

# **FCC Test Report**

Report No.: AGC07581210301FE02

FCC ID	8	2AV9TDS-BEACON-06
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	DS-Beacon-06
BRAND NAME	:	DS
MODEL NAME	÷	DS-Beacon-06
APPLICANT	:	SHENZHEN DEASINO TECHNOLOGY CO., LTD
DATE OF ISSUE	© •	Mar. 17, 2021
STANDARD(S)	:	FCC Part 15.247
REPORT VERSION	:	V1.0



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# **REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0		Mar. 17, 2021	Valid	Initial Release

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# **1. VERIFICATION OF COMPLIANCE**

Applicant	SHENZHEN DEASINO TECHNOLOGY CO., LTD		
Address	Floor3B.4Building, YongQi Technology Park. YinTian Industrial Zone. XiXiang. BaoAn District ShenZhen		
Manufacturer	SHENZHEN DEASINO TECHNOLOGY CO., LTD		
Address	Floor3B.4Building, YongQi Technology Park. YinTian Industrial Zone. XiXiang. BaoAn District ShenZhen		
Factory	SHENZHEN DEASINO TECHNOLOGY CO., LTD		
Address	Floor3B.4Building, YongQi Technology Park. YinTian Industrial Zone. XiXiang. BaoAn District ShenZhen		
Product Designation	DS-Beacon-06		
Brand Name	DS		
Test Model	DS-Beacon-06		
Date of test	Mar. 05, 2021 to Mar. 17, 2021		
Deviation	No any deviation from the test method		
Condition of Test Sample	Normal		
Test Result	Pass		
Report Template	AGCRT-US-BLE/RF		

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC part 15.247.

Prepared By

Then Hurry

Thea Huang Project Engineer

Mar. 17, 2021

Max Zhang

**Reviewed By** 

Max Zhang Reviewer

Mar. 17, 2021

Approved By

Forrest Lei Authorized Officer

Mar. 17, 2021

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# 2. GENERAL INFORMATION

# 2.1. PRODUCT DESCRIPTION

The EUT is designed as a "DS-Beacon-06". It is designed by way of utilizing the GFSK technology to achieve the system operation.

A major technical description of EUT is described as following

<b>Operation Frequency</b>	2.402 GHz to 2.480GHz	
RF Output Power	GFSK 1Mbps:-2.109dBm (Max) GFSK 2Mbps: -2.118dBm (Max)	
Bluetooth Version	V5.2	
Modulation	BLE GFSK 1Mbps GFSK 2Mbps	
Number of channels	40 Channel	
Antenna Designation	PCB Antenna (Comply with requirements of the FCC part 15.203)	
Antenna Gain	3dBi	
Hardware Version	DS-Beacon-06	
Software Version	nRF5SDK160098a08e2	
Power Supply	DC 3V by battery	
Note: The EUT doesn't sup	port BR&EDR.	

# 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	0	2402 MHz
		2404 MHz
2400~2483.5MHz		
	38	2478 MHz
	39	2480 MHz

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# 2.3. RELATED SUBMITTAL(S)/GRANT(S)

This submittal(s) (test report) is intended for FCC ID: 2AV9TDS-BEACON-06 filing to comply with the FCC Part 15.247 requirements.

#### 2.4. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

#### 2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

#### 2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

#### 2.7. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device. For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

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# 3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y  $\pm U$ , where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

- Uncertainty of Conducted Emission, Uc = ±3.1 dB
- Uncertainty of Radiated Emission below 1GHz,  $Uc = \pm 4.0 \text{ dB}$
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB
- Uncertainty of total RF power, conducted,  $Uc = \pm 0.8 dB$
- Uncertainty of RF power density, conducted, Uc = ±2.6 dB
- Uncertainty of spurious emissions, conducted,  $Uc = \pm 2.7 dB$
- Uncertainty of Occupied Channel Bandwidth:  $Uc = \pm 2 \%$

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# 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION		
1	Low channel TX		
2	Middle channel TX		
3	High channel TX		

Note:

- 1. Only the result of the worst case was recorded in the report, if no other cases.
- 2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
- 3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.

File View nRF8001 Setup Hel			
Features RX Constant carrier/LO le TX/RX channel sweep RX sensitivity Bluetooth nRF8001 Configuration Dispatcher Trace Translator Direct Test Mode nRF8002 Derice Manager Motherboards nRF51 Programming Bootloaders	x Direct Test Mode Set up on Com pert [COM9 Mode © Transmit Channel © Single X Faylead model Paylead length Packets received	UART interface	
Log (c) Nordic Semiconductor ASA 200	8-2013		

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# **5. SYSTEM TEST CONFIGURATION**

# 5.1. CONFIGURATION OF TESTED SYSTEM

Radiated Emission Configure:

EUT

Conducted Emission Configure:

EUT	AE

# 5.2. EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	DS-Beacon-06	DS-Beacon-06	2AV9TDS-BEACON-06	EUT
2	Control Box	USB TO TTL	ACC NOC NO	AE

# 5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
15.247 (b)(3)	Peak Output Power	Compliant
15.247 (a)(2)	6 dB Bandwidth	Compliant
15.247 (d)	Conducted Spurious Emission	Compliant
15.247 (e)	Maximum Conducted Output Power Density	Compliant
15.209	Radiated Emission	Compliant
15.207	Conducted Emission	Not applicable

Note: The EUT is powered by battery.

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# 6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd		
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China		
Designation Number	CN1259		
FCC Test Firm Registration Number	975832		
A2LA Cert. No.	5054.02		
Description	Attestation of Global Compliance (Shenzhen) Co., Ltd is accredited by A2LA		

# TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	May 15, 2020	May 14, 2021
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 07, 2020	Dec.06, 2021
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	Mar. 23, 2020	Mar. 22, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 21, 2019	Sep. 20, 2021
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May 17, 2019	May 16, 2021
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08,2021	Jan. 07,2023
Test software Tonscend		JS32-RE (Ver.2.5)	N/A	N/A	N/A

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# 7. PEAK OUTPUT POWER

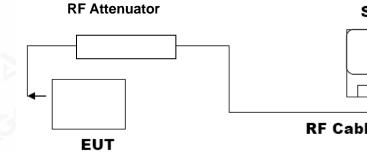
# 7.1. MEASUREMENT PROCEDURE

For peak power test:

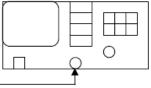
- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. RBW≥DTS bandwidth
- 3. VBW≥3\*RBW.
- 4. SPAN≥VBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. Trace: Max hold.

Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

# 7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) PEAK POWER TEST SETUP



# **Spectrum Analyzer**



**RF** Cable

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# 7.3. LIMITS AND MEASUREMENT RESULT

GFSK 1Mbps:

	PEAK OUTPUT POWER MEASUREMENT RESULT									
	FOR GFSK MOUDULATION									
Frequency (GHz)	Frequency Peak Power Applicable Limits Pass or Fail									
2.402	-2.277	30	Pass							
2.440	-2.248	30	Pass							
2.480	-2.109	30	Pass							

CH0



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Center Freq 2.48000000 GHz         Avg Type: Log-Pwr AvgHold: 100/100         Trace Data to recommendation         Frequency           0 dB/div         Ref 20.00 dBm         -2.109 dBm         -2.109 dBm         -2.109 dBm           0 0 dB/div         Ref 20.00 dBm         -2.109 dBm         -2.109 dBm         -2.4000000 GHz           0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	📕 Keysight Spectrum Analyzer - Swept SA				
Atten: 30 dB Mkr1 2.479 760 GHz 2.4800000 GHz 400 Center 2.480000 GHz Freq Offs Center 2.480000 GHz Freq Offs Ref 2.480000 GHz Freq Offs Ref 2.480000 GHz Freq Offs Ref 2.480000 GHz Freq Offs Start Press Start Pr		GHz	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6	Frequency
Control       Center Fre         100       1 </th <th></th> <th>PNO: Fast +++ Trig: Free Run</th> <th></th> <th>2.479 760 GHz</th> <th>Auto Tune</th>		PNO: Fast +++ Trig: Free Run		2.479 760 GHz	Auto Tune
Start Fre 2.47750000 GH 2.47750000 GH 2.48250000 GH 2.48250000 GH CF Ste 500 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					<b>Center Fre</b> 2.480000000 GH
300       Stop Fre         400       Stop Fre         400       Stop Fre         400       Stop Fre         600       Stop Fre <td>.10.0</td> <td></td> <td></td> <td></td> <td>Start Free 2.477500000 GH:</td>	.10.0				Start Free 2.477500000 GH:
ALLO 50.0 60.0 70.0 Center 2.480000 GHz Res BW 1.5 MHz #VBW 5.0 MHz Sweep 1.000 ms (1001 pts) 500.000 kH Auto 500.000 kH Freq Offs 0 H	20.0				<b>Stop Fre</b> 2.482500000 GH
80.0       Freq Offs         70.0       Freq Offs         Center 2.480000 GHz       Span 5.000 MHz         Res BW 1.5 MHz       #VBW 5.0 MHz	40.0				CF Ste 500.000 kH <u>Auto</u> Ma
Center 2.480000 GHz Res BW 1.5 MHz #VBW 5.0 MHz Sweep 1.000 ms (1001 pts)	60.0				Freq Offse 0 H
	-70.0 Center 2.480000 GHz	#1/D14/ 6 0 BALL		Span 5.000 MHz	
SIATUS	ISG	#APAA.2'0 MHS	Sweep		

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GFSK 2Mbps:

	PEAK OUTPUT POWER MEASUREMENT RESULT									
	FOR GFSK MOUDULATION									
Frequency (GHz)	Pass or Fail									
2.402	-2.118	30	Pass							
2.440	-2.152	30	Pass							
2.480	-2.135	30	Pass							



📕 Keysight Spe 🖬 R L	RF 50 C	vept SA	CORREC	SEI	NSE:INT		ALIGN AUTO	03-50-33 0	M Mar 15, 2021		- 6 -
	req 2.4020				Run		: Log-Pwr	TRAC TYP	E NNNNN	Frec	luency
I0 dB/div	Ref 20.00	dBm					Mkr1	2.402 4 -2.1	90 GHz 18 dBm	A	uto Tur
10.0											nter Fre
0.00				-		<b>↓</b> 1					Start Fre
20.0											<b>Stop Fr</b> 00000 GI
10.0										5	<b>CF St</b> 00.000 k
50.0										<u>Auto</u> Er	M eq Offs
70.0											01
	402000 GHz							Span 5	.000 MHz		
Res BW	1.5 MHz		#VBV	V 5.0 MHz			Sweep 1	.000 ms (	1001 pts)		

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CH19



CH39

💓 Keysight Specti	rum Analyzer - Swept SA RF 50 Ω AC	CORREC	SENSE:INT		04:05:42 PM Mar 15, 2021	
	q 2.48000000	0 GHz		ALIGN AUTO Avg Type: Log-Pwi Avg Hold: 100/100		Frequency
		PNO: Fast ++ IFGain:Low	<ul> <li>Trig: Free Run Atten: 30 dB</li> </ul>	Avg Hold: 100/100	DET	
10 dB/div Log	Ref 20.00 dBm			Mkr	1 2.479 485 GHz -2.135 dBm	Auto Tune
10.0						Center Fred 2.480000000 GH:
-10.0						Start Fred 2.477500000 GH:
-20.0						<b>Stop Fred</b> 2.482500000 GH
-40.0						CF Stej 500.000 kH <u>Auto</u> Ma
-60.0						Freq Offse 0 H
-70.0	00000 GHz				Span 5.000 MHz	
#Res BW 1.		#VBV	/ 5.0 MHz		1.000 ms (1001 pts)	
MSG				STAT	US	

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# 8.6 DB BANDWIDTH

#### **8.1. MEASUREMENT PROCEDURE**

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 kHz, VBW≥3×RBW.
- 4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

## 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

## 8.3. LIMITS AND MEASUREMENT RESULTS

#### GFSK 1Mbps:

LIMITS AND MEASUREMENT RESULT								
Annlinghla Limita		Applicable Limits						
Applicable Limits	Test Data	(kHz)	Criteria					
NO CC	Low Channel	691.8	PASS					
>500KHZ	Middle Channel	688.5	PASS					
	High Channel	692.1	PASS					



# TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

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## TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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#### **GFSK 2Mbps:**

LIMITS AND MEASUREMENT RESULT								
Applicable Limite		Applicable Limits						
Applicable Limits	Test Data	(kHz)	Criteria					
	Low Channel	1139	PASS					
>500KHZ	Middle Channel	1153	PASS					
	High Channel	1146	PASS					

#### 03:59:20 PM Mar 15, 2021 ALIGN AUTO Frequency Center Freq: 2.402000000 GHz Trig: Free Run Avg|Hold:>100/100 #Atten: 30 dB Radio Std: None Center Fi Radio Device: BTS #IEGain:Low Ref 20.00 dBm **Center Freq** 2.402000000 GHz Center 2.402 GHz #Res BW 100 kHz Span 5 MHz Sweep 1 ms **CF** Step #VBW 300 kHz 500.000 kHz Mar <u>Auto</u> 4.98 dBm **Occupied Bandwidth Total Power** 2.0810 MHz Freq Offset 0 Hz 26.156 kHz **Transmit Freq Error OBW Power** 99.00 % 1.139 MHz x dB -6.00 dB x dB Bandwidth

#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the strend in the stamp of the test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15day after the issue of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc~cert.com.





#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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# 9. CONDUCTED SPURIOUS EMISSION

#### 9.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

## 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

## 9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

#### 9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT								
	Measurement Re	sult						
Applicable Limits	Test Data	Criteria						
In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the reference level	PASS						

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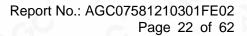


#### **GFSK 1Mbps:**



# TEST RESULT FOR ENTIRE FREQUENCY RANGE GFSK MODULATION IN LOW CHANNEL

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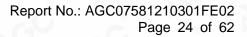
 Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com
 Web: http://cn.agc-cert.com/



		IODULATIO			
Keysight Spectrum Analyze	er - Swept SA 50 Ω AC CORREC	SENSE:INT	ALIGN AUTO	02:24:37 PM Mar 10, 2021	
Center Freq 2.44	0000000 GHz		Avg Type: Log-Pwr Avg Hold: 10/10	TRACE 1 2 3 4 5 6	Frequency
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			Mkr1 2	.440 013 8 GHz	Auto Tun
10 dB/div Ref 20.	.00 dBm			-2.321 dBm	
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0.00		<b>1</b>			2.440000000 GH
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-20.0					
-30.0					Start Fre 2.438500000 GH
-40.0					2.438500000 GH
-50.0				and the second second	
-60.0					Stop Fre
-70.0					2.441500000 GH
Center 2.440000 G #Res BW 100 kHz		BW 300 kHz	Sweep 2.	Span 3.000 MHz 000 ms (30000 pts)	CF Stej 300.000 kH Auto Ma
MKR MODE TRC SCL	X	Y 0.204 dDm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto Mai
1 N 1 f 2	2.440 013 8 GHz	-2.321 dBm			Freq Offse
3 4					0 H
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11		m	STATU	4	
Keysight Spectrum Analyze					
Keysight Spectrum Analyze	50 Ω AC CORREC	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	02:24:46 PM Mar 10, 2021 TRACE <b>1 2 3 4 5 6</b>	⊂ @ ■×
<ul> <li>MSG</li> <li>Keysight Spectrum Analyze</li> <li>RL RF</li> </ul>	50 Ω AC CORREC	SENSE:INT	ALIGN AUTO	02:24:46 PM Mar 10, 2021	
<ul> <li>MSG</li> <li>Keysight Spectrum Analyze</li> <li>RL RF</li> </ul>	50 Ω AC CORREC 5000000 GHZ PNO: Fast	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:24:46 PM Mar 10, 2021 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET PNNNN	Frequency
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Keysight Spectrum Analyze           R.L         RF           Center Freq 1.21           10 dB/div         Ref 20.           0.00	50 Ω AC CORREC 5000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:24:46 PMMar 10, 2021 TRACE 12 23 4 5 6 TYPE MAXMANN DET PNNNNN 1 2.311 99 GHz -51.576 dBm	Frequency Auto Tune Center Free 1.215000000 GH Start Free 30.000000 MH
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Keysight Spectrum Analyze           Resight Spectrum Analyze           Ref         Ref           Center Freq 1.21           10 dB/div         Ref 20.           10.0	50 Ω AC CORREC 5000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:24:46 PM Mar 10, 2021 TRACE 1, 23 4 5 6 TYPE 0 CT NNINN N 1 2.311 99 GHz -51.576 dBm -23 32 dBm	Frequency Auto Tune Center Free 1.215000000 GH Start Free 30.000000 MH Stop Free 2.400000000 GH
Keysight Spectrum Analyze     Ref 20.     Ref 20.     Center Freq 1.21	50 Ω AC CORREC 5000000 GHz PNO: Fast IFGain:Low .00 dBm	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:24:46 PM Mar 10, 2021 TRACE 1 23 4 5 6 TYPE 0 23 4 5 6 DET PNNINN 1 2.311 99 GHz -51.576 dBm 	Frequency Auto Tune Center Free 1.215000000 GH Start Free 30.000000 MH Stop Free 2.400000000 GH
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Keysight Spectrum Analyze           Keysight Spectrum Analyze           Ref         Center Freq 1.21           Center Freq 1.21           10 dB/div         Ref 20.           10.0	50 Ω AC CORREC 5000000 GHz PNO: Fast IFGain:Low .00 dBm	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:24:46 PM Mar 10, 2021 TRACE 1 23 4 5 6 TYPE 0 23 4 5 6 DET PNNINN 1 2.311 99 GHz -51.576 dBm 	Frequency           Auto Tune           Center Freq           1.21500000 GH           Start Freq           30.00000 MH           Stop Freq           2.40000000 GH           CF Step           237.00000 MH
Keysight Spectrum Analyze           Keysight Spectrum Analyze           R E         RF           Center Freq 1.21           Conter Freq 1.21           Start 30 MHz           #Res BW 100 kHz           MKR_MODE TRC SCL	50 Ω AC CORREC 5000000 GHZ PNO: Fast IFGain:Low .00 dBm 	SENSE:INT Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:24:46 PM Mar 10, 2021 TRACE 1, 23 4, 5 6 TYPE 1, 23 4, 5 6 TYPE 1, 23 4, 5 6 DET 1, 21 4, 20 4,	Frequency           Auto Tune           Center Freq           1.215000000 GH           Start Freq           30.000000 MH           Stop Freq           2.400000000 GH           CF Step           237.000000 MH
Keysight Spectrum Analyze           X         RF           Center Freq 1.21           10         E           200         E           300         E           400         E           400         E           Start 30 MHz         M 1           #Res< BWE 100 kHz           MKR <mode scl<="" th="" trc<="">         SCL           1         1         1           2         3         4</mode>	50 Ω AC CORREC 5000000 GHZ PNO: Fast IFGain:Low .00 dBm 	SENSE:INT Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:24:46 PM Mar 10, 2021 TRACE 1, 23 4:5 6 TYPE 1, 23 4:5 6 TYPE 1, 23 4:5 6 TYPE 1, 23 4:5 6 TYPE 1, 23 4:5 6 22:32 dBm 22:32 dBm 1 22:32 dBm 1 2 2 2 2 2 2 2 2 2 2 2 2 2	Frequency           Auto Tune           Center Freq           1.215000000 GH           Start Freq           30.000000 MH           Stop Freq           2.400000000 GH           CF Step           237.000000 MH           Auto           Freq Offset
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Keysight Spectrum Analyze           X         RF           Center Freq 1.21           10         RF           200         RF           300         RF           400         RF           500         RF           Start 30 MHz         RF           RES BW 100 KHz           MKR MODE TRC SCL         1           1         1         1           2         3         3         3           4         5         6         6           7         1         7         1	50 Ω AC CORREC 5000000 GHZ PNO: Fast IFGain:Low .00 dBm 	SENSE:INT Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:24:46 PM Mar 10, 2021 TRACE 1, 23 4:5 6 TYPE 1, 23 4:5 6 TYPE 1, 23 4:5 6 TYPE 1, 23 4:5 6 TYPE 1, 23 4:5 6 22:32 dBm 22:32 dBm 1 22:32 dBm 1 2 2 2 2 2 2 2 2 2 2 2 2 2	Frequency           Auto Tune           Center Freq           1.215000000 GH           Start Freq           30.000000 MH           Stop Freq           2.400000000 GH           CF Step           237.000000 MH           Auto           Freq Offset
Keysight Spectrum Analyze           Keysight Spectrum Analyze           R E         RF           Center Freq 1.21           10 dB/div         Ref 20.           10.0	50 Ω AC CORREC 5000000 GHZ PNO: Fast IFGain:Low .00 dBm 	SENSE:INT Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:24:46 PM Mar 10, 2021 TRACE 1, 23 4:5 6 TYPE 1, 23 4:5 6 TYPE 1, 23 4:5 6 TYPE 1, 23 4:5 6 TYPE 1, 23 4:5 6 22:32 dBm 22:32 dBm 1 22:32 dBm 1 2 2 2 2 2 2 2 2 2 2 2 2 2	Auto Tune Center Free 1.215000000 GH Start Free 30.000000 MH Stop Free 2.400000000 GH CF Step 237.000000 MH

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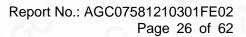
 Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com



	GFSK IV				
Keysight Spectrum Analyzer - Swe RL RF 50 Ω		SENSE:IN	T ALIGN AUTO	02:27:25 PM Mar 10, 2021	
Center Freq 2.48000			Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide ↔ IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Hold: 10/10	TYPE MWWWWW DET PNNNN	
	IFGalli.Low	Atten: 00 ab	Mired (	400 040 7 011-	Auto Tune
D-5 00 00	-ID			2.480 016 7 GHz -2.274 dBm	
10 dB/div Ref 20.00 c	aBm			-2.214 abii	
10.0		<b>↓,</b> _			Center Fred
0.00		<b>1</b>			2.480000000 GH;
-10.0			$\sim$		
-20.0					
					Start Fred
-30.0			· · · · · · · · · · · · · · · · · · ·		2.478500000 GHz
-40.0				and the second second	
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-70.0					2.401000000 011
Center 2.480000 GHz	#1/D1	1 200 kH-	Curson 3	Span 3.000 MHz	CF Step
#Res BW 100 kHz	#VDV	V 300 kHz	· · · ·	000 ms (30000 pts)	300.000 kHz Auto Mar
MKR MODE TRC SCL	X	Y 0.074 dDm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>rate</u>
1 N 1 f	2.480 016 7 GHz	-2.274 dBm			
3 4					Freq Offset
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📜 Keysight Spectrum Analyzer - Swe		m			
J Keysight Spectrum Analyzer - Swe M RL RF 50 Ω	AC CORREC	III SENSE:INT	T ALIGN AUTO	02:27:34 PM Mar 10, 2021	-
📜 Keysight Spectrum Analyzer - Swe	AC CORREC 00000 GHz PNO: Fast ↔	Trig: Free Run		02:27:34 PM Mar 10, 2021 TRACE 1234 5 6	-
J Keysight Spectrum Analyzer - Swe M RL RF 50 Ω	AC CORREC	Trin Frank	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P NNNN N	Frequency
J Keysight Spectrum Analyzer - Swe M RL RF 50 Ω	AC CORREC 00000 GHz PNO: Fast ↔	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE 2 3 4 5 6 TYPE M DET P.NNINN 12.352 20 GHz	-
Keysight Spectrum Analyzer - Swe W RL RF 50 Ω Center Freq 1.21500 10 dB/div Ref 20.00 c	AC CORREC 00000 GHz PNO: Fast ↔ IFGain:Low	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P NNNN N	Frequency
Keysight Spectrum Analyzer - Swe     RL	AC CORREC 00000 GHz PNO: Fast ↔ IFGain:Low	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE 2 3 4 5 6 TYPE M DET P.NNINN 12.352 20 GHz	Frequency Auto Tune
Keysight Spectrum Analyzer - Swe RL	AC CORREC 00000 GHz PNO: Fast ↔ IFGain:Low	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE 2 3 4 5 6 TYPE M DET P.NNINN 12.352 20 GHz	Frequency Auto Tune Center Free
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Keysight Spectrum Analyzer - Swe           RL         RF         50 Ω           Center Freq 1.21500           I         0 dB/div         Ref 20.00 c           0 dB/div         Ref 20.00 c	AC CORREC 00000 GHz PNO: Fast ↔ IFGain:Low	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE 2 3 4 5 6 TYPE M DET P.NNINN 12.352 20 GHz	Frequency Auto Tune Center Fred
Keysight Spectrum Analyzer - Swe           RL         RF         50 Ω           Center Freq 1.21500         1.21500           0 dB/div         Ref 20.00 c           10 dB/div         Ref 20.00 c           -10.0	AC CORREC 00000 GHz PNO: Fast ↔ IFGain:Low	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE [] 2:3 45 6 TYPE N DET NNNNN T1 2:352 20 GHz -53.063 dBm	Frequency Auto Tune Center Free 1.215000000 GH2
Keysight Spectrum Analyzer - Swe           RL         RF         50 Ω           Center Freq 1.21500         1.21500           0 dB/div         Ref 20.00 c           10 dB/div         Ref 20.00 c           -0 dB/div	AC CORREC 00000 GHz PNO: Fast ↔ IFGain:Low	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE [] 2:3 45 6 TYPE N DET NNNNN T1 2:352 20 GHz -53.063 dBm	Frequency Auto Tune Center Frec 1.21500000 GHz Start Frec
Keysight Spectrum Analyzer - Swe           R R         RF         50 Ω           Center Freq 1.21500           10 dB/div         Ref 20.00 c           10 dB/div         Ref 20.00 c           -0 0         -0 0           -10 0         -0 0           -20 0         -0 0	AC CORREC 00000 GHz PNO: Fast ↔ IFGain:Low	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE [] 2:3 45 6 TYPE N DET NNNNN T1 2:352 20 GHz -53.063 dBm	Frequency Auto Tune Center Frec 1.215000000 GHz Start Frec 30.000000 MHz
Keysight Spectrum Analyzer - Swe           RL         RF         50 Ω           Center Freq 1.21500           0 dB/div         Ref 20.00 c           10 dB/div         Ref 20.00 c           -0.0         -0.0           -10.0         -0.0           -20.0         -0.0           -30.0         -0.0           -20.0         -0.0           -20.0         -0.0	AC CORREC D0000 GHz PNO: Fast → IFGain:Low	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE [] 2:3 45 6 TYPE N DET NNNNN T1 2:352 20 GHz -53.063 dBm	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 MH: Stop Frec
Keysight Spectrum Analyzer - Swe           RL         RF         50 Ω           Center Freq 1.21500           0 dB/div         Ref 20.00 c           10 dB/div         Ref 20.00 c           -0.0         -0.0           -10.0         -0.0           -20.0         -0.0           -30.0         -0.0           -20.0         -0.0           -20.0         -0.0	AC CORREC 00000 GHz PNO: Fast ↔ IFGain:Low	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE [] 2:3 45 6 TYPE N DET NNNNN T1 2:352 20 GHz -53.063 dBm	Frequency Auto Tune Center Frec 1.215000000 GHz Start Frec 30.000000 MHz
Keysight Spectrum Analyzer - Swe W RL         RF         50 Ω           Center Freq 1.21500         10 dB/div         Ref 20.00 c           10 dB/div         Ref 20.00 c         0           -0 dB/div         Ref 20.00 c         0	AC CORREC D0000 GHz PNO: Fast → IFGain:Low	Trig: Free Run	T ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:27:34 PM Mar 10, 2021 TRACE [] 2:3 45 6 TYPE N DET NNNNN T1 2:352 20 GHz -53.063 dBm	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 MH: Stop Frec
Keysight Spectrum Analyzer - Swe           RL         RF         50 Ω           Center Freq 1.21500           0 dB/div         Ref 20.00 c           10 dB/div         Ref 20.00 c           0 000         000           -0 0         000           -10 0         000           -20 0         000           -30 0         000           -40 0         000           50 0         000           Start 30 MHz         000	AC CORREC D0000 GHz PNO: Fast → IFGain:Low dBm	Trig: Free Run Atten: 30 dB	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:27:34 PM Mar 10, 2021 TRACE 2 3 4 5 6 TYPE DT P NINNN r1 2.352 20 GHz -53.063 dBm 22:37.66 23:37.66 23:37.66 23:37.66 23:37.66 23:37.66 24:37.66 24:37.66 24:37.66 24:37.66 24:37.66 24:37.66 25:37.56 25:37.56	Frequency Auto Tune Center Frec 1.215000000 GH: 30.000000 MH2 Stop Frec 2.400000000 GH2
Keysight Spectrum Analyzer - Swe           RL         RF         50 Ω           Center Freq 1.21500           IO         Bl/div         Ref 20.00 c           0.00	AC CORREC D0000 GHz PNO: Fast → IFGain:Low dBm	Trig: Free Run	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:27:34 PM Mar 10, 2021 TRACE 1 2.3 4 5 6 TYPE MWWWWW DET P NINNIN r1 2.352 20 GHz -53.063 dBm 22:37 dBm 22:37 dBm	Frequency           Auto Tune           Center Freq           1.215000000 GH2           Start Freq           30.000000 MH2           Stop Freq           2.400000000 GH2           CF Step           237.000000 MH2
Keysight Spectrum Analyzer - Swe           RL         RF         50 Ω           Center Freq 1.21500           0 dB/div         Ref 20.00 c           10 dB/div         Ref 20.00 c           0 000         000           -0 0         000           -10 0         000           -20 0         000           -30 0         000           -40 0         000           50 0         000           Start 30 MHz         000	AC CORREC D0000 GHz PNO: Fast → IFGain:Low dBm	Trig: Free Run Atten: 30 dB	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:27:34 PM Mar 10, 2021 TRACE [] 2.3 4 5 6 TYPE	Frequency Auto Tune Center Frec 1.215000000 GH: 30.000000 MH2 Stop Frec 2.400000000 GH2
Keysight Spectrum Analyzer - Swe           RL         RF         50 Ω           Center Freq 1.21500           Odd/div         Ref 20.00 c           10 dB/div         Ref 20.00 c           0 dB/div         Ref 20.00 c           1 dF         1 dF	AC CORREC D0000 GHZ PNO: Fast IFGain:Low dBm dBm dBm #VBV	Trig: Free Run Atten: 30 dB	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:27:34 PM Mar 10, 2021 TRACE [] 2.3 4.5 6 TYPE	Frequency           Auto Tune           Center Freq           1.215000000 GH2           Start Freq           30.000000 MH2           Stop Freq           2.400000000 GH2           CF Step           237.000000 MH2
Keysight Spectrum Analyzer - Swe W         RL         RF         S0 Ω           Center Freq 1.21500         100<	AC CORREC D0000 GHz PNO: Fast H IFGain:Low dBm dBm dBm dBm dBm dBm dBm dBm	Trig: Free Run Atten: 30 dB	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:27:34 PM Mar 10, 2021 TRACE [] 2.3 4.5 6 TYPE	Frequency           Auto Tune           Center Freq           1.215000000 GH:           Start Freq           30.000000 MH:           Stop Freq           2.400000000 GH:           CF Step           237.000000 MH:           Auto
Keysight Spectrum Analyzer - Swe           RL         RF         50 Ω           Center Freq 1.21500           Ref 20.00 c           a         a           a         a           a         a           a         a           a         a           a         a           b         a           a         a           a         a           a         a           a         a           a         a           a         a           a         a           a         a           a         a           a         a         a           a         a         a           a         a         a	AC CORREC D0000 GHz PNO: Fast H IFGain:Low dBm dBm dBm dBm dBm dBm dBm dBm	Trig: Free Run Atten: 30 dB	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:27:34 PM Mar 10, 2021 TRACE 12.3 45 6 TYPE 12.3 45 6 TYP	Frequency Auto Tune Center Free 1.21500000 GH: Start Free 30.000000 MH: Stop Free 2.400000000 GH: Auto Mar Freq Offse
Keysight Spectrum Analyzer - Swe W RL         RF         50 Ω           Center Freq 1.21500         Center Freq 1.21500         Center Freq 1.21500           10 dB/div         Ref 20.00 c         Center Freq 1.21500           20 dB/div         Ref 20.00 c         Center Freq 1.21500           20 dB/div         Ref 20.00 c         Center Freq 1.21500           3 dB/div         Ref 20.00 c         Center Freq 1.21500	AC CORREC D0000 GHz PNO: Fast H IFGain:Low dBm dBm dBm dBm dBm dBm dBm dBm	Trig: Free Run Atten: 30 dB	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:27:34 PM Mar 10, 2021 TRACE [] 2.3 4.5 6 TYPE	Frequency           Auto Tune           Center Freq           1.215000000 GH2           Start Freq           30.000000 MH2           Stop Freq           2.400000000 GH2           CF Step           237.000000 MH2
Keysight Spectrum Analyzer - Swe           RL         RF         S0 Ω           Center Freq 1.21500           Io dB/div         Ref 20.00 c           Io 0         Ref 20.00 c           Io 0         Io 0           Io 0 <thio 0<="" th=""></thio>	AC CORREC D0000 GHz PNO: Fast H IFGain:Low dBm dBm dBm dBm dBm dBm dBm dBm	Trig: Free Run Atten: 30 dB	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:27:34 PM Mar 10, 2021 TRACE 12.3 45 6 TYPE 12.3 45 6 TYP	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 GH: 2.400000000 GH: 237.000000 MH: Auto Mar Freq Offset
Keysight Spectrum Analyzer - Swe RL         RF         So Ω           Center Freq 1.21500         1.21500           10 dE/div         Ref 20.00 c           -20 d	AC CORREC D0000 GHz PNO: Fast H IFGain:Low dBm dBm dBm dBm dBm dBm dBm dBm	Trig: Free Run Atten: 30 dB	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:27:34 PM Mar 10, 2021 TRACE 12.3 45 6 TYPE 12.3 45 6 TYP	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 GH: 2.400000000 GH: 237.000000 MH: Auto Mar Freq Offset
Keysight Spectrum Analyzer - Swe RL         RF         50 Ω           Center Freq 1.21500         1.21500           10 dB/div         Ref 20.00 c           -0 dB/div	AC CORREC D0000 GHz PNO: Fast H IFGain:Low dBm dBm dBm dBm dBm dBm dBm dBm	Trig: Free Run Atten: 30 dB	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:27:34 PM Mar 10, 2021 TRACE 12.3 45 6 TYPE 12.3 45 6 TYP	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 GH: 2.400000000 GH: 237.000000 MH: Auto Mar Freq Offset
Keysight Spectrum Analyzer - Swe RL         RF         50 Ω           Center Freq 1.21500         Center Freq 1.21500         Center Freq 1.21500           10 dB/div         Ref 20.00 c         Center Freq 1.21500           20 dB/div         Center Freq 1.21500         Center Freq 1.21500           20 dB/div         Center Freq 1.21500         Center Freq 1.21500           20 dB/div         Center Freq 1.21500         Center Freq 1.21500           40 dB/div         Center Freq 1.21500         Center Freq 1.21500           41 dB/div         Center Freq 1.21500         Center Freq 1.21500           41 dB/div         Center Freq 1.21500         Center Freq 1.21500           42 dB/div         Center Freq 1.21500         Center Freq 1.21500           43 dB/div         Center Freq 1.21500         Center Freq1.215000           44 dB/div<	AC CORREC D0000 GHz PNO: Fast H IFGain:Low dBm dBm dBm dBm dBm dBm dBm dBm	Trig: Free Run Atten: 30 dB	r ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:27:34 PM Mar 10, 2021 TRACE 12.3 45 6 TYPE 12.3 45 6 TYP	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 GH: 2.400000000 GH: 237.000000 MH: Auto Mar Freq Offset

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🎉 Keysight Spec										
Center Fr			CORREC GHz	SEN	ISE:INT	Ava Tvp	ALIGN AUTO e: Log-Pwr		4 Mar 10, 2021 E <b>1 2 3 4 5 6</b>	Frequency
Genter I I	Cq 10.75	0000000	PNO: Fast IFGain:Low	Trig: Free Atten: 30		Avg Hold			E WWWWW	
10 dB/div Log	Ref 20.0	0 dBm					Mkr	1 24.23 -47.4	6 5 GHz 31 dBm	Auto Tune
10.0 0.00 -10.0										Center Freq 13.750000000 GHz
-20.0 -30.0 -40.0									dBm 1 -	<b>Start Freq</b> 2.50000000 GHz
-50.0 -60.0										<b>Stop Freq</b> 25.00000000 GHz
Start 2.50 #Res BW	100 kHz	X	#VE	SW 300 kHz	FUN			2.152 s (3	5.00 GHz 0000 pts)	<b>CF Step</b> 2.250000000 GHz <u>Auto</u> Man
N         1           2         3           3         4           5         5           6         7           8         9           10         11			36 5 GHz	Υ -47.431 dE			NCTION WIDTH	FUNCTION		Freq Offset 0 Hz
MSG							STATUS	6		

Note: The peak emissions without marker on the above plots are fundamental wave and need not to compare with the limit.

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 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com

Web: http://cn.agc-cert.com/

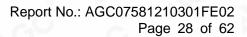


#### **GFSK 2Mbps:**



# TEST RESULT FOR ENTIRE FREQUENCY RANGE GFSK MODULATION IN LOW CHANNEL

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🊺 Keysight	Spectrum	Analyzer - S	wept SA								
<mark>⊯</mark> RL Center	Freq			CORREC		INSE:INT		ALIGN AUTO Type: Log-Pwr Hold: 10/10	TRAC	M Mar 15, 2021 CE 1 2 3 4 5 6 PE M WWWWW	Frequency
10 dB/div	v Re	ef 20.00	dBm	PNO: Fast IFGain:Lov			Avg		cr1 4.804	4 3 GHz 48 dBm	Auto Tune
Log 10.0 0.00											<b>Center Freq</b> 13.741750000 GHz
-20.0 -30.0 -40.0		1								22.22 dBm	<b>Start Freq</b> 2.483500000 GHz
-50.0								he served the first first first first server of a later of the server of			<b>Stop Freq</b> 25.00000000 GHz
Start 2. #Res B	W 100	kHz	×	#V 804 3 GHz	/BW 300 kH Y -47.448 c	FUN	ICTION	Sweep	2.152 s (3	5.00 GHz 0000 pts) <sup>DN VALUE</sup>	<b>CF Step</b> 2.251650000 GHz <u>Auto</u> Man
1 N 2 3 3 4 5 6 7 8 9 9 10 11			4.8	04 3 GHZ	-4/.448 c						Freq Offset 0 Hz
MSG								STATU	s		

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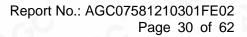
 Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com



Keysight Spectrum Analyzer - S		SENSE:INT	ALIGN	NUTO 04-04-11 P	M Mar 15, 2021	
Center Freq 2.4400	000000 GHz PNO: Wide ↔	Trig: Free Run	Avg Type: Log- Avg Hold: 10/10	Pwr TRAC		Frequency
	IFGain:Low _	Atten: 30 dB	Mke	2.440 012		Auto Tun
10 dB/div Ref 20.00	dBm		IVIKI	-2.2	39 dBm	
10.0		1				Center Free
0.00						2.440000000 GH
-10.0						
-20.0						Start Free
-30.0				$\sim$		2.437500000 GH
-40.0	$\checkmark$					
-50.0						Stop Free
-60.0						2.442500000 GH
-70.0						
Center 2.440000 GH	Z			Span 5	.000 MHz	CF Step
#Res BW 100 kHz	#VBI	N 300 kHz		o 2.000 ms (3	0000 pts)	500.000 kH Auto Mar
MKR MODE TRC SCL	× 2.440 012 58 GHz	Y -2.239 dBm	FUNCTION FUNCTION	WIDTH FUNCTION	ON VALUE	
2	2.440 012 00 0112	-2.203 0.0111				Freq Offse
3 4						0 H;
5					=	
7 8						
9						
11						
					~	
•		m			- F	
MSG		m		STATUS	*	
🚺 Keysight Spectrum Analyzer - S					M Mar 15, 2021	
	Ω AC CORREC	SENSE:INT	ALIGN / Avg Type: Log-	AUTO 04:04:21 PI Pwr trac	MMar 15, 2021	Frequency
Keysight Spectrum Analyzer - S I RL RF 50	Ω AC CORREC	SENSE:INT	ALIGN /	AUTO 04:04:21 PI Pwr trac		Frequency
Keysight Spectrum Analyzer - S I RL RF 50	Ω AC CORREC D000000 GHZ PNO: Fast ↔	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	22 1 2 3 4 5 6 PE MWWWWW P NNNNN 99 GHz	Frequency
Veysight Spectrum Analyzer - S RL RF 50 Center Freq 1.2150 10 dB/div Ref 20.00	Ω AC CORREC 0000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	CE 123456 PE MWWWWW ET P NNNNN	Frequency
Keysight Spectrum Analyzer - S Q RL RF 50 Center Freq 1.2150	Ω AC CORREC 0000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	22 1 2 3 4 5 6 PE MWWWWW P NNNNN 99 GHz	Frequency Auto Tune
Keysight Spectrum Analyzer - S Q RL RF 50 Center Freq 1.2150	Ω AC CORREC 0000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	22 1 2 3 4 5 6 PE MWWWWW P NNNNN 99 GHz	Frequency Auto Tune Center Free
Keysight Spectrum Analyzer - S RL RF 50 Center Freq 1.2150 10 dB/div Ref 20.00 0.00	Ω AC CORREC 0000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	22 1 2 3 4 5 6 PE MWWWWW P NNNNN 99 GHz	Frequency Auto Tune Center Free
Keysight Spectrum Analyzer - S           RL         RF         50           Center Freq 1.2150           10 dB/div         Ref 20.00           10 o         B	Ω AC CORREC 0000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	22 1 2 3 4 5 6 PE MWWWWW P NNNNN 99 GHz	Frequency Auto Tune Center Free 1.215000000 GH
Keysight Spectrum Analyzer - S RL RF 50 Center Freq 1.2150 10 dB/div Ref 20.00 0.00	Ω AC CORREC 0000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	E 123456 E MWWWWW 99 GHz 49 dBm	Frequency Auto Tune Center Free 1.21500000 GH Start Free
Keysight Spectrum Analyzer - S           RL         RF         50           Center Freq 1.2150           10 dB/div         Ref 20.00           10 o	Ω AC CORREC 0000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	E 123456 E MWWWWW 99 GHz 49 dBm	Frequency Auto Tune Center Free 1.21500000 GH Start Free
Keysight Spectrum Analyzer - S           RL         RF         50           Center Freq 1.2150           10 dB/div         Ref 20.00           00         00           -10 0	Ω AC CORREC 0000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	E 123456 E MWWWWW 99 GHz 49 dBm	Frequency Auto Tune Center Free 1.215000000 GH: Start Free 30.000000 MH:
Keysight Spectrum Analyzer - S           RL         RF         50           Center Freq 1.2150           10 dB/div         Ref 20.00           10.0	Ω AC CORREC 000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	E 123456 E MWWWWW 99 GHz 49 dBm	Frequency Auto Tune Center Free 1.215000000 GH Start Free 30.000000 MH Stop Free
Keysight Spectrum Analyzer - S           RL         RF         50           Center Freq 1.2150           10 dB/div         Ref 20.00           000	Ω AC CORREC 000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 P Pwr TRAC DR Mkr1 2.311	E 123456 E MWWWWW 99 GHz 49 dBm	Frequency Auto Tune Center Free 1.215000000 GH Start Free 30.000000 MH Stop Free
Keysight Spectrum Analyzer - S           Q         RL         RF         50           Center Freq 1.2150           I         OdB/div         Ref 20.00           0.00         Ref 20.00         Ref 20.00           10.0         Ref 20.00         Ref 20.00           10.0         Ref 20.00         Ref 20.00           10.0         Ref 20.00         Ref 20.00           -10.0         Ref 20.00         Ref 20.00           -20.0         Ref 20.00         Ref 20.00           -30.0         Ref 20.00         Ref 20.00           -40.0         Ref 20.00         Ref 20.00           -30.0         Ref 20.00         Ref 20.00           -40.0         Ref 20.00         Ref 20.00	Ω AC CORREC 000000 GHz PNO: Fast ← IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg Hold: 10/10	AUTO 04:04:21 PI Pwr TRAC TY DE MKr1 2.311 -52.14	E 12 3 4 5 6 E MWWWWW 99 GHz 49 dBm 22 34 48m 22 34 48m 1 1 1 1 1 1 1 1 1 1 1 1 1	Frequency Auto Tune Center Free 1.215000000 GH Start Free 30.000000 MH Stop Free 2.400000000 GH
Keysight Spectrum Analyzer - S           Q         RL         RF         50           Center Freq 1.2150           10 dB/div         Ref 20.00           0 dB/div         Ref 20.00           10 dB/div         Ref 20.00           10 dB/div         Ref 20.00           10 dB/div         Ref 20.00           10 dB/div         Ref 20.00	R     AC     CORREC       000000 GHz     PNO: Fast       IFGain:Low	SENSE:INT	ALIGN Avg Type: Log- Avg/Hold: 10/10	AUTO 04:04:21 PI Pwr TRAC TYM 00 MIKr1 2.311 -52.14 -52.14 -52.14 -52.14 -52.14 -52.14 -52.14 -52.14 -52.14 -52.14 -52.14 -52.14 -52.54 -52.	22 34 56 E 1 2 3 4 5 6 E 1 2 3 4 5 6 7 6 7 6 E 1 2 3 4 5 6 7 6 7 6 7 6 7 6 7 6 7	Frequency Auto Tune Center Free 1.215000000 GH: 30.000000 MH: Stop Free 2.400000000 GH: CF Step
Keysight Spectrum Analyzer - S           Q         RL         RF         50           Center Freq 1.2150           0         B         60           0         B         60         60           -20	Ω AC CORREC D00000 GHz PNO: Fast IFGain:Low D dBm Automotion of the second seco	SENSE:INT	ALIGN / Avg Type: Log- Avg/Hold: 10/10	AUTO 04:04:21 PI Pwr TRAC TYD DI MIKr1 2.311 -52.14 Stop 2 228.0 ms (3	22 34 56 E M WWWNNN 99 GHz 49 dBm 22 34 48 22 34 48 1 22 34 48 1 22 34 48 1 1 49 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	Frequency Auto Tune Center Frec 1.215000000 GH: 30.000000 MH: Stop Frec 2.400000000 GH: 237.000000 MH:
Keysight Spectrum Analyzer - S           RL         RF         50           Center Freq 1.2150           Odd B/div         Ref 20.00           100         Ref 20.00           200         Ref 20.00           300         Ref 20.00           400         Ref 20.00           500         Ref 20.00           500 <thref 20.00<="" th="">           500</thref>	R     AC     CORREC       000000 GHz     PNO: Fast       IFGain:Low	SENSE:INT	ALIGN Avg Type: Log- Avg/Hold: 10/10	AUTO 04:04:21 PI Pwr TRAC TYD DI MIKr1 2.311 -52.14 Stop 2 228.0 ms (3	2224.60 49 dBm 2224.60 49 dBm 2224.60 40 dBm 40 dBm 40 dBm 40 dBm 40 dBm 40 dBm 40 dBm 40 dBm 40 dBm 40 dBm	Frequency Auto Tune Center Free 1.21500000 GH Start Free 30.000000 MH Stop Free 2.400000000 GH CF Step 237.000000 MH
Keysight Spectrum Analyzer - S           RL         RF         50           Center Freq 1.2150           10 dB/div         Ref 20.00           20 dB/div         Ref 20.00           <	Ω     AC     CORREC       000000     GHz     PNO: Fast       IFGain:Low     IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg/Hold: 10/10	AUTO 04:04:21 PI Pwr TRAC TYD DI MIKr1 2.311 -52.14 Stop 2 228.0 ms (3	22 34 56 E M WWWNNN 99 GHz 49 dBm 22 34 48 22 34 48 1 22 34 48 1 22 34 48 1 1 49 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 GH: 2.400000000 GH: 237.000000 MH: Auto Mar Freq Offse
Keysight Spectrum Analyzer - S           Q         RL         RF         50           Center Freq 1.2150           I         Genter Freq 1.2150           I         Genter Freq 1.2150           I         Genter Freq 1.2150           I         Ref 20.00           I         Genter Freq 1.2150           I         Ref 20.00           I         Genter Freq 1.2150	Ω     AC     CORREC       000000     GHz     PNO: Fast       IFGain:Low     IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg/Hold: 10/10	AUTO 04:04:21 PI Pwr TRAC TYD DI MIKr1 2.311 -52.14 Stop 2 228.0 ms (3	22 34 56 E M WWWNNN 99 GHz 49 dBm 22 34 48 22 34 48 1 22 34 48 1 22 34 48 1 1 49 dBm	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 GH: 2.400000000 GH: 237.000000 MH: Auto Mar Freq Offse
Keysight Spectrum Analyzer - S           RL         RF         50           Center Freq 1.2150           Oddata         Ref 20.00           10 0         Ref 20.00           10 0         Ref 20.00           10 0         Ref 20.00           10 0         Ref 20.00           20 0         Ref 20.00	Ω     AC     CORREC       000000     GHz     PNO: Fast       IFGain:Low     IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg/Hold: 10/10	AUTO 04:04:21 PI Pwr TRAC TYD DI MIKr1 2.311 -52.14 Stop 2 228.0 ms (3	99 GHz 49 dBm 2224 dBm 2224 dBm 49 dBm	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 GH: 2.400000000 GH: 237.000000 MH: Auto Mar Freq Offse
Keysight Spectrum Analyzer - 5           RL         RF         50           Center Freq 1.2150           10 dB/div         Ref 20.00           20 dB/div          20 dB/div	Ω     AC     CORREC       000000     GHz     PNO: Fast       IFGain:Low     IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg/Hold: 10/10	AUTO 04:04:21 PI Pwr TRAC TYD DI MIKr1 2.311 -52.14 Stop 2 228.0 ms (3	99 GHz 49 dBm 2224 dBm 2224 dBm 49 dBm	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 GH: 2.400000000 GH: 237.000000 MH: Auto Mar Freq Offse
Keysight Spectrum Analyzer - S           Qr         RL         RF         50           Center Freq 1.2150           O         Ref 20.00           10         Ref 20.00           100         Ref 20.00           10         Ref 20.00	Ω     AC     CORREC       000000     GHz     PNO: Fast       IFGain:Low     IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg/Hold: 10/10	AUTO 04:04:21 PI Pwr TRAC TYD DI MIKr1 2.311 -52.14 Stop 2 228.0 ms (3	99 GHz 49 dBm 2224 dBm 2224 dBm 49 dBm	Frequency Auto Tune Center Frec 1.215000000 GH: Start Frec 30.000000 GH: 2.400000000 GH: 237.000000 MH: Auto Mar Freq Offse
Keysight Spectrum Analyzer - S           Q         RL         RF         50           Center Freq 1.2150           0         B//div         Ref 20.00           0         0         0         0           0         0         0         0         0           10         0         0         0         0         0           20         0         0         0         0         0         0           20         0	Ω     AC     CORREC       000000     GHz     PNO: Fast       IFGain:Low     IFGain:Low	SENSE:INT	ALIGN / Avg Type: Log- Avg/Hold: 10/10	AUTO 04:04:21 PI Pwr TRAC TYD DI MIKr1 2.311 -52.14 Stop 2 228.0 ms (3	99 GHz 49 dBm 2224 dBm 2224 dBm 49 dBm	Frequency Auto Tune Center Frec 1.215000000 GH: 30.000000 MH: 2.400000000 GH: 237.000000 MH:

Sompliance Dedicated Fe Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the soleciated resistanp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the writter exchorization of AG presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issues to AGC by agc@agc-cert.com. /Inspection The test results Bf ne test report.







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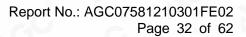
 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com





#### **GFSK MODULATION IN HIGH CHANNEL**

Compliancesh Dedicated Fesh Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the Bedicated Pestivo/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results be to the test of some and approver to the test of some any objections to report issued by AGC should be submitted to AGC within 15days after the issues of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.





🊺 Keysight Spe											
Center F	RF	50 Ω 3 7500			SE	NSE:INT	Avg 1	ALIGN AUTO		M Mar 15, 2021	Frequency
	eq i	5.7500	F	NO: Fast Gain:Low	Trig: Fre Atten: 30		Avg H	old: 10/10	TYP		Auto Tomo
10 dB/div	Ref	20.00 d	Bm					Mkr	1 24.35 -47.1	7 2 GHz 82 dBm	Auto Tune
Log 10.0 0.00 -10.0											Center Freq 13.750000000 GHz
-20.0 -30.0 -40.0										dBm	<b>Start Freq</b> 2.500000000 GHz
-50.0 -60.0 -70.0											<b>Stop Freq</b> 25.00000000 GHz
Start 2.50 #Res BW	100 k	Hz		#VI	BW 300 kHz				2.152 s (3	5.00 GHz 0000 pts)	<b>CF Step</b> 2.25000000 GHz <u>Auto</u> Man
I         N         I           1         N         I           2         3         I           3         I         I           6         I         I           7         I         I           9         I         I           11         I         I			× 24.357	2 GHz	-47.182 dl		NCTION	FUNCTION WIDTH	FUNCTION		Freq Offset 0 Hz
MSG								STATUS	6		

Note: The peak emissions without marker on the above plots are fundamental wave and need not to compare with the limit.

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Web: http://cn.agc-cert.com/

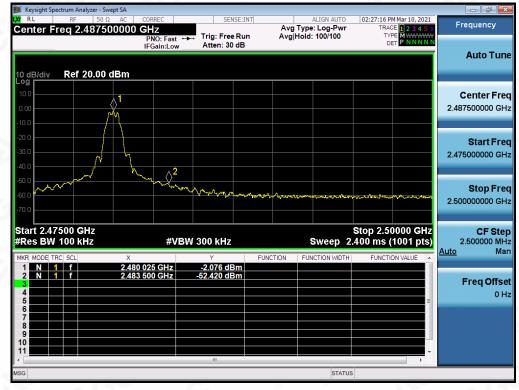


#### **GFSK 1Mbps:**

:19:54 PM Mar 10, 2021 Frequency Avg Type: Log-Pwi Avg|Hold: 100/100 Center Freq 2.398500000 GHz Trig: Free Run PNO: Fast IFGain:Low Atten: 30 dB Auto Tune Ref 20.00 dBm 0 dB/div **Center Freq** 2.398500000 GHz Start Fred 2.39000000 GHz Stop Freq 2.407000000 GHz Start 2.390000 GHz #Res BW 100 kHz Stop 2.407000 GHz Sweep 1.667 ms (1001 pts) CF Step 1.700000 MHz #VBW 300 kHz Auto Mar FUNCTION -2.159 dBm -49.889 dBm 2.402 019 GHz 2.400 000 GHz Freq Offset 0 Hz

# TEST RESULT FOR BAND EDGE GFSK MODULATION IN LOW CHANNEL

**GFSK MODULATION IN HIGH CHANNEL** 



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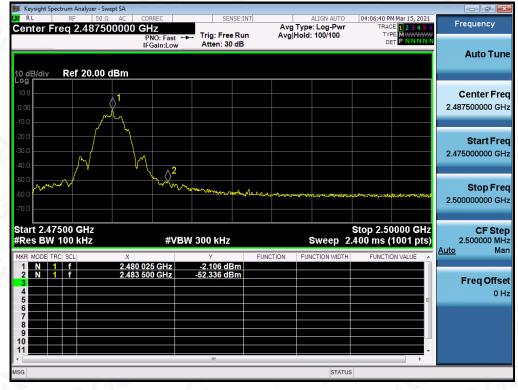


#### **GFSK 2Mbps:**



# TEST RESULT FOR BAND EDGE GFSK MODULATION IN LOW CHANNEL

**GFSK MODULATION IN HIGH CHANNEL** 



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# **10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY**

#### **10.1. MEASUREMENT PROCEDURE**

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set the SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the KDB 558074 item 8.4 was used in this testing.

## **10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)**

Refer to Section 7.2.

#### **10.3. MEASUREMENT EQUIPMENT USED**

Refer to Section 6.

#### **10.4. LIMITS AND MEASUREMENT RESULT**

#### GFSK 1Mbps:

Channel No.	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Low Channel	-20.070	8	Pass
Middle Channel	-20.114	8	Pass
High Channel	-19.883	8	Pass



# TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

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# TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



#### TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

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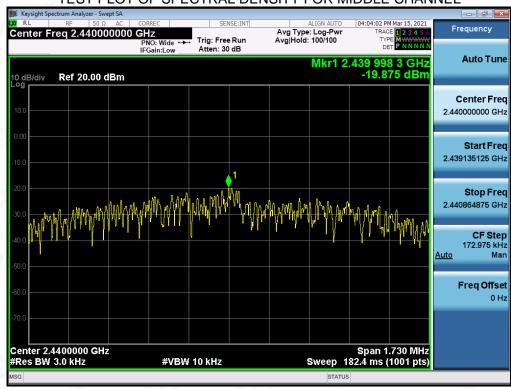
## **GFSK 2Mbps:**

Channel No.	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Low Channel	-19.832	8	Pass
Middle Channel	-19.875	8	Pass
High Channel	-19.958	8	Pass



# TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

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# TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



#### TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

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# **11. RADIATED EMISSION**

#### **11.1. MEASUREMENT PROCEDURE**

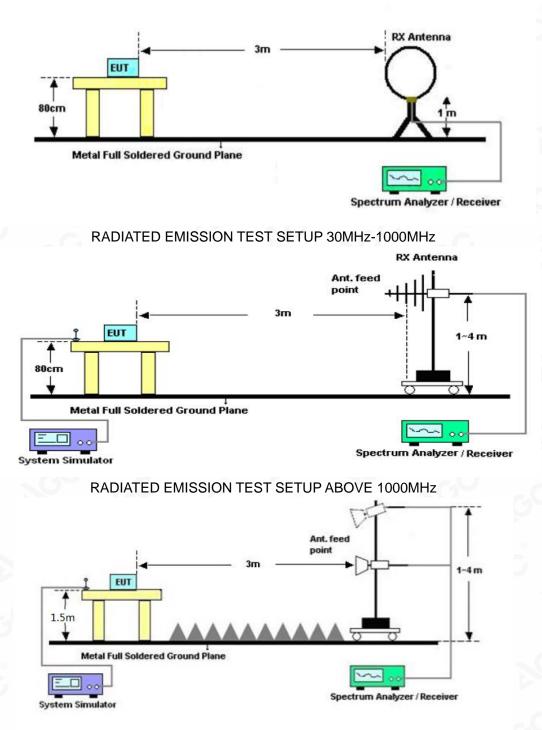
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

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Report No.: AGC07581210301FE02 Page 40 of 62

# 11.2. TEST SETUP



Radiated Emission Test-Setup Frequency Below 30MHz

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# **11.3. LIMITS AND MEASUREMENT RESULT**

15.209 Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

# 11.4. TEST RESULT

# **RADIATED EMISSION BELOW 30MHz**

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

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	GFSK 1Mbps:
RADIATED	<b>EMISSION BELOW 1GHZ</b>

UT			DS-Bea	acon-06		Mode	l Name	D	S-Beacon-06	
emperatur	ture 25° C Relative Humidity		ty 5	55.4%						
Pressure			960hPa	a		Test V	/oltage	N	Normal Voltage	
est Mode			Mode 3	3		Anten	ina	н	orizontal	
	5.9 dBu <sup>1</sup>	√/m						Lin	it:	
									rgin:	
								5 X	- department	
2	7				3	Alm Am	wathman	nowwww.		
		1	2	and the second second	ahan Jahan Marana Ma					
	. M	- marine	my Man	mutor have have						
	Mr. m	~	New Y							
-13 ;	30.000	127.00	224.00	321.00 41	8.00 515.00	612.00	709.00 806	5.00	1000.00 MHz	
				Reading	Correct	Measure	_			
	No.	Mk.	Freq.	Level	Factor	ment	Limit	Over		
	_		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	
	1	1	43.1667	-0.74	19.22	18.48	43.50	-25.02	peak	
	2	2	72.5000	-0.23	19.33	19.10	46.00	-26.90	peak	
	3	4	43.8667	-0.31	23.86	23.55	46.00	-22.45	peak	
	4	6	36.2500	0.53	27.38	27.91	46.00	-18.09	peak	
	5	* 8	377.1333	1.38	31.40	32.78	46.00	-13.22	peak	
	5		377.1333 972.5167	1.38 1.49	31.40 32.32	32.78 33.81	46.00 54.00	-13.22 -20.19	peak peak	

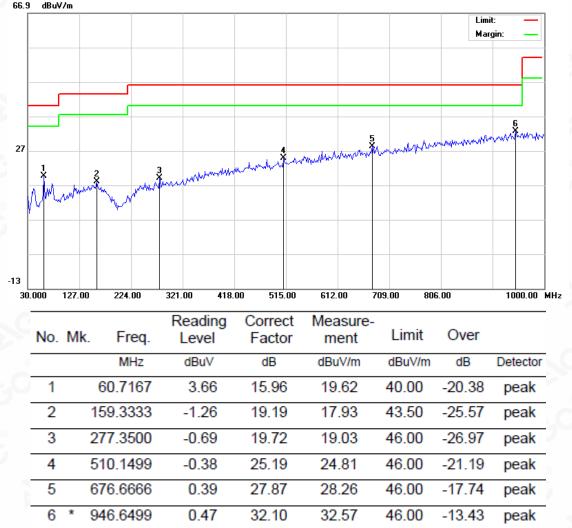
**RESULT: PASS** 

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#### Report No.: AGC07581210301FE02 Page 43 of 62

EUT	DS-Beacon-06	Model Name	DS-Beacon-06
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical
00 0 ID VI			



#### RESULT: PASS Note:

- 1. Factor=Antenna Factor + Cable loss, Over= Measurement –Limit.
- 2. All test modes had been tested. The mode 3 is the worst case and recorded in the report.

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# GFSK 1Mbps: RADIATED EMISSION ABOVE 1GHZ

EUT	DS-Beacon-06	Model Name	DS-Beacon-06
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4804.000	43.85	0.08	43.93	74	-30.07	peak
4804.000	35.62	0.08	35.7	54	-18.3	AVG
7206.000	38.49	2.21	40.7	74	-33.3	peak
7206.000	31.37	2.21	33.58	54	-20.42 💿	AVG
9		8				8

EUT	DS-Beacon-06	Model Name	DS-Beacon-06
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
44.64	0.08	44.72	74	-29.28	peak
34.28	0.08	34.36	54	-19.64	AVG
38.39	2.21	40.6	74	-33.4	peak
30.51	2.21	32.72	54	-21.28	AVG
		100	0	0	
				G	8
-	(dBµV) 44.64 34.28 38.39	(dBµV)         (dB)           44.64         0.08           34.28         0.08           38.39         2.21	(dBµV)         (dB)         (dBµV/m)           44.64         0.08         44.72           34.28         0.08         34.36           38.39         2.21         40.6	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)           44.64         0.08         44.72         74           34.28         0.08         34.36         54           38.39         2.21         40.6         74	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)         (dB)           44.64         0.08         44.72         74         -29.28           34.28         0.08         34.36         54         -19.64           38.39         2.21         40.6         74         -33.4

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## Report No.: AGC07581210301FE02 Page 45 of 62

EUT	DS-Beacon-06	Model Name	DS-Beacon-06
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4880.000	44.42	0.14	44.56	74	-29.44	peak
4880.000	35.18	0.14	35.32	54	-18.68	AVG
7320.000	39.36	2.36	41.72	74	-32.28	peak
7320.000	31.58	2.36	33.94	54	-20.06	AVG
8	© 1			0	0	
emark:	- 6	8			- 6	8
actor = Anter	nna Factor + Cable	Loss – Pre-	amplifier.			- 6

EUT	DS-Beacon-06	Model Name	DS-Beacon-06
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4880.000	46.76	0.14	46.9	74	-27.1	peak
4880.000	38.32	0.14	38.46	54	-15.54	AVG
7320.000	40.54	2.36	42.9	74	-31.1	peak
7320.000	32.41	2.36	34.77	54	-19.23	AVG
		- Ci	®			
				8		

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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EUT	DS-Beacon-06	Model Name	DS-Beacon-06
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

(dBµV)					
(ubµv)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
44.84	0.22	45.06	74	-28.94	peak
35.63	0.22	35.85	54	-18.15	AVG
38.32	2.64	40.96	74	-33.04	peak
29.58	2.64	32.22	54	-21.78	AVG
			. ®		
			C.		
	44.84 35.63 38.32	44.84         0.22           35.63         0.22           38.32         2.64	44.84         0.22         45.06           35.63         0.22         35.85           38.32         2.64         40.96	44.84         0.22         45.06         74           35.63         0.22         35.85         54           38.32         2.64         40.96         74	44.840.2245.0674-28.9435.630.2235.8554-18.1538.322.6440.9674-33.04

EUT	DS-Beacon-06	Model Name	DS-Beacon-06
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Meter Reading	Factor	Emission Level	Limits	Margin	
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
42.51	0.22	42.73	74	-31.27	peak
34.47	0.22	34.69	54	-19.31	AVG
38.42	2.64	41.06	74	-32.94	peak
29.38	2.64	32.02	54	-21.98	AVG
	-C	(B)		<u>G</u>	20
	(dBµV) 42.51 34.47 38.42	(dBµV)         (dB)           42.51         0.22           34.47         0.22           38.42         2.64	(dBµV)         (dB)         (dBµV/m)           42.51         0.22         42.73           34.47         0.22         34.69           38.42         2.64         41.06	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)           42.51         0.22         42.73         74           34.47         0.22         34.69         54           38.42         2.64         41.06         74	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)         (dB)           42.51         0.22         42.73         74         -31.27           34.47         0.22         34.69         54         -19.31           38.42         2.64         41.06         74         -32.94

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

# **RESULT: PASS**

#### Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Level-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

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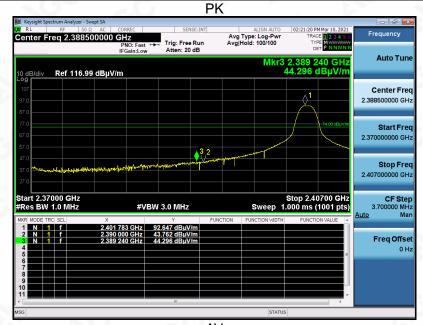


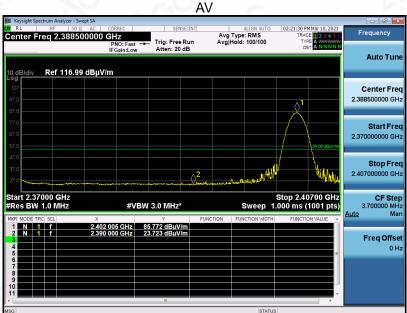
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#### **GFSK 1Mbps:**

#### TEST RESULT FOR RESTRICTED BANDS REQUIREMENTS

EUT	DS-Beacon-06	Model Name	DS-Beacon-06
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal





**RESULT: PASS** 

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