

# DP-0431-11A Datasheet



## 1 Introduction

The DP-0431-11A is a 4.3-inch TFT-LCD module with a resolution of 480 × 272 pixels. It integrates a TFT-LCD panel, driver ICs (ILI6480), flexible printed circuit (FPC), backlight unit, and a resistive touch panel (RTP).

With support for 16.7 million colors through an RGB interface, the DP-0431-11A delivers vivid visuals and dependable performance, making it suitable for a wide range of display applications.

## 1.1 Features

- 4.3" TFT-LCD with 480 × 272 resolution and integrated resistive touch panel (RTP)
  - Supports 16.7M colors for vivid and accurate display output
  - RGB interface for stable and reliable signal transmission
- Compliant with RoHS environmental requirements

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## 2 Part Numbers/Ordering Information

Part No.	Description
DP-0431-11A	TFT Display 4.3 inch (480*272 resolution) with Resistive Touch Panel

**Table 1 - Part Number/Ordering Information**

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### 3 General Specifications

Item	Specification	Unit	Note
LCD Type	TFT	-	
LCD Size	4.3	inch	
Number of Pixels	480(H) x 272(V)	pixels	
Viewing Direction	12	o'clock	
Interface	24-bit RGB		
Display Colors	16.7M Colors (RGB 8 bit)	colors	Note 2
Module Size	105.50(H) x 67.20(V) x 4.10(D)	mm	Note 3
Active Area	95.04(H) x 53.86(V)	mm	
Display Driver IC	ILI6480	-	
Touch Panel	Resistive Touch Panel	-	
Operation Temperature	-20~+70°C	°C	
Storage Temperature	-30~+80°C	°C	

**Table 2 - General Specifications**

**Note:**

1. Complies with environmental protection requirements and is RoHS compliant.
2. Color tune is slightly changed by temperature and driving voltage.
3. Module size excludes FPC and solder; with RTP.

## 4 Hardware Description

The DP-0431-11A features a 4.3-inch TFT-LCD with a 480 × 272 resolution, integrated with a resistive touch panel.

### 4.1 TFT-LCD Interface Pin Assignment

The interface connector pin configuration is described below.  
 40-position 0.5mm pitch, FPC connector

Pin Number	Symbol	Type	Description
1	VLED-	P	LED backlight (Cathode)
2	VLED+	P	LED backlight (Anode)
3	GND	P	Ground
4	VCC	P	Power Supply
5	R0	I	Red Data Input
6	R1	I	Red Data Input
7	R2	I	Red Data Input
8	R3	I	Red Data Input
9	R4	I	Red Data Input
10	R5	I	Red Data Input
11	R6	I	Red Data Input
12	R7	I	Red Data Input
13	G0	I	Green Data Input
14	G1	I	Green Data Input
15	G2	I	Green Data Input
16	G3	I	Green Data Input
17	G4	I	Green Data Input
18	G5	I	Green Data Input
19	G6	I	Green Data Input
20	G7	I	Green Data Input
21	B0	I	Blue Data Input
22	B1	I	Blue Data Input
23	B2	I	Blue Data Input
24	B3	I	Blue Data Input
25	B4	I	Blue Data Input
26	B5	I	Blue Data Input
27	B6	I	Blue Data Input
28	B7	I	Blue Data Input
29	GND	P	Ground
30	PCLK	I	Data Clock
31	DISP	I	Normal Display and Standby Mode select pin
32	HSYNC	I	Line Sync Signal
33	VSNC	I	Frame Sync Signal
34	DE	I	Data Enable Pin
35	NC	-	No Connection

36	GND	P	Ground
37	XR	O	Touch Panel Control Pin
38	YD	O	Touch Panel Control Pin
39	XL	O	Touch Panel Control Pin
40	YU	O	Touch Panel Control Pin

**Table 3 - TFT-LCD Interface Pin Definition**

## 5 Specifications

### 5.1 Absolute Maximum Ratings

#### 5.1.1 Electrical Absolute Maximum Ratings

 Condition:  $V_{SS}=0V$ ,  $T_a=25^{\circ}C$ 

Item	Symbol	MIN.	MAX.	Unit
Power Supply Voltage	VCC	-0.3	3.6	V
Logic Signal Input/Output Voltage	$V_{IOVCC}$	-0.3	VCC+0.5	

**Table 4 - Electrical Absolute Maximum Ratings**
**Note:**

1. Permanent damage to the LCD module may occur if operated beyond the specified limits. Operation beyond the specified electrical characteristics may lead to malfunction or reduced reliability.
2. VCC must always be greater than Vss.

#### 5.1.2 Environmental Absolute Maximum Ratings

Item	Storage		Operating		Note
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature	-30°C	80°C	-20°C	70°C	Note 1, 2
Humidity	-	-	-	-	Note 3

**Table 5 - Environmental Absolute Maximum Ratings**
**Note:**

1. Response time decreases at low operating temperatures.
2. Background color may vary slightly with ambient temperature; this phenomenon is reversible.
3.  $T_a \leq 40^{\circ}C$ : 85%RH MAX  
 $T_a > 40^{\circ}C$ : Absolute humidity must not exceed the equivalent of 85% RH at 40°C.

## 5.2 Electrical Specifications

### 5.2.1 Electrical Characteristics

 Condition:  $V_{SS}=0V$ ,  $T_a=25^{\circ}C$ 

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply	VCC	3.0	3.3	3.6	V	
Input Voltage	'H'	$V_{IH}$	$0.8 * V_{CC}$	Vcc	V	
	'L'	$V_{IL}$	0	$0.2 * V_{CC}$	V	
Current Consumption	$I_{CC1}$	-	20	30	mA	Normal mode, Note 2
	$I_{CC2}$	-	0.03	0.09	mA	Sleep mode, Note 2
Clock Frequency	$f_{clk}$	-	9	12	MHz	

**Table 6 - Electrical Characteristics**
**Note:**

1. Measured at optimum contrast in transmissive mode.
2. Tested in 1x1 chessboard pattern.



## 5.2.2 LED Backlight Specification

The backlight consists of 10 white LEDs arranged in a 5 × 2 matrix, providing uniform illumination across the display.

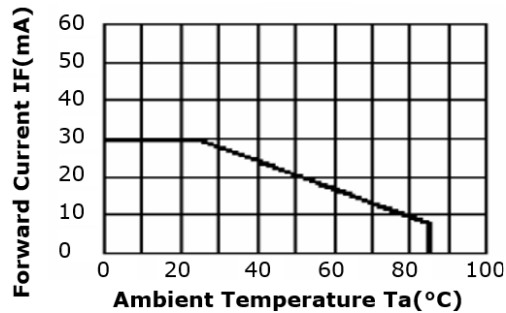
Condition:  $V_{SS}=0V$ ,  $T_a=25^{\circ}C$

Item		Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage		-	15	16	17.2	V	Note 1
Supply Current		$I_f$	-	40	50	mA	Note 2
Forward Current	Normal	$I_{pn}$	-	40	-	mA	

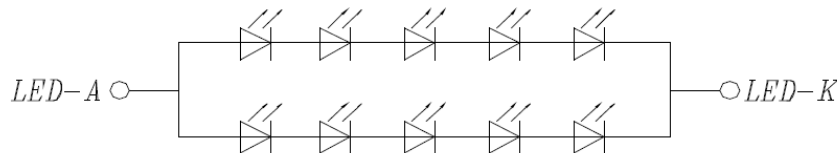
**Table 7 - LED Backlight Specification**

### **Note:**

- $V_{LED} = V_{LED(+)} - V_{LED(-)}$
- The LED current is 20mA.  
It is recommended to drive the LED using a constant current mode.
- The forward current versus ambient temperature characteristics shown in Figure 1 are specified per LED string.



**Figure 1 - Forward Current vs Ambient Temperature**



**Figure 2 - Backlight LED Circuit**

## 5.3 Parallel RGB Input Timing

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency	$f_{clk}$	5	9	12	MHz
HSD period time	Th	520	525	800	DCLK
HSD display area	Thd	480			DCLK
HSD back porch	Thbp	36	40	255	DCLK
HSD front porch	Thfp	4	5	65	DCLK
VSD period time	Tv	277	288	400	H
VSD display area	Tvd	272			H
VSD back porch	Tvbp	3	8	31	H
VSD front porch	Tvfp	2	8	97	H

**Table 8 - Parallel RGB Input Timing**

## 5.4 Optical Specifications

All optical specifications are measured under typical condition (Note 1, 2)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Brightness	Bp	$\theta=0^\circ$ $\Phi=0^\circ$	-	350	-	Cd/m <sup>2</sup>	Note 1
Uniformity	$\Delta Bp$		70	80	-	%	Note 1 Note 2
Viewing Angle	3:00	$Cr \geq 10$	-	45	-	Deg	Note 3
	6:00		-	20	-		
	9:00		-	45	-		
	12:00		-	40	-		
Contrast Ratio	Cr	$\theta=0^\circ$ $\Phi=0^\circ$	350	500	-	-	Note 4
Response Time	T <sub>r</sub>		-	10	-	ms	Note 5
	T <sub>f</sub>		-	10	-	ms	
Color of CIE Coordinate	W	x	$\theta=0^\circ$ $\Phi=0^\circ$	0.28		-	Note 1 Note 6
		y		0.33		-	
	R	X		0.51		-	
		y		0.34		-	
	G	x		0.31		-	
		y		0.56		-	
	B	x		0.15		-	
		y		0.14		-	
NTSC Ratio	S		50	60	-	%	

**Table 9 - Optical Specifications**

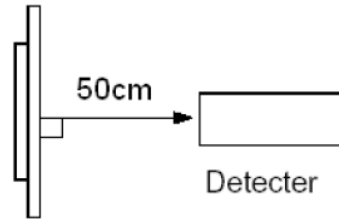
**Remark:** Parameters may vary slightly depending on temperature, driving voltage, and material.

**Note:**

1. Data are measured after the LEDs are turned on for 5 minutes with the LCM displaying full white. Brightness is the average value of 9 measured points. Measurement equipment: PR-705 ( $\Phi 8mm$ )

**Measuring Conditions:**

- Environment: Dark room
- Temperature:  $T_a = 25^\circ\text{C}$
- Operating voltage adjusted for optimum contrast at the center of the display
- Values measured at the center point of the LCD panel after more than 5 minutes of backlight operation

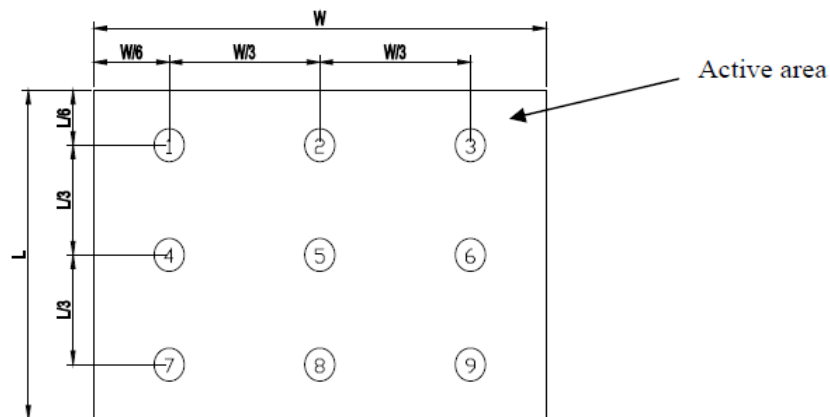

**Figure 3 - Measurement Setup**

2. The luminance uniformity is calculated using the following formula:

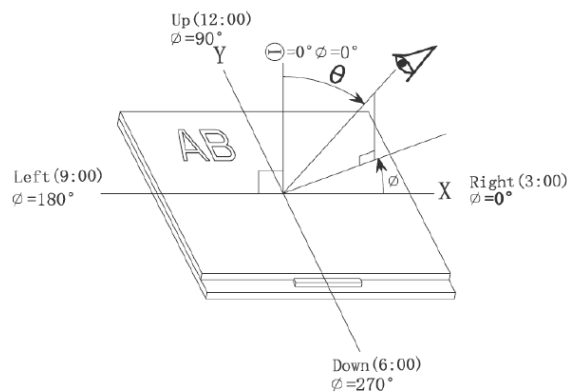
$$\Delta Bp = \frac{Bp \text{ (Min.)}}{Bp \text{ (Max.)}} \times 100\%$$

$Bp \text{ (Max.)}$  = Maximum brightness in 9 measured spots

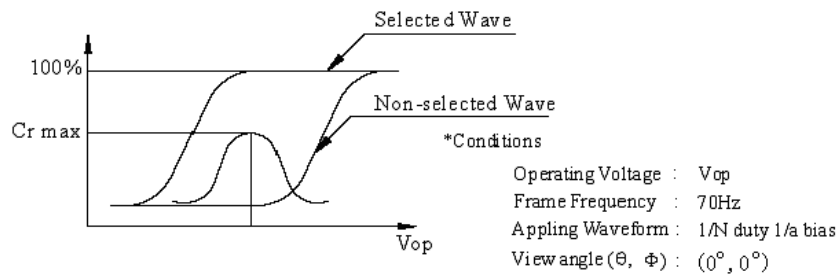
$Bp \text{ (Min.)}$  = Minimum brightness in 9 measured spots


**Figure 4 - Measurement Point**

3. Definition of viewing angle: Refer to the figure below, indicated by  $\theta$  and  $\phi$ .


**Figure 5 - Viewing Angle**

#### 4. Definition of Contrast ratio. (Test equipment: DMS501)

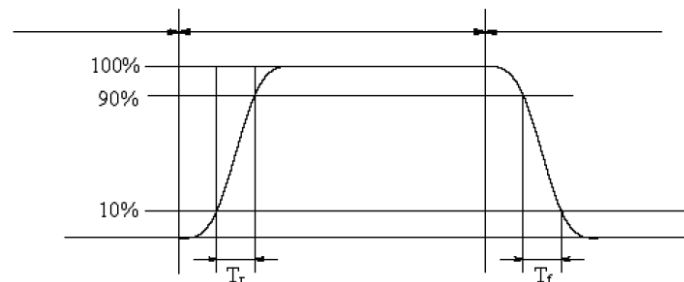


**Figure 6 - Contrast Ratio**

$$\text{Contrast ratio, Cr} = \frac{\text{Brightness of selected dots}}{\text{Brightness of non-selected dots}}$$

#### 5. Definition of response time. (Test equipment: DMS501)

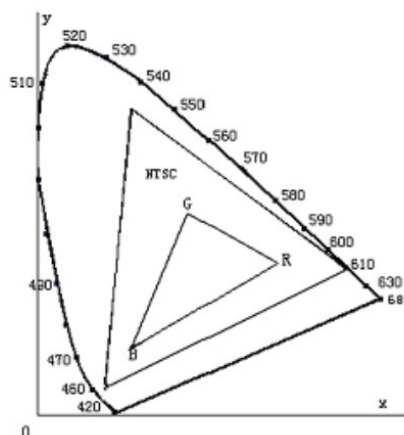
The output signals of the photo detector are measured when the input signal changes from "black" to "white" (falling time) and from "white" to "black" (rising time). Response time is defined as the time interval between 10% and 90% of the signal amplitude. Refer to the figure below for illustration.



**Figure 7 - Definition of Response Time**

#### 6. Definition of color in terms of CIE coordinates and NTSC ratio.

Color gamut: 
$$S = \frac{\text{Area of RGB triangle}}{\text{Area of NTSC triangle}} \times 100\%$$

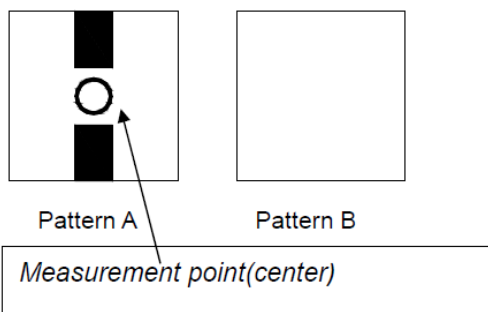


**Figure 8 - 1931 CIE Chromaticity Diagram**

#### 7. Definition of cross talk.

$$\text{Cross talk ratio(\%)} = \frac{|\text{Pattern A Brightness} - \text{Pattern B Brightness}|}{\text{Pattern A Brightness}} \times 100\%$$

**Electric volume value=3F+/-3Hex**



**Figure 9 - Definition of Cross Talk**

## 6 Reliability Test Items

Test Item	Test Conditions	Criterion
High Temperature Storage	Temperature: +80°C±2°C Duration: 96hrs Restoration: 2hrs at 25°C Power Status: OFF	1.No cosmetic or electrical defects shall be observed after testing.  2.Total current consumption shall not exceed twice the initial value.
Low Temperature Storage	Temperature: -30°C±2°C Duration: 96hrs Restoration: 2hrs at 25°C Power Status: OFF	
High Temperature Operation	Temperature: +70°C±2°C Duration: 96hrs Restoration: 2hrs at 25°C Power Status: ON	
Low Temperature Operation	Temperature: -20°C±2°C Duration: 96hrs Restoration: 4hrs at 25°C Power Status: ON	
High Temperature and Humidity Operation	Temperature: +60°C±2°C Humidity: 90% RH Duration: 96hrs Power Status: ON	
Temperature Cycle	Range: -30°C ~ +80°C Cycle: 5 cycles Dwell: 30 min at each extreme Transfer Time: 5 min Restoration: 2hrs at 25°C Power Status: OFF	
Vibration Test	Frequency: 10Hz ~ 150Hz Acceleration: 100m/s <sup>2</sup> Duration: 120min	Cosmetic and electrical defects are not permitted
Shock Test	Waveform: Half-sine wave Acceleration: 300m/s <sup>2</sup> Duration: 11ms	

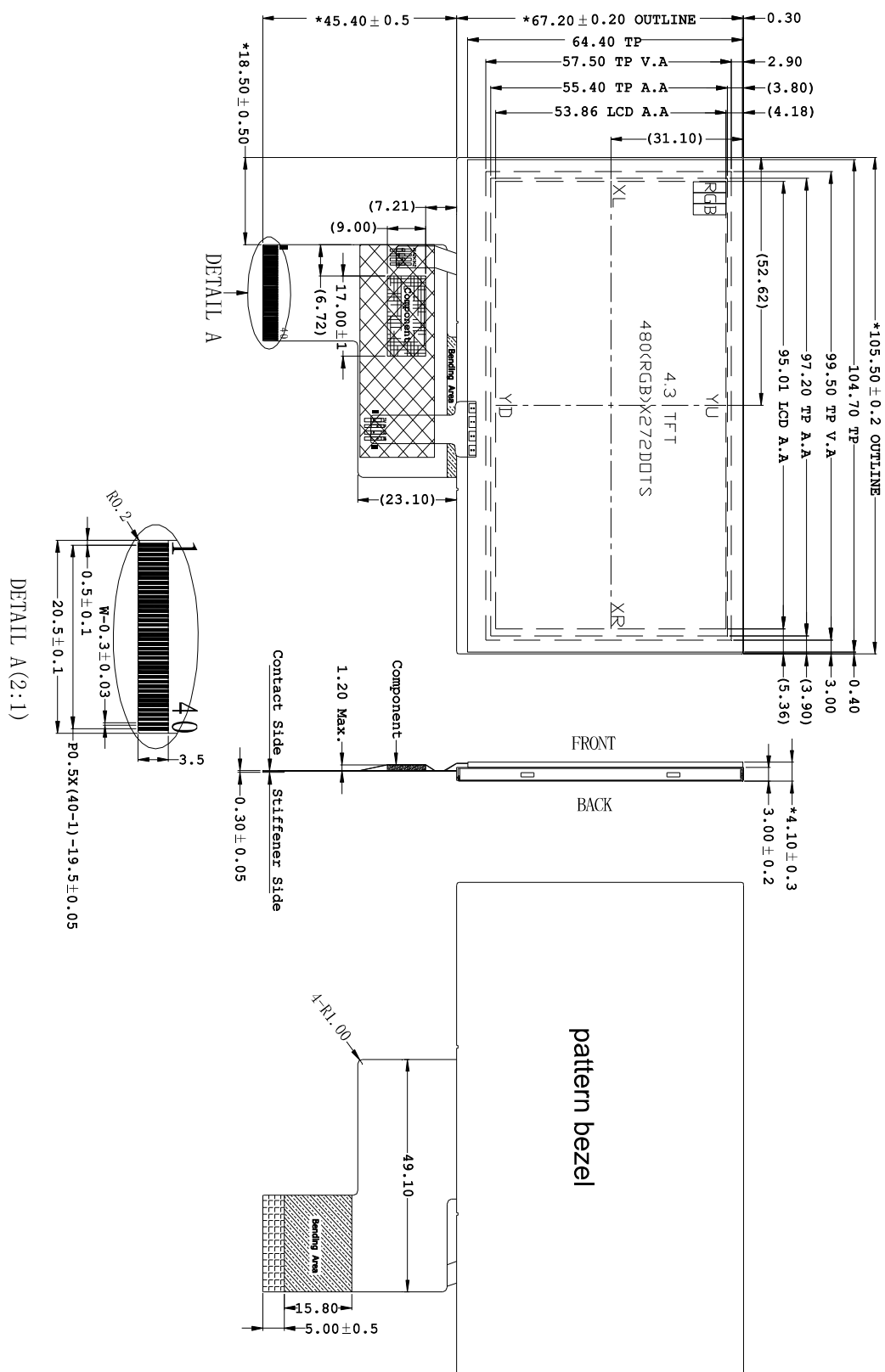
**Table 10 - Reliability Test Items**

### **Note:**

The inspection criteria after reliability testing are as follows:

Item	Inspection
Contrast	CR > 50%
I <sub>DD</sub>	I <sub>DD</sub> < 200%
Brightness	Brightness > 60%
Color Tone	Color Tone ±0.05

## 7 Dimension



### Figure 10 - LCM Dimension

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- The device has malfunctioned due to improper use, mishandling, or usage beyond its intended design.
- The device has been disassembled, repaired, or modified by unauthorized personnel.
- Any other conditions that do not comply with our warranty policy. For details, please [contact our sales team](#).

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## Appendix A – References

### Document References

NA

### Acronyms and Abbreviations

Terms	Description
FPC	Flexible Printed Circuit
IC	Integrated Circuit
I2C	Inter-Integrated Circuit
LCD	Liquid Crystal Display
LCM	Liquid Crystal Module
LED	Light Emitting Diode
LED A	Light Emitting Diode Anode
LED K	Light Emitting Diode Cathode
RTP	Resistive Touch Panel
TFT	Thin Film Transistor

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## Appendix C – Revision History

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Version 1.0	Initial Release	07-11-2025