

APPENDIX E: TEST SEQUENCES

1. Test sequences are generated based on below parameters of the DUT:
 - a. EFS maximum power ($P_{max,nom}$)
 - b. EFS Tx_power_at_SAR_design_target ($P_{limit,nom}$)
 - c. SAR_time_window (100s for FCC)
2. Startup Sequence A Waveform:
 - a. Based on the parameters above, startup sequence A is generated with one transition between high and low Tx powers. Here, high power = $P_{max,nom}$; low power = $0.5 \times P_{limit,nom}$, and the transition occurs after at least 100 seconds of high power P_{max} . The startup sequence A waveform is described below:

Table E-1
Startup Sequence A

Time Duration (seconds)	Requested Tx Power from Callbox
<120	$P_{max,nom}$
<120	$0.5 \times P_{limit,nom}$

3. Startup Sequence B Waveform:
 - b. Based on the parameters above, startup sequence B is generated with one transition between high and low Tx powers. Here, 1 mW (0dBm); high power = $P_{max,nom}$, and the transition occurs after at least 100 seconds of 1mW (0 dBm). The startup sequence B waveform is described below:

Table E-2
Startup Sequence B

Time Duration (seconds)	Requested Tx Power from Callbox
<120	1 mW (0dBm)
<120	$P_{max,nom}$

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4. Pseudo-random Sequence Waveform:

A pseudo-random sequence of power requests shall be applied to validate the dynamic behavior of the TAS algorithm. Each test shall be performed with a unique sequence of 150 independent power requests. These power levels are calculated as follows:

$$P_{req} = P_{max,nom} \left(\frac{P_{limit,nom}}{P_{max,nom}} \right)^x$$

where P_{req} is the requested power in watts and x is a random value drawn from the Weibull distribution with shape and scale parameters of 2.0 and 0.8 respectively. These values were chosen to ensure that P_{req} exceeds $P_{limit,nom}$ on average, while maintaining a reasonable likelihood that some P_{req} values will sometimes fall well below $P_{limit,nom}$. The corresponding request durations are given by:

$$T_{req} = 2(1 + 2y)$$

where T_{req} is the duration of the power request in seconds and y is a uniformly distributed random value between 0 and 1.

Figure E-1 illustrates a requested power sequence for $P_{limit,nom} = 100$ mW (20 dBm), $P_{max,nom} = 200$ mW (23 dBm) and $P_{req} \geq 1$ mW (0 dBm). The request durations have been rounded to the nearest second.

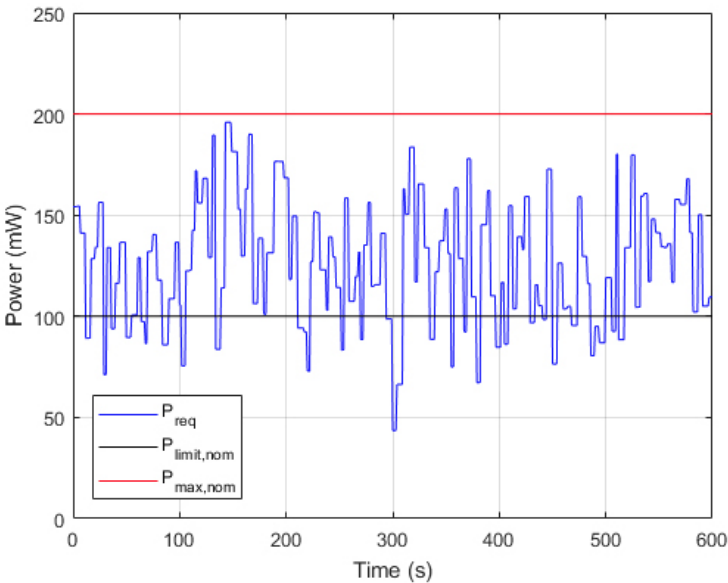


Figure E-1
Example of Pseudo-random sequence waveform

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