

# FCC Test Report

Report No.: AGC15705230939FR01

FCC ID	:	2AZNY-SEJ2301
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Remote Control Robot
BRAND NAME	:	SGILE
MODEL NAME	:	SEJ2301
APPLICANT	:	Fujian EastWest Lifewit Technology Co., LTD
DATE OF ISSUE	:	Oct. 07, 2023
STANDARD(S) TEST PROCEDURE(S)	:	FCC Part 15 Subpart C §15.249
<b>REPORT VERSION</b>	:	V1.0







#### **REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	/ Oct. 07, 2023 Valid Initial		Initial Release



### TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY	5
2. GENERAL INFORMATION	6
2.1. PRODUCT DESCRIPTION	6
2.2. TABLE OF CARRIER FREQUENCY	7
2.3. ANTENNA REQUIREMENT	
4. DESCRIPTION OF TEST MODES	
5. SYSTEM TEST CONFIGURATION	11
5.1. CONFIGURATION OF EUT SYSTEM	11
5.2 EQUIPMENT USED IN TESTED SYSTEM	11
5.3. SUMMARY OF TEST RESULTS	11
6. TEST FACILITY	
7. RADIATED EMISSION	
7.1. TEST LIMIT	
7.2. MEASUREMENT PROCEDURE	
7.3. TEST SETUP	
7.4. TEST RESULT	
8. BAND EDGE EMISSION	
8.1. MEASUREMENT PROCEDURE	
8.2. TEST SETUP	
8.3 RADIATED TEST RESULT	
9. 20DB BANDWIDTH	
9.1. MEASUREMENT PROCEDURE	
9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	
9.3. MEASUREMENT RESULTS	
10. FCC LINE CONDUCTED EMISSION TEST	
10.1. LIMITS OF LINE CONDUCTED EMISSION TEST	



APPENDIX B: PHOTOGRAPHS OF THE EUT	
APPENDIX A: PHOTOGRAPHS OF TEST SETUP	
10.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST	
10.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST	
10.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST	
10.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST	



## **1. VERIFICATION OF CONFORMITY**

Applicant	Fujian EastWest Lifewit Technology Co., LTD		
Address	Rm 1201-1205, Bld 18, 2nd Phase of Innovation Park, no. 7, Wulongjiang		
Audress	Mid-Ave, Fuzhou High-tech Zone, Fuzhou, Fujian Province, 350108, China		
Manufacturer	Fujian EastWest Lifewit Technology Co., LTD		
Address	Rm 1201-1205, Bld 18, 2nd Phase of Innovation Park, no. 7, Wulongjiang		
Audie33	Mid-Ave, Fuzhou High-tech Zone, Fuzhou, Fujian Province, 350108, China		
Factory	Fujian EastWest Lifewit Technology Co., LTD		
Address	Rm 1201-1205, Bld 18, 2nd Phase of Innovation Park, no. 7, Wulongjiang		
Audi 633	Mid-Ave, Fuzhou High-tech Zone, Fuzhou, Fujian Province, 350108, China		
Product Designation Remote Control Robot			
Brand Name SGILE			
Test Model SEJ2301			
Series Model N/A			
Difference Description N/A			
Date of receipt of test item	Sep. 15, 2023		
Date of test Sep. 15, 2023 to Oct. 07, 2023			
Deviation No any deviation from the test method			
Condition of Test Sample	Normal		
Test Result	Pass		
Report Template	AGCRT-US-SRD/RF		

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.249.

Zhou Prepared By Sky Zhou Oct. 07, 2023 (Project Engineer) sin Reviewed By Calvin Liu Oct. 07, 2023 (Reviewer) Approved By Max Zhang Oct. 07, 2023 (Authorized Officer)



# 2. GENERAL INFORMATION

# 2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	2404MHz-2478MHz
Maximum field strength	85.39dBµV/m(Peak)@3m 69.01dBµV/m(Average)@3m
Modulation	GFSK
Number of channels 20 Channels	
Antenna Gain 0 dBi	
Antenna Designation Wire Antenna	
Hardware Version V1.0	
Software Version V1.0	
Power Supply	DC 3V by battery



#### 2.2. TABLE OF CARRIER FREQUENCY

Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	
0	2404	10	2442	
1	2405	11	2446	
2	2410	12	2450	
3	2414	13	2454	
4 2418		14	2458	
5	2422	15	2462	
6	2426	16	2466	
7	2430	17	2470	
8 2434		18	2474	
9	2438	19	2478	



#### 2.3. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device. For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.



# **3. MEASUREMENT UNCERTAINTY**

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in measurement" (GUM) published by CISPR and ANSI.

- Uncertainty of Conducted Emission, Uc = ±2.9 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.9 dB
- Uncertainty of Occupied Channel Bandwidth: Uc =  $\pm 2$  %



## 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION			
1	Low channel TX_2404MHz_GFSK			
2	Middle channel TX_2446MHz_GFSK			
3	High channel TX_2478MHz_GFSK			
Note:				
1. All the test modes can be supply by battery, only the result of the worst case was recorded in the report, if				

no other cases.

- 2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
- 3. Set the EUT into the individual test modes by pressing the EUT buttons.
- 4. For battery operated equipment, the equipment tests are performed using a new battery.



# 5. SYSTEM TEST CONFIGURATION

#### 5.1. CONFIGURATION OF EUT SYSTEM

Configure:



#### **5.2 EQUIPMENT USED IN TESTED SYSTEM**

ltem	Equipment	Model No.	ID or Specification	Remark
1	Remote Control Robot	SEJ2301	2AZNY-SEJ2301	EUT

#### 5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.249&15.209	Radiated Emission	Compliant
§15.249	Band Edges	Compliant
§15.215	20dB bandwidth	Compliant
§15.207	Conducted Emission	Not applicable

Note: The conducted emission tests at AC port are not required for devices which only employ battery power for operation.



## 6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd		
Location 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Commun Fuhai Street, Bao'an District, Shenzhen, Guangdong, China			
Designation Number	CN1259		
FCC Test Firm Registration Number 975832			
A2LA Cert. No.	5054.02		
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA		

## TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESCI	10096	Feb. 18, 2023	Feb. 17, 2024
Signal Analyzer	Aglient	N9020A	MY52090123	Jun. 01, 2023	May 31, 2024
EXA Signal Analyzer	Agilent	N9010A	MY53470504	Jun. 01, 2023	May 31, 2024
2.4GHz Filter	EM Electronics	N/A	N/A	Mar. 18, 2022	Mar. 19, 2024
Attenuator	ZHINAN	E-002	N/A	Aug. 04, 2022	Aug. 03, 2024
Horn Antenna	SCHWARZBEC	BBHA9170	768	Oct. 31, 2021	Oct. 30, 2023
Active Loop Antenna (9K-30Mhz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS	3117	00034609	Mar. 23, 2023	Mar. 22, 2024
Preamplifer	ETS	3117-PA	00246148	Aug. 04, 2022	Aug. 03, 2024
Wideband Antenna	SCHWARZBECK	VULB9168	VULB9168-494	Jan. 05, 2023	Jan. 04, 2024
Test Software	Tonscend	4.0.0.0	N/A	N/A	N/A



# 7. RADIATED EMISSION

#### 7.1. TEST LIMIT

## Standard FCC15.249

Fundamental Frequency	Field Strength of Fundamental	Field Strength of Harmonics
	(millivolts/meter)	(microvolts/meter)
900-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

#### Standard FCC 15.209

Frequency	Distance	Field Strengths Limit			
(MHz)	Meters	<b>μ V/m</b>	dB(µV)/m		
0.009 ~ 0.490	300	2400/F(kHz)			
0.490 ~ 1.705	30	24000/F(kHz)			
1.705 ~ 30	30	30			
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	Other:74.0 dB(µV)/m (Peak) 54.0 dB(µV)/m (Average)			
Remark: (1) Emission le	evel dB $\mu$ V = 20 log Emissio	n level µV/m.			

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.



## 7.2. MEASUREMENT PROCEDURE

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use minimum resolution bandwidth of 1 MHz. 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.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.



The following table is the setting of spectrum analyzer and receiver.

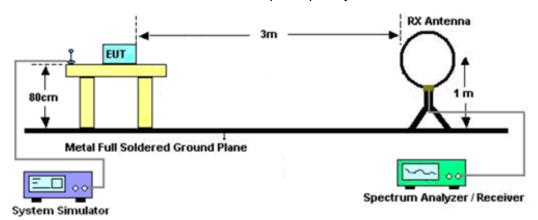
Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
	1GHz~26.5GHz
Start ~Stop Frequency	RBW 2.4MHz/ VBW 8MHz for Peak,
	RBW 2.4MHz/3MHz for Average

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

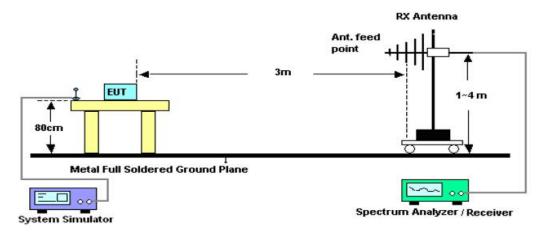


## 7.3. TEST SETUP

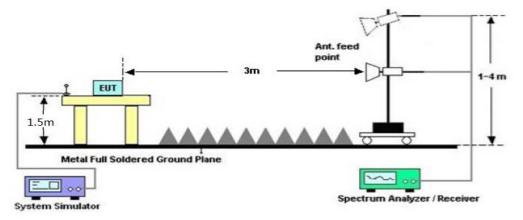
Radiated Emission Test-Setup Frequency Below 30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



## RADIATED EMISSION TEST SETUP ABOVE 1000MHz



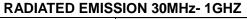


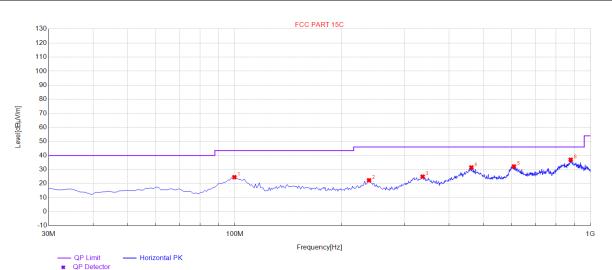
#### 7.4. TEST RESULT

#### **RADIATED EMISSION BELOW 30MHZ**

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

EUT	Remote Control Robot	Model Name	SEJ2301			
Temperature	24.2°C	Relative Humidity	60.5%			
Pressure	985kPa	Test Voltage	DC 3V			
Test Mode	Mode 3	Polarization	Horizontal			



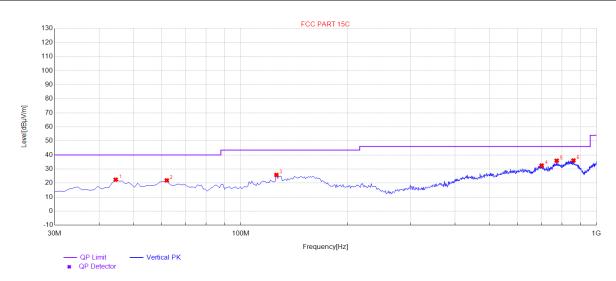


NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	99.84	24.53	20.89	43.50	18.97	100	10	Horizontal
2	238.55	22.37	16.57	46.00	23.63	100	350	Horizontal
3	337.49	24.95	20.18	46.00	21.05	100	180	Horizontal
4	462.62	31.48	26.49	46.00	14.52	100	70	Horizontal
5	609.09	32.20	27.35	46.00	13.80	100	310	Horizontal
6	879.72	37.00	31.94	46.00	9.00	100	10	Horizontal

#### **RESULT: PASS**



EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.2°C	Relative Humidity	60.5%
Pressure	985kPa	Test Voltage	DC 3V
Test Mode	Mode 3	Polarization	Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	44.55	22.41	12.12	40.00	17.59	100	40	Vertical
2	62.01	21.91	14.28	40.00	18.09	100	220	Vertical
3	126.03	25.80	17.61	43.50	17.70	100	60	Vertical
4	701.24	32.52	27.81	46.00	13.48	100	30	Vertical
5	773.02	35.95	29.67	46.00	10.05	100	240	Vertical
6	861.29	36.10	30.59	46.00	9.90	100	20	Vertical

### **RESULT: PASS**

Note: Factor=Antenna Factor + Cable loss, Margin=Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.

All test modes had been tested. The mode 3 is the worst case and recorded in the report.



EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.5°C	Relative Humidity	60.8%
Pressure	985kPa	Test Voltage	DC 3V
Test Modulation	GFSK	Polarization	Horizontal

#### FIELD STRENGTH OF FUNDAMENTAL

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
2404	35.89	49.05	84.94	114.00	-29.06	peak
2404	19.55	49.05	68.60	94.00	-25.40	AVG
2446	34.43	49.12	83.55	114.00	-30.45	peak
2446	18.84	49.12	67.96	94.00	-26.04	AVG
2478	36.14	49.25	85.39	114.00	-28.61	peak
2478	19.76	49.25	69.01	94.00	-24.99	AVG
Remark:						
Factor = Ante	enna Factor + C	able Loss – Pr	e-amplifier.			

EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.5°C	Relative Humidity	60.8%
Pressure	985kPa	Test Voltage	DC 3V
Test Modulation	GFSK	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
2404	44.37	49.05	82.55	114.00	-31.45	peak
2404	29.51	49.05	66.40	94.00	-27.60	AVG
2446	45.31	49.12	81.41	114.00	-32.59	peak
2446	30.11	49.12	65.25	94.00	-28.75	AVG
2478	40.78	49.25	81.39	114.00	-32.61	peak
2478	30.48	49.25	65.35	94.00	-28.65	AVG
Remark:						
Factor = Ante	actor = Antenna Factor + Cable Loss – Pre-amplifier.					



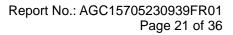
#### **RADIATED EMISSION ABOVE 1GHZ**

EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.5°C	Relative Humidity	60.8%
Pressure	985kPa	Test Voltage	DC 3V
Test Mode	Mode 1	Polarization	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4808	50.06	3.76	53.82	74.00	-20.18	peak
4808	38.54	3.76	42.30	54.00	-11.70	AVG
7212	47.64	8.17	55.81	74.00	-18.19	peak
7212	37.69	8.17	45.86	54.00	-8.14	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.5°C	Relative Humidity	60.8%
Pressure	985kPa	Test Voltage	DC 3V
Test Mode	Mode 1	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4808	48.52	3.76	52.28	74.00	-21.72	peak
4808	37.44	3.76	41.20	54.00	-12.80	AVG
7212	46.39	8.17	54.56	74.00	-19.44	peak
7212	35.67	8.17	43.84	54.00	-10.16	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						





EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.5°C	Relative Humidity	60.8%
Pressure	985kPa	Test Voltage	DC 3V
Test Mode	Mode 2	Polarization	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
4892	49.42	3.78	53.20	74.00	-20.80	peak	
4892	37.39	3.78	41.17	54.00	-12.83	AVG	
7338	46.67	8.23	54.90	74.00	-19.10	peak	
7338	7338 35.85 8.23 44.08 54.00 -9.92 AVG						
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.5°C	Relative Humidity	60.8%
Pressure	985kPa	Test Voltage	DC 3V
Test Mode	Mode 2	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4892	47.26	3.78	51.04	74.00	-22.96	peak
4892	36.73	3.78	40.51	54.00	-13.49	AVG
7338	45.45	8.23	53.68	74.00	-20.32	peak
7338	35.17	8.23	43.40	54.00	-10.60	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						



EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.5°C	Relative Humidity	60.8%
Pressure	985kPa	Test Voltage	DC 3V
Test Mode	Mode 3	Polarization	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4956	49.84	3.81	53.65	74.00	-20.35	peak
4956	39.56	3.81	43.37	54.00	-10.63	AVG
7434	47.37	8.27	55.64	74.00	-18.36	peak
7434	37.25	8.27	45.52	54.00	-8.48	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.5°C	<b>Relative Humidity</b>	60.8%
Pressure	985kPa	Test Voltage	DC 3V
Test Mode	Mode 3	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4956	46.43	3.81	50.24	74.00	-23.76	peak
4956	37.26	3.81	41.07	54.00	-12.93	AVG
7434	44.58	8.27	52.85	74.00	-21.15	peak
7434	35.69	8.27	43.96	54.00	-10.04	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

#### **RESULT: PASS**

**Note:** The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Emission Level-Limit.

The "Factor" value can be calculated automatically by software of measurement system.



## 8. BAND EDGE EMISSION

#### 8.1. MEASUREMENT PROCEDURE

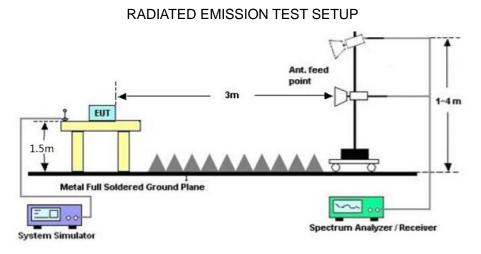
1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.

2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz; VBW=3MHz / Sweep=AUTO

3. Other procedures refer to clause 7.2.

#### 8.2. TEST SETUP



#### **8.3 RADIATED TEST RESULT**

#### Note:

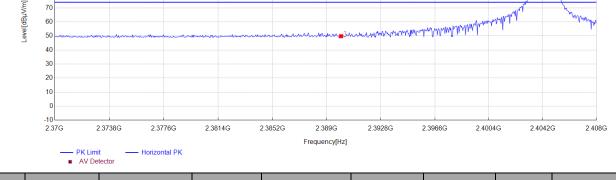
1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level

2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB( $\mu$ V) to represent the Amplitude. Use the F dB( $\mu$ V/m) to represent the Field Strength. So A=F.



70

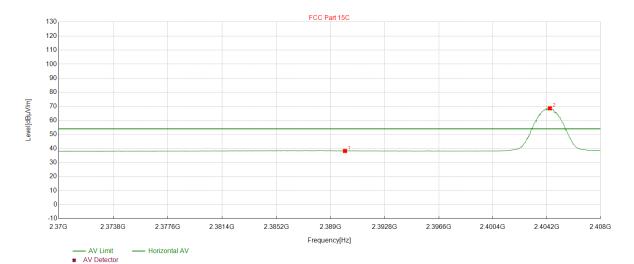
EUT	Remote Control Robot	Model Name	SEJ2301					
Temperature	24.7°C	<b>Relative Humidity</b>	61.2%					
Pressure	985kPa	Test Voltage	DC 3V					
Test Mode	Mode 1	Polarization	Horizontal					
		Peak Value						
130	130, FCC Part 15C							
120								



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390.008	49.79	34.31	74.00	24.21	150	57	Horizontal
2	2404.1201	84.94	34.35	74.00	-10.94	150	123	Horizontal



#### Average Value

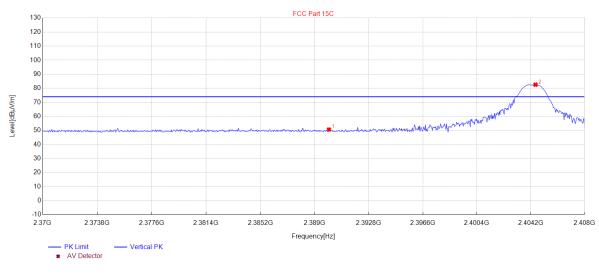


NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390.008	38.23	34.31	54.00	15.77	150	330	Horizontal
2	2404.4244	68.60	34.35	54.00	-14.60	150	123	Horizontal



EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.7°C	Relative Humidity	61.2%
Pressure	985kPa	Test Voltage	DC 3V
Test Mode	Mode 1	Polarization	Vertical

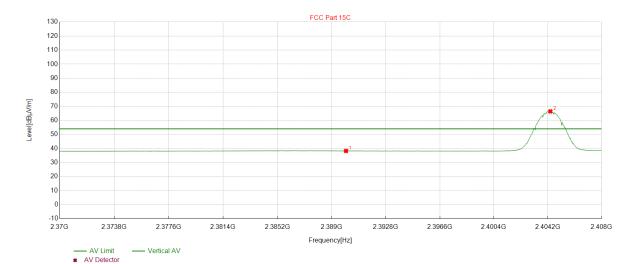
Peak Value



Limit Level Factor Margin Height Angle Freq. NO. Polarity [MHz] [dBµV/m] [dB] [dBµV/m] [dB] [cm] [°] 2390.008 50.67 34.31 74.00 23.33 150 Vertical 1 0 82.55 -8.55 150 2 2404.5385 34.35 74.00 266 Vertical



#### Average Value

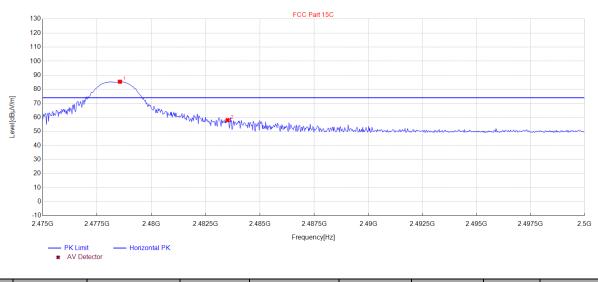


NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390.008	38.24	34.31	54.00	15.76	150	59	Vertical
2	2404.3864	66.40	34.35	54.00	-12.40	150	270	Vertical



EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.7°C	Relative Humidity	61.2%
Pressure	985kPa	Test Voltage	DC 3V
Test Mode	Mode 3	Polarization	Horizontal

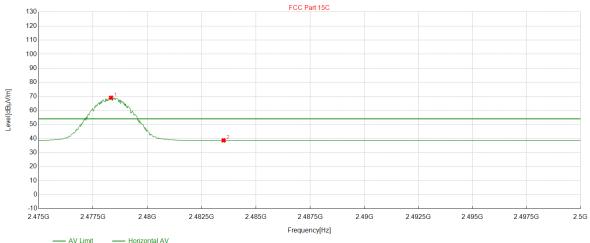
Peak Value



Level Factor Limit Margin Height Angle Freq. NO. Polarity [MHz] [dBµV/m] [dB] [dBµV/m] [dB] [°] [cm] 1 2478.5536 85.39 34.55 74.00 -11.39 150 130 Horizontal 2 2483.5085 58.02 34.56 74.00 15.98 150 130 Horizontal



#### Average Value



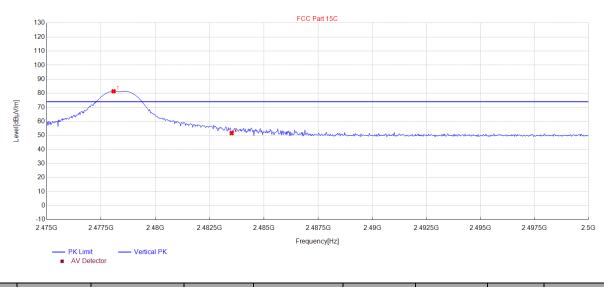
\* AV Detector

NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2478.3283	69.01	34.55	54.00	-15.01	150	129	Horizontal
2	2483.5085	38.64	34.56	54.00	15.36	150	7	Horizontal



EUT	Remote Control Robot	Model Name	SEJ2301
Temperature	24.7°C	Relative Humidity	61.2%
Pressure	985kPa	Test Voltage	DC 3V
Test Mode	Mode 3	Polarization	Vertical

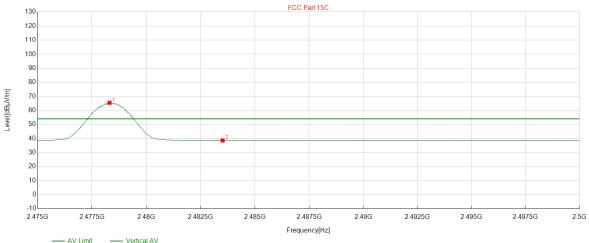
Peak Value



Limit Level Factor Margin Height Angle Freq. Polarity NO. [MHz] [dBµV/m] [dB] [dBµV/m] [dB] [cm] [°] 2478.0781 81.39 34.55 74.00 -7.39 150 301 Vertical 1 34.56 22.39 150 2 2483.5085 51.61 74.00 55 Vertical



#### Average Value



_		
*	AV Detector	

NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2478.3033	65.35	34.55	54.00	-11.35	150	306	Vertical
2	2483.5085	38.61	34.56	54.00	15.39	150	248	Vertical

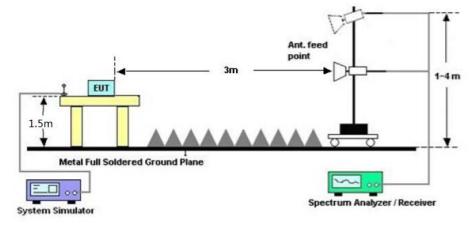


## 9. 20DB BANDWIDTH

#### 9.1. MEASUREMENT PROCEDURE

- 1. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 2. Set SPA Centre Frequency = Operation Frequency, RBW= 30kHz, VBW≥1×RBW.
- 3. Set SPA Trace 1 Max hold, then View.

#### 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



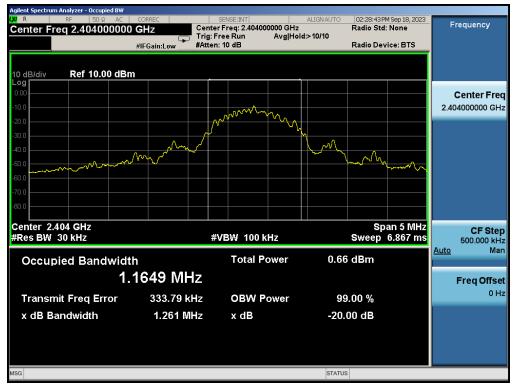


#### 9.3. MEASUREMENT RESULTS

TEST ITEM	20DB BANDWIDTH
TEST MODULATION	GFSK

Test Channel (MHz)	20DB BANDWIDTH (MHz)	99% BANDWIDTH (MHz)	Criteria
2404	1.261	1.1649	PASS
2446	1.264	1.1756	PASS
2478	1.266	1.1876	PASS

#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

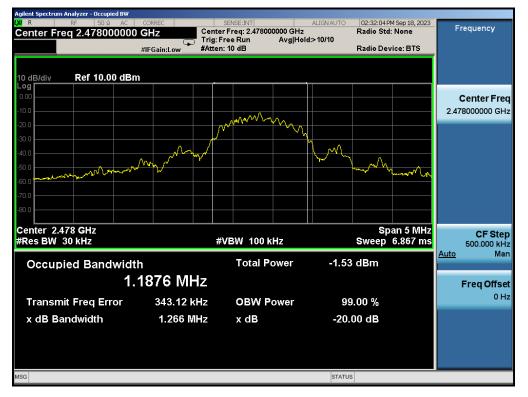






#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL





# **10. FCC LINE CONDUCTED EMISSION TEST**

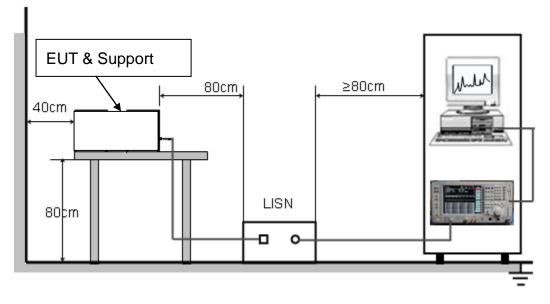
## **10.1. LIMITS OF LINE CONDUCTED EMISSION TEST**

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note: 1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

#### **10.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST**





## **10.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST**

- The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received AC120V/60Hz power from a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

#### 10.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, 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. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.

#### 10.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Note: The conducted emission tests at AC port are not required for devices which only employ battery power for operation.



Report No.: AGC15705230939FR01 Page 37 of 36

## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC15705230939AP02

# APPENDIX B: PHOTOGRAPHS OF THE EUT

Refer to the Report No.: AGC15705230939AP03

----END OF REPORT----

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3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

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