

FCC Test Report

Report No.: AGC02457200606FE03

FCC ID	® :	WKA199342
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Bluetooth headset
BRAND NAME	e	N/A
MODEL NAME	:	199342
APPLICANT	Ģ	MAXELL CORPORATION OF AMERICA
DATE OF ISSUE	:	Jul. 13, 2020
STANDARD(S)	:	FCC Part 15.247
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

CAUTION:

This report shall not be reproduced except in full without the written permission of the test laboratory and shall not be quoted out of context.







REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jul. 13, 2020	Valid	Initial Release





TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY	5
2. GENERAL INFORMATION	
2.1. PRODUCT DESCRIPTION	
2.2. TABLE OF CARRIER FREQUENCYS	
2.3. RECEIVER INPUT BANDWIDTH	
2.4. EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE	7
2.5. EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR	7
2.6. RELATED SUBMITTAL(S) / GRANT (S)	
2.7. TEST METHODOLOGY	
2.8. SPECIAL ACCESSORIES	
2.9. EQUIPMENT MODIFICATIONS	
3. MEASUREMENT UNCERTAINTY	9
4. DESCRIPTION OF TEST MODES	10
5. SYSTEM TEST CONFIGURATION	
5.1. CONFIGURATION OF EUT SYSTEM	
5.2 EQUIPMENT USED IN TESTED SYSTEM	
5.3. SUMMARY OF TEST RESULTS.	
6. TEST FACILITY	
7. PEAK OUTPUT POWER	
7.1. MEASUREMENT PROCEDURE	
7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	
7.3. LIMITS AND MEASUREMENT RESULT	
8. 20DB BANDWIDTH	
8.1. MEASUREMENT PROCEDURE	
8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	
8.3. LIMITS AND MEASUREMENT RESULTS	
9. CONDUCTED SPURIOUS EMISSION	
9.1. MEASUREMENT PROCEDURE	
9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	
9.3. MEASUREMENT EQUIPMENT USED	





Report No.: AGC02457200606FE03 Page 4 of 65

9.4. LIMITS AND MEASUREMENT RESULT	
10. RADIATED EMISSION	
10.1. MEASUREMENT PROCEDURE	
10.2. TEST SETUP	
10.3. LIMITS AND MEASUREMENT RESULT	
10.4. TEST RESULT	
11. NUMBER OF HOPPING FREQUENCY	
11.1. MEASUREMENT PROCEDURE	
11.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)	
11.3. MEASUREMENT EQUIPMENT USED	
11.4. LIMITS AND MEASUREMENT RESULT	
12. TIME OF OCCUPANCY (DWELL TIME)	
12.1. MEASUREMENT PROCEDURE	
12.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)	
12.3. MEASUREMENT EQUIPMENT USED	
12.4. LIMITS AND MEASUREMENT RESULT	
13. FREQUENCY SEPARATION	
13.1. MEASUREMENT PROCEDURE	
13.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)	
13.3. MEASUREMENT EQUIPMENT USED	
13.4. LIMITS AND MEASUREMENT RESULT	
14. FCC LINE CONDUCTED EMISSION TEST	
14.1. LIMITS OF LINE CONDUCTED EMISSION TEST	
14.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST	
14.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST	
14.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST	
14.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST	
APPENDIX A: PHOTOGRAPHS OF TEST SETUP	
APPENDIX B: PHOTOGRAPHS OF EUT	



1. VERIFICATION OF CONFORMITY

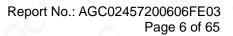
Applicant	MAXELL CORPORATION OF AMERICA	
Address	3 Garret Mountain Plaza, Woodland Park, New Jersey, United States, 07424	
Manufacturer	SKYATT ACOUSTICS(SHENZHEN)CO.,LTD	
Address	4th Floor, C Building, NO.6 Industial Area, Nanlian Community, Longgang Street, Longgang District, Shenzhen	
Factory	SKYATT ACOUSTICS(SHENZHEN)CO.,LTD	
Address	4th Floor, C Building, NO.6 Industial Area, Nanlian Community, Longgang Street, Longgang District, Shenzhen	
Product Designation	Bluetooth headset	
Brand Name	N/A	
Test Model	199342	
Date of test	Jun. 26, 2020 to Jul. 13, 2020	
Deviation	No any deviation from the test method	
Condition of Test Sample	Normal	
Test Result	Pass	
Report Template	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.

NINI. Guno Prepared By Nini Guo Jul. 13, 2020 (Project Engineer) Max Zhans **Reviewed By** Max Zhang Jul. 13, 2020 (Reviewer) Approved By fore Forrest Lei Jul. 13, 2020 (Authorized Officer)







2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "Bluetooth headset". It is designed by way of utilizing the GFSK and Pi/4 DQPSK technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz		
RF Output Power	4.456dBm(Max)		
Bluetooth Version	V 5.0		
Modulation	BR ⊠GFSK, EDR ⊠π /4-DQPSK, □8DPSK BLE □GFSK 1Mbps □GFSK 2Mbps		
Number of channels	79		
Hardware Version	V4.0		
Software Version	V1.2		
Antenna Designation	PCB Antenna(Comply with requirements of the FCC part 15.203)		
Antenna Gain	-0.5dBi		
Power Supply	DC 3.7V by battery or DC 5V by adapter		

2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	0	2402MHZ
	1	2403MHZ
	38	2440 MHZ
2402~2480MHZ	39	2441 MHZ
	40	2442 MHZ
	77	2479 MHZ
	78	2480 MHZ





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 multislot 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 79 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 ehavior zation with other units only offset are 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 bit 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 te Sequence. This will be done at the beginning of every new transmission.

Regarding short transmissions the Bluetooth system has the following7ehavior:

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 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: WKA199342** 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.





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 = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 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 = ± 2 %
- Uncertainty of Frequency: $Uc = \pm 2 \%$





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	Hopping mode GFSK
8	Hopping mode π/4-DQPSK

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.

4. The test software is the FCC_assist 2.4 which can set the EUT into the individual test modes.

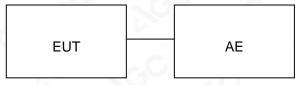




5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Configure :



Conducted Emission Configure :

5.2 EQUIPMENT USED IN TESTED SYSTEM

ltem	Equipment	Model No.	ID or Specification	Remark
1	Bluetooth headset	199342	WKA199342	EUT
2	Smart phone	P8	N/A	
3	Adapter	TY0500100E1MN	DC 5V	AE
4	Charger line	G258	N/A	AE
5	TF card	M203	N/A	AE

5.3. SUMMARY OF TEST RESULTS

FCC RULES	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





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, 2022
LISN	R&S	ESH2-Z5	100086	Aug. 26, 2019	Aug. 25, 2020
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, 2022
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 12, 2019	Dec. 11, 2020
2.4GHz Fliter	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. 09, 2019	Sep. 08, 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	Oct. 15, 2019	Oct. 16, 2020
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 09, 2019	Jan. 08, 2021
Test software	FARA	EZ-EMC (Ver RA-03A)	N/A	N/A	N/A





7. PEAK OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

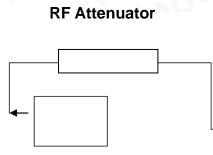
For peak power test:

- 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.

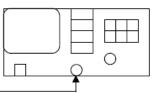
7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

PEAK POWER TEST SETUP





Spectrum Analyzer



RF Cable





7.3. LIMITS AND MEASUREMENT RESULT

	PEAK OUTPUT POWER MEA FOR GFSK MOUL		
Frequency (GHz)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.402	3.645	30	Pass
2.441	3.812	30	Pass
2.480	3.601	30	Pass

CH0





Report No.: AGC02457200606FE03 Page 15 of 65



CH39



CH78

Keysight Spectrum Analyzer - Swept S				
KL RF 50 Ω A Center Freq 2.4800000	00 GHz	Avg Type: Log-Pw	TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 20.00 dBr	PNO: Fast ↔ Trig: Free Ru IFGain:Low Atten: 30 dB		1 2.479 760 GHz 3.601 dBm	Auto Tuno
10.0				Center Fre 2.480000000 GH
-10.0				Start Fre 2.477500000 GH
-20.0				Stop Fre 2.482500000 GH
-40.0				CF Ste 500.000 k⊢ <u>Auto</u> Ma
-60.0				Freq Offse 0 H
-70.0 Center 2.480000 GHz			Span 5.000 MHz	Scale Typ
#Res BW 1.5 MHz	#VBW 5.0 MHz	Sweep	1.000 ms (1001 pts)	



	PEAK OUTPUT POWER MEASUR FOR II /4-DQPSK MODU		
Frequency (GHz)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.402	4.301	21	Pass
2.441	4.456	21	Pass
2.480	4.236	21	Pass

CH0





AGC[®]

Report No.: AGC02457200606FE03 Page 17 of 65



CH39



CH78

Center Fred	RF 50 Ω AC	CORREC							
	1 2 480000000		SENSE:INT		ALIGN AUTO	TRAC	MJul 06, 2020	Fr	equency
		PNO: Fast ↔ IFGain:Low	↓ Trig: Free Run Atten: 30 dB	Avg Hold:		2.479 8			Auto Tune
10 dB/div R	ef 20.00 dBm					4.2	36 dBm		
10.0			↓ ↓						Center Freq 0000000 GHz
-10.0								2.47	Start Freq 7500000 GHz
-20.0								2.48	Stop Freq 2500000 GHz
-30.0								<u>Auto</u>	CF Step 500.000 kH: Mar
-60.0									Freq Offset 0 Hz
-70.0									Scale Type
Center 2.480 #Res BW 1.5		#VBW	/ 5.0 MHz		Sweep 1	Span 5 .000 ms (.000 MHz 1001 pts)	Log	Lin
MSG					STATUS				



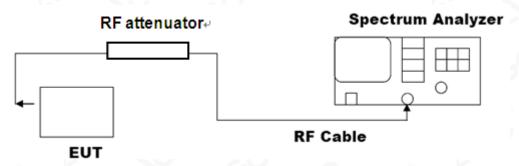


8. 20DB BANDWIDTH

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)







8.3. LIMITS AND MEASUREMENT RESULTS

MEASURI	EMENT RESULT FOR GF	SK MOUDULATION	
Annicable Limite		Measurement Result	
Applicable Limits	Test Data	a (kHz)	Criteria
	Low Channel	952.8	PASS
N/A	Middle Channel	957.6	PASS
.0	High Channel	954.7	PASS



TEST PLOT OF BANDWIDTH FOR LOW CHANNEL





TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

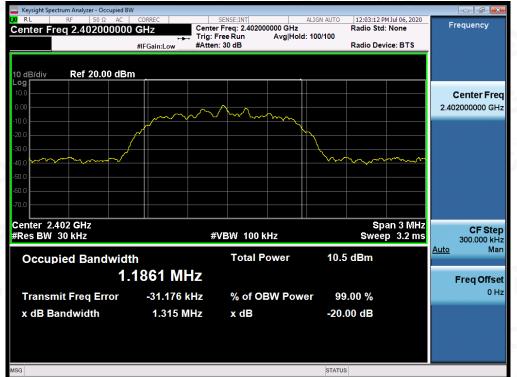




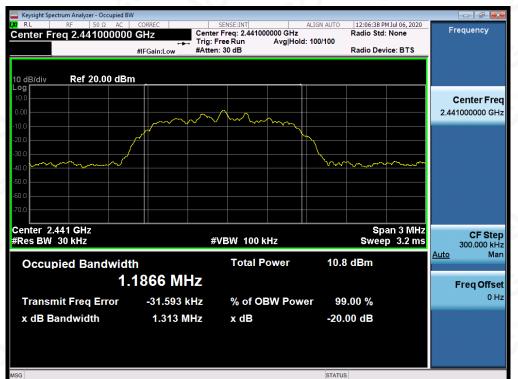


MEASURE	MENT RESULT FOR II /4-I	OQPSK MODULATIO	N
Augliochis Linde		Measurement Resu	lt
Applicable Limits	Test Data	(MHz)	Criteria
	Low Channel	1.315	PASS
N/A	Middle Channel	1.313	PASS
	High Channel	1.315	PASS

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL







TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL







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 MEA	SUREMENT RESULT	
	Measurement Res	ult
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





$\begin{array}{c} \textbf{TEST RESULT FOR ENTIRE FREQUENCY RANGE} \\ \textbf{TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE} \\ \textbf{OF } \pi/4\text{-}DQPSK \text{ MODULATION IN LOW CHANNEL} \end{array}$

Keysight Spectrum Analyzer - Swe					
RL RF 50 Ω Center Freq 2.40200		SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	12:07:32 PM Jul 06, 2020 TRACE 1 2 3 4 5 6	Frequency
Center 1169 2.40200	PNO: Wide ↔	Trig: Free Run Atten: 30 dB	Avg Hold: 10/10	DET P N N N N	
	IFGain:Low	Atten: 30 dB	Nume o		Auto Tune
	ID		WKP1 2	401 814 2 GHz. 3.489 dBm	
10 dB/div Ref 20.00 d	16111			0.400 abiii	
10.0		├─ � ¹ ────			Center Freq
0.00	and and a second	- martine			2.402000000 GHz
-10.0					
-20.0					Start Freq
-30.0			\		2.400500000 GHz
-40.0					
-50.0					Oton Erog
-60.0					Stop Freq 2.403500000 GHz
-70.0					2.40000000 0112
Center 2.402000 GHz				Span 3.000 MHz	CE Otem
#Res BW 100 kHz	#VBV	V 300 kHz	Sweep 2.0	000 ms (30000 pts)	CF Step 300.000 kHz
MKR MODE TRC SCL	X		NCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f	2.401 814 2 GHz	3.489 dBm		T ONC HON VALUE	
2 3					Freq Offset
4				=	0 Hz
6					
8					Scale Type
9 10					Log <u>Lin</u>
11					
			STATUS		
MSG			STATUS		
			STATUS		
MSG Keysight Spectrum Analyzer - Swe	pt SA AC CORREC	SENSE:INT			
Keysight Spectrum Analyzer - Swe	AC CORREC	SENSE:INT	ALIGN AUTO	12:07:41 PM Jul 06, 2020 TRACE 1 2 3 4 5 6	Frequency
Keysight Spectrum Analyzer - Swe R L RF 50 Ω	AC CORREC	SENSE:INT → Trig: Free Run Atten: 30 dB	ALIGN AUTO	12:07:41 PM Jul 06, 2020 TRACE 1 2 3 4 5 6	Frequency
Keysight Spectrum Analyzer - Swe R L RF 50 Ω	AC CORREC 0000 GHz PNO: Fast ↔	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 1 2 34 5 6 TYPE M DET PNNNNN 1 1.746 64 GH2	
Keysight Spectrum Analyzer - Swe (X) RL RF 50 Ω Center Freq 1.21000 10 dB/diy Ref 20.00 d	AC CORREC 0000 GHZ PNO: Fast ↔ IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P.N.N.N.N	Frequency
Center Freq 1.21000	AC CORREC 0000 GHZ PNO: Fast ↔ IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 1 2 34 5 6 TYPE M DET PNNNNN 1 1.746 64 GH2	Frequency Auto Tune
Keysight Spectrum Analyzer - Swe M RL RF 50 Ω Center Freq 1.21000 10 dB/div Ref 20.00 d 10.0	AC CORREC 0000 GHZ PNO: Fast ↔ IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 1 2 34 5 6 TYPE M DET PNNNNN 1 1.746 64 GH2	Frequency Auto Tune Center Freq
Keysight Spectrum Analyzer - Swe W RL RE 50 Ω Center Freq 1.21000 10 dB/div Ref 20.00 d 10.0 00	AC CORREC 0000 GHZ PNO: Fast ↔ IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE DET PINNINN 1 1.746 64 GHz -45.936 dBm	Frequency
Keysight Spectrum Analyzer - Swe Qd RL RF 50 Ω Center Freq 1.21000 10 dB/div Ref 20.00 d 10.0 0.00 -10.0	AC CORREC 0000 GHZ PNO: Fast ↔ IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 1 2 34 5 6 TYPE M DET PNNNNN 1 1.746 64 GH2	Frequency Auto Tune Center Freq 1.210000000 GHz
Keysight Spectrum Analyzer - Sive Center Freq 1.210000 Log Ref 20.00 d 10 dB/div Ref 20.00 d 10.0	AC CORREC 0000 GHZ PNO: Fast ↔ IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE DET PINNINN 1 1.746 64 GHz -45.936 dBm	Frequency Auto Tune Center Freq 1.21000000 GHz Start Freq
Keysight Spectrum Analyzer - Sive Center Freq 1.21000 Ref 50 Ω Center Freq 1.21000 10 dB/div Ref 20.00 d 10 0 10 d 20 0 10 d -10 0 10 d -20 0 10 d -30 0 10 d	AC CORREC 0000 GHZ PNO: Fast ↔ IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE DET PINNINN 1 1.746 64 GHz -45.936 dBm	Frequency Auto Tune Center Freq 1.210000000 GHz
Keysight Spectrum Analyzer - Sive Center Freq 1.210000 Ref 50 Ω Center Freq 1.21000 00 Ref 00 Ref 00 Ref 00 Ref 00 Ref 000 Ref 000 Ref 000 Ref 10.0 Ref -20.0 Ref -30.0 Ref -40.0 Ref	AC CORREC 0000 GHZ PNO: Fast ↔ IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE DET PINNINN 1 1.746 64 GHz -45.936 dBm	Frequency Auto Tune Center Freq 1.21000000 GHz Start Freq
Keysight Spectrum Analyzer - Sive Center Freq 1.21000 Conter Freq 1.21000 Ref 20.00 d 0 dB/div Ref 20.00 d 10 dB/div Ref 20.00 d -0 d	AC CORREC 0000 GHZ PNO: Fast → IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE DET PINNINN 1 1.746 64 GHz -45.936 dBm	Frequency Auto Tune Center Freq 1.21000000 GHz Start Freq 30.000000 MHz Stop Freq
Кеузіght Spectrum Analyzer - Sive Ссптег Freq 1.21000 10 dB/div Ref 20.00 d 10 dB/div	AC CORREC 0000 GHZ PNO: Fast ↔ IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE DET PINNINN 1 1.746 64 GHz -45.936 dBm	Frequency Auto Tune Center Freq 1.21000000 GHz Start Freq 30.000000 MHz
Кеузіght Spectrum Analyzer - Swe RL RF 50 Ω Center Freq 1.21000 100 dB/div Ref 20.00 d 10 dB/div Ref 20.00 d 100 d 10.0 100 d 100 d -30.0 100 d 100 d -40.0 100 d 100 d -60.0 100 d 100 d -70.0 100 d 100 d	AC CORREC 0000 GHZ PNO: Fast → IFGain:Low	→ Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:07:41 PM Jul 06, 2020 TRACE [] 2 3 4 5 6 TYPE MANNAN 1 1.746 64 GHZ -45.936 dBm	Frequency Auto Tune Center Freq 1.21000000 GHz Start Freq 30.000000 MHz Stop Freq
Кеузіght Spectrum Analyzer - Swe Center Freq 1.21000 Conter Freq 1.210000 Conter Freq 1.210000 Conter Freq 1.210000000	AC CORREC 0000 GHZ PNO: Fast → IFGain:Low IBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:07:41 PMJul 06, 2020 TRACE 1 2 3 4 5 6 TYPE P NNNN N 1 1.746 64 GHz -45.936 dBm 0L1-16:51:691	Frequency Auto Tune Center Freq 1.21000000 GHz Start Freq 30.000000 MHz Stop Freq 2.39000000 GHz
Keysight Spectrum Analyzer - Swe R RF 50 Q Center Freq 1.21000 Ref 20.00 d Log Image: Center Freq 1.21000 Image: Center Freq 1.21000 Image: Center Freq 1.210000 Image: Center Freq 1.2100000 Image: Center Freq 1.210000000 Image: Center Freq 1.210000000000 Image: Center Freq 1.21	AC CORREC 0000 GHZ PN0: Fast → IFGain:Low IBM ISM ISM ISM ISM ISM ISM ISM IS	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:07:41 PMJul 06, 2020 TRACE [] 2 3 4 5 6 TYPE P NNNNN 1 1.746 64 GHz -45.936 dBm 0L1-16:51 dBm 0L1-16:51 dBm 500 2.390 GHz 6.0 ms (30000 pts)	Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz Stop Freq 2.39000000 GHz CF Step 236.00000 MHz
Keysight Spectrum Analyzer - Swe Carter Freq 1.21000 Center Freq 1.21000 Conter Freq 1.210000 Conter Freq 1.21000000 Conter Freq 1.2100000000000000000000000000000000000	AC CORREC 0000 GHZ PNO: Fast → IFGain:Low IBM ISM ISM ISM ISM IFGain:Low ISM IFGain:Low ISM IFGain:Low IFGAIN IFGAIN IFGAIN IFGAIN	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:07:41 PMJul 06, 2020 TRACE 1 2 3 4 5 6 TYPE P NNNN N 1 1.746 64 GHz -45.936 dBm 0L1-16:51:691	Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz Stop Freq 2.39000000 GHz CF Step 236.00000 MHz
Keysight Spectrum Analyzer - Swe R RF 50 Q Center Freq 1.21000 Ref 20.00 d Log Ref 20.00 d Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io </td <td>AC CORREC 0000 GHZ PN0: Fast → IFGain:Low IBM ISM ISM ISM ISM ISM ISM ISM IS</td> <td>Trig: Free Run Atten: 30 dB</td> <td>ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr</td> <td>12:07:41 PMJul 06, 2020 TRACE [] 2 3 4 5 6 TYPE P NNNNN 1 1.746 64 GHz -45.936 dBm 0L1-16:51 dBm 0L1-16:51 dBm 500 2.390 GHz 6.0 ms (30000 pts)</td> <td>Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz 2.390000000 GHz 2.390000000 GHz 236.000000 MHz Auto Man</td>	AC CORREC 0000 GHZ PN0: Fast → IFGain:Low IBM ISM ISM ISM ISM ISM ISM ISM IS	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:07:41 PMJul 06, 2020 TRACE [] 2 3 4 5 6 TYPE P NNNNN 1 1.746 64 GHz -45.936 dBm 0L1-16:51 dBm 0L1-16:51 dBm 500 2.390 GHz 6.0 ms (30000 pts)	Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz 2.390000000 GHz 2.390000000 GHz 236.000000 MHz Auto Man
Keysight Spectrum Analyzer - Swe R RF 50.2 Center Freq 1.21000 10 dE/div Ref 20.00 d 11 dE/div Ref 20.00 d 12 d Ref 20.00 d	AC CORREC 0000 GHZ PNO: Fast → IFGain:Low IBM ISM ISM ISM ISM IFGain:Low ISM IFGain:Low ISM IFGain:Low IFGAIN IFGAIN IFGAIN IFGAIN	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:07:41 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MINIMUM 1 1.746 64 GHz -45.936 dBm DL1-18:51 090 DL1-18:51 090 Stop 2.390 GHz 6.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz Stop Freq 2.390000000 GHz 236.000000 MHz Auto Man
Keysight Spectrum Analyzer - Swe R RF 50 Q Center Freq 1.21000 Io dB/div Ref 20.00 d Log	AC CORREC 0000 GHZ PNO: Fast → IFGain:Low IBM ISM ISM ISM ISM IFGain:Low ISM IFGain:Low ISM IFGain:Low IFGAIN IFGAIN IFGAIN IFGAIN	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:07:41 PMJul 06, 2020 TRACE [] 2 3 4 5 6 TYPE P NNNNN 1 1.746 64 GHz -45.936 dBm 0L1-16:51 dBm 0L1-16:51 dBm 500 2.390 GHz 6.0 ms (30000 pts)	Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz Stop Freq 2.390000000 GHz 236.000000 MHz Auto Man
Keysight Spectrum Analyzer - Swe R RF 50 Q Center Freq 1.21000 Ref 20.00 d Log Ref 20.00 d Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io Io </td <td>AC CORREC 0000 GHZ PNO: Fast → IFGain:Low IBM ISM ISM ISM ISM IFGain:Low ISM IFGain:Low ISM IFGain:Low IFGAIN IFGAIN IFGAIN IFGAIN</td> <td>Trig: Free Run Atten: 30 dB</td> <td>ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr</td> <td>12:07:41 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MINIMUM 1 1.746 64 GHz -45.936 dBm DL1-18:51 090 DL1-18:51 090 Stop 2.390 GHz 6.0 ms (30000 pts) FUNCTION VALUE</td> <td>Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz 2.390000000 GHz 2.390000000 GHz 236.000000 MHz Auto Man Freq Offset 0 Hz</td>	AC CORREC 0000 GHZ PNO: Fast → IFGain:Low IBM ISM ISM ISM ISM IFGain:Low ISM IFGain:Low ISM IFGain:Low IFGAIN IFGAIN IFGAIN IFGAIN	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:07:41 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MINIMUM 1 1.746 64 GHz -45.936 dBm DL1-18:51 090 DL1-18:51 090 Stop 2.390 GHz 6.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz 2.390000000 GHz 2.390000000 GHz 236.000000 MHz Auto Man Freq Offset 0 Hz
Keysight Spectrum Analyzer - Swe RL RF 50.2 Center Freq 1.21000 10 dE/div Ref 20.00 d 20 d 20 d 20 d 20 d 30 d 20 d 40 d 20 d 50 d 20 d 51 d 51 d 52 d 52 d 53 d 54 d 54 d 56 d 57 d <t< td=""><td>AC CORREC 0000 GHZ PNO: Fast → IFGain:Low IBM Folder NSprenz Area (P1/1/174) Folder NSp</td><td>Trig: Free Run Atten: 30 dB</td><td>ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr</td><td>12:07:41 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MINIMUM 1 1.746 64 GHz -45.936 dBm DL1-18:51 090 DL1-18:51 090 Stop 2.390 GHz 6.0 ms (30000 pts) FUNCTION VALUE</td><td>Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz Stop Freq 2.390000000 GHz <u>CF Step</u> 236.000000 MHz <u>Auto</u> Man Freq Offset 0 Hz Scale Type</td></t<>	AC CORREC 0000 GHZ PNO: Fast → IFGain:Low IBM Folder NSprenz Area (P1/1/174) Folder NSp	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:07:41 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MINIMUM 1 1.746 64 GHz -45.936 dBm DL1-18:51 090 DL1-18:51 090 Stop 2.390 GHz 6.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz Stop Freq 2.390000000 GHz <u>CF Step</u> 236.000000 MHz <u>Auto</u> Man Freq Offset 0 Hz Scale Type
Image: system is a system in the system is a system in the system is a system is a system in the system is a system	AC CORREC 0000 GHZ PNO: Fast → IFGain:Low IBM Folder NSprenz Area (P1/1/174) Folder NSp	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:07:41 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MINIMUM 1 1.746 64 GHz -45.936 dBm DL1-18:51 090 DL1-18:51 090 Stop 2.390 GHz 6.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz 2.390000000 GHz 2.390000000 GHz 236.000000 MHz Auto Man Freq Offset 0 Hz
Keysight Spectrum Analyzer - Swe RL RF 50 Q Center Freq 1.21000 Conter Freq 1.210000 Conter Freq 1.210000 Conter Freq 1.21000000 Conter Freq 1.2100000000000000000000000000000000000	AC CORREC 0000 GHZ PNO: Fast → IFGain:Low IBM Folder NSprenz Area (P1/1/174) Folder NSp	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:07:41 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MINIMUM 1 1.746 64 GHz -45.936 dBm DL1-1851 390 CL1-1851 390 Stop 2.390 GHz 6.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tune Center Freq 1.210000000 GHz Start Freq 30.000000 MHz Stop Freq 2.390000000 GHz <u>CF Step</u> 236.000000 MHz <u>Auto</u> Man Freq Offset 0 Hz Scale Type



Report No.: AGC02457200606FE03 Page 25 of 65



🔤 Keysight S		Analyzer - Sw											
Center I	RF	50Ω		CORREC		SENSE:	INT		ALIGN AUTO		M Jul 06, 2020 DE 1 2 3 4 5 (F	requency
				PNO: Fast IFGain:Lov		g: Free Ru ten: 30 dE		Avg Hold	d: 10/10	r1 4.80	3 5 GHz 38 dBm		Auto Tune
10 dB/div Log 10.0	Re	f 20.00											Center Freq 41750000 GHz
-20.0		1									DL1 -16.51 dBm	2.48	Start Freq 33500000 GHz
-50.0 -60.0 <mark>0000000000000000000000000000000000</mark>				lurat furation.								25.00	Stop Freq 00000000 GHz
Start 2.4 #Res BV	V 100	kHz	X			Y	FUNCT	ION FL	Sweep	2.152 s (3	5.00 GHz 0000 pts) ^{DN VALUE}		CF Step 51650000 GHz Man
1 N 2 3 4 5 6	1 f		4.8	03 5 GHz	-39.1	638 dBm					=		Freq Offset 0 Hz
8													Scale Type
10											-	Log	Lin
MSG						III			STATU	2	F F		
mod									STATU				



Attestation of Global Compliance(Shenzhen)Co.,Ltd. Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



XIRL RF	zer - Swept SA 50 Ω AC CORREC	SENSE:INT	ALIGN AUTO	12:10:42 PM Jul 06, 2020	
Center Freq 2.44	41000000 GHz PNO: Wid IFGain:Lo	le 🛶 Trig: Free Run	Avg Type: Log-Pwr Avg Hold: 10/10	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNNN	Frequency
	IFGaIN:LC	Atten. oo ub	Mkr1 2	440 818 0 GHz	Auto Tu
10 dB/div Ref 20).00 dBm			3.655 dBm	
10.0		<u>1</u>			O antan En
0.00					Center Fr 2.441000000 G
-10.0					2.4410000000
-20.0					Start Fr
-30.0					2.439500000 G
-40.0					
-50.0					Stop Fr
-60.0					2.442500000 0
-70.0					
Center 2.441000 #Res BW 100 kHz		VBW 300 kHz	Sweep 2.0	Span 3.000 MHz 000 ms (30000 pts)	CF St 300.000 k
MKR MODE TRC SCL	х		FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> N
1 N 1 f 2	2.440 818 0 GHz	3.655 dBm			F 0#
3					Freq Off
5				=E	
7 8					Scale Ty
9					Log
11				-	
ISG			STATUS	, , , , , , , , , , , , , , , , , , ,	
	tar - Swant SA		STATUS		
Keysight Spectrum Analyz	50 Ω AC CORREC	SENSE:INT	ALIGN AUTO	12:10:51 PM Jul 06, 2020	_
Keysight Spectrum Analyz	50 Ω AC CORREC 15000000 GHz PNO: Fas	it 🛶 Trig: Free Run		12:10:51 PM Jul 06, 2020 TRACE 1 2 3 4 5 6	Frequency
Keysight Spectrum Analyz	50 Ω AC CORREC 15000000 GHz	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE M	Frequency
Keysight Spectrum Analyz RL RF Center Freq 1.2	50 Ω AC CORREC 15000000 GHz PNO: Fas IFGain:Lc	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PMJul 06, 2020 TRACE 1 233456 TYPE M DET PNNNNN 1 2.392 89 GHz	Frequency
RL RF Center Freq 1.2	50 Ω AC CORREC 15000000 GHz PNO: Fas	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE M	Frequency Auto Tu
Keysight Spectrum Analyz RL RF Center Freq 1.2'	50 Ω AC CORREC 15000000 GHz PNO: Fas IFGain:Lc	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PMJul 06, 2020 TRACE 1 233456 TYPE M DET PNNNNN 1 2.392 89 GHz	Frequency Auto Tu Center Fi
Keysight Spectrum Analyz RL RF Center Freq 1.2'	50 Ω AC CORREC 15000000 GHz PNO: Fas IFGain:Lc	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE NUMBER DET PININNN 1 2.392 89 GHz -55.045 dBm	Frequency Auto Tu Center Fi
Keysight Spectrum Analyz RL RF Center Freq 1.2'	50 Ω AC CORREC 15000000 GHz PNO: Fas IFGain:Lc	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PMJul 06, 2020 TRACE 1 233456 TYPE M DET PNNNNN 1 2.392 89 GHz	Frequency Auto Tu Center Fr 1.215000000 0
Keysight Spectrum Analyz RL RF Center Freq 1.2' dB/div Ref 20 00 00 00 00 00 00	50 Ω AC CORREC 15000000 GHz PNO: Fas IFGain:Lc	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE NUMBER DET PININNN 1 2.392 89 GHz -55.045 dBm	Frequency Auto Tu Center Fr 1.215000000 0 Start Fr
Keysight Spectrum Analyz RL RF Center Freq 1.2' dB/div Ref 20 0.0	50 Ω AC CORREC 15000000 GHz PNO: Fas IFGain:Lc	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE NUMBER DET PININNN 1 2.392 89 GHz -55.045 dBm	Frequency Auto Tu Center Fr 1.21500000 G Start Fr
Keysight Spectrum Analyz RL RF Center Freq 1.2' 10 dB/div Ref 20 00 0.00 0.00 0.00 -10.0 0.00 -10.0 0.00 -10.0 0.00	50 Ω AC CORREC 15000000 GHz PNO: Fas IFGain:Lc	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE NUMBER DET PININNN 1 2.392 89 GHz -55.045 dBm	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M
Keysight Spectrum Analyz RL RF Center Freq 1.2' dB/div Ref 20 d0 dB/div Ref 20 d0 0 d0	50 Ω AC CORREC 15000000 GHz PNO: Fas IFGain:Lo	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE NUMBER DET PININNN 1 2.392 89 GHz -55.045 dBm	Frequency Auto Tu Center Fr 1.215000000 C Start Fr 30.00000 M Stop Fr
Y RL RF Center Freq 1.2* 10 10 10 dB/div Ref 20 10.0	50 Ω AC CORREC 15000000 GHz PNO: Fas IFGain:Lo	it 🛶 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:10:51 PMJul 06, 2020 TRACE 12 3 4 5 6 TYPE NUMBER DET PININNN 1 2.392 89 GHz -55.045 dBm	Frequency Auto Tu Center Fr 1.215000000 C Start Fr 30.00000 M Stop Fr
Keysight Spectrum Analyz RL RF Center Freq 1.24 IO Ref 20 Og IO IO Ref 20 Og IO IO IO IO <td>S0 Ω AC CORREC 15000000 GHz PNO: Re IFGain:Lo 0.00 dBm</td> <td>Trig: Free Run Atten: 30 dB</td> <td>ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr</td> <td>12:10:51 PM Jul 06, 2020 TRACE 12 3 4 5 6 TYPE MWWWWW DET PNNNN 1 2.392 89 GHz -55.045 dBm 0L1-16.35 dBm</td> <td>Frequency Auto Tu Center Fi 1.215000000 G Start Fr 30.000000 M Stop Fr 2.400000000 G</td>	S0 Ω AC CORREC 15000000 GHz PNO: Re IFGain:Lo 0.00 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	12:10:51 PM Jul 06, 2020 TRACE 12 3 4 5 6 TYPE MWWWWW DET PNNNN 1 2.392 89 GHz -55.045 dBm 0L1-16.35 dBm	Frequency Auto Tu Center Fi 1.215000000 G Start Fr 30.000000 M Stop Fr 2.400000000 G
Keysight Spectrum Analyz RL RF Center Freq 1.2: O dB/div Ref 20 Start O dB/div Ref 20	S0 Ω AC CORREC 15000000 GHZ PNO: Fat IFGain:Lc D.00 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:10:51 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MUNICIPAL OF PARAMETER DET PANNAN 1 2.392 89 GHz -55.045 dBm 0L1 -16.35 dBm 0L1 -16.35 dBm 1 0L1 -16.35 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	Frequency Auto Tu Center Fri 1.215000000 M Start Fri 30.000000 M Stop Fri 2.400000000 G
Keysight Spectrum Analyz RL RF Center Freq 1.2'	S0 Ω AC CORREC 15000000 GHZ PNO: RA IFGain:Lo 0.00 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 MKr	12:10:51 PM Jul 06, 2020 TRACE 12 3 4 5 6 TYPE MWWWWW DET PNNNN 1 2.392 89 GHz -55.045 dBm 0L1-16.35 dBm	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M Stop Fr 2.400000000 G
Keysight Spectrum Analyz RL RF Center Freq 1.21 O dB/div Ref 20 Log	S0 Ω AC CORREC 15000000 GHZ PNO: Fat IFGain:Lc D.00 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:10:51 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MUNICIPAL OF PARAMETER DET PANNAN 1 2.392 89 GHz -55.045 dBm 0L1 -16.35 dBm 0L1 -16.35 dBm 1 0L1 -16.35 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	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
Keysight Spectrum Analyz RL RF Center Freq 1.2: O dB/div Ref 20 Log	S0 Ω AC CORREC 15000000 GHZ PNO: RA IFGain:Lo 0.00 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:10:51 PM Jul 06, 2020 TRACE 12 3 4 5 6 TYPE MUNICIPAL DET P NNNNN 1 2.392 89 GHz -55.045 dBm DL1-18.35 dBm DL1-18.35 dBm 2 dBm Line Jul 2 dBm Line Jul 2 3 dBm Line Jul 2 dBm Line Jul 2 4 dBm Line Jul 2 dBm Line Jul 2 5 dBm Line Jul 2 dBm Line Jul 2 Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tu Center Fri 1.215000000 G Start Fri 30.000000 M Stop Fri 2.400000000 G CF St 237.000000 M Auto M Freq Offst
Keysight Spectrum Analyz RL RF Center Freq 1.2: O dB/div Ref 20 Log	S0 Ω AC CORREC 15000000 GHZ PNO: RA IFGain:Lo 0.00 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:10:51 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE MUNICIPAL OF PARAMETER DET PANNAN 1 2.392 89 GHz -55.045 dBm 0L1 -16.35 dBm 0L1 -16.35 dBm 1 0L1 -16.35 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	Frequency Auto Tu Center Fri 1.215000000 G Start Fri 30.000000 M Stop Fri 2.400000000 G CF St 237.000000 M Auto M Freq Offst
Keysight Spectrum Analyz RL RF Center Freq 1.2: 0 dB/div Ref 20 00 Ref 20 -20.0 Ref 20 -30.0 Ref 20 -40.0 Ref 20 -50.0 Ref 20 -60.0 Ref 20 -70.0	S0 Ω AC CORREC 15000000 GHZ PNO: RA IFGain:Lo 0.00 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:10:51 PM Jul 06, 2020 TRACE 12 3 4 5 6 TYPE MUNICIPAL DET P NNNNN 1 2.392 89 GHz -55.045 dBm DL1-18.35 dBm DL1-18.35 dBm 2 dBm Line Jul 2 dBm Line Jul 2 3 dBm Line Jul 2 dBm Line Jul 2 4 dBm Line Jul 2 dBm Line Jul 2 5 dBm Line Jul 2 dBm Line Jul 2 Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto TL Center Fr 1.215000000 0 Start Fr 30.000000 M Stop Fr 2.400000000 M CF St 237.000000 M Auto M Freq Off 0
Keysight Spectrum Analyz RL RF Center Freq 1.2: IO dB/div Ref 20	S0 Ω AC CORREC 15000000 GHZ PNO: RA IFGain:Lo 0.00 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:10:51 PM Jul 06, 2020 TRACE 12 3 4 5 6 TYPE MUNICIPAL DET P NNNNN 1 2.392 89 GHz -55.045 dBm DL1-18.35 dBm DL1-18.35 dBm 2 dBm Line Jul 2 dBm Line Jul 2 3 dBm Line Jul 2 dBm Line Jul 2 4 dBm Line Jul 2 dBm Line Jul 2 5 dBm Line Jul 2 dBm Line Jul 2 Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Start Fr 30.000000 fr Start Fr 30.000000 fr Stop Fr 2.400000000 fr CF St 237.000000 fr Auto Freq Offr 0 Scale Ty
Keysight Spectrum Analyz RL RF Center Freq 1.2: IO dE/div Ref 20 Og IO IO dE/div Ref 20 Og IO IO dE/div Ref 20 IO dE/div Reise IO dE/div Ref 20 IO dE/div Ref 20 <thio de="" div<="" th=""> Ref 20 <</thio>	S0 Ω AC CORREC 15000000 GHZ PNO: RA IFGain:Lo 0.00 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	12:10:51 PM Jul 06, 2020 TRACE 12 3 4 5 6 TYPE MUNICIPAL DET P NNNNN 1 2.392 89 GHz -55.045 dBm DL1-18.35 dBm DL1-18.35 dBm 2 dBm Line Jul 2 dBm Line Jul 2 3 dBm Line Jul 2 dBm Line Jul 2 4 dBm Line Jul 2 dBm Line Jul 2 5 dBm Line Jul 2 dBm Line Jul 2 Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M Stop Fr 2.40000000 G CF St 237.000000 M Auto M Freq Offs 0 Scale Ty

TEST PLOT OF OUT OF BAND EMISSIONS OF π /4-DQPSK MODULATION IN MIDDLE CHANNEL







🔤 Keysight Spectrum Analyzer - Swept SA				
KL RF 50 Ω AC Center Freq 13.74175000	CORREC SENSI	E:INT ALIGN AUT Avg Type: Log-Py		Frequency
10 dB/div Ref 20.00 dBm	PNO: Fast →→ Trig: Free F IFGain:Low Atten: 30 d	Run Avg Hold: 10/10 IB	TYPE MWWWW DET PNNNNN Mkr1 4.881 6 GHz -34.475 dBm	Auto Tune
				Center Freq 13.741750000 GHz
-20.0 -30.0 -40.0			DL1 -16.35 dBm	Start Freq 2.483500000 GHz
-50.0 -60.0 -70.0				Stop Freq 25.00000000 GHz
Start 2.48 GHz #Res BW 100 kHz	#VBW 300 kHz		Stop 25.00 GHz 2.152 s (30000 pts)	CF Step 2.251650000 GHz <u>Auto</u> Man
	.881 6 GHz -34.475 dBr			Freq Offset 0 Hz
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9				Scale Type Log <u>Lin</u>
MSG	m	ST/	ATUS	



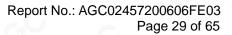
Attestation of Global Compliance(Shenzhen)Co.,Ltd. Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



Keysight Spectrum Analyzer -	Swept SA Ω AC CORREC	SENSE:INT	ALIGN AUTO	12:12:04 PM Jul 06, 2020	
Center Freq 2.480			Avg Type: Log-Pwr Avg Hold: 10/10	TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN	Frequency
			Mkr1 2	.479 813 1 GHz	
10 dB/div Ref 20.00	0 dBm			3.421 dBm	
10.0		- -•• ¹			Center Fr
0.00		- many			2.480000000 G
-10.0					
-20.0					Start Fr
40.0				a contraction of the second se	2.478500000 G
-50.0					
60.0					Stop Fr 2.481500000 G
70.0					2.401000000
Center 2.480000 GH				Span 3.000 MHz	
Res BW 100 kHz	#VE	W 300 kHz		000 ms (30000 pts)	300.000 k Auto N
MKR MODE TRC SCL	× 2.479 813 1 GHz	۲ F 3.421 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	
2					Freq Offs
4				=	. 0
6					
8					Scale Ty
10					Log
<		III		4	
•		m	STATU	5	
<					
SG SG Keysight Spectrum Analyzer - RL RF 50	Ω AC CORREC 000000 GHz	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	12:12:13 PM Jul 06, 2020	_
<	Ω AC CORREC	SENSE:INT	ALIGN AUTO		Frequency
<	Ω AC CORREC 0000000 GHz PNO: Fast	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 1 2 3 4 5 TYPE M DET P NNNN Akr1 48.01 MHz	Frequency Auto Tu
RL RF 50 RE RF 50 RE RF 50 RE RF 50 RE RF 50 RE RF 70 RE 70.01	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PM Jul 06, 2020 TRACE 1 2 3 4 5 TYPE M	Frequency Auto Tu
Keysight Spectrum Analyzer - G RL RF St Center Freq 1.2150 0 dB/div Ref 20.00	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 1 2 3 4 5 TYPE M DET P NNNN Akr1 48.01 MHz	Frequency Auto Tu
Keysight Spectrum Analyzer - RL RF Scenter Freq 1.2150 IO GB/div Ref 20.01	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 1 2 3 4 5 TYPE M DET P NNNN Akr1 48.01 MHz	Frequency Auto Tu Center Fi
Keysight Spectrum Analyzer - RL RF 50 Center Freq 1.215 10 dB/div Ref 20.0 9 10 dB/div Ref 20.0 10 dB/div Ref 20.0	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 1 2 3 4 5 TYPE M DET P NNNN Akr1 48.01 MHz	Frequency Auto Tu Center Fr
Keysight Spectrum Analyzer- RL RF 55 Center Freq 1.2151 0 dB/div Ref 20.01 9 0 0 10 dB/div Ref 20.01 9 0 0 10.0 0 0 20.0 0 0	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PM Jul 06, 2020 TRACE 12 3 4 5 TYPE MUNICIPAL DET PNNNN Akr1 48,01 MHz -56.380 dBm	Frequency Auto Tu Center Fr 1.21500000 G Start Fr
Keysight Spectrum Analyzer - RL RF 50 Center Freq 1.2150 50 0 dB/div Ref 20.00 90 0 00 dB/div Ref 20.00 90 0 00 dB/div Ref 20.00	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PM Jul 06, 2020 TRACE 12 3 4 5 TYPE MUNICIPAL DET PNNNN Akr1 48,01 MHz -56.380 dBm	Frequency Auto Tu Center Fr 1.21500000 G Start Fr
Center Freq 1.215 Center Freq 1.215 O dB/div Ref 20.00 O	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PM Jul 06, 2020 TRACE 12 3 4 5 TYPE MUNICIPAL DET PNNNN Akr1 48,01 MHz -56.380 dBm	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M
G Keysight Spectrum Analyzer RL RF SG Center Freq 1.2150 SG 0 dB/div Ref 20.00 0 0 SG	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PM Jul 06, 2020 TRACE 12 3 4 5 TYPE MUNICIPAL DET PNNNN Akr1 48,01 MHz -56.380 dBm	Auto Tu Center Fi 1.215000000 G Start Fr 30.00000 M Stop Fr
Keysight Spectrum Analyzer RL RF SG Center Freq 1.2150 10 dB/div Ref 20.00 9	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PM Jul 06, 2020 TRACE 12 3 4 5 TYPE MUNICIPAL DET PNNNN Akr1 48,01 MHz -56.380 dBm	Auto Tu Center Fr 1.215000000 G Start Fr 30.00000 M Stop Fr
Keysight Spectrum Analyzer SG 0 RL RF SC 20 clb/cliv Ref 20.01 -00 -00	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PM Jul 06, 2020 TRACE 12 3 4 5 TYPE MUNICIPAL DET PNNNN Akr1 48,01 MHz -56.380 dBm	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M Stop Fr 2.400000000 G
G Reysight Spectrum Analyzer - 0 RL RF 50 0 Call (div Ref 20.01 0 0 0 0	0 Q AC CORREC 000000 CHz PNO: Fast IFGain:Low 0 CBM	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 12 3 4 5 TYPE MINING Akr1 48.01 MHz -56.380 dBm DC1 -16 50 dBm DC1 -16 50 dBm Stop 2.400 GHz 8.0 ms (30000 pts)	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M Stop Fr 2.400000000 G CF St 237.000000 M
Center Freq 1.215	AC CORREC OD0000 CHz PNO: Fast IFGain:Low 0 dBm 0 dBm 1 data under the second se	SENSE:INT	ALIGN AUTO	12:12:13 PM Jul 06, 2020 TRACE 12 3 4 5 TYPE MWWW DET PNNN Akr1 48.01 MHz -56.380 dBm DC1-15.50 dBm	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M Stop Fr 2.400000000 G CF St 237.000000 M
Keysight Spectrum Analyzer Keysight Spectrum Analyzer Q RL RF SC Center Freq 1.2150 O dB/div Ref 20.01 °0	Ω AC CORREC 000000 GHz PN0: Fast IFGain:Low	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 12 3 4 5 TYPE MINING Akr1 48.01 MHz -56.380 dBm DC1 -16 50 dBm DC1 -16 50 dBm Stop 2.400 GHz 8.0 ms (30000 pts)	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
Keysight Spectrum Analyzer - Keysight Spectrum Analyzer - R L RF 50 Center Freq 1.2151 Second Seco	AC CORREC OD0000 CHz PNO: Fast IFGain:Low 0 dBm 0 dBm 1 data under the second se	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 12 3 4 5 TYPE M DET PNNNN Akr1 48.01 MHz -56.380 dBm DL1 -10.50 dBm Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M Stop Fr 2.40000000 G CF St 237.000000 M Auto M Freq Offs 0
Keysight Spectrum Analyzer- RL RF 55 Center Freq 1.2151 IO Ref 20.01 ''''' Ref 20.01 ''''' Ref 20.01 '''''' Ref 20.01 ''''''''''''''''''''''''''''''''''''	AC CORREC OD0000 CHz PNO: Fast IFGain:Low 0 dBm 0 dBm 1 data ware in Fast 1 data ware	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 12 3 4 5 TYPE MINING Akr1 48.01 MHz -56.380 dBm DC1 -16 50 dBm DC1 -16 50 dBm Stop 2.400 GHz 8.0 ms (30000 pts)	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M Stop Fr 2.40000000 G CF St 237.000000 M Auto M Freq Offs 0
Keysight Spectrum Analyzer- RL RF SG Center Freq 1.2150 10 dB/div Ref 20.00 9	AC CORREC OD0000 CHz PNO: Fast IFGain:Low 0 dBm 0 dBm 1 data ware in Fast 1 data ware	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 12 3 4 5 TYPE M DET PNNNN Akr1 48.01 MHz -56.380 dBm DL1 -10.50 dBm Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	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 Offs 0
Keyzight Spectrum Analyzer- RL RF S5 Center Freq 1.2150 0 B/div Ref 20.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AC CORREC OD0000 CHz PNO: Fast IFGain:Low 0 dBm 0 dBm 1 data ware in Fast 1 data ware	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 12 3 4 5 TYPE M DET PNNNN Akr1 48.01 MHz -56.380 dBm DL1 -10.50 dBm Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M Stop Fr 2.400000000 G CF St 237.00000 M Auto M Freq Offs 0 Scale Ty
Keysight Spectrum Analyzer- RL RF SG Center Freq 1.2150 10 dB/div Ref 20.00 9	AC CORREC OD0000 CHz PNO: Fast IFGain:Low 0 dBm 0 dBm 1 data ware in Fast 1 data ware	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	12:12:13 PMJul 06, 2020 TRACE 12 3 4 5 TYPE M DET PNNNN Akr1 48.01 MHz -56.380 dBm DL1 -10.50 dBm Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Auto Tu Center Fr 1.215000000 G Start Fr 30.000000 M Stop Fr 2.400000000 G CF Sta 237.00000 M Auto M Freq Offs 0 Scale Ty

TEST PLOT OF OUT OF BAND EMISSIONS OF $\pi/4\text{-}\mathsf{DQPSK}$ MODULATION IN HIGH CHANNEL



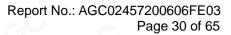






Note: The $\pi/4$ -DQPSK modulation is the worst case and only those data recorded in the report.



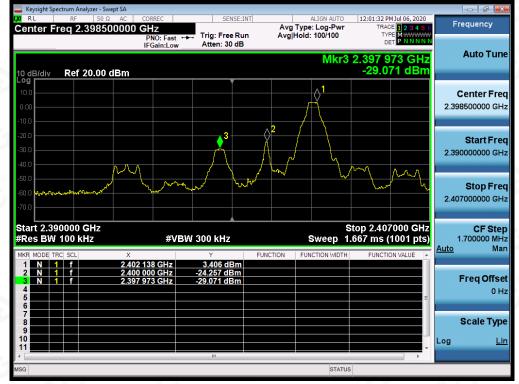




TEST RESULT FOR BAND EDGE

GFSK MODULATION IN LOW CHANNEL

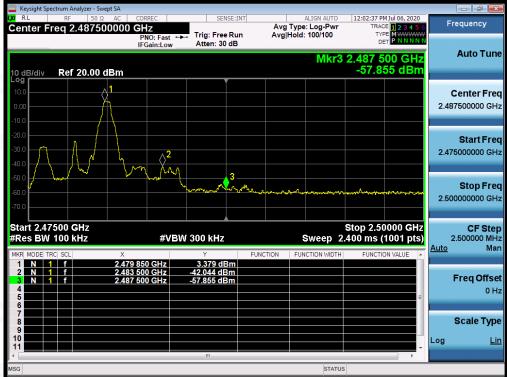
Hopping off





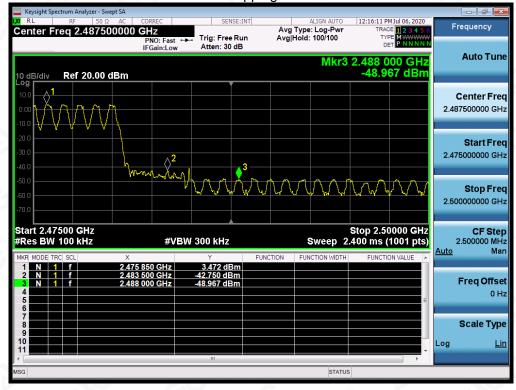






GFSK MODULATION IN HIGH CHANNEL

Hopping off









π /4-DQPSK MODULATION IN LOW CHANNEL Hopping off

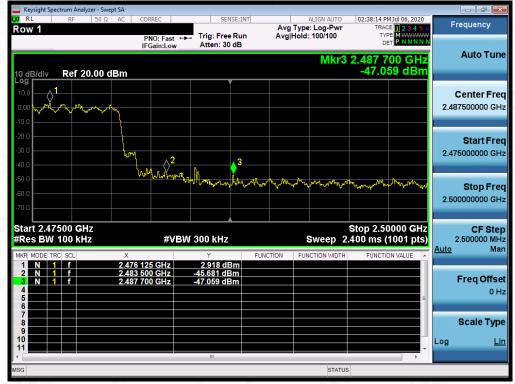








π /4-DQPSK MODULATION IN HIGH CHANNEL Hopping off







10. RADIATED EMISSION

10.1. 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 emissions, 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.





The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

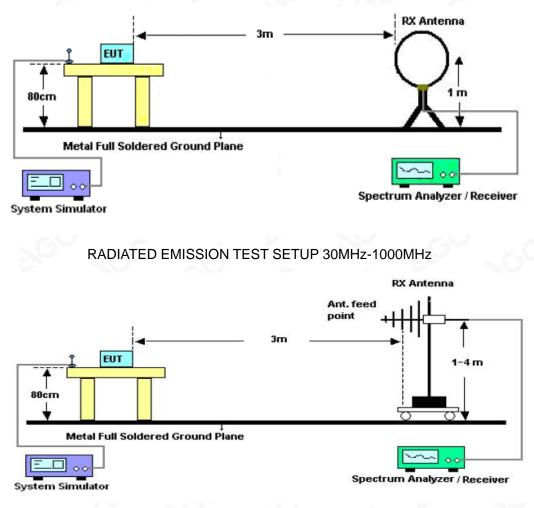




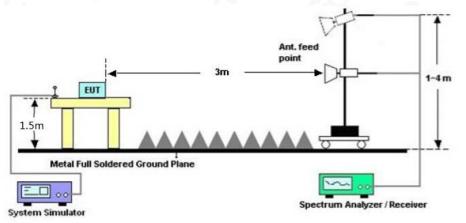
Report No.: AGC02457200606FE03 Page 36 of 65

10.2. TEST SETUP

Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz





Attestation of Global Compliance(Shenzhen)Co.,Ltd.Tel: +86-755 2523 4088E-mail: agc@agc-cert.comWeb: http://cn.agc-cert.com/

10.3. LIMITS AND MEASUREMENT RESULT

15.209 Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/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.

10.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

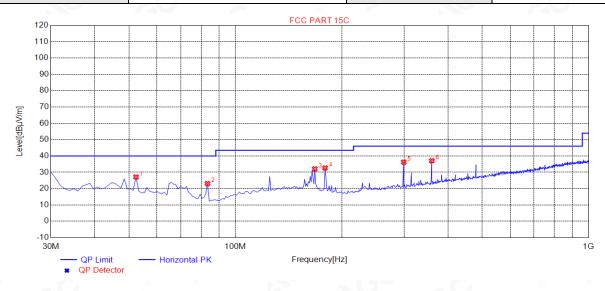
No emission found between lowest internal used/generated frequencies to 30MHz.





RADIATED EMISSION BELOW 1GHZ

EUT	Bluetooth headset	Model Name	199342
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna	Horizontal



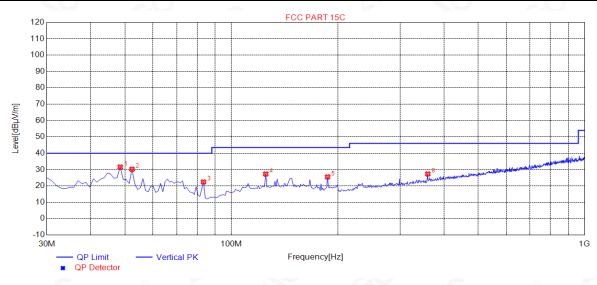
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	52.3100	27.14	11.49	40.00	12.86	200	296	Horizontal
2	83.3500	23.10	7.18	40.00	16.90	200	304	Horizontal
3	167.7400	32.06	14.17	43.50	11.44	100	212	Horizontal
4	179.3800	32.66	13.06	43.50	10.84	200	235	Horizontal
5	299.6600	36.21	15.91	46.00	9.79	100	126	Horizontal
6	359.8000	37.09	18.20	46.00	8.91	100	92	Horizontal

RESULT: PASS





EUT	Bluetooth headset	Model Name	199342
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna	Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	48.4300	31.55	11.71	40.00	8.45	100	3	Vertical
2	52.3100	30.20	11.49	40.00	9.80	100	267	Vertical
3	83.3500	22.47	7.18	40.00	17.53	100	90	Vertical
4	125.0600	27.32	13.81	43.50	16.18	100	51	Vertical
5	187.1400	25.53	12.65	43.50	17.97	100	14	Vertical
6	359.8000	27.37	18.20	46.00	18.63	100	159	Vertical

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. All test modes had been pre-tested. The mode 4 is the worst case and recorded in the report.





RADIATED EMISSION ABOVE 1GHZ

EUT	Bluetooth headset	Model Name	199342
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

dBµV) 45.18 37.24 40.94	(dB) 0.08 0.08	(dBµV/m) 45.26 37.32	(dBµV/m) 74 54	(dB) -28.74 -16.68	Value Type
37.24	0.08				
		37.32	54	-16.68	AVG
40 94					1110
+0.0+	2.21	43.15	74	-30.85	peak
31.41	2.21	33.62	54	-20.38	AVG
5				20	
	1 6	0			C.V
		0		31.41 2.21 33.62 54	

EUT	Bluetooth headset	Model Name	199342
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

(dBµV)	(dB)				
	(ub)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
45.65	0.08	45.73	74	-28.27	peak
36.87	0.08	36.95	54	-17.05	AVG
40.23	2.21	42.44	74	-31.56	peak
31.44	2.21	33.65	54	-20.35	AVG
				5	
-	36.87 40.23	36.87 0.08 40.23 2.21	36.87 0.08 36.95 40.23 2.21 42.44	36.87 0.08 36.95 54 40.23 2.21 42.44 74	36.87 0.08 36.95 54 -17.05 40.23 2.21 42.44 74 -31.56

Antenna Factor + Cable Loss – Pre-amplifier Factor =





Report No.: AGC02457200606FE03 Page 41 of 65

EUT	Bluetooth headset	Model Name	199342
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
4882.000	46.37	0.14	46.51	74	-27.49	peak
4882.000	38.59	0.14	38.73	54	-15.27	AVG
7323.000	41.17	2.36	43.53	74	-30.47	peak
7323.000	32.68	2.36	35.04	54	-18.96	AVG
	6				8	

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

EUT	Bluetooth headset	Model Name	199342
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

F		E 1		1.1		
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
4882.000	45.62	0.14	45.76	74	-28.24	peak
4882.000	38.27	0.14	38.41	54	-15.59	AVG
7323.000	40.26	2.36	42.62	74	-31.38	peak
7323.000	31.47	2.36	33.83	54	-20.17	AVG
			- C			
	· · · · · · · · · · · · · · · · · · ·					

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





Report No.: AGC02457200606FE03 Page 42 of 65

EUT	Bluetooth headset	Model Name	199342
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

	Neter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4960.000	46.98	0.22	47.2	74	-26.8	peak
4960.000	38.11	0.22	38.33	54	-15.67	AVG
7440.000	41.57	2.64	44.21	74	-29.79	peak
7440.000	32.32	2.64	34.96	54	-19.04	AVG
0				(3)		
C.	8				6	

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

EUT	Bluetooth headset	Model Name	199342
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4960.000	45.66	0.22	45.88	74	-28.12	peak
4960.000	37.13	0.22	37.35	54	-16.65	AVG
7440.000	41.27	2.64	43.91	74	-30.09	peak
7440.000	32.93	2.64	35.57	54	-18.43	AVG
		- C	(8)			
				0		1 . 6

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

RESULT: PASS

Note: Other emissions from 1G~25GHz are 20dB below the limits. No recording in the test report. Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

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

All test modes had been tested. The GFSK modulation is the worst case and recorded in the report.





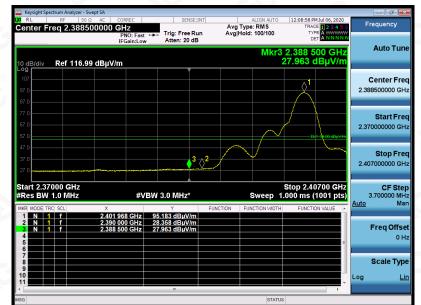
EUT	Bluetooth headset	Model Name	199342
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

TEST RESULT FOR RESTRICTED BANDS REQUIREMENTS

PK



AV



RESULT: PASS



Attestation of Global Compliance(Shenzhen)Co.,Ltd. Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/