

FCC Test Report

Report No. : 1812C40195712501

Applicant : Beijing Sillion Technology Corp.,LTD.

Address : 5 Floor, Building A, No.3 Longyu North St.,
Changping District, Beijing, China

Product Name : RFID module

Report Date : Jan. 14, 2025

Shenzhen Anbotek Compliance Laboratory Limited



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TEST REPORT

Applicant : Beijing Silion Technology Corp.,LTD.
Manufacturer : Beijing Silion Technology Corp.,LTD.
Product Name : RFID module
Model No. : SIM7200, SIM5200, SIM3200
Trade Mark : N/A
Rating(s) : Input: 5V=2A

Test Standard(s) : FCC Part15 Subpart C, Section 15.247

Test Method(s) : ANSI C63.10: 2020

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of receipt

Dec. 25, 2024

Date of Test

Dec. 25, 2024 ~ Jan. 07, 2025

Prepared by

Cecilia Chen

(Cecilia Chen)

Approved & Authorized Signer

Kingkong Jin

(Kingkong Jin)

Revision History

Report Version	Description	Issued Date
R00	Original Issue.	Jan. 14, 2025

Note 1:
This is a Class II application which was based on the original report 18220WC30002601. The difference between the original device and current one described as following:

- 1. Update the Antenna.
- 2. Update the Photograph of Antenna.

The changes are not related with the other RF parameters, only Radiation Spurious Emission were retested.

1. General Information

1.1. Client Information

Applicant	:	Beijing Silion Technology Corp.,LTD.
Address	:	5 Floor, Building A, No.3 Longyu North St., Changping District, Beijing, China
Manufacturer	:	Beijing Silion Technology Corp.,LTD.
Address	:	5 Floor, Building A, No.3 Longyu North St., Changping District, Beijing, China
Factory	:	Beijing Silion Technology Corp.,LTD.
Address	:	5 Floor, Building A, No.3 Longyu North St., Changping District, Beijing, China

1.2. Description of Device (EUT)

Product Name	:	RFID module
Model No.	:	SIM7200, SIM5200, SIM3200 (Note: All samples are the same except the model number, appearance and size, so we prepare "SIM7200"for test only.)
Trade Mark	:	N/A
Test Power Supply	:	AC 120V, 60Hz for adapter
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	N/A.
RF Specification		
Support Technology	:	☒ RFID
Operation Mode	:	☐ DSSS ☒ FHSS
Operation Frequency	:	902.750~927.25MHz
Number of Channel	:	50 Channels
Modulation Type	:	ASK
Antenna Type	:	Ceramic antenna
Antenna Gain(Peak)	:	7dBi
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

1.3. Auxiliary Equipment Used During Test

Description	Rating(s)
Adapter	Model: PA-1650-58 Input: AC100-240~50/60Hz, 1.6A CMIIT KP06503020
Computer	Model: N19W3 Input: 19V/3.42A;20V/3.25A CMIIT ID:2020AJ3862

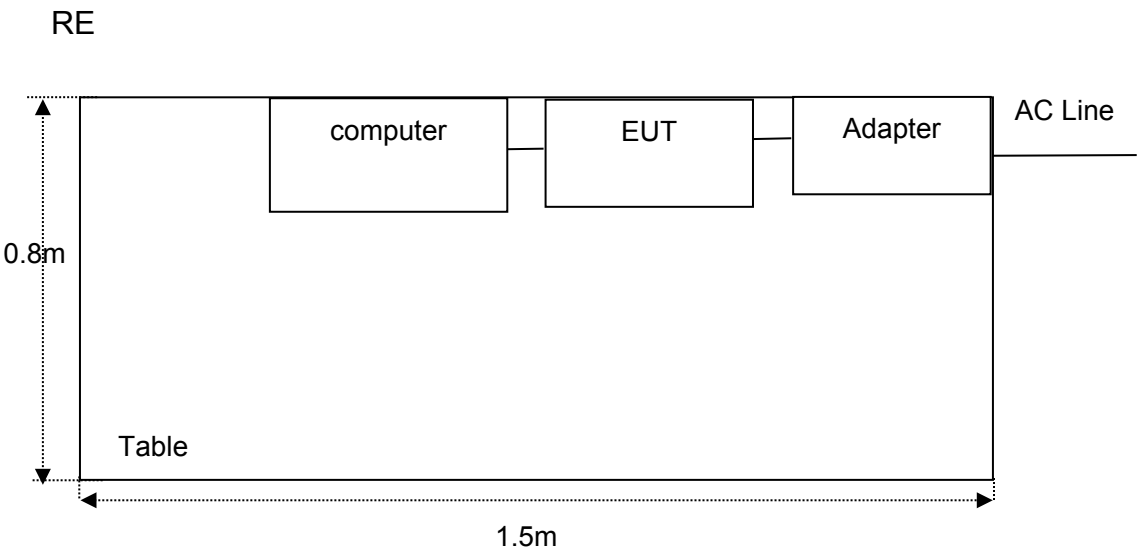
1.4. Description of Test Modes

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	902.750	18	911.250	35	919.750
02	903.250	19	911.750	36	920.250
03	903.750	20	912.250	37	920.750
04	904.250	21	912.750	38	921.250
05	904.750	22	913.250	39	921.750
06	905.250	23	913.750	40	922.250
07	905.750	24	914.250	41	922.750
08	906.250	25	914.750	42	923.250
09	906.750	26	915.250	43	923.750
10	907.250	27	915.750	44	924.250
11	907.750	28	916.250	45	924.750
12	908.250	29	916.750	46	925.250
13	908.750	30	917.250	47	925.750
14	909.250	31	917.750	48	926.250
15	909.750	32	918.250	49	926.750
16	910.250	33	918.750	50	927.25
17	910.750	34	919.250	/	/

Note:

1. The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.
2. EUT was tested with Channel 1, 25 and 50.

1.5. Description Of Test Setup



1.6. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Jan. 18, 2024	1 Year
2.	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040DT00 1	Jan. 17, 2024	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Jan. 17, 2024	1 Year
4.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Jan. 23, 2024	1 Year
5.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Sept. 09, 2024	1 Year
6.	EMI Preamplifier	SKET Electronic	LNPA-0118G- 45	SKET-PA-002	Jan. 17, 2024	1 Year
7.	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	Oct. 16, 2022	3 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	Oct. 23, 2022	3 Year
9.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Sept. 12, 2024	1 Year
10.	Horn Antenna	A-INFO	LB-180400-KF	J211060628	Jan. 22, 2024	3 Year
11.	Pre-amplifier	SONOMA	310N	186860	Jan. 17, 2024	1 Year
12.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
13.	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY53280032	Sept. 09, 2024	1 Year
14.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Feb. 04, 2024	1 Year
15.	Signal Generator	Agilent	E4421B	MY41000743	Oct. 10, 2024	1 Year
16.	DC Power Supply	IVYTECH	IV3605	1804D360510	Sept. 09, 2024	1 Year
17.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Oct. 14, 2024	1 Year
18.	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102150	May. 06, 2024	1 Year

1.7. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Horizontal)
	:	Ur = 3.8 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4 dB

1.8. Description of Test Facility

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

FCC-Registration No.: 434132

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 434132.

ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

2. Summary of Test Results

Standard Section	Test Item	Result
15.203/15.247(c)	Antenna Requirement	PASS
15.205/15.209	Spurious Emission	PASS
Remark: "N/A" is an abbreviation for Not Applicable.		

3. Radiation Spurious Emission and Band Edge

3.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209 and 15.205				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	74.0	Peak	3

Remark:
 (1)The lower limit shall apply at the transition frequency.
 (2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

3.2. Test Setup

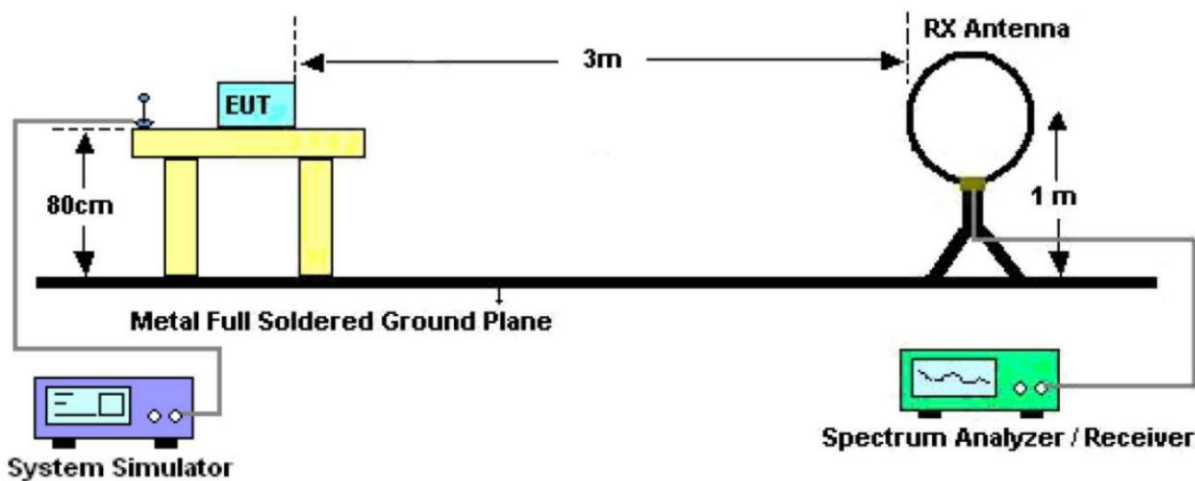


Figure 1. Below 30MHz

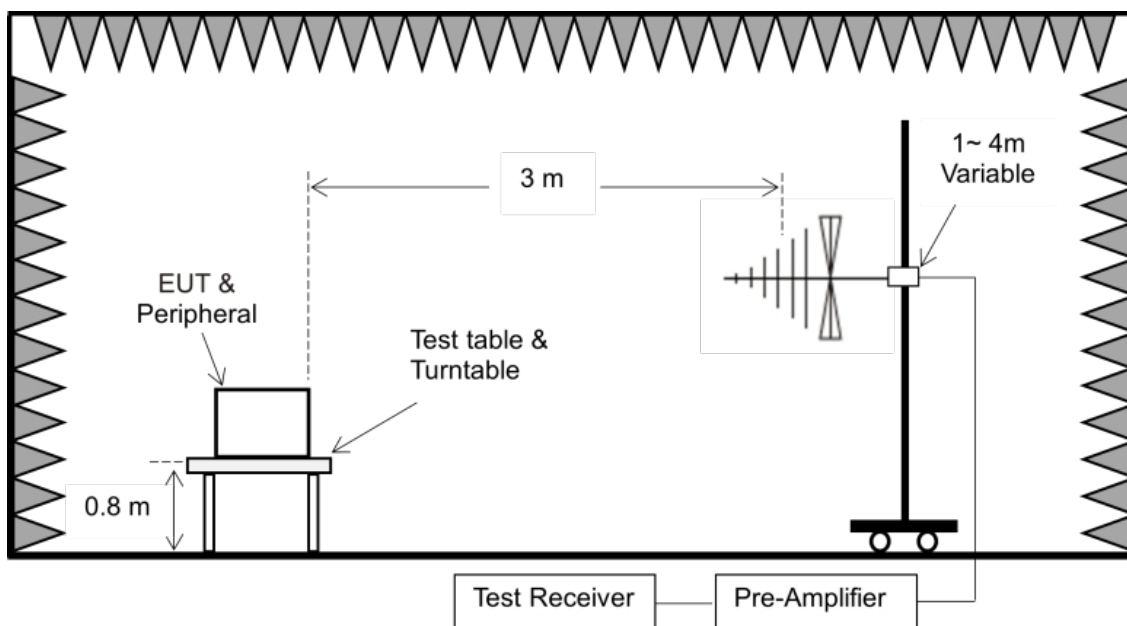


Figure 2. 30MHz to 1GHz

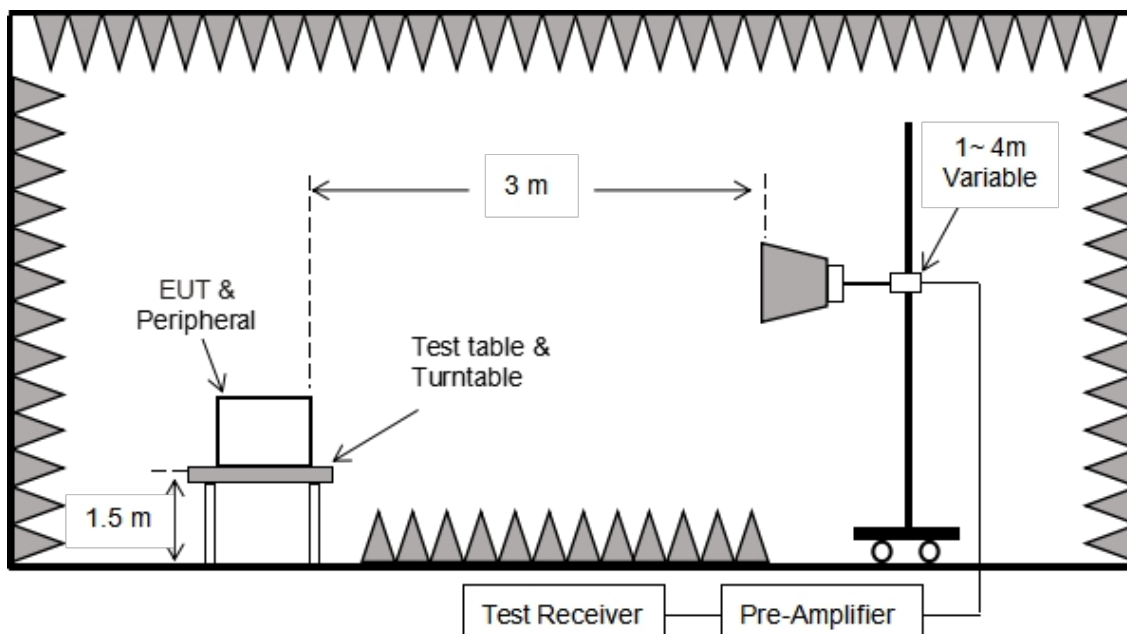


Figure 3. Above 1 GHz

3.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

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.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For above 1GHz, Set the spectrum analyzer as:

RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

RBW =1MHz, VBW =10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

3.4. Test Data

PASS

During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

During the test, pre-scan all modes, only the worst case is recorded in the report.



Test Results (30~1000MHz)

Test Mode:

Low CH (902.75MHz)

Power Source:

AC 120V, 60Hz for adapter

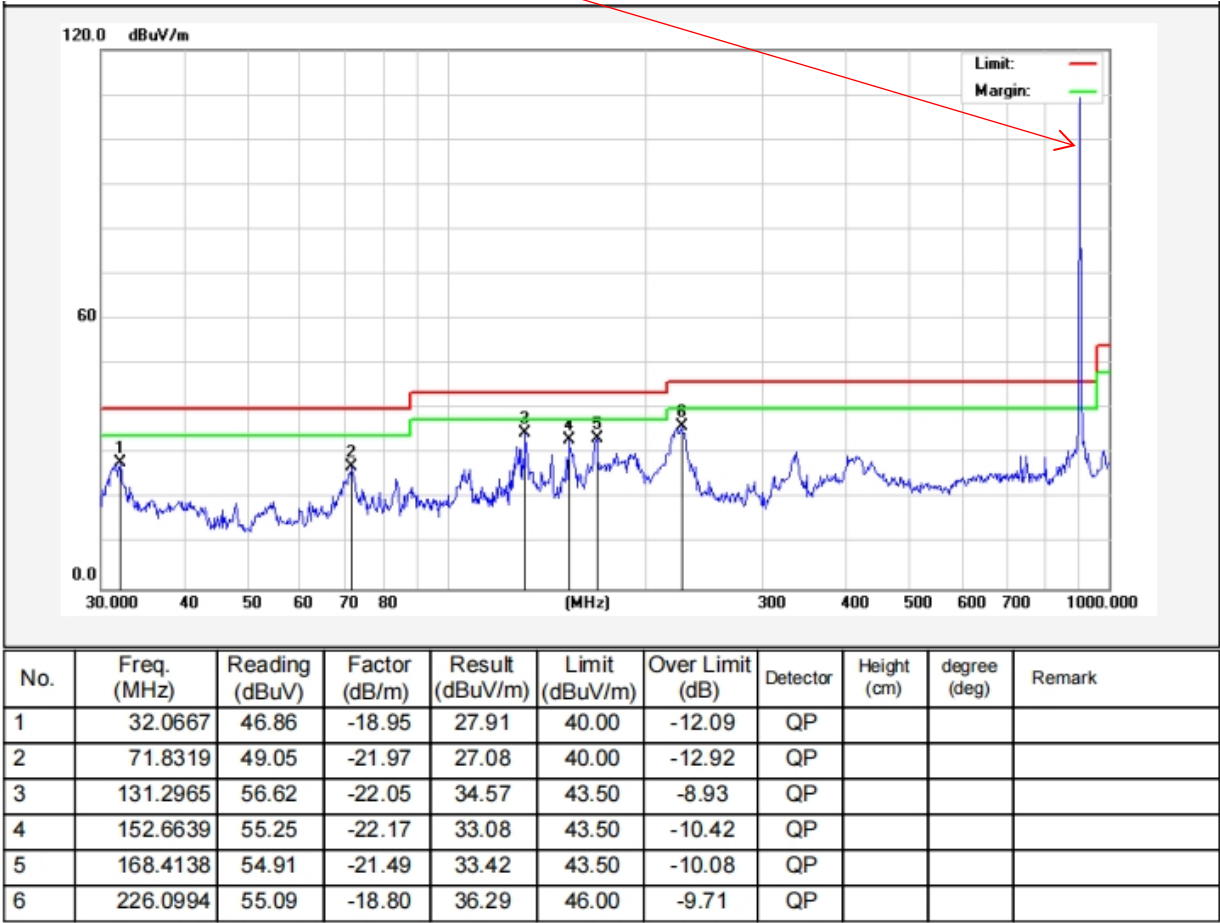
Polarization:

Horizontal

Temp.(°C)/Hum.(%RH):

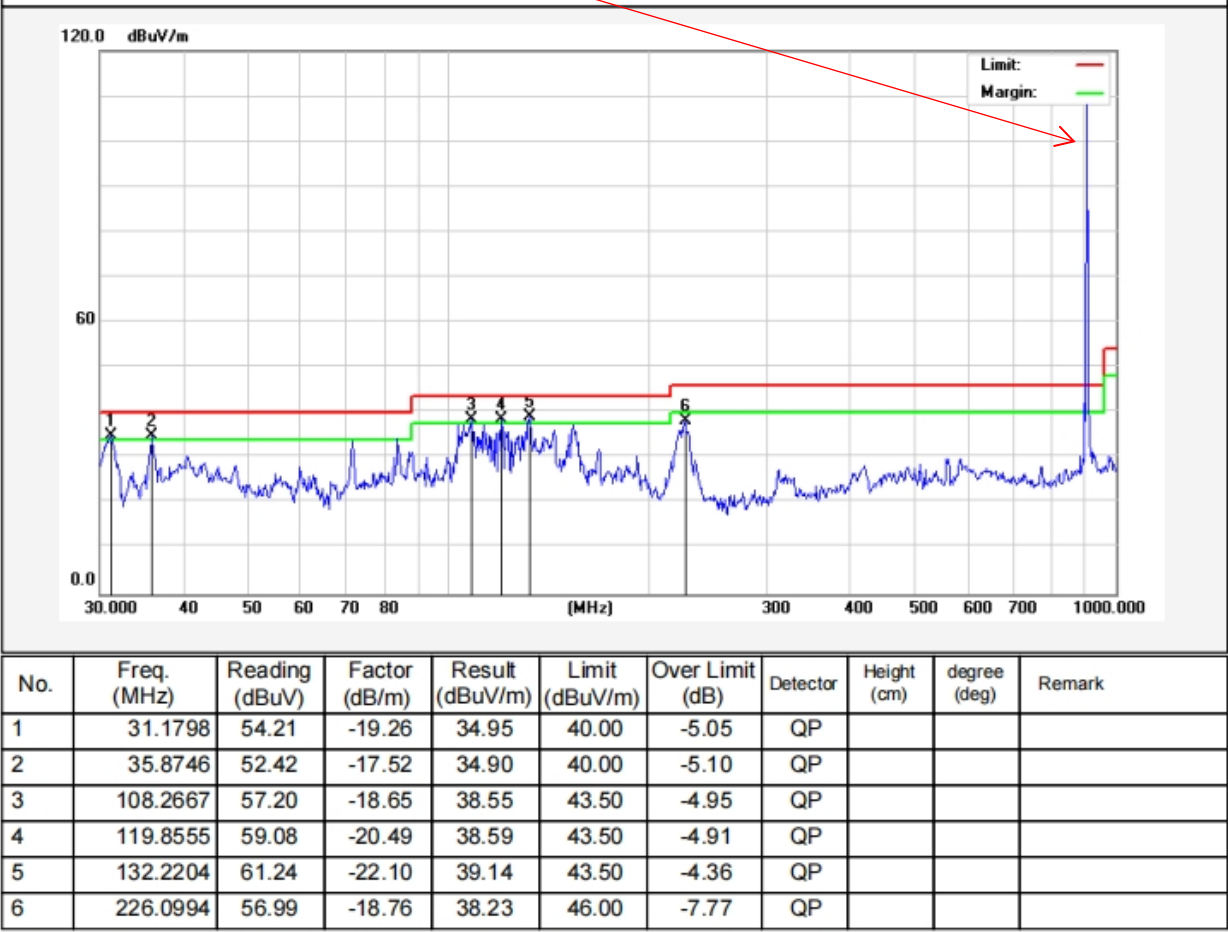
25.3°C/54%RH

Fundamental



Test Results (30~1000MHz)

Test Mode: Low CH (902.75MHz)
Power Source: AC 120V, 60Hz for adapter
Polarization: Vertical
Temp.(°C)/Hum.(%RH): 25.3°C/54%RH
Fundamental



Test Results (1GHz-25GHz)

Test channel: Lowest						
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
1805.50	34.17	17.67	51.84	74.00	-22.16	Vertical
2708.25	33.25	20.94	54.19	74.00	-19.81	Vertical
3611.00	36.06	22.51	58.57	74.00	-15.43	Vertical
4513.75	*			74.00		Vertical
5416.50	*			74.00		Vertical
1805.50	33.34	17.67	51.01	74.00	-22.99	Horizontal
2708.25	35.90	20.94	56.84	74.00	-17.16	Horizontal
3611.00	30.56	22.51	53.07	74.00	-20.93	Horizontal
4513.75	*			74.00		Horizontal
5416.50	*			74.00		Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
1805.50	22.44	17.67	40.11	54.00	-13.89	Vertical
2708.25	22.30	20.94	43.24	54.00	-10.76	Vertical
3611.00	25.53	22.51	48.04	54.00	-5.96	Vertical
4513.75	*			54.00		Vertical
5416.50	*			54.00		Vertical
1805.50	21.67	17.67	39.34	54.00	-14.66	Horizontal
2708.25	24.93	20.94	45.87	54.00	-8.13	Horizontal
3611.00	20.07	22.51	42.58	54.00	-11.42	Horizontal
4513.75	*			54.00		Horizontal
5416.50	*			54.00		Horizontal

Test Results (1GHz-25GHz)

Test channel: Middle						
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
1829.50	33.72	17.70	51.42	74.00	-22.58	Vertical
2744.25	33.22	20.97	54.19	74.00	-19.81	Vertical
3659.00	35.56	22.51	58.07	74.00	-15.93	Vertical
4573.75	*			74.00		Vertical
5488.50	*			74.00		Vertical
1829.50	33.15	17.70	50.85	74.00	-23.15	Horizontal
2744.25	35.77	20.97	56.74	74.00	-17.26	Horizontal
3659.00	30.28	22.51	52.79	74.00	-21.21	Horizontal
4573.75	*			74.00		Horizontal
5488.50	*			74.00		Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
1829.50	22.53	17.70	40.23	54.00	-13.77	polarization
2744.25	22.16	20.97	43.13	54.00	-10.87	Vertical
3659.00	25.38	22.51	47.89	54.00	-6.11	Vertical
4573.75	*			54.00		Vertical
5488.50	*			54.00		Vertical
1829.50	21.78	17.70	39.48	54.00	-14.52	Vertical
2744.25	25.28	20.97	46.25	54.00	-7.75	Horizontal
3659.00	20.37	22.51	42.88	54.00	-11.12	Horizontal
4573.75	*			54.00		Horizontal
5488.50	*			54.00		Horizontal

Test Results (1GHz-25GHz)

Test channel: Highest						
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
1854.50	33.85	17.74	51.59	74.00	-22.41	Vertical
2781.75	33.38	20.99	54.37	74.00	-19.63	Vertical
3709.00	36.26	22.51	58.77	74.00	-15.23	Vertical
4636.25	*			74.00		Vertical
5563.50	*			74.00		Vertical
1854.50	33.29	17.74	51.03	74.00	-22.97	Horizontal
2781.75	35.98	20.99	56.97	74.00	-17.03	Horizontal
3709.00	30.66	22.51	53.17	74.00	-20.83	Horizontal
4636.25	*			74.00		Horizontal
5563.50	*			74.00		Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
1854.50	23.65	17.74	41.39	54.00	-12.61	Vertical
2781.75	23.43	20.99	44.42	54.00	-9.58	Vertical
3709.00	26.03	22.51	48.54	54.00	-5.46	Vertical
4636.25				54.00		Vertical
5563.50				54.00		Vertical
1854.50	22.96	17.74	40.70	54.00	-13.30	Horizontal
2781.75	26.08	20.99	47.07	54.00	-6.93	Horizontal
3709.00	20.52	22.51	43.03	54.00	-10.97	Horizontal
4636.25	*			54.00		Horizontal
5563.50	*			54.00		Horizontal

Remark:

1. Result = Reading + Factor
2. Test frequency are from 1GHz to 25GHz, "*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

4. Antenna Requirement

4.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203 /247(c)
Requirement	1) 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. 2) 15.247(c) (1)(i) requirement: Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 7dBi.

4.2. Antenna Connected Construction

The antenna is ceramic antenna which permanently attached, and the best case gain of the antenna is 7dBi. It complies with the standard requirement.

APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

----- End of Report -----