



FCC AND ISED CERTIFICATION TEST REPORT

Applicant:	Guangzhou Shikun Electronics Co., Ltd
Address:	NO.6 Liankun Road, Huangpu District, Guangzhou, China
Manufacturer:	Guangzhou Shikun Electronics Co., Ltd
Address:	NO.6 Liankun Road, Huangpu District, Guangzhou, China
Product Description:	IEEE 802.11b/g/n/a/ac/ax 2T2R USB WiFi Module Integrated BT2.1+EDR/4.2/5.2
Brand Name:	NA
Tested Model:	SKI.WB921AU.1
FCC ID:	2AR82-SKIWB921AU1
IC:	24728-SKIWB921AU1
Report No.:	JCF241017071-003
Received Date:	Oct. 17, 2024
Tested Date:	Oct. 17, 2024 ~ Oct. 31 2024
Issued Date:	Oct. 31 2024
Test Standards:	FCC Rules and Regulations Part 15 Subpart C, RSS-247 Issue 3 August 2023
Test Procedure:	ANSI C63.10:2013, RSS-Gen Issue 5 A2, Feb. 2021
Test Result:	Pass
Prepared By:	
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Date: Oct. 31 2024	
Reviewed By:	
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Date: Oct. 31 2024	
Approved By:	
 <u>Talent Zhang</u> <u>Talent Zhang/Engineer</u>	
Date: Oct. 31 2024	

Note: The test results in this report apply exclusively to the tested model / sample. Without written approval of Guangzhou Jingce Testing Technology Co., Ltd. the test report shall not be reproduced except in full.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Oct. 31 2024	Original Report	/

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1. Test Report Declare

Applicant:	Guangzhou Shikun Electronics Co., Ltd
Address:	NO.6 Liankun Road, Huangpu District, Guangzhou, China
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Address:	NO.6 Liankun Road, Huangpu District, Guangzhou, China
Product Name:	IEEE 802.11b/g/n/a/ac/ax 2T2R USB WiFi Module Integrated BT2.1+EDR/4.2/5.2
Brand Name:	NA
Model Name:	SKI.WB921AU.1
Difference Description:	NA

We Declare:

The equipment described above is tested by Guangzhou Jingce Testing Technology Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangzhou Jingce Testing Technology Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests except as provided information by clients.

2. Summary of Test Results

Summary of Test Results			
Clause	Test Items	FCC/ISED Rules	Test Results
1	6dB Bandwidth and 99 % Occupied Bandwidth	FCC Part 15.247 (a) (2) RSS-247 Clause 5.2 (a) ISED RSS-Gen Clause 6.7	NA
2	Peak Conducted Output Power	FCC Part 15.247 (b) (3) RSS-247 Clause 5.4 (d)	NA
3	Power Spectral Density	FCC Part 15.247 (e) RSS-247 Clause 5.2 (b)	NA
4	Conducted Bandedge and Spurious Emission	FCC Part 15.247 (d) RSS-247 Clause 5.5	NA
5	Radiated Bandedge and Spurious Emission	FCC Part 15.247 (d) FCC Part 15.209 FCC Part 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9	PASS
6	Conducted Emission Test For AC Power Port	FCC Part 15.207 RSS-GEN Clause 8.8	PASS
7	Antenna Requirement	FCC Part 15.203 RSS-GEN Clause 6.8	NA

Note: This module has passed the certification. The module plans to change PCB layout, but the wireless-related wiring has not changed. In the report, only the radiated emission and Conducted Emission Test For AC Power Port are tested. Other test items and test data will refer to the report of the module (FCC ID: 2AR82-SKIWB921AU1 IC: 24728-SKIWB921AU1).

3. Test Laboratory

Guangzhou Jingce Testing Technology Co., Ltd.

Add.: No.10, Hefeng No.1 street, Huangpu District, Guangzhou, Guangdong, People's Republic of China

Association for Laboratory Accreditation(A2LA). Certificate Number: 6594.03

FCC Designation Number: CN1381. Test Firm Registration Number: 486550

IC Test Firm Registration Number: 31808

Conformity Assessment Body identifier: CN0173

4. Equipment Under Test

4.1. Description of EUT

EUT Name:	IEEE 802.11b/g/n/a/ac/ax 2T2R USB WiFi Module Integrated BT2.1+EDR/4.2/5.2
Model Number:	SKI.WB921AU.1
EUT Function Description:	Please refer to user manual of this device
Power Supply:	DC 3.3V+/-0.3
Hardware Version:	NA
Software Version:	NA
Radio Specification:	IEEE802.11b/g/n/ax
Operation Frequency:	IEEE 802.11b: 2412MHz—2462MHz IEEE 802.11g: 2412MHz—2462MHz IEEE 802.11n HT20: 2412MHz—2462MHz IEEE 802.11n HT40: 2422MHz—2452MHz IEEE 802.11ax HE20: 2412MHz—2462MHz IEEE 802.11ax HE40: 2422MHz—2452MHz
Modulation:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n (HT20/40): OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax (HE20/40): OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Data Rate:	IEEE 802.11b: 1, 2, 5.5, 11 Mbps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n HT20: 14.4, 28.9, 43.3, 57.8, 86.7, 115.6, 130.0, 144.4Mbps IEEE 802.11n HT40: 30.0, 60.0, 90.0, 120.0, 180.0, 240.0, 270.0, 300.0 Mbps IEEE 802.11ax HE20: 17.2, 34.4, 51.6, 68.8, 103.2, 137.6, 154.8, 172.1, 206.5, 229.4, 258.1, 286.8Mbps IEEE 802.11ax HE40: 34.4, 51.6, 68.8, 103.2, 137.6, 206.5, 275.3, 309.7, 344.1, 412.9, 458.8, 516.2, 573.5Mbps
Antenna Type:	External Antenna, MAX. Gain: 1.5 dBi

Note 1: EUT is the ab. of equipment under test.

Note 2: The antenna gain is declared by the customer and the laboratory is not responsible for the accuracy of the antenna gain.

4.2. Channel List

Channel List for 802.11b/g/n/ax (20 MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	4	2427	7	2442	10	2457
2	2417	5	2432	8	2447	11	2462
3	2422	6	2437	9	2452	/	/

Channel List for 802.11n/ax (40 MHz)					
Channel	Frequency (MHz)	Channel	Frequency(MHz)	Channel	Frequency (MHz)
3	2422	6	2437	9	2452
4	2427	7	2442	/	/

5	2432	8	2447	/	/
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4.3. Test Channel Configuration

Tested mode, channel and rand data rate information			
Mode	Data rate (Mbps) (see Note)	Channel	Frequency (MHz)
802.11b	1	Low: CH1	2412
	1	Middle: CH6	2437
	1	High: CH11	2462
802.11g	6	Low: CH1	2412
	6	Middle: CH6	2437
	6	High: CH11	2462
802.11n HT20	MCS 8	Low: CH1	2412
	MCS 8	Middle: CH6	2437
	MCS 8	High: CH11	2462
802.11n HT40	MCS 8	Low: CH3	2422
	MCS 8	Middle: CH6	2437
	MCS 8	High: CH9	2452
802.11ax HE20	MCS 0	Low: CH1	2412
	MCS 0	Middle: CH6	2437
	MCS 0	High: CH11	2462
802.11ax HE40	MCS 0	Low: CH3	2422
	MCS 0	Middle: CH6	2437
	MCS 0	High: CH9	2452

Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

4.4. Test environment conditions

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

Temperature range:	21-25 °C
Humidity range:	40-75%
Pressure range:	86-106 kPa

4.5. Description of Available Antennas

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band				
Test Software		QATool_Dbq		
Modulation Mode	Transmit Antenna Number	Test Software Setting Value		
		Channel	ANT1	ANT2
802.11b	2	CH1	Default	Default
		CH6	Default	Default
		CH11	Default	Default
802.11g	2	CH1	Default	Default
		CH6	Default	Default

		CH11	Default	Default
802.11HT20	2	CH1	Default	Default
		CH6	Default	Default
		CH11	Default	Default
		CH3	Default	Default
802.11n HT40	2	CH6	Default	Default
		CH9	Default	Default
		CH1	Default	Default
802.11ax HE20	2	CH6	Default	Default
		CH11	Default	Default
		CH3	Default	Default
802.11ax HE40	2	CH6	Default	Default
		CH9	Default	Default

4.6. Description of Available Antennas

Test Mode	Transmit and Receive Mode	Description
802.11b	<input checked="" type="checkbox"/> 2TX, 2RX	ANT 1 and ANT2 can be used as transmitting/receiving antenna.
802.11g	<input checked="" type="checkbox"/> 2TX, 2RX	ANT 1 and ANT2 can be used as transmitting/receiving antenna.
802.11n HT20	<input checked="" type="checkbox"/> 2TX, 2RX	ANT 1 and ANT2 can be used as transmitting/receiving antenna.
802.11n HT40	<input checked="" type="checkbox"/> 2TX, 2RX	ANT 1 and ANT2 can be used as transmitting/receiving antenna.
802.11ax HE20	<input checked="" type="checkbox"/> 2TX, 2RX	ANT 1 and ANT2 can be used as transmitting/receiving antenna.
802.11ax HE40	<input checked="" type="checkbox"/> 2TX, 2RX	ANT 1 and ANT2 can be used as transmitting/receiving antenna.

Note:

- Only 802.11n HT20/HT40 and 802.11ax HE20/HE40 support MIMO mode
- WLAN 2.4 GHz & WLAN 5G can't transmit simultaneously. (declared by client)

5. Description of Test Setup

5.1. Accessory

Description of Accessories	Manufacturer	Model Number	Description	Remark
/	/	/	/	/

5.2. Support Equipment

Equipment	Brand Name	Model Name	P/N
PC	Lenovo	T480	/
Adapter	Shangwei	SW-12300	/

5.3. Test Setup

The EUT can work in Fixed Frequency mode.

5.4. Setup Diagram for Tests



6. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
AC Power Conduction emission	1.37 dB
All Radiated emissions	5.4dB
Conducted emissions	3.09 dB
Occupied Channel Bandwidth	1.1%
Conducted Output power	0.82dB
Power Spectral Density	0.82dB

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

7. Measuring Instrument and Software Used

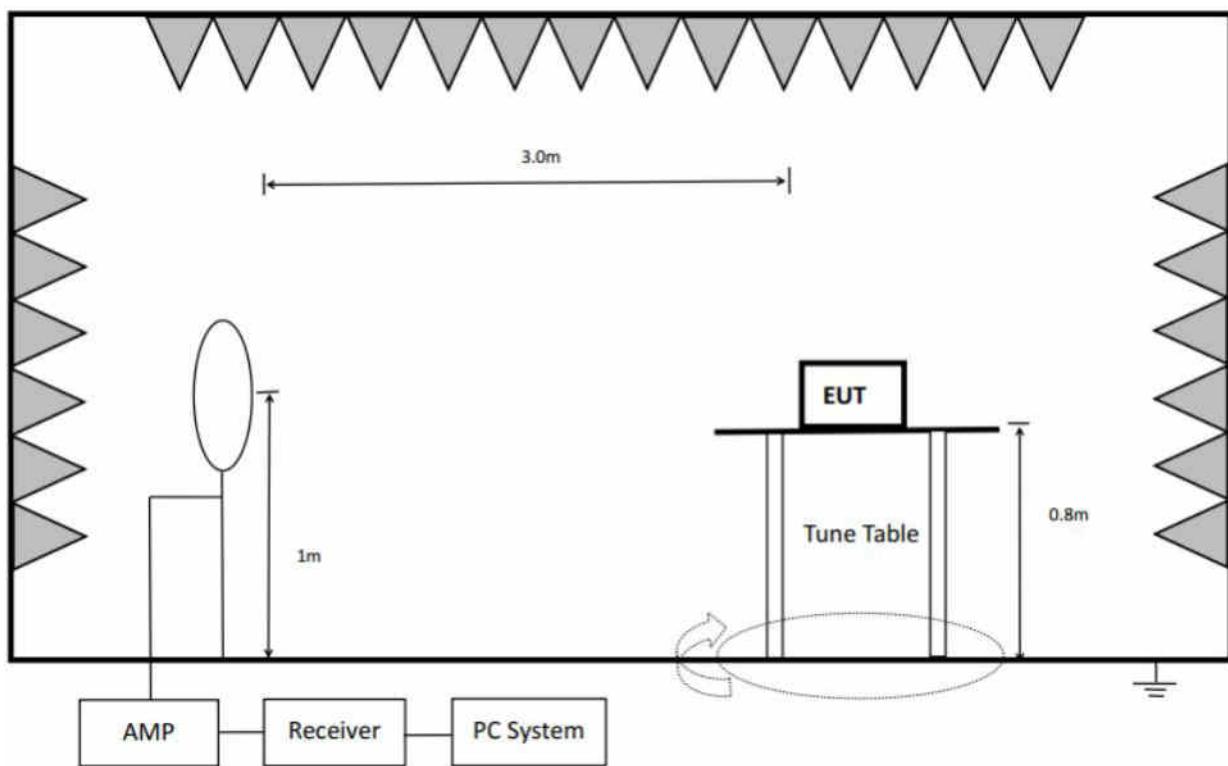
TS Test System						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
<input checked="" type="checkbox"/>	Spectrum Analyzer	Keysight	N9030B	MY56320512	Aug. 22, 2024	Aug. 21, 2025
<input checked="" type="checkbox"/>	Vector Signal Generator	Keysight	N5182B	MY57300334	Aug. 22, 2024	Aug. 21, 2025
<input checked="" type="checkbox"/>	Signal Generator	Keysight	N5171B	MY57280639	Aug. 22, 2024	Aug. 21, 2025
<input checked="" type="checkbox"/>	DC POWER	Keysight	E342A	MY59020356	Aug. 29, 2024	Aug. 28, 2025
<input checked="" type="checkbox"/>	Incubator thermometer	GWS	EL-02JA	21107288	Aug. 15, 2024	Aug. 14, 2025
<input checked="" type="checkbox"/>	Control unit(Power sensor)	Tonscend	JS0806-2	/	Aug. 23, 2024	Aug. 22, 2025
<input checked="" type="checkbox"/>	Spectrum Analyzer	Keysight	N9020B	MY60112206	Sep. 11, 2024	Sep. 10, 2025
<input checked="" type="checkbox"/>	Control unit(Power sensor)	Tonscend	JS0806-2	21H8060465	Aug. 22, 2024	Aug. 21, 2025
<input checked="" type="checkbox"/>	Spectrum Analyzer	Keysight	N9020B	MY60112811	Aug. 23, 2024	Aug. 22, 2025
<input checked="" type="checkbox"/>	Signal Generator	Keysight	N5173B	MY62220145	Aug. 23, 2024	Aug. 22, 2025
<input checked="" type="checkbox"/>	Vector Signal Generator	Keysight	N5182B	MY61252859	Aug. 22, 2024	Aug. 21, 2025
<input checked="" type="checkbox"/>	DC POWER	Keysight	E3642A	MY40005294	Aug. 30, 2024	Aug. 29, 2025
<input checked="" type="checkbox"/>	Control unit(Power	Tonscend	JS0806-2	24F80620865	Aug. 23, 2024	Aug. 22, 2025

	sensor)					
Software						
Used	Description	Manufacturer	Name		Version	
<input checked="" type="checkbox"/>	Test software	Tonscend	JS1120-3		V3.3.10	
RSE Test System						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
<input checked="" type="checkbox"/>	EMI Receiver	R&S	ESR26	101424	Sep. 14, 2024	Sep. 13, 2025
<input checked="" type="checkbox"/>	Hybrid Antenna	Schwarzbeck	VULB9163	01416	May. 22, 2024	May. 21, 2025
<input checked="" type="checkbox"/>	Horn Antenna 1	Schwarzbeck	BBHA 9120 D	02910	Sep. 11, 2024	Sep. 10, 2025
<input checked="" type="checkbox"/>	Horn Antenna 2	ETS	BBHA 9170	1090	Sep. 11, 2024	Sep. 10, 2025
<input checked="" type="checkbox"/>	loop-antenna	Schwarzbeck	FMZB 1513-60	00030	Jan. 14, 2024	Jan. 13, 2025
<input checked="" type="checkbox"/>	Test path	/	Path2: WIFI-2.4G 1-3GHz	/	Aug. 23, 2024	Aug. 22, 2025
<input checked="" type="checkbox"/>	Test path	/	Path7: ALL PASS 1-18GHz	/	Aug. 23, 2024	Aug. 22, 2025
<input checked="" type="checkbox"/>	Test path	/	Path9: 3GHz High PASS 3-18GHz	/	Aug. 23, 2024	Aug. 22, 2025
<input checked="" type="checkbox"/>	Test path	/	Path16: 30MHz-1GHz ALL PASS NO AMP	/	Aug. 23, 2024	Aug. 22, 2025
<input checked="" type="checkbox"/>	Signal Pre-Amplifier	ETS	3116C-PA	00217677	Sep. 06, 2024	Sep. 05, 2025
<input checked="" type="checkbox"/>	3m Fully-anechoic Chamber	YIHENG	9m*6m*6m	001	Sep. 05, 2023	Sep. 04, 2026
Software						
Used	Description	Manufacturer	Name		Version	
<input checked="" type="checkbox"/>	Test software	Tonscend	TS+		V3.0.0.4	
Conducted Emission Test For AC Power Port						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
<input checked="" type="checkbox"/>	LISN	R&S	ENV216	102509	Aug. 22, 2024	Aug. 21, 2025
<input checked="" type="checkbox"/>	EMI Receiver	R&S	ESR	102154	Aug. 22, 2024	Aug. 21, 2025
Software						
Used	Description	Manufacturer	Name		Version	
<input checked="" type="checkbox"/>	Test software	EZ	EZ-EMC		EMEC-3A1	
Other Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
<input checked="" type="checkbox"/>	Temperature & Humidity	Temperature	HTC-1	/	Sep. 04, 2024	Sep. 03, 2025

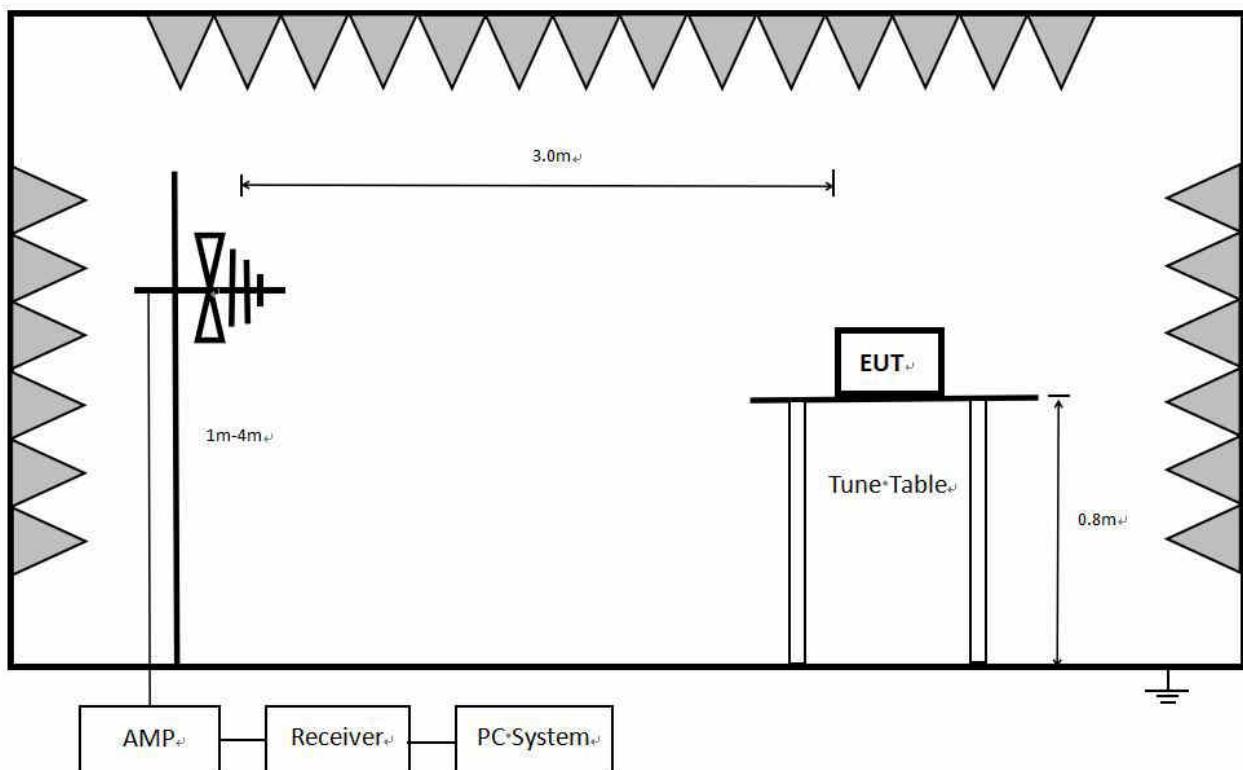
8. Radiated Emission

8.1. Block diagram of test setup

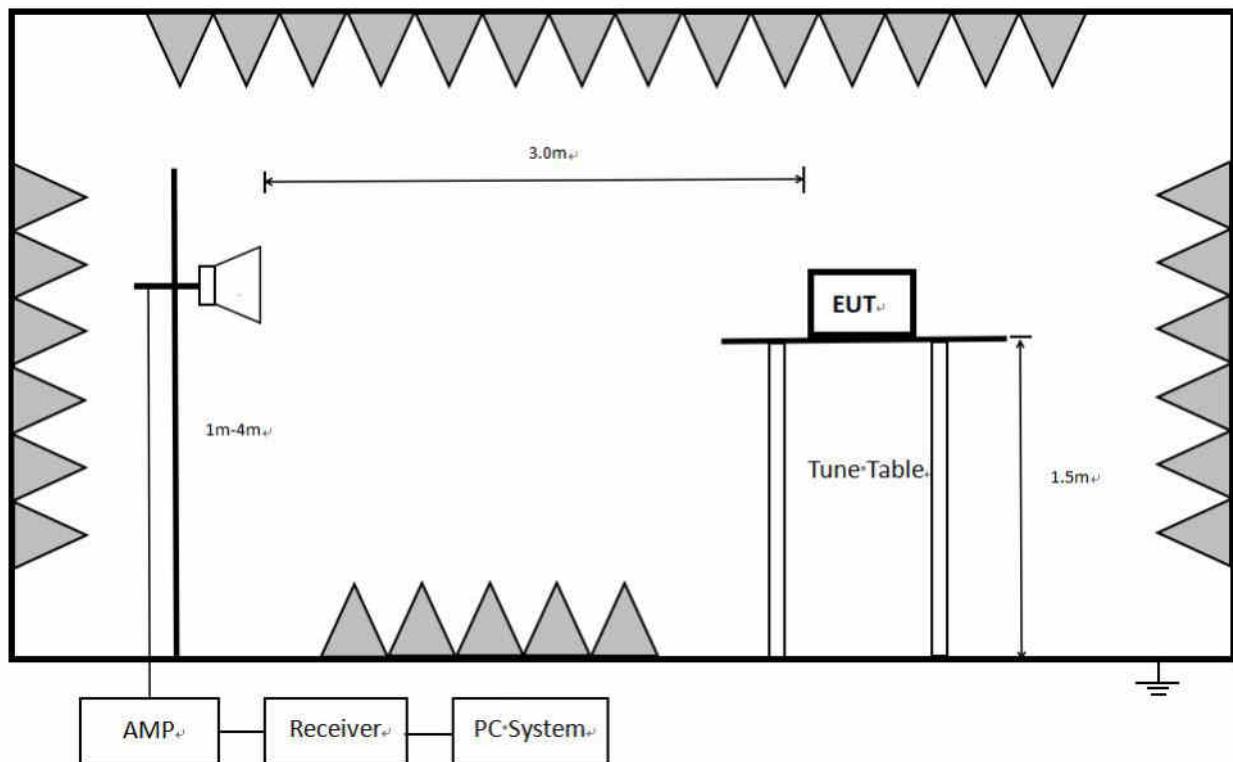
In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:



In 3 m Anechoic Chamber, test setup diagram for 30 MHz - 1 GHz:



In 3 m Anechoic Chamber, test setup diagram for frequency above 1 GHz:



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

8.2. Limit

(1) FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

²Above 38.6

(2) FCC 15.209 Limit.

Frequency MHz	Distance Meters	Field Strengths Limit	
		μ V/m	dB(μ V)/m
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216~960	3	200	46.0
960~1000	3	500	54.0
Above 1000	3	74.0 dB(μ V)/m (Peak) 54.0 dB(μ V)/m (Average)	

Note: (1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.

About Restricted bands of operation please refer to RSS-Gen section 8.10 and FCC § 15.205(a).

8.3. Test Procedure

Below 30 MHz:

The setting of the spectrum Analyzer

RBW	300 Hz (From 9 kHz to 0.15 MHz)/ 10 kHz (From 0.15 MHz to 30 MHz)
VBW	1 kHz (From 9 kHz to 0.15 MHz)/ 30 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80 cm meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of 1 meter height antenna tower.
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
6. For measurement below 1 GHz, 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. If the emission level of the EUT

measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore, sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.

Below 1 GHz and above 30 MHz:

The setting of the spectrum Analyzer

RBW	100 kHz
VBW	300 kHz
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80 cm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1GHz, 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. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Above 1 GHz:

RBW	1 MHz
VBW	PEAK: 3 MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 1.5m above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for AVG measurements. For the Duty Cycle please refer to clause 8.1.ON TIME AND DUTY CYCLE.
7. Restriction band: Investigated frequency range from 2310 MHz to 2430 MHz and 2445 MHz to 2500 MHz, 2310 MHz to 2450 MHz and 2425 MHz to 2500MHz.

All restriction band should comply with 15.209, other emission should be at least 20 dB below the fundamental.

Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

Note 2: The EUT does not support simultaneous transmission.

Note 3: The EUT was fully exercised with external accessories during the test. In the case of multiple accessory external ports, an external accessory shall be connected to one of each type of port.

8.4. Results

Pass. (See below detailed test result)

All the emissions except fundamental emission from 9 kHz to 25 GHz were comply with 15.209 limits.

Note1: According exploratory test, the emission levels are 20 dB below the limit detected from 9 kHz to 30 MHz, so the final test was performed with frequency range from 30 MHz to 26 GHz and recorded in below.

Note2: For emissions below 1 GHz, according exploratory test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1 GHz, the final test was only performed with EUT working in 11N20_2412 mode.

Note3: For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

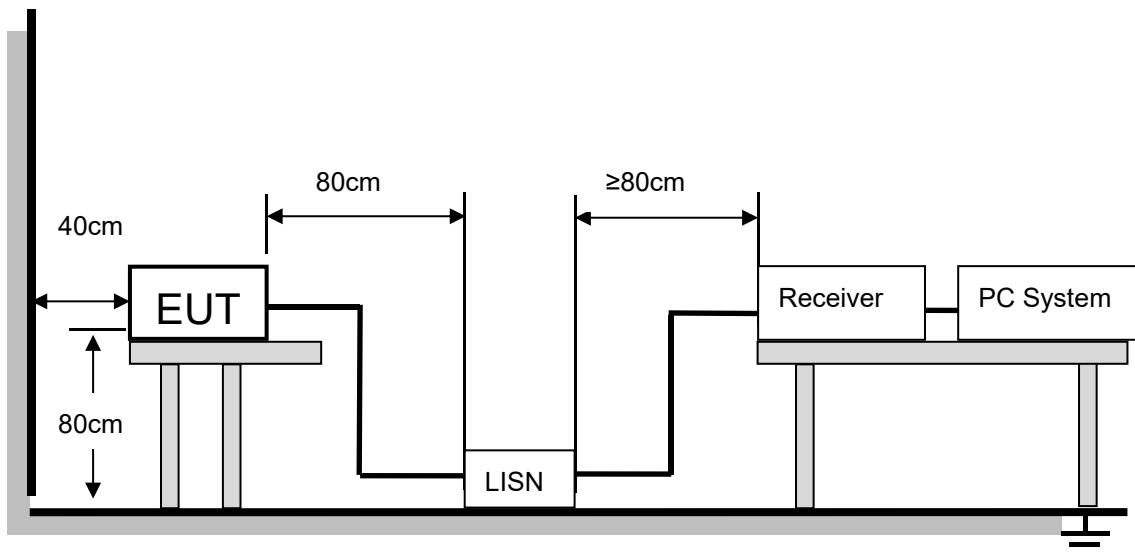
8.5. Original test data

Below 1 GHz and above 30 MHz test data Refer to appendix A

Above 1 GHz test data Refer to appendix B

9. AC Power Line Conducted Emissions

9.1. Block diagram of test setup



The EUT is put on a table of non-conducting material that is 80 cm high. The vertical conducting wall of shielding is located 40 cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9 kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

9.2. Limits

Please refer to CFR 47 FCC § 15.207 (a) and ISED RSS-Gen Clause 8.8.

Frequency (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

9.3. Test procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

9.4. Test result

Pass. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

Note2: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded worse case.

9.5. Original test data

AC Power Line Conducted Emission Test Data Refer to appendix C

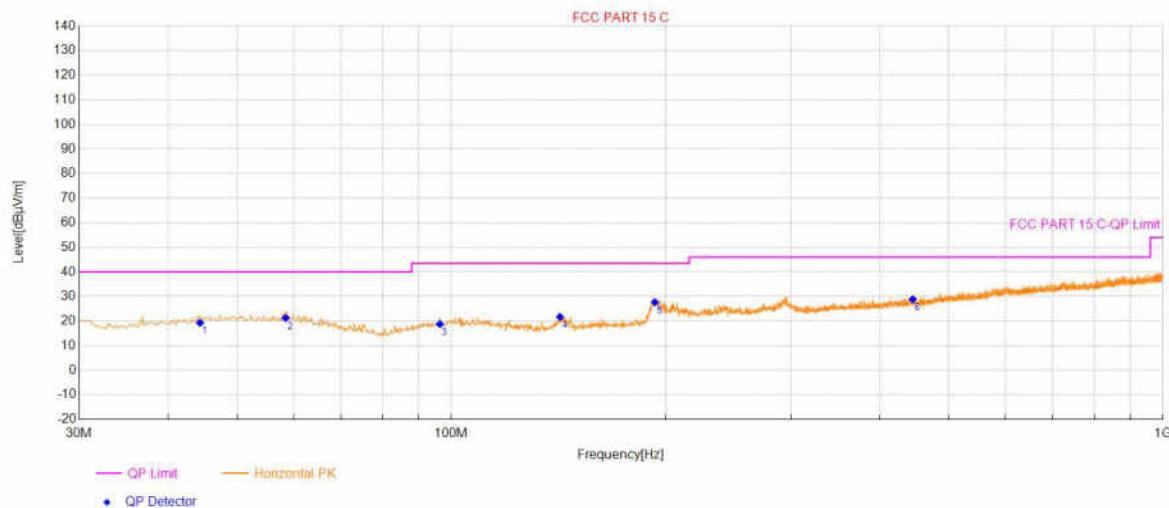
APPENDIX A – Radiated Emission Below 1GHz Test Data

Test Report

Project Information			
EUT:		Environment:	23.3°C;55%
Model:	SKI.WB921AU.1	SN:	
Mode:	11N20_2412	Voltage:	DC 3.3V
Customer:		Engineer:	Fly Liao
Remark:	Power Set:Default		

Start of Test: 2024-10-21

Test Graph



Final Data List								
NO.	Frequency (MHz)	QP Value (dBμV/m)	QP Limit (dBμV/m)	QP Margin (dB)	Height (cm)	Angle (°)	Polarity	Verdict
1	44.3589	19.31	40.00	20.69	100	33	Horizontal	PASS
2	58.5237	21.22	40.00	18.78	100	133	Horizontal	PASS
3	96.3613	18.79	43.50	24.71	100	355	Horizontal	PASS
4	142.1544	21.70	43.50	21.80	100	107	Horizontal	PASS
5	193.1866	27.70	43.50	15.80	100	241	Horizontal	PASS
6	445.0490	28.88	46.00	17.12	100	107	Horizontal	PASS

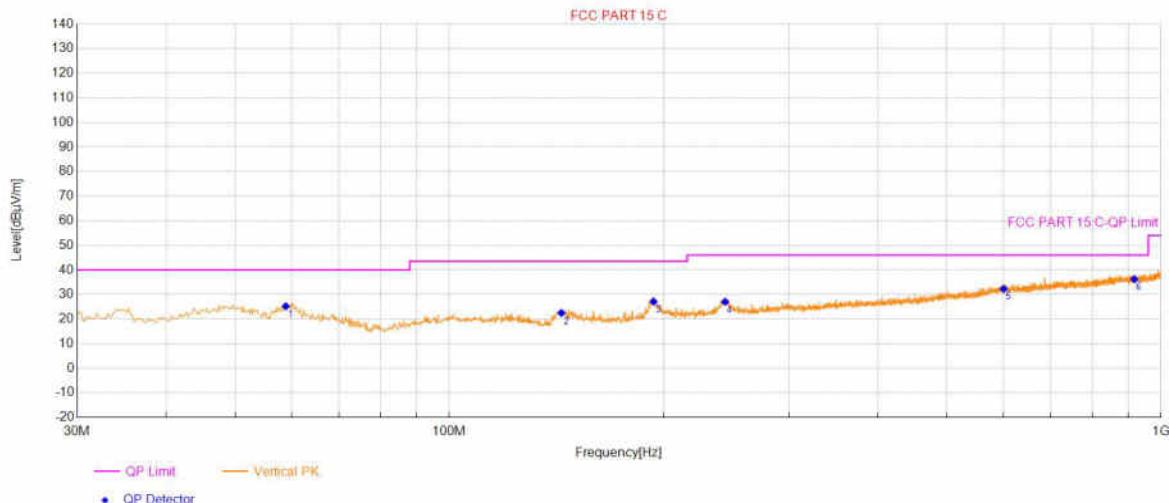
Test Report

Project Information

EUT:		Environment:	23.3°C;55%
Model:	SKI.WB921AU.1	SN:	
Mode:	11N20_2412	Voltage:	DC 3.3V
Customer:		Engineer:	Fly Liao
Remark:	Power Set:Default		

Start of Test: 2024-10-21

Test Graph



Final Data List

NO.	Frequency (MHz)	QP Value (dBμV/m)	QP Limit (dBμV/m)	QP Margin (dB)	Height (cm)	Angle (°)	Polarity	Verdict
1	58.9118	25.19	40.00	14.81	100	328	Vertical	PASS
2	143.7067	22.50	43.50	21.00	100	204	Vertical	PASS
3	193.5747	27.14	43.50	16.36	100	185	Vertical	PASS
4	244.0248	27.07	46.00	18.93	100	24	Vertical	PASS
5	601.0562	32.28	46.00	13.72	100	273	Vertical	PASS
6	917.1454	36.24	46.00	9.76	100	0	Vertical	PASS

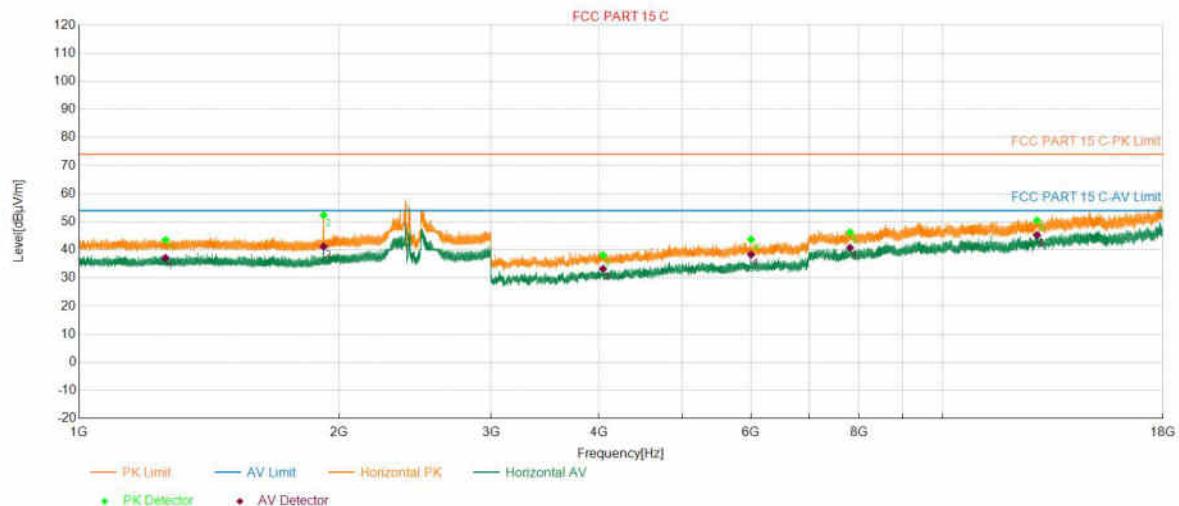
APPENDIX B – Radiated Emission Above 1GHz Test Data

Test Report

Project Information			
Customer:			
EUT:			
Model:	SKI.WB921AU.1	SN:	
Mode:	11N20_2412	Voltage:	DC3.3V
Environment:	Temp: 25°C; Humi:60%	Engineer:	
Remark:			
Test Standard: FCC PART 15 C			

Start of Test: 2024-10-30 19:25:35

Test Graph



PK Final Data List										
NO.	Frequency (MHz)	PK Value (dBμV/m)	PK Limit (dBμV/m)	PK Margin (dB)	AV Value (dBμV/m)	AV Limit (dBμV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1259.1130	43.55	74.00	30.45	37.09	54.00	16.91	150	150	Horizontal
2	1919.7460	52.31	74.00	21.69	41.18	54.00	12.82	150	7	Horizontal
3	4042.5521	38.11	74.00	35.89	33.21	54.00	20.79	150	22	Horizontal
4	6000.1500	43.70	74.00	30.30	38.30	54.00	15.70	150	47	Horizontal
5	7810.7405	46.22	74.00	27.78	40.76	54.00	13.24	150	116	Horizontal
6	12861.4931	50.49	74.00	23.51	45.28	54.00	8.72	150	360	Horizontal

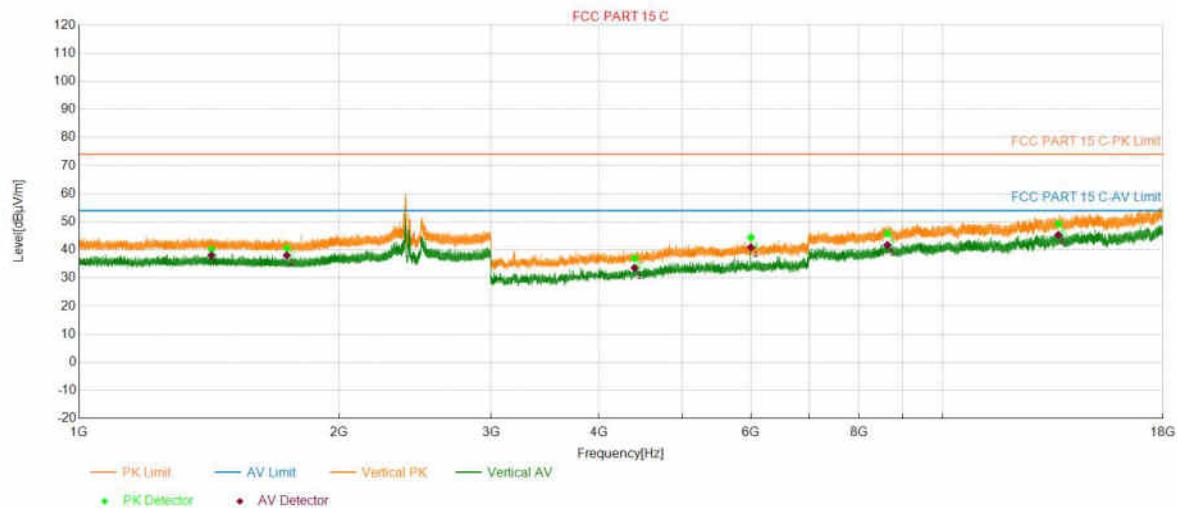
Test Report

Project Information

Customer:			
EUT:			
Model:	SKI.WB921AU.1	SN:	
Mode:	11N20_2412	Voltage:	DC3.3V
Environment:	Temp: 25°C; Humi:60%	Engineer:	Fly Liao
Remark:			
Test Standard: FCC PART 15 C			

Start of Test: 2024-10-30 19:26:55

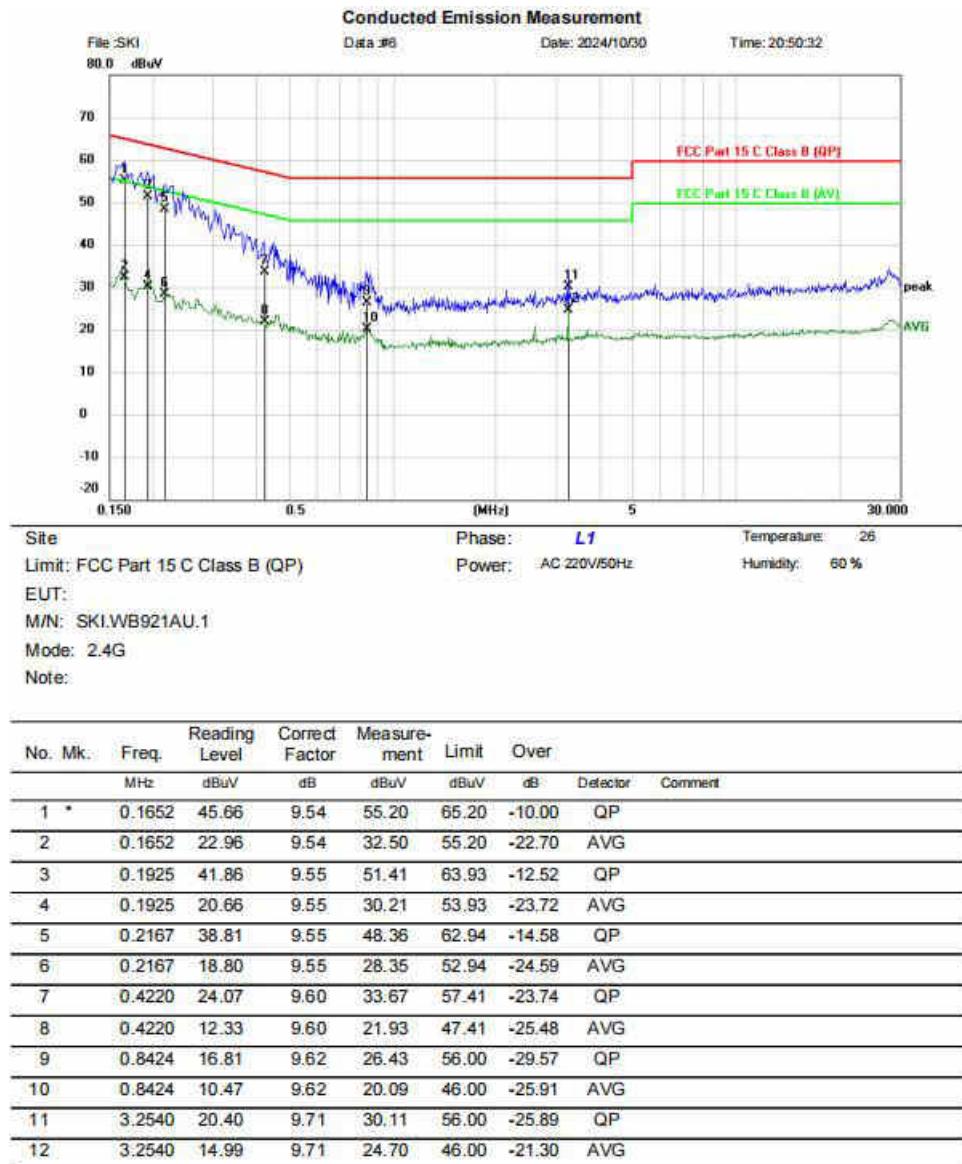
Test Graph

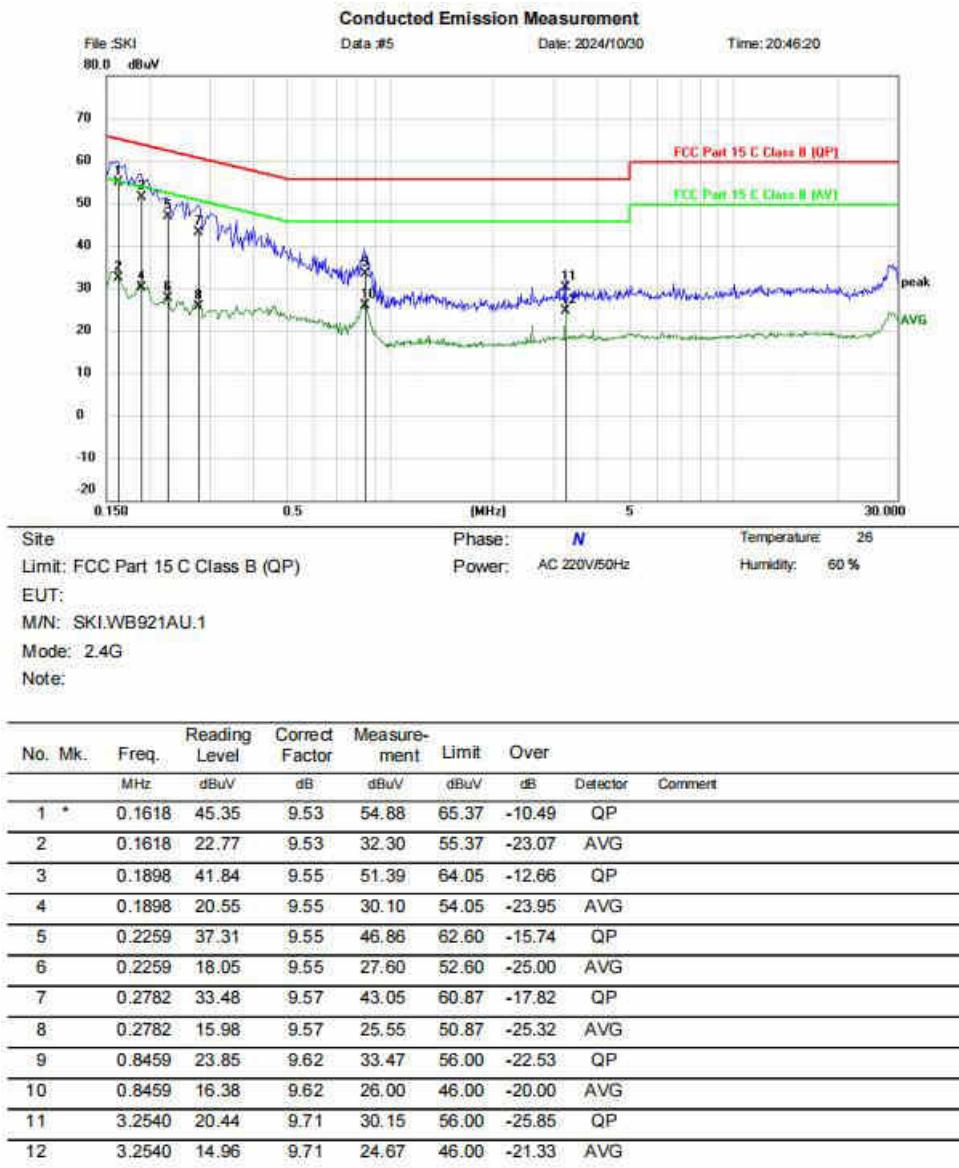


PK Final Data List

NO.	Frequency (MHz)	PK Value (dB μ V/m)	PK Limit (dB μ V/m)	PK Margin (dB)	AV Value (dB μ V/m)	AV Limit (dB μ V/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1423.2212	40.17	74.00	33.83	38.05	54.00	15.95	150	0	Vertical
2	1739.9370	40.57	74.00	33.43	38.03	54.00	15.97	150	111	Vertical
3	4399.5700	36.93	74.00	37.07	33.64	54.00	20.36	150	46	Vertical
4	6000.1500	44.41	74.00	29.59	40.87	54.00	13.13	150	121	Vertical
5	8629.0315	45.78	74.00	28.22	41.71	54.00	12.29	150	94	Vertical
6	13616.7808	49.26	74.00	24.74	45.36	54.00	8.64	150	271	Vertical

APPENDIX C – AC Power Line Conducted Emission Test Data





END OF REPORT