FCC TEST REPORT
FCC ID:2AV8I-X

Report Number.....:	**ZKT-2311218997E-4**
Date of Test.....	Nov. 21, 2023 to Nov. 28, 2023
Date of issue.....:	Nov. 28, 2023
Total number of pages.....	32
Test Result .....:	PASS
Testing Laboratory.....:	**Shenzhen ZKT Technology Co., Ltd.**
Address .....:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name .....:	**Pacific Time Trading (Shenzhen)Limited**
Address .....:	Unit 607,block A, Rong Chaoying Long building, 5 longfuRoad, Longcheng street,Longgang District,Shenzhen,Guangdong,China
Manufacturer's name .....:	**TFVC SHANGHAI CO.,LTD.**
Address .....:	Rm 103,No.1 Lane 666 Xinhua Road,Changning District, Shanghai, China
Test specification:	
Standard.....:	FCC CFR Title 47 Part 15 239 ANSI C63.10:2013
Test procedure.....:	/
Non-standard test method .....:	N/A
Test Report Form No.....:	TRF-EL-112_V0
Test Report Form(s) Originator.....:	ZKT Testing
Master TRF .....:	Dated: 2020-01-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
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Product name.....:	**CARPLAY**
Trademark .....:	N/A
Model/Type reference.....:	X XD, XM, XS
Ratings.....:	Input: DC 5V/2.0A

Testing procedure and testing location:

Testing Laboratory.....:	**Shenzhen ZKT Technology Co., Ltd.**
Address.....:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Tested by (name + signature).....:	Jim Liu
Reviewer (name + signature).....:	Jackson Fang
Approved (name + signature).....:	Lake Xie

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1. VERSION

Report No.	Version	Description	Approved
ZKT-2311218997E-4	Rev.01	Initial issue of report	Nov. 28, 2023

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.239) , Subpart C			
Standard Section	Test Item	Judgment	Remark
FCC part 15.203	Antenna requirement	PASS	
FCC part 15.207	AC Power Line Conducted Emission	N/A	
FCC part 15.209 & 15.239 c	Fundamental & Radiated / Conducted Spurious Emission Measurement	PASS	
FCC part 15.239 a	20dB Occupied Bandwidth	PASS	
FCC part 15.239 c	Band Edge Measurement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.
Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225
Designation Number: CN1299
IC Registered No.: 27033

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %。

No.	Item	Uncertainty
1	3m camber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m camber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF conducted Spurious Emission	U=2.2dB
7	RF Band Edge	U=1.68dB
8	RF Occupied Bandwidth	U=1.8MHz
9	humidity uncertainty	U=5.3%
10	Temperature uncertainty	U=0.59℃

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	CARPLAY
Model No.:	X
Model Different.:	All the model are the same circuit and RF module, only the model name is different.
Serial No.:	XD, XM, XS
Hardware Version:	H1.0
Software Version:	S1.0
Sample(s) Status:	Engineer sample
Sample Number:	E-1
Operation Frequency:	88.1 MHz ~ 107.9MHz
Channel Numbers:	199
Channel Separation:	100kHz
Modulation Type:	FM
Antenna Type:	Exterior Antenna
Antenna gain:	0dBi
Power supply:	Input: DC 5V/2.0A

3.2 TEST CHANNEL

For All Emission	
Final Test Mode	Description
Mode 1	CH01
Mode 2	CH100
Mode 3	CH199

Channel	Frequency (MHz)
01	88.1
02	88.2
03	88.3
~	~
198	107.8
199	107.9

Note:

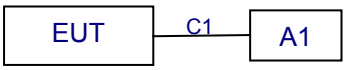
(1) The measurements are performed at the highest, middle, lowest available channels.

3.3 DESCRIPTION OF TEST MODES

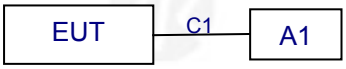
Transmitting mode	Keep the EUT in continuously transmitting FM mode
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Emission



Conducted Spurious



3.5 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	CARPLAY	N/A	X	See page 8	EUT
A1	Storage Battery	Narada	ZKT-00	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C1	N/A	N/A	3.5M	Car Charger

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

(3) EUT used new batteries during test.

3.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Nov. 14, 2023	Nov. 13, 2024
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Nov. 02, 2023	Nov. 01, 2024
3	Test Cable	N/A	C-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
4	Test Cable	N/A	C-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
5	Test Cable	N/A	C-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
6	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Nov. 02, 2023	Nov. 01, 2024
7	Triple-Loop Antenna	N/A	RF300	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
8	Absorbing Clamp	DZ	ZN23201	15034	N/A	Nov. 07, 2023	Nov. 06, 2024
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\

Radiation Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	A.17.05	Nov. 02, 2023	Nov. 01, 2024
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Nov. 02, 2023	Nov. 01, 2024
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	101169	4.32	Nov. 02, 2023	Nov. 01, 2024
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	N/A	N/A	Nov. 13, 2023	Nov. 12, 2024
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Nov. 13, 2023	Nov. 12, 2024
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Nov. 13, 2023	Nov. 12, 2024
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Nov. 16, 2023	Nov. 15, 2024
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	060747	N/A	Nov. 02, 2023	Nov. 01, 2024
9	Amplifier (1GHz-26.5GHz)	Agilent	8449B	3008A00315	N/A	Nov. 02, 2023	Nov. 01, 2024
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Nov. 02, 2023	Nov. 01, 2024
11	Test Cable	N/A	R-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
12	Test Cable	N/A	R-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
13	Test Cable	N/A	R-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
14	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
15	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
16	Turntable	MF	MF-7802BS	N/A	N/A	\	\
17	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\

RF Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	A.17.05	Nov. 02, 2023	Nov. 01, 2024
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Nov. 02, 2023	Nov. 01, 2024
3	Test Cable	N/A	RF-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
4	Test Cable	N/A	RF-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
5	Test Cable	N/A	RF-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
6	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Nov. 02, 2023	Nov. 01, 2024
7	Signal Generator	Agilent	N5182A	N/A	A.01.87	Nov. 02, 2023	Nov. 01, 2024
8	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	N/A	Nov. 16, 2023	Nov. 15, 2024
9	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Nov. 02, 2023	Nov. 01, 2024
10	MWRF Power Meter Test system	MW	MW100-RF CB	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
11	Power Meter	KEYSIGHT	N1912A P	N/A	A.05.00	Nov. 02, 2023	Nov. 01, 2024
12	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
13	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quas-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) *Decreases with the logarithm of the frequency.

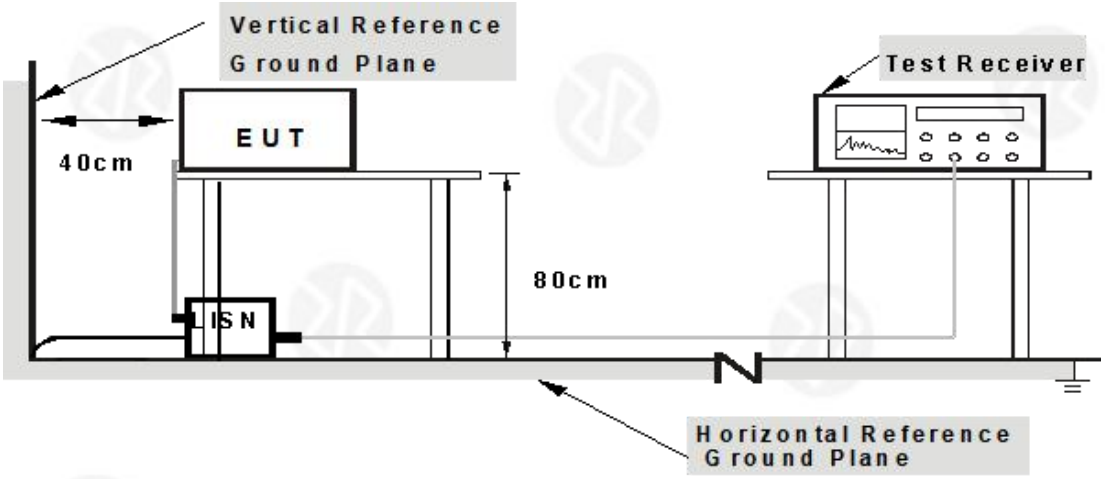
4.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.1.6 Test Result

N/A
Remark: Only AC products need to test this item, DC products are not applicable to this item.

4.2 RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10:2013
Test Frequency Range:	9kHz to 1GHz
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

4.2.1 RADIATED EMISSION LIMITS

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.209&15.239 limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

FUNDAMENTAL AND HARMONICS EMISSION LIMITS

Fundamental Frequency (MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66 - 40.70	2,250	225
70 - 130	1,250	125
130 - 174	1,250 to 3,750 **	125 to 375 **
174 - 260	3,750	375
260 - 470	3,750 to 12,500 **	375 to 1,250 **
Above 470	12,500	1,250

** linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, μV/m at 3 meters = 56.81818(F) - 6136.3636; for the band 260-470 MHz, μV/m at 3 meters = 41.6667(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

4.2.2 TEST PROCEDURE

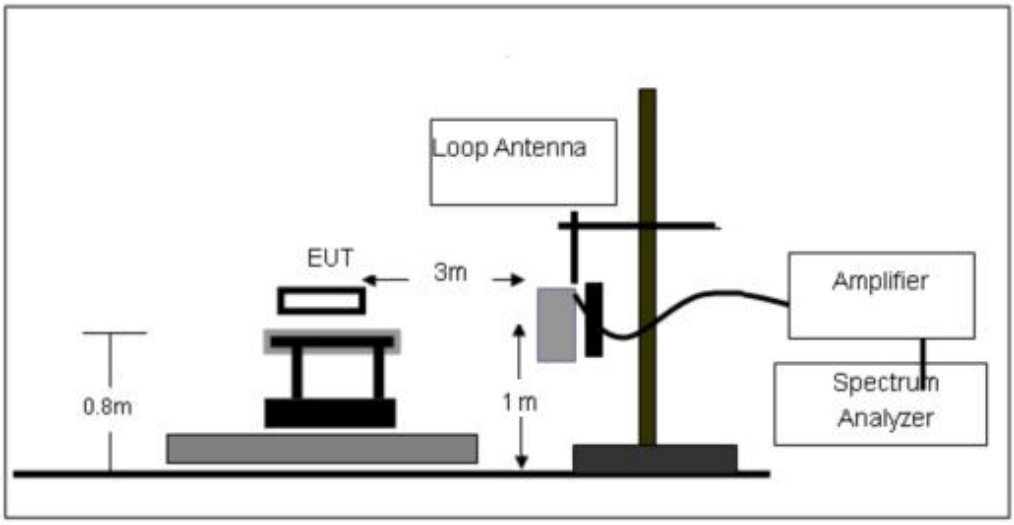
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 25GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-chamber test. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8m; above 1GHz, the height was 1.5m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.
g. For the radiated emission test above 1GHz:
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.
The measurement 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 measurement antenna elevation shall be that which maximizes the emissions. The measurement 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.
Note:
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

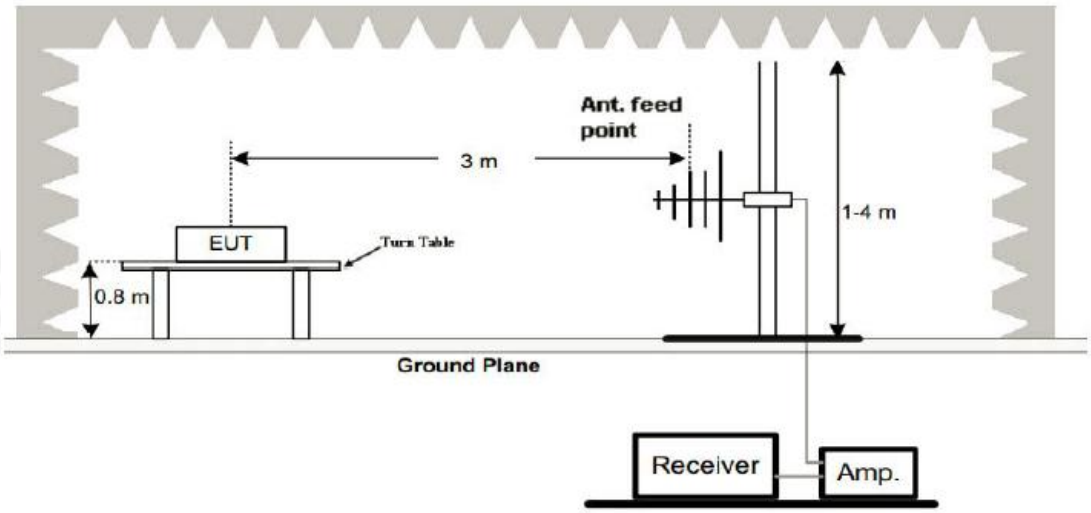
No deviation

4.2.4 TEST SETUP

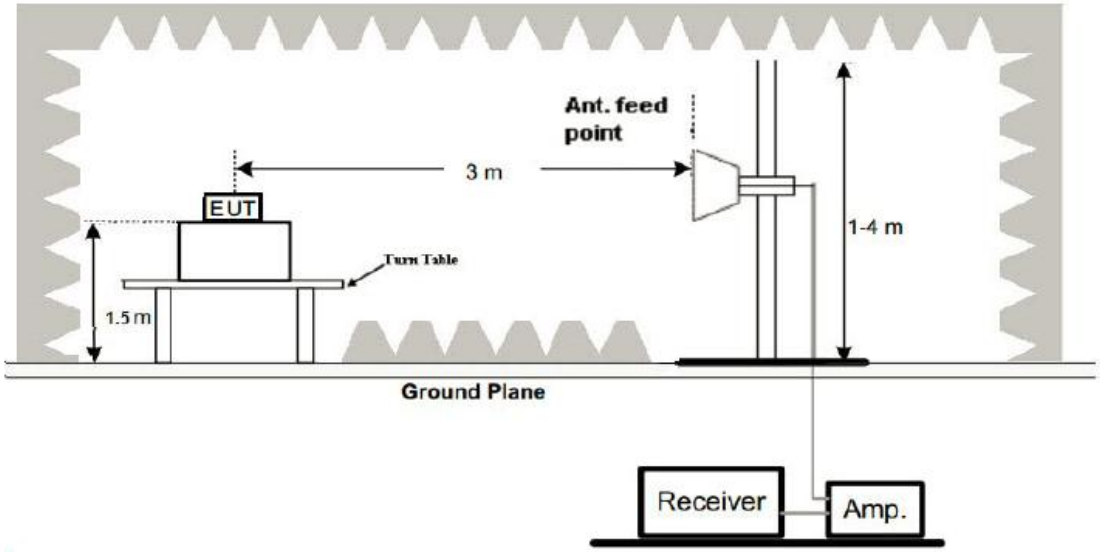
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



4.2.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.2.6 TEST RESULTS

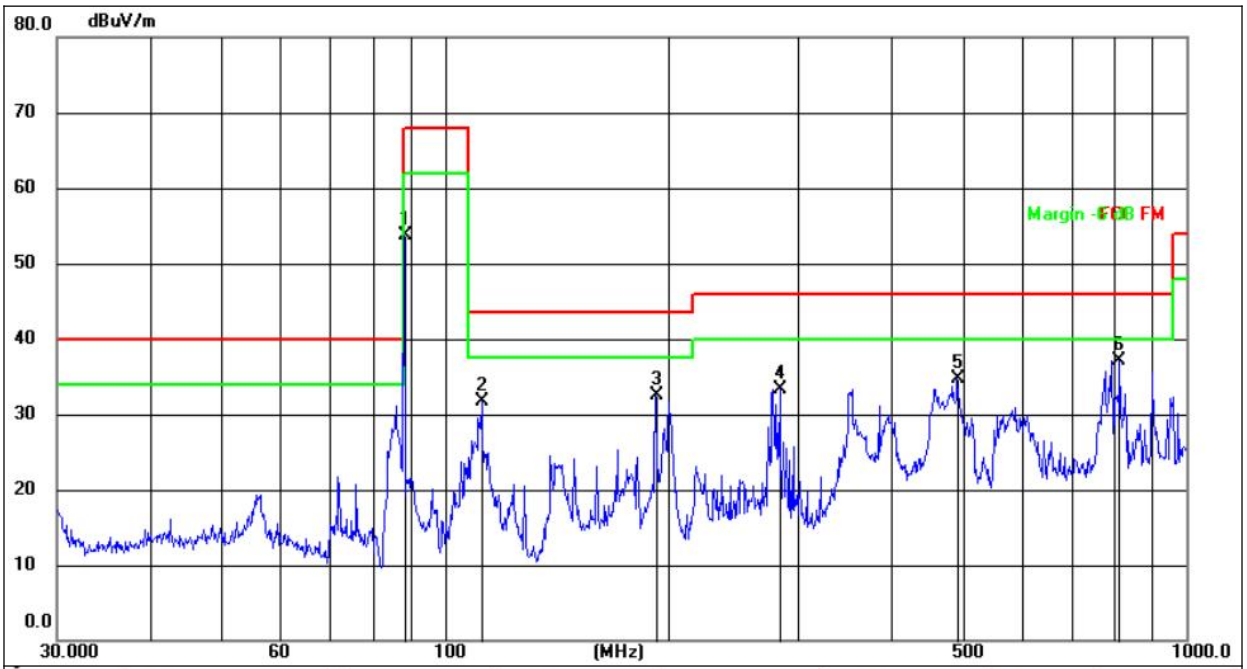
Field Strength of Fundamental

Between 9KHz – 30 MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

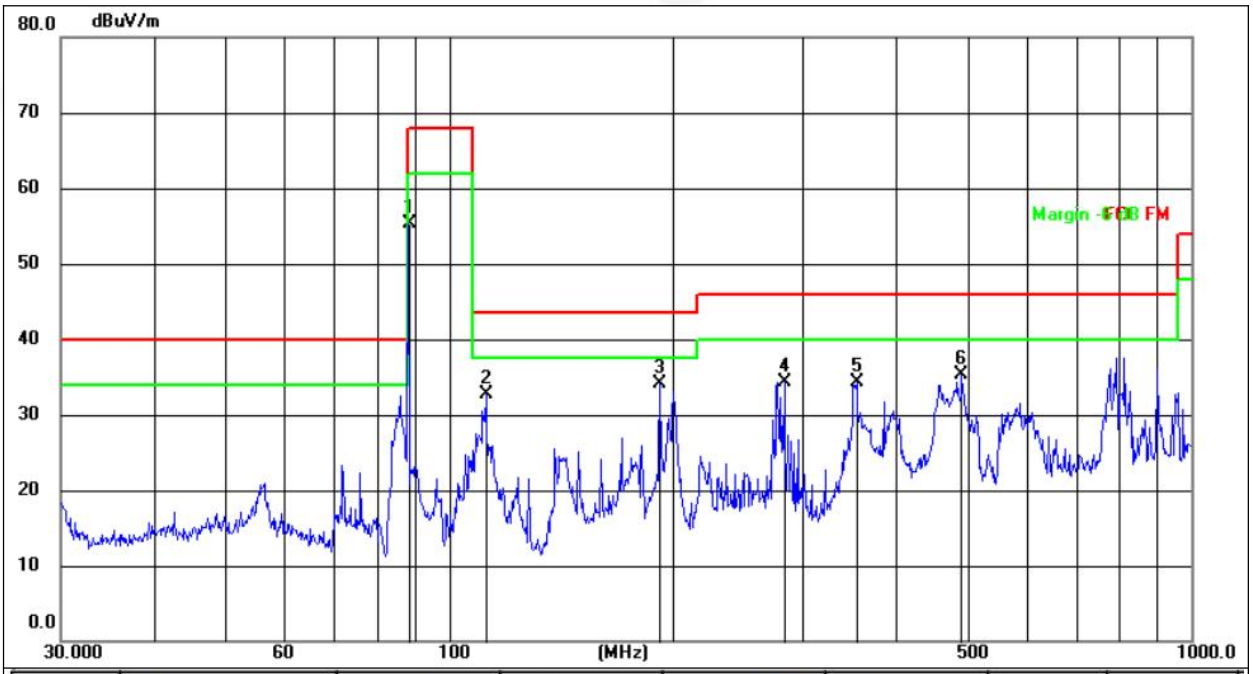
Between 30MHz – 1GHz

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 5V	Test Mode:	Mode 1 (88.1MHz)



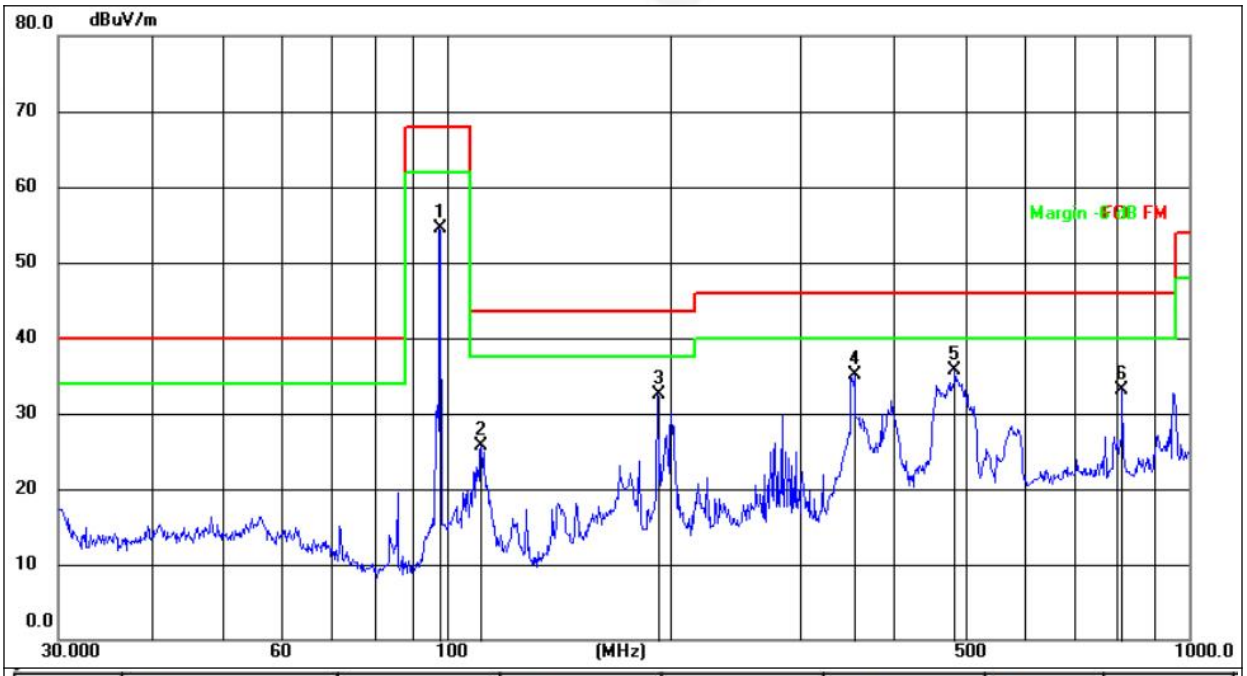
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	88.1000	73.79	-20.06	53.73	68.00	-14.27	peak
2	112.1305	50.76	-19.07	31.69	43.50	-11.81	QP
3	192.4186	51.03	-18.44	32.59	43.50	-10.91	QP
4	282.9852	48.11	-14.73	33.38	46.00	-12.62	QP
5	490.7447	46.88	-12.08	34.80	46.00	-11.20	QP
6	813.1115	44.04	-6.95	37.09	46.00	-8.91	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 5V	Test Mode：	Mode 1 (88.1MHz)



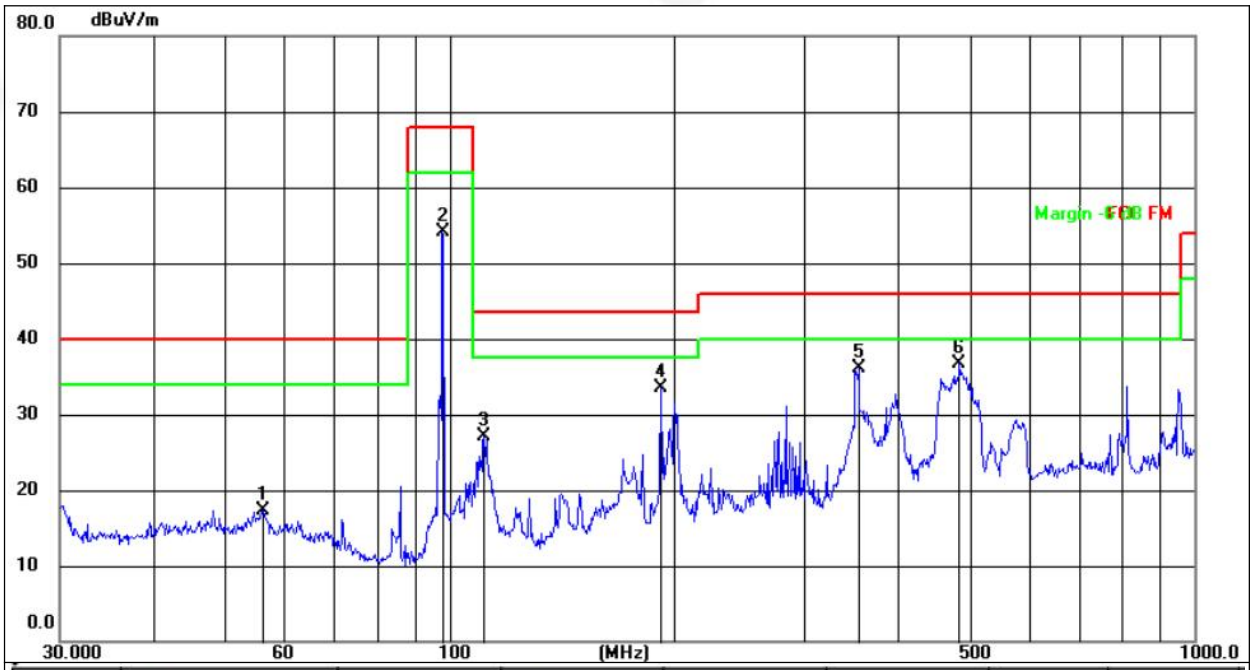
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	88.1000	75.29	-20.06	55.23	68.00	-12.77	peak
2	112.1303	51.76	-19.07	32.69	43.50	-10.81	QP
3	192.4183	52.53	-18.44	34.09	43.50	-9.41	QP
4	282.9849	49.11	-14.73	34.38	46.00	-11.62	QP
5	354.1831	51.10	-16.75	34.35	46.00	-11.65	QP
6	490.7445	47.38	-12.08	35.30	46.00	-10.70	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 5V	Test Mode：	Mode 2 (98MHz)



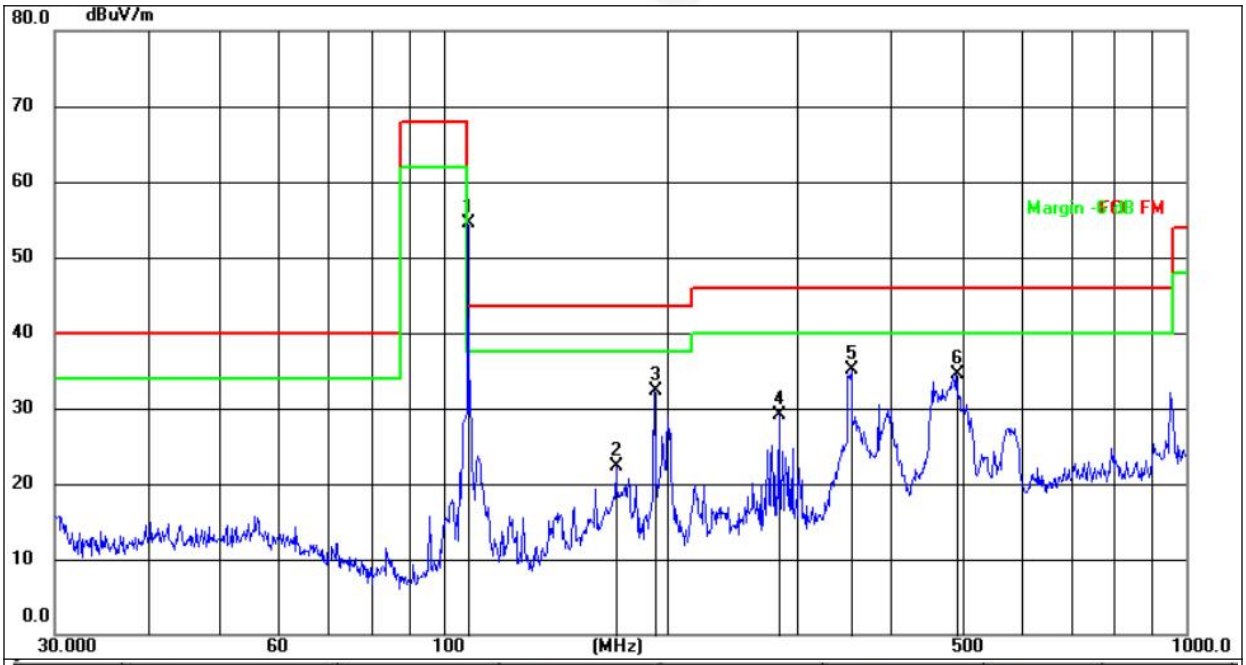
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	98.0000	74.44	-19.89	54.55	68.00	-13.45	peak
2	111.3468	44.74	-19.12	25.62	43.50	-17.88	QP
3	192.4186	50.87	-18.44	32.43	43.50	-11.07	QP
4	354.1831	51.92	-16.75	35.17	46.00	-10.83	QP
5	483.9094	48.12	-12.41	35.71	46.00	-10.29	QP
6	813.1115	40.06	-6.95	33.11	46.00	-12.89	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 5V	Test Mode:	Mode 2 (98MHz)



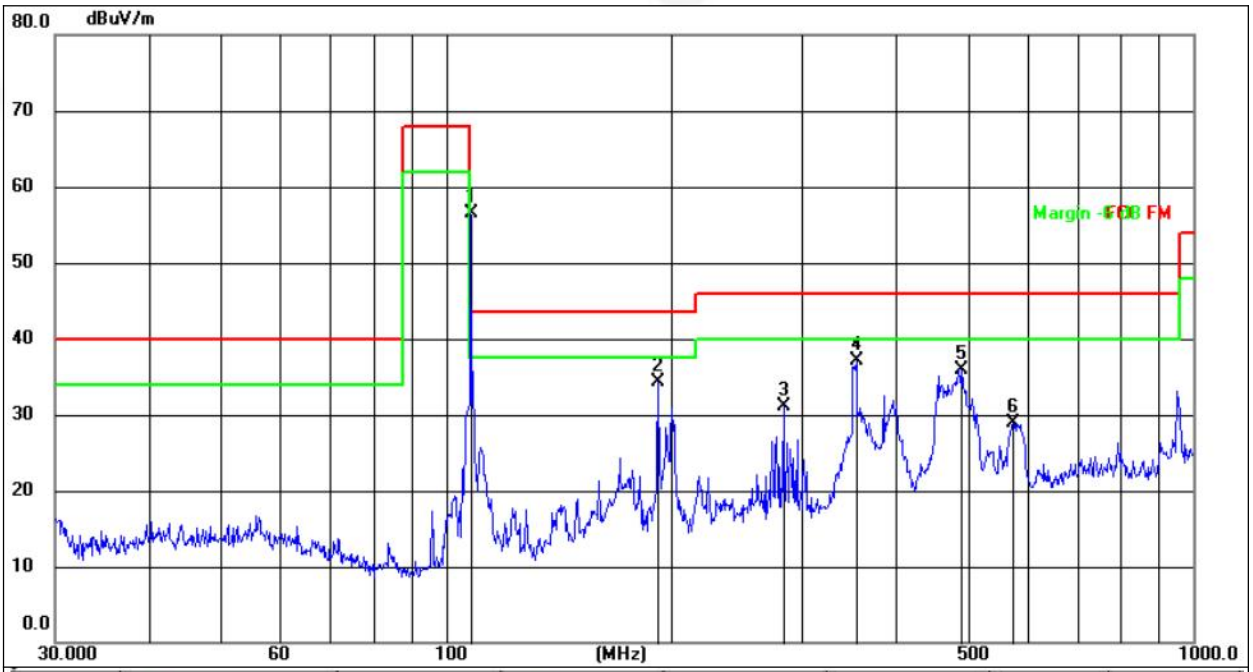
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	56.1974	31.54	-14.16	17.38	40.00	-22.62	QP
2	98.0000	73.94	-19.89	54.05	68.00	-13.95	peak
3	111.3468	46.24	-19.12	27.12	43.50	-16.38	QP
4	192.4183	51.87	-18.44	33.43	43.50	-10.07	QP
5	354.1831	52.92	-16.75	36.17	46.00	-9.83	QP
6	483.9094	49.12	-12.41	36.71	46.00	-9.29	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 5V	Test Mode：	Mode 3 (107.9MHz)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	107.9000	73.85	-19.32	54.53	68.00	-13.47	peak
2	170.7926	39.33	-17.09	22.24	43.50	-21.26	QP
3	192.4186	50.82	-18.44	32.38	43.50	-11.12	QP
4	282.9852	43.87	-14.73	29.14	46.00	-16.86	QP
5	354.1831	51.94	-16.75	35.19	46.00	-10.81	QP
6	490.7447	46.56	-12.08	34.48	46.00	-11.52	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 5V	Test Mode：	Mode 3 (107.9MHz)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	107.9000	75.85	-19.32	56.53	68.00	-11.47	peak
2	192.4183	52.82	-18.44	34.38	43.50	-9.12	QP
3	282.9849	45.87	-14.73	31.14	46.00	-14.86	QP
4	354.1831	53.94	-16.75	37.19	46.00	-8.81	QP
5	490.7445	48.06	-12.08	35.98	46.00	-10.02	QP
6	574.6258	38.33	-9.52	28.81	46.00	-17.19	QP

Remarks:
1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2.The emission levels of other frequencies are very lower than the limit and not show in test report.

FIELD STRENGTH CALCULATION

Frequency (MHz)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Horizontal / Vertical	Detector Type
88.10	53.73	68.00	-14.27	H	PK
88.10	43.57	48.00	-4.43	H	AV
88.10	55.23	68.00	-12.77	V	PK
88.10	42.62	48.00	-5.38	V	AV
98.00	54.55	68.00	-13.45	H	PK
98.00	41.75	48.00	-6.25	H	AV
98.00	54.05	68.00	-13.95	V	PK
98.00	41.28	48.00	-6.72	V	AV
107.90	54.53	68.00	-13.47	H	PK
107.90	42.33	48.00	-5.67	H	AV
107.90	56.53	68.00	-11.47	V	PK
107.90	41.08	48.00	-6.92	V	AV

TEST RESULTS (1GHZ ~ 6GHZ)

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
V	1057.20	42.77	39.55	7.77	25.66	36.65	74.00	-37.35	PK
V	1057.20	37.12	39.55	7.77	25.66	31.00	54.00	-23.00	AV
V	1176.00	43.64	38.33	7.30	24.55	37.16	74.00	-36.84	PK
V	1176.00	38.20	38.33	7.30	24.55	31.72	54.00	-22.28	AV
V	1294.80	45.62	38.33	7.60	24.55	39.44	74.00	-34.56	PK
V	1294.80	35.82	35.23	7.60	26.59	34.78	54.00	-19.22	AV
H	1145.30	44.96	39.55	7.77	25.66	38.84	74.00	-35.16	PK
H	1145.30	39.14	39.55	7.77	25.66	33.02	54.00	-20.98	AV
H	1274.00	46.47	38.33	7.30	23.55	38.99	74.00	-35.01	PK
H	1274.00	41.22	38.33	7.30	23.22	33.41	54.00	-20.59	AV
H	1402.70	44.24	38.33	7.60	24.55	38.06	74.00	-35.94	PK
H	1402.70	36.41	35.45	7.60	27.88	36.44	54.00	-17.56	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

5. 20DB OCCUPIED BANDWIDTH

Test Requirement:	FCC Part15 C Section 15.209 & 15.239
Test Method:	ANSI C63.10: 2013

6.1 APPLIED PROCEDURES / LIMIT

According to 15.209 & 15.239 requirement:

The bandwidth of the emission shall not exceed 200 kHz.

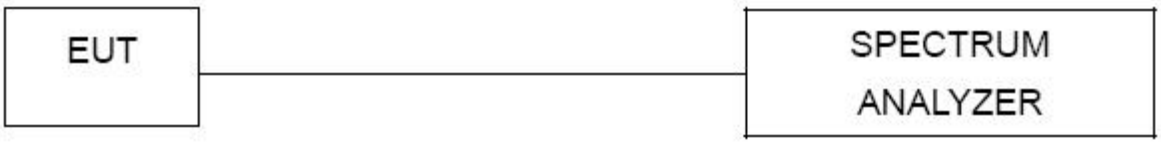
6.2 TEST PROCEDURE

1. Set RBW = 2 kHz.
2. Set the video bandwidth (VBW) ≥RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

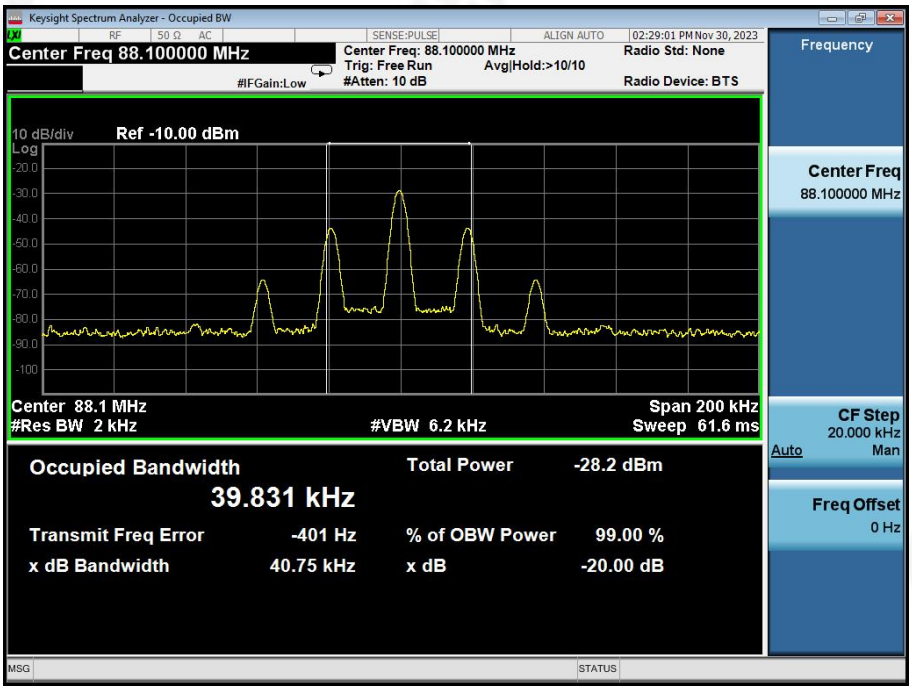
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.6 TEST RESULT

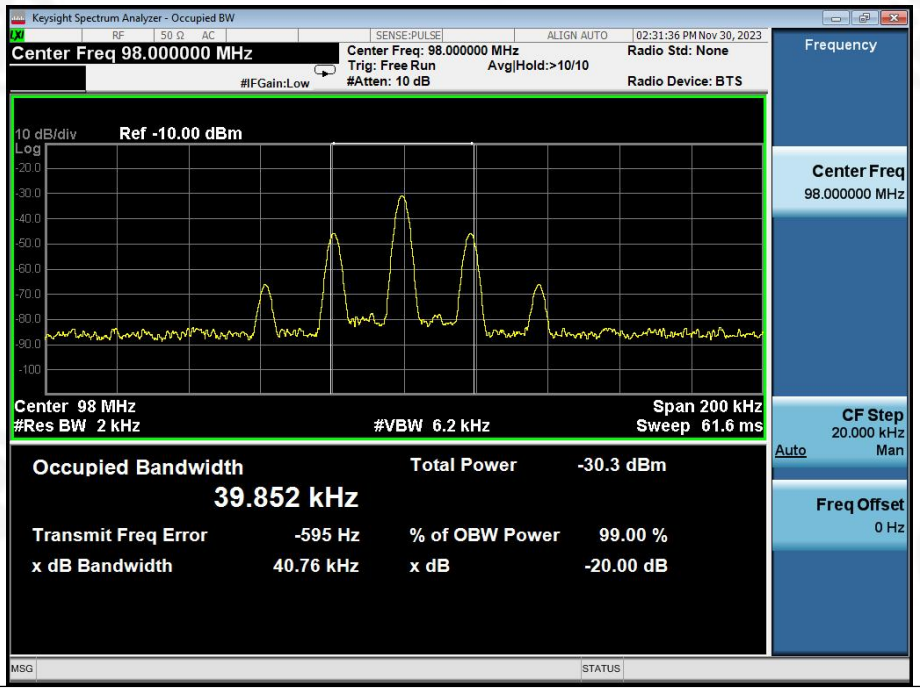
Temperature：	26℃	Relative Humidity：	54%
Test Mode ：	TX Mode	Test Voltage ：	DC 5V

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Result
88.10	40.75	200	PASS
98.00	40.76	200	PASS
107.90	40.76	200	PASS

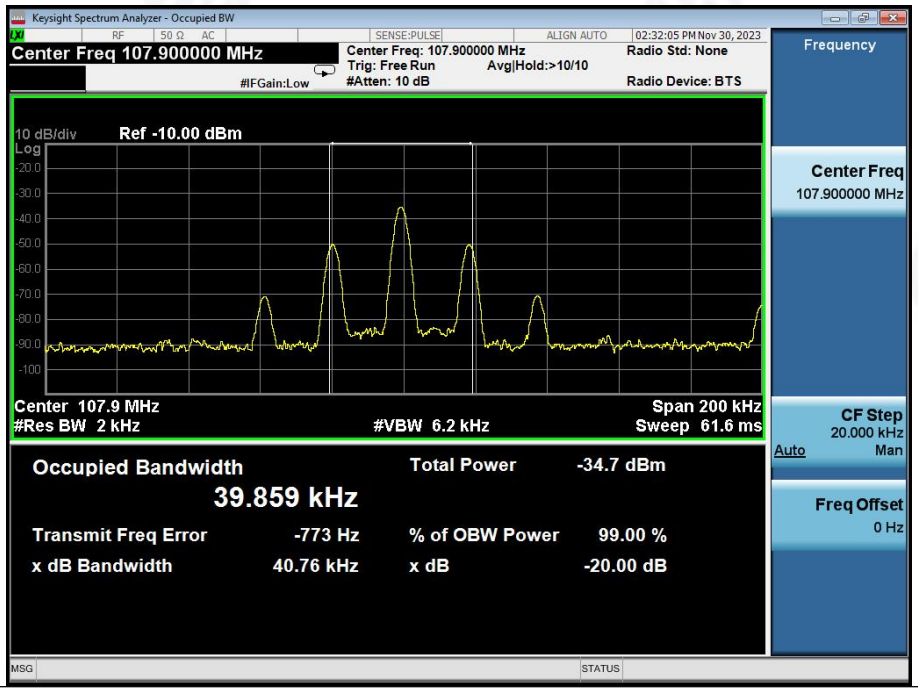
88.1MHz



98 MHz



107.9 MHz



7. BAND EDGE MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209 & 15.239
Test Method:	ANSI C63.10: 2013

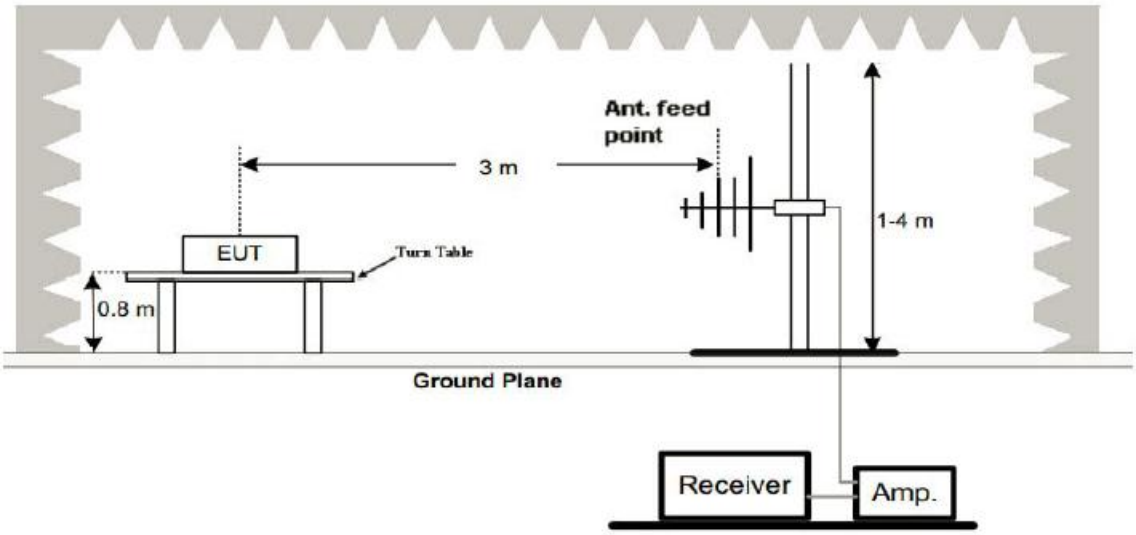
7.1 APPLICABLE STANDARD / LIMIT
FCC Part15 Paragraph 15.209 & 15.239
Outside the 200kHz band(as well as outside the 88-108MHz band), the general field strength limits listed in 15.209 apply.

7.2 TEST PROCEDURE
a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
b. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
c. VBW for Peak, Quasi-peak, or Average Detector Function: 3 x RBW
d. Repeat above procedures until all measured frequencies were complete.
Note:
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULTS

Mode	Polar(HV)	Frequency (MHz)	Reading Level (dBuV/m)	Correct Factor (dB)	Measure-Ment (dBuV/m)	Limits (dBuV/m)	Result
					QP	QP	
FM	88.1MHz						
	H	75.05	38.06	-19.55	18.51	40.00	PASS
	H	88.00	40.93	-19.58	21.35	40.00	PASS
	V	75.05	35.81	-19.55	16.26	40.00	PASS
	V	88.00	38.75	-19.58	19.17	40.00	PASS
	107.9MHz						
	H	108.00	44.54	-16.67	27.87	43.50	PASS
	H	109.24	43.29	-16.69	26.60	43.50	PASS
	V	108.00	39.40	-16.67	22.73	43.50	PASS
	V	109.24	42.12	-16.69	25.43	43.50	PASS

Remark:
1. Emission Level = Meter Reading + Factor,
Factor = Antenna Factor + Cable Loss - Pre-amplifier.
Over= Emission Level - Limit
2. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.
3. In restricted bands of operation, The spurious emissions below the permissible value more than 20dB
4. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

8. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
EUT Antenna:	
The antennas is Exterior Antenna, the best case gain of the antennas is 0dBi, reference to the appendix II for details	

9. TEST SETUP PHOTO

Reference to the appendix I for details.

10. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

※※※※※ END OF REPORT ※※※※※