

EUT:	Security control panel	Model No.:	HP2J0002NA
Temperature:	<b>20</b> °C	Relative Humidity:	48%
Test Mode:	Mode2 /Mode4/ Mode5	Test By:	Gavan Zhang

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Certificate #4298.01

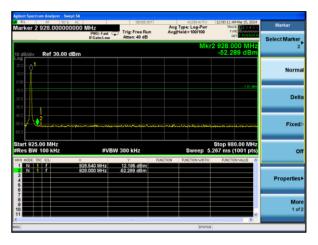
(Module2)OCW=140K-Antenna3

## **Test Plot**

# GFSK: Band Edge-Low Channel

arker 2	RF 50 2 902.0000	F	Z NO: Fast Gain:Low		Run Avg	ALIGNAUTO g Type: Log-Pwr  Hold>100/100	11:57:55 PM Mar 14, 2024 TRACE 2 2 4 5 6 TVPE 0 0 0 0 0 0	Marker
0 dB/div	Ref 30.00		Gain:Low	Atten: 40	40	N	lkr2 902.0 MHz -51.535 dBm	Select Mark
20.0 10.0 0.00								Norr
10.0 20.0 30.0								D
50.0	nontonenterre	sarigen ginnestelles	un territor	an a	and the state of the sectors	han an a		Fix
Start 810	).00 MHz / 100 kHz			W 300 kHz	an the second		Stop 910.00 MHz 600 ms (1001 pts)	
60.0 Start 810 #Res BW #KR MODE T 1 N 2 2 N 2	0.00 MHz / 100 kHz TRC SCL 1 f	× 905			FUNCTION	Sweep 9	Stop 910.00 MHz 600 ms (1001 pts) FUNCTION VALUE	
5010 5010	0.00 MHz / 100 kHz TRC SCL 1 f	× 905	#VE	W 300 kHz 14,637 dB	m		.600 ms (1001 pts)	
50 0 50 0	0.00 MHz / 100 kHz TRC SCL 1 f	× 905	#VE	W 300 kHz 14,637 dB	m		.600 ms (1001 pts)	Fixe Propertie M 1

# GFSK: Band Edge-High Channel



GFSK: Band Edge-Low Channel (Hopping Mode)

RL larker 2	RF 501			SENSE:INT	Avg Typ	ALIGNAUTO e: Log-Pwr	12:31:28 AM Mar 1 TRACE 2 TVPE M M	3456	Marker
		PNO: IFGair		Free Run n:40 dB	Avg Hold		DET P N	NNNN	Select Marke
0 dB/div	Ref 30.00	dBm				М	kr2 902.0 f -51.206 d	VHz IBm	
og 20.0									Norr
20.0								5.96 dbm	De
10.0 40.0 50.0			n later and a second				<sup>2</sup>	11	Fixe
0.0 50.0 50.0 start 810	0.00 MHz / 100 kHz		#VBW 300 k	iHz		Sweep 9.0	2 2 9 9 9 9 10.00 500 ms (1001	MHz pts)	
tart 810 Res BW	0.00 MHz / 100 kHz TRC SCL	×	Y	P		Sweep 9.6	Stop 910.00 500 ms (1001	pts)	Fixe
itart 810 Res BW	0.00 MHz / 100 kHz	× 905.0 M 902.0 M	Y 14.34			Sweep 9.6	500 ms (1001	pts)	

GFSK: Band Edge-High Channel (Hopping Mode)

RL RF Rker 2 928.000			SENSE	Av	g Type: Log-Pwr giHold>100/100	12:33:32 AM Mar 15, 2024 TRACE 1 2 3 4 5 6 Type	Marker
	PNO IFGai	:Fast 🕞	Atten: 40 dl		g Hold>100/100	DET P NINNIN	Select Marker
dB/div Ref 30.	.00 dBm				Mki	2 928.000 MHz -51.040 dBm	2
a 10 1 10 1							Norma
00						-8.19 dDe	Delt
1.0							Den
Contraction of the local states	Annalist Sundhour when	- And <sup>ah</sup> angada	hangeri dek son tafleri	******	Jonander (1950) House of S	enne terrenter	Fixed
			300 kHz	24		Stop 980.00 MHz .267 ms (1001 pts)	Fixed
art 925.00 MHz es BW 100 kHz	× 925.275 M	#VBW	300 kHz Y 11.809 dBn	FUNCTION		Stop 980.00 MHz	
art 925.00 MHz tes BW 100 KHz R MODE TRC: SCL	×	#VBW	300 kHz	FUNCTION	Sweep 5	Stop 980.00 MHz .267 ms (1001 pts)	
art 925.00 MHz Res BW 100 kHz R MODE TRC SCL N 1 f	× 925.275 M	#VBW	300 kHz Y 11.809 dBn	FUNCTION	Sweep 5	Stop 980.00 MHz .267 ms (1001 pts)	0



(Module2)OCW=140K-Antenna4



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GFSK: Band Edge-Low Channel (Hopping Mode)

Marker 2		R AC DOOOO MHz PN0: Fast	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr Avg Hold>100/100	10:46:46 PM Mar 12, 2024 TRACE 2 3 4 5 6 TYPE	Marker
10 dB/div	Ref 30.00	IFGain:Low	Atten: 40 dB		kr2 902.0 MHz -52.131 dBm	Select Marker 2
20.0						Norn
-10.0					-4,45 dBn	De
-40.0 -50.0 -60.0	4. Europe - Anno 10 - Anno 10	en Negener og Storner og	w		2 <sup>4</sup>	Fixe
Start 810. #Res BW	100 kHz		W 300 kHz		Stop 910.00 MHz 600 ms (1001 pts)	
MKR MODE TR 1 N 1 2 N 1 3 4 5	f	× 906.4 MHz 902.0 MHz	13.549 dBm -52.131 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Propertie
6 7 8 9 10 11					~	<b>M</b> 1
< 15G			U.	STATUS	>	

GFSK: Band Edge-High Channel



GFSK: Band Edge-High Channel (Hopping Mode)

RL RF 75 Q AC arker 2 928.000000000 M		AUGNAUTO Avg Type: Log-Pwr Avg Hold>100/100	10:51:39 PM Mar 12, 2024 TRACE 12345 6 TYPE	Marker
	PNO: Fast Trig: Free Run IFGain:Low Atten: 40 dB	Avgineia>100/100	DET DITTUTION	Select Marker
dB/div Ref 30.00 dBm		Mkr2	2 928.000 MHz -51.750 dBm	2
				Norma
			-6.61 dDr	Delt
		ener die Televisie konstante (Litter voor die State en	ang manaka bina ka shqana bar qa	Fixed
tart 925.00 MHz Res BW 100 kHz	#VBW 300 kHz	Sweep 5.2	Stop 980.00 MHz 267 ms (1001 pts)	0
	.540 MHz 13.391 dBm .000 MHz -51.750 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Properties
4 6 6 7 8				
9				Mor 1 of





## 7.9 SPURIOUS RF CONDUCTED EMISSION

## 7.9.1 Applicable Standard

According to FCC Part 15.247(d) and ANSI C63.10-2013.

## 7.9.2 Conformance Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

## 7.9.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

## 7.9.4 Test Setup

Please refer to Section 6.1 of this test report.

## 7.9.5 Test Procedure

Establish an emission level by using the following procedure:

a) Set the center frequency and span to encompass frequency range to be measured.

- b) Set the RBW = 100 kHz.
- c) Set the VBW  $\geq$  [3 × RBW].
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use the peak marker function to determine the maximum amplitude level.

Then the limit shall be attenuated by at least 20 dB relative to the maximum amplitude level in 100 kHz.

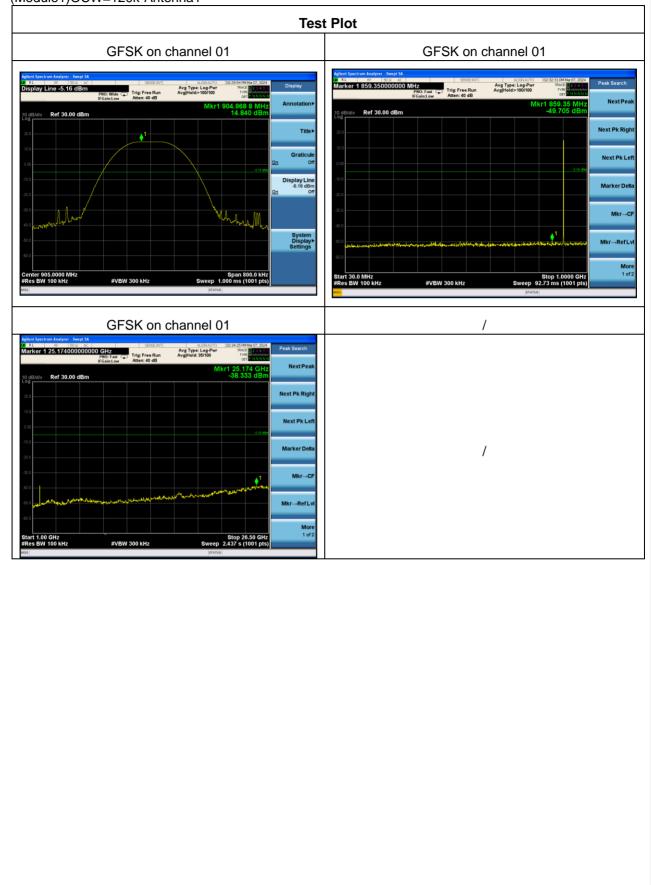
### 7.9.6 Test Results

Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.



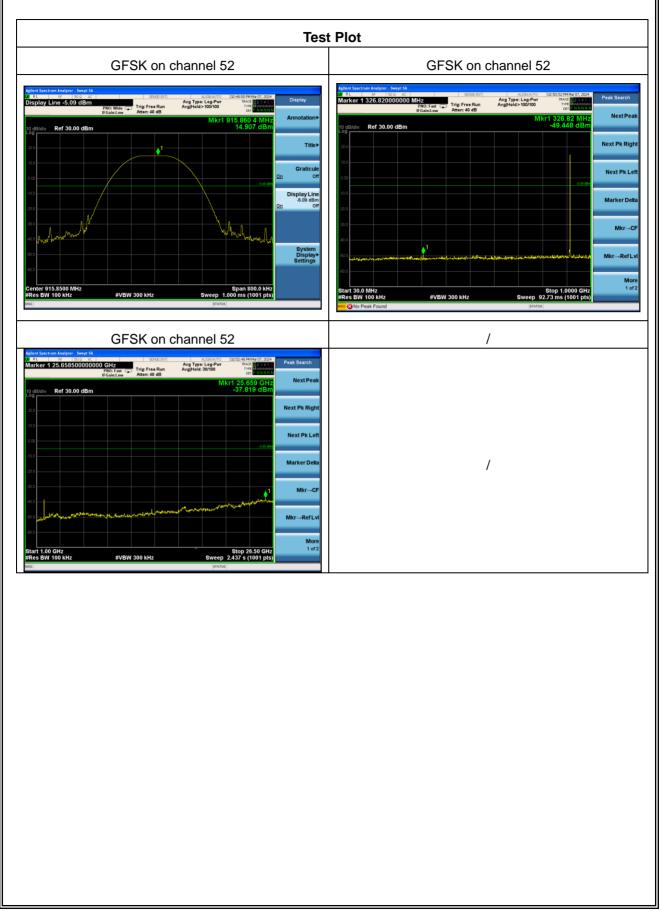


(Module1)OCW=120k-Antenna1



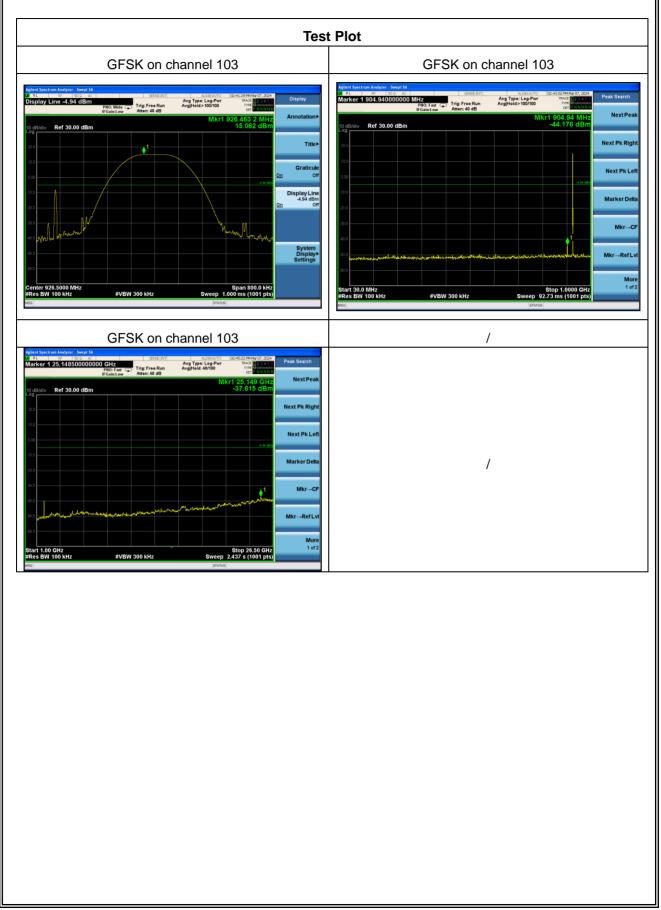
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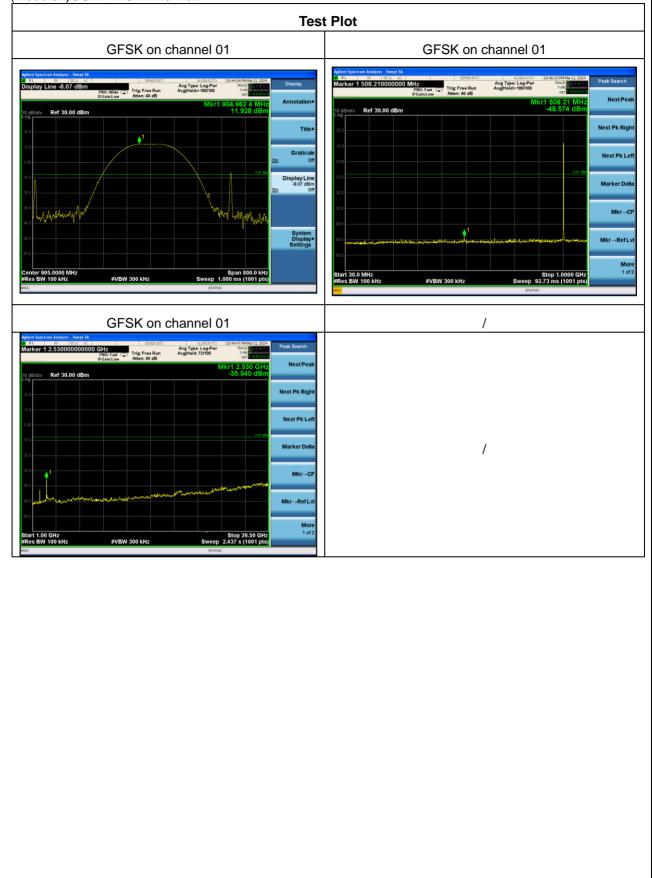


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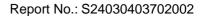


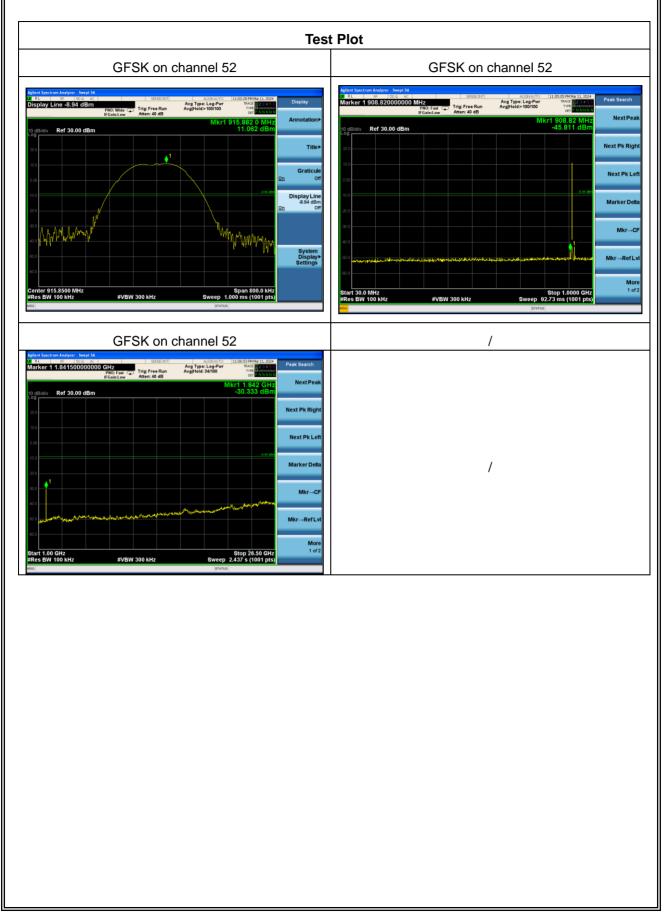
(Module1)OCW=120k-Antenna2



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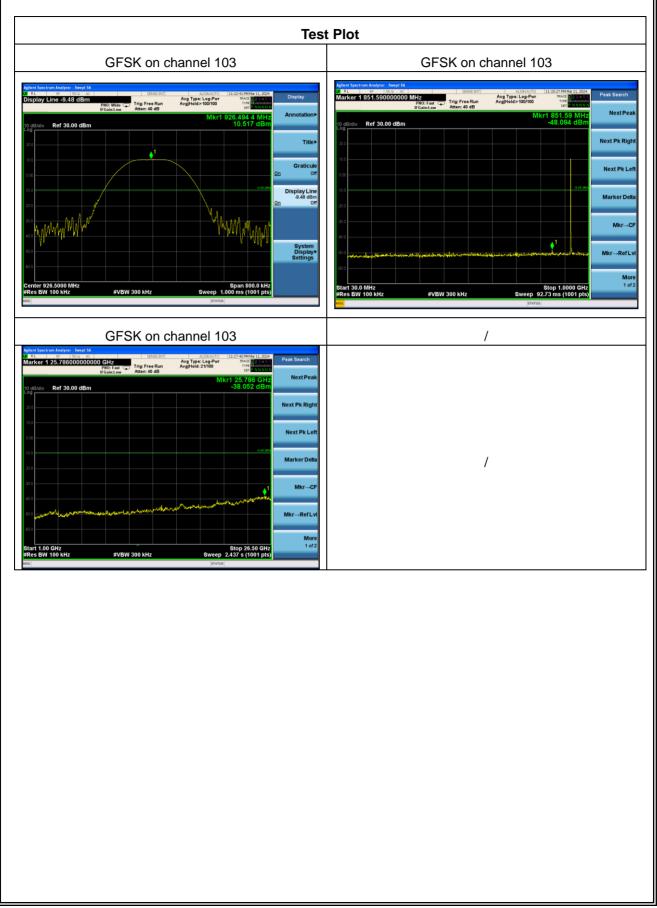






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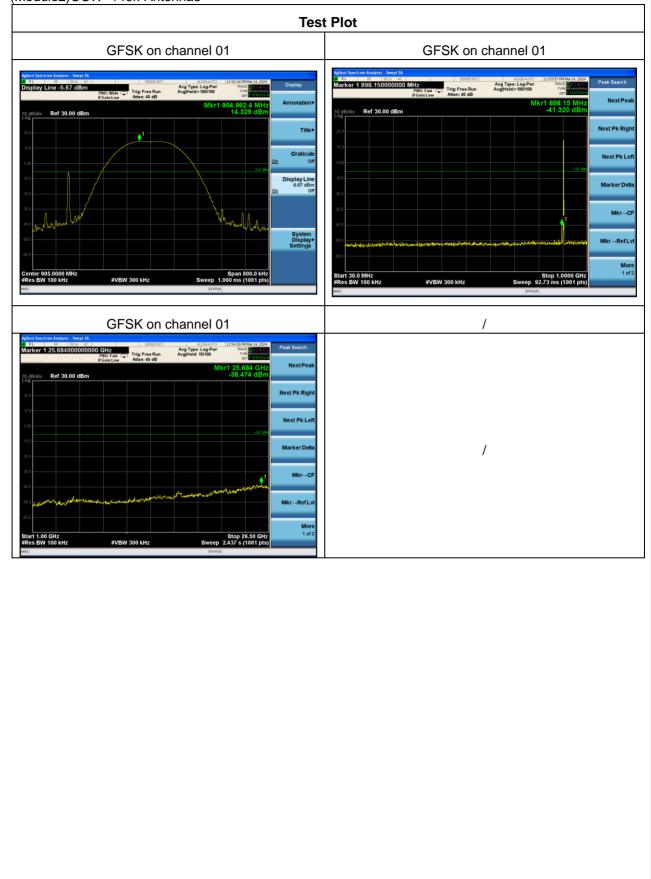


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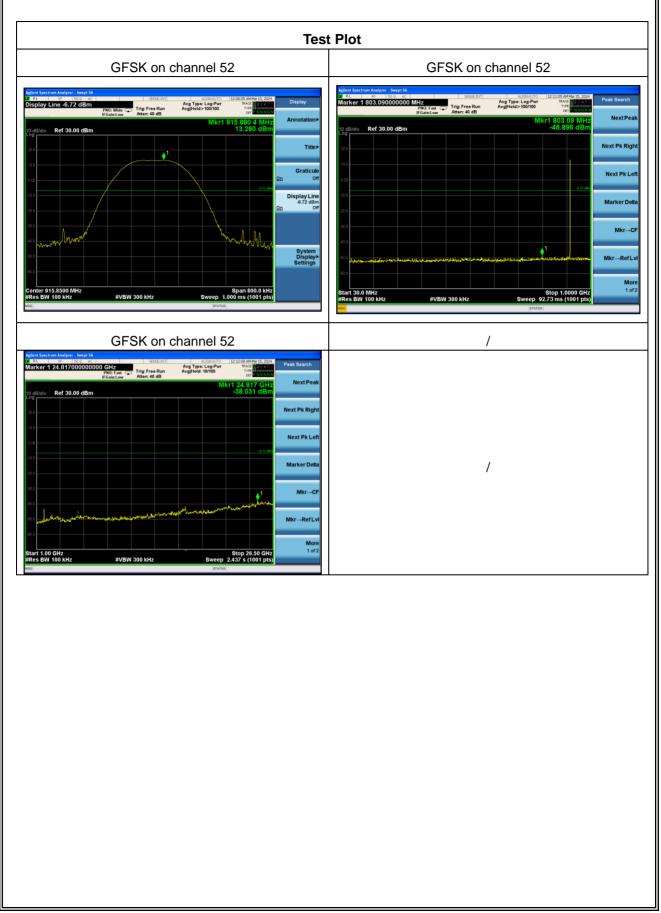
(Module2)OCW=140k-Antenna3



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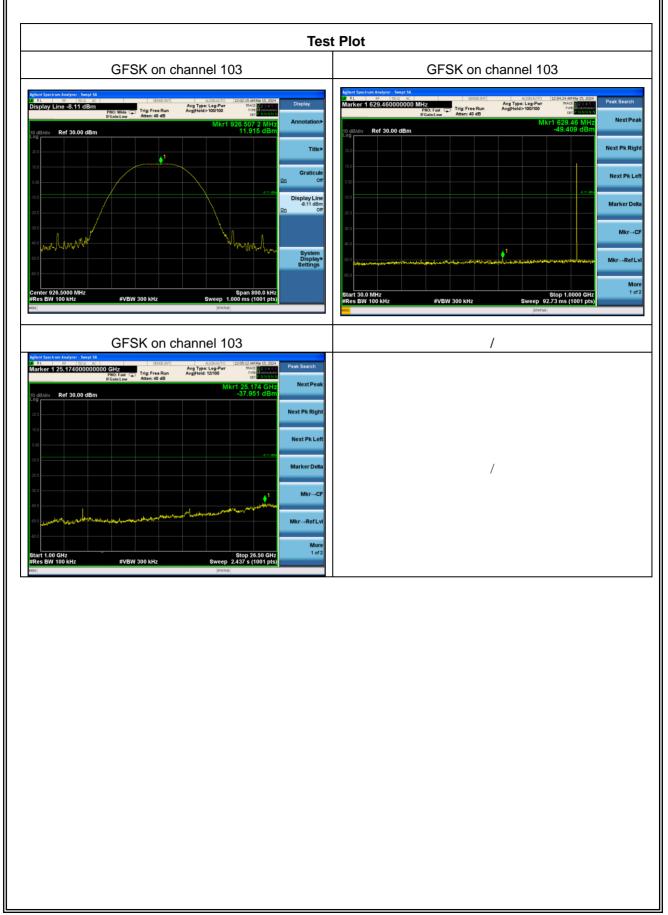






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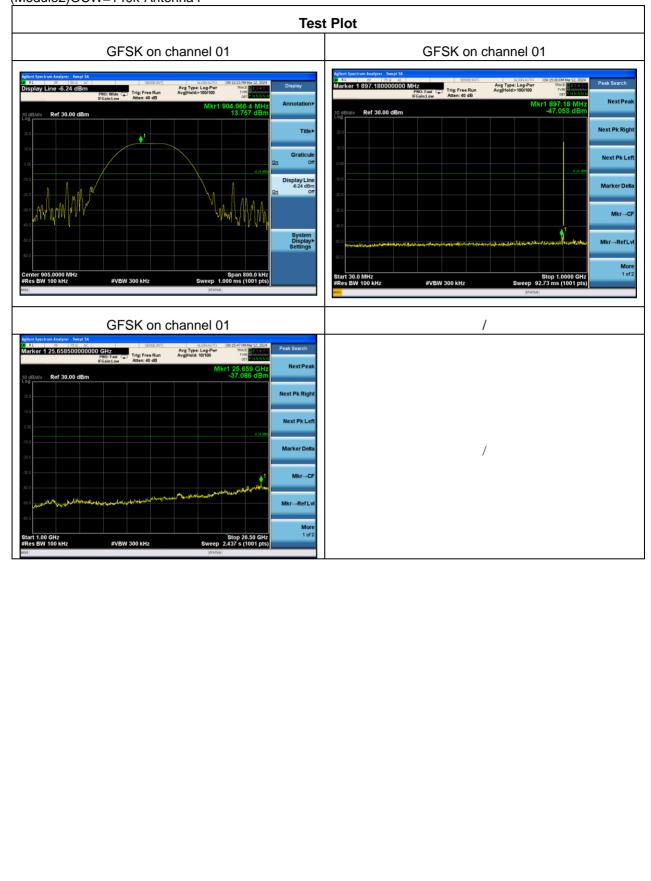


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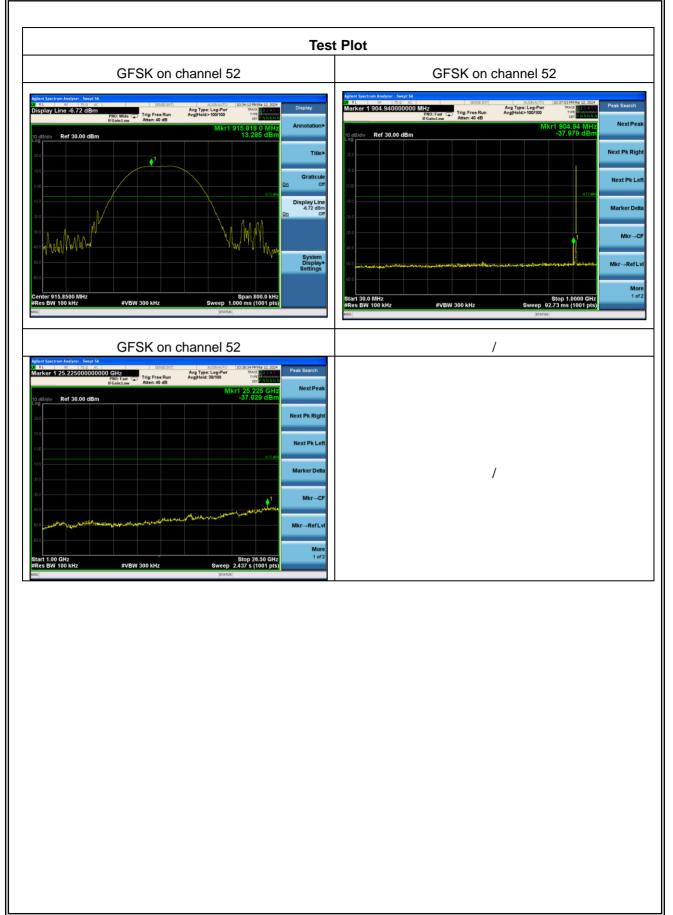


(Module2)OCW=140k-Antenna4



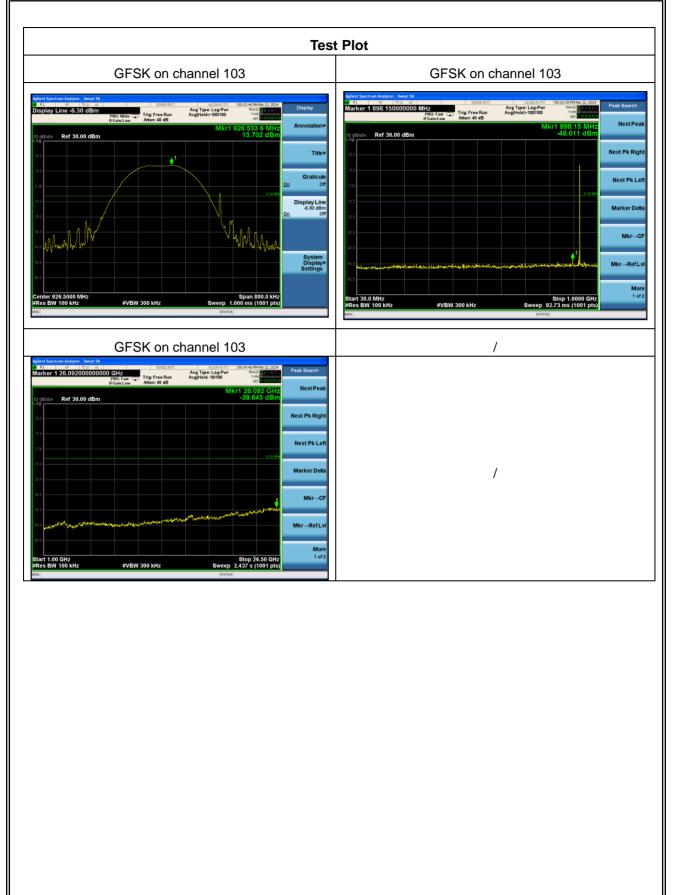
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### 7.10 ANTENNA APPLICATION

### 7.10.1 Antenna Requirement

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

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### 7.10.2 Result

The EUT has four antenna connector and use only the Antenna1Type: Planar Inverted L- Antenna(Gain:-5dB). Antenna2Type: Planar Inverted F- Antenna (Gain:-6dBi). Antenna3Type: Planar Inverted F- Antenna (Gain: -6dBi). Antenna4Type: Planar Inverted F- Antenna (Gain: -6dBi). It comply with the standard of 15.203 requirement.

END OF REPORT