

VGAP-CG1-AS-A1 Specification

1. Features and Application

- (1) This product is manufactured in ISO/TS16949 certified production factory.
- (2) This product is qualified according to AEC-Q200.
- (3) This product is for GPS L1 band, 1575.42 MHz, Glonass...

2. Explanation of Part Number

VGAP - $\frac{\mathbf{C}}{\mathbf{(1)}}$ $\frac{\mathbf{G1}}{\mathbf{(2)}}$ - $\frac{\mathbf{A}}{\mathbf{(3)}}$ $\frac{\mathbf{S}}{\mathbf{(4)}}$ - $\frac{\mathbf{A1}}{\mathbf{(5)}}$

- (1) Product Type: Chip Antenna
- (2) Center Frequency/Band Code: M4 - Dual-band(GPS + Glonass)
- (3) Size Code: 5.0*3.6 mm (Length*Width)
- (4) Special Code: RoHS Compliant
- (5) Design Revision Code: Rev.1

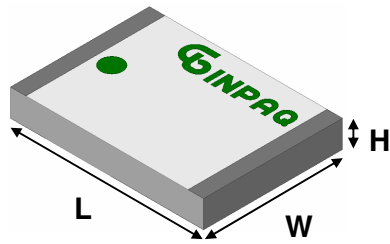
3. Electrical Specification

Item	Specification	
Frequency Band	1570 ~ 1580 MHz	1593 ~ 1610 MHz
Polarization	Linear	
Impedance	50 ohm Typ.	
VSWR	Less than 2.0	Less than 2.0
*Peak Gain	3.62 dBi Typ.	3.71 dBi Typ.
*Peak Efficiency	75.7% Typ.	77.2 % Typ.

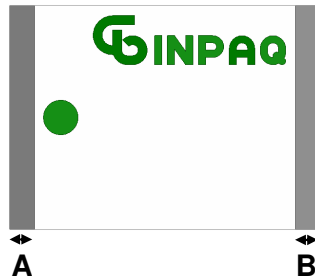
* Test condition: Test board size 80*40 mm
Matching circuit may be required

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ANGLES=±		HOLEDIA=±		
SCALE : -----	UNIT : mm			
DRAWN BY : 趙彥年 <i>Oliver</i>	CHECKED BY : 黃啓傑 <i>Tommy</i>			
DESIGNED BY : 林豪建 <i>Stan</i>	APPROVED BY : 蘇志銘 <i>Tom</i>			
TITLE : VGAP-CG1-AS-A1 Specification		DOCUMENT NO.	ENS000063510	SPEC REV.
				A1

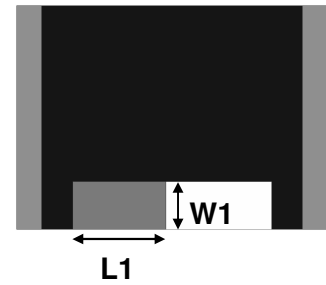
4. Physical Dimension



Top view




Bottom view



Marking is Green

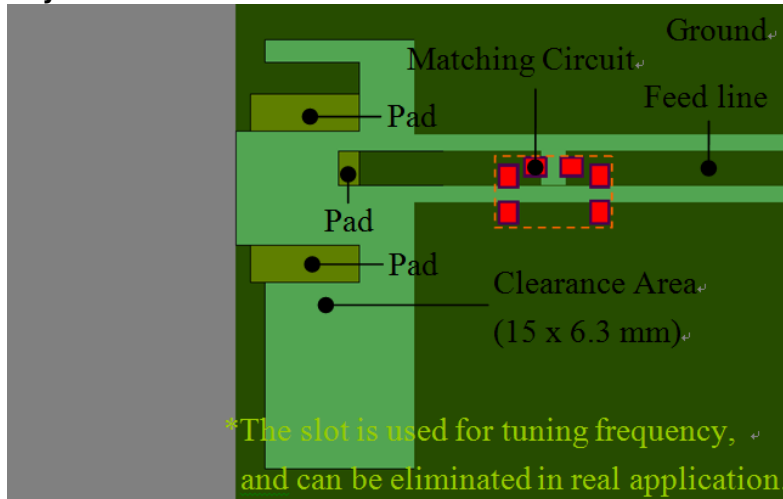
L	5.20 ± 0.30
W	3.70 ± 0.30
H	0.70 ± 0.15
A	0.45 ± 0.25
B	0.45 ± 0.25
L1	1.10 ± 0.20
W1	0.55 ± 0.20

(Unit: mm)

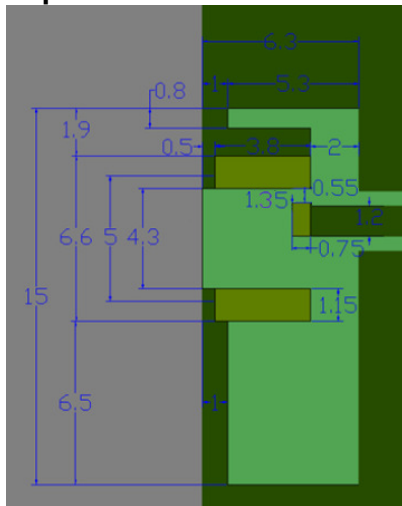
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DESIGNED BY : 林豪建 <i>Stan</i>	APPROVED BY : 蘇志銘 <i>Jim</i>	
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5. Recommend PCB Layout

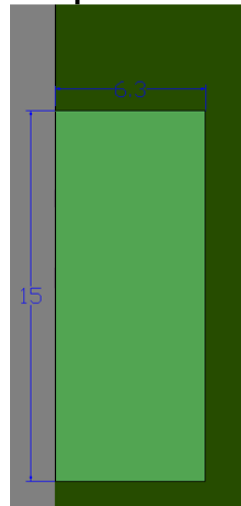
Layout



Pad Dimensions on PCB Layout Top View



Perspective View



(Unit : mm)

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UNIT : mm

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APPROVED BY : 蘇志銘 *Tom*

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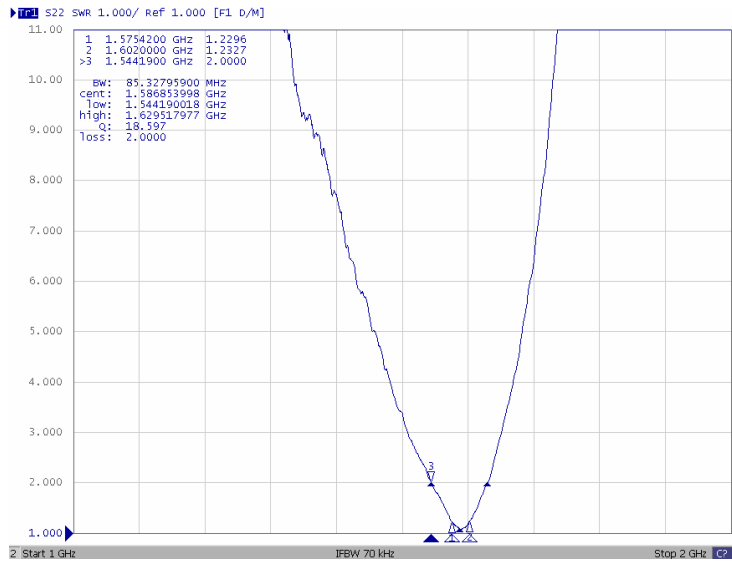
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6. Electrical Characteristics

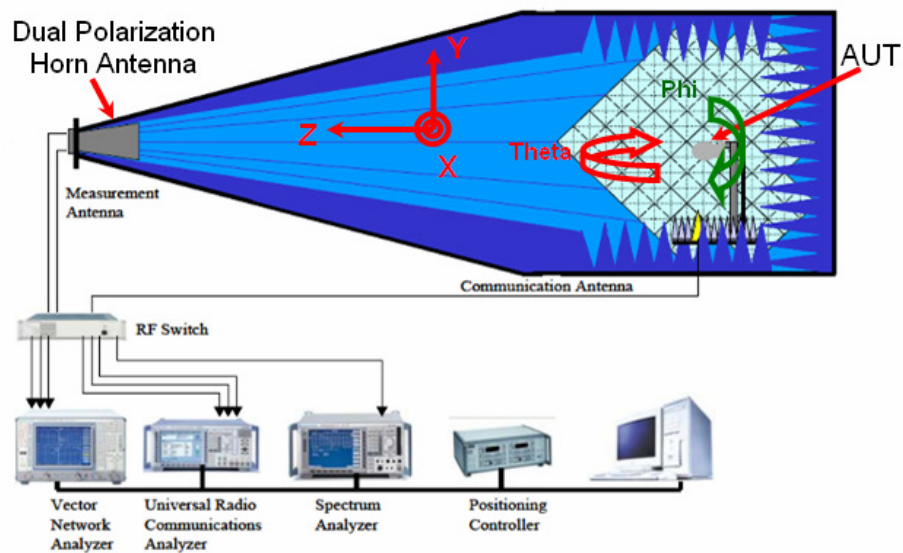
VSWR



Mark	Frequency	VSWR
1	1575 MHz	1.3
2	1602 MHz	1.3

Radiation Pattern

The Gain pattern is measured in INPAQ's FAR-field chamber. DUT is placed on the table of rotator, a standard horn antenna and Vector Network Analyzer is used to collect data.



3D Chamber Definition

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SCALE : -----

UNIT : mm

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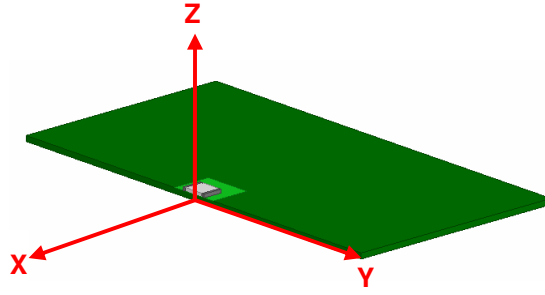
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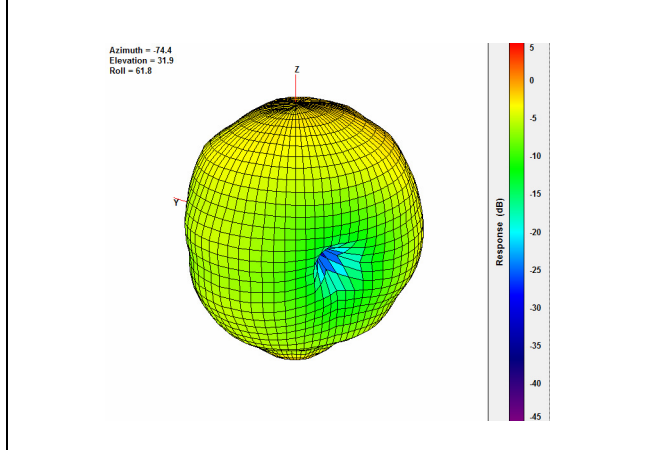
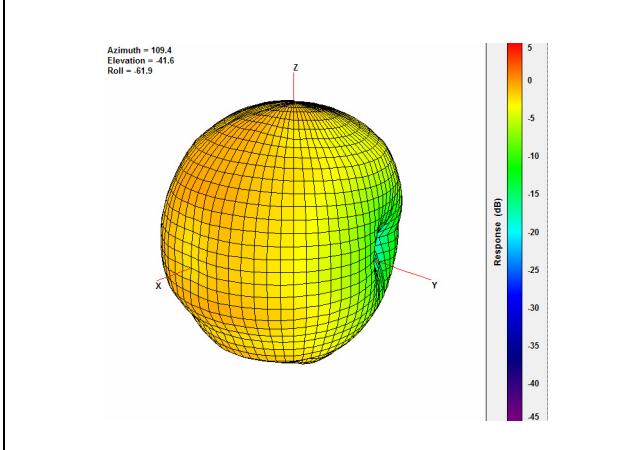
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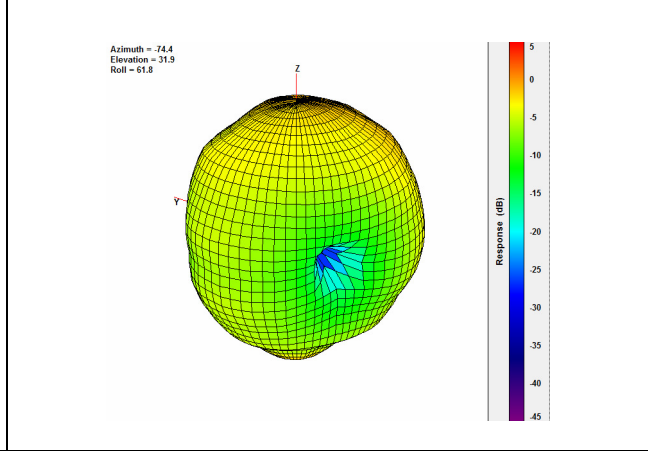
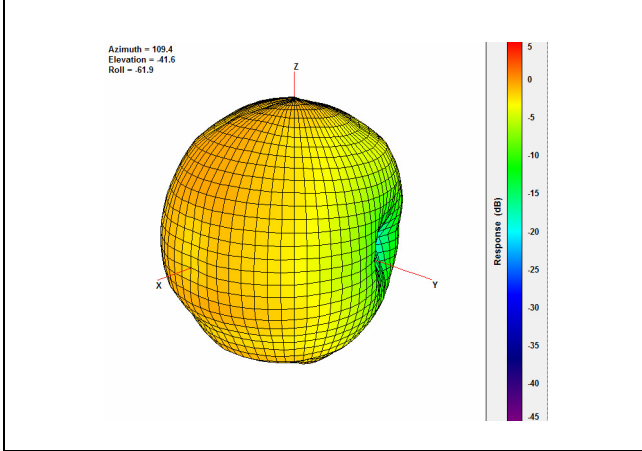
3D Gain Pattern



1575.42 MHz



1600 MHz



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 ANGLES=± HOLEDIA=±



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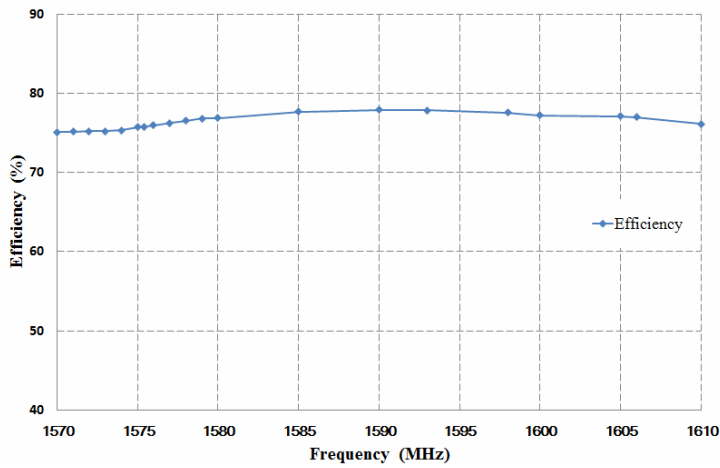
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Efficiency



Frequency (MHz)	Efficiency (%)
1570	75.1
1575.42	75.7
1580	76.8
1590	77.9
1600	77.2
1610	76.1

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UNIT : mm

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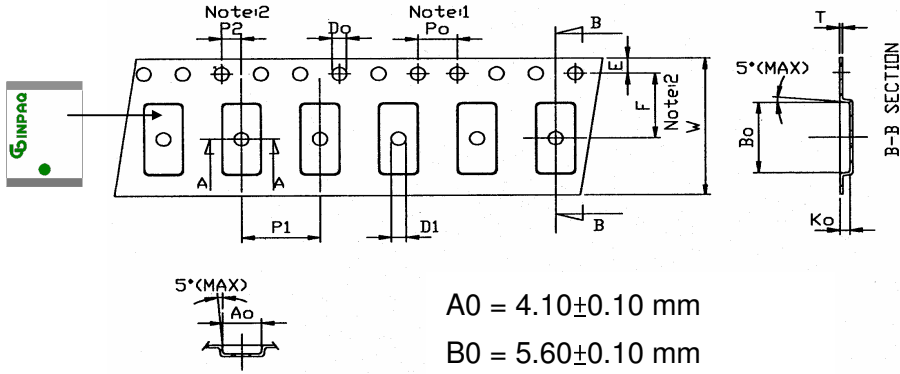
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7. Taping Package and Label Marking

- (1) Quantity/Reel : 2000pcs/Reel
- (2) Carrier tape dimensions

(Unit: mm)



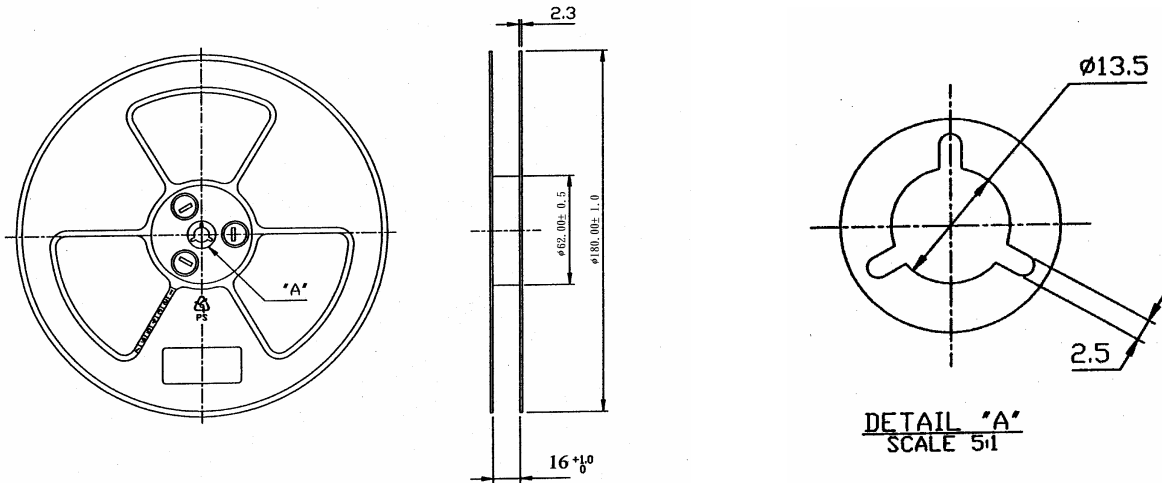
Symbol	Spec.
Po	4.00±0.1
P1	8.00±0.1
P2	2.00±0.05
Do	1.55±0.05
D1	1.50(MIN)
E	1.75±0.1
F	5.50±0.05
10Po	40.00±0.2
W	12.00±0.1
T	0.25±0.05

$A0 = 4.10 \pm 0.10 \text{ mm}$
 $B0 = 5.60 \pm 0.10 \text{ mm}$
 $K0 = 1.02 \pm 0.10 \text{ mm}$

Notice:

- 10 Sprocket hole pitch cumulative tolerance is $\pm 0.1\text{mm}$
- Pocket position relative to sprocket hole measured as true position of pocket not pocket hole.
- Ao & Bo measured on a plane 0.3mm above the bottom of the pocket to top surface of the carrier.
- Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
- Carrier camber shall be not than 1mm per 100mm through a length of 250mm.

- (3) Taping reel dimensions



UNLESS OTHER SPECIFIED TOLERANCES ON :

$X = \pm$ $X.X = \pm$ $X.XX =$
 ANGLES = \pm HOLEDIA = \pm

SCALE : ----- UNIT : mm

DRAWN BY : 趙彥年 *Oliver* CHECKED BY : 黃啓傑 *Tommy*

DESIGNED BY : 林豪建 *Stan* APPROVED BY : 蘇志銘 *Jimmy*

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SPEC REV. A1

8. Environmental Characteristics

This product is qualified according to AEC-Q200.

(1) Reliability Test

Item	Condition	Specification
Thermal shock	1. 30±3 minutes at -40°C±5°C, 2. Convert to +105°C (5 minutes) 3. 30±3 minutes at +105°C±5°C, 4. Convert to -40°C (5 minutes) 5. Total 100 continuous cycles	No damage
Humidity resistance	1. Humidity: 85% R.H. 2. Temperature: 85±5°C 3. Time: 1000 hours.	No damage
High temperature resistance	1. Temperature: 150°C±5°C 2. Time: 1000 hours.	No damage
Low temperature resistance	1. Temperature: -40°C±5°C 2. Time: 1000 hours.	No damage
Soldering heat resistance	1. Solder bath temperature: 260±5°C 2. Bathing time: 10±1 seconds	No damage
Solderability	The dipped surface of the terminal shall be at least 95% covered with solder after dipped in solder bath of 245±5°C for 3±1 seconds.	No damage

(2) Storage condition

(a) At warehouse :

The temperature should be within 0 ~ 30°C and humidity should be less than 60% RH.


The product should be used within 1 year from the time of delivery.

(b) On board :

The temperature should be within -40 ~ 85°C and humidity should be less than 85% RH.

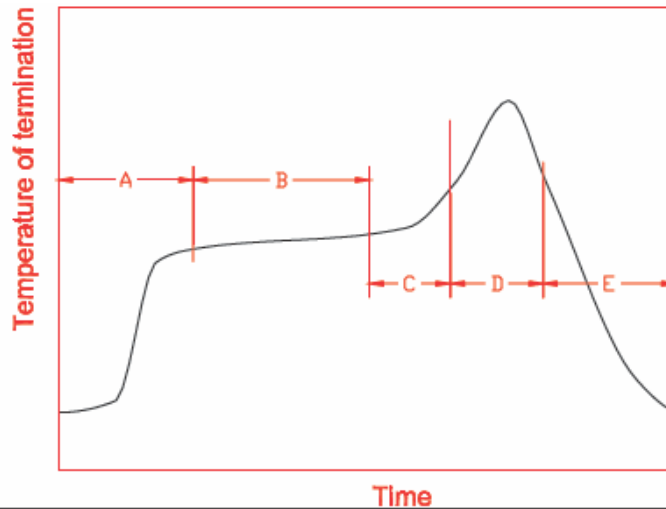
(3) Operating temperature range

Operating temperature range : -40 ~ +105°C.

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9. Recommended reflow soldering

Reference: J-STD-020C



A	1 st rising temperature	The normal to Preheating temperature	30s to 60s
B	Preheating	140°C to 160°C	60s to 120s
C	2 nd rising temperature	Preheating to 200°C	20s to 40s
D	Main heating	if 220°C	50s~60s
		if 230°C	40s~50s
		if 240°C	30s~40s
		if 250°C	20s~40s
E	Regular cooling	if 260°C	20s~40s
		200°C to 100°C	1°C/s ~ 4°C/s


(1) Soldering gun procedure

Note the follows, in case of using solder gun for replacement.

- The tip temperature must be less than 350°C for the period within 3 seconds by using soldering gun under 30 W.
- The soldering gun tip shall not touch this product directly.

(2) Soldering volume

Note that excess of soldering volume will easily get crack the body of this product.

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DESIGNED BY : 林豪建 <i>Stan</i>	APPROVED BY : 蘇志銘 <i>Tom</i>			
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