High Temperature Test

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



7. Packing Specification

IF An	ol onnot	palpodo	0000	Nation	_	Model		Specification		Packaging Type		Approv. Date	ADD	Application
1	LF AIITEIIIIA FACKABIIII SPEC.	CRAUIIN	oher.		5	LF Antenna		Regular		S, M.	,		-L	Initial∼
Parts SKETCH/IMAGE	CH/IMAGE			IMAGE						NOTE	٠. بر			
											1. Put ti	1. Put the product in a poly bad	a polv ba	0
				1	10	000			17		2. Put ti	2. Put the polybag packaging products	ckading pr	oducts
				The same	1		1				ina	papper box (2	50pcs)	
		A			M.			le le			3. Pack	3. Pack the box		
						\	•	•						
	E. Contraction								0					
Part Size (W*L*H) :	(W*L*H):							-	-	-				
	COLOR	DSN	1 EA											
Parts	WEIGHT	Material	Plating											
Corrosion	Material													
ON CON	Method			pulpodood	Mimber/Boy		10000	Poly L ×	\times W \times H(mm)	[mm]	5	CBM/BOX	33	CBM/BOX
163, NG	Surface Area		-	Tachagilla				bag	200 * 150		360	360 * 220 * 150		0.0119
	Same Packaging Parts No.	alng Parts No	0.			Packaging Material	Materia		REV.	P.EPI NO.	<u>ფ</u>	Contents	Applica.	Check
Q.	PART NO	Type	e Applica.	-	C/B0X		220*150	360*220*150 ; 1sheet	1					
-				2	OPP Tape	m8.0 e								
				3	Label	2 EA								
	Idns	Supplier		N.W/Polybag	gec		Kyungwoo	00			,	0000	S	Supplier CODE
Date	Design	Check	Approval	G.W/Polybag		Design	Check	ck Approval	<u>a</u>	Part No.	1-3	1-3602-00008		Supplier
2019.01.07	S.C.Jaegal		S.K.Kim						Part	Part Name	, E	LF Antenna		
					+			$\left\{ \right.$					$\frac{1}{1}$	

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
3/3	TARA	AT
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

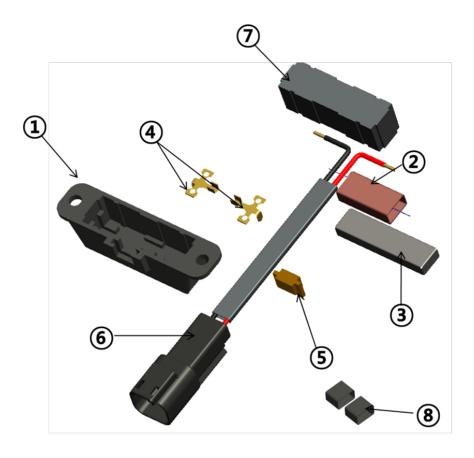
	Environr	mental & Operation Specification
No	Parameter	Specification
1	Storage Temperature	-40°C to 105°C
2	Operation Temperature	-30℃ to 85℃

3.2 Electrical

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

3.3 Components

3.4.1 Body Antenna Assembly

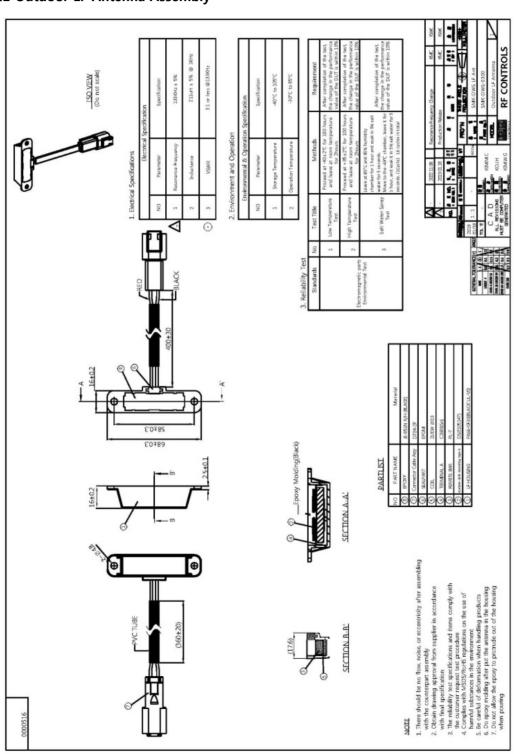


		PART DES	CRIPT	TON
No	P/No	P/Name	Q'ty	Remark
1	0000517	LF HOUSING	1	Indoor/Outdoor Common
2	0000521	COIL	1	Indoor/Outdoor Common
3	0000520	FERRITE BAR	1	Indoor/Outdoor Common
4	0000518	TERMINAL A	2	Indoor/Outdoor Common
5	0000519	SEALPART	1	Indoor/Outdoor Common
6	0000522	CABLE ASSY	1	DT04-2P (TE)
7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

4. Drawing

4.1 Mechanical Drawing

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
	Environmental Test	Low Temp. Test	6	Proceed at -40±2°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%
Outdoor	Environmental Test	High Temp. Test	6	Proceed at +85±2°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%
LF Antenna	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

		S	Design	Check	Check	Approval
Low Te	mperature Te	st	SS SACS BALL			SCHOOLS STORY
	inperature re	g n	J.H. Ko			W.K. Kim
Report No.	RFC-0104-001	Date			2019.01.04	
Test Date	2018.12.27~2018.12.31	Organizatio	n/Tester	R&D	Team / J.I	∃. Ko
1. General Status						
Request Team	RFC Co. Ltd R&D Team	Purpo	se	R	eliability Te	est
Requester	J.H. Ko	Test Ite	em	low 1	emperatur	e Test
2. Test Target						
Car	Wheel Loader/ Excavator	Part N	o.	N2	лк-DWS-03	300
Model	SMK-DWS LF Ant	LOT N	O	#1 ~ #6		
3. Test Status						
Management No.	RFC-0104-001	Test Equip	oment	Consta	nt Temp. C	hamber
Test Site	RF Controls Co. Ltd	Number of !	Samples		6 EA	
4. Test Methods a	and Criteria					
Test Method	Proceed at -40±2°C for 100 hours and leave at room temperature for 2hours					
Criteria	Criteria After completion of the test, the change in the performance value of the DUT is within 10%					
5. Test Resuts : "	PASS " (Refer: Attached I	DATA)				
6. Remarks - Reliability Tes	st					
X 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						