



# Emerald MLK Pen

## Specification

<b>Model #</b>	SPEN-DEL-01
<b>Sunwoda P/N</b>	1106000000731 (35PRK)
<b>Document Version</b>	1.0
<b>Creation Date</b>	2018-10-24

**Revision Control**

<b>Version</b>	<b>Date</b>	<b>Created By</b>	<b>Description</b>
1.0	2018-10-24	Horsee Li	Creation

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# 1. Product Description

## 1.1. General

The Emerald MLK pen (basing on Microsoft licensed Ntrig technology) enables direct on screen digital input, for a true Hands-on computing experience for mobile computers and other products. This document describes the specifications for the Emerald MLK pen.

The pen supports latest Windows 8.1 / 10 OS, meet all HLK requirements.

## 1.2. Operation Description

The pen is composed of a battery, electronic parts (IC & passive components) and a body envelope.

The pen is active and transmits as long as there is a battery inserted into the pen and the battery is operational; the pen transmits low power low frequency FSK radio signal which includes the pen operational information. The signal origin is at the pen tip.

## 1.3. Pen Technology

Electrostatic stylus, Active, self-powered battery pen

## 1.4. Battery Type& battery life

AAAA, user replaceable

Power Consumption: Hover  $40\mu\text{A} \pm 15\%$ ; Tip  $85\mu\text{A} \pm 15\%$

Working voltage range: 0.9-1.8V

Battery life: > 18 months (presuming 10% in Tip mode)

## 1.5. Key Parameters

Working frequency: 18-44 KHz

Report rate– Tip mode: 133Hz

Report rate – Hove mode: 66Hz

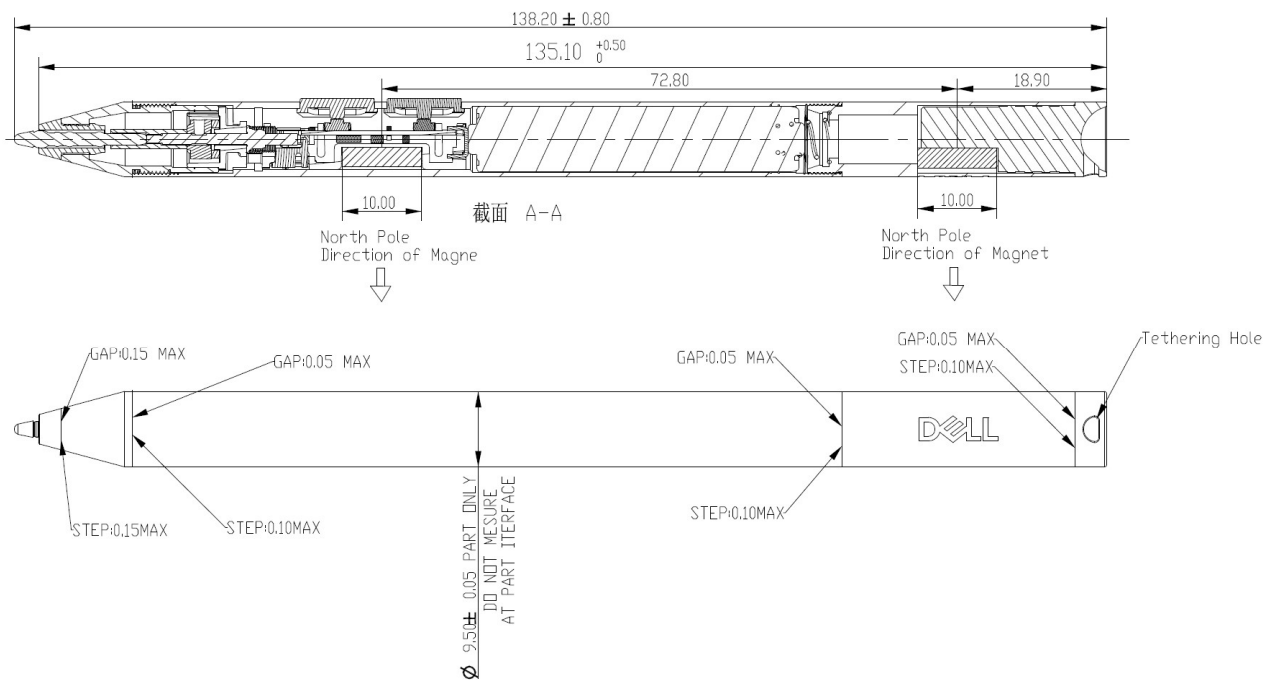
Pressure levels: 256-1024 (depends on Touch IC controller that OEM customers will choose)

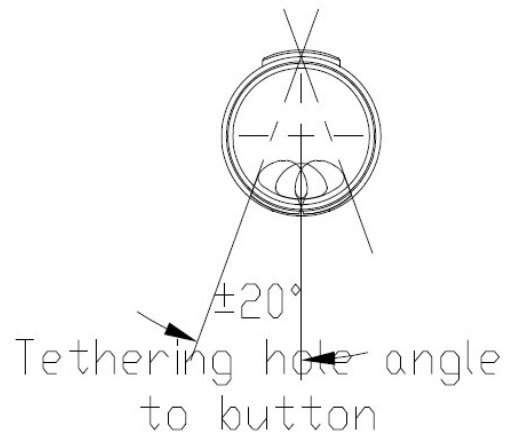
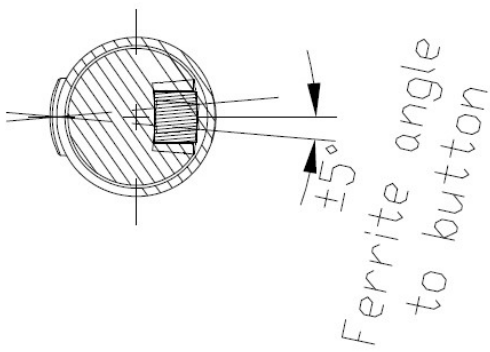
Max power output: 27uW

Modulation: Frequency, Phase

## 2. Mechanical specifications

Item	Description
Dimensions	138.2mm±0.8mm Ø9.5mm
Total Weight (including battery)	18gr +/- 2gr
Activation Force	10-28gr
Maximum Force	350gr
Buttons	Eraser & Barrel Button
Tip Minimum Extraction Force	>1N
Tip type	MEDIUM POM, Shore D 78+/-3 <a href="#">P/N 5732000020341</a>





### 3. Durability Specifications

s/n	Test case and condition
1	MTBF (Failure Rate) Prediction
2	Thermal Shock Test (Non Operating)
3	Temperature & Humidity Cycling Operating Test
4	Storage Test (Non Operating) with Dell Packaging Box
6	Side Button / Top button Life Test
7	Pen Pressure Life Test
8	Stylus tip pull out strength
9	Stylus tip abrasion test
10	End Cap Life Test
11	Tumbling test
12	Bending test
13	Legend Durability Test
14	Chemical & Stain Resistance Test
15	Coating Performance Test (Paint & Plated Finish)
16	Drop test (Operating) w/o packaging

# 4. CMF definition

## Emerald MLK | Design

1	2	3	4
<b>Nib</b>	<b>Tip Shield</b>	<b>Pen Body &amp; Cone</b>	<b>Tail Enclosure</b>
Material Process Color Finish Texture Remark	Material Process Color Finish Texture Remark	Material Process Color Finish Texture Remark	Material Process Color Finish Texture Remark
Per Supplier Spec Per Supplier Spec Black Per Supplier Spec -	PCM Molded, Resin Dell Standard Black, Resin Per Supplier Spec (Emerald) Per Supplier Spec (Emerald)	Aluminum CNC + Painted (Basecoat + ST Topcoat) Dell Standard Black, Velvet 2 +2/-1 GU -	Aluminum CNC + Anodized Anodized Alvs, Beadblast Beadblast + Anodized -
-	-	-	<b>With Laser Etched LOGO</b>

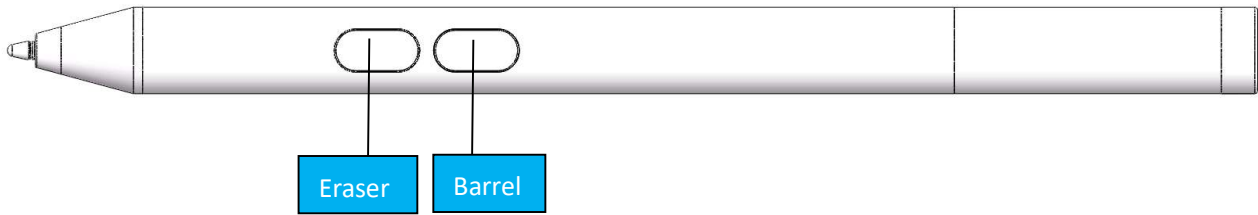
5	6
<b>End Cap</b>	<b>Pen Buttons</b>
Material Process Color Finish Texture Remark	Material Process Color Finish Texture Remark
Aluminum CNC + Anodized Anodized Alvs, Beadblast Beadblast + Anodized -	Plastic Molded, Resin Dell Standard Black, Resin Per Supplier Spec (Emerald) Per Supplier Spec (Emerald)
-	-



### MAGNET Requirements

- To embed magnets (min 2pos) for attachment to Notebook.
- Magnet location, shape, size and strength T.B.D.
- No visible wires and unfinished metal exposure from internal components should be seen from outside.

## 5. Button functions



### Eraser Button

- *HLK requirement, standard eraser function*
- *Press the button and draw pen tip on screen through contents to be erased.*

### Barrel button

- *Customized function button, its function is defined by Touch IC chosen by OEM customers.*
- *Default function (under Windows One Note environment)*
  - Right click function - Press the button, then touch the pen tip on screen*
  - Select function – Press the button, then touch the pen tip on screen and keep drawing it to select contents*

## 6. Regulatory information

### On going certification list

Country	Regulatory	Country	Regulatory	Country	Regulatory
Algeria	APRT	Egypt	NTRA	Lebanon	TRA/MoT
Antigua and Barbuda	ABTD	Ethiopia	MCIT	Libya	CIM
Argentina	ENACOM	European Union	CE	Madagascar	OMERT
Armenia	ANAB	Fiji	TAF	Malaysia	SIRIM
Aruba	DTZ	Gabon	ARCEP	Mauritius	ICTA
Australia & New Zealand	ACMA	Germany	TUV	Mexico	NYCE
Azerbaijan	ARRVITN	Ghana	NCA	Moldova	ANRCETI
Bahamas	URCA	Grenada	NTRC	Mongolia	ICTA
Bahrain	DWL F&M	Guatemala	SIT	Montserrat	MICA
Barbados	MFEA	Guyana	PUC	Morocco	ANRT



Belarus		Haiti	CONATEL	Mozambique	INCM
Belize	PUC	Honduras	CONATEL	Namibia	CRAM
Bermuda	DoT	India (exempted)	DoT	Nepal	NTA
Bolivia	ATT	Indonesia	SDPPI	New Caledonia	ANFR
Brazil	Anatel	Iraq	CMC	Nicaragua	TELCOR
Brunei	AITI	Israel	MoC	Niger	ARM
Cambodia	MPTC	Jamaica	SMA	Nigeria	NCC
Cameroon	ART	Japan	VCCI	Oman	TRA
Canada	IC		MIC	Pakistan	PTA
Chile	SUBTEL	Jordan	TRC	Panama	ASEP
Colombia	CRC	Kenya	CA	Papua New Guinea	NICTA
Costa Rica	SUBTEL	Kiribati	CCK	Paraguay	Conatel
Cote D'Ivoire	ARTCI	Korea	MSIP	Peru	(exempted if Tx <10mW)
Dominica	NTRC	Kuwait	MoC	Philippines	NTC
Dominican Republic	INDOTEL	Kyrgyzstan	KNCA	Qatar	CRA
Ecuador		Laos	MPT	Russia Federation	CU (fm Russian Agency only)
USA	FCC	Uruguay	URSEC	Vietnam	MIC (exempt if <60mW)
USA / Canada	FCC / IC	Uzbekistan	TASHKENT	Yemen	MTIT
	NRTL	Venezuela	CONATEL	Zambia	ZICTA (exempt if <100mW)

## 7. Label information

TBD

## 8. Packing information

TBD

### United States, FCC Notices

#### FCC Radiation Exposure Statement

**WARNING:** The radiated output power of Dell Bluetooth/wireless devices is far below the FCC radio frequency exposure limits. Nevertheless, Dell Bluetooth/wireless devices should be used in such a manner that the potential for human contact during normal operation is minimized.

This device has also been evaluated for and shown compliant with the FCC RF exposure limits under portable exposure conditions (antennas are within 20 cm of a person's body) when installed in certain specific OTCM configurations. Details of the authorized configurations can be found at <https://fjffloss.fcc.gov/otcm/faq/reports/GeneralSearch.cfm> by entering the FCC ID number on the device.

#### Interference Statement

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

**NOTE:** The FCC regulations provide that changes or modifications not expressly approved by Dell Inc. could void your authority to operate this equipment.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the system with respect to the receiver.
- Move the system away from the receiver.