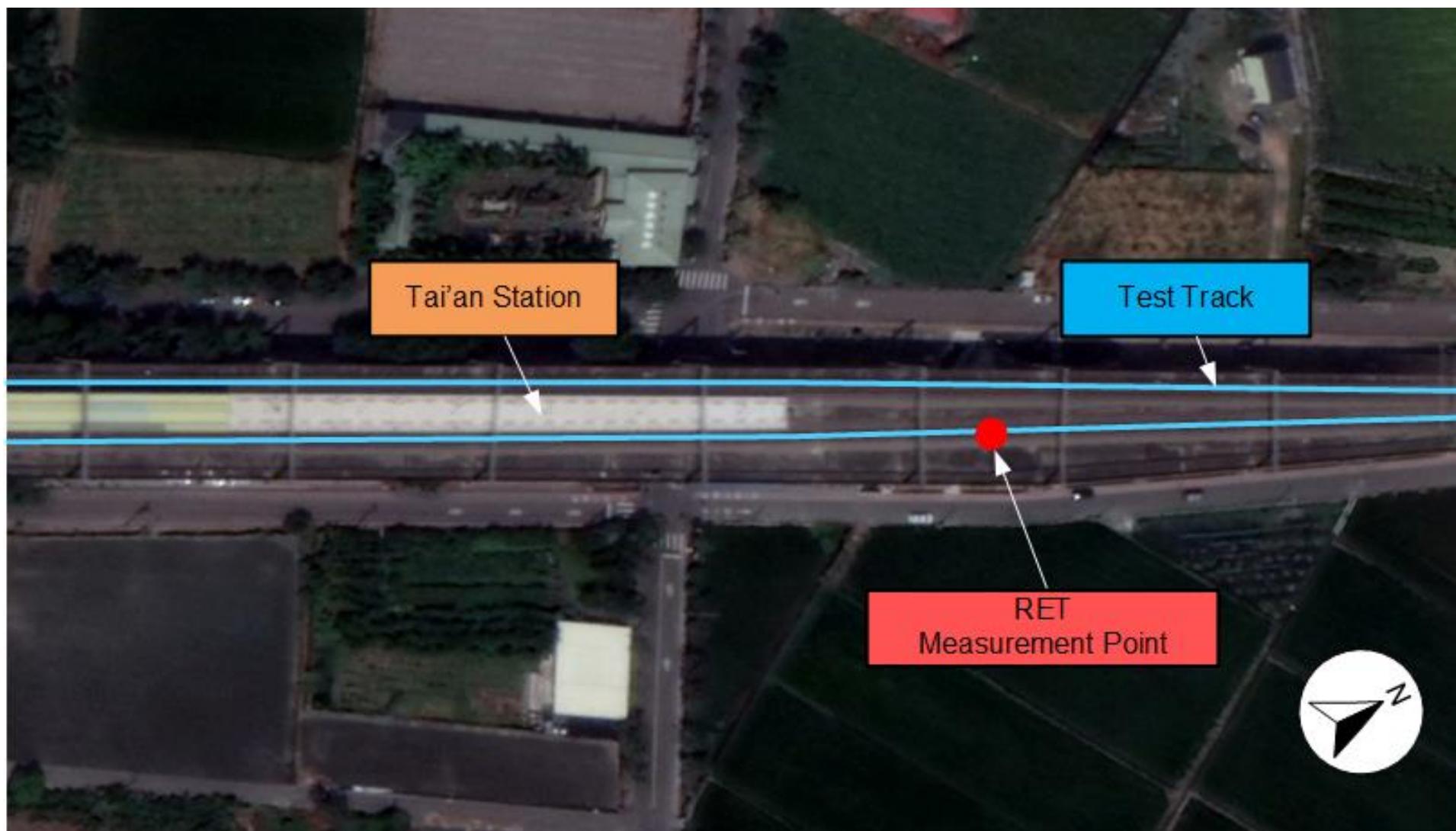


Appendix B

Radiated Emissions Test Results

- Radiated Emissions Test Site Plan
- Radiated Emissions Test Run Directory
- Radiated Emissions Test Run Log
- Radiated Emissions Test Results Record

Radiated Emissions Site Plan



Radiated Emissions Test Run Directory

電力機車輻射式電磁放射量測試運行目錄 Electric Locomotive Radiated Emissions Test Run Directory
 電力機車配置 Electric Locomotive Configuration: 1 Toshiba Locomotive, E501
 地點 Location: North of Tai'an Station Platform, Taichung City

		頻帶 Frequency Band					
運行類型 Run Type		B1: 150 kHz– 650 kHz 單極垂直 9 kHz res bw Monopole Vertical 9 kHz res bw	B2: 500 kHz – 3 MHz 單極垂直 9 kHz res bw Monopole Vertical 9 kHz res bw	B3: 2.5MHz– 7.5 MHz 單極垂直 9 kHz res bw Monopole Vertical 9 kHz res bw	B4: 5 MHz– 30 MHz 單極垂直 9 kHz res bw Monopole Vertical 9 kHz res bw	B5: 30 MHz– 330 MHz (注意V與H的極性) 雙天線, 120 kHz res bw (Note V & H polarity) Biological, 120 kHz res bw	B6: 0.3GHz – 1.0 GHz (注意V與H的極性) 雙天線, 120 kHz res bw (Note V & H polarity) Biological, 120 kHz rbw
R0	校正 Calibration	125-30	125-31	125-32	125-33	H: 125-34	H: 125-35
						V: N/A	V: N/A
R1	周圍環境 Ambient	126-05	126-06	126-07	126-08	H: 126-71	H: 126-72
						V: 126-69	V: 126-70
R2	電車停止 Standing	126-09	126-10	126-11	126-12	H: 126-47	H: 126-48
						V: 126-45	V: 126-46
R3	電車滑行 Coasting	126-21	126-22	126-23	126-24	H: 126-49	H: 126-50
						V: 126-51	V: 126-52
R4	電車出力 (最小, 中等, 最大) Powering (Min, Med, Max)	126-25	126-27	126-29	126-30	H: 126-55	H: 126-56
						V: 126-53	V: 126-54
R5	電車制動 (最小, 中等, 最大) Braking (Min, Med, Max)	126-37	126-38	126-39	126-40	H: 126-57	H: 126-58
						V: 126-59	V: 126-60
	最壞情況 Worst Cases					H:	H:
						V:	V:

Radiated Emissions Test Run Log

Toshiba TRA EL Factory Tests**Radiated Emissions Field Test Log**

Date: 1-25-2024 to 1-26-2024
 Train Config: 1 Toshiba Locomotive, E501
 Performed by: Frank Nicholas, Joe Nicholas, Tembo Mateck
 Location: 37 m north of the end of Tai'an Station Platform on Taichung mainline as measured on Google Earth. Positioned in between two nearest OCS poles
 Antenna Config: 10 meters from track center line; 2 meters above the rail
 Analyzer Sweep: Measure for 5 seconds unless otherwise specified in notes column for standing and ambient runs (R1 to R2); Measure for time locomotive is passing measurement point for other runs (R3 to R5)
 Aux Load: Normal Aux Load unless otherwise specified
 Failure Mode: Nominal
 Braking Mode: Electrical Brake to 6 km/h unless otherwise specified. Friction Brake required after 6 km/h to come to a complete stop.

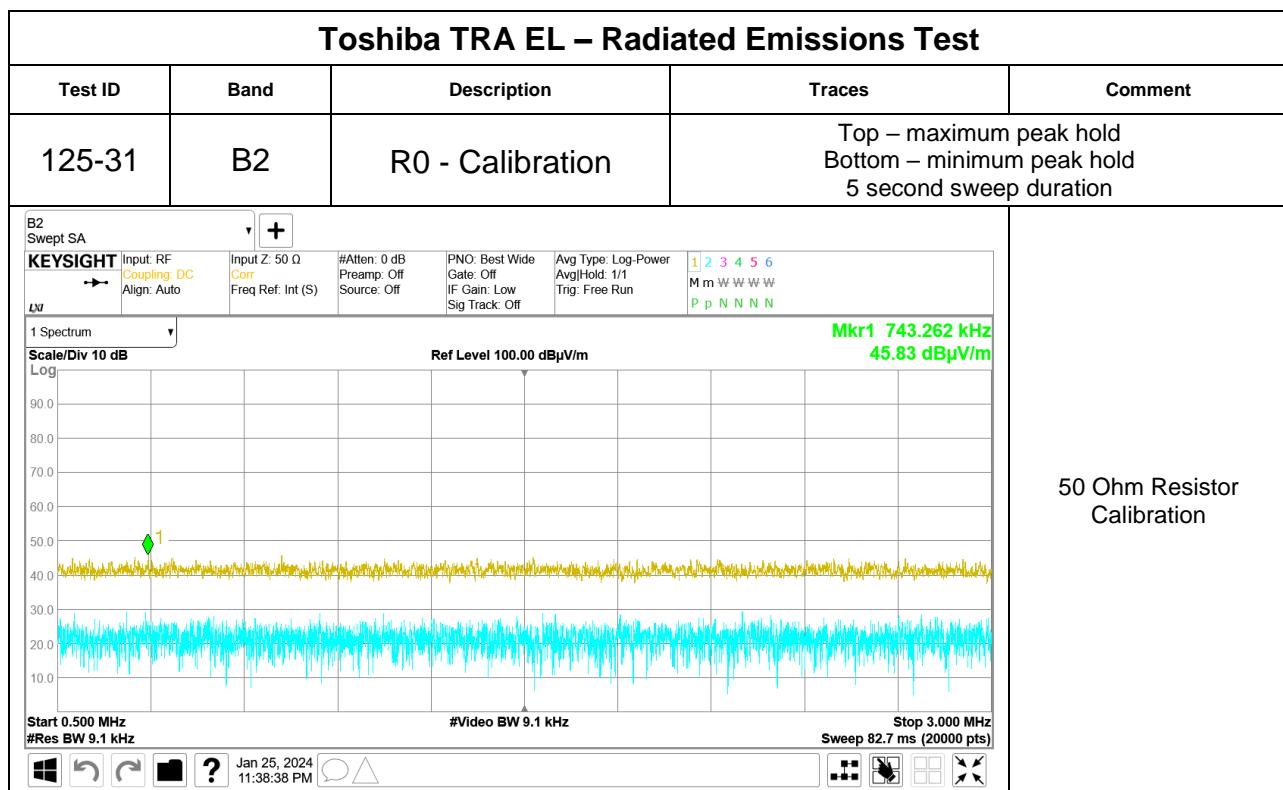
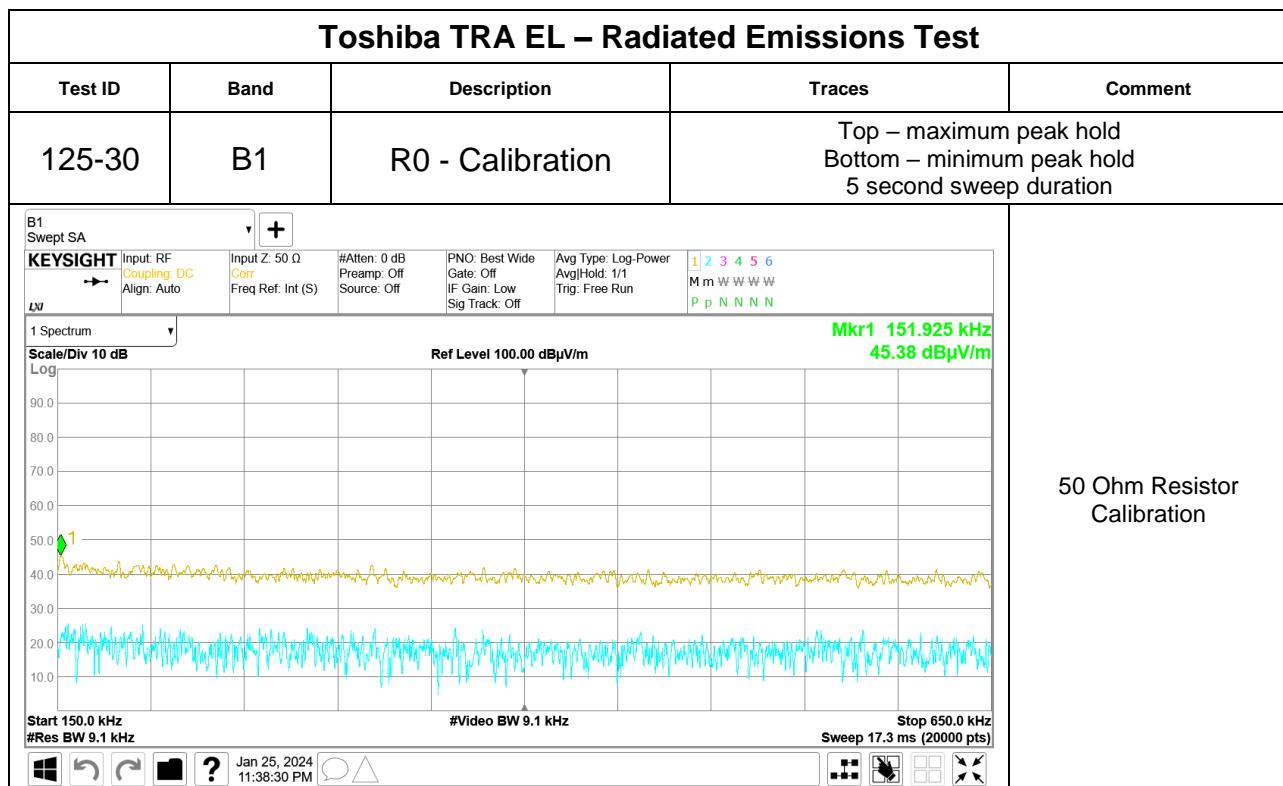
Test ID	Date	Time	Freq Band (B1 - B6v)	Procedure Operation ID (R0-R5)	Antenna	Operating Activity	Starting Speed (km/h)	Ending Speed (km/h)	Mode	Direction	Notes / Results
125-30	1-25-2024	23:38	B1	R0 Cal	50 Ohm Resistor	-	-	-	-	-	This and following tests performed at test site near Tai'an station. No limit lines for B5 and B6 for all runs in this test log.
125-31	1-25-2024	23:38	B2	R0 Cal	50 Ohm Resistor	-	-	-	-	-	
125-32	1-25-2024	23:38	B3	R0 Cal	50 Ohm Resistor	-	-	-	-	-	
125-33	1-25-2024	23:38	B4	R0 Cal	50 Ohm Resistor	-	-	-	-	-	
125-34	1-25-2024	23:38	B5	R0 Cal	50 Ohm Resistor	-	-	-	-	-	
125-35	1-25-2024	23:38	B6	R0 Cal	50 Ohm Resistor	-	-	-	-	-	
125-36	1-25-2024	23:47	B1	Test	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan up
125-37	1-25-2024	23:47	B2	Test	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan up
125-38	1-25-2024	23:48	B3	Test	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan up
125-39	1-25-2024	23:48	B4	Test	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan up
125-40	1-25-2024	23:53	B1	R0 Cal	50 Ohm Resistor	-	-	-	-	-	Generator ecotrottle was turned off for next six runs. Had negligible effect.
125-41	1-25-2024	23:53	B2	R0 Cal	50 Ohm Resistor	-	-	-	-	-	
125-42	1-25-2024	23:53	B3	R0 Cal	50 Ohm Resistor	-	-	-	-	-	
125-43	1-25-2024	23:53	B4	R0 Cal	50 Ohm Resistor	-	-	-	-	-	
125-44	1-25-2024	23:54	B5	R0 Cal	50 Ohm Resistor	-	-	-	-	-	
125-45	1-25-2024	23:54	B6	R0 Cal	50 Ohm Resistor	-	-	-	-	-	
126-01	1-26-2024	0:17	B1	R1	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan down Unofficial run, no filming
126-02	1-26-2024	0:17	B2	R1	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan down Unofficial run, no filming
126-03	1-26-2024	0:17	B3	R1	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan down Unofficial run, no filming
126-04	1-26-2024	0:17	B4	R1	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan down Unofficial run, no filming
126-05	1-26-2024	0:38	B1	R1	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan down
126-06	1-26-2024	0:38	B2	R1	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan down
126-07	1-26-2024	0:38	B3	R1	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan down
126-08	1-26-2024	0:38	B4	R1	Monopole	No Traction	-	-	Ambient	-	Vehicle standing about 20 meters south of measurement point with pan down
126-09	1-26-2024	0:47	B1	R2	Monopole	No Traction	-	-	Standing	-	Normal aux load - essential load Missnamed as R1
126-10	1-26-2024	0:47	B2	R2	Monopole	No Traction	-	-	Standing	-	Normal aux load - essential load Missnamed as R1
126-11	1-26-2024	0:47	B3	R2	Monopole	No Traction	-	-	Standing	-	Normal aux load - essential load Missnamed as R1

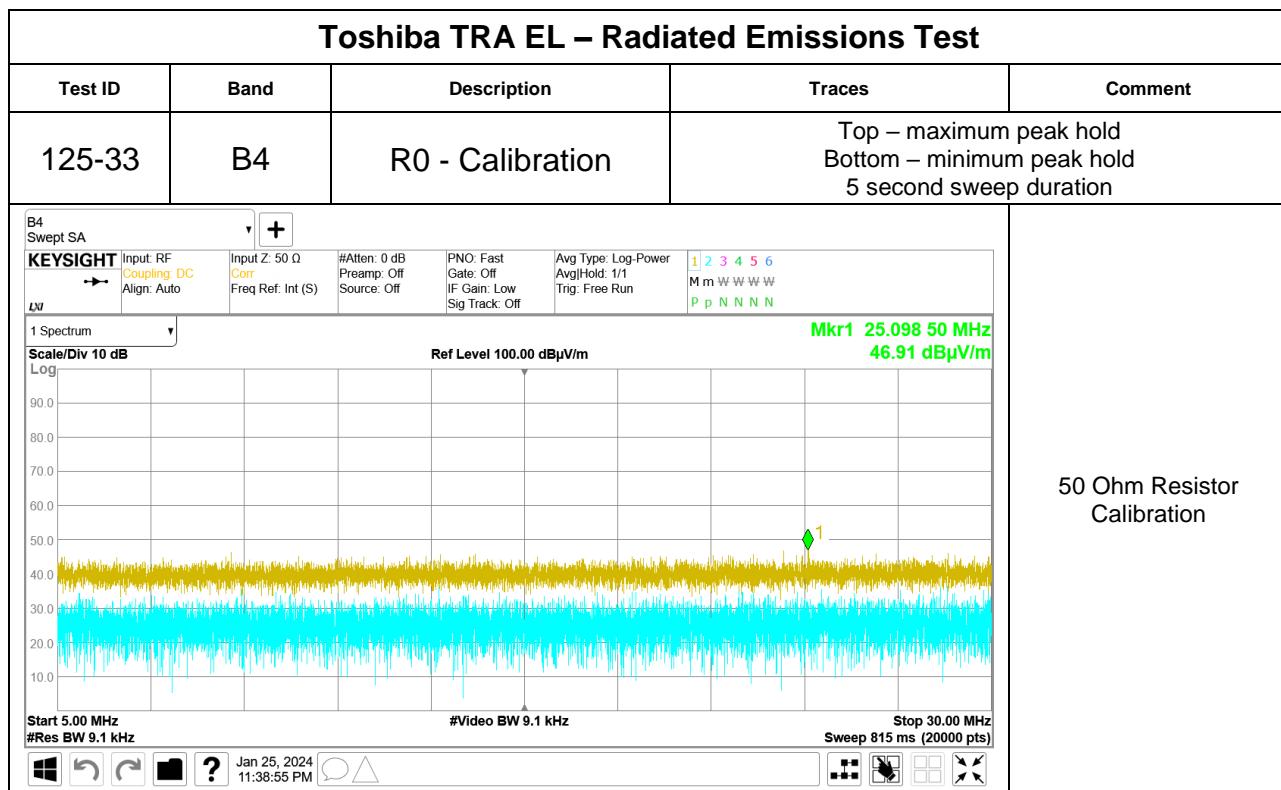
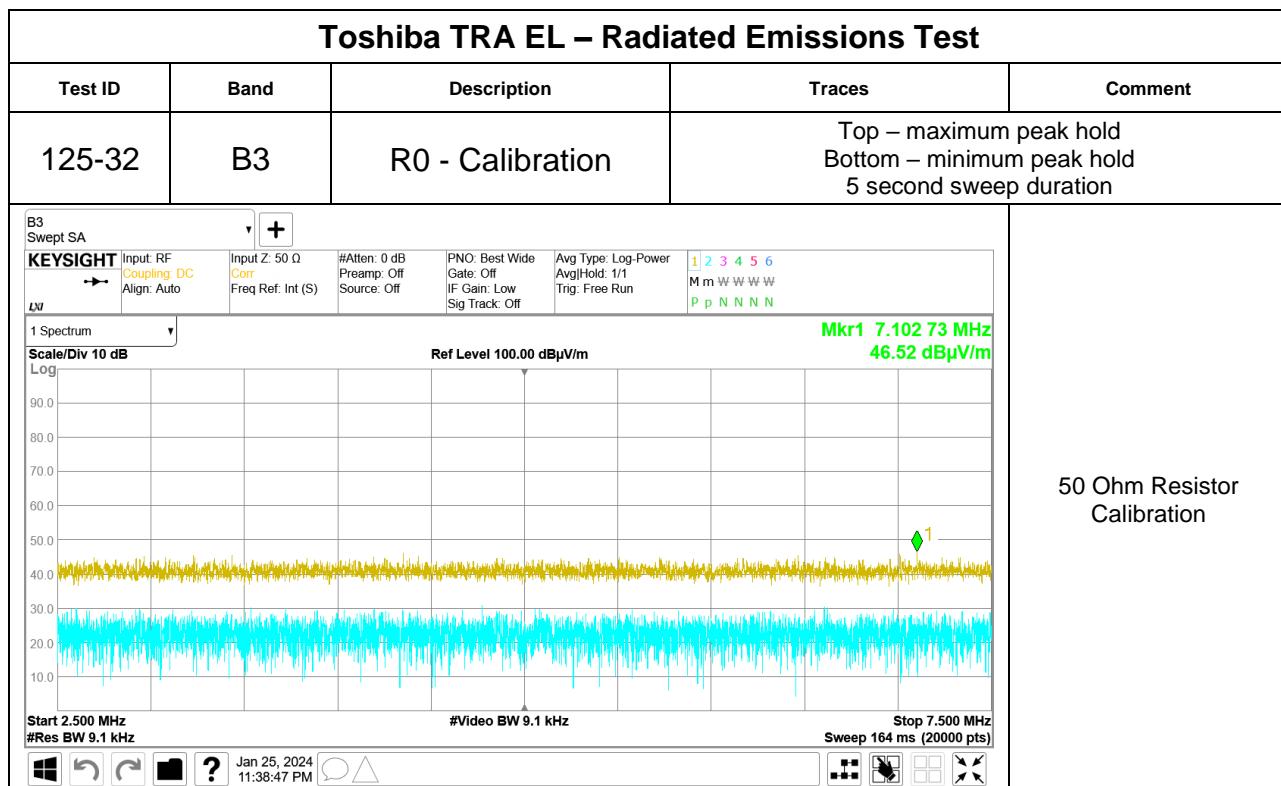
Test ID	Date	Time	Freq Band (B1 - B6v)	Procedure Operation ID (R0-R5)	Antenna	Operating Activity	Starting Speed (km/h)	Ending Speed (km/h)	Mode	Direction	Notes / Results
126-12	1-26-2024	0:47	B4	R2	Monopole	No Traction	-	-	Standing	-	Normal aux load - essential load Missnamed as R1
126-13	1-26-2024	0:53	B1	R2	Monopole	No Traction	-	-	Standing	-	Minimum aux load - Air Conditioning turned off
126-14	1-26-2024	0:53	B2	R2	Monopole	No Traction	-	-	Standing	-	Minimum aux load - Air Conditioning turned off
126-15	1-26-2024	0:53	B3	R2	Monopole	No Traction	-	-	Standing	-	Minimum aux load - Air Conditioning turned off
126-16	1-26-2024	0:53	B4	R2	Monopole	No Traction	-	-	Standing	-	Minimum aux load - Air Conditioning turned off
126-17	1-26-2024	1:01	B1	R2	Monopole	No Traction	-	-	Standing	-	Maximum aux load - Air Compressor turned on File namd shortenned
126-18	1-26-2024	1:01	B2	R2	Monopole	No Traction	-	-	Standing	-	Maximum aux load - Air Compressor turned on File namd shortenned
126-19	1-26-2024	1:04	B3	R2	Monopole	No Traction	-	-	Standing	-	Maximum aux load - Air Compressor turned on
126-20	1-26-2024	1:04	B4	R2	Monopole	No Traction	-	-	Standing	-	Maximum aux load - Air Compressor turned on
126-21	1-26-2024	1:15	B1	R3	Monopole	Start from 0 km/h. Coasting at 10 km/h	0	10	Coasting	North / Reverse (Cab B)	
126-22	1-26-2024	1:18	B2	R3	Monopole	Start from 0 km/h. Coasting at 10 km/h	0	10	Coasting	South / Forward (Cab A)	138.27 dB at 1.738 MHz, lower peak for ambient
126-23	1-26-2024	1:22	B3	R3	Monopole	Start from 0 km/h. Coasting at 10 km/h	0	10	Coasting	North / Reverse	
126-24	1-26-2024	1:26	B4	R3	Monopole	Start from 0 km/h. Coasting at 10 km/h	0	10	Coasting	South / Forward	
126-25	1-26-2024	1:36	B1	R4	Monopole	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	North / Reverse	Adding 10 dB of attenuation for R4 runs
126-26	1-26-2024	1:47	B1	R4	Monopole	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	South / Forward	
126-27	1-26-2024	1:49	B2	R4	Monopole	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	North / Reverse	
126-28	1-26-2024	1:51	B2	R4	Monopole	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	South / Forward	
126-29	1-26-2024	1:53	B3	R4	Monopole	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	North / Reverse	
126-30	1-26-2024	1:56	B3	R4	Monopole	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	South / Forward	
126-31	1-26-2024	1:58	B4	R4	Monopole	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	North / Reverse	
126-32	1-26-2024	2:00	B4	R4	Monopole	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	South / Forward	
126-33	1-26-2024	2:08	B1	R1	Monopole	Ambient	-	-	Standing 100+m away	-	Loco standing by station structure - pan up
126-34	1-26-2024	2:08	B2	R1	Monopole	Ambient	-	-	Standing 100+m away	-	
126-35	1-26-2024	2:08	B3	R1	Monopole	Ambient	-	-	Standing 100+m away	-	
126-36	1-26-2024	2:08	B4	R1	Monopole	Ambient	-	-	Standing 100+m away	-	
126-37	1-26-2024	2:10	B1	R5	Monopole	Approach at 50 km/h. Brake to 0 km/h	50	0	Braking (Max Electrical)	North / Reverse	
126-38	1-26-2024	2:15	B2	R5	Monopole	Approach at 50 km/h. Brake to 0 km/h	50	0	Braking (Max Electrical)	South / Forward	
126-39	1-26-2024	2:18	B3	R5	Monopole	Approach at 50 km/h. Brake to 0 km/h	50	0	Braking (Max Electrical)	North / Reverse	
126-40	1-26-2024	2:22	B4	R5	Monopole	Approach at 50 km/h. Brake to 0 km/h	50	0	Braking (Max Electrical)	South / Forward	
126-41	1-26-2024	2:38	B5h	R1	Bilogic H	No Traction	-	-	Ambient	-	Vehicle standing about 50 meters south of measurement point with pan down
126-42	1-26-2024	2:38	B6h	R1	Bilogic H	No Traction	-	-	Ambient	-	Vehicle standing about 50 meters south of measurement point with pan down
126-43	1-26-2024	2:39	B5v	R1	Bilogic V	No Traction	-	-	Ambient	-	Vehicle standing about 50 meters south of measurement point with pan down
126-44	1-26-2024	2:39	B6v	R1	Bilogic V	No Traction	-	-	Ambient	-	Vehicle standing about 50 meters south of measurement point with pan down

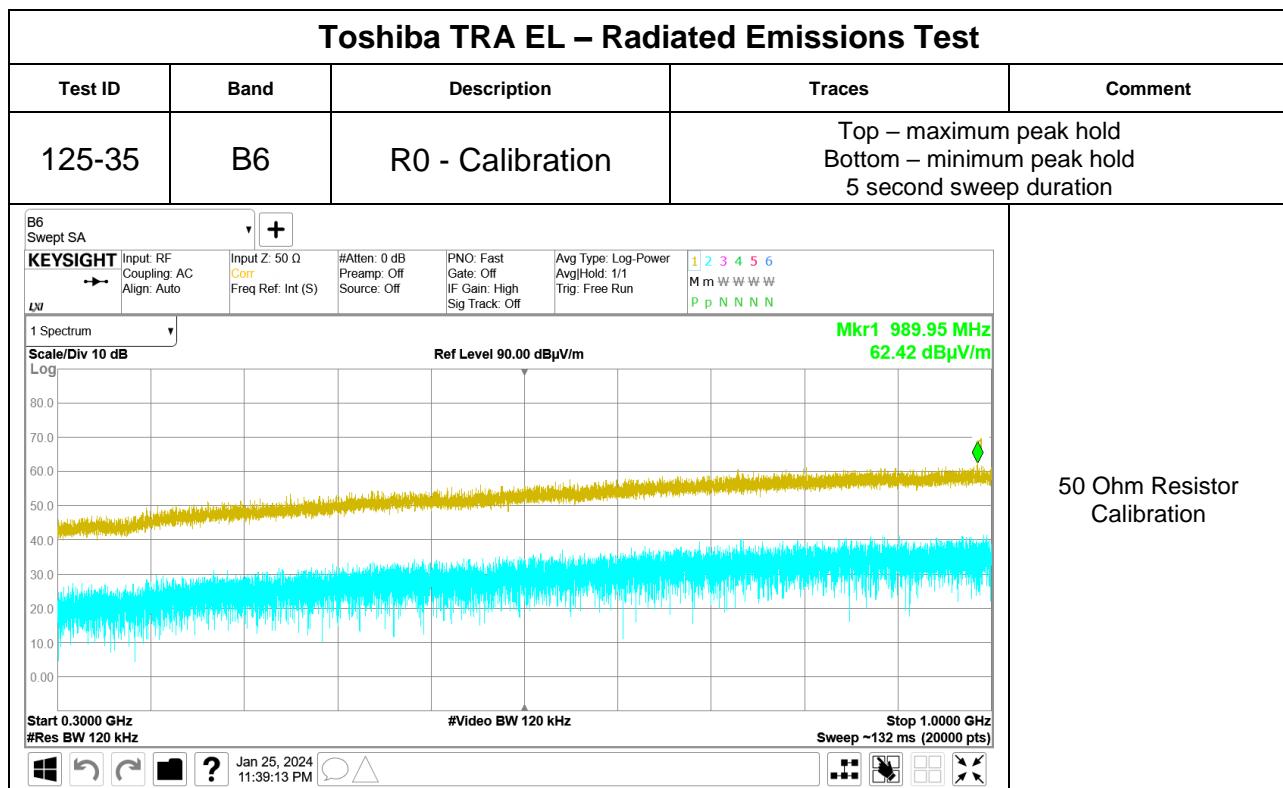
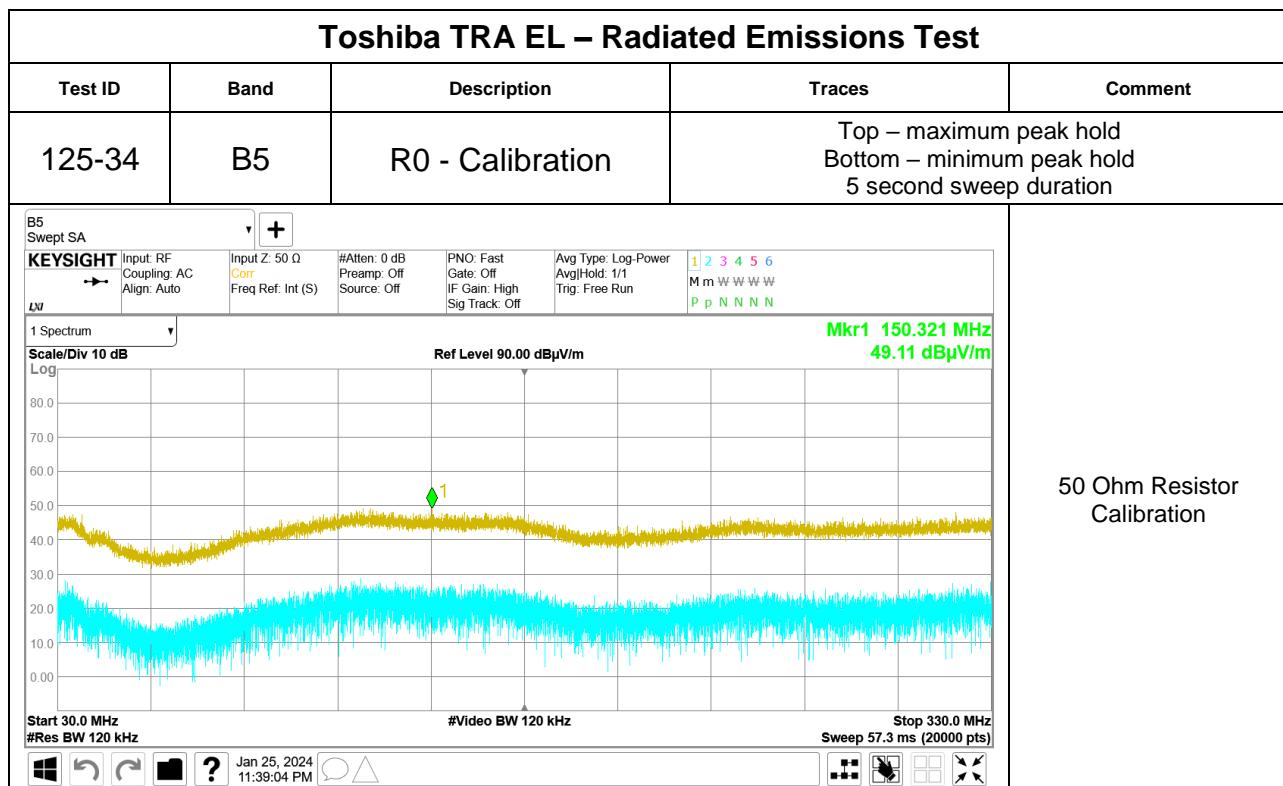
Test ID	Date	Time	Freq Band (B1 - B6v)	Procedure Operation ID (R0-R5)	Antenna	Operating Activity	Starting Speed (km/h)	Ending Speed (km/h)	Mode	Direction	Notes / Results
126-45	1-26-2024	2:45	B5v	R2	Bilogic V	No Traction	-	-	Standing	-	Normal aux load - essential load Peak around 200 MHz that may or may not be in ambient
126-46	1-26-2024	2:45	B6v	R2	Bilogic V	No Traction	-	-	Standing	-	Normal aux load - essential load
126-47	1-26-2024	2:47	B5h	R2	Bilogic H	No Traction	-	-	Standing	-	Normal aux load - essential load
126-48	1-26-2024	2:47	B6h	R2	Bilogic H	No Traction	-	-	Standing	-	Normal aux load - essential load
126-49	1-26-2024	2:50	B5h	R3	Bilogic H	Start from 0 km/h. Coasting at 10 km/h	0	10	Coasting	North / Reverse	
126-50	1-26-2024	2:51	B6h	R3	Bilogic H	Start from 0 km/h. Coasting at 10 km/h	0	10	Coasting	South / Forward	
126-51	1-26-2024	2:53	B5v	R3	Bilogic V	Start from 0 km/h. Coasting at 10 km/h	0	10	Coasting	North / Reverse	
126-52	1-26-2024	2:54	B6v	R3	Bilogic V	Start from 0 km/h. Coasting at 10 km/h	0	10	Coasting	South / Forward	
126-53	1-26-2024	2:57	B5v	R4	Bilogic V	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	North / Reverse	Narrow peaks around 150 MHz. Broad peaks at 50 MHz and 175 MHz
126-54	1-26-2024	2:59	B6v	R4	Bilogic V	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	South / Forward	Narrow peaks on first half of plot - possibly transients
126-55	1-26-2024	3:01	B5h	R4	Bilogic H	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	North / Reverse	
126-56	1-26-2024	3:03	B6h	R4	Bilogic H	Start from 0 km/h. Acceleration to 50 km/h	0	50	Powering (Max)	South / Forward	118.2 dB at 435.04 MHz
126-57	1-26-2024	3:06	B5h	R5	Bilogic H	Approach at 50 km/h. Brake to 0 km/h	50	0	Braking (Max Electrical)	North / Reverse	Going to begin braking at the end of the platform about 30 meters before the measurement point
126-58	1-26-2024	3:09	B6h	R5	Bilogic H	Approach at 50 km/h. Brake to 0 km/h	50	0	Braking (Max Electrical)	South / Forward	
126-59	1-26-2024	3:12	B5v	R5	Bilogic V	Approach at 50 km/h. Brake to 0 km/h	50	0	Braking (Max Electrical)	North / Reverse	Narrow peaks around 150 MHz
126-60	1-26-2024	3:15	B6v	R5	Bilogic V	Approach at 50 km/h. Brake to 0 km/h	50	0	Braking (Max Electrical)	South / Forward	133.63 dB at 435.04 MHz
126-61	1-26-2024	3:18	B5v	-	Bilogic V	-	-	-	-	-	Unofficial measurement while hand radios are in use; locomotive is standing ~30 meters away with pan up
126-62	1-26-2024	3:18	B6v	-	Bilogic V	-	-	-	-	-	Unofficial measurement while hand radios are in use; locomotive is standing ~30 meters away with pan up
126-63	1-26-2024	3:21	B5h	-	Bilogic H	-	-	-	-	-	Unofficial measurement while hand radios are in use; locomotive is standing ~30 meters away with pan up
126-64	1-26-2024	3:21	B6h	-	Bilogic H	-	-	-	-	-	Unofficial measurement while hand radios are in use; locomotive is standing ~30 meters away with pan up
126-65	1-26-2024	3:23	B5h	R1	Bilogic H	No Traction	-	-	Ambient Pan Up	-	Unofficial ambient measurement, locomotive is standing ~30 meters away with pan up - no peak at 435 MHz it is likely the radio signal
126-66	1-26-2024	3:23	B6h	R1	Bilogic H	No Traction	-	-	Ambient Pan Up	-	Unofficial ambient measurement, locomotive is standing ~30 meters away with pan up
126-67	1-26-2024	3:24	B5v	R1	Bilogic V	No Traction	-	-	Ambient Pan Up	-	Unofficial ambient measurement, locomotive is standing ~30 meters away with pan up
126-68	1-26-2024	3:24	B6v	R1	Bilogic V	No Traction	-	-	Ambient Pan Up	-	Unofficial ambient measurement, locomotive is standing ~30 meters away with pan up
126-69	1-26-2024	3:28	B5v	R1	Bilogic V	No Traction	-	-	Ambient Pan Up	-	Unofficial ambient measurement, locomotive is standing ~30 meters away with pan up; measure for 60 seconds this time
126-70	1-26-2024	3:29	B6v	R1	Bilogic V	No Traction	-	-	Ambient Pan Up	-	Unofficial ambient measurement, locomotive is standing ~30 meters away with pan up; measure for 60 seconds this time
126-71	1-26-2024	3:31	B5h	R1	Bilogic H	No Traction	-	-	Ambient Pan Up	-	Unofficial ambient measurement, locomotive is standing ~30 meters away with pan up; measure for 60 seconds this time
126-72	1-26-2024	3:32	B6h	R1	Bilogic H	No Traction	-	-	Ambient Pan Up	-	Unofficial ambient measurement, locomotive is standing ~30 meters away with pan up; measure for 60 seconds this time
126-73	1-26-2024	3:38	B1	R1	Monopole	No Locomotive	-	-	Ambient	-	Unofficial ambient measurement, no locomotive, measure for 60 seconds this time - Bad measurement was using the wrong cable
126-74	1-26-2024	3:39	B2	R1	Monopole	No Locomotive	-	-	Ambient	-	Unofficial ambient measurement, no locomotive; measure for 60 seconds this time - Bad measurement was using the wrong cable
126-75	1-26-2024	3:40	B3	R1	Monopole	No Locomotive	-	-	Ambient	-	Unofficial ambient measurement, no locomotive; measure for 60 seconds this time - Bad measurement was using the wrong cable

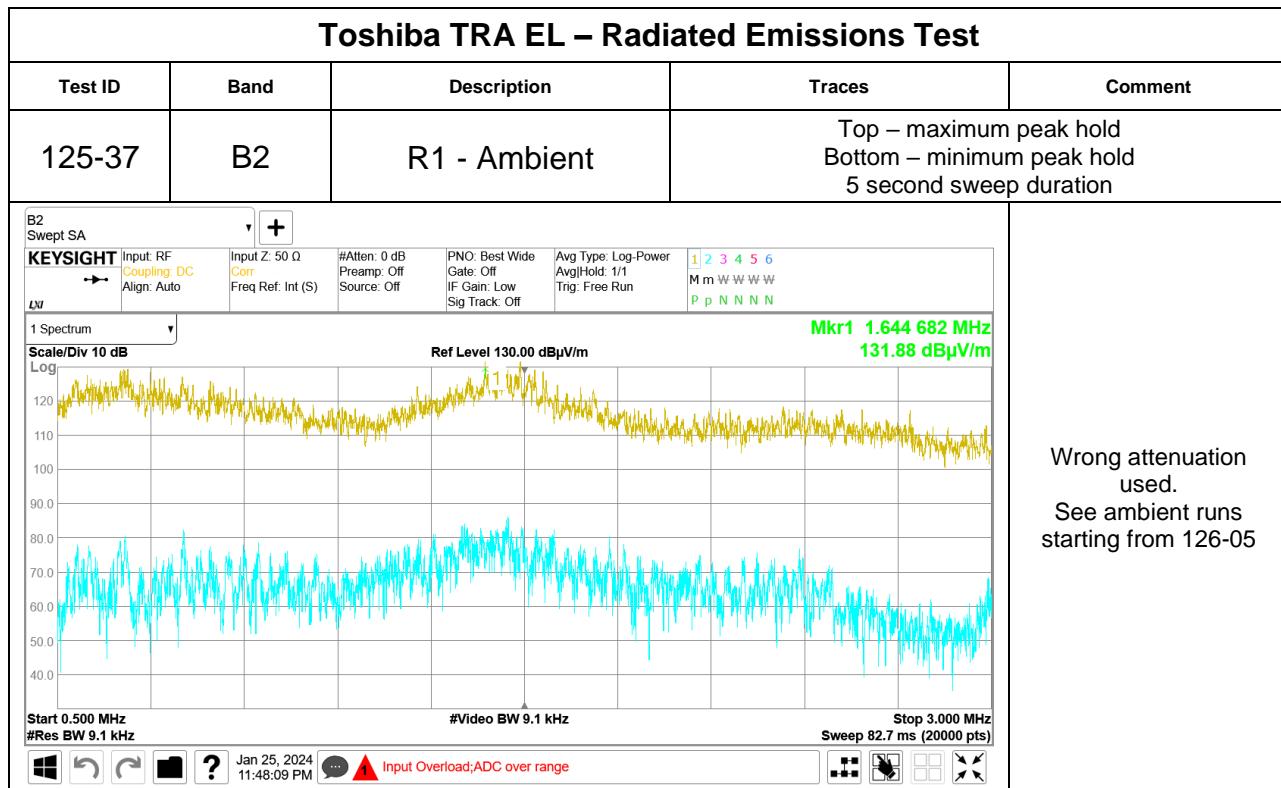
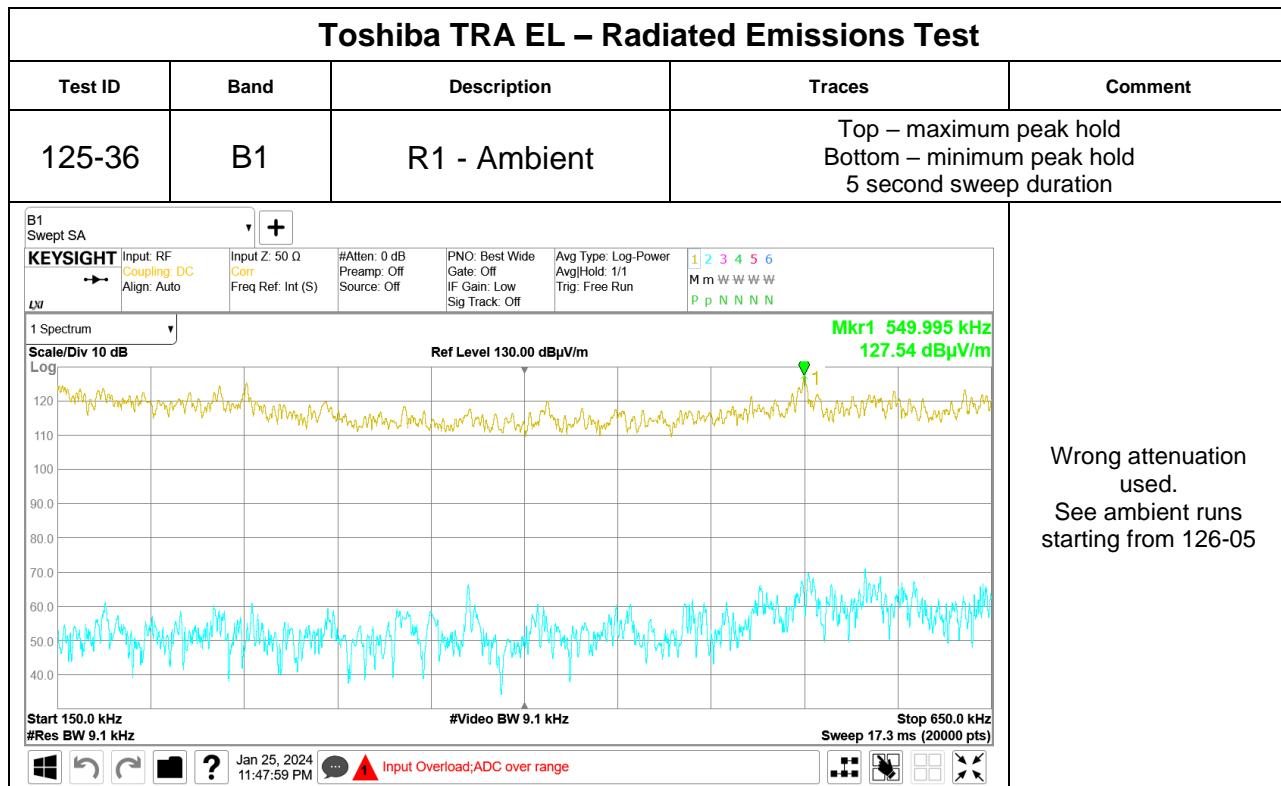
Test ID	Date	Time	Freq Band (B1 - B6v)	Procedure Operation ID (R0-R5)	Antenna	Operating Activity	Starting Speed (km/h)	Ending Speed (km/h)	Mode	Direction	Notes / Results
126-76	1-26-2024	3:41	B4	R1	Monopole	No Locomotive	-	-	Ambient	-	Unofficial ambient measurement, no locomotive; measure for 60 seconds this time
126-77	1-26-2024	3:43	B1	R1	Monopole	No Locomotive	-	-	Ambient	-	Unofficial ambient measurement, no locomotive; measure for 60 seconds this time
126-78	1-26-2024	3:44	B2	R1	Monopole	No Locomotive	-	-	Ambient	-	Unofficial ambient measurement, no locomotive; measure for 60 seconds this time
126-79	1-26-2024	3:45	B3	R1	Monopole	No Locomotive	-	-	Ambient	-	Unofficial ambient measurement, no locomotive; measure for 60 seconds this time
126-80	1-26-2024	3:46	B4	R1	Monopole	No Locomotive	-	-	Ambient	-	Unofficial ambient measurement, no locomotive, measure for 60 seconds this time

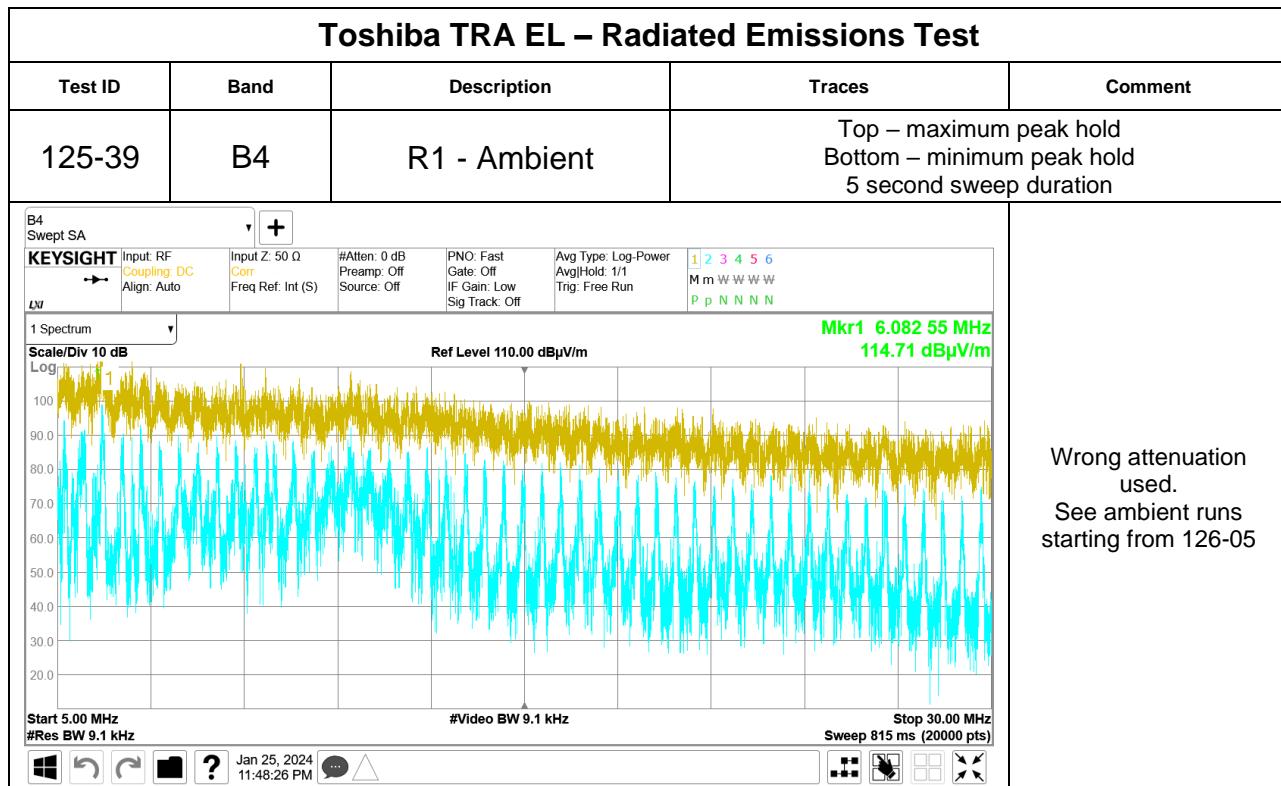
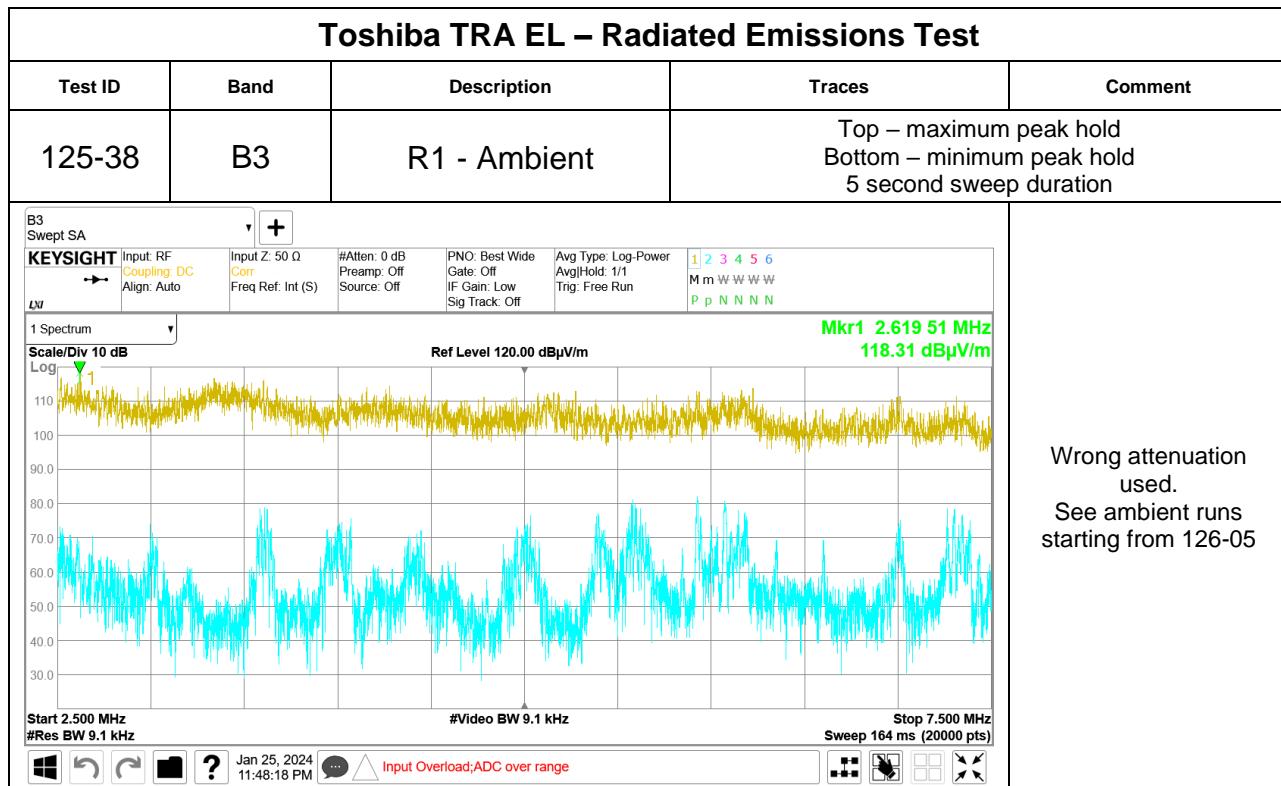
Radiated Emissions Test Results Record

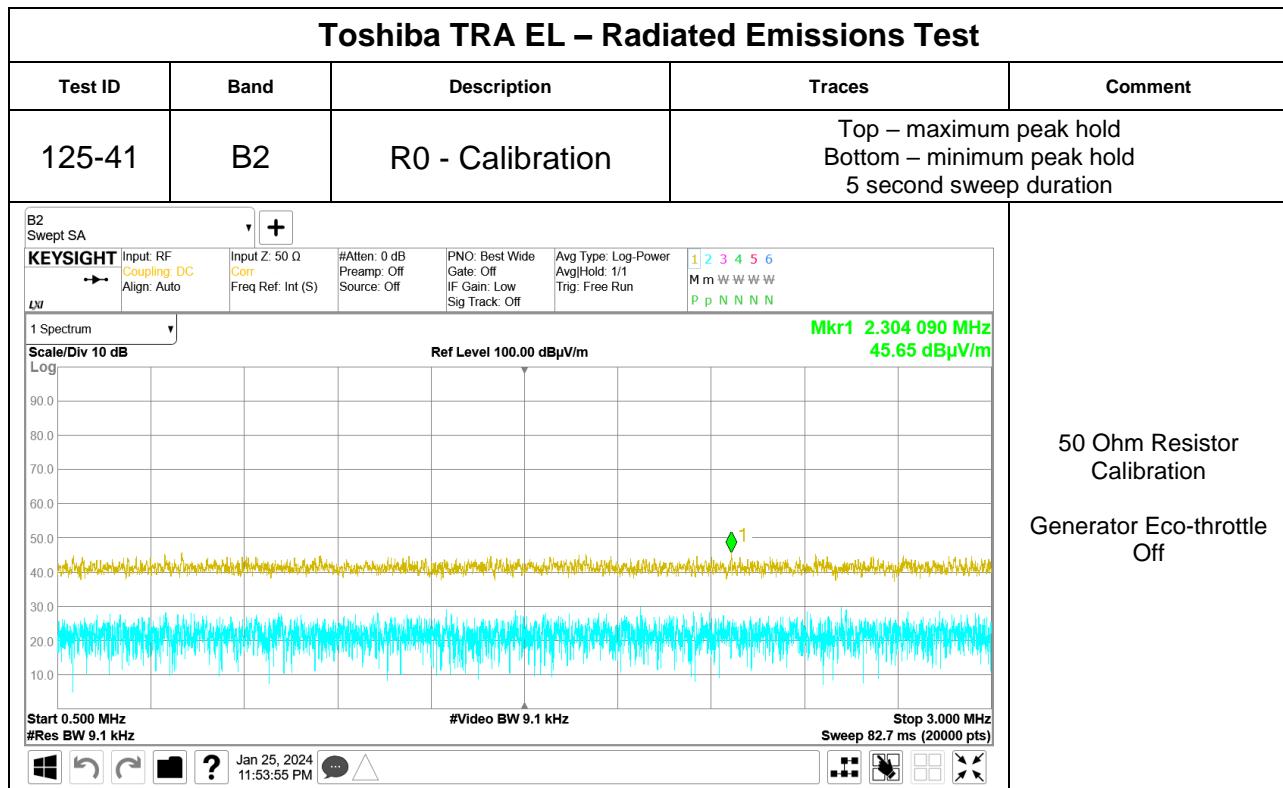
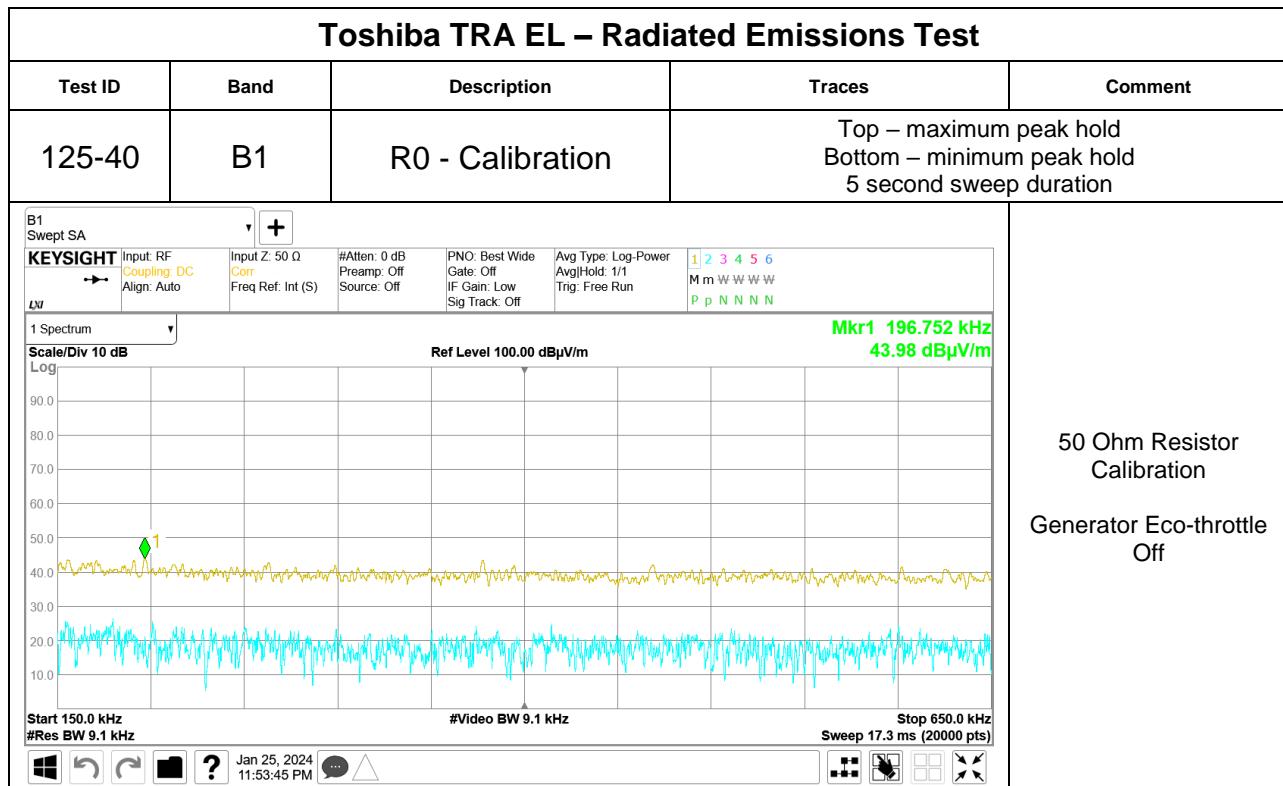


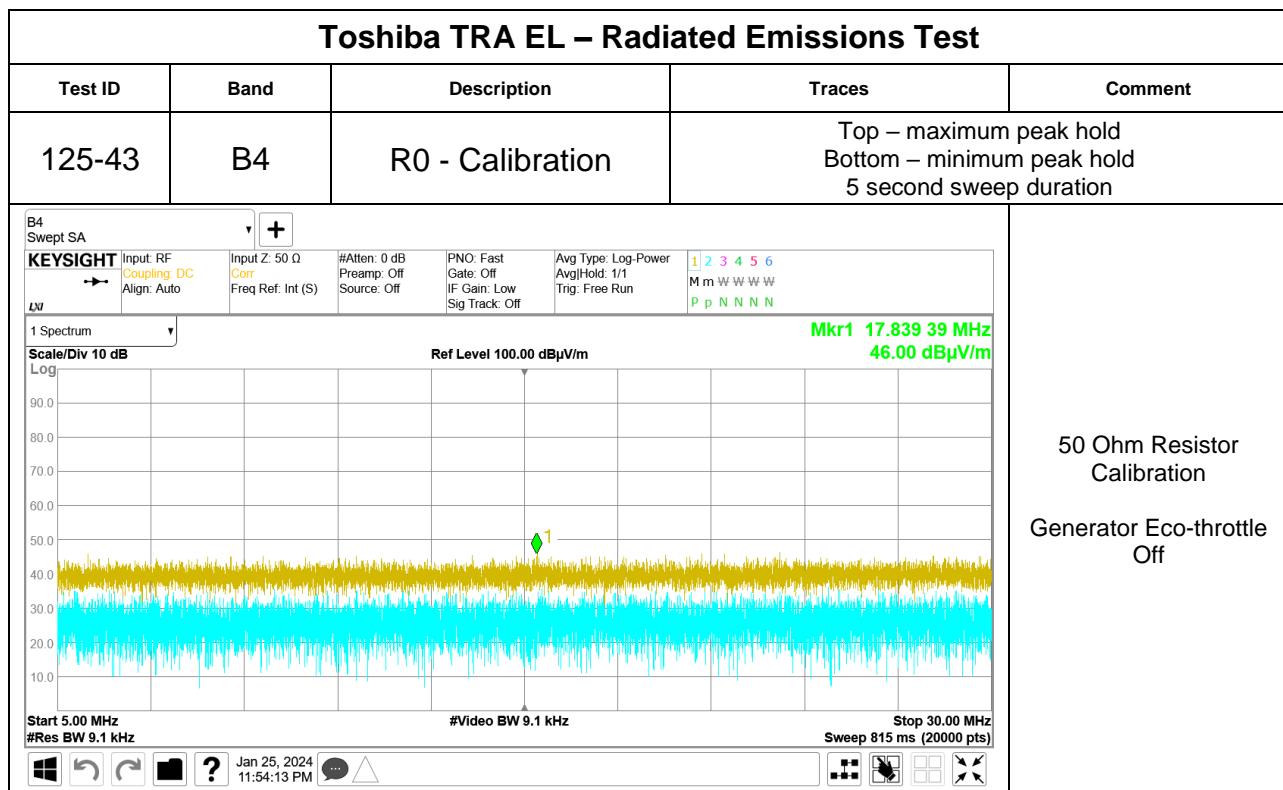
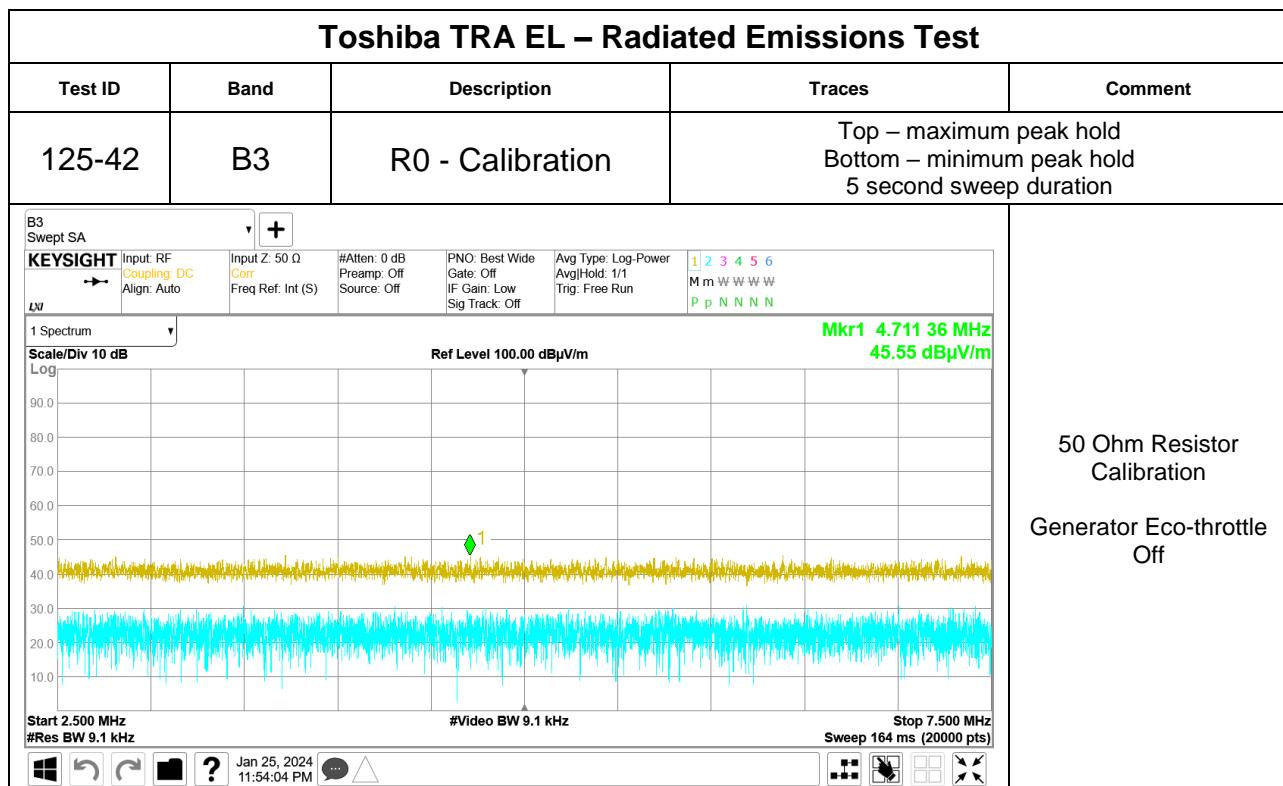


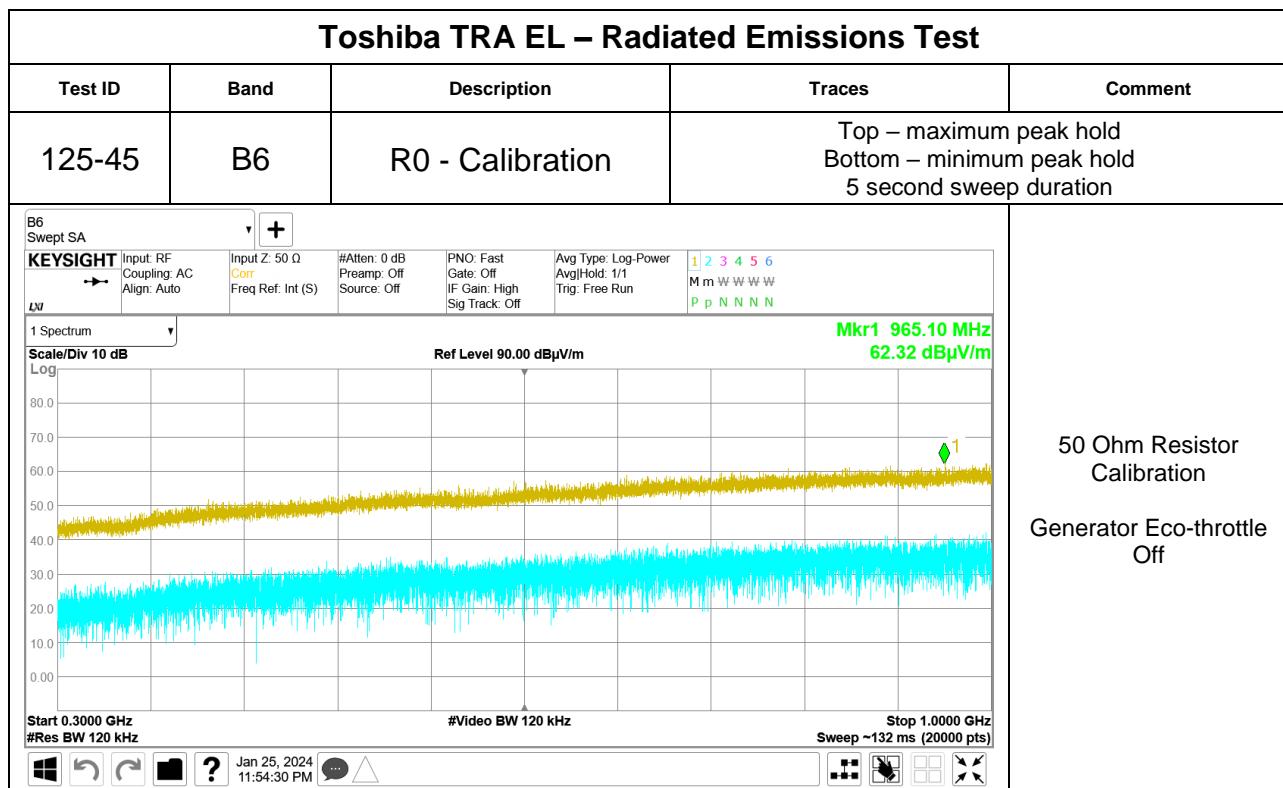
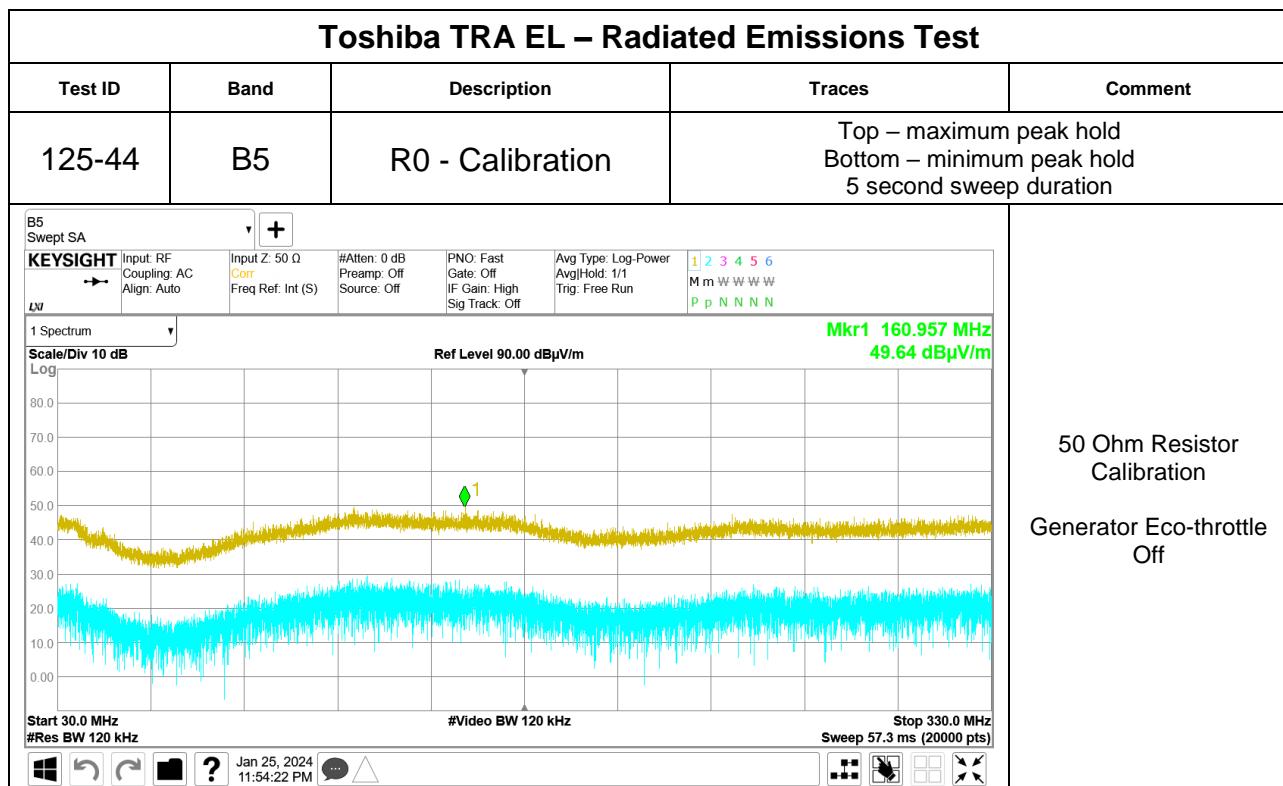


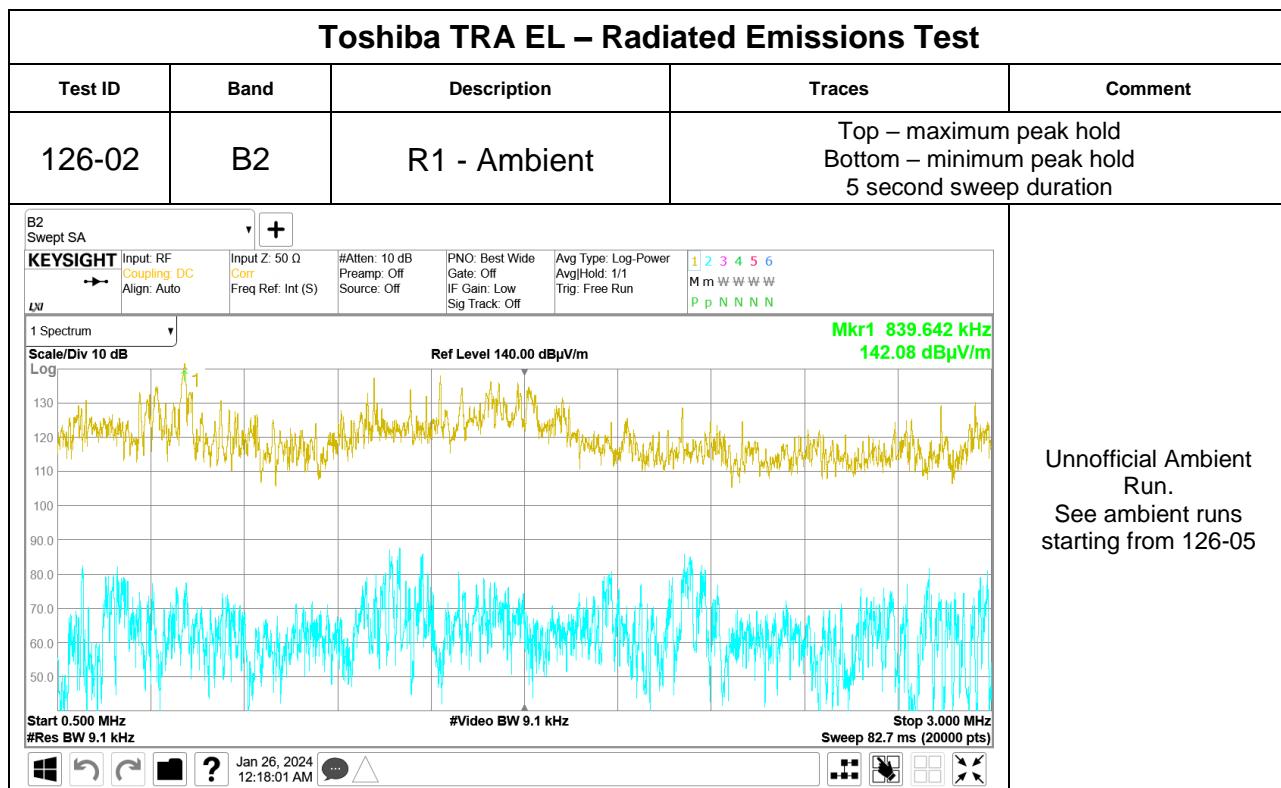
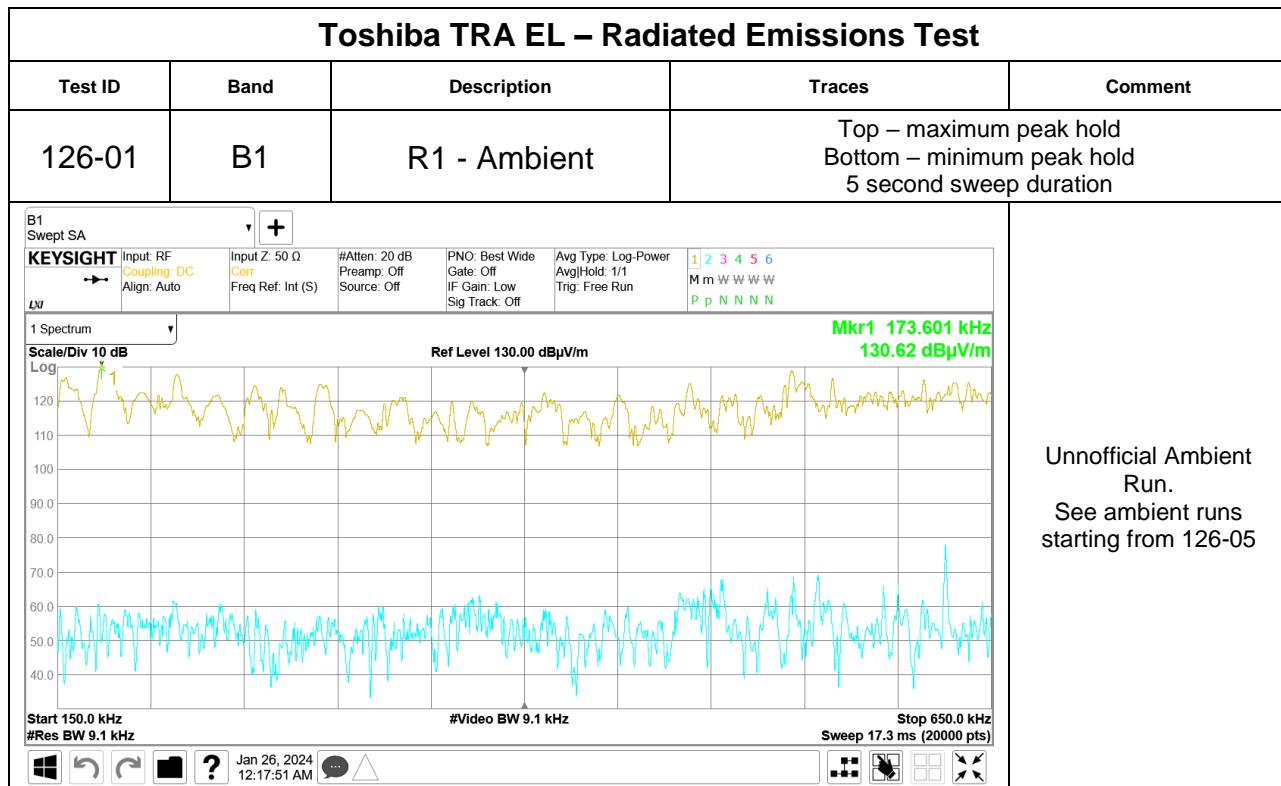


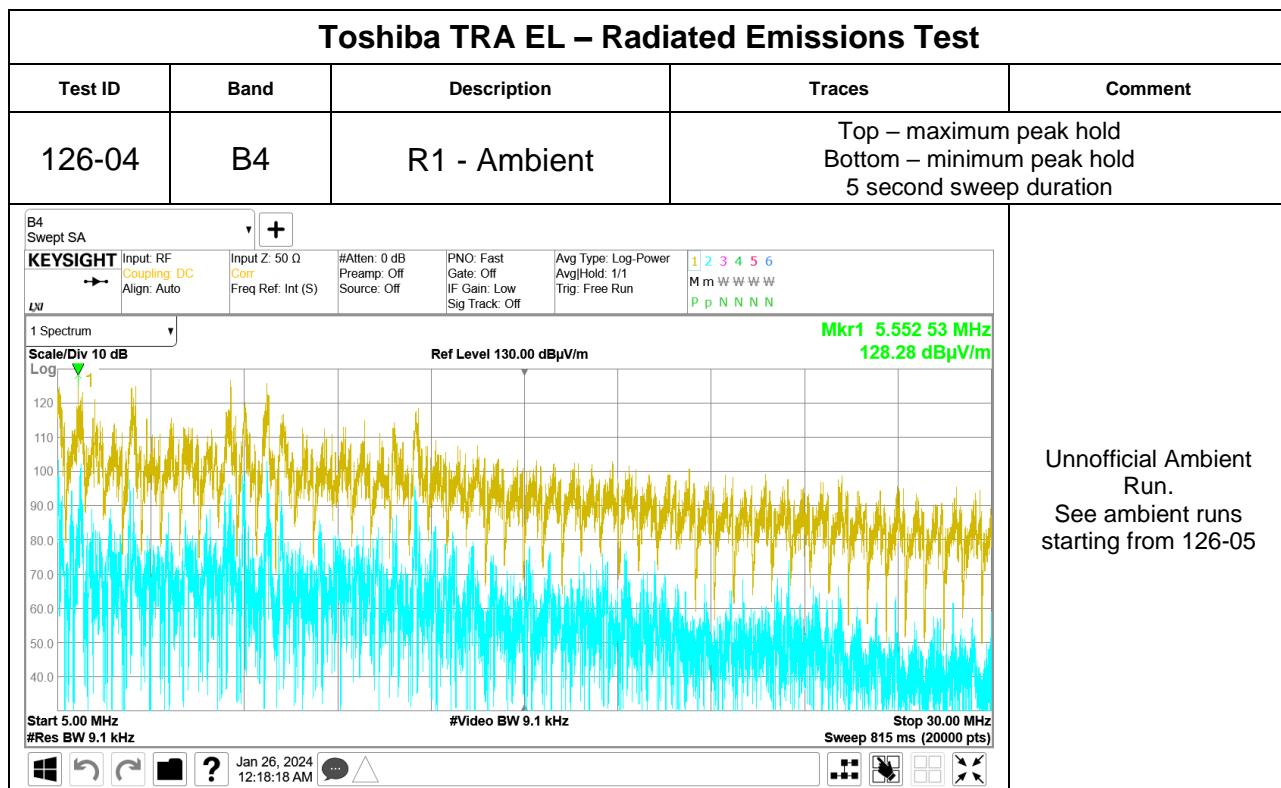
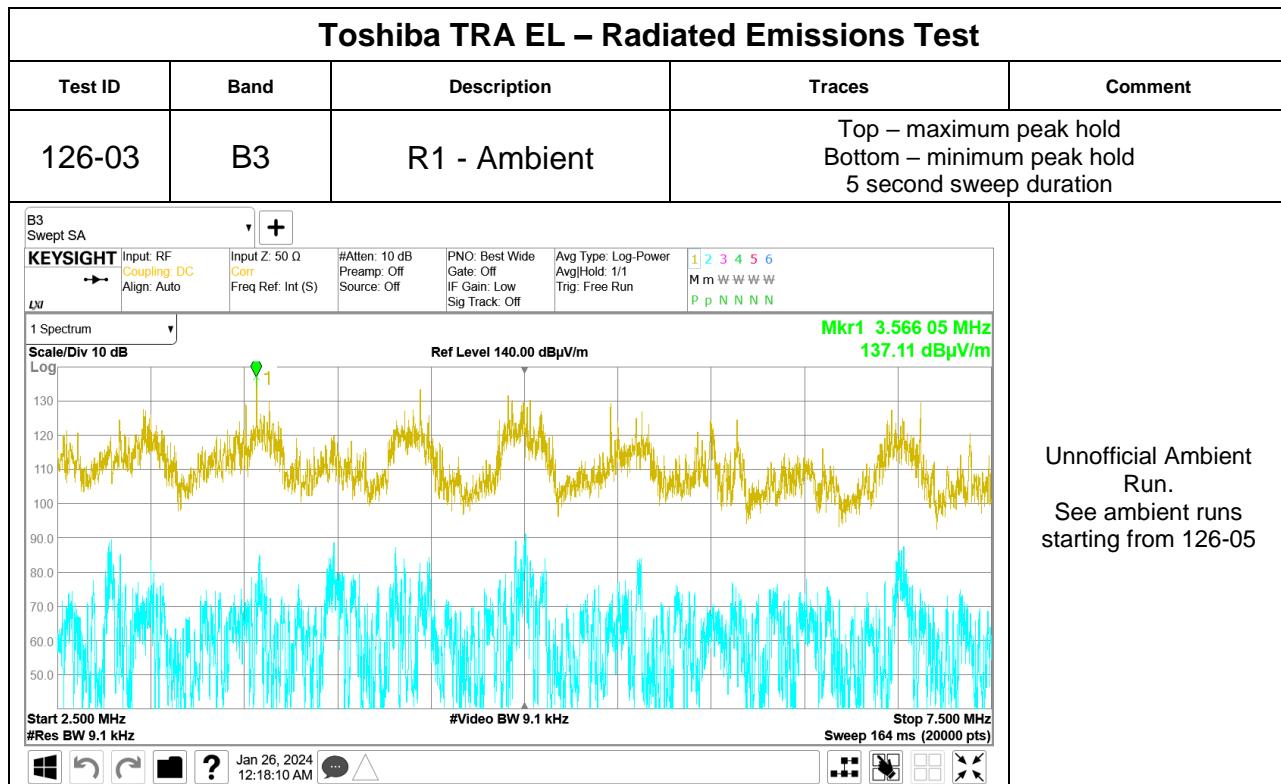


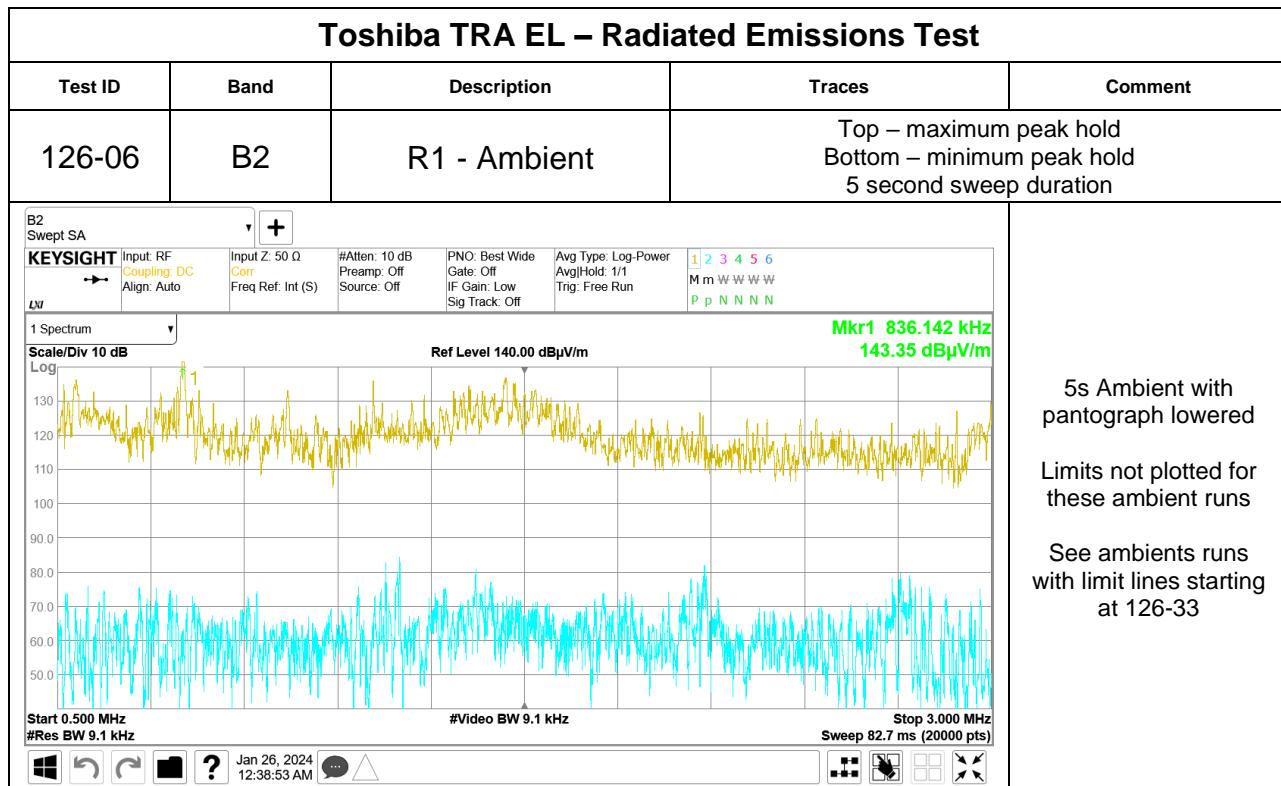
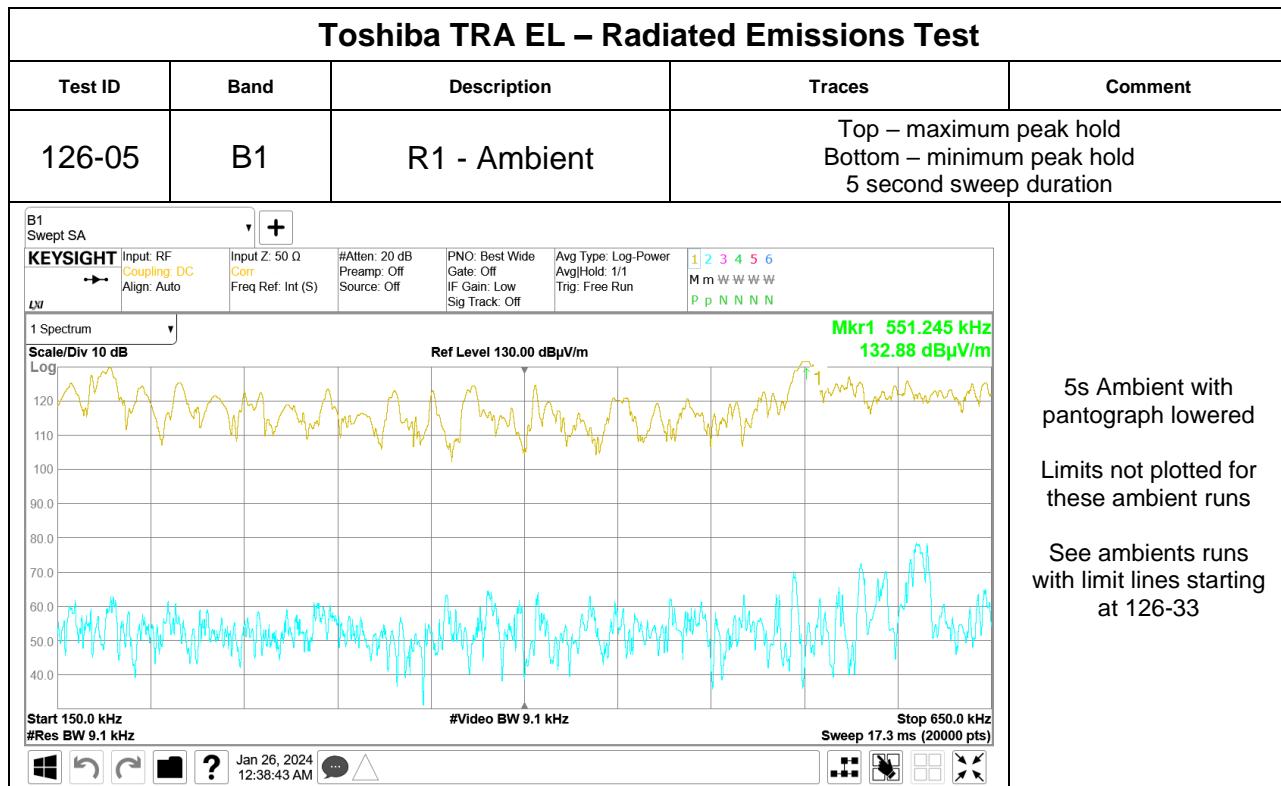


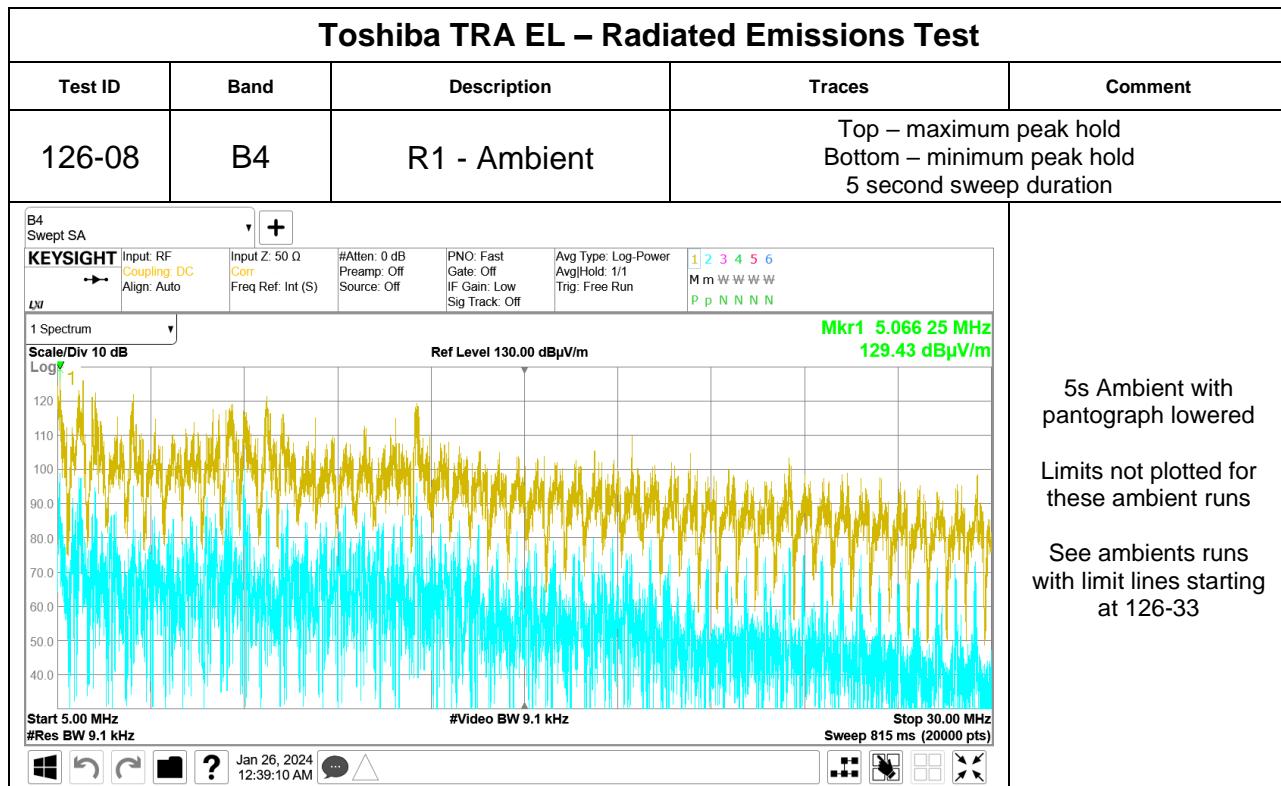
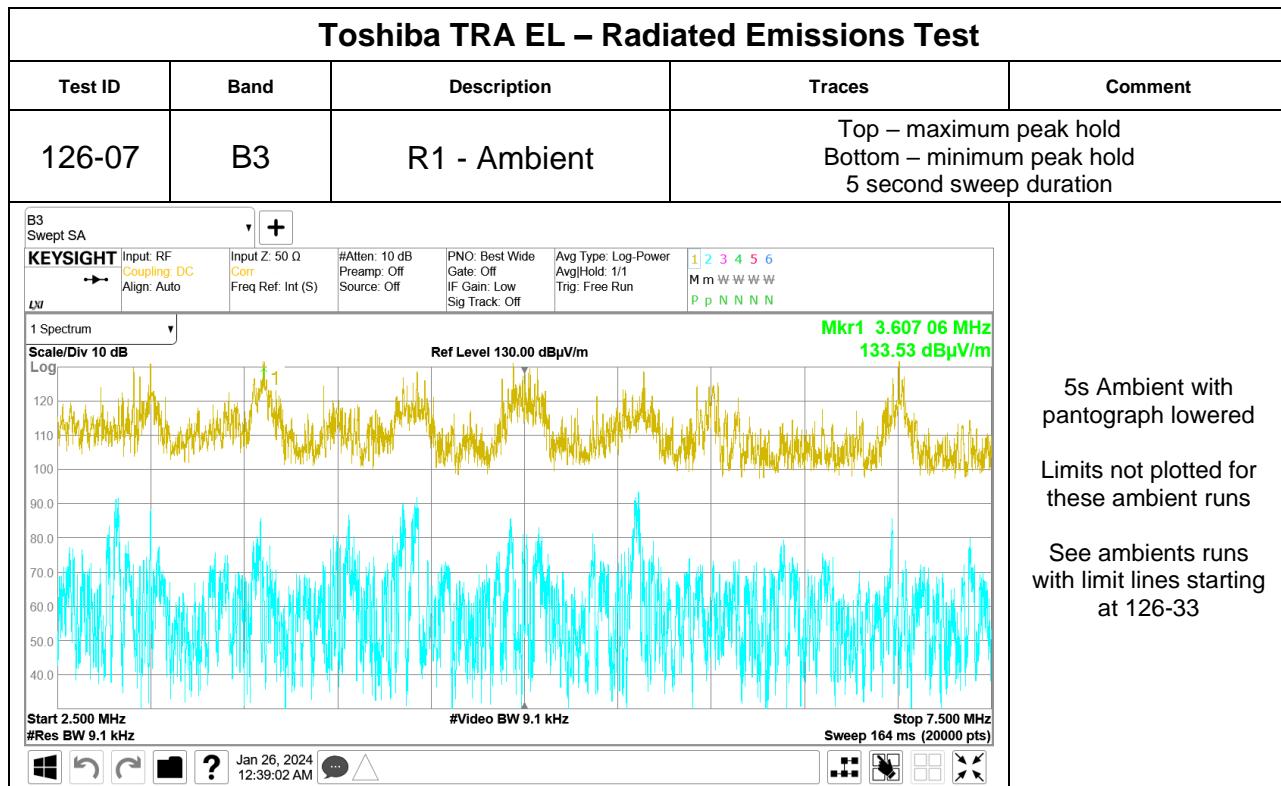


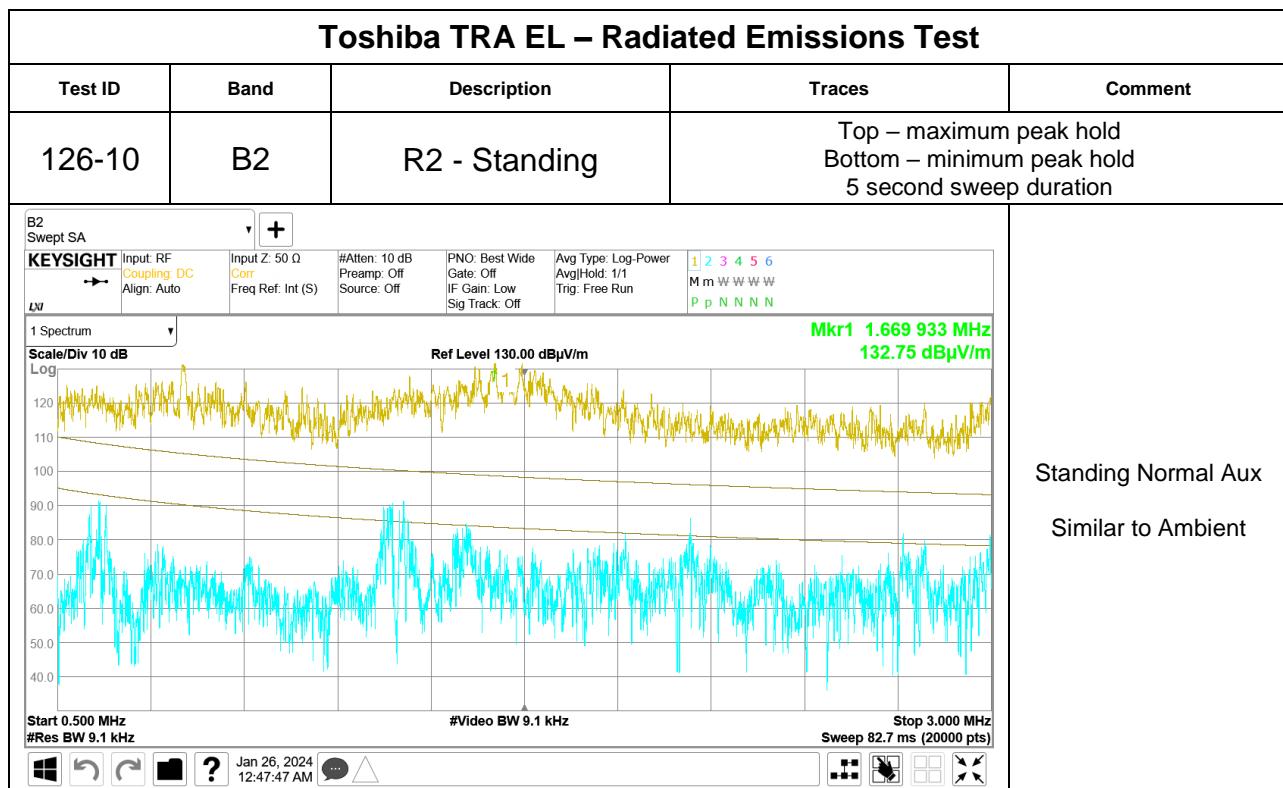
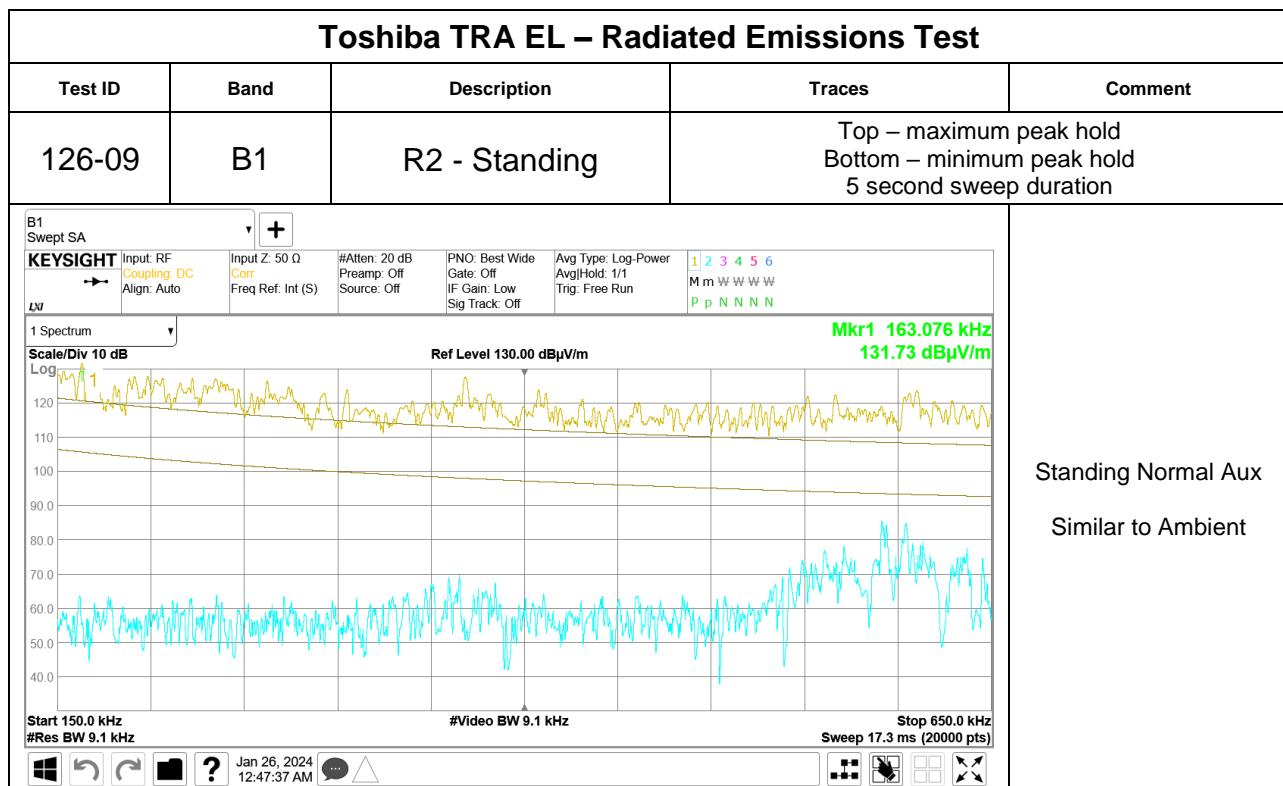


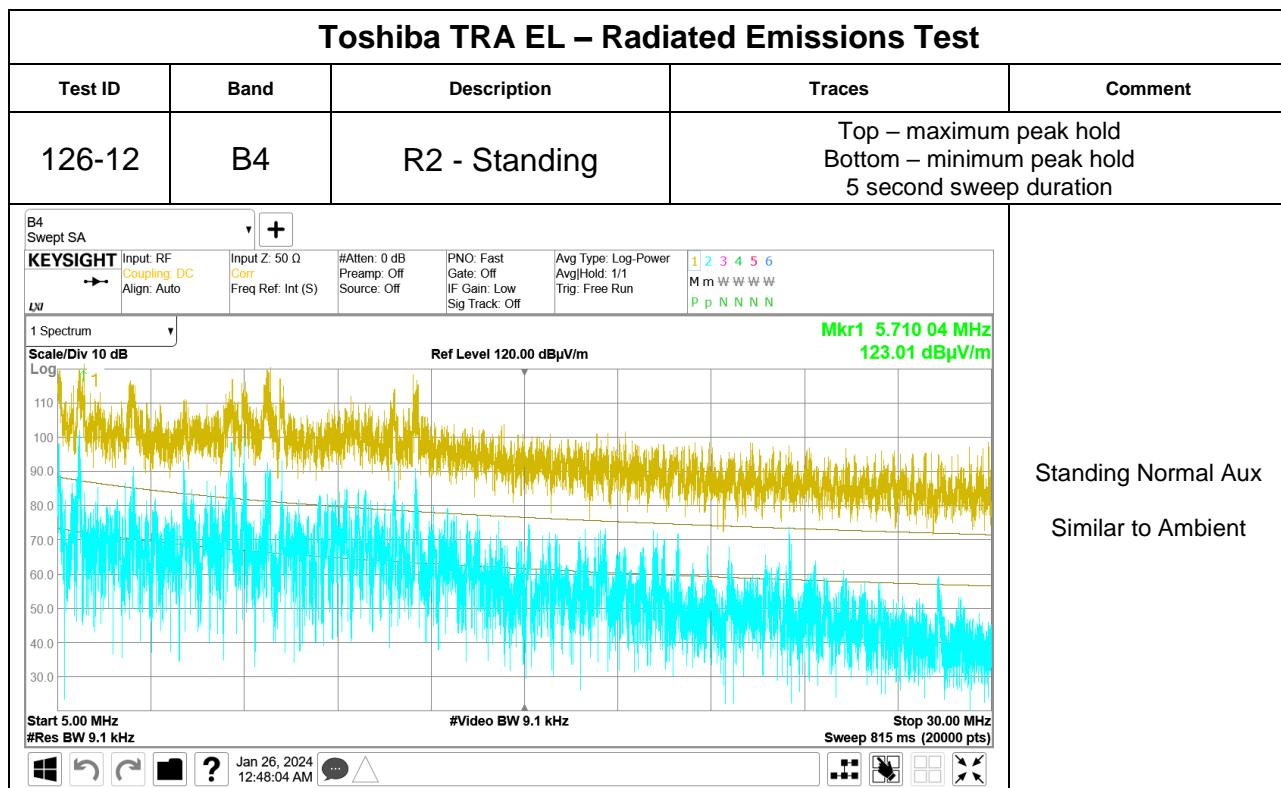
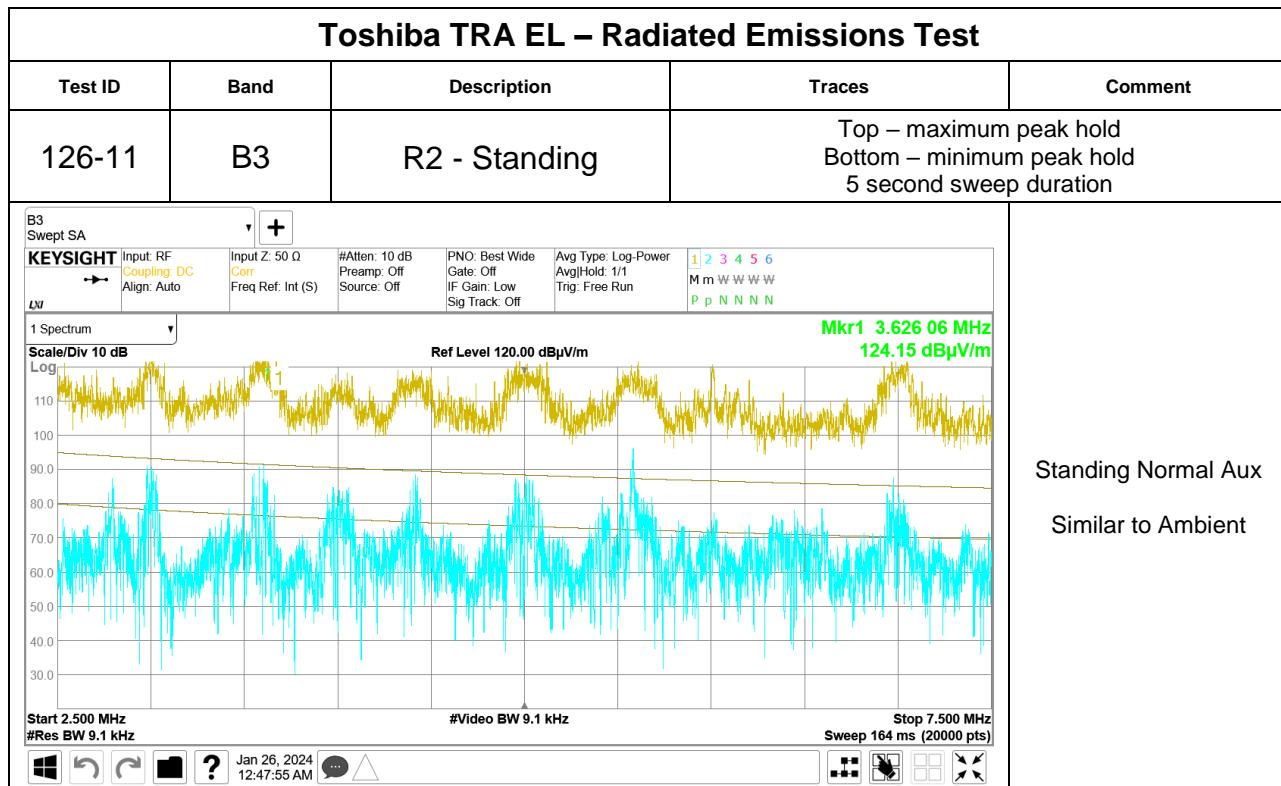


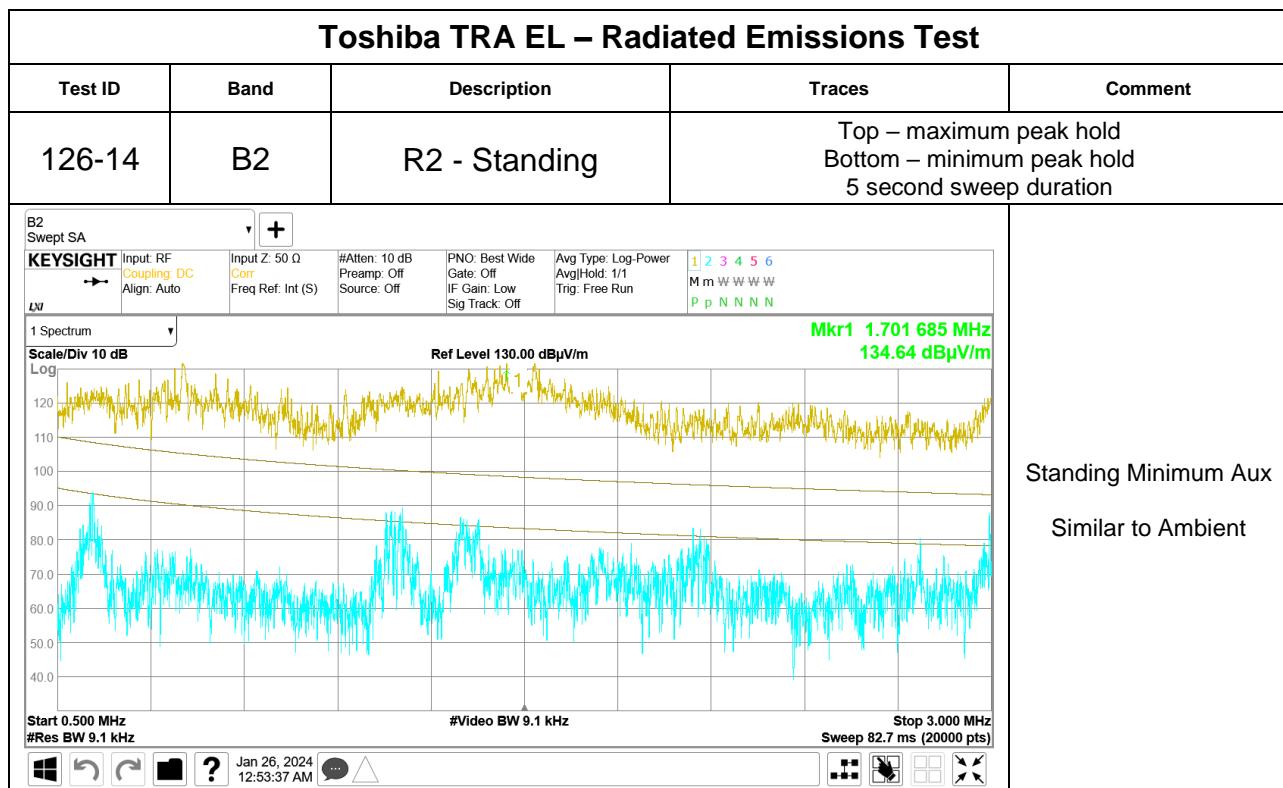
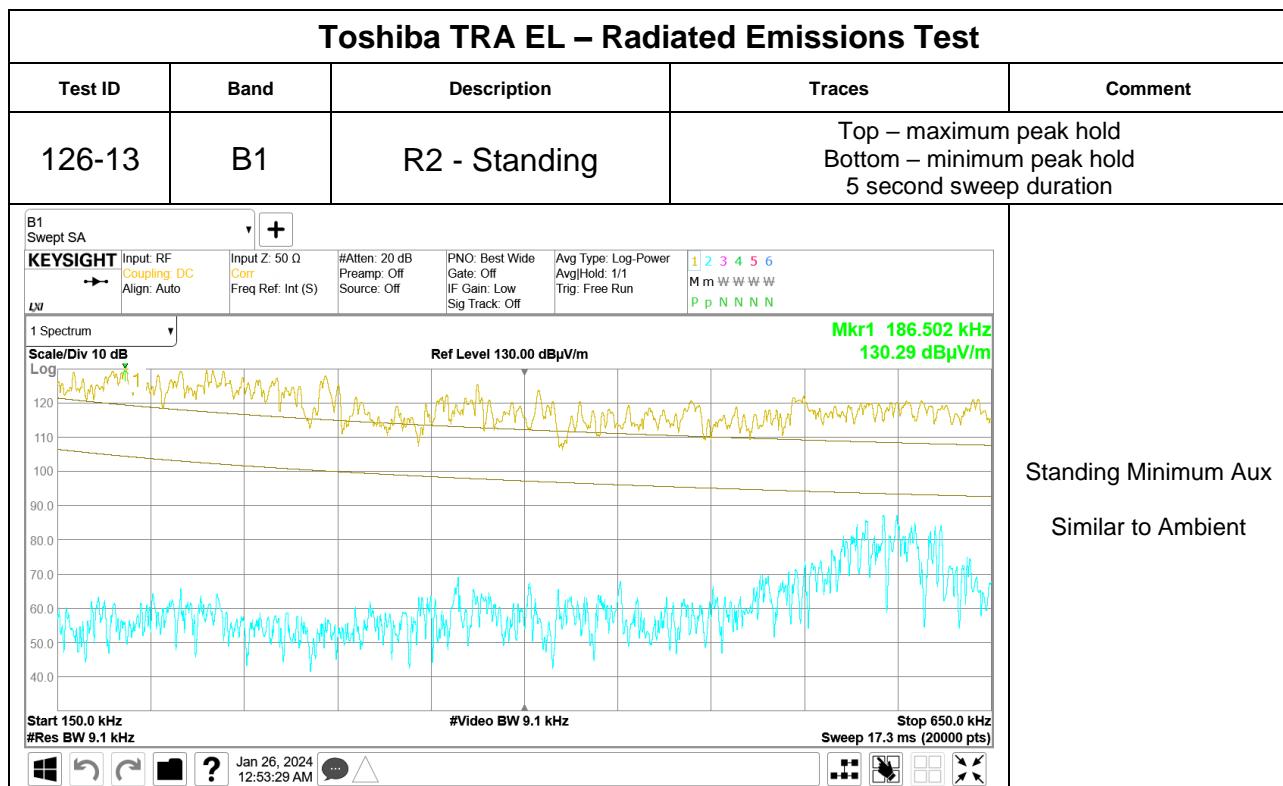


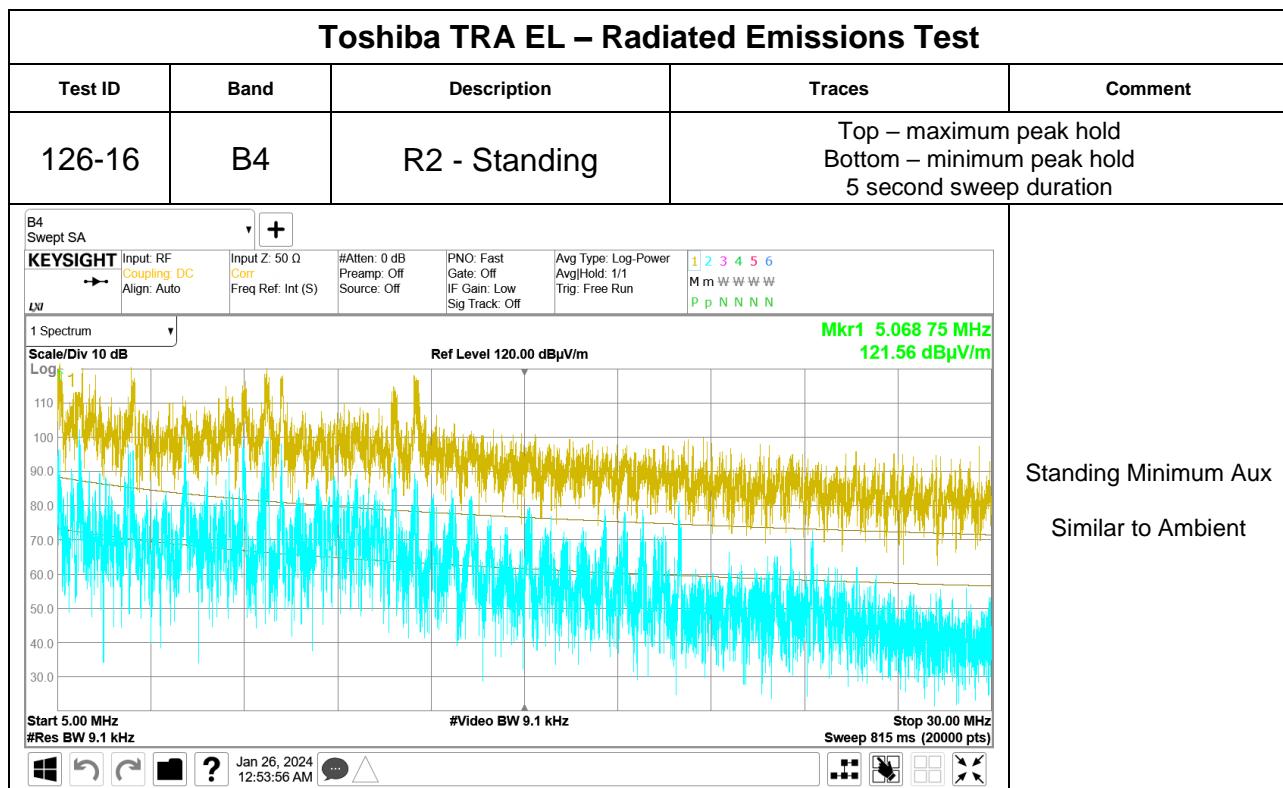
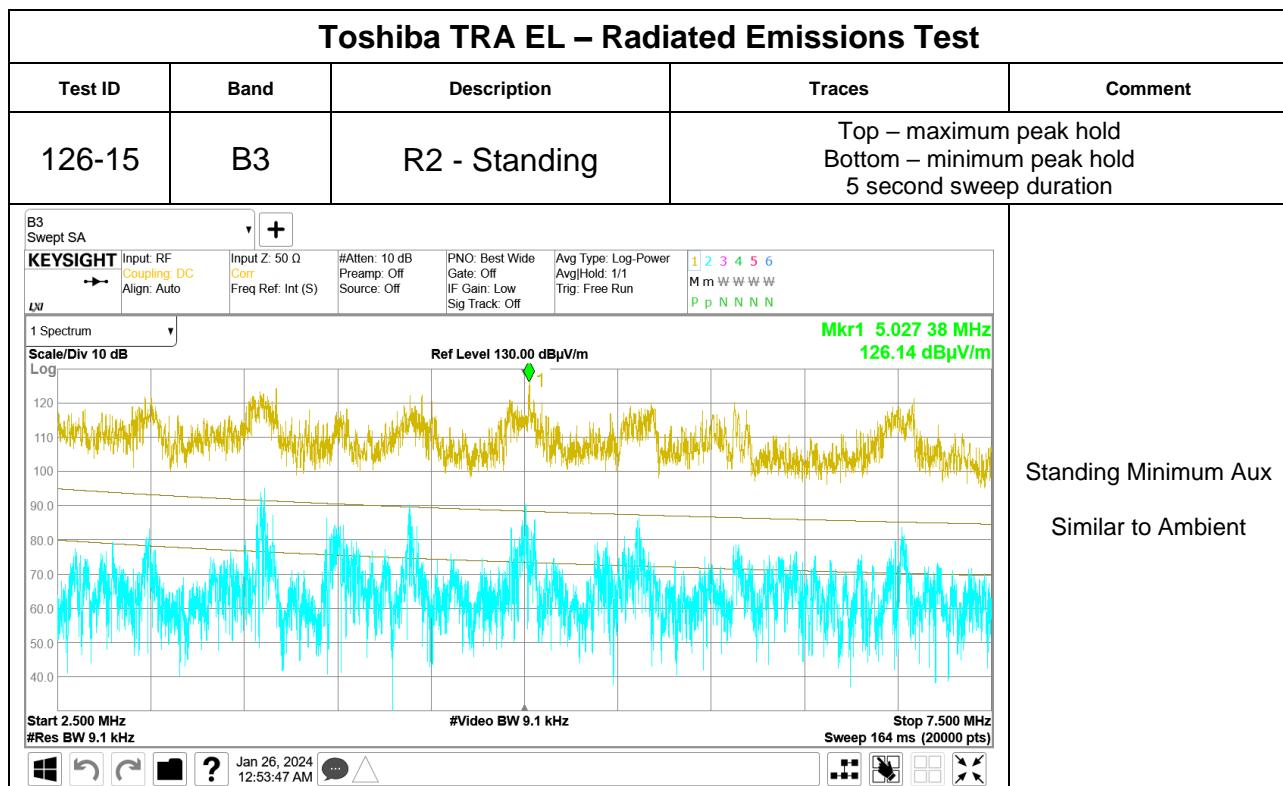


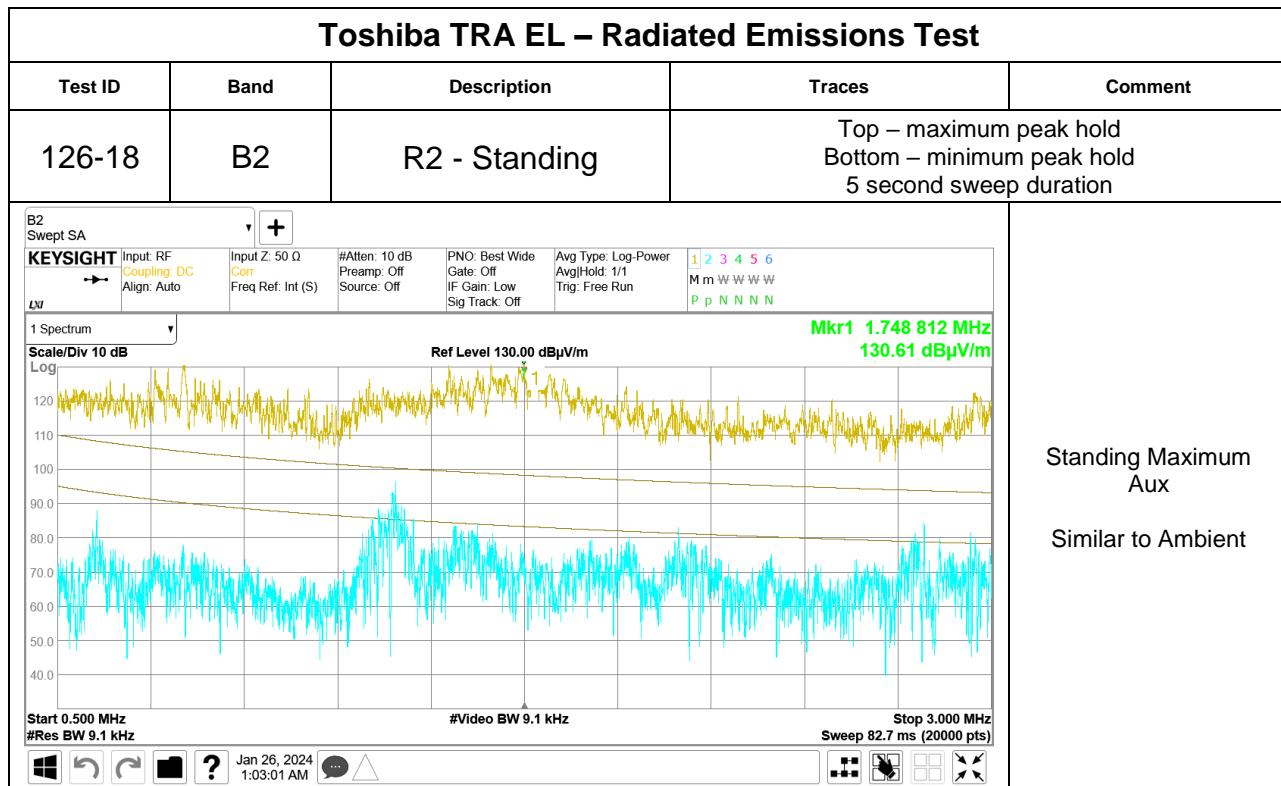
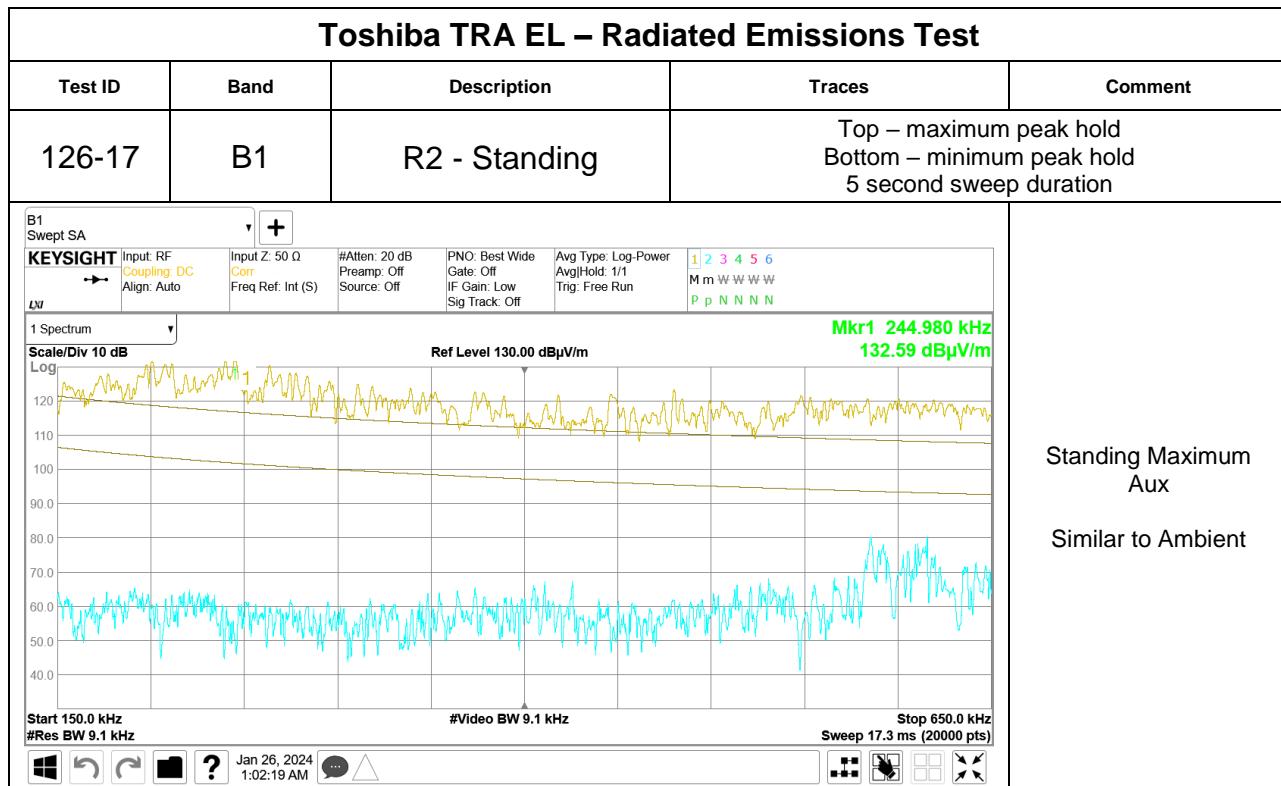


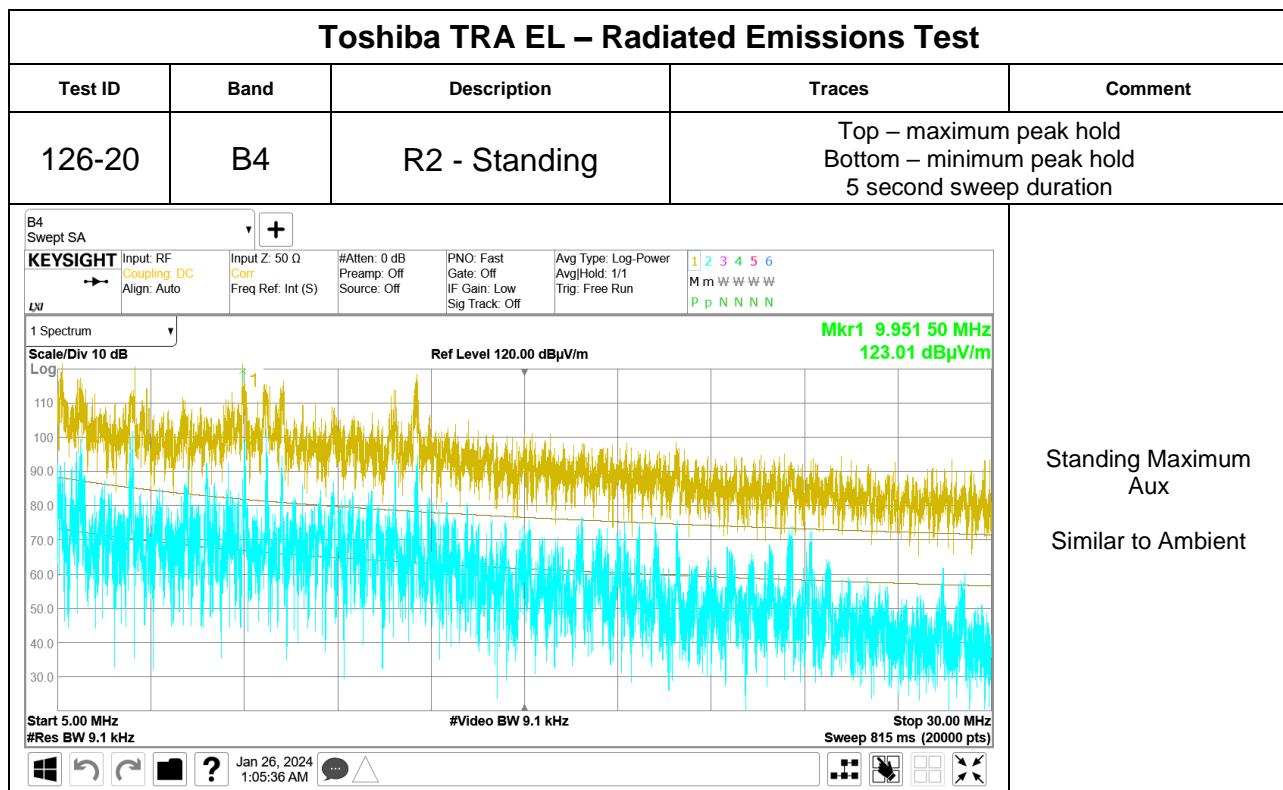
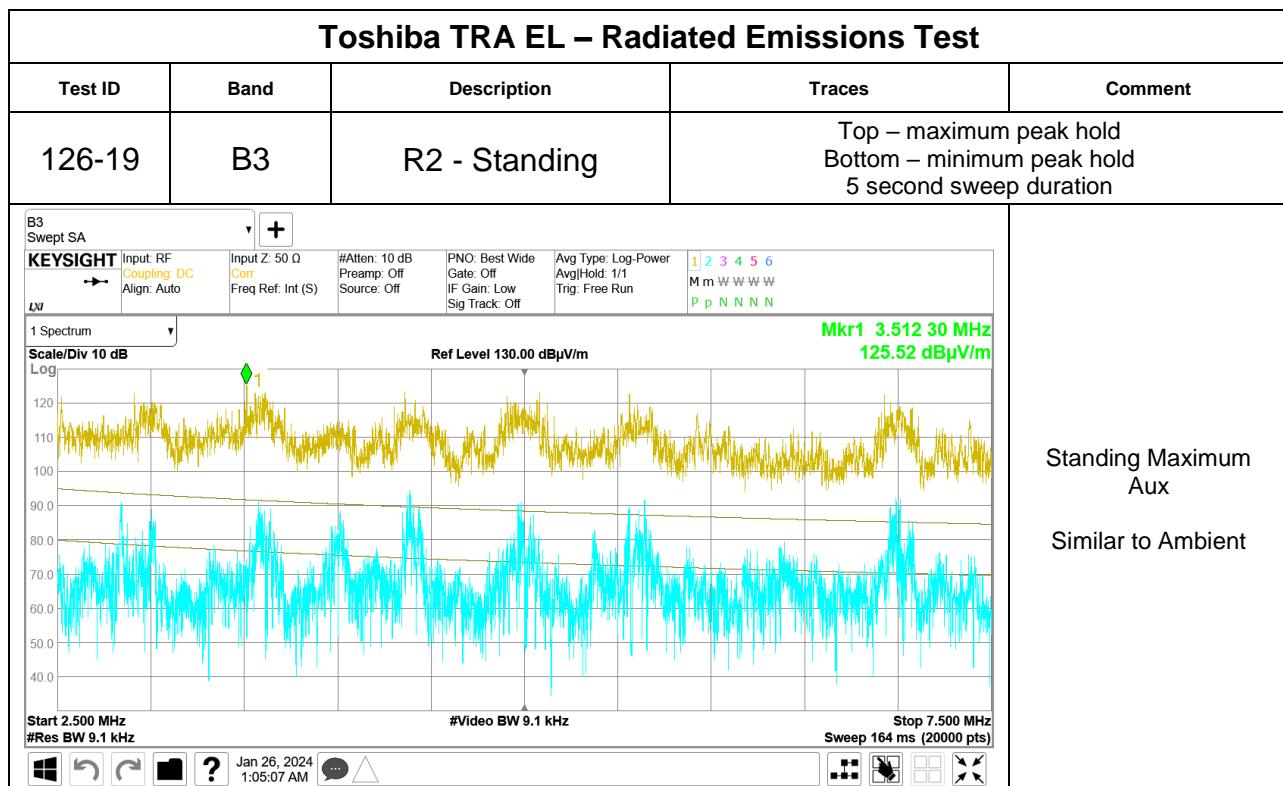


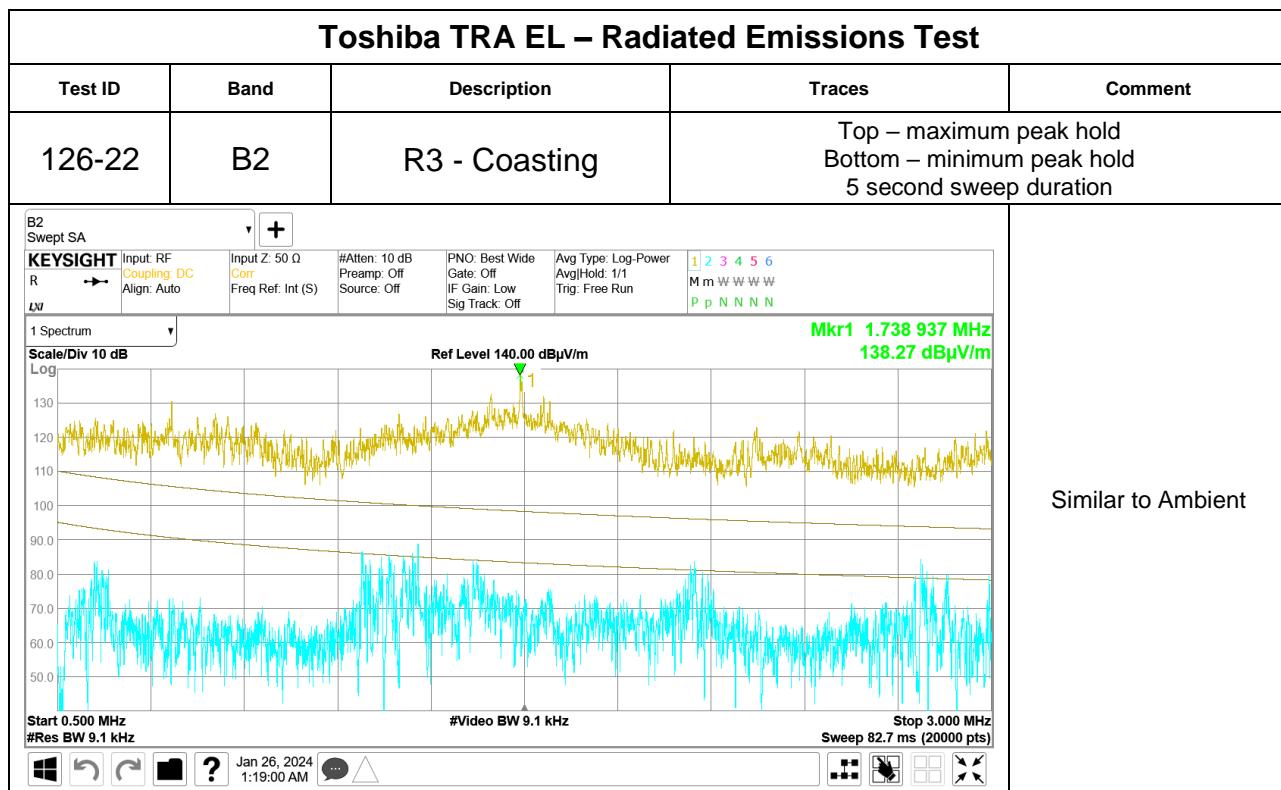
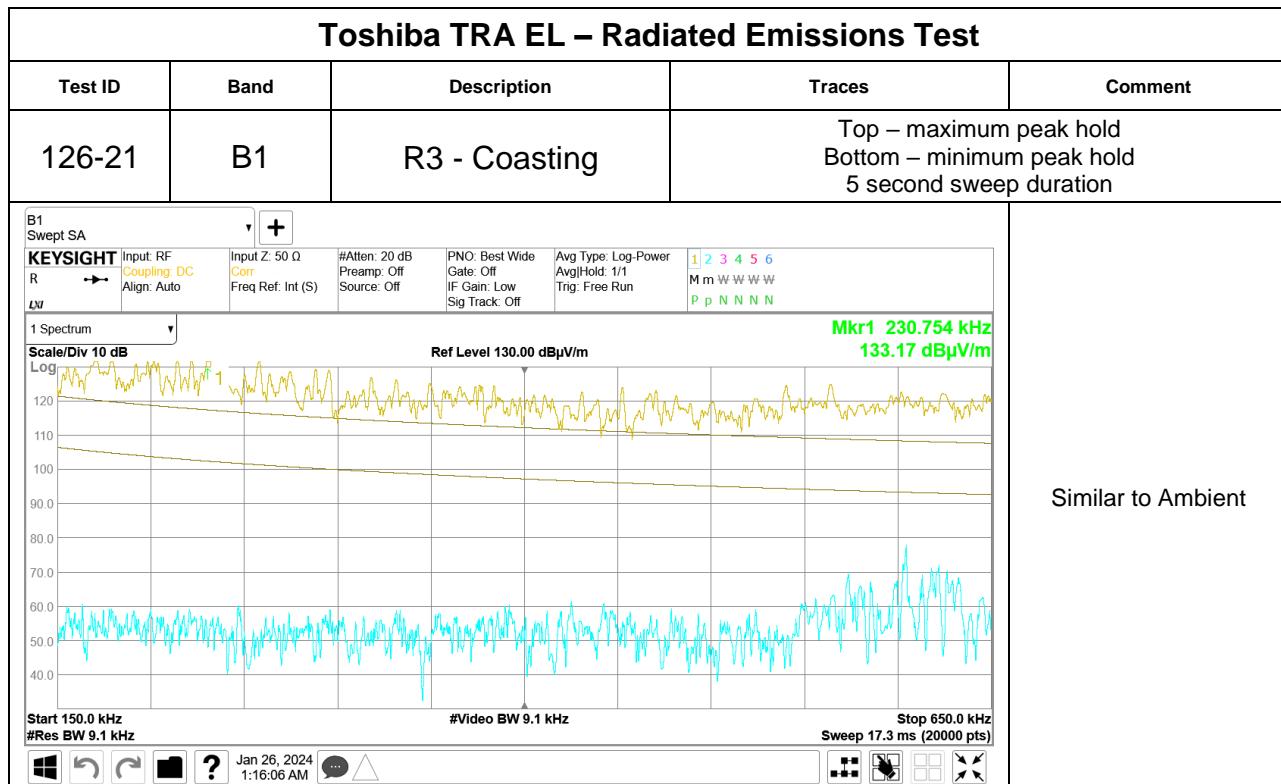


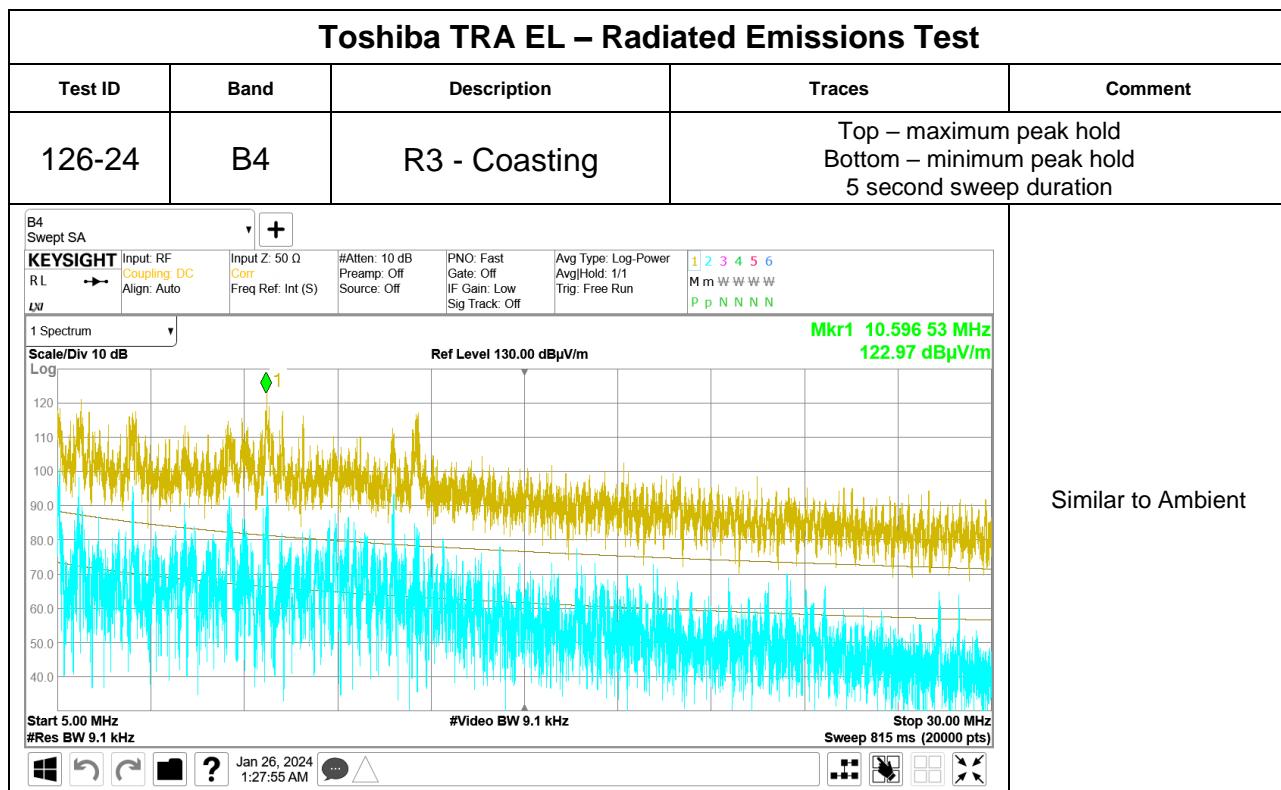
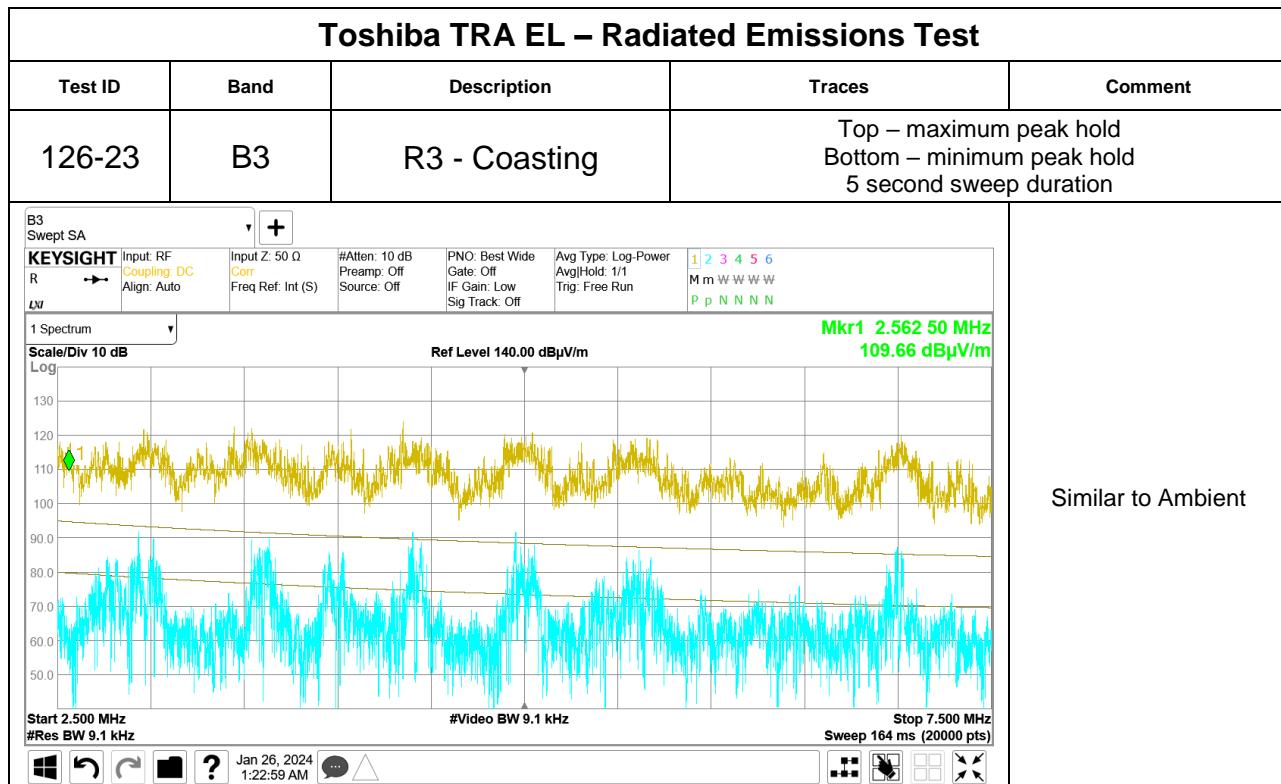


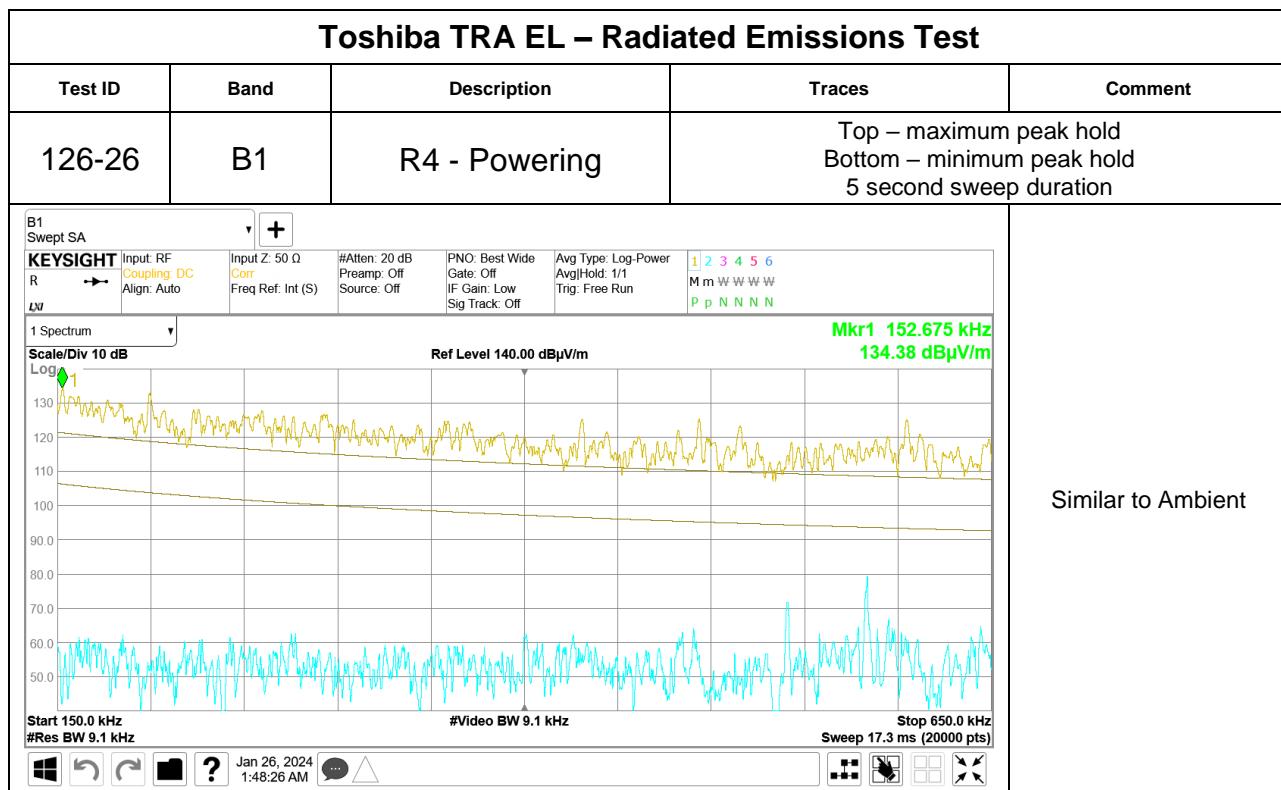
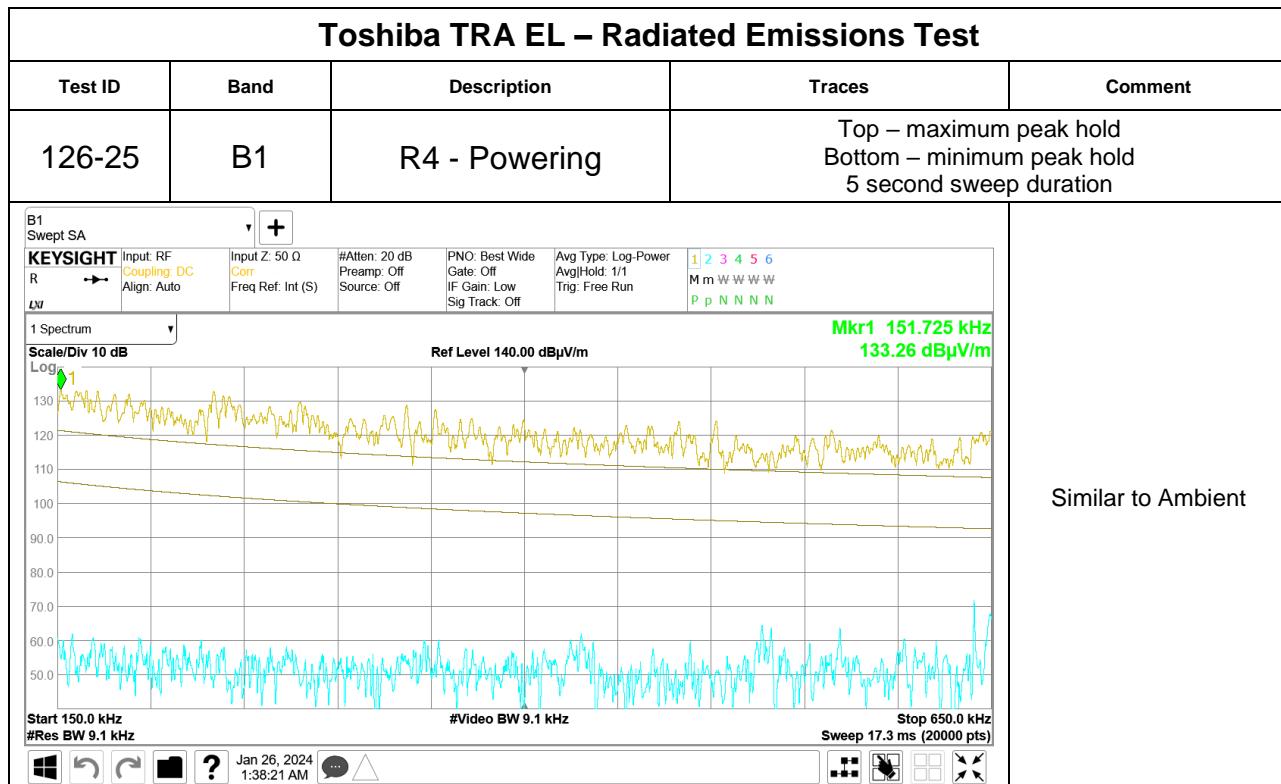


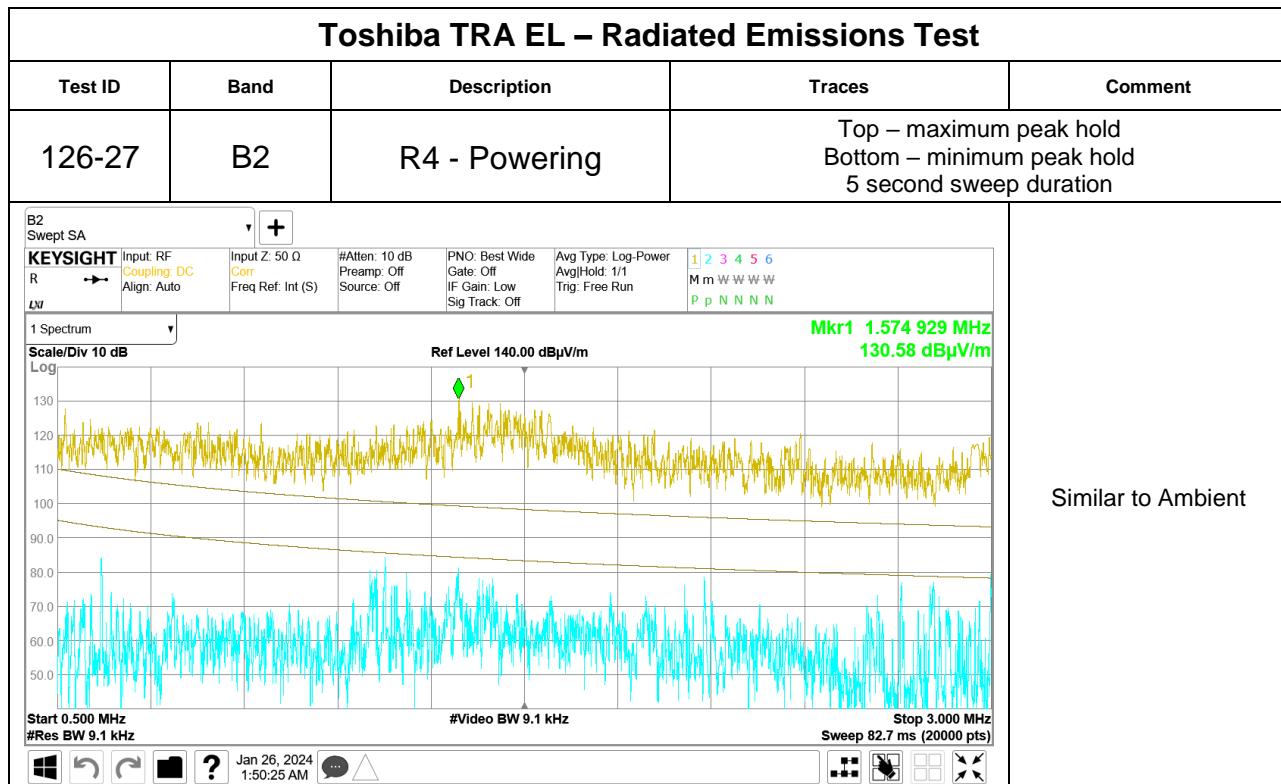




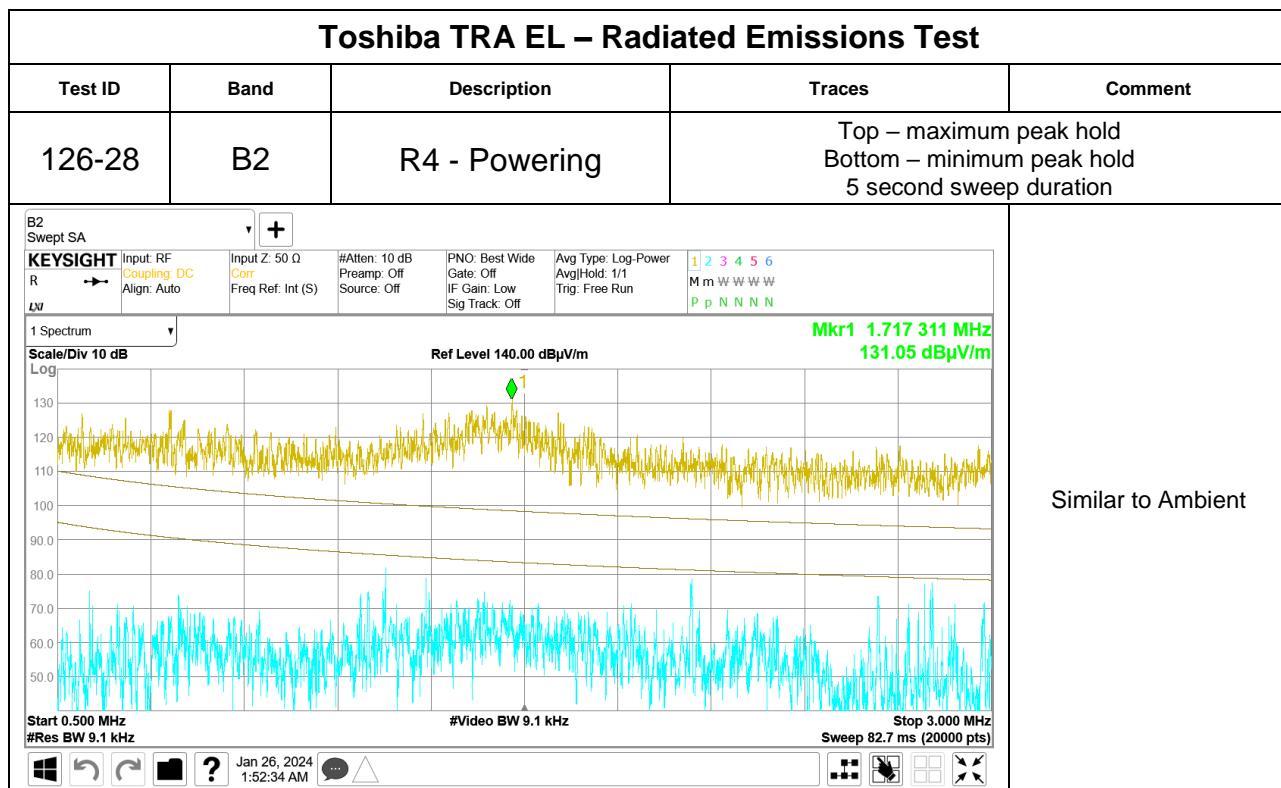




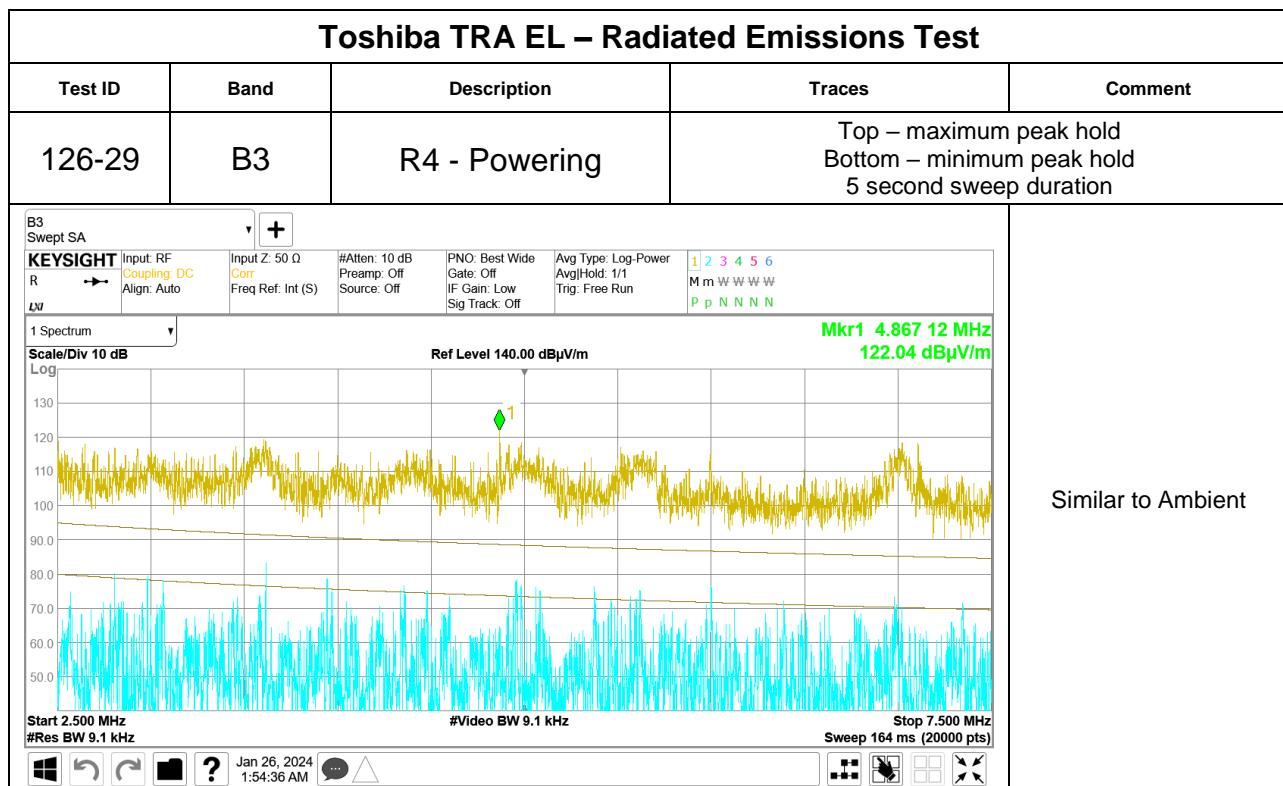




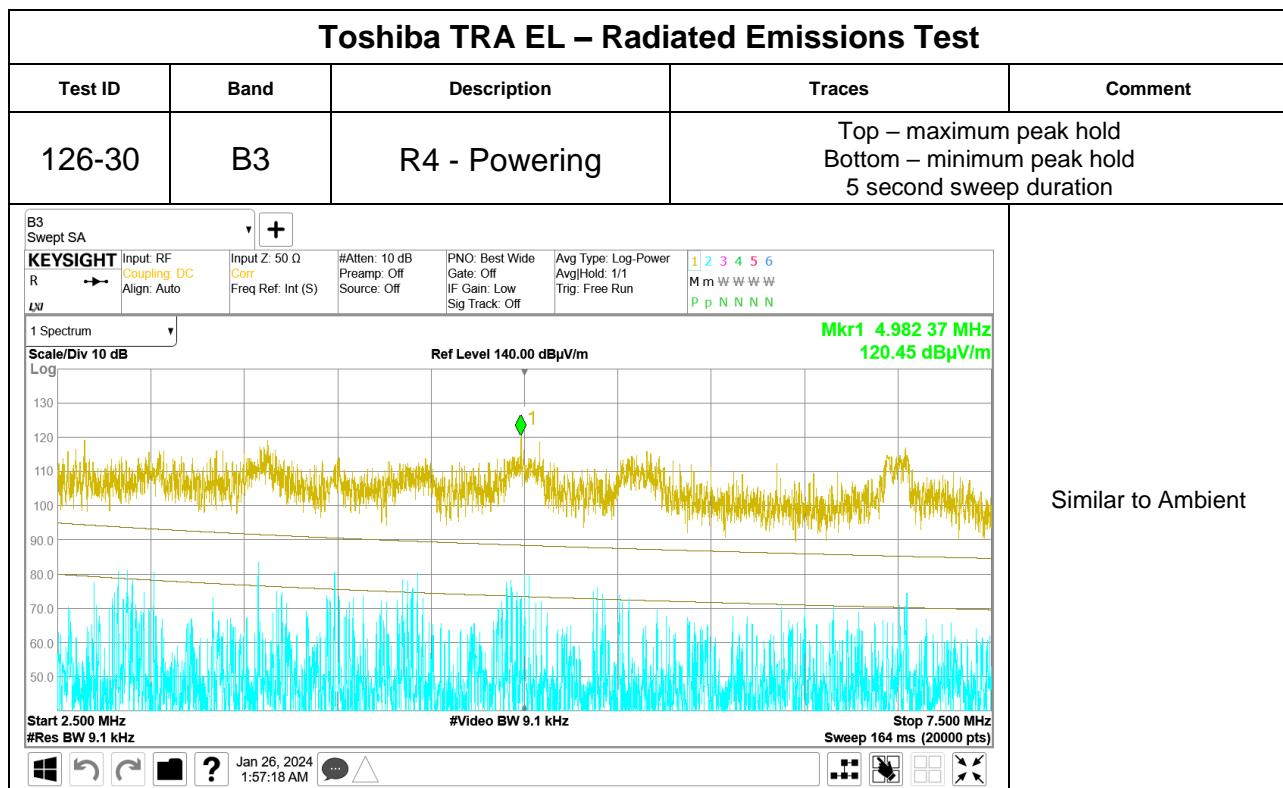
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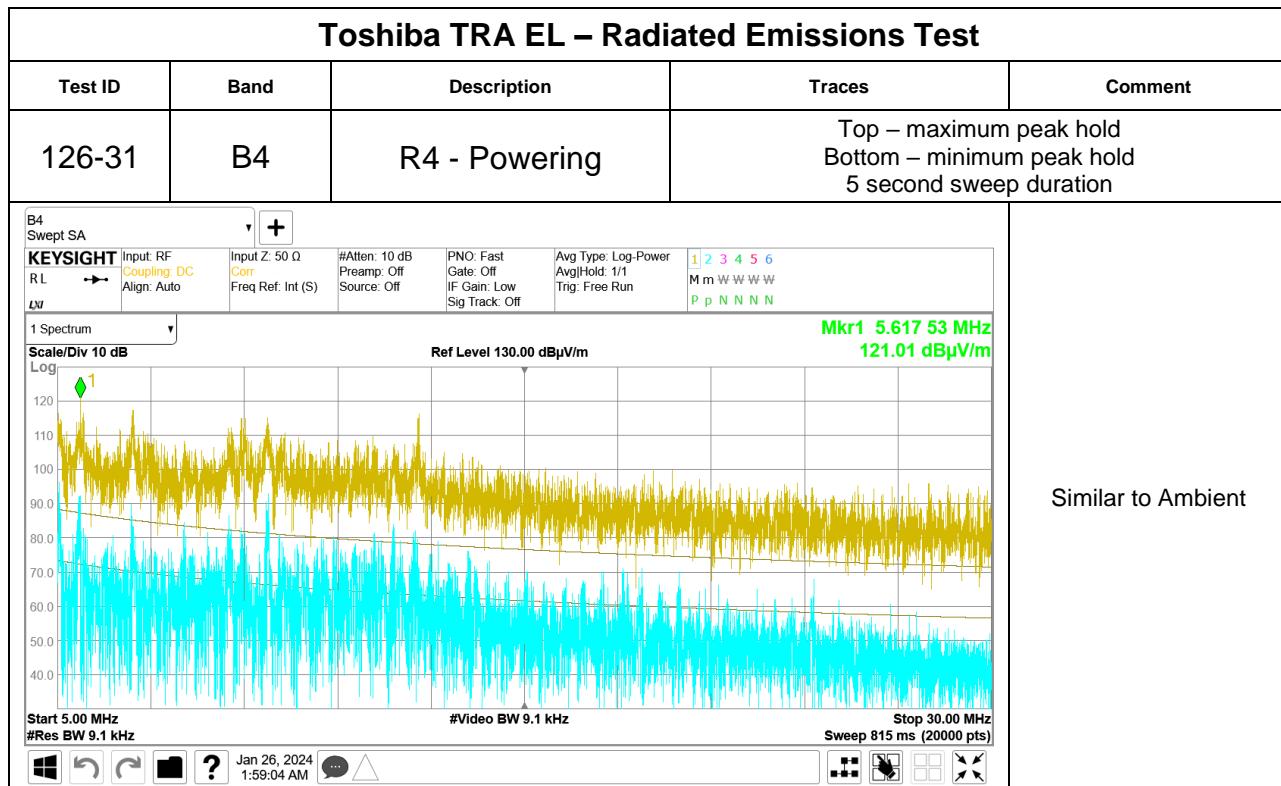
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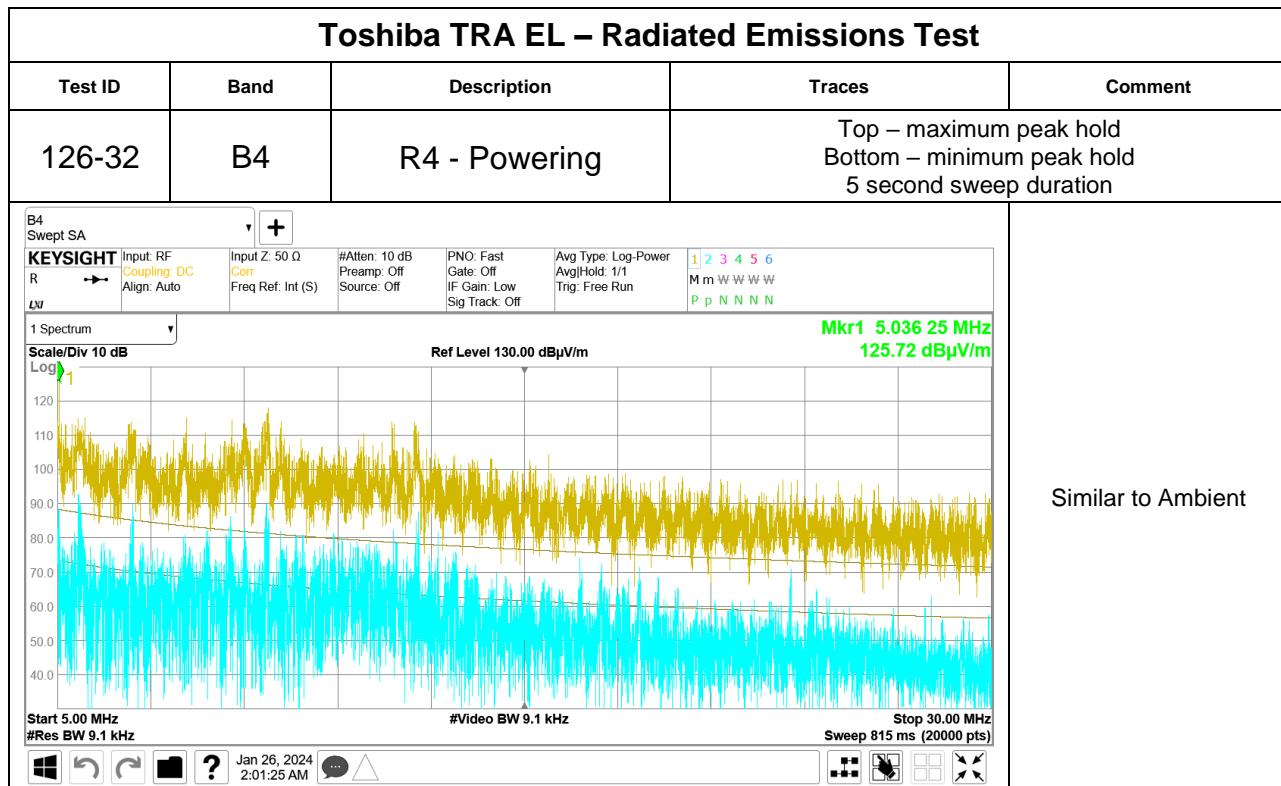
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