TEST REPORT

Product	:	Wio-LR1121
Trade mark	:	seeed studio
Model/Type reference	:	Wio-LR1121, Wio-LR1121-N
Serial Number	:	N/A
Report Number	:	EED32R80625602
FCC ID	:	Z4T-WIO-LR1121
Date of Issue	:	Jun. 24, 2025
Test Standards	:	47 CFR Part 15 Subpart C
Test result	:	PASS

Prepared for:

Seeed Technology Co., Ltd.
9F, G3 Building, TCL International E City, Zhongshanyuan Road, Nanshan District, Shenzjhen, Guangdong Province, P.R.C

Prepared by:

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Check No.: 8518250425

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2 Test Summary

Test Item	Test Requirement	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203/15.247 (c)	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	PASS
DTS Bandwidth	47 CFR Part 15 Subpart C Section 15.247 (a)(2)	PASS
Maximum Conducted Output Power	47 CFR Part 15 Subpart C Section 15.247 (b)(3)	PASS
Maximum Power Spectral Density	47 CFR Part 15 Subpart C Section 15.247 (e)	PASS
Band Edge Measurements	47 CFR Part 15 Subpart C Section 15.247(d)	PASS
Conducted Spurious Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	PASS
Radiated Spurious Emission	47 CFR Part 15 Subpart C Section 15.205/15.209	PASS

Remark:
Model No.: Wio-LR1121, Wio-LR1121-N
Model Wio-LR1121, Wio-LR1121-N was tested, The electrical circuit design, layout, components used, and internal wiring are identical, Except for the presence of an IPEX4 connector and antenna output path configuration via an internal 0Ω resistor.

Feature	Wio-LR1121	Wio-LR1121-N
IPEX4 Connector	Present	Not Present
Antenna Output Path	Routed to IPEX4 Connector	Routed to Module Pad
Configuration Method	0Ω resistor bypasses pad	0Ω resistor connects to pad
RF Performance	Identical	Identical
Functionality	Identical	Identical
Other Components	Identical	Identical

3 General Information

3.1 Client Information

Applicant:	Seeed Technology Co., Ltd.
Address of Applicant:	9F, G3 Building, TCL International E City, Zhongshanyuan Road, Nanshan District, Shenzjhen, Guangdong Province, P.R.C
Manufacturer:	Seeed Technology Co., Ltd.
Address of Manufacturer:	9F, G3 Building, TCL International E City, Zhongshanyuan Road, Nanshan District, Shenzjhen, Guangdong Province, P.R.C
Factory:	Shenzhen Xinxian Technology Co., Limited
Address of Factory:	F5, Building B17, Hengfeng Industrial City,No. 739 Zhoushi Rd, Baoan District, Shenzhen,Guangdong, P.R.C.

3.2 General Description of EUT

Product Name:	Wio-LR1121
Model No.:	Wio-LR1121, Wio-LR1121-N
Test Model No.:	Wio-LR1121, Wio-LR1121-N
Trade mark:	seeed studio
Product Type:	☒ Mobile ☐ Portable ☐ Fix Location
Operation Frequency:	903MHz~914.2MHz
Modulation Type:	FSK
Number of Channel:	8
Antenna Type & Gain:	FPC Antenna: -2.1dBi Spring Antenna: 2.25dBi Fiberglass Antenna: 8dBi
Power Supply:	DC 5V
Test Voltage:	DC 5V
Sample Received Date:	May 09, 2025
Sample tested Date:	May 14, 2025 to Jun. 05, 2025

Operation Frequency of each channel

Channel	Frequency (MHz)
CH65	903
CH66	904.6
CH67	906.2
CH68	907.8
CH69	909.4
CH70	911
CH71	912.6
CH72	914.2

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency (MHz)
The lowest channel (CH65)	903
The middle channel (CH69)	909.4
The highest channel (CH72)	914.2

3.3 Test Configuration

EUT Test Software Settings:			
Test Software:	N/A		
EUT Power Grade:	Default (Power level is built-in set parameters and cannot be changed and selected)		
Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.			
Test Mode	Modulation	Channel	Frequency (MHz)
Mode a	FSK	The lowest channel (CH65)	903
Mode b	FSK	The middle channel (CH69)	909.4
Mode c	FSK	The highest channel (CH72)	914.2

3.4 Test Environment

Operating Environment:	
Radiated Spurious Emissions:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar
Conducted Emissions:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar
RF Conducted:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar

3.5 Description of Support Units

The EUT has been tested with associated equipment below.

1） support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

3.6 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd
Hongwei Industrial Park, Zone 70, Bao'an District, Shenzhen, Guangdong, China
Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385
No tests were sub-contracted.
FCC Designation No.: CN1164

3.7 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-40GHz)
3	Radiated Spurious emission test	3.3dB (9kHz-30MHz)
		4.3dB (30MHz-1GHz)
		4.5dB (1GHz-18GHz)
		3.4dB (18GHz-40GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

4 Equipment List

RF test system					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Spectrum Analyzer	Keysight	N9010A	MY54510339	12-05-2024	12-04-2025
Signal Generator	Keysight	N5182B	MY53051549	11-30-2024	11-29-2025
DC Power	Keysight	E3642A	MY56376072	11-30-2024	11-29-2025
Communication test set	R&S	CMW500	169004	03-03-2025	03-02-2026
RF control unit(power unit)	JS Tonscend	JS0806-2	22G8060592	07-22-2024	07-21-2025
Wi-Fi 7GHz Band Extendder	JS Tonscend	TS-WF7U2	2206200002	05-31-2024 05-12-2025	05-30-2025 05-11-2026
High-low temperature test chamber	Dong Guang Qin Zhuo	LK-80GA	QZ20150611879	11-30-2024	11-29-2025
Temperature/ Humidity Indicator	biaozhi	HM10	1804186	05-29-2024 05-26-2025	05-28-2025 05-25-2026
BT&WI-FI Automatic test software	JS Tonscend	JS1120-3	V3.3.20	---	---
Spectrum Analyzer	R&S	FSV3044	101509	02-14-2025	02-13-2026

Conducted disturbance Test					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Receiver	R&S	ESCI	100435	04-18-2024 04-08-2025	04-17-2025 04-07-2026
Temperature/ Humidity Indicator	Defu	TH128	/	04-25-2024 03-31-2025	04-24-2025 03-30-2026
LISN	R&S	ENV216	100098	09-19-2024	09-18-2025
Barometer	changchun	DYM3	1188	---	---
Test software	Fara	EZ-EMC	EMC-CON 3A1.1	---	---

Capacitive voltage probe	Schwarzbeck	CVP 9222C	00124	06-18-2024	06-17-2025
ISN	TESEQ	ISN T800	30297	12-05-2024	12-04-2025

3M Semi-anechoic Chamber (2)- Radiated disturbance Test					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
3M Chamber & Accessory Equipment	TDK	SAC-3	---	01-13-2024	01-12-2027-
Receiver	R&S	ESCI7	100938-003	09/07/2024	09/06/2025
Spectrum Analyzer	R&S	FSV40	101200	07/18/2024	07/17/2025
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	9163-618	05/22/2022 05-14-2025	05/21/2025 05-13-2026
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04/16/2024 04-07-2025	04/15/2025 04-06-2026
Microwave Preamplifier	Tonscend	EMC051845SE	980380	12/05/2024	12/04/2025
Horn Antenna	A.H.SYSTEMS	SAS-574	374	07/02/2023	07/01/2026
Horn Antenna	ETS-LINGREN	BBHA 9120D	9120D-1869	04/16/2024 04-07-2025	04/15/2025 04-06-2026
Preamplifier	Agilent	11909A	12-1	03/03/2025	03/02/2026
Preamplifier	CD	PAP-1840-60	6041.6042	06/19/2024	06/18/2025
Test software	Fara	EZ-EMC	EMEC-3A1-Pre	---	---
Cable line	Fulai(7M)	SF106	5219/6A	01-13-2024	01-12-2027-
Cable line	Fulai(6M)	SF106	5220/6A	01-13-2024	01-12-2027-
Cable line	Fulai(3M)	SF106	5216/6A	01-13-2024	01-12-2027-
Cable line	Fulai(3M)	SF106	5217/6A	01-13-2024	01-12-2027-

3M full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Fully Anechoic Chamber	TDK	FAC-3	---	01-09-2024	01-08-2027
Receiver	Keysight	N9038A	MY57290136	01-04-2025	01-03-2026
Spectrum Analyzer	Keysight	N9020B	MY57111112	01-14-2025	01-13-2026
Spectrum Analyzer	Keysight	N9030B	MY57140871	01-14-2025	01-13-2026
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-28-2024 04-12-2025	04-27-2025 04-11-2026
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-16-2024 04-12-2025	04-15-2025 04-11-2026-
Horn Antenna	ETS-LINDGREN	3117	57407	07-03-2024	07-02-2025
Preamplifier	EMCI	EMC001330	980563	03-03-2025 03-03-2025	03-02-2026 03-02-2026
Preamplifier	Tonscend	TAP-011858	AP21B806112	07-18-2024	07-17-2025
Preamplifier	Tonscend	EMC051845SE	980380	12-05-2024	12-04-2025
Communication test set	R&S	CMW500	102898	01-04-2025	01-03-2026
Temperature/ Humidity Indicator	biaozhi	GM1360	EE1186631	04-07-2024 03-31-2025	04-06-2025 03-30-2026
RSE Automatic test software	JS Tonscend	JS36-RSE	V4.0.0.0	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	01-09-2024	01-08-2027
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	01-09-2024	01-08-2027
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	01-09-2024	01-08-2027
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	01-09-2024	01-08-2027
Cable line	Times	EMC104-NMNM-1000	SN160710	01-09-2024	01-08-2027
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	01-09-2024	01-08-2027
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	01-09-2024	01-08-2027
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	01-09-2024	01-08-2027

Cable line	Times	HF160-KMKM-3.00M	393493-0001	01-09-2024	01-08-2027

5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
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. 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
EUT Antenna:	Please see Internal photos

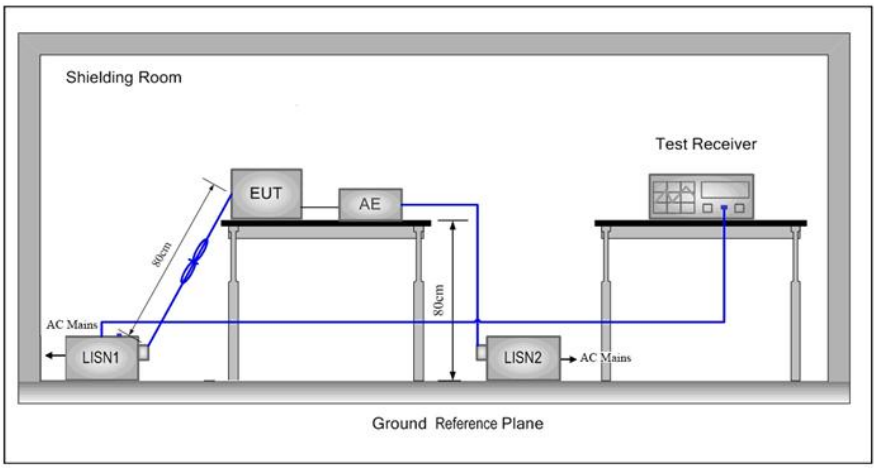
5.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	150kHz to 30MHz
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto
Limit:	

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

Test Setup:



Test Procedure:

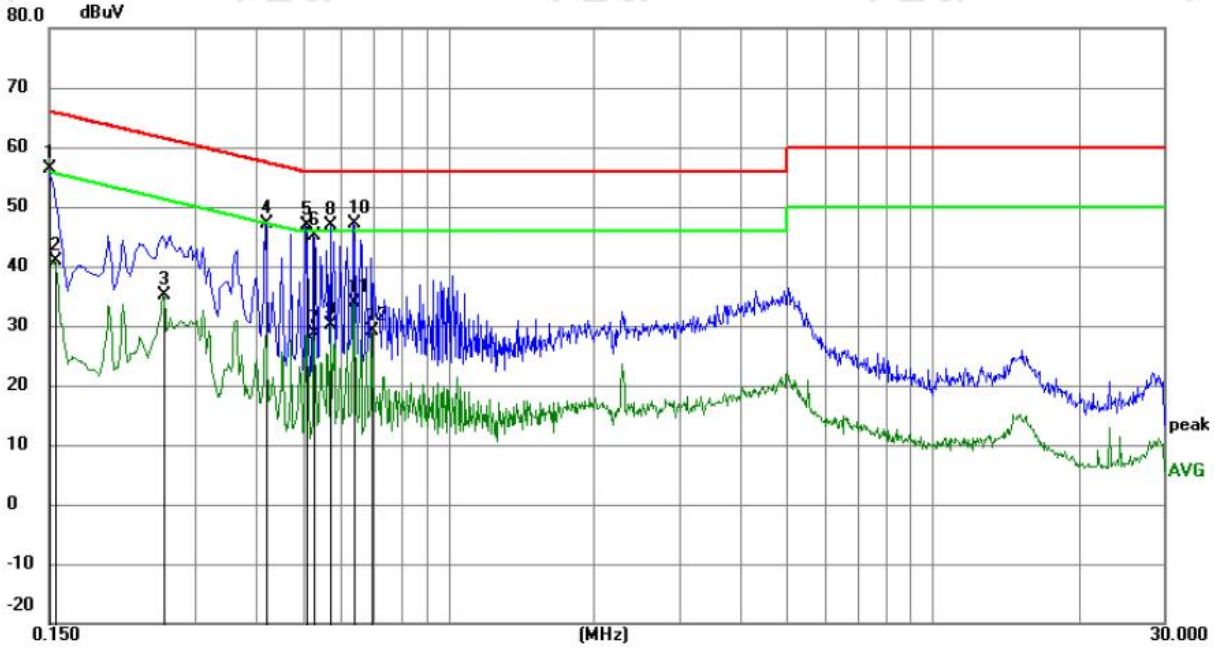
1) The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.

Test Mode: All modes were tested, only the worst case mode a was recorded in the report.

Test Results:	Pass

Measurement Data

Live line:

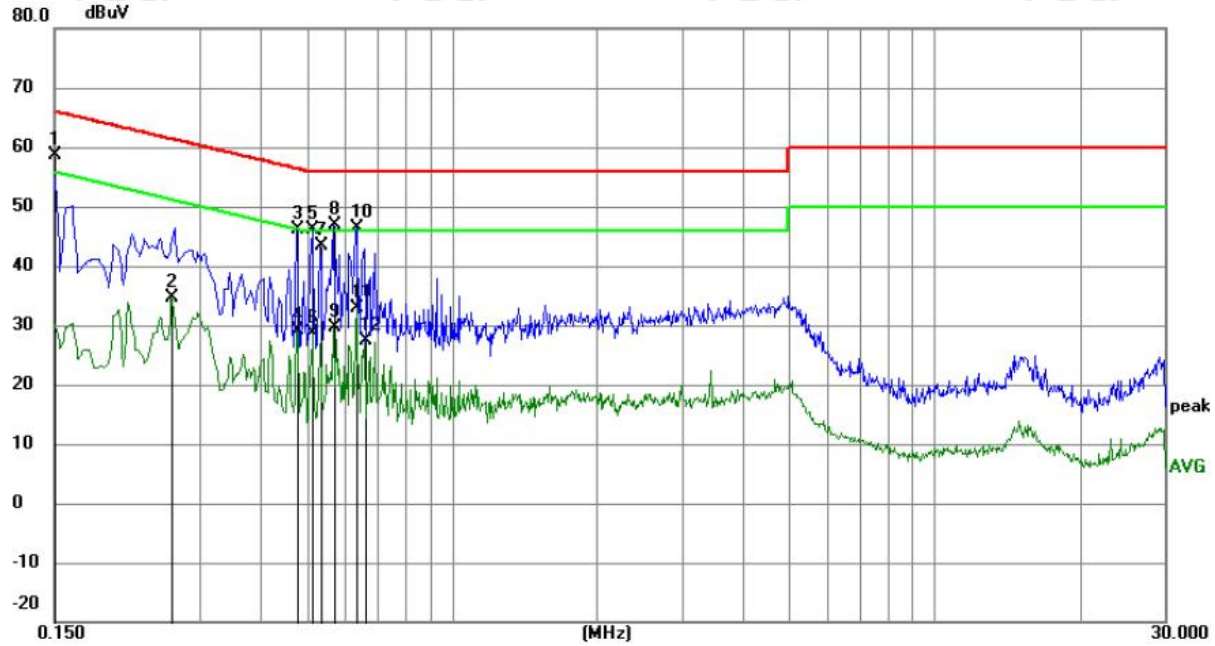


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	46.19	10.28	56.47	66.00	-9.53	QP	
2		0.1545	30.50	10.28	40.78	55.75	-14.97	AVG	
3		0.2580	24.85	10.16	35.01	51.50	-16.49	AVG	
4		0.4200	36.98	10.09	47.07	57.45	-10.38	QP	
5		0.5100	36.83	10.08	46.91	56.00	-9.09	QP	
6		0.5280	34.92	10.09	45.01	56.00	-10.99	QP	
7		0.5280	18.62	10.09	28.71	46.00	-17.29	AVG	
8		0.5730	36.79	10.09	46.88	56.00	-9.12	QP	
9		0.5730	19.96	10.09	30.05	46.00	-15.95	AVG	
10	*	0.6405	37.03	10.11	47.14	56.00	-8.86	QP	
11		0.6405	23.79	10.11	33.90	46.00	-12.10	AVG	
12		0.6945	18.91	10.13	29.04	46.00	-16.96	AVG	

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral line:

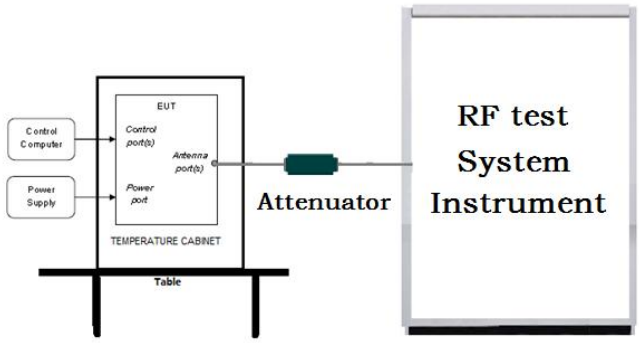


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	48.33	10.28	58.61	66.00	-7.39	QP	
2		0.2625	24.39	10.16	34.55	51.35	-16.80	AVG	
3		0.4785	35.98	10.08	46.06	56.37	-10.31	QP	
4		0.4785	19.14	10.08	29.22	46.37	-17.15	AVG	
5		0.5144	36.11	10.08	46.19	56.00	-9.81	QP	
6		0.5144	18.61	10.08	28.69	46.00	-17.31	AVG	
7		0.5325	33.36	10.09	43.45	56.00	-12.55	QP	
8		0.5685	36.89	10.09	46.98	56.00	-9.02	QP	
9		0.5685	19.65	10.09	29.74	46.00	-16.26	AVG	
10		0.6360	36.27	10.11	46.38	56.00	-9.62	QP	
11		0.6360	22.69	10.11	32.80	46.00	-13.20	AVG	
12		0.6585	17.19	10.12	27.31	46.00	-18.69	AVG	

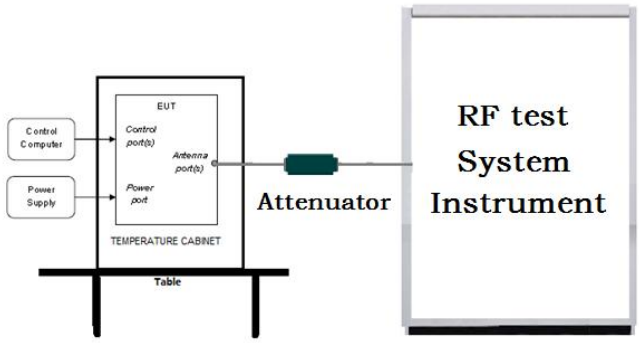
Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

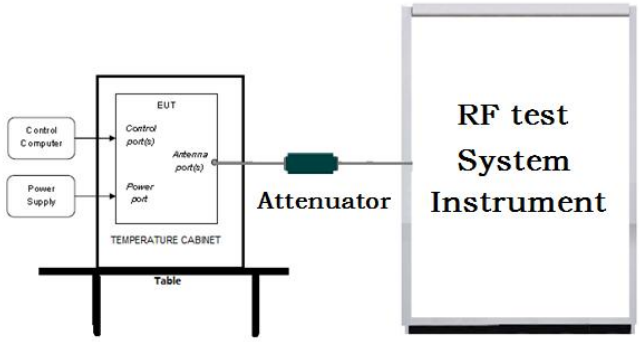
5.3 Maximum Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)
Test Method:	ANSI C63.10 2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	a) Set the RBW ⩾ DTS bandwidth. b) Set VBW ⩾ 3 × RBW. c) Set span ⩾ 3 x RBW d) Sweep time = auto couple. e) Detector = peak. f) Trace mode = max hold. g) Allow trace to fully stabilize. h) Use peak marker function to determine the peak amplitude level.
Limit:	30dBm
Test Mode:	Refer to clause 5.3
Test Results:	Refer to Appendix A

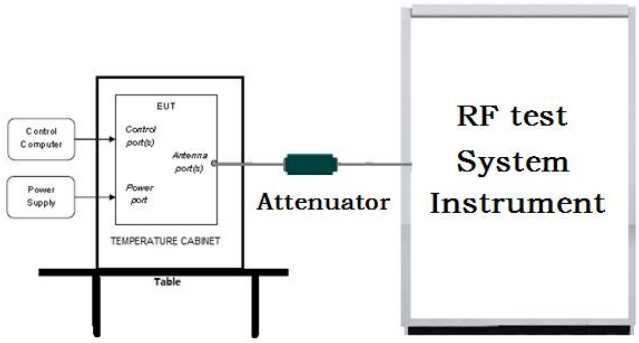
5.4 DTS Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10 2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	a) Set RBW = 100 kHz. b) Set the VBW ⩾[3 × RBW]. c) Detector = peak. d) Trace mode = max hold. e) Sweep = auto couple. f) Allow the trace to stabilize. g) 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 6 dB relative to the maximum level measured in the fundamental emission.
Limit:	≥ 500 kHz
Test Mode:	Refer to clause 5.3
Test Results:	Refer to Appendix A

5.5 Maximum Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10 2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	a) Set analyzer center frequency to DTS channel center frequency. b) Set the span to 1.5 times the DTS bandwidth. c) Set the RBW to 3 kHz ⩽ RBW ⩽ 100 kHz. d) Set the VBW ⩾ [3 × RBW]. e) Detector = peak. f) Sweep time = auto couple. g) Trace mode = max hold. h) Allow trace to fully stabilize. i) Use the peak marker function to determine the maximum amplitude level within the RBW. j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.
Limit:	≤8.00dBm/3kHz
Test Mode:	Refer to clause 5.3
Test Results:	Refer to Appendix A

5.6 Band Edge measurements and Conducted Spurious Emission

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10 2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	a) Set RBW =100KHz. b) Set VBW = 300KHz. c) Sweep time = auto couple. d) Detector = peak. e) Trace mode = max hold. f) Allow trace to fully stabilize. g) Use peak marker function to determine the peak amplitude level.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test Mode:	Refer to clause 5.3
Test Results:	Refer to Appendix A

5.7 Radiated Spurious Emission

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205
Test Method:	ANSI C63.10 2013
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Receiver Setup:	

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10kHz	Average

Limit:

Frequency	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-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

Note: 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.

Test Setup:	

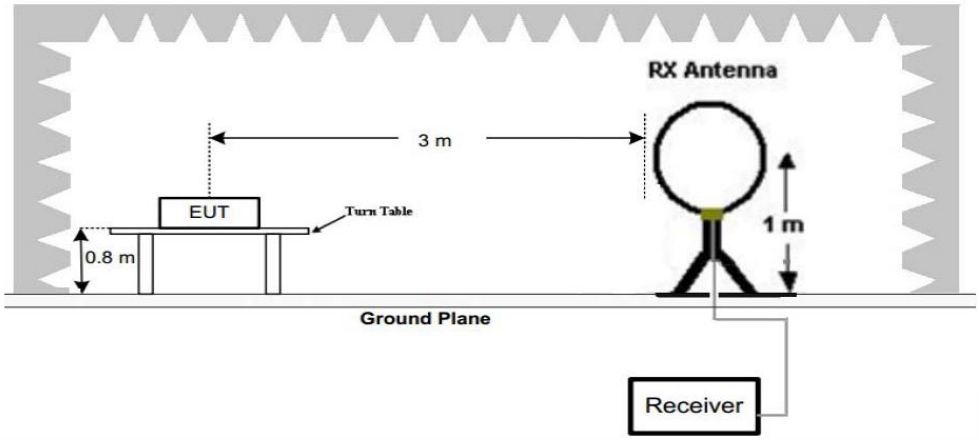


Figure 1. Below 30MHz

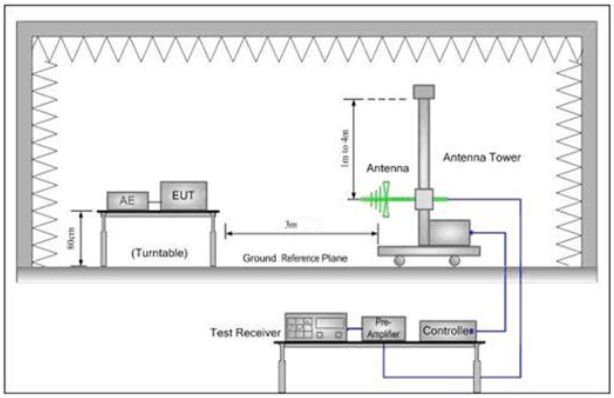


Figure 2. 30MHz to 1GHz

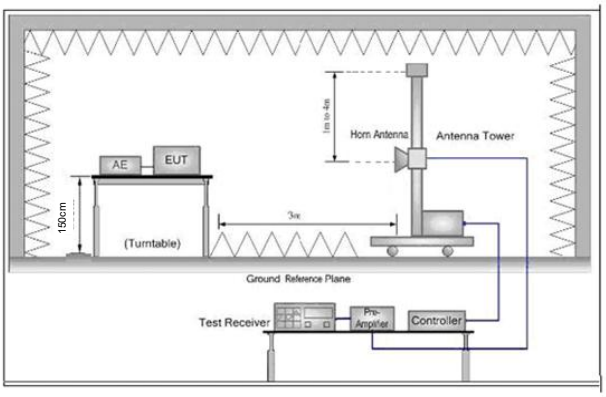


Figure 3. Above 1 GHz

Test Procedure:	a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. Note: 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. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both

	horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel (2402MHz),the middle channel (2440MHz),the Highest channel (2480MHz) h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Refer to clause 5.3
Test Results:	Pass

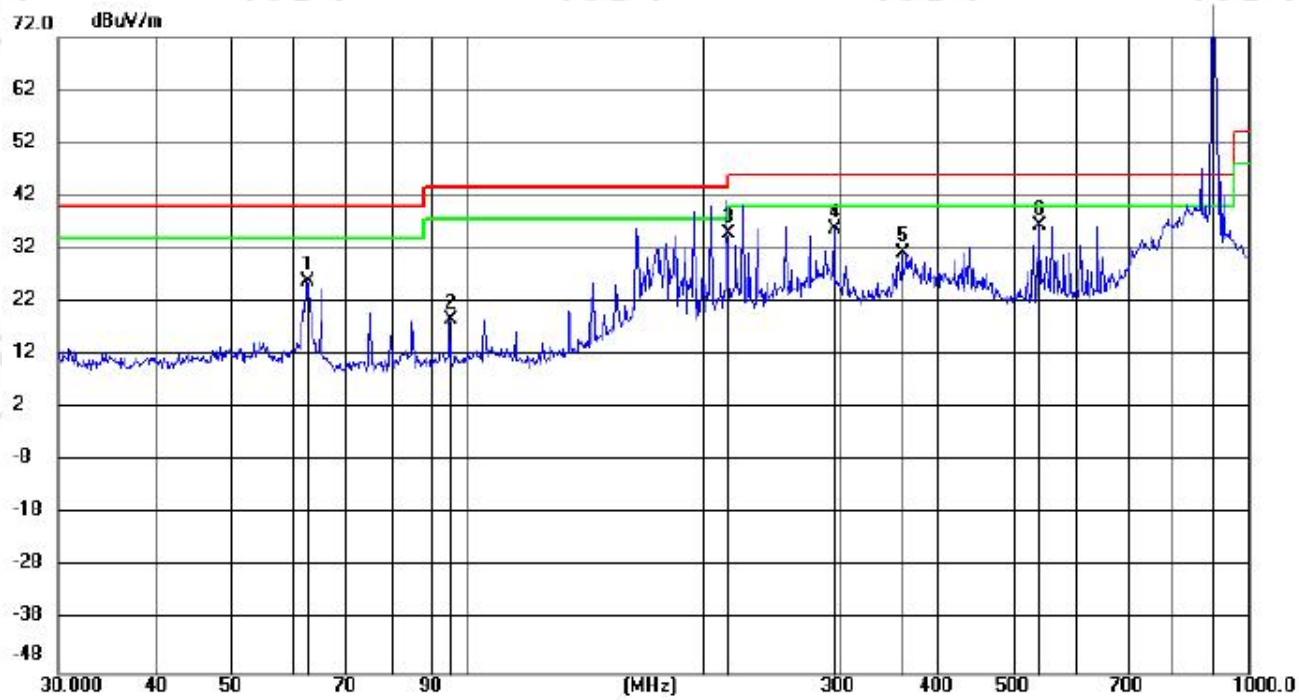
Radiated Spurious Emission 9kHz-30MHz:

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement
The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

Radiated Spurious Emission 30MHz-1GHz:

Remark	（Wio-LR1121）FPC Antenna	Polarity	Horizontal
Mode:	Transmitting	Channel:	903 MHz

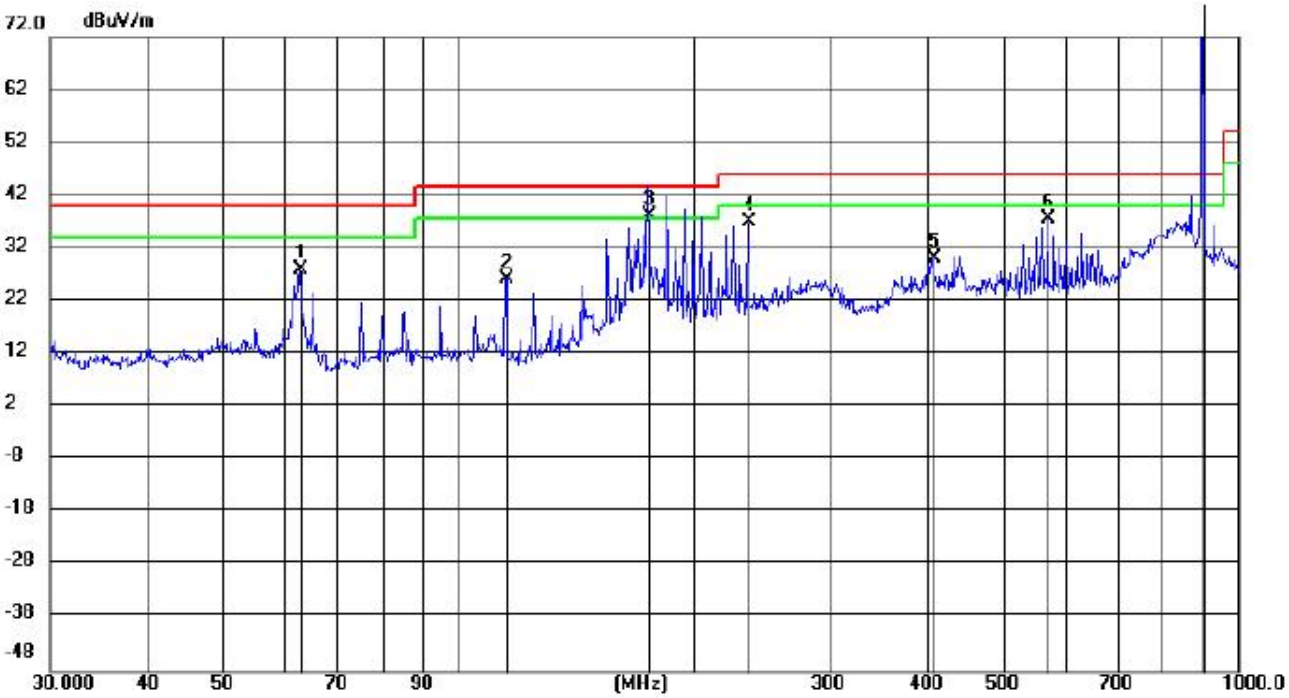
Test Graph



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		62.6506	13.32	12.62	25.94	40.00	-14.06	peak	199	145	
2		95.3100	6.31	12.39	18.70	43.50	-24.80	peak	199	145	
3		215.7212	21.62	13.38	35.00	43.50	-8.50	QP	100	340	
4		295.8203	19.38	16.42	35.80	46.00	-10.20	peak	100	235	
5		360.8903	13.03	18.41	31.44	46.00	-14.56	peak	100	131	
6		541.3725	14.46	21.86	36.32	46.00	-9.68	peak	199	103	

Remark	（Wio-LR1121）FPC Antenna	Polarity	Vertical
Mode:	Transmitting	Channel:	903 MHz

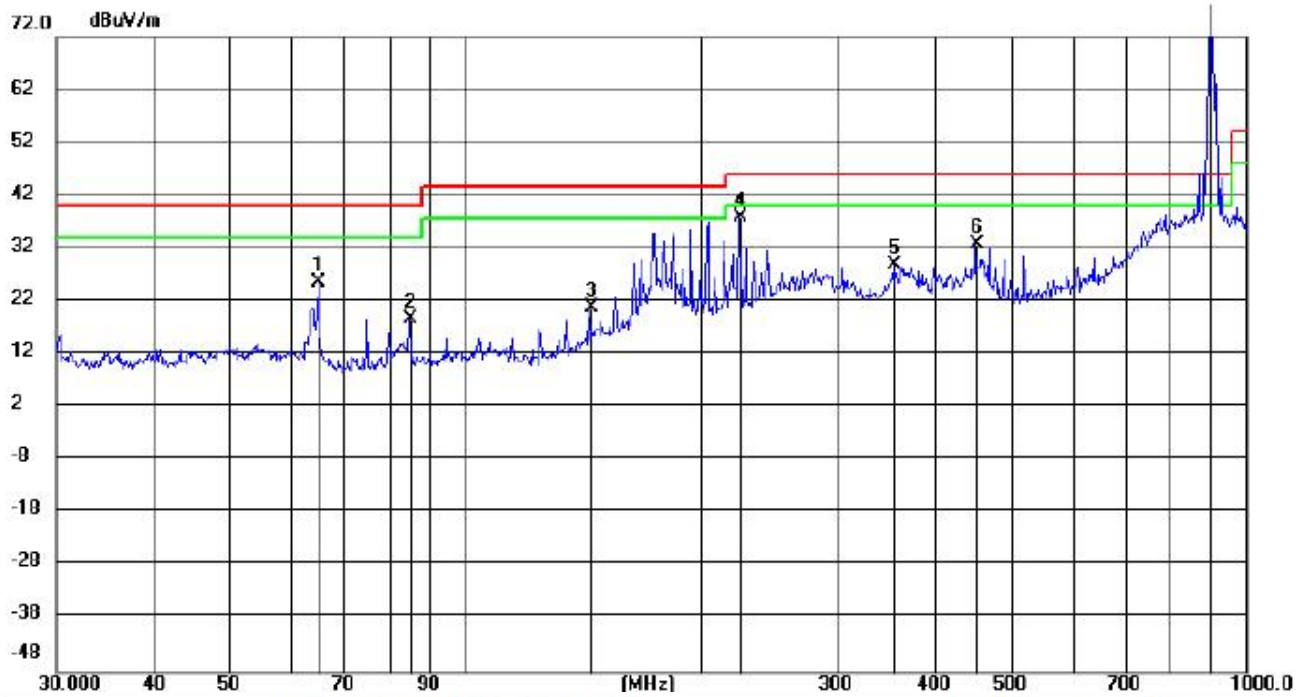
Test Graph



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		62.7606	15.45	12.59	28.04	40.00	-11.96	peak	200	58	
2		115.3205	13.56	12.82	26.38	43.50	-17.12	peak	100	352	
3	!	175.5900	26.92	11.28	38.20	43.50	-5.30	QP	100	352	
4		235.7337	22.94	14.14	37.08	46.00	-8.92	peak	200	317	
5		406.3016	10.64	19.66	30.30	46.00	-15.70	peak	100	206	
6		572.2130	15.04	22.65	37.69	46.00	-8.31	peak	200	223	

Remark	（Wio-LR1121-N）Spring Antenna	Polarity	Horizontal
Mode:	Transmitting	Channel:	903 MHz

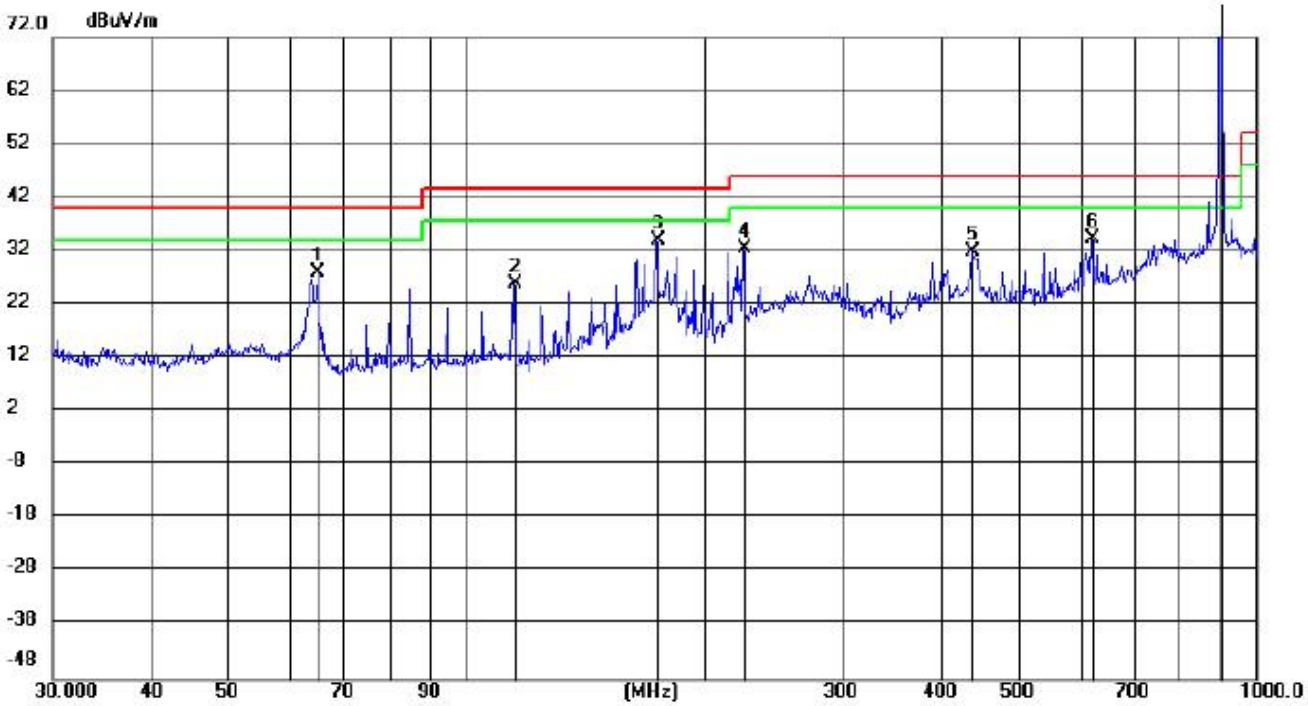
Test Graph



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		64.9662	13.67	12.01	25.68	40.00	-14.32	peak	100	360	
2		85.0143	8.26	10.52	18.78	40.00	-21.22	peak	199	186	
3		145.0195	10.50	10.40	20.90	43.50	-22.60	peak	199	352	
4		224.9921	24.19	13.72	37.91	46.00	-8.09	peak	100	308	
5		354.1831	10.83	18.21	29.04	46.00	-16.96	peak	100	194	
6		451.5306	12.67	20.22	32.89	46.00	-13.11	peak	100	69	

Remark	（Wio-LR1121-N）Spring Antenna	Polarity	Vertical
Mode:	Transmitting	Channel:	903 MHz

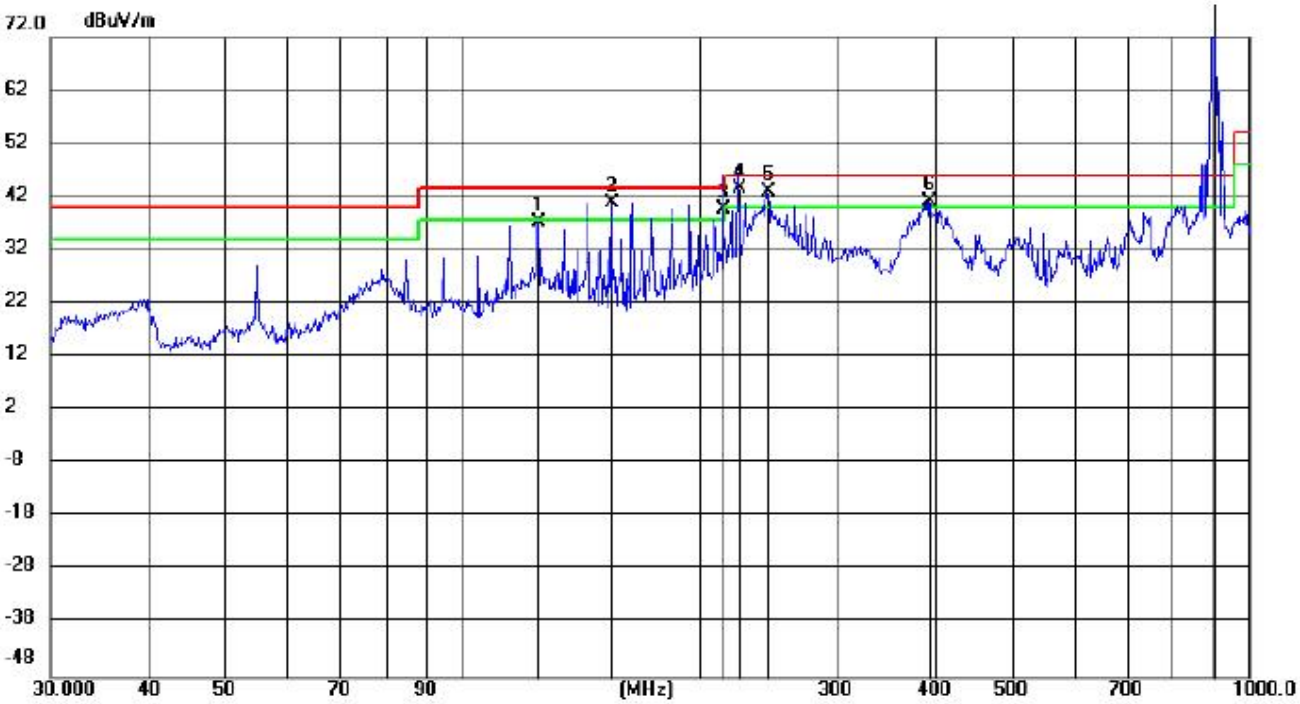
Test Graph



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		65.0802	16.01	11.97	27.98	40.00	-12.02	peak	100	204	
2		114.9975	13.05	12.90	25.95	43.50	-17.55	peak	100	340	
3		174.9447	22.91	11.29	34.20	43.50	-9.30	peak	100	340	
4		224.9922	18.78	13.72	32.50	46.00	-13.50	peak	199	321	
5		437.5033	11.87	20.04	31.91	46.00	-14.09	peak	100	172	
6		620.2745	10.89	23.53	34.42	46.00	-11.58	peak	100	214	

Remark	（Wio-LR1121）Fiberglass Antenna	Polarity	Horizontal
Mode:	Transmitting	Channel:	903 MHz

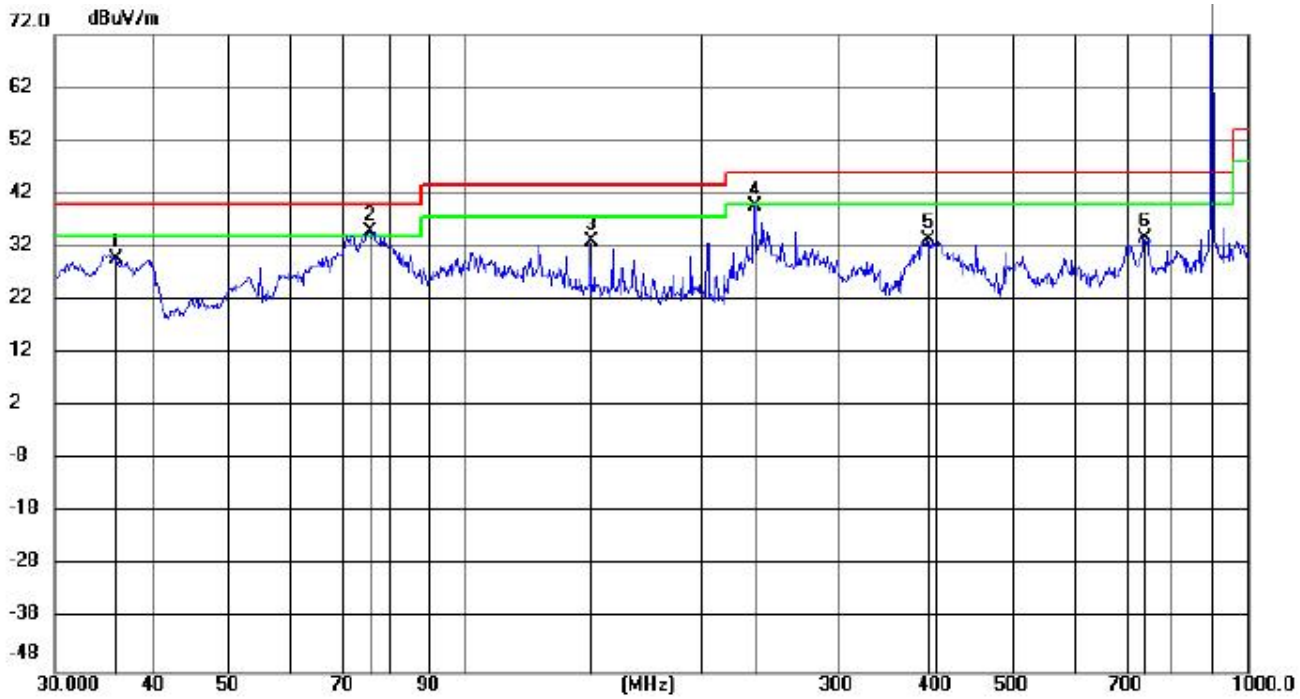
Test Graph



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		124.9847	26.14	11.26	37.40	43.50	-6.10	QP	199	140	
2	!	155.0922	30.45	10.52	40.97	43.50	-2.53	QP	100	133	
3	!	215.0038	26.35	13.35	39.70	43.50	-3.80	QP	199	352	
4	!	224.9527	30.08	13.72	43.80	46.00	-2.20	QP	100	186	
5	!	245.0471	28.64	14.50	43.14	46.00	-2.86	QP	199	352	
6	!	392.9209	21.74	19.38	41.12	46.00	-4.88	QP	100	91	

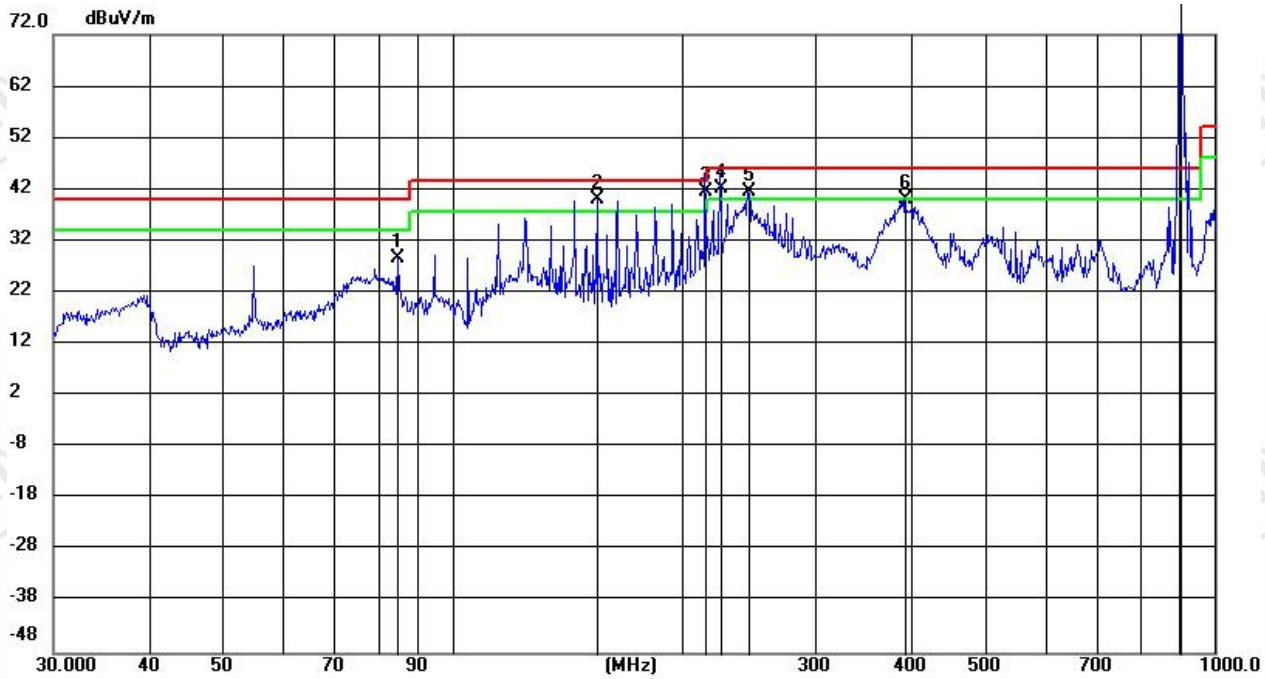
Remark	（Wio-LR1121）Fiberglass Antenna	Polarity	Vertical
Mode:	Transmitting	Channel:	903 MHz

Test Graph



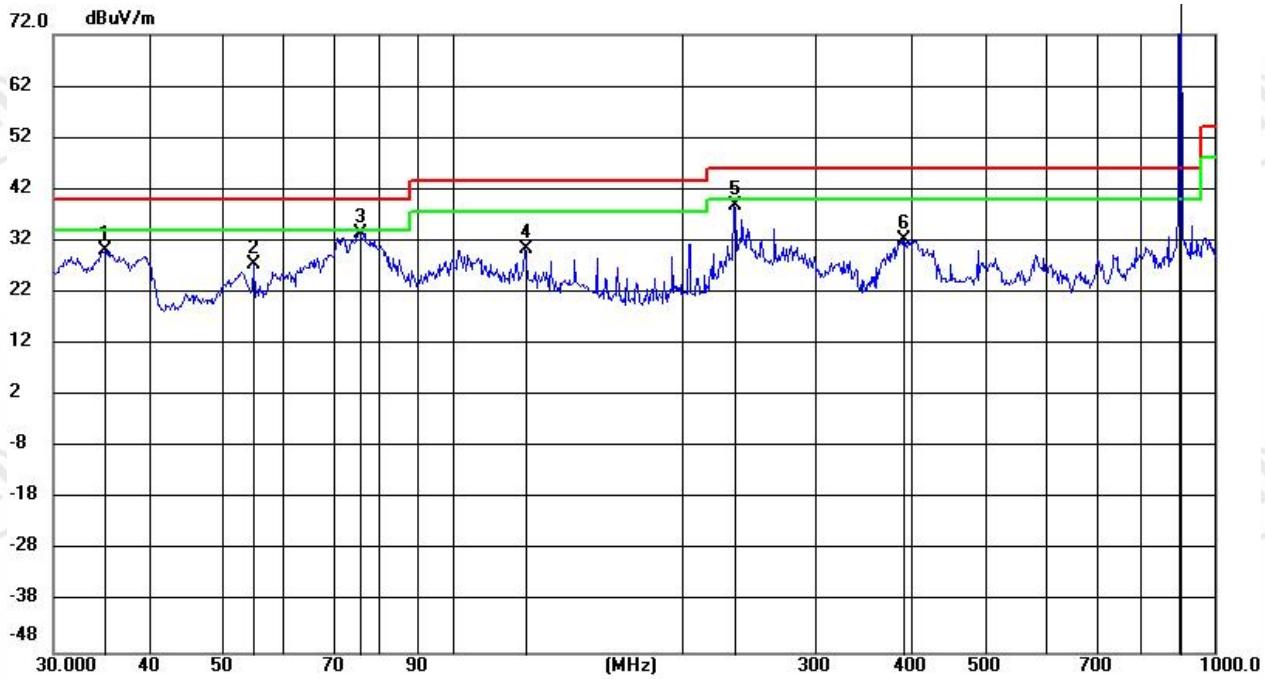
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		35.7553	17.15	12.69	29.84	40.00	-10.16	QP	100	214	
2	!	75.8576	25.07	10.02	35.09	40.00	-4.91	QP	199	240	
3		144.9942	22.83	10.40	33.23	43.50	-10.27	QP	199	208	
4		234.9497	25.66	14.10	39.76	46.00	-6.24	QP	199	187	
5		389.6280	14.13	19.28	33.41	46.00	-12.59	QP	100	203	
6		739.0124	9.39	24.51	33.90	46.00	-12.10	QP	100	44	

Remark	（Wio-LR1121-N）Fiberglass Antenna	Polarity	Horizontal
Mode:	Transmitting	Channel:	903 MHz



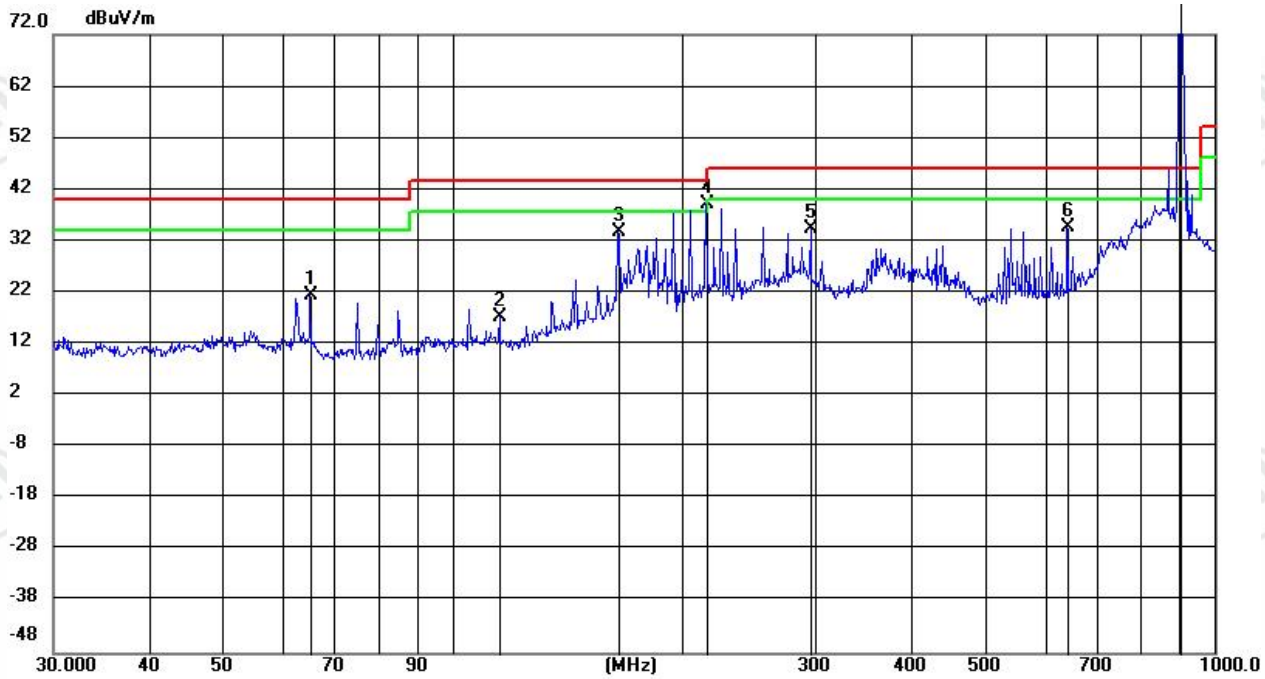
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		84.9693	18.09	10.50	28.59	40.00	-11.41	QP	199	254	
2	!	155.0920	29.44	10.52	39.96	43.50	-3.54	QP	100	14	
3	!	215.0037	28.21	13.35	41.56	43.50	-1.94	QP	199	223	
4	!	224.9524	28.31	13.72	42.03	46.00	-3.97	QP	100	54	
5	!	245.0466	27.13	14.50	41.63	46.00	-4.37	QP	100	74	
6	!	392.9207	20.73	19.38	40.11	46.00	-5.89	QP	100	156	

Remark	（Wio-LR1121-N）Fiberglass Antenna	Polarity	Vertical
Mode:	Transmitting	Channel:	903 MHz



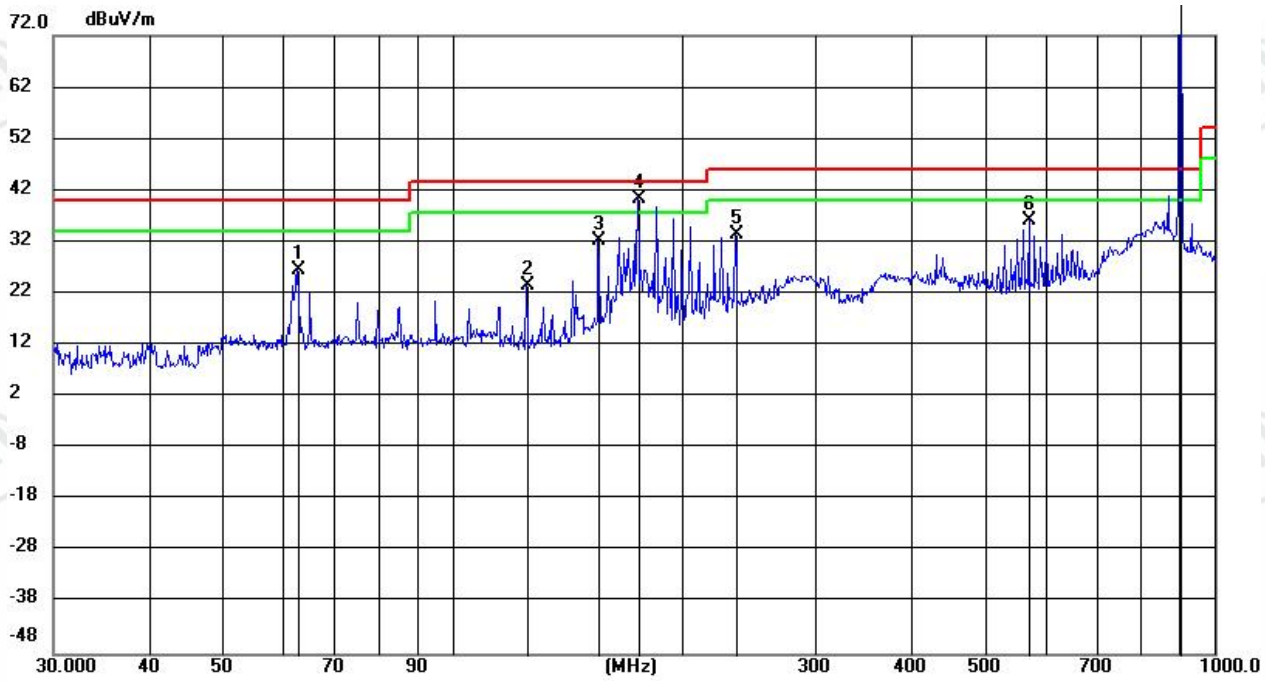
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		35.0661	17.44	12.64	30.08	40.00	-9.92	QP	100	352	
2		55.0274	13.60	13.95	27.55	40.00	-12.45	QP	200	135	
3		75.8575	23.55	10.02	33.57	40.00	-6.43	QP	200	35	
4		125.0065	19.15	11.26	30.41	43.50	-13.09	QP	100	267	
5		234.9497	24.64	14.10	38.74	46.00	-7.26	QP	100	315	
6		389.6279	13.11	19.28	32.39	46.00	-13.61	QP	100	179	

Remark	（Wio-LR1121-N）FPC Antenna	Polarity	Horizontal
Mode:	Transmitting	Channel:	903 MHz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		65.2056	9.56	11.94	21.50	40.00	-18.50	QP	199	69	
2		115.4013	4.44	12.80	17.24	43.50	-26.26	QP	199	146	
3		165.4576	22.71	11.09	33.80	43.50	-9.70	QP	100	314	
4	!	215.7212	25.90	13.38	39.28	43.50	-4.22	QP	100	56	
5		295.8201	17.88	16.42	34.30	46.00	-11.70	QP	199	72	
6		641.9601	10.91	23.72	34.63	46.00	-11.37	QP	100	239	

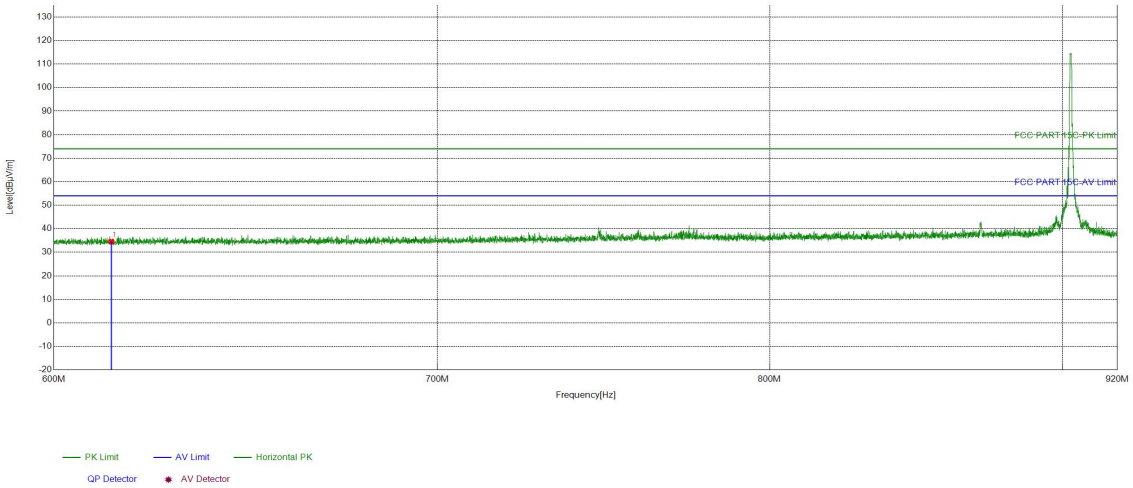
Remark	（Wio-LR1121-N）FPC Antenna	Polarity	Vertical
Mode:	Transmitting	Channel:	903 MHz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		62.7605	13.95	12.59	26.54	40.00	-13.46	QP	100	197	
2		125.3357	12.32	11.24	23.56	43.50	-19.94	QP	200	79	
3		155.4458	21.86	10.53	32.39	43.50	-11.11	QP	200	291	
4	!	175.5900	29.22	11.28	40.50	43.50	-3.00	QP	100	173	
5		235.7334	19.44	14.14	33.58	46.00	-12.42	QP	100	213	
6		572.2128	13.54	22.65	36.19	46.00	-9.81	QP	100	54	

Test_Mode	Wio-LR1121-N	Test_Frequency	903Mhz
Remark	Spring Antenna		

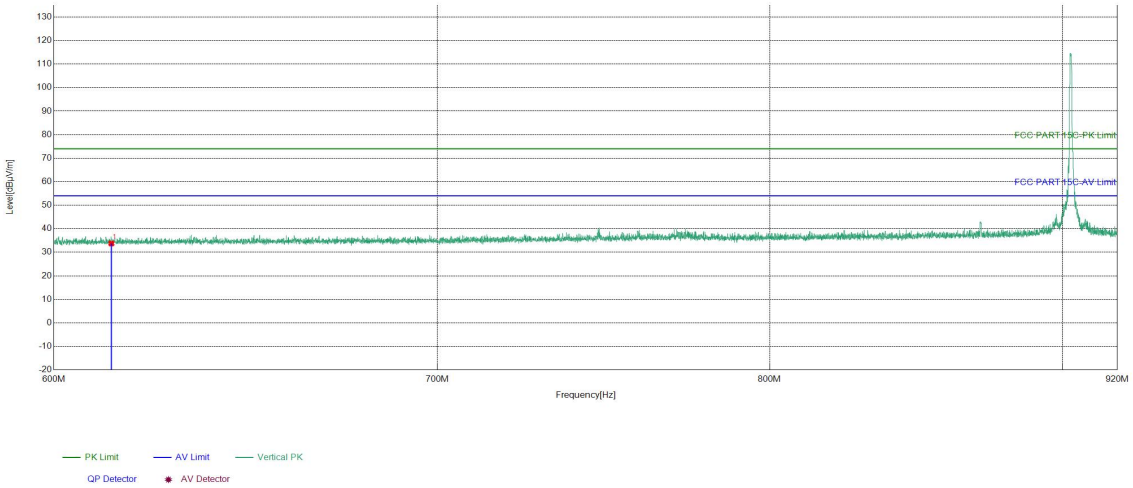
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	614	-8.49	43.05	34.56	74.00	39.44	PASS	Horizontal	PK

Test_Mode	Wio-LR1121-N	Test_Frequency	903Mhz
Remark	Spring Antenna		

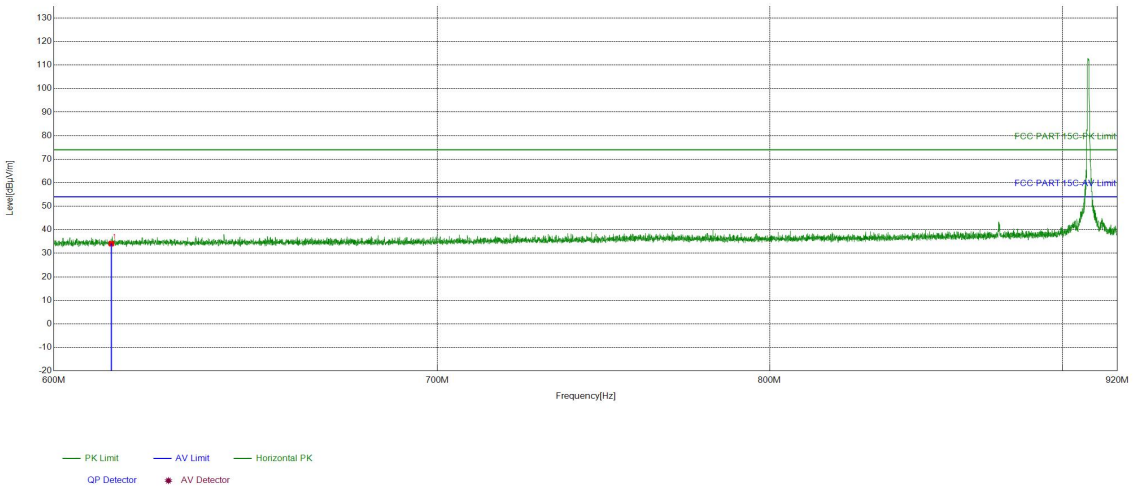
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	614	-8.49	42.24	33.75	74.00	40.25	PASS	Vertical	PK

Test_Mode	Wio-LR1121-N	Test_Frequency	909.4Mhz
Remark	Spring Antenna		

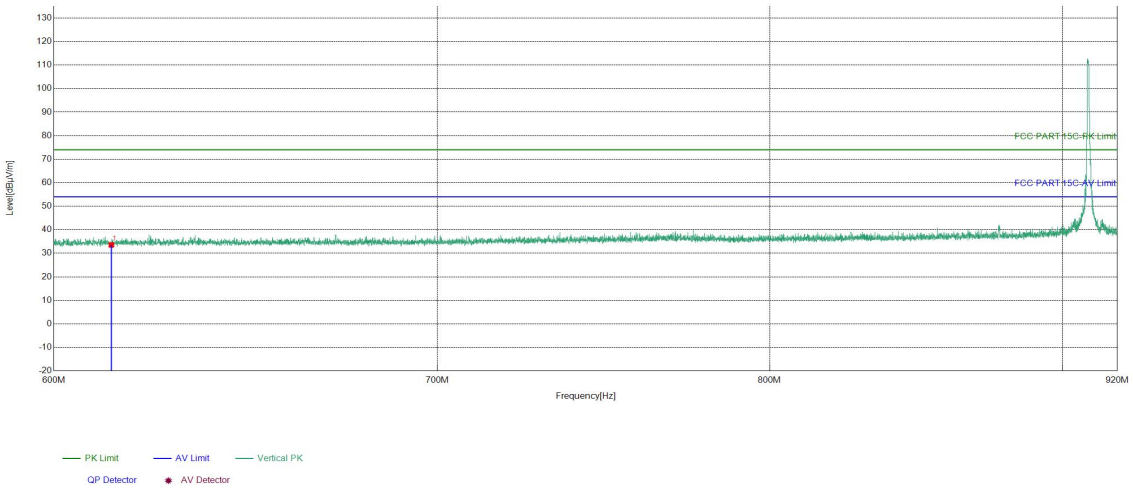
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	614	-8.49	42.60	34.11	74.00	39.89	PASS	Horizontal	PK

Test_Mode	Wio-LR1121-N	Test_Frequency	909.4Mhz
Remark	Spring Antenna		

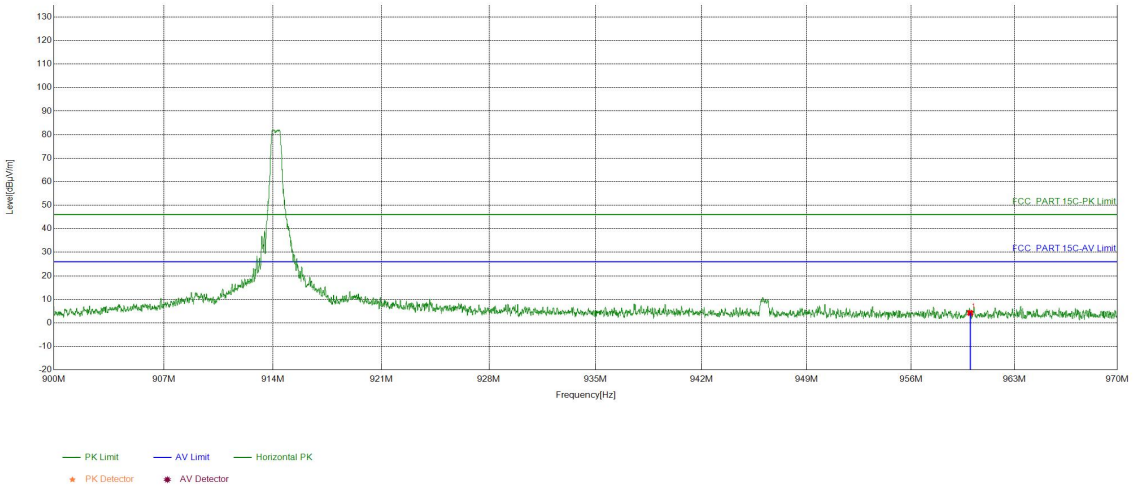
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	614	-8.49	42.05	33.56	74.00	40.44	PASS	Vertical	PK

Test_Mode	Wio-LR1121-N	Test_Frequency	914.2Mhz
Remark	Spring Antenna		

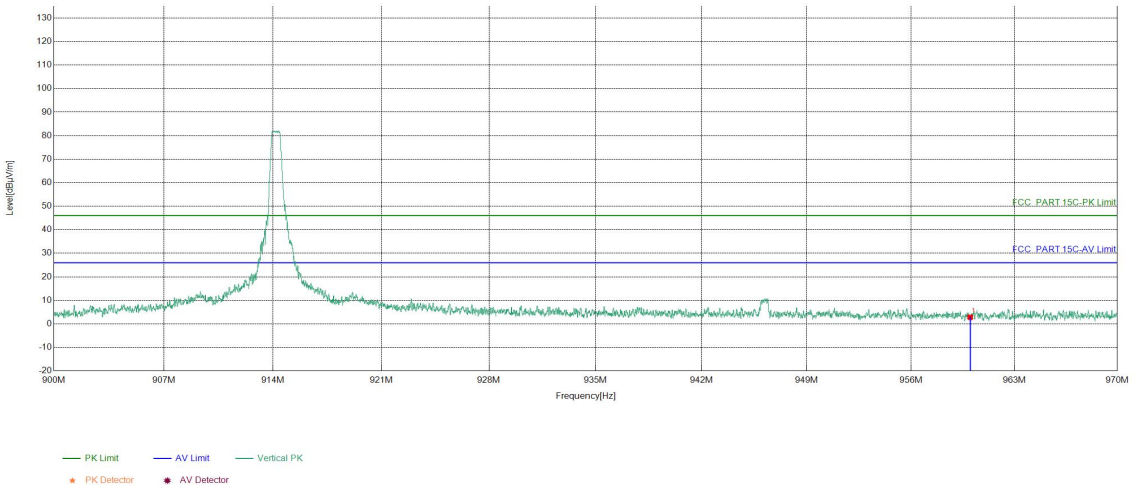
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	960	-35.46	39.66	4.20	46.00	41.80	PASS	Horizontal	PK

Test_Mode	Wio-LR1121-N	Test_Frequency	914.2Mhz
Remark	Spring Antenna		

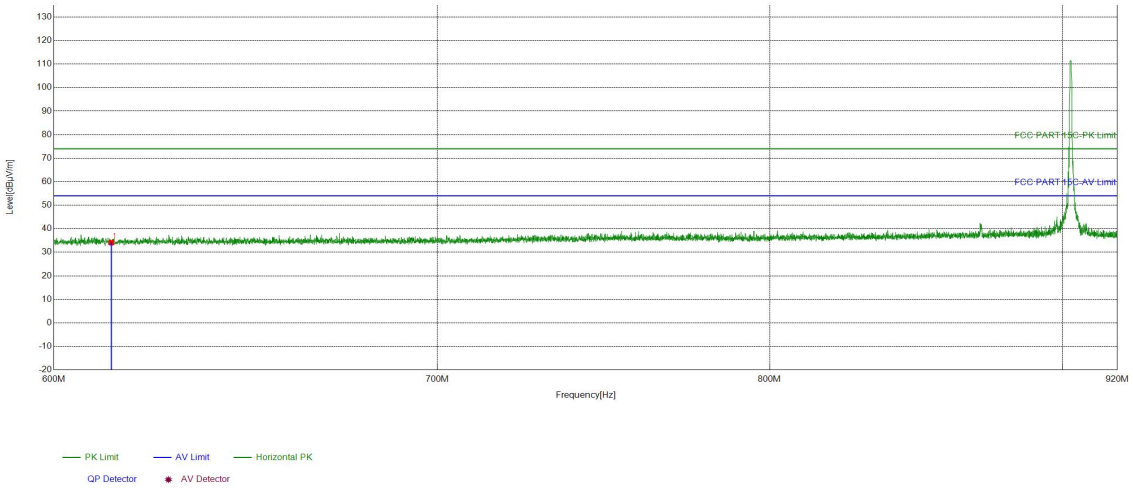
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	960	-35.46	38.28	2.82	46.00	43.18	PASS	Vertical	PK

Test_Mode	Wio-LR1121	Test_Frequency	903Mhz
Remark	FPC Antenna		

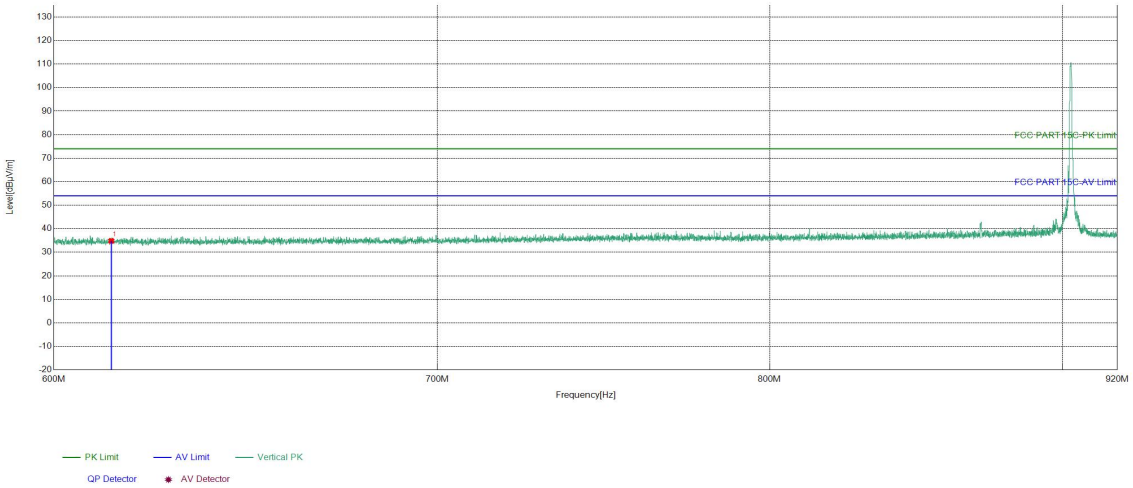
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	614	-8.49	42.61	34.12	74.00	39.88	PASS	Horizontal	PK

Test_Mode	Wio-LR1121	Test_Frequency	903Mhz
Remark	FPC Antenna		

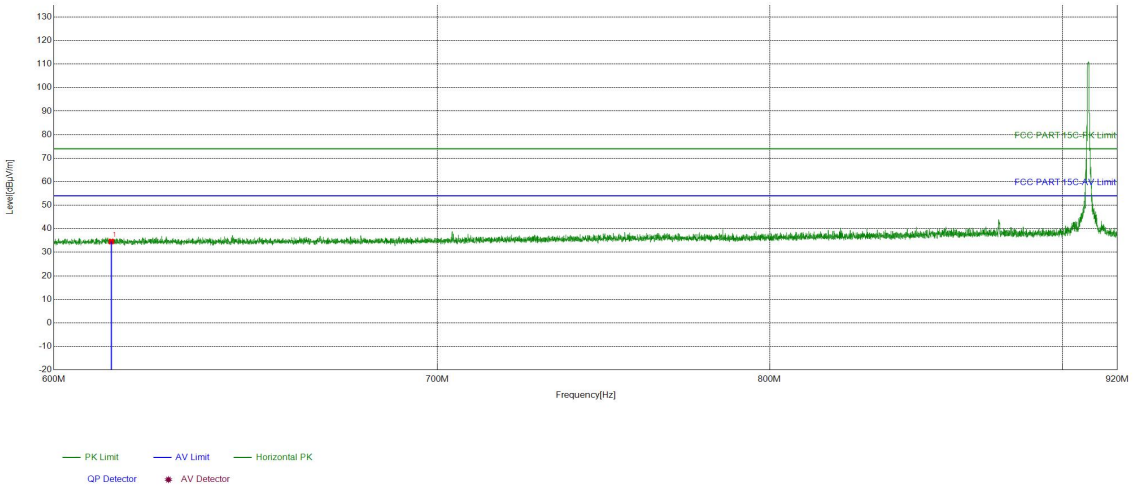
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	614	-8.49	43.31	34.82	74.00	39.18	PASS	Vertical	PK

Test_Mode	Wio-LR1121	Test_Frequency	909.4Mhz
Remark	FPC Antenna		

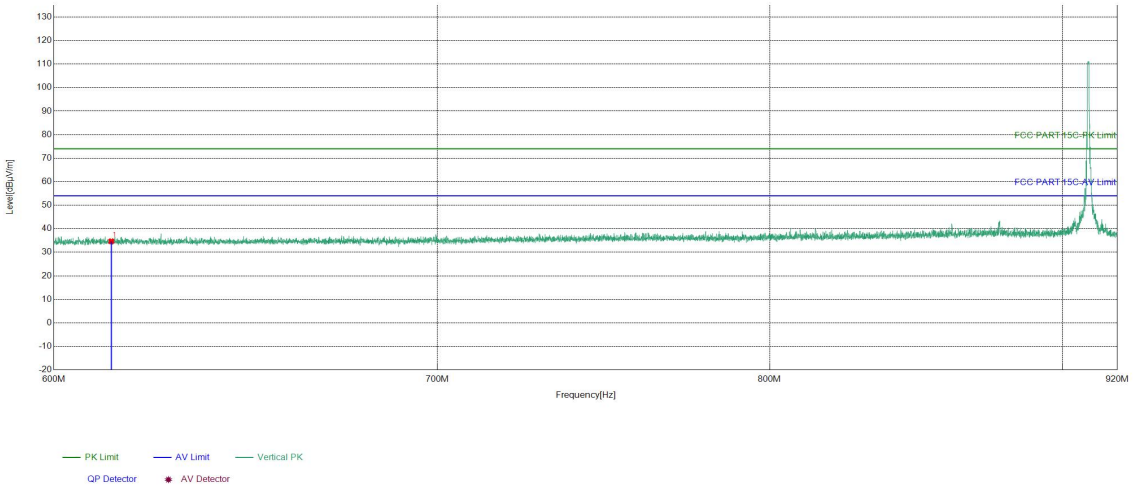
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	614	-8.49	43.08	34.59	74.00	39.41	PASS	Horizontal	PK

Test_Mode	Wio-LR1121	Test_Frequency	909.4Mhz
Remark	FPC Antenna		

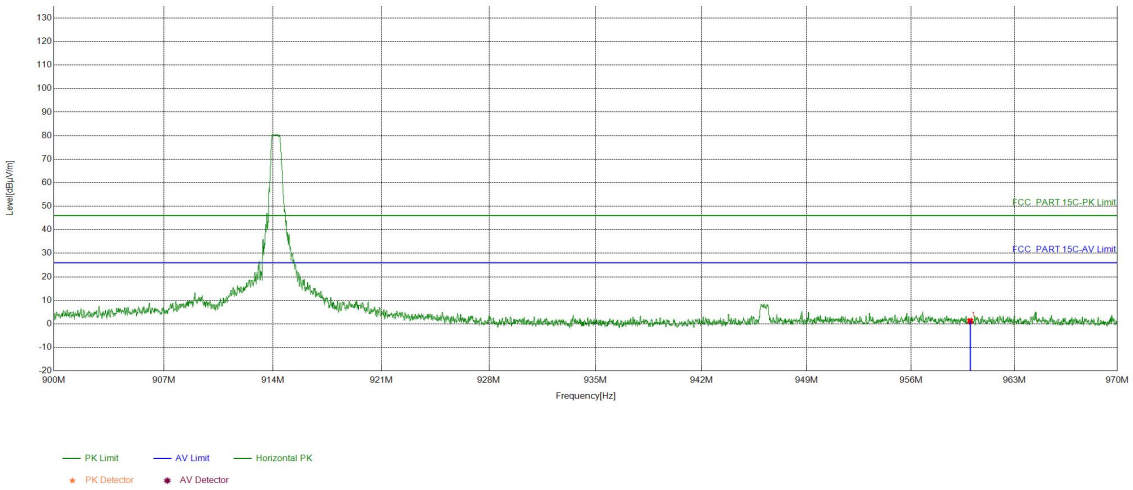
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	614	-8.49	43.17	34.68	74.00	39.32	PASS	Vertical	PK

Test_Mode	Wio-LR1121	Test_Frequency	914.2Mhz
Remark	FPC Antenna		

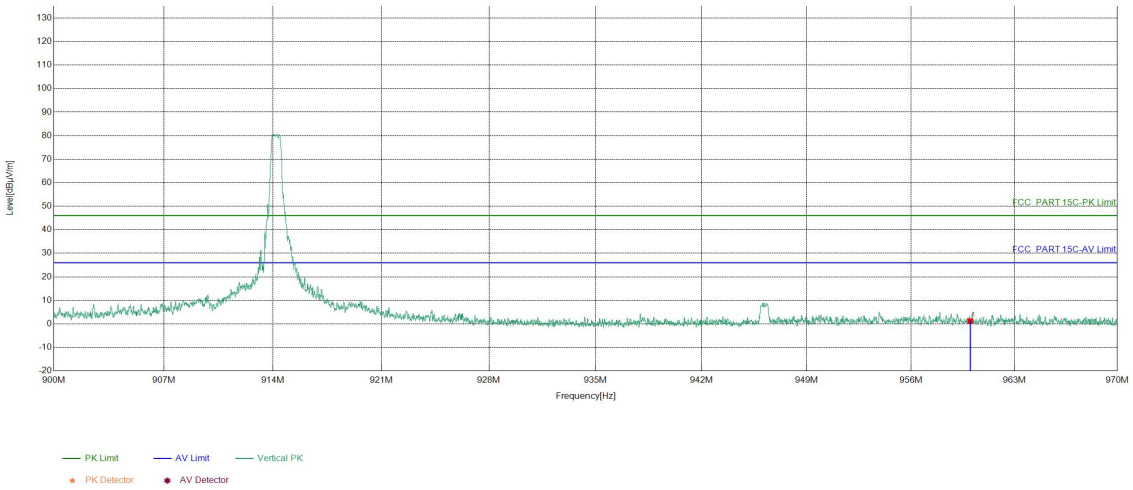
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	960	-35.46	36.68	1.22	46.00	44.78	PASS	Horizontal	PK

Test_Mode	Wio-LR1121	Test_Frequency	914.2Mhz
Remark	FPC Antenna		

Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	960	-35.46	36.67	1.21	46.00	44.79	PASS	Vertical	PK