

FCC Test Report

Report No.: AGC00737180603FE06

FCC ID : 2AIL4-BH169A
APPLICATION PURPOSE : Original Equipment
PRODUCT DESIGNATION : BLUETOOTH FM TRANSMITTER
BRAND NAME : VTIN
MODEL NAME : BH169A
CLIENT : VTIN TECHNOLOGY CO., LIMITED
DATE OF ISSUE : Jun. 23, 2018
STANDARD(S) : FCC Part 15.239
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.



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jun. 23, 2018	Valid	Original Report

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY **4**

2. GENERAL INFORMATION **5**

 2.1. PRODUCT DESCRIPTION 5

3. MEASUREMENT UNCERTAINTY **6**

4. DESCRIPTION OF TEST MODES **6**

5. SYSTEM TEST CONFIGURATION **6**

 5.1. EQUIPMENT USED IN EUT SYSTEM 6

 5.2. SUMMARY OF TEST RESULTS 6

6. TEST FACILITY **7**

7. RADIATED EMISSION **8**

 7.1. MEASUREMENT PROCEDURE 8

 7.2. TEST SETUP 9

 7.3. TEST RESULT FOR FIELD STRENGTH OF FUNDAMENTAL 10

 7.4. TEST RESULT FOR FIELD STRENGTH OF BAND EDGE EMISSION 10

 7.5. TEST RESULT FOR SPURIOUS EMISSION 11

8. BANDWIDTH **13**

 8.1. MEASUREMENT PROCEDURE 13

 8.2. TEST SETUP 13

 8.3. TEST RESULT 14

APPENDIX A: PHOTOGRAPHS OF TEST SETUP **14**

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

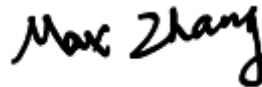
1. VERIFICATION OF CONFORMITY

Applicant	VTIN TECHNOLOGY CO., LIMITED
Address	Unit D,16/F, One Capital Place, 18 Luard Road Wan Chai, HongKong ,China
Manufacturer	VTIN TECHNOLOGY CO., LIMITED
Address	Unit D,16/F, One Capital Place, 18 Luard Road Wan Chai, HongKong ,China
Product Designation	BLUETOOTH FM TRANSMITTER
Brand Name	VTIN
Test Model	BH169A
Date of test	Jun. 08, 2018 to Jun. 23, 2018
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-BR/RF (2013-03-01)

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 15.239.

Tested by



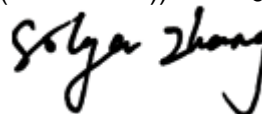
Max Zhang(Zhang Yi) Jun. 23, 2018

Reviewed by



Bart Xie(Xie Xiaobin)) Jun. 23, 2018

Approved by



Solger Zhang(Zhang Hongyi)
 Authorized Officer Jun. 23, 2018

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	88.1MHz; 98.0MHz; 107.9MHz
Field Strength(3m)	39.93dBuV/m(AV)@3m
Modulation	FM
Number of channels	199(Channel spacing 100kHz)
Hardware Version	BM169A_MB_V1.0
Software Version	V1.0
Antenna Designation	Integrated Antenna (Met 15.203 Antenna requirement)
Power Supply	DC 12V/24V

NOTE: 1. About the EUT, please refer to User's Manual.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 3.18dB

Radiated measurement: +/- 3.91dB

4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Transmitting mode(Low channel)
2	Transmitting mode(Middle channel)
3	Transmitting mode(High channel)

Note:

1. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
2. All the requirements have been tested by modulating the transmitter with a 2.5 kHz tone at a fixed level which set to the manufacturer's maximum rated input to the modulator.
3. All the modes are tested under DC 12V and DC24V, only the result of the worst case was recorded in the report, if no other cases.

5. SYSTEM TEST CONFIGURATION

5.1. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	WIRELESS FM TRANSMITTER	BH169A	2AIL4-BH169A	EUT
2	U-disk	Kingston	--	Support
3	Load	--	DC5V 2A	Support
4	Battery	--	DC 12V	Support *2

5.2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
15.209	Field Strength of Fundamental and Spurious Emission	Compliant
15.215	Bandwidth	Compliant
15.207	Line Conducted Emission	N/A

NOTE: N/A stands for not applicable.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2F., Bldg.2, No.1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District B112-B113, Bldg.12, Baoan Bldg Materials Center, No.1 of Xixiang Inner Ring Road, Baoan District, Shenzhen 518012
NVLAP LAB CODE	600153-0
Designation Number	CN5028
FCC Test Firm Registration Number	682566
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by National Voluntary Laboratory Accreditation program, NVLAP Code 600153-0

ALL TEST EQUIPMENT LIST

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
TEST RECEIVER	R&S	ESPI	101206	Jul. 02, 2017	Jul. 01, 2018
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec.08, 2017	Dec.07, 2018
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep.20, 2017	Sep.19, 2018
preamplifier	ChengYi	EMC184045SE	980508	Sep.15, 2017	Sep.14, 2018
Active loop antenna (9K-30MHz)	A.H.	SAS-562B	N/A	Mar.01, 2018	Feb.28, 2020
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May 18, 2017	May 17, 2019
Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-205	Jul. 02, 2017	Jul. 01, 2018
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep.28, 2017	Sep.27, 2018
Audio analyzer	HP	8920B	US35010161	July 3, 2016	July 2, 2017

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

7. RADIATED EMISSION

7.1. MEASUREMENT PROCEDURE

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground and opposite the horn antenna. 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 below 1GHz, use 120KHz RBW and VBW \geq 3RBW for QP reading.
7. 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.
8. Only the worst case is reported.

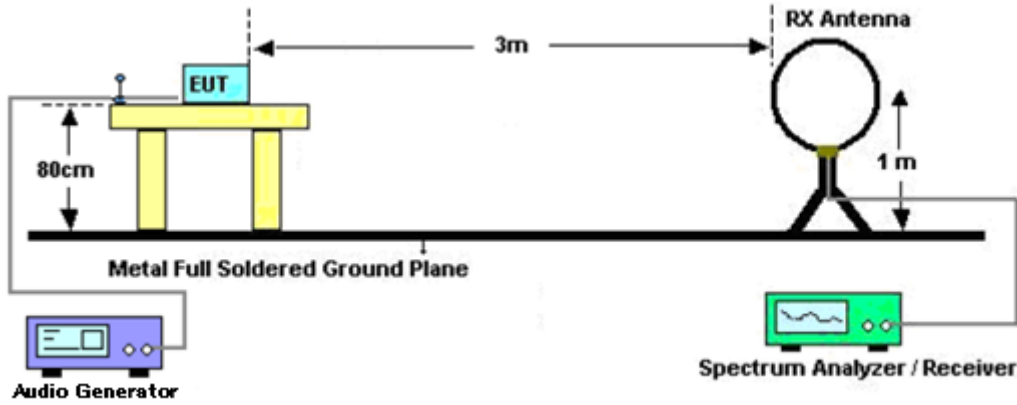
The following table is the setting of spectrum analyzer and receiver.

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

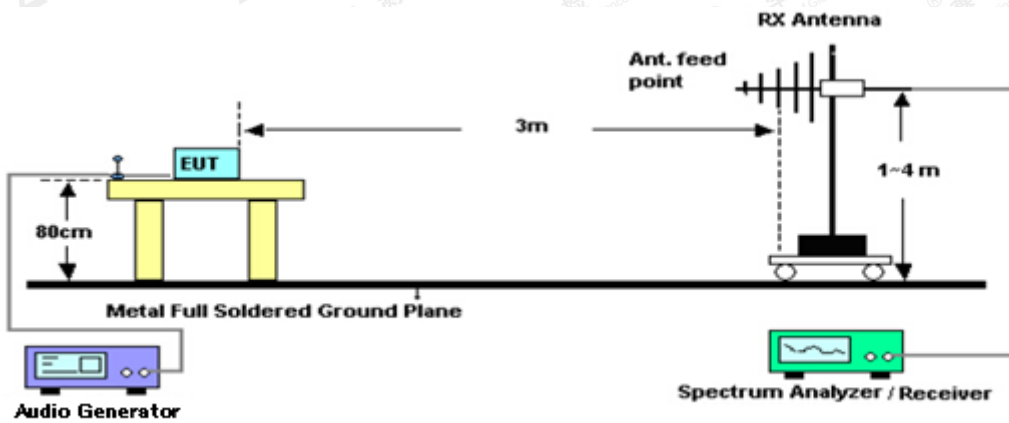
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

7.2. TEST SETUP

Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

7.3. TEST RESULT FOR FIELD STRENGTH OF FUNDAMENTAL

Frequency MHz	Polarization	Level dB(uV/m) PK	Limit dB(uV/m) PK	Margin dB	Pass/Fail	Detector
88.100	H	42.15	67.96	25.81	Pass	PK
88.100	V	41.66	67.96	26.3	Pass	PK
98.000	H	42.52	67.96	25.44	Pass	PK
98.000	V	41.69	67.96	26.27	Pass	PK
107.900	H	42.75	67.96	25.21	Pass	PK
107.900	V	41.72	67.96	26.24	Pass	PK
Frequency MHz	Polarization	Level dB(uV/m) AV	Limit dB(uV/m) AV	Margin dB	Pass/Fail	Detector
88.100	H	39.61	47.96	8.35	Pass	AV
88.100	V	38.52	47.96	9.44	Pass	AV
98.000	H	39.85	47.96	8.11	Pass	AV
98.000	V	38.34	47.96	9.62	Pass	AV
107.900	H	39.93	47.96	8.03	Pass	AV
107.900	V	38.56	47.96	9.4	Pass	AV

8.4. TEST RESULT FOR FIELD STRENGTH OF BAND EDGE EMISSION

Frequency MHz	Polarization	Level dB(uV/m) QP	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Detector
88.000	H	36.24	40.00	3.76	Pass	QP
88.000	V	35.16	40.00	4.84	Pass	QP
108.000	H	33.58	43.50	9.92	Pass	QP
108.000	V	32.21	43.50	11.29	Pass	QP

Note: The above two frequencies are the worst case for the band edge emission test.

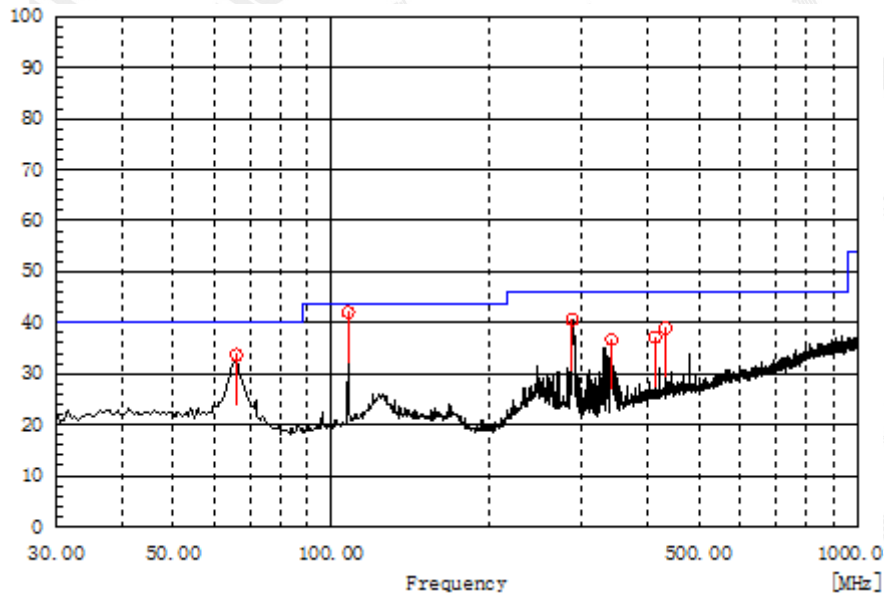
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

7.5. TEST RESULT FOR SPURIOUS EMISSION

RADIATED EMISSION BELOW 30MHz

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

RADIATED EMISSION BELOW 1GHZ-Horizontal

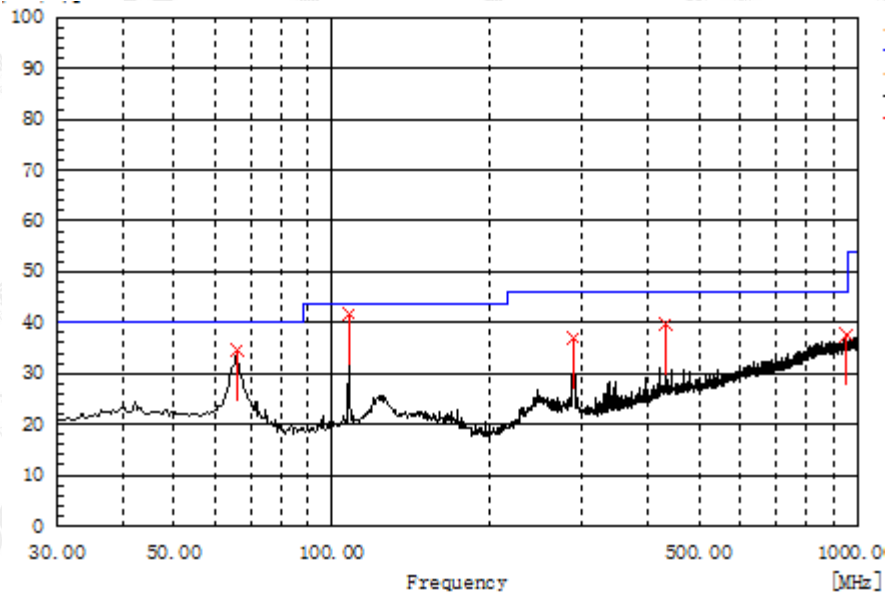


Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
107.900	H	27.7	14.3	42.0	43.5	1.5	Pass	200.0	263.7
287.050	H	22.9	17.7	40.6	46.0	5.4	Pass	150.0	358.0
65.890	H	18.3	15.4	33.7	40.0	6.3	Pass	200.0	183.6
431.580	H	17.3	21.7	39.0	46.0	7.0	Pass	200.0	323.6
412.665	H	16.0	21.2	37.2	46.0	8.8	Pass	200.0	3.4
340.885	H	18.2	18.5	36.7	46.0	9.3	Pass	100.0	241.4

RESULT: PASS

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

RADIATED EMISSION BELOW 1GHZ-Vertical



Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
65.890	V	19.1	15.4	34.5	40.0	5.5	Pass	100.0	259.7
107.900	V	27.3	14.3	41.6	43.5	1.9	Pass	100.0	144.5
288.020	V	19.3	17.6	36.9	46.0	9.1	Pass	200.0	198.2
431.580	V	17.9	21.7	39.6	46.0	6.4	Pass	100.0	195.6
951.500	V	6.9	30.7	37.6	46.0	8.4	Pass	200.0	187.0

RESULT: PASS

Note:

- Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.
- The "Factor" value can be calculated automatically by software of measurement system.
- All test modes had been tested. The Low channel is the worst case and recorded in the report.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

8. BANDWIDTH

8.1. MEASUREMENT PROCEDURE

1. Set the parameters of SPA as below:

Centre frequency = Operation Frequency

RBW=1KHz

VBW=3KHz

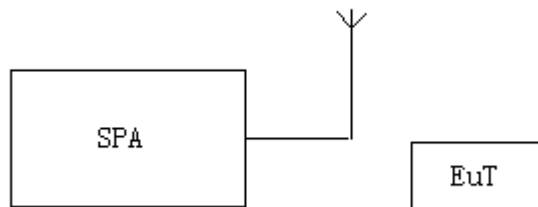
Span: 300kHz

Sweep time: Auto

2. Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the “N dB down” function of SPA to define the bandwidth.

3. Record the plots and Reported.

8.2. TEST SETUP

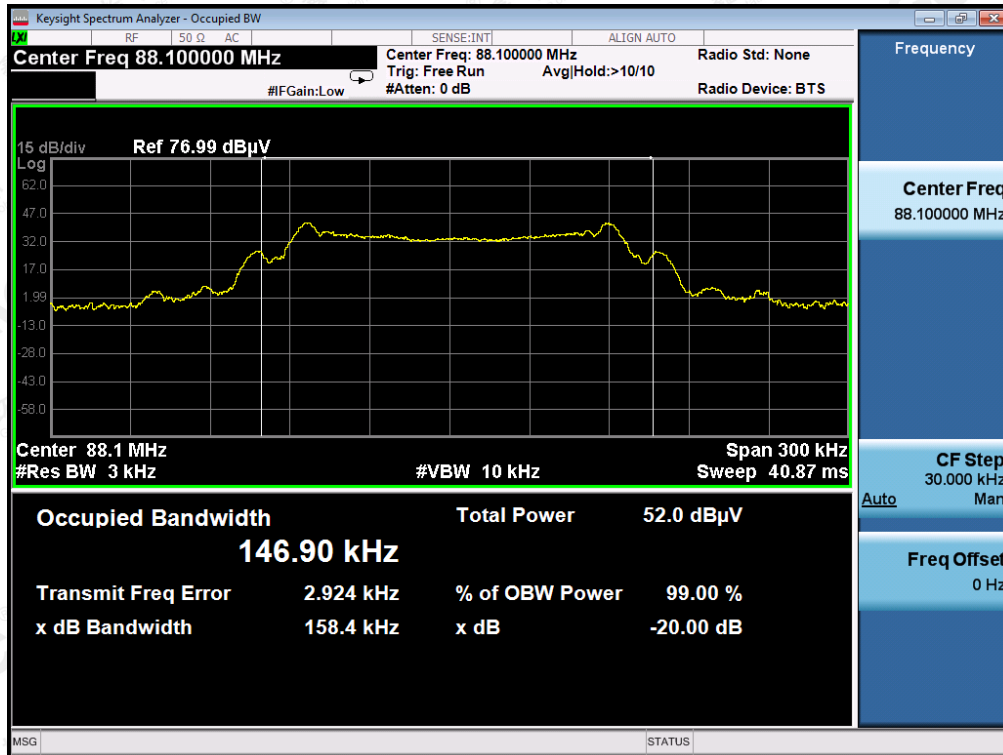


The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

8.3. TEST RESULT

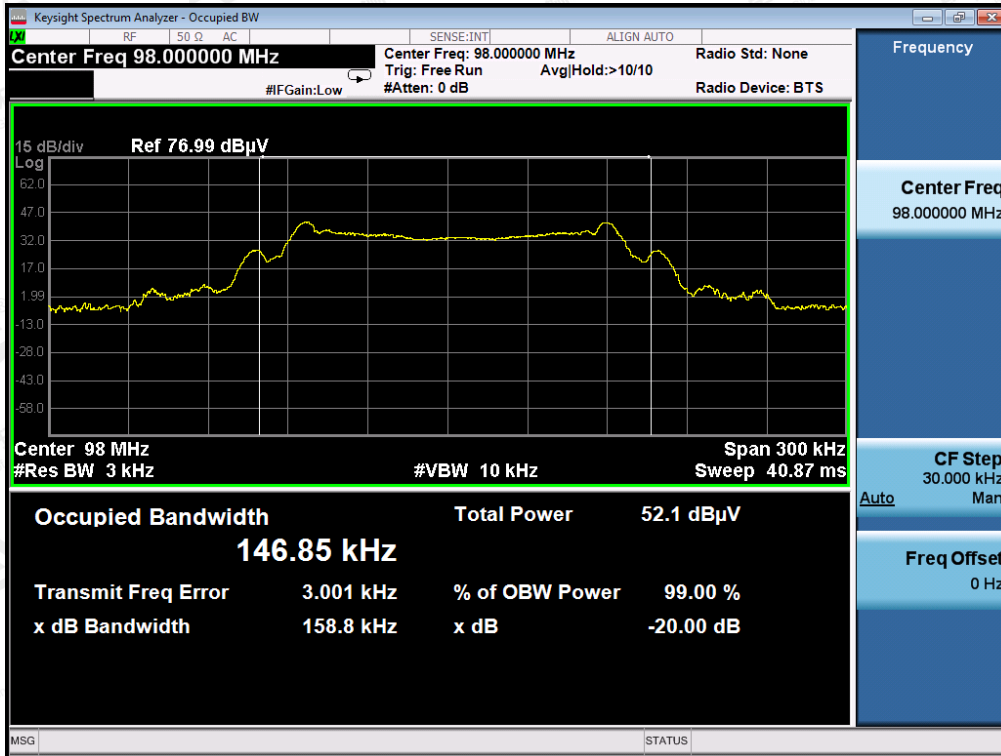
Channel	Channel Frequency(MHz)	-20dB bandwidth (kHz)	Limit(kHz)
Low	88.1	158.4	200
Middle	98.0	158.8	200
High	107.9	155.4	200

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

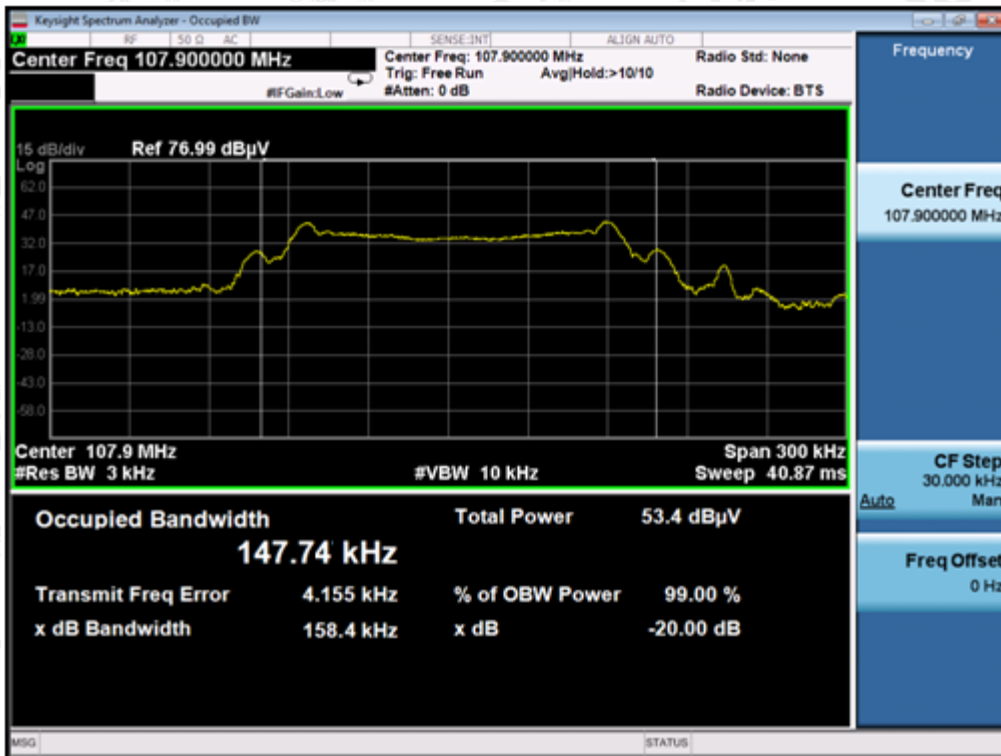


The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

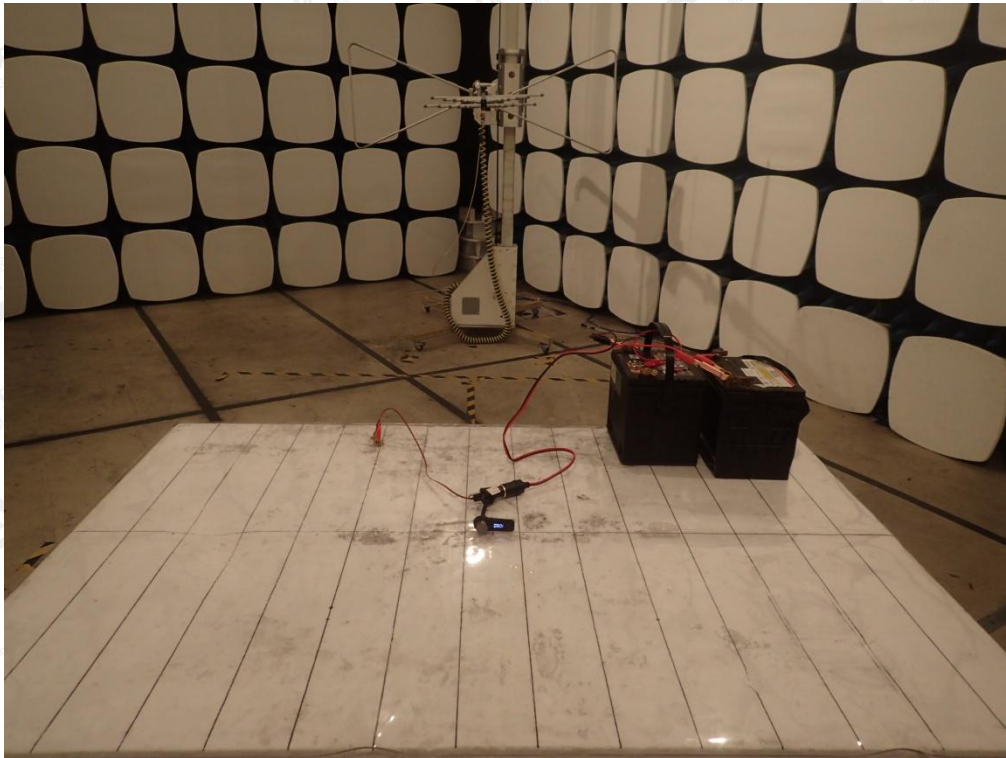


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.

APPENDIX A: PHOTOGRAPHS OF TEST SETUP
RADIATED EMISSION TEST SETUP BELOW 1G



----END OF REPORT----

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by AGC, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.agc-cert.com>.