



TEST REPORT

FCC PART 15 SUBPART C 15.239

RSS-210 ISSUE 9 ANNEX B.9

Test report
On Behalf of
Scosche Industries Inc.
For
Wireless Hands-free Car Kit
Model No.: BTFM4

FCC ID: IKQBTFM4
IC: 6955A-BTFM4

Prepared for : **Scosche Industries Inc.**
1550 Pacific Ave, Oxnard, CA93033, USA

Prepared By : **Shenzhen HUAKE Testing Technology Co., Ltd.**
1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai
Street, Bao'an District, Shenzhen City, China

Date of Test: **Aug. 19, 2018 ~ Aug. 31, 2018**
Date of Report: **Aug. 31, 2018**
Report Number: **HUAK180904967E**



TEST RESULT CERTIFICATION

Applicant's name : Scosche Industries Inc.

Address..... : 1550 Pacific Ave, Oxnard, CA93033, USA

Manufacture's Name : Scosche Industries Inc.

Address..... : 1550 Pacific Ave, Oxnard, CA93033, USA

Product description

Trade Mark: SCOSCHE

Product name..... : Wireless Hands-free Car Kit

Model and/or type reference .. : BTFM4

FCC Rules and Regulations Part 15 Subpart C Section 15.239

Standards : RSS-210 issue 9 Annex B.9

ANSI C63.10: 2013

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Date of Test

Date (s) of performance of tests..... : Aug. 20, 2018 ~ Aug. 31, 2018

Date of Issue : Aug. 31, 2018

Test Result..... : **Pass**

Testing Engineer :

(Gary Qian)

Technical Manager :

(Eden Hu)

Authorized Signatory :

(Jason Zhou)



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1. TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

FCC/IC RULES	DESCRIPTION OF TEST	RESULT
FCC Part 15.239 RSS-210 ISSUE 9 ANNEX B.9	Field Strength of Fundamental and Spurious Emission	Compliant
FCC Part 15.239 RSS-210 ISSUE 9 ANNEX B.9	Bandwidth	Compliant
FCC Part 15.207 RSS-GEN ISSUE 5	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.

1.2 TEST FACILITY

1.2.1 Address of the test laboratory

Shenzhen HUAKE Testing Technology Co., Ltd.

Add.:1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park,Heping Community, Fuhai Street, Bao'an District, Shenzhen, China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 32/EN 55032 requirements.

1.2.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 21210

The 3m alternate test site of Shenzhen HUAKE Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 21210 on May 24, 2016.

FCC Registration No.: CN1229

Test Firm Registration Number : 616276

1.3 MEASUREMENT UNCERTAINTY

Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Operation Frequency	88.1MHz-107.9MHz
Field Strength(3m)	43.14dBuV/m(AV)@3m
Modulation	FM
Number of channels	199(Channel spacing 100kHz)
Hardware Version	BT-15-BT-M V3.2
Software Version	YHW-BC23_6621EX_20180816_V7_(SCOSCHE BTFM)_SPBB1758E4
Antenna Designation	Integrated Antenna (Met 15.203 Antenna requirement)
Power Supply	DC12V

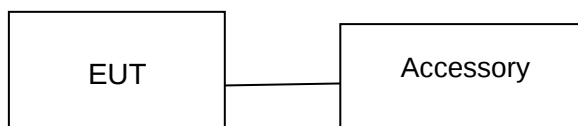


2.2 OPERATION OF EUT DURING TESTING

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.	

2.3 DESCRIPTION OF TEST SETUP

Operation of EUT during Radiation and Above1GHz Radiation testing:



Item	Equipment	Model No.	ID or Specification	Remark
1	Car Battery	--	DC12V	Support
2	Load	--	10W	Support

**2.4 MEASUREMENT INSTRUMENTS LIST**

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Dec. 28, 2017	1 Year
2.	Receiver	R&S	ESCI 7	HKE-010	Dec. 28, 2017	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 28, 2017	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Dec. 28, 2017	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 28, 2017	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 28, 2017	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 28, 2017	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 28, 2017	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 28, 2017	1 Year
10.	Horn Antenna	Schwarzbeck	9120D	HKE-013	Dec. 28, 2017	1 Year
11.	Pre-amplifier	EMCI	EMC05184 5SE	HKE-015	Dec. 28, 2017	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Dec. 28, 2017	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	Dec. 28, 2017	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Dec. 28, 2017	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 28, 2017	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Dec. 28, 2017	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Dec. 28, 2017	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 28, 2017	3 Year



3. RADIATED EMISSION

3.1. MEASUREMENT PROCEDURE

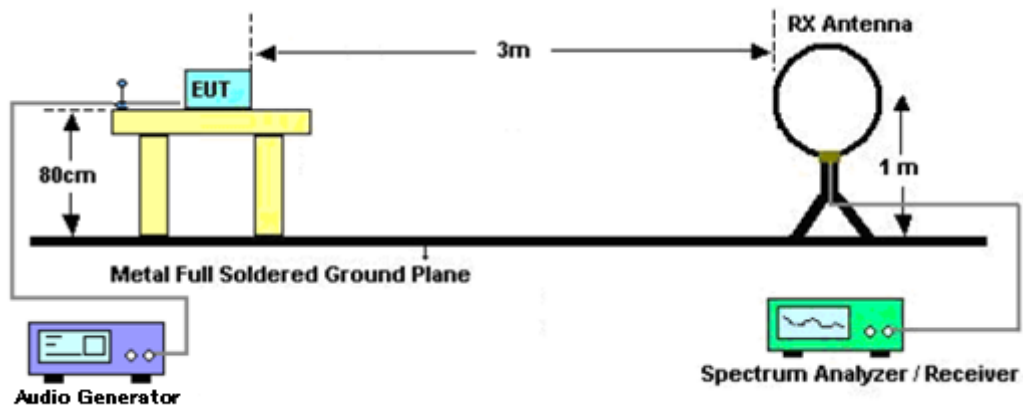
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground and opposite the horn antenna. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power 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.

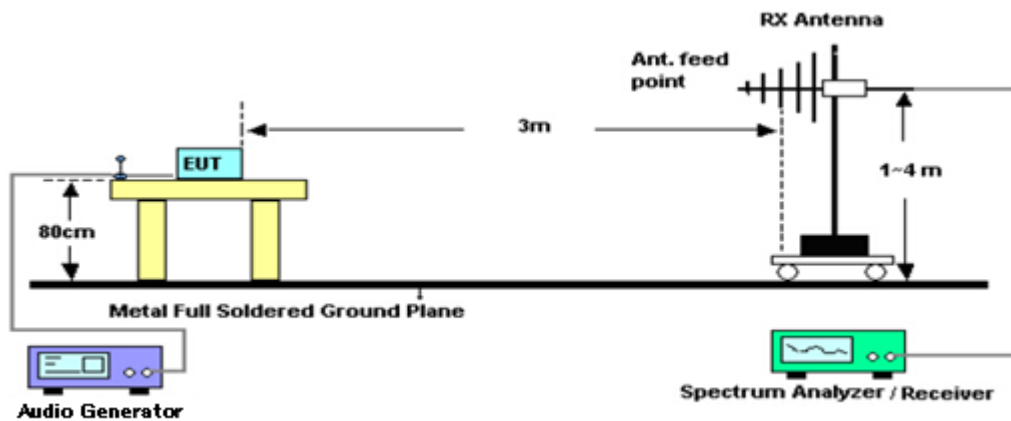
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RBW 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RBW 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RBW 120KHz for QP

3.2. TEST SETUP

Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



**3.3. 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	40.26	67.96	27.70	Pass	PK
88.100	V	43.67	67.96	24.29	Pass	PK
98.000	H	41.85	67.96	26.11	Pass	PK
98.000	V	44.54	67.96	23.42	Pass	PK
107.900	H	42.05	67.96	25.91	Pass	PK
107.900	V	44.97	67.96	22.99	Pass	PK
Frequency MHz	Polarization	Level dB(uV/m) AV	Limit dB(uV/m) AV	Margin dB	Pass/Fail	Detector
88.100	H	38.75	47.96	9.21	Pass	AV
88.100	V	42.15	47.96	5.81	Pass	AV
98.000	H	40.12	47.96	7.84	Pass	AV
98.000	V	42.95	47.96	5.01	Pass	AV
107.900	H	41.12	47.96	6.84	Pass	AV
107.900	V	43.14	47.96	4.82	Pass	AV

3.4. 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	31.62	40.00	-7.55	Pass	QP
88.000	V	32.53	40.00	-6.82	Pass	QP
108.000	H	33.44	43.50	-12.02	Pass	QP
108.000	V	35.67	43.50	-8.98	Pass	QP

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

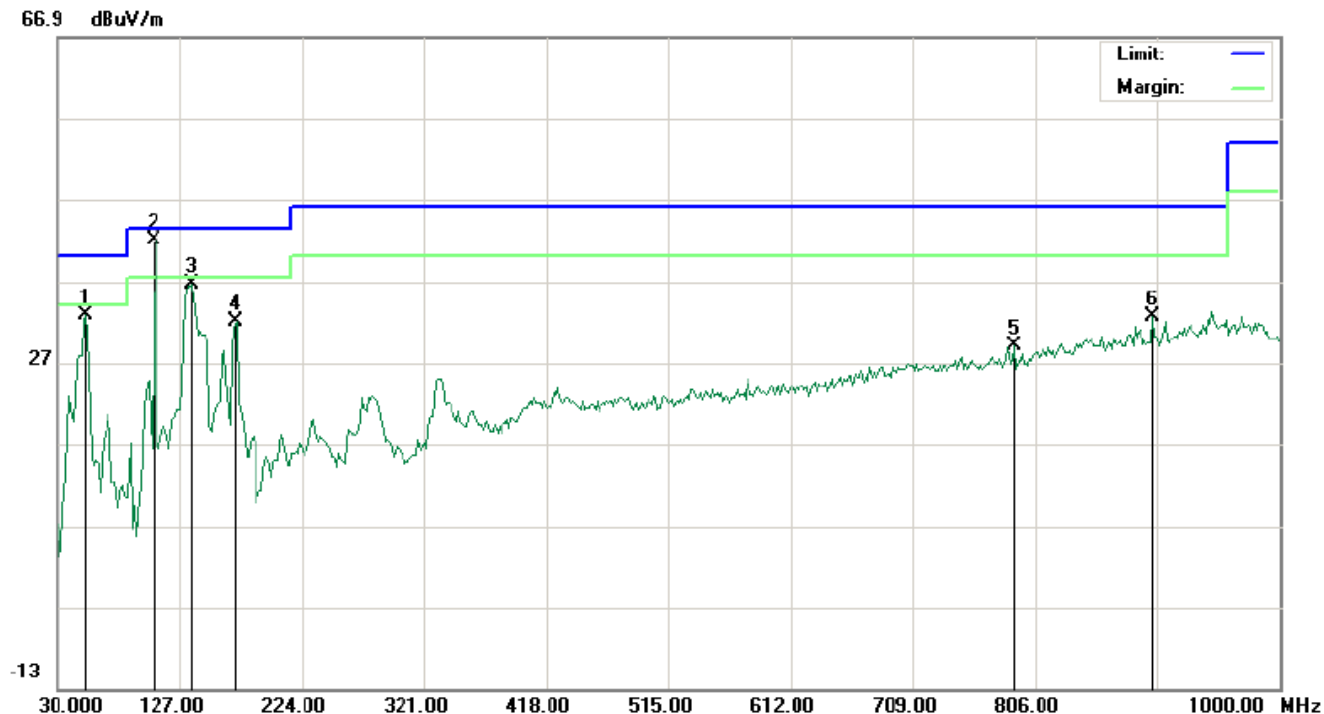


3.5. TEST RESULT FOR SPURIOUS EMISSION

RADIATED EMISSION BELOW 30MHz

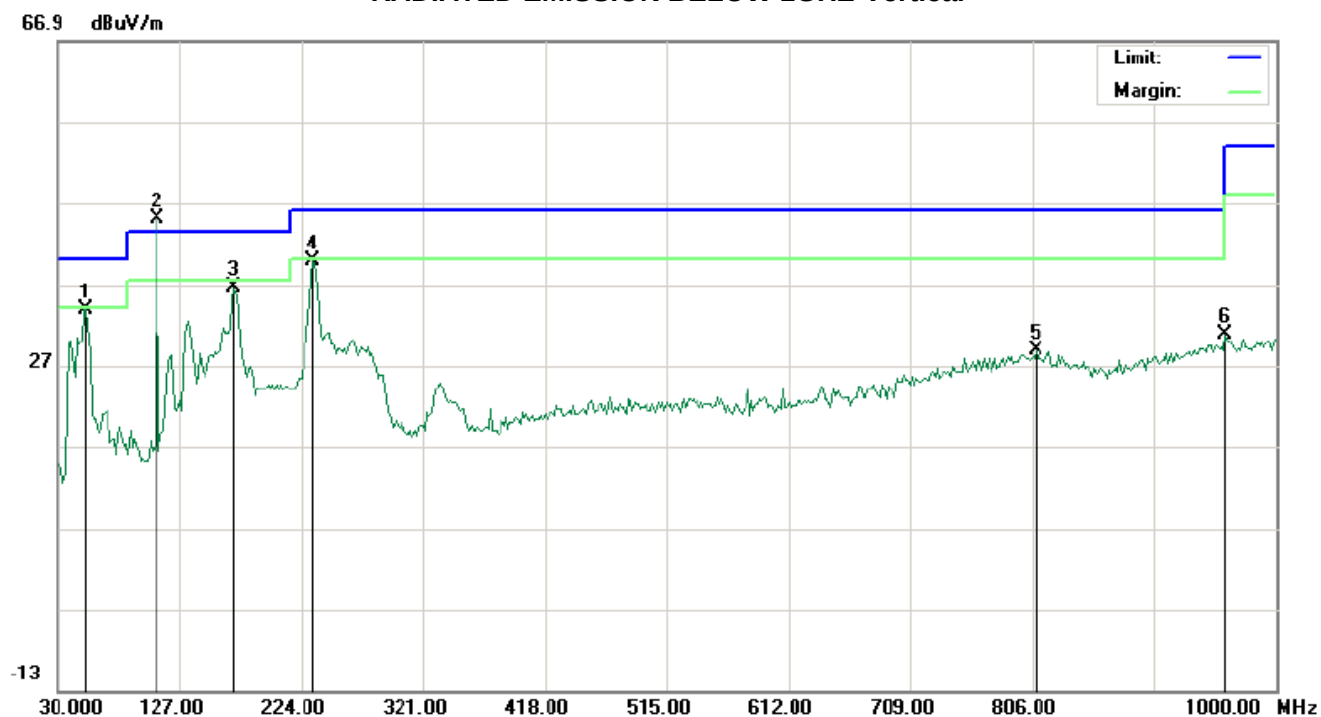
No emission found between lowest internal used/generated frequencies to 30MHz.

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		52.6332	24.40	8.41	32.81	40.00	-7.19	peak			
2	*	107.9000	33.33	8.72	42.05						
3		136.6999	22.89	13.66	36.55	43.50	-6.95	peak			
4		172.2666	21.17	10.78	31.95	43.50	-11.55	peak			
5		789.8333	1.85	27.18	29.03	46.00	-16.97	peak			
6		899.7667	3.91	28.60	32.51	46.00	-13.49	peak			

RESULT: PASS

**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		52.6332	25.53	8.22	33.75	40.00	-6.25	peak			
2	*	107.9000	43.48	1.49	44.97						
3		170.6500	21.85	14.66	36.51	43.50	-6.99	peak			
4		233.6999	27.49	12.30	39.79	46.00	-6.21	peak			
5		809.2332	1.50	27.32	28.82	46.00	-17.18	peak			
6		959.5833	0.89	29.91	30.80	46.00	-15.20	peak			

RESULT: PASS

Note:

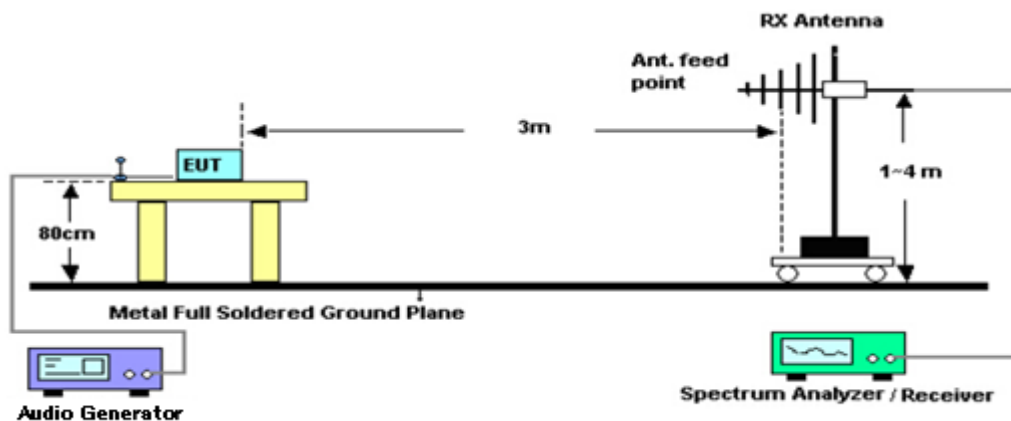
1. Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.
2. The "Factor" value can be calculated automatically by software of measurement system.
3. All test modes had been tested. The High channel is the worst case and recorded in the report.

4. BANDWIDTH

4.1. 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.
4. In addition, the requirement has 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.

4.2. TEST SETUP

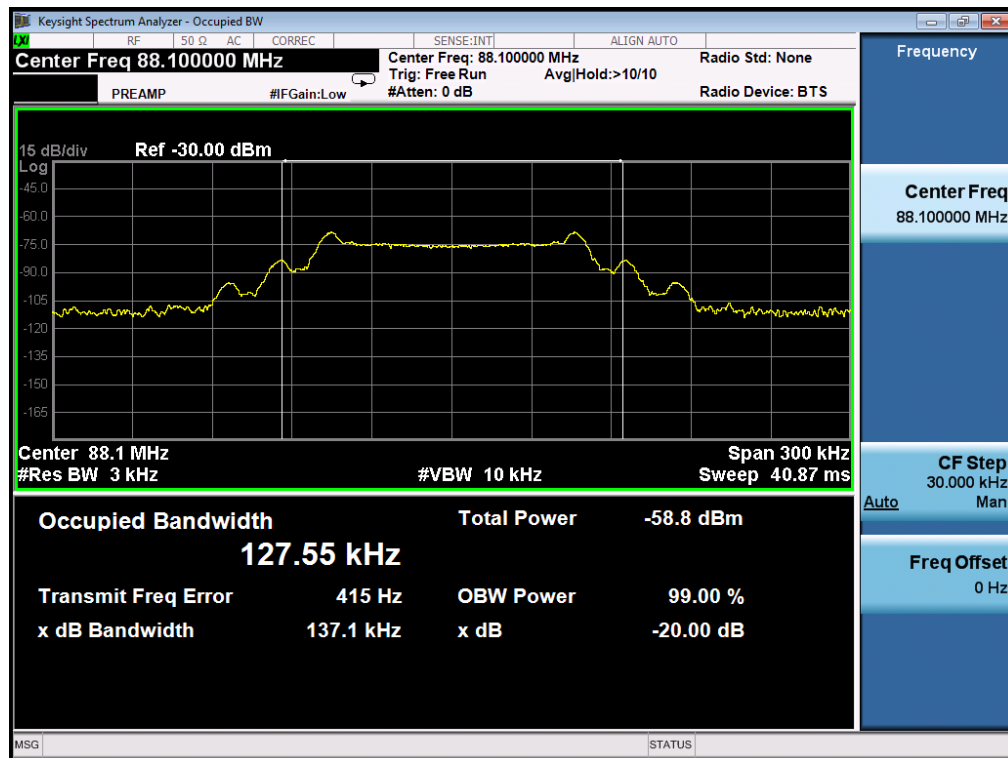




4.3. TEST RESULT

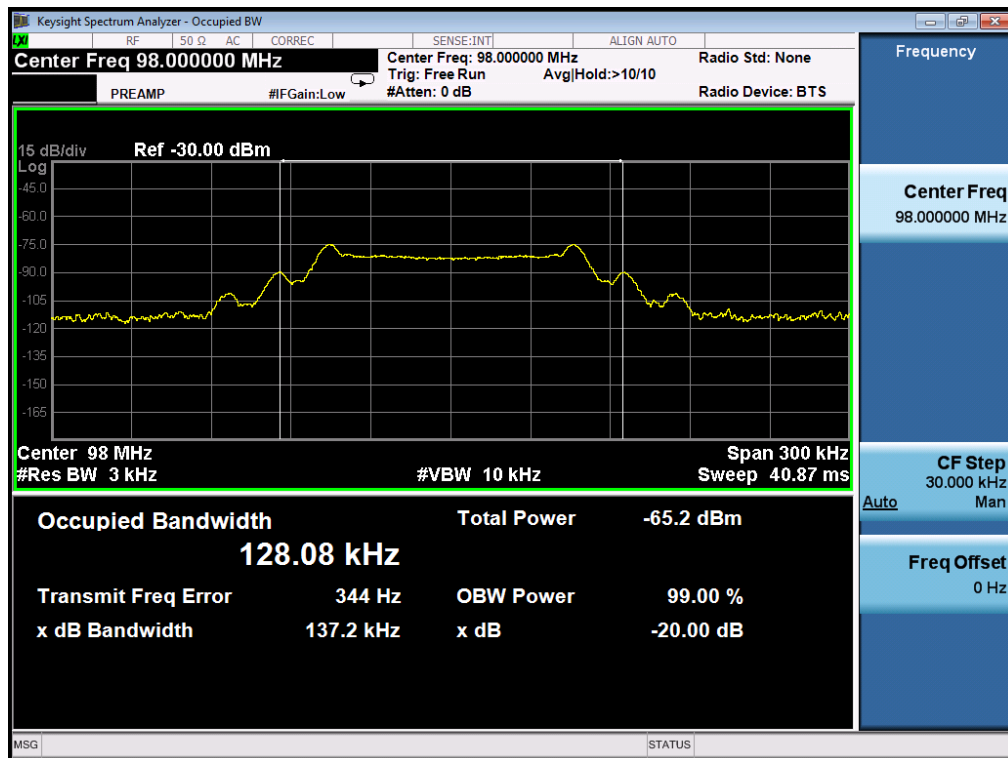
Channel	Channel Frequency(MHz)	-20dB bandwidth (kHz)	99% bandwidth (kHz)	Limit(kHz)
Low	88.1	137.1	127.55	200
Middle	98.0	137.2	128.08	200
High	107.9	137.3	127.48	200

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

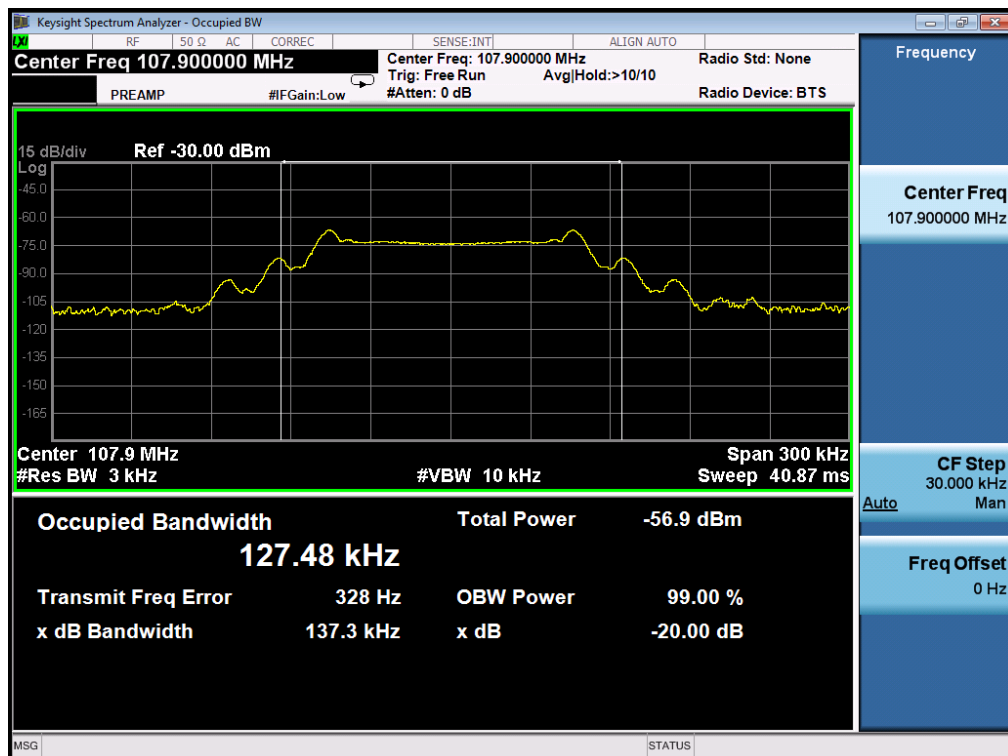




TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



5. PHOTOGRAPH OF TEST

Radiated Emission

