

FCC Test Report

Report No.: AGC00737180702FE06

FCC ID : 2AIL4-BH163B
APPLICATION PURPOSE : Original Equipment
PRODUCT DESIGNATION : Bluetooth FM Transmitter
BRAND NAME : VTIN
MODEL NAME : BH163B,BH163C,BH163D,BH163E
CLIENT : VTIN TECHNOLOGY CO., LIMITED
DATE OF ISSUE : Jul. 30, 2018
STANDARD(S) : FCC Part 15.239
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	/	Jul. 30, 2018	Valid	Original Report

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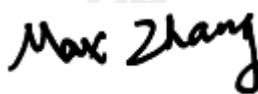
1. VERIFICATION OF CONFORMITY

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	BH163B
Series Model	BH163C,BH163D,BH163E
Difference Description	All are the same except the appearance.
Date of test	Jul. 15, 2018 to Jul. 30, 2018
Deviation	None
Condition of Test Sample	Normal
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 15.239.

Tested By



Max Zhang(Zhang Yi)

Jul. 30, 2018

Reviewed By



Bart Xie(Xie Xiaobin)

Jul. 30, 2018

Approved By



Forrest Lei(Lei Yonggang)
Authorized Officer

Jul. 30, 2018

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	87.5MHz-107.9MHz
Field Strength(3m)	44.78dBuV/m(AV)@3m
Modulation	FM
Number of channels	199(Channel spacing 100kHz)
Hardware Version	YHW-BH163B-V2-20180425
Software Version	BH163B_180507_EN
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.

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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.	

5. SYSTEM TEST CONFIGURATION

5.1. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Bluetooth FM Transmitter	BH163B	2AIL4-BH163B	EUT

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 device is only used in the car, so the conducted emission is not applicable.

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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

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Jun.12, 2018	Jun.11, 2019
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec.08, 2017	Dec.07, 2018
Active loop antenna (9K-30MHz)	A.H.	SAS-562B	N/A	Mar.01, 2018	Feb.28, 2019
Audio analyzer	HP	8920B	US35010161	Jun.12, 2018	Jun.11, 2019
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep.28, 2017	Sep.27, 2018

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7. RADIATED EMISSION

7.1. MEASUREMENT PROCEDURE

1. Configure the EUT according to ANSI C63.10. 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.

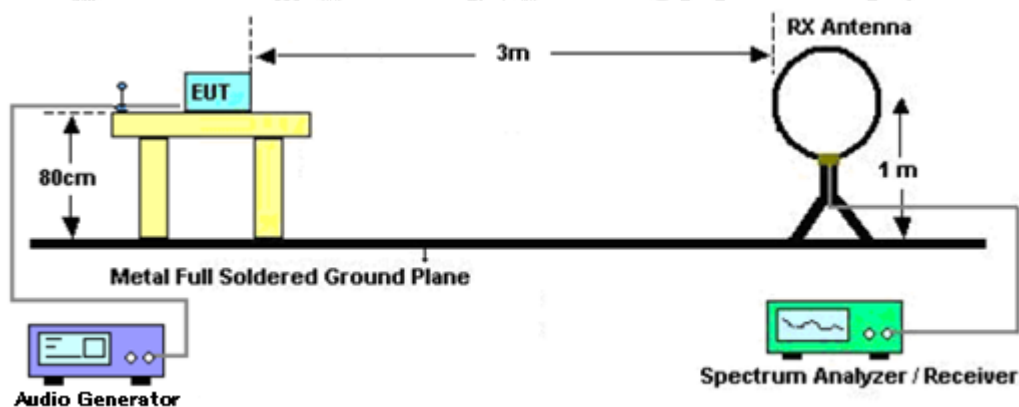
The following table is the setting of spectrum analyzer and receiver.

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

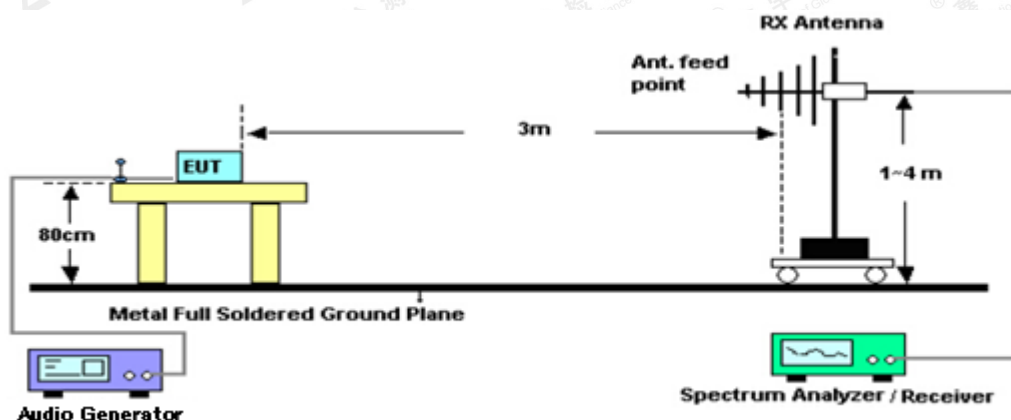
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7.2. TEST SETUP

Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



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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	45.33	67.96	22.63	Pass	PK
88.100	V	40.24	67.96	27.72	Pass	PK
98.000	H	45.78	67.96	22.18	Pass	PK
98.000	V	40.39	67.96	27.57	Pass	PK
107.900	H	46.15	67.96	21.81	Pass	PK
107.900	V	40.81	67.96	27.15	Pass	PK
Frequency MHz	Polarization	Level dB(uV/m) AV	Limit dB(uV/m) AV	Margin dB	Pass/Fail	Detector
88.100	H	44.21	47.96	3.75	Pass	AV
88.100	V	39.07	47.96	8.89	Pass	AV
98.000	H	44.59	47.96	3.37	Pass	AV
98.000	V	39.21	47.96	8.75	Pass	AV
107.900	H	44.78	47.96	3.18	Pass	AV
107.900	V	39.81	47.96	8.15	Pass	AV

7.4. 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	36.51	40.00	3.49	Pass	QP
88.000	V	32.34	40.00	7.66	Pass	QP
108.000	H	37.12	43.50	6.38	Pass	QP
108.000	V	32.11	43.50	11.39	Pass	QP

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

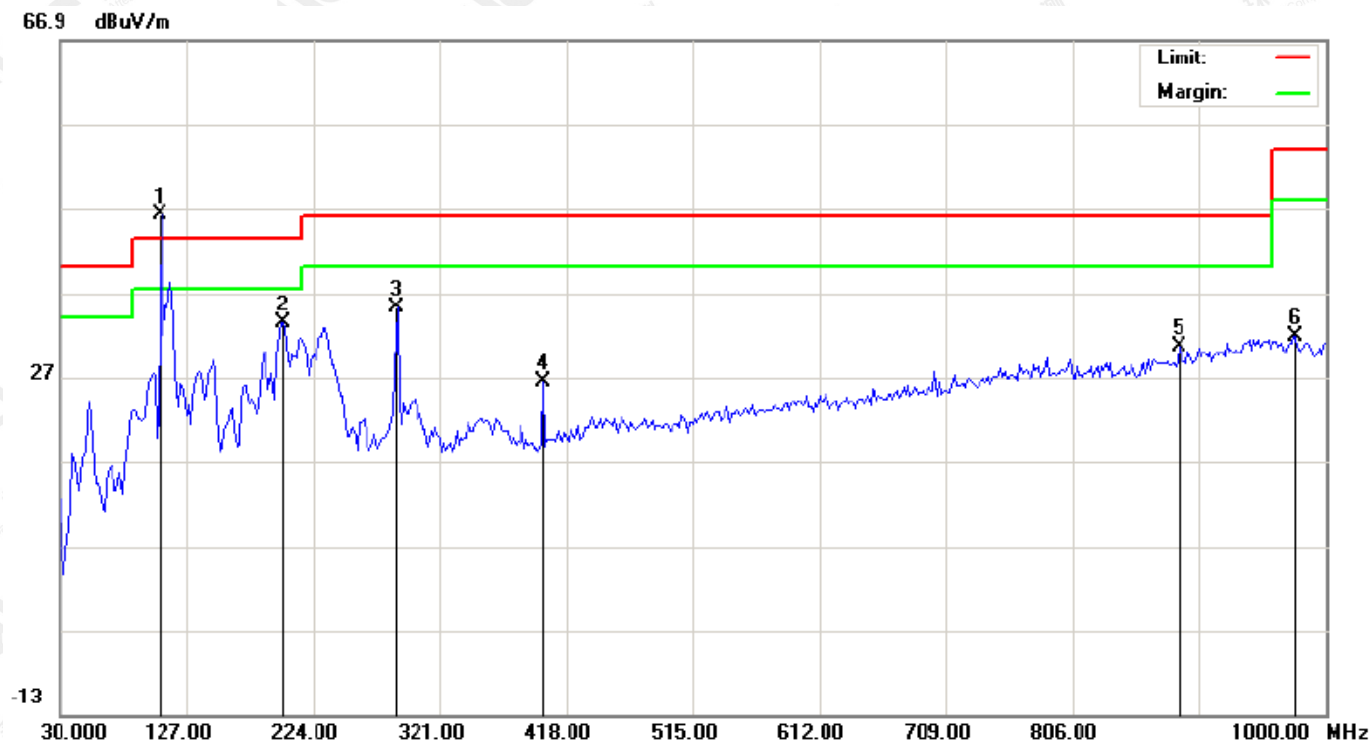
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7.5. TEST RESULT FOR SPURIOUS EMISSION

RADIATED EMISSION BELOW 30MHz

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

RADIATED EMISSION BELOW 1GHZ-Horizontal

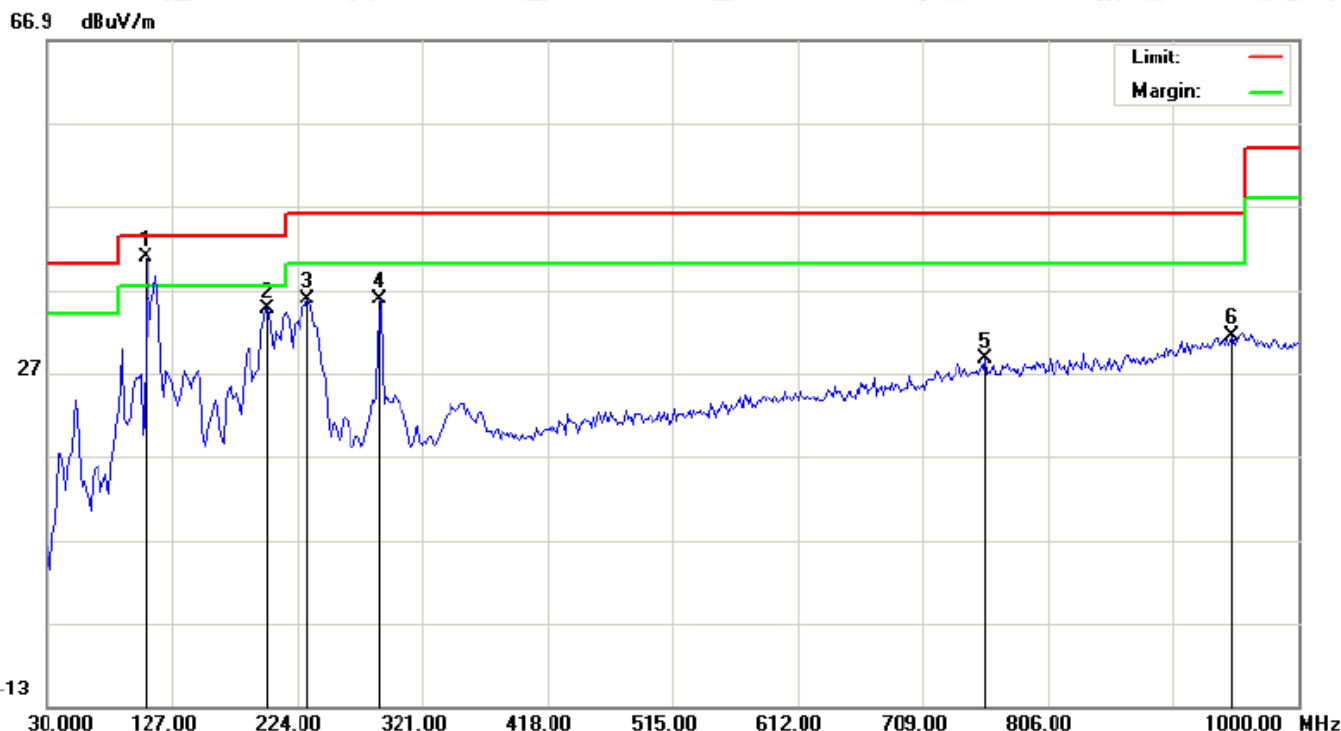


No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	107.900	37.43	8.72	46.15						
2		201.3667	21.59	11.86	33.45	43.50	-10.05	peak			
3		288.6666	21.79	13.48	35.27	46.00	-10.73	peak			
4		400.2167	7.28	19.08	26.36	46.00	-19.64	peak			
5		888.4500	2.20	28.31	30.51	46.00	-15.49	peak			
6		977.3667	2.08	29.74	31.82	54.00	-22.18	peak			

RESULT: PASS

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RADIATED EMISSION BELOW 1GHZ-Vertical



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	107.900	32.09	8.72	40.81						
2		201.3667	22.78	11.86	34.64	43.50	-8.86	peak			
3		232.0833	27.06	8.73	35.79	46.00	-10.21	peak			
4		288.6666	22.29	13.48	35.77	46.00	-10.23	peak			
5		757.5000	1.80	26.73	28.53	46.00	-17.47	peak			
6		948.2667	1.36	29.95	31.31	46.00	-14.69	peak			

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 High channel is the worst case and recorded in the report.

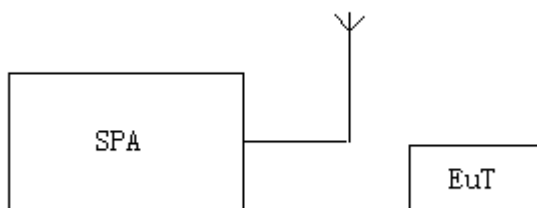
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8. BANDWIDTH

8.1. MEASUREMENT PROCEDURE

1. Set the parameters of SPA as below:
Centre frequency = Operation Frequency
RBW=3KHz
VBW=10KHz
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

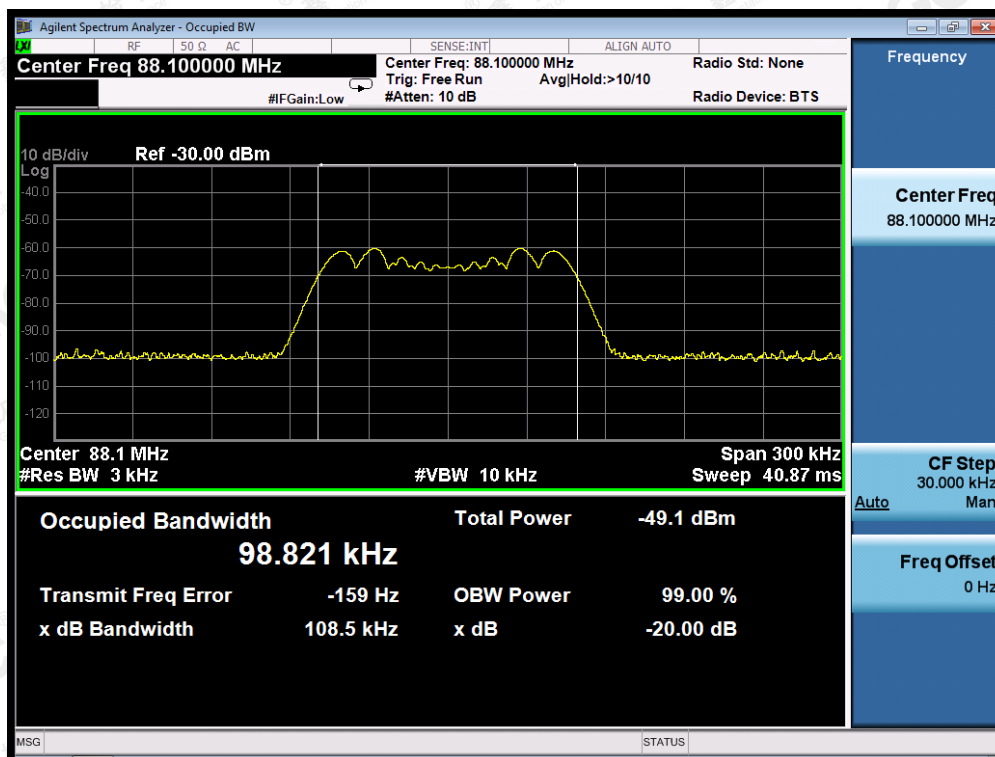


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8.3. TEST RESULT

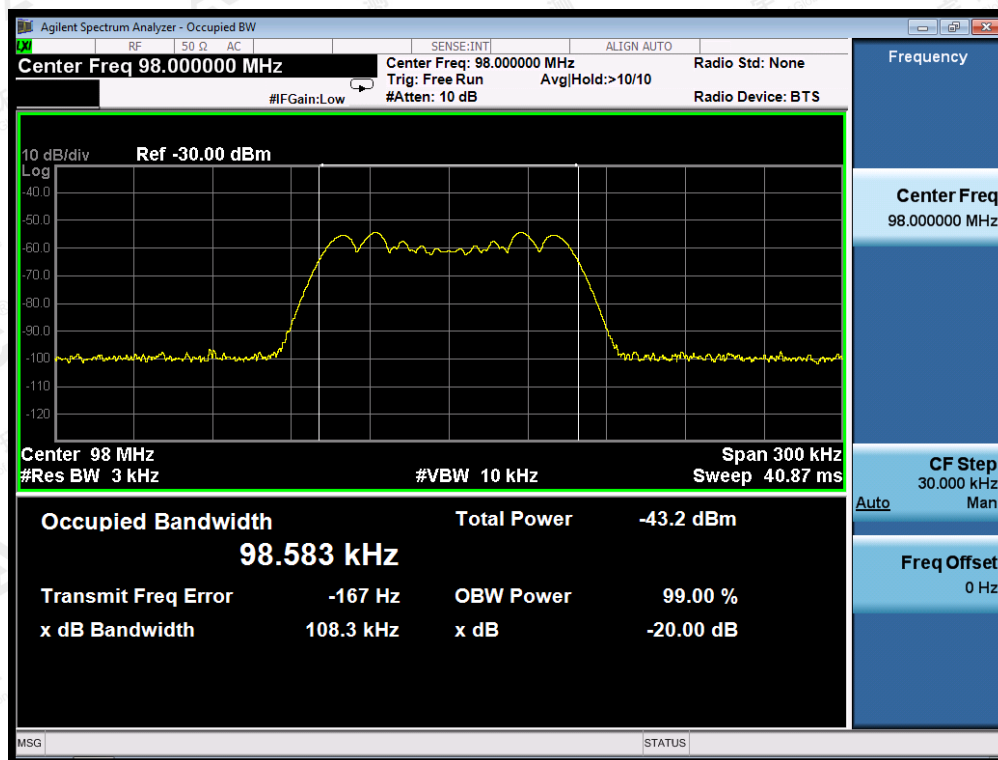
Channel	Channel Frequency(MHz)	-20dB bandwidth (kHz)	Limit(kHz)
Low	88.1	108.5	200
Middle	98.0	108.3	200
High	107.9	108.2	200

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

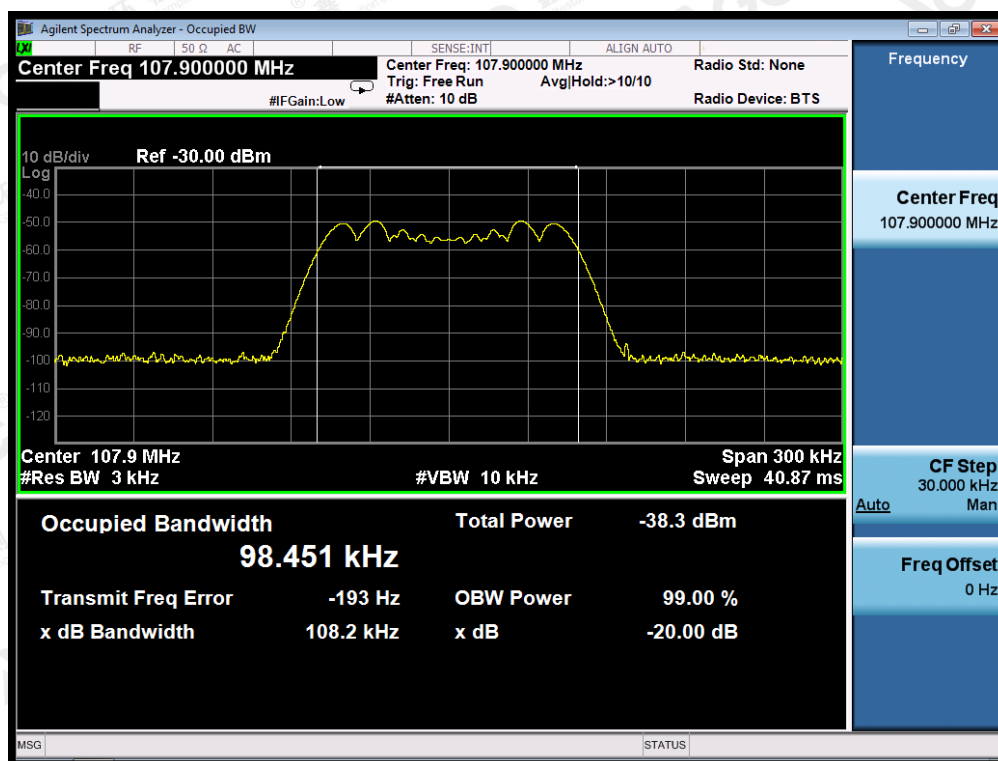


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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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



----END OF REPORT----

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