APPENDIX 3

Duty Cycle Measurement Procedure

SAR Duty Cycle measurement procedure proposed

- A normal transceiver co-axial RF link between the WES (Host) and the VSC(Companion Terminal) centered at 914.625MHz was established between the host unit and its' companion terminal through a directional coupler and 40dB attenuators.
- An HP8990A peak power analyzer using a 40GHz peak power sensor HP 8481A is connected to the Forward Coupling point of the directional coupler to RF Power from the WES (Host) device.
- Once the emergency stop is pushed on the Wes (Host device), the two connected devices stops communicating with each other and the RF link is terminated. This is verified on the peak power analyzer. A blinking green LED indicates that the two devices were communicating and it changes to red when the RF link is terminated.
- The measurement duration selected for the aggregation of the duty cycle measurements was 1 hour
- The power Analyzer measurement window was set to the following window sizes; 100ms, 500ms and 1000msto observe the variation in duty cycle variance over this parameter.
- The Maximum, Minimum and Average Statistics on the Power Analyzer was enabled to aggregate the duty cycle measurements over the 1 Hour duration.
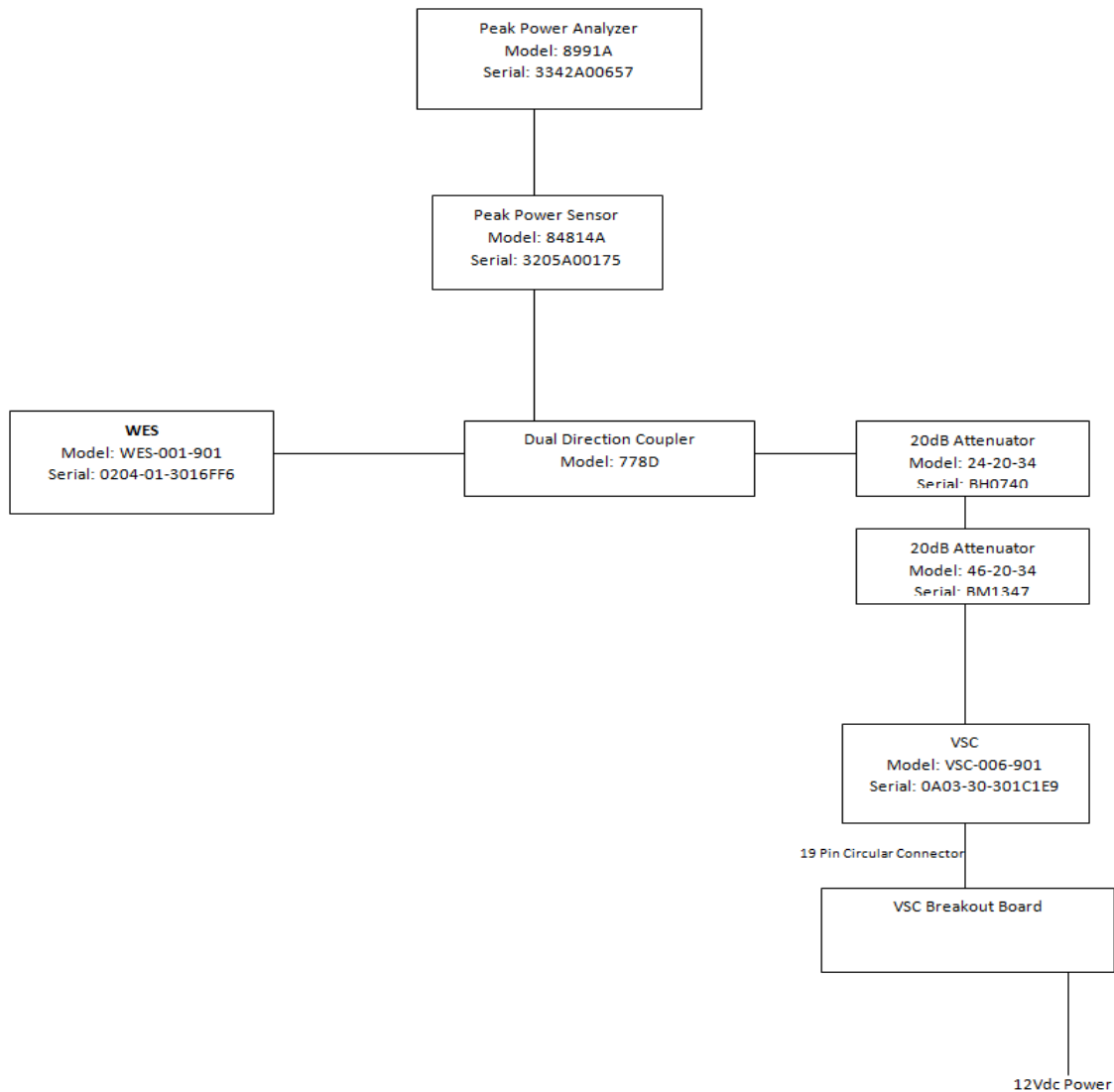

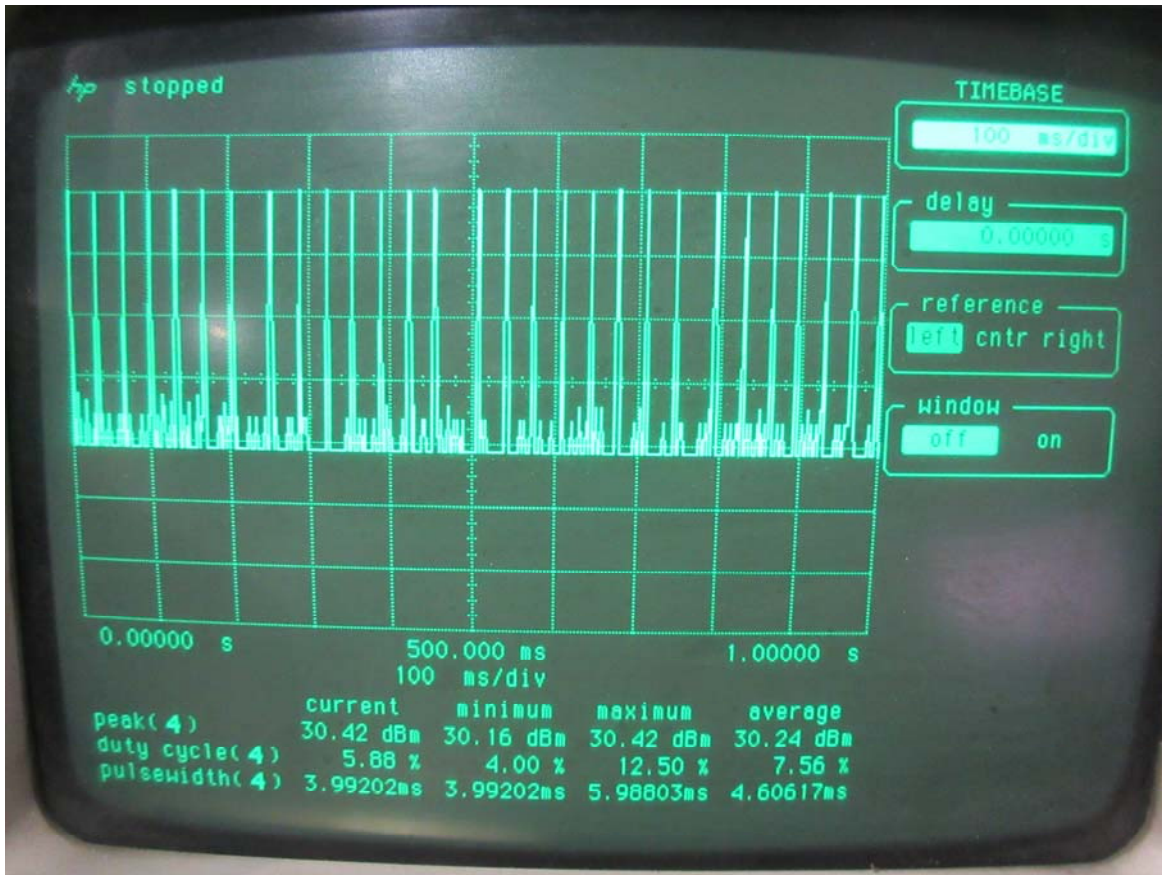Figure 1. Duty Cycle Measurement Block Diagram

Figure 2. Pulse Train in 1s Window

	Frequency	Time span	Duty Cycle(Max)	Duty Cycle(Avg)	Test Duration
WES	914.625	100ms	8.28%	7.47%	1 hour
	914.625	500ms	9.09%	7.49%	1 hour
	914.625	1s	12.50%	7.52%	1 hour

Figure 3. Duty Cycle Measurements

Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Calibration Due Date
Peak Power Analyzer	Hewlett Packard	8991A	3342A00657	-	11-Mar-2024
Peak Power Sensor	Hewlett Packard	84814A	3205A00175	0.5–40 GHz	11-Mar-2024
Attenuator	Weinschel Corp	24-20-34	BH0740	DC–8.5 GHz	Cal before use
Attenuator	Weinschel Corp	46-20-34	BM1347	DC–18 GHz	Cal before use
Dual Directional Coupler	Hewlett Packard	778D	-	0.1–2.0 GHz	20-Oct-2023