

## TEST REPORT

**Product** : Notebook  
**Trade mark** : CHUWI  
**Model/Type reference** : CWI510  
**Serial Number** : N/A  
**Report Number** : EED32L00176302  
**Date of Issue** : Aug. 06, 2019  
**Product Class** : Item 19 of Article 2 Paragraph 1  
**Test result** : PASS

Prepared for:

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Aug. 06, 2019



Check No.: 4038810272

## 2 Version

Version No.	Date	Description
00	Aug. 06, 2019	Original

### 3 Test Summary

Test	Test Requirement	Limit/Severity	Result
Antenna Requirement	Item 19 of Article 2 Paragraph 1	Notice 88 Appendix 43,B-1 (1)&(2)	PASS
Test frequency	Item 19 of Article 2 Paragraph 1	Notice 88 Appendix 43, A-3	PASS
Frequency Error	Item 19 of Article 2 Paragraph 1	±50 PPM or less	PASS
Occupied Bandwidth	Item 19 of Article 2 Paragraph 1	83.5 MHz or less	PASS
Spread-spectrum Bandwidth	Item 19 of Article 2 Paragraph 1	500 kHz or more	PASS
Antenna Power	Item 19 of Article 2 Paragraph 1	Designated value: (1)FH, FH+DS , FH+OFDM 3mW/MHz (Used in the range of 2427-2470.75MHz) (2) OFDM , DS other than (1) : 10mW/MHz (3) Other than (1) & (2) 10mW Tolerance: +20%,-80%	PASS
Spurious Emission of Tx	Item 19 of Article 2 Paragraph 1	(1) Below 2387 MHz : -26dBm (2) 2387 to 2400 MHz : -16dBm (3) 2483.5 through 2496.5 MHz : -16dBm (4) Over 2496.5 MHz : -26dBm	PASS
Dwell Time	Item 19 of Article 2 Paragraph 1	less than 0.4sec	PASS
Pseudorandom Frequency Hopping Sequence	Item 19 of Article 2 Paragraph 1	Notice 88 Appendix 43, 44, 45	PASS
Interference prevention capability	Item 19 of Article 2 Paragraph 1	Notice 88 Appendix 43, 44, 45	PASS
RF accessibility	Item 19 of Article 2 Paragraph 1	Notice 88 Appendix 43, 44, 45	PASS
Spurious Emission of Rx	Item 19 of Article 2 Paragraph 1	(1) Below 1 GHz: -54dBm (2) 1GHz or higher: -47dBm	PASS

**Remark:**

The tested sample(s) and the sample information are provided by the client.

EUT: In this whole report EUT means Equipment Under Test.

Tx: In this whole report Tx (or tx) means the product in transmitting status.

Rx: In this whole report Rx (or rx) means the product in receiving status.

RF: In this whole report RF means Radiated Frequency.

DS: Direct spreading FH: Frequency hopping

OFDM: Orthogonal frequency division multiplexing.



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## 5 General Information

### 5.1 Client Information

Applicant:	CHUWI Innovation And Technology (ShenZhen)co.,Ltd.
Address of Applicant:	F2, Building 3 , Li jincheng Industrial Park , Industrial east Road, Longhua Street, Longhua District,ShenZhen City, China
Manufacturer:	CHUWI Innovation And Technology (ShenZhen)co.,Ltd.
Address of Manufacturer:	F2, Building 3 , Li jincheng Industrial Park , Industrial east Road, Longhua Street, Longhua District,ShenZhen City, China
Factory:	Yuko Technology Co.,Ltd
Address of Factory:	6th Floor, A9 building, TianRui Industrial Park, FuYuan 1st Road, XinHe Village, FuYong Town,Bao'an District,ShenZhen

### 5.2 General Description of EUT

Product Name:	Notebook
Model No.:	CWI510
Trade Mark:	CHUWI
EUT Supports Radios application:	BT: 4.0 BT Dual mode, 2402-2480MHz
Bluetooth Version:	3.0 +EDR
Operating Frequency:	2402 MHz to 2480 MHz
Conducted rated power:	F1D: 0.015mW/MHz
Number of Channels:	79 Channels
Type of Modulation:	GFSK, ( $\pi/4$ )DQPSK, 8DPSK
Channel Separation:	1 MHz
Dwell time	Per channel is less than 0.4s.
Antenna Type:	FPCB Antenna
Antenna gain:	0.6dBi from 2402~2480MHz
Hardware Version:	N/A
Software Version:	N/A
Test Voltage:	AC 100V/50Hz
Test Power Grade:	GFSK, ( $\pi/4$ )DQPSK, 8DPSK
Test Software of EUT:	DRTU
Power Supply:	AC/DC ADAPTER Model: A241-1202000D Input: AC100-240VAC, 50/60Hz, 0.8A Output: DC12V --- 2000mA
Product Characteristic:	Once the Bluetooth function is opened, the device will automatically search other BT products, and then will operation at hopping state.
Sample Received Date:	Jul. 03, 2019
Sample tested Date:	Jul. 03, 2019 to Aug. 06, 2019

### 5.3 EUT test environment range

Temperature:	24 °C
Humidity:	65% RH
Atmospheric Pressure:	1010 mbar

### 5.4 Description of Support Units

The EUT has been tested stand-alone.

### 5.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101

Telephone: +86 (0) 755 3368 3668 Fax: +86 (0) 755 3368 3385

No tests were sub-contracted.



## 6 Equipment List

Equipment	Manufacturer	Model	Serial No.	Cal. Date	Due date	Calibration body	Classification
Spectrum Analyzer	R&S	FSP40	100416	04-28-2019	04-26-2020	SMQ	(c)
Signal Generator	Keysight	N5182B	MY53051549	03-01-2019	02-28-2020	CTIMT	(c)
Temperature/Humidity Indicator	biaozhi	HM10	1804186	10-12-2018	10-11-2019	CTIMT	(c)
Digital multimeter	FLUKE	15B	N/A	07-02-2019	07-03-2020	CTIMT	(c)

### Remark:

- (a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) in Japan (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1) in JRL.
- (b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Act (Act No. 51 of 1992).
- (c) Calibration conducted in countries except Japan, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
- (d) Calibration, etc. conducted by using measuring instruments and other equipment listed in the right column of appended table No. 3, which shall have been given any type of calibration, etc. listed above from (a) to(c).

From JRL Article 24-2, paragraph 4, Item 2

**Notice: Calibration duration for above equipment is 1 year.**

## 7 Radio Technical Requirements Specification

**Table 1: Radio Technical Requirements Specification for 2.4 GHz band wide-band low-power data communication system (Item 19 of Article 2 Paragraph 1)**

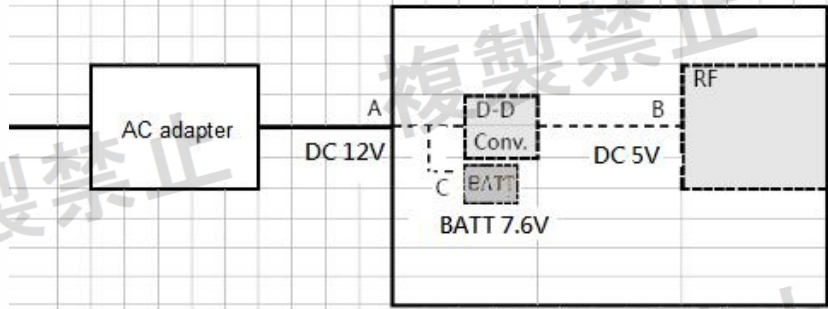
Items	Technical standard
Assigned frequency or designated frequency	2400-2483.5MHz
Communication method	One-way communication, simplex, semi-duplex, or duplex operation of digital signal transmission including spread spectrum
Tolerance of frequency ( $\times 10^{-6}$ )	$\pm 50$ PPM
Tolerance of occupied bandwidth	FH: 83.5MHz or less FH + DS: 83.5MHz or less FH + OFDM: 83.5MHz or less OFDM: 38MHz or less Others: 26MHz or less
Antenna power	Designated value (1) FH, FH+DS, FH+OFDM: 3mW/MHz (used in the range of 2427 - 2470.75 MHz) (2) OFDM, DS other than (1): 10mW/MHz (3) Other than (1) & (2): 10mW Tolerance : +20%,-80%
Antenna gain	1) 12.14 dBi or less in principle 2) In case of directional antenna (1) FH, FH+DS or FH+OFDM using 2427-2470.75 MHz EIRP $\leq$ 16.91 dBm/MHz (2) OFDM or DS other than (1) EIRP $\leq$ 22.14 dBm/MHz (3) Other than (1) and (2): 22.14 dBm or less (4) OFDM OBW 26 - 38MHz: 19.14dBm/MHz (5) Half-power angle of directional antenna (e) in case of the item 2):e $\leq$ 360/A (The A is 10 in maximum.)
Tolerance of spurious emission intensity	(1) Below 2387 MHz: 2.5 $\mu$ W (2) 2387 to 2400 MHz: 25 $\mu$ W (3) 2483.5 through 2496.5 MHz: 25 $\mu$ W (4) Over 2496.5 MHz: 2.5 $\mu$ W
Spreading bandwidth	500kHz or more
Limit of secondary radiated emissions	(1) Below 1 GHz: 4nW (2) 1 GHz or higher: 20nW
Interference prevention function	Shall have the function of automatic transmission and reception of identification sign.
Structure	Shall be of the structure that the RF and modulator sections excluding antenna cannot easily be opened.
Note	DS: Direct spread FH: Frequency hopping OFDM: Orthogonal frequency division multiplexing

Note: The Technical Standards described here do not cover all of the regulated items.



## 7.1 Transmitter Requirements

### 7.1.1 EUT test voltage and Frequency

EUT test voltage					
Power Supply:		AC/DC ADAPTER: Model: A241-1202000D Input: AC100-240VAC, 50/60Hz, 0.8A Output: DC12V---2000mA			
Battery:		Rechargeable Li polymer Model:G139 Battery HW-34154184 Normal 7.6V---5000mah 38Wh Max Voltage:8.7V			
Test voltage require:		The RF unit is supplied DC with AC/DC adapter. The fluctuation of input voltage to the circuit of RF unit of test equipment is under ±1%, when input voltage from DC7.6V or AC/DC adapter (AC 100V) to the test equipment is fluctuated by ±10%, So, the DC 7.6V is chosen in the test report.			
Power Supply view:		<div><p>Test below: 1: The fluctuation of B point is under ±1%, when input voltage from C point to the test equipment is fluctuated by ±10%. 2:The fluctuation of B point is under ±1%, when input voltage from A point to the test equipment is fluctuated by ±10%.</p></div>			
Power Supply result:		The measurement result of the voltage fluctuation at RF circuit when AC100V +/- 10% or DC7.6V +/- 10%.			
		AC INPUT	DC5V	DC Input	DC5V
		110V	5.020V	8.36V	5.014V
		100V	5.026V	7.6V	5.014V
		90V	5.020V	6.84V	5.014V

### 7.1.1.1 Test frequency

<b>Test frequencies:</b>	If the EUT can be set to 3 or more different (carrier) frequencies in 1 allocated band, testing shall be performed using the Lowest, Middle and the Highest frequency (L,M and H). If there are 2 or fewer frequencies, testing shall be performed with the available frequencies.	
	Frequency range over which device operates	Number of frequencies
	1 MHz or less	1
	1 to 10 MHz	2
	More than 10 MHz	3
	Location in the range of operation	
	Middle	
	1 near top and 1 near bottom	
	1 near top, 1 near middle and 1 near bottom	

### EUT channels and frequencies list:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	N/A	N/A

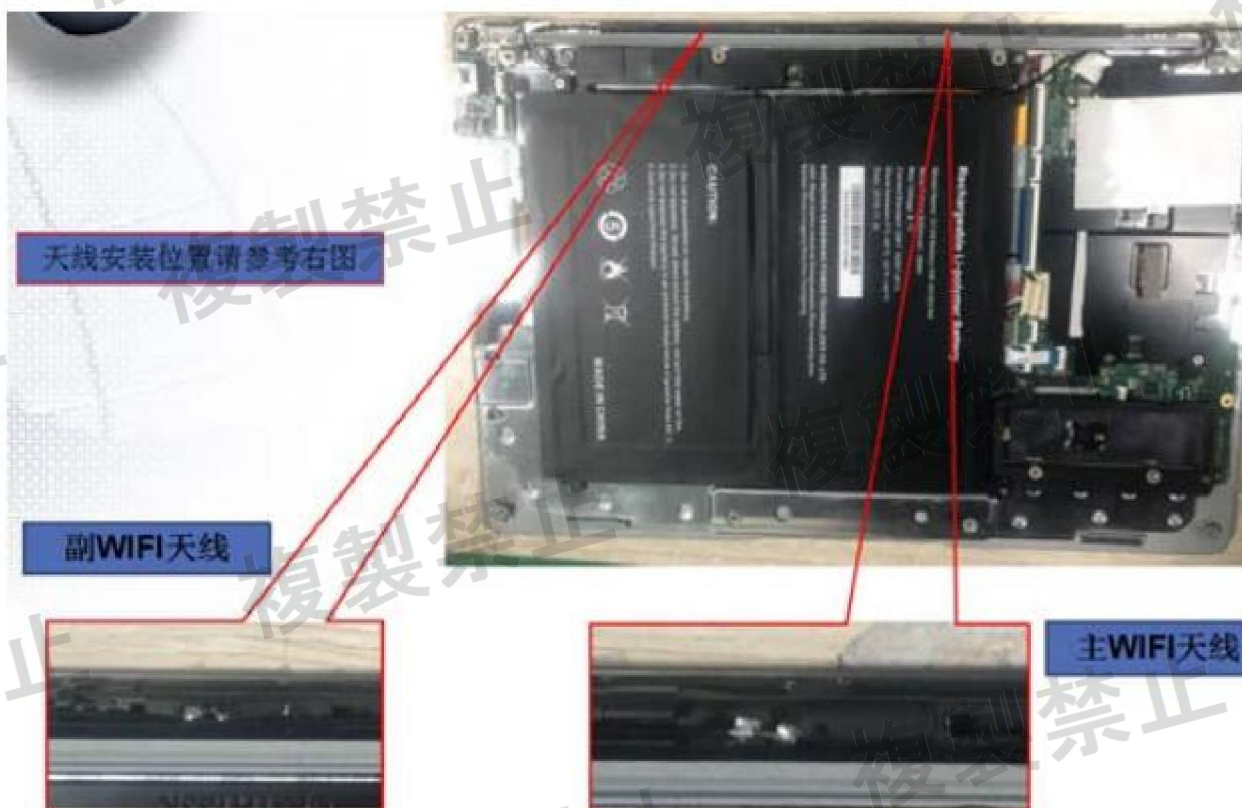
Test frequencies are the lowest channel: 0 channel (2402 MHz), Middle channel: 39 channel (2441 MHz) And highest channel: 78 channel (2480 MHz)

## 7.1.2 Antenna Requirement

### Standard requirement

Applicable for equipment with an antenna terminal, including testing terminals) If an antenna connector is available, all relevant tests will be carried out conducted. If not, tests will be carried out in an anechoic room or with a suitable test-fixture.

### EUT Antenna



The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0.6dBi..

**Result:** An antenna connector is available; all relevant tests will be carried out conducted.



### 7.1.3 Frequency Error

<b>Test Requirement:</b>	Item 19 of Article 2 Paragraph 1		
<b>Test Method:</b>	MIC Notice No.88 Appendix No.43		
<b>EUT Operation:</b>			
<b>Ambient:</b>	Temp.: 24°C	Humid.:65%	Press.: 1010mbar
<b>Test Status:</b>	Enter the unmodulation mode for the product. Test in Channel lowest (2402MHz), middle (2441MHz) and highest(2480MHz), keep in continuously transmitting status.		
<b>Test Configuration:</b>	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">EUT</div> <div style="font-size: 24px; margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 5px;">Spectrum Analyzer</div> </div>		
<b>Test Conditions:</b>	Frequency Counter or Spectrum Analyzer is used for measurement.		
<b>EUT conditions:</b>	Modulation/Spread/Hopping off, CW Tx If EUT does not accept "Modulation OFF" mode in the measurement, you may use "Modulation ON" mode. In that case you can use the Max power Frequency as the measuring results.		
<b>Spectrum Analyzer conditions:</b>	Frequency: Test Frequency Span 1MHz RBW 10KHz (Modulation ON), VBW 10KHz (Modulation ON), Sweep Time Auto Detector mode Positive peak Indication mode Max hold		
<b>Technical standard:</b>	Tolerance of frequency: $\pm 50 \times 10^{-6}$		
<b>Test result:</b>	PASS		

**Measurement Record:**

**Uncertainty:  $\pm 10\text{Hz}$**

**Test Result:**

**GFSK**

Test channel	Test Frequency (MHz)	Test Result			Unit	Limit
		Normal Voltage	High Voltage	Low Voltage		
		AC100V/50Hz	N/A	N/A		
Lowest	2402.0	2401.992	N/A	N/A	MHz	$\pm 50\text{ PPM}$ or less
		-3.3306	N/A	N/A	PPM	
Middle	2441.0	2440.992	N/A	N/A	MHz	
		-3.2773	N/A	N/A	PPM	
Highest	2480.0	2479.992	N/A	N/A	MHz	
		-3.2258	N/A	N/A	PPM	

Note: The nominal frequency shall be confirmed by the applicant and test lab.

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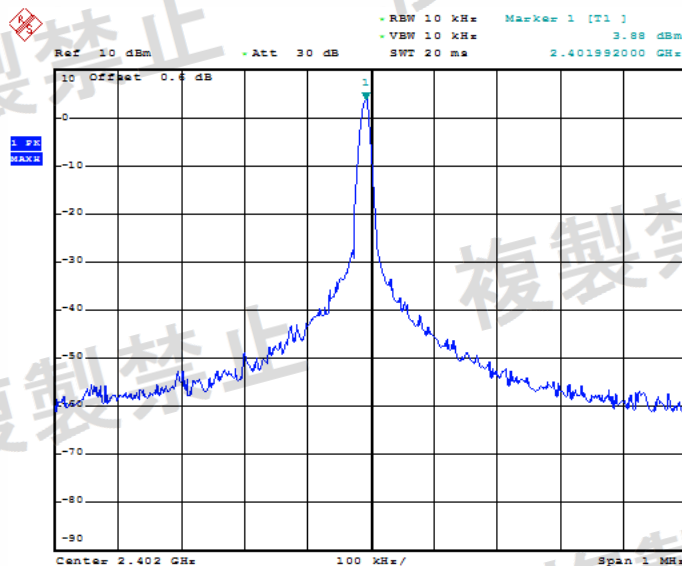
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Result plot as follows:

Normal Voltage: AC100V/50Hz

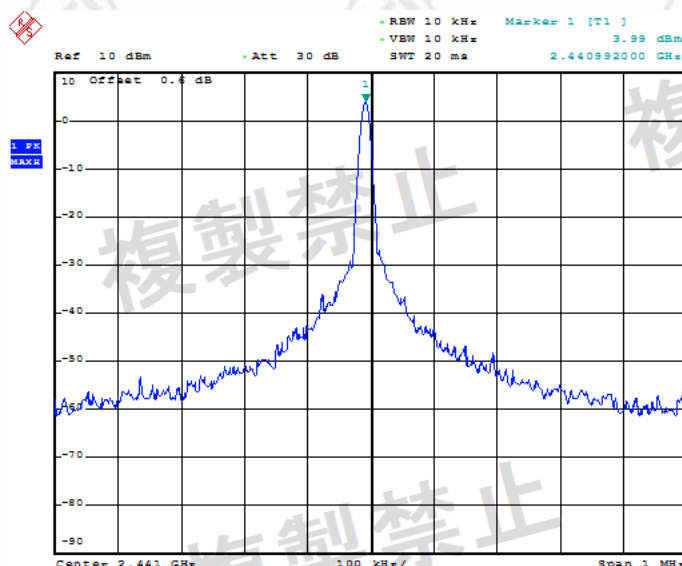
GFSK

Channel 0: 2.402 GHz:



Date: 22.JUL.2019 18:06:15

Channel 39: 2.441 GHz:



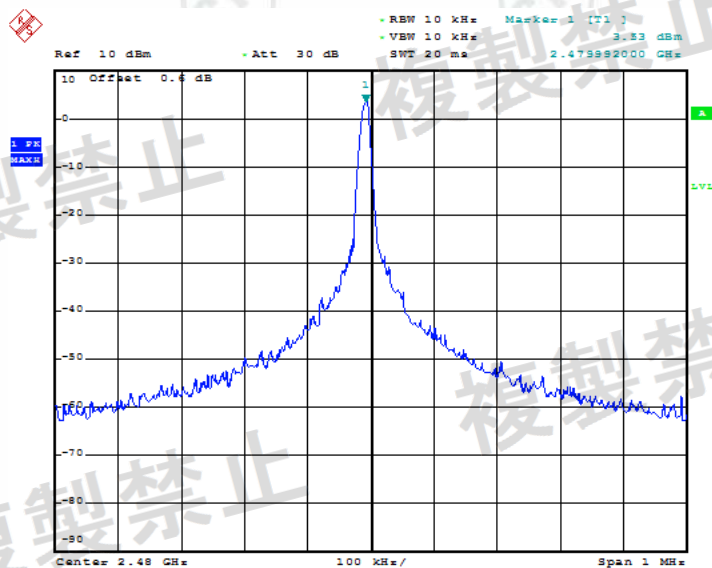
Date: 22.JUL.2019 18:05:31



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Channel 78: 2.480 GHz:



Date: 22.JUL.2019 18:06:49

#### 7.1.4 Occupied Bandwidth (99%)

<b>Test Requirement:</b>	Item 19 of Article 2 Paragraph 1		
<b>Test Method:</b>	MIC Notice No.88 Appendix No.43		
<b>EUT Operation:</b>			
Ambient:	Temp.: 24°C	Humid.: 65%	Press.: 1010mbar
<b>Test Status:</b>	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.		
<b>Test Configuration:</b>	 <pre> graph LR     EUT[EUT] --&gt; SA[Spectrum Analyzer]             </pre>		
<b>EUT conditions:</b>	Modulation/Spread/Hopping on, PN9 Modulation Tx For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.		
<b>Spectrum Analyzer conditions:</b>	Frequency: Test Frequency Span 120MHz (FHSS), RBW 1MHz VBW 1MHz Sweep Time Auto detector mode Positive peak Indication mode Max hold OBW 99%		
<b>Technical standard:</b>	FH : 83.5MHz		
<b>Test result:</b>	PASS		

**Measurement Record:**

**Uncertainty:  $\pm 10\text{KHz}$**

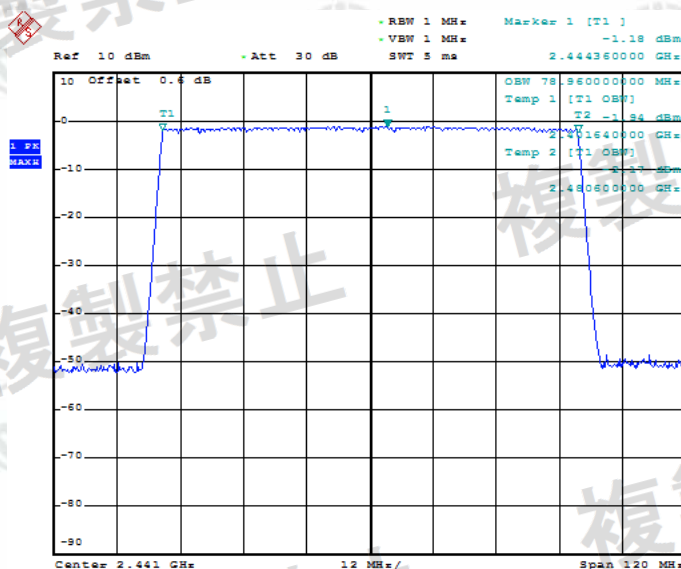
**Test Result:**

Modulation	Test channels	Test Result			Unit	Limit
		Normal Voltage	High Voltage	Low Voltage		
		AC100V/50Hz	N/A	N/A		
GFSK	79 channels (2402~2480)	78.96	N/A	N/A	MHz	83.50 MHz or less
( $\pi/4$ )DQPSK	79 channels (2402~2480)	78.96	N/A	N/A	MHz	83.50 MHz or less
8DPSK	79 channels (2402~2480)	78.96	N/A	N/A	MHz	83.50 MHz or less

**Result plot as follows:**

**Normal Voltage: AC100V/50Hz**

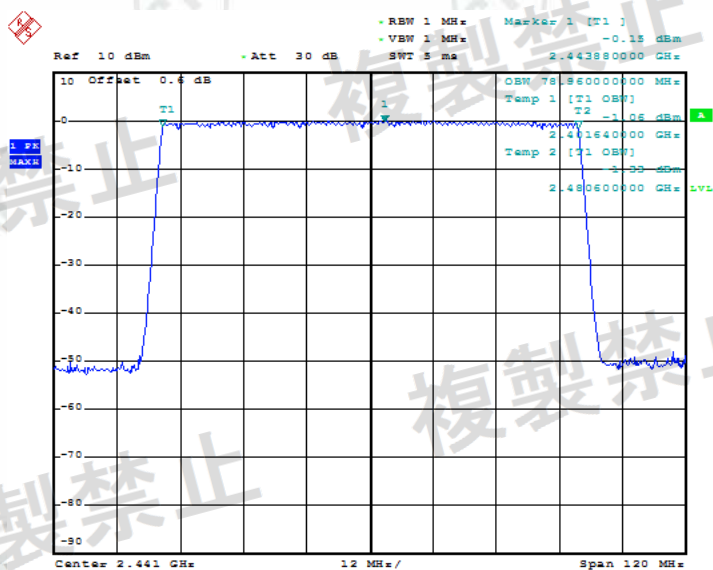
**GFSK**



Date: 22 JUL 2019 17:59:38

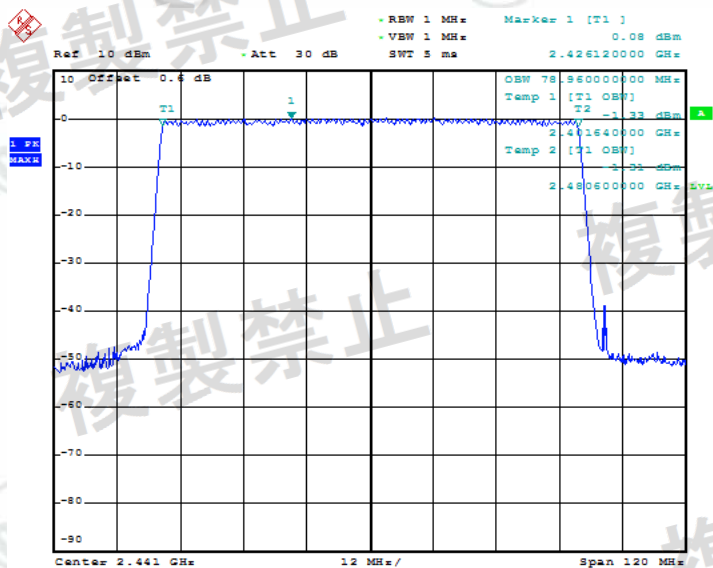


( $\pi/4$ )DQPSK



Date: 22.JUL.2019 18:02:00

8DPSK



Date: 22.JUL.2019 18:02:44

### 7.1.5 Spread spectrum Bandwidth (90%)

<b>Test Requirement:</b>	Item 19 of Article 2 Paragraph 1		
<b>Test Method:</b>	MIC Notice No.88 Appendix No.43		
<b>EUT Operation:</b>			
Ambient:	Temp.: 24°C	Humid.: 65%	Press.: 1010mbar
<b>Test Status:</b>	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).Following channel(s) was (were) selected for the final test as listed below.		
<b>Test Configuration:</b>	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">EUT</div> <div style="font-size: 24px; margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 5px; margin-left: 10px;">Spectrum Analyzer</div> </div>		
<b>EUT conditions:</b>	Modulation/Spread/Hopping on, PN9 Modulation Tx For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.		
<b>Spectrum Analyzer conditions:</b>	Frequency: Test Frequency Span 120MHz (FHSS), RBW 1MHz VBW 1MHz Sweep Time Auto detector mode Positive peak Indication mode Max hold OBW 90%		
<b>Technical standard:</b>	500kHz or more		
<b>Test result:</b>	PASS		

**Measurement Record:**

**Uncertainty:  $\pm 10\text{KHz}$**

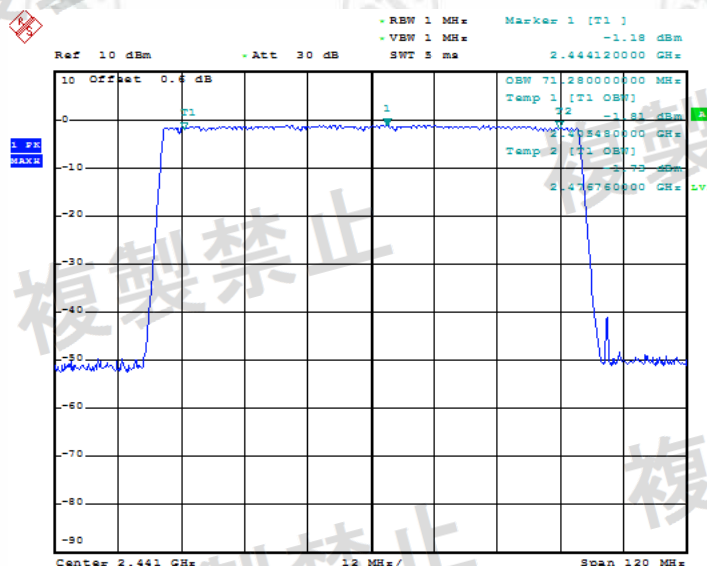
**Test Result:**

Modulation	Test channels	Test Result			Unit	Limit
		Normal Voltage	High Voltage	Low Voltage		
		AC100V/50Hz	N/A	N/A		
GFSK	79 channels (2402~2480)	71.28	N/A	N/A	MHz	500 kHz or more
( $\pi/4$ )DQPSK	79 channels (2402~2480)	71.52	N/A	N/A	MHz	500 kHz or more
8DPSK	79 channels (2402~2480)	71.52	N/A	N/A	MHz	500 kHz or more

**Result plot as follows:**

**Normal Voltage: AC100V/50Hz**

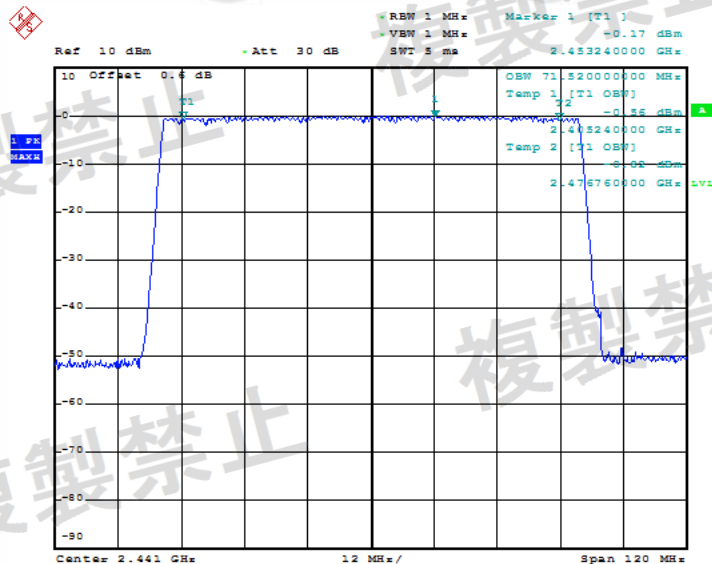
**GFSK**



Date: 22.JUL.2019 18:00:28

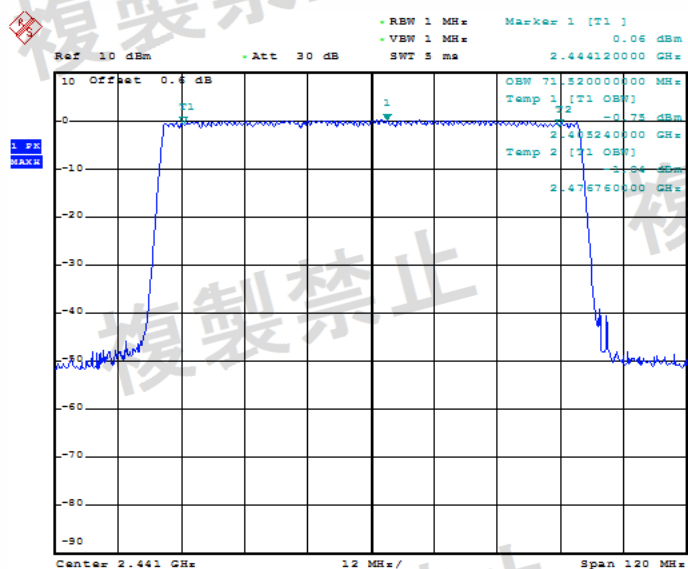


( $\pi/4$ )DQPSK



Date: 22.JUL.2019 18:01:20

8DPSK



Date: 22.JUL.2019 18:03:51

### 7.1.6 Antenna Power

<b>Test Requirement:</b>	Item 19 of Article 2 Paragraph 1		
<b>Test Method:</b>	MIC Notice No.88 Appendix No.43		
<b>EUT Operation:</b>			
Ambient:	Temp.: 24°C	Humid.: 65%	Press.: 1010 mbar
<b>Test Status:</b>	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.		
<b>Test Configuration:</b>	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">EUT</div> <div style="font-size: 24px; margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 5px;">Spectrum Analyzer</div> </div>		
<b>EUT conditions:</b>	Modulation/Spread/Hopping on, PN9 Modulation Tx For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.		
<b>Spectrum Analyzer conditions(FHSS):</b>	Frequency: Test Frequency Span 120MHz RBW 1MHz VBW 1MHz Sweep Time Auto Detector mode Positive peak Indication mode Max hold		
<b>Technical standard:</b>	Antenna Power (1) FH, FH+DS, FH+OFDM 3mW/MHz or less (used in the range of 2427 - 2470.75 MHz) (2) OFDM, DS other than (1) 10mW/MHz or less (3) Other than (1) & (2) 10mW or less Tolerance: +20% -80%		
<b>Test result:</b>	PASS		

**Measurement Record:**

**Uncertainty:  $\pm 10$  kHz /  $\pm 1$  dB**

**Test Result:**

**GFSK:**

Modulation	Test channels	Test Result			Unit	Limit
		Normal Voltage	High Voltage	Low Voltage		
		AC100V/50Hz Z	N/A	N/A		
GFSK ( $\pi/4$ )DQPSK	79 channels (2402~2480)	0.0155	N/A	N/A	mW/MHz	3 mW /MHz or less Error +20%~ -80%
	79 channels (2402~2480)	3.333	N/A	N/A	%	
8DPSK GFSK	79 channels (2402~2480)	0.011	N/A	N/A	mW/MHz	
	79 channels (2402~2480)	-26.666	N/A	N/A	%	
( $\pi/4$ )DQPSK	79 channels (2402~2480)	0.014	N/A	N/A	mW/MHz	
	79 channels (2402~2480)	-6.666	N/A	N/A	%	

**Remark:**

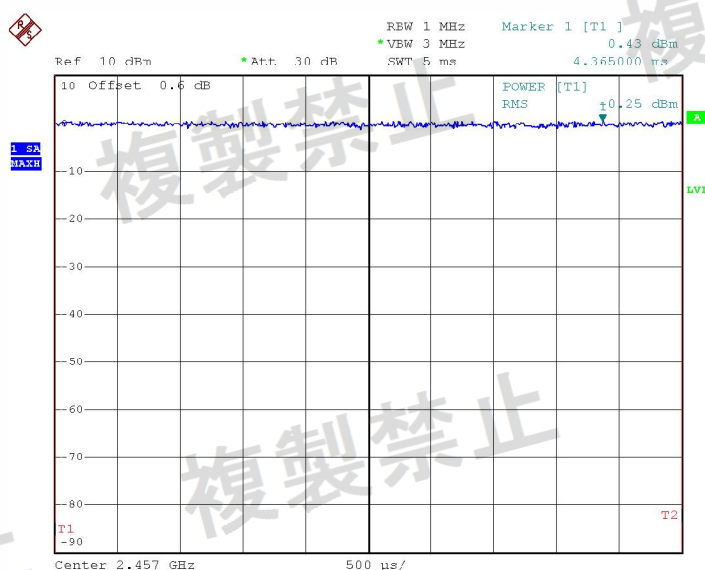
Conducted rated power: 0.015 mW/MHz

Tolerance (%) :[( test value- rate power)/rater power]\*100

**Result plot as follows:**

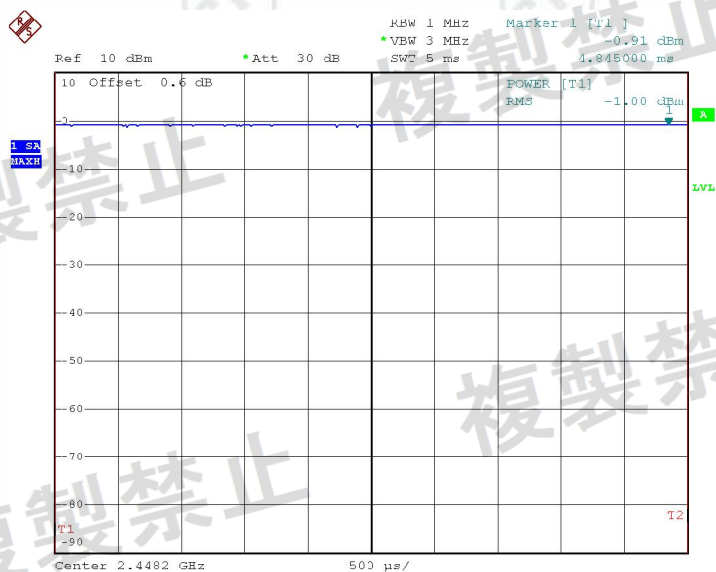
**Normal Voltage:AC100V/50Hz**

**GFSK**



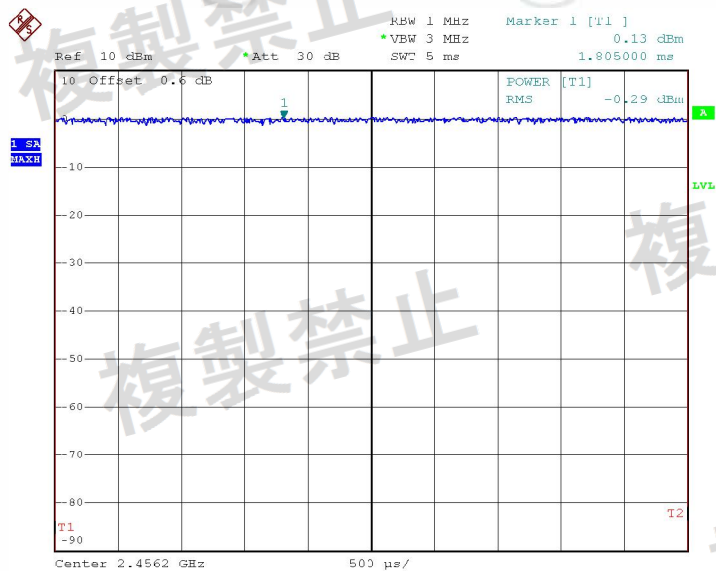
Date: 12.AUG.2019 15:21:10





Date: 12.AUG.2019 15:15:39

( $\pi/4$ )DQPSK:



Date: 12.AUG.2019 15:18:52

**Remark:**

Conducted rated power: 1.258 mW/MHz

Tolerance (%) : [( test value- rate power)/rater power]\*100

### 7.1.7 Spurious Emissions of Tx

<b>Test Requirement:</b>	Item 19 of Article 2 Paragraph 1		
<b>Test Method:</b>	MIC Notice No.88 Appendix No.43		
<b>EUT Operation:</b>			
<b>Ambient:</b>	Temp.: 24°C	Humid.: 65%	Press.: 1010 mbar
<b>Test Status:</b>	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.		
<b>Test Configuration:</b>	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">EUT</div> <div style="font-size: 24px; margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 5px; margin-left: 10px;">Spectrum Analyzer</div> </div>		
<b>EUT conditions:</b>	Modulation/Spread/Hopping on, PN9 Modulation Tx For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.		
<b>Measurement Procedure:</b>	Step1 All spurious are measured from 30MHz to 13GHz by peak mode. Step2 If the value measured by Step1 is 2dB or less, measure in average mode.		
<b>Spectrum Analyzer conditions(Step 1):</b>	Frequency: 30MHz – 2400MHz , 2483.5MHz –13GHz RBW 1000kHz (30 – 1GHz) , 1000KHz (over 1GHz) VBW 1000kHz (30 – 1GHz) , 1000KHz (over 1GHz) Sweep Time Auto detector mode Positive peak Indication mode Max hold		
<b>Spectrum Analyzer conditions(Step 2):</b>	Frequency: Spurious Frequency Span 0Hz RBW 1MHz VBW 1MHz Sweep Time Auto Detector mode Sample Indication mode Max hold		
<b>Technical standard:</b>	(1) Below 2387 MHz : 2.5μW/MHz (2) 2387 to 2400 MHz : 25μW/MHz (3) 2483.5 through 2496.5 MHz : 25μW/MHz (4) Over 2496.5 MHz : 2.5μW/MHz		
<b>Test result:</b>	PASS		

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Measurement Record:

Uncertainty:  $\pm 1\text{dB}$

Test Result:

GFSK:

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
Channel (2402MHz)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 2387 MHz: -26dBm/MHz
	30.000	-52.34	N/A	N/A	N/A	N/A		(2) 2387 to 2400 MHz :-16dBm/MHz
	2400.000	-25.03	N/A	N/A	N/A	N/A		(3) 2483.5 through 2496.5 MHz :
	2490.312	-52.88	N/A	N/A	N/A	N/A		-16dBm/MHz
	9323.775	-42.44	N/A	N/A	N/A	N/A		(4)Over 2496.5 MHz: -26dBm/MHz

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
Channel (2441MHz)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 2387 MHz: -26dBm/MHz (2) 2387 to 2400 MHz :-16dBm/MHz (3) 2483.5 through 2496.5 MHz : -16dBm/MHz (4)Over 2496.5 MHz: -26dBm/MHz
	1104.792	-50.63	N/A	N/A	N/A	N/A		
	2395.684	-49.06	N/A	N/A	N/A	N/A		
	2484.306	-49.39	N/A	N/A	N/A	N/A		
	9281.761	-41.91	N/A	N/A	N/A	N/A		

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
Channel (2480MHz)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 2387 MHz: -26dBm/MHz (2) 2387 to 2400 MHz :-16dBm/MHz (3) 2483.5 through 2496.5 MHz : -16dBm/MHz (4)Over 2496.5 MHz: -26dBm/MHz
	1118.934	-50.38	N/A	N/A	N/A	N/A		
	2399.558	-51.55	N/A	N/A	N/A	N/A		
	2485.086	-37.70	N/A	N/A	N/A	N/A		
	1136.145	-45.23	N/A	N/A	N/A	N/A		



( $\pi/4$ ) DQPSK:

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
Channel (2402MHz)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 2387 MHz: -26dBm/MHz (2) 2387 to 2400 MHz :-16dBm/MHz (3) 2483.5 through 2496.5 MHz : -16dBm/MHz (4)Over 2496.5 MHz: -26dBm/MHz
	39.428	-49.83	N/A	N/A	N/A	N/A		
	2400.000	-22.16	N/A	N/A	N/A	N/A		
	2486.048	-49.17	N/A	N/A	N/A	N/A		
	9281.761	-42.26	N/A	N/A	N/A	N/A		

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
Channel (2441MHz)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 2387 MHz: -26dBm/MHz
	821.952	-49.07	N/A	N/A	N/A	N/A		(2) 2387 to 2400 MHz :-16dBm/MHz
	2395.320	-49.55	N/A	N/A	N/A	N/A		(3) 2483.5 through 2496.5 MHz :
	2489.766	-49.28	N/A	N/A	N/A	N/A		-16dBm/MHz
	1243.281	-42.65	N/A	N/A	N/A	N/A		(4)Over 2496.5 MHz: -26dBm/MHz

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
Channel (2480MHz)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 2387 MHz: -26dBm/MHz
	2283.292	-50.07	N/A	N/A	N/A	N/A		(2) 2387 to 2400 MHz :-16dBm/MHz
	2390.900	-49.28	N/A	N/A	N/A	N/A		(3) 2483.5 through 2496.5 MHz :
	2484.930	-37.58	N/A	N/A	N/A	N/A		-16dBm/MHz
	9407.803	-43.15	N/A	N/A	N/A	N/A		(4)Over 2496.5 MHz: -26dBm/MHz

**8DPSK:**

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
Channel (2402MHz)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 2387 MHz: -26dBm/MHz (2) 2387 to 2400 MHz :-16dBm/MHz (3) 2483.5 through 2496.5 MHz : -16dBm/MHz (4)Over 2496.5 MHz: -26dBm/MHz
	39.428	-51.68	N/A	N/A	N/A	N/A		
	2400.000	-21.78	N/A	N/A	N/A	N/A		
	2490.338	-51.16	N/A	N/A	N/A	N/A		
	1131.944	-42.58	N/A	N/A	N/A	N/A		

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
Channel (2441MHz)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 2387 MHz: -26dBm/MHz
	39.428	-49.56	N/A	N/A	N/A	N/A		(2) 2387 to 2400 MHz :-16dBm/MHz
	2396.542	-49.84	N/A	N/A	N/A	N/A		(3) 2483.5 through 2496.5 MHz :
	2493.042	-49.03	N/A	N/A	N/A	N/A		-16dBm/MHz
	9302.768	-42.73	N/A	N/A	N/A	N/A		(4)Over 2496.5 MHz: -26dBm/MHz

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
Channel (2480MHz)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 2387 MHz: -26dBm/MHz
	3942.800	-49.77	N/A	N/A	N/A	N/A		(2) 2387 to 2400 MHz :-16dBm/MHz
	2396.204	-49.29	N/A	N/A	N/A	N/A		(3) 2483.5 through 2496.5 MHz :
	2485.164	-37.89	N/A	N/A	N/A	N/A		-16dBm/MHz
	1194.965	-41.76	N/A	N/A	N/A	N/A		(4)Over 2496.5 MHz: -26dBm/MHz

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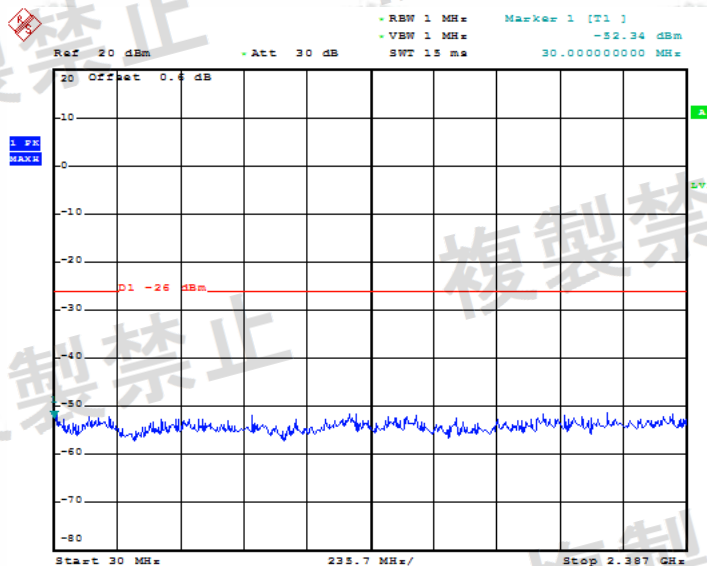
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Result plot as follows:

GFSK (Normal Voltage AC100V/50Hz)

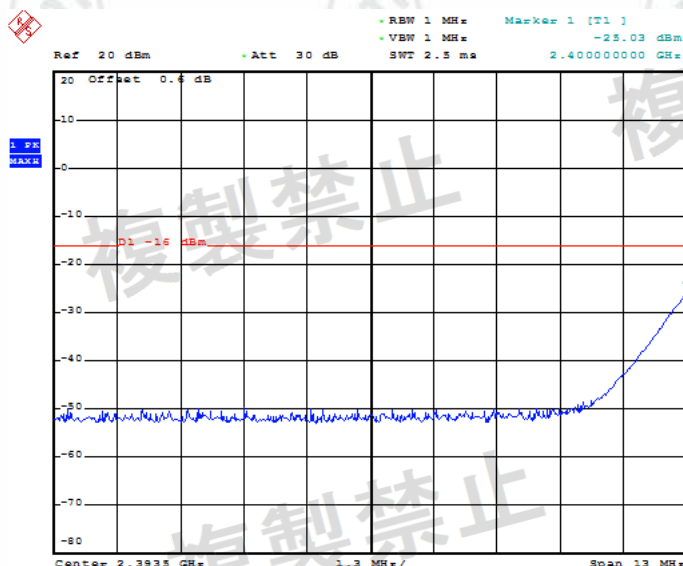
Channel 0 (2.402 GHz)

30MHz-2.387GHz:



Date: 23.JUL.2019 15:10:06

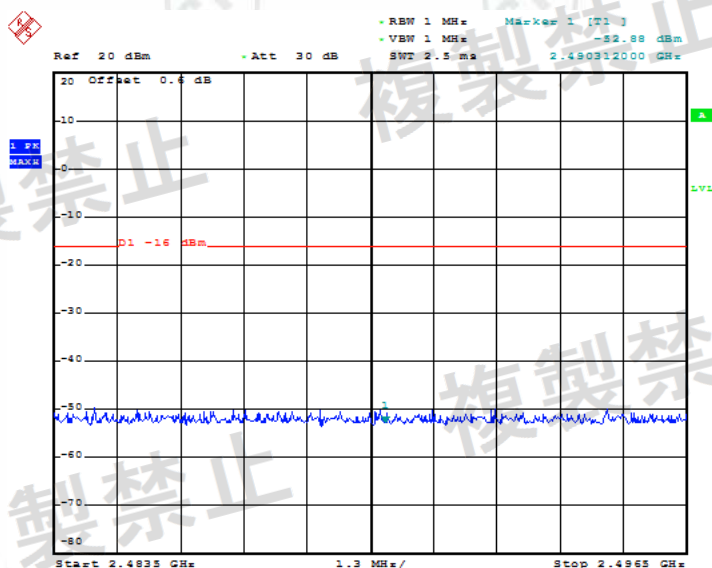
2.387GHz-2.4GHz:



Date: 23.JUL.2019 15:15:24

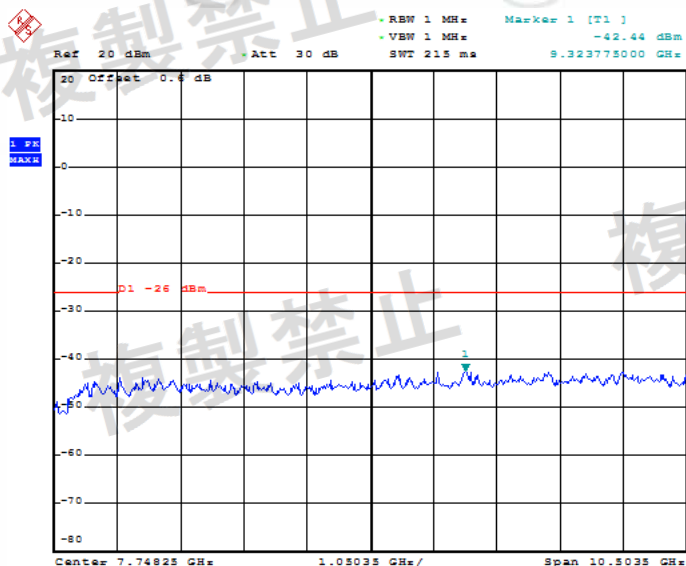


2.4835GHz-2.4965GHz:



Date: 23.JUL.2019 15:18:22

2.4965GHz-13GHz:



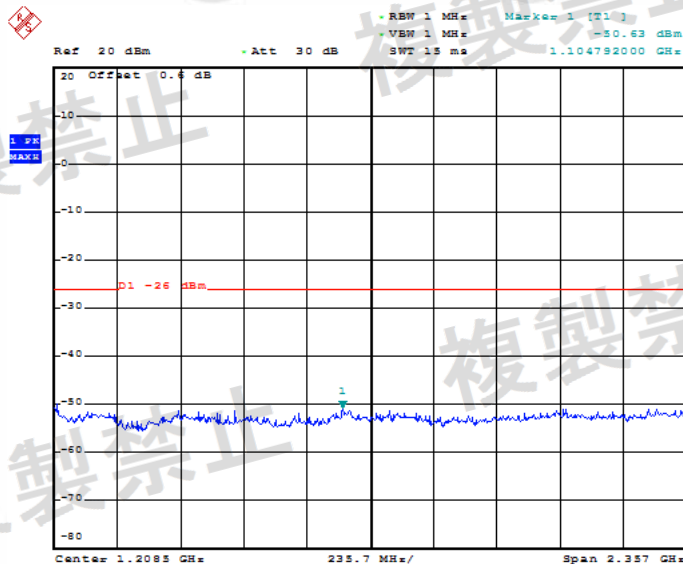
Date: 23.JUL.2019 15:21:34

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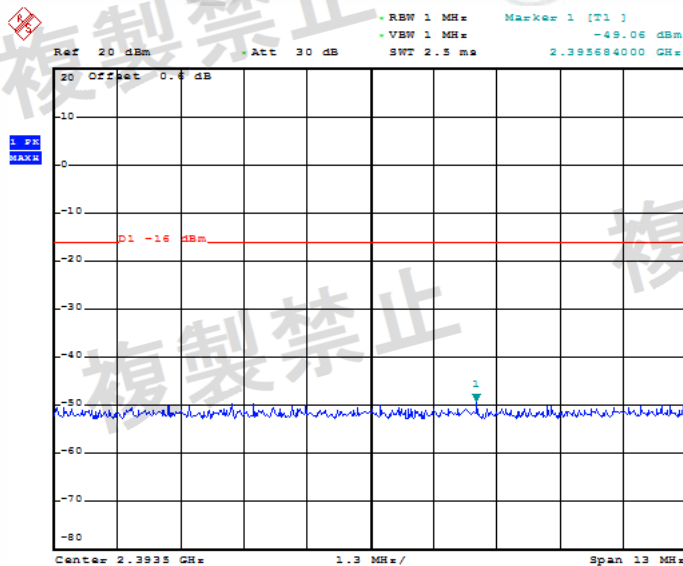
Channel 39 (2.441 GHz)

30MHz-2.387GHz:



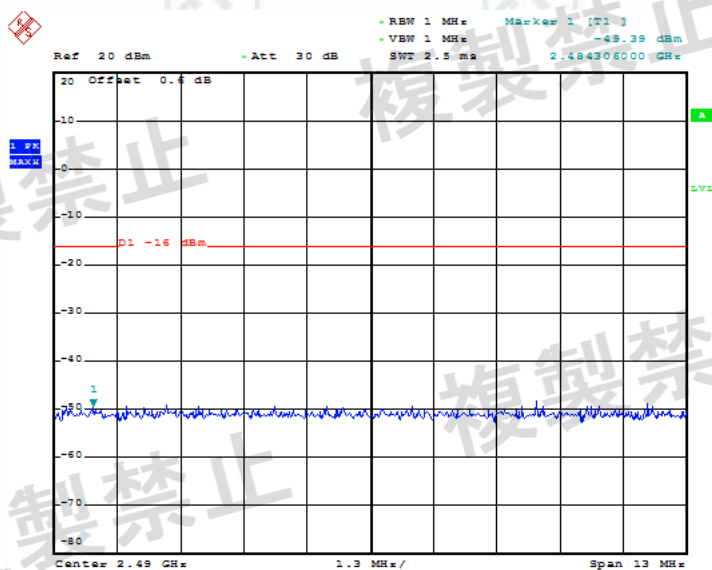
Date: 23.JUL.2019 15:10:47

2.387GHz-2.4GHz:



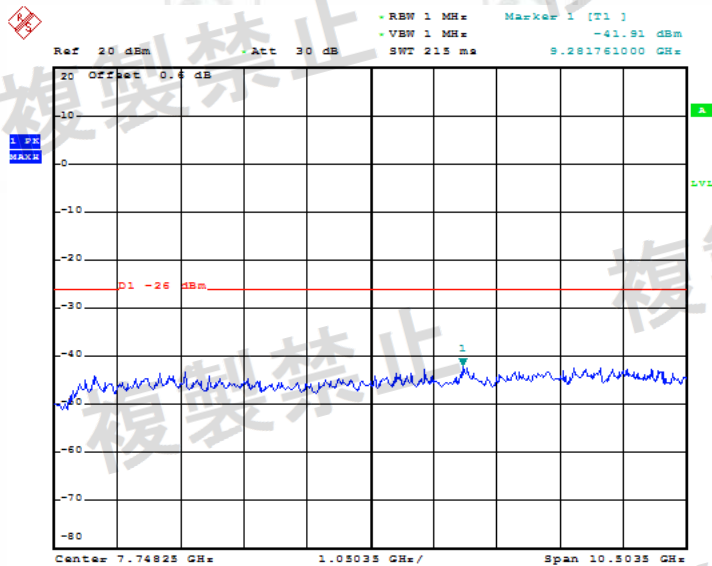
Date: 23.JUL.2019 15:15:03

2.4835GHz-2.4965GHz:



Date: 23.JUL.2019 15:18:46

2.4965GHz-13GHz:



Date: 23.JUL.2019 15:21:03

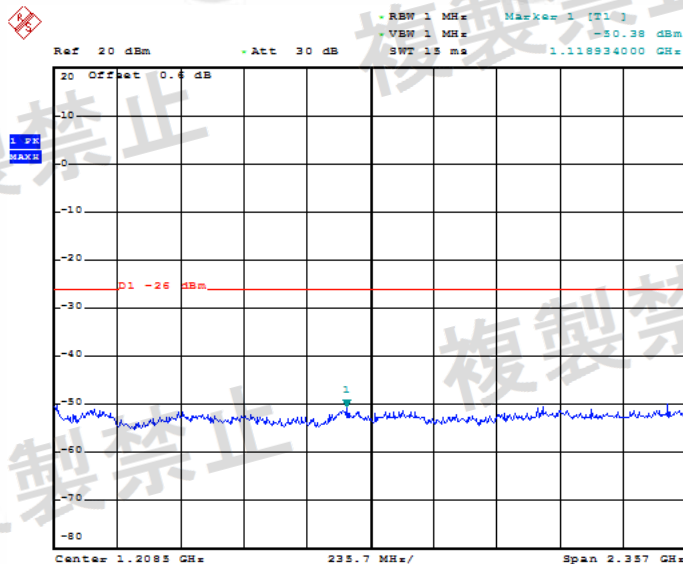


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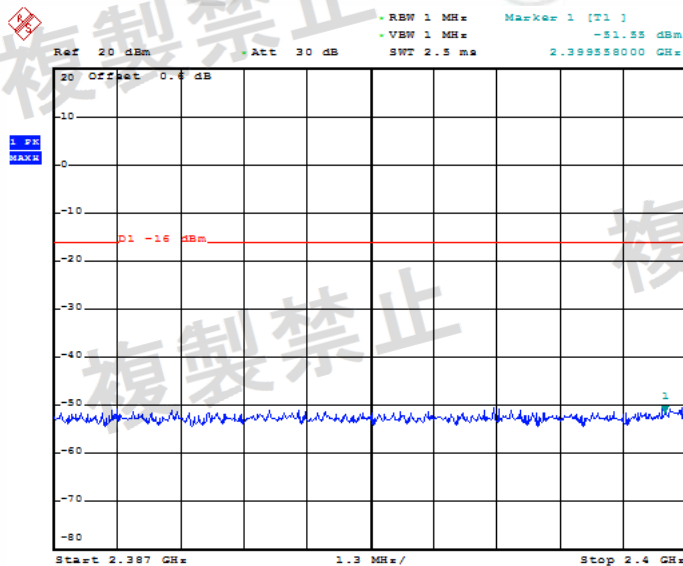
Channel 78 (2.480 GHz)

30MHz-2.387GHz:



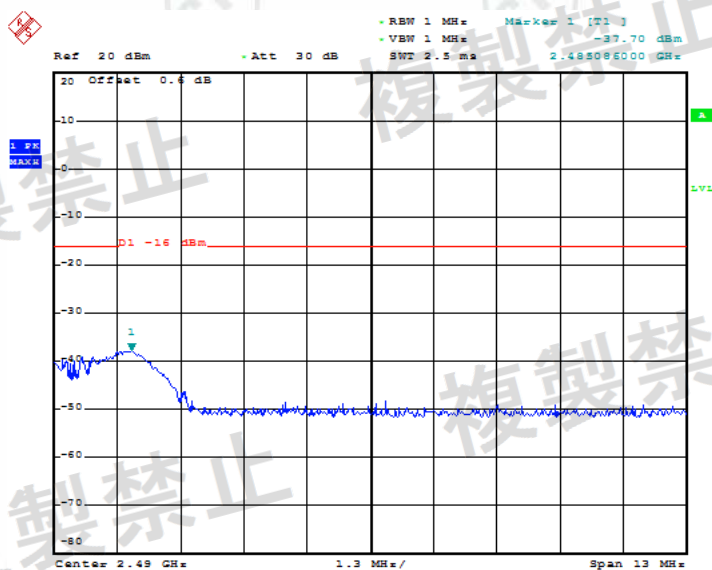
Date: 23.JUL.2019 15:11:25

2.387GHz-2.4GHz:



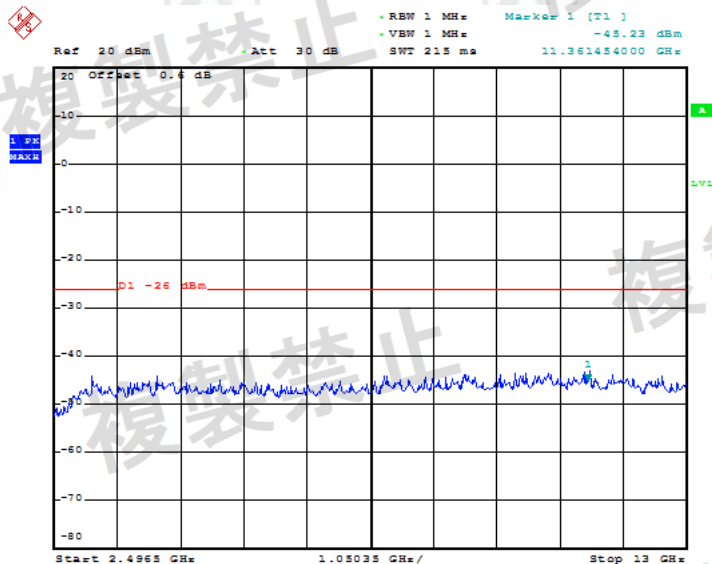
Date: 23.JUL.2019 15:13:25

2.4835GHz-2.4965GHz:



Date: 23.JUL.2019 15:19:34

2.4965GHz-13GHz:

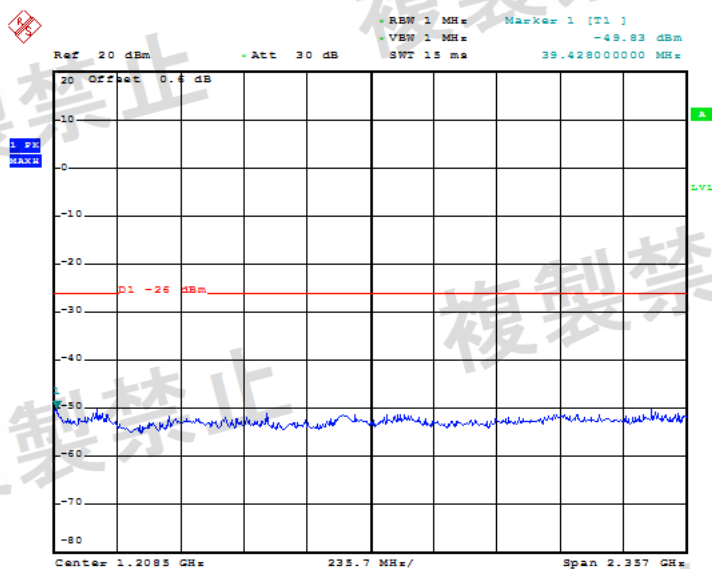


Date: 23.JUL.2019 15:20:37

( $\pi/4$ ) DQPSK (Normal Voltage AC100V/50Hz)

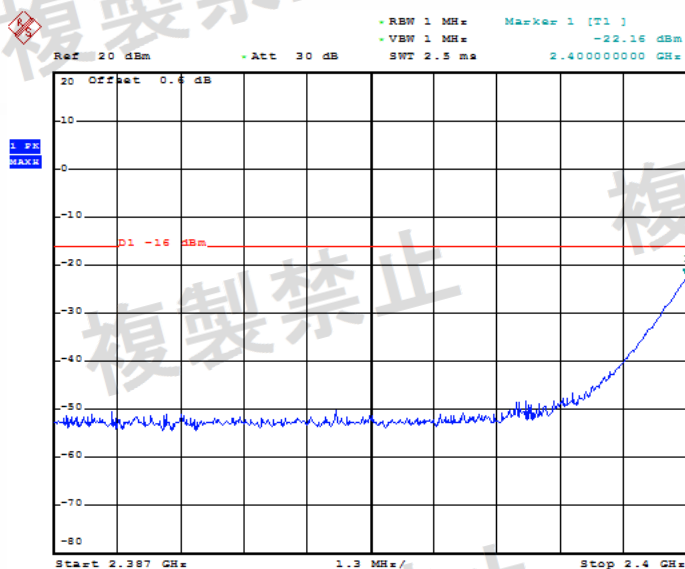
Channel 0 (2.402 GHz)

30MHz-2.387GHz:



Date: 23.JUL.2019 15:38:55

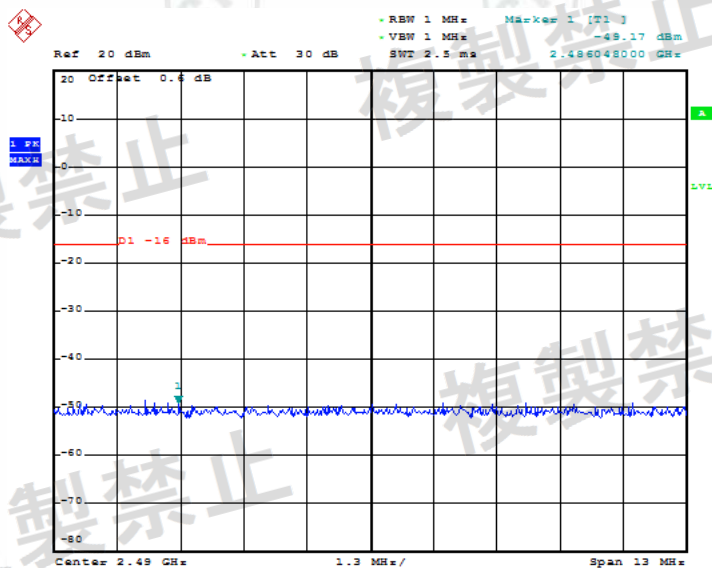
2.387GHz-2.4GHz:



Date: 23.JUL.2019 15:31:14

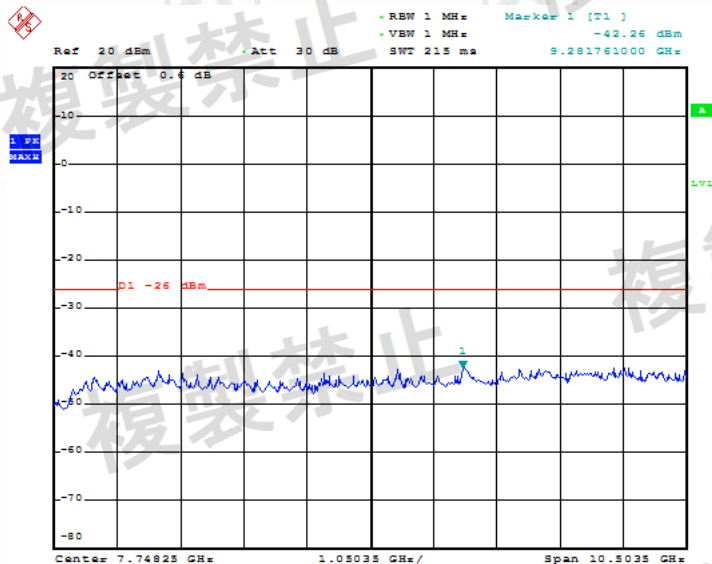


2.4835GHz-2.4965GHz:



Date: 23.JUL.2019 15:29:04

2.4965GHz-13GHz:



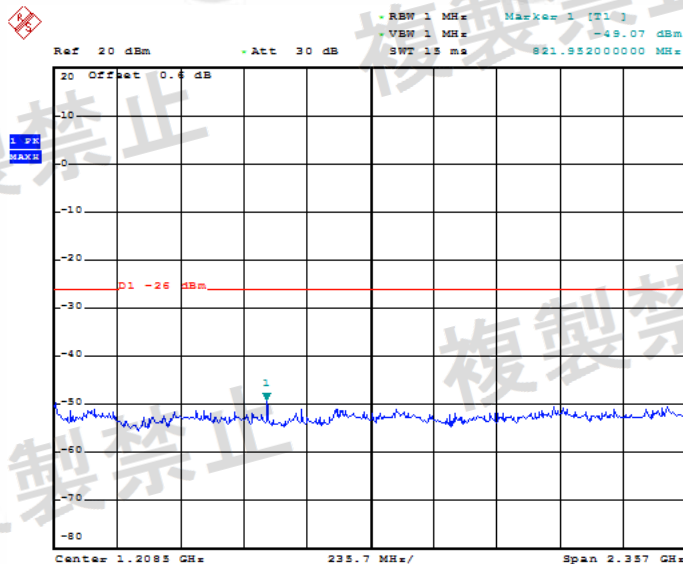
Date: 23.JUL.2019 15:22:05

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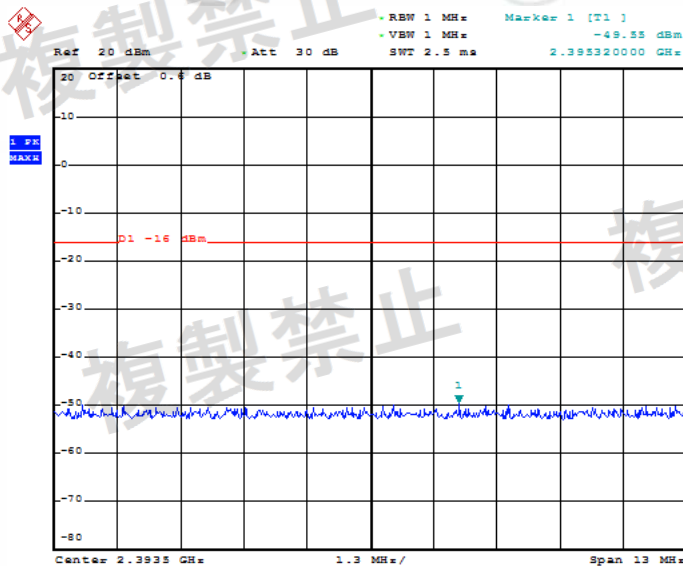
Channel 39 (2.441 GHz)

30MHz-2.387GHz:



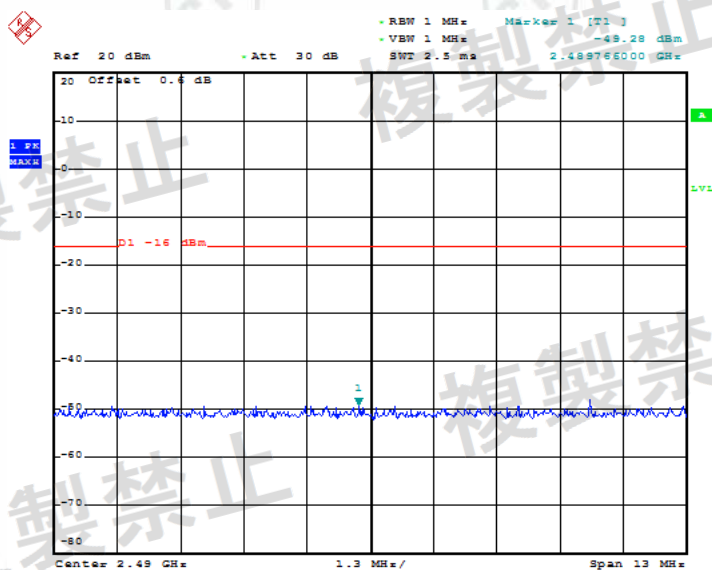
Date: 23.JUL.2019 15:38:07

2.387GHz-2.4GHz:



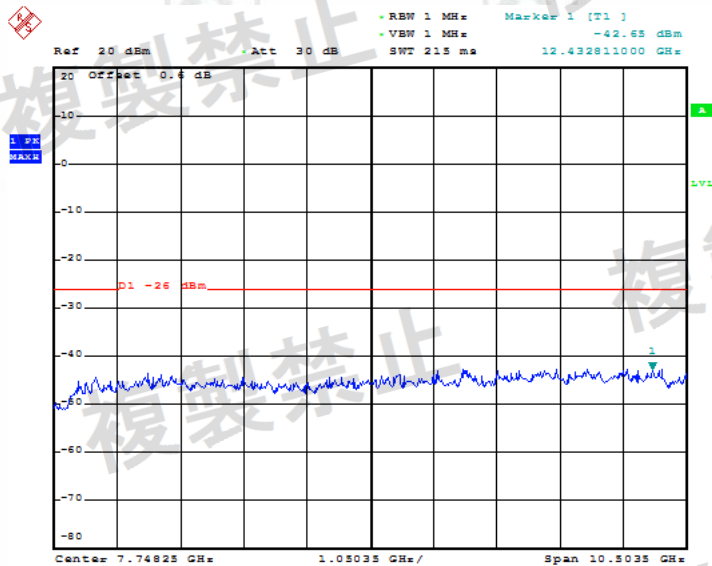
Date: 23.JUL.2019 15:31:39

2.4835GHz-2.4965GHz:



Date: 23.JUL.2019 15:28:38

2.4965GHz-13GHz:

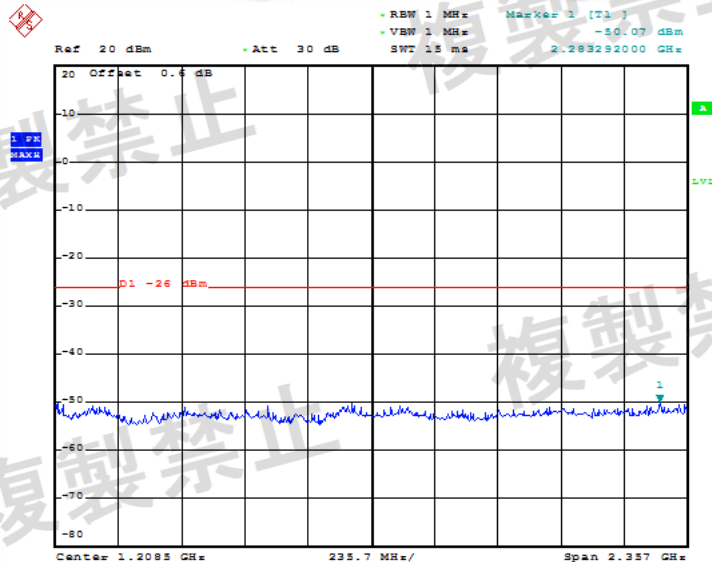


Date: 23.JUL.2019 15:22:31



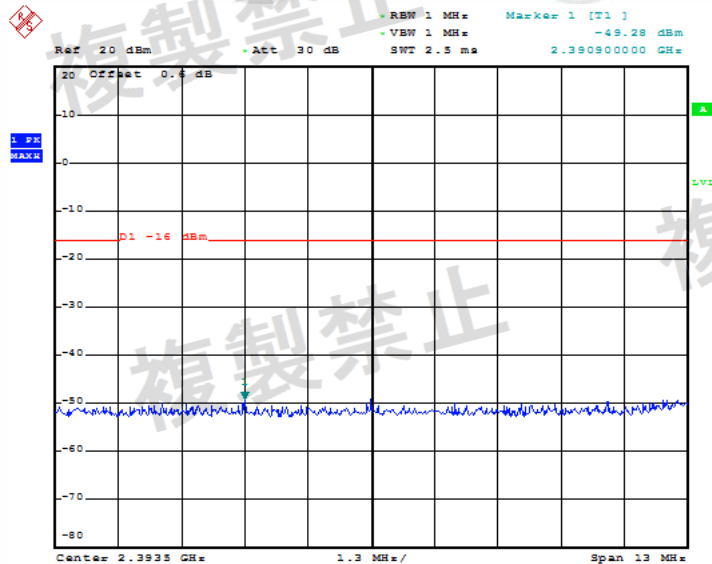
**Channel 78 (2.480 GHz)**

30MHz-2.387GHz:



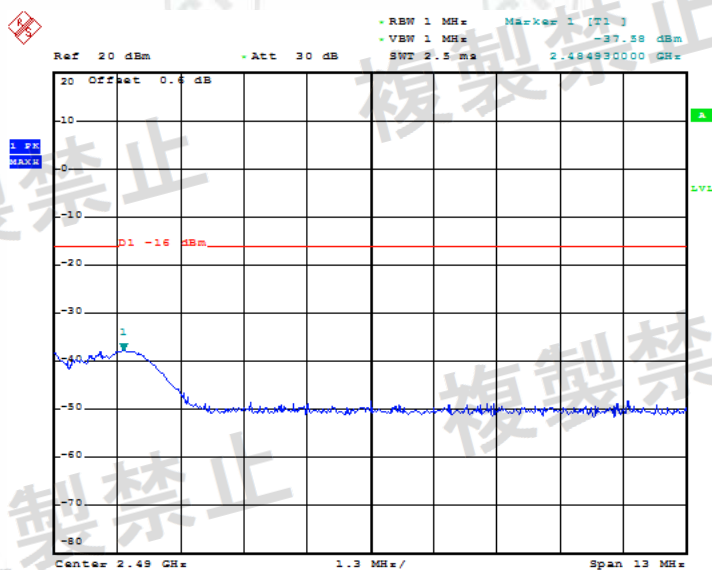
Date: 23.JUL.2019 15:37:25

2.387GHz-2.4GHz:



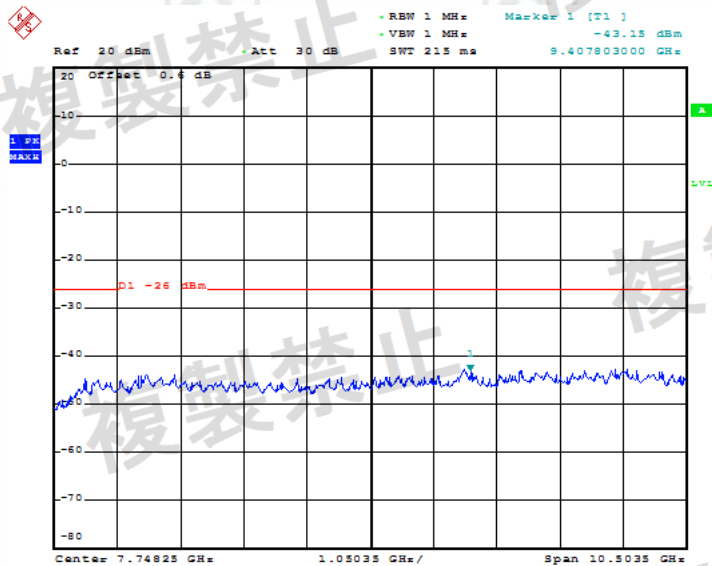
Date: 23.JUL.2019 15:32:31

2.4835GHz-2.4965GHz:



Date: 23.JUL.2019 15:28:12

2.4965GHz-13GHz:



Date: 23.JUL.2019 15:22:54

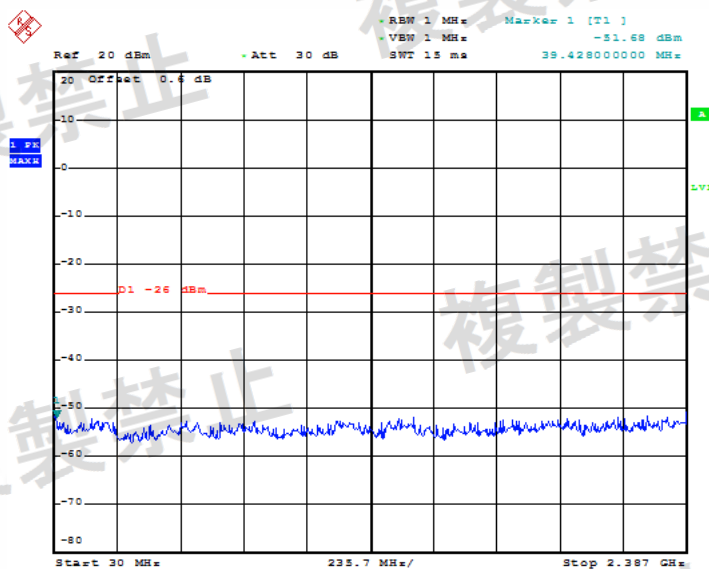
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8DPSK (Normal Voltage AC100V/50Hz)

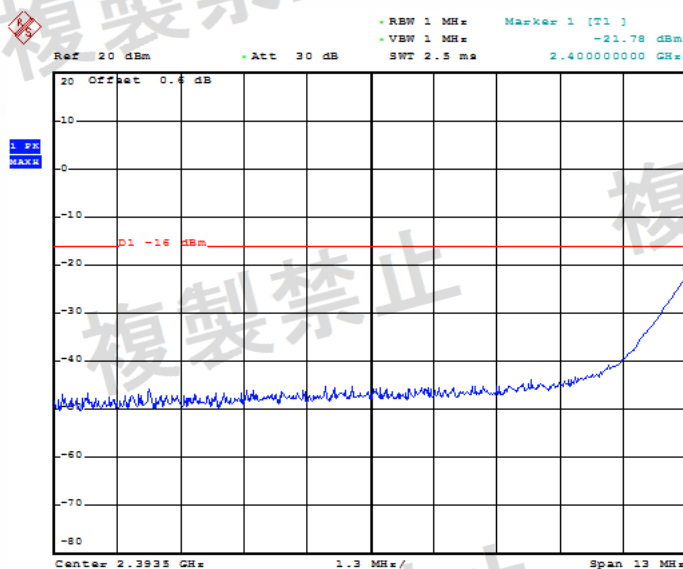
Channel 0 (2.402 GHz)

30MHz-2.387GHz:



Date: 23.JUL.2019 15:35:13

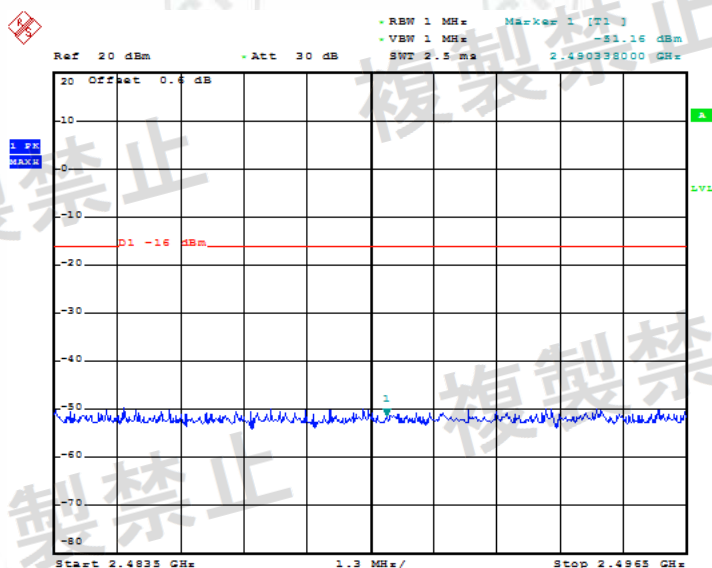
2.387GHz-2.4GHz:



Date: 23.JUL.2019 15:34:05

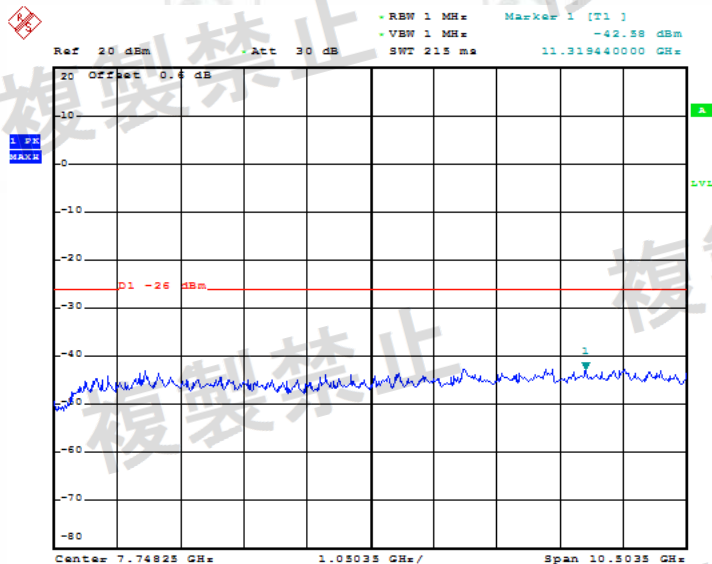


2.4835GHz-2.4965GHz:



Date: 23.JUL.2019 15:25:42

2.4965GHz-13GHz:



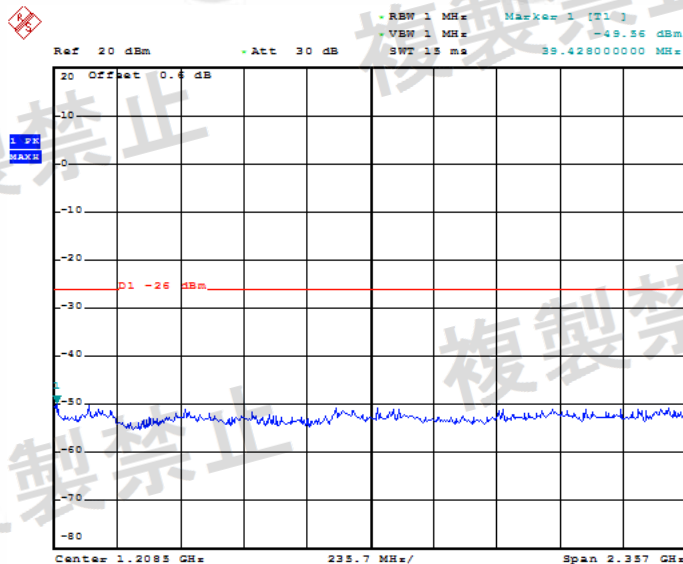
Date: 23.JUL.2019 15:24:28

Report No.: EED32L00176302

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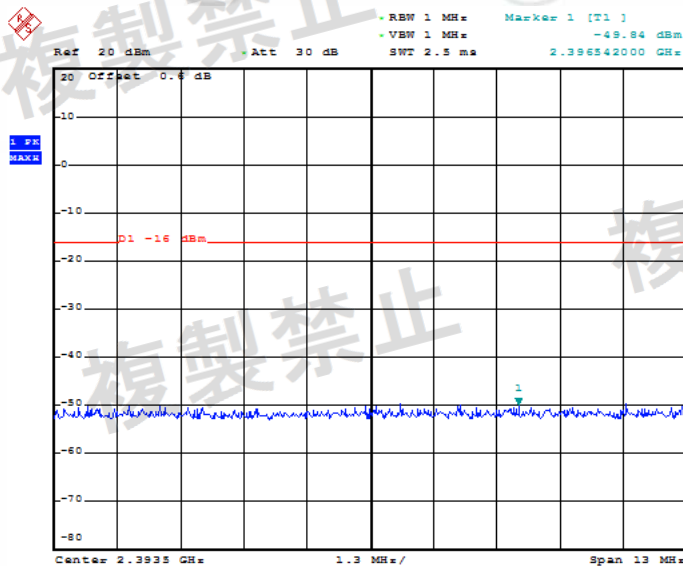
Channel 39 (2.441 GHz)

30MHz-2.387GHz:



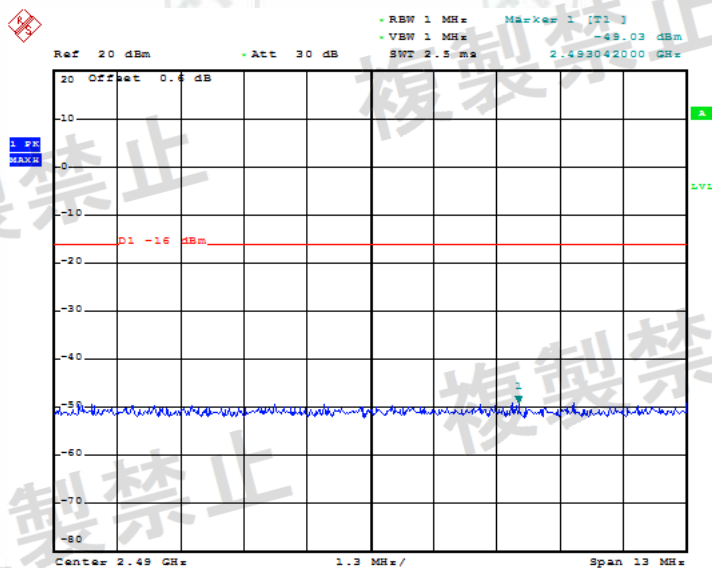
Date: 23.JUL.2019 15:35:49

2.387GHz-2.4GHz:



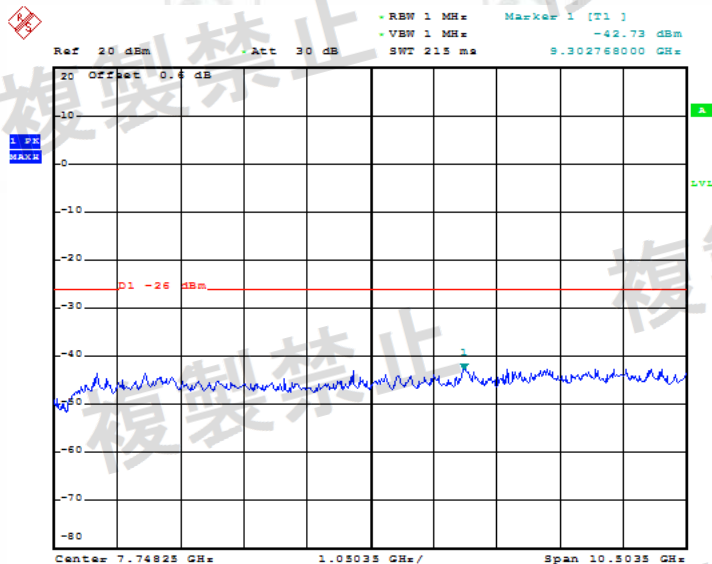
Date: 23.JUL.2019 15:33:31

2.4835GHz-2.4965GHz:



Date: 23.JUL.2019 15:26:08

2.4965GHz-13GHz:



Date: 23.JUL.2019 15:23:57

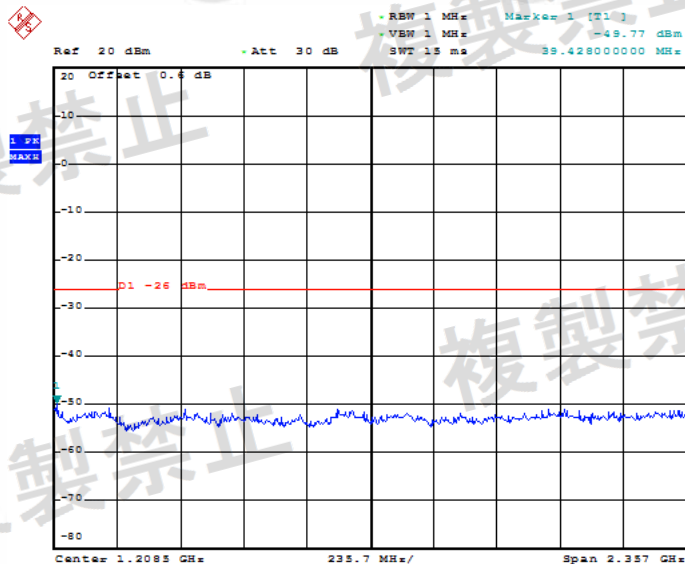


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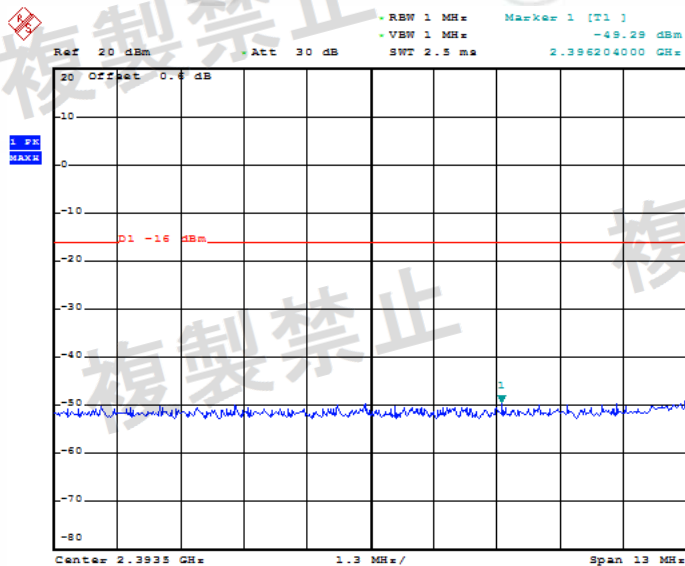
Channel 78 (2.480 GHz)

30MHz-2.387GHz:



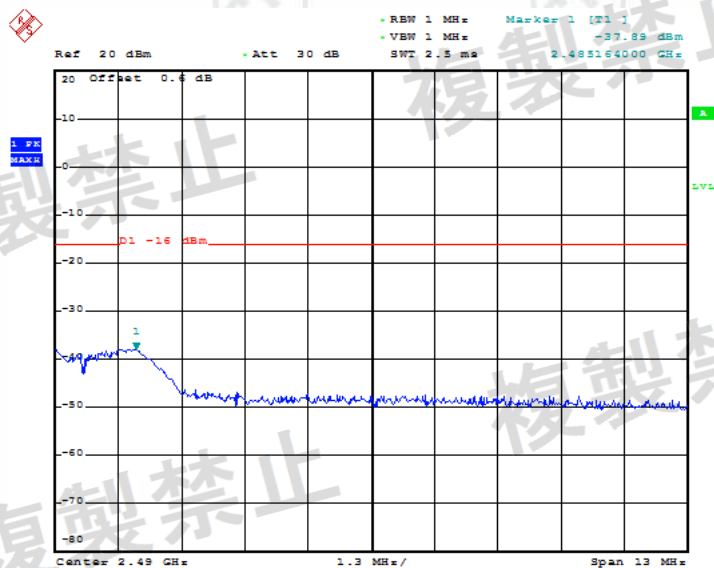
Date: 23.JUL.2019 15:36:21

2.387GHz-2.4GHz:



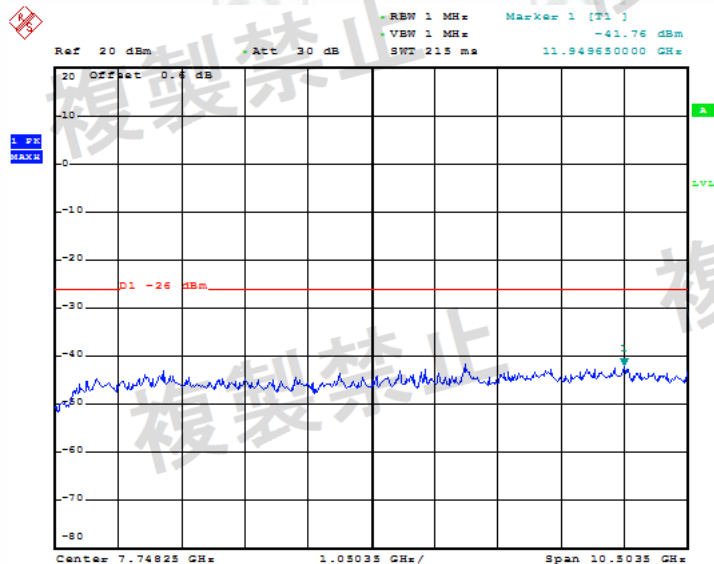
Date: 23.JUL.2019 15:33:04

2.4835GHz-2.4965GHz:



Date: 23.JUL.2019 15:27:11

2.4965GHz-13GHz:



Date: 23.JUL.2019 15:23:25

**Test Result: The unit does meet the requirements.**

### 7.1.8 Dwell Time

<b>Test Requirement:</b>	Item 19 of Article 2 Paragraph 1		
<b>Test Method:</b>	MIC Notice No.88 Appendix No.43		
<b>EUT Operation:</b>			
Ambient:	Temp.: 24°C	Humid.: 65%	Press.: 1010mbar
<b>Test Status:</b>	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below. Modulation/Spread/Hopping ON, Hopping frequency is fixed, Bluetooth equipment is setting DH5 mode		
<b>Test Configuration:</b>	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">EUT</div> <div style="font-size: 24px; margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 5px; margin-left: 10px;">Spectrum Analyzer</div> </div>		
<b>EUT conditions:</b>	Modulation/Spread/Hopping ON, Hopping frequency is fixed, Bluetooth equipment is setting DH5 mode For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.		
<b>Spectrum Analyzer conditions:</b>	Frequency: Test Frequency (fixed hopping frequency) Span 0 Hz RBW 1 MHz VBW 1 MHz Sweep Time EUT condition Trigger Video Trigger Measures the Transmission time of 1 burst (sec) Measures the Burst cycle (sec)		
<b>Calculation procedure :</b>	Dwell time = (0.4(s) x [spreading rate] x [Transmission time of 1 burst(s)]) / ([burst cycle(s)] x [No. of hopping channel]) Note: * Spreading rate = [Spread bandwidth (actual measurement value)] / [Transmission rate]		
<b>Technical standard:</b>	Less than 0.4 sec		
<b>Test result:</b>	PASS		

**Test Result:**

**GFSK mode:**

Test channel	Test Frequency (MHz)	Test Result			Unit	Limit
		Normal Voltage	High Voltage	Low Voltage		
		AC100V/50Hz	N/A	N/A		
Lowest	2402.0	0.39	N/A	N/A	Sec	less than 0.4 sec
Middle	2441.0	0.25	N/A	N/A	Sec	
Highest	2480.0	0.19	N/A	N/A	Sec	

**Remark:** Calculated method: Dwell time=(0.4(s) x [spreading rate] x [Transmission time of 1 burst(s)])/([burst cycle(s)] x [No. of hopping channel])

Note: Spreading rate=[Spread bandwidth (actual measurement value)]/[Transmission rate]

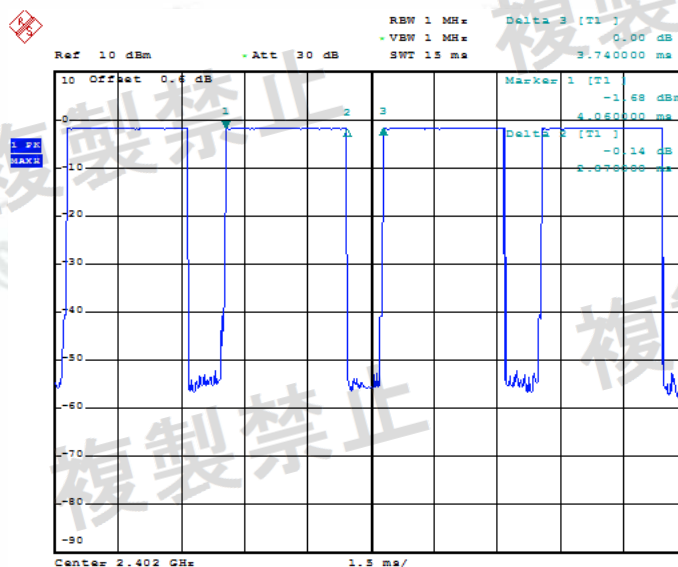
Transmission rate is 1.0 Mbps

**Result plot as follows:**

**Normal Voltage:AC100V/50Hz**

GFSK

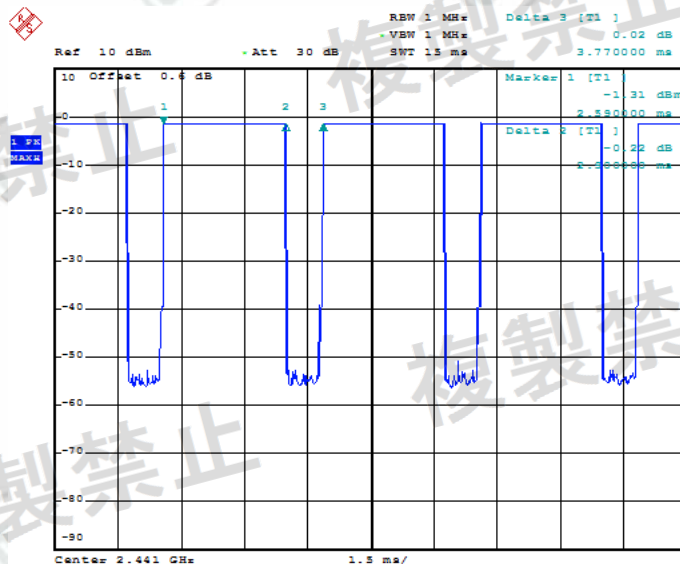
Channel 0 (2.402 GHz)



Date: 22.JUL.2019 17:56:30

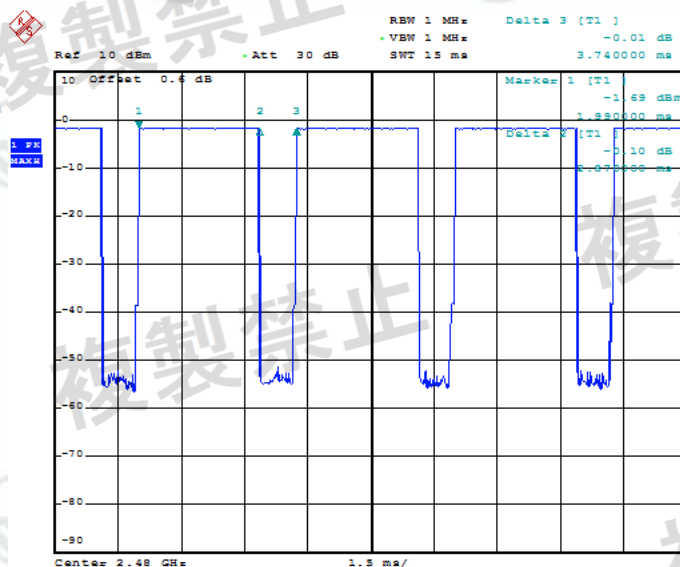


Channel 39 (2.441 GHz)



Date: 22.JUL.2019 17:52:26

Channel 78 (2.480 GHz)



Date: 22.JUL.2019 17:51:27

**( $\pi/4$ )DQPSK mode:**

Test channel	Test Frequency (MHz)	Test Result			Unit	Limit
		Normal Voltage	High Voltage	Low Voltage		
		AC100V/50Hz	N/A	N/A		
Lowest	2402.0	0.28	N/A	N/A	Sec	less than 0.4 sec
Middle	2441.0	0.38	N/A	N/A	Sec	
Highest	2480.0	0.24	N/A	N/A	Sec	

**Remark:** Calculated method: Dwell time=(0.4(s) x [spreading rate] x [Transmission time of 1 burst(s)])/([burst cycle(s)] x [No. of hopping channel])

Note: Spreading rate=[Spread bandwidth (actual measurement value)]/[Transmission rate]

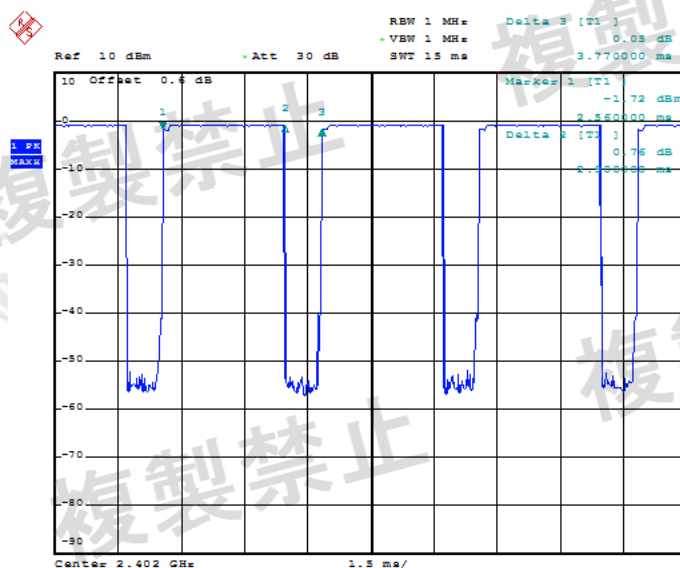
Transmission rate is 2.0 Mbps

**Result plot as follows:**

**Normal Voltage: AC100V/50Hz**

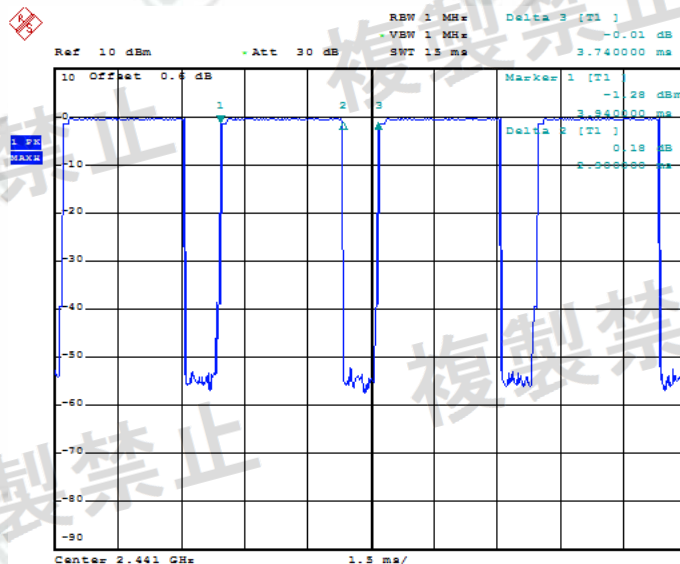
**( $\pi/4$ )DQPSK**

Channel 0 (2.402 GHz)



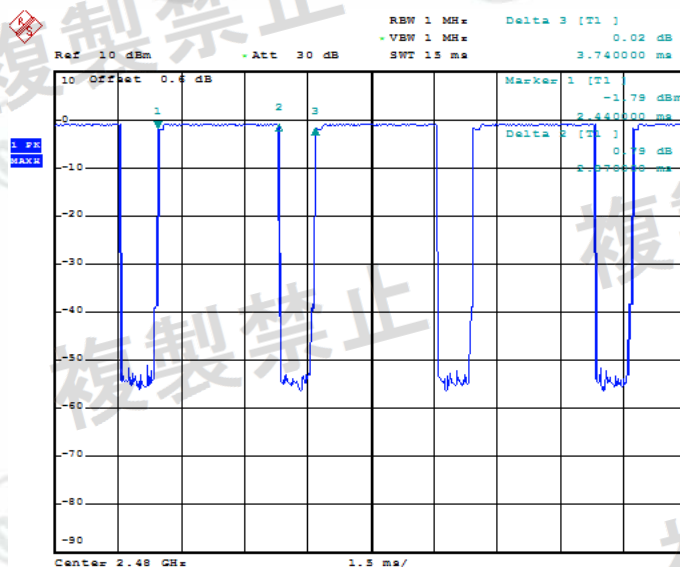
Date: 22.JUL.2019 17:55:50

Channel 39 (2.441 GHz)



Date: 22.JUL.2019 17:53:18

Channel 78 (2.480 GHz)



Date: 22.JUL.2019 17:50:25

**8DPSK mode:**

Test channel	Test Frequency (MHz)	Test Result			Unit	Limit
		Normal Voltage	High Voltage	Low Voltage		
		AC100V/50Hz	N/A	N/A		
Lowest	2402.0	0.13	N/A	N/A	Sec	less than 0.4 sec
Middle	2441.0	0.35	N/A	N/A	Sec	
Highest	2480.0	0.41	N/A	N/A	Sec	

**Remark:** Calculated method: Dwell time=(0.4(s) x [spreading rate] x [Transmission time of 1 burst(s)])/([burst cycle(s)] x [No. of hopping channel])

Note: Spreading rate=[Spread bandwidth (actual measurement value)]/[Transmission rate]

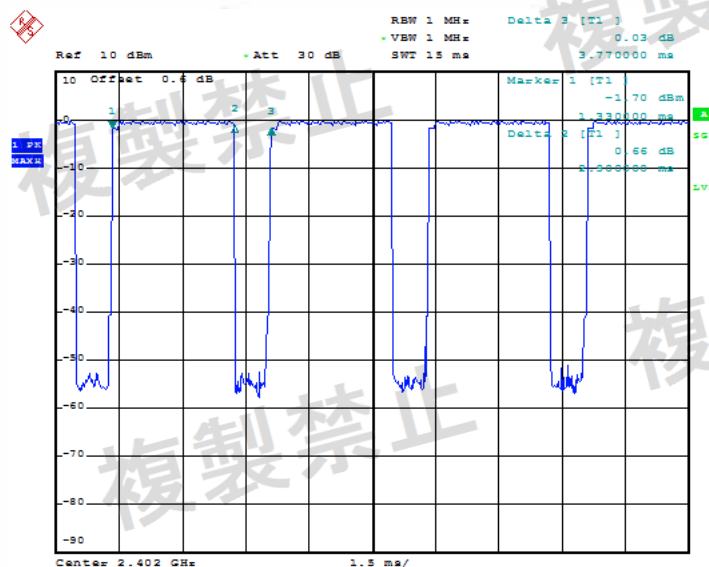
Transmission rate is 3.0 Mbps

**Result plot as follows:**

**Normal Voltage:AC100V/50Hz**

## 8DPSK

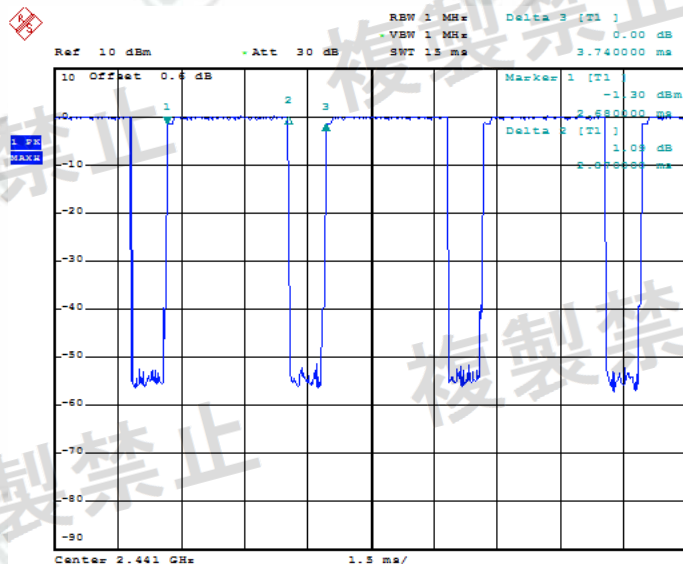
Channel 0 (2.402 GHz)



Date: 22.JUL.2019 17:55:08

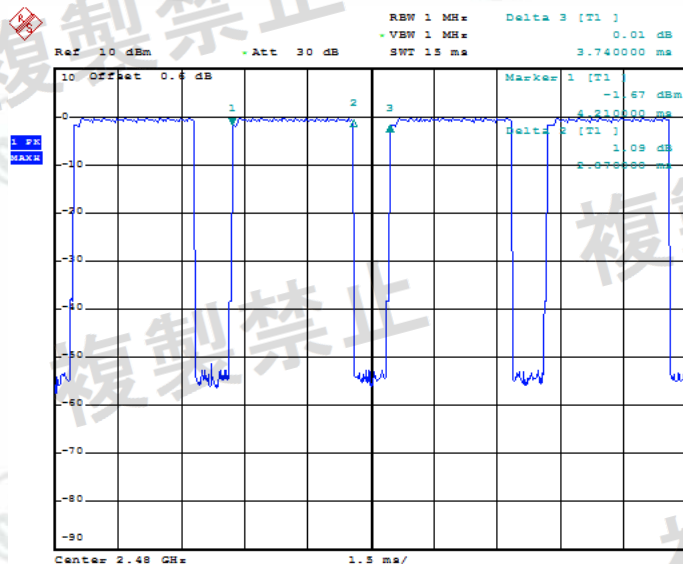


Channel 39 (2.441 GHz)



Date: 22.JUL.2019 17:54:06

Channel 78 (2.480 GHz)



Date: 22.JUL.2019 17:49:24

**Test Result: The unit does meet the requirements.**

### 7.1.9 Pseudorandom Frequency Hopping Sequence

Standard requirement

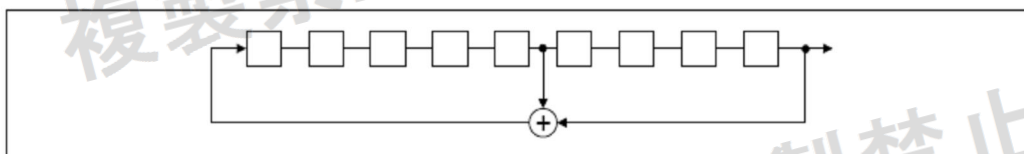
Article 2, Item (19) Notice 88 Appendix 43, 44, 45 requirement:

The EUT shall have the capability to transmit or to receive the MAC identification automatically, so that sender and receiver shall exclude other equipment.

EUT Pseudorandom Frequency Hopping Sequence

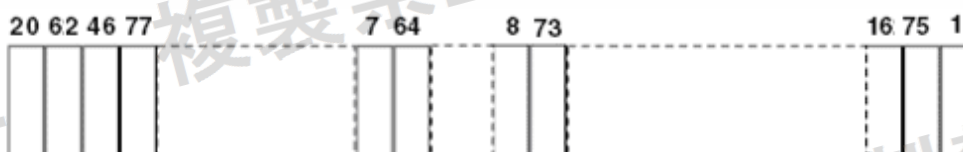
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. and the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONES; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence:  $2^9 - 1 = 511$  bits
- Longest sequence of zeros: 8 (non-inverted signal)



*Linear Feedback Shift Register for Generation of the PRBS sequence*

An example of Pseudorandom Frequency Hopping Sequence as follow:



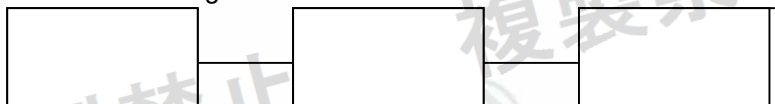
Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

### 7.1.10 Interference prevention function

1) Measurement system diagram

(1) When transmitting identification code



2) Condition of measuring instrument

(1) Demodulator must be able to demodulate the transmitting signal emitted by test equipment and to indicate the identification code.

3) Condition of test equipment The mode of normal use.

4) Measuring operation procedure

(1) When test equipment has the function to transmit identification code automatically:

A) Transmit the predetermined identification code from test equipment.

B) Confirm the transmitted identification code by demodulator.

50-76-AF-93-20-1F

5) Test result: The unit does meet the requirements (Good).

Test result: PASS

### 7.1.11 RF accessibility

#### Standard requirement

Article 49-20, paragraph 1 (a)

The EUT shall be constructed in such a way that sensitive RF parts, (like modulation and oscillator parts) cannot be reached easily by the user. These parts shall be covered by soldered metal caps or glue or by other mechanical covers. If the covers are fixed with screws, these shall be not the common type(s) like a Phillips, but special versions like Torx, so that the user cannot open the device with common tools.

<input type="checkbox"/>	Sealed with special screws.
<input type="checkbox"/>	Plastic chassis is being welded using ultrasonic waves.
<input type="checkbox"/>	Chassis is glued using a special adhesive.
<input type="checkbox"/>	Metal covers are spot-fused.
<input type="checkbox"/>	Cover is specially interlocked.
<input checked="" type="checkbox"/>	RF and Modulation components are covered with shielding case and this shielding case is soldered.
<input type="checkbox"/>	Shield case is welded at RF and modulation parts, and ID-ROM is welded using the BGA Method.
<input type="checkbox"/>	Shield case is welded at RF and modulation parts, and ID-ROM is glued at its lead with a special adhesive.
<input type="checkbox"/>	Shield case is welded at RF and modulation parts, and ID-ROM is glued with anon-transparent laminating agent.
<input type="checkbox"/>	RF and Modulation parts are mounted on PCB with surface mount technology, and there is no any adjustable parts on PCB or adjustable parts are not exposed.



## 7.2 Receiver Requirements

### 7.2.1 Spurious Emissions of Rx

<b>Test Requirement:</b>	Item 19 of Article 2 Paragraph 1		
<b>Test Method:</b>	MIC Notice No.88 Appendix No.43		
<b>EUT Operation:</b>			
<b>Ambient:</b>	Temp.: 24°C	Humid.: 65%	Press.: 1010mbar
<b>Test Status:</b>	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.		
<b>Test Configuration:</b>	 <pre> graph LR     EUT[EUT] --&gt; SA[Spectrum Analyzer]             </pre>		
<b>EUT conditions:</b>	Rx		
<b>Measurement Procedure:</b>	Step 1 All spurious are measured from 30 MHz to 13 GHz by peak mode. Step 2 IF the value measured by Step1 is 2 dB or less, measure in average mode.		
<b>Spectrum Analyzer conditions(Step 1):</b>	Frequency: 30 MHz – 2400 MHz , 2483.5 MHz –13 GHz RBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz) VBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz) Sweep Time Auto detector mode Positive peak Indication mode Max hold		
<b>Spectrum Analyzer Conditions( Step 2):</b>	Frequency: Spurious Frequency Span 0 Hz RBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz) VBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz) Sweep Time Auto detector mode Sample Indication mode Max hold		
<b>Technical standard:</b>	(1) Below 1 GHz : 4 nW or less (2) 1 GHz and over : 20 nW or less		
<b>Test result:</b>	PASS		

**Test Result:**

**GFSK:**

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
79 channels (2402 MHz)	Frequency (MHz)	Level (dBm)	Frequency( MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 1 GHz :-54dBm (2) 1 GHz to 13 GHz : -47dBm
	212.360	-68.31	N/A	N/A	N/A	N/A		
	9328.000	-62.52	N/A	N/A	N/A	N/A		
79 channels (2441 MHz)	39.700	-72.47	N/A	N/A	N/A	N/A	dBm	(1) Below 1 GHz :-54dBm (2) 1 GHz to 13 GHz : -47dBm
	10792.000	-61.52	N/A	N/A	N/A	N/A		
79 channels (2480 MHz)	542.160	-67.96	N/A	N/A	N/A	N/A	dBm	(1) Below 1 GHz :-54dBm (2) 1 GHz to 13 GHz : -47dBm
	9304.000	-62.40	N/A	N/A	N/A	N/A		

**( $\pi/4$ )DQPSK:**

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
79 channels (2402 MHz)	Frequency (MHz)	Level (dBm)	Frequency( MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 1 GHz :-54dBm (2) 1 GHz to 13 GHz : -47dBm
	621.700	-67.73	N/A	N/A	N/A	N/A		
	9376.000	-63.33	N/A	N/A	N/A	N/A		
79 channels (2441 MHz)	904.940	-68.11	N/A	N/A	N/A	N/A	dBm	(1) Below 1 GHz :-54dBm (2) 1 GHz to 13 GHz : -47dBm
	9280.000	-62.72	N/A	N/A	N/A	N/A		
79 channels (2480 MHz)	222.060	-68.44	N/A	N/A	N/A	N/A	dBm	(1) Below 1 GHz :-54dBm (2) 1 GHz to 13 GHz : -47dBm
	10120.000	-63.26	N/A	N/A	N/A	N/A		

**8DPSK:**

Test channel	Test Result						Unit	Limit
	Normal Voltage		High Voltage		Low Voltage			
	AC100V/50Hz		N/A		N/A			
79 channels (2402 MHz)	Frequency (MHz)	Level (dBm)	Frequency( MHz)	Level (dBm)	Frequency (MHz)	Level (dBm)	dBm	(1) Below 1 GHz :-54dBm (2) 1 GHz to 13 GHz : -47dBm
	955.380	-68.69	N/A	N/A	N/A	N/A		
	12616.000	-62.87	N/A	N/A	N/A	N/A		
79 channels (2441 MHz)	332.640	-68.47	N/A	N/A	N/A	N/A	dBm	(1) Below 1 GHz :-54dBm (2) 1 GHz to 13 GHz : -47dBm
	12400.000	-62.40	N/A	N/A	N/A	N/A		
79 channels (2480 MHz)	753.620	-69.16	N/A	N/A	N/A	N/A	dBm	(1) Below 1 GHz :-54dBm (2) 1 GHz to 13 GHz : -47dBm
	11728.000	-63.34	N/A	N/A	N/A	N/A		



Report No.: EED32L00176302

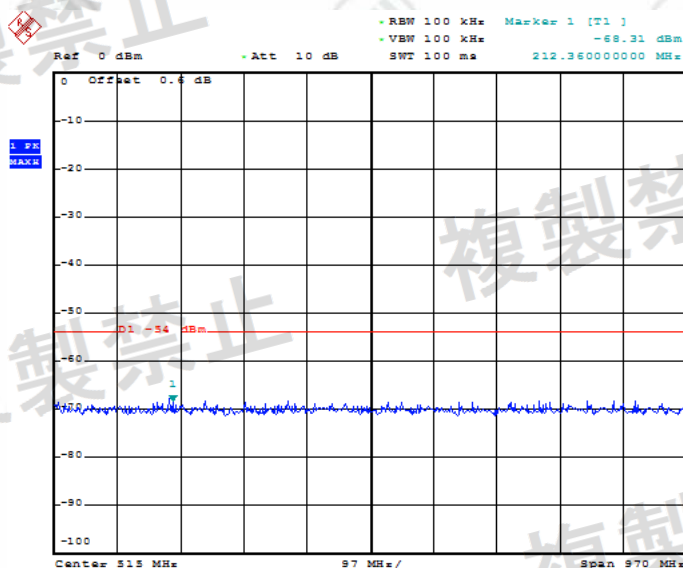
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Result plot as follows:

GFSK (Normal Voltage AC100V/50Hz)

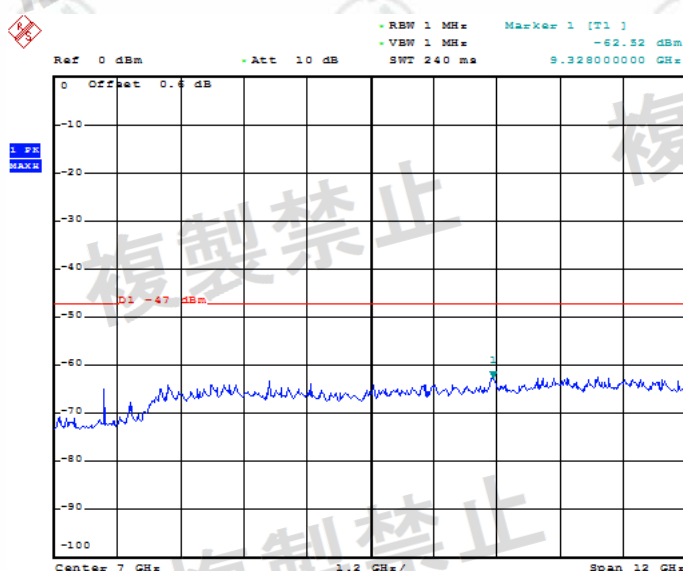
Channel 79: 2402MHz

30MHz-1GHz



Date: 22.JUL.2019 18:15:17

1GHz -13GHz



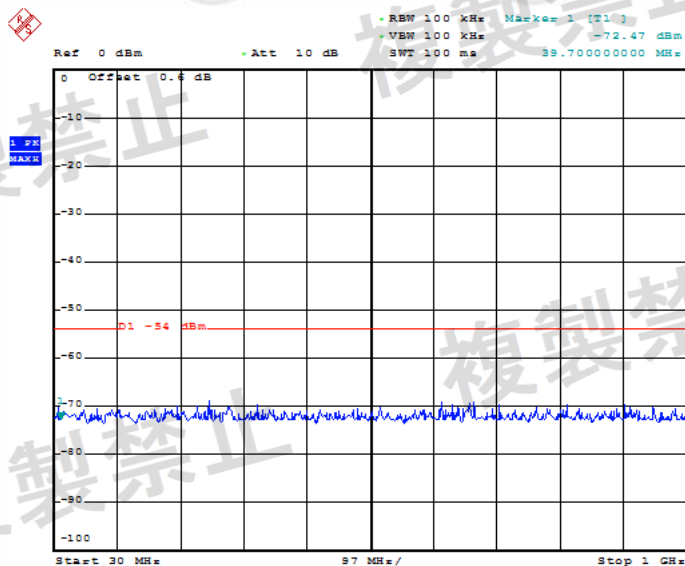
Date: 22.JUL.2019 18:41:30



Report No.: EED32L00176302

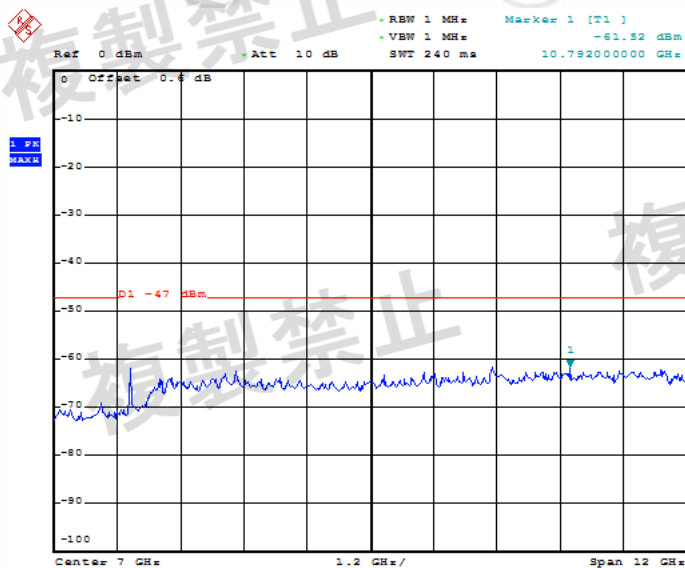
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Channel 79: 2441MHz  
30MHz-1GHz



Date: 22.JUL.2019 18:14:26

1GHz -13GHz

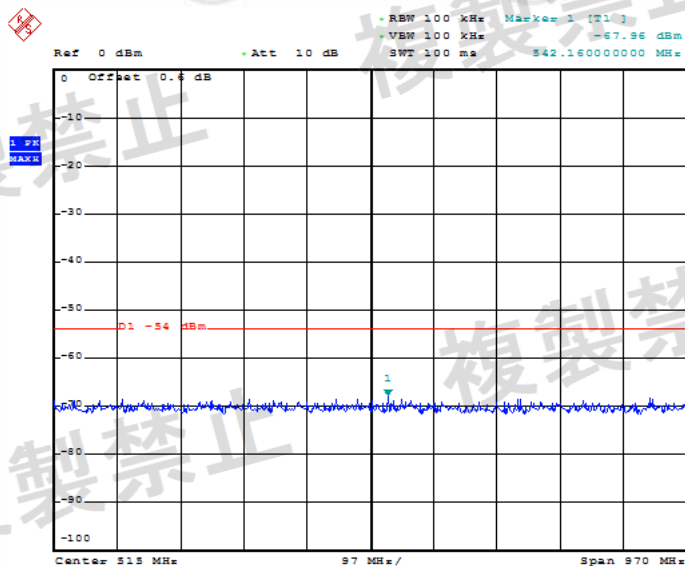


Date: 22.JUL.2019 18:41:03

Report No.: EED32L00176302

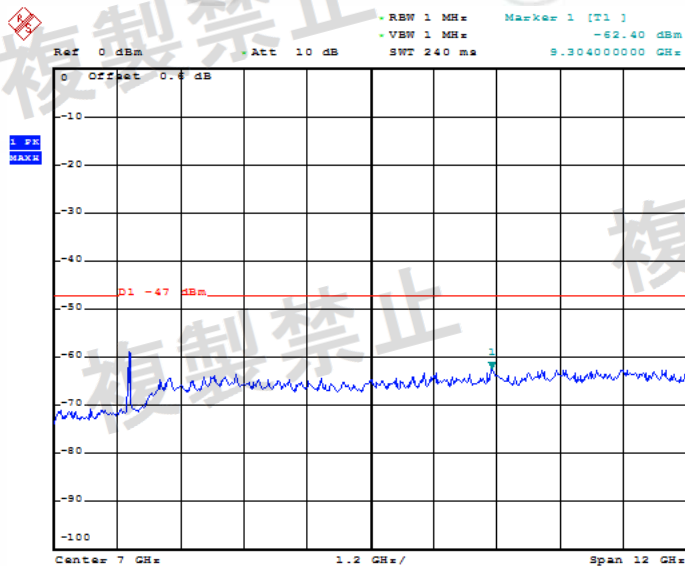
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Channel 79: 2480MHz  
30MHz-1GHz



Date: 22.JUL.2019 18:15:45

1GHz -13GHz



Date: 22.JUL.2019 18:36:56

Report No.: EED32L00176302

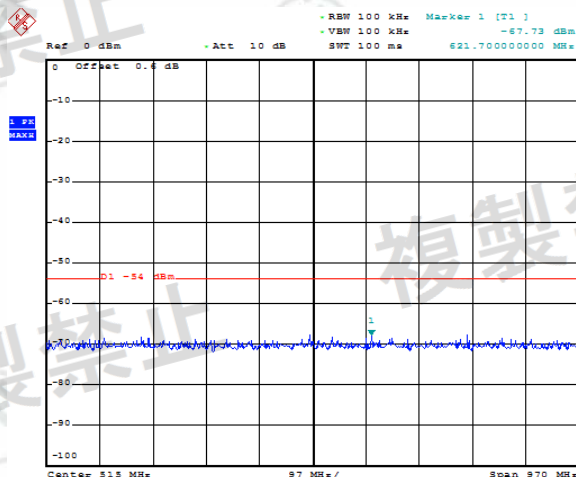
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Result plot as follows:

( $\pi/4$ ) DQPSK (AC100V/50Hz)

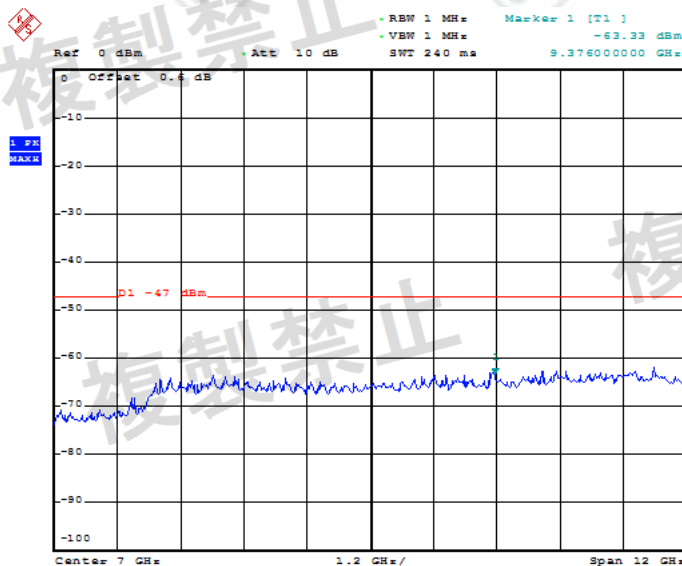
Channel 79: 2402MHz

30MHz-1GHz



Date: 22.JUL.2019 18:17:40

1GHz -13GHz

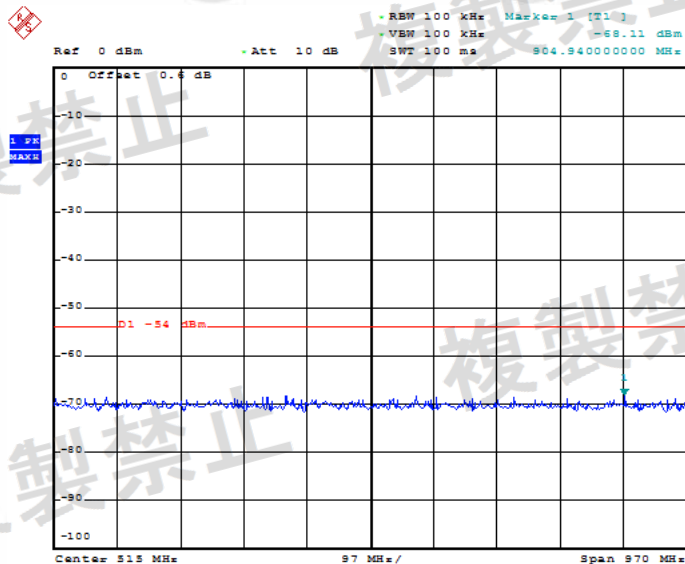


Date: 22.JUL.2019 18:24:14

Report No.: EED32L00176302

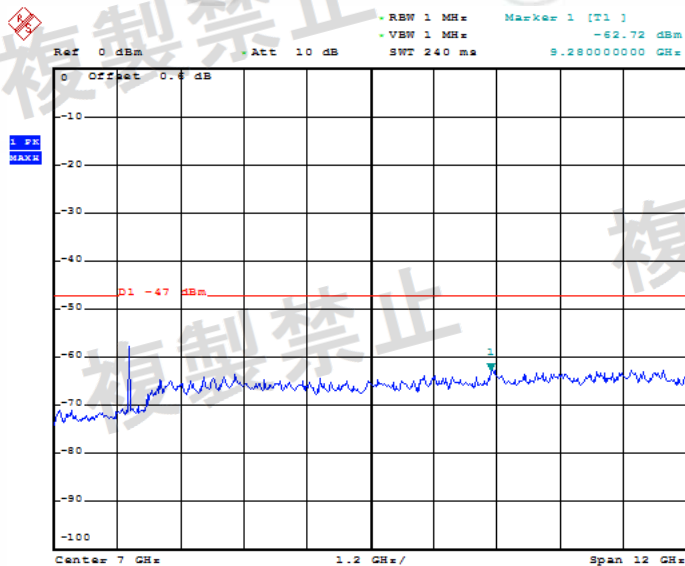
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Channel 79: 2441MHz  
30MHz-1GHz



Date: 22.JUL.2019 18:17:04

1GHz -13GHz



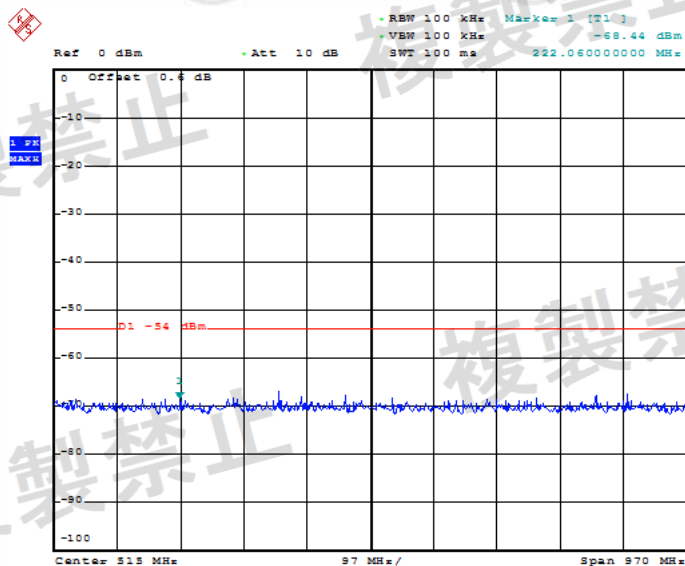
Date: 22.JUL.2019 18:28:28



Report No.: EED32L00176302

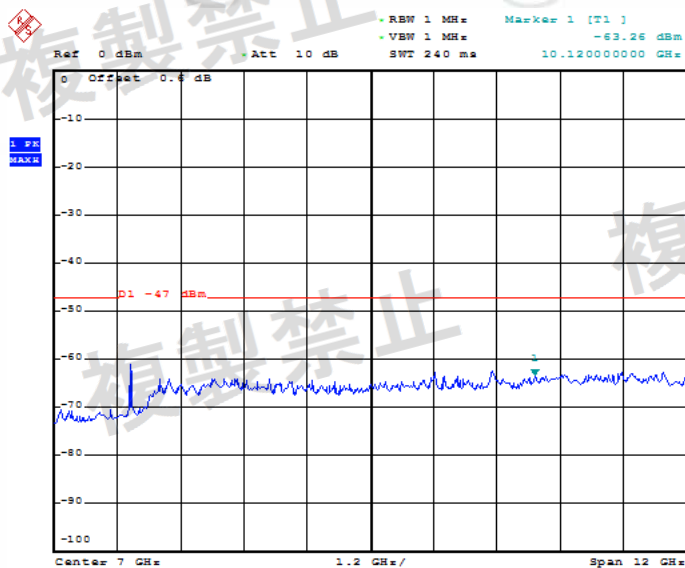
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Channel 79: 2480MHz  
30MHz-1GHz



Date: 22.JUL.2019 18:16:27

1GHz -13GHz



Date: 22.JUL.2019 18:36:09

Report No.: EED32L00176302

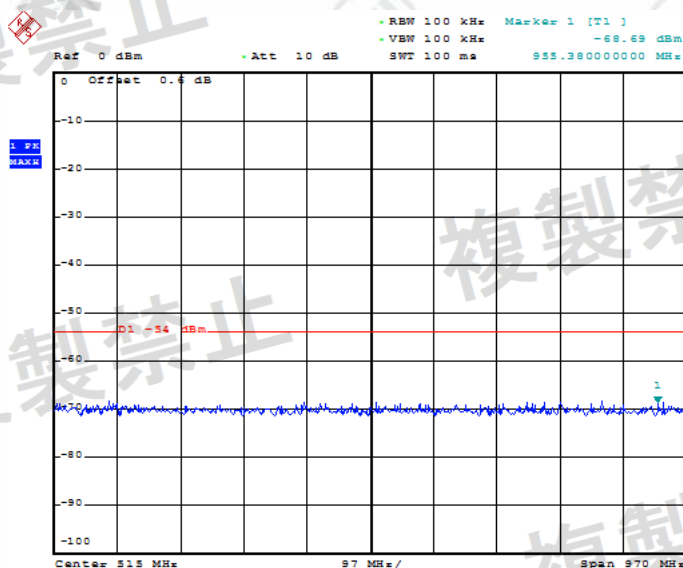
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Result plot as follows:

8DPSK (AC100V/50Hz)

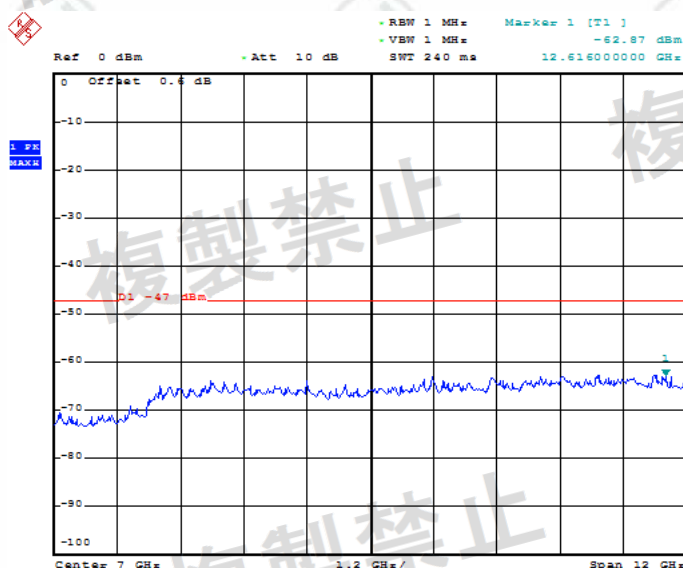
Channel 79: 2402MHz

30MHz-1GHz



Date: 22.JUL.2019 18:18:23

1GHz -13GHz

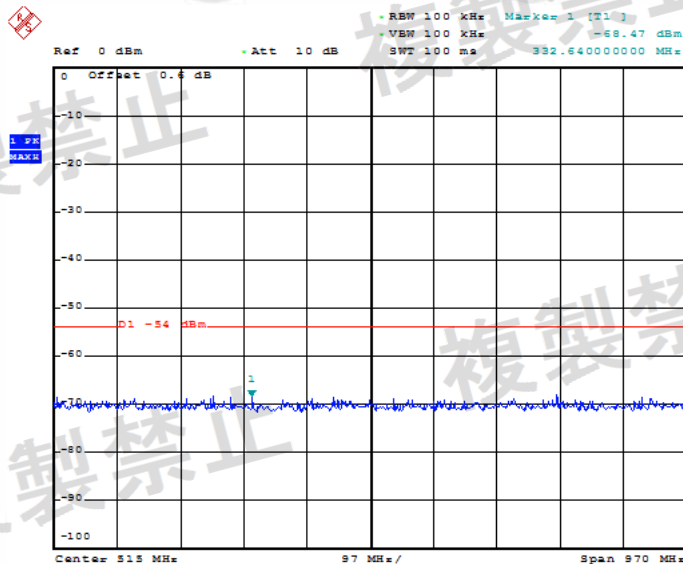


Date: 22.JUL.2019 18:23:38

Report No.: EED32L00176302

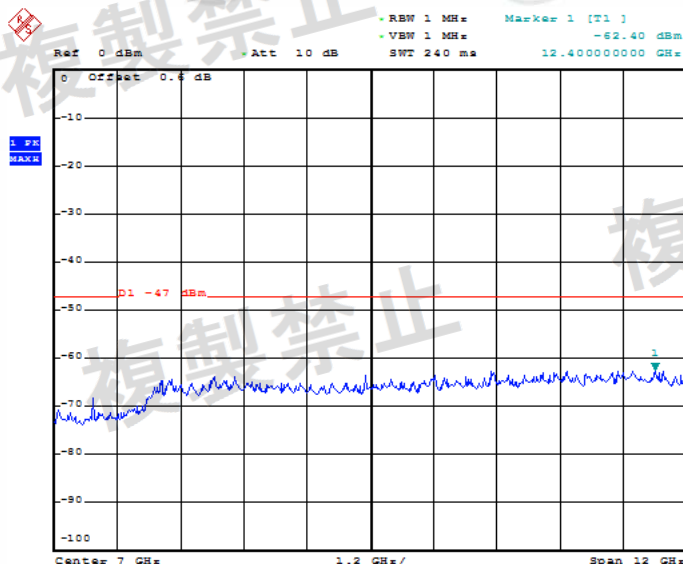
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Channel 79: 2441MHz  
30MHz-1GHz



Date: 22.JUL.2019 18:18:48

1GHz -13GHz

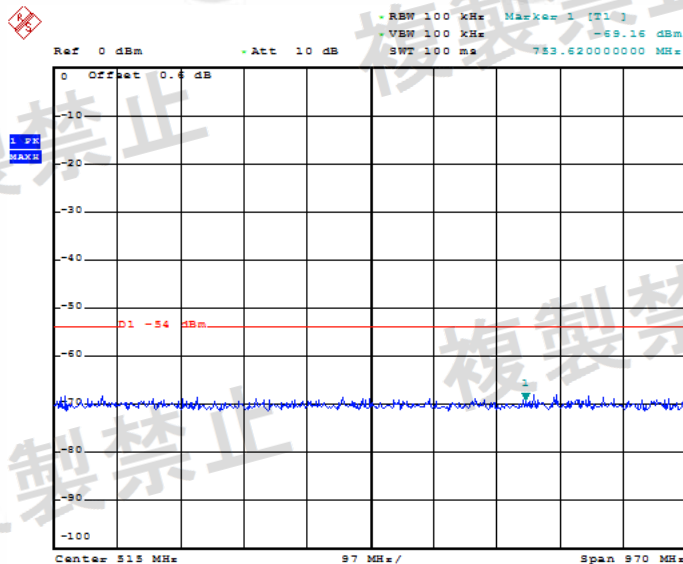


Date: 22.JUL.2019 18:22:56

Report No.: EED32L00176302

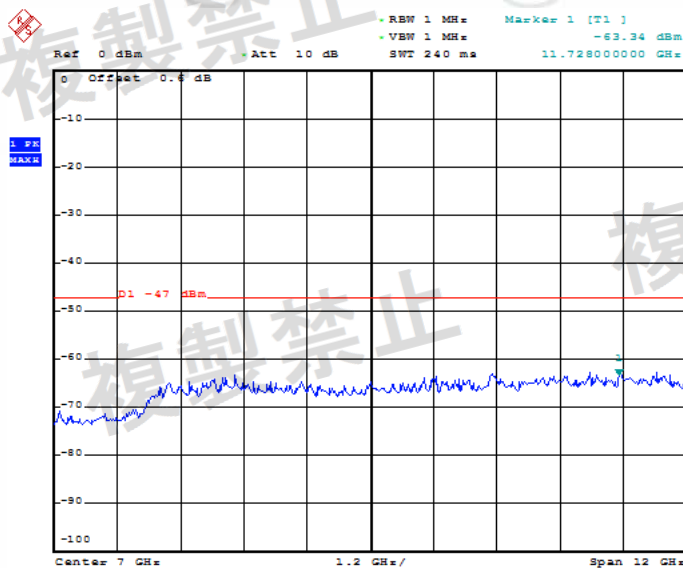
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Channel 79: 2480MHz  
30MHz-1GHz



Date: 22.JUL.2019 18:19:22

1GHz -13GHz



Date: 22.JUL.2019 18:22:17



## 8 Photographs

### 8.1 EUT Test Setup (test model No.: CWI510)



### 8.2 EUT Constructional Details

Refer to Report No. EED32L00176301 for EUT external and internal photos.

\*\*\* End of Report \*\*\*

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