FCC Radio Test Report

FCC ID: 2AZDN-SBCHAM

Report No.	:	TB-FCC180473
Applicant	:	Launch Pad LLC
Equipment Under Test (EUT)		
EUT Name	:	Chameleon
Model No.	:	CH-23
Serial Model No.	:	----
Brand Name	:	SyncroB.it
Sample ID	:	20210511-13-01 & 20210511-13-02
Receipt Date	:	2021-05-18
Test Date	:	2021-05-19 to 2021-07-01
Issue Date	:	2021-07-01
Standards	:	FCC Part 15, Subpart C 15.249
Test Method	:	ANSI C63.10: 2013
Conclusions	:	**PASS**

In the configuration tested, the EUT complied with the standards specified above,
The EUT technically complies with the FCC requirements

Test/Witness Engineer	:	Wade. Lv
Engineer Supervisor	:	Ivan Su
Approved & Authorized	:	Ray Lai

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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Revision History

Report No.	Version	Description	Issued Date
TB-FCC180473	Rev.01	Initial issue of report	2021-07-01

1. General Information about EUT

1.1 Client Information

Applicant	:	Launch Pad LLC
Address	:	358 Westside Drive, Shepherdsville KY 40165 USA
Manufacturer	:	Shenzhen Changkeshun Technology Co., Ltd
Address	:	FL.3-4, Blog.K, Jinchangda Tech Park, Guanlan St., Longhua Dist., Shenzhen, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Chameleon	
Model No.	:	CH-23	
Model Difference	:	----	
Product Description	:	Operation Frequency:	915~916.4 MHz
		Number of Channel:	Please see the note (2)
		Output power:	ANT1: 83.77 dBuV/m@3m QP ANT2: 90.27 dBuV/m@3m QP
		Antenna Gain:	3.0dBi External ANT 1 6.0dBi External ANT 2
		Note: The External Ant 2 is an Optional Accessories antenna please refer to user manual.	
		Modulation Type:	ISM
Power Rating	:	Adapter (F012WB-120100u) Input: AC 100-240V, 50/60Hz 0.5A Output: DC 12V, 1A 12W	
Software Version	:	----	
Hardware Version	:	----	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

Note:

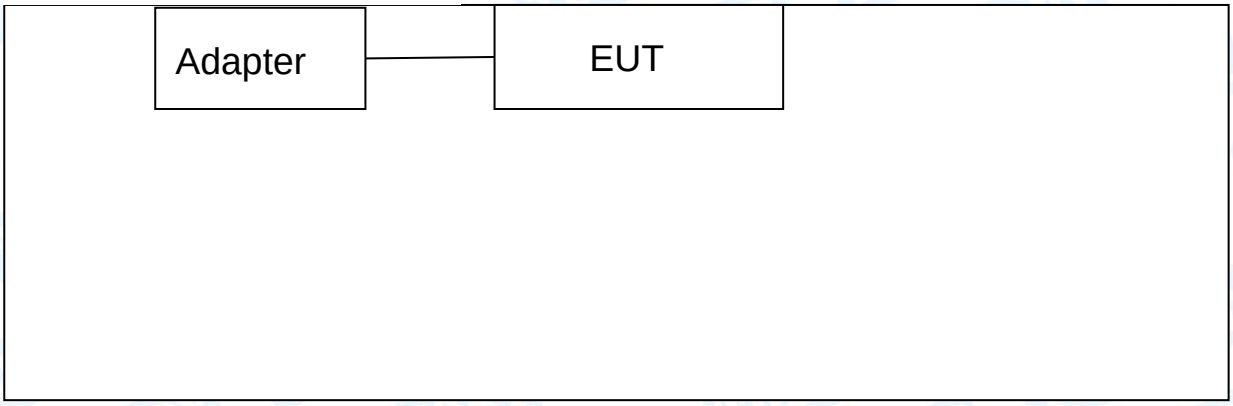
(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(2) Channel List:

Channel	Frequency (MHz)
01	915.0
02	915.2
03	915.4
04	915.6
05	915.8
06	916.0
07	916.2
08	916.4

1.3 Block Diagram Showing the Configuration of System Tested

TX Mode



1.4 Description of Support Units

Equipment Information				
Name	Model	FCC ID/SDOC	Manufacturer	Used "√"
----	----	----	----	----

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test	
Final Test Mode	**Description**
Mode 1	TX Mode
For Radiated Test	
Final Test Mode	**Description**
Mode 1	TX Mode(915MHz/915.8MHz/916.4MHz)

Note:

For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

(1) According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels.

(2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.

(3) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

During testing channel & Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF mode.

Test Software Version	sscom5.13.1		
Frequency	915MHz	915.8MHz	916.4MHz

1.7 Measurement Uncertainty

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	±3.50 dB ±3.10 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB

1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025：2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.

2. Test Summary

FCC Part 15 Subpart C (15.249)			
Standard Section	**Test Item**	**Judgment**	**Remark**
15.203	Antenna Requirement	PASS	N/A
15.205	Restricted Bands	PASS	N/A
15.207	AC Power Conducted Emission	PASS	N/A
15.249 &15.209	Radiated Spurious Emission	PASS	N/A
15.215(C)	20dB Bandwidth	PASS	N/A
Note: N/A is an abbreviation for Not Applicable.			

3. Test Equipment

Conducted Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 06, 2020	Jul. 05, 2021
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 06, 2020	Jul. 05, 2021
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 06, 2020	Jul. 05, 2021
LISN	Rohde & Schwarz	ENV216	101131	Jul. 06, 2020	Jul. 05, 2021
Radiation Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 06, 2020	Jul. 05, 2021
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.01, 2020	Feb. 28, 2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 07, 2020	Jul. 06, 2021
Pre-amplifier	Sonoma	310N	185903	Feb. 25, 2021	Feb. 24, 2022
Pre-amplifier	HP	8449B	3008A00849	Feb. 25, 2021	Feb. 24, 2022
Cable	HUBER+SUHNER	100	SUCOFLEX	Feb. 25, 2021	Feb. 24, 2022
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
Antenna Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	ESPI	100010/007	Jul. 06, 2020	Jul. 05, 2021
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 11, 2020	Sep. 10, 2021
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 11, 2020	Sep. 10, 2021
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 11, 2020	Sep. 10, 2021
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 11, 2020	Sep. 10, 2021

4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard

FCC Part 15.207

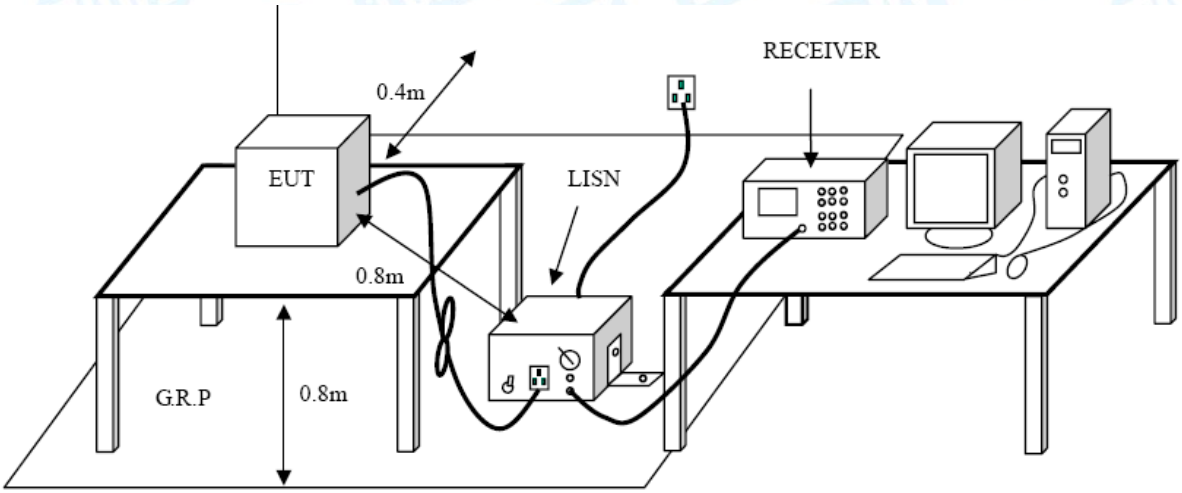
4.1.2 Test Limit

Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dBμV)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:
(1) *Decreasing linearly with logarithm of the frequency.
(2) The lower limit shall apply at the transition frequencies.
(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN is at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Please refer to the Attachment A.

5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard

FCC Part 15.209

5.1.2 Test Limit

Radiated Emission Limit (9kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Radiated Emission Limit (Above 1000MHz)

Frequency (MHz)	(dBuV/m)(at 3 M)	
	Peak	Average
Above 1000	74	54

Note:

(1) The tighter limit applies at the band edges.

(2) Emission Level(dBuV/m)=20log Emission Level(Uv/m)

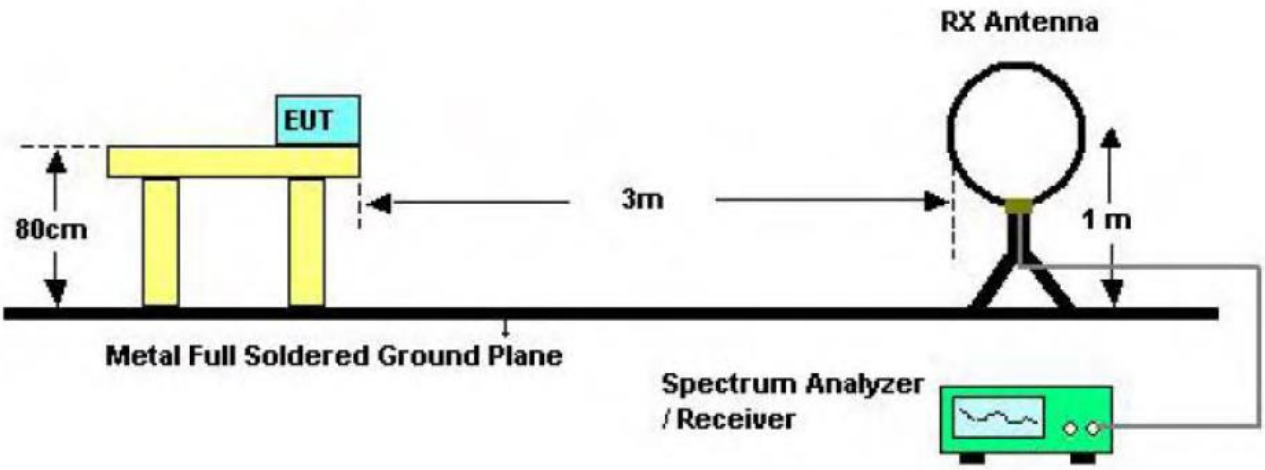
Limits of radiated emission measurement (15.249)

FCC Part 15 (15.249), Subpart C	
Limit	**Frequency Range (MHz)**
Field strength of fundamental 50000 μV/m (94 dBμV/m) @ 3 m	902.1~927.9
Field strength of harmonics 500 μV/m (54 dBμV/m) @ 3 m	Below 902 and Above 928

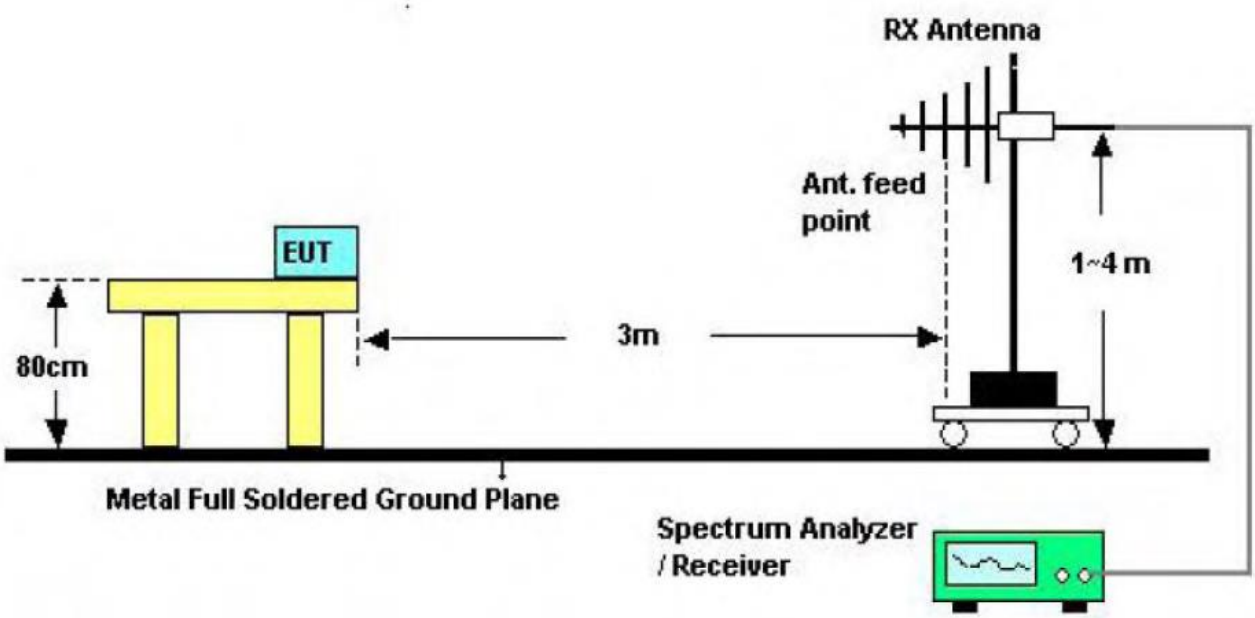
Restricted bands requirement for equipment operating in 902MHz to 928 MHz (15.249)

Restricted Frequency Band (MHz)	(dBuV/m)(at 3 M)
902~928	Attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation

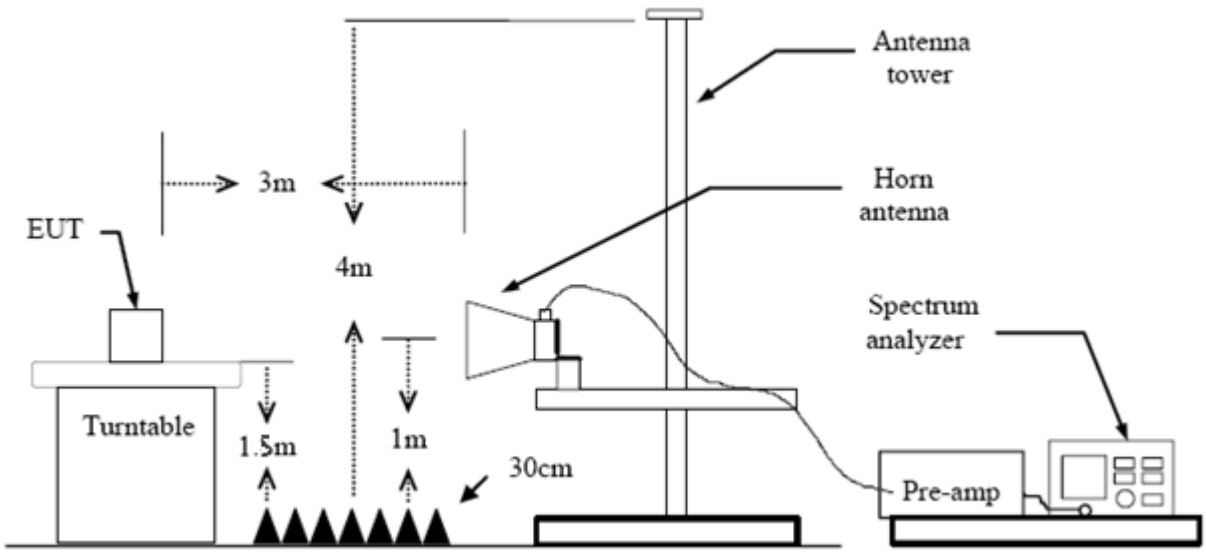
5.2 Test Setup



Bellow 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

5.3 Test Procedure

(1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.

(2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.

(3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

(4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

(5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.

(6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.

(7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

(8) For the actual test configuration, please see the test setup photo.

5.4 EUT Operating Condition

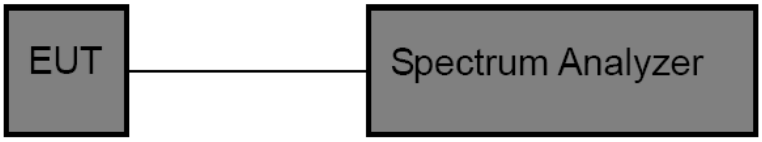
The EUT was set to Continual Transmitting in maximum power, and new batteries are used during testing.

5.5 Test Data

Please refer to the Attachment B.

6. Bandwidth Test

6.1 Test Setup



6.2 Test Procedure

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

(2) Spectrum Setting:

Bandwidth: RBW=100 kHz, VBW=300kHz.

(3) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.

6.3 EUT Operating Condition

The EUT was set to continuously transmitting for the Bandwidth Test.

6.4 Test Data

Please refer to the Attachment C.

7. Antenna Requirement

7.1 Standard Requirement

7.1.1 Standard

FCC Part 15.203

7.1.2 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 shall be considered sufficient to comply with the provisions of this Section. 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.

7.2 Antenna Connected Construction

The gains of the antenna used for transmitting is 3.0 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

7.3 Result

The EUT has two antennas

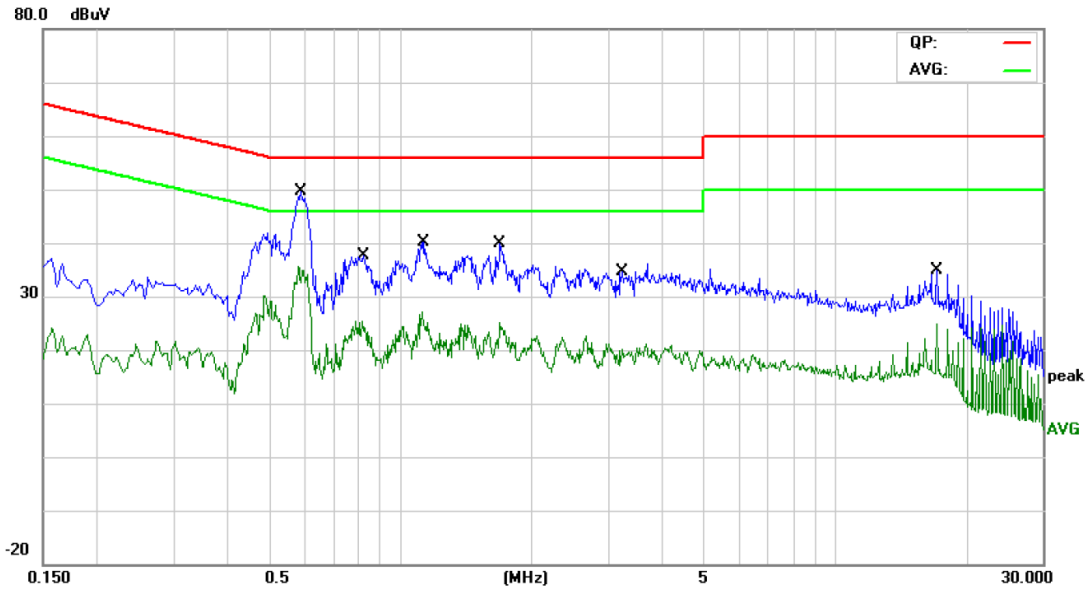
Antenna	Brand	Model Name	Type	LoRa Antenna Gain(dBi)
Lora	N/A	N/A	External ANT 1	3.0
Lora	N/A	N/A	External ANT 2	6.0
Note:The External Ant 2 is an Optional Accessories antenna please refer to user manual.				

It complies with the standard requirement.

Antenna Type
☐Permanent attached antenna
☒RP-SMA connector antenna
☐Professional installation antenna

Attachment A-- Conducted Emission Test Data

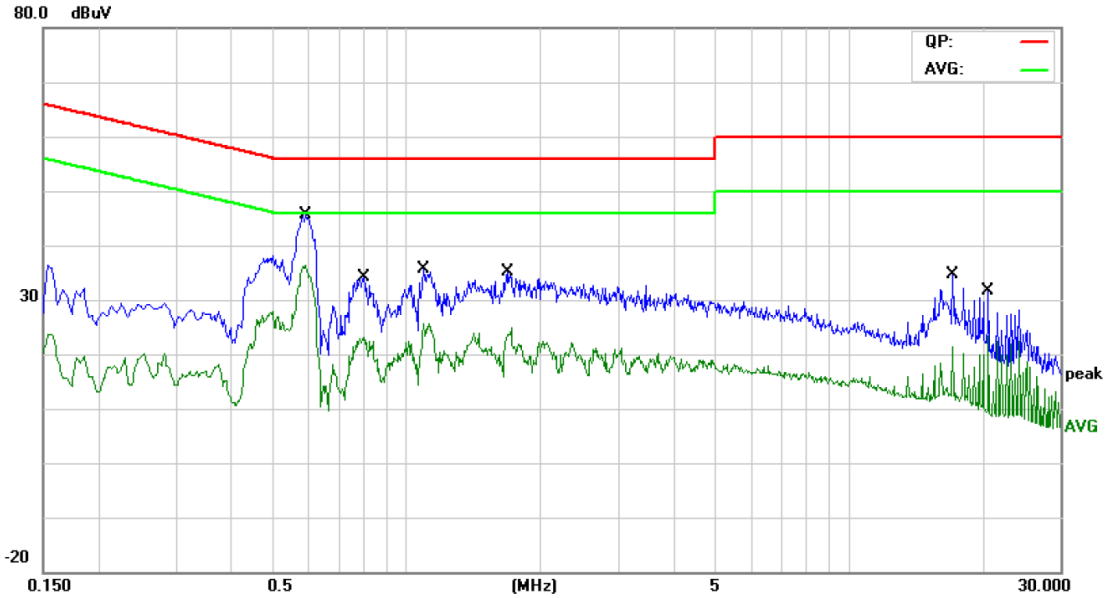
Temperature:	24.6℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V 60Hz		
Terminal:	Line		
Test Mode:	Mode 1		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.5899	35.78	9.70	45.48	56.00	-10.52	QP
2		0.5899	24.45	9.70	34.15	46.00	-11.85	AVG
3		0.8180	23.55	9.74	33.29	56.00	-22.71	QP
4		0.8180	13.17	9.74	22.91	46.00	-23.09	AVG
5		1.1340	24.88	9.79	34.67	56.00	-21.33	QP
6		1.1340	13.41	9.79	23.20	46.00	-22.80	AVG
7		1.6980	24.89	9.73	34.62	56.00	-21.38	QP
8		1.6980	13.50	9.73	23.23	46.00	-22.77	AVG
9		3.2260	19.39	9.90	29.29	56.00	-26.71	QP
10		3.2260	8.08	9.90	17.98	46.00	-28.02	AVG
11		17.1299	22.64	10.00	32.64	60.00	-27.36	QP
12		17.1299	15.08	10.00	25.08	50.00	-24.92	AVG

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

Temperature:	24.6℃	**Relative Humidity:**	42%
Test Voltage:	AC 120V 60Hz		
Terminal:	Neutral		
Test Mode:	Mode 1		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.5899	32.65	9.80	42.45	56.00	-13.55	QP
2	*	0.5899	25.44	9.80	35.24	46.00	-10.76	AVG
3		0.7980	20.17	9.80	29.97	56.00	-26.03	QP
4		0.7980	12.86	9.80	22.66	46.00	-23.34	AVG
5		1.0900	20.42	9.80	30.22	56.00	-25.78	QP
6		1.0900	12.93	9.80	22.73	46.00	-23.27	AVG
7		1.6940	20.69	9.80	30.49	56.00	-25.51	QP
8		1.6940	13.14	9.80	22.94	46.00	-23.06	AVG
9		17.1299	19.25	10.00	29.25	60.00	-30.75	QP
10		17.1299	9.29	10.00	19.29	50.00	-30.71	AVG
11		20.6540	16.89	10.02	26.91	60.00	-33.09	QP
12		20.6540	10.81	10.02	20.83	50.00	-29.17	AVG

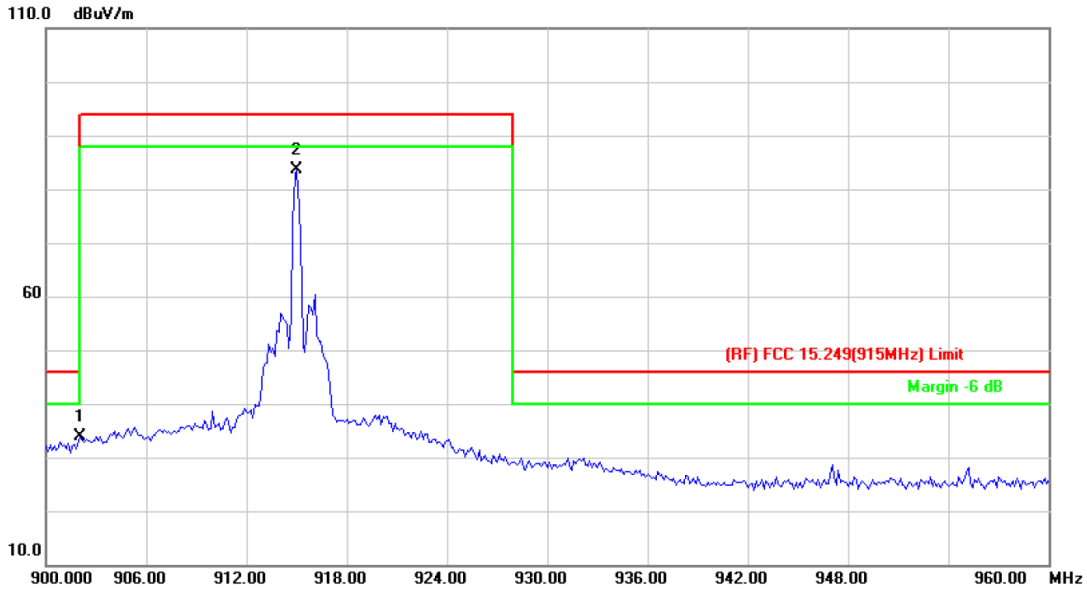
Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

Attachment B-- Radiated Emission Test Data

Field Strength of the Fundamental

ANT1

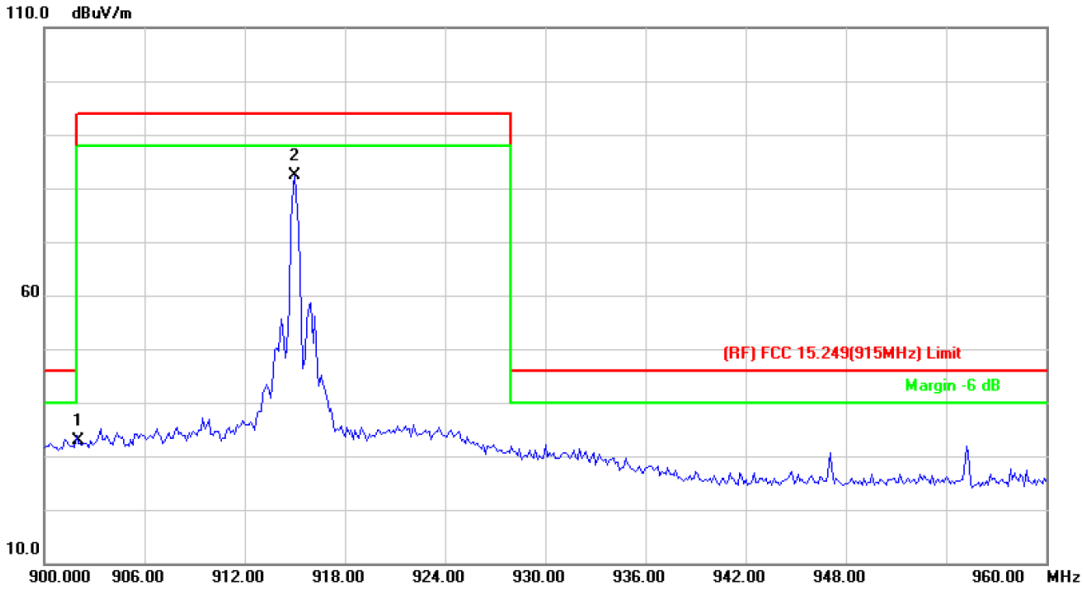
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		902.0000	38.09	-4.24	33.85	46.00	-12.15	QP
2	*	915.0000	87.99	-4.25	83.74	94.00	-10.26	QP

Emission Level= Read Level+ Correct Factor

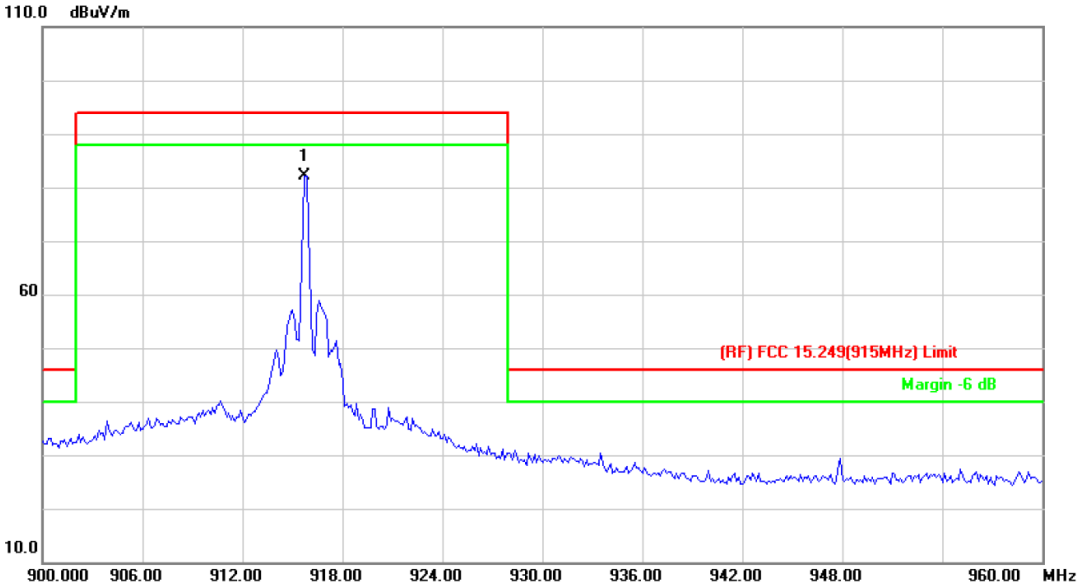
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		902.0000	37.19	-4.24	32.95	46.00	-13.05	QP
2	*	915.0000	86.52	-4.25	82.27	94.00	-11.73	QP

Emission Level= Read Level+ Correct Factor

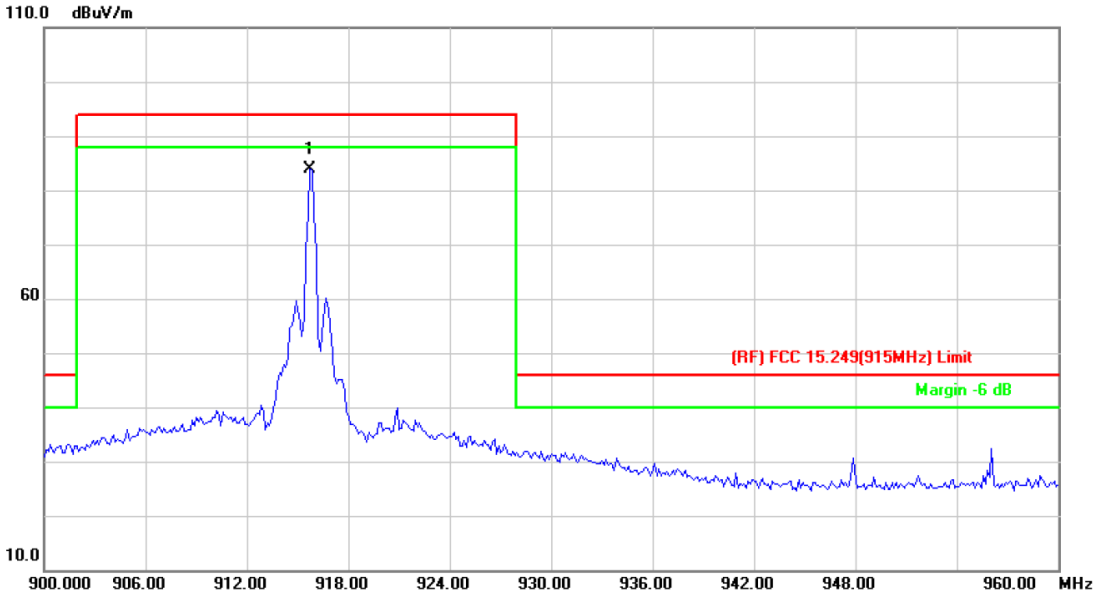
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915.8MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	915.7200	86.49	-4.25	82.24	94.00	-11.76	QP

Emission Level= Read Level+ Correct Factor

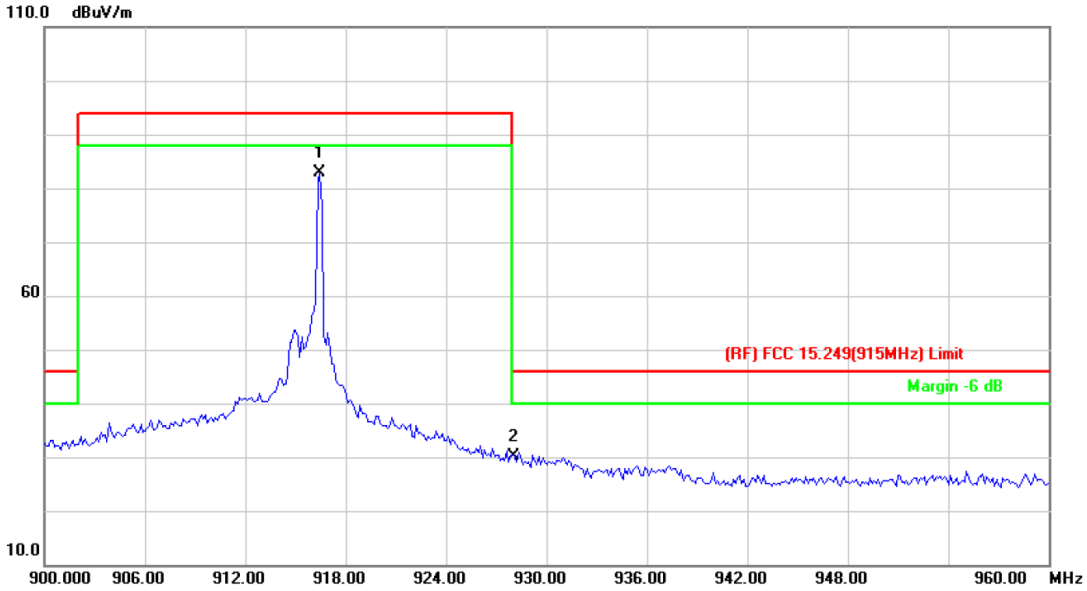
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915.8MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	915.7200	88.02	-4.25	83.77	94.00	-10.23	QP

Emission Level= Read Level+ Correct Factor

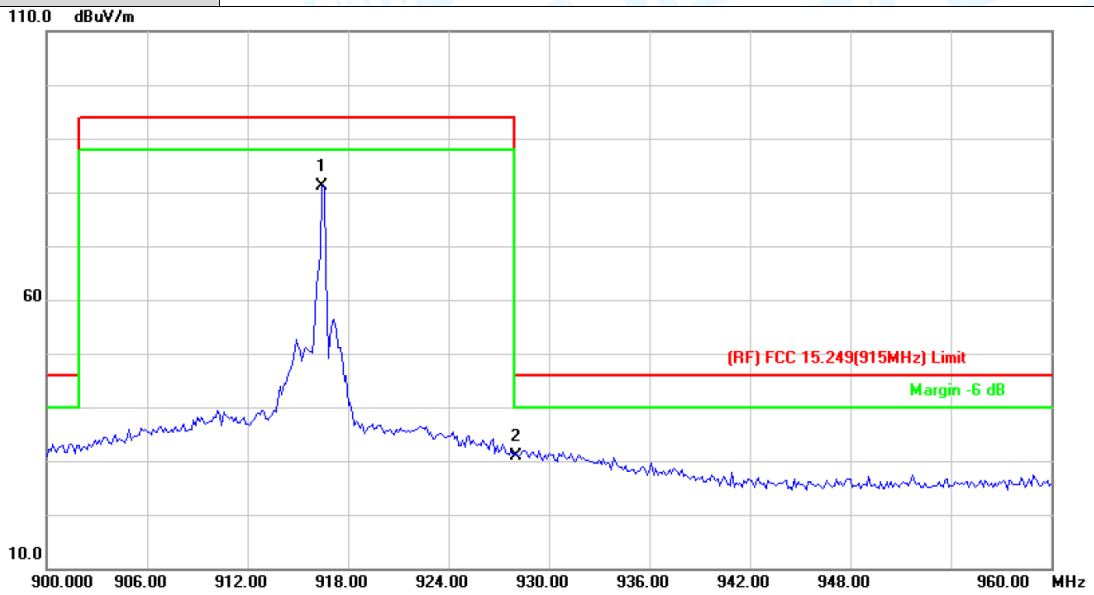
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 916.4MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	916.4400	87.24	-4.25	82.99	94.00	-11.01	QP
2		928.0000	34.44	-4.26	30.18	46.00	-15.82	QP

Emission Level= Read Level+ Correct Factor

Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 916.4MHz		
Remark:			

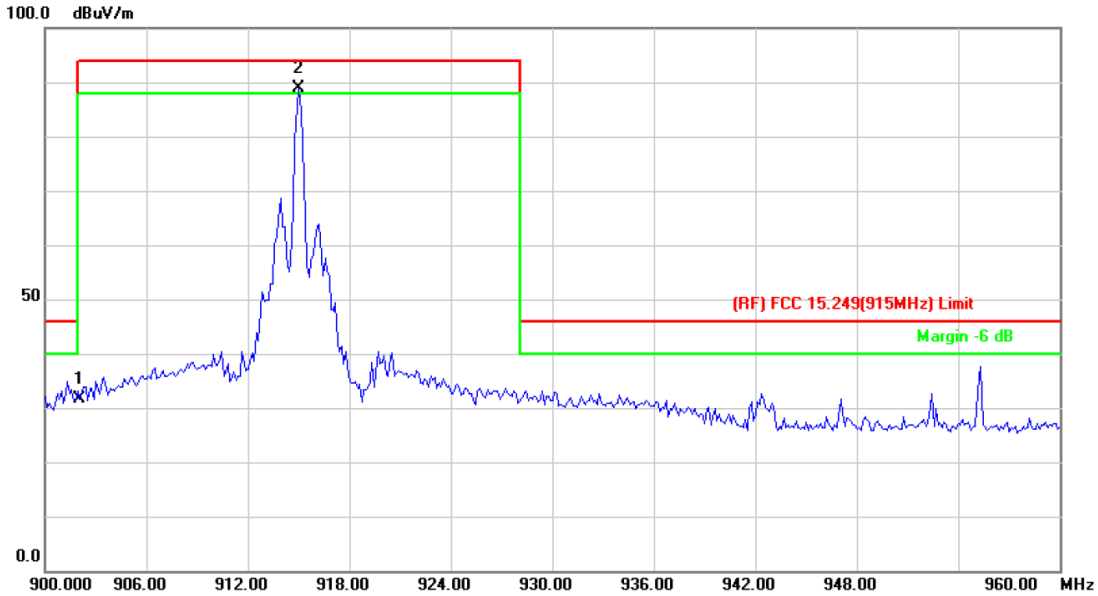


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	916.4400	85.36	-4.25	81.11	94.00	-12.89	QP
2		928.0000	35.25	-4.26	30.99	46.00	-15.01	QP

Emission Level= Read Level+ Correct Factor

ANT2

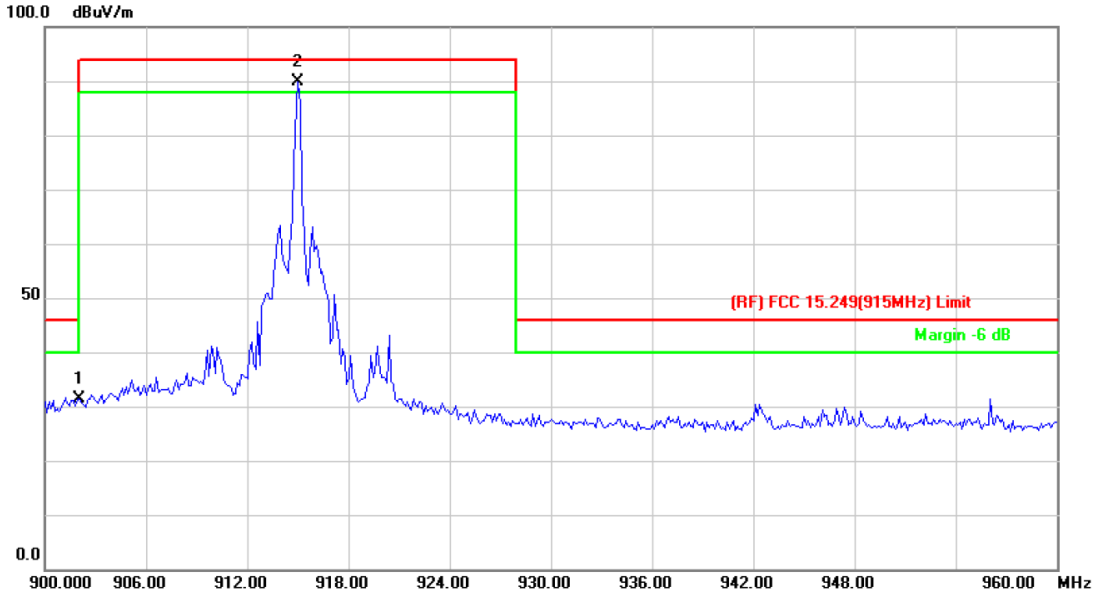
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		902.0000	35.83	-4.24	31.59	46.00	-14.41	QP
2	*	915.0000	93.02	-4.25	88.77	94.00	-5.23	QP

Emission Level= Read Level+ Correct Factor

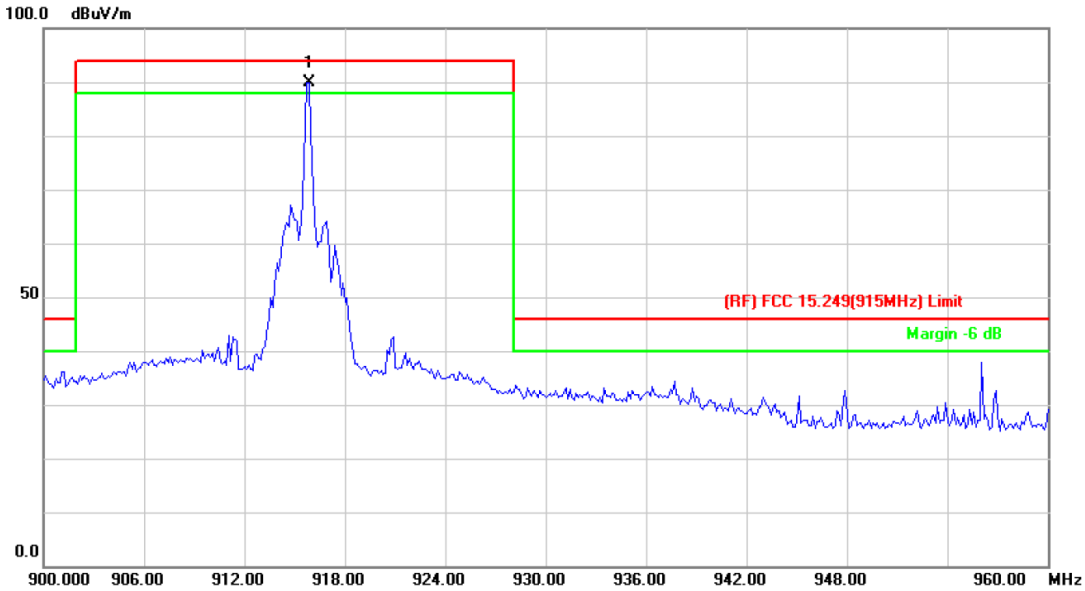
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		902.0000	35.58	-4.24	31.34	46.00	-14.66	QP
2	*	915.0000	94.02	-4.25	89.77	94.00	-4.23	QP

Emission Level= Read Level+ Correct Factor

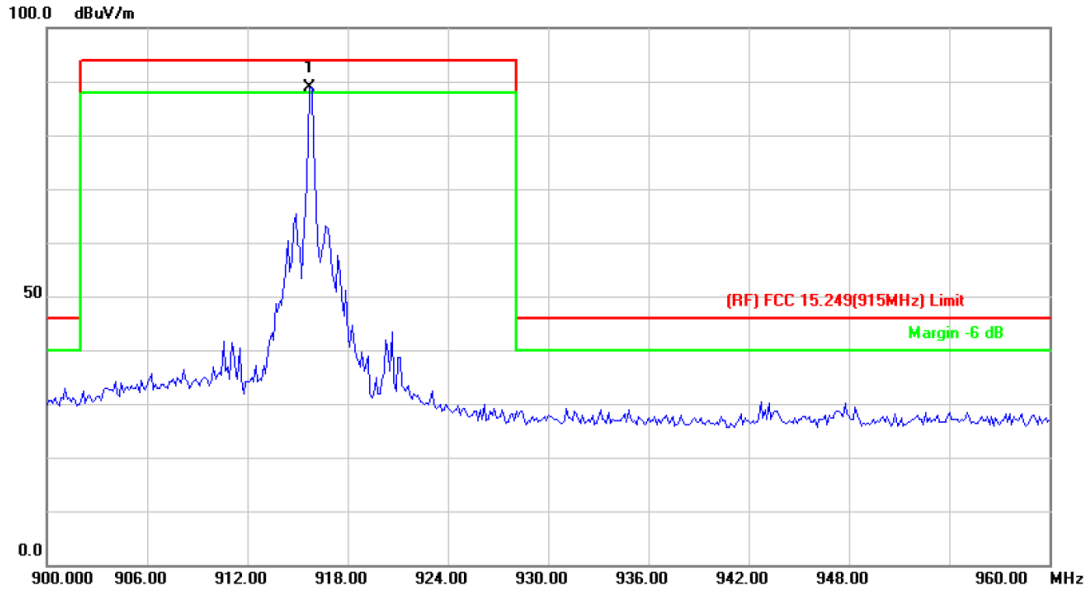
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915.8MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	915.8400	94.02	-4.25	89.77	94.00	-4.23	QP

Emission Level= Read Level+ Correct Factor

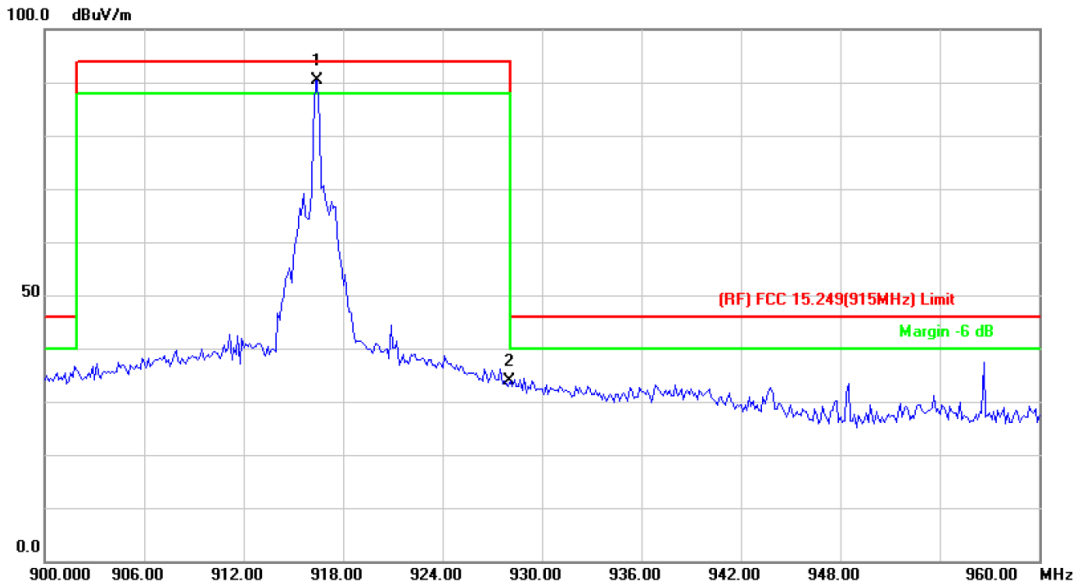
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915.8MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	915.7200	93.01	-4.25	88.76	94.00	-5.24	QP

Emission Level= Read Level+ Correct Factor

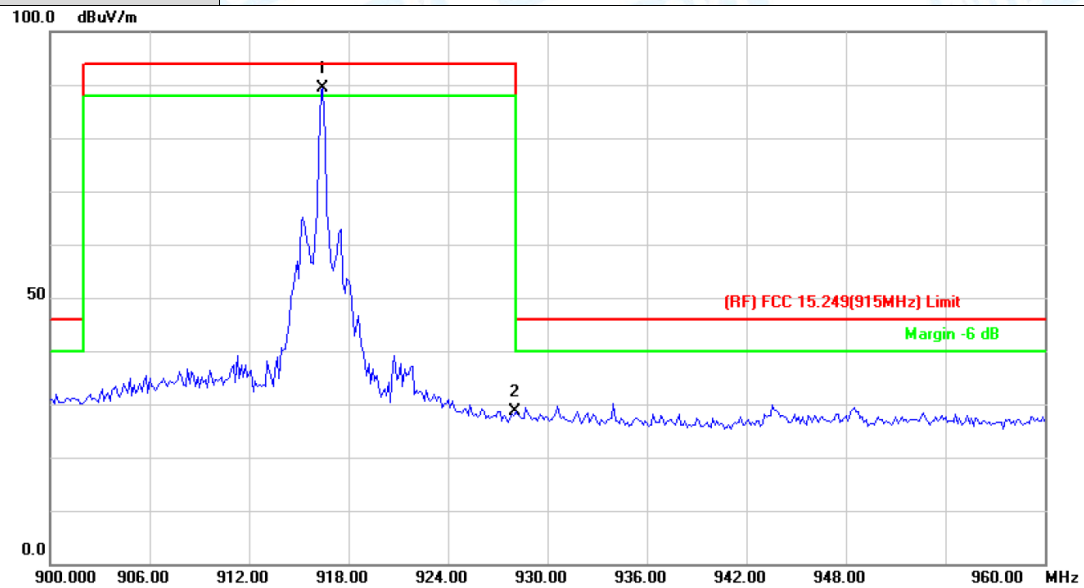
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 916.4MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	916.4400	94.52	-4.25	90.27	94.00	-3.73	QP
2		928.0000	38.07	-4.26	33.81	46.00	-12.19	QP

Emission Level= Read Level+ Correct Factor

Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 916.4MHz		
Remark:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	916.4400	93.52	-4.25	89.27	94.00	-4.73	QP
2		928.0000	32.83	-4.26	28.57	46.00	-17.43	QP

Emission Level= Read Level+ Correct Factor

9 KHz to 30 MHz

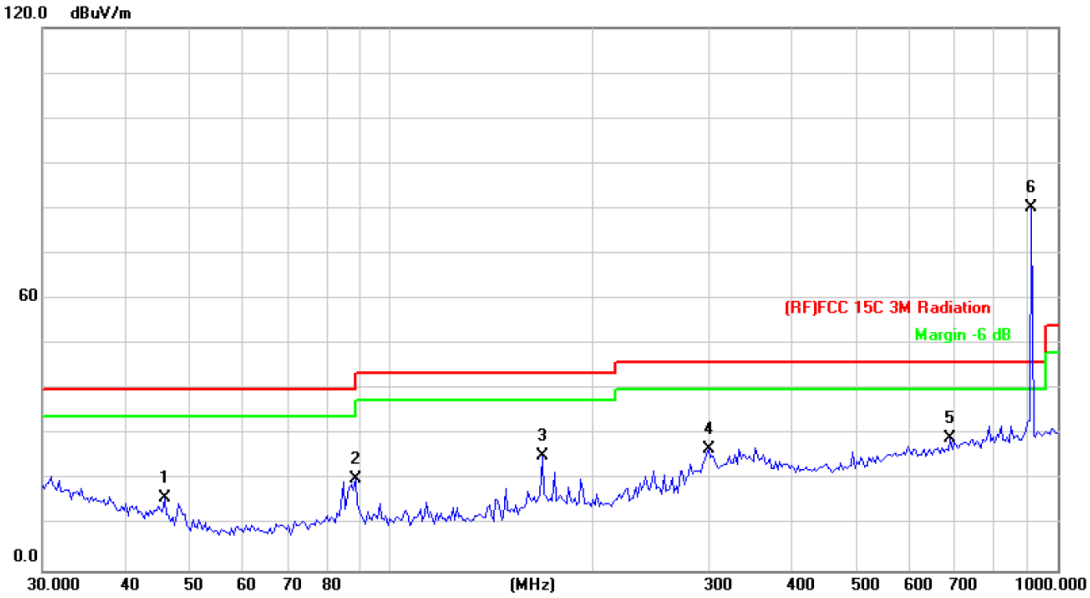
From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

30MHz-1GHz

ANT1

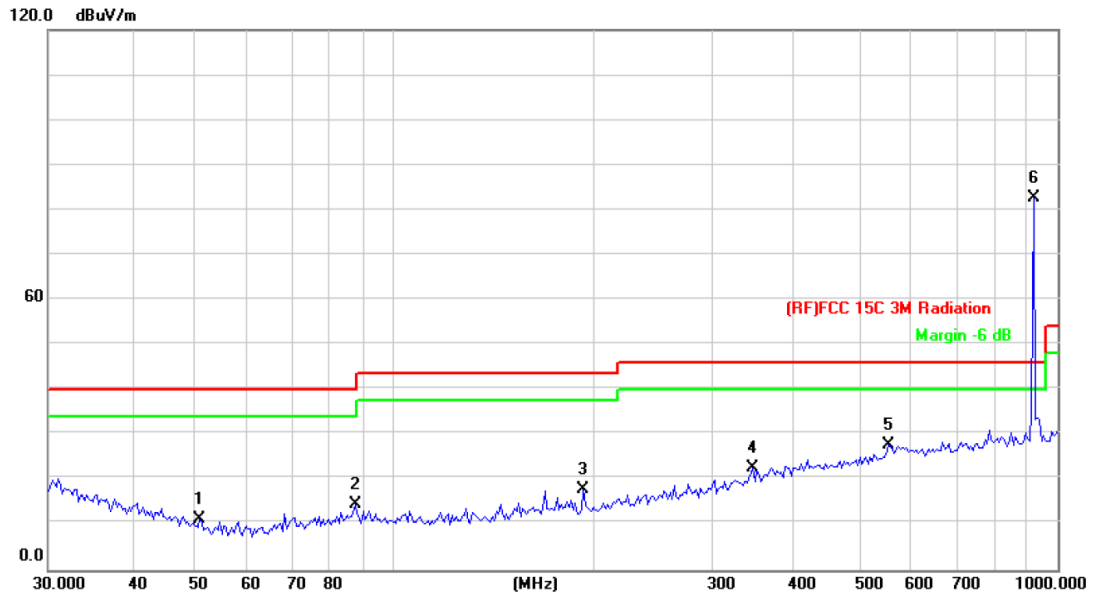
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		45.6948	37.58	-21.65	15.93	40.00	-24.07	peak
2		88.3421	42.10	-21.96	20.14	43.50	-23.36	peak
3		168.4138	45.82	-20.52	25.30	43.50	-18.20	peak
4		299.3158	43.27	-16.30	26.97	46.00	-19.03	peak
5		689.5644	36.12	-7.01	29.11	46.00	-16.89	peak
6	*	912.8618	84.40	-4.26	80.14	**94.00**	**-13.86**	QP

Emission Level= Read Level+ Correct Factor

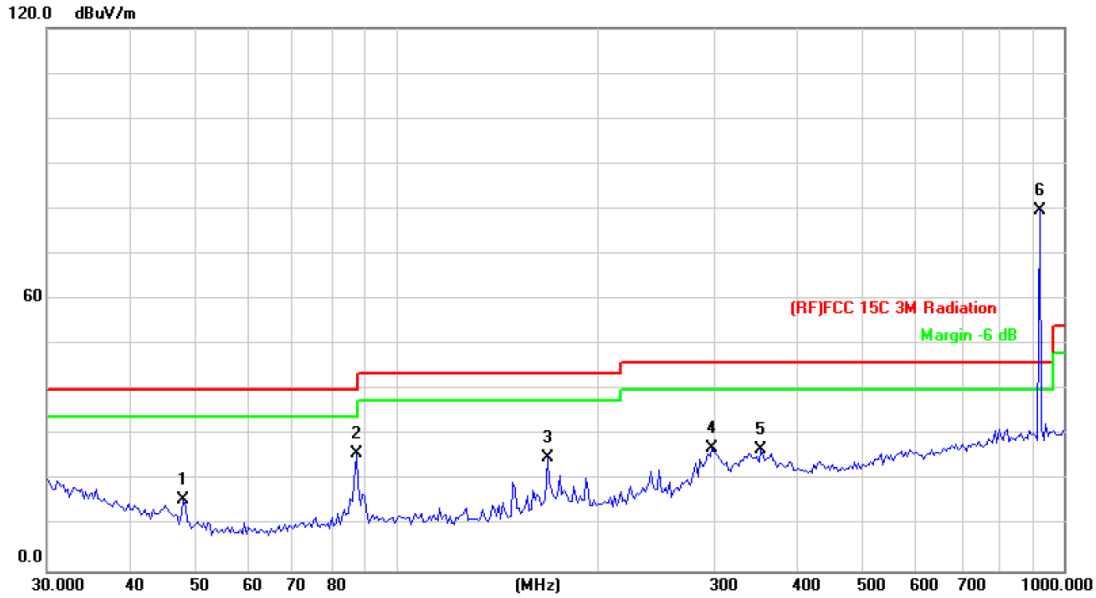
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		50.7637	34.52	-23.13	11.39	40.00	-28.61	peak
2		87.1117	36.56	-22.02	14.54	40.00	-25.46	peak
3		192.4186	37.80	-19.83	17.97	43.50	-25.53	peak
4		346.8092	37.54	-14.75	22.79	46.00	-23.21	peak
5		554.8254	36.72	-8.87	27.85	46.00	-18.15	peak
6	*	919.2866	86.85	-4.25	82.60	**94.00**	**-11.4**	QP

Emission Level= Read Level+ Correct Factor

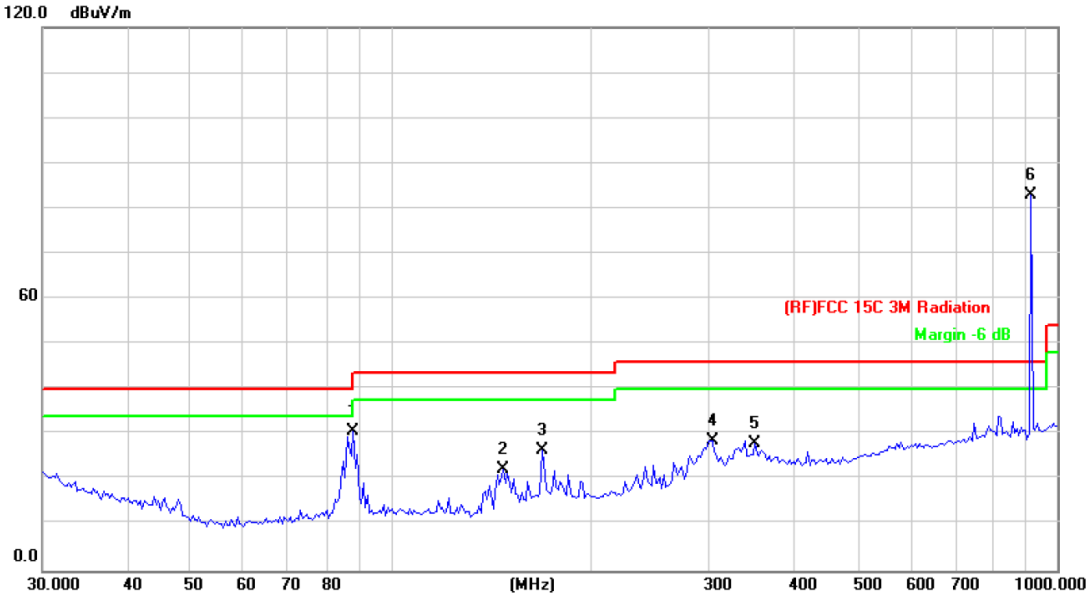
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915.8MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		47.9940	38.05	-22.40	15.65	40.00	-24.35	peak
2		87.1117	47.88	-22.02	25.86	40.00	-14.14	peak
3		168.4138	45.44	-20.52	24.92	43.50	-18.58	peak
4		297.2241	43.42	-16.34	27.08	46.00	-18.92	peak
5		351.7079	41.30	-14.56	26.74	46.00	-19.26	peak
6	*	919.2866	83.84	-4.25	79.59	**94.00**	**-14.41**	QP

Emission Level= Read Level+ Correct Factor

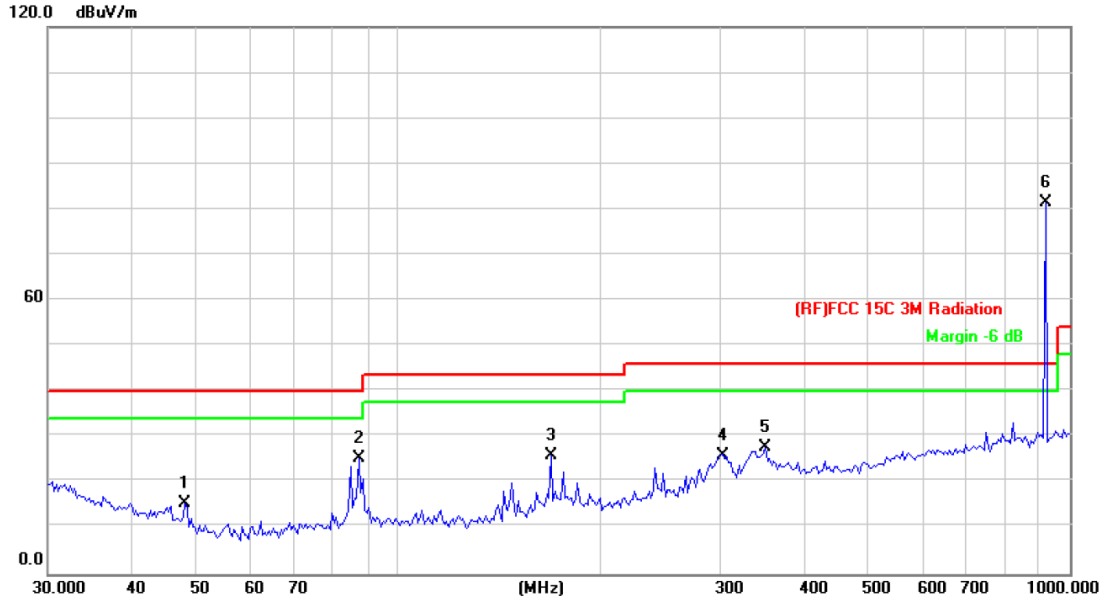
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915.8MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		87.7248	52.75	-21.99	30.76	40.00	-9.24	peak
2		147.4036	43.94	-21.62	22.32	43.50	-21.18	peak
3		168.4138	47.21	-20.52	26.69	43.50	-16.81	peak
4		303.5437	44.92	-16.17	28.75	46.00	-17.25	peak
5		351.7079	42.51	-14.56	27.95	46.00	-18.05	peak
6	*	912.8618	87.25	-4.26	82.99	**94.00**	**-11.01**	QP

Emission Level= Read Level+ Correct Factor

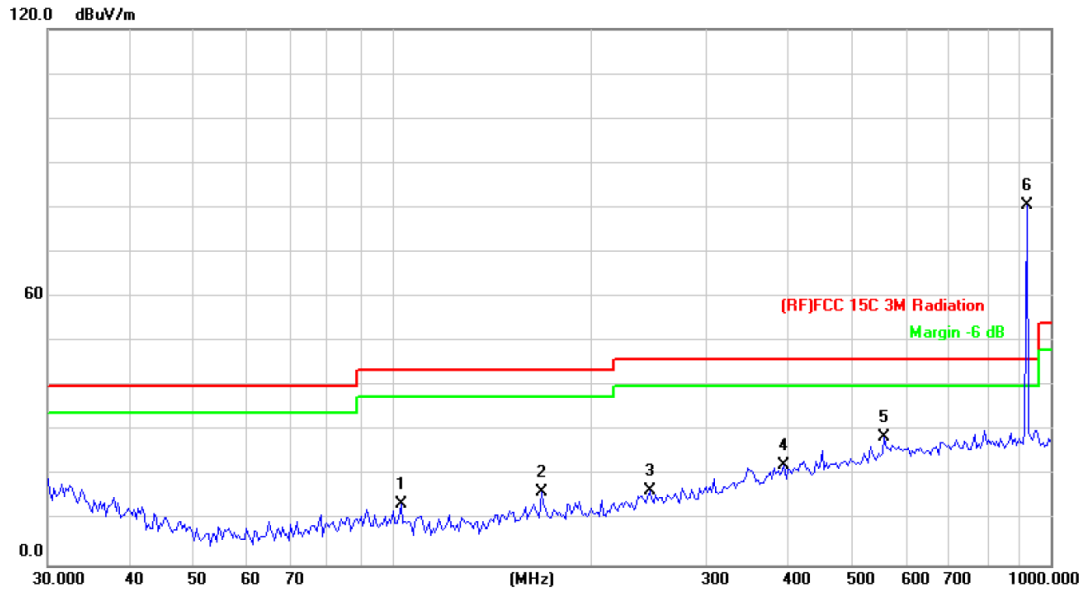
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 916.4MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		47.9940	37.86	-22.40	15.46	40.00	-24.54	peak
2		87.1117	47.27	-22.02	25.25	40.00	-14.75	peak
3		168.4138	46.34	-20.52	25.82	43.50	-17.68	peak
4		301.4224	42.33	-16.25	26.08	46.00	-19.92	peak
5		351.7079	42.44	-14.56	27.88	46.00	-18.12	peak
6	*	919.2866	85.66	-4.25	81.41	**94.00**	**-12.59**	QP

Emission Level= Read Level+ Correct Factor

Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 916.4MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		

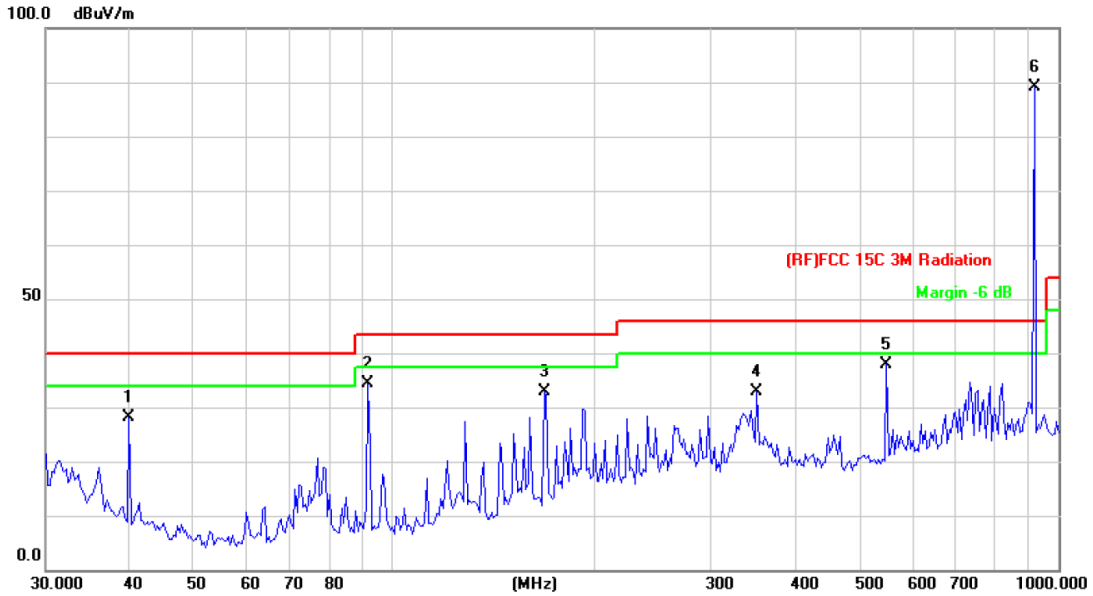


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		103.0800	35.83	-22.04	13.79	43.50	-29.71	peak
2		168.4138	36.90	-20.52	16.38	43.50	-27.12	peak
3		245.9509	34.05	-17.44	16.61	46.00	-29.39	peak
4		393.4723	34.89	-12.60	22.29	46.00	-23.71	peak
5		558.7302	37.57	-8.82	28.75	46.00	-17.25	peak
6	*	919.2866	84.81	-4.25	80.56	**94.00**	**-13.44**	QP

Emission Level= Read Level+ Correct Factor

ANT2

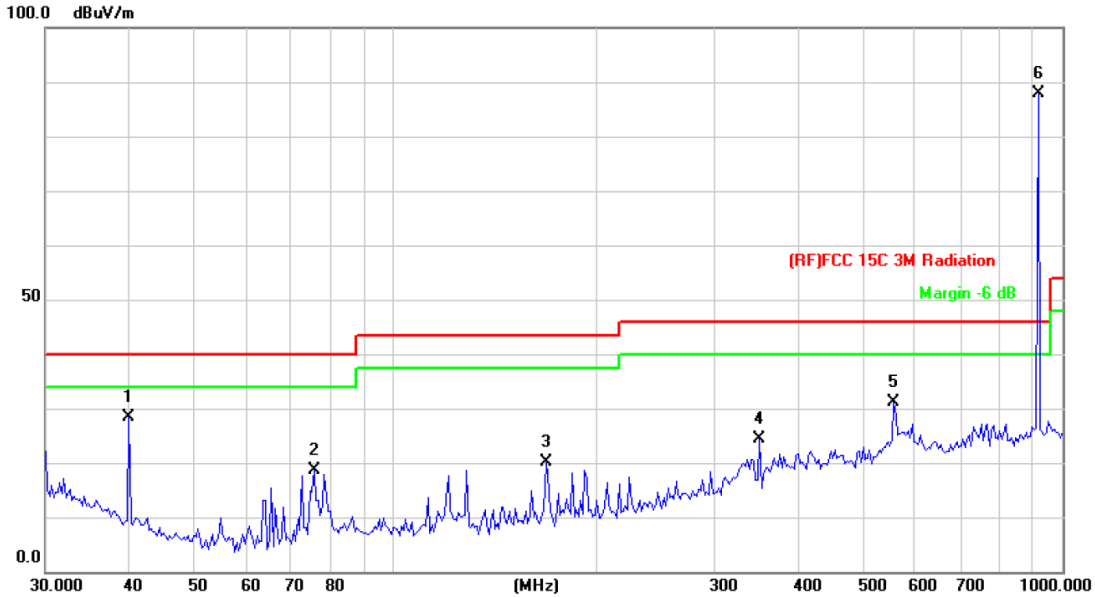
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		39.9941	47.15	-18.99	28.16	40.00	-11.84	peak
2		91.4949	56.28	-21.87	34.41	43.50	-9.09	peak
3		168.4138	53.45	-20.52	32.93	43.50	-10.57	peak
4		351.7078	47.39	-14.56	32.83	46.00	-13.17	peak
5		550.9479	46.90	-8.93	37.97	46.00	-8.03	peak
6	*	919.2866	93.29	-4.25	89.04	**94.00**	**-4.96**	QP

Emission Level= Read Level+ Correct Factor

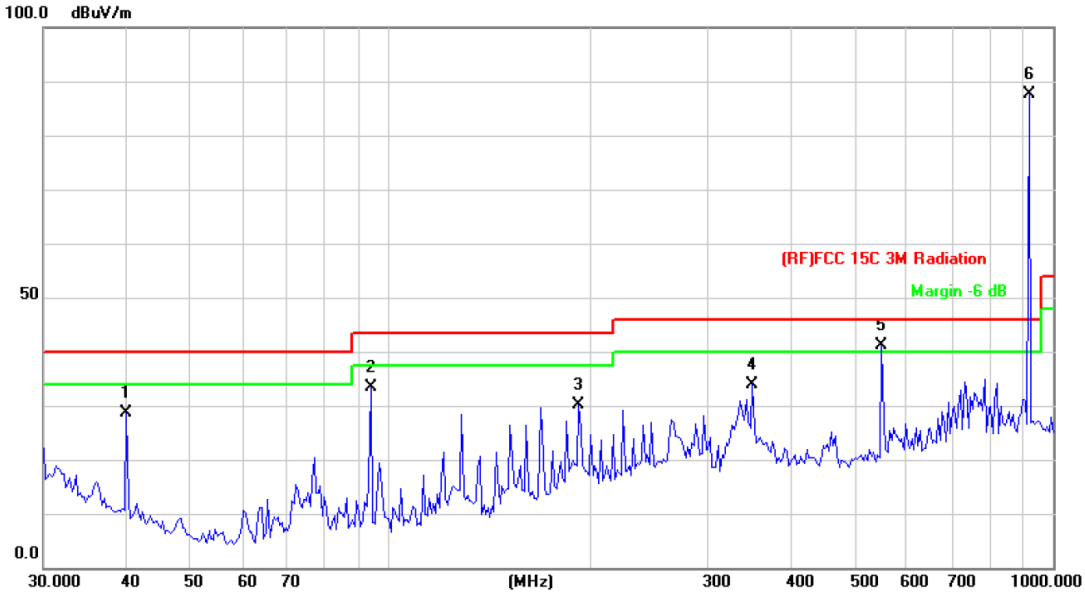
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		39.9941	47.38	-18.99	28.39	40.00	-11.61	peak
2		75.7113	41.41	-22.87	18.54	40.00	-21.46	peak
3		168.4138	40.67	-20.52	20.15	43.50	-23.35	peak
4		351.7078	38.84	-14.56	24.28	46.00	-21.72	peak
5		558.7301	39.90	-8.82	31.08	46.00	-14.92	peak
6	*	919.2866	92.03	-4.25	87.78	**94.00**	**-6.22**	QP

Emission Level= Read Level+ Correct Factor

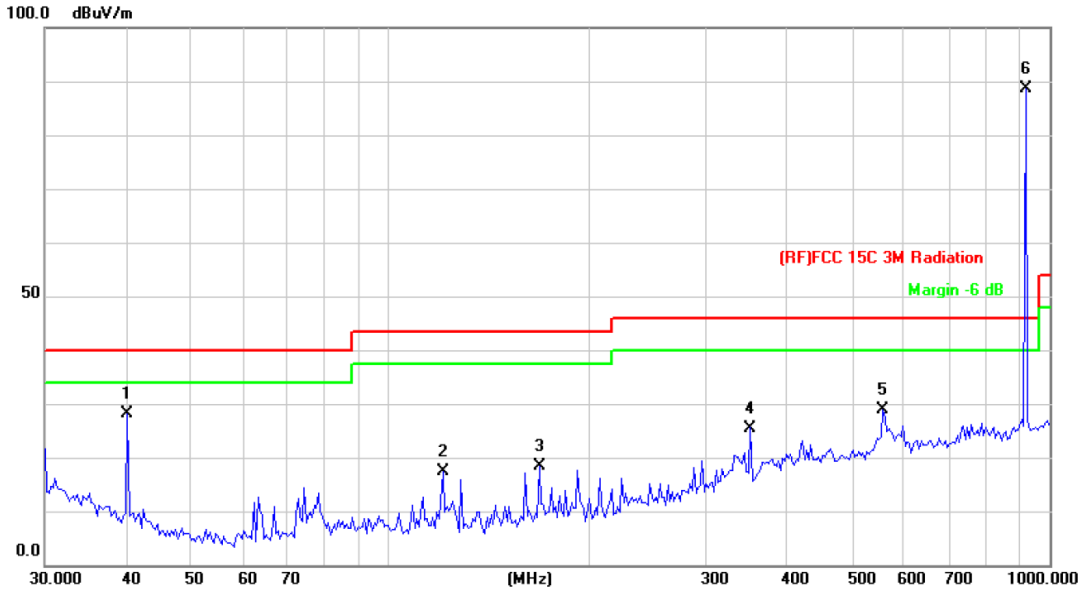
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915.8MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		39.9941	47.54	-18.99	28.55	40.00	-11.45	peak
2		93.4402	55.17	-21.89	33.28	43.50	-10.22	peak
3		192.4185	50.03	-19.83	30.20	43.50	-13.30	peak
4		351.7078	48.32	-14.56	33.76	46.00	-12.24	peak
5	!	550.9479	50.09	-8.93	41.16	46.00	-4.84	peak
6	*	919.2866	91.95	-4.25	87.70	**94.00**	**-6.3**	QP

Emission Level= Read Level+ Correct Factor

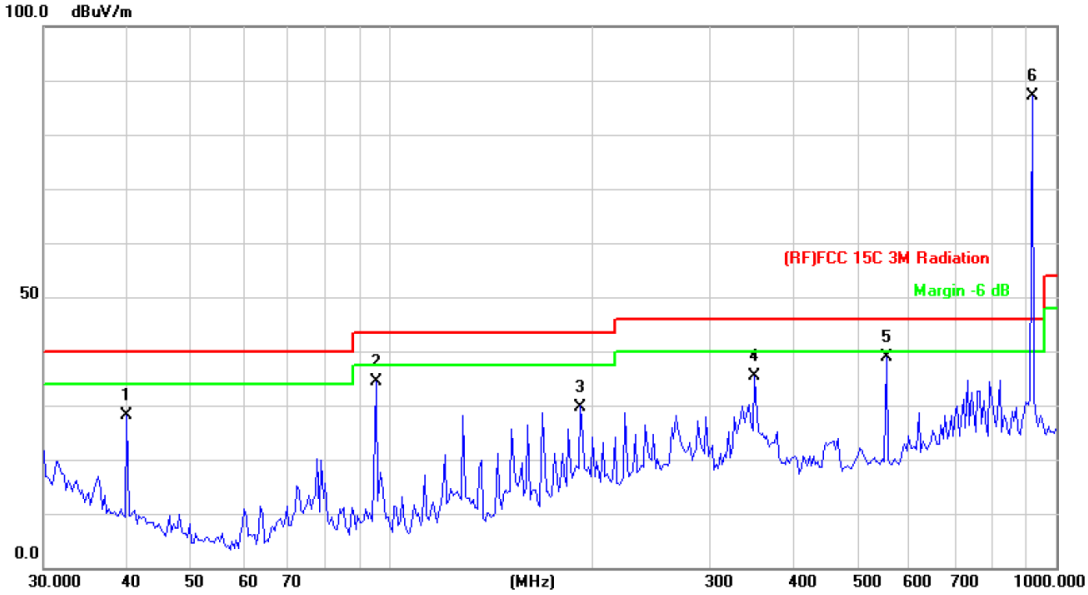
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915.8MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		39.9941	47.19	-18.99	28.20	40.00	-11.80	peak
2		120.2766	39.52	-22.17	17.35	43.50	-26.15	peak
3		168.4138	38.82	-20.52	18.30	43.50	-25.20	peak
4		351.7078	40.06	-14.56	25.50	46.00	-20.50	peak
5		558.7301	37.68	-8.82	28.86	46.00	-17.14	peak
6	*	919.2866	92.95	-4.25	88.70	**94.00**	**-5.3**	QP

Emission Level= Read Level+ Correct Factor

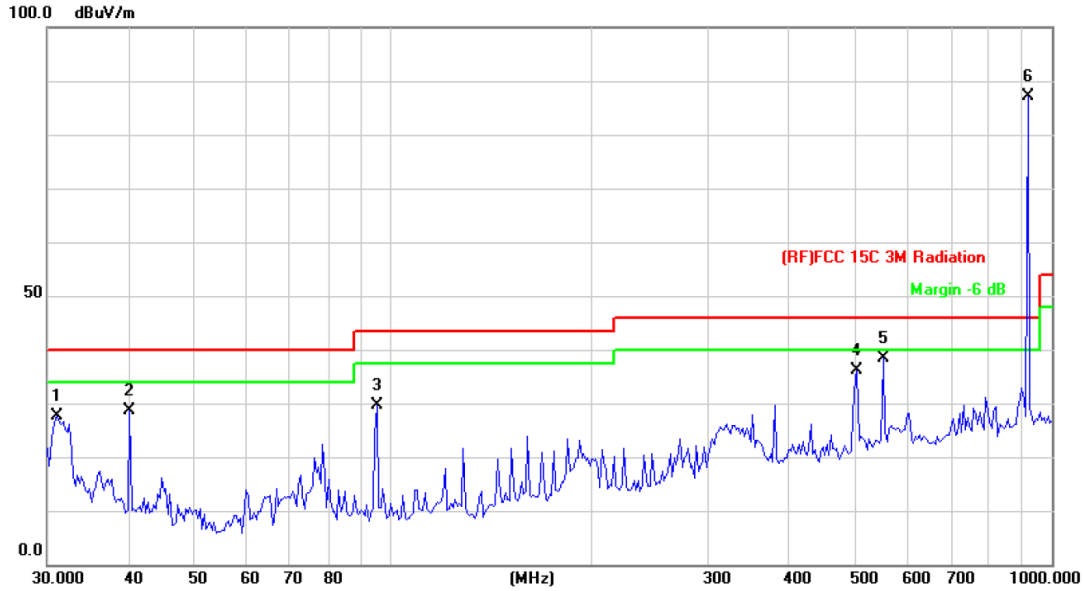
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 916.4MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		39.9941	47.22	-18.99	28.23	40.00	-11.77	peak
2		94.7600	56.40	-21.91	34.49	43.50	-9.01	peak
3		192.4185	49.58	-19.83	29.75	43.50	-13.75	peak
4		351.7078	49.98	-14.56	35.42	46.00	-10.58	peak
5		554.8253	47.66	-8.87	38.79	46.00	-7.21	peak
6	*	919.2866	91.45	-4.25	87.20	**94.00**	**-6.8**	QP

Emission Level= Read Level+ Correct Factor

Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 916.4MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		

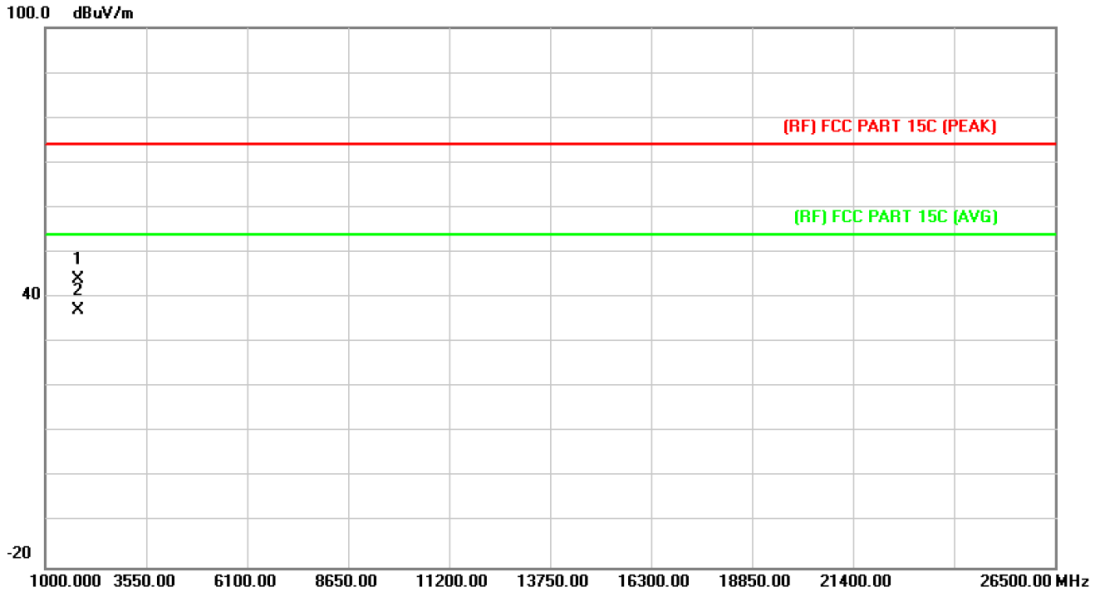


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		31.0705	41.44	-13.74	27.70	40.00	-12.30	peak
2		39.9941	47.55	-18.99	28.56	40.00	-11.44	peak
3		94.7600	51.44	-21.91	29.53	43.50	-13.97	peak
4		506.4791	46.47	-10.28	36.19	46.00	-9.81	peak
5		554.8253	47.25	-8.87	38.38	46.00	-7.62	peak
6	*	919.2866	91.41	-4.25	87.16	**94.00**	**-6.84**	QP

Emission Level= Read Level+ Correct Factor

Radiated Spurious Emission (Above 1 GHz) ANT1

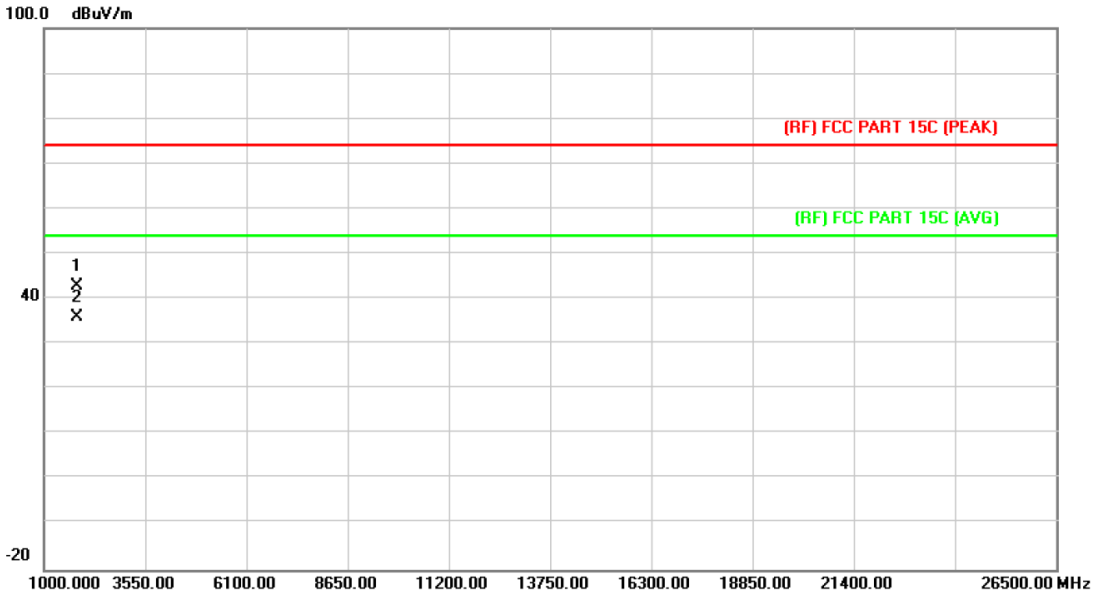
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1830.103	46.24	-2.32	43.92	74.00	-30.08	peak
2	*	1830.233	39.46	-2.32	37.14	54.00	-16.86	AVG

Emission Level= Read Level+ Correct Factor

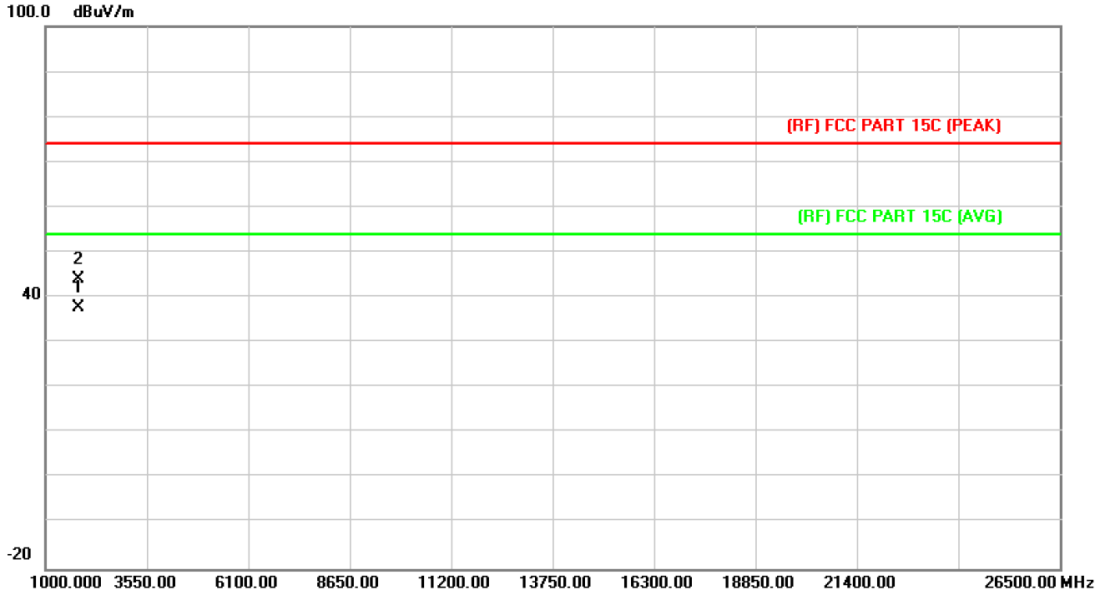
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1830.123	45.15	-2.32	42.83	74.00	-31.17	peak
2	*	1830.253	38.30	-2.32	35.98	54.00	-18.02	AVG

Emission Level= Read Level+ Correct Factor

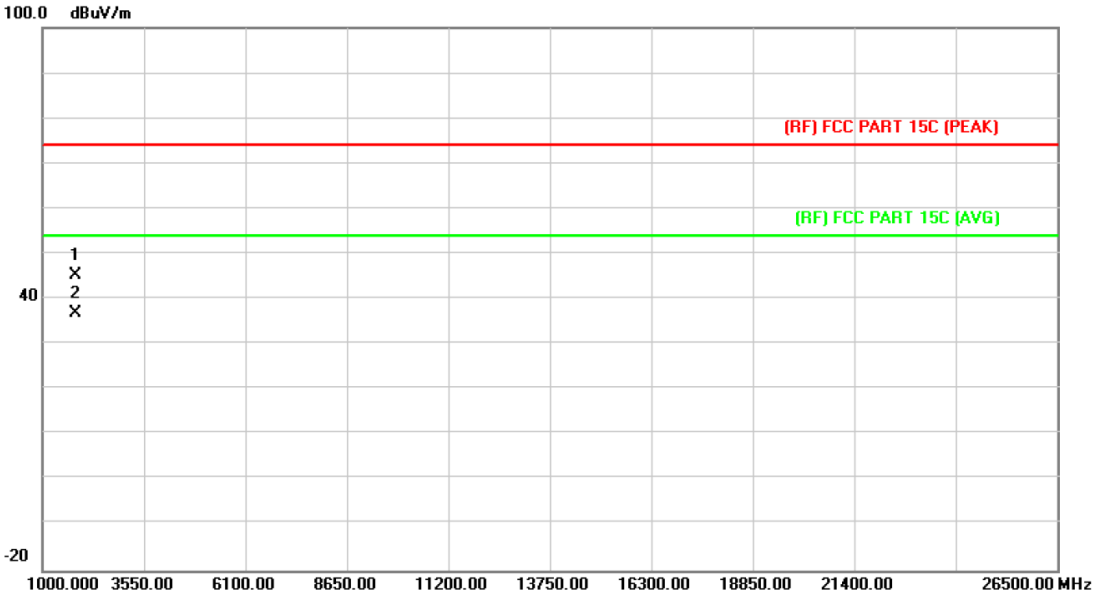
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915.8MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	1831.653	40.11	-2.32	37.79	54.00	-16.21	AVG
2		1831.743	46.41	-2.32	44.09	74.00	-29.91	peak

Emission Level= Read Level+ Correct Factor

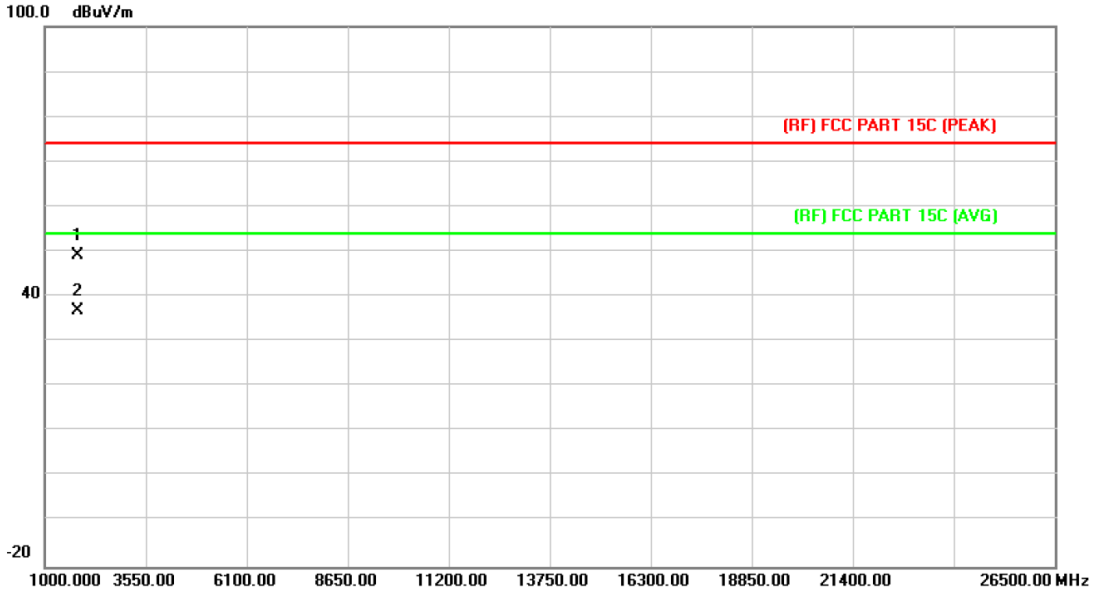
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915.8MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1831.523	47.52	-2.32	45.20	74.00	-28.80	peak
2	*	1831.763	39.10	-2.32	36.78	54.00	-17.22	AVG

Emission Level= Read Level+ Correct Factor

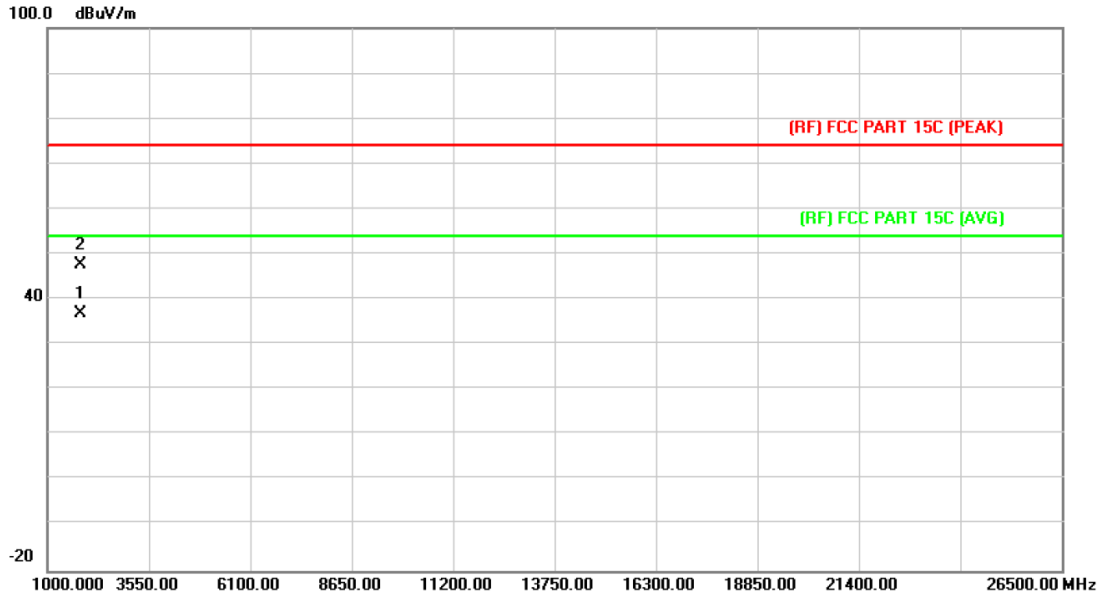
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 916.4MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1832.563	51.54	-2.31	49.23	74.00	-24.77	peak
2	*	1832.813	39.12	-2.31	36.81	54.00	-17.19	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 916.4MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		

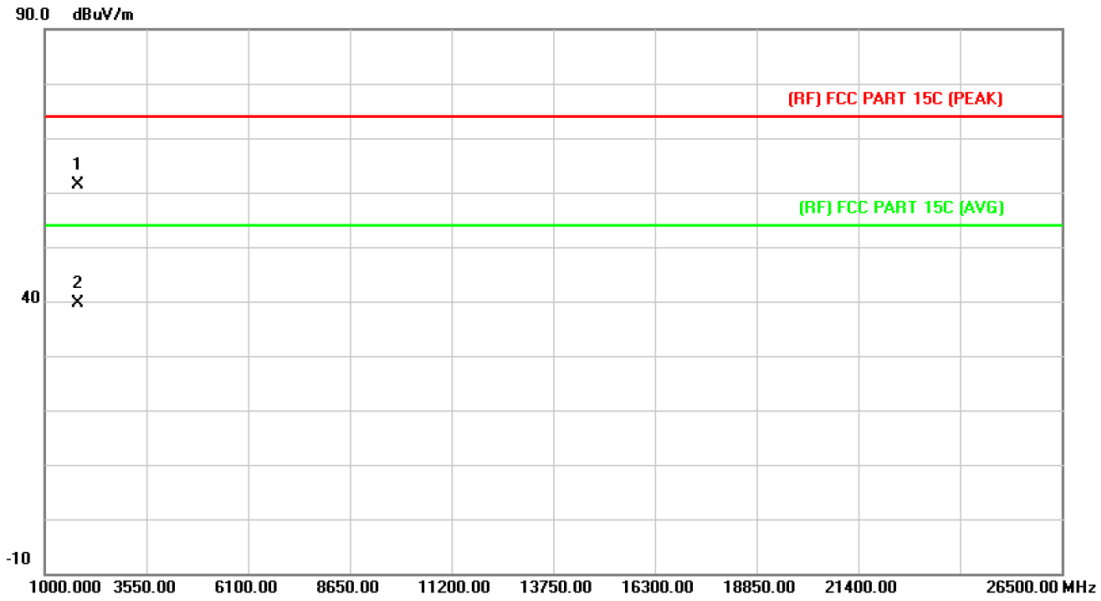


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	1832.563	39.15	-2.31	36.84	54.00	-17.16	AVG
2		1832.963	50.10	-2.31	47.79	74.00	-26.21	peak

Emission Level= Read Level+ Correct Factor

ANT2

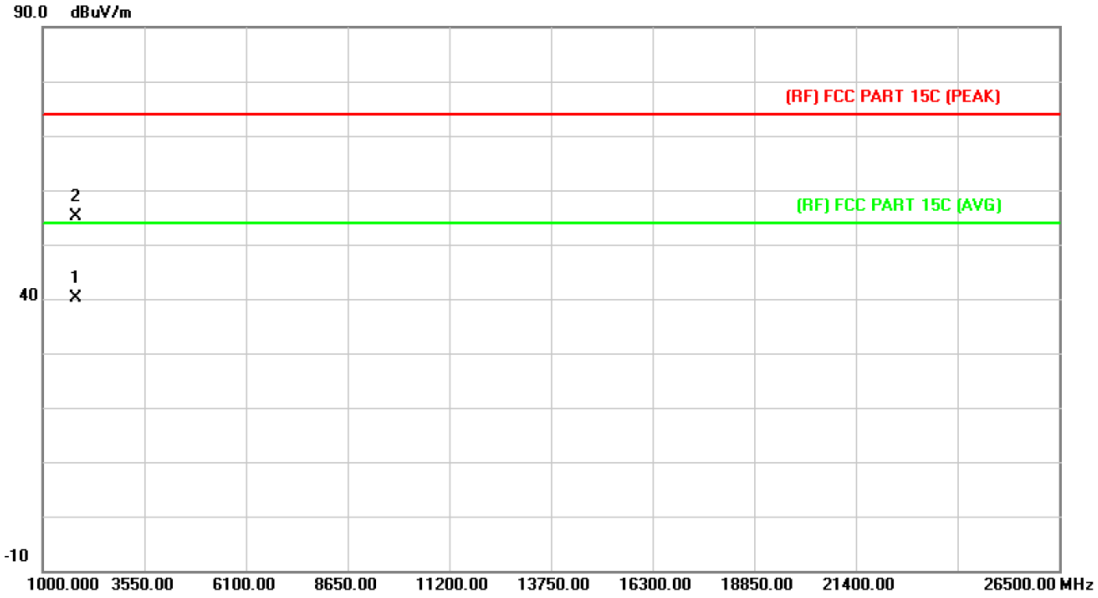
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	1829.820	63.78	-2.33	61.45	74.00	-12.55	peak
2		1829.996	41.93	-2.33	39.60	54.00	-14.40	AVG

Emission Level= Read Level+ Correct Factor

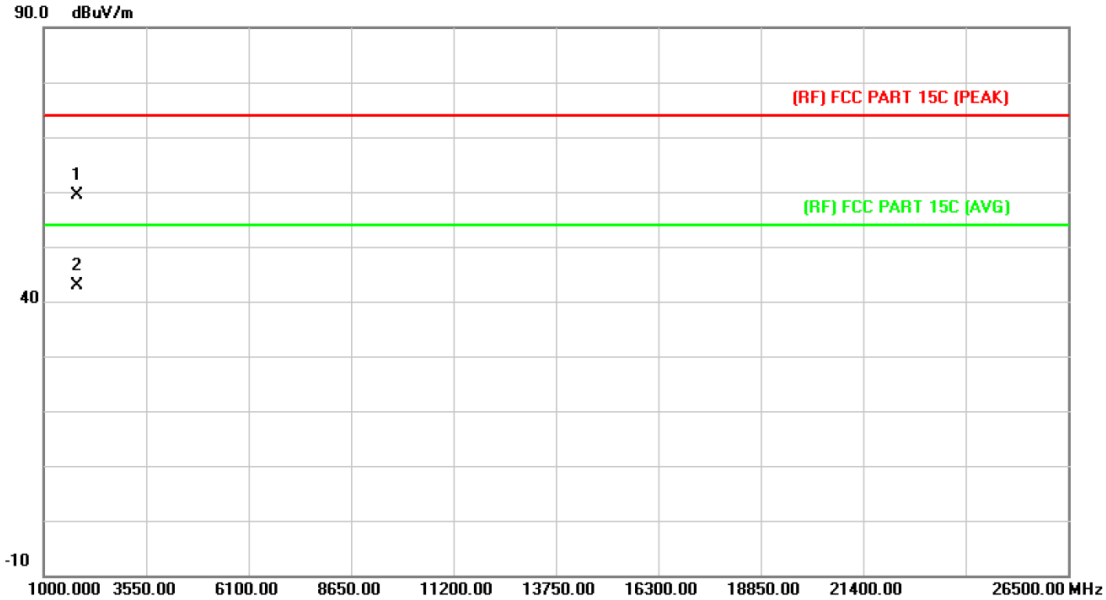
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	1830.072	42.42	-2.32	40.10	54.00	-13.90	AVG
2		1830.126	57.49	-2.32	55.17	74.00	-18.83	peak

Emission Level= Read Level+ Correct Factor

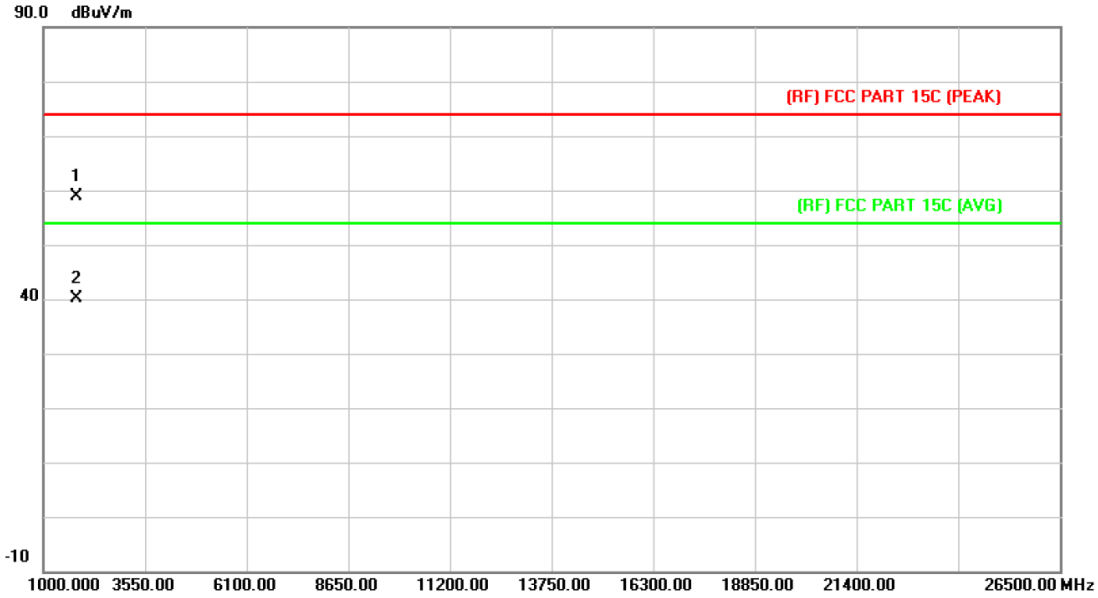
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 915.8MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1831.182	61.80	-2.32	59.48	74.00	-14.52	peak
2	*	1831.666	45.17	-2.32	42.85	54.00	-11.15	AVG

Emission Level= Read Level+ Correct Factor

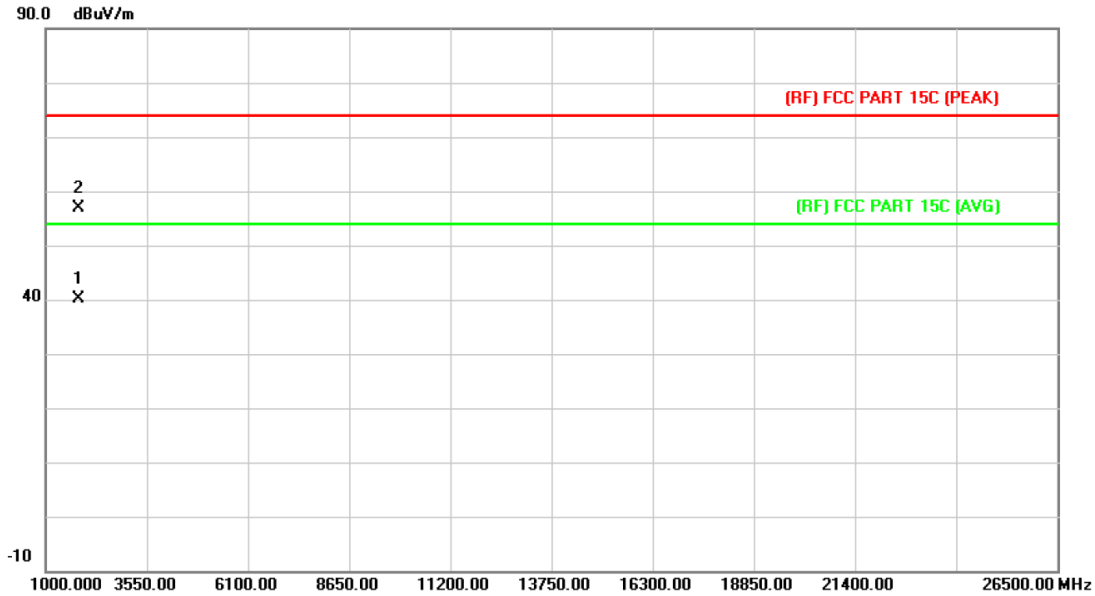
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 915.8MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1831.578	61.29	-2.32	58.97	74.00	-15.03	peak
2	*	1831.666	42.42	-2.32	40.10	54.00	-13.90	AVG

Emission Level= Read Level+ Correct Factor

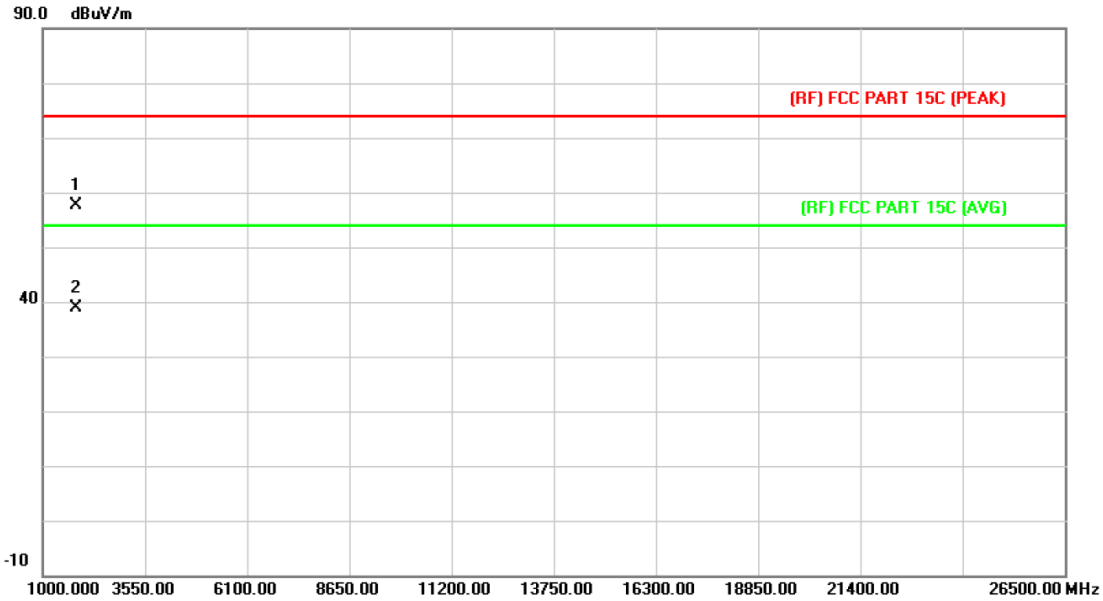
Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX 916.4MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	1832.610	42.42	-2.31	40.11	54.00	-13.89	AVG
2		1832.786	59.11	-2.31	56.80	74.00	-17.20	peak

Emission Level= Read Level+ Correct Factor

Temperature:	23.9℃	**Relative Humidity:**	44%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	TX 916.4MHz		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		



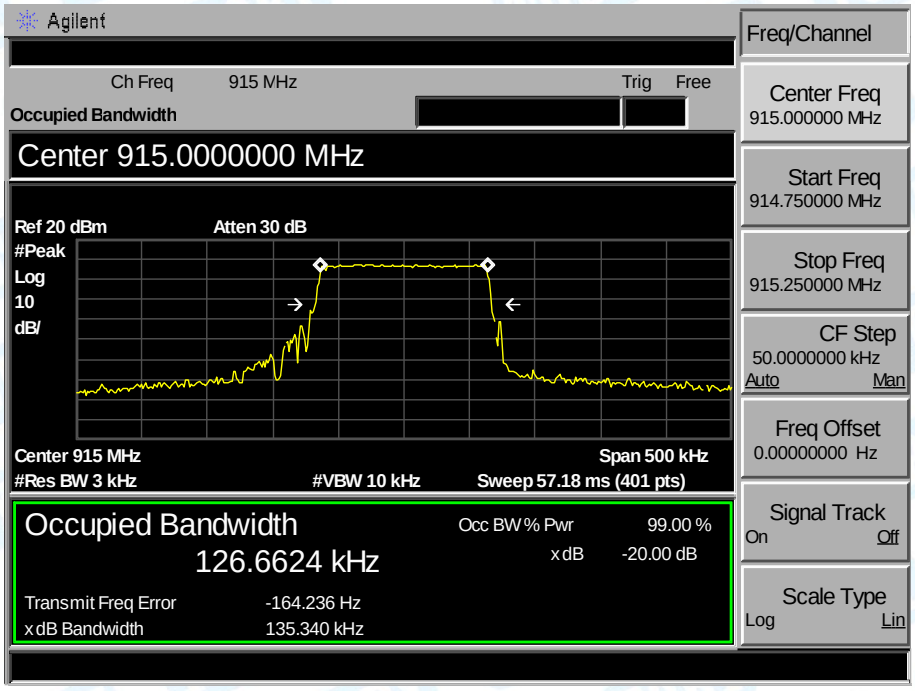
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1832.668	59.95	-2.31	57.64	74.00	-16.36	peak
2	*	1832.918	41.17	-2.31	38.86	54.00	-15.14	AVG

Emission Level= Read Level+ Correct Factor

Attachment C--Bandwidth Data

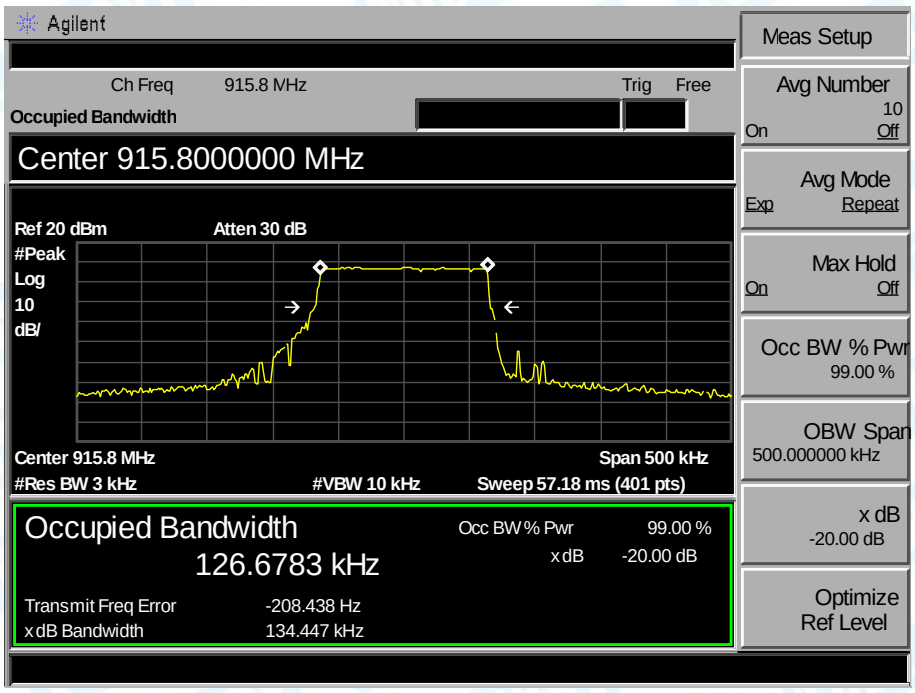
Low Channel Frequency (MHz)	20dB Bandwidth (kHz)
915	135.340

915 MHz



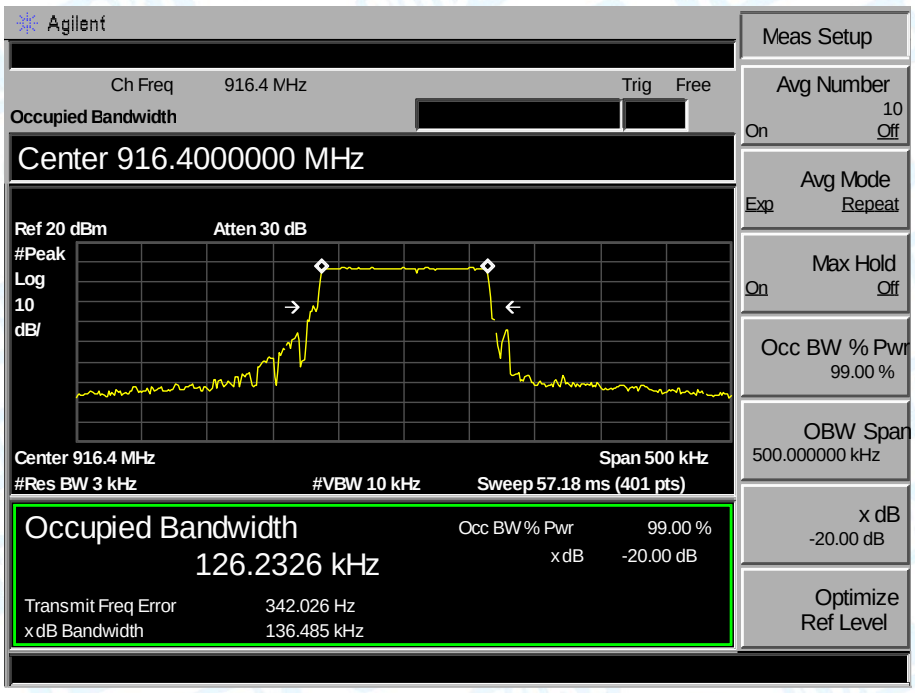
MID Channel Frequency (MHz)	20dB Bandwidth (kHz)
915.8	134.447

915.8 MHz



HIGH Channel Frequency (MHz)	20dB Bandwidth (kHz)
916.4	136.485

916.4 MHz



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