

FCC Test Report

Report No.: AGC11147171101FE06

FCC ID : 2AOES-ATJ2825
APPLICATION PURPOSE : Original Equipment
PRODUCT DESIGNATION : Car Bluetooth FM Transmitter
BRAND NAME : N/A
MODEL NAME : ATJ2825, T18, T19, T24
CLIENT : Shenzhen Agetunr Technology Co., Ltd.
DATE OF ISSUE : Jan. 26, 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	/	Jan. 26, 2018	Valid	Initial release

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1. VERIFICATION OF CONFORMITY

Applicant	Shenzhen Agetunr Technology Co., Ltd.
Address	Room 201, A block, Hechangtai Industrial Park, No.31 Guiyuan Road, Guanlan Street, Longhua District, Shenzhen, Guangdong, China
Manufacturer	Dongguan Pinmi Electronic Technology Co., Ltd
Address	2F, E block, Hongda Industrial Park, Shima Community, Tangxia Town, Dongguan City, Guangdong, China
Product Designation	Car Bluetooth FM Transmitter
Brand Name	N/A
Test Model	ATJ2825
Series Model	T18, T19, T24
Difference description	All the same except for the model name.
Date of test	Jan. 09, 2018 to Jan. 16, 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 Dongguan Precise Testing Service 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

Berg Lu(Lu Bing)

Jan. 16, 2018

Reviewed By

Cool Cheng(Cheng Mengguo)

Jan. 26, 2018

Approved By

Forrest Lei(Lei Yonggang)
Authorized Officer

Jan. 26, 2018

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	88.1MHz-107.9MHz
Field Strength(3m)	46.80dBuV/m(AV)@3m
Modulation	FM
Number of channels	199(Channel spacing 100kHz)
Hardware Version	V1.1
Software Version	1.0
Antenna Designation	PCB antenna
Power Supply	INPUT:DC 12V-24V OUTPUT:DC 5V 2.1A MAX

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

2. The tuning range (88.1 ~ 107.9 MHz) has been checked and confirmed.

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3. MEASUREMENT UNCERTAINTY

Uncertainty of Conducted Emission, $U_c = \pm 3.2$ dB

Uncertainty of Radiated Emission below 1GHz, $U_c = \pm 3.9$ dB

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. 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. Only the result of the worst case was recorded in the report, if no other cases.
3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

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5. SYSTEM TEST CONFIGURATION

5.1. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Car Bluetooth FM Transmitter	Pinmi	ATJ2825	EUT
2	Battery	SAIL	12V 60Ah 356A	A.E
3	Battery	SAIL	12V 60Ah 356A	A.E

5.2. SUMMARY OF TEST RESULTS

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

Note: N/A means it's not applicable to this item.

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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
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

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Jun.20, 2017	Jun.19, 2018
LISN	R&S	ESH2-Z5	100086	Aug.21, 2017	Aug.20, 2018

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Jun.20, 2017	Jun.19, 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
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May 18, 2017	May 17, 2019
Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-205	Jun.20, 2017	Jun.19, 2018
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep.28, 2017	Sep.27, 2018
Loop Antenna	A.H.Systems,Inc	SAS-562B	--	Mar. 01, 2016	Feb. 28, 2018
Signal Generator	AGILENT	E4421B	MY43351574	Oct. 12, 2017	Oct. 11, 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. 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.
7. Only the worst case is reported.

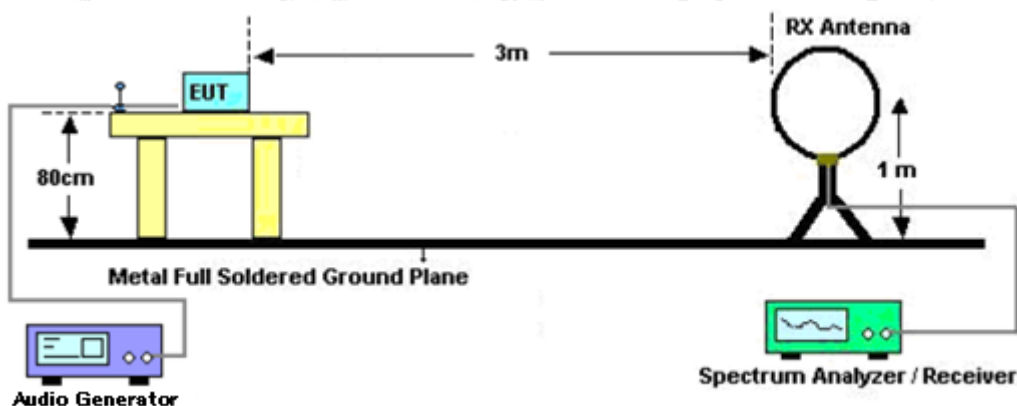
The following table is the setting of spectrum analyzer and receiver.

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

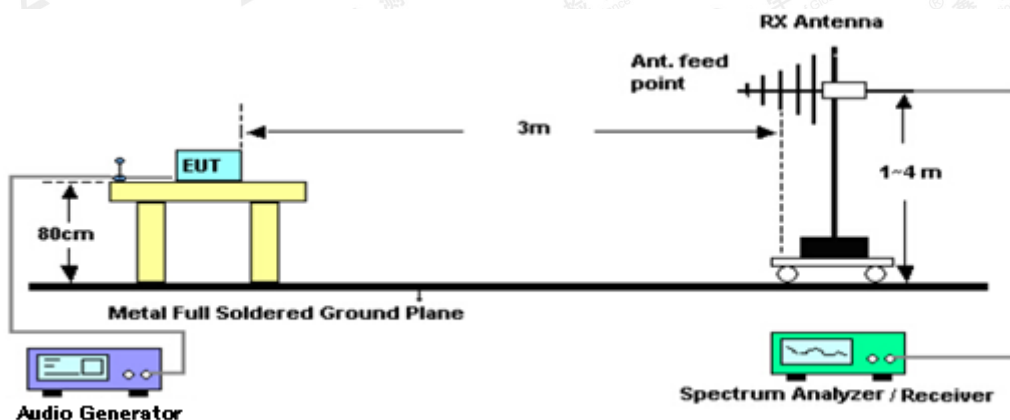
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7.2. TEST SETUP

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	46.80	67.96	-21.16	Pass	PK
88.100	V	45.05	67.96	-22.91	Pass	PK
98.000	H	45.01	67.96	-22.95	Pass	PK
98.000	V	44.34	67.96	-23.62	Pass	PK
107.900	H	44.22	67.96	-23.74	Pass	PK
107.900	V	43.17	67.96	-24.79	Pass	PK
Frequency MHz	Polarization	Level dB(uV/m) AV	Limit dB(uV/m) AV	Margin dB	Pass/Fail	Detector
88.100	H	44.67	47.96	-3.29	Pass	AV
88.100	V	43.55	47.96	-4.41	Pass	AV
88.300	H	43.12	47.96	-4.84	Pass	AV
88.300	V	42.35	47.96	-5.61	Pass	AV
88.700	H	42.22	47.96	-5.74	Pass	AV
88.700	V	41.59	47.96	-6.37	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	36.71	40.00	-3.29	Pass	QP
88.000	V	35.41	40.00	-4.59	Pass	QP
108.000	H	33.64	43.50	-9.86	Pass	QP
108.000	V	32.60	43.50	-10.90	Pass	QP

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

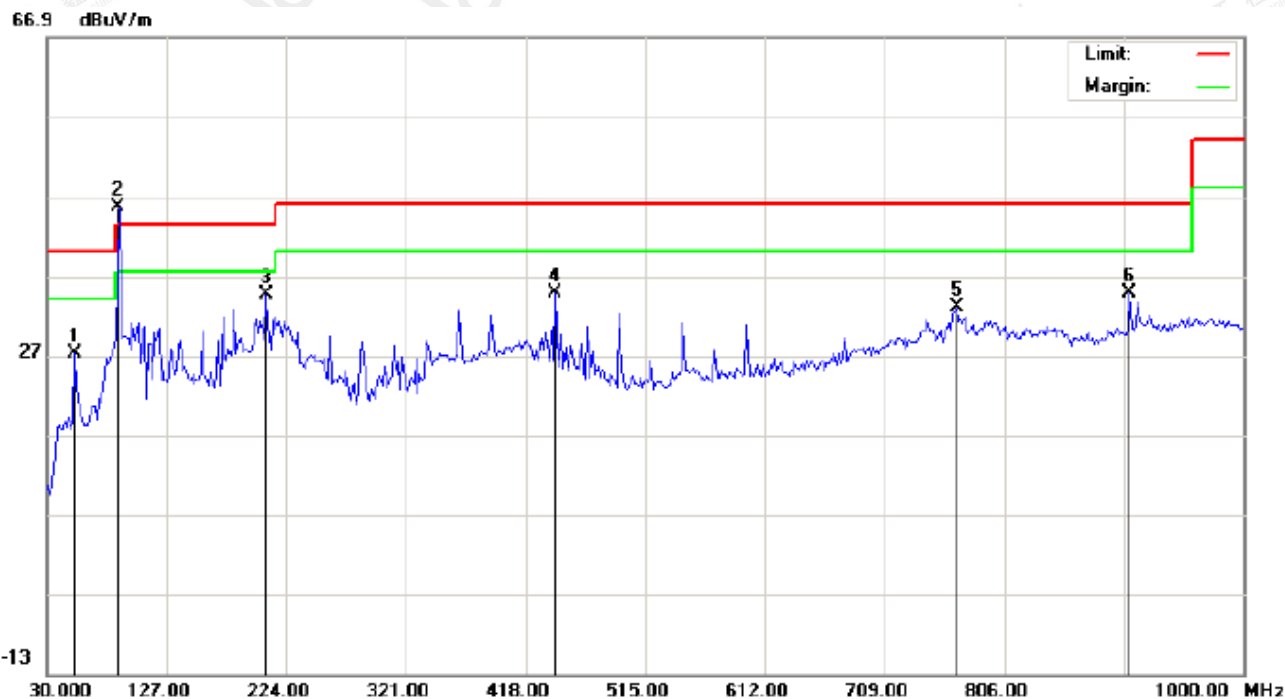
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7.5. TEST RESULT FOR SPURIOUS EMISSION

RADIATED EMISSION BELOW 30MHz

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

RADIATED EMISSION BELOW 1GHZ-Horizontal

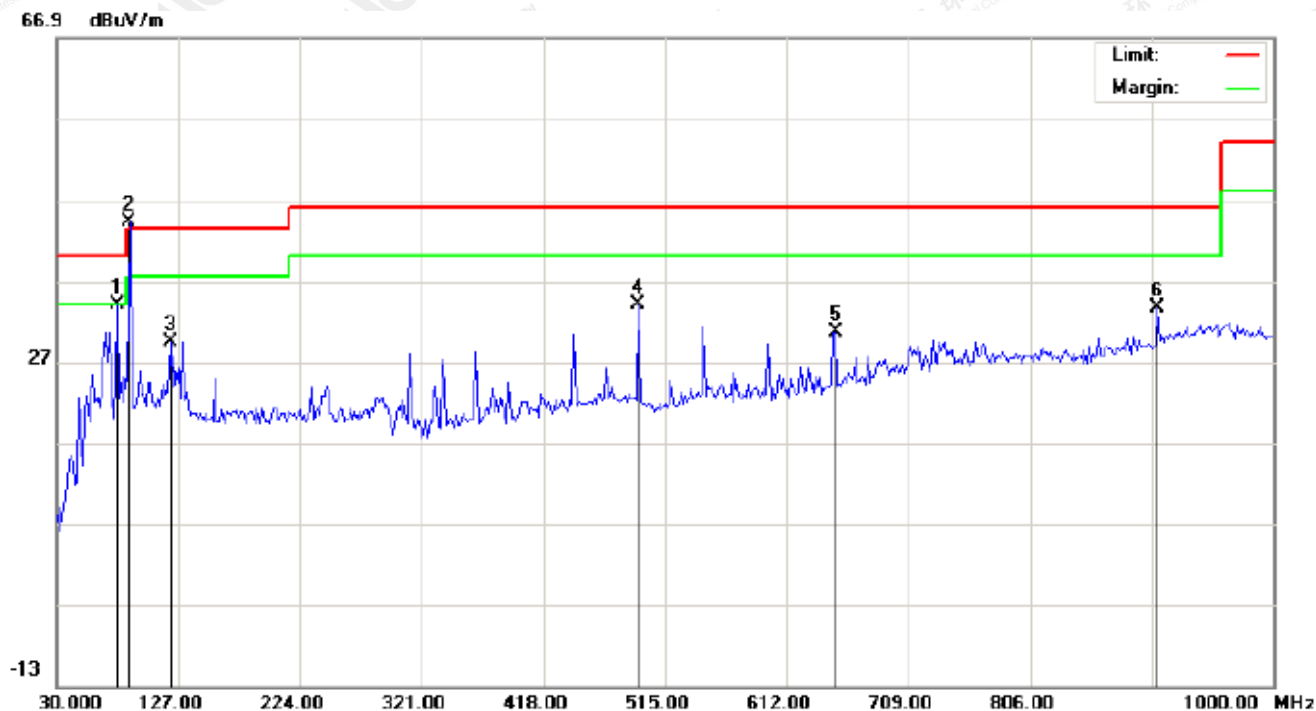


No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		52.6333	18.82	8.41	27.23	40.00	-12.77	peak			
2	*	88.1000	45.04	0.50	45.54	43.50	2.04	peak			
3		207.8333	23.47	11.20	34.67	43.50	-8.83	peak			
4		442.2500	14.53	20.35	34.88	46.00	-11.12	peak			
5		767.2000	6.20	26.87	33.07	46.00	-12.93	peak			
6		907.8500	6.01	28.83	34.84	46.00	-11.16	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		78.5000	31.79	2.17	33.96	40.00	-6.04	peak			
2	*	88.1000	39.44	4.70	44.14	43.50	0.64	peak			
3		120.5333	22.38	7.08	29.46	43.50	-14.04	peak			
4		493.9833	12.98	21.07	34.05	46.00	-11.95	peak			
5		650.8000	6.81	23.87	30.68	46.00	-15.32	peak			
6		907.8500	4.75	28.83	33.58	46.00	-12.42	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

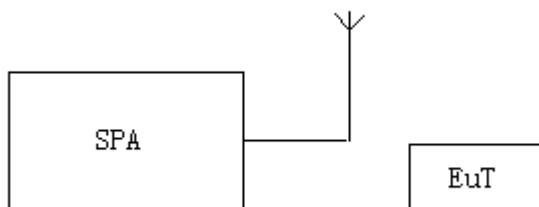
VBW=10KHz

Span: 500kHz

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

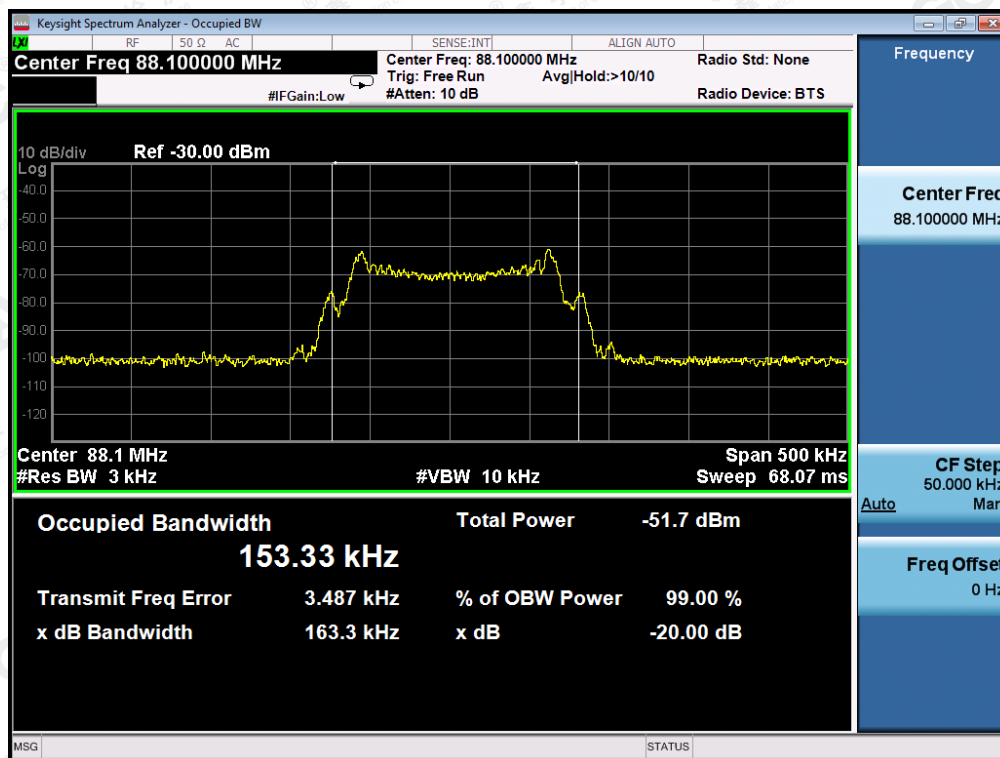


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8.3. TEST RESULT

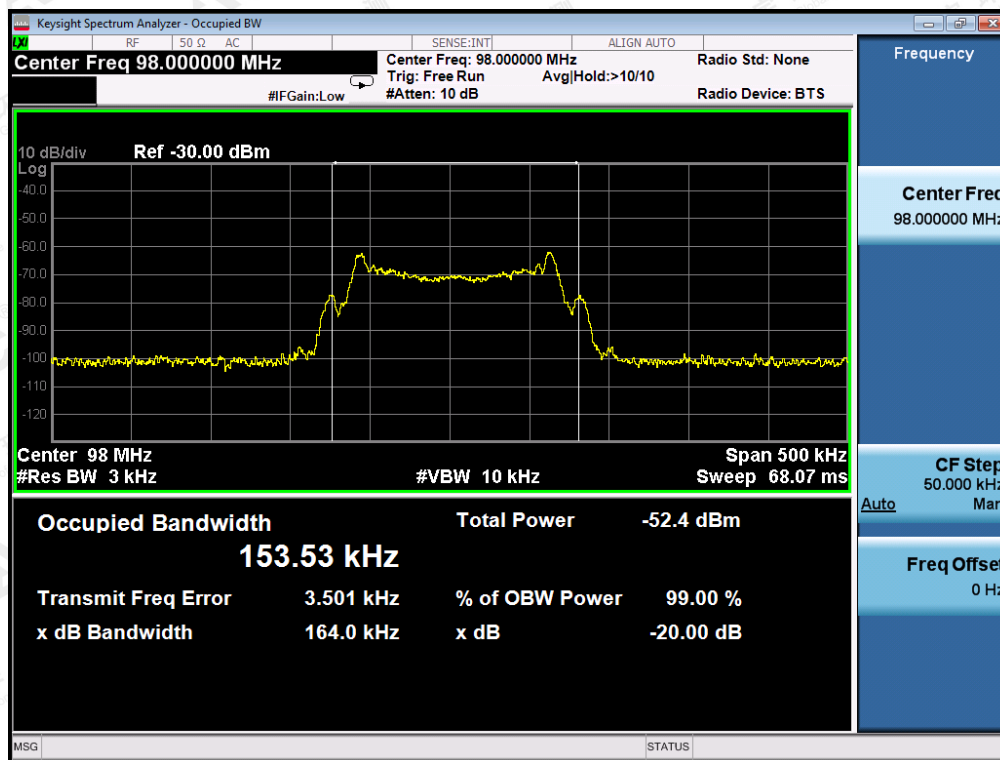
Channel	Channel Frequency(MHz)	-20dB bandwidth (kHz)	Limit(kHz)
Low	88.1	163.3	200
Middle	98.0	164.0	200
High	107.9	165.2	200

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

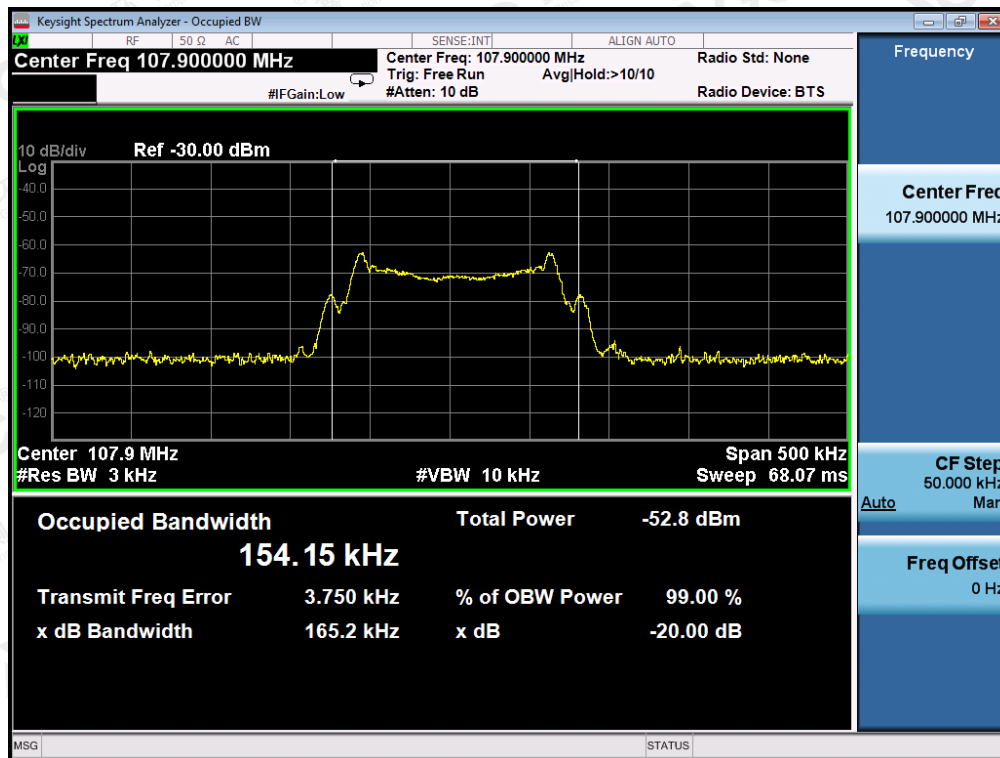


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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

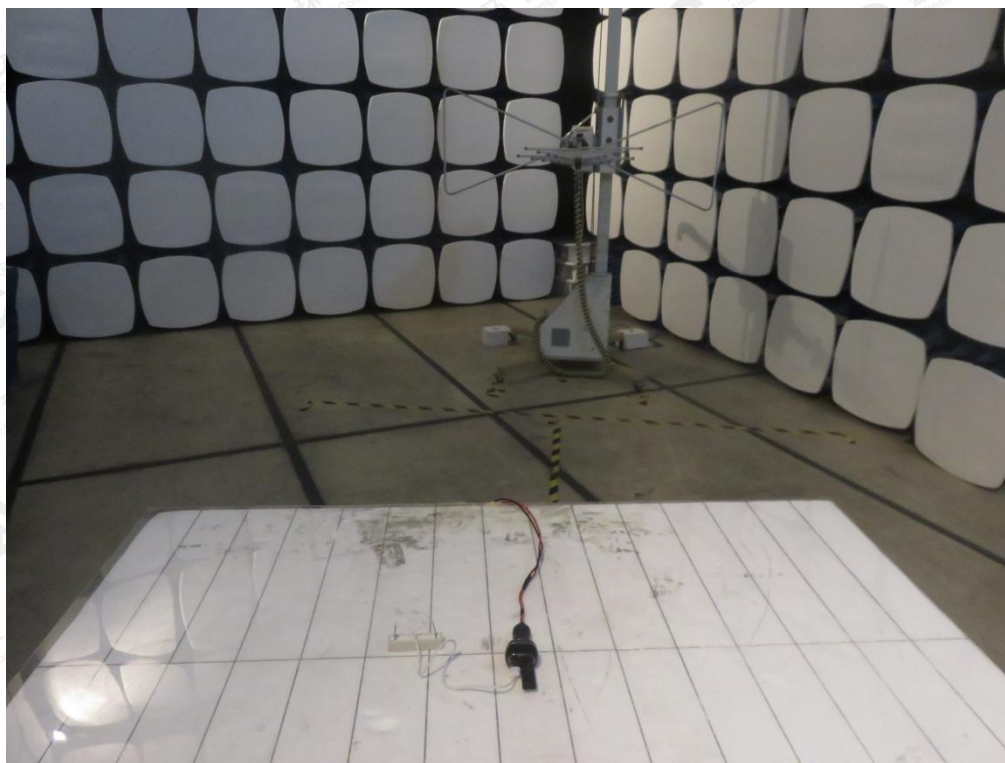


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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



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APPENDIX B: PHOTOGRAPHS OF EUT

TOP VIEW OF EUT



BOTTOM VIEW OF EUT



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FRONT VIEW OF EUT



BACK VIEW OF EUT



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LEFT VIEW OF EUT



RIGHT VIEW OF EUT



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VIEW OF EUT (PORT)-1



VIEW OF EUT (PORT)-2



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VIEW OF EUT (PORT)-3

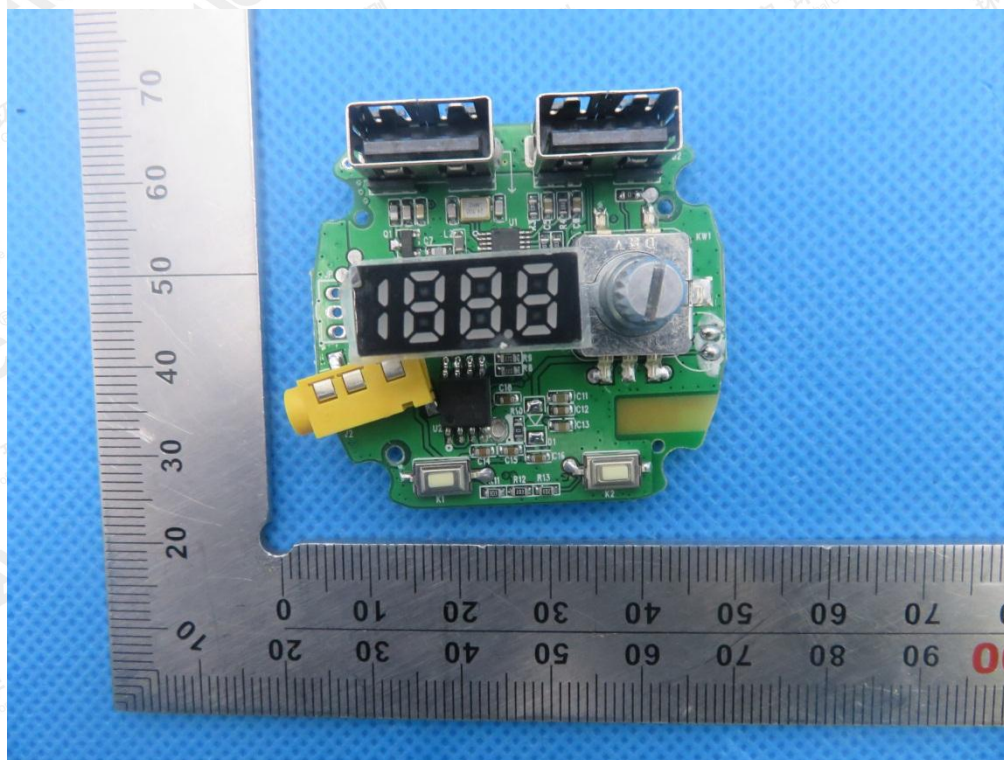


OPEN VIEW OF EUT

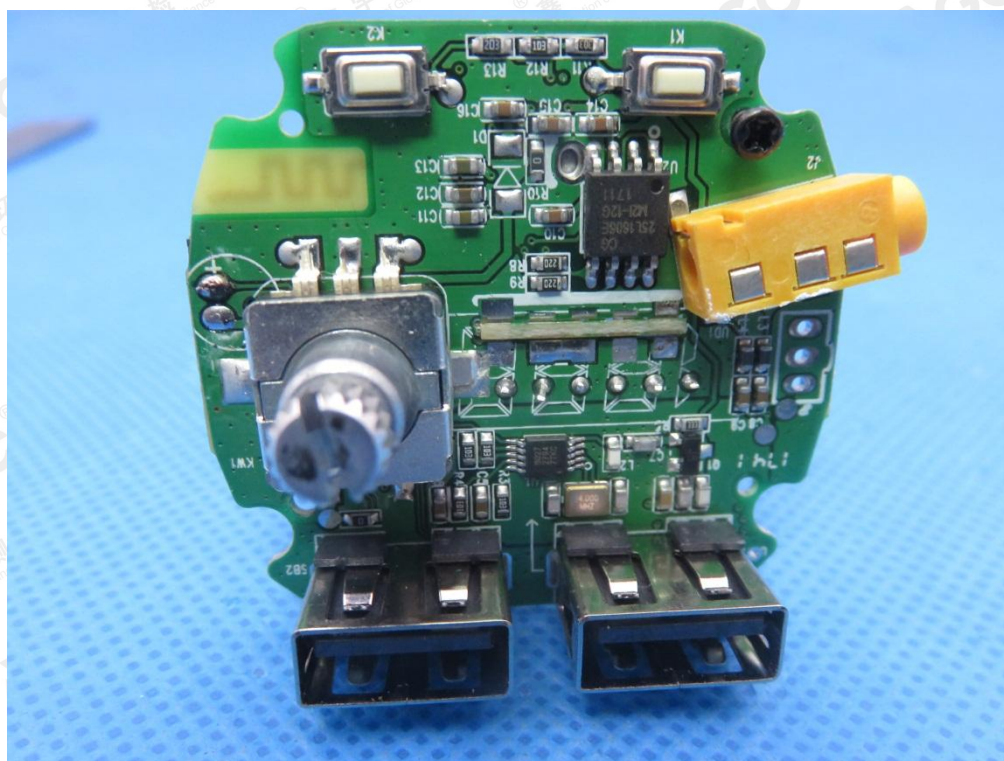


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INTERNAL VIEW OF EUT-1

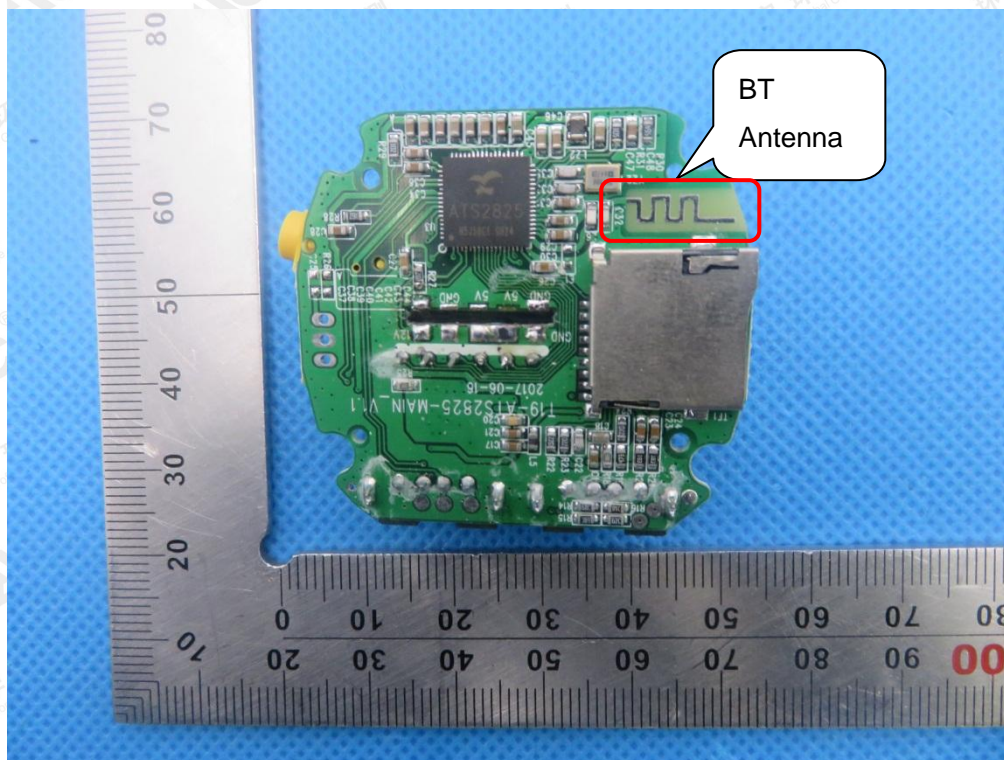


INTERNAL VIEW OF EUT-2

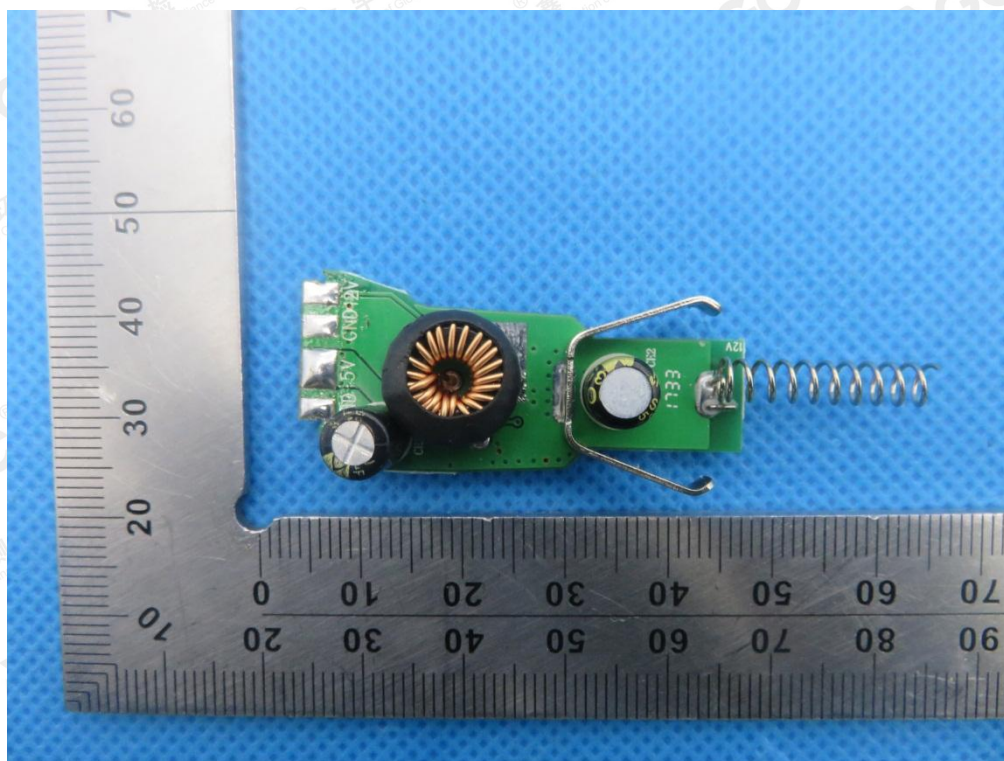


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INTERNAL VIEW OF EUT-3

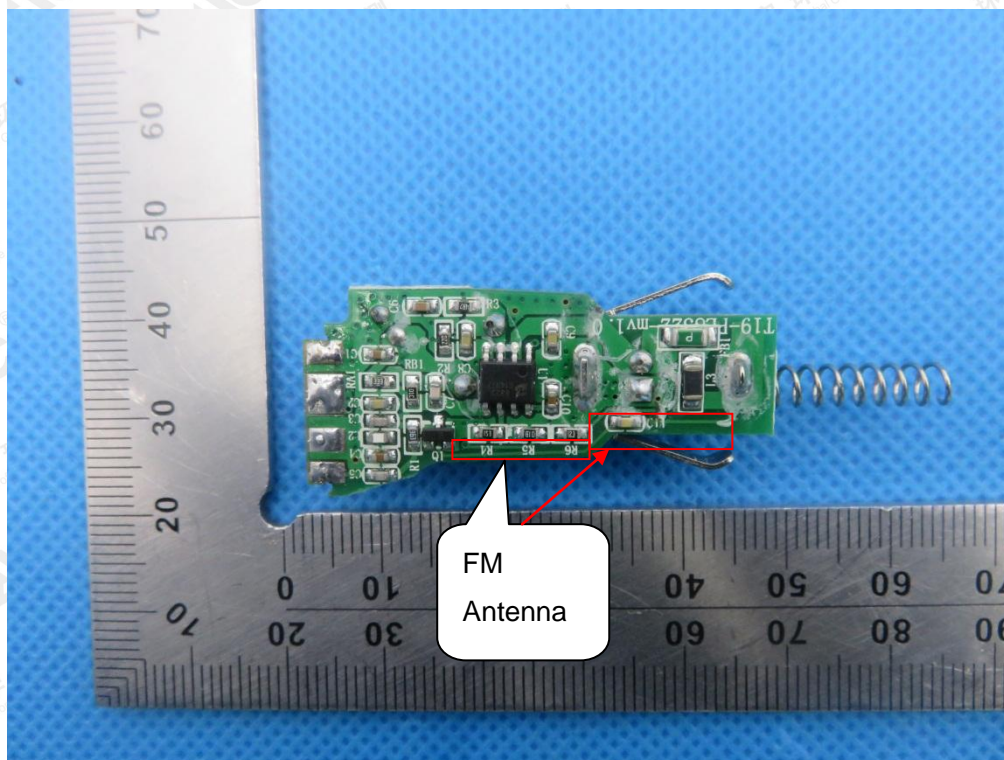


INTERNAL VIEW OF EUT-4



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INTERNAL VIEW OF EUT-5



INTERNAL VIEW OF EUT-6



---END OF REPORT---

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