

PCN – Process Change Notification

Change:	SWLP.2450.12.4.B.02
Date:	2017/07/19
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Affected Products

Model#	Part Number	Changes
SWLP.2450.12.4.B.02 2.4GHz SMD Patch Antenna	SWLP.2450.12.4.B.02	Supplier

Type of Change

- ☐ Hardware Modification
☐ Production Process Advance
☒ Others – Supplier

Description of Change

- 2017/04/25 ECR Reason for change : Vendor notice from January 2017 onwards does no longer provide the original material powder(013A406700201B-SMA 2450), therefore Taoglas finds alternative material supplier. With the new supplier selection, alternative powder supplier cannot provide 100% same material, therefore color and deployment ratio of silver ink needs to be re-evaluated:

- Appearance color difference :

Old SWLP.12.B - Dark brown.(Similar color code: 8B4500)

New SWLP. 12.B- Light brown.(Similar color code: 8B5A2B)

- Dielectric coefficient is different :

So the silver surface area will be adjusted.

Customers to be informed immediately once alternative solution is approved internally.

- Silver ink top area size

The dielectric coefficient of original material is K39 and its silver area isn't symmetrical with the ceramics. The dielectric coefficient of K39 would be close to lower limit during production and would cause silver area to be bigger than current material. That would cause production difficulty and defective product. Therefore ceramic material with higher dielectric is appropriate solution.

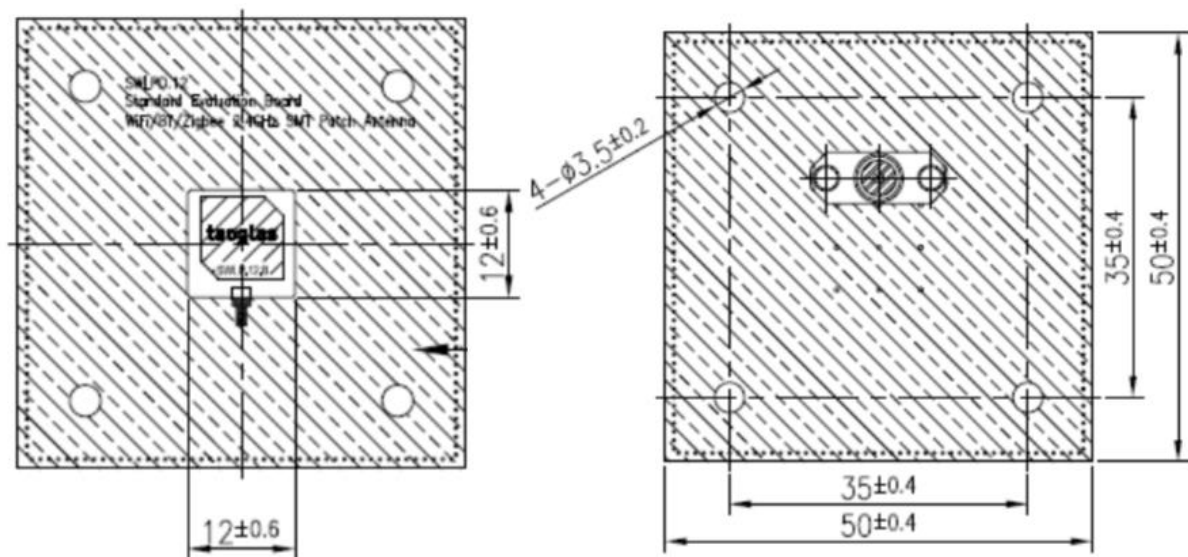
- Under circumstances of equal performance and same efficiency of antenna, we have chosen K45 dielectric material with the similar coloring and appearance of original ceramics. Choosing higher dielectric material leads to adjustment on the silver surface size of top printing area. Silver area becomes smaller which leads to better control over production (no overflow of silver on the edges in production compared to original part). Silver paste chosen is Noritake with 83% of silver contents and extended life cycle. This silver paste is no different to original product.

● Characteristics of microwave powder

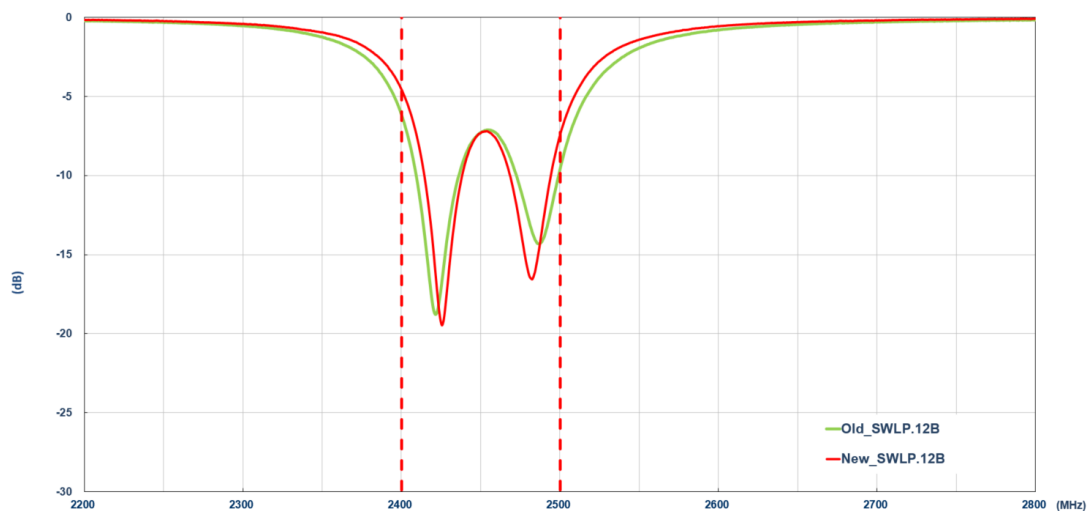
Power module	NP045B		Lot number	
Item	Dielectric constant	f (frequency) Q(quality) $f \times Q$	τ (Temperature Coefficient) $f(\text{frequency}) \times \tau$ -40°C ~25°C (ppm/°C)	τf -40°C~125°C (ppm/°C)
Specification	45.5±1.5	≥16000	±20	±20
Test Value	46.37	16049	15.42	16.85

● Performance Comparison

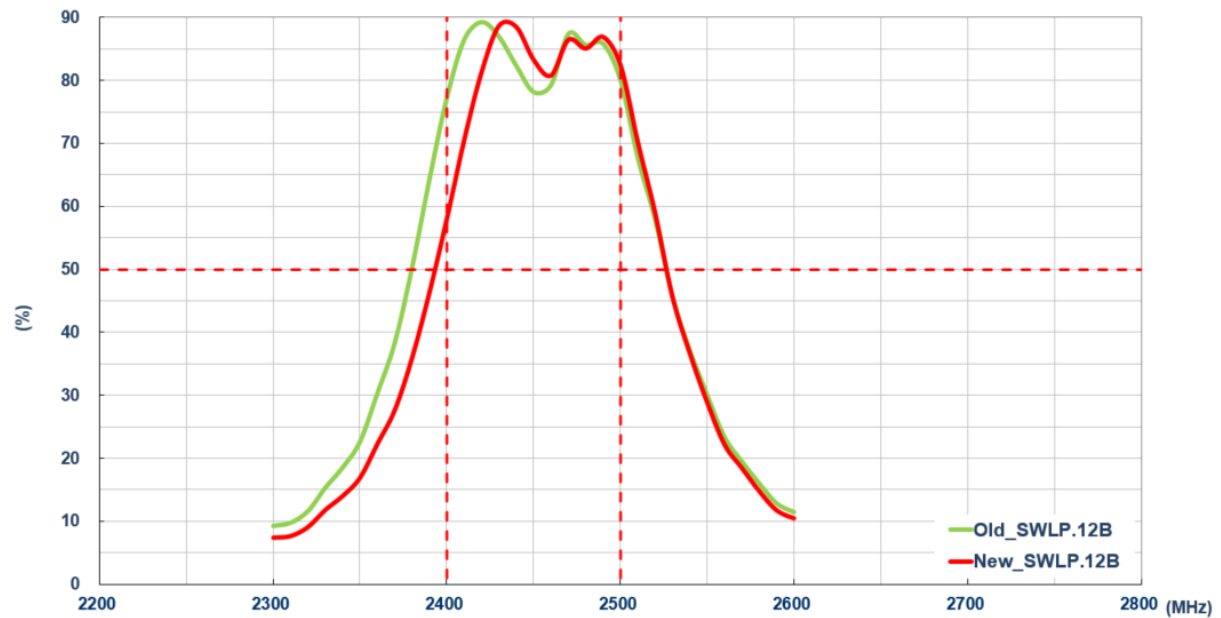
The Antenna was measured when it mounted at the center of 50mm*50mm ground plane for comparison. (Taoglas Standard Evaluation Board)



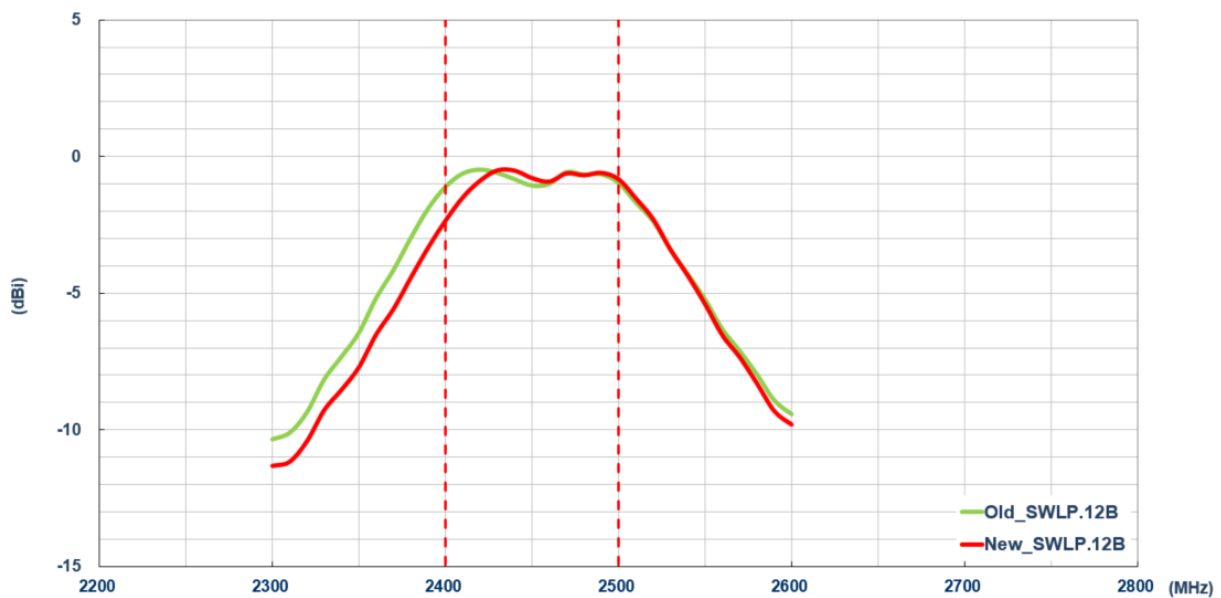
● Return Loss.



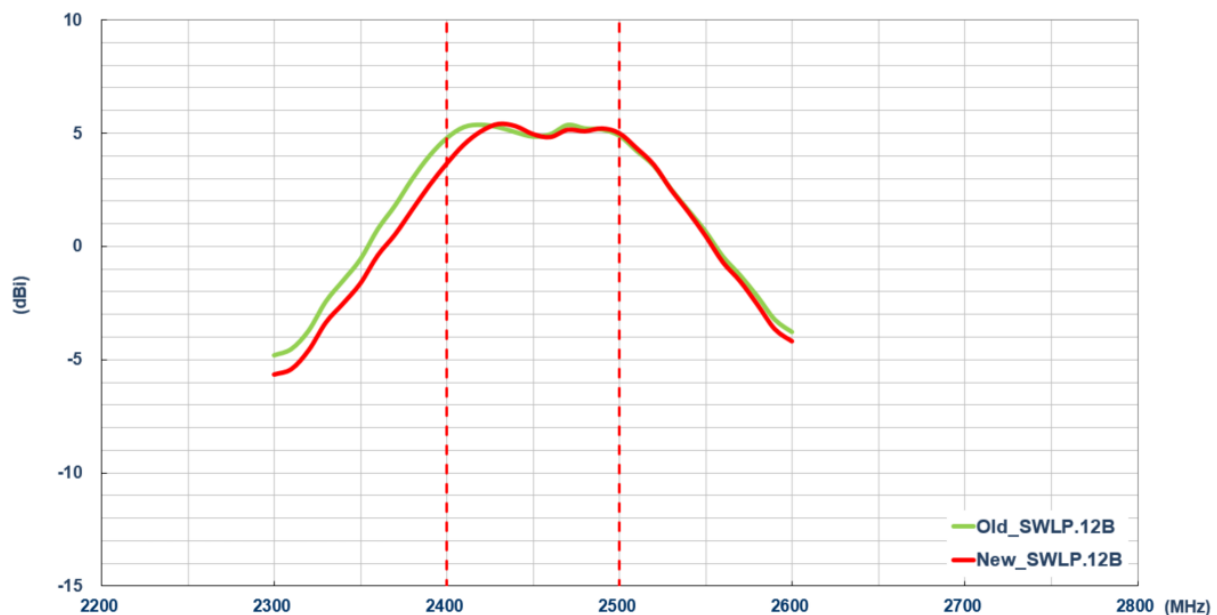
● **Efficiency**



● **Average Gain**



● Peak Gain



● Performance Comparison Table

	Old SWLP.12B	New SWLP.12B
Average Efficiency (%)	83.52	81.06
Average Gain (dBi)	-0.78	-0.93
Peak Gain (dBi)	5.36	5.40

Note: Passive antenna testing was conducted in EMtrek anechoic chamber. Measurement tolerances apply up to +/-10% between measurements.

● Conclusion

Efficiency of two WIFI resonance frequency border points surpass 50% and comply with bandwidth requirements and design criteria. Both antennas comply with antenna's original design and performance demand. Therefore we recommend this antenna for customer application.

Schedule

2017, May, Taoglas will provide new supplier.

Forecast Estimated Transition Date

May/2017

Illustration of Change



(New Package)

(Old Package)