

FCC Test Report

Report No.: AGC01110200818FE03

FCC ID	: 2AOKB-A3125
APPLICATION PURPOSE	: Original Equipment
PRODUCT DESIGNATION	: Wireless Speaker
BRAND NAME	: Soundcore
MODEL NAME	: A3125
APPLICANT	: Anker Innovations Limited
DATE OF ISSUE	: Sep. 07, 2020
STANDARD(S)	: FCC Part 15.247
REPORT VERSION	: V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	· /	Sep. 07, 2020	Valid	Initial Release

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1. VERIFICATION OF CONFORMITY

Anker Innovations Limited	
Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong	
Anker Innovations Limited	
Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong	
Anam Electronics Vietnam CO., Ltd	
Dong Van IV industrial zone, Dai Cuong commune, Kim Bang district, Ha Nam province, Vietnam	
Wireless Speaker	
Soundcore	
A3125	
Aug. 24, 2020 to Sep. 04, 2020	
No any deviation from the test method	
Normal	
Pass	
AGCRT-US-BR/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

John Zerry

John Zeng (Project Engineer)

Max Zhan

Sep. 04, 2020

Reviewed By

Max Zhang

Max Zhang (Reviewer)

Sep. 07, 2020

Approved By

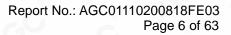
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Forrest Lei (Authorized Officer)

Sep. 07, 2020

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "Wireless Speaker". It is designed by way of utilizing the GFSK, Pi/4 DQPSK and 8DPSK technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480 GHz	
RF Output Power	10.689dBm (Max)	
Bluetooth Version	V5.0	
Modulation	BR ⊠GFSK, EDR ⊠π /4-DQPSK, ⊠8DPSK BLE □GFSK 1Mbps □GFSK 2Mbps	
Number of channels	79	
Hardware Version	V1.0	
Software Version	V0.0.4	
Antenna Designation	FPC Antenna (Comply with requirements of the FCC part 15.203)	
Antenna Gain	2.62dBi	
Power Supply	DC 7.4V by battery	
Note: The EUT supports NF	C function, but NFC tag is passive.	

2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	0	2402 MHz
	1	2403 MHz
8		
	38	2440 MHz
2402~2480MHz	39	2441 MHz
-C	40	2442 MHz
	77	2479 MHz
	78	2480 MHz

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2.3. RECEIVER INPUT BANDWIDTH

The input bandwidth of the receiver is 1.3MHz, in every connection one Bluetooth device is the master and the other one is slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally, the type of connection (e.g. single of multi slot packet) is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also, the slave of the connection will use these settings. Repeating of a packet has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

2.4. EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE

Example of a hopping sequence in data mode: 40,21,44,23,42,53,46,55,48,33,52,35,50,65,54,67 56,37,60,39,58,69,62,71,64,25,68,27,66,57,70,59 72,29,76,31,74,61,78,63,01,41,05,43,03,73,07,75 09,45,13,47,11,77,15,00,64,49,66,53,68,02,70,06 01, 51, 03, 55, 05, 04

2.5. EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR

The generation of the hopping sequence in connection mode depends essentially on two input values:

1. LAP/UAP of the master of the connection.

2. Internal master clock.

The LAP (lower address part) are the 24 LSB's of the 48 BD_ADDRESS. The BD_ADDRESS is an unambiguous number of every Bluetooth unit. The UAP (upper address part) are the 24MSB's of the 48BD_ADDRESS

The internal clock of a Bluetooth unit is derived from a free running clock which is never adjusted and is never turned off. For behavior action with other units only offset is used. It has no relation to the time of the day. Its resolution is at least half the RX/TX slot length of 312.5us. The clock has a cycle of about one day(23h30). In most case it is implemented as 28 bits counter. For the deriving of the hopping sequence the entire. LAP (24 bits),4LSB's(4bits) (Input 1) and the 27MSB's of the clock (Input 2) are used. With this input values different mathematical procedures (permutations, additions, XOR-operations) are performed to generate the Sequence. This will be done at the beginning of every new transmission.

Regarding short transmissions the Bluetooth system has the following behavior:

The first connection between the two devices is established, a hopping sequence was generated. For Transmitting the wanted data the complete hopping sequence was not used. The connection ended. The second connection will be established. A new hopping sequence is generated. Due to the fact the

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Bluetooth clock has a different value, because the period between the two transmission is longer (and it Cannot be shorter) than the minimum resolution of the clock(312.5us). The hopping sequence will always differ from the first one.

2.6. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AOKB-A3125** filing to comply with the FCC PART 15.247 requirements.

2.7. 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.

2.8. SPECIAL ACCESSORIES

Refer to section 5.2.

2.9. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2.10. 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 ±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 = ±4.0 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB
- Uncertainty of total RF power, conducted, $Uc = \pm 0.8$ dB
- Uncertainty of spurious emissions, conducted, Uc = ±2.7dB
- Uncertainty of Occupied Channel Bandwidth: Uc = ±2 %
- Uncertainty of Dwell Time: $Uc = \pm 2\%$
- Uncertainty of Frequency: $Uc = \pm 2 \%$

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4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1 Low channel GFSK	
2	Middle channel GFSK
3	High channel GFSK
4	Low channel π/4-DQPSK
5	Middle channel π/4-DQPSK
6	High channel π/4-DQPSK
7	Low channel 8DPSK
8	Middle channel 8DPSK
9	High channel 8DPSK
10	Hopping mode GFSK
11	Hopping mode π/4-DQPSK
12	Hopping mode 8DPSK

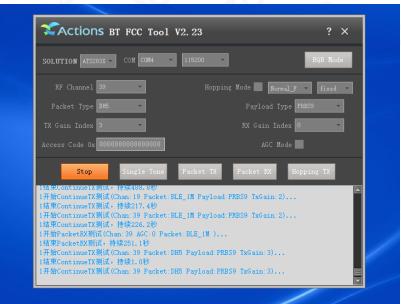
Note:

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.

Software Setting



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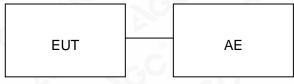
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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Configure:



Conducted Emission Configure:

EUT	0	AE

5.2. EQUIPMENT USED IN TESTED SYSTEM

ltem	Equipment	Model No.	ID or Specification	Remark
1	Wireless Speaker	A3125	2AOKB-A3125	EUT
2	Adapter	TY0500100E1MN	N/A	AE
3	Charger line	N/A	0.6m unshielded	AE
4	control board	N/A	USB_TTL	AE

5.3. SUMMARY OF TEST RESULTS

	DESCRIPTION OF TEST	RESULT
15.247 (b)(1)	Peak Output Power	Compliant
15.247 (a)(1)	20 dB Bandwidth	Compliant
15.247 (d)	Conducted Spurious Emission	Compliant
15.209	Radiated Emission	Compliant
15.247 (a)(1)(iii)	Number of Hopping Frequency	Compliant
15.247 (a)(1)(iii)	Time of Occupancy	Compliant
15.247 (a)(1)	Frequency Separation	Compliant
15.207	Conducted Emission	Compliant

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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 CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	May 15, 2020	May 14, 2021
LISN	R&S	ESH2-Z5	100086	Jul. 03, 2020	Jul. 02, 2022
Test software	R&S	ES-K1(Ver.V1.71)	N/A	N/A	N/A

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. 12, 2019	Dec. 11, 2020
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	Mar. 23, 2020	Mar. 22, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 09, 2019	Sep. 08, 2020
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	Oct. 25, 2019	Oct. 26, 2021
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Oct. 15, 2019	Oct. 16, 2020
ANTENNA	SCHWARZBECK	VULB9168	494	Sep. 20, 2019	Sep. 19, 2021
Test software	FARA	EZ-EMC (Ver RA-03A)	N/A	N/A	N/A

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7. PEAK OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

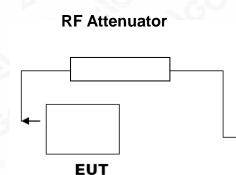
For peak power test:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- 3. RBW > 20 dB bandwidth of the emission being measured.
- 4. VBW \geq RBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. Trace: Max hold.

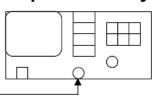
Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

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

PEAK OUTPUT POWER MEASUREMENT RESULT					
FOR GFSK MOUDULATION					
Frequency (GHz)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail		
2.402	10.079	21	Pass		
2.441	10.294	21	Pass		
2.480	10.481	21	Pass		

CH0



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CH39 NSE:INT Avg Type: Log-Pwr Avg|Hold: 100/100 Frequency Center Freq 2.441000000 GHz Trig: Free Run Atten: 30 dB PNO: Fast IFGain:Low Auto Tune Mkr1 2.441 115 GHz 10.294 dBm Ref 20.00 dBm 10 dB/div 1 **Center Freq** 2.441000000 GHz Start Freq 2.438500000 GHz Stop Freq 2.443500000 GHz CF Step 500.000 kHz <u>Auto</u> Ма **Freq Offset** 0 Hz Center 2.441000 GHz #Res BW 1.5 MHz Span 5.000 MHz Sweep 1.000 ms (1001 pts) #VBW 5.0 MHz STATUS

CH78

Keysight Spectrum Analyzer - Swept SA Correct SENSE:INT ALIGN AUTO 01:16:25 PM Aug 25, 2020 Frequency Center Freq 2.480000000 GHz PNO: Fast → Trig: Free Run Atten: 30 dB Avg Type: Log-Pwr Avg Hold: 100/100 TRACE 12:2:4:5 G Frequency 10 dB/div Ref 20.00 dBm 01:46:25 PM Aug 25, 2020 Trig: Free Run Atten: 30 dB Avg Type: Log-Pwr Avg Hold: 100/100 Trig: Frequency Auto Tur 10 dB/div Ref 20.00 dBm 01 01:46:25 PM Aug 25, 2020 Auto Tur 10 dB/div Ref 20.00 dBm 01 01:46:25 PM Aug 25, 2020 Center Frequency 10 dB/div Ref 20.00 dBm 01 01:46:25 PM Aug 25, 2020 Center Frequency 10 dB/div Ref 20.00 dBm 01 01:46:25 PM Aug 25, 2020 Center Frequency 10 dB/div Ref 20.00 dBm 01 01 01 02 01
PNO: Fast Trig: Free Run IFGain:Low Avg Hold: 100/100 IVPE DET NNNNN Det Auto Tur 10 dB/div Ref 20.00 dBm 1 0
Cog Conter Fre 10.0 0.00 Start Fre 2.48000000 GF
Start Free
-10.0 2.477500000 Gr
-20.0 / / / / / / / / / / / / / / / / / /
-40.0
-60.0 Freq Offs -70.0
Center 2.480000 GHz Span 5.000 MHz #Res BW 1.5 MHz #VBW 5.0 MHz Sweep 1.000 ms (1001 pts)
MSG

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PEAK OUTPUT POWER MEASUREMENT RESULT					
FOR Π/4-DQPSK MODULATION					
Frequency (GHz)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail		
2.402	9.981	21	Pass		
2.441	10.488	21	Pass		
2.480	10.635	21	Pass		

CH0



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CH39 NSE:INT Avg Type: Log-Pwr Avg|Hold: 100/100 Frequency Center Freq 2.441000000 GHz Trig: Free Run Atten: 30 dB PNO: Fast IFGain:Low Auto Tune Mkr1 2.441 155 GHz 10.488 dBm Ref 20.00 dBm 10 dB/div ▲1 **Center Freq** 2.441000000 GHz Start Freq 2.438500000 GHz Stop Freq 2.443500000 GHz CF Step 500.000 kHz <u>Auto</u> Ма **Freq Offset** 0 Hz Center 2.441000 GHz #Res BW 1.5 MHz Span 5.000 MHz Sweep 1.000 ms (1001 pts) #VBW 5.0 MHz STATUS

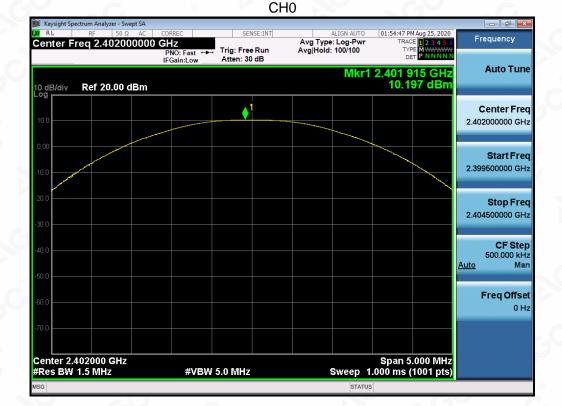
CH78

Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC	CORREC	CENCEANT		01/52/00 PM Ave 25, 2020	- P
Center Freq 2.48000000		Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 100/100	01:52:08 PM Aug 25, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N	Frequency
0 dB/div Ref 20.00 dBm	I Gain. Low		Mkr1	2.479 845 GHz 10.635 dBm	Auto Tu
0.0		↓ 1			Center F 2.480000000 0
					Start F 2.477500000 (
D.0					Stop F 2.482500000
					CF S 500.000 <u>Auto</u>
					Freq Off ر
enter 2.480000 GHz Res BW 1.5 MHz	#\/B\A	(5.0 MHz	Sween-4	Span 5.000 MHz .000 ms (1001 pts)	
G G	#989	-540-141112	SWIGEP		

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PEAK OUTPUT POWER MEASUREMENT RESULT					
FOR 8-DPSK MODULATION					
Frequency (GHz)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail		
2.402	10.197	21	Pass		
2.441	10.459	21	Pass		
2.480	10.689	21	Pass		

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CH39



CH78

Keysight Spectrum Analyzer - Swept SA XI RL RF 50 Ω AC	CORREC	SENSE:INT	ALIGN AUT	01:55:56 PM Aug 25, 2020	
Center Freq 2.48000000) GHz	rig: Free Run	Avg Type: Log-Pw Avg Hold: 100/100	TRACE 1 2 3 4 5 6	Frequency
0 dB/div Ref 20.00 dBm		Atten: 30 dB		^{DET P NNNN N} 12.479 920 GHz 10.689 dBm	Auto Tur
10.0					Center Fre 2.480000000 Gi
					Start Fr 2.477500000 G
0.0					Stop Fr 2.482500000 G
0.0					CF St 500.000 k <u>Auto</u> M
0.0					Freq Offs 0
20.0 enter 2.480000 GHz				Span 5.000 MHz	
Res BW 1.5 MHz	#VBW 5.0	UWHZ	Sweep	1.000 ms (1001 pts) ^{rus}	

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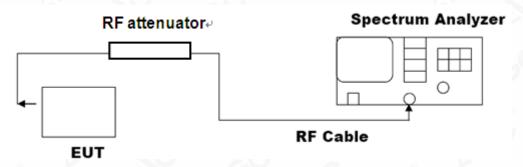


8. 20DB BANDWIDTH

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 Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hoping channel The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
- 4. Set SPA Trace 1 Max hold, then View.

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



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8.3. LIMITS AND MEASUREMENT RESULTS

MEASUREMENT RESULT FOR GFSK MOUDULATION					
	Measurement Result				
Applicable Limits	Test Da	Criteria			
N/A	Low Channel	0.922	PASS		
	Middle Channel	0.923	PASS		
	High Channel	0.923	PASS		

01:44:44 PM Aug 25, 2020 SENSE:INT Center Freq: 2.402000000 GHz Trig: Free Run Avg|Hol #Atten: 30 dB Frequency Radio Std: None 102000000 GHz Avg|Hold: 100/100 #IFGain:Low Radio Device: BTS Ref 20.00 dBm **Center Freq** 2.402000000 GHz Center 2.402 GHz #Res BW 30 kHz Span 3 MHz Sweep 3.2 ms CF Step 300.000 kHz #VBW 100 kHz <u>Auto</u> 17.8 dBm **Occupied Bandwidth Total Power** 841.86 kHz Freq Offset 0 Hz Transmit Freq Error -394 Hz **OBW Power** 99.00 % x dB Bandwidth 921.9 kHz x dB -20.00 dB

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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MEASUREMENT RESULT FOR II /4-DQPSK MODULATION					
Applicable Limits	Measurement Result				
	Test Data	(MHz)	Criteria		
N/A	Low Channel	1.189	PASS		
	Middle Channel	1.193	PASS		
	High Channel	1.195	PASS		

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

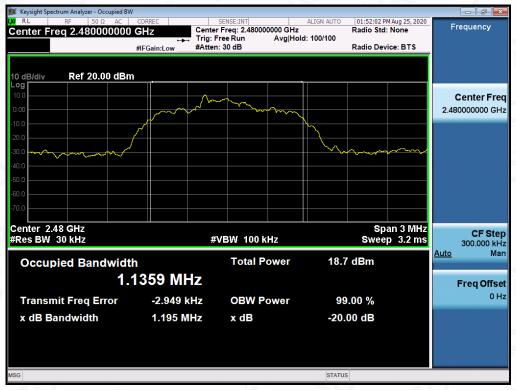


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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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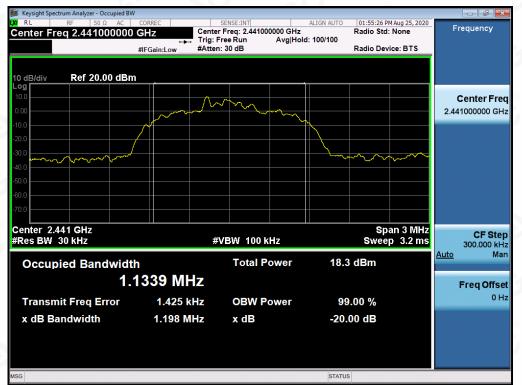


MEASUREMENT RESULT FOR 8-DPSK MODULATION						
Applicable Limits		Measurement Result				
	Test Data	ı (MHz)	Criteria			
N/A	Low Channel	1.199	PASS			
	Middle Channel	1.198	PASS			
	High Channel	1.241	PASS			

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

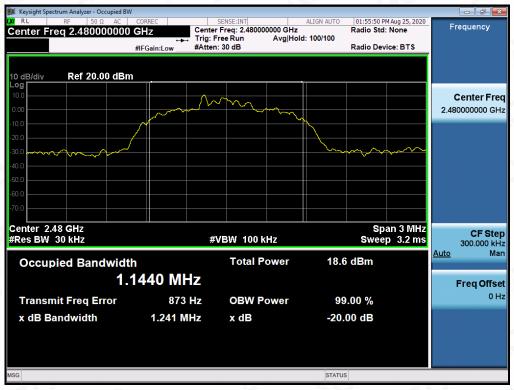


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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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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.
- Set the Span = wide enough to capture the peak level of the in-band emission and all spurious emissions from the lowest frequency generated in the EUT up through the 10th harmonic.
 RBW = 100 kHz; VBW= 300 kHz; Sweep = auto; Detector function = peak.
- 4. Set SPA Trace 1 Max hold, then View.

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

The same as described in section 8.2

9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6

9.4. LIMITS AND MEASUREMENT RESULT

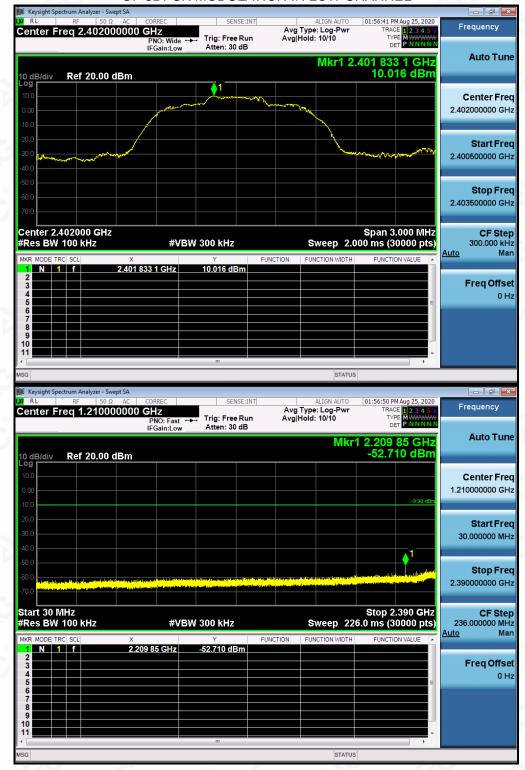
LIMITS AND MEASUREMENT RESULT					
Angliaghta Limita	Measurement Result				
Applicable Limits	Test Data	Criteria			
In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS			
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. In addition, radiation 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))	At least -20dBc than the limit Specified on the TOP Channel	PASS			

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TEST RESULT FOR ENTIRE FREQUENCY RANGE TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE

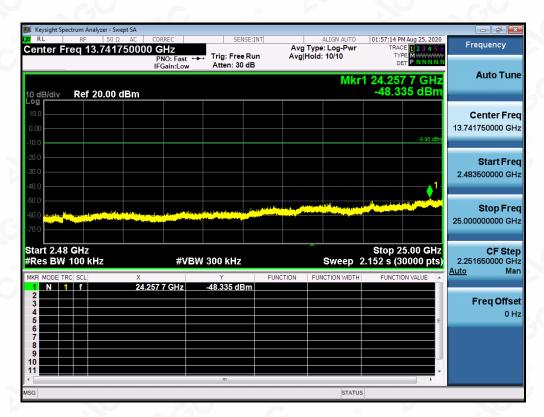
OF 8DPSK MODULATION IN LOW CHANNEL



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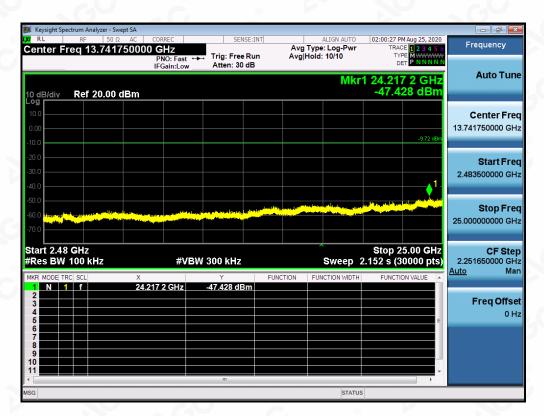
	er - Swept SA 50 Ω AC CORREC	SENSE:INT	ALIGN AUTO	01:59:53 PM Aug 25, 2020	
Center Freq 2.44	1000000 GHz PNO: Wid IFGain:Lot	e ↔ Trig: Free Run	Avg Type: Log-Pwr Avg Hold: 10/10	TRACE 1 2 3 4 5 6 TYPE MWWWW DET PNNNN	Frequency
			Mkr1 2	.440 831 7 GHz	Auto Tu
0 dB/div Ref 20.	.00 dBm	<u> </u>		10.280 dBm	
10.0					Center Fi
0.00	a state				2.441000000 0
20.0					
30.0					2.439500000 0
40.0					2.1000000000
50.0					Stop Fi
70.0					2.442500000 0
Center 2.441000 (Res BW 100 kHz		/BW 300 kHz	Sweep 2.0	Span 3.000 MHz 000 ms (30000 pts)	CF Si 300.000
MKR MODE TRC SCL	× 2.440 831 7 GHz	Y 10.280 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
2 3					Freq Off
4 5				=	0
6 7					
8					
10				Ŧ	
(III			
SG			STATUS	4	
	er - Swept SA		STATUS	• • • • • • • • • • • • • • • • • • •	
Keysight Spectrum Analyze	50 Ω AC CORREC	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	02:00:03 PM Aug 25, 2020	Frequency
Keysight Spectrum Analyze	50 Ω AC CORREC	SENSE:INT	ALIGN AUTO		Frequency
Keysight Spectrum Analyze	50 Ω AC CORREC 5000000 GHz PNO: Fas	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:00:03 PM Aug 25, 2020 TRACE 23 4 5 6 TYPE WWWWWW DET PNNNNN 1 2.248 79 GHZ	Frequency
Keysight Spectrum Analyza RL RF Center Freq 1.21 0 dB/div Ref 20	50 Ω AC CORREC 5000000 GHz PNO: Fas	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:00:03 PM Aug 25, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWW DET PNNNN	Frequency
RL RF RL RF Center Freq 1.21	50 Ω AC CORREC 50000000 GHz PNO: Fas IFGain:Lot	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:00:03 PM Aug 25, 2020 TRACE 23 4 5 6 TYPE WWWWWW DET PNNNNN 1 2.248 79 GHZ	Frequency Auto Tu Center F
RL RF Center Freq 1.21	50 Ω AC CORREC 50000000 GHz PNO: Fas IFGain:Lot	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:00:03 PM Aug 25,2020 TRACE 1 23 45 6 TYPE MMMMMMM DET P NANNA N 1 2.248 79 GHz -53.738 dBm	Frequency Auto Tu Center F
Keysight Spectrum Analyz RL RF Center Freq 1.21 0 dB/div Ref 20 0 0 0 0 0 0	50 Ω AC CORREC 50000000 GHz PNO: Fas IFGain:Lot	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:00:03 PM Aug 25, 2020 TRACE 23 4 5 6 TYPE WWWWWW DET PNNNNN 1 2.248 79 GHZ	Frequency Auto Tu Center Fr 1.215000000 0
Keysight Spectrum Analyz RL RF Center Freq 1.21 0 dB/div Ref 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	50 Ω AC CORREC 50000000 GHz PNO: Fas IFGain:Lot	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:00:03 PM Aug 25,2020 TRACE 1 23 45 6 TYPE MMMMMMM DET P NNNNN N 1 2.248 79 GHz -53.738 dBm	Frequency Auto Tu Center F 1.215000000 0 Start Fr
Keysight Spectrum Analyz RL RF center Freq 1.21 0 dB/div Ref 20 9g 0 10.0 0 0.00 0 0.00 0 0.00 0 0.00 0 0.00 0 0.00 0 0.00 0 0.00 0	50 Ω AC CORREC 50000000 GHz PNO: Fas IFGain:Lot	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:00:03 PM Aug 25,2020 TRACE 1 23 45 6 TYPE MMMMMMM DET P NNNNN N 1 2.248 79 GHz -53.738 dBm	Frequency Auto Tu Center Fr 1.215000000 0 Start Fr
Keysight Spectrum Analyz RL RF center Freq 1.21 0 dB/div Ref 20 9g 0 10.0 0 20.0 0 30.0 0 50.0 0	50 Ω AC CORREC 50000000 GHz PNO: Fas IFGain:Lot	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:00:03 PM Aug 25,2020 TRACE 1 23 45 6 TYPE MMMMMMM DET P NNNNN N 1 2.248 79 GHz -53.738 dBm	Frequency Auto Tu Center F 1.215000000 0 Start Fr 30.000000 M
Keysight Spectrum Analyz RL RF Center Freq 1.21 0 dB/div Ref 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	50 Ω AC CORREC 50000000 GHz PNO: Fas IFGain:Lot	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:00:03 PM Aug 25,2020 TRACE 1 23 45 6 TYPE MMMMMMM DET P NNNNN N 1 2.248 79 GHz -53.738 dBm	Frequency Auto Tu Center Fr 1.215000000 fo Start Fr 30.000000 fo Stop Fr
Keysight Spectrum Analyze RL RF Center Freq 1.21 0 dB/div	50 Ω AC CORREC 50000000 GHz PNO: Fas IFGain:Lot	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:00:03 PM Aug 25, 2020 TRACE 1, 23 4, 5 6 TYPE MANNAWA OF MANNAWA 1, 2, 2448, 79 GHz -53, 738 dBm -9, 72 dBm -9, 72 dBm -1 -9, 72 dBm -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	Frequency Auto Tu Center Fr 1.215000000 0 Start Fr 30.000000 N Stop Fr 2.400000000 0
Keysight Spectrum Analyze Q RL RF Center Freq 1.21 0 dB/div Ref 20 0 g	50 Ω AC CORREC 5000000 GHz PNO: Fas IFGain:Lov .00 dBm	SENSE:INT Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:00:03 PM Aug 25, 2020 TRACE 1, 23 4,5 6 TYPE 0=T PHILIN N 1, 2:,248,79 GHz -53.738 dBm -9.72 dbn -9.72 dbn	Frequency Auto Tu Center Fi 1.215000000 0 Start Fi 30.000000 N Stop Fi 2.400000000 0
Center Freq 1.21	50 Ω AC CORREC 5000000 GHz PNO: Fas IFGain:Lov .00 dBm	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:00:03 PM Aug 25, 2020 TRACE 1, 23 4, 5 6 TYPE MANNAWA OF MANNAWA 1, 2, 2448, 79 GHz -53, 738 dBm -9, 72 dBm -9, 72 dBm -1 -9, 72 dBm -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	
Keysight Spectrum Analyze Q RL RF Center Freq 1.21 0 dB/div Ref 20 0 g	50 Ω AC CORREC 5000000 GHZ PNO: Fas IFGain:Lo .00 dBm	SENSE:INT t Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:00:03 PM Aug 25, 2020 TRACE 1, 23 4, 5 6 TYPE 0, 1990 C 1, 1990	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 N Stop Fr 2.400000000 C CF St 237.000000 N Auto N
Keysight Spectrum Analyze RL RF Center Freq 1.21 0 dB/div Ref 20. 0 g	50 Ω AC CORREC 5000000 GHZ PNO: FAS IFGain:Lov .00 dBm .00 dBm	SENSE:INT t Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:00:03 PM Aug 25, 2020 TRACE 1, 23 4, 5 6 TYPE 0, 1990 C 1, 1990	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M Stop Fr 2.400000000 G CF St 237.000000 M Auto M Freq Off:
Keysight Spectrum Analyze Register Freq 1.21 O dB/div Ref 20 Og Image: Content Freq 1.21 O dB/div Ref 20 Og Image: Content Freq 1.21 O dB/div Ref 20 Og Image: Content Freq 1.21 O dB/div Ref 20 O data Image: Content for the data of the da	50 Ω AC CORREC 5000000 GHZ PNO: FAS IFGain:Lov .00 dBm .00 dBm	SENSE:INT t Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:00:03 PM Aug 25, 2020 TRACE 1, 23 4, 5 6 TYPE 0, 1990 C 1, 1990	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 N Stop Fr 2.400000000 C CF St 237.000000 N Auto N
Keysight Spectrum Analyz RL RF Center Freq 1.21 0 dB/div Ref 20 0 g Image: Center Freq 1.21 0 dB/div Ref 20 0 g Image: Center Freq 1.21 0 dB/div Ref 20 0 g Image: Center Freq 1.21 0 dB/div Ref 20 0 g Image: Center Freq 1.21 0 dB/div Ref 20 0 g Image: Center Freq 1.21 0 d0 Image: Center Freq 1.21 1 mode: Center Freq 1.21 Image: Center Freq 1.21 1 mode: Center Freq 1.21 Image: Center Freq 1.21 1 mode: Center Freq 1.21 Image: Center Freq 1.21 1 mode: Center Freq 1.21 Image: Center Freq 1.21 1 mode: Center Freq 1.21 Image: Center Freq 1.21 1 mode: Center Freq 1.21 Image: Center Freq 1.21 1 mode: Center Freq 1.21 <thimage: 1.21<="" center="" freq="" th=""> <td>50 Ω AC CORREC 5000000 GHZ PNO: FAS IFGain:Lov .00 dBm .00 dBm</td><td>SENSE:INT t Trig: Free Run Atten: 30 dB</td><td>ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr</td><td>02:00:03 PM Aug 25, 2020 TRACE 1, 23 4, 5 6 TYPE 0, 12 4, 5 6 -53,738 dBm -972 dBm -</td><td>Frequency Auto Tu Center Fr 1.215000000 0 Start Fr 30.000000 N Stop Fr 2.400000000 0 CF St 237.000000 N Auto N Freq Off</td></thimage:>	50 Ω AC CORREC 5000000 GHZ PNO: FAS IFGain:Lov .00 dBm .00 dBm	SENSE:INT t Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:00:03 PM Aug 25, 2020 TRACE 1, 23 4, 5 6 TYPE 0, 12 4, 5 6 -53,738 dBm -972 dBm -	Frequency Auto Tu Center Fr 1.215000000 0 Start Fr 30.000000 N Stop Fr 2.400000000 0 CF St 237.000000 N Auto N Freq Off
Keysight Spectrum Analyze RL RF Center Freq 1.21 0 B	50 Ω AC CORREC 5000000 GHZ PNO: FAS IFGain:Lov .00 dBm .00 dBm	SENSE:INT t Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:00:03 PM Aug 25, 2020 TRACE 1, 23 4, 5 6 TYPE 0, 12 4, 5 6 -53,738 dBm -972 dBm -	Frequency Auto Tu Center Fr 1.215000000 0 Start Fr 30.000000 N Stop Fr 2.400000000 0 CF St 237.000000 N Auto N Freq Off
Keysight Spectrum Analyz RL RF Center Freq 1.21 O dB/div Ref 20 O dD David Constant 30 MHz Res BW 100 kHz Res BW 100 kHz Scl A I f 2 I f 3 I f 3 I f 6 I G 7 I f 8 I I g	50 Ω AC CORREC 5000000 GHZ PNO: FAS IFGain:Lov .00 dBm .00 dBm	SENSE:INT t Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	02:00:03 PM Aug 25, 2020 TRACE 1, 23 4, 5 6 TYPE 0, 12 4, 5 6 -53,738 dBm -972 dBm -	Frequency Auto Tu Center Fr 1.215000000 0 Start Fr 30.000000 N Stop Fr 2.400000000 0 CF St 237.000000 N Auto N Freq Off

TEST PLOT OF OUT OF BAND EMISSIONS OF 8DPSK MODULATION IN MIDDLE CHANNEL

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 Attestation of Global Compliance(Shenzhen)Co., Ltd

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

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

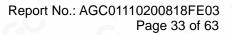
Web: http://cn.agc-cert.com/



Keysight Spectrum Analyzer - : R L RF 50		SENSE:INT		02:02:02 01 4: 25, 2020	
enter Freq 2.4800	000000 GHz	T	ALIGN AUTO Avg Type: Log-Pwr	02:02:02 PM Aug 25, 2020 TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide • IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Hold: 10/10		
			Mkr1 2	.479 829 8 GHz	Auto Tun
dB/div Ref 20.00) dBm	<u> </u>		10.525 dBm	
D					Center Fre
			and the second s		2.48000000 GH
MMm	all and a second se				Start Fre
					2.478500000 GH
					Stop Fre
					2.481500000 GH
er 2.480000 GH				Span 3.000 MHz	05.044
s BW 100 kHz		W 300 kHz	Sweep 2.0	000 ms (30000 pts)	CF Ste 300.000 kH
MODE TRC SCL	Х		UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ma
N 1 f	2.479 829 8 GHz	10.525 dBm			
					Freq Offse 0 H
				E	UTI I
				-	
			STATUS	3	
sight Spectrum Analyzer - 3	Swept SA			-	
er Freq 1.215		SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	02:02:11 PM Aug 25, 2020 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Hold: 10/10	DET P NNNN	
			Mkr	1 2.287 82 GHz	Auto Tune
/div Ref 20.00) dBm			-54.628 dBm	
					Center Free
					1.215000000 GH
				-9.48 dBm	
					Start Fre
					30.000000 MH
				1	
				tale out the building of the building the shift in	Stop Fre
					2.40000000 GH
t 30 MHz s BW 100 kHz	#VB	W 300 kHz	Sweep 22	Stop 2.400 GHz 8.0 ms (30000 pts)	CF Ste 237.000000 MH
	X		UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ma
IODE TRC SCL	2.287 82 GHz	-54.628 dBm			
					Freq Offse
				E	
				E	он
				ш	
				E	
R MODE TRC SCL			STATUS	-	

TEST PLOT OF OUT OF BAND EMISSIONS OF 8DPSK MODULATION IN HIGH CHANNEL

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🚺 Kev	/sight Sp	ectrum	n Ana	alvzer - S	Swept	SA															7 ×
LXI RI			RF.					SENSE:INT			Ave To	ALIGN AUTO			02:02:37 PM Aug 25, 2020 TRACE 1 2 3 4 5 6			Frequency			
Cen	nter Freq 13.750000000 GHz PNO: Fast +- IFGain:Low					Trig: Free Run Atten: 30 dB			Avg Hold: 10/10												
10 dl	3/div	R	ef 2	20.00	dB	m								Ν	/lkr′	1 24.32 -48.4	22 7 G 430 dE	Hz 3m		Auto	Tune
Log 10.0 0.00 -10.0																	-9.48	3 dBm	13.7	Center 5000000	
-20.0 -30.0 -40.0																		1	2.5	Start 0000000	t Freq 00 GHz
-50.0 -60.0 -70.0	in stad												A CONTRACT OF		ing profile Second and				25.0	Stop 0000000	Freq 00 GHz
#Re	t 2.50 s BW	100) k	Hz				#VB	W 30	0 kHz				Swee	ep 2	.152 s (ots)	2.2 Auto	CF 5000000	Step 00 GHz Man
MKR	MODE T					X 24	322 7 (247	-49	Y . 430 di		FUNCT	ION F	UNCTION W	VIDTH	FUNC	FION VALUE	Â	<u>/(uro</u>		man
2 3 4 5 6 7										.400 01								E		Freq (Offset 0 Hz
8 9 10 11																					
MSG														S	TATUS						

Note: The 8DPSK modulation is the worst case and only those data recorded in the report.

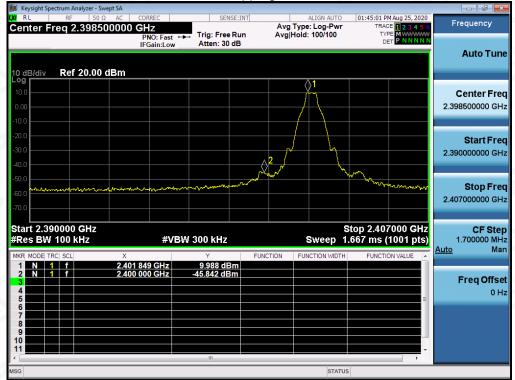
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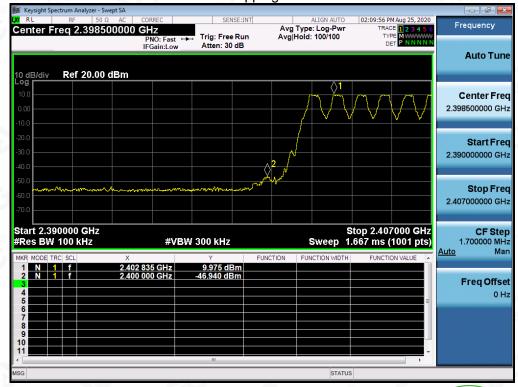
TEST RESULT FOR BAND EDGE

GFSK MODULATION IN LOW CHANNEL

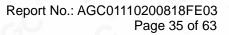
Hopping off



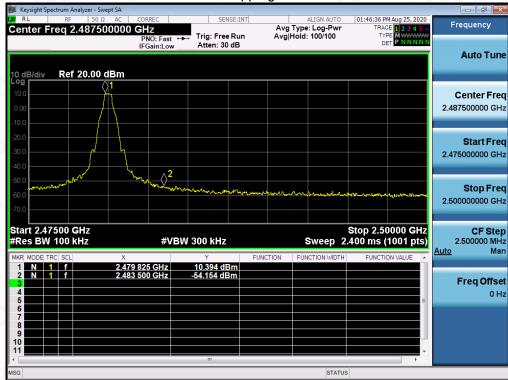
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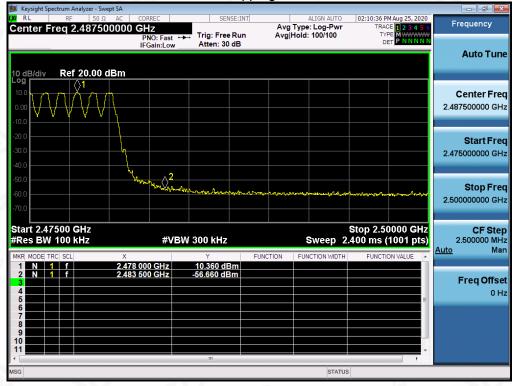




GFSK MODULATION IN HIGH CHANNEL

Hopping off

Hopping on



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