

TEST REPORT

Product : Wio-LR1121
Trade mark : seeed studio
Model/Type reference : Wio-LR1121, Wio-LR1121-N
Serial Number : N/A
Report Number : EED32R80625601
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, Shenzhen, Guangdong Province, P.R.C

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Park, Zone 70, Bao'an District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385

Compiled by:

Keven Tan.

Keven Tan

Reviewed by:

Frazer Li

Frazer Li

Approved by:

Aaron Ma

Aaron Ma

Date:

Jun. 24, 2025



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 & Restricted bands	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 0 Ω 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	0 Ω resistor bypasses pad	0 Ω 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, Shenzhen, Guangdong Province, P.R.C
Manufacturer:	Seeed Technology Co., Ltd.
Address of Manufacturer:	9F, G3 Building, TCL International E City, Zhongshanyuan Road, Nanshan District, Shenzhen, 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:	2403MHz~2479MHz
Modulation Type:	FSK
Number of Channel:	77
Antenna Type & Gain:	FPC Antenna: 2.53dBi Spring Antenna: 2.55dBi Fiberglass Antenna: 5.03dBi
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

Channels	Frequency (MHz)	Channels	Frequency (MHz)	Channels	Frequency (MHz)	Channels	Frequency (MHz)
0	2403	1	2404	2	2405	3	2406
4	2407	5	2408	6	2409	7	2410
8	2411	9	2412	10	2413	11	2414
12	2415	13	2416	14	2417	15	2418
16	2419	17	2420	18	2421	19	2422
20	2423	21	2424	22	2425	23	2426
24	2427	25	2428	26	2429	27	2430
28	2431	29	2432	30	2433	31	2434
32	2435	33	2436	34	2437	35	2438
36	2439	37	2440	38	2441	39	2442
40	2443	41	2444	42	2445	43	2446
44	2447	45	2448	46	2449	47	2450
48	2451	49	2452	50	2453	51	2454
52	2455	53	2456	54	2457	55	2458
56	2459	57	2460	58	2461	59	2462
60	2463	61	2464	62	2465	63	2466
64	2467	65	2468	66	2469	67	2470
68	2471	69	2472	70	2473	71	2474
72	2475	73	2476	74	2477	75	2478
76	2479	77	NA	78	NA	NA	NA

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
The lowest channel (CH0)	2403MHz
The middle channel (CH30)	2441MHz
The highest channel (CH76)	2479MHz

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
Mode a	FSK	The lowest channel (CH0)	2403MHz
Mode b	FSK	The middle channel (CH30)	2441MHz
Mode c	FSK	The highest channel (CH76)	2479MHz

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 Extender	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	Cal. Due date
				(mm-dd-yyyy)	(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	Cal. Due date
				(mm-dd-yyyy)	(mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	01-13-2024	01-12-2027-
Receiver	R&S	ESC17	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

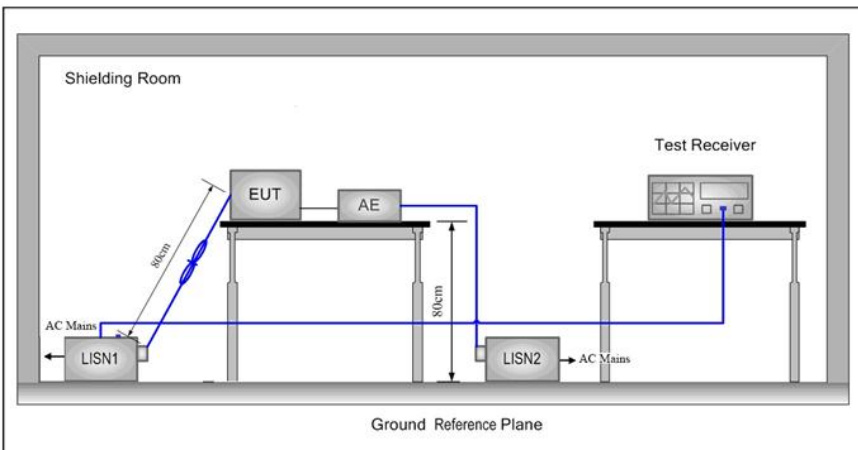
Cable line	Times	HF160-KMKM-3.00M	393493-0001	01-09-2024	01-08-2027
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5 Test results and Measurement Data

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

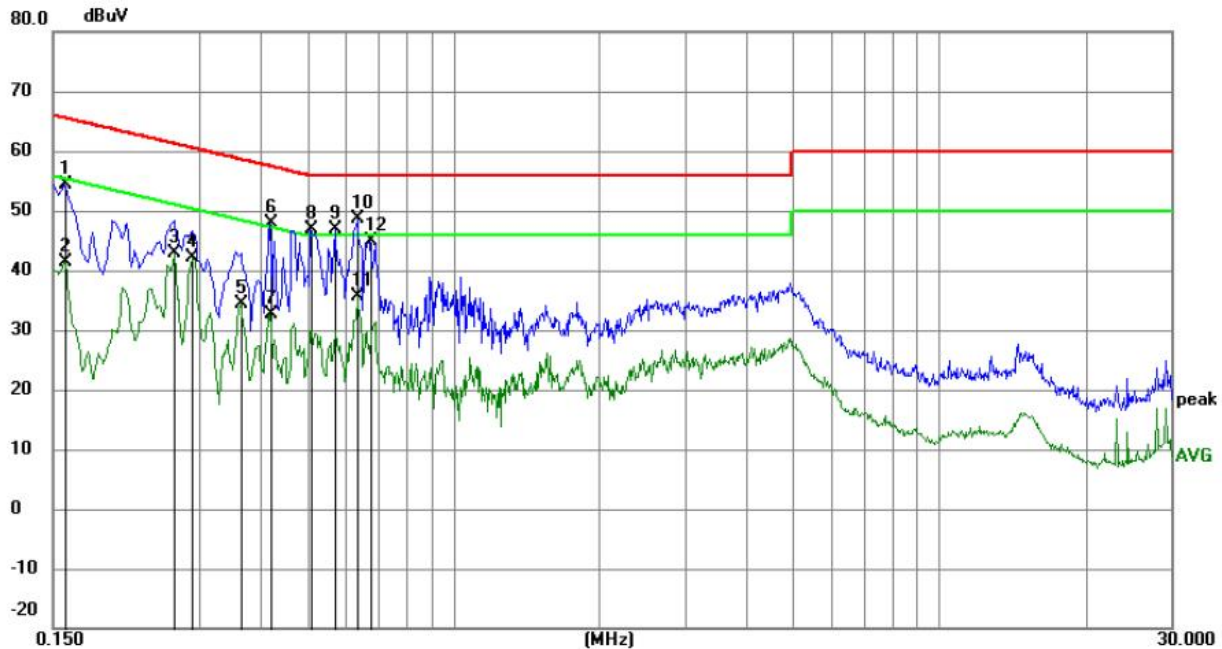
5.2 Conducted Emissions

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 $50\Omega/50\mu\text{H} + 5\Omega$ 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
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Measurement Data

Live line:

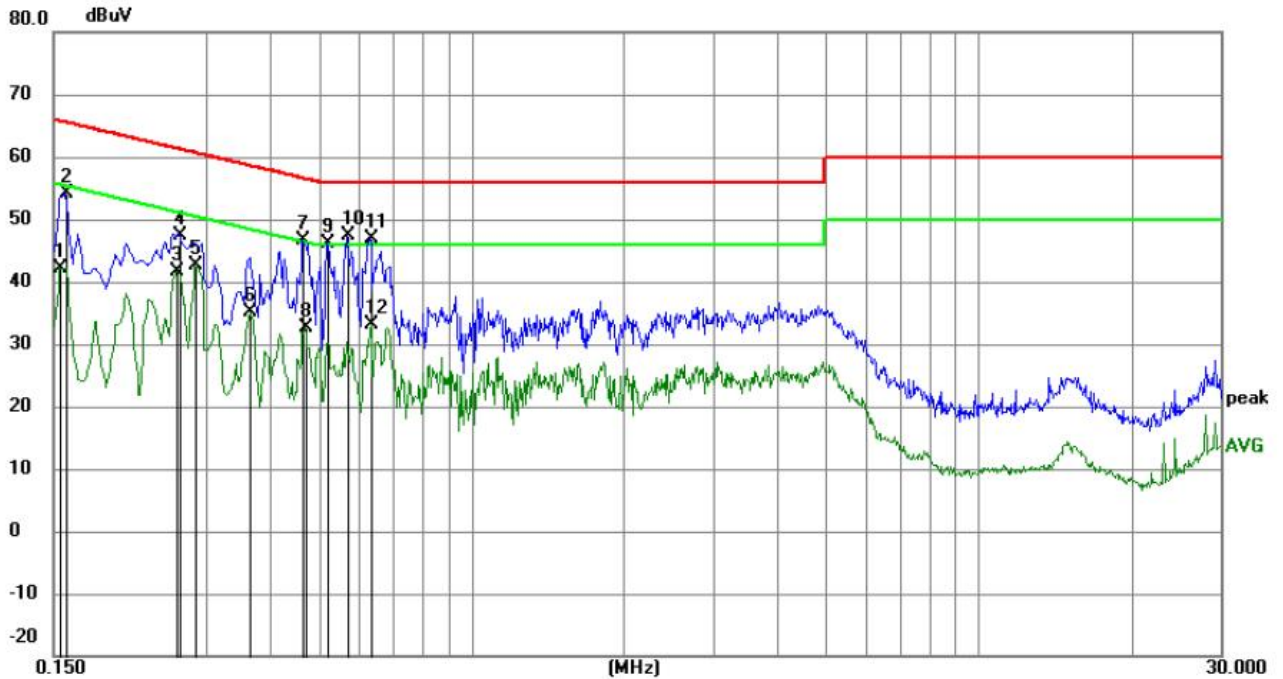


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1590	44.12	10.27	54.39	65.52	-11.13	QP	
2		0.1590	31.00	10.27	41.27	55.52	-14.25	AVG	
3		0.2670	32.77	10.16	42.93	51.21	-8.28	AVG	
4		0.2895	31.95	10.14	42.09	50.54	-8.45	AVG	
5		0.3660	24.20	10.10	34.30	48.59	-14.29	AVG	
6		0.4200	37.89	10.09	47.98	57.45	-9.47	QP	
7		0.4200	22.57	10.09	32.66	47.45	-14.79	AVG	
8		0.5100	36.91	10.08	46.99	56.00	-9.01	QP	
9		0.5730	36.72	10.09	46.81	56.00	-9.19	QP	
10	*	0.6360	38.63	10.11	48.74	56.00	-7.26	QP	
11		0.6360	25.52	10.11	35.63	46.00	-10.37	AVG	
12		0.6720	34.76	10.12	44.88	56.00	-11.12	QP	

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:

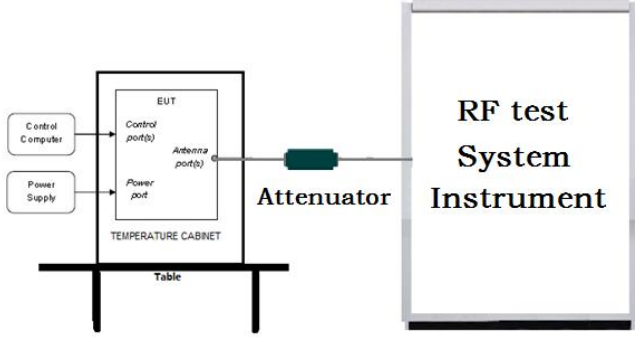


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1545	31.97	10.28	42.25	55.75	-13.50	AVG	
2		0.1590	43.82	10.27	54.09	65.52	-11.43	QP	
3		0.2625	31.41	10.16	41.57	51.35	-9.78	AVG	
4		0.2670	37.29	10.16	47.45	61.21	-13.76	QP	
5	*	0.2850	32.51	10.14	42.65	50.67	-8.02	AVG	
6		0.3660	24.91	10.10	35.01	48.59	-13.58	AVG	
7		0.4650	36.65	10.08	46.73	56.60	-9.87	QP	
8		0.4695	22.52	10.08	32.60	46.52	-13.92	AVG	
9		0.5190	35.99	10.08	46.07	56.00	-9.93	QP	
10		0.5685	37.36	10.09	47.45	56.00	-8.55	QP	
11		0.6315	36.75	10.11	46.86	56.00	-9.14	QP	
12		0.6360	23.08	10.11	33.19	46.00	-12.81	AVG	

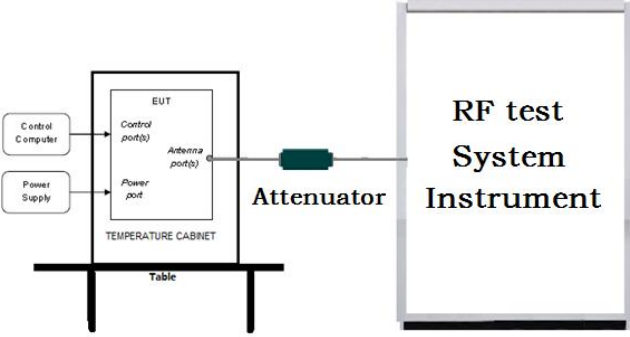
Remark:

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.

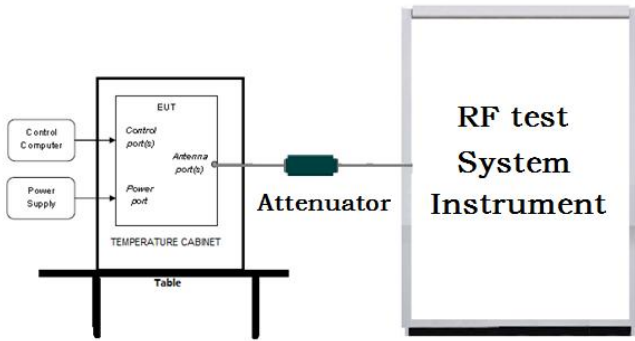
5.3 Maximum Conducted Output Power

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 $\geq$ DTS bandwidth. b) Set VBW $\geq 3 \times$ RBW. c) Set span $\geq 3 \times$ 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

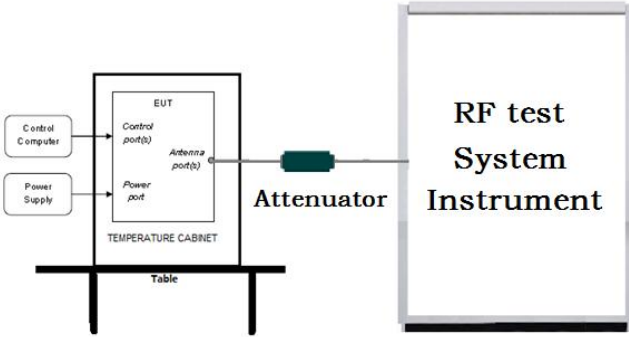
5.4 DTS Bandwidth

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 $\geq [3 \times \text{RBW}]$. 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:	$\geq 500 \text{ kHz}$
Test Mode:	Refer to clause 5.3
Test Results:	Refer to Appendix A

5.5 Maximum Power Spectral Density

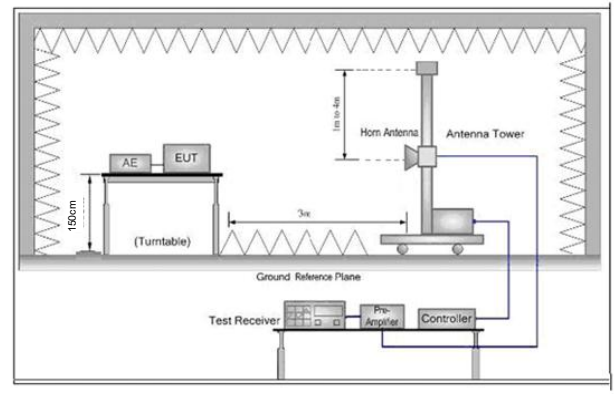
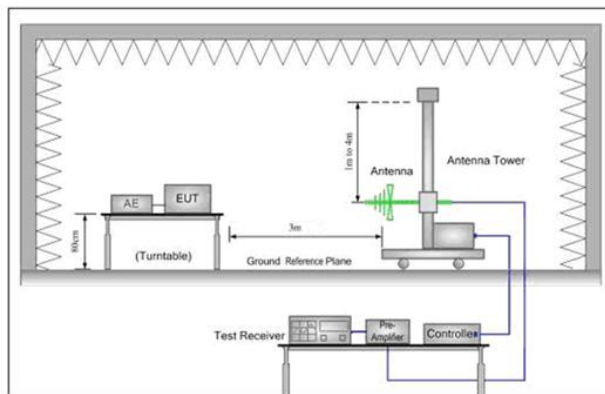
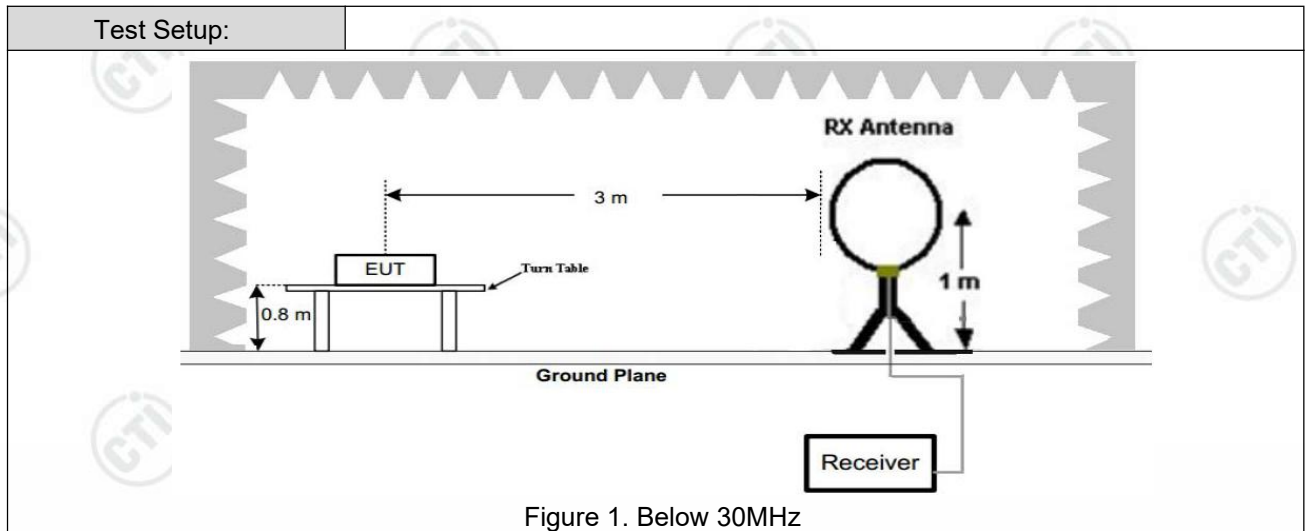
Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10 2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	a) Set analyzer center frequency to DTS channel center frequency. b) Set the span to 1.5 times the DTS bandwidth. c) Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$. d) Set the VBW $\geq [3 \times \text{RBW}]$. 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:	$\leq 8.00 \text{ dBm}/3 \text{ kHz}$
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 & Restricted bands

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 Procedure:

- 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 chamber. 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 chamber. 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
 - 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:	2.4G Transmitting	Channel:	2403 MHz

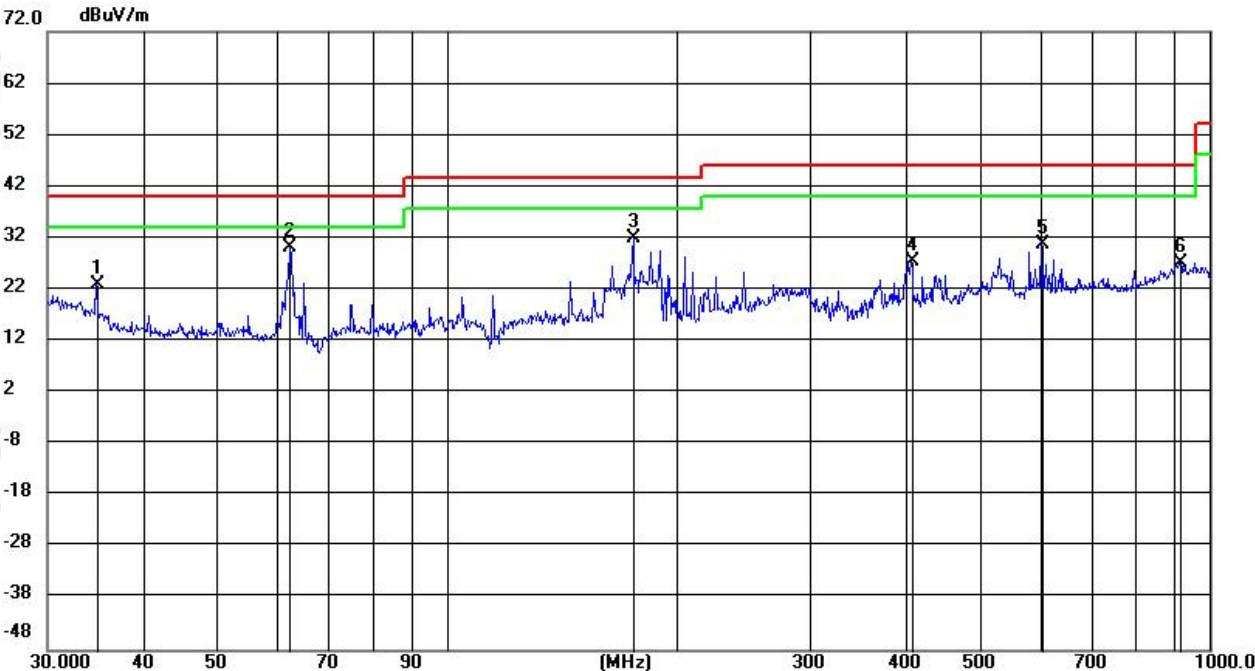
Test Graph



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		62.6176	17.56	12.63	30.19	40.00	-9.81	QP	199	138	
2		165.3417	25.63	11.09	36.72	43.50	-6.78	QP	100	256	
3		205.4225	24.44	12.99	37.43	43.50	-6.07	QP	199	7	
4	*	225.7427	27.33	13.76	41.09	46.00	-4.91	QP	100	35	
5		551.6245	12.32	22.12	34.44	46.00	-11.56	QP	100	342	
6		998.5982	2.25	27.65	29.90	54.00	-24.10	QP	199	58	

Remark	(Wio-LR1121) FPC Antenna	Polarity	Vertical
Mode:	2.4G Transmitting	Channel:	2403 MHz

Test Graph

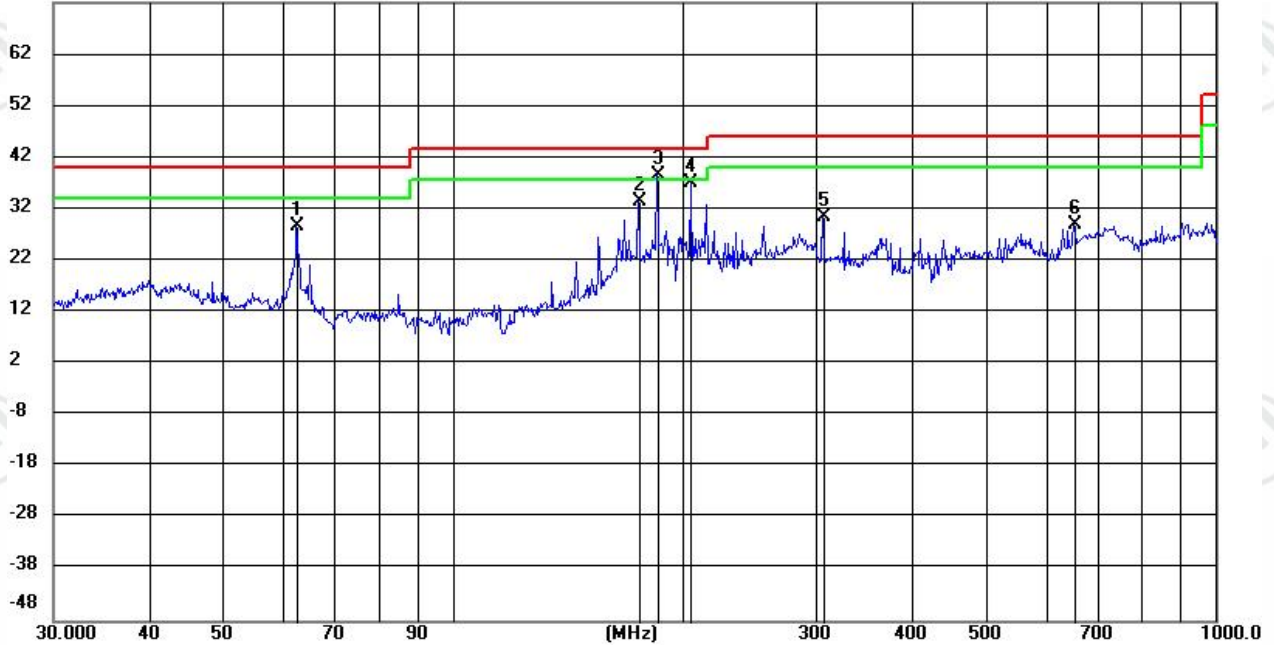


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree		
		MHz	dBuV	dBm	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		34.8333	10.19	12.64	22.83	40.00	-17.17	QP	100	246	
2	*	62.3766	17.41	12.69	30.10	40.00	-9.90	QP	100	159	
3		175.6824	20.56	11.28	31.84	43.50	-11.66	QP	100	318	
4		406.1591	7.66	19.66	27.32	46.00	-18.68	QP	200	76	
5		601.7427	7.28	23.36	30.64	46.00	-15.36	QP	100	20	
6		913.5022	-0.07	27.36	27.29	46.00	-18.71	QP	100	89	

Remark	(Wio-LR1121-N) Spring Antenna	Polarity	Horizontal
Mode:	2.4G Transmitting	Channel:	2403 MHz

Test Graph

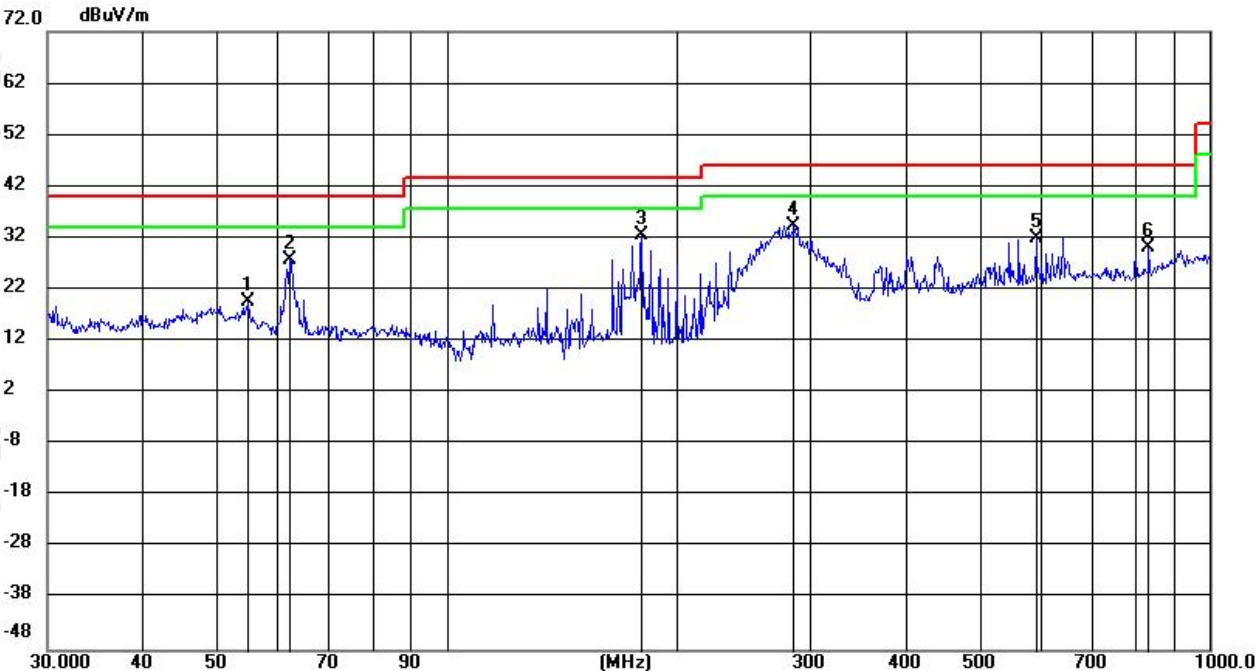
72.0 dBuV/m



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1		62.5409	15.87	12.65	28.52	40.00	-11.48	QP	100	39	
2		175.5284	22.04	11.28	33.32	43.50	-10.18	QP	199	7	
3	*	185.4952	26.59	12.05	38.64	43.50	-4.86	QP	100	156	
4		205.5669	23.93	12.99	36.92	43.50	-6.58	QP	100	360	
5		305.8407	13.69	16.76	30.45	46.00	-15.55	QP	100	247	
6		652.1702	5.15	23.81	28.96	46.00	-17.04	QP	199	56	

Remark	(Wio-LR1121-N) Spring Antenna	Polarity	Vertical
Mode:	2.4G Transmitting	Channel:	2403 MHz

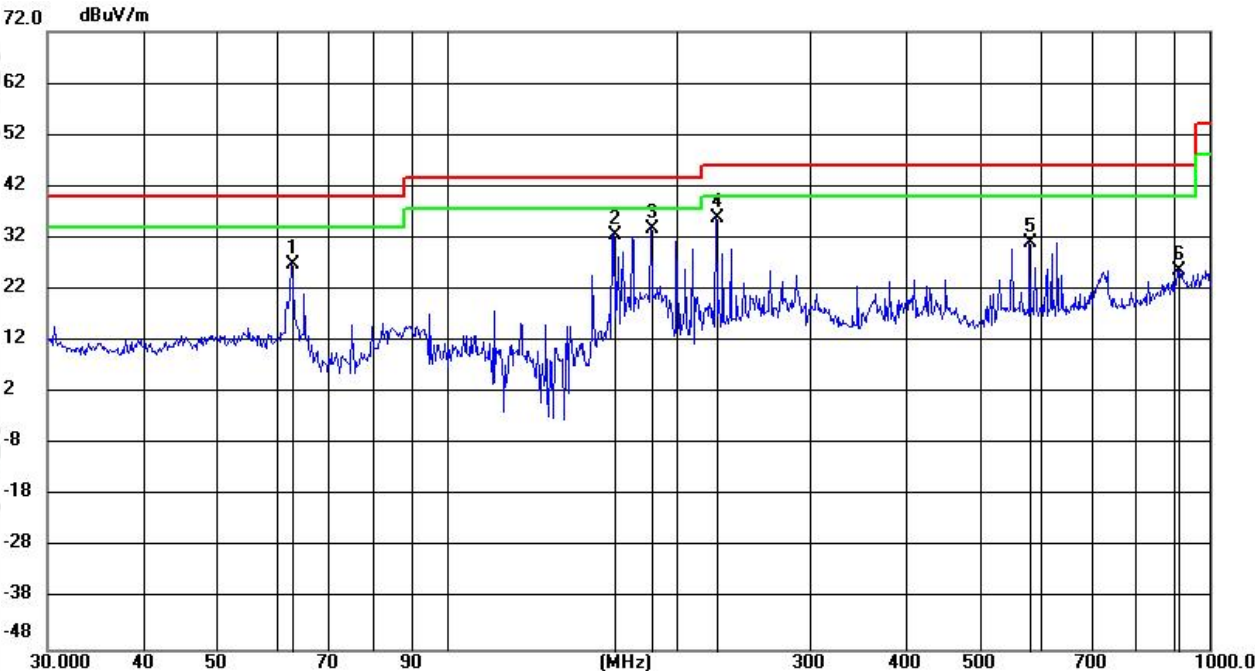
Test Graph



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dBm	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		55.0608	5.78	13.94	19.72	40.00	-20.28	QP	100	29
2		62.2582	15.10	12.72	27.82	40.00	-12.18	QP	200	132
3	*	180.3396	21.44	11.21	32.65	43.50	-10.85	QP	200	298
4		285.6196	18.46	16.04	34.50	46.00	-11.50	QP	200	352
5		592.7395	8.91	23.17	32.08	46.00	-13.92	QP	100	225
6		833.1650	4.29	25.72	30.01	46.00	-15.99	QP	100	38

Remark	(Wio-LR1121) Fiberglass Antenna	Polarity	Horizontal
Mode:	2.4G Transmitting	Channel:	2403 MHz

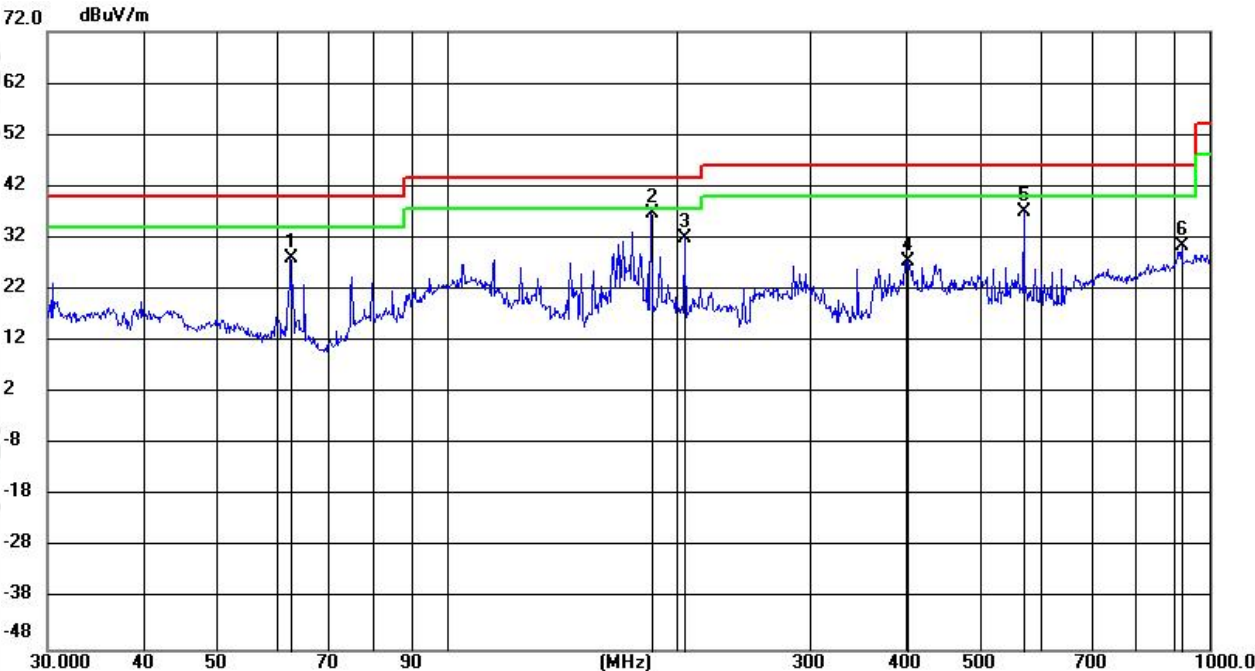
Test Graph



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	62.6726	14.10	12.62	26.72	40.00	-13.28	QP	100	64	
2	165.5157	21.59	11.10	32.69	43.50	-10.81	QP	100	258	
3 *	185.4952	21.67	12.05	33.72	43.50	-9.78	QP	100	146	
4	225.7033	22.01	13.76	35.77	46.00	-10.23	QP	199	339	
5	581.6195	8.32	22.88	31.20	46.00	-14.80	QP	100	28	
6	912.2219	-1.59	27.35	25.76	46.00	-20.24	QP	199	194	

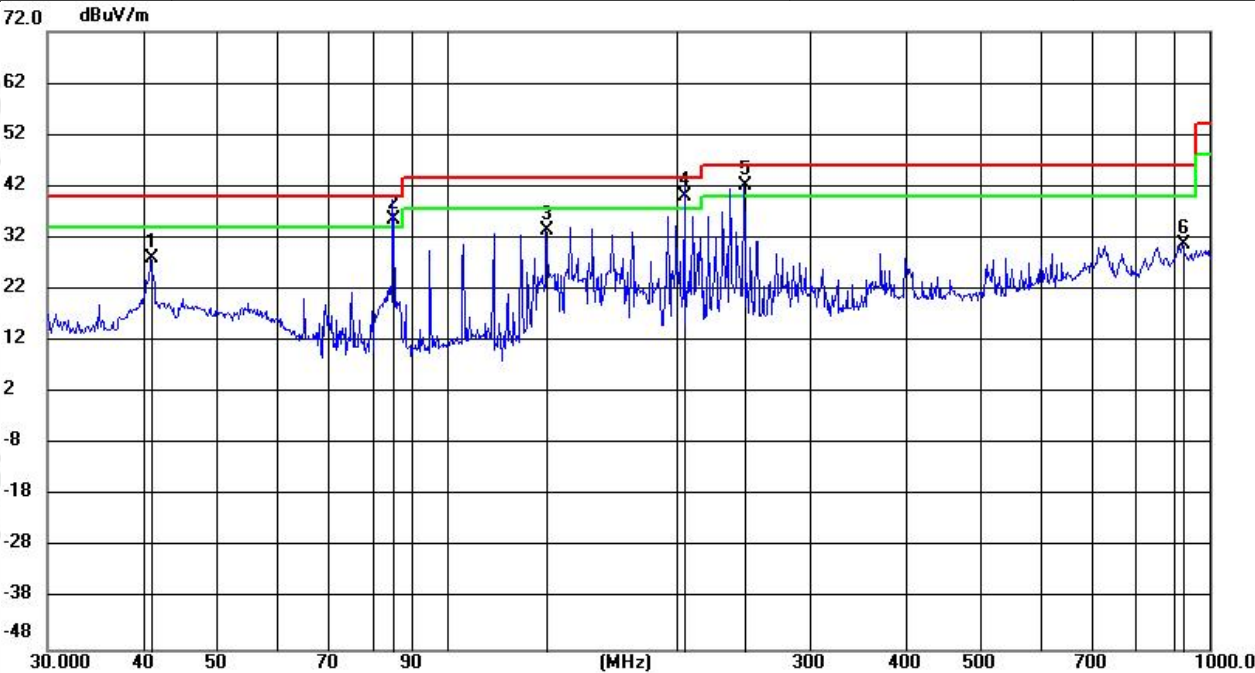
Remark	(Wio-LR1121) Fiberglass Antenna	Polarity	Vertical
Mode:	2.4G Transmitting	Channel:	2403 MHz

Test Graph



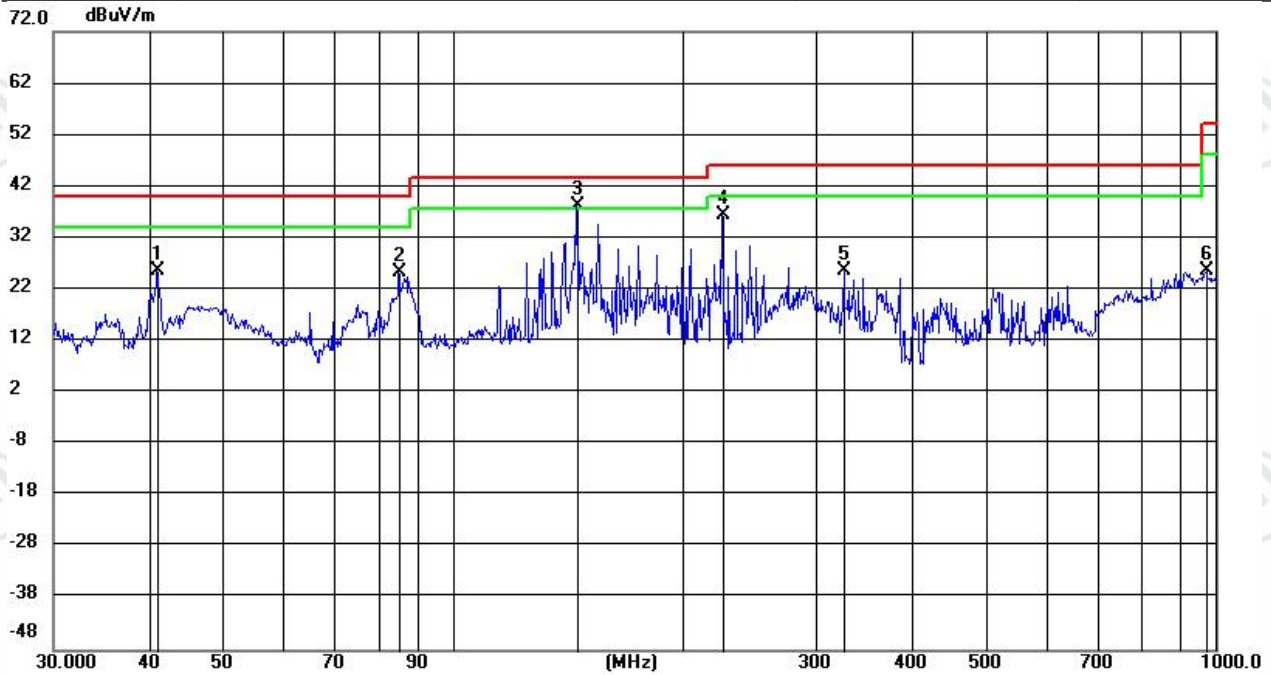
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		62.6396	15.38	12.62	28.00	40.00	-12.00	QP	199	39
2	*	185.5278	24.68	12.06	36.74	43.50	-6.76	QP	199	82
3		205.6390	18.86	13.00	31.86	43.50	-11.64	QP	100	169
4		400.8531	7.75	19.60	27.35	46.00	-18.65	QP	199	215
5		571.9120	14.35	22.64	36.99	46.00	-9.01	QP	100	341
6		920.4153	3.18	27.38	30.56	46.00	-15.44	QP	199	71

Remark	(Wio-LR1121-N) Fiberglass Antenna	Polarity	Horizontal
Mode:	2.4G Transmitting	Channel:	2403 MHz



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree
1	41.0671	14.90	13.12	28.02	40.00	-11.98	QP	100	256
2 !	85.2531	25.01	10.56	35.57	40.00	-4.43	QP	199	352
3	135.4584	22.82	10.67	33.49	43.50	-10.01	QP	100	247
4 *	205.6029	27.12	12.99	40.11	43.50	-3.39	QP	199	198
5 !	245.7785	27.63	14.52	42.15	46.00	-3.85	QP	100	65
6	924.2966	3.51	27.39	30.90	46.00	-15.10	QP	100	195

Remark	(Wio-LR1121-N) Fiberglass Antenna	Polarity	Vertical
Mode:	2.4G Transmitting	Channel:	2403 MHz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dBm	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		40.9950	12.53	13.10	25.63	40.00	-14.37	QP	100	93
2		85.2531	14.68	10.56	25.24	40.00	-14.76	QP	200	184
3	*	145.4524	27.86	10.39	38.25	43.50	-5.25	QP	100	321
4		225.7821	22.70	13.76	36.46	46.00	-9.54	QP	100	86
5		326.2814	8.20	17.37	25.57	46.00	-20.43	QP	100	219
6		972.5076	-2.00	27.56	25.56	54.00	-28.44	QP	200	359