

# PRODUCT SPECIFICATION AND MANUAL

**2017.08**

<b>BUYER / PROJECT</b>	FCCC / KESM
<b>BUYER MODEL</b>	PCB PACKAGE ASSY – Smart Key
<b>PART No.</b>	
<b>COMPANY</b>	NAMSUNG Co.,.
<b>MAKER/NATION</b>	NAMSUNG Co.,/Republic of Korea
<b>DRAFT PART</b>	Research Center
<b>DRAFTER</b>	JEONG WOO SEOK

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<b>Title</b>	<b>Certification Request Document</b>		
<b>Project Name</b>	<b>KESM</b>	<b>Drawn</b>	<b>2017-08-16</b>
<b>Model Name</b>		<b>Released</b>	<b>2017-08-16</b>
		<b>Made by</b>	<b>JEONG W.S</b>

## Table of Contents

1. CONTENTS..... 3

2. ELECTRONIC SPEC ..... 3

3. SPECIFICATION..... 4

4. REPAIR OF UNIT & CIRCUIT EXPLANATION ..... 4

5. THE METHOD OF UNIT OPERATING..... 5

6. THE SYSTEM OF EACH UNIT CODE DISCRIMINATION ..... 6

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### 1. Contents

TYPE	Wireless controller about wireless electronic equipment of specific low output radio station
MODEL NAME	
USE	Vehicle of door keyless controller what use 133.3KHz & 433.92 MHz frequency
SUMMARY	<p>1. This equipment use semiconductor and integrated circuit, so it designs to get high reliability.</p> <p>2. This equipment use oscillation circuit of crystal, so it designs to satisfy about legally frequency an allowable error and bandwidth of exclusive frequency.</p> <p>3. The transmitter has each other specific identification code.</p> <p>4. The power use Li-ion coin Battery (DC 3.0V)</p>
COMPOSITION	<p>1. RF Transmitter part</p> <p>2. Pattern Antenna</p> <p>3. LF Receiver</p> <p>4. LF Antenna.</p>

### 2. ELECTRONIC SPEC

List	UNIT	TRANSMITTER(FOB)
Rated voltage		DC 3.0V
Voltage range		UNIT 2.1 ~ 3.6V ( except Battery influence)
Operating Temperature range		-20 ~ +60℃
Storage temperature range		-30 ~ +80℃
Dark current		6.1μA ±0.4uA

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### 3. Specification

TYPE	TRANSMITTER ASSY – SMART KEY
NAME	Wireless controller about wireless electronic equipment of specific low output radio station)
Equipment List	RF Transmitter, LF Receiver
Frequency	TX: 433.920MHz, RX: 133.3KHz
Antenna composition	Pattern ANTENNA, LF ANTENNA
Oscillation method	Crystal oscillation
Modulation method	FSK
Communication method	Two-Way Communication ( LF & RF each other)
Frequency multiplier	32 multiplier

### 4. Repair of Unit & Circuit Explanation

#### 4.1 Repair of Unit

Exchange an old unit.

#### 4.2 Circuit Explanation

If User presses specific Switch of transmitter, MCU makes inherent serial value and Encryption value, so it print what CPU make data, at the same time , RF IC get to be ENABLE.

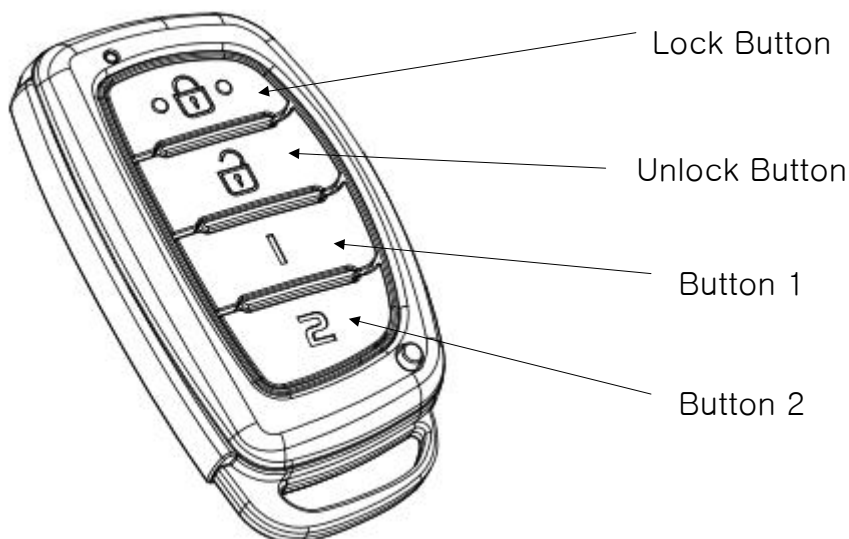
Printing data are falsified into TxIC and it synthesize through CRYSTAL. Compounded frequency is amplified by TxIC and it transmits through antenna from matching circuit diagram of output.

FOB receives RANDOM DATA through LF Antenna and print to encrypt result value from MCU, at the same time RF IC get to be ENABLE. As following, it transmits PATTERN Antenna how to change falsification, synthesis, and multiplier.

Title	Certification Request Document		
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## 5. The Method of Unit Operating

### 5.1 REMOTE



FUNCTION		SWITCH FUNCTION
LOCK BUTTON	Short Press	SHORT PRESSING LOCK BUTTON less 0.5s - RED LED flicker once as short time
	Double Press	SHORT PRESSING LOCK BUTTON x2 less 0.5s - RED LED flicker once as short time
	Long Press	Long PRESSING LOCK BUTTON more 1s - RED LED ON as Long time
UNLOCK BUTTON	Short Press	SHORT PRESSING LOCK BUTTON less 0.5s - RED LED flicker once as short time
	Double Press	SHORT PRESSING LOCK BUTTON x2 less 0.5s - RED LED flicker once as short time
	Long Press	Long PRESSING LOCK BUTTON more 1s - RED LED ON as Long time

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Model Name		Released	2017-08-16
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Button 1	Short Press	SHORT PRESSING LOCK BUTTON less 0.5s - RED LED flicker once as short time
	Double Press	SHORT PRESSING LOCK BUTTON x2 less 0.5s - RED LED flicker once as short time
	Long Press	Long PRESSING LOCK BUTTON more 1s - RED LED ON as Long time
Button 2	Short Press	SHORT PRESSING LOCK BUTTON less 0.5s - RED LED flicker once as short time
	Double Press	SHORT PRESSING LOCK BUTTON x2 less 0.5s - RED LED flicker once as short time
	Long Press	Long PRESSING LOCK BUTTON more 1s - RED LED ON as Long time

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## 6. The System of Each Unit Code Discrimination

### 6.1 TRANSMISSION CODE

<RF Transmit>

항목	bit	비고
preamble	50	
header	2	1100
start bit	1	10
Serial	24	
'R'	8	
Frame Number	8	
Command	4	0x02
V_low	4	
CRC8	8	
Stop bit	1	

<RKE Transmit>

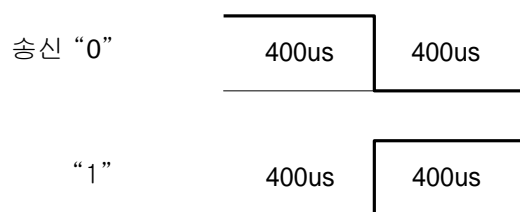
항목	bit	비고
preamble	200	160000
header		1100
start bit	1	10
Serial	24	버튼 동작 정보
Count	16	Count
Command	4	Command
V_low	4	low voltage
CRC8	8	
Stop bit	1	

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<LF Transmit>

항목	bit	비고
wake up bit		WakeUp bit
Start bit		Start bit
High bit		High bit
Low bit		low bit
Pattern	4	Wake Pattern : D
ReWake Up bit		ReWake bit
Data	56	
EOB		End of bit

6.2 DATA STRUCTURE ("1", "0")



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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