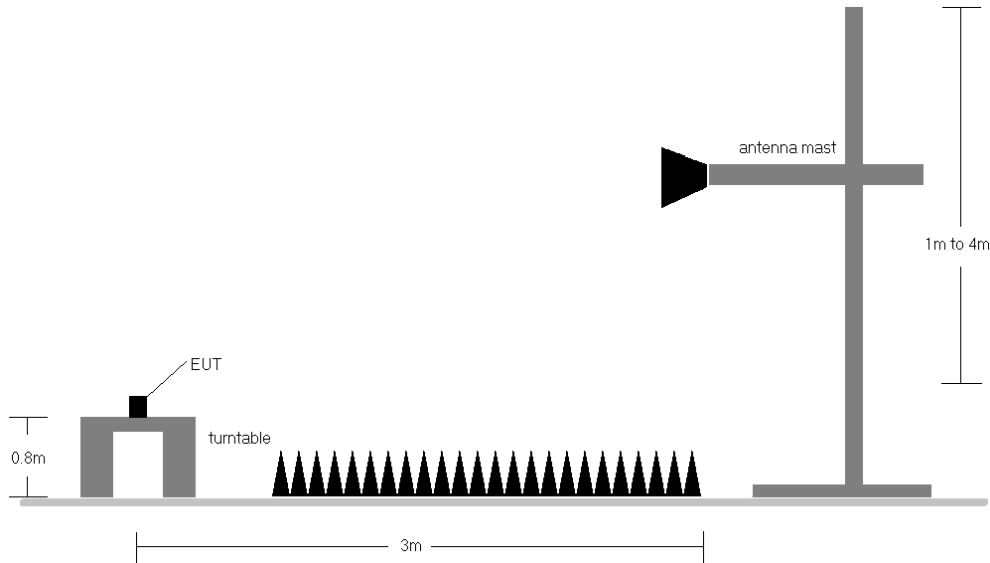


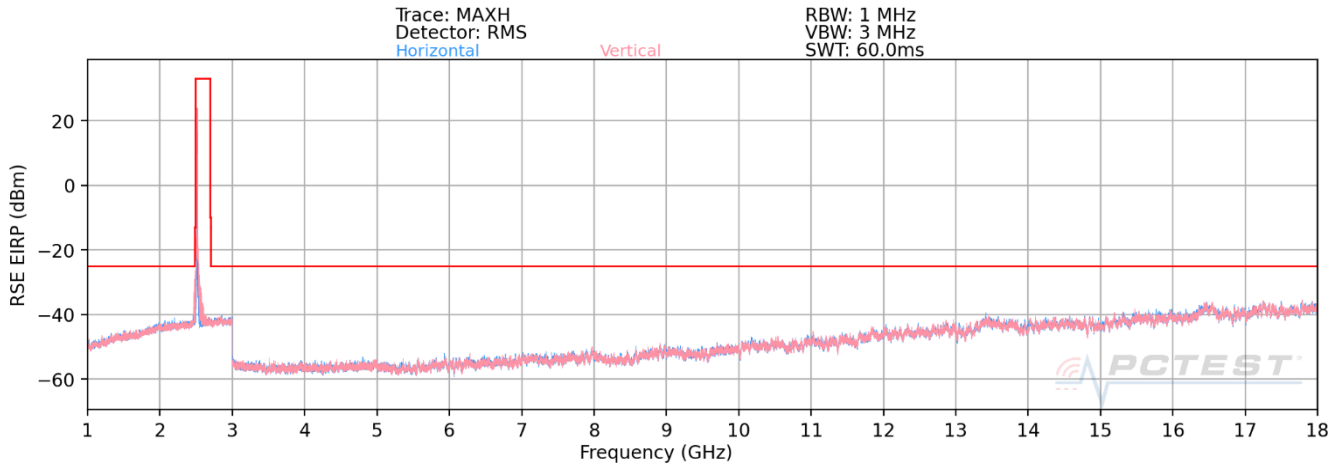
Figure 7-10. Test Instrument & Measurement Setup

Test Notes

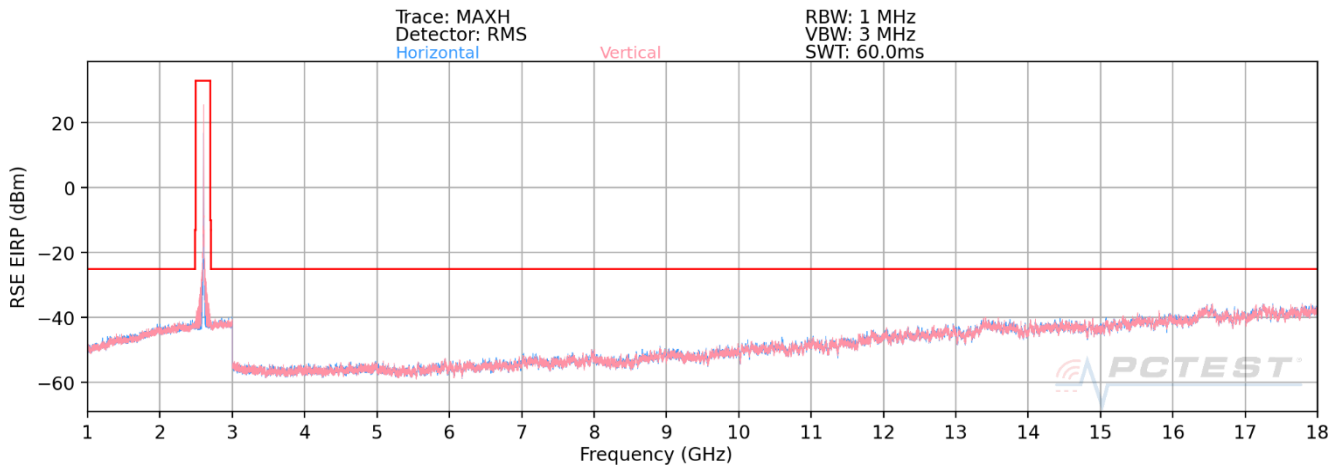
- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) Radiated spurious emissions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

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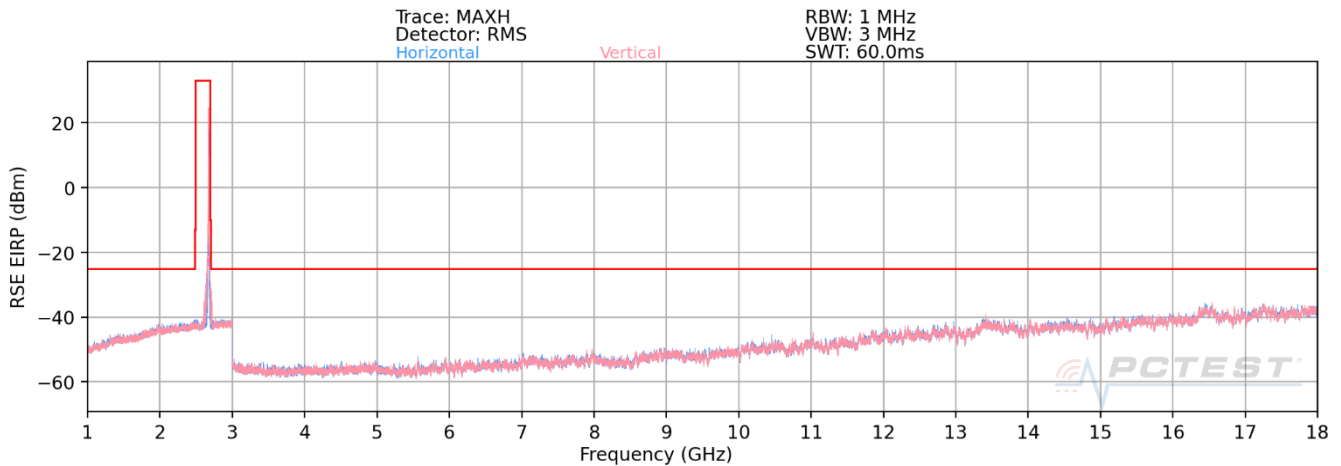
ULCA Band 41



Plot 7-372. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 Low Channel – PCC/SCC: 1RB)



Plot 7-373. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 Mid Channel – PCC/SCC: 1RB)



Plot 7-374. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 High Channel – PCC/SCC: 1RB)

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PCC Bandwidth (MHz):	20
PCC Frequency (MHz):	2506.0
PCC RB / Offset:	1 / 99
SCC Bandwidth (MHz):	20
SCC Frequency (MHz):	2525.8
SCC RB / Offset:	1 / 0
Detector / Trace Mode:	RMS / Average
RBW / VBW:	1MHz / 3MHz



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5032.0	V	177	183	-72.52	9.62	44.10	-51.15	-25.00	-26.15
7548.0	V	103	44	-72.72	15.75	50.03	-45.23	-25.00	-20.23
10064.0	V	103	343	-71.70	18.73	54.03	-41.23	-25.00	-16.23
12580.0	V	100	216	-75.13	22.71	54.58	-40.68	-25.00	-15.68
15096.0	V	115	353	-77.88	27.36	56.48	-38.77	-25.00	-13.77
17612.0	V	-	-	-76.44	30.01	60.57	-34.69	-25.00	-9.69

Plot 7-25. Radiated Spurious Plot (ULCA B41 Left Carrier: RB 1 Offset 99, Right Carrier: RB 1 Offset 0)

PCC Bandwidth (MHz):	20
PCC Frequency (MHz):	2593.0
PCC RB / Offset:	1 / 99
SCC Bandwidth (MHz):	20
SCC Frequency (MHz):	2612.8
SCC RB / Offset:	1 / 0
Detector / Trace Mode:	RMS / Average
RBW / VBW:	1MHz / 3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5206.0	V	136	174	-72.01	9.93	44.92	-50.34	-25.00	-25.34
7809.0	V	101	353	-69.76	16.09	53.33	-41.93	-25.00	-16.93
10412.0	V	102	302	-72.96	19.87	53.91	-41.35	-25.00	-16.35
13015.0	V	100	65	-75.70	23.73	55.03	-40.22	-25.00	-15.22
15618.0	V	-	-	-76.66	27.65	57.99	-37.27	-25.00	-12.27



Plot 7-26. Radiated Spurious Plot (ULCA B41 Left Carrier: RB 100 Offset 0, Right Carrier: RB 100 Offset 0)

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PCC Bandwidth (MHz):	20
PCC Frequency (MHz):	2680.0
PCC RB / Offset:	1 / 0
SCC Bandwidth (MHz):	20
SCC Frequency (MHz):	2660.2
SCC RB / Offset:	1 / 99
Detector / Trace Mode:	RMS / Average
RBW / VBW:	1MHz / 3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5380.0	V	115	154	-72.44	10.49	45.05	-50.21	-25.00	-25.21
8070.0	V	100	346	-73.05	16.03	49.98	-45.28	-25.00	-20.28
10760.0	V	101	94	-72.89	20.31	54.42	-40.83	-25.00	-15.83
13450.0	V	102	225	-75.54	24.61	56.07	-39.19	-25.00	-14.19
16140.0	V	-	-	-76.80	28.60	58.80	-36.45	-25.00	-11.45

Plot 7-27. Radiated Spurious Data (ULCA B41 Left Carrier: RB 1 Offset 0, Right Carrier: RB 1 Offset 99)

FCC ID: A3LSMG996U	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Quality Manager
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7.11 Frequency Stability / Temperature Variation

Test Overview and Limit

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

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

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings



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

Test Setup

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

Test Notes

None

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LTE Band 30					
Operating Frequency (Hz):		2,310,000,000			
Ref. Voltage (VDC):		4.41			
Deviation Limit:		± 0.00025% or 2.5 ppm			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	2,310,000,132	-284	-0.0000123
		- 20	2,309,999,900	-52	-0.0000023
		- 10	2,309,999,705	143	0.0000062
		0	2,310,000,055	-207	-0.0000090
		+ 10	2,309,999,518	330	0.0000143
		+ 20 (Ref)	2,309,999,848	0	0.0000000
		+ 30	2,309,999,827	21	0.0000009
		+ 40	2,310,000,107	-259	-0.0000112
Battery Endpoint	3.37	+ 20	2,310,000,017	-169	-0.0000073

Table 7-9. LTE Band 30 Frequency Stability Data

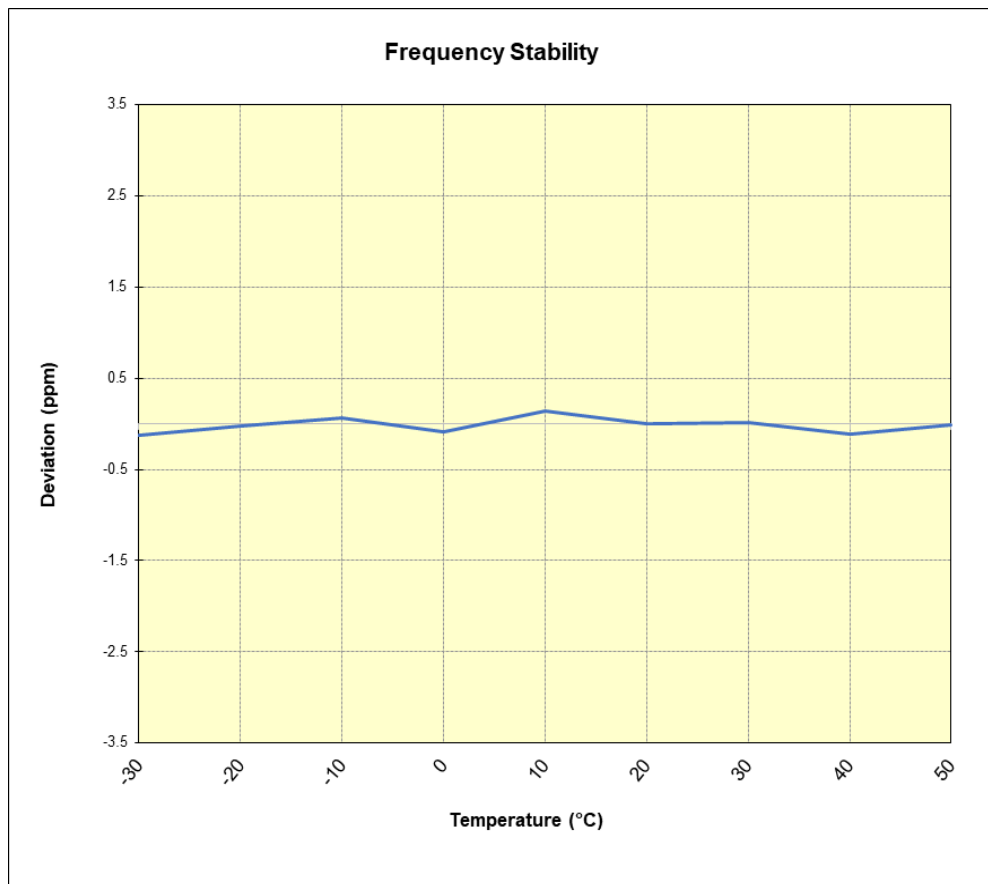


Table 7-9. LTE Band 30 Frequency Stability Chart

FCC ID: A3LSMG996U	PCTEST <small>Proud to be part of element</small>	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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LTE Band 7					
Operating Frequency (Hz):		2,535,000,000			
Ref. Voltage (VDC):		4.41			
Deviation Limit:		± 0.00025% or 2.5 ppm			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	2,535,000,379	-494	-0.0000195
		- 20	2,535,000,003	-118	-0.0000047
		- 10	2,535,000,009	-124	-0.0000049
		0	2,534,999,879	6	0.0000002
		+ 10	2,535,000,026	-141	-0.0000056
		+ 20 (Ref)	2,534,999,885	0	0.0000000
		+ 30	2,535,000,269	-384	-0.0000151
		+ 40	2,535,000,071	-186	-0.0000073
Battery Endpoint	3.37	+ 20	2,535,000,070	-185	-0.0000073

Table 7-9. LTE Band 7 Frequency Stability Data

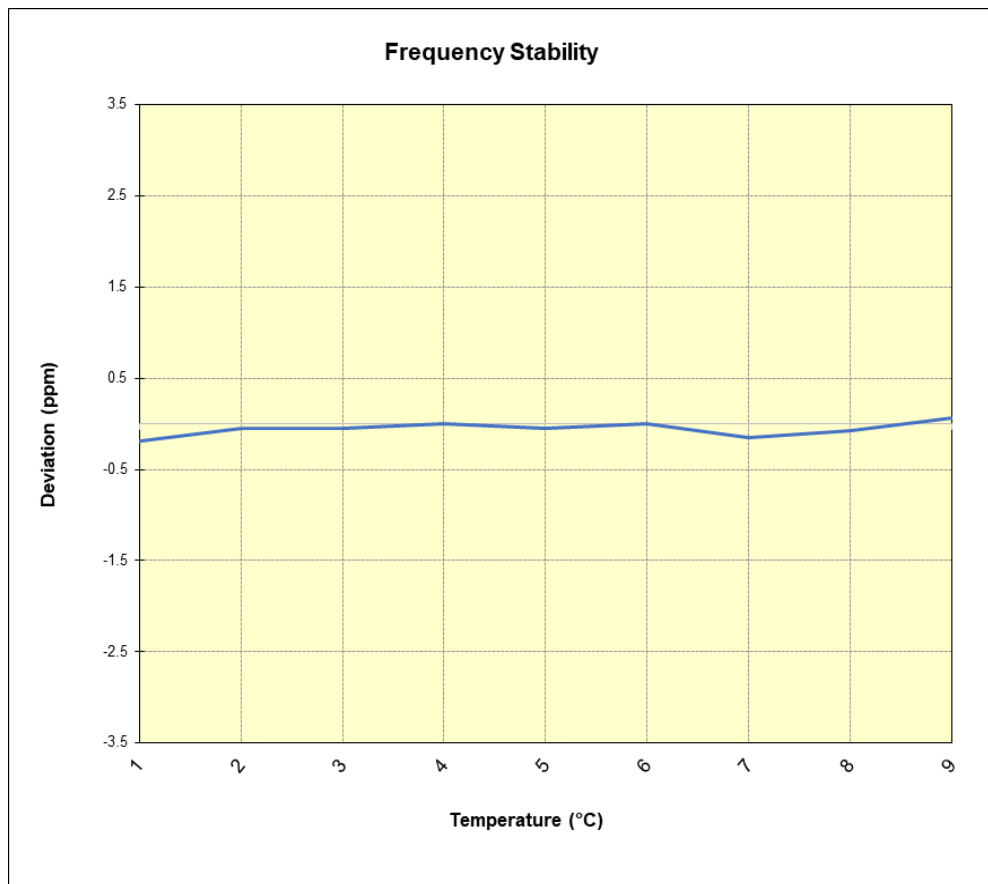


Table 7-9. LTE Band 7 Frequency Stability Chart

FCC ID: A3LSMG996U	PCTEST <small>Proud to be part of element</small>	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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LTE Band 41/38

Operating Frequency (Hz):	2,593,000,000
Ref. Voltage (VDC):	4.41
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	2,592,999,950	-50	-0.0000019
		- 20	2,593,000,118	118	0.0000046
		- 10	2,592,999,797	-203	-0.0000078
		0	2,593,000,357	357	0.0000138
		+ 10	2,592,999,970	-30	-0.0000012
		+ 20 (Ref)	2,592,999,817	-183	-0.0000071
		+ 30	2,593,000,165	165	0.0000064
		+ 40	2,593,000,131	131	0.0000051
Battery Endpoint	3.37	+ 20	2,592,999,984	-16	-0.0000006

Table 7-9. LTE Band 41(PC2) Frequency Stability Data

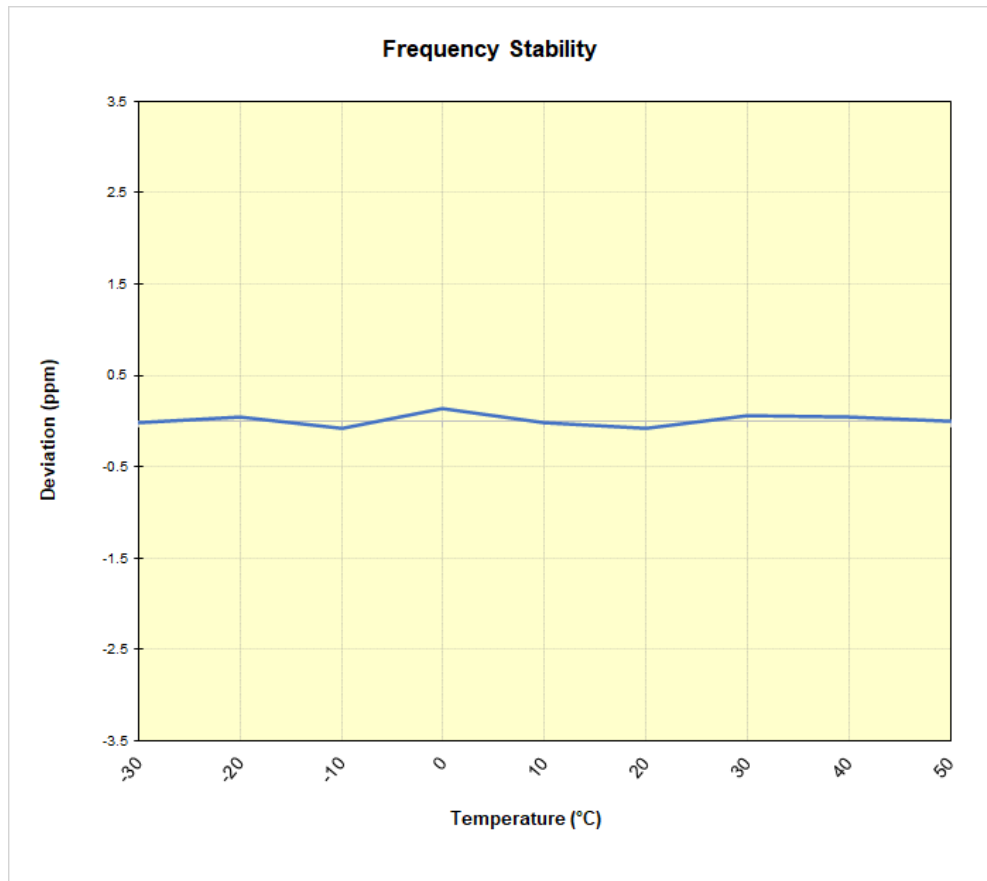


Table 7-9. LTE Band 41(PC2) Frequency Stability Chart

FCC ID: A3LSMG996U	PCTEST <small>Proud to be part of element</small>	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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NR Band n41					
Operating Frequency (Hz):		2,593,000,000			
Ref. Voltage (VDC):		4.41			
Deviation Limit:		± 0.00025% or 2.5 ppm			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	2,593,000,193	-520	-0.0000201
		- 20	2,593,000,017	-344	-0.0000133
		- 10	2,592,999,719	-46	-0.0000018
		0	2,592,999,902	-229	-0.0000088
		+ 10	2,592,999,756	-83	-0.0000032
		+ 20 (Ref)	2,592,999,673	0	0.0000000
		+ 30	2,593,000,076	-403	-0.0000155
		+ 40	2,592,999,876	-203	-0.0000078
Battery Endpoint	3.37	+ 20	2,593,000,083	-410	-0.0000158

Table 7-9. NR Band n41 Frequency Stability Data

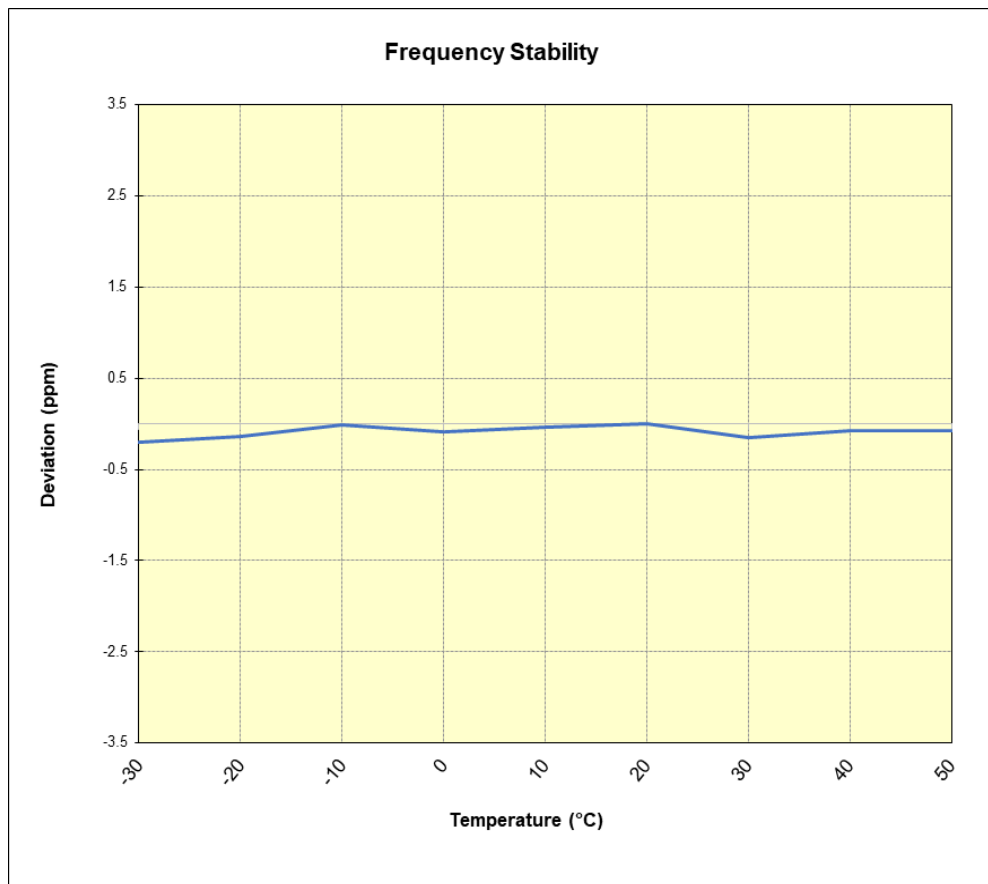


Table 7-9. NR Band n41 Frequency Stability Chart

FCC ID: A3LSMG996U	PCTEST <small>Proud to be part of element</small>	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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NR Band n77					
Operating Frequency (Hz):		3,750,000,000			
Ref. Voltage (VDC):		4.41			
Deviation Limit:		± 0.00025% or 2.5 ppm			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	3,749,999,601	-188	-0.0000050
		- 20	3,749,999,259	154	0.0000041
		- 10	3,749,999,458	-45	-0.0000012
		0	3,749,999,635	-222	-0.0000059
		+ 10	3,749,999,022	391	0.0000104
		+ 20 (Ref)	3,749,999,413	0	0.0000000
		+ 30	3,749,999,163	250	0.0000067
		+ 40	3,749,999,161	252	0.0000067
Battery Endpoint	3.37	+ 20	3,749,999,043	370	0.0000099

Table 7-9. NR Band n77 Frequency Stability Data

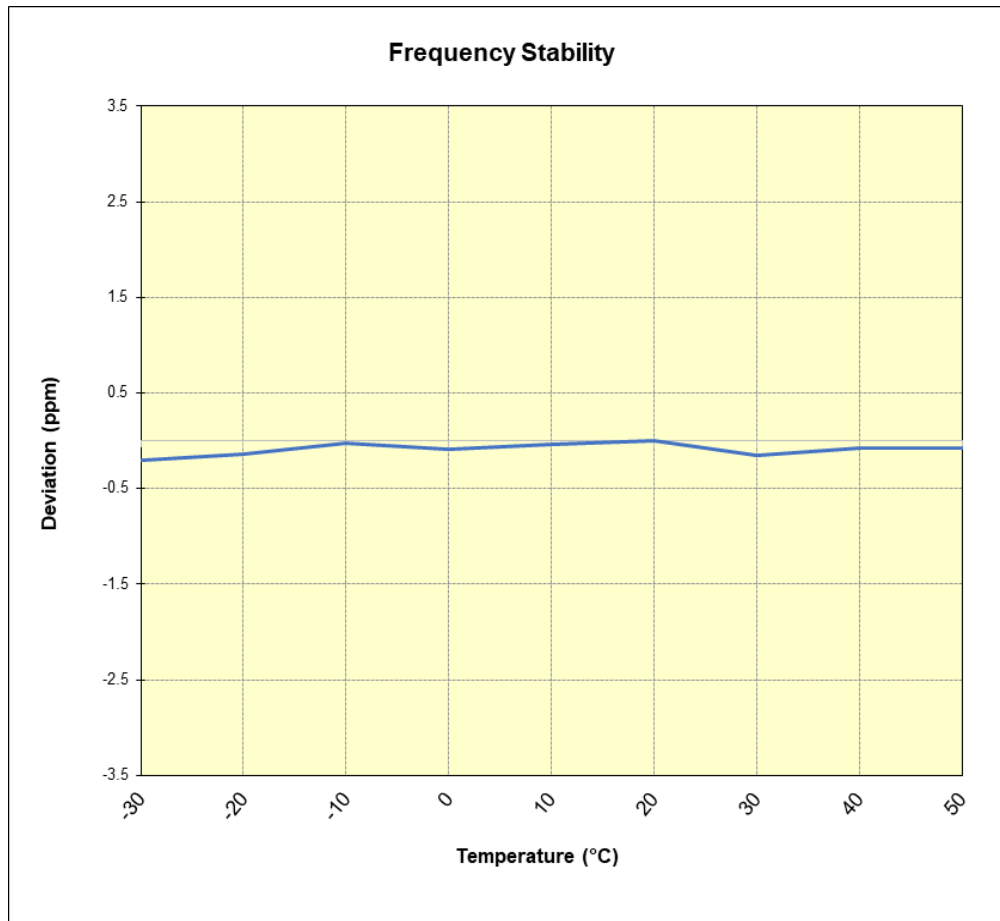




Table 7-9. NR Band n77 Frequency Stability Chart

FCC ID: A3LSMG996U	PCTEST <small>Proud to be part of element</small>	PART 27 MEASUREMENT REPORT	SAMSUNG	Approved by: Quality Manager
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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the Samsung **Portable Handset** **FCC ID: A3LSMG996U** complies with all the requirements of Part 27 of the FCC rules.

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