

# TEST REPORT



## CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

Report No.:  
CTK-2020-04853  
Page (1) / (18) Pages

### 1. Client

- Name : 3Alogics Inc.
- Address : Rm. 714, Hyundai-office Bldg., #3, Hwangsaoul-ro 240beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
- Date of Receipt : 2020-11-17

### 2. Manufacturer

- Name : 3Alogics Inc.
- Address : Rm. 714, Hyundai-office Bldg., #3, Hwangsaoul-ro 240beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

### 3. Use of Report : For Japan MIC Certification

### 4. Test Sample / Model : Remote control for Doorlock / SHS-DARCX10/JP

### 5. Date of Test : 2020-12-09 to 2020-12-10

### 6. Test Standard(method) used : Article 2, Clause 1, Item 13 No. 88 appended table 36

### 7. Testing Environment : Temp.: (22 ± 1) °C, Humidity: (48 ± 3) % R.H.

### 8. Test Results : Compliance

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

Affirmation	Tested by Bongseok Kim: (Signature)	Technical Manager Young-taek Lee: (Signature)
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2020-12-10

Republic of KOREA **CTK Co., Ltd.**



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CTK-2020-04853  
Page (2) / (18) Pages

## REPORT REVISION HISTORY

Date	Revision	Page No
2020-12-10	Issued (CTK-2020-04853)	all

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Report No.:  
CTK-2020-04853  
Page (3) / (18) Pages

## **CONTENTS**

1. General Product Description .....	4
1.1 Client Information .....	4
1.2 Product Information .....	4
1.3 Peripheral Devices .....	4
2. Facility and Accreditations .....	5
2.1 Test Facility .....	5
2.2 Laboratory Accreditations and Listings .....	5
2.3 Calibration Details of Equipment Used for Measurement .....	5
3. Test Specifications .....	6
3.1 Standards .....	6
3.2 Mode of operation during the test .....	7
3.3 Measurement equipment list .....	8
3.4 Maximum Measurement Uncertainty .....	8
3.5 Test Setup photo .....	9
4. Test Results .....	10
APPENDIX A – Data .....	11

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## 1. General Product Description

### 1.1 Client Information

<b>Company</b>	3Alogics Inc.
<b>Contact Point</b>	Rm. 714, Hyundai-office Bldg., #3, Hwangsaoul-ro 240beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
<b>Contact Person</b>	Name: Yeong-Uk Yun E-mail: yuyun@3Alogics.com Tel : +82-31-715-7117

### 1.2 Product Information

<b>Product Description</b>	Remote control for Doorlock
<b>Model name</b>	SHS-DARCX10/JP
<b>Variant Model name</b>	-
<b>Antenna type</b>	Helical Antenna
<b>Antenna gain</b>	-6.44 dBi
<b>Operating Frequency</b>	426.25 MHz
<b>RF Output Power(Declaration)</b>	10 dBm (10 mW)
<b>Number of channels</b>	1
<b>Type of Equipment</b>	Type 2 (Occupied bandwidth : below 8.5 kHz)
<b>Power Source</b>	DC 3.0 V(Battery)

### 1.3 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
-	-	-	-



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Report No.:  
CTK-2020-04853  
Page (5) / (18) Pages

## 2. Facility and Accreditations

### 2.1 Test Facility

The measurement facility is located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yong-in-si, Gyeonggi-do, Korea.

### 2.2 Laboratory Accreditations and Listings

Country	Agency	Registration Number
USA	FCC	805871
CANADA	ISED	8737A-2
KOREA	NRRA	KR0025

### 2.3 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.



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Report No.:  
CTK-2020-04853  
Page (6) / (18) Pages

### 3. Test Specifications

#### 3.1 Standards

ARIB STD-30 Reference	Test Items	Test result (Note)
<b>Transmit Equipment</b>		
3.2 (1)	RF Output Power	C
3.2 (2)	RF Output Power tolerance	C
3.2 (4)	Frequency tolerance	C
3.2 (8)	Adjacent Channel Leakage Power	C
3.2 (9)	Occupied Bandwidth	C
3.2 (10)	Spurious Emissions of Transmitter	C
<b>Receive Equipment</b>		
3.3 (6)	Spurious Emissions of Receiver	NA(Note 2)
<b>Control Function</b>		
3.4.1	Interference prevention function	C
3.4.2	Transmission time	C
Note 1 : C = Complies NC = Not Complies NT = Not Tested NA = Not Applicable		
Note 2 : This equipment only transmits.		



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Report No.:


CTK-2020-04853

Page (7) / (18) Pages

### 3.2 Mode of operation during the test

The test was performed using a continuous transmission sample provided by the manufacturer.

Frequency [MHz]	Power setting
426.25	Default

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### 3.3 Measurement equipment list

	Name of Equipment	Manufacturer	Model No.	Serial No.	Cal. Authority	Cal Date	Due Date
1	Spectrum Analyzer	Rohde & Schwarz	FSP-30	100994	ICT*	2020-10-13	2021-10-13
2	MXG Signal Generator	Agilent	N5182A	MY50143486	ICT	2020-01-17	2021-01-17
3	DC Power Supply	Agilent	E3632A	MY40011638	ICT	2020-10-12	2021-10-12
4	POWER SENSOR	HP	8487A	3318A03524	ICT	2020-10-20	2021-01-20
5	EPM Series Power Meter	HP	E4418A	GB38272734	ICT	2020-10-13	2021-10-13

\*ICT : Institute of Calibration & Technology Co., Ltd.

### 3.4 Maximum Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.  
 Coverage factor  $k = 2$ , Confidence levels of 95 %

Description	Uncertainty
Conducted measurement	1.0 dB
Conducted RF power measurement	1.0 dB



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Report No.:  
CTK-2020-04853  
Page (9) / (18) Pages

### 3.5 Test Setup photo





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Report No.:  
 CTK-2020-04853  
 Page (10) / (18) Pages

## 4. Test Results

Measurement Frequency		MHz	426.25			Result	Limit
Channel Number		Ch.	1			---	---
Voltage condition		Vdc	3.3	3.0	2.7	---	---
Frequency Measurements		MHz	426.25004	426.25002	426.25000	---	---
Frequency Tolerance		ppm	0.094	0.047	0.000	PASS	±4×10 <sup>-6</sup> (4ppm)
Occupied Bandwidth		kHz	6.08	6.08	6.08	PASS	8.5kHz or below
RF Output Power		mW	9.432	7.674	5.672	PASS	10mW or below
RF Output Power Tolerance		%	-5.68	-23.26	-43.28	PASS	+20 to -50%
Spurious Emissions of Transmitter	30MHz to 425MHz	uW	0.014	0.014	0.015	PASS	2.5uW or below (-26 dBm or below)
		MHz	60.810	320.720	182.470	---	
	425MHz to 427MHz**	uW	1.349**	1.191**	1.276**	PASS	2.5uW or below (-26 dBm or below)
		MHz	426.314	426.185	426.185	---	
	427MHz to 1000MHz	uW	0.143	0.117	0.102	PASS	2.5uW or below (-26 dBm or below)
		MHz	853.312	853.312	853.312	---	
	1000MHz to 3000MHz	uW	0.091	0.079	0.067	PASS	2.5uW or below (-26 dBm or below)
		MHz	1280.0	1280.0	1280.0	---	
Adjacent Channel Leakage Power	fc-12.5 kHz	dB	-60.43	-60.80	-62.48	PASS	-40 dBc or below
	fc+12.5 kHz	dB	-59.58	-58.99	-60.58	PASS	-40 dBc or below
Spurious Emissions of Receiver	30MHz to 1000MHz	nW	-	-	-	N/A	4nW or below (-54 dBm or below)
		MHz	-	-	-	---	
	1000MHz to 3000MHz	nW	-	-	-	N/A	4nW or below (-54 dBm or below)
		MHz	-	-	-	---	
Transmission time	TX time	---	Good			PASS	3s or below
	TX rest time	---	Good			PASS	2s or above
Interference prevention function		---	Good			PASS	

### Note.

fc : Fundamental frequency

\* Excluding  $fc \pm 62.5$  kHz

\*\* After testing with a low RBW setting, the RBW factor was added to the measured value.

- Measurement RBW : 3 kHz

- RBW Factor :  $10 \times \log(100 \text{ kHz} / 3 \text{ kHz}) = 15.2 \text{ dB}$



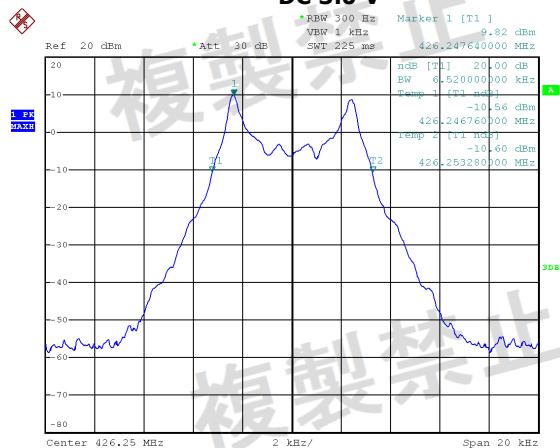
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Report No.:  
CTK-2020-04853  
Page (11) / (18) Pages

## APPENDIX A – Data

### Frequency Tolerance

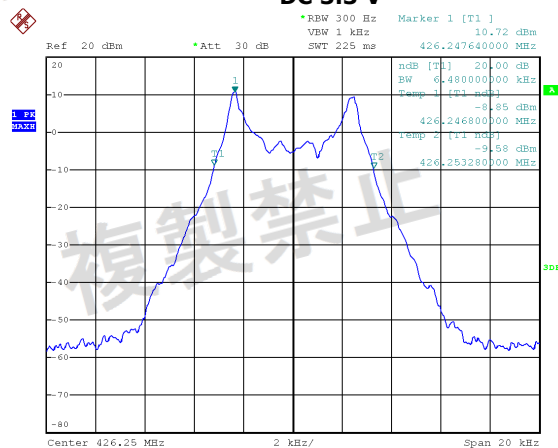
DC 3.0 V



Date: 9.DEC.2020 09:52:13

$f_L$  : 426.24676 MHz  
 $f_H$  : 426.25328 MHz  
Measurement frequency( $(f_L+f_H)/2$ ) : 426.25002 MHz

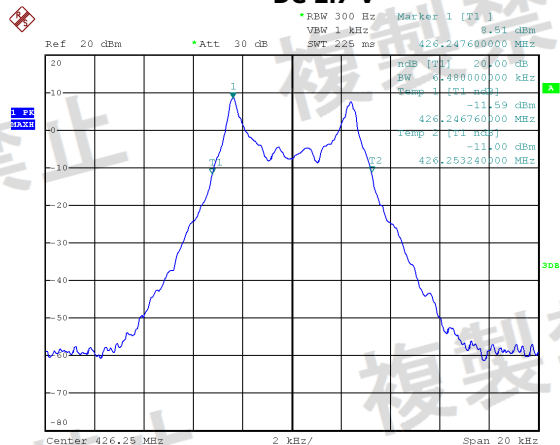
DC 3.3 V



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$f_L$  : 426.24680 MHz  
 $f_H$  : 426.25328 MHz  
Measurement frequency( $(f_L+f_H)/2$ ) : 426.25004 MHz

DC 2.7 V



Date: 9.DEC.2020 09:53:43

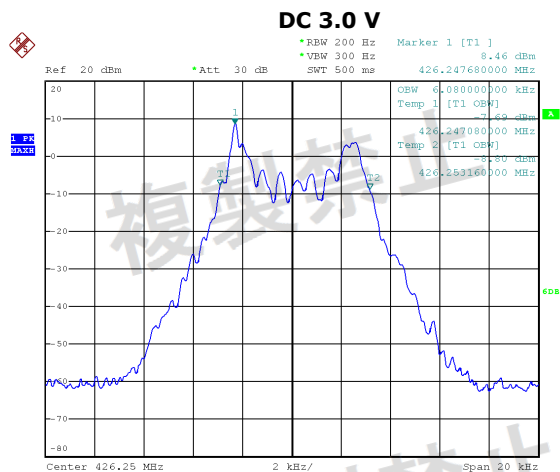
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 $f_H$  : 426.25324 MHz  
Measurement frequency( $(f_L+f_H)/2$ ) : 426.25000 MHz



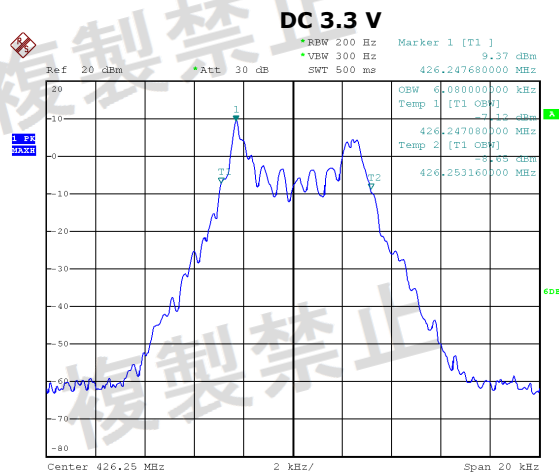
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Report No.:  
CTK-2020-04853  
Page (12) / (18) Pages

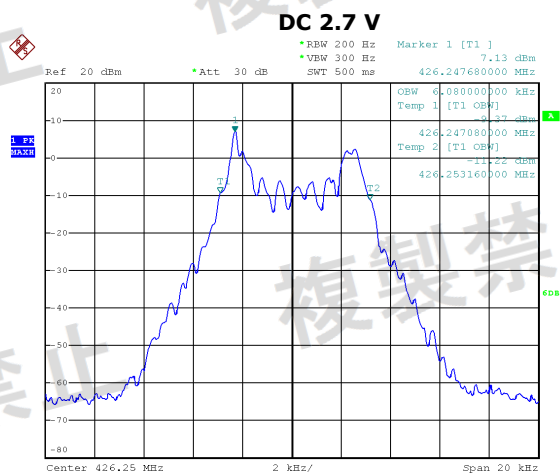
## Occupied Bandwidth



Date: 9.DEC.2020 09:56:59



Date: 9.DEC.2020 09:58:02



Date: 9.DEC.2020 09:58:33



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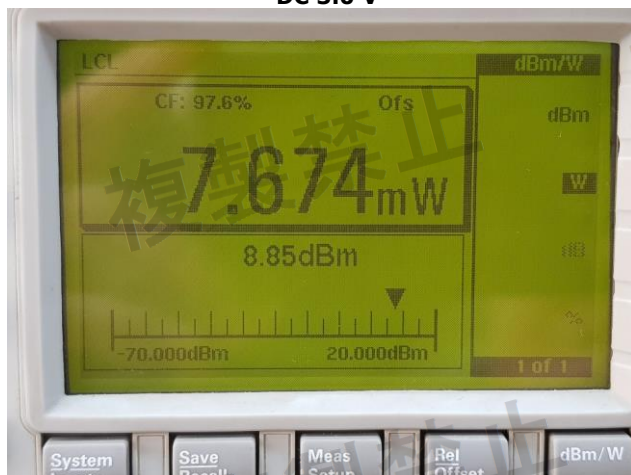
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CTK-2020-04853

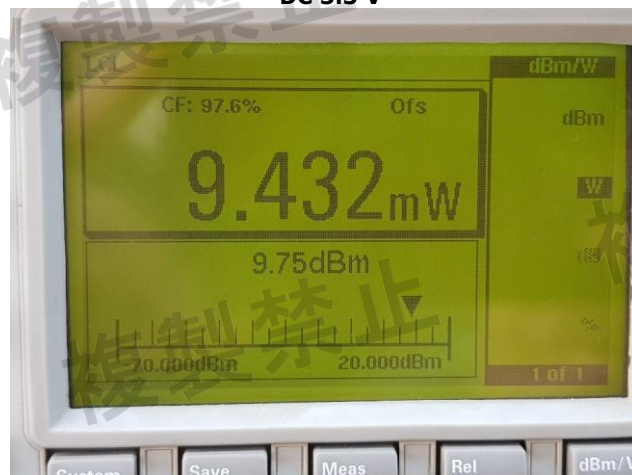
Page (13) / (18) Pages

### RF Output Power

DC 3.0 V



DC 3.3 V



DC 2.7 V

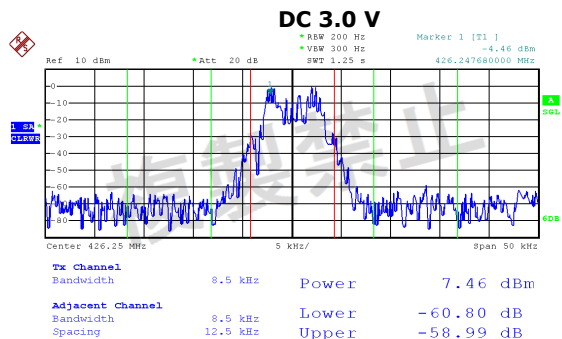




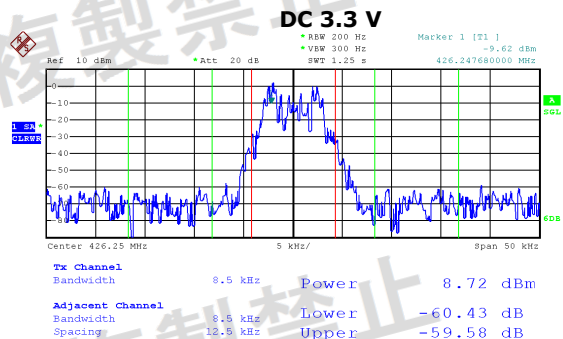
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Report No.:  
CTK-2020-04853  
Page (14) / (18) Pages

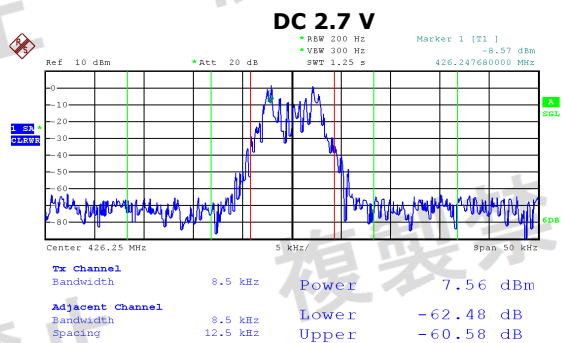
## Adjacent Channel Leakage Power



Date: 9.DEC.2020 10:03:22



Date: 9.DEC.2020 10:03:39



Date: 9.DEC.2020 10:03:56



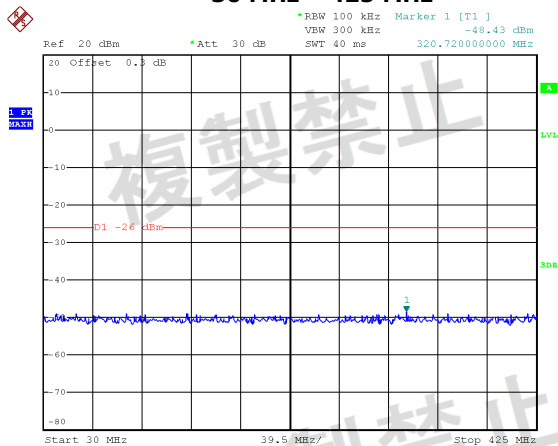
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Report No.:  
CTK-2020-04853  
Page (15) / (18) Pages

## Spurious Emission of Transmitter

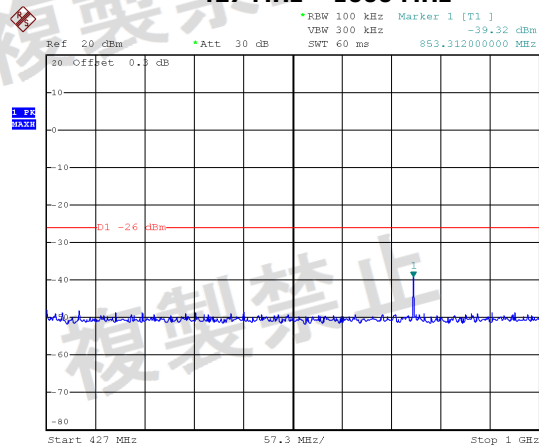
DC 3.0 V

30 MHz – 425 MHz



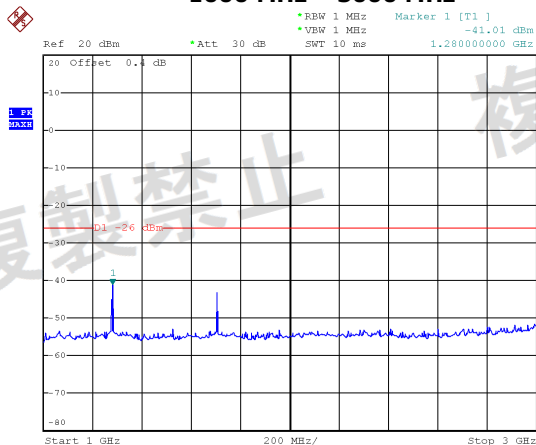
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427 MHz – 1000 MHz



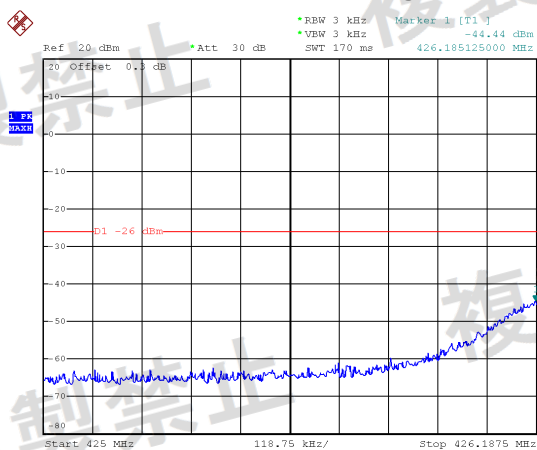
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1000 MHz – 3000 MHz

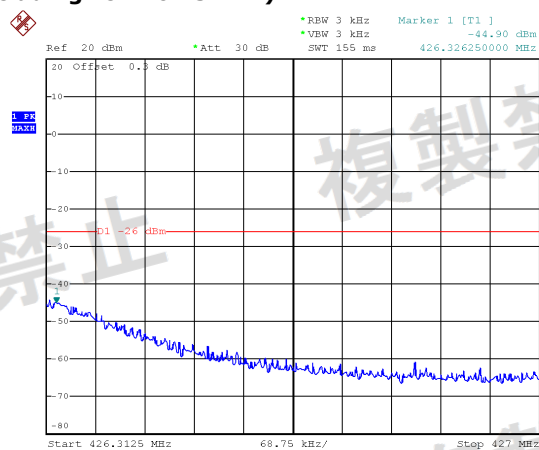


Date: 9.DEC.2020 10:28:39

425 MHz – 427 MHz(excluding  $f_c \pm 62.5$  kHz)



Date: 9.DEC.2020 12:22:55



Date: 9.DEC.2020 12:24:13

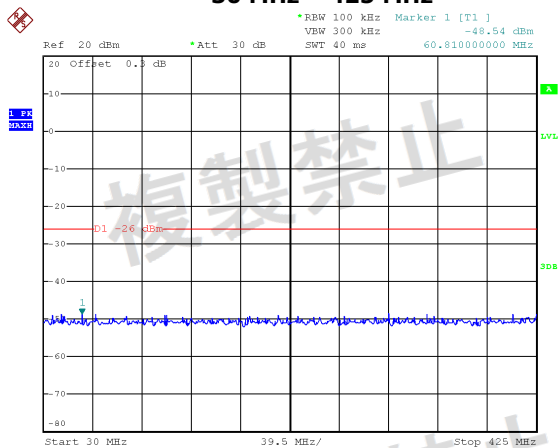


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Page (16) / (18) Pages

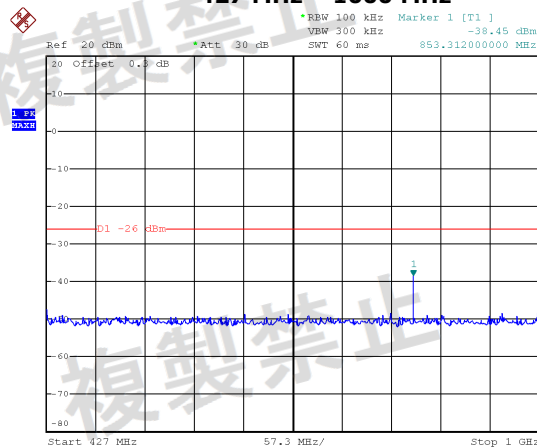
## DC 3.3 V

### 30 MHz – 425 MHz



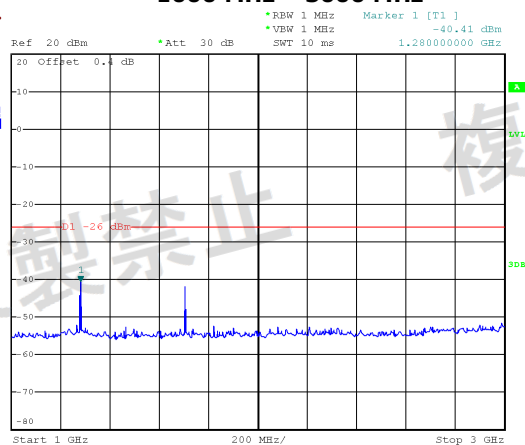
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### 427 MHz – 1000 MHz



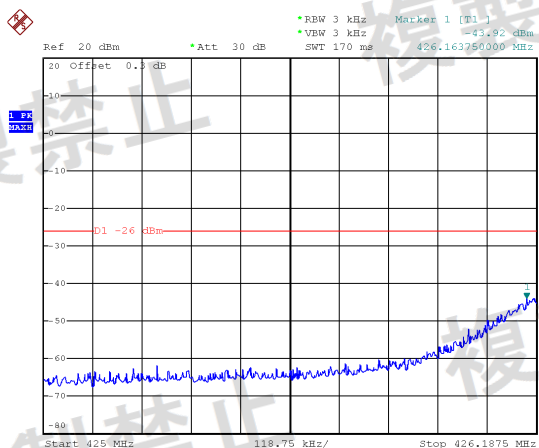
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### 1000 MHz – 3000 MHz

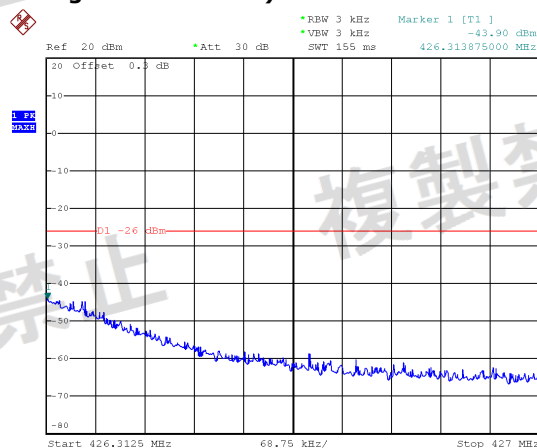


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### 425 MHz – 427 MHz(excluding $f_c \pm 62.5$ kHz)



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Date: 9.DEC.2020 12:23:51

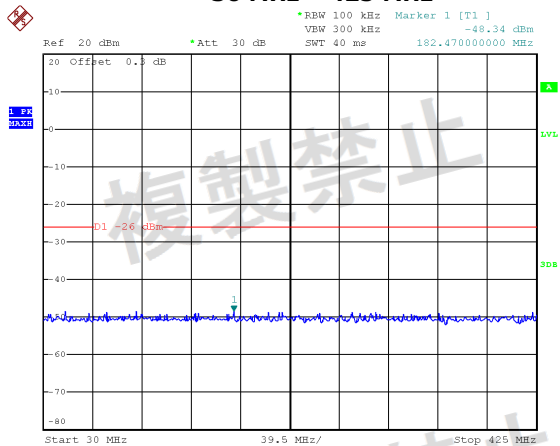


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Page (17) / (18) Pages

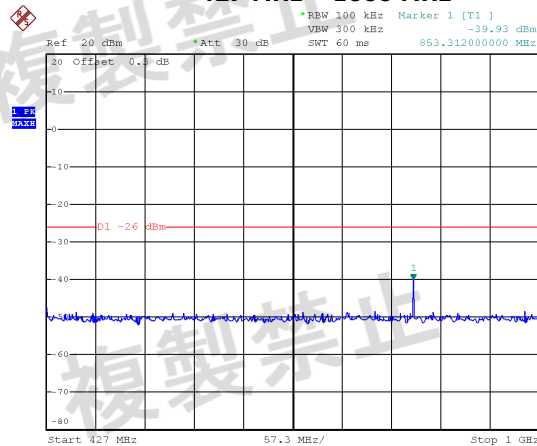
## DC 2.7 V

### 30 MHz – 425 MHz



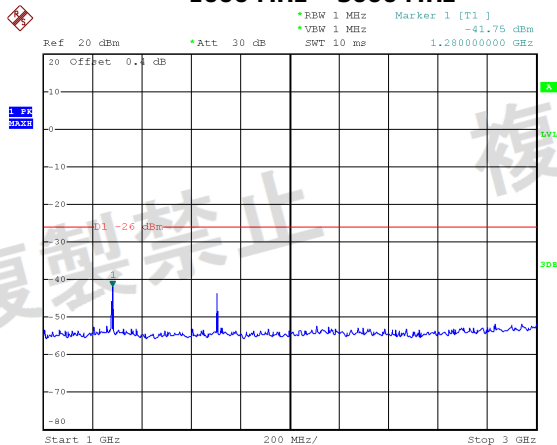
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### 427 MHz – 1000 MHz



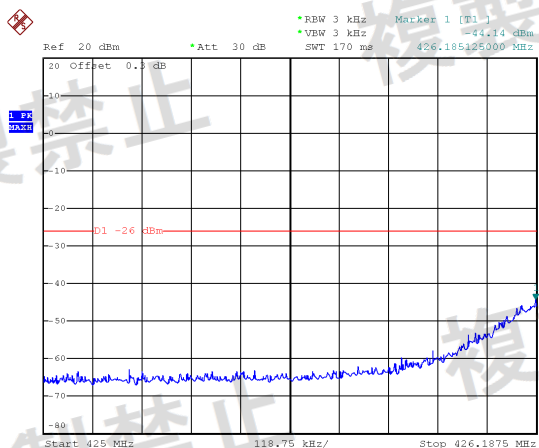
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### 1000 MHz – 3000 MHz

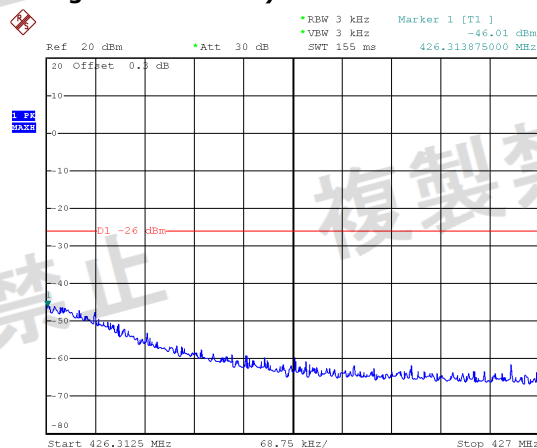


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### 425 MHz – 427 MHz(excluding $f_c \pm 62.5$ kHz)



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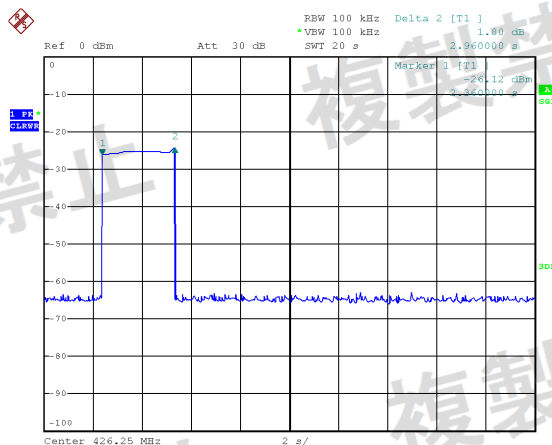
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Report No.:  
CTK-2020-04853  
Page (18) / (18) Pages

## Transmission time



Date: 10.DEC.2020 15:14:03