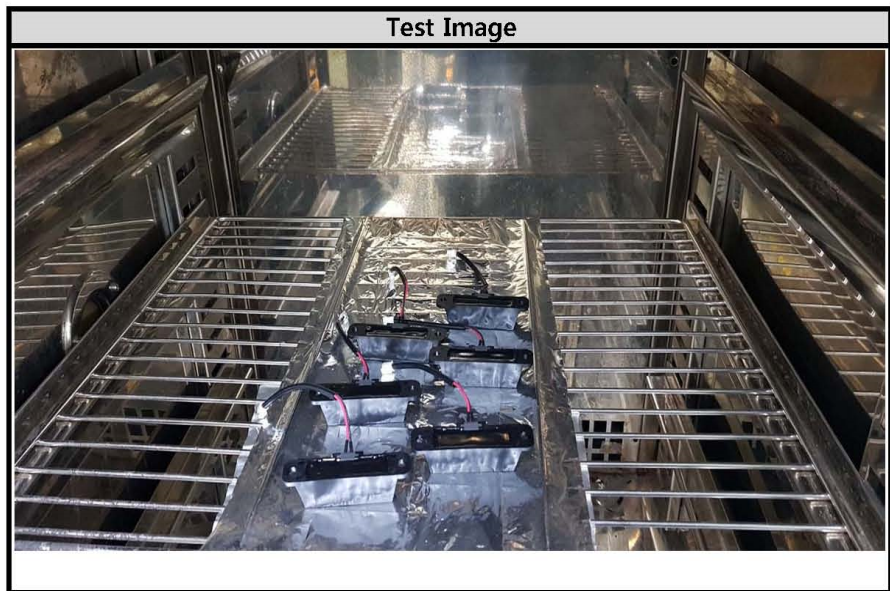


High Temperature Test

Indoor LF Antenna		3 : 1 or less @ 133KHz		
		Before Test	After Test	Rate of Change
	#7	1.70	1.79	5.29%
	#8	1.70	1.76	3.53%
	#9	2.01	2.09	3.98%
	#10	1.80	1.84	2.22%
	#11	1.34	1.42	5.97%
	#12	1.80	1.88	4.44%
	VSWR	OK		



7. Packing Specification

[illegible]

8. Precaution

8.1 Storage

Store products away from hot or humid places

Store the product away from corrosive gases such as hydrogen sulfide, sulfuric acid, chlorine, ammonia, etc

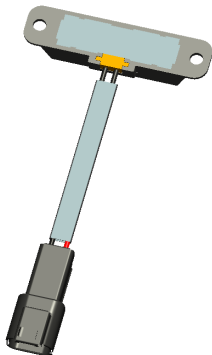
8.2 Storage Conditions

Temperature : 5 to 35°C

Humidity : 45 to 75% RH

Period : 4 Months from the date of Packaging

Product Approval Sheet

Product Name	SMK-DWS LF Ant	Product Image
Model	Outdoor LF Antenna	
Part No.	SMK-DWS-0300	
Manufacturer	RF Controls Co. Ltd	

DESIGN	CHECK	APPROVAL
		
2019.02.01.	2/1	

Contents

- 1. Revision History**
- 2. Product Description**
- 3. Rated Specifications**
- 4. Drawing**
- 5. Related Standards**
- 6. Reliability Test**
- 7. Packaging Specification**
- 8. Precaution**

1. Revision History

Rev.	Contents	Description	Organization	Date
0	Production Release			
1	Resonace Frequency change (134KHz -> 133KHz)	Re-Approval	R&D Team	Immediately
2				
3				
4				

2. Product Descriptions

2.1 Outlines

2.1.1 Product Name

SMK-DWS LF Ant

2.1.2 Goal

This product is a transmission antenna and is mounted inside heavy equipment of Doosan Infracore. It functions to transmit an encrypted 133KHz LF signal for approval of security values to the user's smart key inside the vehicle, and vehicle control is possible when user authentication is completed in the smart key.

2.2 Application Range

Excavator / Wheel Loader

2.3 Warranty

1 Year

3. Rated Specifications

3.1 Environment and Operation

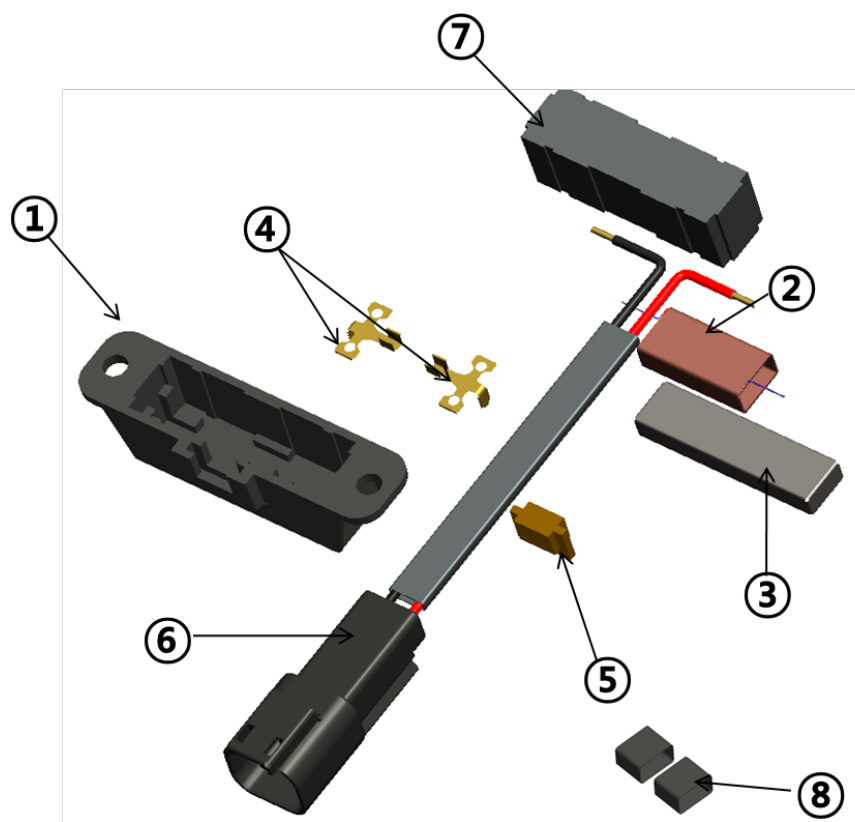
Environmental & Operation Specification		
No	Parameter	Specification
1	Storage Temperature	-40°C to 105°C
2	Operation Temperature	-30°C to 85°C

3.2 Electrical

Electrical Specification		
No	Parameter	Specification
1	Resonance Frequency	133KHz $\pm$ 5%
2	Inductance	211uH $\pm$ 5%
3	VSWR	3 : 1 or less @ 133KHz

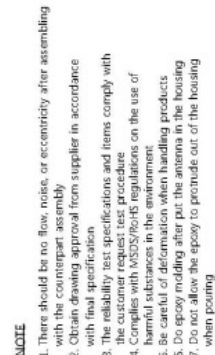
3.3 Components

3.4.1 Body Antenna Assembly



PART DESCRIPTION				
No	P/No	P/Name	Q'ty	Remark
1	0000517	LF HOUSING	1	Indoor/Outdoor Common
2	0000521	COIL	1	Indoor/Outdoor Common
3	0000520	FERRITE BAR	1	Indoor/Outdoor Common
4	0000518	TERMINAL A	2	Indoor/Outdoor Common
5	0000519	SEALPART	1	Indoor/Outdoor Common
6	0000522	CABLE ASSY	1	DT04-2P (TE)
7	0000523	EPOXY	1	Indoor/Outdoor Common
8	0000560	ISOLATED TAPE	1	Indoor/Outdoor Common

4.1.1 Outdoor LF Antenna Assembly



5. Related Standards

5.1 Environmental Test

Item	Division	Test Title	Q'ty	Test Condition	Requirement
Common	Performance Test	Basic Function Test	12	Performance Test after connecting test Jig	Check Specification
Outdoor LF Antenna	Environmental Test	Low Temp. Test	6	Proceed at $-40\pm 2^{\circ}\text{C}$ for 100 hours and leave at room temperature for 2hrs	After completion of the test, the change in the performance value of the DUT is within 10%
	Environmental Test	High Temp. Test	6	Proceed at $+85\pm 2^{\circ}\text{C}$ for 100 hours and leave at room temperature for 2hrs	After completion of the test, the change in the performance value of the DUT is within 10%
	Environmental Test	Salt Water Spray Test	6	Leave at 85°C and 95% humidity chamber for 1 hour and soak in 5% salt water for 5 seconds. Move to the -40°C chamber, leave it for 1 hour, and soak it in 5% salt water for 5 seconds. (1Cycle) 16 cycles in total	After completion of the test, the change in the performance value of the DUT is within 10%

6. Reliability Test

6.1 Environmental Test Results

Low Temperature Test		S i g n	Design	Check	Check	Approval
			J.H. Ko			W.K. Kim
Report No.	RFC-0104-001	Date		2019.01.04		
Test Date	2018.12.27~2018.12.31	Organization/Tester		R&D Team / J.H. Ko		
1. General Status						
Request Team	RFC Co. Ltd R&D Team	Purpose		Reliability Test		
Requester	J.H. Ko	Test Item		low Temperature Test		
2. Test Target						
Car	Wheel Loader/ Excavator	Part No.		SMK-DWS-0300		
Model	SMK-DWS LF Ant	LOT NO.		#1 ~ #6		
3. Test Status						
Management No.	RFC-0104-001	Test Equipment		Constant Temp. Chamber		
Test Site	RF Controls Co. Ltd	Number of Samples		6 EA		
4. Test Methods and Criteria						
Test Method	Proceed at -40±2°C for 100 hours and leave at room temperature for 2hours					
Criteria	▶ After completion of the test, the change in the performance value of the DUT is within 10%					
5. Test Results : " PASS " (Refer: Attached DATA)						
6. Remarks - Reliability Test						
※ This is a test report only for samples submitted by the above request team and cannot be used for propaganda, litigation, or other legal requirements						