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

TEST REPORT
FCC Rules and Regulations Part PART 15.249

Report Reference No.:	GTS20201103017-1-1
FCC ID:	2AX2A-USB-102
Compiled by (position+printed name+signature)..:	File administrators Jimmy Wang
Supervised by (position+printed name+signature)..:	Test Engineer Aaron Tan
Approved by (position+printed name+signature)..:	Manager Jason Hu
Date of issue.....:	Nov.03, 2020
Testing 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, China
Applicant's name.....:	**Enping Karonl Electronic Technology Co., Ltd.**
Address .....:	Second Floor, Third Floor, Electronic Building, Dongan Industrial Zone, Enping City,China
Standard .....:	**FCC Rules and Regulations Part PART 15.249**

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Test item description .....:	wireless microphone
Trade Mark .....:	N/A
Manufacturer.....:	**Enping Karonl Electronic Technology Co., Ltd.**
Model/Type reference.....:	USB-102
Listed Models .....:	VOCOPRO-USB-CAST-(H,B,C),USB-102,USB-101T,USB-102T,USB-101M, USB-102M,U-801,802,K-910,K-930,K-931,K-220U,K-220S,ST-08,BT-168, K-711,K-712,K-8800A,K-84000A,k-889A,A6,K-366,K-661,K-662,K-2800
Modulation .....:	FM
Frequency.....	902-928MHz
Ratings .....:	DC 3.0 V From Battery
Result.....:	**PASS**

TEST REPORT

Test Report No. :	GTS20201103017-1-1	Nov.03, 2020 Date of issue

Equipment under Test	:	wireless microphone
Model /Type	:	USB-102
Listed Models	:	VOCOPRO-USB-CAST-(H,B,C),USB-102,USB-101T,USB-102T, USB-101M,USB-102M,U-801,802,K-910,K-930,K-931,K-220U, K-220S,ST-08,BT-168,K-711,K-712,K-8800A,K-84000A,k-889A, A6,K-366,K-661,K-662,K-2800
Applicant	:	**Enping Karonl Electronic Technology Co., Ltd.**
Address	:	Second Floor, Third Floor, Electronic Building, Dongan Industrial Zone, Enping City,China
Manufacturer	:	**Enping Karonl Electronic Technology Co., Ltd.**
Address	:	Second Floor, Third Floor, Electronic Building, Dongan Industrial Zone, Enping City,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.

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1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.249: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

ANSI C63.10:2013 : American National Standard for Testing Unlicensed Wireless Devices

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 40GHz Range of 9 kHz to 40GHz

2 . SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Oct.16, 2020
Testing commenced on	:	Oct.16, 2020
Testing concluded on	:	Nov.03, 2020

2.2. Product Description

Name of EUT	wireless microphone
Model Number	USB-102
List Model:	VOCOPRO-USB-CAST-(H,B,C),USB-102,USB-101T,USB-102T, USB-101M,USB-102M,U-801,802,K-910,K-930,K-931,K-220U, K-220S,ST-08,BT-168,K-711,K-712,K-8800A,K-84000A,k-889A, A6,K-366,K-661,K-662,K-2800
Power Rating	DC 3.0V From Battery
Sample ID:	GTS20201103017-1-1-1#(Engineer sample) GTS20201103017-1-1-2#(Normal sample)
Operation frequency	902-928MHz
Modulation	FM
Antenna Type	Internal antenna
Antenna Gain	0dB(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 3.0 V

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

This is a wireless microphone

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

2.5. EUT operation mode

The Applicant use Key to control the EUT for staying in continuous transmitting and receiving mode for testing .There is 100 channels provided to the EUT. Channel Low,Mid and High was selected to test.

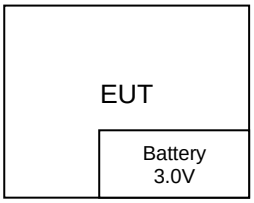
Channel A		Channel B	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	902.10	00	915.10

01	902.35	01	915.35
⋮	⋮	⋮	⋮
25	908.35	25	921.35
⋮	⋮	⋮	⋮
48	914.10	48	927.10
49	914.35	49	927.35

Test frequency:

Channel A		Channel B	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low	902.10	Low	915.10
Mid	908.35	Mid	921.35
High	914.35	High	927.35

2.6. Block Diagram of Test Setup



2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. TEST FACILITY

Test Firm : 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

3.2. Environmental conditions

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

Radiated Emission:

Temperature:	25 ° C
Humidity:	45 %
Atmospheric pressure:	950-1050mbar

Conducted testing：

Temperature:	25 ° C
Humidity:	44 %
Atmospheric pressure:	950-1050mbar

3.3. Summary of measurement results

FCC PART 15.249		
FCC Part 15.249(a)	Field Strength of Fundamental	PASS
FCC Part 15.209	Spurious Emission	PASS
FCC Part 15.209	Band edge	PASS
FCC Part 15.215(c)	20dB bandwidth	PASS
FCC Part 15.207	Conducted Emission	N/A
FCC Part 15.203	Antenna Requirement	PASS

3.4. Statement of the 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

3.5. Equipments Used during the Test

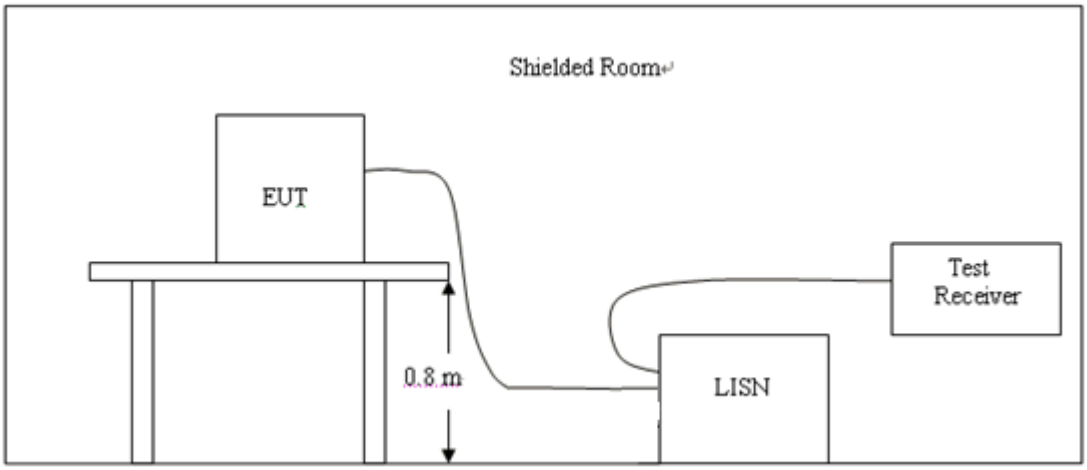
Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ENV216	3560.6550.08	2020/09/19	2021/09/18
LISN	R&S	ESH2-Z5	893606/008	2020/09/19	2021/09/18
EMI Test Receiver	R&S	ESPI3	101841-cd	2020/09/19	2021/09/18
EMI Test Receiver	R&S	ESCI7	101102	2020/09/19	2021/09/18
Spectrum Analyzer	Agilent	N9020A	MY48010425	2020/09/19	2021/09/18
Spectrum Analyzer	R&S	FSV40	100019	2020/09/19	2021/09/18
Vector Signal generator	Agilent	N5181A	MY49060502	2020/09/19	2021/09/18
Signal generator	Agilent	E4421B	3610AO1069	2020/09/19	2021/09/18
Climate Chamber	ESPEC	EL-10KA	A20120523	2020/09/19	2021/09/18
Controller	EM Electronics	Controller EM 1000	N/A	N/A	N/A
Horn Antenna	Schwarzbeck	BBHA 9120D	01622	2020/09/19	2021/09/18
Active Loop Antenna	Beijing Da Ze Technology Co.,Ltd.	ZN30900C	15006	2020/10/11	2021/10/10
Bilog Antenna	Schwarzbeck	VULB9163	000976	2020/05/26	2021/05/25
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2020/09/19	2021/09/18
Amplifier	Schwarzbeck	BBV 9743	#202	2020/09/19	2021/09/18
Amplifier	Schwarzbeck	BBV9179	9719-025	2020/09/19	2021/09/18
Amplifier	EMCI	EMC051845B	980355	2020/09/19	2021/09/18
Temperature/Humidity Meter	Gangxing	CTH-608	02	2020/09/19	2021/09/18
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	KL142031	2020/09/19	2021/09/18
High-Pass Filter	K&L	41H10-1375/U12750-O/O	KL142032	2020/09/19	2021/09/18
RF Cable(below 1GHz)	HUBER+SUHNER	RG214	RE01	2020/09/19	2021/09/18
RF Cable(above 1GHz)	HUBER+SUHNER	RG214	RE02	2020/09/19	2021/09/18
Data acquisition card	Agilent	U2531A	TW53323507	2020/09/19	2021/09/18
Power Sensor	Agilent	U2021XA	MY5365004	2020/09/19	2021/09/18
Test Control Unit	Tonscend	JS0806-1	178060067	2020/06/19	2021/06/18
Automated filter bank	Tonscend	JS0806-F	19F8060177	2020/06/19	2021/06/18
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 C63.10.
2, Support equipment, if needed, was placed as per ANSI C63.10.
3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received 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.

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.		

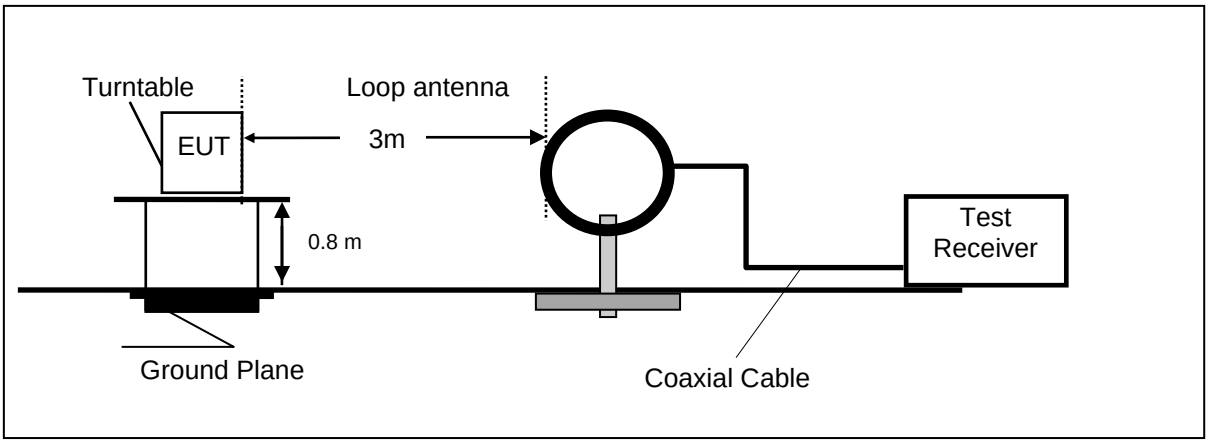
TEST RESULTS

The EUT is powered by Battery,So this test item is not applicable for the EUT.

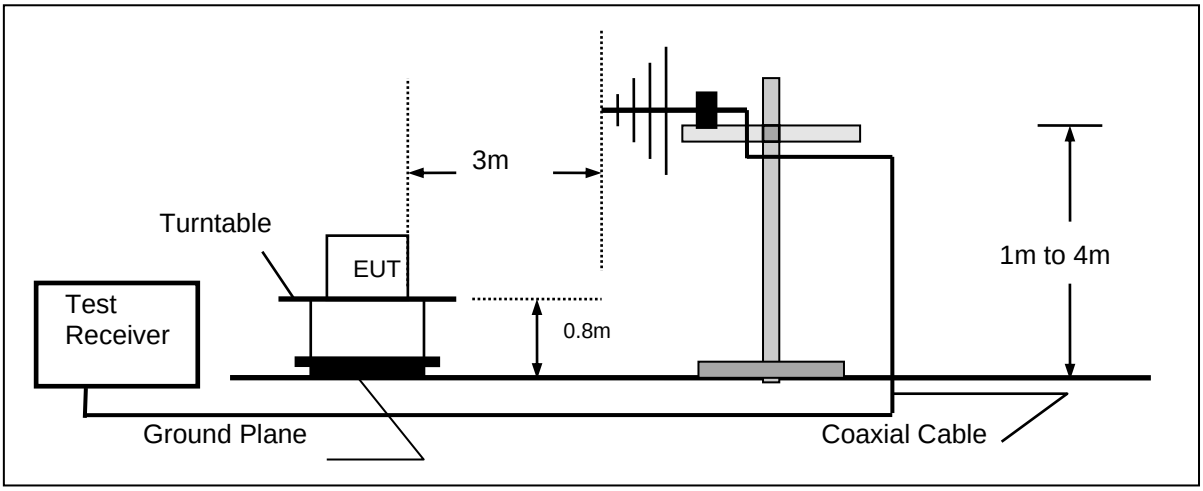
4.2. Radiated Emission and Band Edges

TEST CONFIGURATION

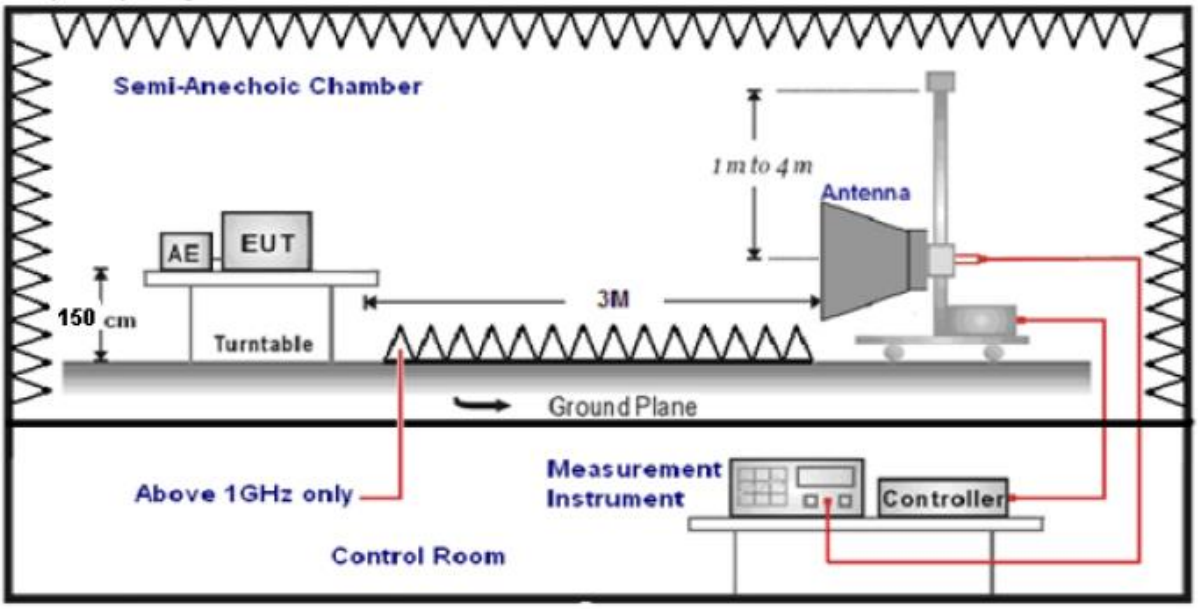
Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 9 KHz –25GHz.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. The EUT minimum operation frequency was 26MHz and maximum operation frequency was 1910MHz.so radiated emission test frequency band from 9KHz to 25GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

Transd=AF +CL-AG

RADIATION LIMIT

According 15.249, the field strength of emissions from intentional radiators operated within 902MHz-928 MHz shall not exceed 94dBμV/m (50mV/m):

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST RESULTS

Remark:

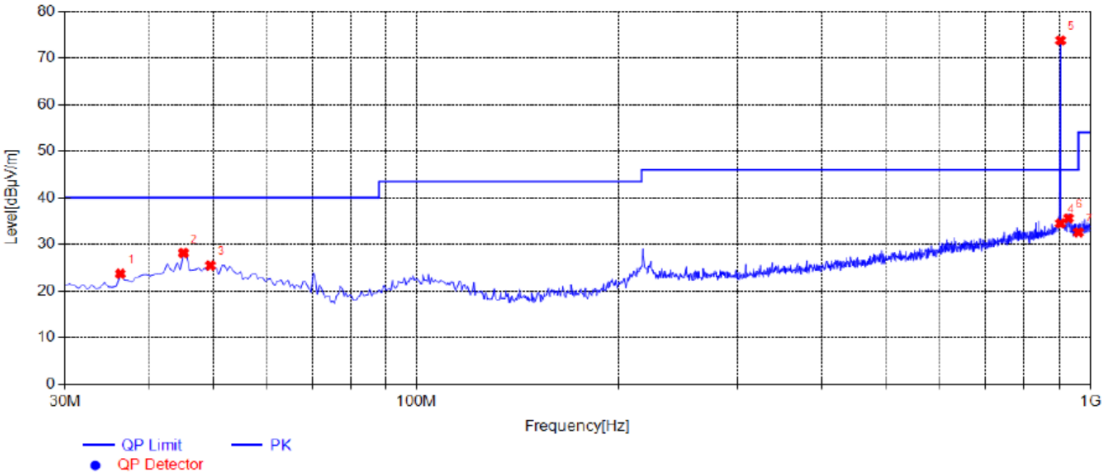
1. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

For 30MHz-1GHz

Channel A

Low Channel

Horizontal



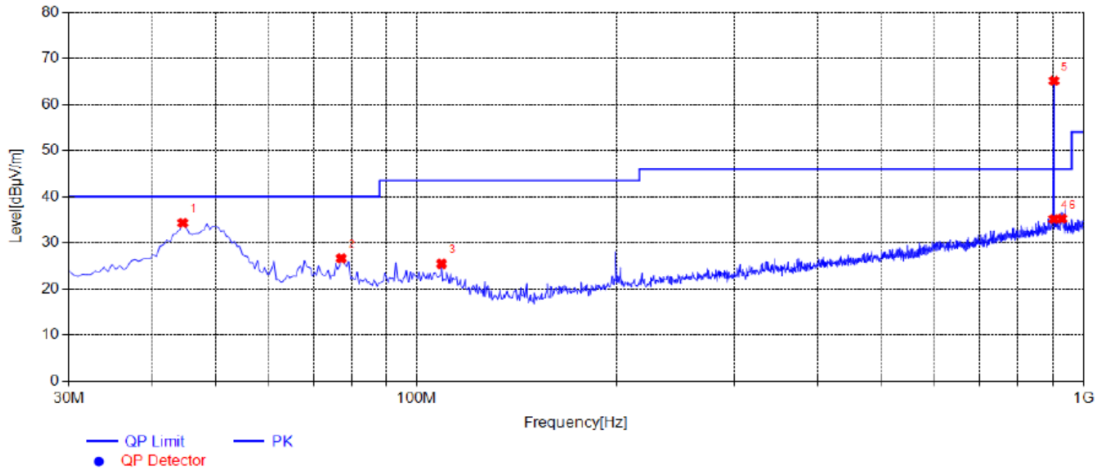
Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	36.3050	32.85	-9.16	23.69	40.00	16.31	100	130	PK	Horizonta	PASS
2	45.0350	34.65	-6.51	28.14	40.00	11.86	100	104	PK	Horizonta	PASS
3	49.4000	31.99	-6.51	25.48	40.00	14.52	100	28	PK	Horizonta	PASS
4	902.0300	30.83	3.67	34.50	46.00	11.50	100	66	PK	Horizonta	PASS
5	902.5150	70.09	3.66	73.75	94.00	20.25	100	360	PK	Horizonta	PASS
6	928.2200	31.16	4.45	35.61	46.00	10.39	100	35	PK	Horizonta	PASS
7	960.2300	30.30	2.27	32.57	54.00	21.43	100	137	PK	Horizonta	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



Suspected List

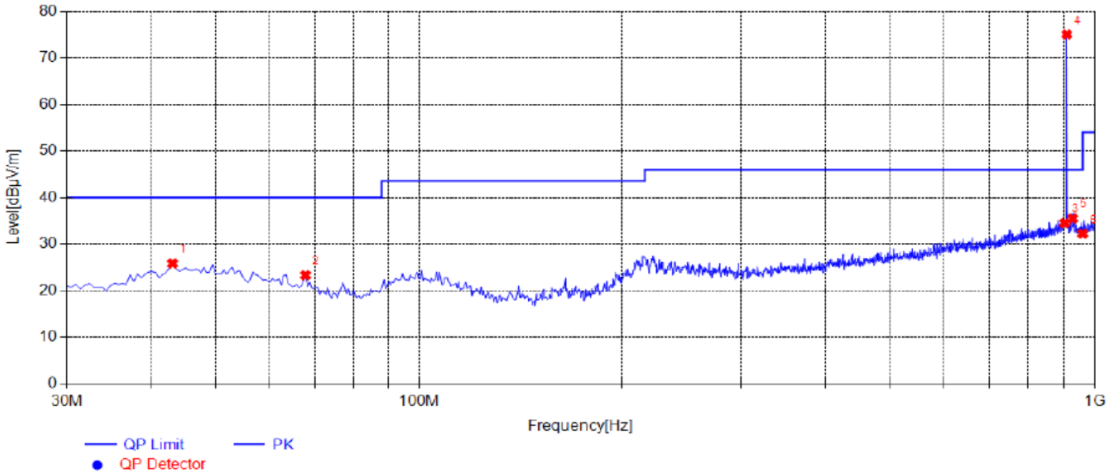
NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	44.5500	40.82	-6.52	34.30	40.00	5.70	100	41	PK	Vertical	PASS
2	77.0450	36.29	-9.66	26.63	40.00	13.37	100	194	PK	Vertical	PASS
3	109.0550	34.05	-8.60	25.45	43.50	18.05	100	63	PK	Vertical	PASS
4	902.0300	31.45	3.67	35.12	46.00	10.88	100	352	PK	Vertical	PASS
5	902.5150	61.48	3.66	65.14	94.00	28.86	100	251	PK	Vertical	PASS
6	928.2200	30.77	4.45	35.22	46.00	10.78	100	56	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).

Mid Channel

Horizontal



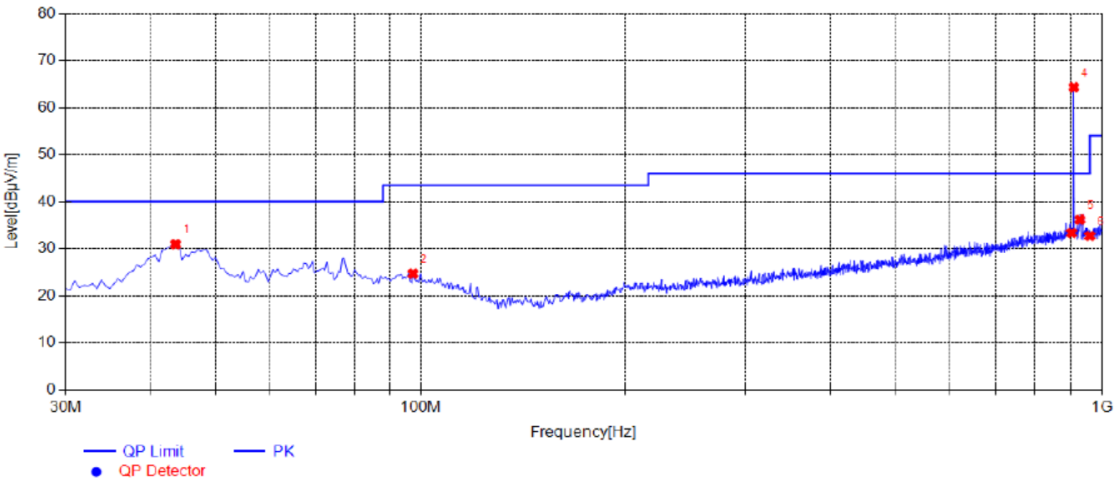
Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	43.0950	32.36	-6.56	25.80	40.00	14.20	100	113	PK	Horizonta	PASS
2	67.8300	32.66	-9.34	23.32	40.00	16.68	100	308	PK	Horizonta	PASS
3	902.0300	30.86	3.67	34.53	46.00	11.47	100	42	PK	Horizonta	PASS
4	908.8200	71.48	3.54	75.02	94.00	18.98	100	317	PK	Horizonta	PASS
5	928.2200	31.04	4.45	35.49	46.00	10.51	100	185	PK	Horizonta	PASS
6	960.2300	29.94	2.27	32.21	54.00	21.79	100	295	PK	Horizonta	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



Suspected List

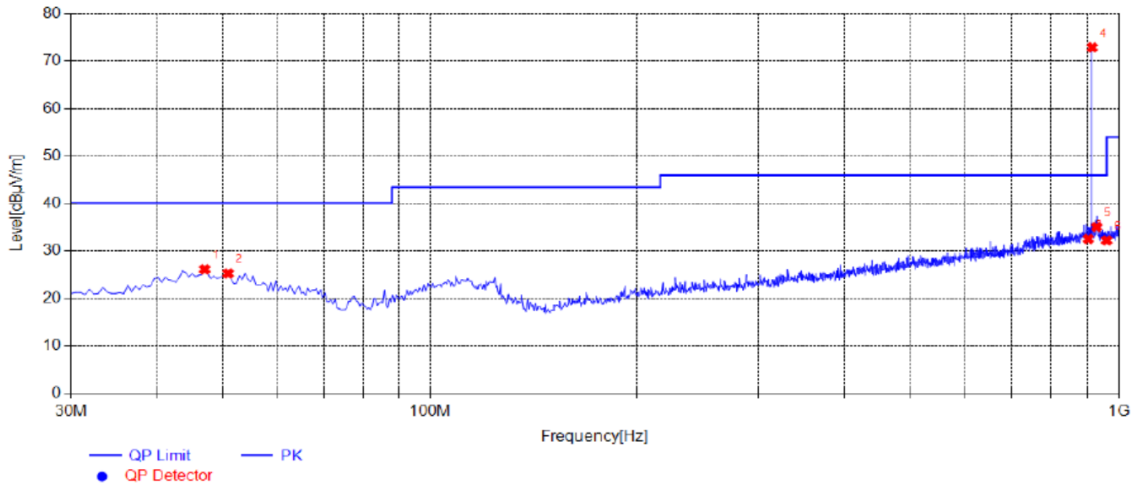
NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	43.5800	37.51	-6.55	30.96	40.00	9.04	100	175	PK	Vertical	PASS
2	97.4150	33.55	-8.85	24.70	43.50	18.80	100	67	PK	Vertical	PASS
3	902.0300	29.67	3.67	33.34	46.00	12.66	100	159	PK	Vertical	PASS
4	908.8200	60.79	3.54	64.33	94.00	29.67	100	236	PK	Vertical	PASS
5	928.2200	31.72	4.45	36.17	46.00	9.83	100	298	PK	Vertical	PASS
6	960.2300	30.45	2.27	32.72	54.00	21.28	100	352	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).

High Channel

Horizontal



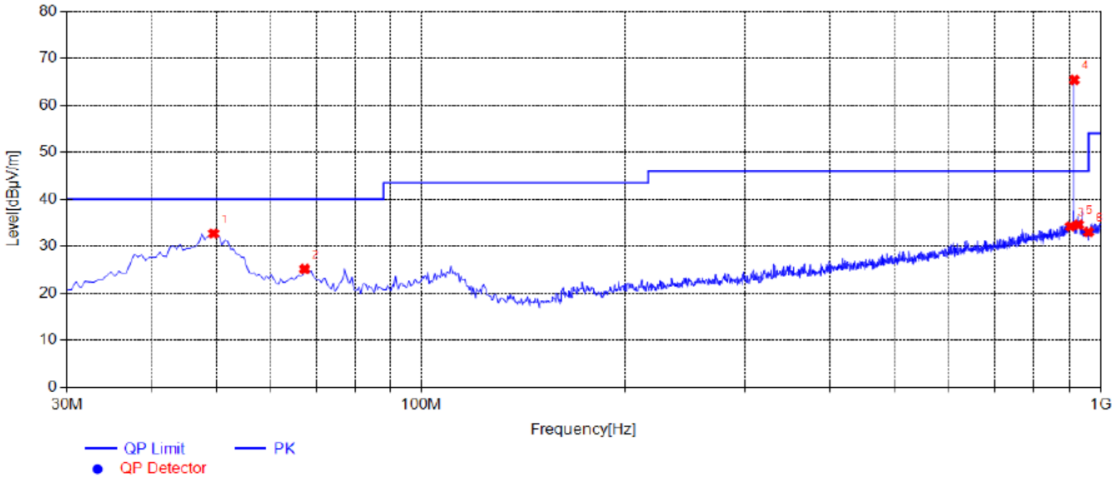
Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	46.9750	32.62	-6.52	26.10	40.00	13.90	100	337	PK	Horizonta	PASS
2	50.8550	31.92	-6.68	25.24	40.00	14.76	100	113	PK	Horizonta	PASS
3	902.0300	28.82	3.67	32.49	46.00	13.51	100	2	PK	Horizonta	PASS
4	914.6400	69.53	3.34	72.87	94.00	21.13	100	91	PK	Horizonta	PASS
5	928.2200	30.56	4.45	35.01	46.00	10.99	100	190	PK	Horizonta	PASS
6	960.2300	29.92	2.27	32.19	54.00	21.81	100	173	PK	Horizonta	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



Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	49.4000	39.22	-6.51	32.71	40.00	7.29	100	93	PK	Vertical	PASS
2	67.3450	34.57	-9.39	25.18	40.00	14.82	100	115	PK	Vertical	PASS
3	902.0300	30.51	3.67	34.18	46.00	11.82	100	273	PK	Vertical	PASS
4	914.6400	62.04	3.34	65.38	94.00	28.62	100	115	PK	Vertical	PASS
5	928.2200	30.12	4.45	34.57	46.00	11.43	100	117	PK	Vertical	PASS
6	960.2300	30.77	2.27	33.04	54.00	20.96	100	224	PK	Vertical	PASS

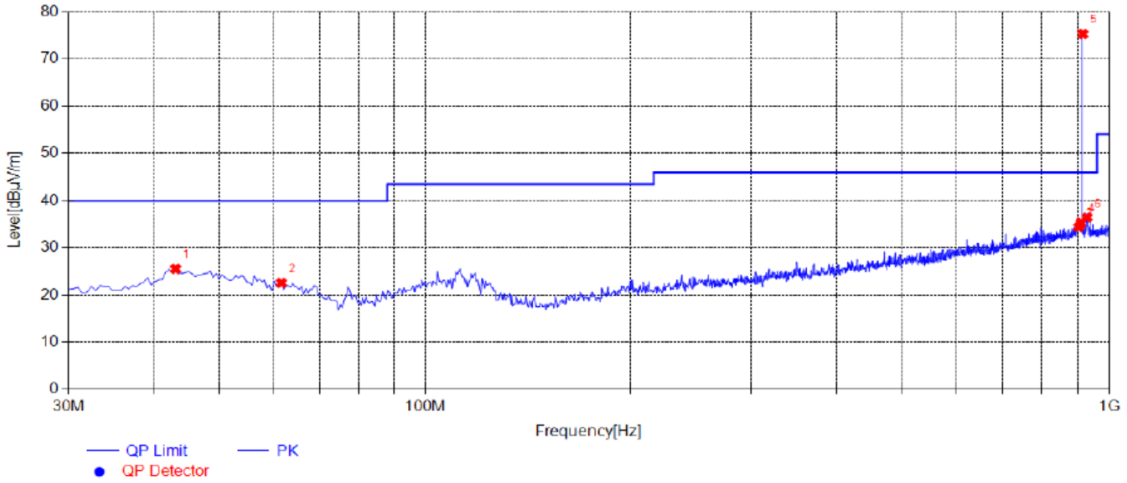
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

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

Channel B

Low Channel

Horizontal



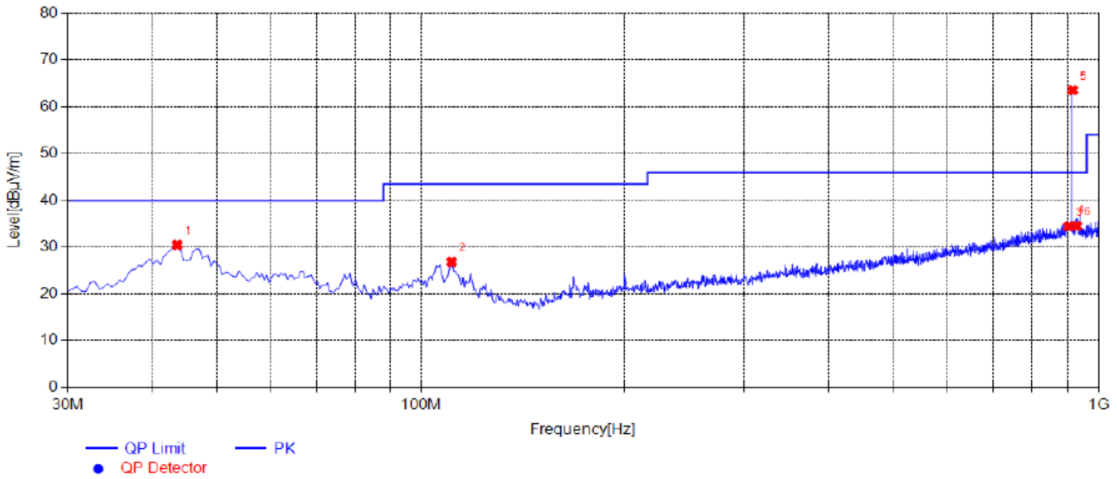
Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	43.0950	32.10	-6.56	25.54	40.00	14.46	100	341	PK	Horizonta	PASS
2	61.5250	31.38	-8.76	22.62	40.00	17.38	100	292	PK	Horizonta	PASS
3	902.0300	30.73	3.67	34.40	46.00	11.60	100	339	PK	Horizonta	PASS
4	908.3350	31.77	3.55	35.32	46.00	10.68	100	275	PK	Horizonta	PASS
5	915.1250	71.97	3.31	75.28	94.00	18.72	100	85	PK	Horizonta	PASS
6	928.2200	32.02	4.45	36.47	46.00	9.53	100	148	PK	Horizonta	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



Suspected List

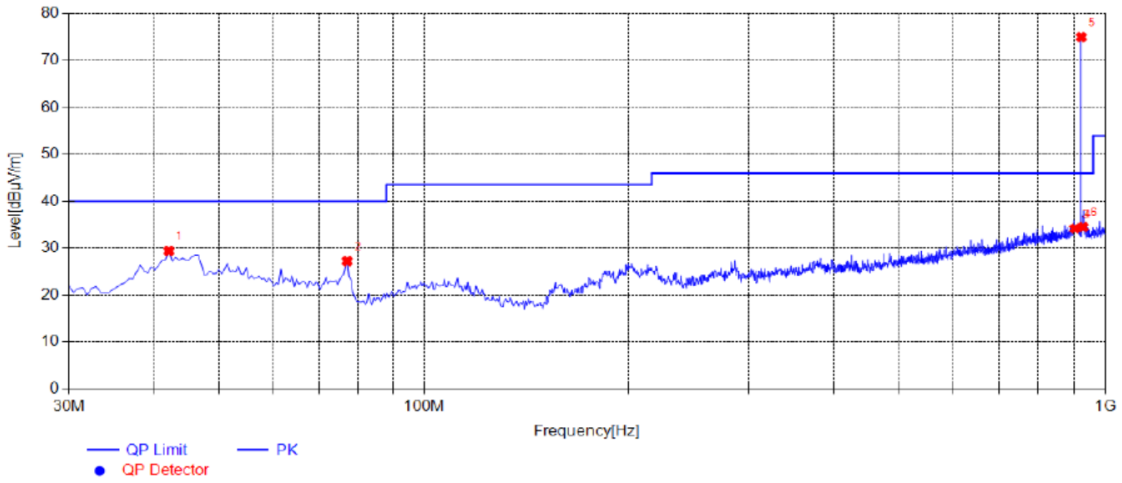
NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	43.5800	37.06	-6.55	30.51	40.00	9.49	100	21	PK	Vertical	PASS
2	110.9950	35.57	-8.73	26.84	43.50	16.66	100	58	PK	Vertical	PASS
3	902.0300	30.82	3.67	34.49	46.00	11.51	100	185	PK	Vertical	PASS
4	908.3350	31.37	3.55	34.92	46.00	11.08	100	360	PK	Vertical	PASS
5	915.1250	60.21	3.31	63.52	94.00	30.48	100	190	PK	Vertical	PASS
6	928.2200	30.13	4.45	34.58	46.00	11.42	100	310	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).

Mid Channel

Horizontal



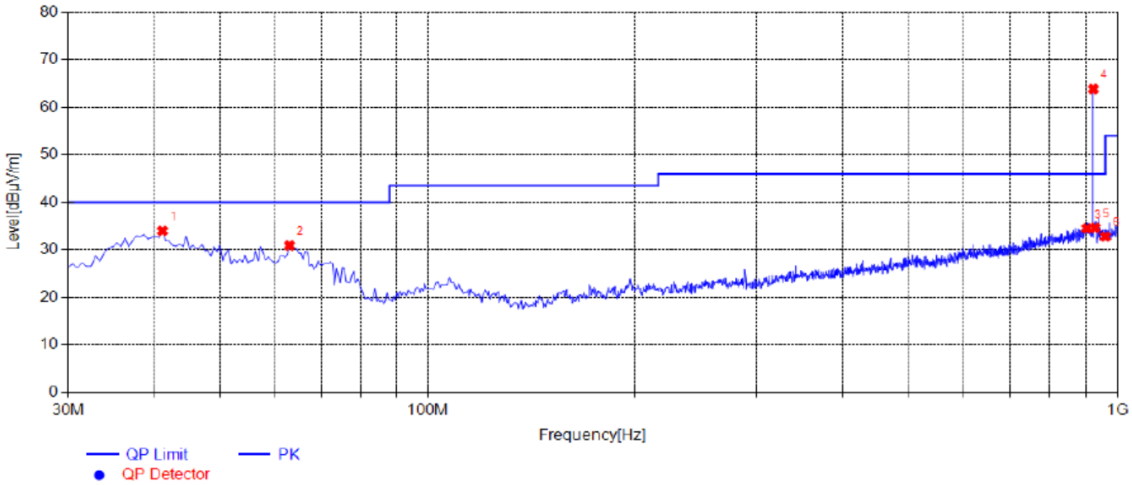
Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	42.1250	36.17	-6.76	29.41	40.00	10.59	100	301	PK	Horizonta	PASS
2	77.0450	36.87	-9.66	27.21	40.00	12.79	100	4	PK	Horizonta	PASS
3	902.0300	30.51	3.67	34.18	46.00	11.82	100	93	PK	Horizonta	PASS
4	908.3350	30.72	3.55	34.27	46.00	11.73	100	185	PK	Horizonta	PASS
5	921.4300	72.37	2.56	74.93	94.00	19.07	100	170	PK	Horizonta	PASS
6	928.2200	30.06	4.45	34.51	46.00	11.49	100	242	PK	Horizonta	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



Suspected List

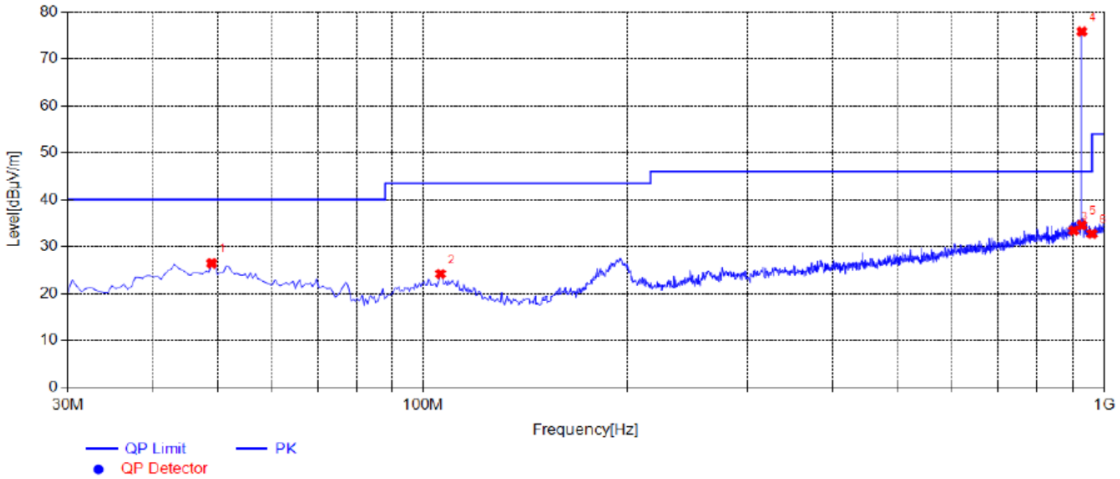
NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	41.1550	41.11	-7.15	33.96	40.00	6.04	100	348	PK	Vertical	PASS
2	62.9800	39.85	-8.94	30.91	40.00	9.09	100	293	PK	Vertical	PASS
3	902.0300	30.80	3.67	34.47	46.00	11.53	100	86	PK	Vertical	PASS
4	921.4300	61.26	2.56	63.82	94.00	30.18	100	188	PK	Vertical	PASS
5	928.2200	30.14	4.45	34.59	46.00	11.41	100	304	PK	Vertical	PASS
6	960.2300	30.50	2.27	32.77	54.00	21.23	100	44	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).

High Channel

Horizontal



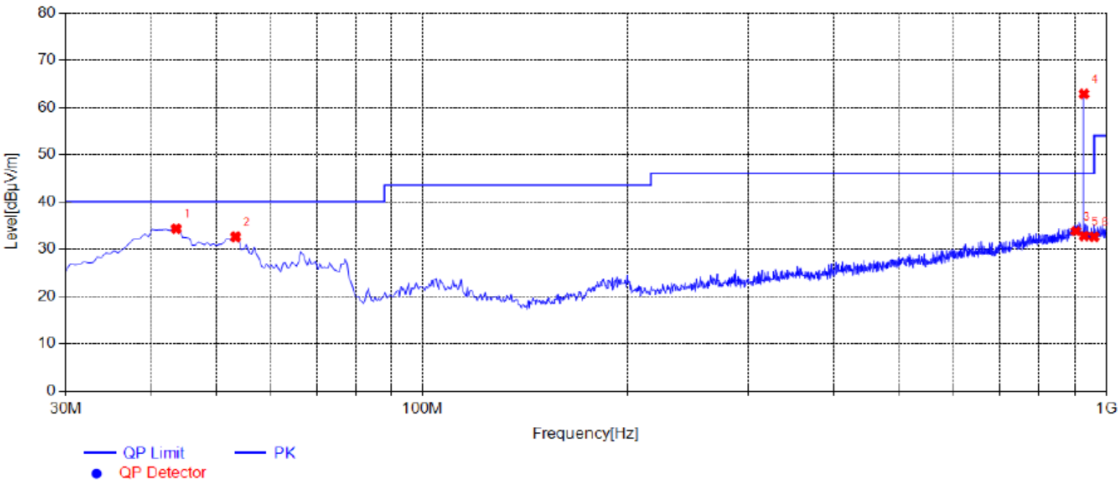
Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	48.9150	32.91	-6.45	26.46	40.00	13.54	100	44	PK	Horizonta	PASS
2	106.1450	32.19	-8.00	24.19	43.50	19.31	100	284	PK	Horizonta	PASS
3	902.0300	29.74	3.67	33.41	46.00	12.59	100	241	PK	Horizonta	PASS
4	927.7350	71.66	4.17	75.83	94.00	18.17	100	326	PK	Horizonta	PASS
5	928.2200	30.13	4.45	34.58	46.00	11.42	100	32	PK	Horizonta	PASS
6	960.2300	30.46	2.27	32.73	54.00	21.27	100	319	PK	Horizonta	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



Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	43.5800	40.88	-6.55	34.33	40.00	5.67	100	38	PK	Vertical	PASS
2	53.2800	39.44	-6.86	32.58	40.00	7.42	100	110	PK	Vertical	PASS
3	902.0300	30.14	3.67	33.81	46.00	12.19	100	204	PK	Vertical	PASS
4	927.7350	58.72	4.17	62.89	94.00	31.11	100	272	PK	Vertical	PASS
5	928.2200	28.28	4.45	32.73	46.00	13.27	100	76	PK	Vertical	PASS
6	960.2300	30.31	2.27	32.58	54.00	21.42	100	283	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).

For 1GHz to 25GHz
Chanel A
Low Channel

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	58.46	-9.1	49.36	74	-24.64	peak
1240	43.63	-9.1	34.53	54	-19.47	AVG
1804.2	61.98	-8.75	53.23	74	-20.77	peak
1804.2	48.12	-8.75	39.37	54	-14.63	AVG
2706.3	57.07	-4.03	53.04	74	-20.96	peak
2706.3	44.33	-4.03	40.3	54	-13.7	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	59.56	-9.1	50.46	74	-23.54	peak
1240	44.69	-9.1	35.59	54	-18.41	AVG
1804.2	63.18	-8.75	54.43	74	-19.57	peak
1804.2	46.37	-8.75	37.62	54	-16.38	AVG
2706.3	58.28	-4.03	54.25	74	-19.75	peak
2706.3	43.08	-4.03	39.05	54	-14.95	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Mid Channel

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	58.42	-9.08	49.34	74	-24.66	peak
1240	43.63	-9.08	34.55	54	-19.45	AVG
1816.7	62.72	-8.79	53.93	74	-20.07	peak
1816.7	47.58	-8.79	38.79	54	-15.21	AVG
2725.05	56.89	-4.05	52.84	74	-21.16	peak
2725.05	45.01	-4.05	40.96	54	-13.04	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	59.29	-9.08	50.21	74	-23.79	peak
1240	44.35	-9.08	35.27	54	-18.73	AVG
1816.7	62.89	-8.79	54.1	74	-19.9	peak
1816.7	45.85	-8.79	37.06	54	-16.94	AVG
2725.05	59.28	-4.05	55.23	74	-18.77	peak
2725.05	42.98	-4.05	38.93	54	-15.07	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

High Channel

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	58.49	-9.08	49.41	74	-24.59	peak
1240	43.63	-9.08	34.55	54	-19.45	AVG
1828.7	62.71	-8.79	53.92	74	-20.08	peak
1828.7	47.57	-8.79	38.78	54	-15.22	AVG
2743.05	57.33	-4.05	53.28	74	-20.72	peak
2743.05	44.42	-4.05	40.37	54	-13.63	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	59.45	-9.08	50.37	74	-23.63	peak
1240	44.63	-9.08	35.55	54	-18.45	AVG
1828.7	62.96	-8.79	54.17	74	-19.83	peak
1828.7	46.52	-8.79	37.73	54	-16.27	AVG
2743.05	58.63	-4.05	54.58	74	-19.42	peak
2743.05	44.08	-4.05	40.03	54	-13.97	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Chanel B
Low Channel

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	59.85	-9.08	50.77	74	-23.23	peak
1240	43.96	-9.08	34.88	54	-19.12	AVG
1830.2	63.17	-8.79	54.38	74	-19.62	peak
1830.2	47.68	-8.79	38.89	54	-15.11	AVG
2745.3	57.35	-4.05	53.3	74	-20.7	peak
2745.3	44.72	-4.05	40.67	54	-13.33	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	58.56	-9.08	49.48	74	-24.52	peak
1240	44.36	-9.08	35.28	54	-18.72	AVG
1830.2	62.71	-8.79	53.92	74	-20.08	peak
1830.2	45.86	-8.79	37.07	54	-16.93	AVG
2745.3	58.63	-4.05	54.58	74	-19.42	peak
2745.3	43.82	-4.05	39.77	54	-14.23	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Mid Channel

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	57.98	-9.08	48.9	74	-25.1	peak
1240	44.06	-9.08	34.98	54	-19.02	AVG
1842.7	62.33	-8.79	53.54	74	-20.46	peak
1842.7	48.1	-8.79	39.31	54	-14.69	AVG
2764.05	58.06	-4.05	54.01	74	-19.99	peak
2764.05	44.19	-4.05	40.14	54	-13.86	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	59.56	-9.08	50.48	74	-23.52	peak
1240	44.87	-9.08	35.79	54	-18.21	AVG
1842.7	63.42	-8.79	54.63	74	-19.37	peak
1842.7	45.68	-8.79	36.89	54	-17.11	AVG
2764.05	58.27	-4.05	54.22	74	-19.78	peak
2764.05	44.08	-4.05	40.03	54	-13.97	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

High Channel

Horizontal:

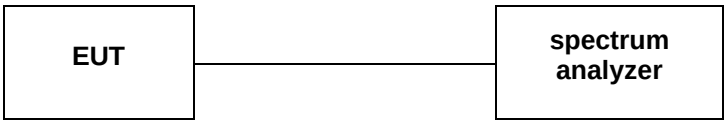
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	58.85	-9.06	49.79	74	-24.21	peak
1240	43.63	-9.06	34.57	54	-19.43	AVG
1854.7	62.79	-8.75	54.04	74	-19.96	peak
1854.7	47.58	-8.75	38.83	54	-15.17	AVG
2782.05	58.21	-4.03	54.18	74	-19.82	peak
2782.05	44.87	-4.03	40.84	54	-13.16	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1240	60.52	-9.06	51.46	74	-22.54	peak
1240	44.75	-9.06	35.69	54	-18.31	AVG
1854.7	63.81	-8.75	55.06	74	-18.94	peak
1854.7	45.26	-8.75	36.51	54	-17.49	AVG
2782.05	59.07	-4.03	55.04	74	-18.96	peak
2782.05	43.48	-4.03	39.45	54	-14.55	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

4.3. 20dB Bandwidth Measurement

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30KHz RBW and 300KHz VBW.

The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

LIMIT

N/A

TEST RESULTS

Channel A

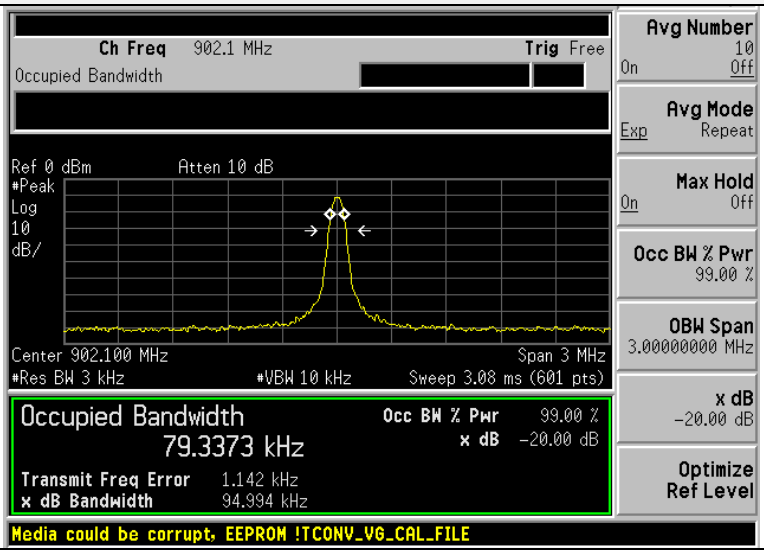
Modulation	Channel	20dB bandwidth (kHz)	Result
FM	CH00	94.994	Pass
	CH25	94.803	
	CH49	94.766	

Channel B

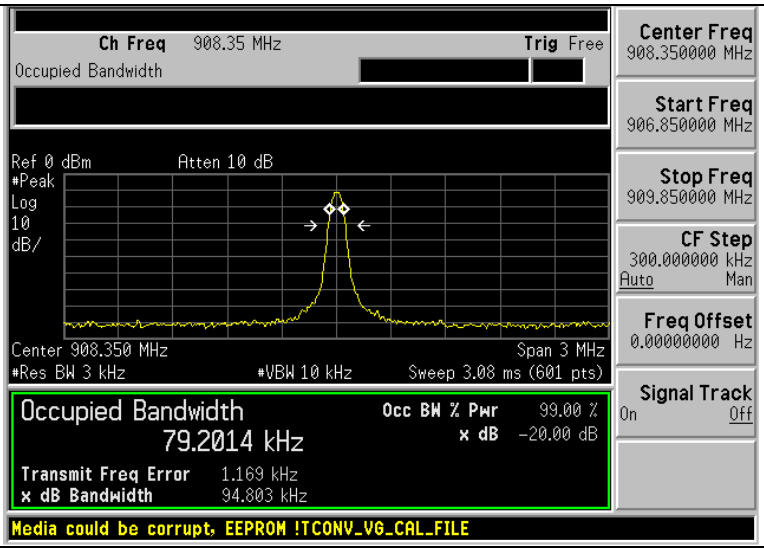
Modulation	Channel	20dB bandwidth (kHz)	Result
FM	CH00	94.955	Pass
	CH25	94.681	
	CH49	94.864	

Note: 1.The test results including the cable lose.

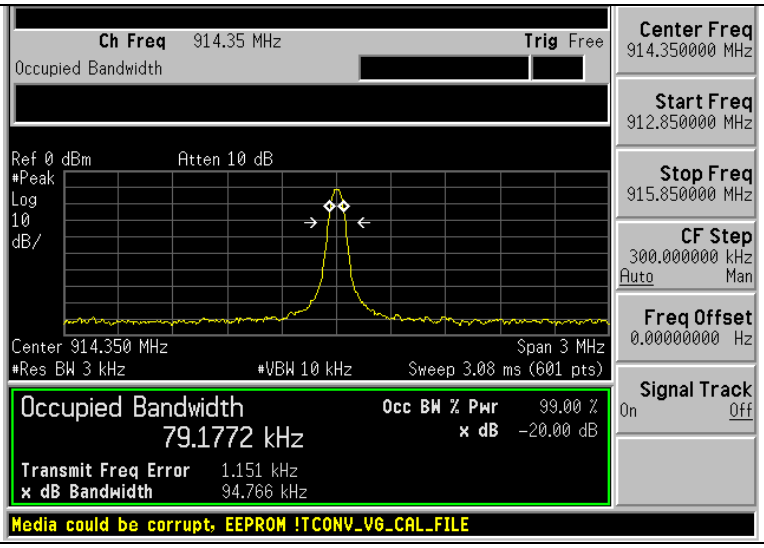
Channel A



CH00

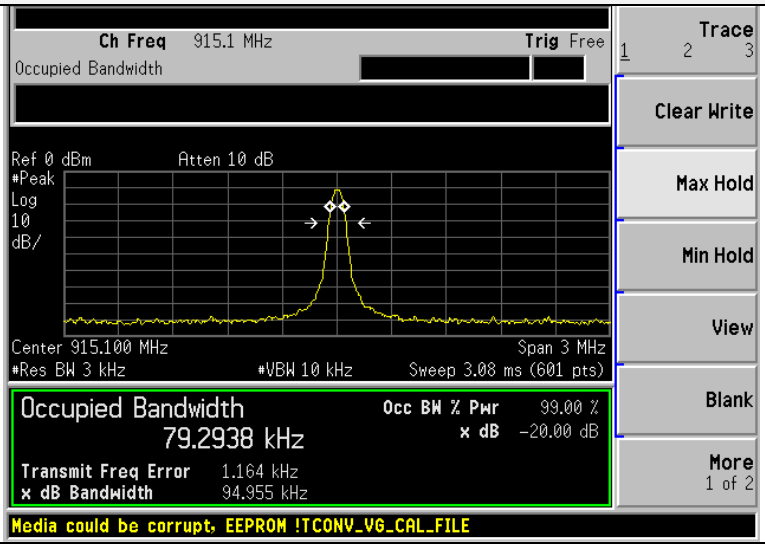


CH25

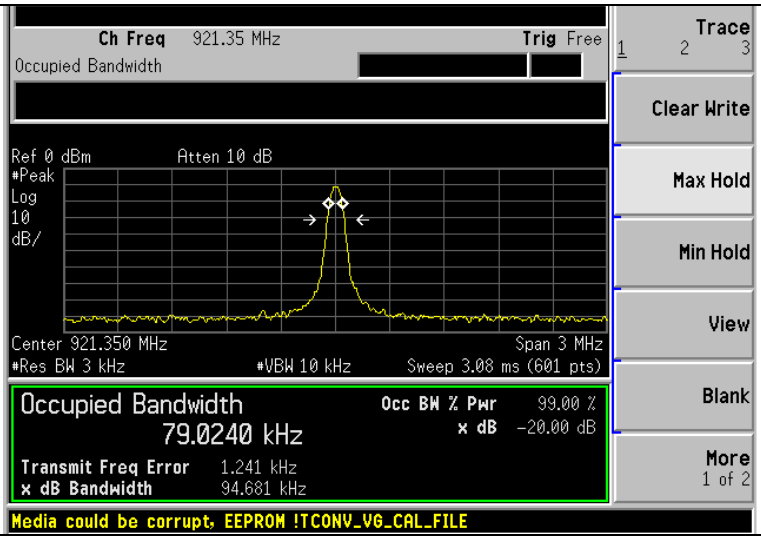


CH49

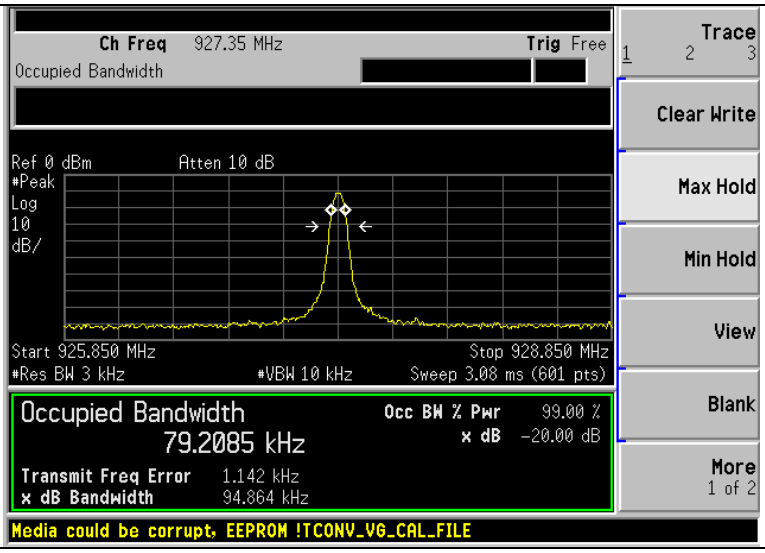
Channel B



CH00



CH25



CH49

4.4. Antenna Requirement

Standard Applicable

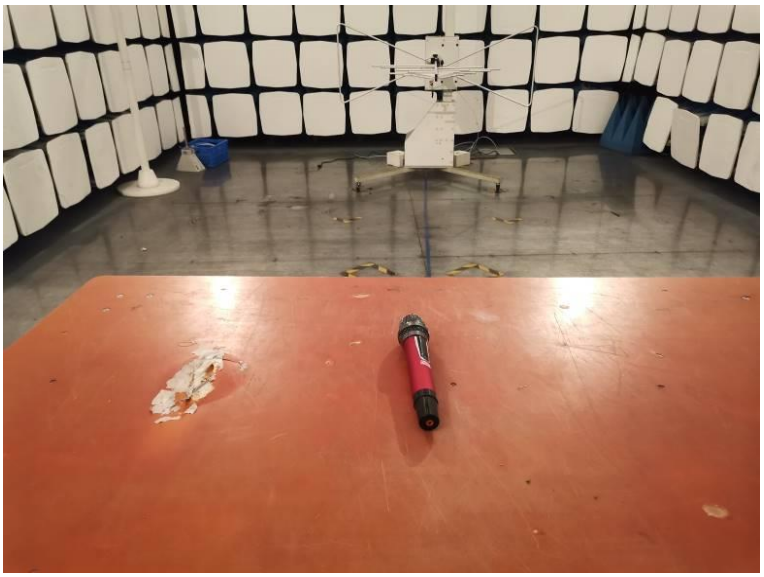
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

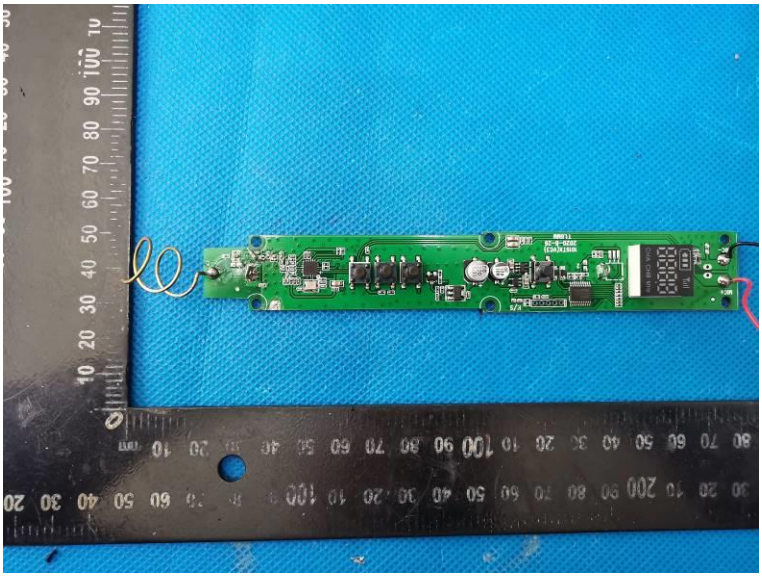
Antenna Information

The directional gains of antenna used for transmitting is 0.00 dBi.

5. Test Setup Photos of the EUT



6. Test Photos of the EUT



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