

Project	Canterbury CPX Measurements
Subject	Trial Site Summary
Date	24 August 2022
Prepared by	Robin Wareing, Principal Acoustics Engineer

1 Introduction

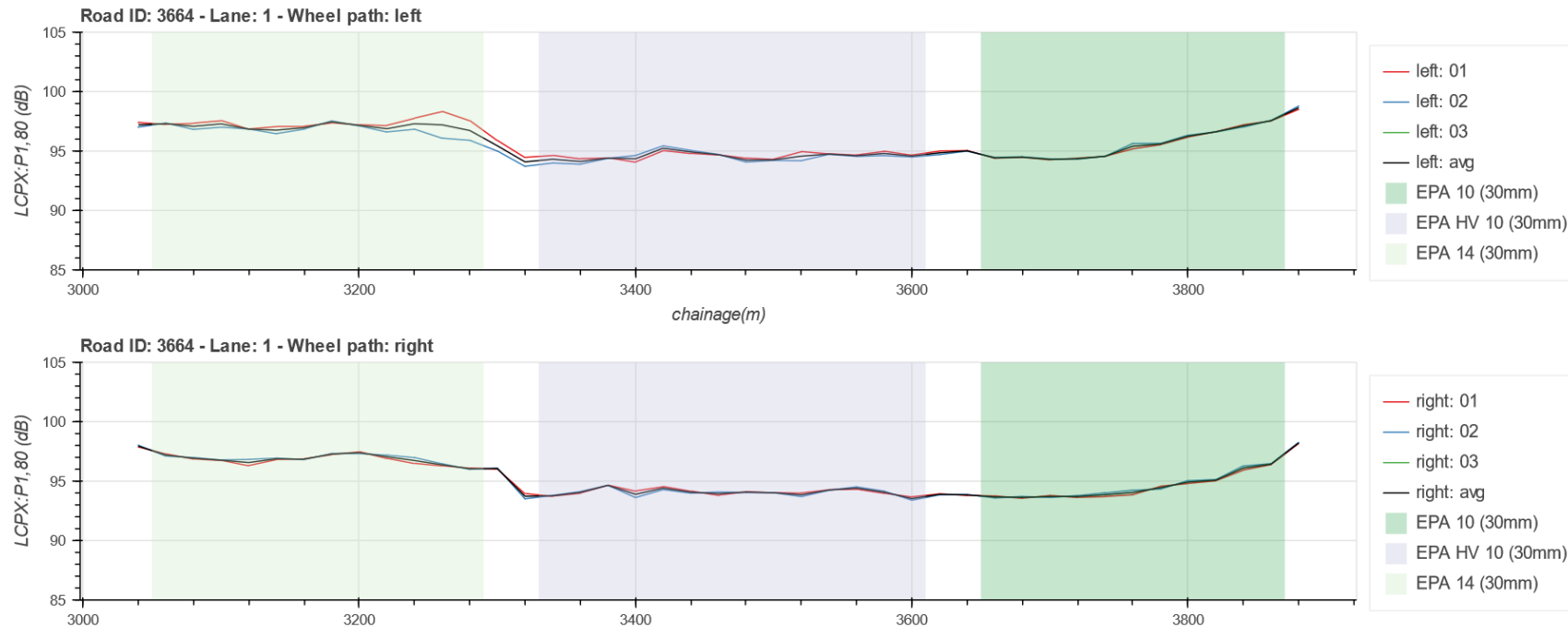
Altissimo Consulting has undertaken CPX noise measurements on the trial sites around Canterbury. This memo summarises the results from these measurement sites. The trial sites are described below:

Table 1 CPX measurement locations

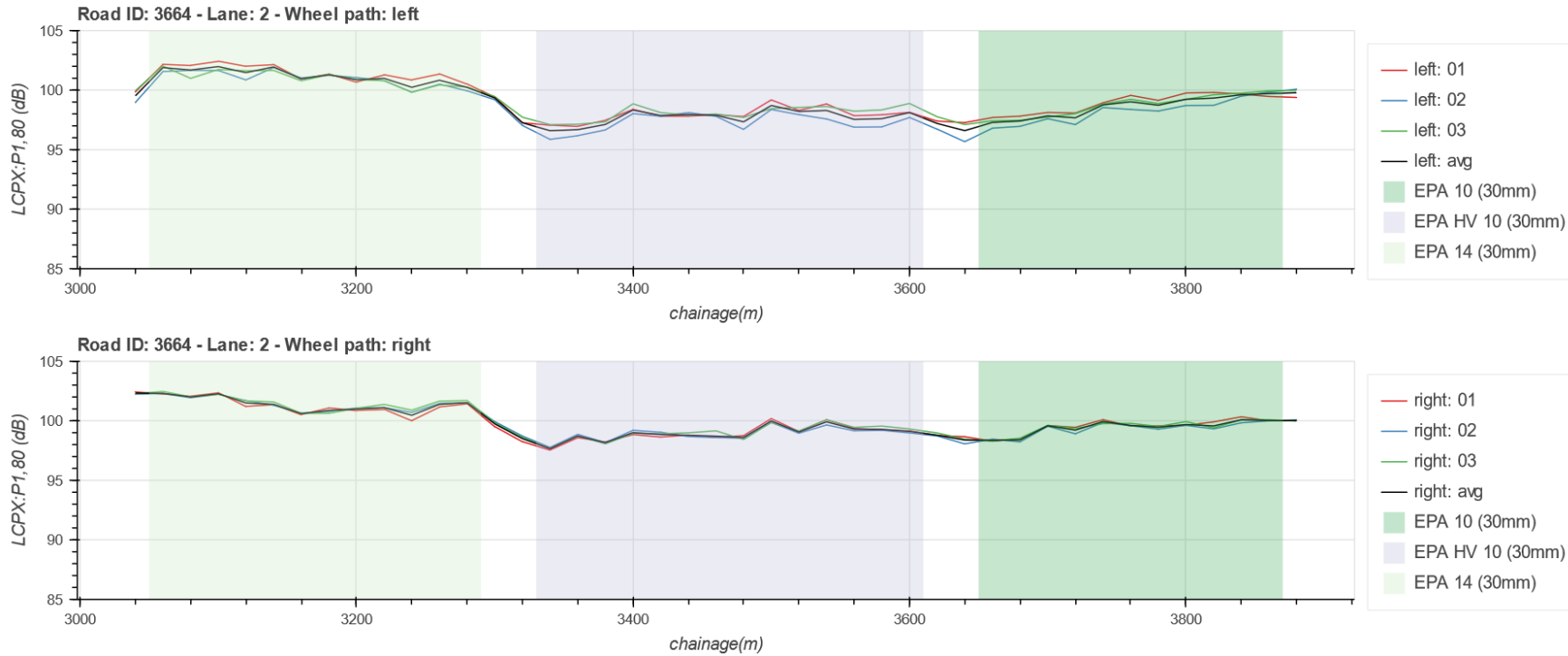
Trial	Description	Road ID/Chainage	
High voids trial	Installed in 2017 on SH1 between Sawyers Arms Road and Greywacke Road: <ul style="list-style-type: none"> - EPA10 (30 mm) - EPA10 HV (30 mm) - EPA14 (30 mm) 	3664/3040-3880	
Small chip trials	Installed in 2017 on SH1 within Western Belfast Bypass project: <ul style="list-style-type: none"> - EPA7 (40 mm) 	3656/518-1007	
	Installed in 2018 on SH1 within Memorial Ave bridge project: <ul style="list-style-type: none"> - EPA7 (30 mm) 	3736/6895-7260 3736/7322-7660	
Thickness trial	Installed in November 2018 within Western Belfast Bypass: <ul style="list-style-type: none"> - EPA7 (30mm) - EPA7 (40mm) - EPA7 (50mm) 	1715/4292-5126	
Low voids trial	Installed in March 2022 within Christchurch Northern Corridor: <ul style="list-style-type: none"> - PA7 HS (30 mm) ("high strength") - PA7 LV (30 mm) ("low voids") - PA7 (30 mm) - SMA7 (30 mm) - PA10 (30 mm) 	3844/2040-4610 3843/1855-4430	
	Installed in March 2021 within Christchurch Southern Motorway 2: <ul style="list-style-type: none"> - EPA 7 (40mm) 	3318/7810-9428 3319/8764-10030	
	Installed in January 2022 near Kirwee <ul style="list-style-type: none"> - Single coat grade 3 - Two-coat grade 3/5 - Single coat grade 2 - Racked-in grade 2/4 - Two-coat grade 2/4 - Multi-coat grade 2/4/6 	1713/15317-17330	

2 Results

2.1 High voids trial - Johns Road

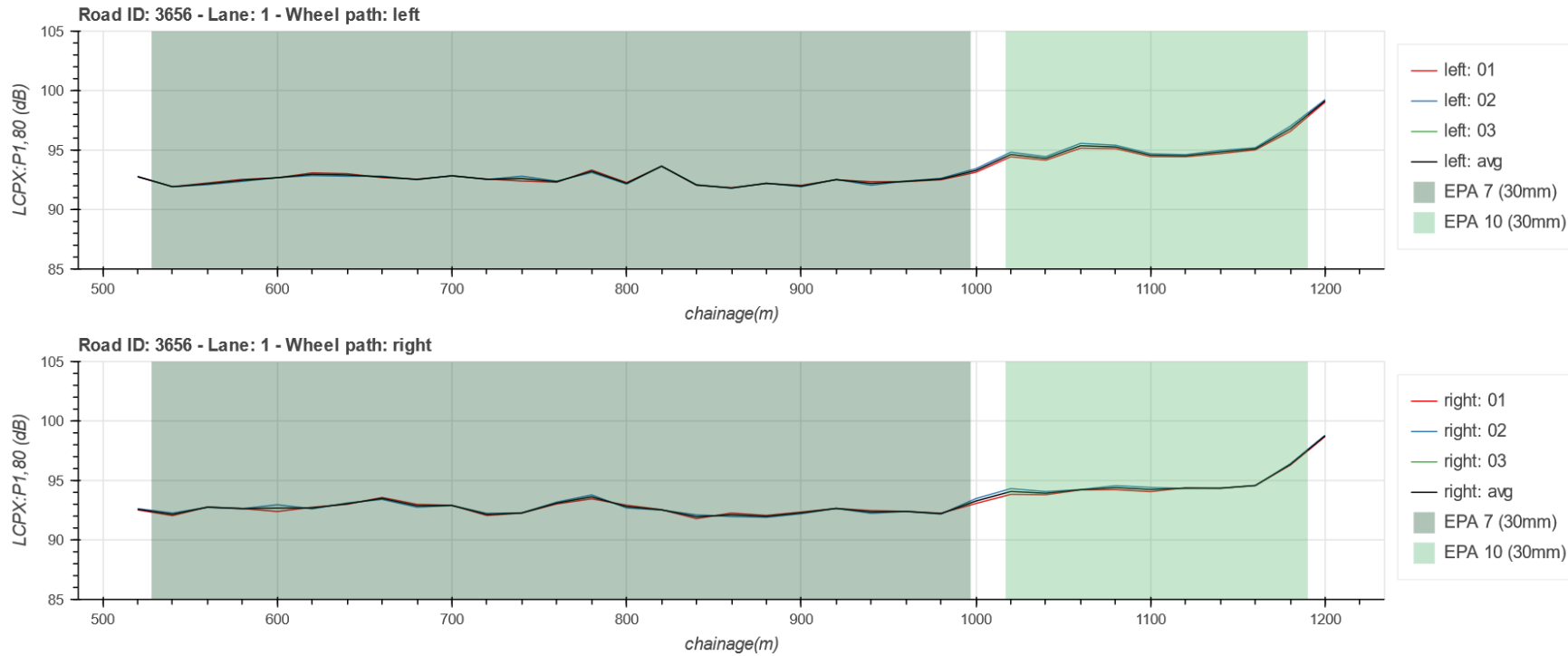


Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
EPA 10 (30mm)	95.5	1.2	94.5	1.0	220.0	1
EPA HV 10 (30mm)	94.6	0.4	94.1	0.3	280.0	1
EPA 14 (30mm)	97.1	0.5	96.8	0.4	240.0	1

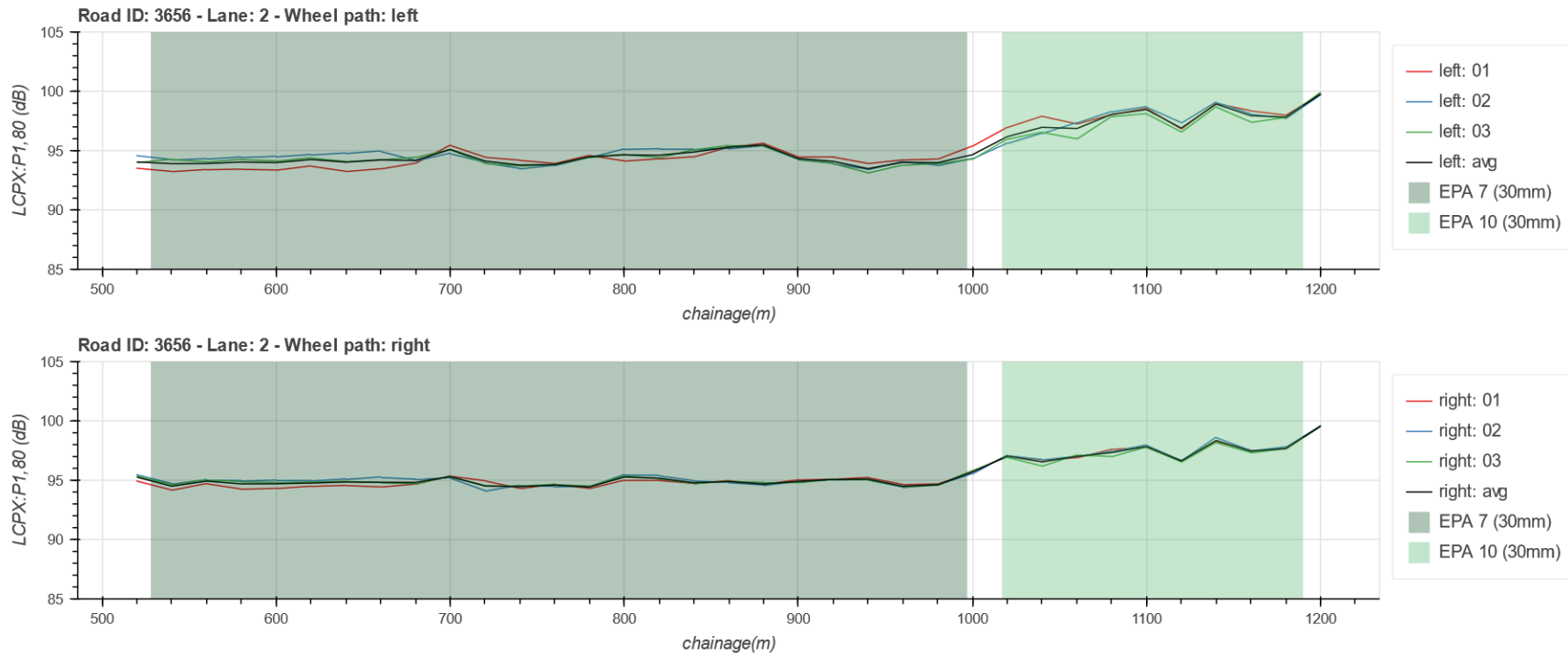


Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
EPA 10 (30mm)	98.6 dB	0.9 dB	99.4 dB	0.6 dB	220 m	1
EPA HV 10 (30mm)	97.7 dB	0.7 dB	98.9 dB	0.6 dB	280 m	1
EPA 14 (30mm)	101.2 dB	0.7 dB	101.4 dB	0.6 dB	240 m	1

2.2 Small chip trial - Western Belfast Bypass

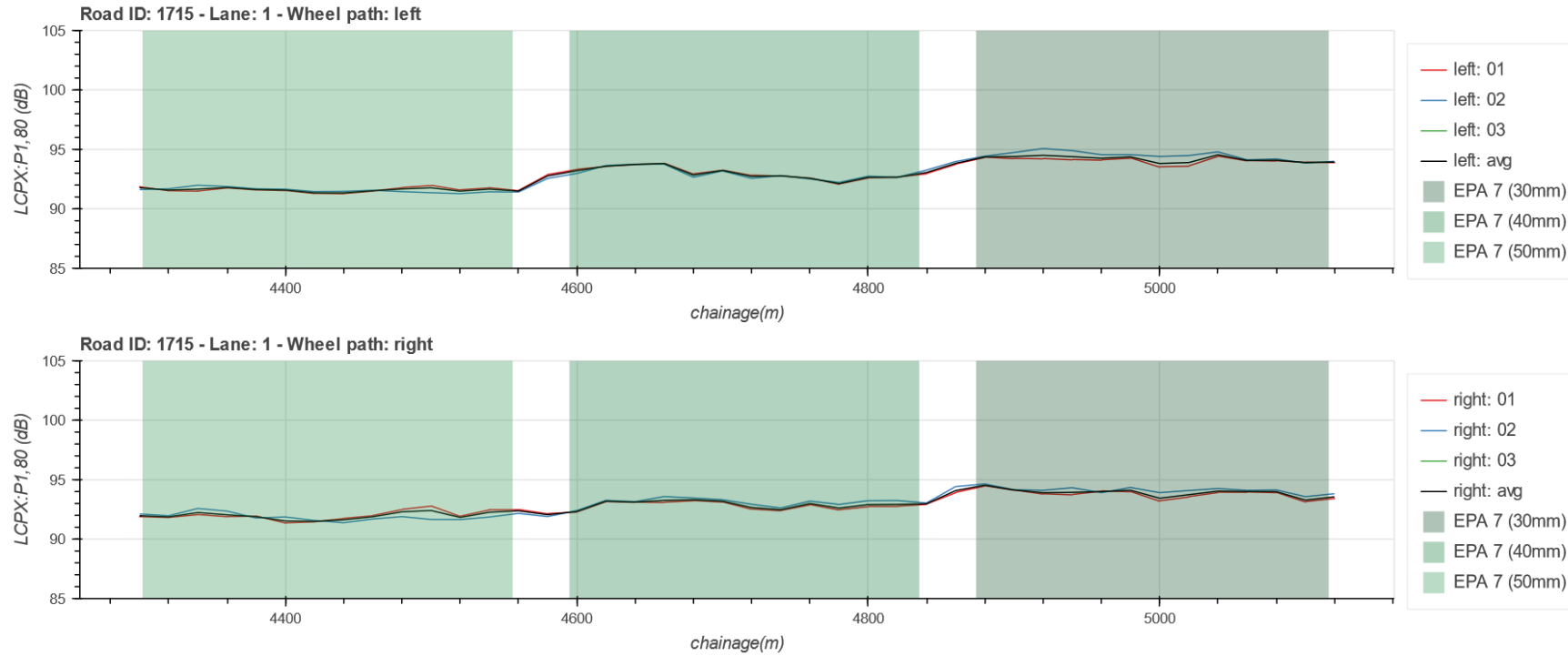


Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
EPA 7 (30mm)	92.5 dB	0.4 dB	92.6 dB	0.5 dB	469 m	1
EPA 10 (30mm)	95.0 dB	0.7 dB	94.5 dB	0.7 dB	173 m	1

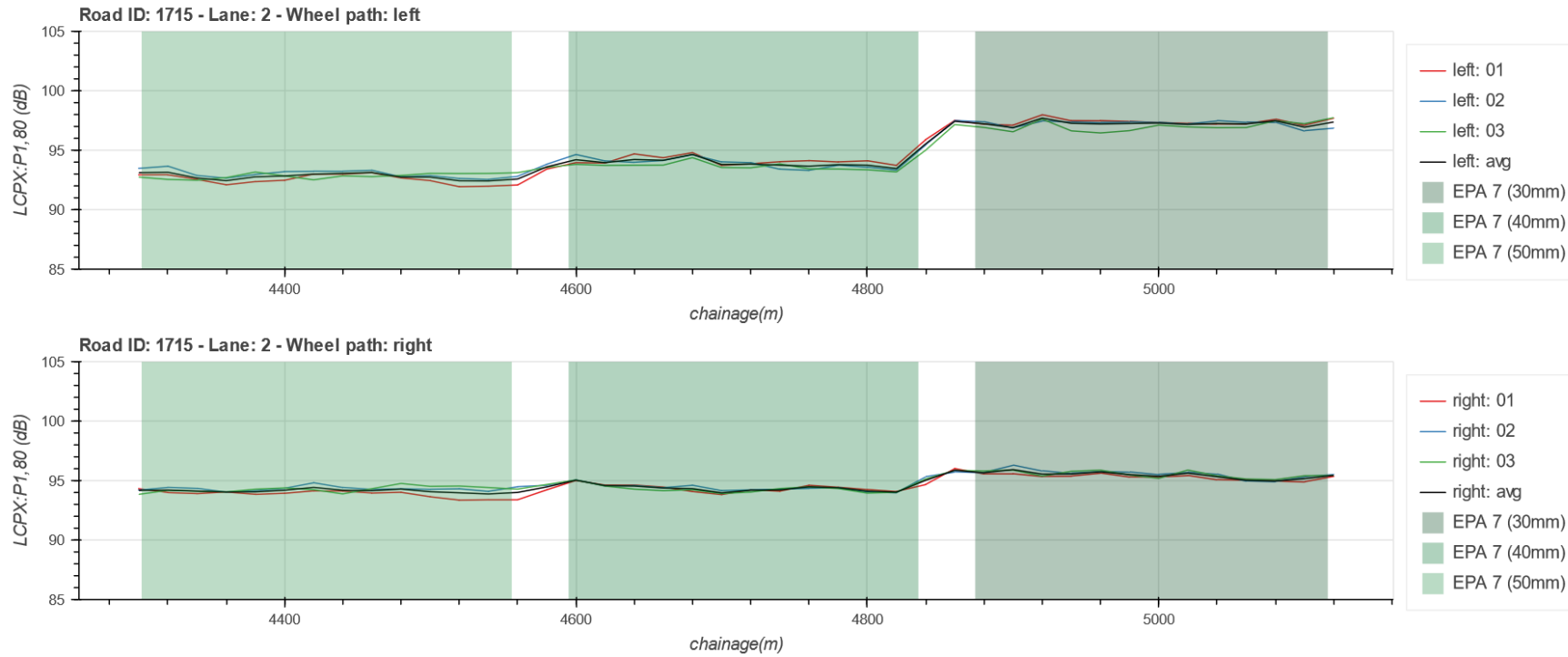


Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
EPA 7 (30mm)	94.3 dB	0.6 dB	94.8 dB	0.3 dB	469 m	1
EPA 10 (30mm)	97.6 dB	0.9 dB	97.3 dB	0.6 dB	173 m	1

2.3 Thickness trial - Western Belfast Bypass

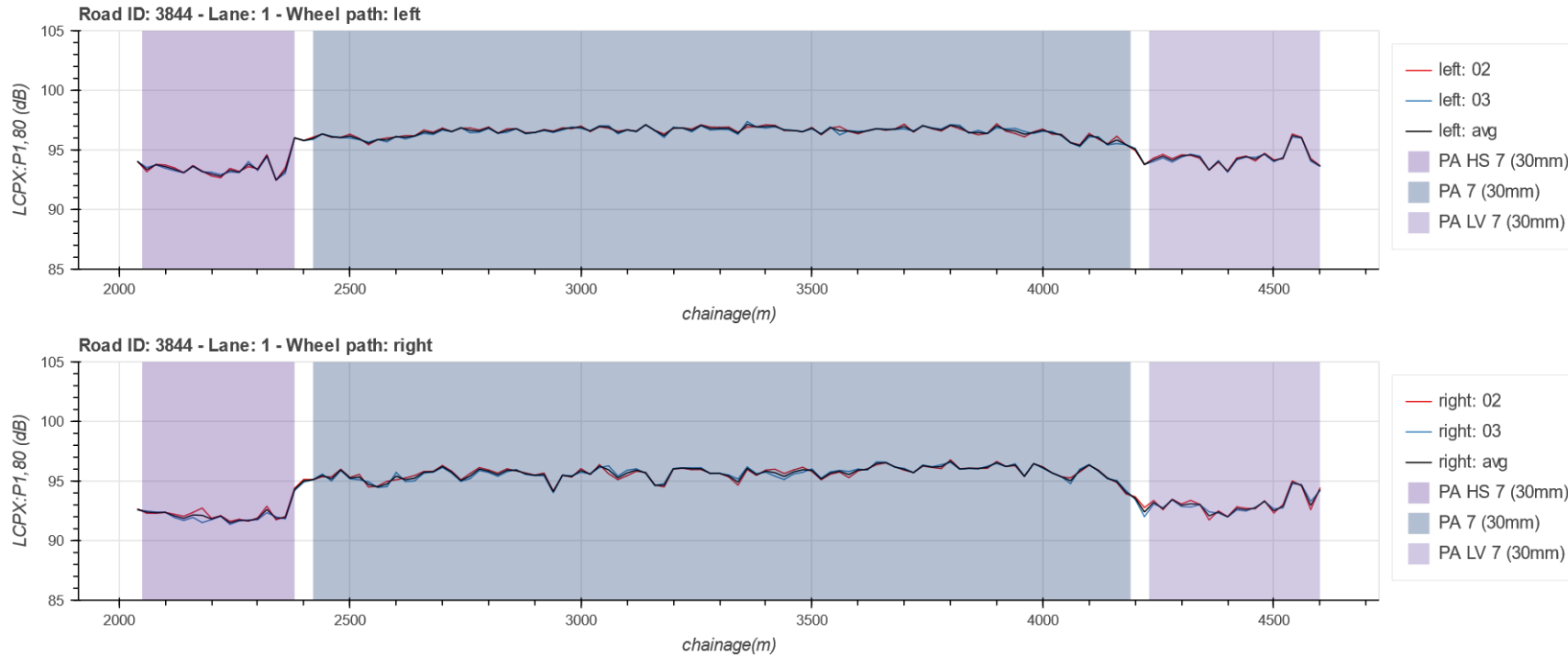


Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
EPA 7 (30mm)	94.2 dB	0.4 dB	93.9 dB	0.4 dB	242 m	1
EPA 7 (40mm)	93.0 dB	0.5 dB	92.9 dB	0.4 dB	240 m	1
EPA 7 (50mm)	91.6 dB	0.2 dB	91.9 dB	0.4 dB	254 m	1

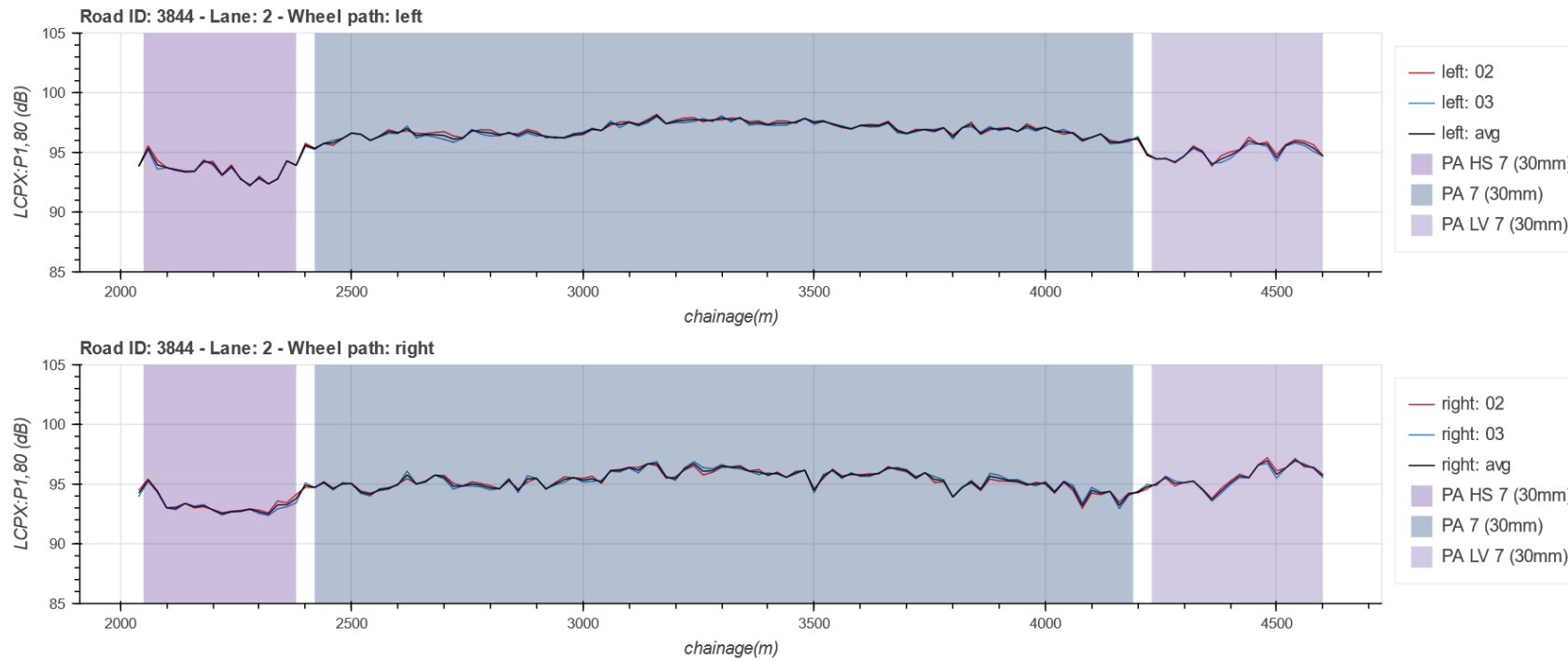


Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
EPA 7 (30mm)	97.2 dB	0.3 dB	95.4 dB	0.3 dB	242 m	1
EPA 7 (40mm)	93.9 dB	0.4 dB	94.4 dB	0.3 dB	240 m	1
EPA 7 (50mm)	92.8 dB	0.4 dB	94.1 dB	0.3 dB	254 m	1

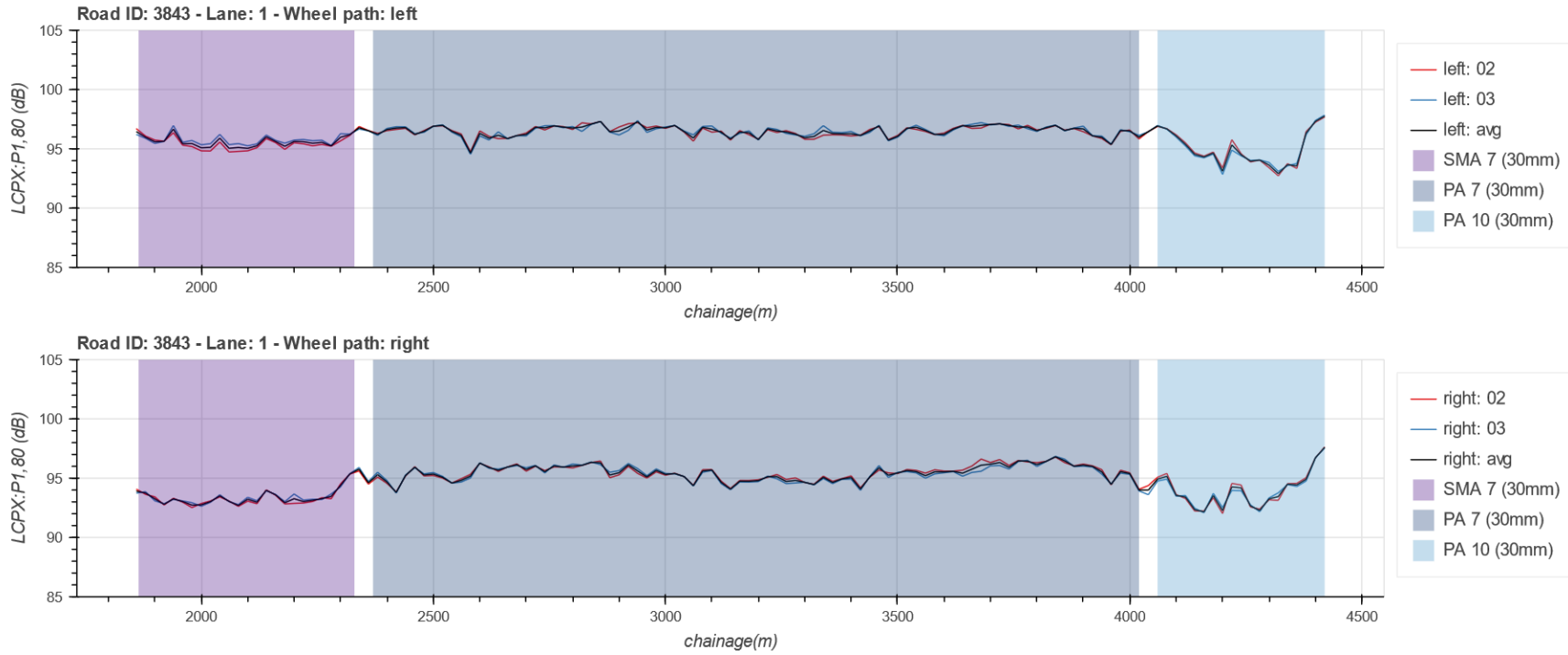
2.4 Low voids trial - Christchurch Northern Corridor



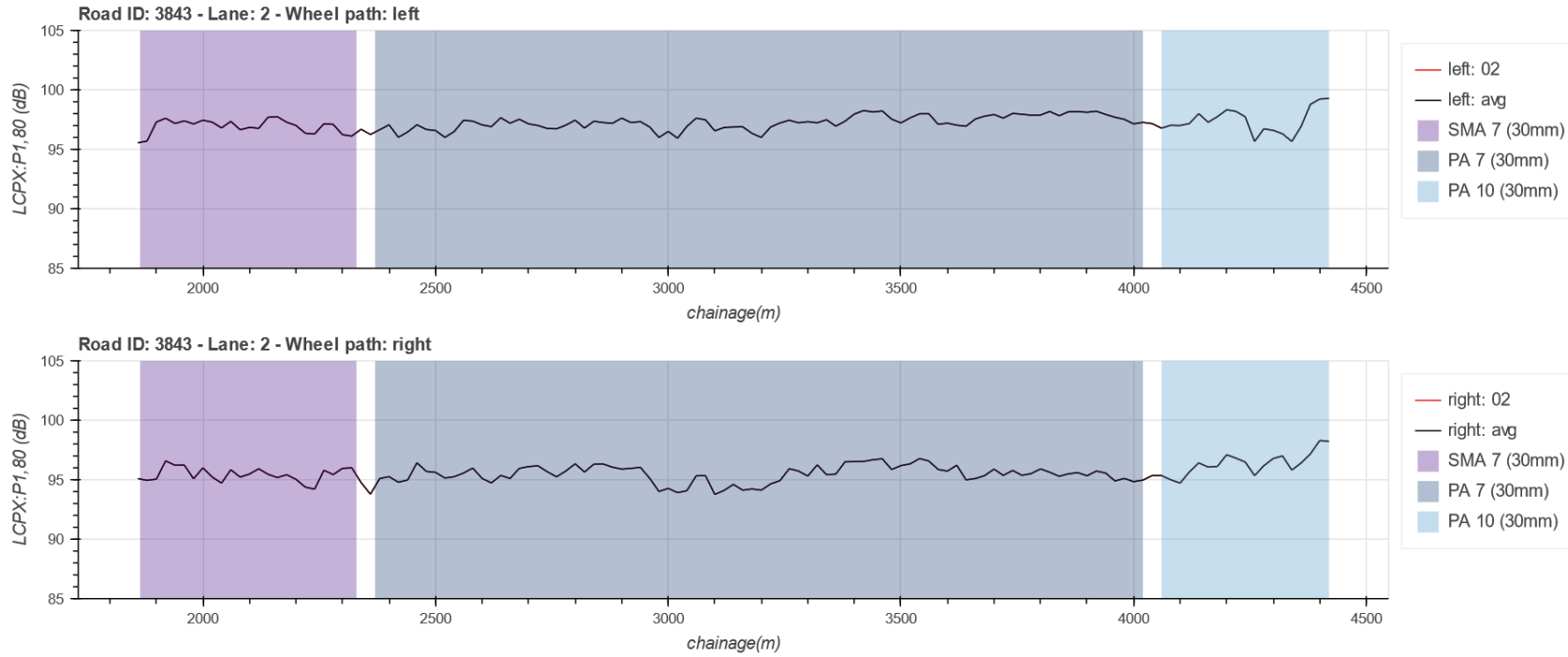
Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
PA 7 HS (30mm)	93.4 dB	0.5 dB	92.0 dB	0.4 dB	330 m	1
PA 7 (30mm)	96.5 dB	0.4 dB	95.7 dB	0.5 dB	1770 m	1
PA 7 LV (30mm)	94.4 dB	0.7 dB	93.0 dB	0.8 dB	370 m	1



Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
PA 7 HS (30mm)	93.5 dB	0.8 dB	93.2 dB	0.7 dB	330 m	1
PA 7 (30mm)	96.9 dB	0.6 dB	95.3 dB	0.8 dB	1770 m	1
PA 7 LV (30mm)	95.1 dB	0.7 dB	95.6 dB	0.9 dB	370 m	1

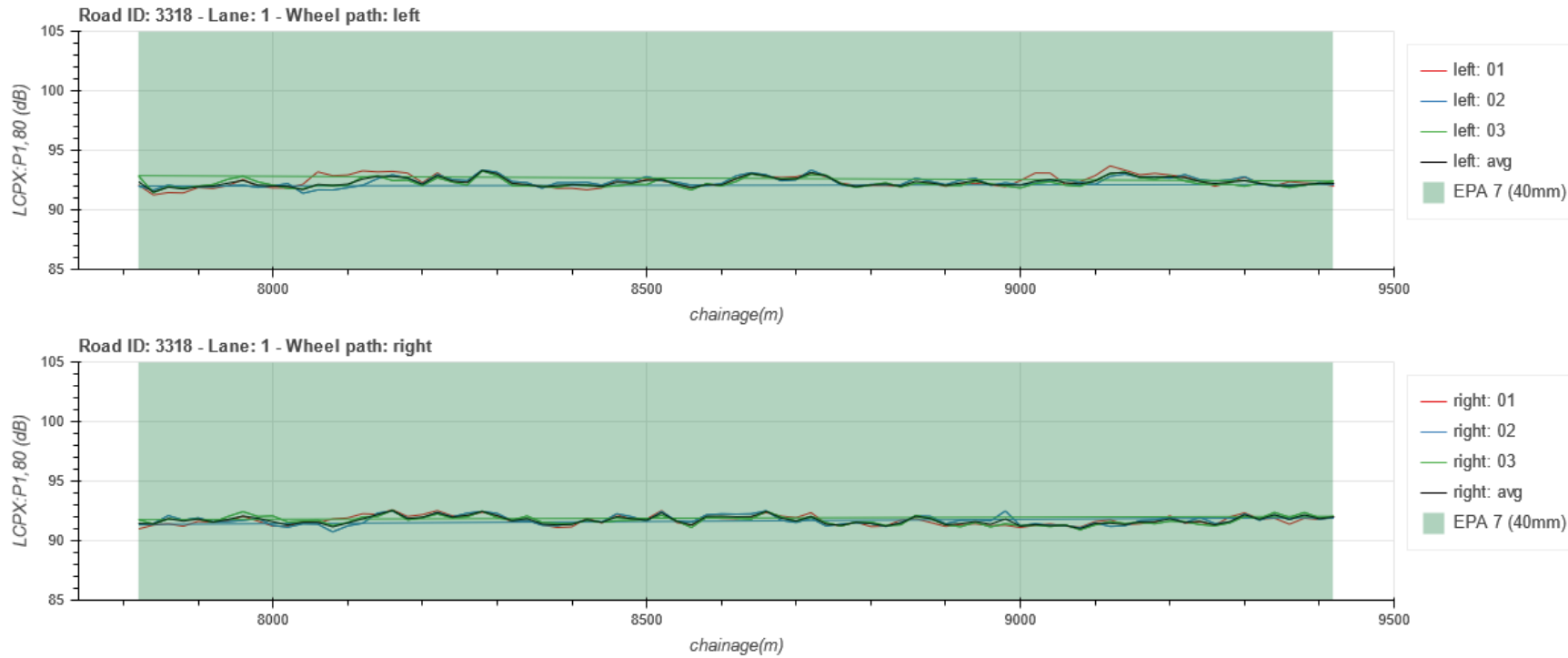


Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
SMA 7 (30mm)	95.6 dB	0.5 dB	93.3 dB	0.6 dB	465 m	1
PA 7 (30mm)	96.5 dB	0.5 dB	95.5 dB	0.6 dB	1650 m	1
PA 10 (30mm)	94.7 dB	1.3 dB	93.7 dB	1.2 dB	360 m	1

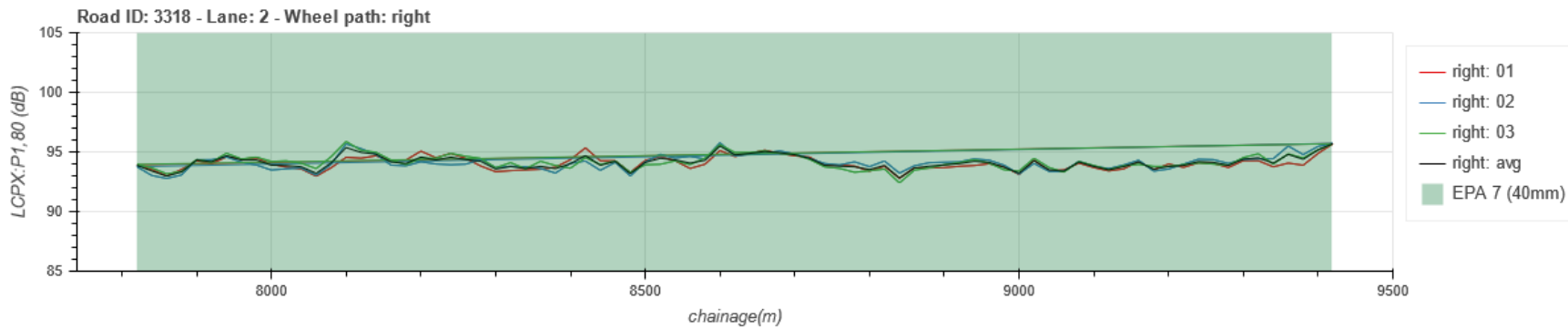
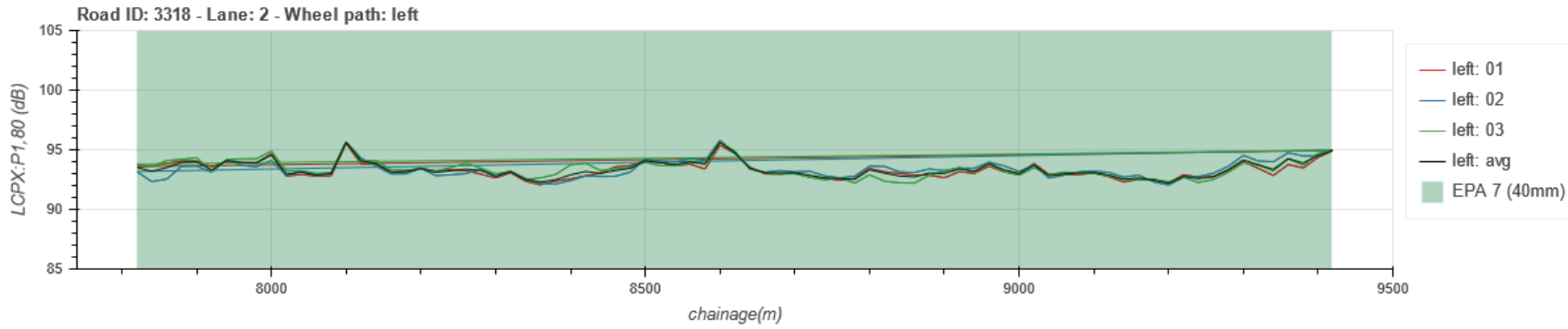


Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
SMA 7 (30mm)	97.0 dB	0.5 dB	95.4 dB	0.6 dB	465 m	1
PA 7 (30mm)	97.3 dB	0.6 dB	95.5 dB	0.7 dB	1650 m	1
PA 10 (30mm)	97.3 dB	1.0 dB	96.3 dB	0.9 dB	360 m	1

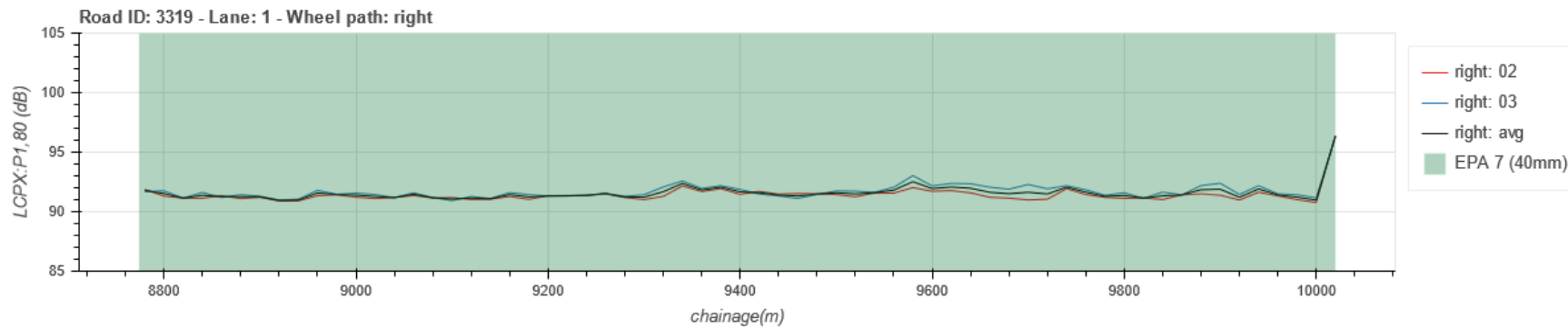
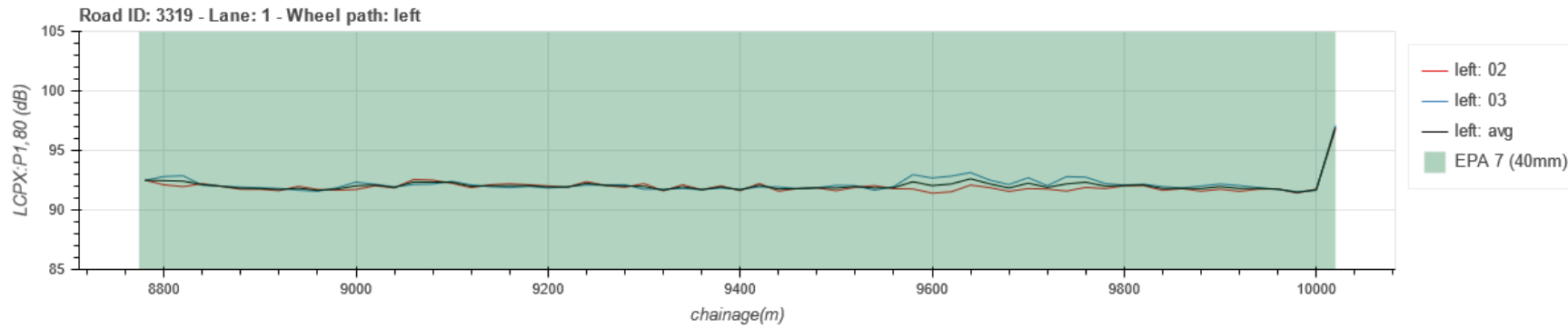
2.5 Longitudinal thickness trial - Christchurch Southern Motorway 2



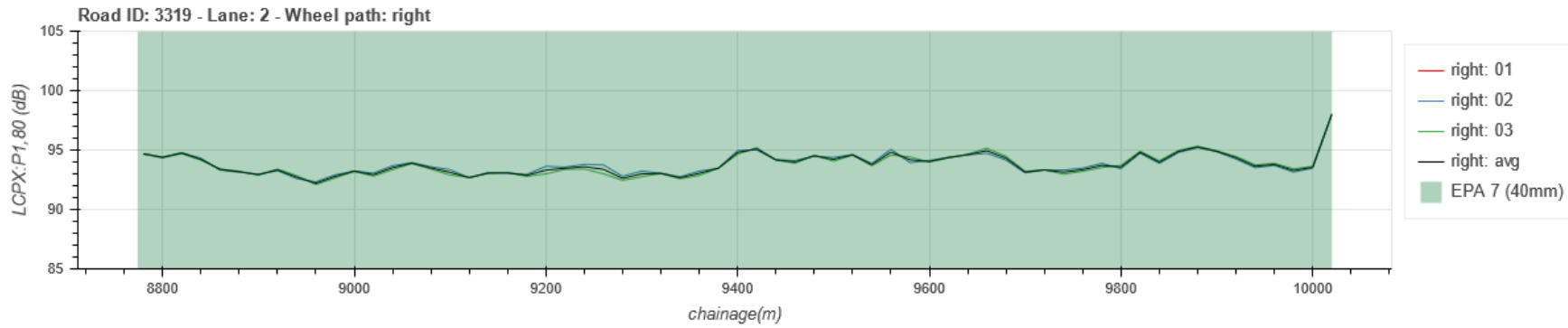
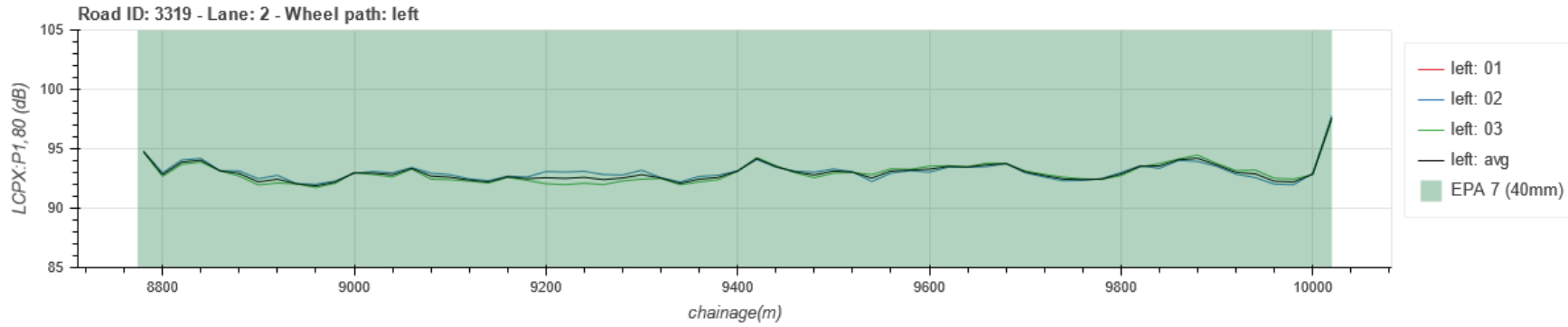
Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
EPA 7 (40mm)	92.3 dB	0.4 dB	91.7 dB	0.4 dB	1598 m	1



Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
EPA 7 (40mm)	93.3 dB	0.7 dB	94.1 dB	0.6 dB	1598 m	1

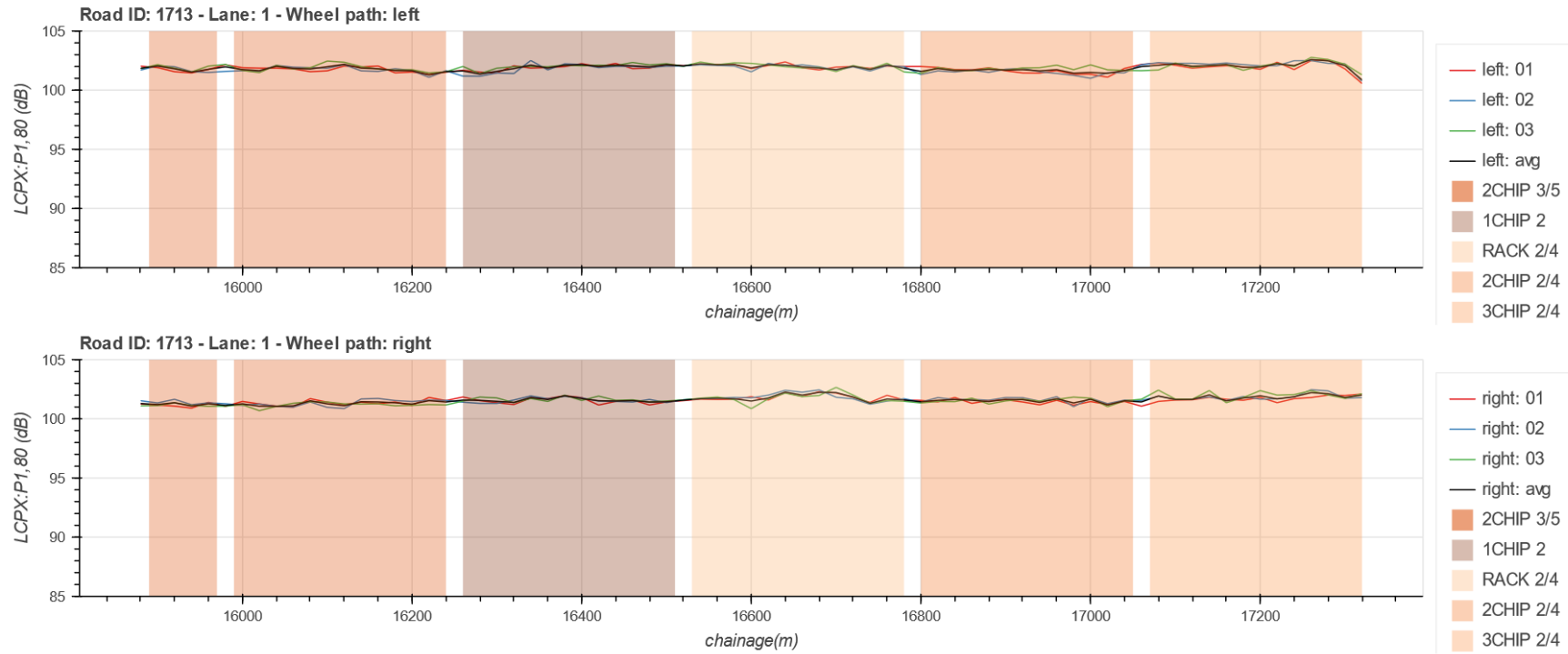


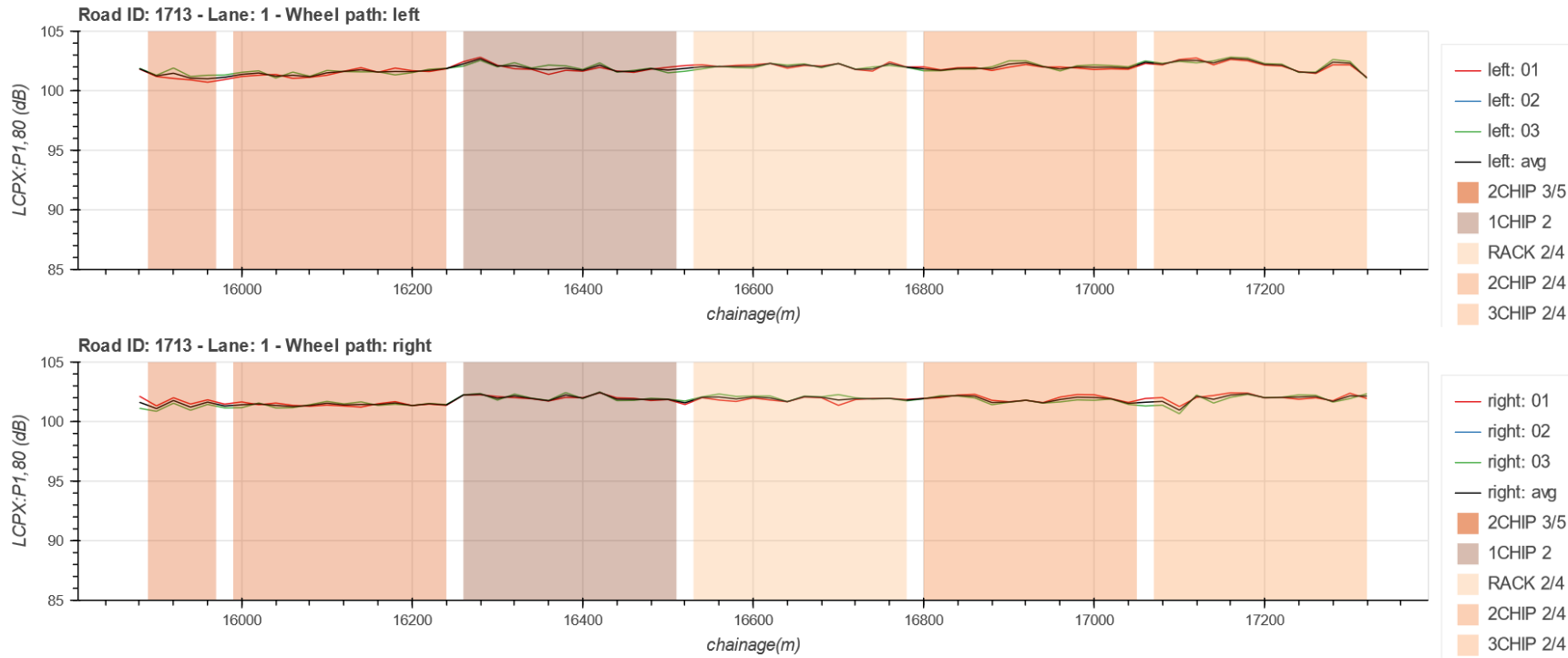
Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
EPA 7 (40mm)	92.0 dB	0.3 dB	91.5 dB	0.4 dB	1246 m	1



Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
EPA 7 (40mm)	92.9 dB	0.6 dB	93.7 dB	0.8 dB	1246 m	1

2.6 Chipseal trials - West Coast Road





Surface	Left wheel path		Right wheel path		Length	Lanes
	Mean	Standard Deviation	Mean	Standard Deviation		
2CHIP 3/5	101.6 dB	0.3 dB	101.3 dB	0.2 dB	330 m	2
1CHIP 2	101.9 dB	0.3 dB	101.8 dB	0.3 dB	250 m	2
RACK 2/4	102.0 dB	0.2 dB	101.9 dB	0.3 dB	250 m	2
2CHIP 2/4	101.8 dB	0.3 dB	101.7 dB	0.3 dB	250 m	2
3CHIP 2/4	102.2 dB	0.3 dB	101.9 dB	0.3 dB	250 m	2
2CHIP 3/5	101.6 dB	0.3 dB	101.3 dB	0.2 dB	330 m	2