SPECIFICATIONS

Customer	
Product Name	**Chip Antenna**
Sunlord Part Number	**SLDA92-2R450G-S1TF**
Customer Part Number	

[☒New Released, ☐Revised] **SPEC No.: SLDA000000**

Rev.	Effective Date	Changed Contents	Change reasons	Approved By
01	/	New release	/	Hai Guo

【 This SPEC is total 9 pages 】

【 ROHS Compliant Parts 】

Approved By	Checked By	Issued By

【For Customer approval Only】 Date:_____

Qualification Status: ☐ Full ☐ Restricted ☐ Rejected

Approved By	Verified By	Re-checked By	Checked By

Comments:

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1. Scope

This specification applies to SLDA92-2R450G-S1 of Multi-layer Chip Antenna.

2. Applied Documents

MIL-STD-202 Test Methods for Electronic and Electrical Chip Parts.
IEC-68 Test Methods for Environmental Testing.

3. Product Description and Identification (Part Number)

SLDA	92	-2R450G	-S1	T	F
①	②	③	④	⑤	⑥

①	Type
SLDA	Multilayer Chip Antenna

②	External Dimensions（L × W） [mm]
92	9.0×2.0

③	Center Frequency
2R450G	2450.0MHz

④	Series Code
	S1

⑤	Packing
B	Bulk Package
T	Tape Carrier Package

⑥	HSF Products
	Hazardous Substance Free Products

4. Electrical Characteristics

Part Number	Band Width	Peak Gain	Average Gain	VSWR	Impedance	Power Capacity
	MHz	V-XZ	V-XZ	In BW	Ω	W
SLDA92-2R450G-S1	⩾200	3.0 dBi typ.	1.0 dBi typ	< 2	50	3 W max

1) Operating and storage temperature range (individual chip without packing): -40℃ ~+85℃.
2) Storage temperature range (packaging conditions): -10℃~+40℃ and RH 90% (Max.).
3) Test equipment: Network Analyzer——HP8753E, HP8719ES.
4) Electrical Performance: See Fig.4-1

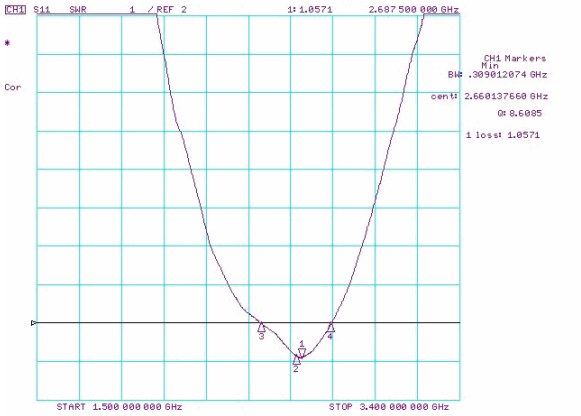


Fig.4-1

5. Shape and Dimensions

1) Dimensions and recommended PCB pattern for reflow soldering: See **Fig.5-1, Fig.5-2** and **Table 5-1**

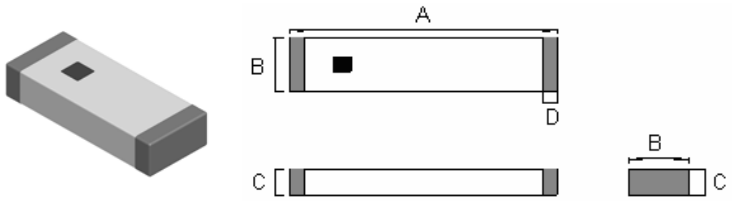


Fig.5-1

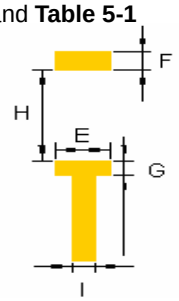


Fig.5-2

	A	B	C	D.	E	F	G	H	I
SLDA92	9.0±0.2	2.0±0.2	1.0±0.2	0.5±0.2	2.0	1.5	1.0	8.0	1.4

2) Terminal Configuration: See **Fig.5-3**

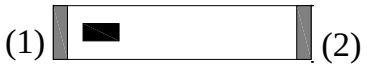


Fig.5-3

No.	Terminal Name	No.	Terminal Name
(1)	Feeding Point	(2)	NC

6. Test and Measurement Procedures

6.1 Test Conditions

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

a. Ambient Temperature: 20±15℃
b. Relative Humidity: 65±20%
c. Air Pressure: 86 KPa to 106 KPa

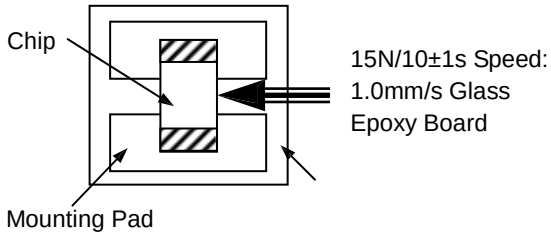
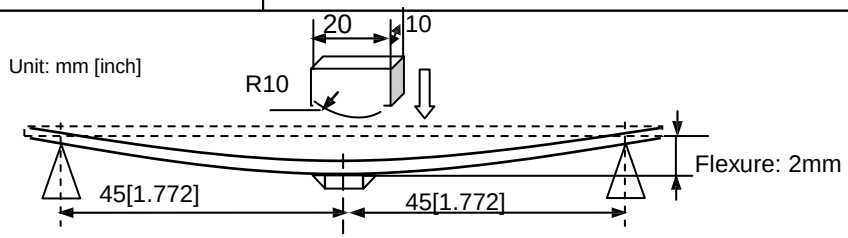
If any doubt on the results, measurements/tests should be made within the following limits:

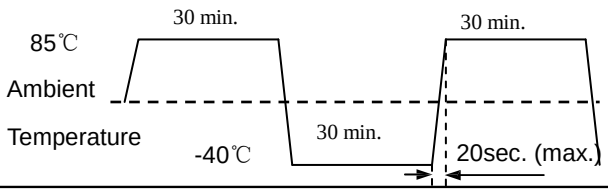
a. Ambient Temperature: 20±2℃
b. Relative Humidity: 65±5%
c. Air Pressure: 86KPa to 106 KPa

6.2 Visual Examination

a. Inspection Equipment: 20 X magnifier

6.3 Reliability Test

Items	Requirements	Test Methods and Remarks
6.3.1. Terminal Strength	No visible mechanical damage.	① Solder the inductor to the testing jig (glass epoxy board shown as the following figure) using eutectic solder. Then apply a force in the direction of the arrow. ② 15N force for 9020 series. ③ Keep time: 10±1sec. 
6.3.2. Resistance to Flexure	No visible mechanical damage.	① Solder the chip to the test jig (glass epoxy board) using a eutectic solder. Then apply a force in the direction shown as the following figure. Solder the chip to the test jig (glass epoxy board) using eutectic solder. Then apply a force in the direction. ② Flexure: 2mm ③ Pressurizing Speed: 0.5mm/sec ④ Keep time: ≥30 sec
		
6.3.3. Dropping	No visible mechanical damage.	Drop the chip 10 times on a concrete floor from a height of 50 cm.
6.3.4. Solderability	① No visible mechanical damage. ② Wetting shall be exceeded 75% coverage.	① Solder temperature: 240±2℃ ② Duration: 3sec ③ Solder: Sn/3.0Ag/0.5Cu ④ Flux: 25% Resin and 75% ethanol in weight

Items	Requirements	Test Methods and Remarks
6.3.5. Resistance to Soldering Heat	No visible mechanical damage.	① Solder temperature: 260±5℃ ② Duration: 5 sec ③ Solder: Sn/3.0Ag/0.5Cu ④ Flux: 25% Resin and 75% ethanol in weight ⑤ The chip shall be stabilized at normal condition for 1~2 hours before measuring.
6.3.6. Thermal Shock	① No visible mechanical damage. ② Satisfy electrical Characteristic.	① Temperature and time: -40℃ for 30±3 min→85℃ for 30±3min ② Transforming interval: Max. 20 sec. ③ Tested cycle: 10 cycles for SLDA series ④ The chip shall be stabilized at normal condition for 1~2 hours before measuring. 
6.3.7. Temperature Characteristics	① No visible mechanical damage. ② Satisfy electrical Characteristic.	① Temperature range: -40℃ to +85℃ ② Reference temperature: +20℃
6.3.8. Damp Heat (Steady States)	① No visible mechanical damage. ② Satisfy electrical Characteristic.	① Temperature: 40±2℃ ② Humidity: 90% to 95% RH ③ Duration: 96^{+24} hours for SLDA series ④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.
6.3.9. Resistance to High temperature	① No visible mechanical damage. ② Satisfy electrical Characteristic.	① Temperature: 85±2℃ ② Duration: 96^{+24} hours for SLDA series ③ The chip shall be stabilized at normal condition for 1~2 hours before measuring.

7. Packaging, Storage and Transportation

7.1 Packaging

There are two types of packaging for the chip beads. Please specify the packing code when ordering.

7.1.1 Bulk Packaging:

Packaging code: B, The quantity of each bag is integral multiple of 1000.

Remark: The actual quantity in a package may change sometimes.

7.1.2 Tape Carrier Packaging:

Packaging code: T

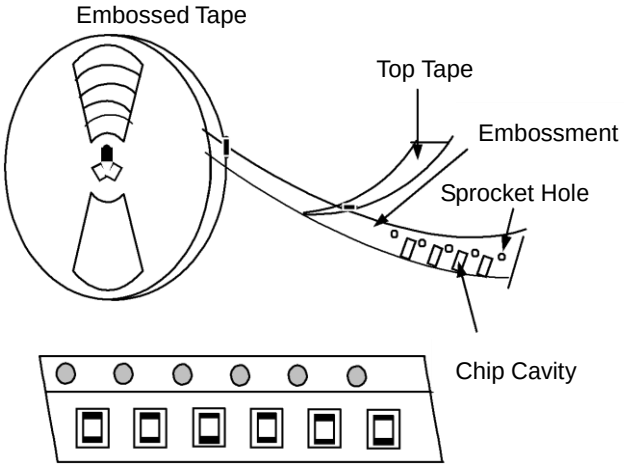
a. Tape carrier packaging are specified in attached figure **Fig.7.1-1~4**

b. Tape carrier packaging quantity please see the following table:

Type	9020
T(mm)	1.0±0.2
Tape	Embossed Tape
Quantity	4K

c. Maximum of 5 reels shall be packaged in an outer case.

(1) Taping Drawings (Unit: mm)



Remark: The sprocket holes are to the right as the tape is pulled toward the user.

(2) Taping Dimensions (Unit: mm)

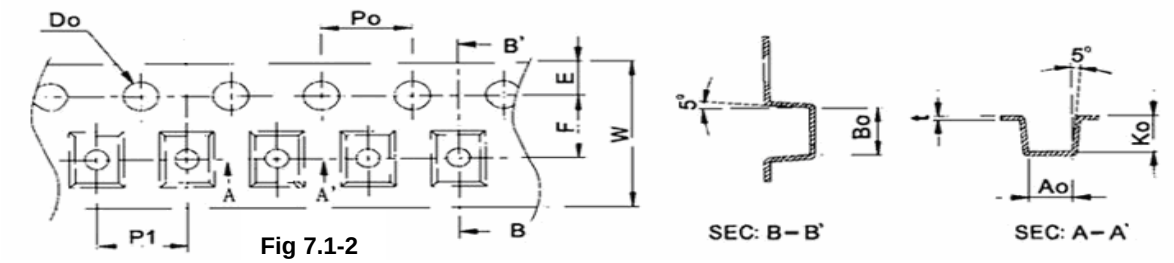
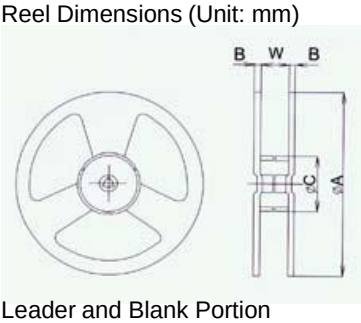


Fig 7.1-2

Type	W	P1	E	F	D0	P0	K0	A0	B0
Tolerance	±0.3	±0.1	±0.1	±0.05	+0.1/ -0.0	±0.1	±0.1	±0.1	±0.1
SLDA92	16.0	12.0	1.75	7.5	1.5	4.0	1.40	2.30	9.30

(3) Reel Dimensions (Unit: mm)



Type	Spec.	Dimensions(mm)			
		A	W	C	B
SLDA92	13"*16mm	330	16.5	100	2.3

Fig 7.1-3

(4) Leader and Blank Portion

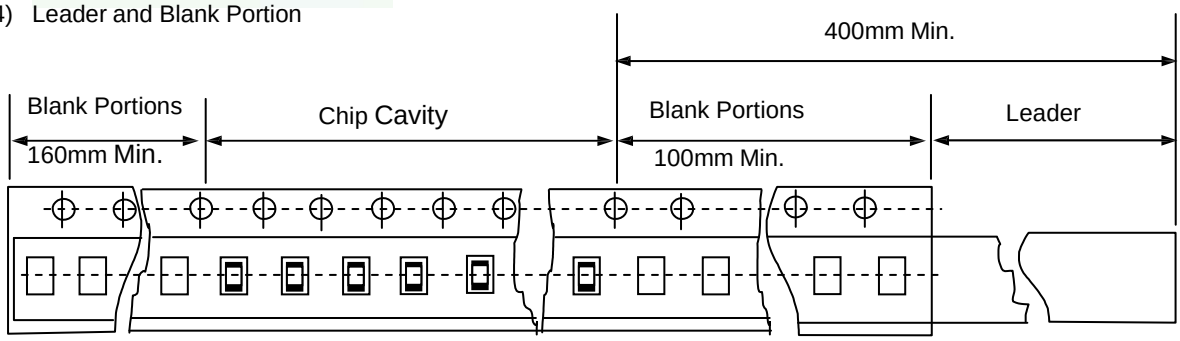


Fig. 7.1-4

(5) Missing beads number within 0.1% of the number per reel or 1 pcs, whichever is greater, and are not continuous.

(6) The top tape and bottom tape shall not protrude beyond the edges of the tape and shall not cover sprocket hole.

(7) Cumulative tolerance of sprocket holes, 10 pitches: ±0.3mm

(8) Peeling off force: 10gf to 70gf in the direction show below.

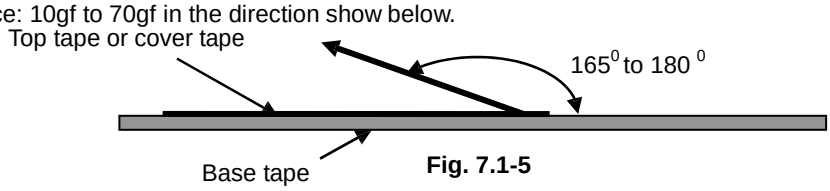


Fig. 7.1-5

7.2 Storage

a. The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to high humidity. Package must be stored at 40℃ or less and 70% RH or less.

b. The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to dust of harmful gas (e.g. HCl, sulfurous gas of H_2S)

c. Packaging material may be deformed if package are stored where they are exposed to heat of direct sunlight.

d. Minimum packages, such as polyvinyl heat-seal packages shall not be opened until they are used. If opened, use the reels as soon as possible.

e. Solderability specified in **Clause 6.4.6** shall be guaranteed for 3 months from the date of delivery on condition that they are stored at the environment specified in **Clause 4** .For those parts, which passed more than 3 months shall be checked solder-ability before use.

7.3 Transportation

The cases shall not be damaged, destroyed and rained on.

7.4 General Handling Precautions

a. Always wear static control bands to protect against ESD.

b. Any devices used with the beads (soldering iron, measuring instruments) should be properly grounded.

c. Keep bare hands and metal conductors (i.e., metal desk) away from chip electrodes or conductive areas that lead to chip electrodes.

7.5 Precautions on Use

a. Pre-heating when soldering, see detail in **Clause 9** in this specification.

b. When splitting the PC board after mounting beads and other components, care is required so as not to give any stress of deflection or twisting to the board.

c. Don't apply current in excess of the rated current value. It may reduce the impedance due to the temperature increase effect.

d. Always wear static control bands to protect against ESD.

e. Keep clear of anything that may generate magnetic fields such as speakers, coils.

f. When Soldering, the impedance may be varied due to hot energy and mechanical stress.

g. Mounting ships with adhesive in preliminary assembly, before the soldering stage, may lead appropriately checked; the size of land pattern, type of adhesive, amount applied, hardening of the adhesive on proper usage and amounts of adhesive to use.

h. Mounting Density: Add special attention to radiating heat of products when mounting the beads near the products with heating. The excessive heat by other products may cause deterioration at joint of this product with substrate.

8. Packaging Documents and Marking

8.1. Packing documents.

Packing documents include the following:

a. Packaging list

b. Certificate of compliance (COC)

8.2. Marking

1). Marking label information on reels includes (see Fig.8.2-1~2):

a. Customer

b. Customer part No.

c. Customer P/O#

d. Sunlord part No.

e. Date code

f. Lot number

g. Quantity per reel

h. Inspection stamp

i. MFG address as 'MADE IN CHINA'

2). Marking on outer case (see Fig.8.2-3~4):

a. Manufacturer:
"Shenzhen Sunlord Electronics Co., Ltd."

b. Packing label include the following:

i) Customer

ii) Manufacture

iii) Date code

iv) C/No.
Example; "1/10" means this case is the 1st one of total 10 cases

v) P/O No.

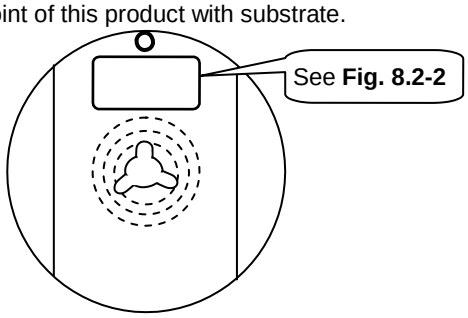


Fig. 8.2-1

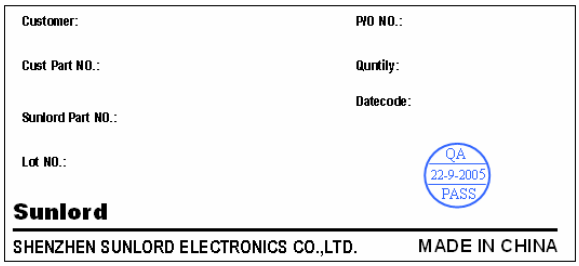


Fig. 8.2-2: Marking label on reels

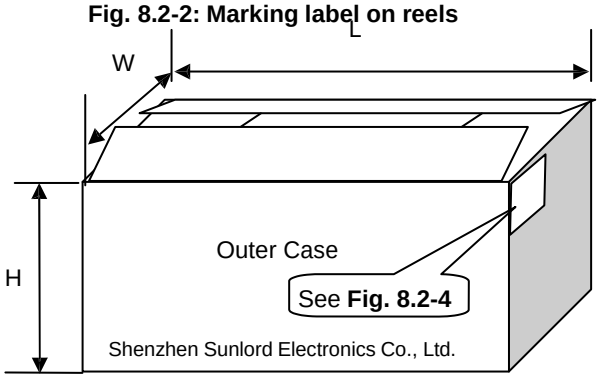


Fig. 8.2-3

vi) Customer P/N
vii) Sunlord P/N
viii) QT'Y(K)

Packaging type	L(cm)	W(cm)	H(cm)
Outer Case	38	38	7

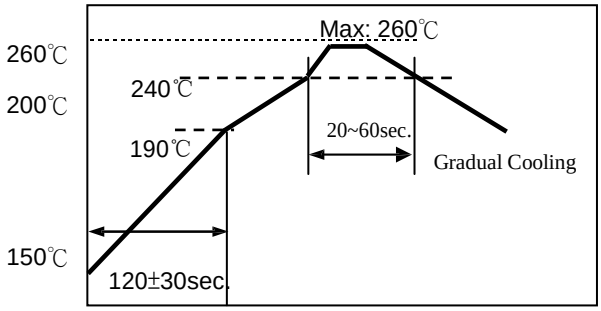
Sunlord	Customer			DATE CODE
	Manufacturer	SHEN ZHEN SUNLORD ELECTRONICS CO.,LTD		
C/No.	P/O No.	Customer P/N	Sunlord P/N	QT'Y(K)

Fig. 8.2-4: Marking label on outer case

9. Recommended Soldering Technologies

9.1 Re-flowing Profile

△ 1~2 ℃/sec. Ramp
△ Pre-heating: 150~190℃/120±30 sec.
△ Time above 240℃: 20~60sec
△ Peak temperature: 260℃ Max.
△ Solder paste: Sn/3.0Ag/0.5Cu
△ Max.2 times for Re-flowing

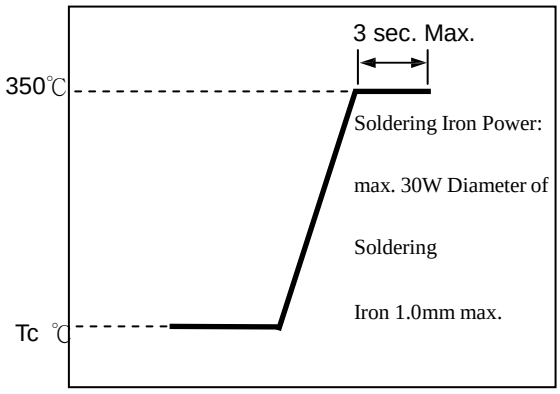


△ Iron soldering power: Max.30W

△ Soldering Tip temperature: 350℃Max.

△ Solder paste: Sn/3.0Ag/0.5Cu
△ Max.1 times for iron soldering

[Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.]



9.3 Solder Volume

Solder shall be used not to exceed as shown below.

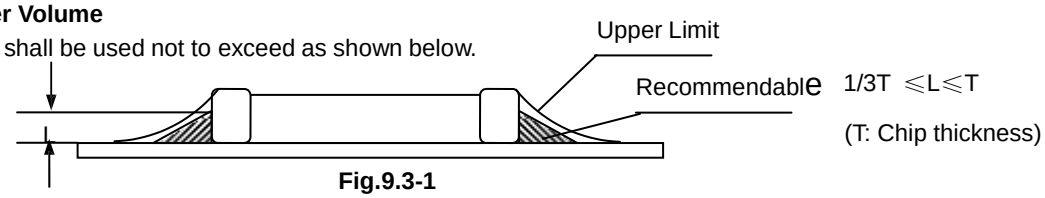


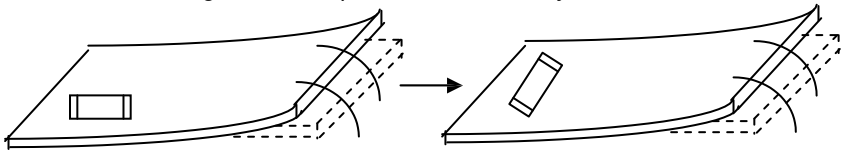
Fig.9.3-1

Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance.

9.4Attention Regarding PCB Bending

The following shall be considered when designing and laying out PCB's.

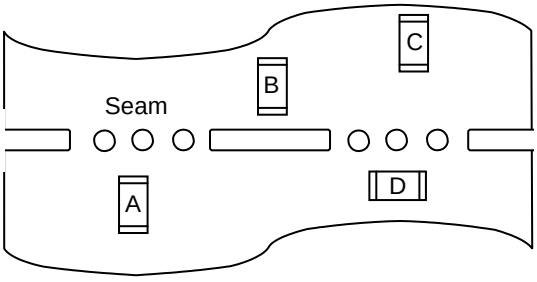
(1) PCB shall be designed so that products are not subjected to the mechanical stress from board warp or deflection.



(Poor example) **Fig. 9.4-1** (Good example)

Products shall be located in the sideways direction to the mechanical stress

(2) Products location on PCB separation.



Product shall be located carefully because they may be subjected to the mechanical stress in order of A>C=B>D.

Fig. 9.4-2

9.5 Cleaning

Products shall be cleaned on the following conditions:

(1) Cleaning temperature shall be limited to 60℃ Max. (40℃ Max. for fluoride and alcohol type cleaner.)

(2) Ultrasonic cleaning shall comply with the following conditions, avoiding the resonance phenomenon at the mounted products and PCB.

Power: 20W/l Max.
Frequency: 28KHz to 40 KHz
Time: 5 minutes Max

(3) Cleaner

① Alternative cleaner

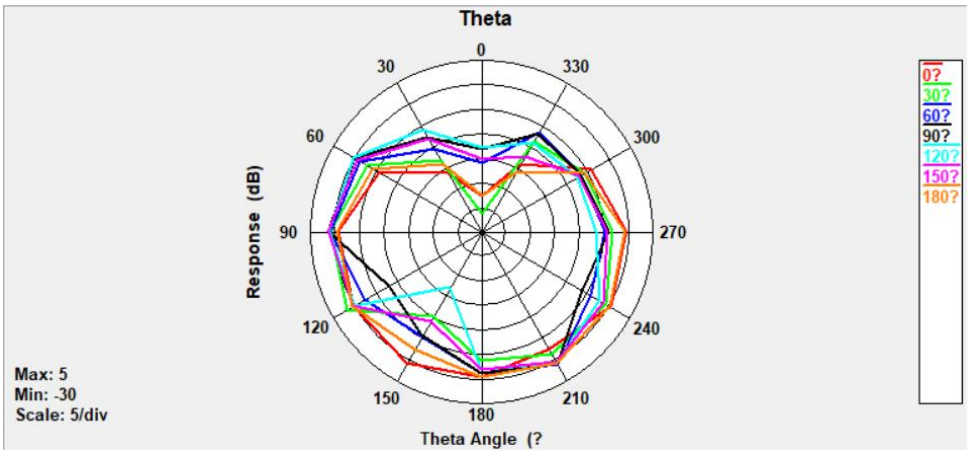
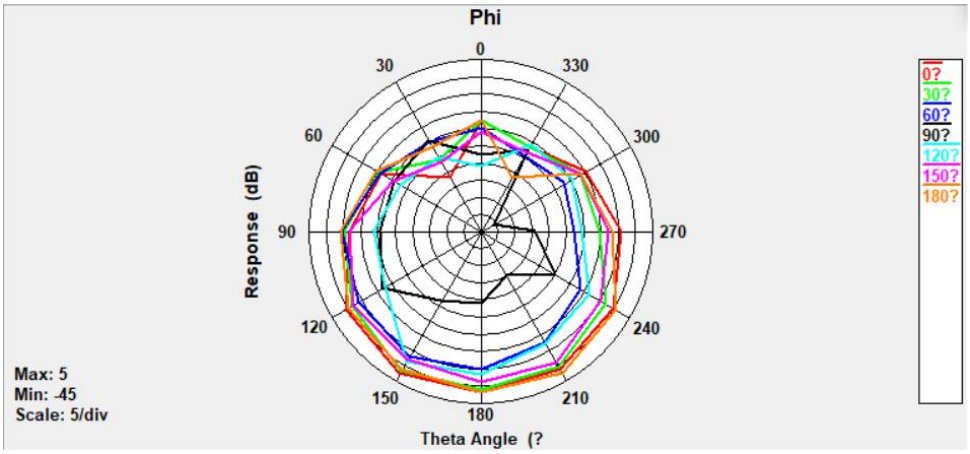
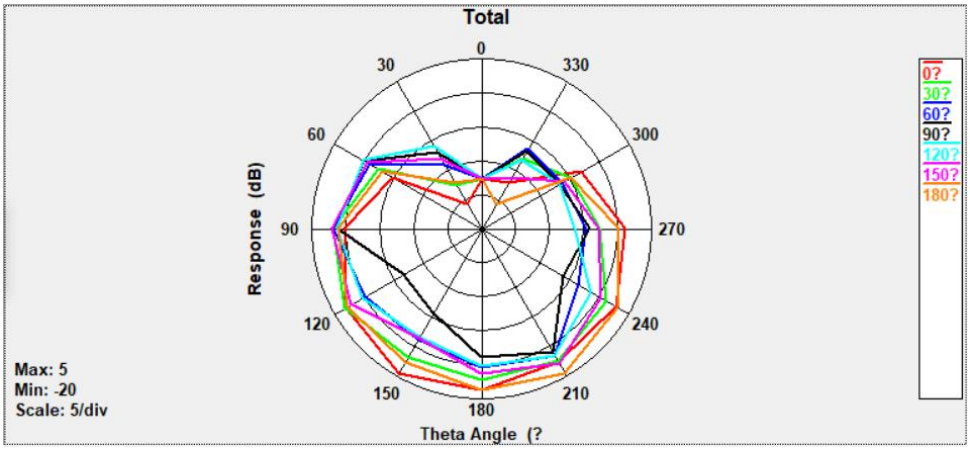
i. Isopropyl alcohol (IPA)
ii. HCFC-225

② Aqueous agent

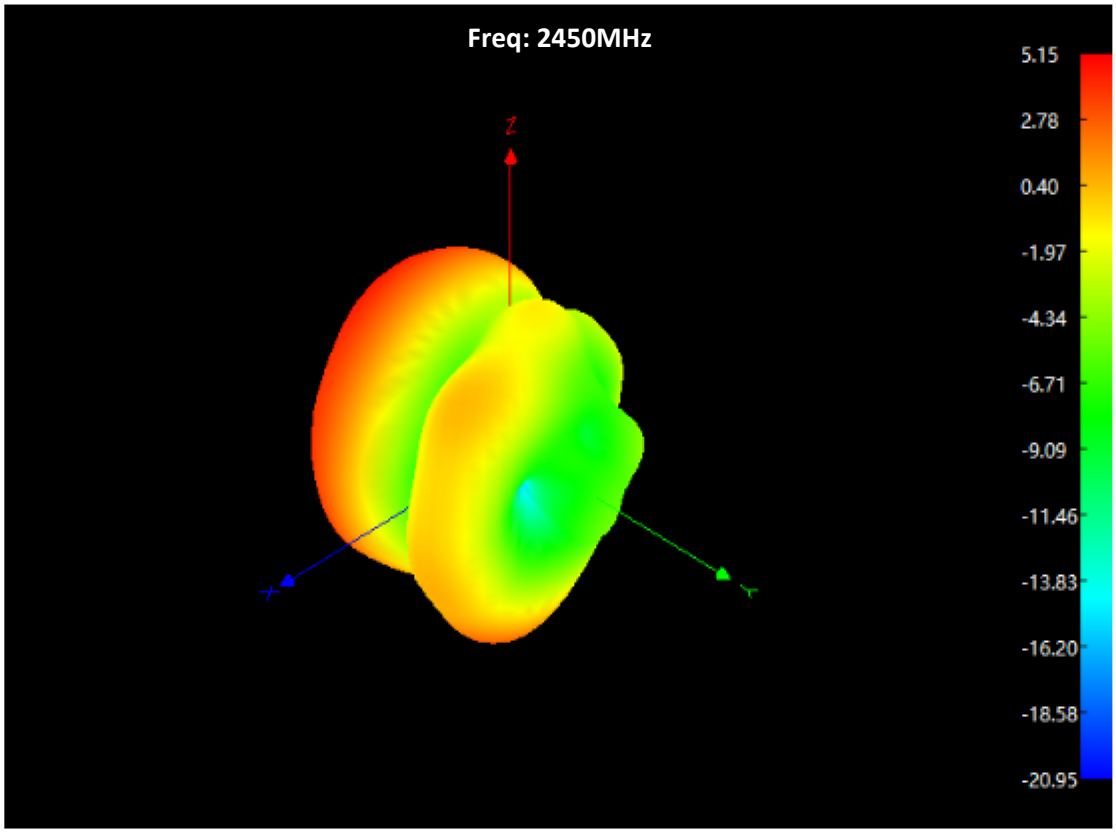
z Surface Active Agent Type (Clean through-750H)
z Hydrocarbon Type (Techno Cleaner-335)
z Higher Alcohol Type (Pine Alpha ST-100S)
z Alkali saponifier Type (※ Aqua Cleaner 240)
※ Alkali saponification shall be diluted to 20% volume with de-ionized water.

(4) There shall be no residual flux and residual cleaner after cleaning. In the case of using aqueous agent, product shall be dried completely after rinse with de-ionized water in order to remove the cleaner.

Some products may become slightly whitened. However, product performance or usage is not affected.

Theta @2.45 GHz	
Phi @2.45 GHz	
Total @2.45 GHz	

3D 方向图


Freq: 2450MHz
Z
X
Y
5.15
2.78
0.40
-1.97
-4.34
-6.71
-9.09
-11.46
-13.83
-16.20
-18.58
-20.95