Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road,
Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

FCC PART 15 SUBPART C TEST REPORT

FCC CFR 47 PART 74

Report Reference No.	:	**GTS20220216003-1-1**
FCC ID.	:	**2A5K9-WM300**
Compiled by (position+printed name+signature)	:	File administrators Peter Xiao
Supervised by (position+printed name+signature)	:	Test Engineer Oliver Ou
Approved by (position+printed name+signature)	:	Manager Simon Hu
Date of issue	:	Mar.09, 2022

Representative Laboratory Name	:	**Shenzhen Global Test Service Co.,Ltd.**
Address	:	No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

Applicant's name	:	**Fuzhou Huiqixin Technology Co. , Ltd.**
Address	:	Room 906, zone A, floor 9, yunzuo-3 building, no. 528 xihong road, gulou district, Fuzhou city, Fujian province, China

Test specification	:	
Standard	:	FCC CFR 47 PART 74
TRF Originator	:	Shenzhen Global Test Service Co.,Ltd.
Master TRF	:	Dated 2014-12

Test item description	:	**Lavalier Microphone**
Trade Mark	:	FULAIM, Alilong, Fotowelt, Dazzne
Manufacturer	:	Fuzhou Huiqixin Technology Co. , Ltd.
Model/Type reference	:	WM300
Listed Models	:	WM100, WM400, WM600, WM700, WM800, WM900, WM1000, MK1, MK2, MK3, MK4, MK5, MK6, MK7, MK8, MK9, MK10, WS10, WS20, WS30, WS40, WS50, WS60, WS70, WS80, WS90, WS100, WM1, WM2, WM3, WM4, WM5, WM6, WM7, WM8, WM9, WM10, AL11, WL, WL1, WL2, WL3, WL4, WL5, FL01, FL02, FL03, FL04, FL05, LM1-C, LM1-R, LM1-E, LM1-P, LM1-E, AL10, AL12, AL13, AL14, AL15, AL1, AL2, AL3, AL4, AL5, AL6, ALU1, ALU2, ALU3, ALU4, ALU5, MH1, MH2, MH3, MH4, MH5, MH6,M1, M2, M3, M4, M5
Modulation Type	:	DQPSK
Operation Frequency	:	From 570.0-579.5MHz and 580.0-589.5MHz
Rating	:	DC 3.7V by battery Recharged by DC 5.0V
Result	:	**PASS**

T E S T R E P O R T

Test Report No. :	**GTS20220216003-1-1**	Mar.09, 2022 Date of issue

Equipment under Test	:	Lavalier Microphone
Model /Type	:	WM300
Listed Models	:	WM100, WM400, WM600, WM700, WM800, WM900, WM1000, MK1, MK2, MK3, MK4, MK5, MK6, MK7, MK8, MK9, MK10, WS10, WS20, WS30, WS40, WS50, WS60, WS70, WS80, WS90, WS100, WM1, WM2, WM3, WM4, WM5, WM6, WM7, WM8, WM9, WM10, AL11, WL, WL1, WL2, WL3, WL4, WL5, FL01, FL02, FL03, FL04, FL05, LM1-C, LM1-R, LM1-E, LM1-P, LM1-E, AL10, AL12, AL13, AL14, AL15, AL1, AL2, AL3, AL4, AL5, AL6, ALU1, ALU2, ALU3, ALU4, ALU5, MH1, MH2, MH3, MH4, MH5, MH6,M1, M2, M3, M4, M5
Applicant	:	**Fuzhou Huiqixin Technology Co. , Ltd.**
Address	:	Room 906, zone A, floor 9, yunzuo-3 building, no. 528 xihong road, gulou district, Fuzhou city, Fujian province, China
Manufacturer	:	**Fuzhou Huiqixin Technology Co. , Ltd.**
Address	:	Room 906, zone A, floor 9, yunzuo-3 building, no. 528 xihong road, gulou district, Fuzhou city, Fujian province, China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 74: Experimental radio,auxiliary, special broadcast and other program distributional services.
ANSI C63.4-2014: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
KDB 935210 D05: KDB Publication 935210 D05 Measurements guidance for industrial and non-consumer signal booster, repeater, and amplifier devices

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Feb. 20, 2022
Testing commenced on	:	Feb. 20, 2022
Testing concluded on	:	Mar.08, 2022

2.2. Product Description

Product Name	Lavalier Microphone
Trade Mark	FULAIM, Alilong, Fotowelt, Dazzne
Model/Type reference	WM300
List Models	WM100, WM400, WM600, WM700, WM800, WM900, WM1000, MK1, MK2, MK3, MK4, MK5, MK6, MK7, MK8, MK9, MK10, WS10, WS20, WS30, WS40, WS50, WS60, WS70, WS80, WS90, WS100, WM1, WM2, WM3, WM4, WM5, WM6, WM7, WM8, WM9, WM10, AL11, WL, WL1, WL2, WL3, WL4, WL5, FL01, FL02, FL03, FL04, FL05, LM1-C, LM1-R, LM1-E, LM1-P, LM1-E, AL10, AL12, AL13, AL14, AL15, AL1, AL2, AL3, AL4, AL5, AL6, ALU1, ALU2, ALU3, ALU4, ALU5, MH1, MH2, MH3, MH4, MH5, MH6,M1, M2, M3, M4, M5
Model Declaration	PCB board, structure and internal of these model(s) are the same, So no additional models were tested.
Power supply:	DC 3.7V by battery Recharged by DC 5.0V
Hardware Version	N/A
Software Version	N/A
Sample ID	GTS20220216003-1-1# & GTS20220216003-1-2#
Lavalier Microphone(Transmitter)	
Frequency Range	570.0-579.5MHz and 580.0-589.5MHz
Channel No.	20 Channels form 570.0-579.5MHz 20 Channels form 580.0-589.5MHz
Modulation Type	DQPSK
Rated Power	10mW
Antenna Description	External Antenna; 0dBi(Max.)

2.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	○	120V / 60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 3.7V from battery

2.4. Short description of the Equipment under Test (EUT)

This is a Lavalier Microphone.

For more details, refer to the user's manual of the EUT.

2.5. EUT operation mode

The EUT has been tested under typical operating condition.

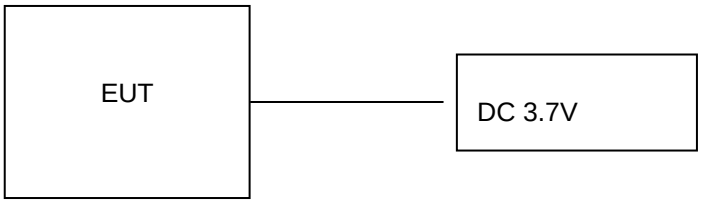
***Note: Only recorded the worst case in this report.

Channel List & Frequency:

Channel A			
Channel	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**
01	**570.0**	**11**	**575.5**
02	570.5	12	576.0
03	571.0	13	576.5
--	--	--	--
--	--	--	--
--	--	--	--
09	574.5	19	579.0
10	575.0	**20**	**579.5**

Channel B			
Channel	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**
01	**580.0**	**11**	**585.5**
02	580.5	12	586.0
03	571.0	13	586.5
--	--	--	--
--	--	--	--
--	--	--	--
09	584.5	19	589.0
10	585.0	**20**	**589.5**

2.6. Block Diagram of Test Setup



2.7. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: 2A5K9-WM300** filing to comply with Section 861 of the FCC Part 74.

2.8. Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
SHENZHEN TIANYIN ELECTRONICS CO.,LTD.	Adapter	TPA-46B050100UU	--	SDOC

The adapter is provided by the laboratory.

2.9. External I/O Cable

I/O Port Description	Quantity	Cable
DC IN Port	1	1.0M, Unscreened Cable
MIC Port	1	1.0M, Unscreened Cable

2.10. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

3.2. Test Facility

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

CNAS (No. CNAS L8169)
Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2019 General Requirements) for the Competence of Testing and Calibration Laboratories.
A2LA (Certificate No. 4758.01)
Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.
Industry Canada Registration Number. is 24189.
FCC Designation Number is CN1234.
FCC Registered Test Site Number is165725.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Global Test Service Co.,Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.
Hereafter the best measurement capability for Shenzhen GTS laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.12 dB	(1)

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.5. Summary of measurement results

Applied Standard: FCC Part 74			
FCC Rules	Description of Test	Test Sample	Result
FCC Part 74.861(e)(1)(ii) FCC Part 2.1046	Maximum Conducted Output Power	GTS20220216003-1-1# GTS20220216003-1-2#	Compliant
FCC Part 74.861 (e)(5) FCC Part 2.1049	Occupied Bandwidth	GTS20220216003-1-1# GTS20220216003-1-2#	Compliant
FCC Part 74.861 (e)(4) FCC Part 2.1055	Frequency error	GTS20220216003-1-1# GTS20220216003-1-2#	Compliant
FCC Part 74.861(e)(6) FCC Part 2.1053	Transmitter unwanted emissions(radiated or conducted)	GTS20220216003-1-1# GTS20220216003-1-2#	Compliant
FCC Part 2.1049 FCC Part 2.1047	Modulation characteristic	N/A	N/A
FCC Part 74.861 (e)(7) FCC Part 2.1049	Necessary bandwidth (BN)	GTS20220216003-1-1# GTS20220216003-1-2#	Compliant
§15.107(a) §15.207	Conducted Emission	GTS20220216003-1-1#	Compliant

Remark:
1. The measurement uncertainty is not included in the test result.
2. NA = Not Applicable; NP = Not Performed
3. We tested all test mode and recorded worst case in report

3.6. Equipments Used during the Test

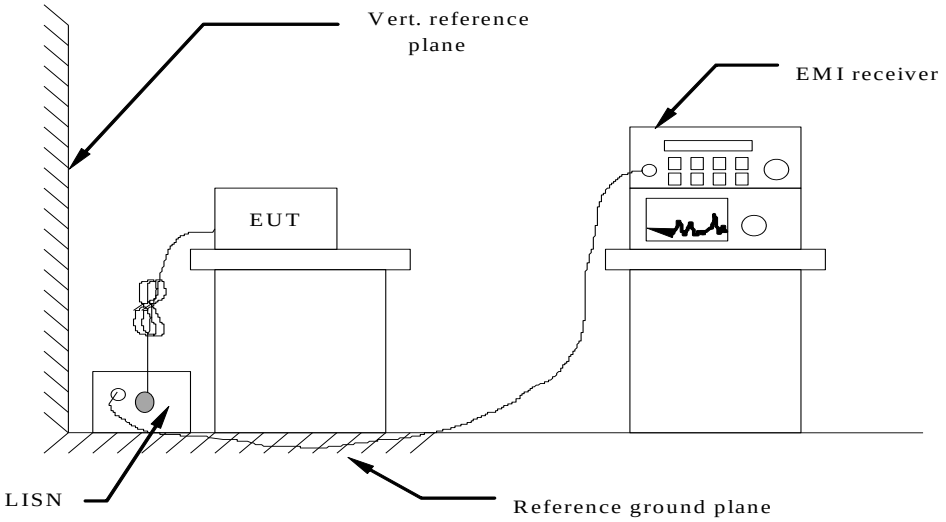
Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	CYBERTEK	EM5040A	E1850400105	2021/07/17	2022/07/16
LISN	R&S	ESH2-Z5	893606/008	2021/07/17	2022/07/16
EMI Test Receiver	R&S	ESPI3	101841-cd	2021/07/17	2022/07/16
EMI Test Receiver	R&S	ESCI7	101102	2021/09/19	2022/09/18
Spectrum Analyzer	Agilent	N9020A	MY48010425	2021/09/19	2022/09/18
Spectrum Analyzer	R&S	FSV40	100019	2021/07/17	2022/07/16
Vector Signal generator	Agilent	N5181A	MY49060502	2021/07/17	2022/07/16
Signal generator	Agilent	N5182A	3610AO1069	2021/09/19	2022/09/18
Climate Chamber	ESPEC	EL-10KA	A20120523	2021/09/19	2022/09/18
Controller	EM Electronics	Controller EM 1000	N/A	N/A	N/A
Horn Antenna	Schwarzbeck	BBHA 9120D	01622	2021/09/19	2022/09/18
Active Loop Antenna	Beijing Da Ze Technology Co.,Ltd.	ZN30900C	15006	2021/09/19	2022/09/18
Bilog Antenna	Schwarzbeck	VULB9163	000976	2021/08/08	2022/08/07
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2021/09/19	2022/09/18
Amplifier	Schwarzbeck	BBV 9743	#202	2021/07/17	2022/07/16
Amplifier	Schwarzbeck	BBV9179	9719-025	2021/07/17	2022/07/16
Amplifier	EMCI	EMC051845B	980355	2021/07/17	2022/07/16
Temperature/Humidity Meter	Gangxing	CTH-608	02	2021/07/17	2022/07/16
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	KL142031	2021/07/17	2022/07/16
High-Pass Filter	K&L	41H10-1375/U12750-O/O	KL142032	2021/07/17	2022/07/16
RF Cable(below 1GHz)	HUBER+SUHNER	RG214	RE01	2021/07/17	2022/07/16
RF Cable(above 1GHz)	HUBER+SUHNER	RG214	RE02	2021/07/17	2022/07/16
Data acquisition card	Agilent	U2531A	TW53323507	2021/07/17	2022/07/16
Power Sensor	Agilent	U2021XA	MY5365004	2021/07/17	2022/07/16
Test Control Unit	Tonscend	JS0806-1	178060067	2021/07/17	2022/07/16
Automated filter bank	Tonscend	JS0806-F	19F8060177	2021/07/17	2022/07/16
EMI Test Software	Tonscend	JS1120-1	Ver 2.6.8.0518	/	/
EMI Test Software	Tonscend	JS1120-3	Ver 2.5.77.0418	/	/
EMI Test Software	Tonscend	JS32-CE	Ver 2.5	/	/
EMI Test Software	Tonscend	JS32-RE	Ver 2.5.1.8	/	/

Note: The Cal.Interval was one year.

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2014.
2 Support equipment, if needed, was placed as per ANSI C63.4-2014.
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2014.
4 The EUT received DC 5V power, the adapter received AC120V/60Hz or AC 240V/50Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5 All support equipments received AC power from a second LISN, if any.
6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8 During the above scans, the emissions were maximized by cable manipulation.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following：

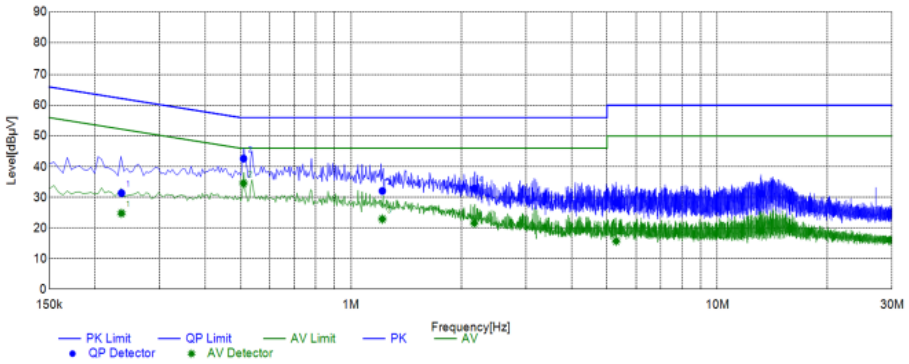
Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

TEST RESULTS

Remark: We measured Conducted Emission at DQPSK mode in AC 120V/60Hz and AC 240V/50Hz, the worst case was recorded .

Power supply:	AC 120V/60Hz	Polarization	L

Test Graph



Final Data List

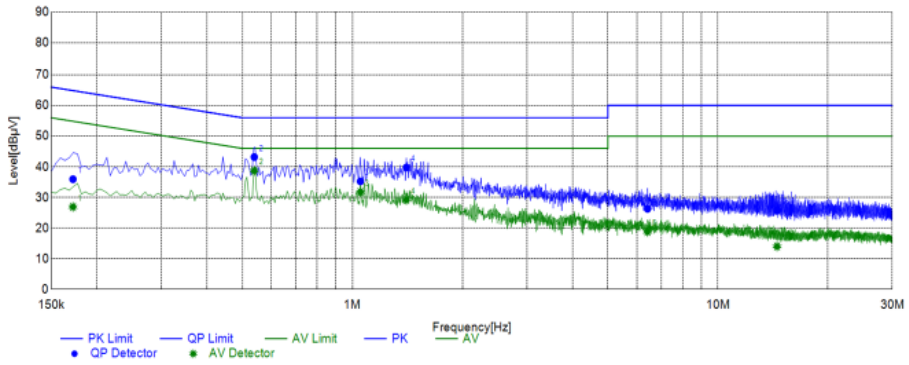
NO.	Frequency [MHz]	QP Reading [dBµV]	AVG. Reading [dBµV]	Factor [dB]	QP Result [dBµV]	AVG. Result [dBµV]	QP Limit [dBµV]	AVG. Limit [dBµV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.2363	21.88	15.28	9.51	31.39	24.79	62.22	52.22	30.83	27.43	L1	PASS
2	0.5089	33.20	25.17	9.43	42.63	34.60	56.00	46.00	13.37	11.40	L1	PASS
3	1.2180	22.68	13.51	9.40	32.08	22.91	56.00	46.00	23.92	23.09	L1	PASS
4	2.1711	23.53	12.26	9.34	32.87	21.60	56.00	46.00	23.13	24.40	L1	PASS
5	5.2967	18.88	6.41	9.35	28.23	15.76	60.00	50.00	31.77	34.24	L1	PASS
6	13.1920	21.98	9.88	9.17	31.15	19.05	60.00	50.00	28.85	30.95	L1	PASS

Note: 1. Result (dBµV) = Reading (dBµV) + Factor (dB).

2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

Power supply:	AC 120V/60Hz	Polarization	N

Test Graph



Final Data List

NO.	Frequency [MHz]	QP Reading [dBµV]	AVG. Reading [dBµV]	Factor [dB]	QP Result [dBµV]	AVG. Result [dBµV]	QP Limit [dBµV]	AVG. Limit [dBµV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.1720	26.37	17.33	9.59	35.96	26.92	64.86	54.86	28.90	27.94	N	PASS
2	0.5389	33.80	29.32	9.40	43.20	38.72	56.00	46.00	12.80	7.28	N	PASS
3	1.0520	25.89	22.39	9.37	35.26	31.76	56.00	46.00	20.74	14.24	N	PASS
4	1.4047	30.42	19.86	9.36	39.78	29.22	56.00	46.00	16.22	16.78	N	PASS
5	6.4196	16.98	9.48	9.33	26.31	18.81	60.00	50.00	33.69	31.19	N	PASS
6	14.5157	16.59	4.83	9.19	25.78	14.02	60.00	50.00	34.22	35.98	N	PASS

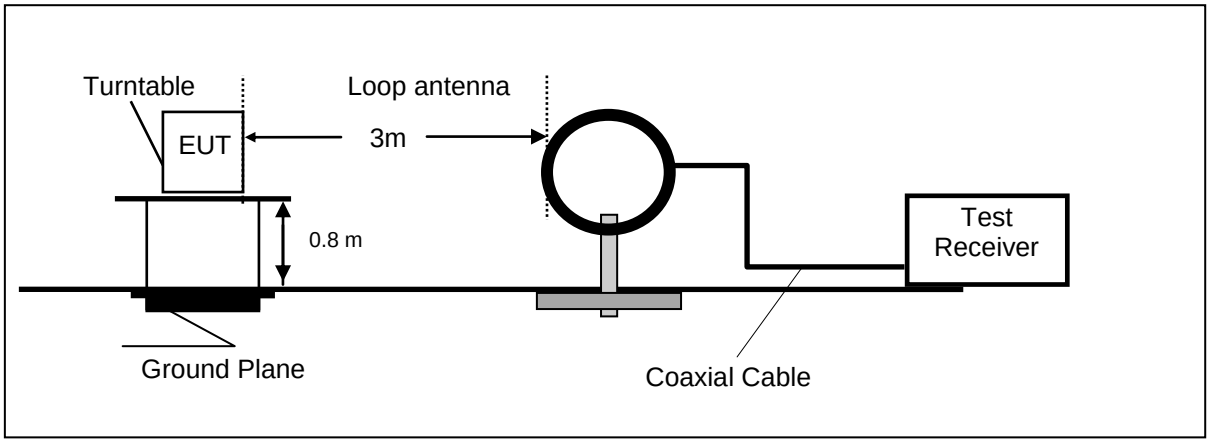
Note: 1. Result (dBµV) = Reading (dBµV) + Factor (dB).

2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

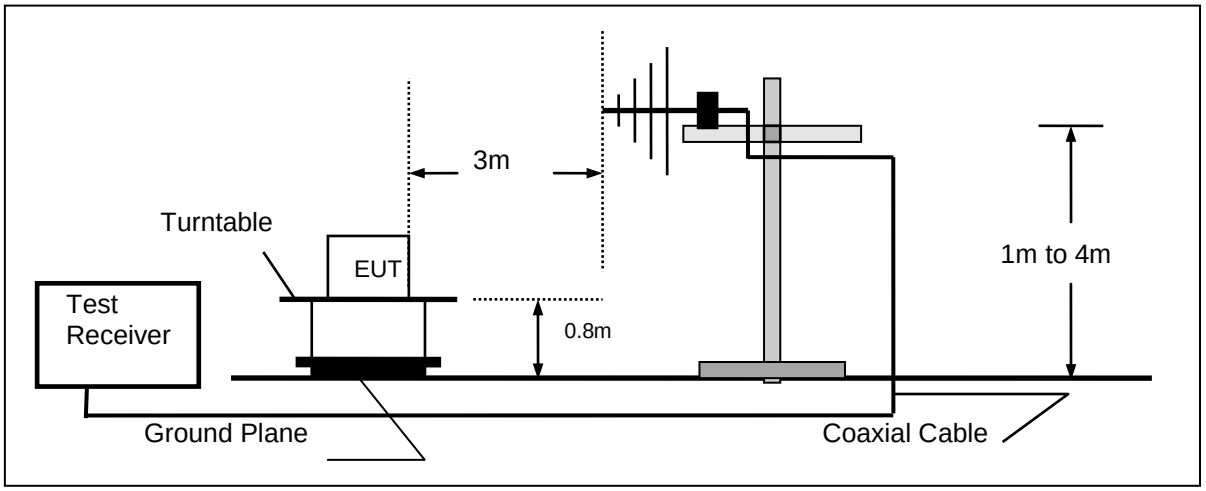
4.2. Transmitter unwanted emissions(radiated or conducted)

TEST CONFIGURATION

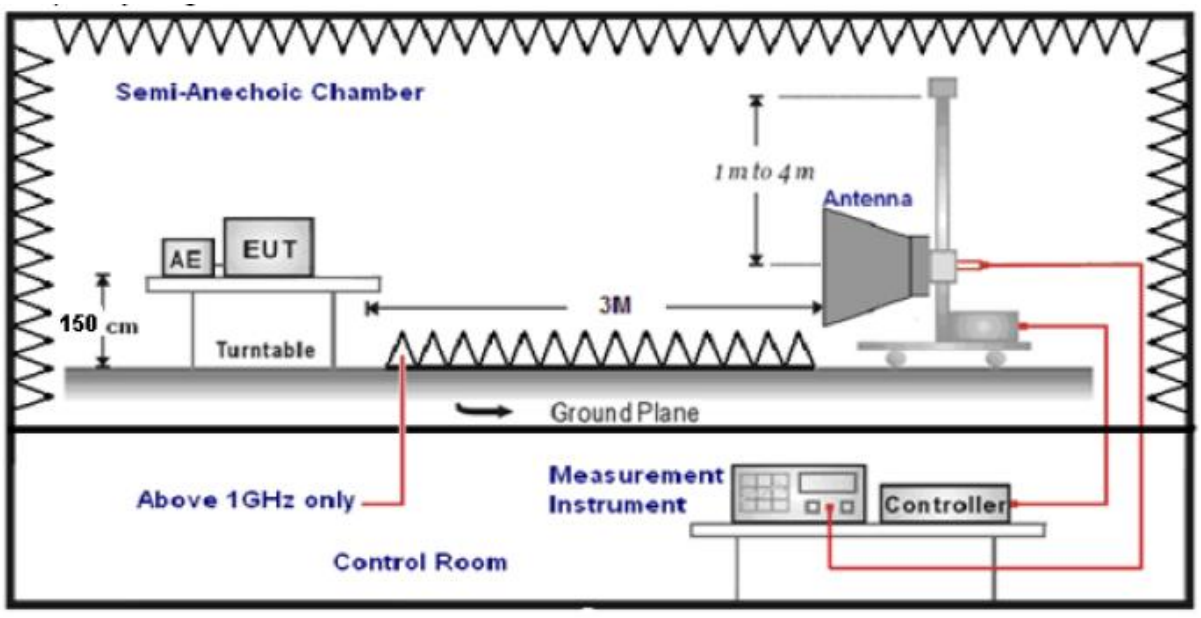
Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50 m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz, And the maximum value of the receiver should be recorded as (P_r).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.
   The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}- P_{Ag} - P_{cl} + G_a
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.
8. In order to make sure test results more clearly,we set frequency range and sweep time for difference frequency range as follows table:

RADIATION LIMIT

FCC & IC (according to ETSI EN 300 422-1 V2.2.1 (2021-11))			
State	**Max. spurious level**		
	47 MHz to 74 MHz 87.5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies ≤ 1000 MHz	All frequencies > 1000 MHz
Operating	4.0 nW	250 nW	1.00 µW
Standby	2.0 nW	2.0 nW	20.0 nW

FCC & IC	
The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:	
On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least	25 dB
On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth	35 dB
On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least	43 + 10log10 (mean output power in watts) dB

TEST RESULTS

Remark: We measured Radiated Emission at DQPSK mode from 30MHz to 25GHz and recorded worst case at High power mode.

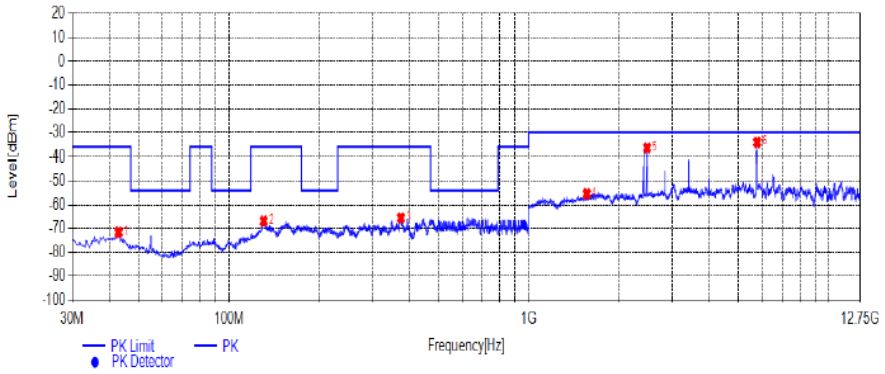
Radiated Emissions:

For 30MHz-18GHz

Channel 01 / 570.0 MHz

Horizontal

Test Graph



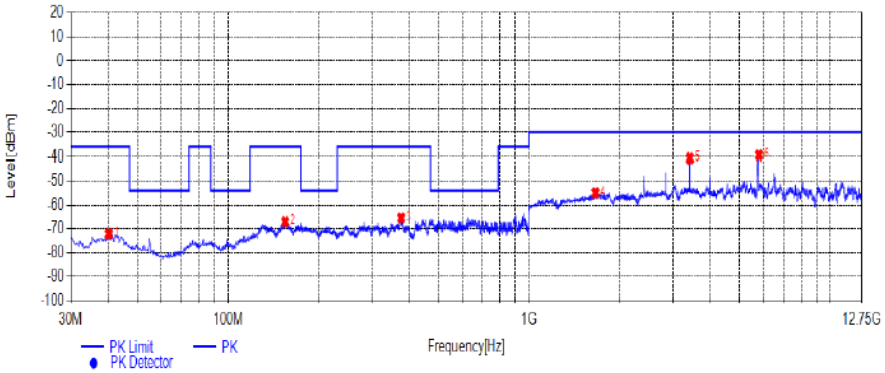
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	42.8066	-99.97	35.57	100	341	PK	Horizontal	PASS
2	130.3181	-92.87	30.82	100	326	PK	Horizontal	PASS
3	373.8368	-91.26	29.52	100	214	PK	Horizontal	PASS
4	1561.7624	-90.79	25.36	100	78	PK	Horizontal	PASS
5	2480.7962	-89.37	6.52	100	4	PK	Horizontal	PASS
6	5771.4543	-87.06	4.19	100	282	PK	Horizontal	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	40.0900	-98.01	36.09	100	335	PK	Vertical	PASS
2	154.5729	-92.34	31.02	100	202	PK	Vertical	PASS
3	375.1950	-90.58	29.41	100	230	PK	Vertical	PASS
4	1660.4821	-90.02	24.92	100	53	PK	Vertical	PASS
5	3420.9842	-86.99	10.75	100	109	PK	Vertical	PASS
6	5799.6599	-87.29	9.43	100	274	PK	Vertical	PASS

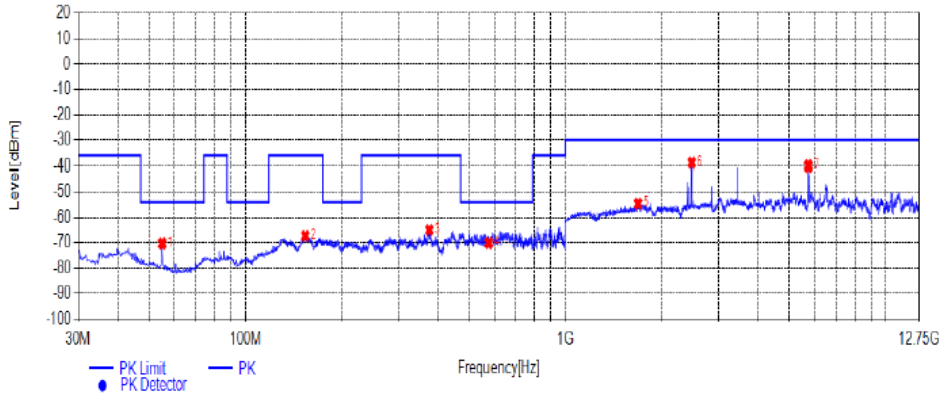
Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Channel 11 / 575.5 MHz

Horizontal

Test Graph



Suspected List

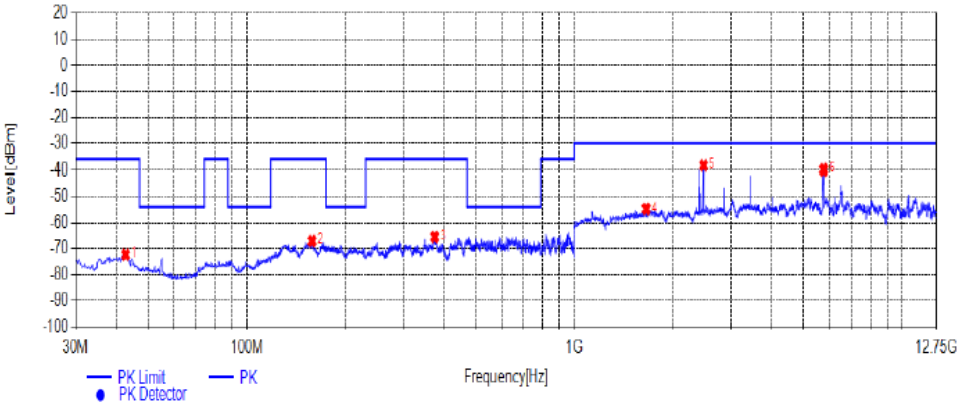
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	54.8370	-103.21	16.22	100	130	PK	Horizontal	PASS
2	153.6027	-92.48	31.27	100	316	PK	Horizontal	PASS
3	374.8070	-90.61	28.93	100	211	PK	Horizontal	PASS
4	575.4431	-93.42	16.06	100	245	PK	Horizontal	PASS
5	1686.3373	-89.86	24.58	100	200	PK	Horizontal	PASS
6	2480.7962	-89.37	8.84	100	172	PK	Horizontal	PASS
7	5738.5477	-87.48	10.00	100	35	PK	Horizontal	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	42.6125	-99.88	36.31	100	285	PK	Vertical	PASS
2	157.8716	-92.76	31.06	100	313	PK	Vertical	PASS
3	373.8368	-91.26	29.45	100	183	PK	Vertical	PASS
4	1655.7812	-90.05	24.71	100	74	PK	Vertical	PASS
5	2480.7962	-89.37	8.44	100	22	PK	Vertical	PASS
6	5764.4029	-87.00	9.94	100	180	PK	Vertical	PASS

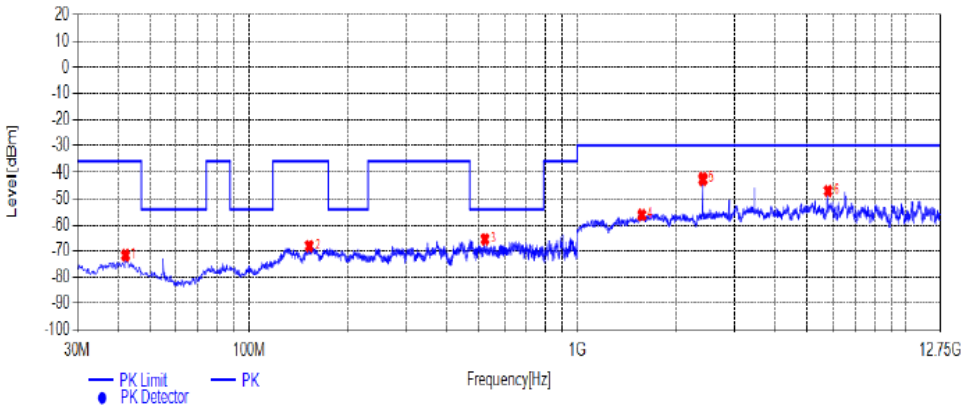
Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Channel 20 / 579.5 MHz

Horizontal

Test Graph



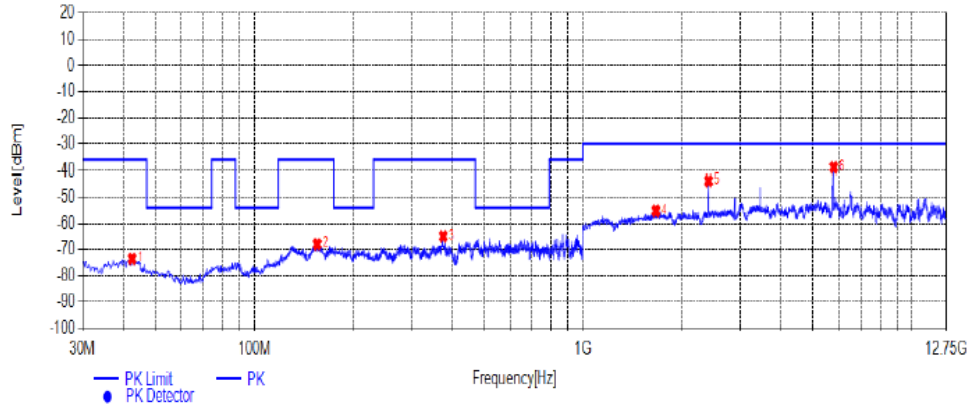
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	42.0304	-99.60	35.58	100	70	PK	Horizontal	PASS
2	152.2444	-92.68	32.01	100	180	PK	Horizontal	PASS
3	523.2466	-92.48	11.41	100	310	PK	Horizontal	PASS
4	1571.1642	-90.71	26.20	100	260	PK	Horizontal	PASS
5	2410.2821	-89.96	12.55	100	350	PK	Horizontal	PASS
6	5787.9076	-87.19	16.85	100	150	PK	Horizontal	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	42.4185	-99.79	37.48	100	10	PK	Vertical	PASS
2	155.1550	-92.31	31.91	100	360	PK	Vertical	PASS
3	374.8070	-90.61	28.89	100	150	PK	Vertical	PASS
4	1665.1830	-89.99	25.18	100	260	PK	Vertical	PASS
5	2410.2821	-89.96	13.76	100	300	PK	Vertical	PASS
6	5785.5571	-87.17	8.89	100	130	PK	Vertical	PASS

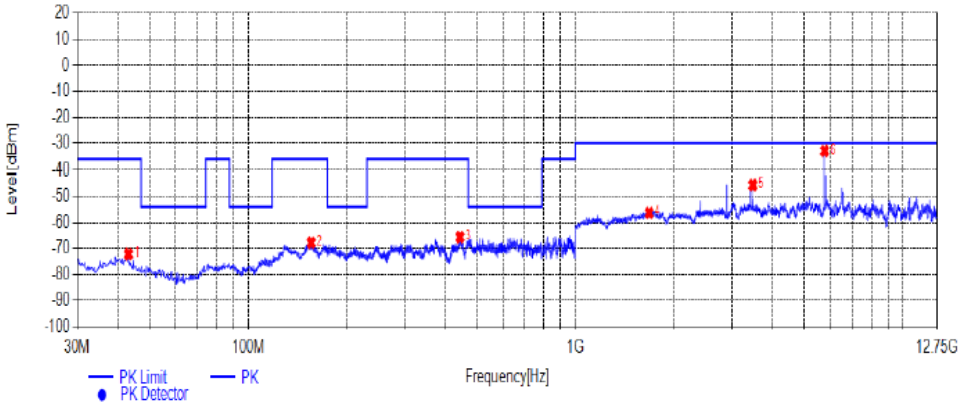
Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Channel 01 / 580.0 MHz

Horizontal

Test Graph



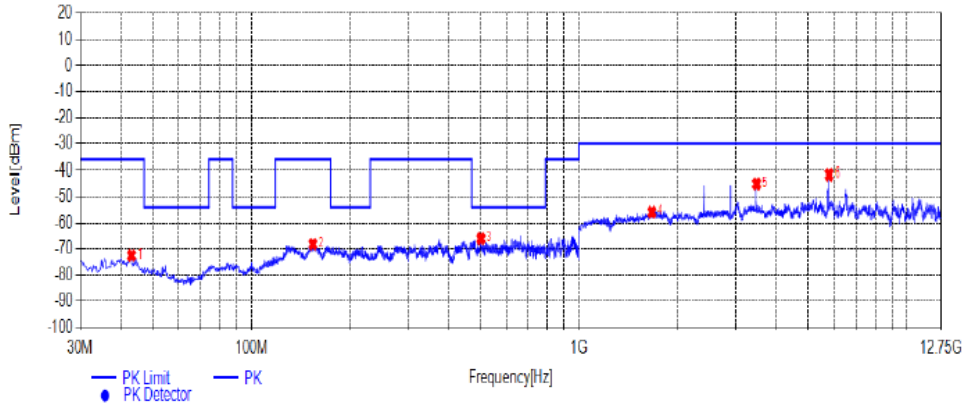
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	43.0006	-100.06	36.16	100	290	PK	Horizontal	PASS
2	155.5431	-92.37	31.75	100	90	PK	Horizontal	PASS
3	443.3027	-91.75	29.60	100	260	PK	Horizontal	PASS
4	1679.2859	-89.90	26.33	100	250	PK	Horizontal	PASS
5	3479.7459	-87.21	15.56	100	260	PK	Horizontal	PASS
6	5766.7534	-87.02	2.98	100	110	PK	Horizontal	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	43.0006	-100.06	36.48	100	310	PK	Vertical	PASS
2	153.7968	-92.46	32.14	100	210	PK	Vertical	PASS
3	501.1262	-91.98	11.99	100	160	PK	Vertical	PASS
4	1667.5335	-89.97	25.86	100	110	PK	Vertical	PASS
5	3479.7459	-87.21	14.97	100	300	PK	Vertical	PASS
6	5790.2581	-87.21	11.71	100	140	PK	Vertical	PASS

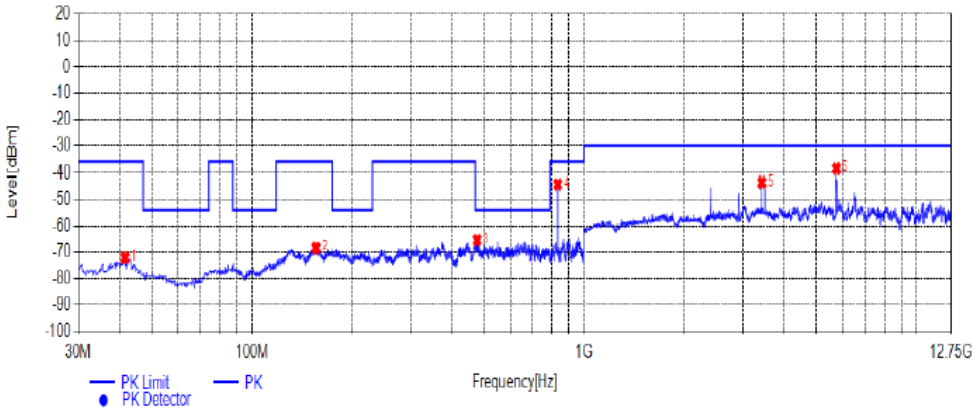
Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Channel 11 / 585.5 MHz

Horizontal

Test Graph



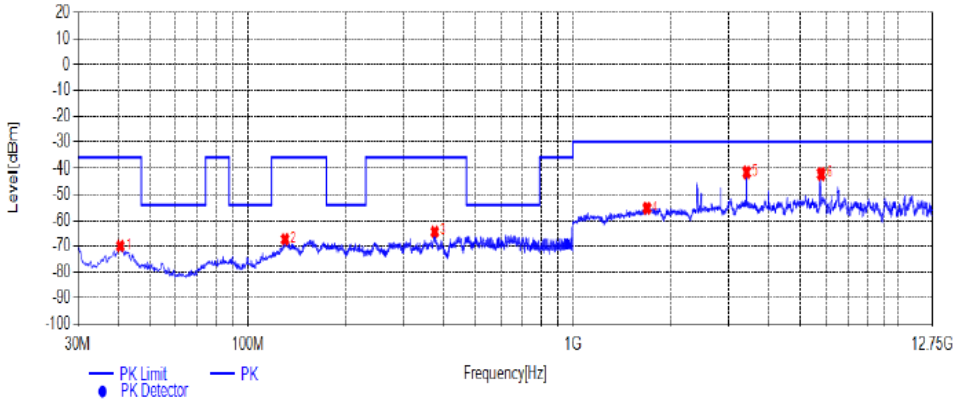
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	41.4483	-99.10	36.04	100	360	PK	Horizontal	PASS
2	155.7371	-92.40	32.35	100	140	PK	Horizontal	PASS
3	475.7071	-91.71	11.36	100	90	PK	Horizontal	PASS
4	833.1266	-92.43	8.20	100	300	PK	Horizontal	PASS
5	3430.3861	-87.03	13.58	100	350	PK	Horizontal	PASS
6	5747.9496	-86.99	8.62	100	80	PK	Horizontal	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	40.4781	-98.31	33.87	100	245	PK	Vertical	PASS
2	129.9300	-92.78	31.28	100	310	PK	Vertical	PASS
3	375.0010	-90.49	28.38	100	120	PK	Vertical	PASS
4	1688.6877	-89.84	25.22	100	130	PK	Vertical	PASS
5	3420.9842	-86.99	11.51	100	117	PK	Vertical	PASS
6	5790.2581	-87.21	12.16	100	22	PK	Vertical	PASS

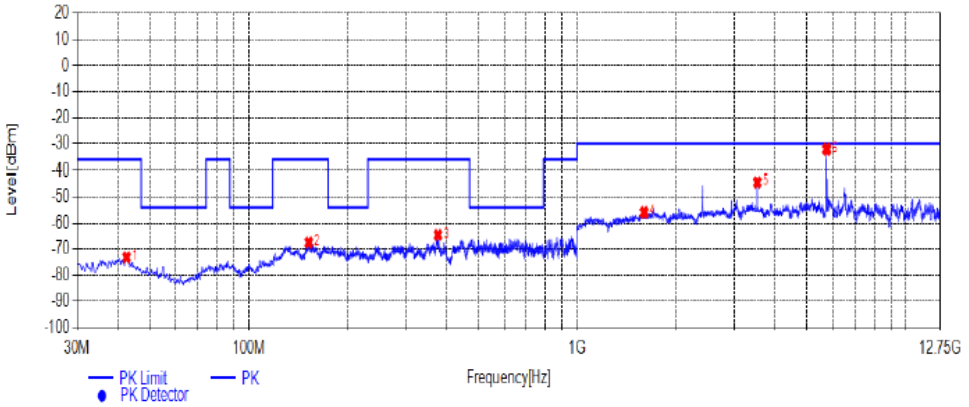
Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Channel 20 / 589.5 MHz

Horizontal

Test Graph



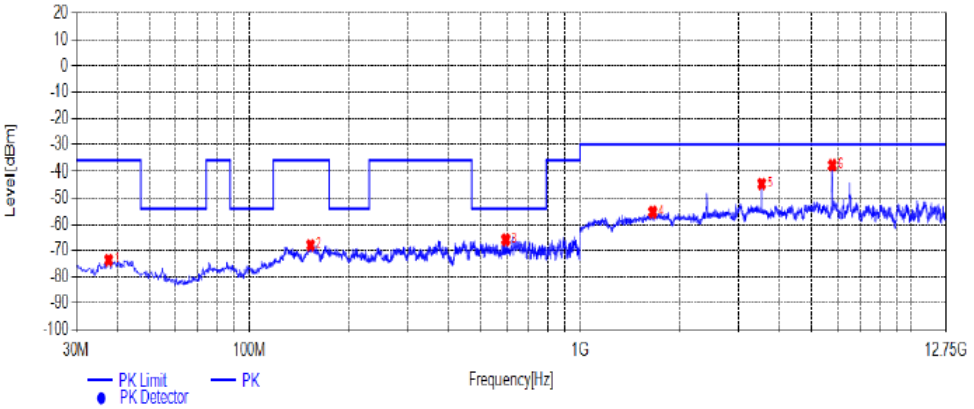
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	42.4185	-99.79	37.08	100	330	PK	Horizontal	PASS
2	152.0504	-92.71	31.45	100	350	PK	Horizontal	PASS
3	376.1652	-91.07	28.55	100	310	PK	Horizontal	PASS
4	1597.0194	-90.48	25.91	100	140	PK	Horizontal	PASS
5	3536.1572	-87.30	14.34	100	10	PK	Horizontal	PASS
6	5747.9496	-86.99	2.18	100	20	PK	Horizontal	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	37.5675	-100.04	37.54	100	250	PK	Vertical	PASS
2	153.0206	-92.57	31.89	100	40	PK	Vertical	PASS
3	595.8172	-91.86	11.81	100	20	PK	Vertical	PASS
4	1655.7812	-90.05	25.28	100	320	PK	Vertical	PASS
5	3536.1572	-87.30	14.46	100	20	PK	Vertical	PASS
6	5773.8048	-87.08	7.92	100	100	PK	Vertical	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

4.3. Maximum Peak Output Power

Measurement description

Two traces are captured to show the difference between input- and output signals and to measure the effective output power of the device. Trace 1 shows the measurement results of the output signal and trace 2 shows the measurement results of the input signal. Marker D2 in the plots shows the difference between the input and the output signal

Measurement

Measurement parameter	
Detector:	Peak (worst case) / Average (RMS)
Sweep time:	Auto / 20s
Resolution bandwidth:	> emission bandwidth
Video bandwidth:	> resolution bandwidth
Span:	> 2 times emissions bandwidth
Trace mode:	Max. hold
EUT configuration:	Peak: Unmodulated carrier RMS: Modulate the transmitter with a 2.5 kHz tone at a level 16 dB higher than that required to produce a frequency deviation of ± 75 kHz, or to produce 50% of the manufacturer's rated deviation, whichever is less.

Limits

FCC&IC	
470 MHz to 608 MHz	**250 mW (average) / 24 dBm (average)**

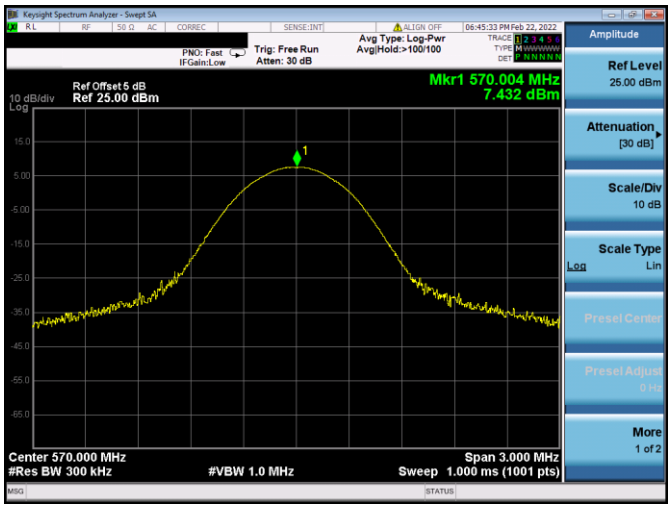
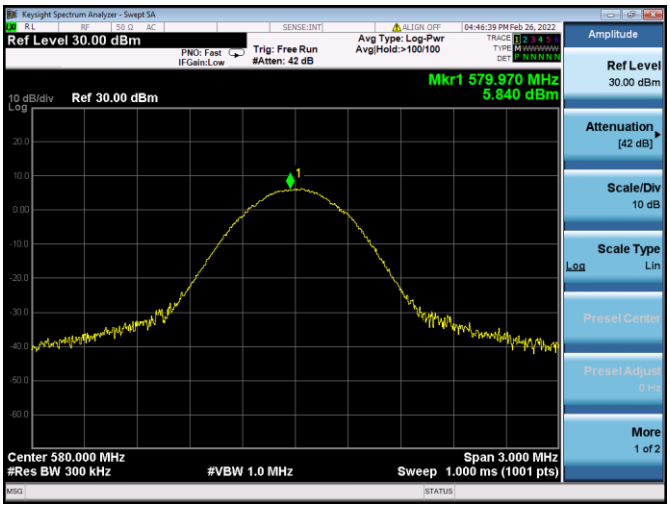
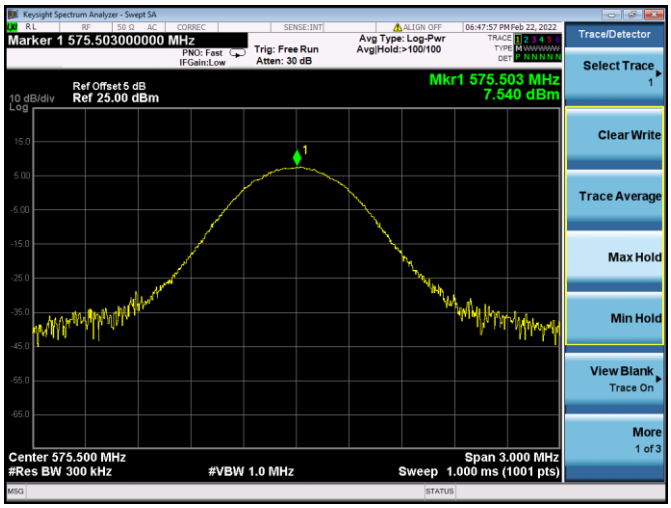
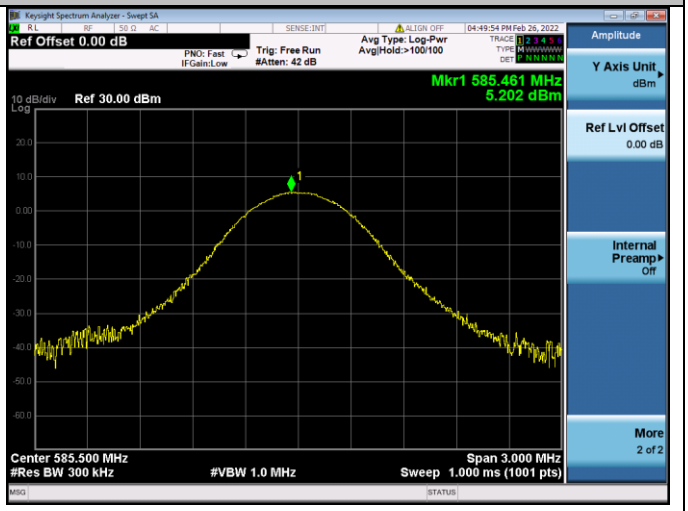
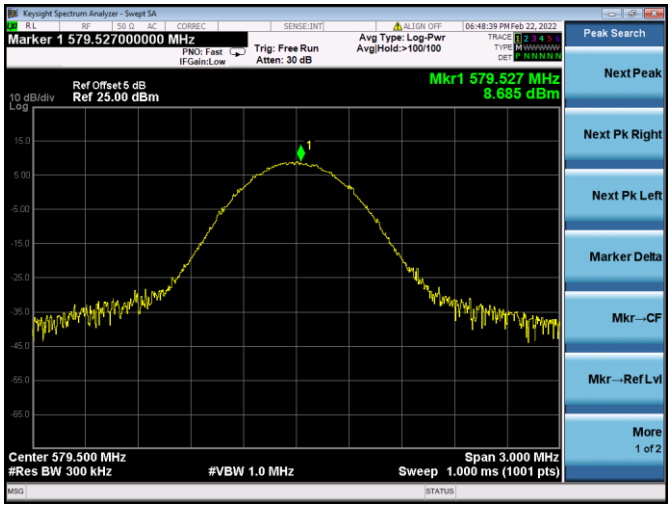
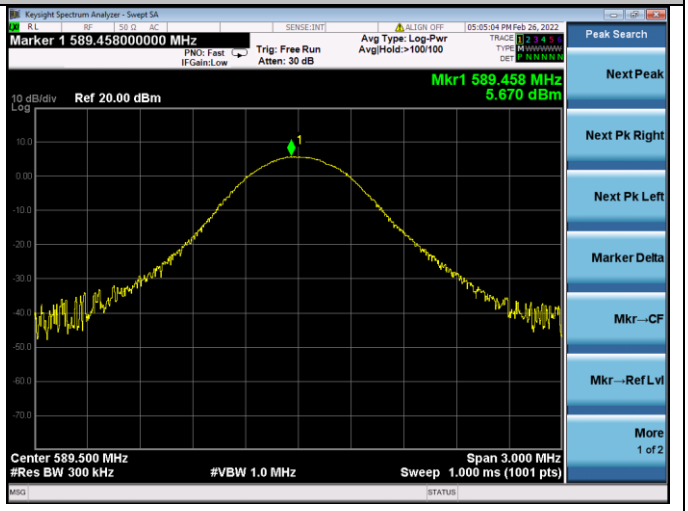
Test result

The EUT was programmed to be in continuously transmitting mode.

Channel A						
Test Mode	Channel	Frequency (MHz)	Measured Maximum Peak Power(dBm)	Measured Maximum Average Power(dBm)	Limits Average (dBm)	Verdict
DQPSK	01	570.0	7.432	/	24	PASS
	11	575.5	7.540	/		
	20	579.5	8.685	/		

Channel B						
Test Mode	Channel	Frequency (MHz)	Measured Maximum Peak Power(dBm)	Measured Maximum Average Power(dBm)	Limits Average (dBm)	Verdict
DQPSK	01	580.0	5.840	/	24	PASS
	11	585.5	5.202	/		
	20	589.5	5.670	/		

Maximum Peak Output Power

Channel A	Channel B
	
Channel 1 / 570.0 MHz	*Channel 1 / 580.0 MHz*
	
Channel 11 / 575.5 MHz	*Channel 11 / 585.5 MHz*
	
Channel 20 / 579.5 MHz	*Channel 20 / 589.5 MHz*

4.4. Occupied bandwidth and Emission Mask

Measurement description

Two traces are captured to show the difference between input- and output signals and to measure the effective bandwidth of the output signal. Trace 1 shows the measurement results of the output signal and trace 2 shows the measurement results of the input signal.

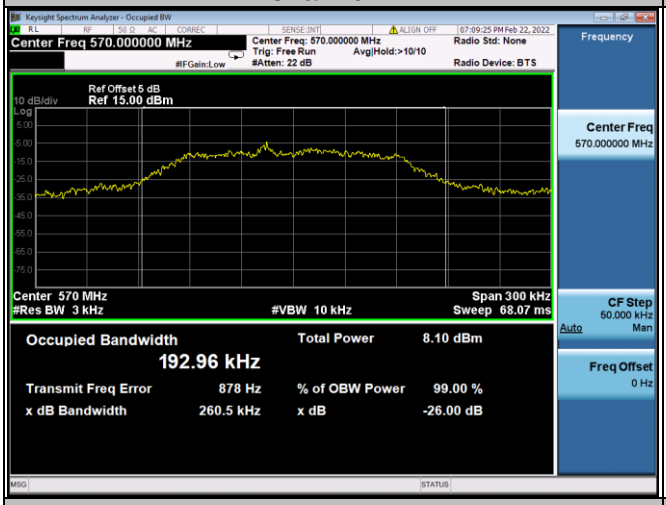
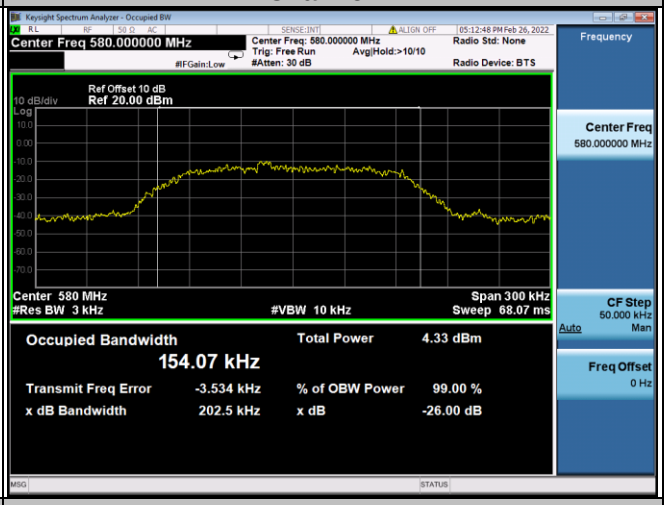
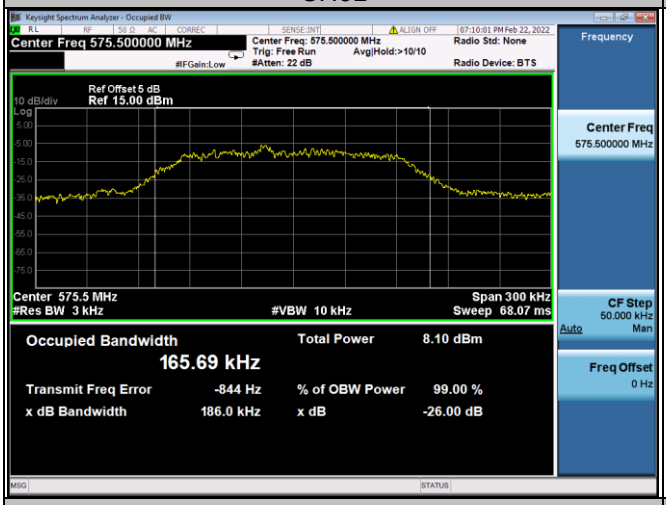
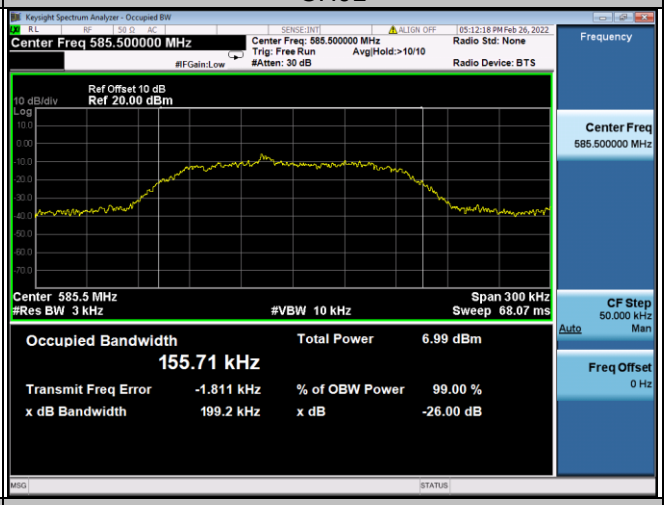
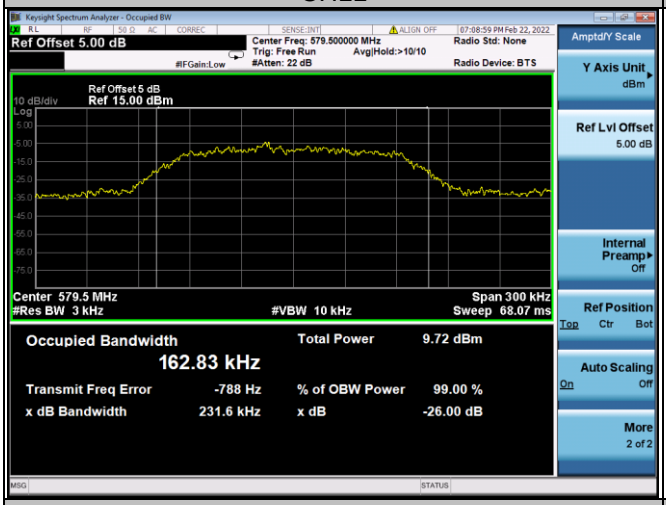
Measurement

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1 % to 5 % of the occupied bandwidth
Video bandwidth:	3 x resolution bandwidth
Span:	2 x emission bandwidth
Trace mode:	Max. hold
Analyzer function:	99% power occupied bandwidth function
EUT:	Modulated signal with max. frequency deviation

TEST RESULTS

Channel A				
Modulation	**Frequency (MHz)**	**99% Bandwidth(KHz)**	**Limits (KHz)**	**Result**
DQPSK	570.0	192.96	200	PASS
	575.5	165.69		PASS
	579.5	162.83		PASS

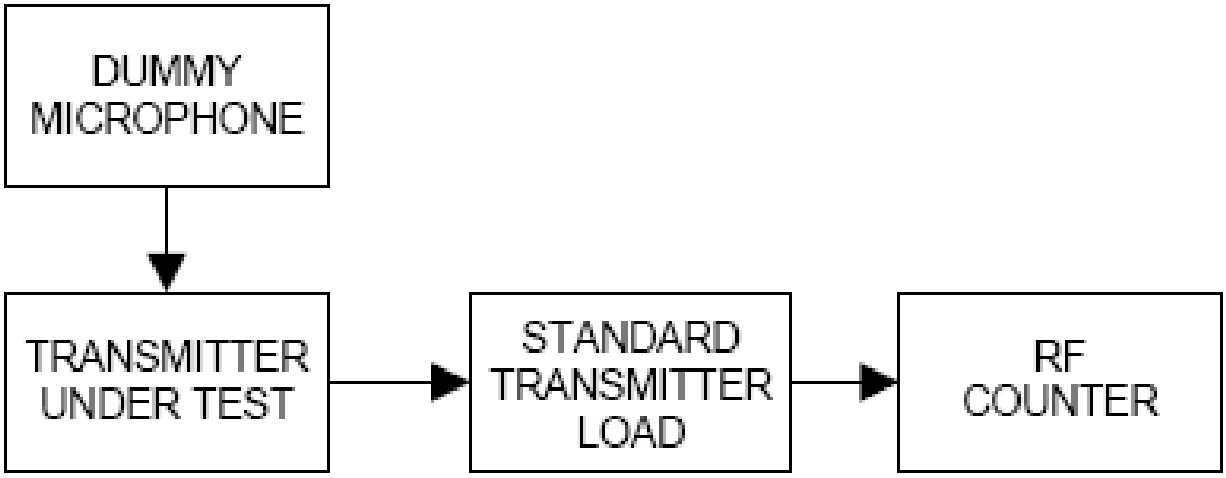
Channel B				
Modulation	**Frequency (MHz)**	**99% Bandwidth(KHz)**	**Limits (KHz)**	**Result**
DQPSK	580.0	154.07	200	PASS
	585.5	155.71		PASS
	589.5	152.33		PASS

99% Bandwidth	
Channel A	Channel B
	
CH01	CH01
	
CH11	CH11
	
CH20	CH20

4.5. Frequency Stability

Test Requirement:FCC CFR 47 Part 74.e) 4)
Test Method:FCC CFR 47 Part 2.1055
Requirements:+/-50 ppm
(e) For low power auxiliary stations operating in the bands allocated for TV broadcasting, the following technical requirements apply:
(4) The frequency tolerance of the transmitter shall be 0.005 percent.
Test Procedure:
Frequency stability versus Environmental Temperature
The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed through attenuators.
The EUT was placed inside the temperature chamber. After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.

Frequency Stability versus Input Voltage
At room temperature (25 ± 5°C), an external variable DC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage. For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



TEST RESULTS

Channel A		
Assigned Frequency: 570.000 MHz		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 28.50 kHz
50	3.7	+15.6
40	3.7	+16.5
30	3.7	+15.4
20	3.7	+16.1
10	3.7	+15.8
0	3.7	+14.8
-10	3.7	+15.6
-20	3.7	+14.9
-30	3.7	+15.2
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 28.50 kHz
25	3.7	+15.5
25	3.3	+15.5
25	3.0	+15.9

Channel A		
Assigned Frequency: 575.500 MHz		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 28.76 kHz
50	3.7	+18.9
40	3.7	+17.6
30	3.7	+16.2
20	3.7	+15.3
10	3.7	+16.1
0	3.7	+15.8
-10	3.7	+17.2
-20	3.7	+16.5
-30	3.7	+16.8
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 28.76 kHz
25	3.7	+16.2
25	3.3	+15.9
25	3.0	+15.3

Channel A		
Assigned Frequency: 579.500 MHz		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 28.98 kHz
50	3.7	+17.5
40	3.7	+16.9
30	3.7	+15.8
20	3.7	+16.2
10	3.7	+15.8
0	3.7	+15.7
-10	3.7	+16.4
-20	3.7	+15.7
-30	3.7	+16.9
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 28.98 kHz
25	3.7	+15.1
25	3.3	+16.6
25	3.0	+15.9

Channel B		
Assigned Frequency: 580.000 MHz		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 29.00 kHz
50	3.7	+15.8
40	3.7	+14.9
30	3.7	+14.6
20	3.7	+15.7
10	3.7	+15.3
0	3.7	+15.7
-10	3.7	+16.2
-20	3.7	+16.5
-30	3.7	+15.9
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 29.00 kHz
25	3.7	+16.1
25	3.3	+15.7
25	3.0	+15.2

Channel B		
Assigned Frequency: 585.500 MHz		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 29.28 kHz
50	3.7	+17.3
40	3.7	+16.9
30	3.7	+17.5
20	3.7	+16.2
10	3.7	+17.1
0	3.7	+17.6
-10	3.7	+16.5
-20	3.7	+16.9
-30	3.7	+16.8
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 29.28 kHz
25	3.7	+17.2
25	3.3	+16.5
25	3.0	+15.9

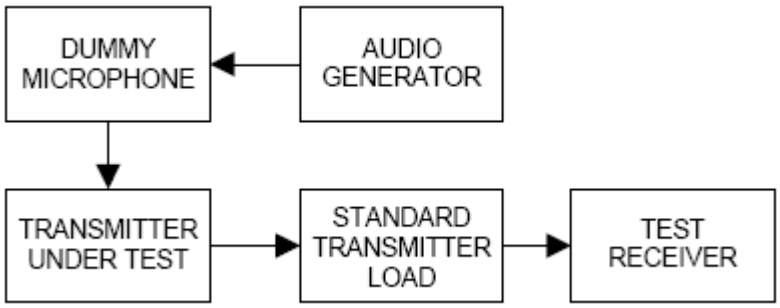
Channel B		
Assigned Frequency: 589.500 MHz		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 29.48 kHz
50	3.7	+15.4
40	3.7	+16.3
30	3.7	+15.9
20	3.7	+15.2
10	3.7	+16.1
0	3.7	+15.4
-10	3.7	+16.2
-20	3.7	+15.5
-30	3.7	+16.7
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 29.48 kHz
25	3.7	+15.3
25	3.3	+14.8
25	3.0	+15.1

Battery end point: 3.0Vdc

The results: The unit does meet the FCC requirements.

4.6. Modulation Characteristics

Test Requirement:FCC CFR 47 Part 74.e) 3)
Test Method:FCC CFR 47 Part 2.1047 & TIA/EIA 603 E 2016:Land Mobile DQPSK or PM Communications Equipment Measurement and Performance Standards
Requirements:
(e) For low power auxiliary stations operating in the bands allocated for TV broadcasting, the following technical requirements apply:
(3) Any form of modulation may be used. A maximum deviation of ±75 kHz is permitted when frequency modulation is employed.
Test Procedure:
Audio Frequency Response
The RF output of the transceiver was connected to the input of FSP 30 with DQPSK deviation module through sufficient attenuation so as not to overload the meter or distort the reading. An audio signal generator was connected to the audio input of microphone.
The audio signal input level was adjusted to obtain 20% of the maximum rated system deviation at 1 kHz, and recorded as DEV REF . With the audio signal generator level unchanged, set the generator frequency between 100 to 5000 Hz. The transmitter deviations (DEV FREQ) were measured and the audio frequency response was calculated as 20log10 [DEV FREQ / DEV REF]



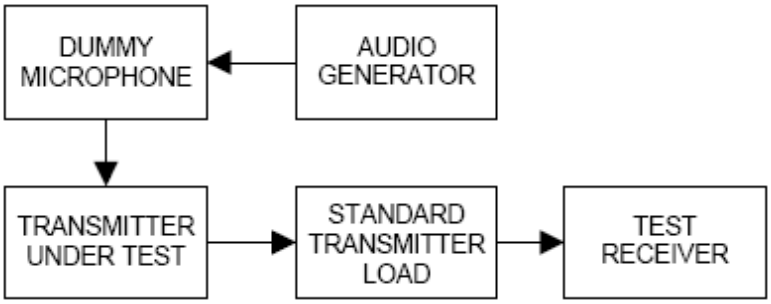
The plot(s) of Audio Frequency Response is presented hereinafter as reference.

Test Result:

Not Applicable. The EUT is a digital modulation wireless microphone.

Modulation Limiting

1. Adjust the transmitter per the manufacturer's procedure for full rated system deviation. Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤0.25 Hz to ≥15,000 Hz. Turn the de-emphasis function off.
2. Apply a 1000 Hz modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain 60% of full rated system deviation.
3. Increase the level from the audio frequency generator by 20 dB in one step (rise time between the 10% and 90% points shall be 0.1 second maximum).
4. Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level.
5. With the level from the audio frequency generator held constant at the level obtained in step e), slowly vary the audio frequency from 100 to 15k Hz and observe the steady-state deviation. Record the maximum deviation.



Test at five different modulating frequencies (100Hz ,300Hz, 500Hz, 1KHz, 2.5kHz, 5kHz, 10kHz,15kHz), the output level of the audio generator was varied up to 1V and the DQPSK deviation level was recorded.

Positive peak deviation:

Test Result:

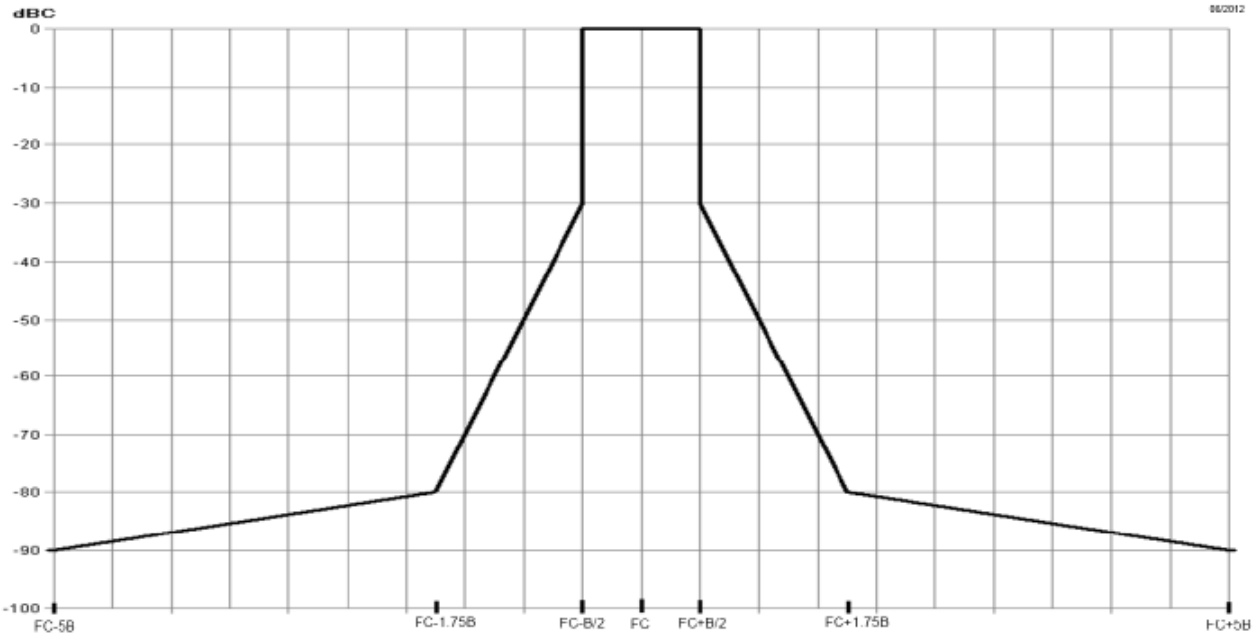
Not Applicable. The EUT is a digital modulation wireless microphone.

4.7. Necessary bandwidth (BN)

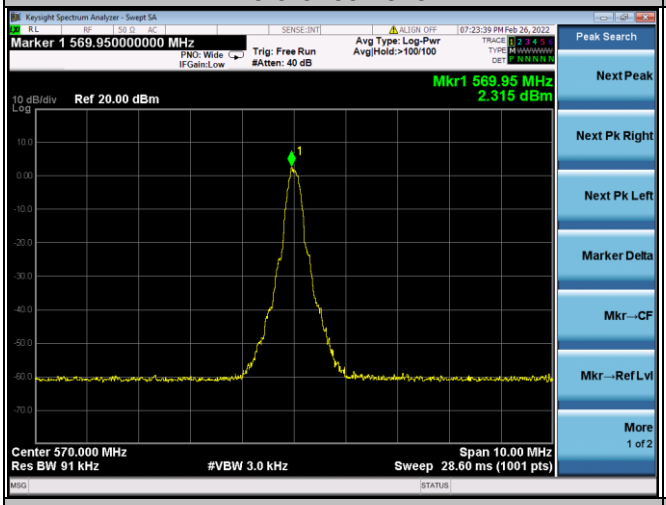
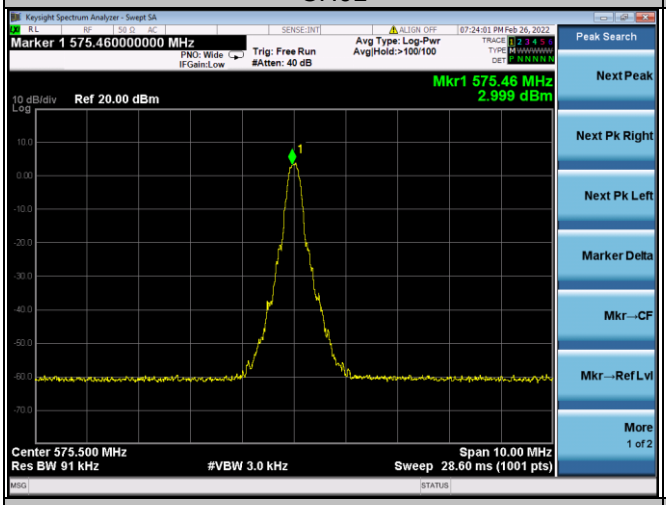
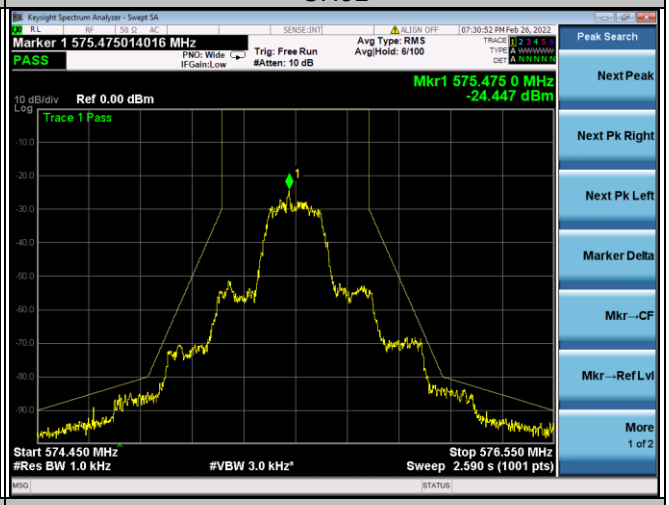
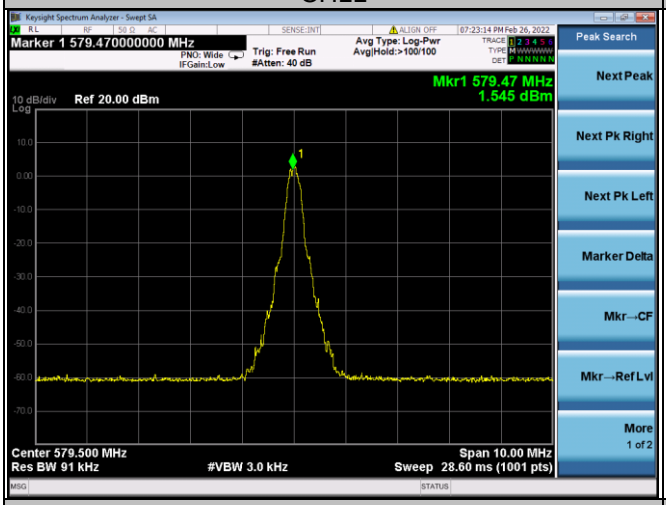
Measurement

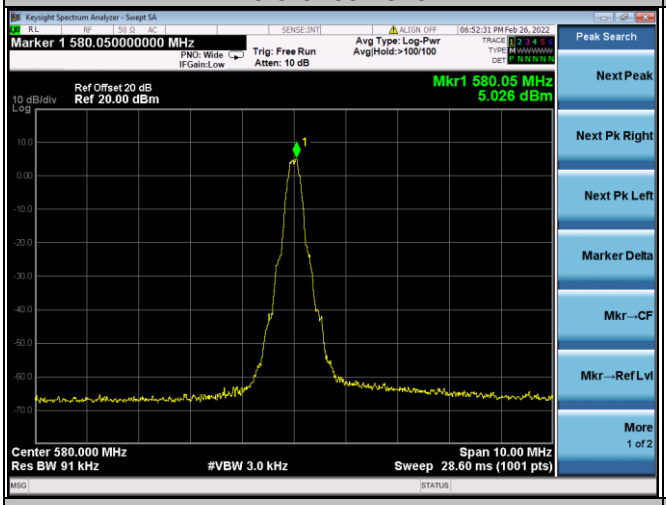
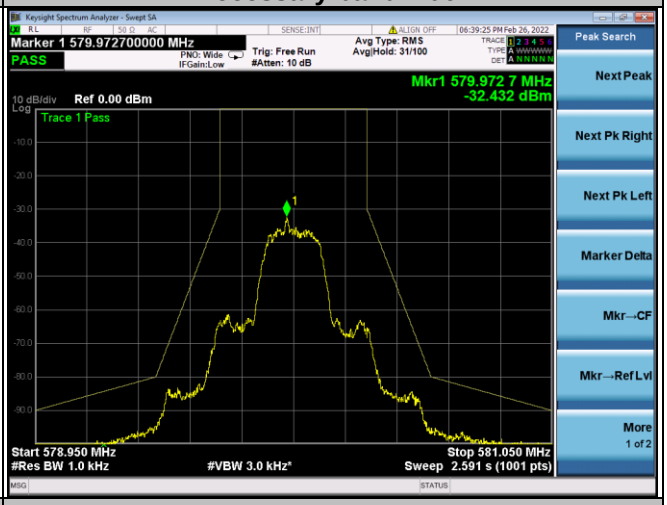
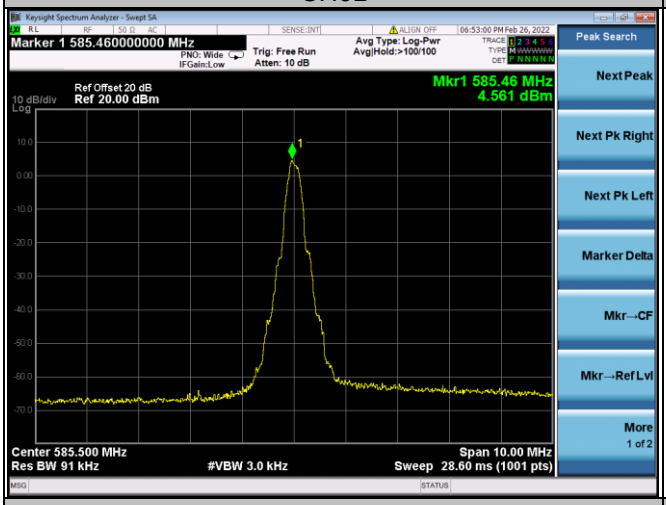
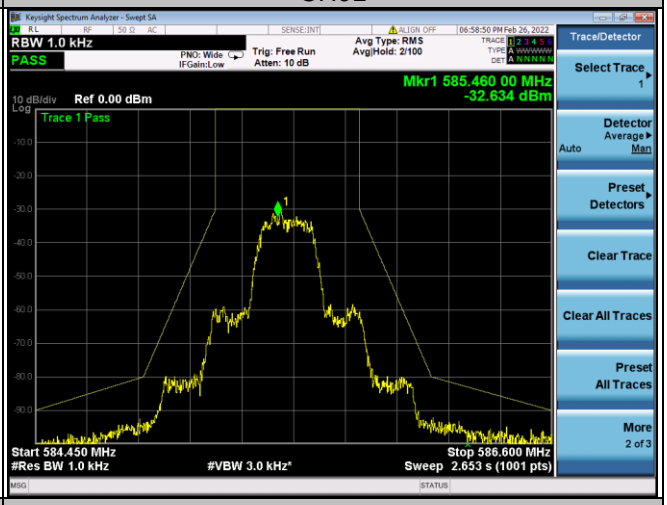
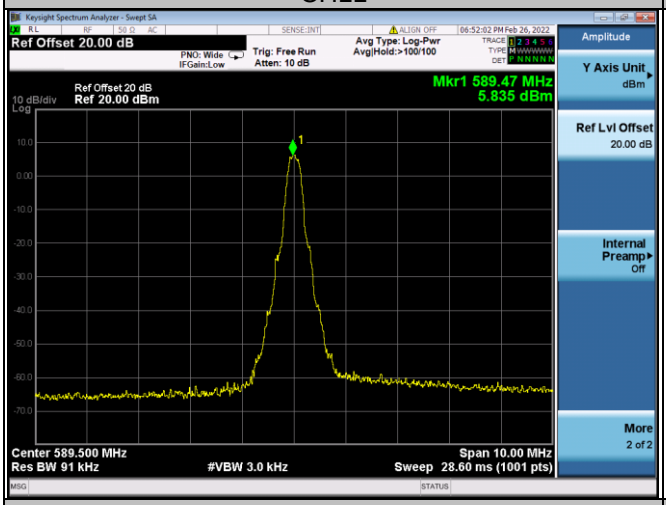
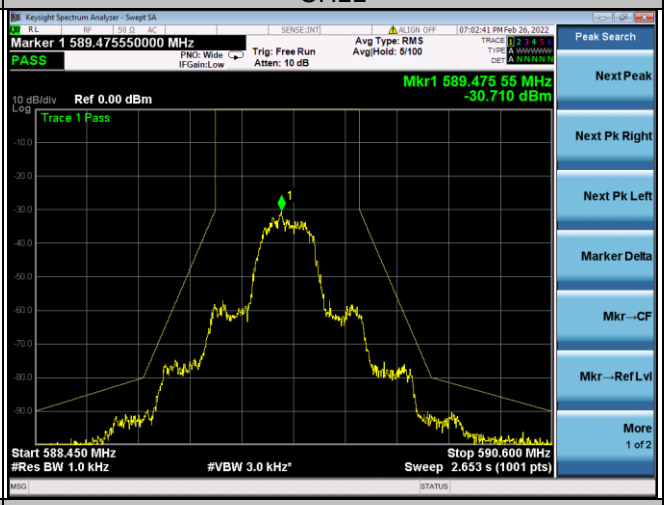
Measurement parameter	
Detector:	Peak - Quasi Peak / Average
Sweep time:	Auto
Resolution bandwidth:	1 kHz
Video bandwidth:	1 kHz
Span:	Fc-1MHz to fc+1MHz(2MHz)
Trace mode:	Max Hold

LIMIT



Results:

Channel A	
Reference Level	**Necessary bandwidth**
	
CH01	CH01
	
CH11	CH11
	
CH20	CH20

Channel B	
Reference Level	Necessary bandwidth
	
CH01	CH01
	
CH11	CH11
	
CH20	CH20

5. TEST SETUP PHOTOS OF THE EUT

Photo of Radiated Emissions Measurement

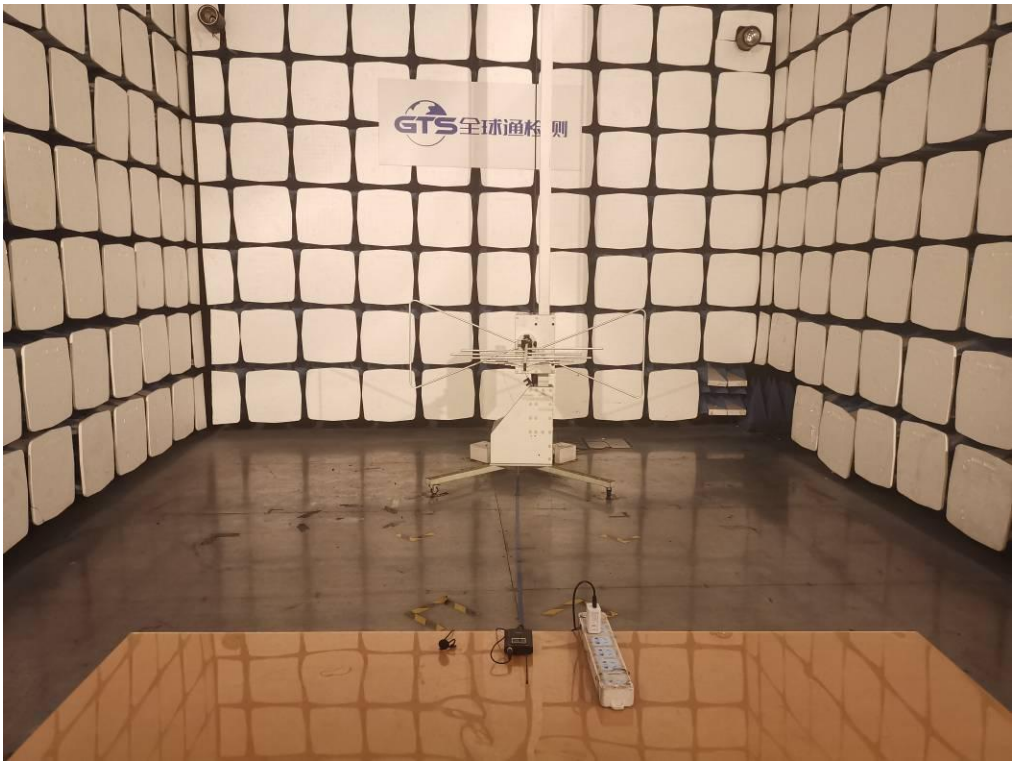


Fig. 1

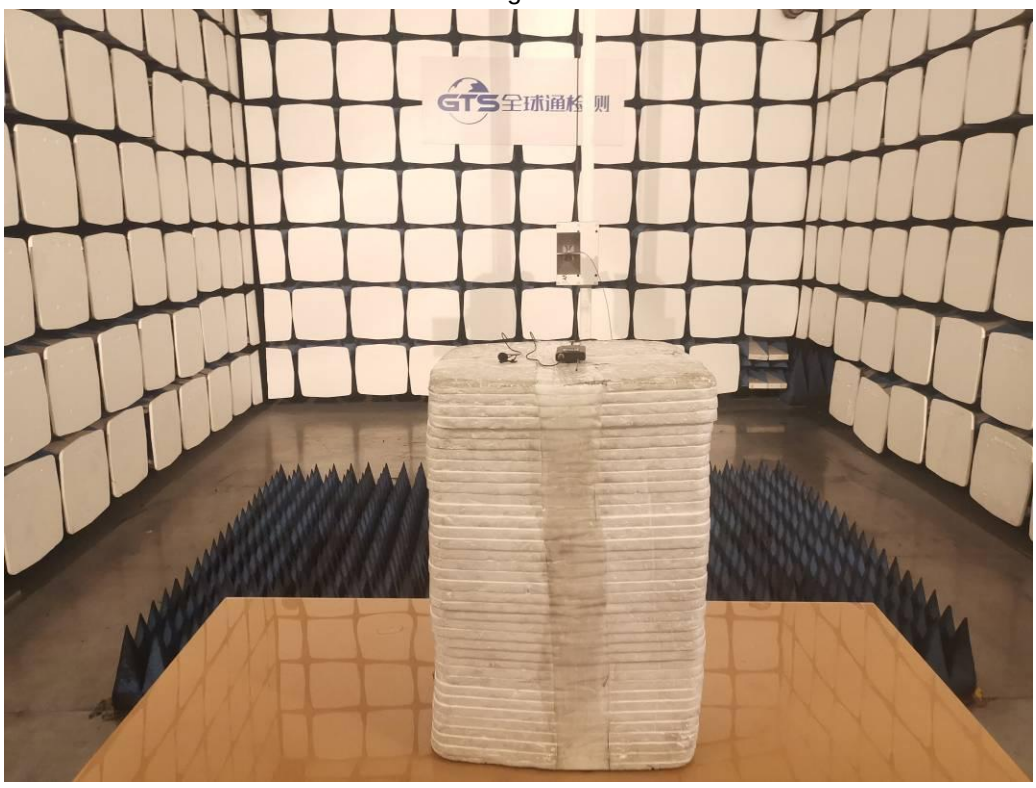


Fig. 2

Photo of Conducted Emission Measurement

Fig. 3

6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

6.1. External photos of the EUT

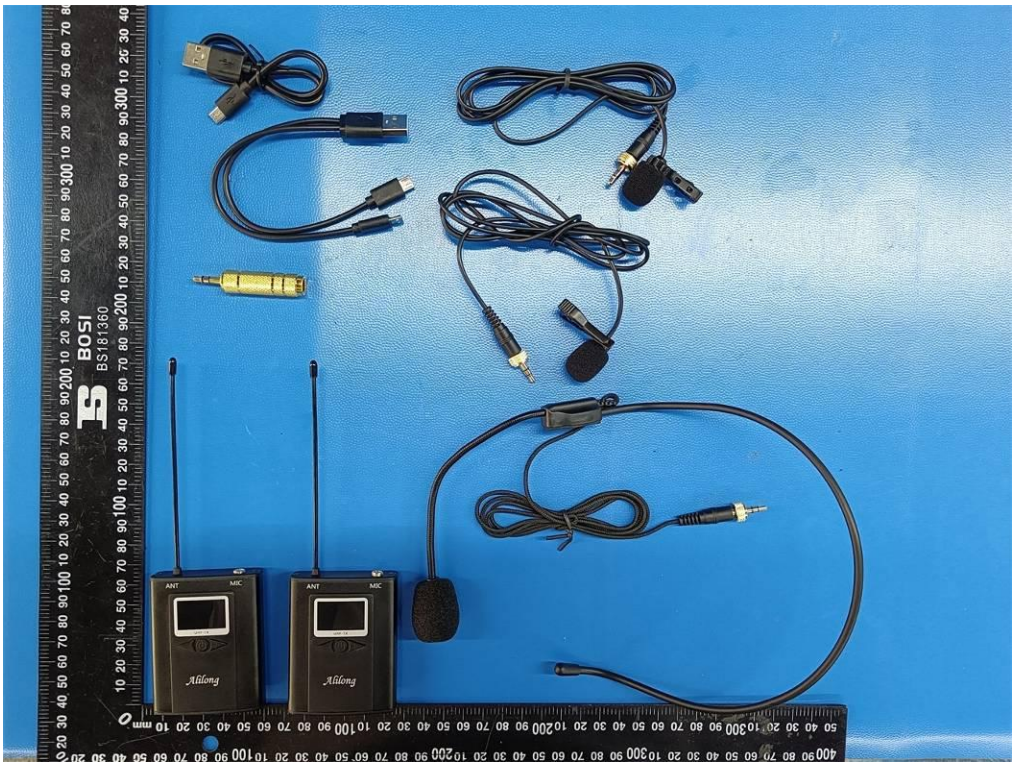


Fig. 1

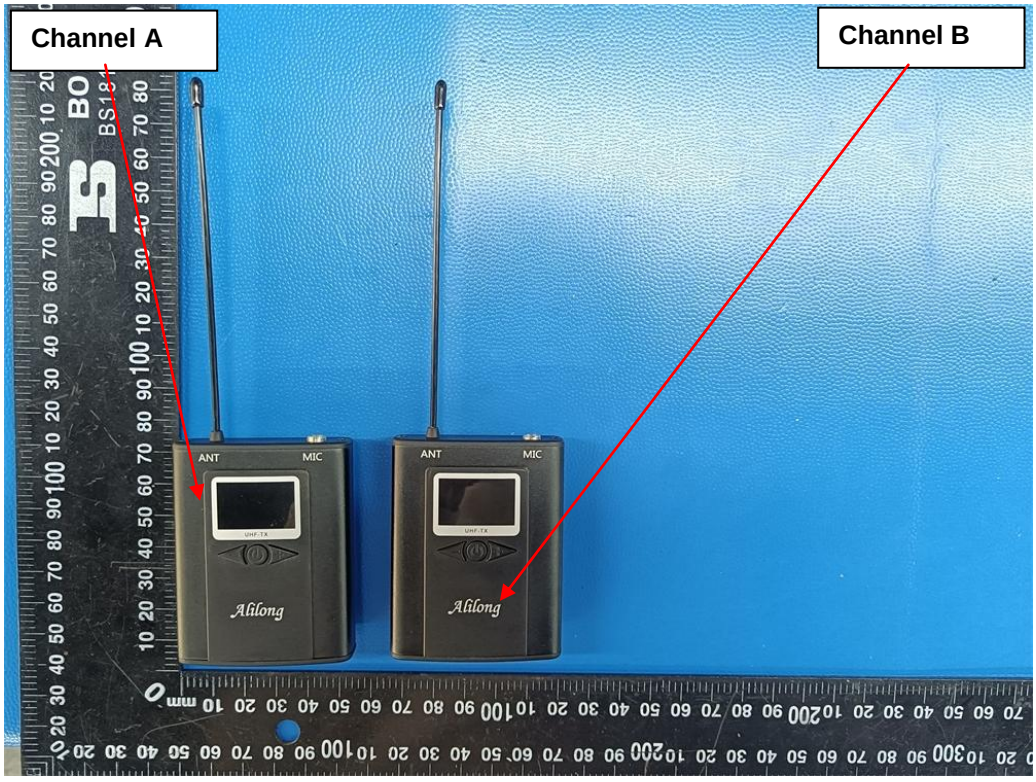


Fig. 2

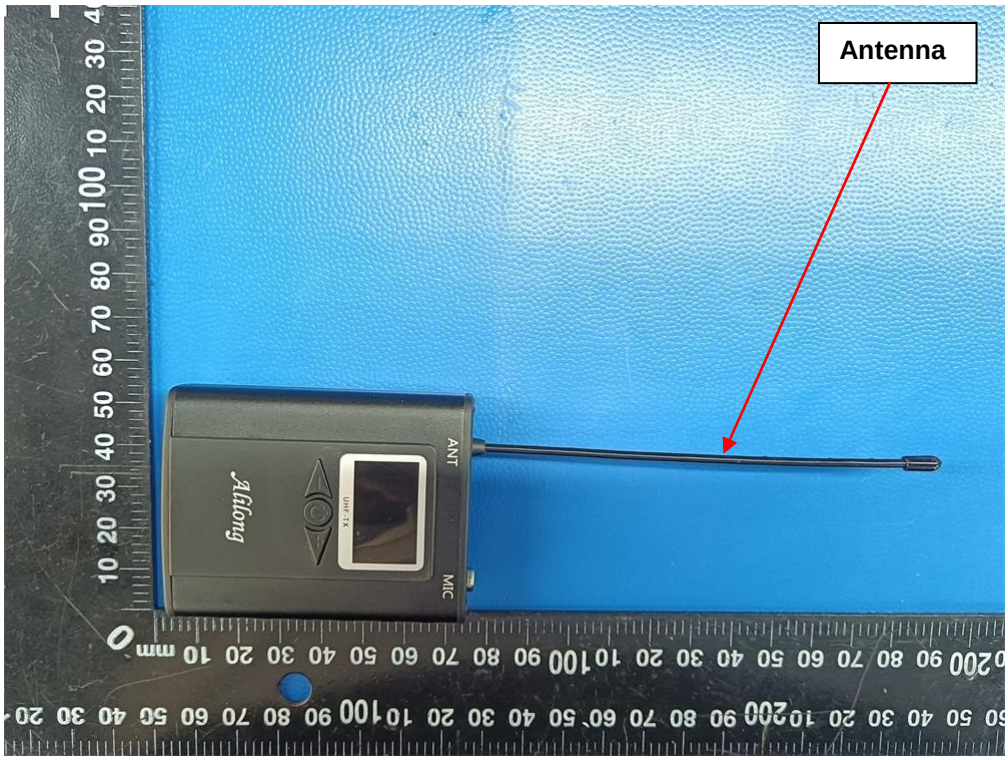

Antenna
ANT
MIC
UHF-TX

Fig. 3


Wireless Microphone System
Frequency Range: 570-579.5MHz
580-589.5MHz
MADE IN CHINA

Fig. 4

Fig. 5

Fig. 6

Fig. 7

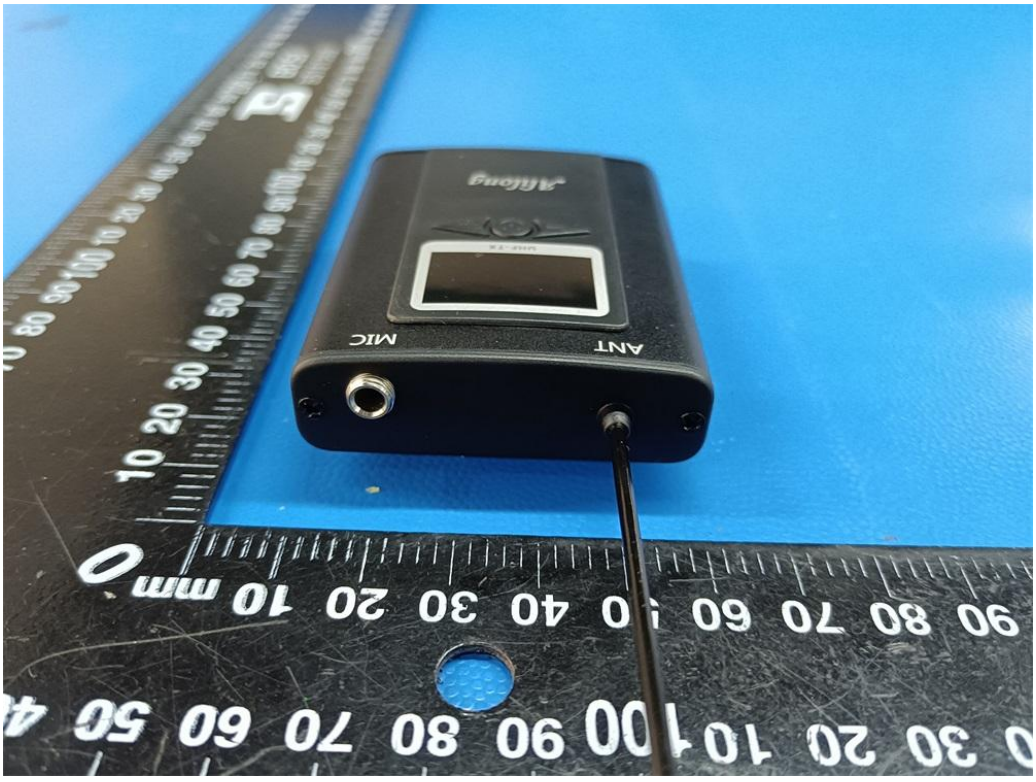


Fig. 8

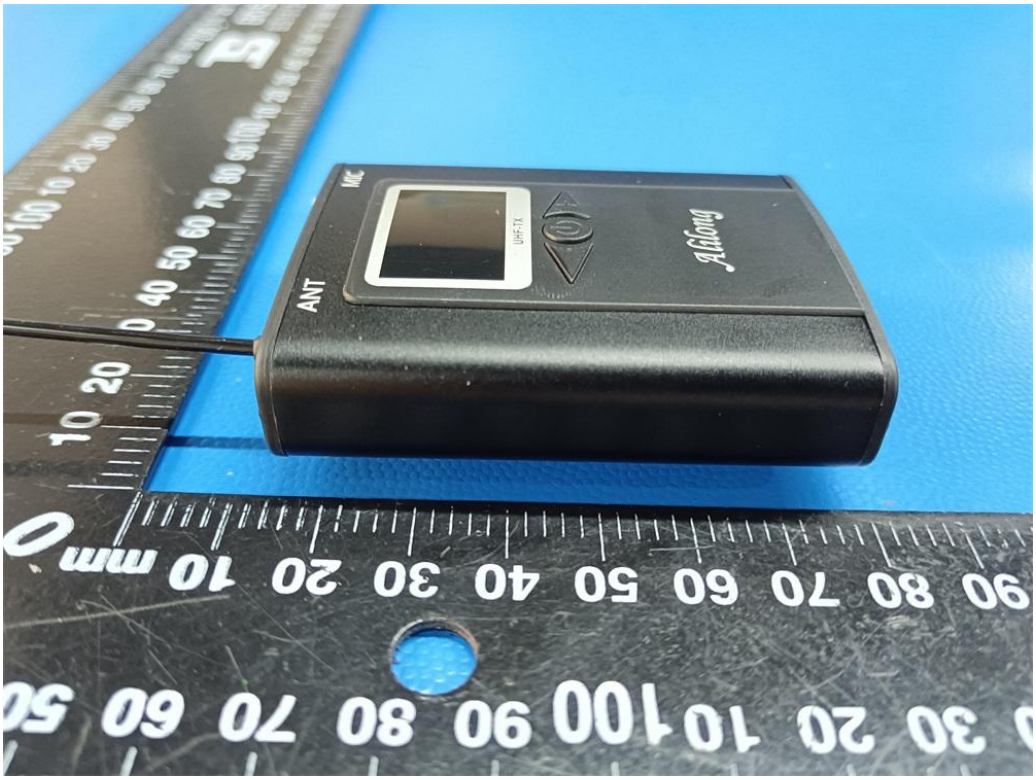


Fig. 9

6.2. Internal photos of the EUT

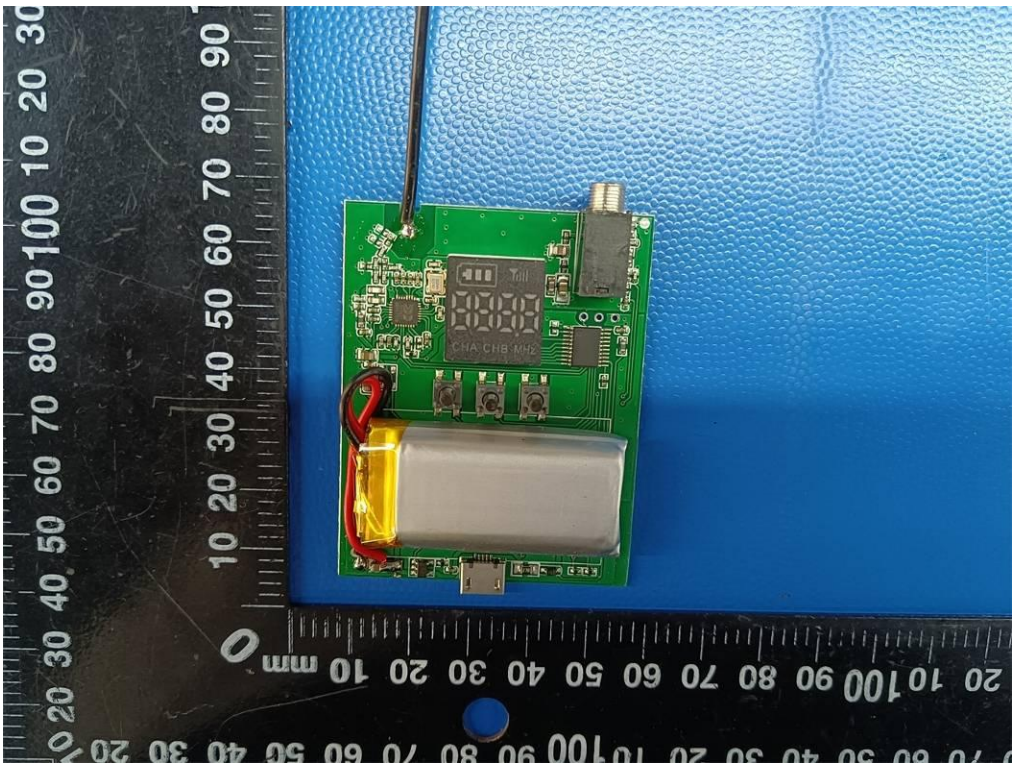


Fig. 10

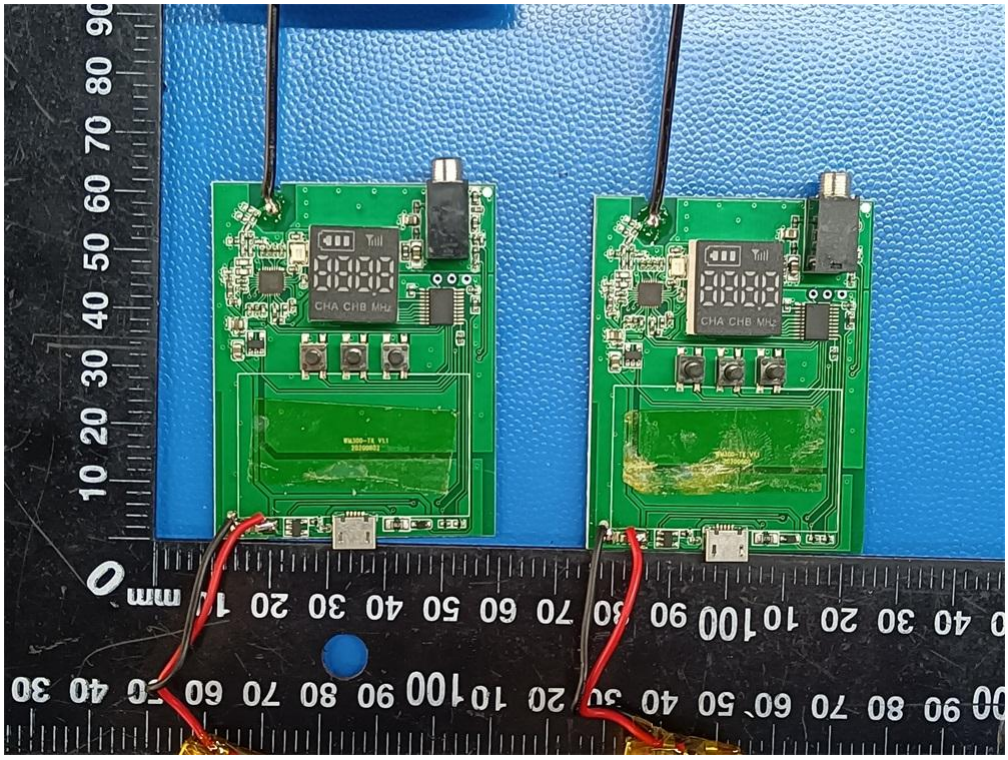


Fig. 11

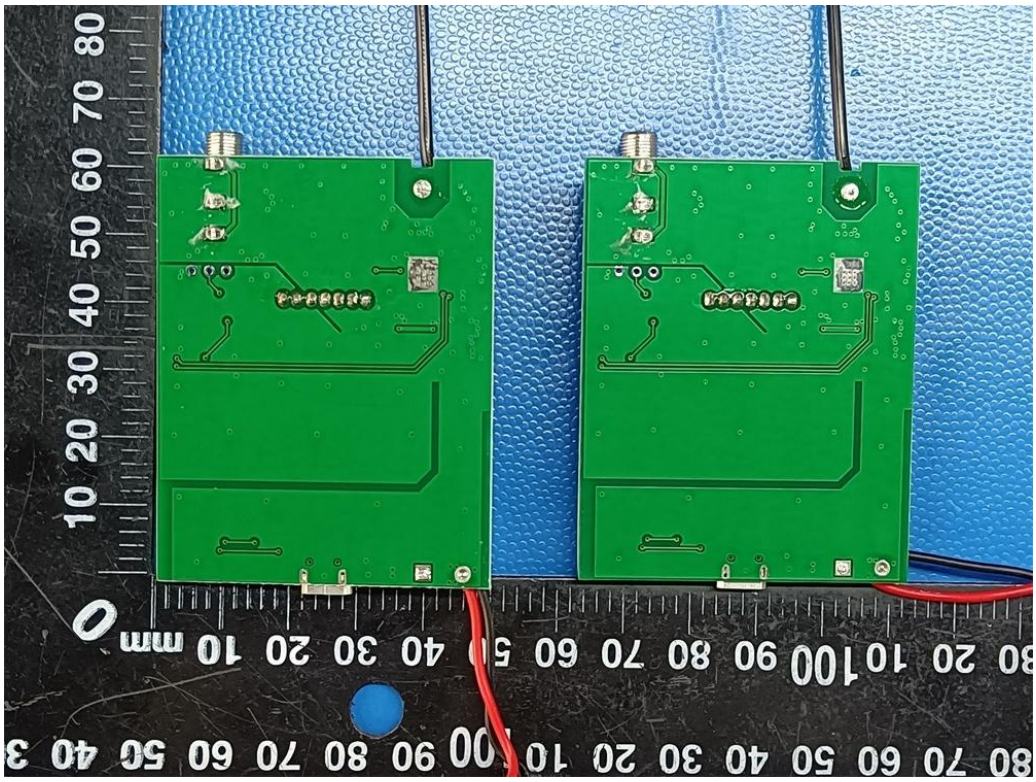


Fig. 12

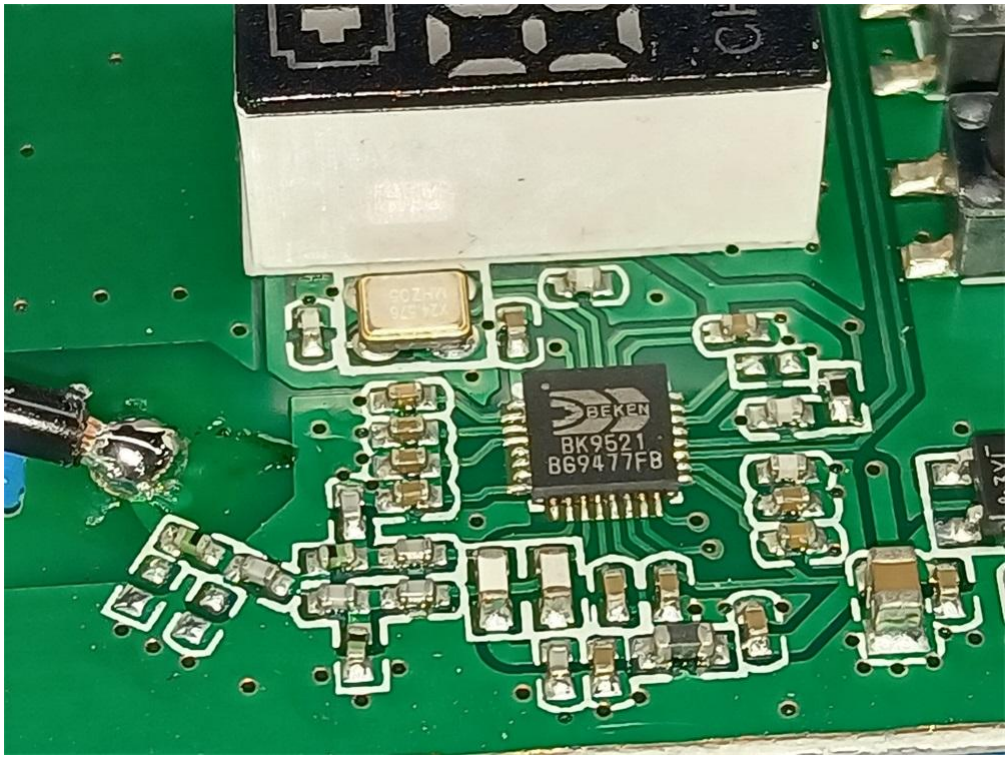


Fig. 13

Fig. 14

.....End of Report.....