

FCC Part 15.247

Test Information:

Serial No.:	2ES3-3	Test Date:	2024-01-04~2024-01-15
Test Site:	RF	Test Mode:	Transmitting
Tester:	Lingling Li	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.5-26.5	Relative Humidity: (%)	57-59	ATM Pressure: (kPa)	101.1-101.5
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	100147	2023-03-31	2024-03-30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

20 dB Emission Bandwidth**BDR**

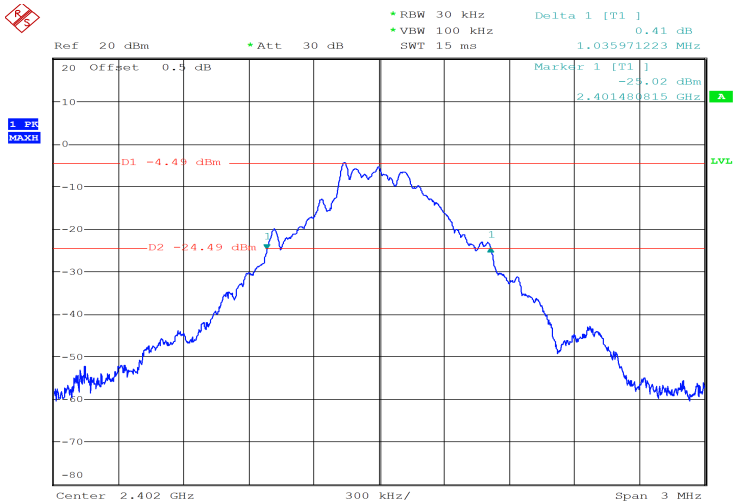
Mode	Value (MHz)	Result
GFSK_Low	1.036	Pass
GFSK_Middle	1.038	Pass
GFSK_High	1.046	Pass

EDR

Mode	Value (MHz)	Result
$\pi/4$ -DQPSK_Low	1.302	Pass
$\pi/4$ -DQPSK_Middle	1.295	Pass
$\pi/4$ -DQPSK_High	1.293	Pass
8DPSK_Low	1.264	Pass
8DPSK_Middle	1.273	Pass
8DPSK_High	1.281	Pass

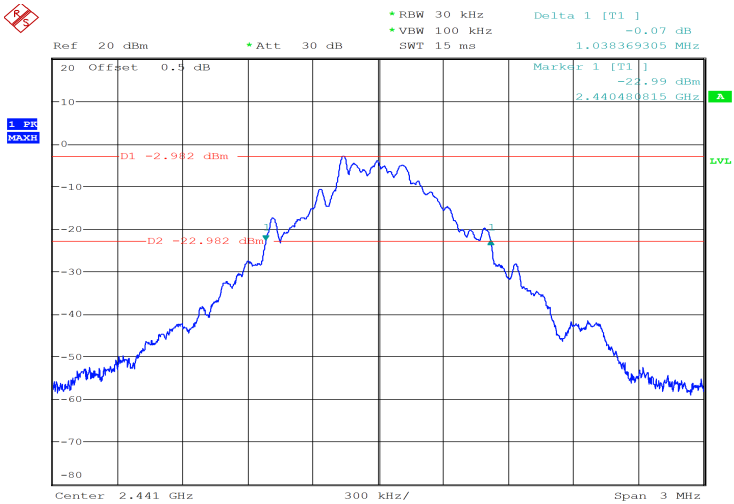
BDR

GFSK_Low 1.036 MHz



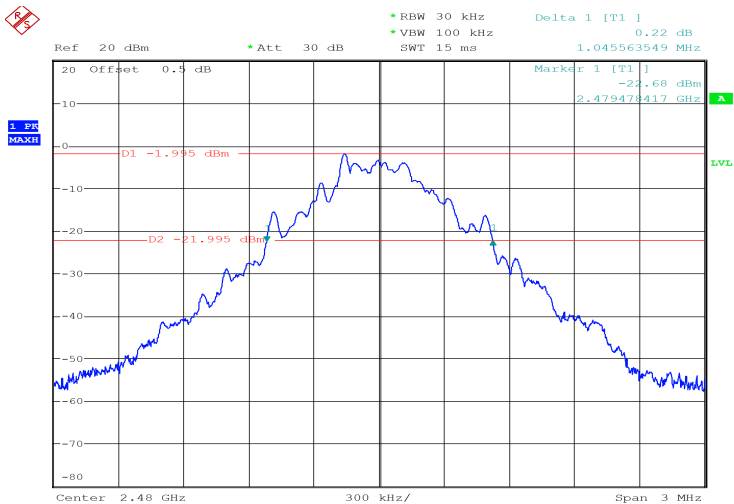
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:05:57

GFSK_Middle 1.038 MHz



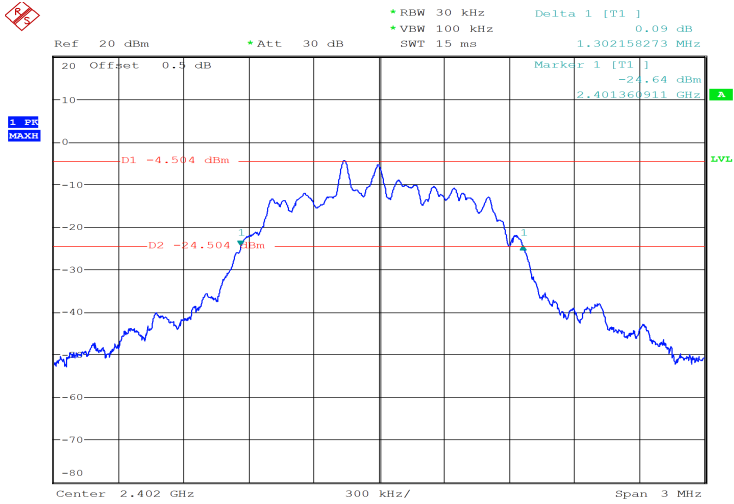
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:08:49

GFSK_High 1.046 MHz

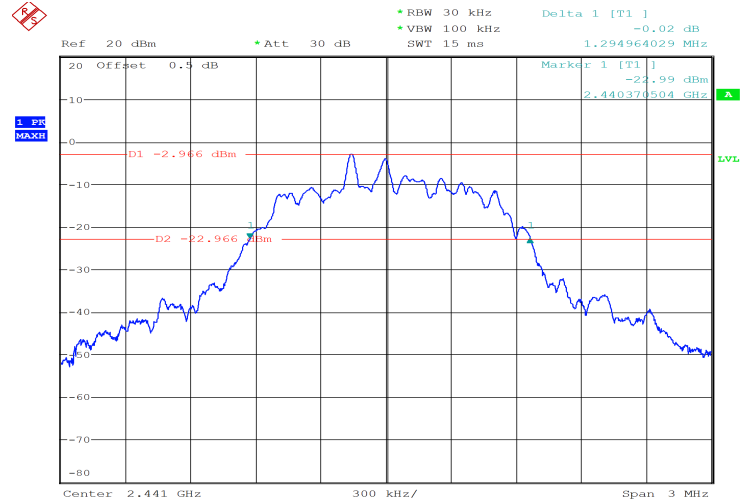


Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:13:51

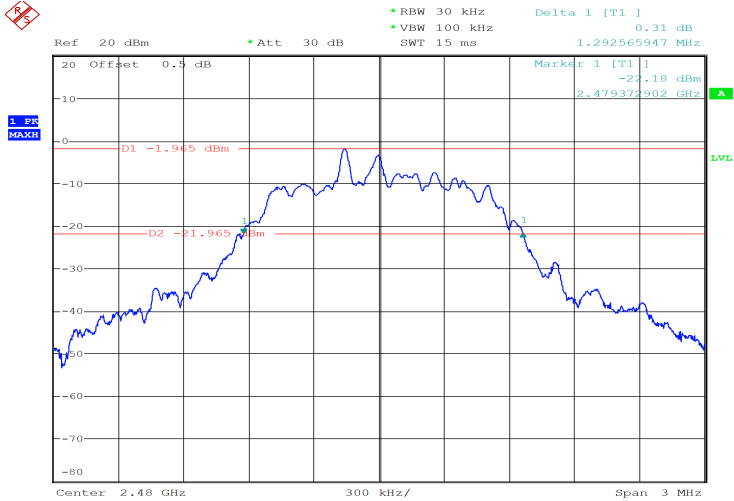
EDR

 $\pi/4$ -DQPSK_Low 1.302 MHz

Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:22:30

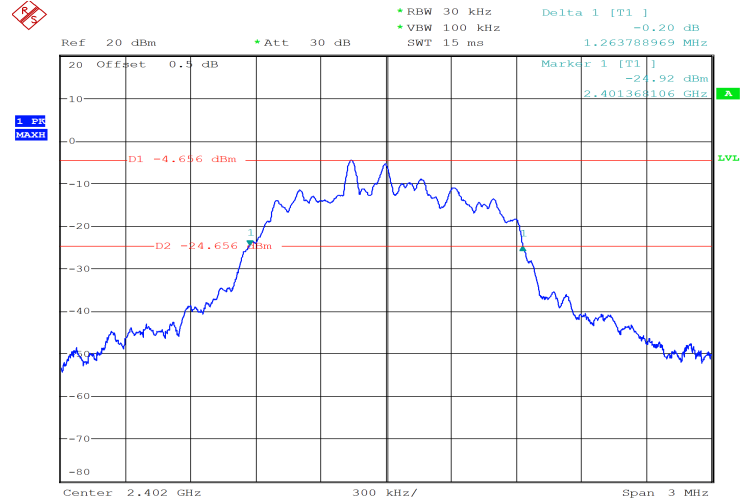
 $\pi/4$ -DQPSK_Middle 1.295 MHz

Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:27:54

 $\pi/4$ -DQPSK_High 1.293 MHz

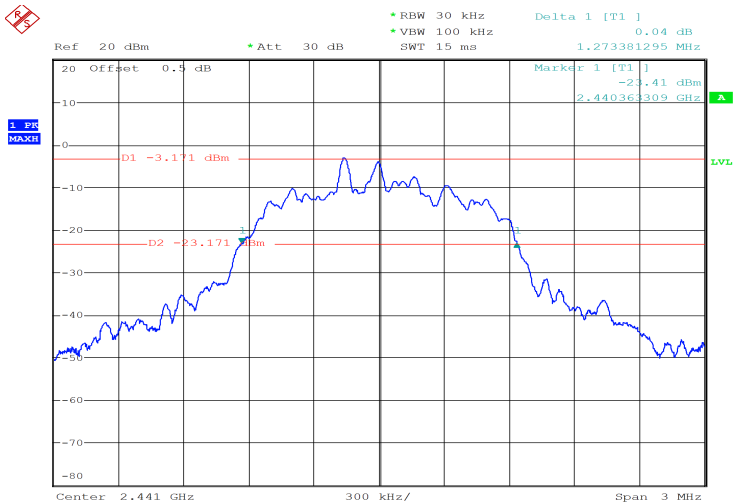
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:31:16

8DPSK_Low 1.264 MHz



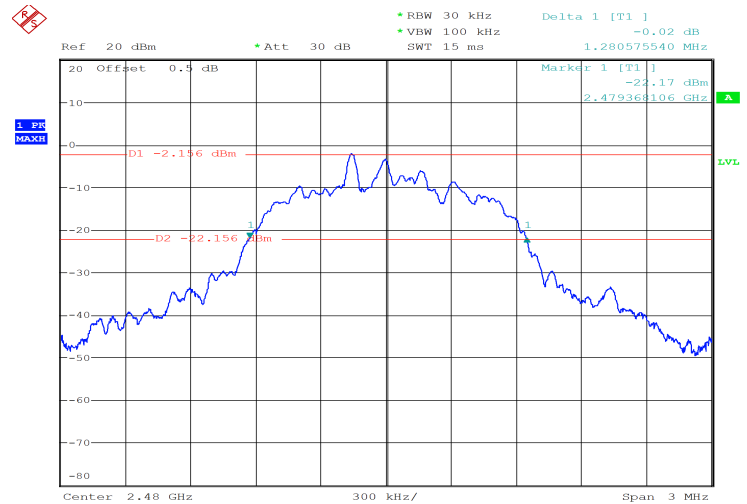
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:37:58

8DPSK_Middle 1.273 MHz



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:40:47

8DPSK_High 1.281 MHz



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:44:23

99% Occupied Bandwidth

BDR

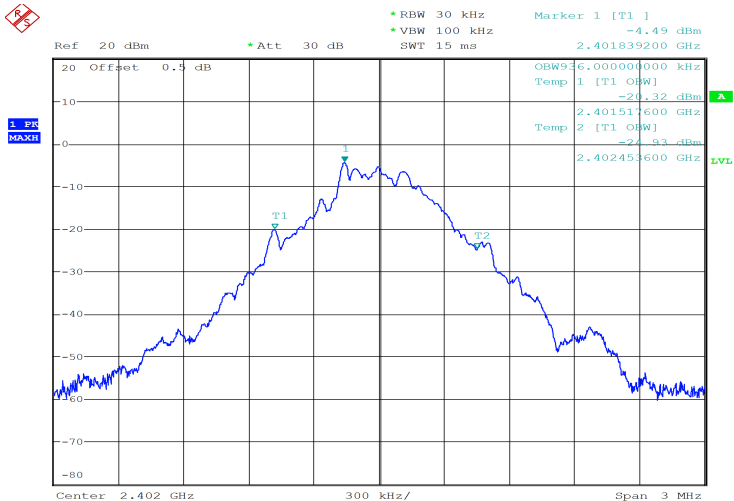
Mode	99% OBW (MHz)
GFSK_Low	0.936
GFSK_Middle	0.970
GFSK_High	0.986

EDR

Mode	99% OBW (MHz)
$\pi/4$ -DQPSK_Low	1.212
$\pi/4$ -DQPSK_Middle	1.222
$\pi/4$ -DQPSK_High	1.238
8DPSK_Low	1.186
8DPSK_Middle	1.195
8DPSK_High	1.210

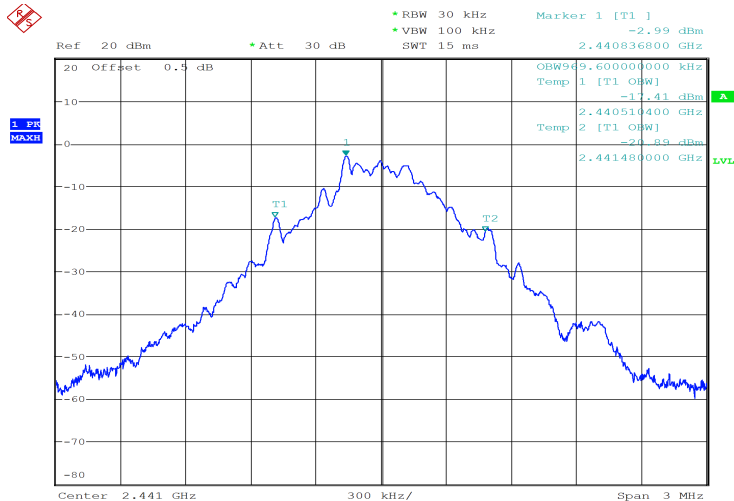
BDR

GFSK_Low 0.936 MHz



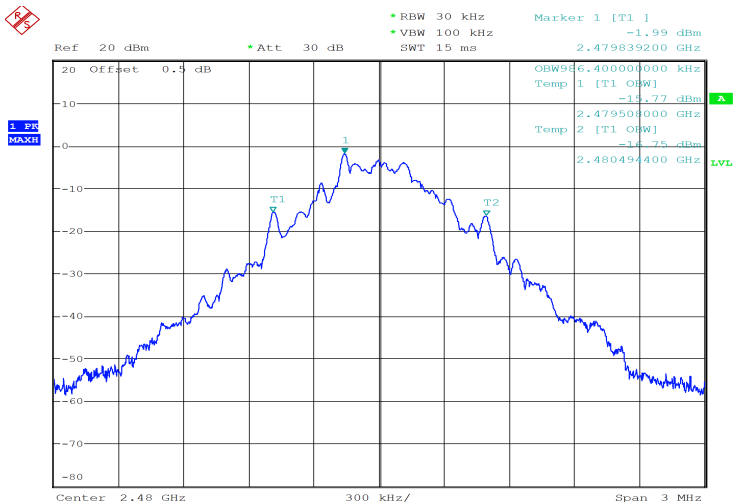
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:06:42

GFSK_Middle 0.970 MHz



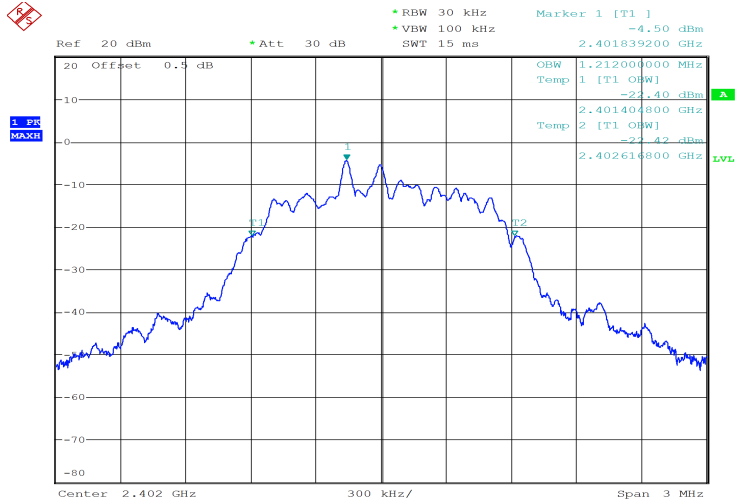
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:09:46

GFSK_High 0.986 MHz

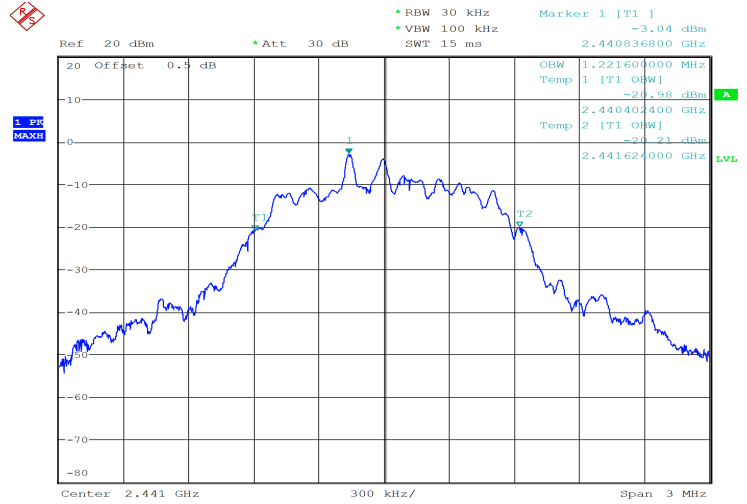


Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:14:22

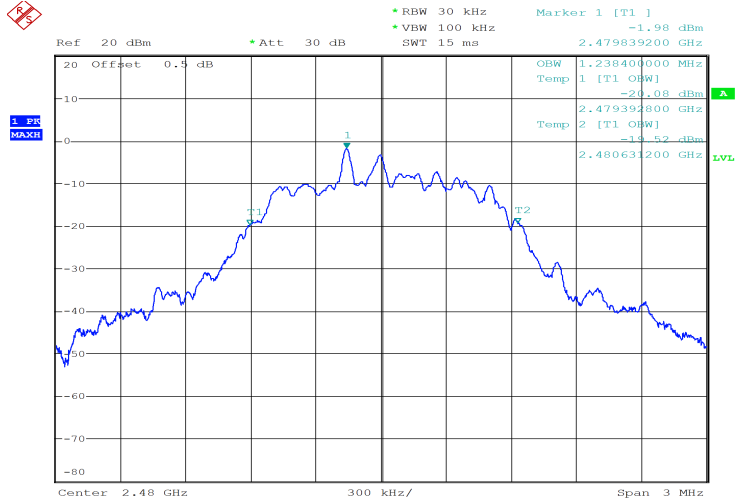
EDR

 $\pi/4$ -DQPSK_Low 1.212 MHz

Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:23:05

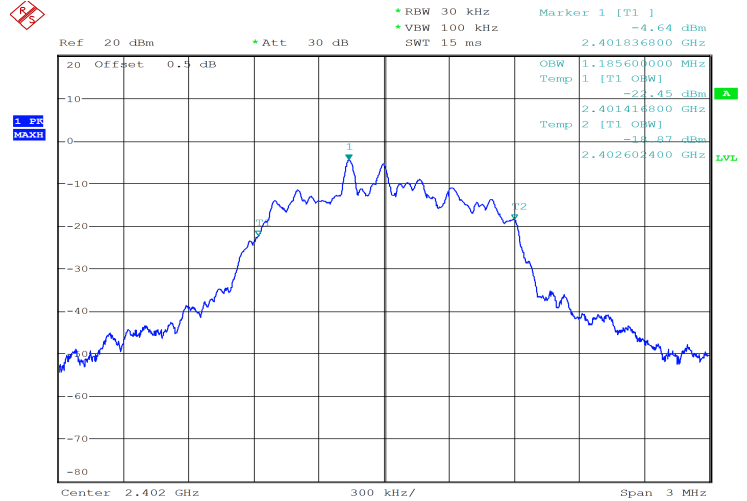
 $\pi/4$ -DQPSK_Middle 1.222 MHz

Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:28:20

 $\pi/4$ -DQPSK_High 1.238 MHz

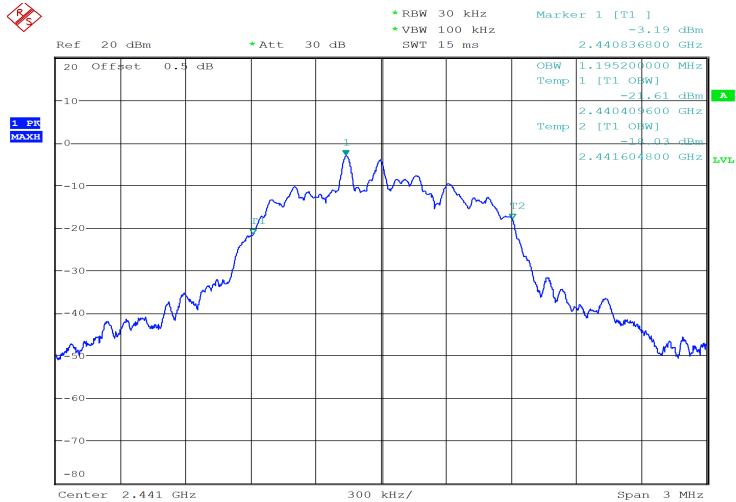
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:31:48

8DPSK_Low 1.186 MHz



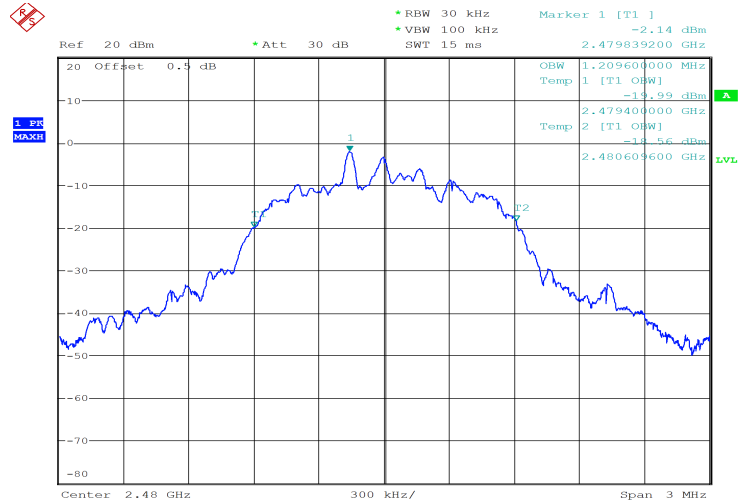
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:38:31

8DPSK_Middle 1.195 MHz



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:41:19

8DPSK_High 1.210 MHz



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:44:57

Channel Separation**BDR**

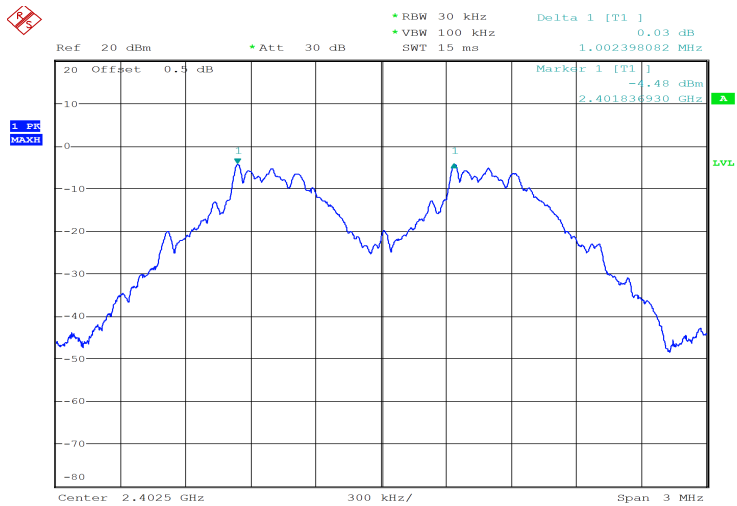
Mode	Value (MHz)	Limit (MHz)	Result
GFSK_Low	1.002	0.691	Pass
GFSK_Middle	1.002	0.692	Pass
GFSK_High	1.002	0.697	Pass

EDR

Mode	Value (MHz)	Limit (MHz)	Result
$\pi/4$ -DQPSK_Low	1.002	0.868	Pass
$\pi/4$ -DQPSK_Middle	1.005	0.863	Pass
$\pi/4$ -DQPSK_High	1.000	0.862	Pass
8DPSK_Low	1.002	0.843	Pass
8DPSK_Middle	1.002	0.849	Pass
8DPSK_High	1.000	0.854	Pass

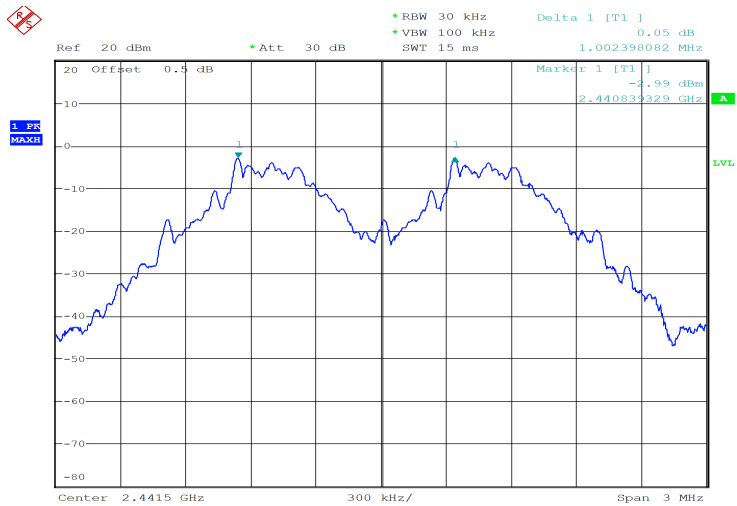
BDR

GFSK_Low 1.002 MHz



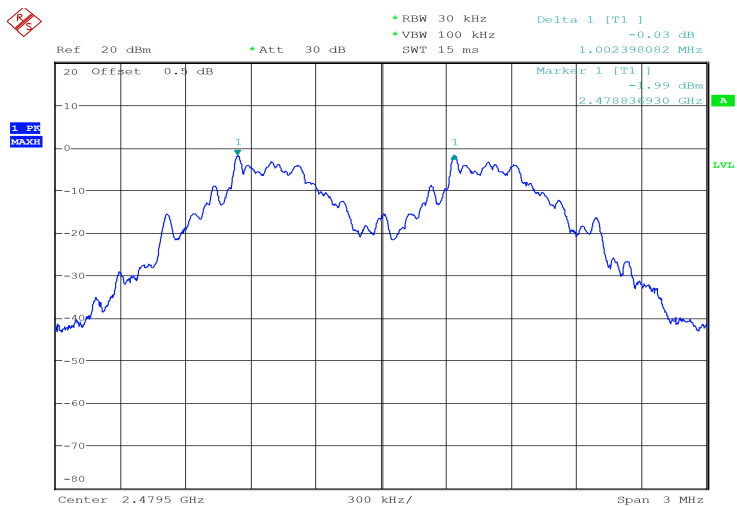
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:07:48

GFSK_Middle 1.002 MHz



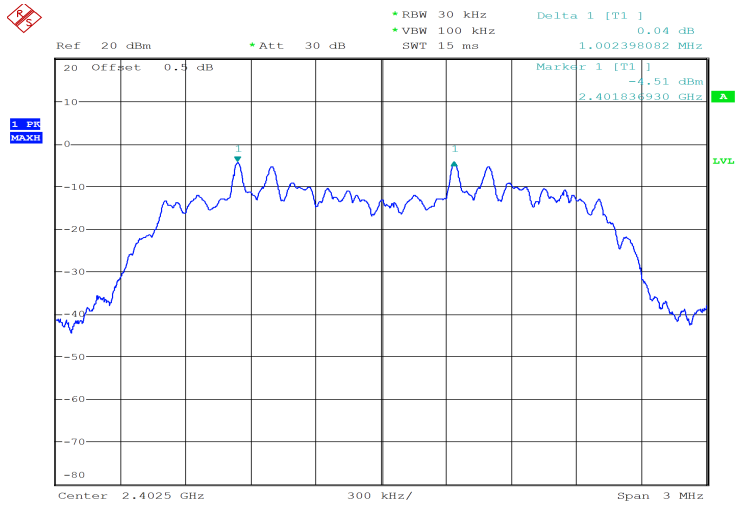
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:10:45

GFSK_High 1.002 MHz

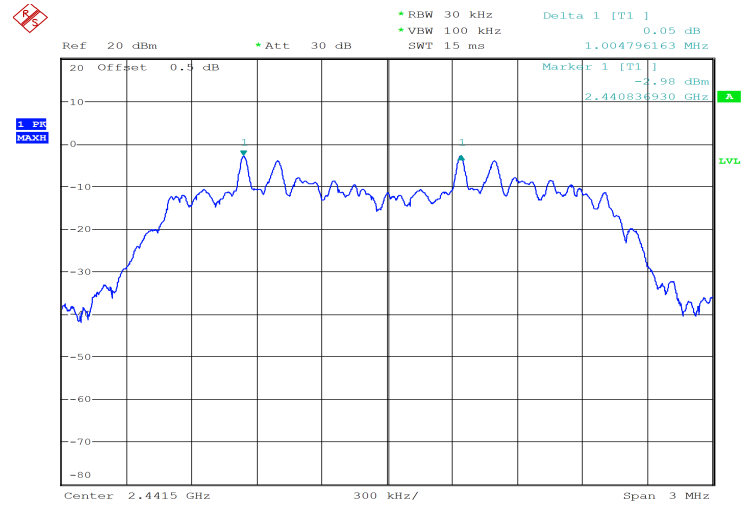


Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:15:15

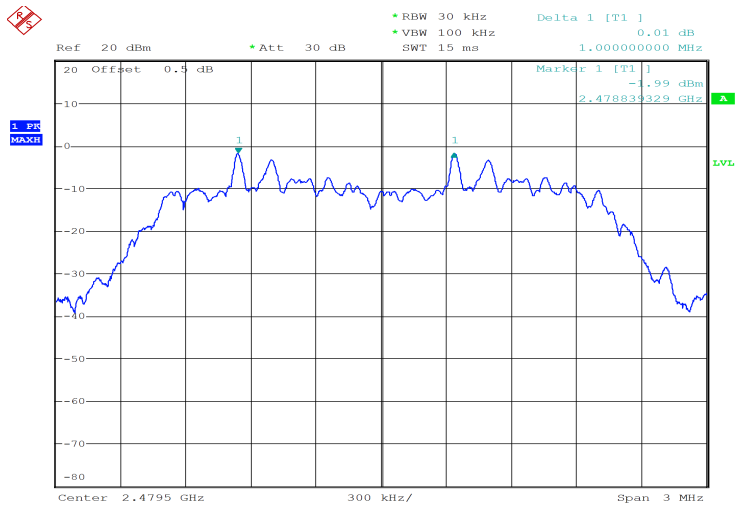
EDR

 $\pi/4$ -DQPSK_Low 1.002 MHz

Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:23:51

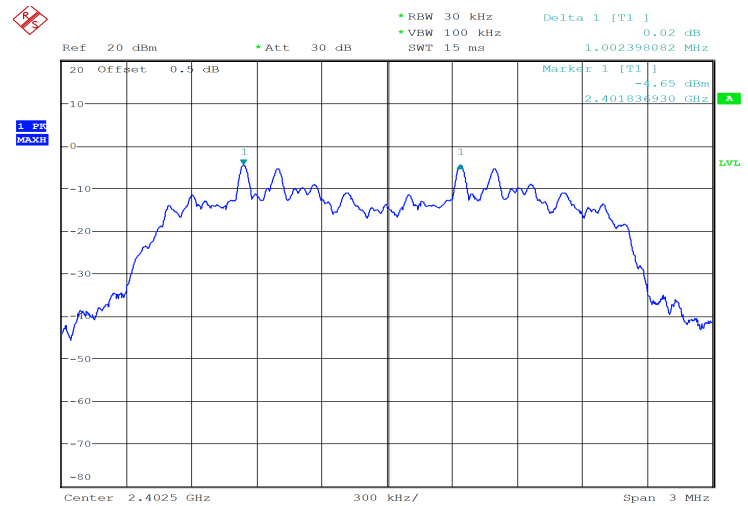
 $\pi/4$ -DQPSK_Middle 1.005 MHz

Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:29:06

 $\pi/4$ -DQPSK_High 1.000 MHz

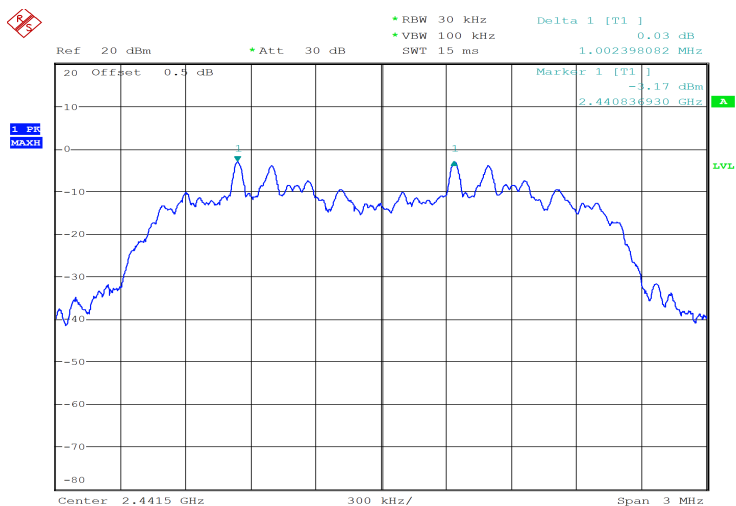
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:32:45

8DPSK_Low 1.002 MHz



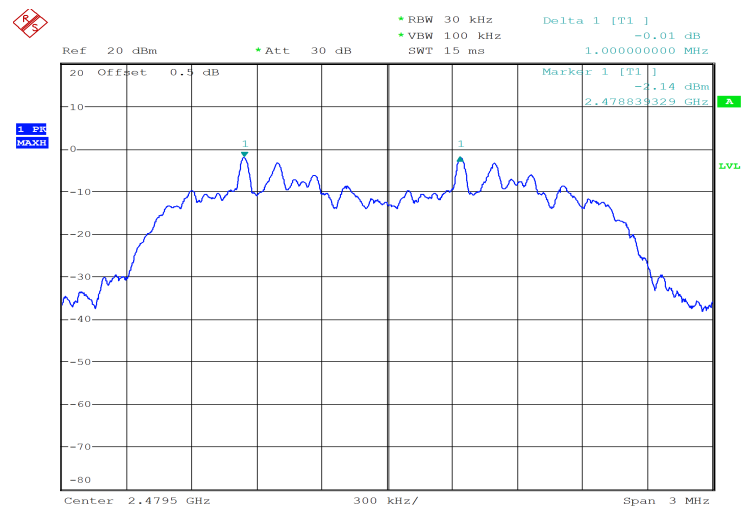
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:39:24

8DPSK_Middle 1.002 MHz



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:42:24

8DPSK_High 1.000 MHz



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:46:02

Number of Hopping Frequency**BDR**

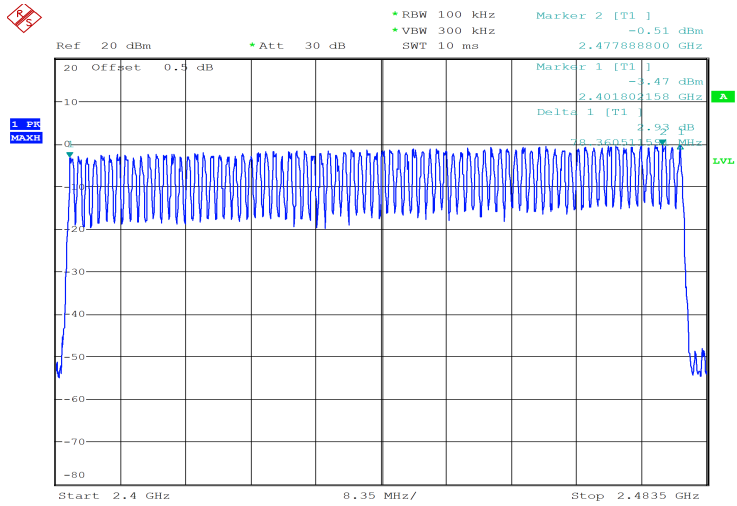
Mode	Value	Limit	Result
GFSK_Hopping	79	15	Pass

EDR

Mode	Value	Limit	Result
$\pi/4$ -DQPSK_Hopping	79	15	Pass
8DPSK_Hopping	79	15	Pass

BDR

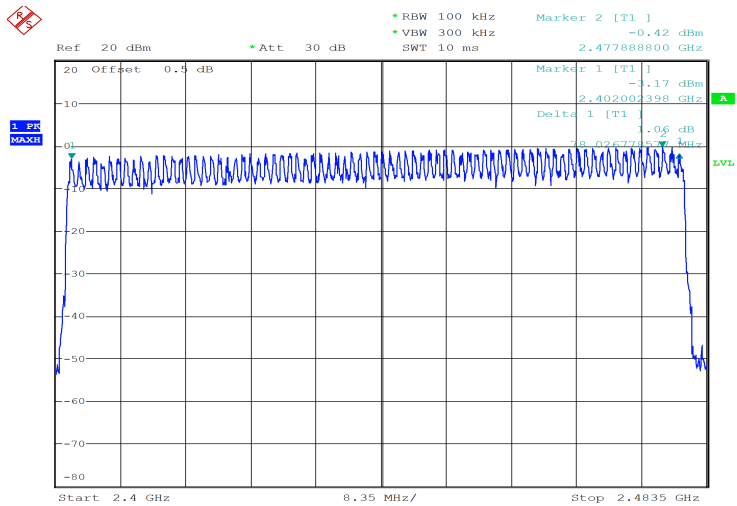
GFSK_Hopping 79



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 15.JAN.2024 10:18:11

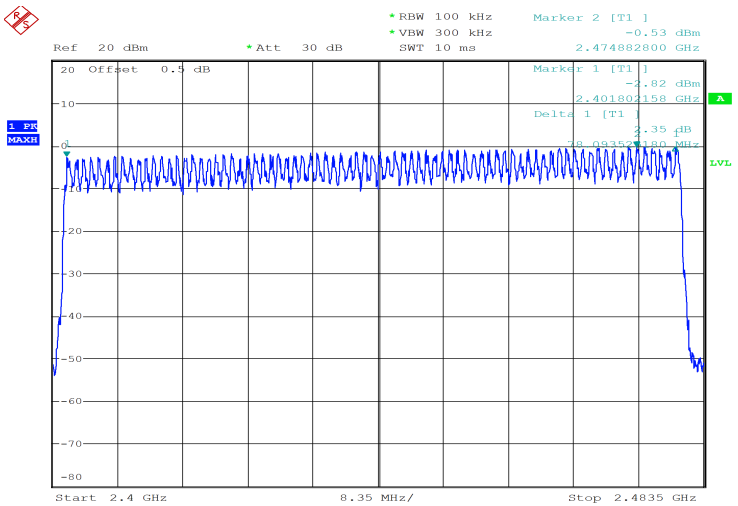
EDR

$\pi/4$ -DQPSK_Hopping 79



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 15.JAN.2024 10:25:51

8DPSK_Hopping 79



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 15.JAN.2024 10:34:02

Time of Occupancy (dwell time)**BDR**

Mode	Pulse width (ms)	Dwell time (s)	Limit (s)	Result
GFSK_Hopping_DH1	0.387	0.124	0.400	Pass
GFSK_Hopping_DH3	1.650	0.264	0.400	Pass
GFSK_Hopping_DH5	2.906	0.310	0.400	Pass

EDR

Mode	Pulse width (ms)	Dwell time (s)	Limit (s)	Result
$\pi/4$ -DQPSK_Hopping_2DH1	0.396	0.127	0.400	Pass
$\pi/4$ -DQPSK_Hopping_2DH3	1.657	0.265	0.400	Pass
$\pi/4$ -DQPSK_Hopping_2DH5	2.910	0.310	0.400	Pass
8DPSK_Hopping_3DH1	0.398	0.127	0.400	Pass
8DPSK_Hopping_3DH3	1.652	0.264	0.400	Pass
8DPSK_Hopping_3DH5	2.910	0.310	0.400	Pass

Note:

DH1:Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s

DH3:Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s

DH5:Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s

2DH1: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s

2DH3: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s

2DH5: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s

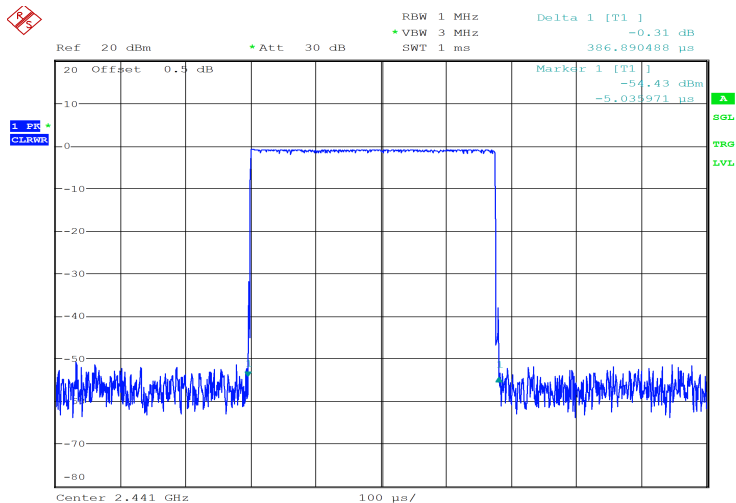
3DH1: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s

3DH3: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s

3DH5: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s

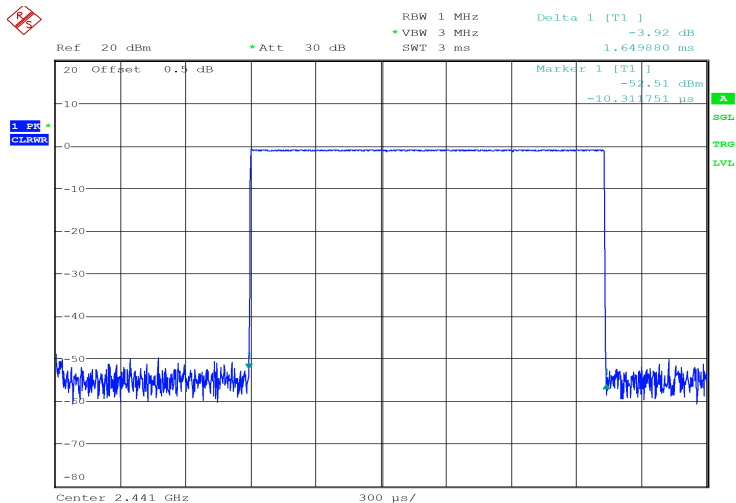
BDR

GFSK_Hopping_DH1 0.387ms



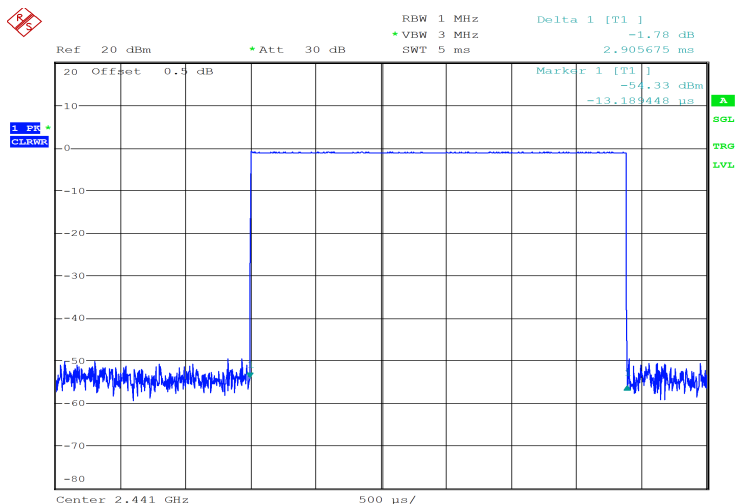
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:51:16

GFSK_Hopping_DH3 1.650ms



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:53:19

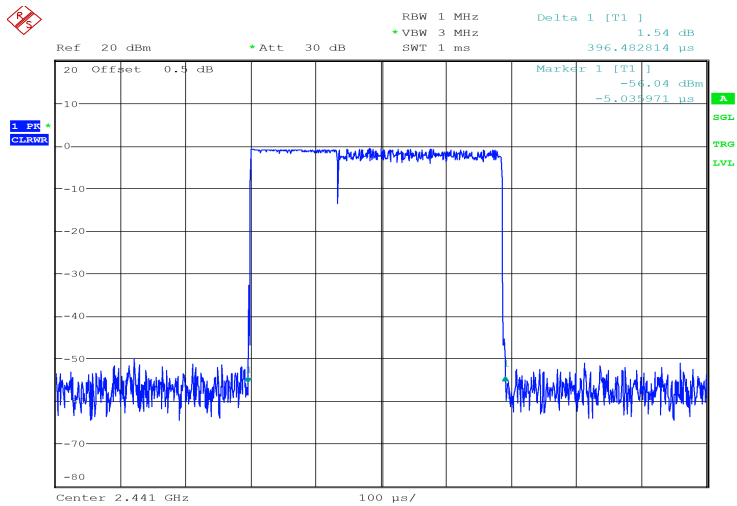
GFSK_Hopping_DH5 2.906ms



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 15.JAN.2024 10:38:42

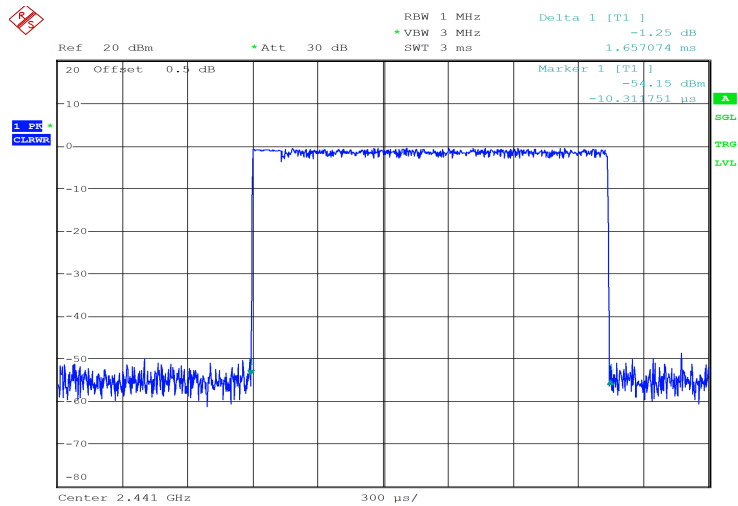
EDR

$\pi/4$ -DQPSK_Hopping_2DH1 0.396ms



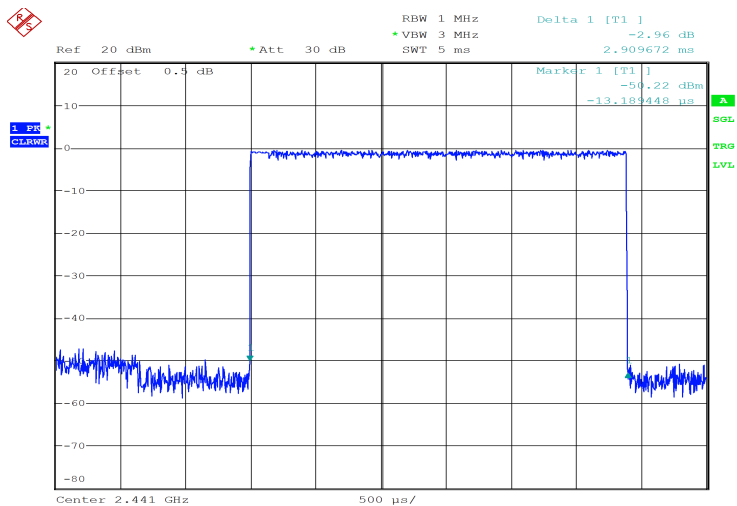
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:57:02

$\pi/4$ -DQPSK_Hopping_2DH3 1.657ms



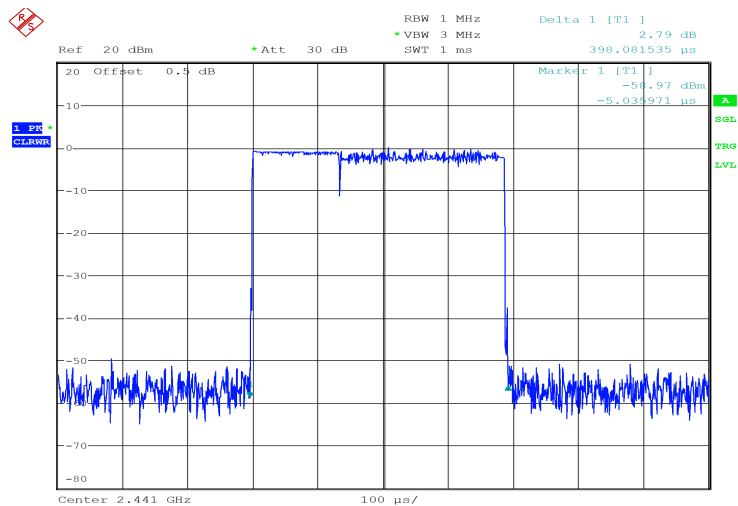
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:58:35

$\pi/4$ -DQPSK_Hopping_2DH5 2.910ms



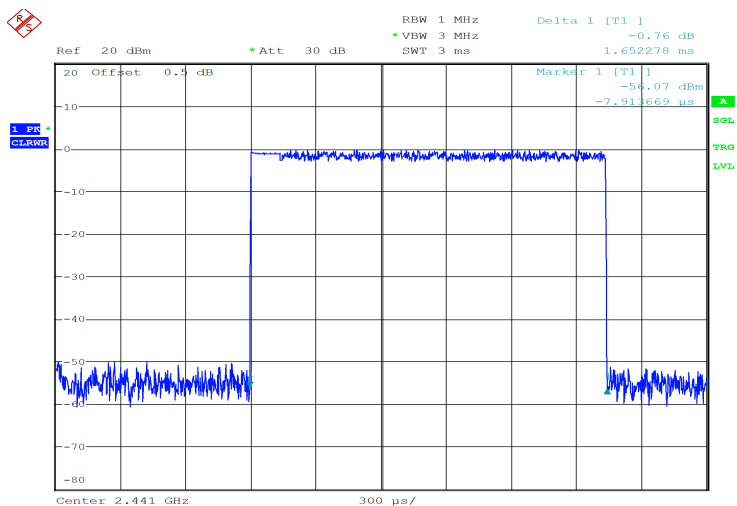
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 15.JAN.2024 10:05:21

8DPSK_Hopping_3DH1 0.398ms



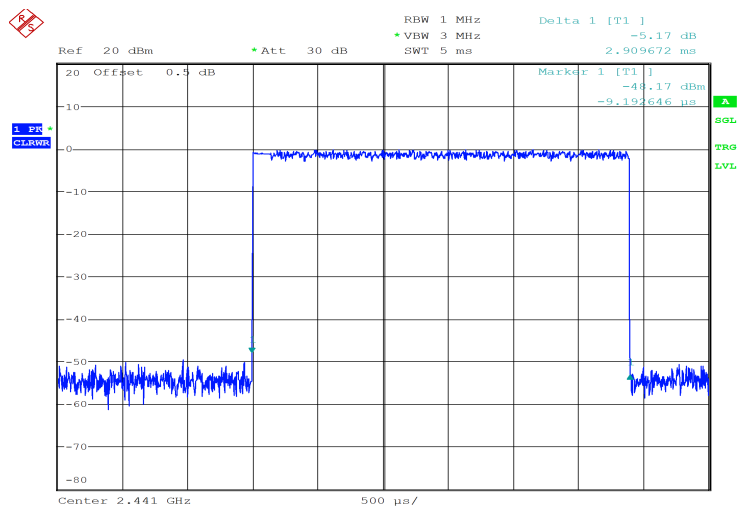
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 15:02:22

8DPSK_Hopping_3DH3 1.652ms



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 15.JAN.2024 10:07:01

8DPSK_Hopping_3DH5 2.910ms



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 15.JAN.2024 10:10:24

Maximum Conducted Output Power**BDR**

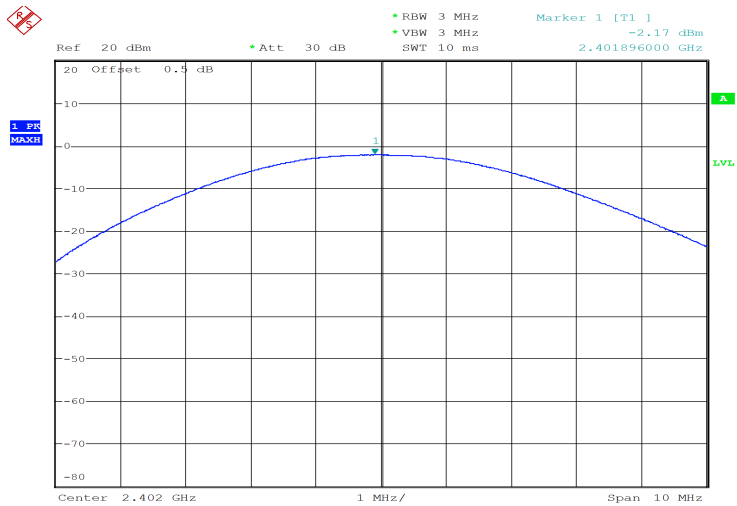
Mode	Value (dBm)	Limit (dBm)	Result
GFSK_Low	-2.17	21.00	Pass
GFSK_Middle	-0.76	21.00	Pass
GFSK_High	0.24	21.00	Pass

EDR

Mode	Value (dBm)	Limit (dBm)	Result
$\pi/4$ -DQPSK_Low	-1.47	21.00	Pass
$\pi/4$ -DQPSK_Middle	-0.08	21.00	Pass
$\pi/4$ -DQPSK_High	0.88	21.00	Pass
8DPSK_Low	-0.85	21.00	Pass
8DPSK_Middle	0.51	21.00	Pass
8DPSK_High	1.41	21.00	Pass

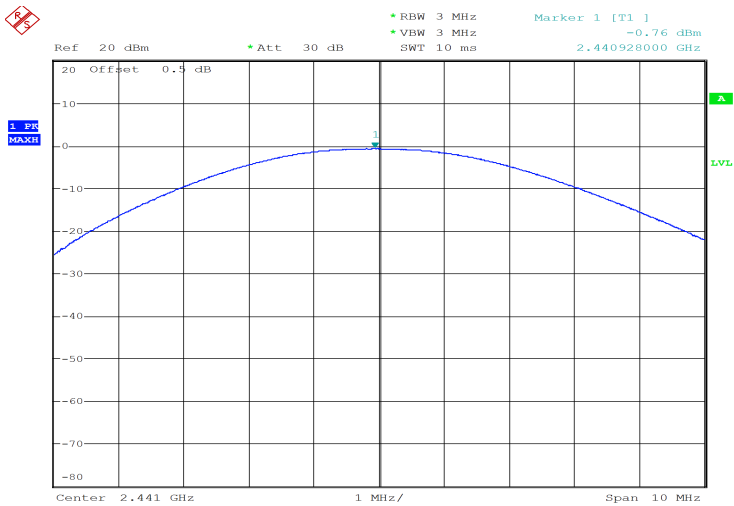
BDR

GFSK_Low -2.17 dBm



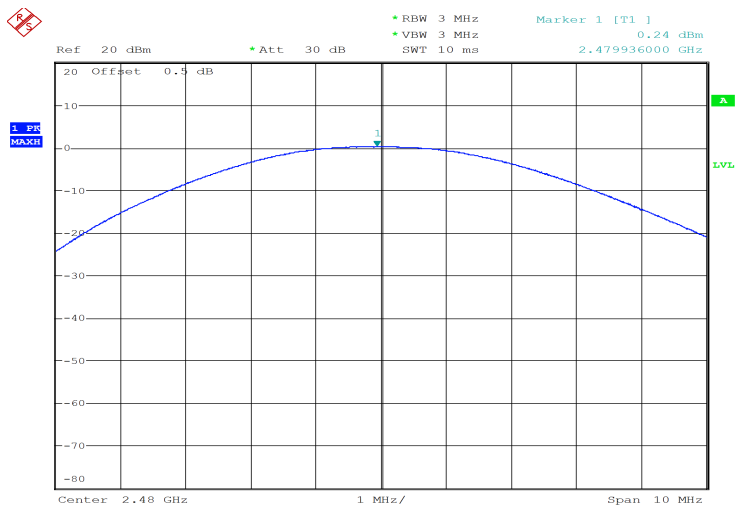
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:04:10

GFSK_Middle -0.76 dBm



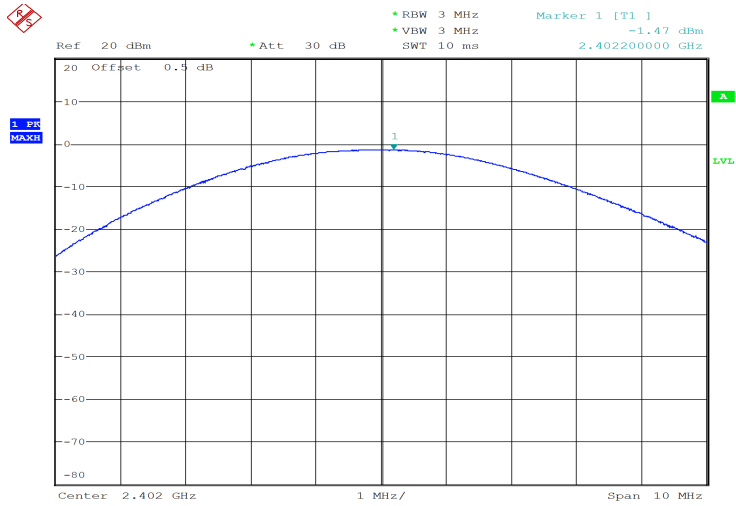
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:08:15

GFSK_High 0.24 dBm

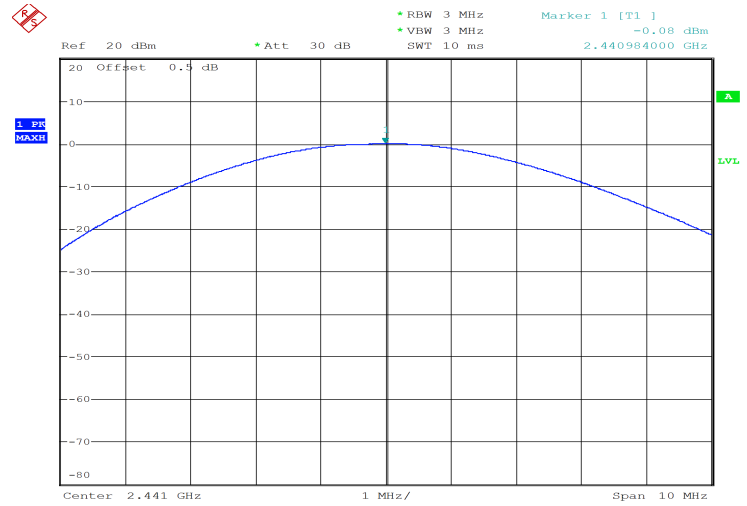


Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:11:37

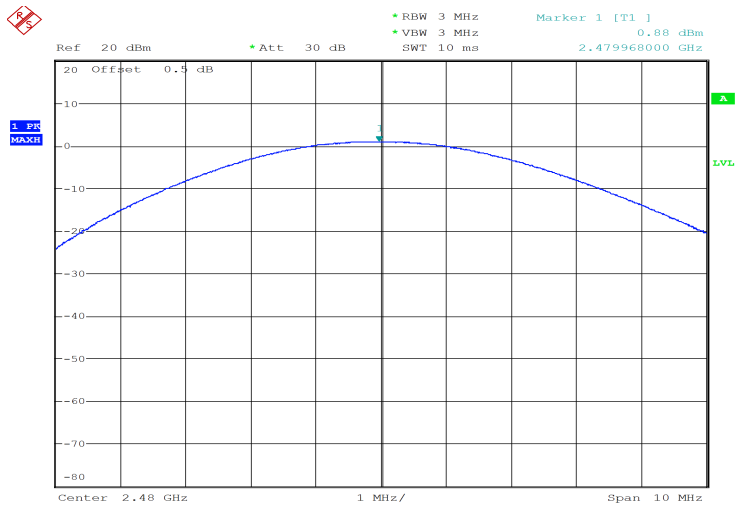
EDR

 $\pi/4$ -DQPSK_Low -1.47 dBm

Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:19:07

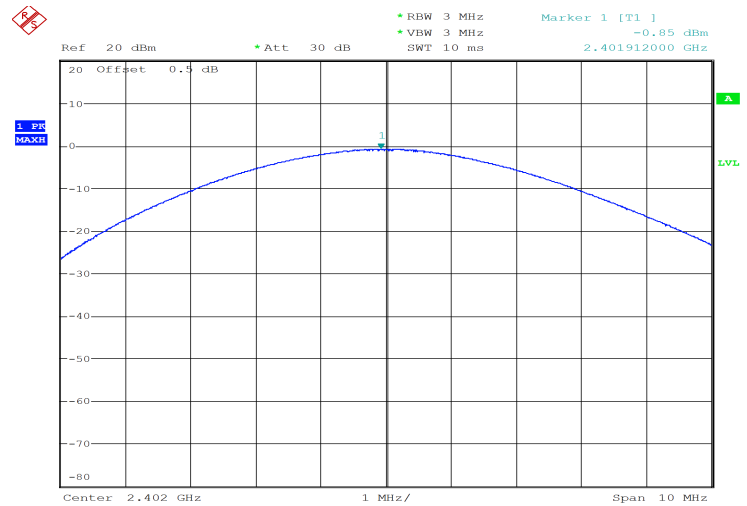
 $\pi/4$ -DQPSK_Middle -0.08 dBm

Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:27:25

 $\pi/4$ -DQPSK_High 0.88 dBm

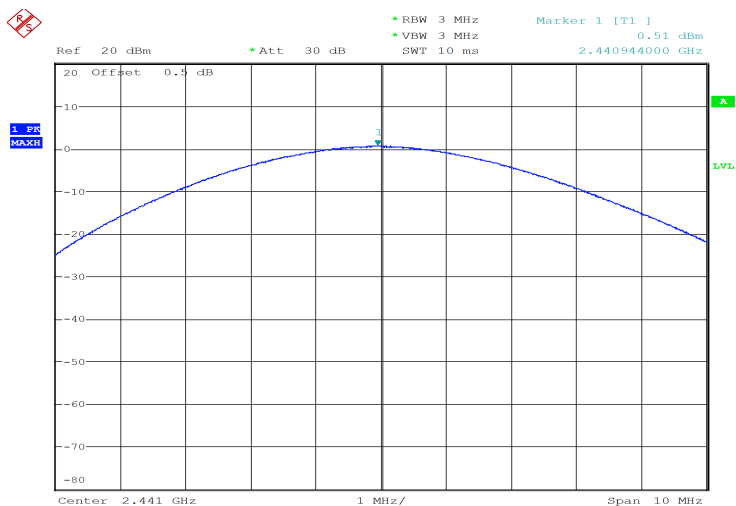
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:29:38

8DPSK_Low -0.85 dBm



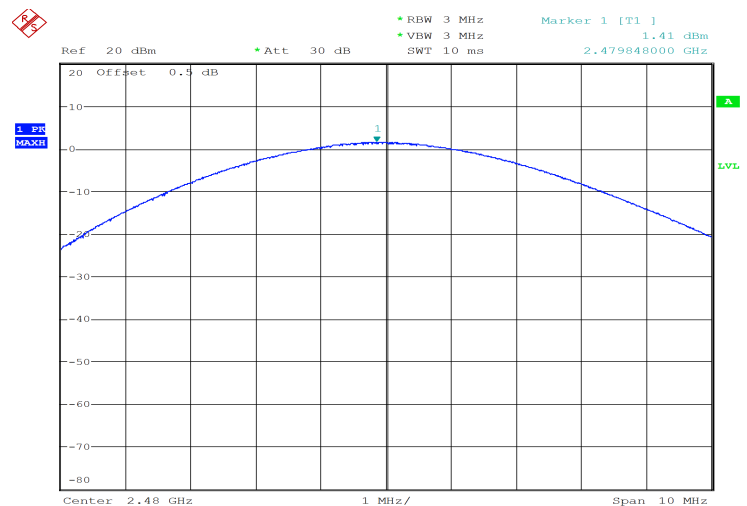
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:36:21

8DPSK_Middle 0.51 dBm



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:40:11

8DPSK_High 1.41 dBm



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:42:46

100 kHz Bandwidth of Frequency Band Edge**BDR**

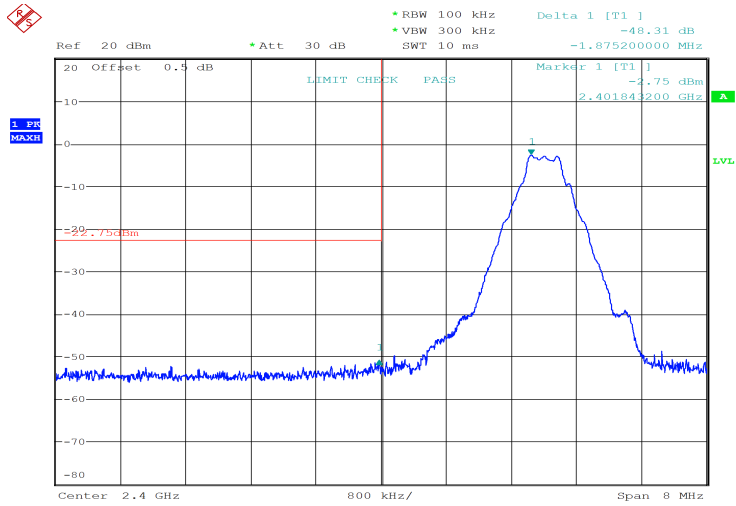
Mode	Value (dB)	Limit (dB)	Result
GFSK_Low	48.31	20.00	Pass
GFSK_High	51.25	20.00	Pass
GFSK_Hopping_Lower	47.81	20.00	Pass
GFSK_Hopping_Upper	50.71	20.00	Pass

EDR

Mode	Value (dB)	Limit (dB)	Result
$\pi/4$ -DQPSK_Low	46.96	20.00	Pass
$\pi/4$ -DQPSK_High	51.21	20.00	Pass
$\pi/4$ -DQPSK_Hopping_Lower	48.06	20.00	Pass
$\pi/4$ -DQPSK_Hopping_Upper	51.40	20.00	Pass
8DPSK_Low	49.27	20.00	Pass
8DPSK_High	51.20	20.00	Pass
8DPSK_Hopping_Lower	46.70	20.00	Pass
8DPSK_Hopping_Upper	51.33	20.00	Pass

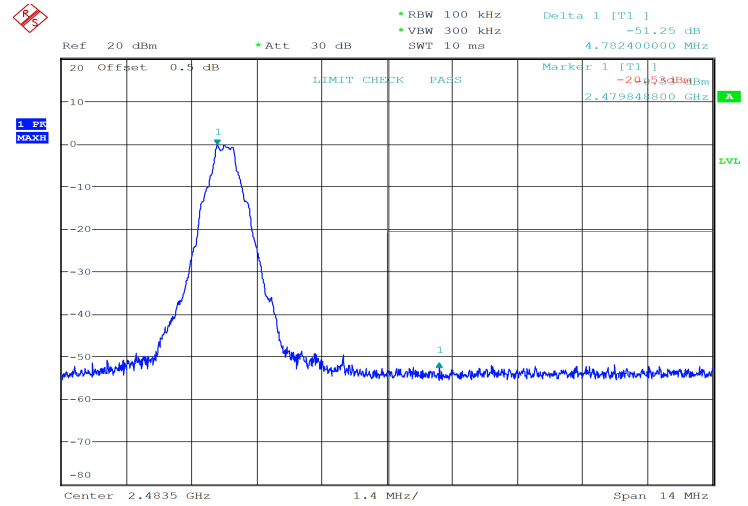
BDR

GFSK_Low 48.31 dB



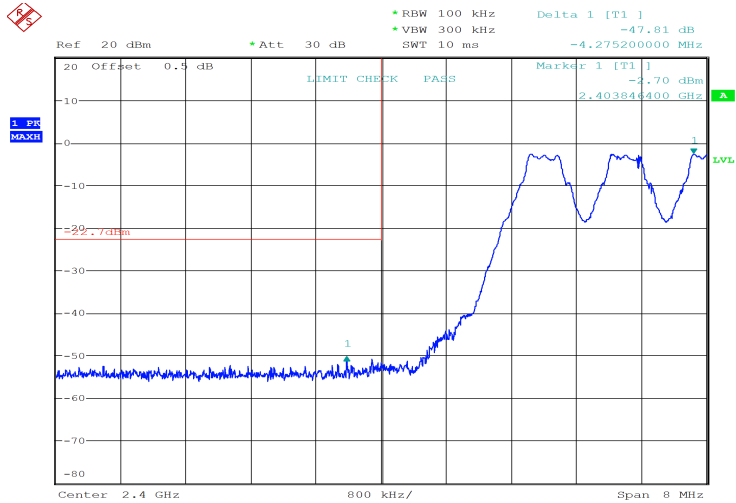
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:05:24

GFSK_High 51.25 dB



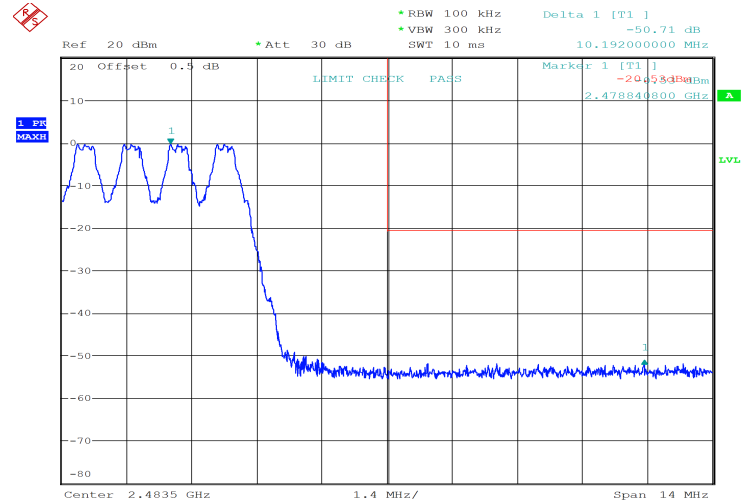
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:13:11

GFSK_Hopping_Lower 47.81 dB



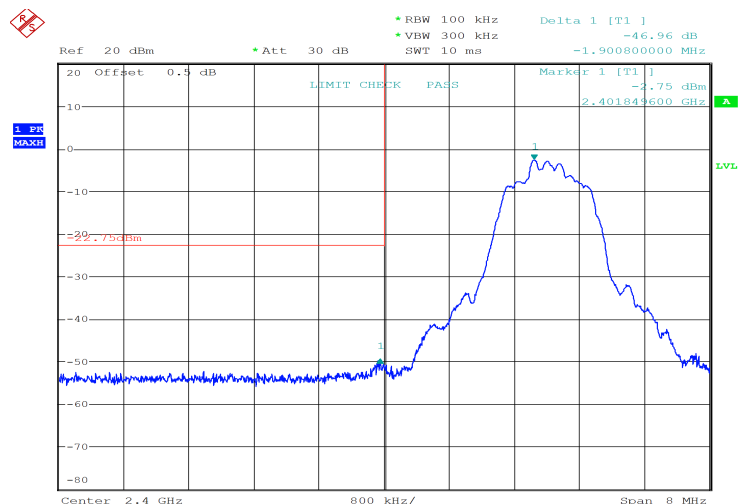
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:16:55

GFSK_Hopping_Upper 50.71 dB

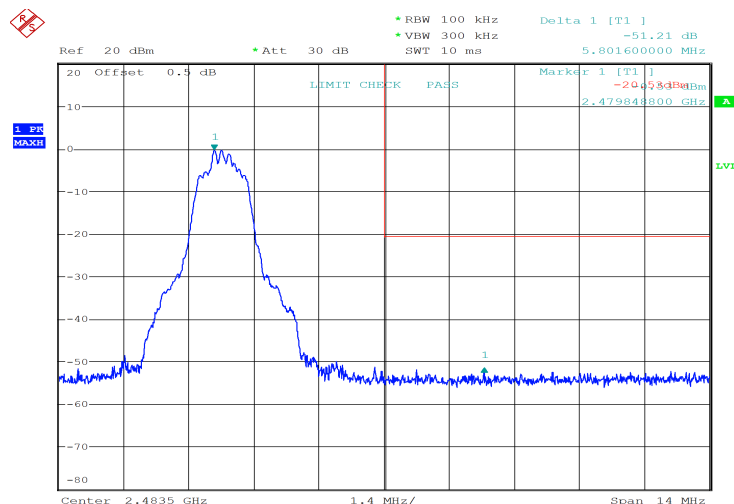


Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 15.JAN.2024 10:13:18

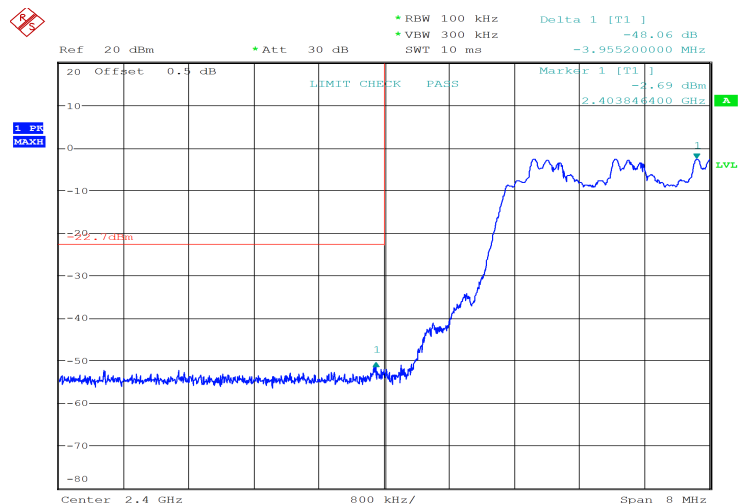
EDR

 $\pi/4$ -DQPSK_Low 46.96 dB

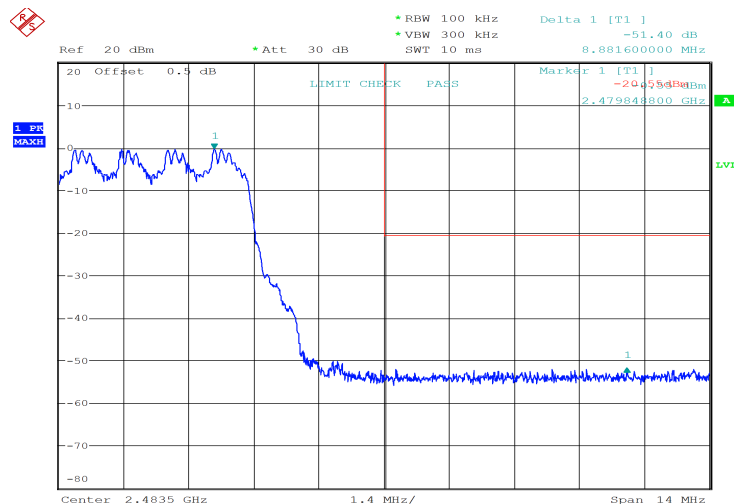
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:21:56

 $\pi/4$ -DQPSK_High 51.21 dB

Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:30:51

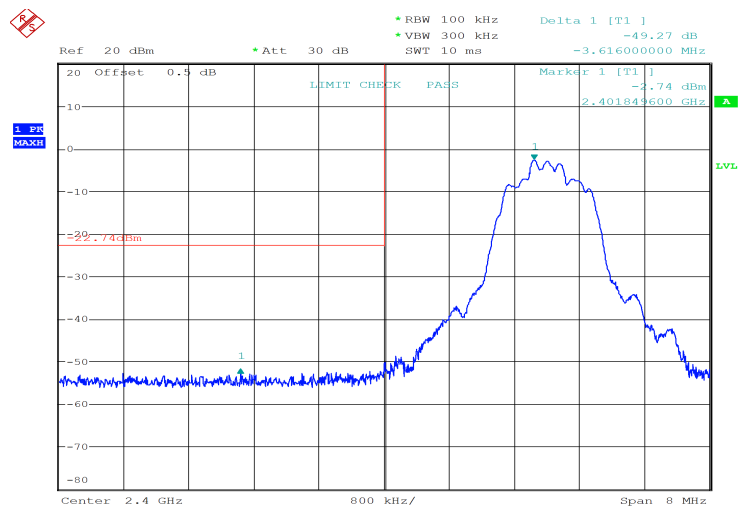
 $\pi/4$ -DQPSK_Hopping_Lower 48.06 dB

Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:34:05

 $\pi/4$ -DQPSK_Hopping_Upper 51.40 dB

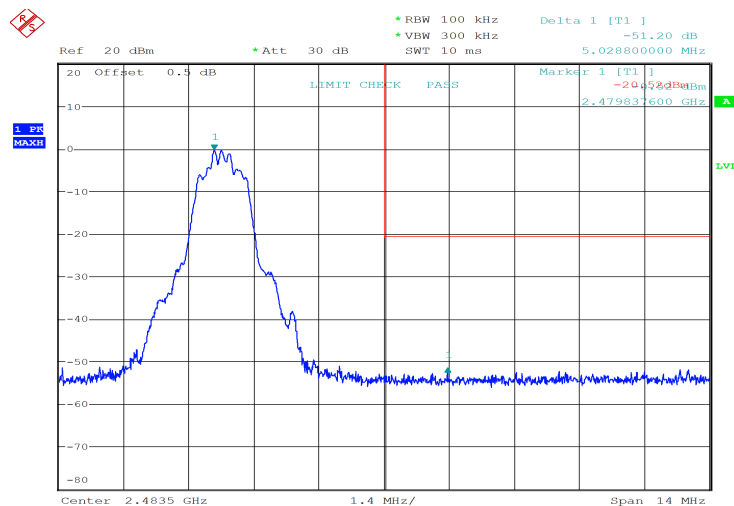
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:35:46

8DPSK_Low 49.27 dB



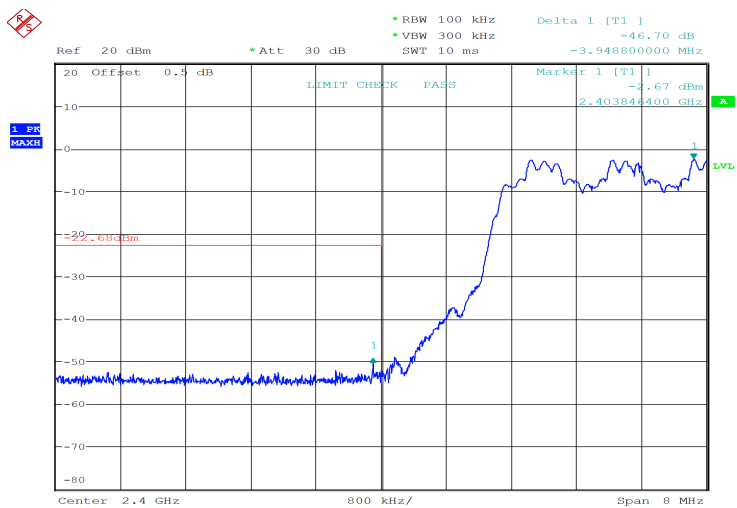
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:37:20

8DPSK_High 51.20 dB



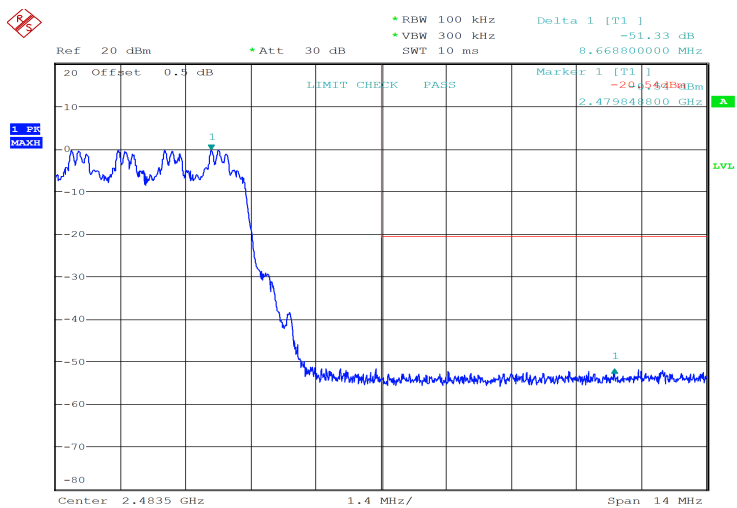
Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:43:54

8DPSK_Hopping_Lower 46.70 dB



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:48:01

8DPSK_Hopping_Upper 51.33 dB



Comment: ProjectNo.:CR231267242-RF Tester:Lingling Li
Date: 4.JAN.2024 14:49:25