REPORT No.：SZ17080108W02A

TEST REPORT

APPLICANT	:	CUSTOM ACCESSORIES INC
PRODUCT NAME	:	Bluetooth FM Transmitter & Car charger
MODEL NAME	:	18843(C30S)/BT70/BT719S/BT74
BRAND NAME	:	GOXT
FCC ID	:	2ADMQ-18843
STANDARD(S)	:	47 CFR Part 15 Subpart C
TEST DATE	:	2017-11-08 to 2017-11-09
ISSUE DATE	:	2017-11-14

Tested by: Wang Dalong (Test Engineer)

Approved by: Peng Huarui (Supervisor)

MORLAB

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DIRECTORY

Change History		
Issue	**Date**	**Reason for change**
1.0	2017-11-14	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	CUSTOM ACCESSORIES INC
Applicant Address:	5900 AMI DRIVE RICHMOND IL 60071
Manufacturer:	SAGE HUMAN ELECTRONICS INTERNATIONAL CO.,LTD
Manufacturer Address:	401RM, 4th FLR, A Bld, Rongli Industrial Park, Miaoxi Industrial Zone, Xinhua Community, Guanlan Town, Longhua New District, Shenzhen, China 51800

1.2. Equipment Under Test (EUT) Description

Product Name:	Bluetooth FM Transmitter & Car charger
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	N/A
Software Version:	N/A
Equipment Type:	FM Transmitter
Modulation Type:	FM
Operating Frequency Range:	The frequency range used is 88.1MHz-107.9MHz (199 channels, at intervals of 0.1MHz)
Channel Number:	199(See Note1)
Antenna Type:	PCB Antenna
Antenna Gain:	0dBi

Note 1: The EUT is operating at 88.10MHz-107.9MHz; the frequencies allocated for the EUT is F(MHz)=88.1+0.1*(n-1) (1<=n<=199). The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 1 (88.1MHz), 100 (98.00MHz) and 199 (107.9MHz).

Note 2: The terminal product 18843(C30S）/BT70 /BT719S /BT74 has the same hardware and software, the same Bluetooth module. The main differences are that they have different model number.

Note 3: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.3. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No	Identity	Document Title
1	47 CFR Part 15 (10-1-15 Edition)	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result
1	15.203	Antenna Requirement	N/A	Wang Dalong	**PASS**
2	15.239(a)	Occupied Bandwidth	Nov 08, 2017	Wang Dalong	**PASS**
3	15.239(b)	Field Strength of Fundamental	Nov 08, 2017	Wang Dalong	**PASS**
4	15.239(c)	Field Strength of Unwanted Emissions	Nov 08, 2017	Wang Dalong	**PASS**
5	15.239(c)	Band Edge	Nov 08, 2017	Wang Dalong	**PASS**

Note: The tests were performed according to the method of measurements prescribed in ANSI C63.10-2013.

1.4. Environmental Conditions

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

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60
Atmospheric Pressure (kPa):	86-106

2. 47 CFR Part 15C Requirements

2.1. Antenna requirement

2.1.1. Applicable Standard

According to FCC 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

2.1.2. Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

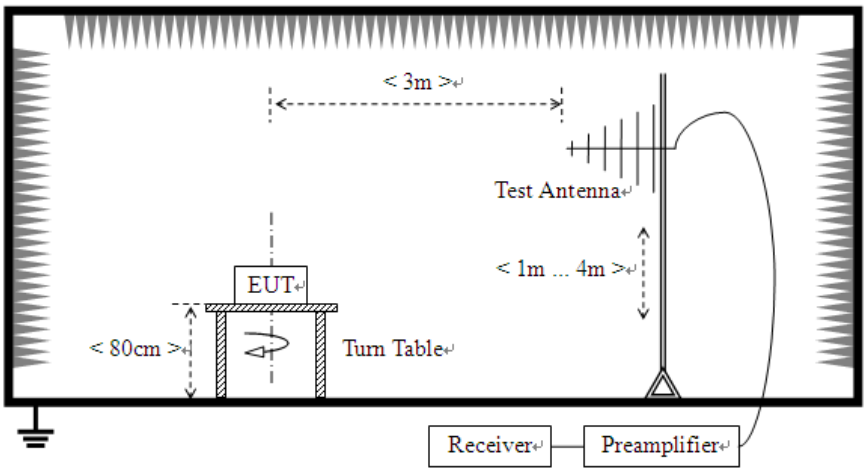
2.2. Occupied Bandwidth

2.2.1. Requirement

Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

2.2.2. Test Description

A. Test Set:



Use the following spectrum analyzer settings:

1) Set to the maximum power setting and enable the EUT transmit continuously.
2) Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW≥ 1% of the 20 dB bandwidth; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold.
3) Measure and record the results in the test report.

B. Equipments List:

Please reference ANNEX A(1.5).

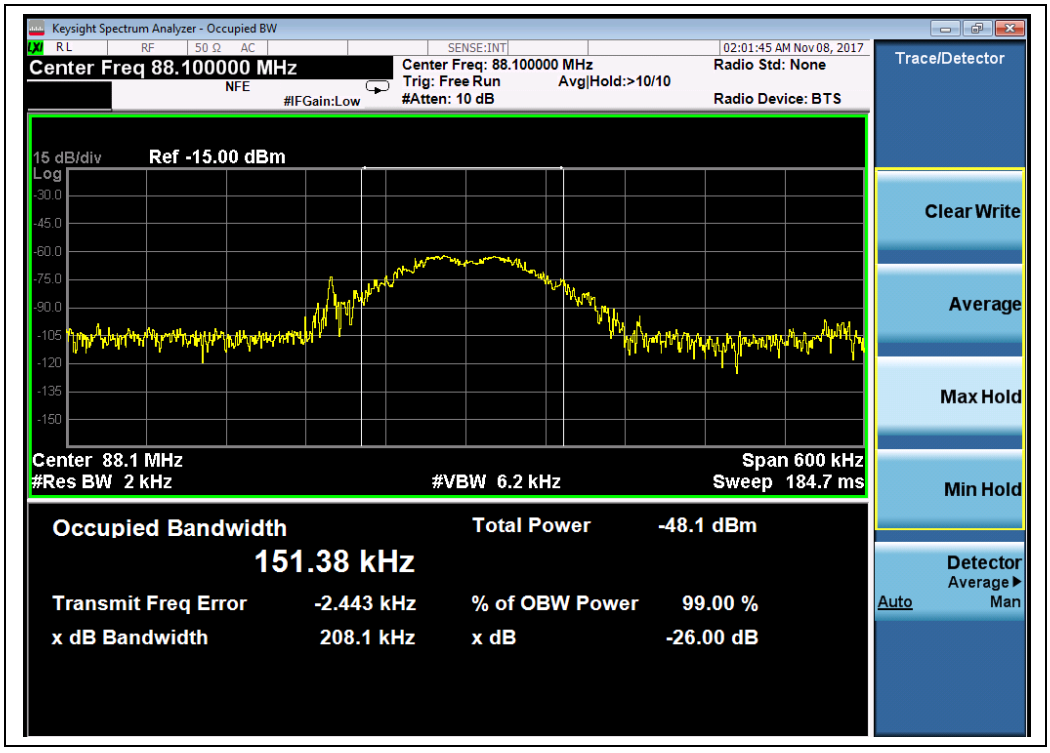
2.2.3. Test Result

The lowest, middle and highest channels are selected to perform testing to record the occupied bandwidth.

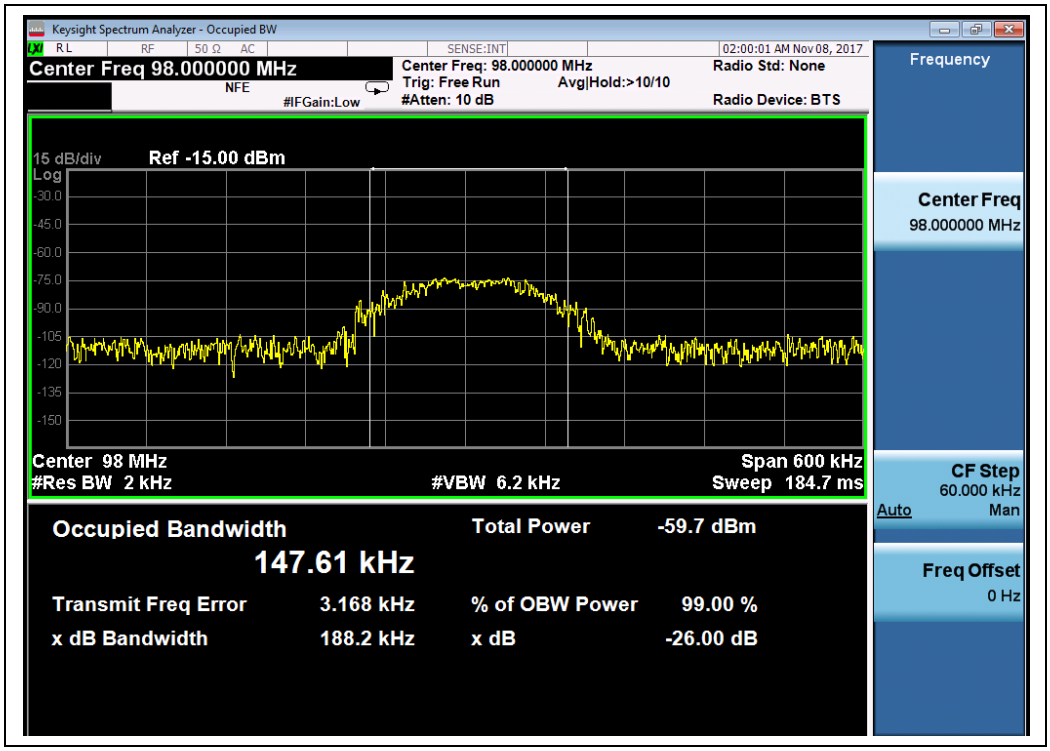
A. Test Verdict:

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit(kHz)	Refer Plot
1	88.10	151.38	200	Plot A
100	98.00	147.61	200	Plot B
199	107.90	146.22	200	Plot C

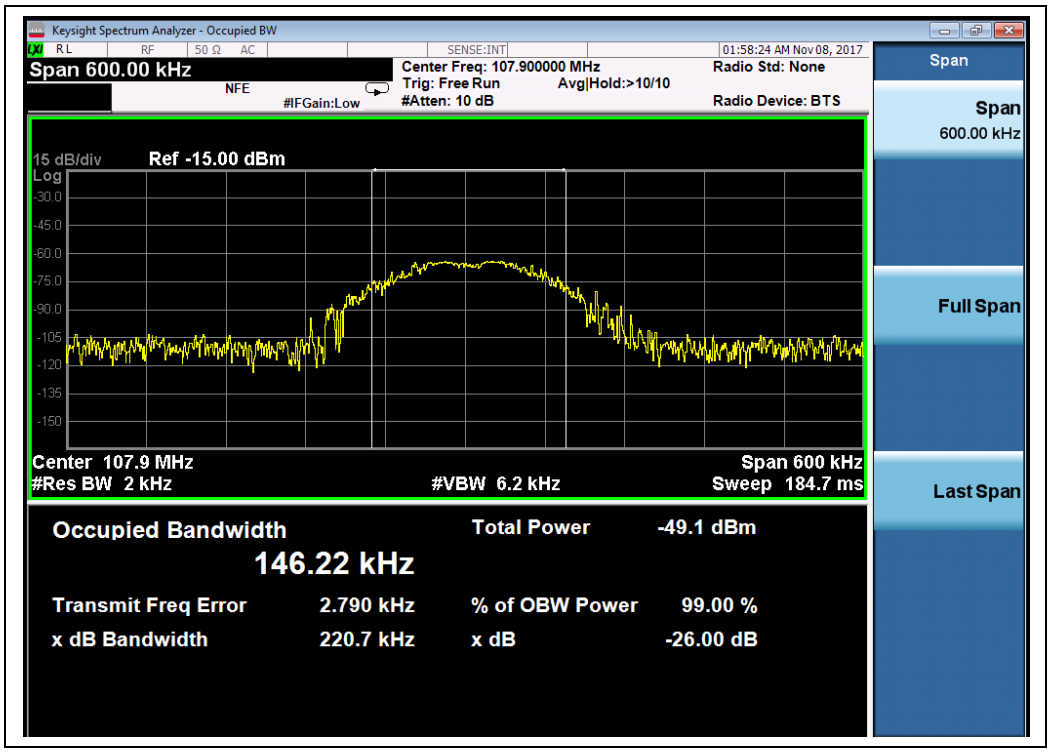
B. Test Plots



(Plot A:Channel 1, 88.1MHz)



(Plot B: Channel 100, 98.1MHz)



(Plot C: Channel 199, 107.9MHz)

2.3. Field strength of fundamental

2.3.1. Requirement

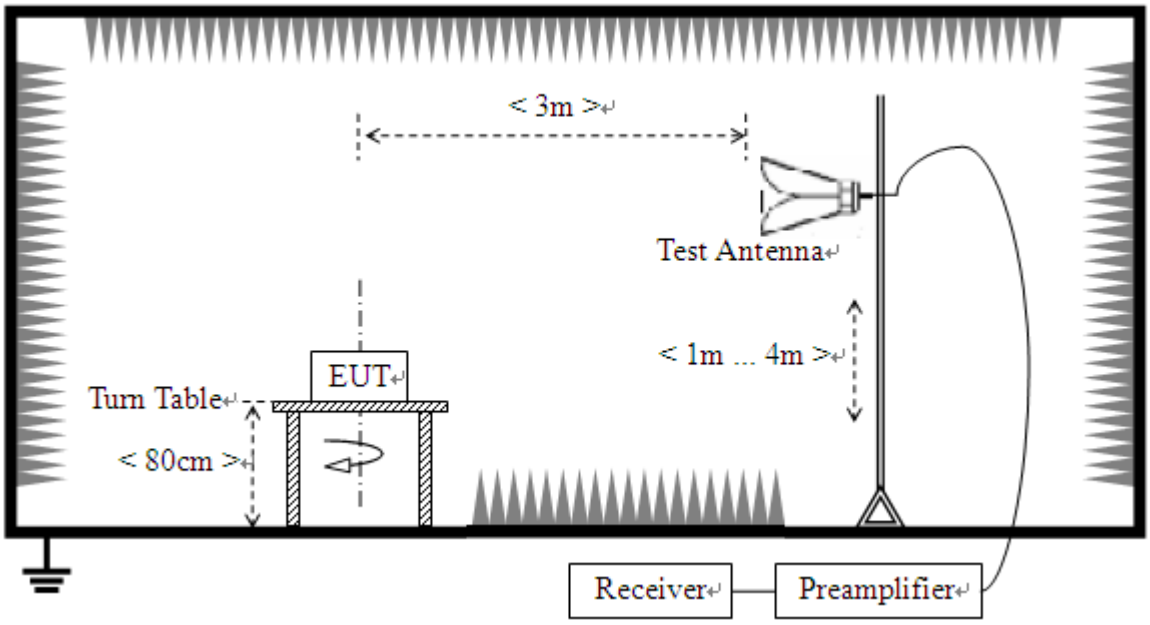
The field strength of any emissions within the permitted 200 kHz band shall not exceed 250 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

Fundamental frequency	Field strength of fundamental (dBμV/m@3m)	
88-108MHz	Peak	Average
	68	48

Limitation expressed in dBμV/m is calculated by 20log Emission Level(μV/m).

2.3.2. Test Description

A. Test Setup



The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

B. Equipments List:

Please reference ANNEX A(1.5).

2.3.3. Test Procedure

Use the following spectrum analyzer settings:
For Peak value:
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
For Average value:
Average value = Peak value + 20log(Duty cycle)

2.3.4. Test Result

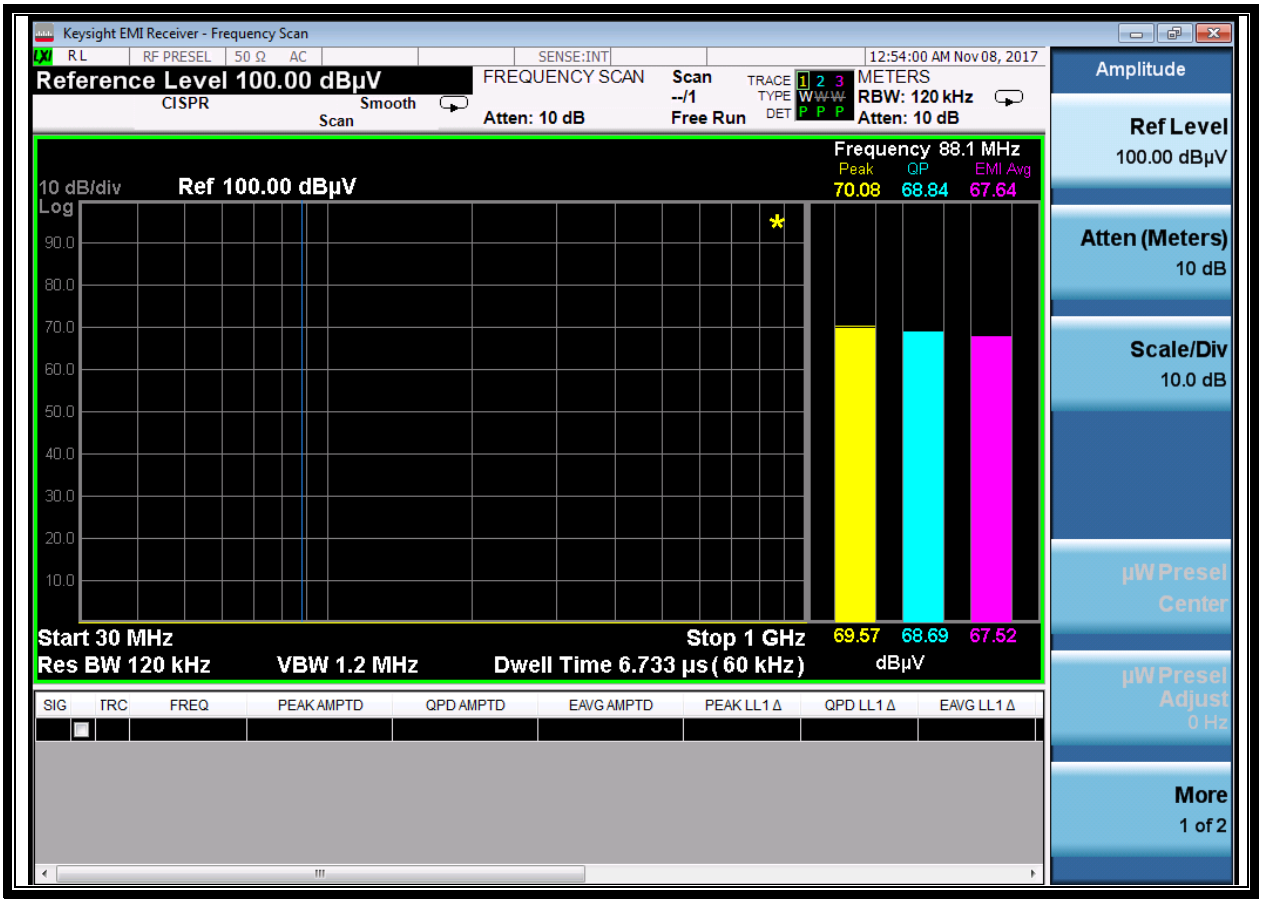
The lowest and highest channels are tested to verify Restricted Frequency Bands.

The measurement results are obtained as below:
$E\ [dB\mu V/m] = U_R + A_T + A_{Factor}\ [dB]$; $A_T = L_{Cable\ loss}\ [dB] - G_{preamp}\ [dB]$
A_T: Total correction Factor except Antenna
U_R: Receiver Reading
G_{preamp}: Preamplifier Gain
A_{Factor}: Antenna Factor at 3m
During the test, the total correction Factor AT and A_{Factor} were built in test software.
Note: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report

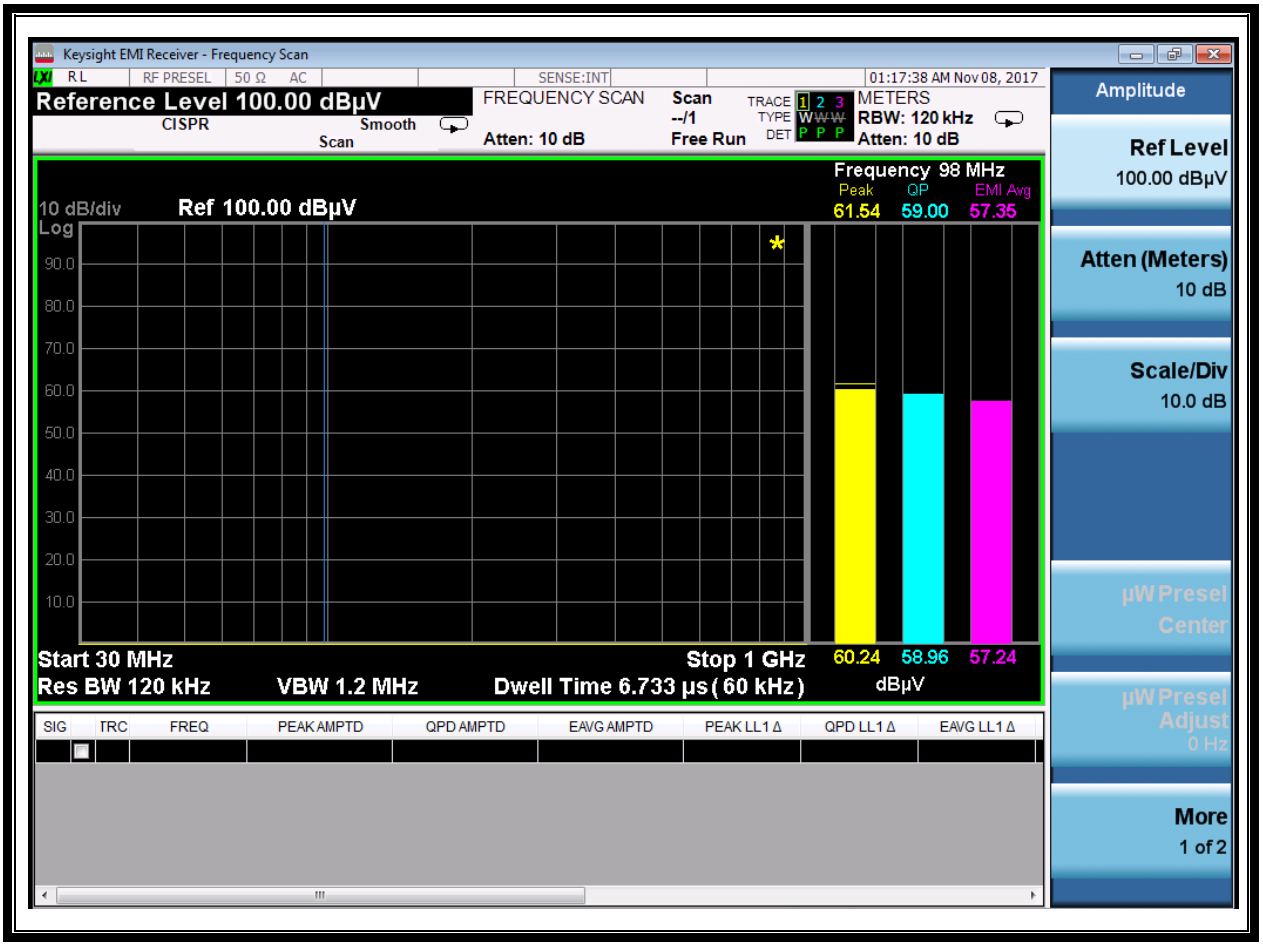
A. Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBµV/m)	Limit (dBµV/m)	Verdict
1	88.10	PK	70.08	-39.52	13.7	44.26	68	Pass
1	88.10	AV	67.64	-39.52	13.7	41.82	48	Pass
100	97.10	PK	61.54	-39.24	17.0	39.30	68	Pass
100	97.10	AV	57.35	-39.24	17.0	35.11	48	Pass
199	107.90	PK	61.85	-39.08	15.1	37.87	68	Pass
199	107.90	AV	57.98	-39.08	15.1	34.00	48	Pass

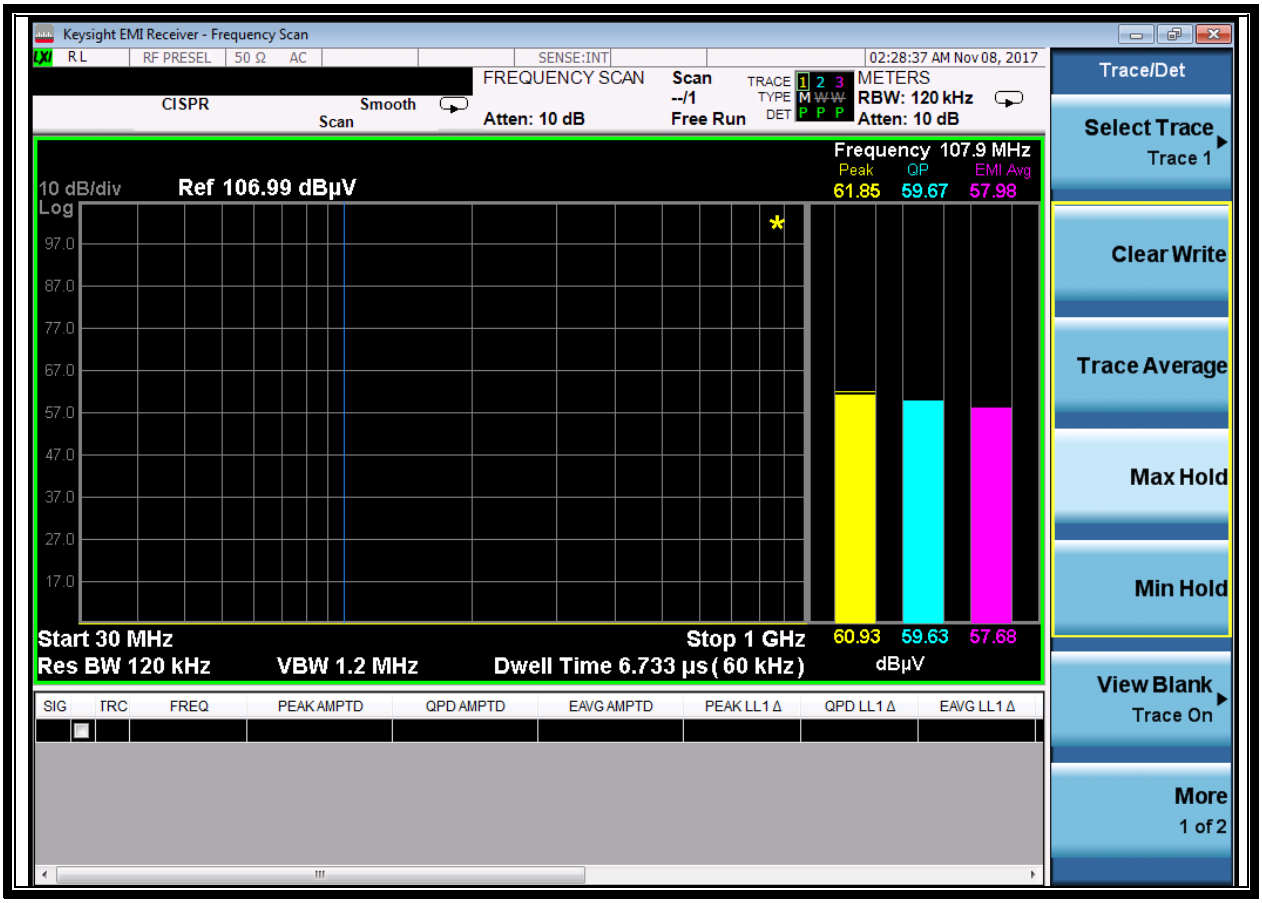
B. Test Plots:



(Plot 1: Channel 1: 88.10MHz)



(Plot 2: Channel 100: 98.00MHz)



(Plot 3: Channel 199: 107.9MHz)

2.4. Field Strength of Unwanted Emissions and Band Edge

2.4.1. Requirement

The field strength of any emissions radiated on any frequency outside of the specified 200 kHz band shall not exceed the general radiated emission limits in §15.209.

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)	Field Strength Limitation at 3m Measurement Dist	
			(uV/m)	(dBuV/m)
0.009 - 0.490	2400/F(kHz)	300	10000* 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 - 1.705	24000/F(kHz)	30	100* 2400/F(KHz)	20log 2400/F(KHz) + 40
1.705 - 30.0	30	30	100*30	20log 30 + 40
30 - 88	100	3	100	20log 100
88 - 216	150	3	150	20log 150
216 - 960	200	3	200	20log 200
Above 960	500	3	500	20log 500

According to section 15.35(b), Unless otherwise specified, e.g., see §§15.250, 15.252, 15.253(d), 15.255, 15.256, and 15.509 through 15.519 of this part, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

Note:

1) The tighter limit shall apply at the boundary between two frequency range.

2) Limitation expressed in dBuV/m is calculated by 20log Emission Level(uV/m).

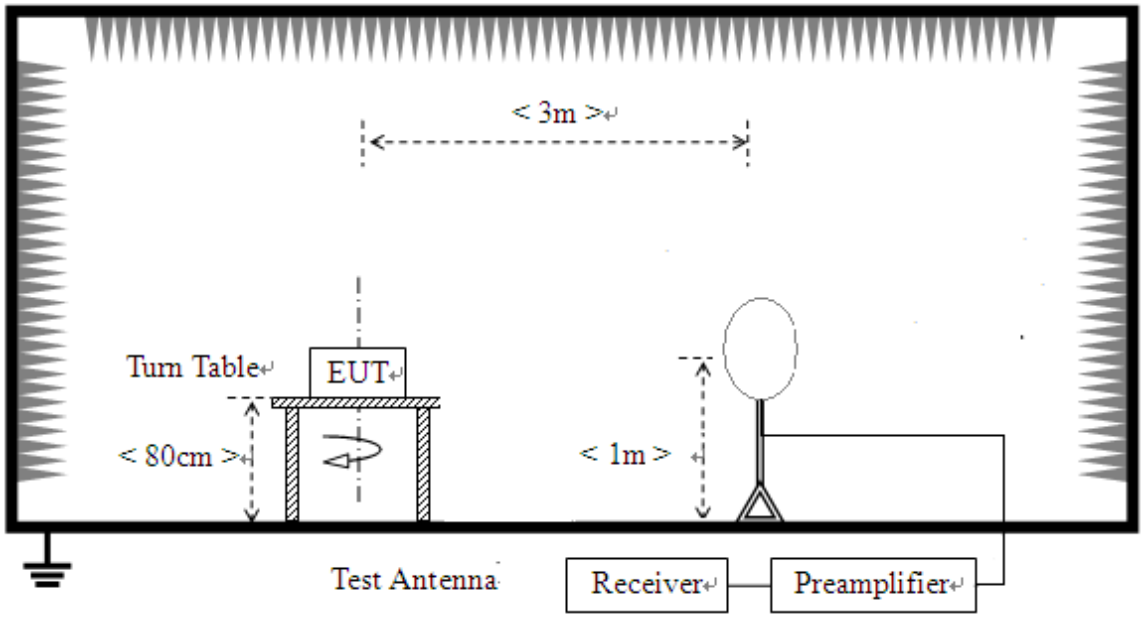
3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using theformula of Ld1 = Ld2 * (d2/d1)^2.

Example: F.S Limit at 30m distance is 30uV/m, then F.S Limitation at 3m distance is adjusted as Ld1 = L1 = 30uV/m * (10)2 = 100 * 30uV/m

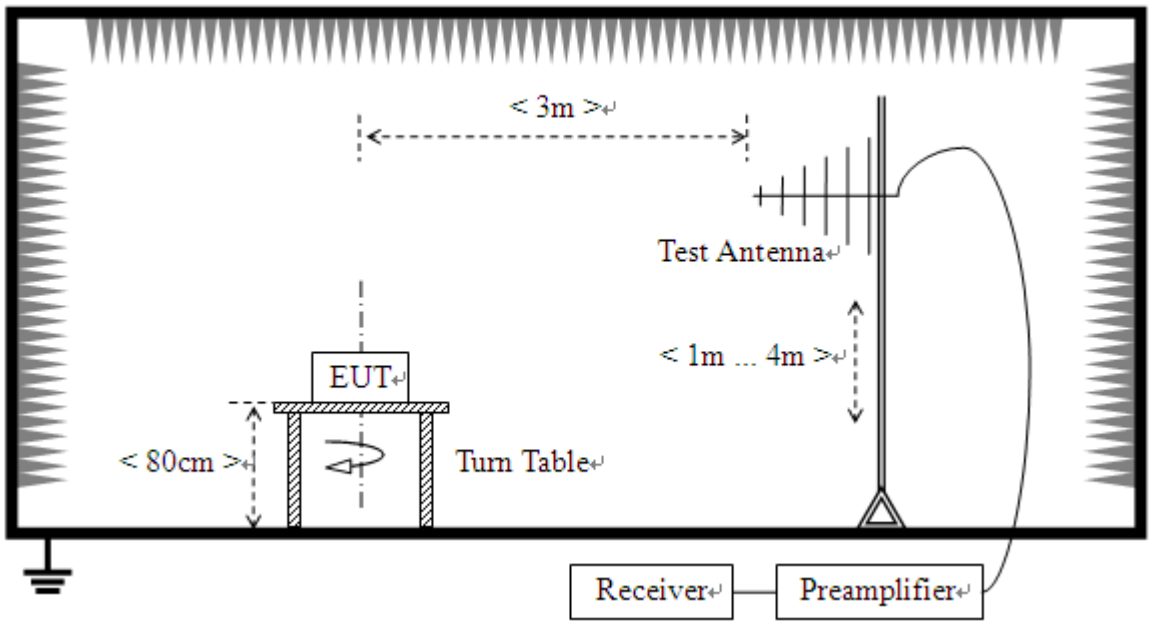
2.4.2. Test Description

A. Test Setup:

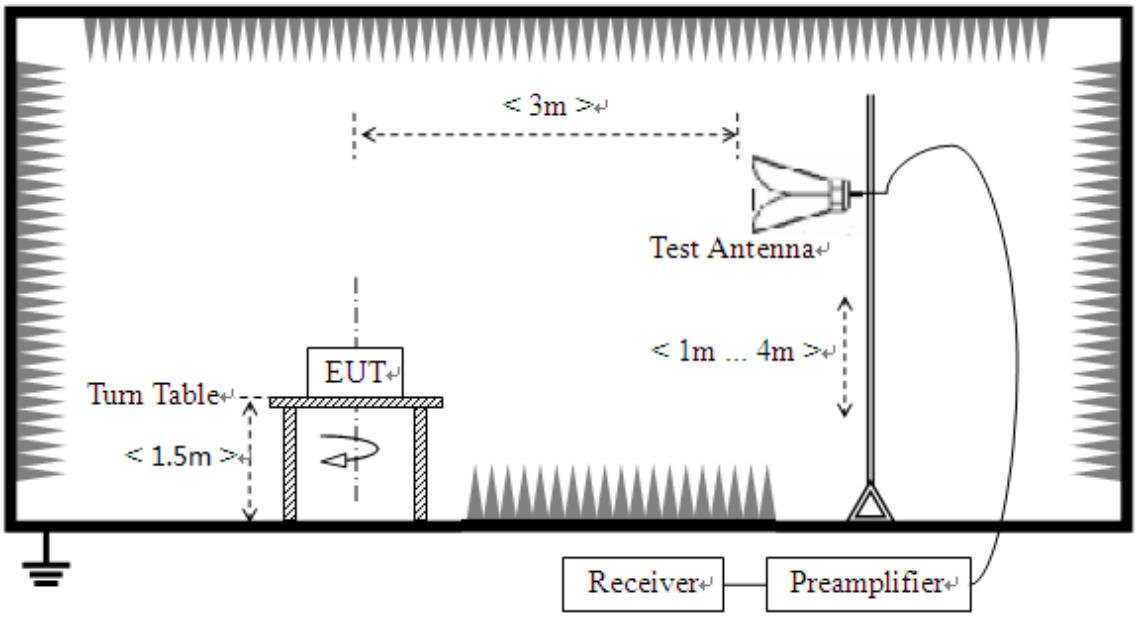
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



The RF absorbing material used on the reference ground plane and on the turntable have a maximum height (thickness) of 30 cm (12 in) and have a minimum-rated attenuation of 20 dB at all frequencies from 1 GHz to 18 GHz. Test site have a minimum area of the ground plane covered with RF absorbing material as specified in Figure 6 of ANSI C63.4: 2014.

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.10:2013. For radiated emissions below or equal to 1GHz, The EUT was set-up on insulator 80cm above the Ground Plane, For radiated emissions above 1GHz, The EUT was set-up on insulator 150cm above the Ground Plane. The set-up and test methods were according to ANSI C63.10:2013.

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna:

(a) In the frequency range of 9kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
(b) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Place the test antenna at 3m away from area of the EUT, while keeping the test antenna aimed at the source of emissions at each frequency of significant

emissions, with polarization oriented for maximum response. The test antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final test antenna elevation shall be that which maximizes the emissions. The test antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. The emission levels at both horizontal and vertical polarizations should be tested.
Use the following spectrum analyzer settings:
For Peak value:
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
For Average value:
For harmonic emissions:
Average value = Peak value + 20log(Duty cycle)
For other unwanted emissions:
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW = 10Hz
Sweep = auto
Detector function = peak
Trace = max hold

B. Equipments List:

Please reference ANNEX A(1.5).

2.4.3. Test Result

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak limit, it is unnecessary to perform an quasi-peak measurement.

The measurement results are obtained as below:

$E\ [dB\mu V/m] = U_R + A_T + A_{Factor}\ [dB]$; $A_T = L_{Cable\ loss}\ [dB] - G_{preamp}\ [dB]$

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

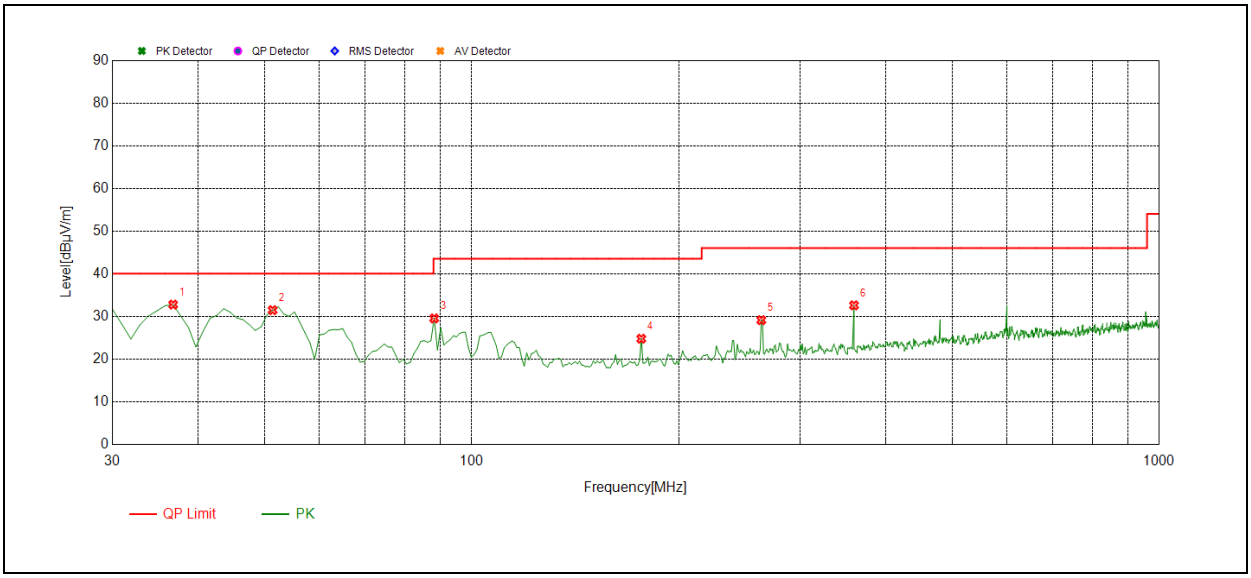
During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

The low frequency, which started from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

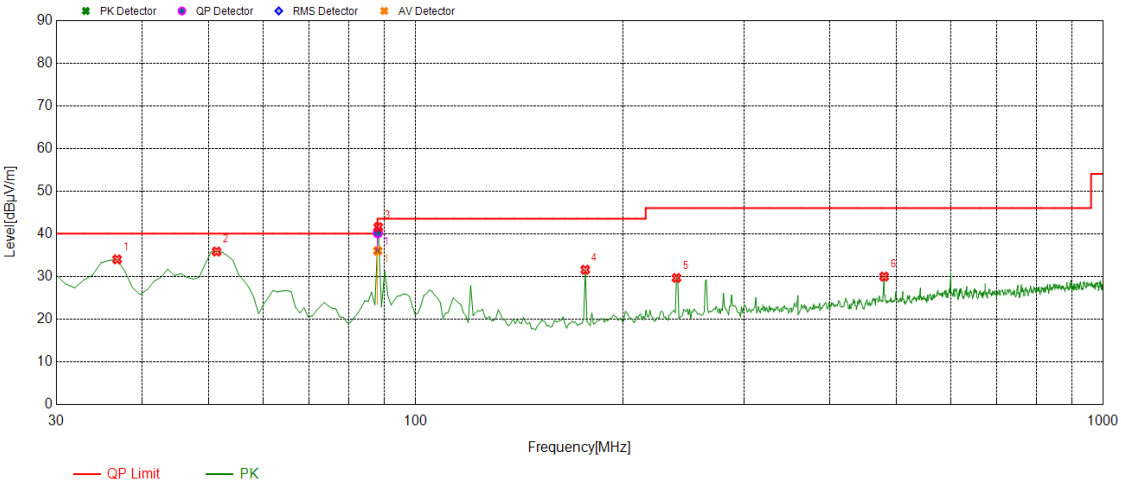
Harmonic and other spurious emissions result:

Plot for Channel = 1



(Antenna Horizontal, 30MHz to 10GHz)

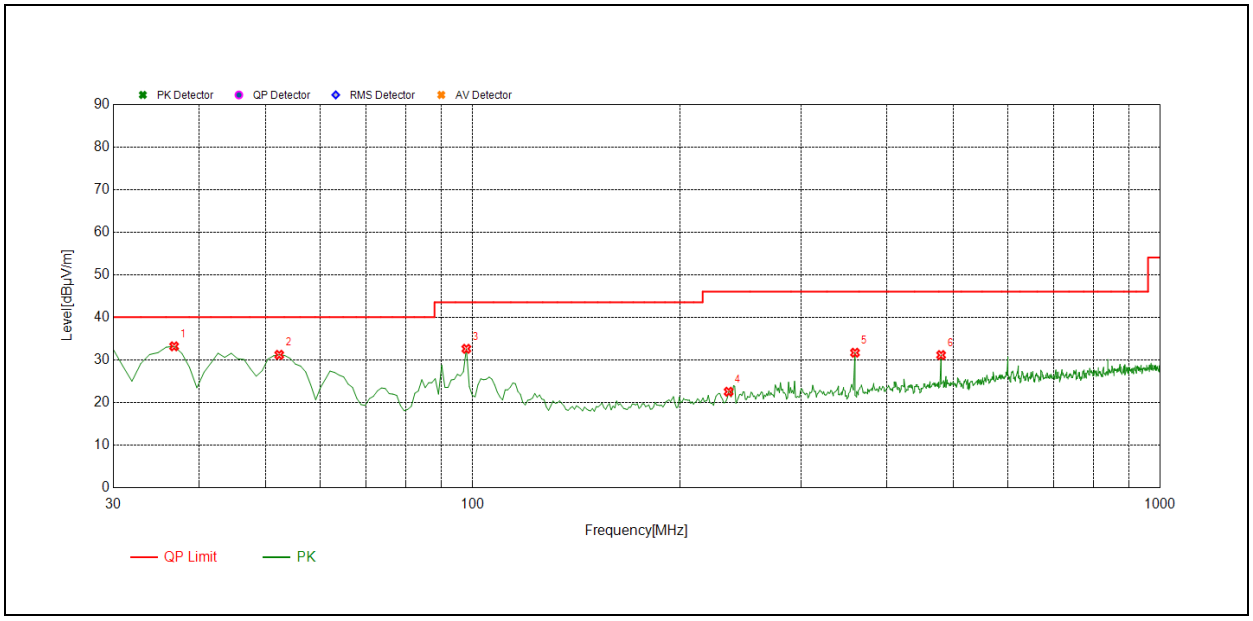
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
36.790	N/A	32.73	N/A	N/A	40.00	N/A	Horizontal	PASS
51.340	N/A	31.43	N/A	N/A	40.00	N/A	Horizontal	PASS
88.200	N/A	29.5	N/A	N/A	43.50	N/A	Horizontal	PASS
176.470	N/A	24.73	N/A	N/A	43.50	N/A	Horizontal	PASS
263.770	N/A	29.09	N/A	N/A	46.00	N/A	Horizontal	PASS
359.800	N/A	32.56	N/A	N/A	46.00	N/A	Horizontal	PASS



(Antenna Vertical, 30MHz to 10GHz)

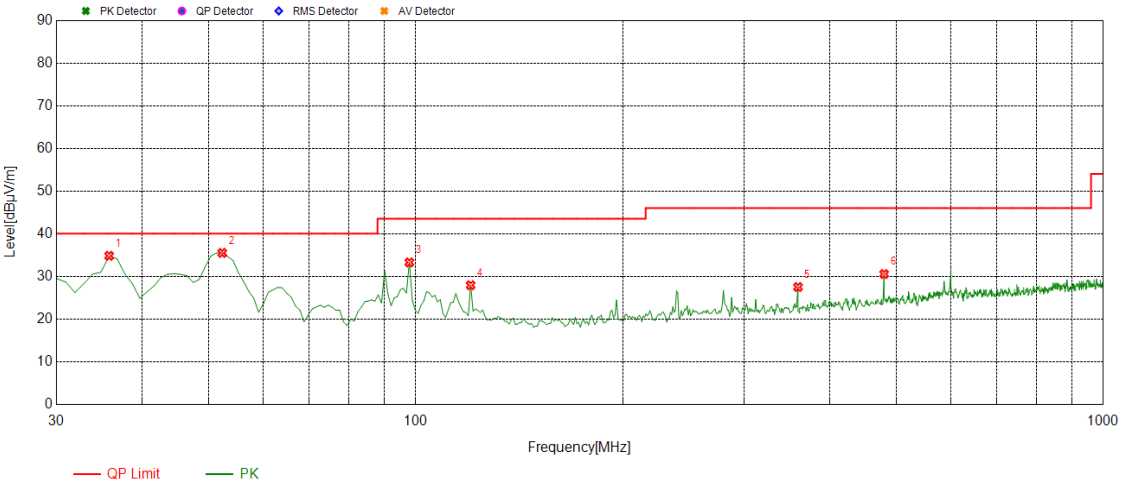
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
36.790	N/A	33.95	N/A	N/A	40.00	N/A	Vertical	PASS
51.340	N/A	35.79	N/A	N/A	40.00	N/A	Vertical	PASS
88.200	N/A	41.52	N/A	N/A	43.50	N/A	Vertical	PASS
176.470	N/A	31.52	N/A	N/A	43.50	N/A	Vertical	PASS
239.520	N/A	29.61	N/A	N/A	46.00	N/A	Vertical	PASS
480.080	N/A	29.92	N/A	N/A	46.00	N/A	Vertical	PASS

Plot for Channel =100



(Antenna Horizontal, 30MHz to 10GHz)

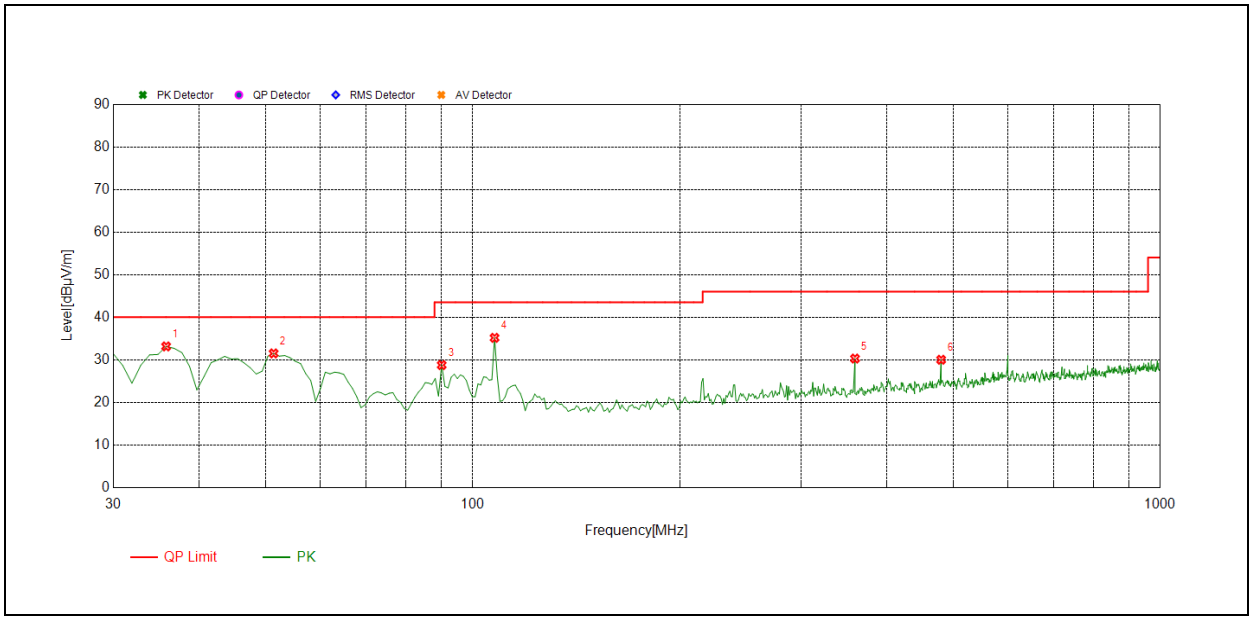
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
36.790	N/A	33.14	N/A	N/A	40.00	N/A	Horizontal	PASS
52.310	N/A	31.15	N/A	N/A	40.00	N/A	Horizontal	PASS
97.900	N/A	32.56	N/A	N/A	43.50	N/A	Horizontal	PASS
235.640	N/A	22.48	N/A	N/A	46.00	N/A	Horizontal	PASS
359.800	N/A	31.64	N/A	N/A	46.00	N/A	Horizontal	PASS
480.080	N/A	31.09	N/A	N/A	46.00	N/A	Horizontal	PASS



(Antenna Vertical, 30MHz to 10GHz)

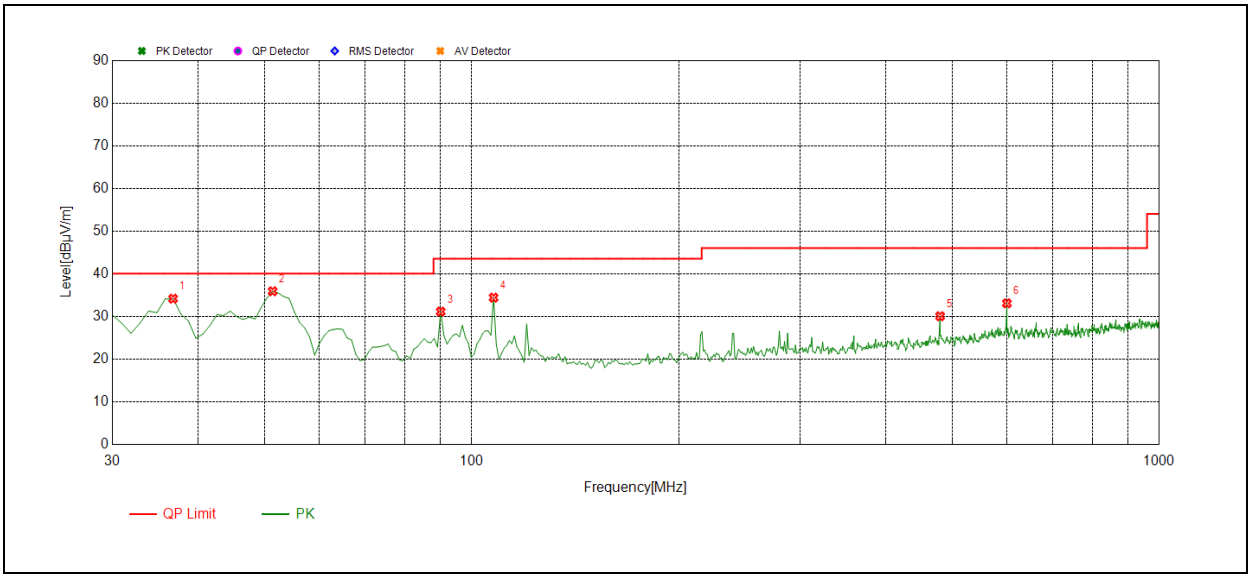
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
35.820	N/A	34.80	N/A	N/A	40.00	N/A	Vertical	PASS
52.310	N/A	35.47	N/A	N/A	40.00	N/A	Vertical	PASS
97.900	N/A	33.25	N/A	N/A	43.50	N/A	Vertical	PASS
120.210	N/A	27.90	N/A	N/A	43.50	N/A	Vertical	PASS
359.800	N/A	27.48	N/A	N/A	46.00	N/A	Vertical	PASS
480.080	N/A	30.52	N/A	N/A	46.00	N/A	Vertical	PASS

Plot for Channel =199



(Antenna Horizontal, 30MHz to 10GHz)

Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
35.820	N/A	33.12	N/A	N/A	40.00	N/A	Horizontal	PASS
51.340	N/A	31.48	N/A	N/A	40.00	N/A	Horizontal	PASS
90.140	N/A	28.74	N/A	N/A	43.50	N/A	Horizontal	PASS
107.600	N/A	35.14	N/A	N/A	43.50	N/A	Horizontal	PASS
359.800	N/A	30.27	N/A	N/A	46.00	N/A	Horizontal	PASS
480.080	N/A	29.99	N/A	N/A	46.00	N/A	Horizontal	PASS



(Antenna Vertical, 30MHz to 10GHz)

Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
36.790	N/A	34.12	N/A	N/A	40.00	N/A	Vertical	PASS
51.340	N/A	35.86	N/A	N/A	40.00	N/A	Vertical	PASS
90.140	N/A	31.10	N/A	N/A	43.50	N/A	Vertical	PASS
107.600	N/A	34.37	N/A	N/A	43.50	N/A	Vertical	PASS
480.080	N/A	30.01	N/A	N/A	46.00	N/A	Vertical	PASS
600.360	N/A	33.03	N/A	N/A	46.00	N/A	Vertical	PASS

Band edge result:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBuV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBµV/m)	Limit (dBµV/m)	Verdict
		PK/ AV						
1	88.10	PK	70.08	-39.52	13.7	44.26	68	Pass
1	88.10	AV	67.64	-39.52	13.7	41.82	48	Pass
3	107.90	PK	61.85	-39.08	15.1	37.87	68	Pass
3	107.90	AV	57.98	-39.08	15.1	34.00	48	Pass

Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test items	Uncertainty
Conducted Emission	±2.44dB
Restricted Frequency Bands	±5%
Radiated Emission	±2.95dB

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192.

4. Test Equipments Utilized

Conducted Emission Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
Receiver	US44210471	E7405A	Agilent	2017.05.17	2018.05.16
LISN	812744	NSLK 8127	Schwarzbeck	2017.05.17	2018.05.16
Service Supplier	100448	CMU200	R&S	2017.05.17	2018.05.16
Pulse Limiter (20dB)	9391	VTSD 9561-D	Schwarzbeck	2017.05.17	2018.05.16
Coaxial cable(BNC) (30MHz-26GHz)	CB01	EMC01	Morlab	N/A	N/A

Radiated Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal.Due Date
System Simulator	GB45360846	8960-E5515C	Agilent	2017.05.17	2018.05.16
Receiver	MY54130016	N9038A	Agilent	2017.05.17	2018.05.16
Test Antenna - Bi-Log	N/A	VULB9163	Schwarzbeck	2016.12.09	2017.12.08
Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2017.03.30	2018.03.29
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2017.03.30	2018.03.29
Test Antenna - Horn	71688	BBHA 9120D	Schwarzbeck	2017.03.30	2018.03.29
Coaxial cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial cable(N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
1-18GHz pre-Amplifier	MA02	TS-PR18	Rohde& Schwarz	2017.05.17	2018.05.16
18-26.5GHz pre-Amplifier	MA03	TS-PR18	Rohde& Schwarz	2017.05.17	2018.05.16
Climate Chamber	2004012	HL4003T	Yinhe	2017.01.11	2018.01.10
Vibration Table	N/A	ACT2000-S015L	CMI-COM	2017.01.11	2018.01.10
Anechoic Chamber	N/A	9m*6m*6m	Changning	2017.01.11	2018.01.10

Auxiliary Test Equipment

Equipment Name	Model No.	Brand Name	Manufacturer	Cal.Date	Cal.Due Date
Computer	T430i	Think Pad	Lenovo	N/A	N/A

END OF REPORT