

# **HW Differences between Cinterion<sup>®</sup> PLSx3-X and PLSx3-X2 Products**

**Delta Report**

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# Contents

- 1 Introduction .....5**
  
- 2 Baseband Hardware Differences between PLSx3-X Rev. 2.2 and PLSx3-X2 Rev. 2.2 .....6**
  - Schematic Differences .....6
  
- 3 RF Hardware Differences between PLSx3-X Rev. 2.2 and PLSx3-X2 Rev. 2.2 .....8**
  - Schematic Differences .....8

# 1 Introduction

This document describes the Cinterion® PLSx3-X and PLSx3-X2 hardware design differences, including:

- Changes from PLSx3-X Rev. 2.2 to PLSx3-X2 Rev. 2.2
- Differences between PLS83-X/X2 Rev. 2.2 and PLS63-X/X2 Rev. 2.2

As US operator projects, PLSx3-X2 variants support different bands from base variants PLSx3-X, as shown in Table 1. Both variants use the same footprint and PCB layout. Different hardware IDs are implemented to identify different variants.

Table 1: Supported frequent bands

Variants	Technology	2	4	5	12	13	14	25	26	66	71
PLS63/83-X (base variants)	LTE	x	x	x	x	x	x	x	x	x	x
	WCDMA	x	x	x							
PLS63/83-X2	LTE	x	x		x	x	x			x	
	WCDMA										

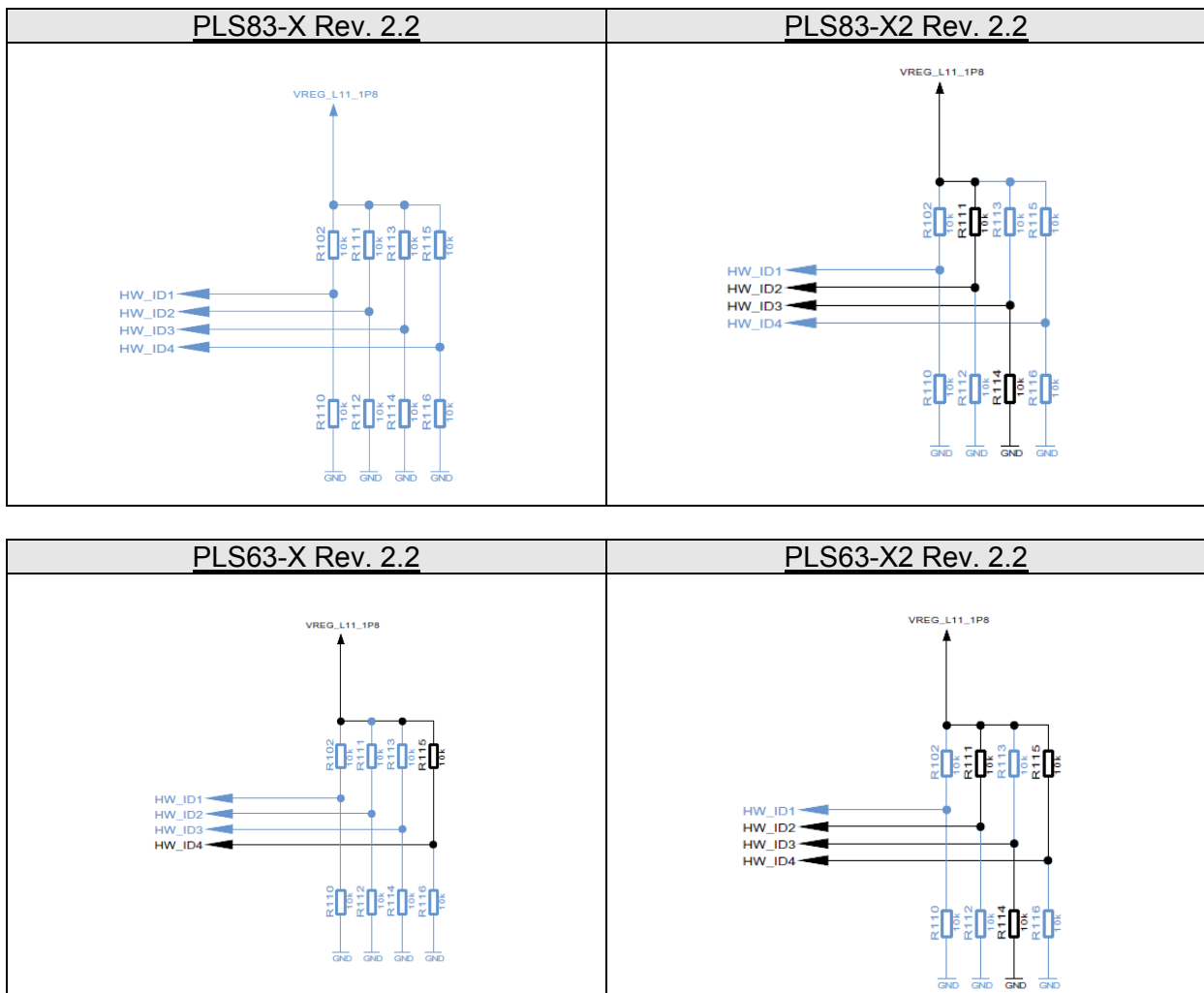
## 2 Baseband Hardware Differences between PLSx3-X Rev. 2.2 and PLSx3-X2 Rev. 2.2

This section describes the differences on the baseband part.

### Schematic Differences

The following section highlights the schematic differences on baseband between PLSx3-X Rev. 2.2 and PLSx3-X2 Rev. 2.2. Different hardware IDs are implemented to identify different variants.

Note: Components in black are populated, components in blue are not populated.



PLS83-X/X2 Rev. 2.2 are designed with a Cat. 4 processor, while PLS63-X/X2 is based on a Cat. 1 processor. The two processors are pin-pin compatible.

<u>PLS83-X/X2 Rev. 2.2</u>	<u>PLS63-X/X2 Rev. 2.2</u>
Cat. 4 processor	Cat. 1 processor
U100: 600000001376	U100: 600000001377

### 3 RF Hardware Differences between PLSx3-X Rev. 2.2 and PLSx3-X2 Rev. 2.2

This section describes the differences on the RF part.

#### Schematic Differences

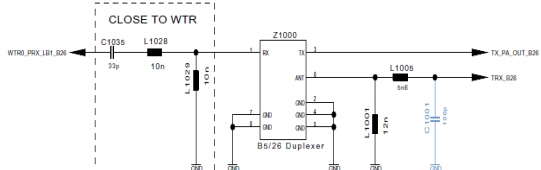
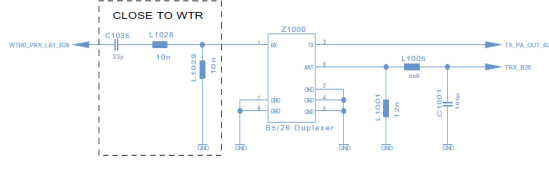
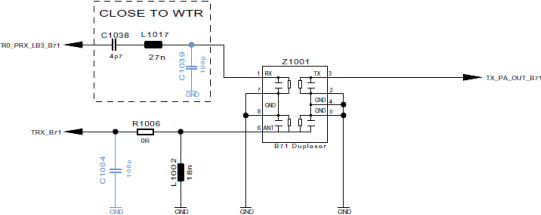
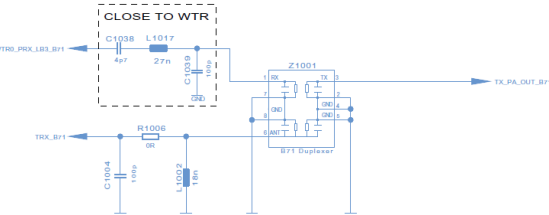
The following section highlights the schematic differences on RF part between PLSx3-X Rev. 2.2 and PLSx3-X2 Rev. 2.2. The non-supporting bands are disabled in schematic RF part.

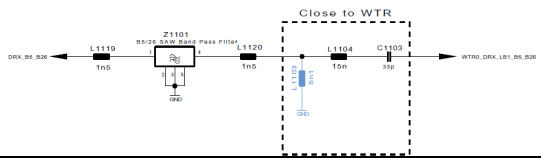
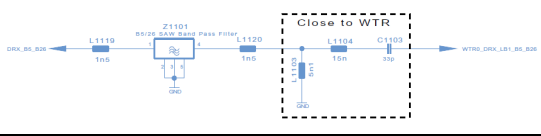
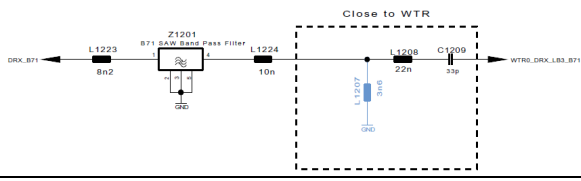
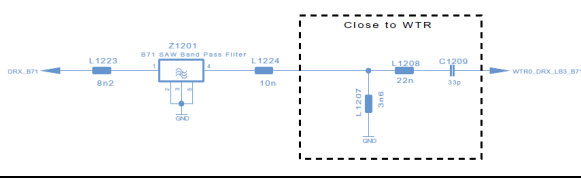
Note: Components in black are populated, components in blue are not populated.

PLS83/63-X Rev. 2.2	PLS83/63-X2 Rev. 2.2
<p>WTR_TX_DA1_B12_B13_B14_B71</p> <p>WTR0_TX_DA4_B25_2_B66_4</p>	<p>WTR_TX_DA1_B12_B13_B14_B71 -X2/-X3 no B71 -X3 no B13</p> <p>WTR0_TX_DA4_B25_2_B66_4 -X2/-X3 no B25 -X3 no B66</p>
<p>WTR0_DRX_MB1_B25_B2</p> <p>WTR0_DRX_MB3_B1_B4_B66</p> <p>WTR0_DRX_LB1_B5_B26</p> <p>WTR0_DRX_LB2_B12_B13_B14</p> <p>WTR0_DRX_LB3_B71</p> <p>WTR0_PRX_MB1_B25_B2</p> <p>WTR0_PRX_MB3_B4_B66</p> <p>WTR0_PRX_LB1_B26</p> <p>WTR0_PRX_LB2_B12_B13_B14</p> <p>WTR0_PRX_LB3_B71</p>	<p>WTR0_DRX_MB1_B25_B2 [-X2/-X3 no B25]</p> <p>WTR0_DRX_MB3_B1_B4_B66 [-X3 no B66]</p> <p>WTR0_DRX_LB1_B5_B26 [-X2/-X3 no B5/B26]</p> <p>WTR0_DRX_LB2_B12_B13_B14 [-X3 no B13]</p> <p>WTR0_DRX_LB3_B71 [-X2/-X3 no B71]</p> <p>WTR0_PRX_MB1_B25_B2 [-X2/-X3 no B25]</p> <p>WTR0_PRX_MB3_B4_B66 [-X3 no B66]</p> <p>WTR0_PRX_LB1_B26 [-X2/-X3 no B5/B26]</p> <p>WTR0_PRX_LB2_B12_B13_B14 [-X3 no B13]</p> <p>WTR0_PRX_LB3_B71 [-X2/-X3 no B71]</p>
<p>BAND_SEL_B25_B66</p> <p>TRX_B2_B25</p> <p>TRX_B4_B66</p>	<p>BAND_SEL_B25_B66 [-X2/-X3: no B25 -X3: B2/B4]</p> <p>TRX_B2_B25 [-X2/-X3: no B25]</p> <p>TRX_B4_B66 [-X3: no B66]</p>



<p>TRX_B26 ←</p> <p>TRX_B71 ←</p> <p>→ TRX_B13</p>	<p>TRX_B26 ← -X2/-X3: no B26</p> <p>TRX_B71 ← -X2/-X3: no B71</p> <p>→ TRX_B13 -X3: no B13</p>
<p>TX_PA_OUT_B26 B26/B5 TX</p>	<p>TX_PA_OUT_B26 B26/B5 TX -X2/-X3 no B26/B5</p>
<p>TX_PA_OUT_B71 B71 TX</p>	<p>TX_PA_OUT_B71 B71 TX -X2/-X3 no B71</p>
<p>→ TX_PA_OUT_B2 B25/B2 TX</p> <p>→ TX_PA_OUT_B4_B66 B66/B4 TX</p> <p>→ TX_PA_OUT_B13 B13 TX</p>	<p>→ TX_PA_OUT_B2 B25/B2 TX -X2/-X3 no B25</p> <p>→ TX_PA_OUT_B4_B66 B66/B4 TX -X3 no B66</p> <p>→ TX_PA_OUT_B13 B13 TX -X3 no B13</p>
<p>WTR0_TX_DA4_B25_2_B66_4 ←</p> <p>WTR0_TX_DA2_B26 ←</p> <p>WTR_TX_DA1_B12_B13_B14_B71 ←</p>	<p>WTR0_TX_DA4_B25_2_B66_4 ← -X2/-X3 no B25 -X3 no B66</p> <p>WTR0_TX_DA2_B26 ← -X2/-X3 no B26</p> <p>WTR_TX_DA1_B12_B13_B14_B71 ← -X2/-X3 no B71 -X3 no B13</p>
<p>WTR0_PRX_LB2_B12_B13_B14 ←</p> <p>PRX_B12 ←</p> <p>PRX_B14 ←</p> <p>PRX_B13 ←</p>	<p>WTR0_PRX_LB2_B12_B13_B14 ← -X3 no B13</p> <p>PRX_B12 ←</p> <p>PRX_B14 ←</p> <p>PRX_B13 ← -X3 no B13</p>

<p>B5 / B26</p> 	<p>-X: B5 / B26 -X2/-X3: no B5/B26</p> 
<p>B71</p> 	<p>-X: B71 -X2/-X3: no B71</p> 
<p>WTR0_PRX_MB1_B25_B2</p> <p>TRX_B2_B25</p>	<p>WTR0_PRX_MB1_B25_B2 -X2/-X3 no B25</p> <p>TRX_B2_B25 -X2/-X3 no B25</p>
<p>WTR0_PRX_MB3_B4_B66</p> <p>TX_PA_OUT_B4_B66</p>	<p>WTR0_PRX_MB3_B4_B66 -X3: no B66</p> <p>TX_PA_OUT_B4_B66 -X3: no B66</p>
<p>DRX_B71</p> <p>DRX_B12_B13_B14</p> <p>DRX_B5_B26</p> <p>DRX_B4_B66</p> <p>DRX_B2_B25</p>	<p>DRX_B71 -X2/-X3 no B71</p> <p>DRX_B12_B13_B14 -X3 no B13</p> <p>DRX_B5_B26 -X2/-X3 no B5/26</p> <p>DRX_B4_B66 -X3 no B66</p> <p>DRX_B2_B25 -X2/-X3 no B25</p>

<p><b>B5 / B26 DRX</b></p> 	<p><b>B5 / B26 DRX</b></p> <p>-X2/-X3: no B5/B26</p> 
<p>DRX_B12_B13_B14</p> <p>WTR0_DRX_LB2_B12_B13_B14</p>	<p>DRX_B12_B13_B14</p> <p>-X3: no B13</p> <p>WTR0_DRX_LB2_B12_B13_B14</p> <p>-X3: no B13</p>
<p><b>B71 DRX</b></p> 	<p><b>B71 DRX</b></p> <p>-X2/-X3: no B71</p> 
<p>DRX_B4_B66</p> <p>WTR0_DRX_MB3_B1_B4_B66</p>	<p>DRX_B4_B66</p> <p>-X3: no B66</p> <p>WTR0_DRX_MB3_B1_B4_B66</p> <p>-X3: no B66</p>
<p>DRX_B2_B25</p> <p>WTR0_DRX_MB1_B25_B2</p>	<p>DRX_B2_B25</p> <p>-X2/-X3 no B25</p> <p>WTR0_DRX_MB1_B25_B2</p> <p>-X2/-X3 no B25</p>



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