



FCC RF Test Report

APPLICANT : Ademco Inc.
EQUIPMENT : Chandelier 7" Tablet
BRAND NAME : Touch Screen
MODEL NAME : TUXEDOW
FCC ID : CFS8DLTUXEDOW
STANDARD : 47 CFR FCC Part 15 Subpart C § 15.249
CLASSIFICATION : (DXX) Low Power Communication Device Transmitter

The product was received on Feb. 27, 2019 and testing was completed on Jun. 24, 2019. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Jason Jia

Reviewed by: Jason Jia / Supervisor

James Huang

Approved by: James Huang / Manager



Sporton International (Kunshan) Inc.

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China



TABLE OF CONTENTS

SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION.....	5
1.1 Applicant	5
1.2 Product Feature of Equipment Under Test.....	5
1.3 Product Specification of Equipment Under Test.....	5
1.4 Modification of EUT	5
1.5 Testing Location	6
1.6 Applicable Standards.....	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST.....	7
2.1 Descriptions of Test Mode	7
2.2 Test Mode	8
2.3 Test Configurations.....	9
2.4 Support Unit used in test configuration and system	9
2.5 EUT Operation Test Setup	9
2.6 Measurement Results Explanation Example.....	10
3 TEST RESULT	11
3.1 AC Power Line Conducted Emissions Measurement.....	11
3.2 20dB & 99% Occupied Bandwidth.....	15
3.3 Field Strength of Fundamental Emissions and Radiated Spurious Emissions	18
3.4 Antenna Requirements	40
4 LIST OF MEASURING EQUIPMENT.....	41
5 UNCERTAINTY OF EVALUATION.....	42
APPENDIX A. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR8N0513-01D	Rev. 01	Initial issue of report	May 30, 2019
FR8N0513-01D	Rev. 02	Updated 20dB & 99% Occupied Bandwidth data	Jun. 25, 2019



SUMMARY OF TEST RESULT

Part	FCC Rule	Description of Test	Result	Remark
3.1	15.207	AC Power Line Conducted Emissions	Complies	Under limit 10.69 dB at 0.516 MHz
3.2	2.1049	20dB & 99% Occupied Bandwidth	Complies	-
3.3	15.249(a)	Field Strength of Fundamental Emissions	Complies	Under limit 4.62 dB at 908.400 MHz for Quasi-Peak
3.3	15.249(a)(d)	Radiated Spurious Emissions	Complies	Under limit 11.98 dB at 30.000 MHz
3.4	15.203	Antenna Requirements	Complies	-



1 General Description

1.1 Applicant

Ademco Inc.

2 Corporate Center Drive, Melville NY 11747

1.2 Product Feature of Equipment Under Test

Product Feature	
Equipment	Chandelier 7" Tablet
Brand Name	Touch Screen
Model Name	TUXEDOW
FCC ID	CFS8DLTUXEDOW
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n (HT20/HT40) WLAN 5GHz 802.11a/n(HT20/HT40) Z-wave
HW Version	A6r5d
SW Version	TUXEDOW 02.01.008.0001_multiDownload
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.3 Product Specification of Equipment Under Test

Standards-related Product Specification	
Frequency Range	40 kbps: 908.4 MHz 9.6 kbps: 908.42 MHz 100 kbps: 916 MHz
Channel Bandwidth (99%)	40 kbps: 97.202 kHz 9.6 kbps: 93.282 kHz 100 kbps: 97.397 kHz
Max. Field Strength (Quasi-Peak)	40 kbps: 89.38 dB μ V/m 9.6 kbps: 89.03 dB μ V/m 100 kbps: 89.23 dB μ V/m
Antenna Type / Gain	Monopole Antenna type with gain 1.50 dBi
Type of Modulation	40 kbps and 9.6 kbps: 2FSK 100 kbps: 2GFSK

1.4 Modification of EUT

No modifications are made to the EUT during all test items.



1.5 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-KS 03CH02-KS TH01-KS	CN1257	314309

1.6 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.249
- ♦ ISED RSS-210 Issue 9
- ♦ ISED RSS-Gen Issue 5
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

2.1 Descriptions of Test Mode

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode
AC Power Line Conducted Emissions	CTX
Field Strength of Fundamental Emissions	CTX
Bandwidth	CTX
Radiated Emissions	CTX

Note:

1. CTX=continuously transmitting.
2. The programmed RF utility, "Test Tool" installed in the notebook to make the EUT get into the engineering modes to continuously transmit.

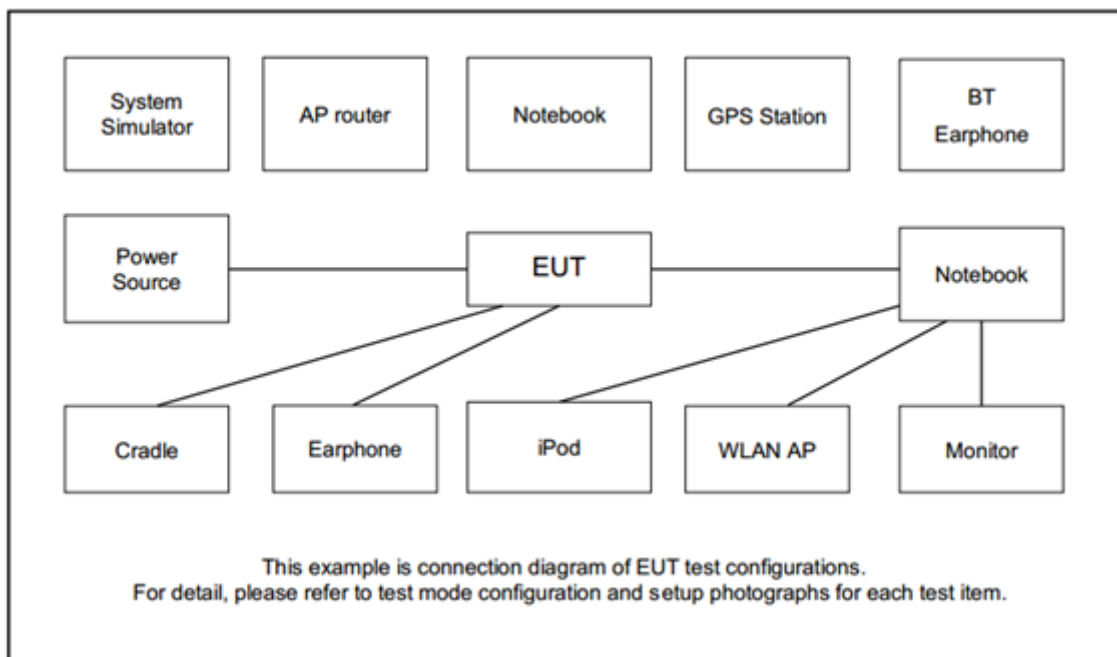


2.2 Test Mode

The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases	
Test Item	Z-wave
Conducted TCs	Mode 1: 40kbps Mode 2: 9.6kbps Mode 3: 100kbps
Radiated TCs	Mode 1: 40kbps Mode 2: 9.6kbps Mode 3: 100kbps
AC Conducted Emission	Mode 1: WLAN (2.4G) Idle + Z-wave Idle + Adapter
Remark: For Radiated TCs, The tests were performed with Adapter.	

2.3 Test Configurations



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	LINKSYS	WRT600N	Q87-WRT600NV11	N/A	Unshielded,1.8m
2.	Notebook	Lenovo	G480	N/A	N/A	Shielded cable DC O/P 1.8 m Unshielded AC I/P cable1.8 m

2.5 EUT Operation Test Setup

The RF test items, make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.



2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 5.3 dB.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)}. \\ &= 5.3 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 AC Power Line Conducted Emissions Measurement

3.1.1 Limit

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency (MHz)	QP Limit (dB μ V)	AV Limit (dB μ V)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

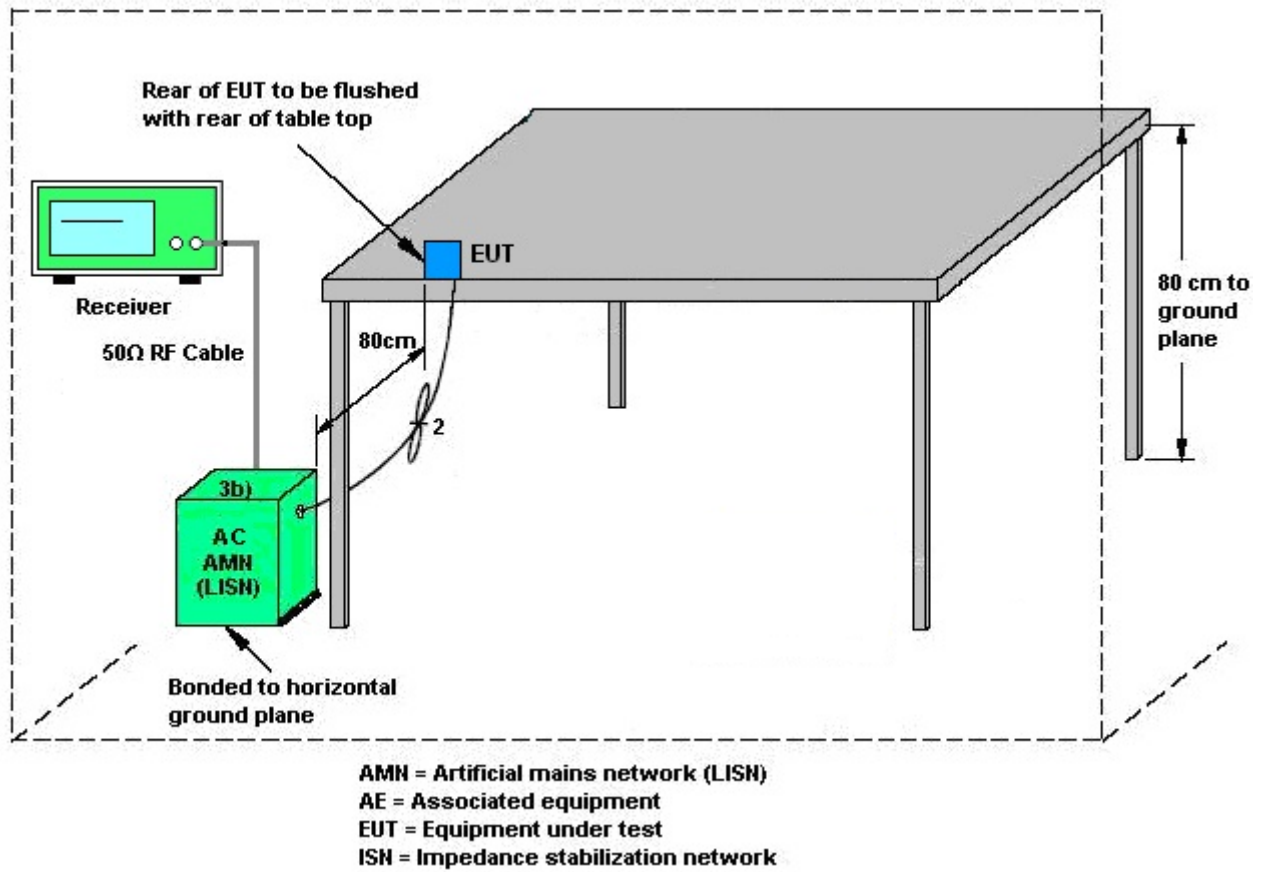
3.1.2 Measuring Instruments

Please refer to section 4 of equipment list in this report.

3.1.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

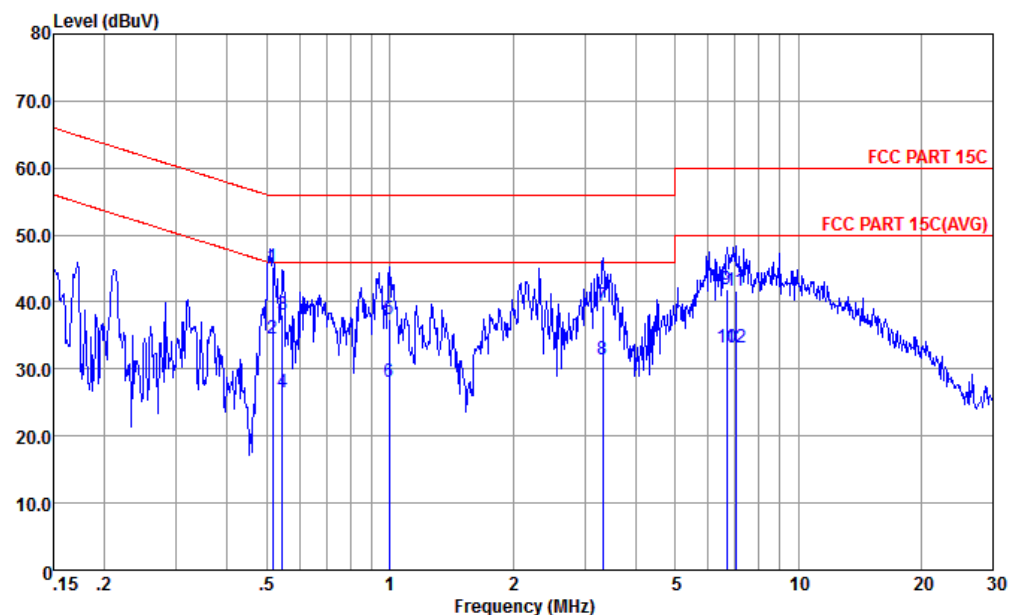
3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~25℃
Test Engineer :	Peng Wang	Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN (2.4G) Idle + Z-wave Idle + Adapter		

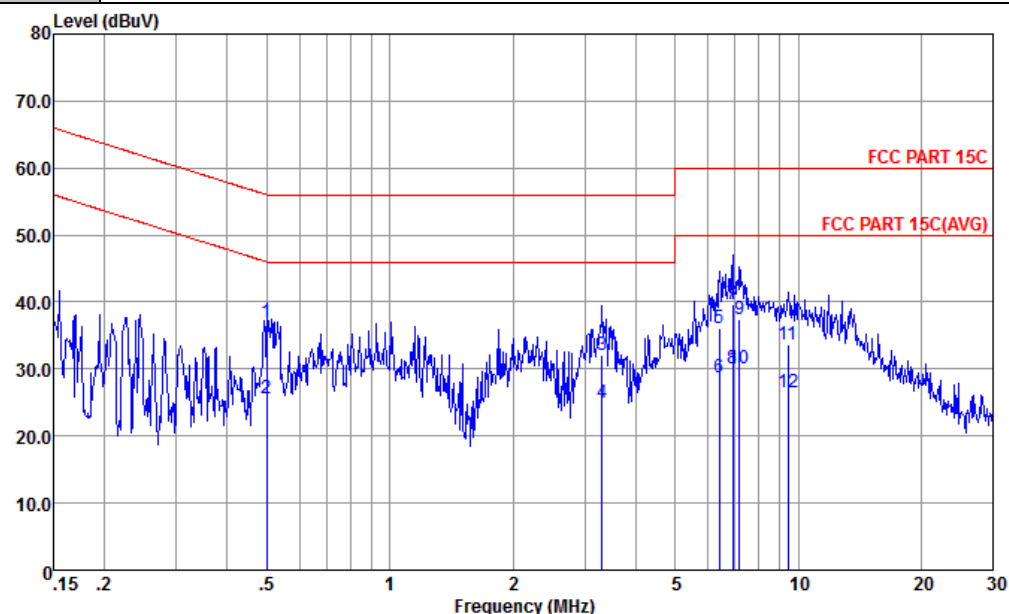


Site : CO01-KS
Condition : FCC PART 15C LISN-L-181119-060105 LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.516	45.31	-10.69	56.00	34.90	0.17	10.24	QP
2	0.516	34.61	-11.39	46.00	24.20	0.17	10.24	Average
3	0.546	38.01	-17.99	56.00	27.59	0.18	10.24	QP
4	0.546	26.61	-19.39	46.00	16.19	0.18	10.24	Average
5	0.994	37.33	-18.67	56.00	26.90	0.20	10.23	QP
6	0.994	28.03	-17.97	46.00	17.60	0.20	10.23	Average
7	3.328	39.38	-16.62	56.00	28.89	0.24	10.25	QP
8	3.328	31.38	-14.62	46.00	20.89	0.24	10.25	Average
9	6.698	41.85	-18.15	60.00	31.30	0.25	10.30	QP
10	6.698	33.15	-16.85	50.00	22.60	0.25	10.30	Average
11	7.025	41.65	-18.35	60.00	31.10	0.25	10.30	QP
12	7.025	33.15	-16.85	50.00	22.60	0.25	10.30	Average



Test Mode :	Mode 1	Temperature :	22~25°C
Test Engineer :	Peng Wang	Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN (2.4G) Idle + Z-wave Idle + Adapter		



Site : CO01-KS
Condition : FCC PART 15C LISN-N-181119-060105 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1 *	0.499	36.98	-19.03	56.01	26.60	0.15	10.23	QP
2	0.499	25.58	-20.43	46.01	15.20	0.15	10.23	Average
3	3.310	32.01	-23.99	56.00	21.59	0.17	10.25	QP
4	3.310	24.91	-21.09	46.00	14.49	0.17	10.25	Average
5	6.420	36.07	-23.93	60.00	25.60	0.18	10.29	QP
6	6.420	28.67	-21.33	50.00	18.20	0.18	10.29	Average
7	6.914	39.68	-20.32	60.00	29.20	0.18	10.30	QP
8	6.914	29.98	-20.02	50.00	19.50	0.18	10.30	Average
9	7.175	37.38	-22.62	60.00	26.89	0.18	10.31	QP
10	7.175	30.08	-19.92	50.00	19.59	0.18	10.31	Average
11	9.451	33.61	-26.39	60.00	23.10	0.17	10.34	QP
12	9.451	26.41	-23.59	50.00	15.90	0.17	10.34	Average

3.2 20dB & 99% Occupied Bandwidth

3.2.1 Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band.

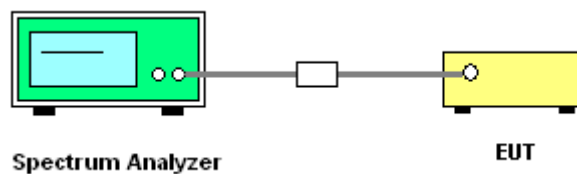
3.2.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.2.3 Test Procedures

1. The spectrum analyzer connected via a receive antenna.
2. The RBW is set to 1% to 5% of the 99% OBW, the VBW is set to 3 times the RBW.
3. Measured the spectrum width with power higher than 20dB below carrier.
4. Measure the 99% OBW.

3.2.4 Test Setup



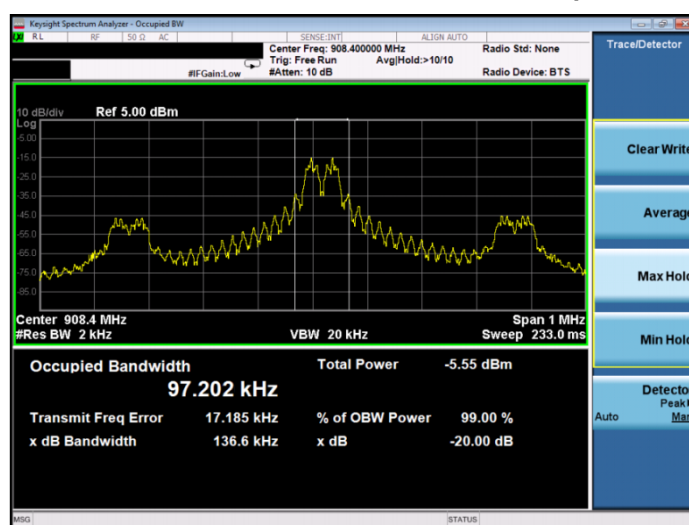


3.2.5 Test Result of 20dB Spectrum Bandwidth

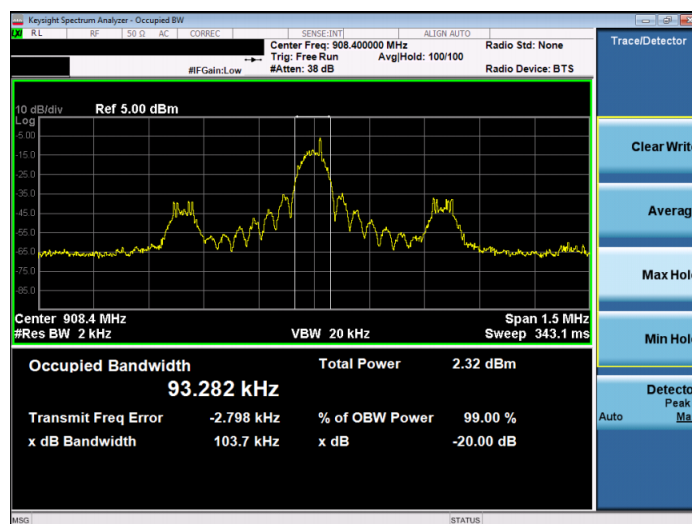
Temperature :	22~26℃	Relative Humidity :	50~53%
Test Engineer :	Wilson Chen	Test Voltage :	120Vac / 60Hz

Frequency	20dB BW (kHz)	99% OBW (kHz)
40kbps	136.60	97.202
9.6kbps	103.70	93.282
100kbps	136.30	97.397

20 dB & 99% Bandwidth Plot on 40kbps

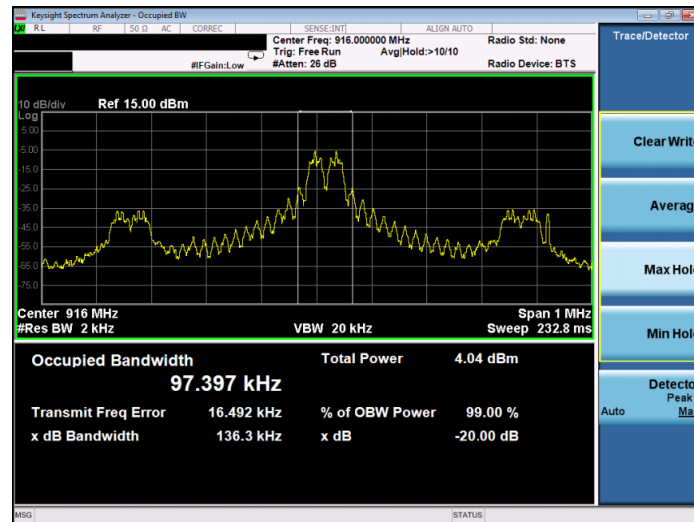


20 dB & 99% Bandwidth Plot on 9.6kbps





20 dB & 99% Bandwidth Plot on 100kbps



3.3 Field Strength of Fundamental Emissions and Radiated Spurious Emissions

3.3.1 Limit

The field strength measured at 3 meters shall not exceed the limits in the following table:

Fundamental Frequencies(MHz)	Field Strength(millivolts/m)	
	Fundamental	Harmonics
902~928	50	0.5
2400~2483.5	50	0.5
5725~5875	50	0.5

Note: The limits shown in the above table are based on measurements using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using a CISPR quasi-peak detector.

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general field strength limits listed as below, whichever is less stringent.

Frequency (MHz)	Field Strength (microvolts/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

3.3.2 Measuring Instruments

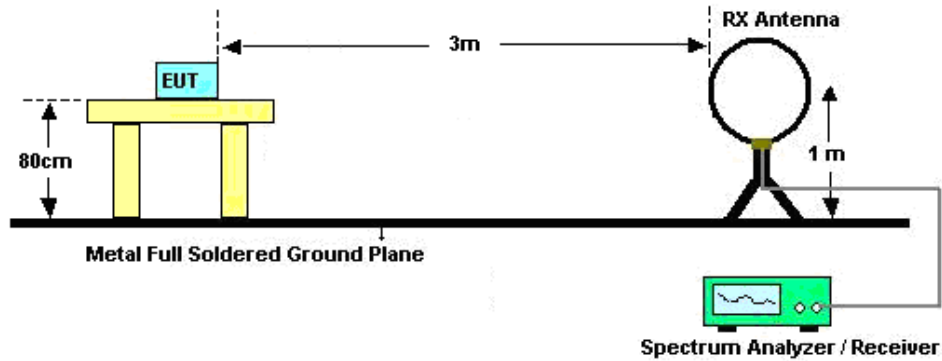
The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.3.3 Test Procedures

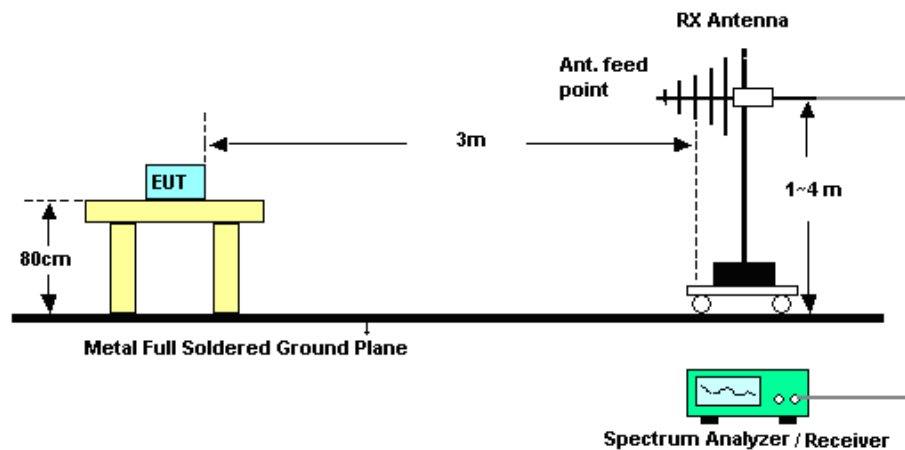
1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
Span shall wide enough to fully capture the emission being measured;
Set RBW=120 kHz for $f < 1 \text{ GHz}$, RBW=1MHz for $f > 1\text{GHz}$; VBW $\geq$ RBW; Sweep = auto;
Detector function = peak; Trace = max hold for peak
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

3.3.4 Test Setup

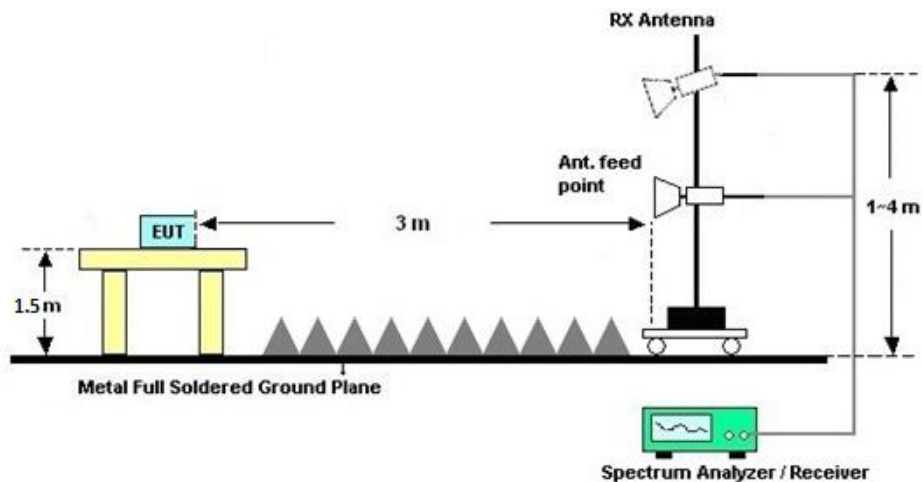
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





3.3.5 Test Deviation

There is no deviation with the original standard.

3.3.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.3.7 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

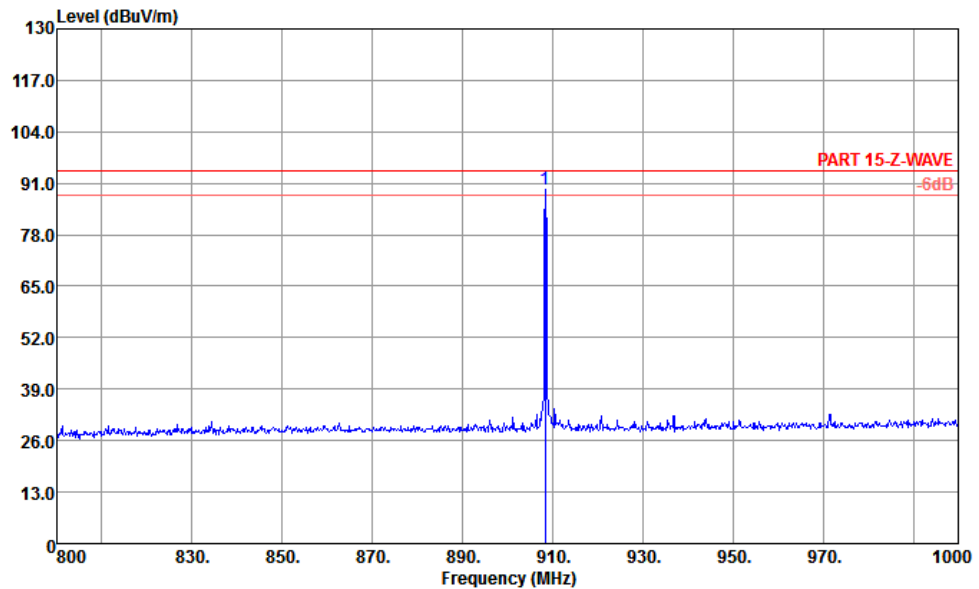
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit not reported.



3.3.8 Test Result of Field Strength of Fundamental Emissions

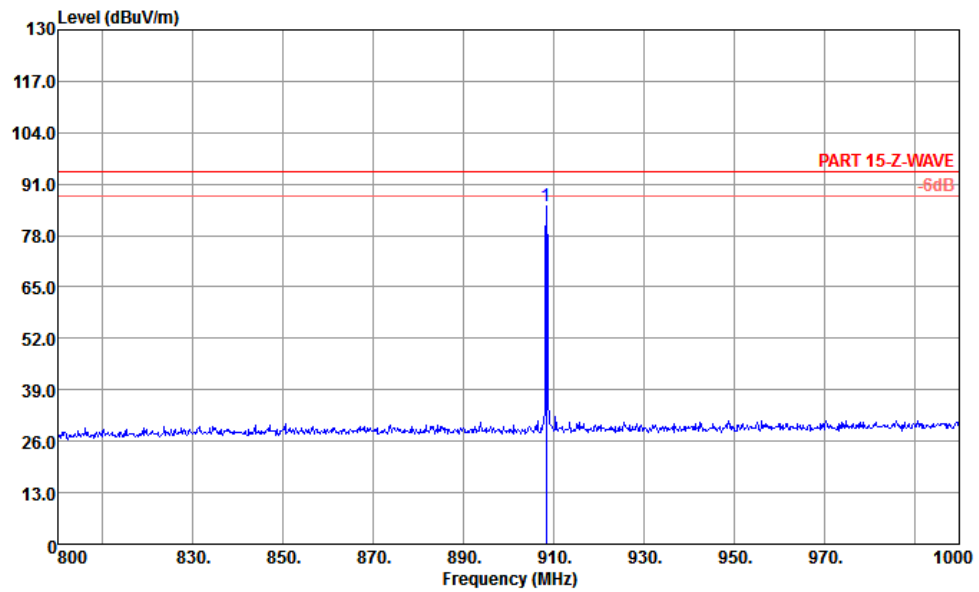
Temperature :	21~22℃	Relative Humidity :	41~42%
Test Engineer :	Jack Guo	Test Voltage :	120Vac / 60Hz

40kbps



Site : 03CH02-KS
Condition : PART 15-Z-WAVE 3m LF 49922-3M HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 !	908.40	89.38	-4.62	94.00	87.90	29.40	3.47	31.39	100	0 QP

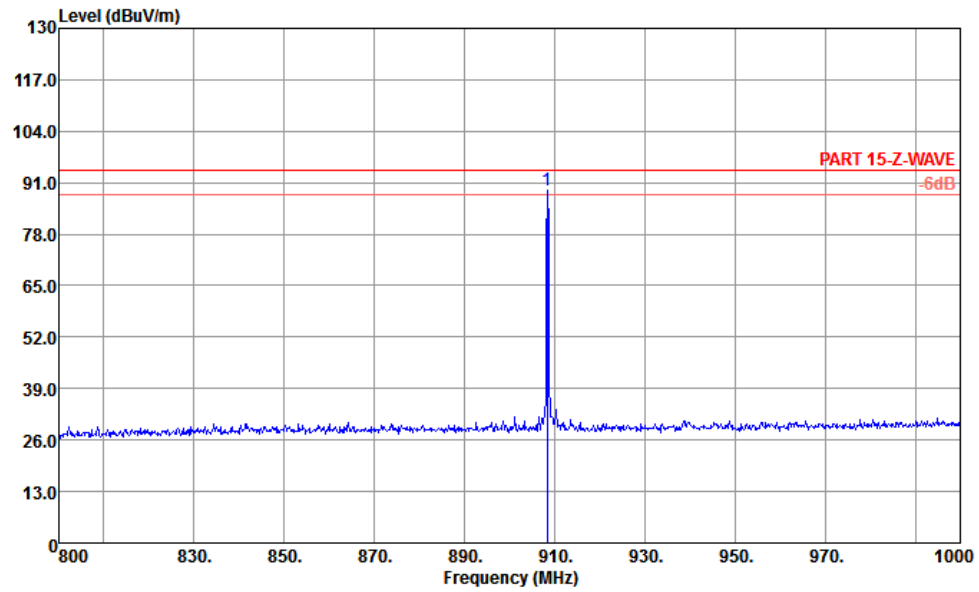


Site : 03CH02-KS
Condition : PART 15-Z-WAVE 3m LF 49922-3M VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor			
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	908.40	85.45	-8.55	94.00	83.97	29.40	3.47	31.39	100	0 QP

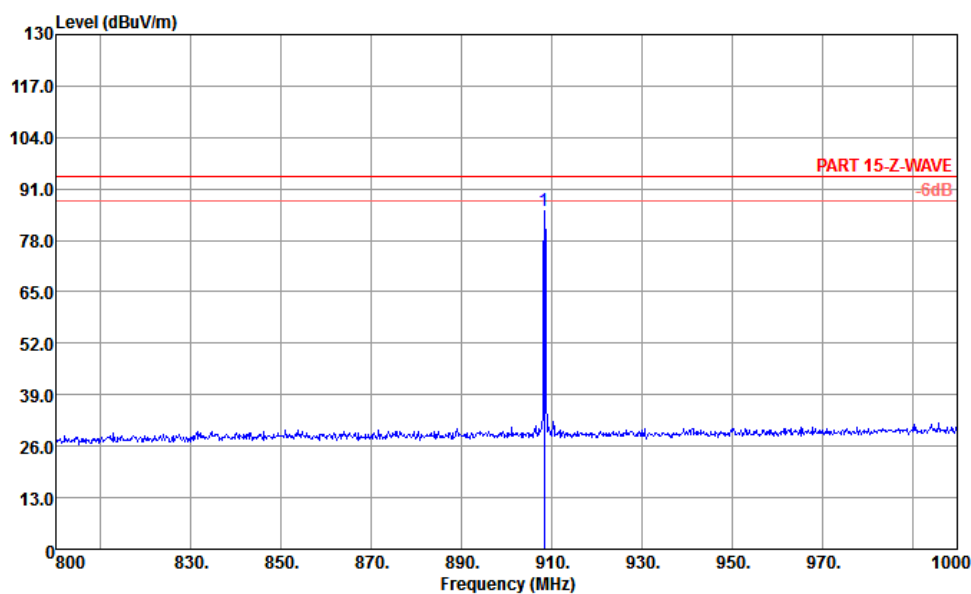


9.6kbps



Site : 03CH02-KS
Condition : PART 15-7-WAVE 3m LF 49922-3M HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 !	908.40	89.03	-4.97	94.00	87.55	29.40	3.47	31.39	160	0	QP

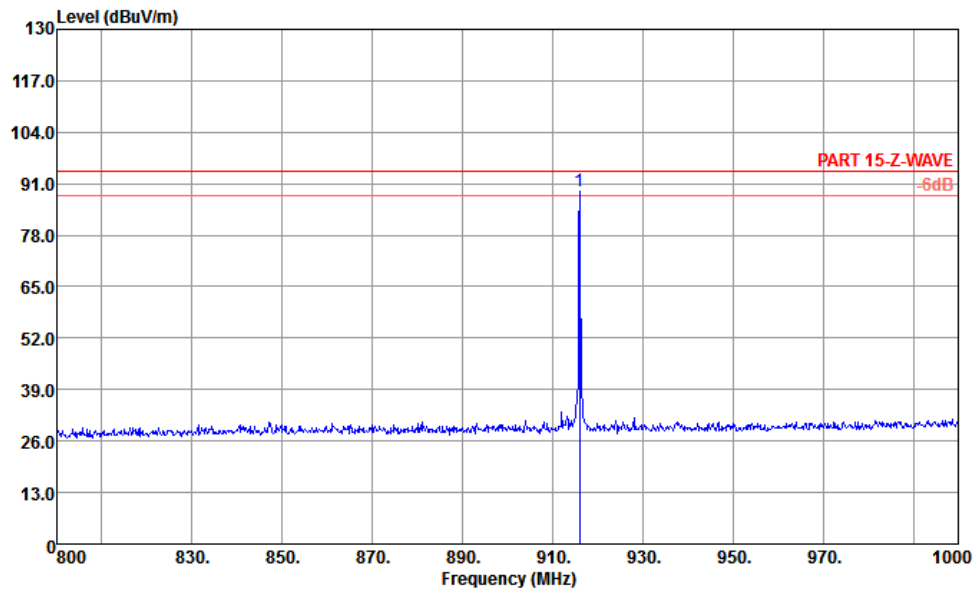


Site : 03CH02-KS
Condition : PART 15-Z-WAVE 3m LF 49922-3M VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor			
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	908.40	85.46	-8.54	94.00	83.98	29.40	3.47	31.39	100	0 QP

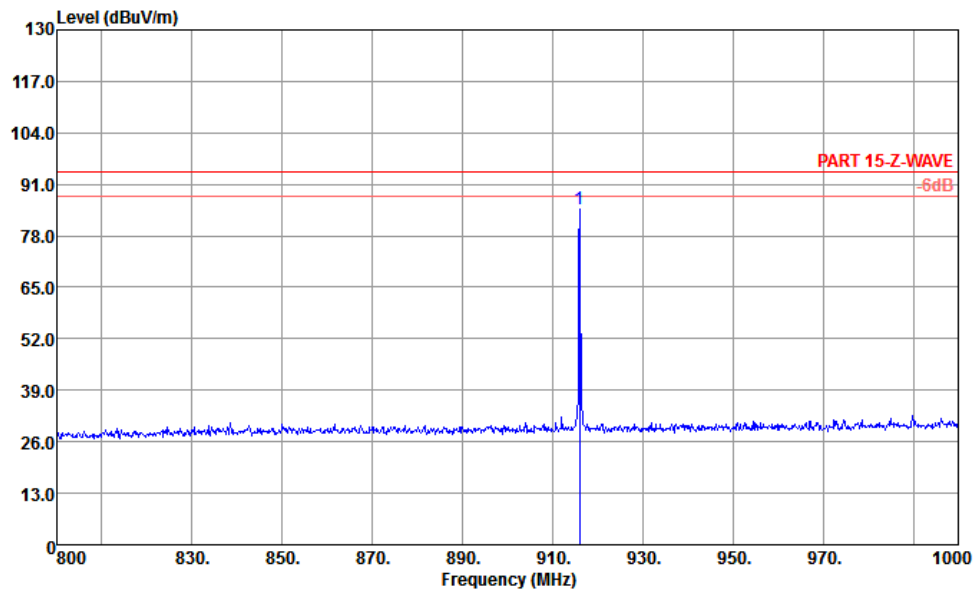


100kbps



Site : 03CH02-KS
Condition : PART 15-Z-WAVE 3m LF 49922-3M HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 !	916.00	89.23	-4.77	94.00	87.57	29.49	3.48	31.31	100	0	QP



Site : 03CH02-KS
Condition : PART 15-Z-WAVE 3m LF 49922-3M VERTICAL

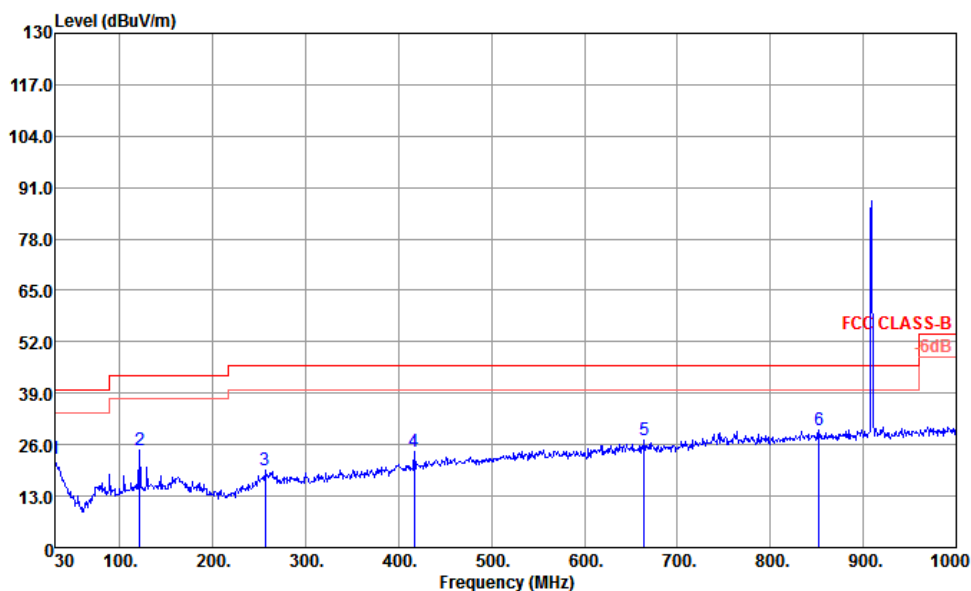
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor			
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	916.00	84.72	-9.28	94.00	83.06	29.49	3.48	31.31	100	0 QP



3.3.9 Test Result of Radiated Spurious Emissions (30 MHz~1GHz)

Temperature :	21~22℃	Relative Humidity :	41~42%
Test Engineer :	Jack Guo	Test Voltage :	120Vac / 60Hz

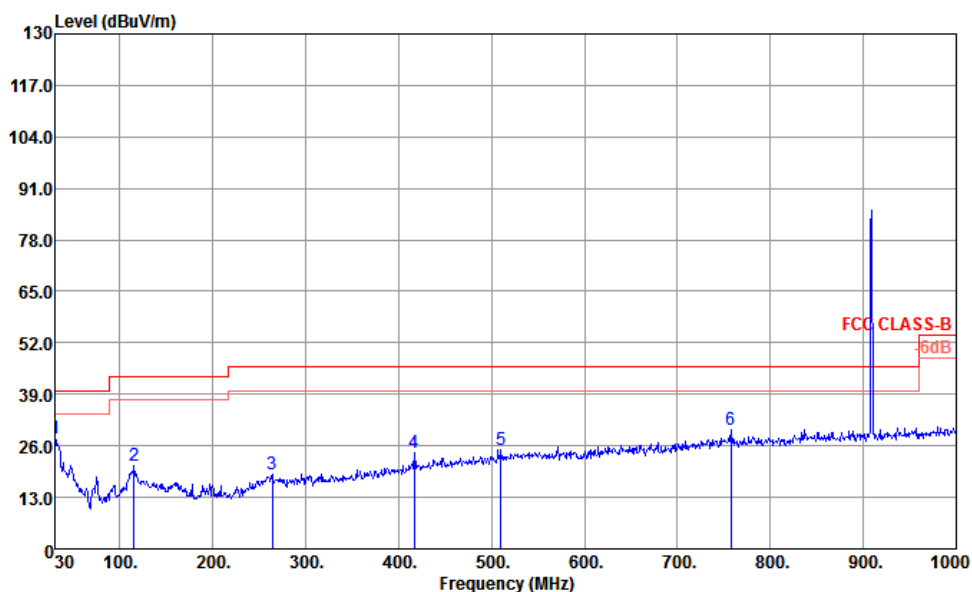
40kbps



Site : 03CH02-KS
Condition : FCC CLASS-B 3m LF 49922-3M HORIZONTAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor			
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	30.00	22.49	-17.51	40.00	28.63	25.20	0.64	31.98	---	Peak
2	121.18	24.45	-19.05	43.50	37.40	17.71	1.27	31.93	---	Peak
3	256.01	19.42	-26.58	46.00	29.88	19.64	1.87	31.97	---	Peak
4	417.03	24.26	-21.74	46.00	31.60	22.52	2.29	32.15	---	Peak
5	664.38	27.04	-18.96	46.00	29.81	26.63	2.95	32.35	---	Peak
6	852.56	29.64	-16.36	46.00	28.75	29.30	3.36	31.77	100	0 Peak

Note: The over limit signal is Fundamental signal which can be referred section 3.3.8



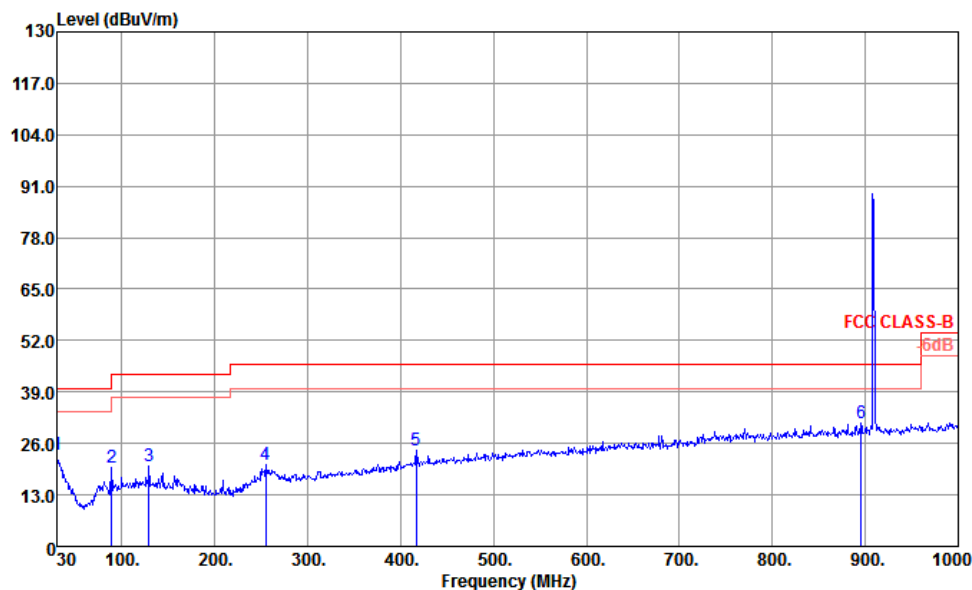
Site : 03CH02-K5
Condition : FCC CLASS-B 3m LF 49922-3M VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	30.00	27.78	-12.22	40.00	33.92	25.20	0.64	31.98	100	0 Peak
2	115.36	21.00	-22.50	43.50	34.22	17.47	1.24	31.93	---	---
3	263.77	18.95	-27.05	46.00	29.25	19.80	1.89	31.99	---	---
4	417.03	24.13	-21.87	46.00	31.47	22.52	2.29	32.15	---	---
5	510.15	24.98	-21.02	46.00	30.24	24.45	2.57	32.28	---	---
6	757.50	30.01	-15.99	46.00	30.61	28.47	3.16	32.23	---	---

Note: The over limit signal is Fundamental signal which can be referred section 3.3.8



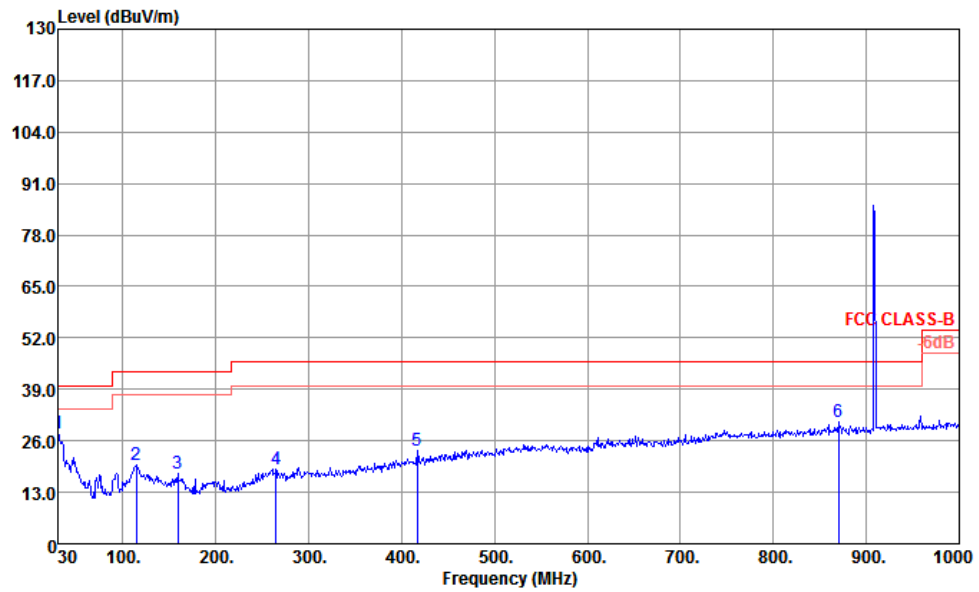
9.6kbps



Site : 03CH02-KS
Condition : FCC CLASS-B 3m LF 49922-3M HORIZONTAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	cm	deg
			dB	dBuV/m	dBuV	dB/m	dB	dB		
1	30.00	23.03	-16.97	40.00	29.17	25.20	0.64	31.98	---	Peak
2	89.17	19.97	-23.53	43.50	36.02	14.77	1.10	31.92	---	Peak
3	128.94	20.42	-23.08	43.50	33.29	17.79	1.28	31.94	---	Peak
4	255.04	20.49	-25.51	46.00	31.09	19.50	1.87	31.97	---	Peak
5	417.03	24.40	-21.60	46.00	31.74	22.52	2.29	32.15	---	Peak
6	895.24	31.09	-14.91	46.00	29.85	29.30	3.44	31.50	100	0 Peak

Note: The over limit signal is Fundamental signal which can be referred section 3.3.8



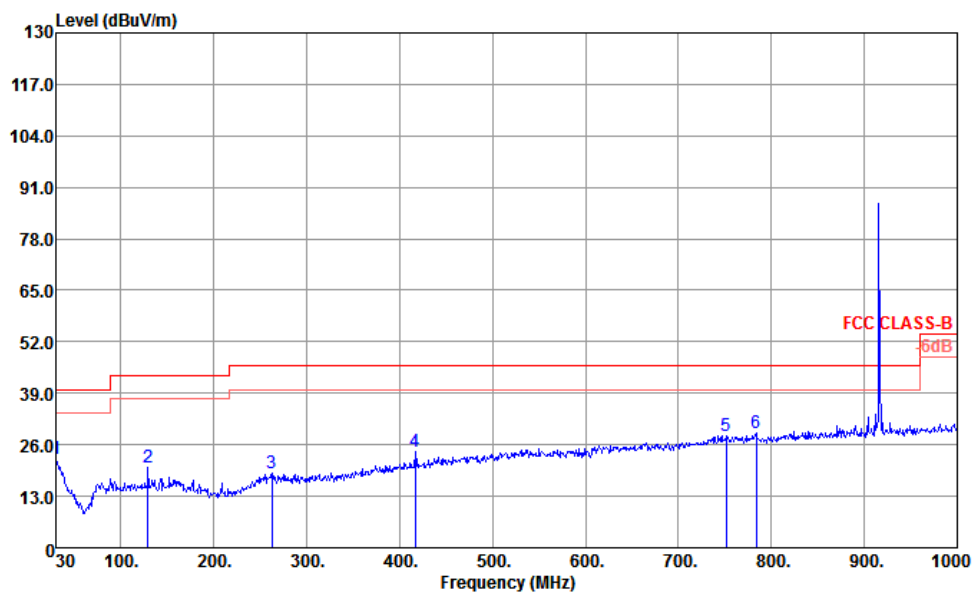
Site : 03CH02-KS
Condition : FCC CLASS-B 3m LF 49922-3M VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor			
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	30.00	28.02	-11.98	40.00	34.16	25.20	0.64	31.98	100	0 Peak
2	114.39	19.77	-23.73	43.50	33.04	17.43	1.23	31.93	---	---
3	159.01	17.73	-25.77	43.50	31.51	16.66	1.49	31.93	---	---
4	264.74	18.80	-27.20	46.00	29.20	19.70	1.90	32.00	---	---
5	417.03	23.68	-22.32	46.00	31.02	22.52	2.29	32.15	---	---
6	870.02	30.77	-15.23	46.00	29.74	29.30	3.39	31.66	---	---

Note: The over limit signal is Fundamental signal which can be referred section 3.3.8



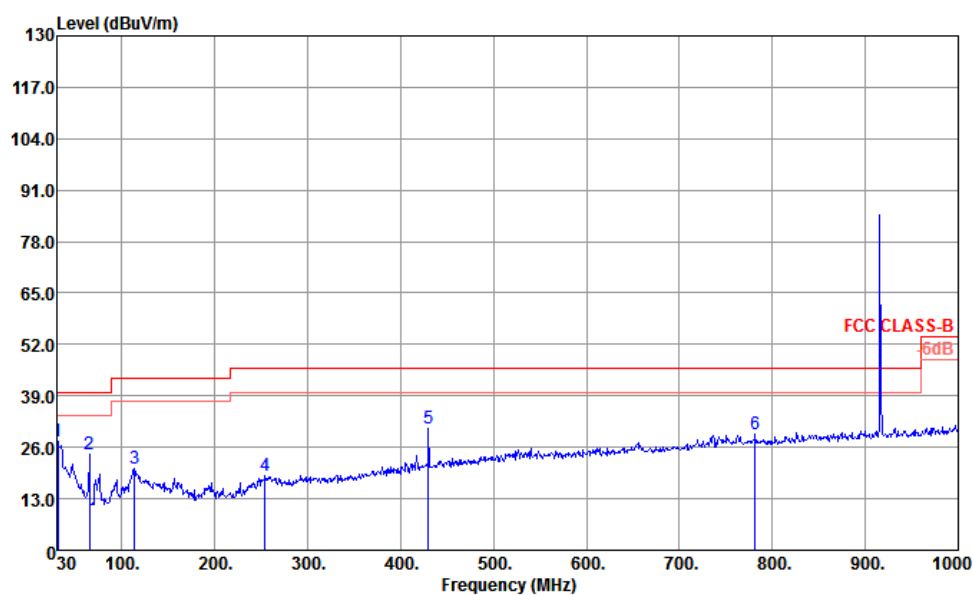
100kbps



Site : 03CH02-KS
Condition : FCC CLASS-B 3m LF 49922-3M HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	22.53	-17.47	40.00	28.67	25.20	0.64	31.98	---	---	Peak
2	128.94	20.36	-23.14	43.50	33.23	17.79	1.28	31.94	---	---	Peak
3	262.80	18.81	-27.19	46.00	29.01	19.90	1.89	31.99	---	---	Peak
4	417.03	24.10	-21.90	46.00	31.44	22.52	2.29	32.15	---	---	Peak
5	751.68	28.28	-17.72	46.00	28.89	28.49	3.15	32.25	---	---	Peak
6	783.69	28.81	-17.19	46.00	29.37	28.37	3.23	32.16	100	0	Peak

Note: The over limit signal is Fundamental signal which can be referred section 3.3.8



Site : 03CH02-K5
Condition : FCC CLASS-B 3m LF 49922-3M VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor			
					dBuV	dB/m	dB	dB	cm	deg
1	30.97	27.43	-12.57	40.00	34.07	24.68	0.66	31.98	100	0 Peak
2	64.92	24.40	-15.60	40.00	43.11	12.25	0.97	31.93	---	Peak
3	113.42	20.54	-22.96	43.50	33.86	17.38	1.23	31.93	---	Peak
4	254.07	18.88	-27.12	46.00	29.62	19.36	1.87	31.97	---	Peak
5	429.64	30.90	-15.10	46.00	37.92	22.82	2.33	32.17	---	Peak
6	781.75	29.41	-16.59	46.00	29.99	28.37	3.22	32.17	---	Peak

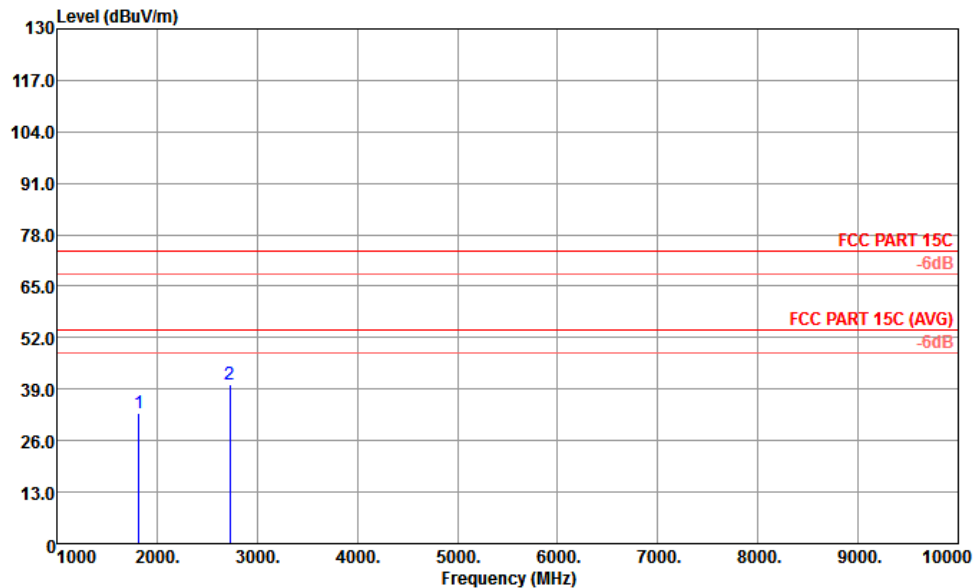
Note: The over limit signal is Fundamental signal which can be referred section 3.3.8



3.3.10 Test Result of Radiated Spurious Emissions (1 GHz~10GHz)

Temperature :	21~22℃	Relative Humidity :	41~42%
Test Engineer :	Jack Guo	Test Voltage :	120Vac / 60Hz

40kbps

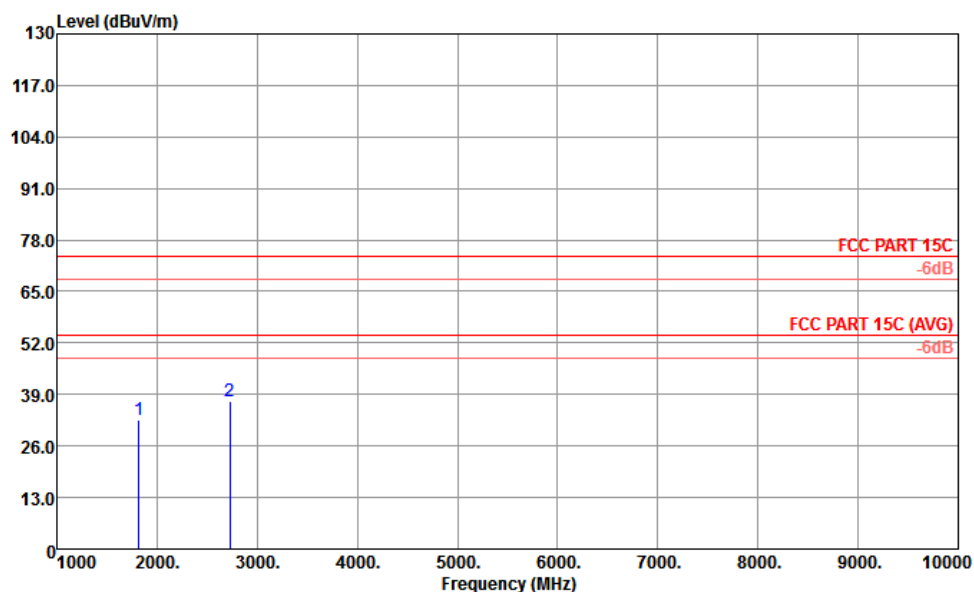


Site : 03CH02-KS
Condition : FCC PART 15C 3m 3117 SN 75959 HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1819.00	32.80	-41.20	74.00	32.66	28.93	4.83	33.62	---	---	Peak
2	2728.00	40.04	-33.96	74.00	34.26	32.23	6.00	32.45	---	---	Peak

Note:

1. Average measurement was not performed if peak level went lower than the average limit.
2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.

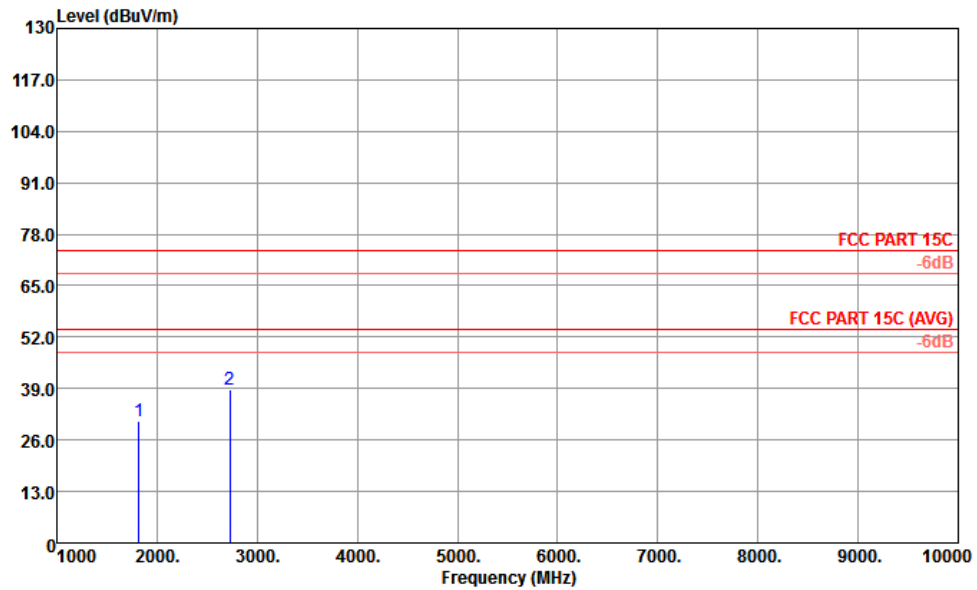


Site : 03CH02-K5
Condition : FCC PART 15C 3m 3117 SN 75959 VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	cm	deg
			dB	dBuV/m	dBuV	dB/m	dB	dB		
1	1819.00	32.71	-41.29	74.00	32.57	28.93	4.83	33.62	---	Peak
2	2728.00	37.16	-36.84	74.00	31.38	32.23	6.00	32.45	---	Peak

Note:

1. Average measurement was not performed if peak level went lower than the average limit.
2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.

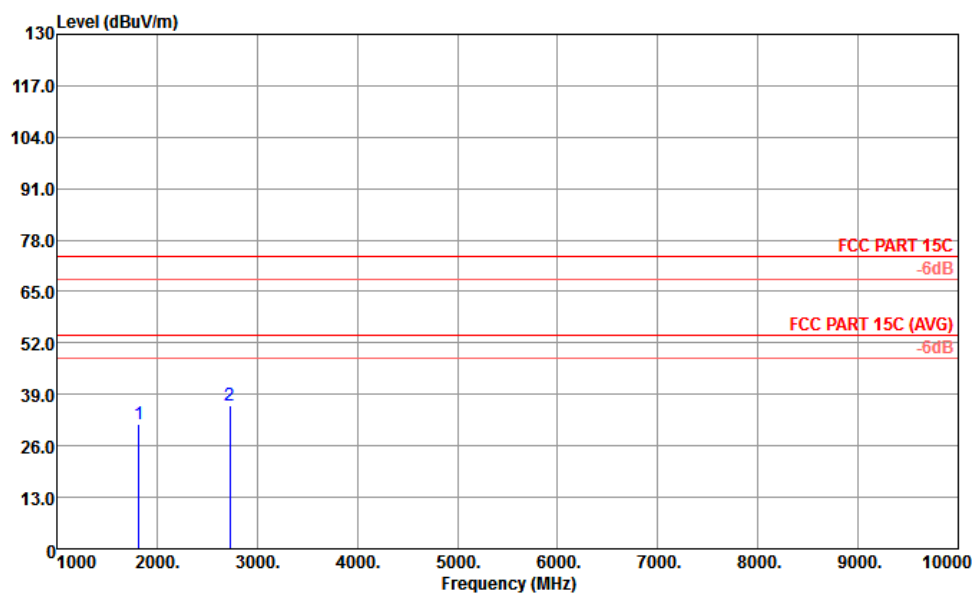
9.6kbps


Site : 03CH02-KS
Condition : FCC PART 15C 3m 3117 SN 75959 HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1819.00	30.88	-43.12	74.00	30.74	28.93	4.83	33.62	---	---	Peak
2	2728.00	38.89	-35.11	74.00	33.11	32.23	6.00	32.45	---	---	Peak

Note:

1. Average measurement was not performed if peak level went lower than the average limit.
2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.



Site : 03CH02-KS
Condition : FCC PART 15C 3m 3117 SN 75959 VERTICAL

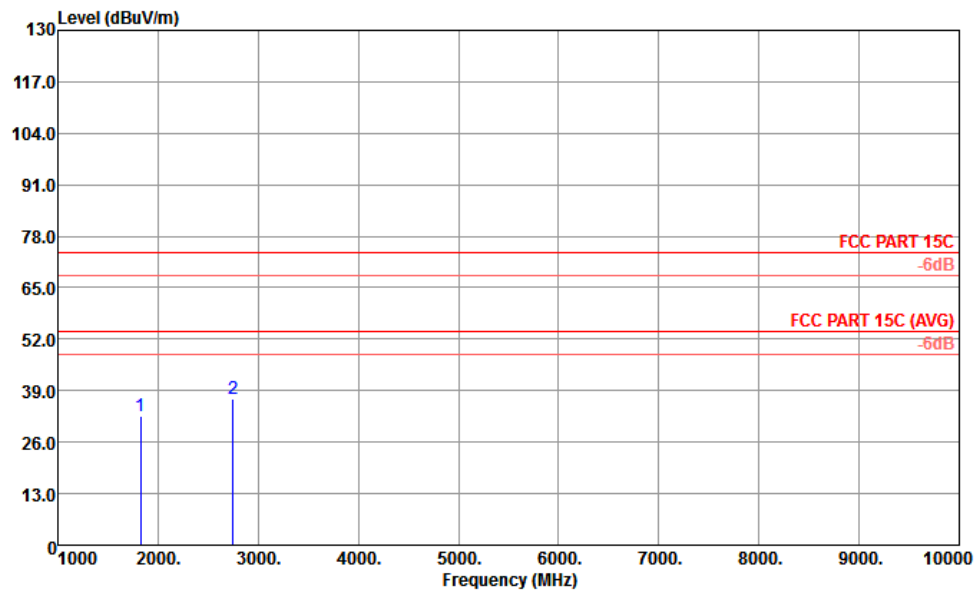
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	cm	deg
1	1819.00	31.34	-42.66	74.00	31.20	28.93	4.83	33.62	---	Peak
2	2728.00	36.20	-37.80	74.00	30.42	32.23	6.00	32.45	---	Peak

Note:

1. Average measurement was not performed if peak level went lower than the average limit.
2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.



100kbps

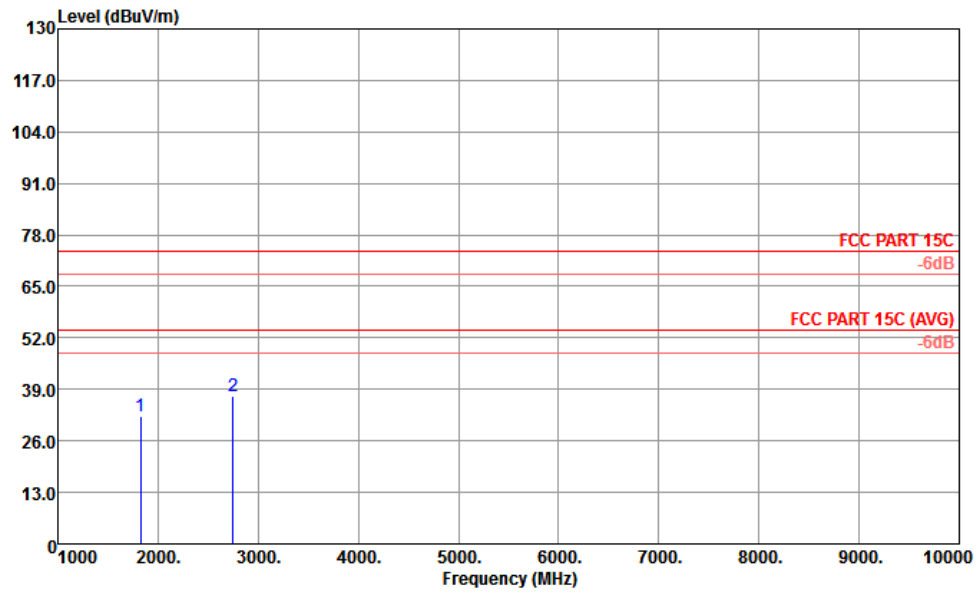


Site : 03CH02-KS
Condition : FCC PART 15C 3m 3117 SN 75959 HORIZONTAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	cm	deg	
					Factor					
1	1828.00	32.63	-41.37	74.00	32.35	29.02	4.86	33.60	---	Peak
2	2746.00	36.83	-37.17	74.00	30.98	32.25	6.02	32.42	---	Peak

Note:

1. Average measurement was not performed if peak level went lower than the average limit.
2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.



Site : 03CH02-KS
Condition : FCC PART 15C 3m 3117 SN 75959 VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor			
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	1828.00	32.09	-41.91	74.00	31.81	29.02	4.86	33.60	---	Peak
2	2746.00	37.46	-36.54	74.00	31.61	32.25	6.02	32.42	---	Peak

Note:

1. Average measurement was not performed if peak level went lower than the average limit.
2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.



3.4 Antenna Requirements

3.4.1 Standard Applicable

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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 the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited

3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44G,MAX 30dB	Apr. 16, 2019	Apr. 29, 2019~Jun. 24, 2019	Apr. 15, 2020	Conducted (TH01-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr. 19, 2018	Apr. 02, 2019	Apr. 18, 2019	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 12, 2018	Apr. 02, 2019	Oct. 11, 2019	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Nov. 19, 2018	Apr. 02, 2019	Nov. 18, 2019	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2018	Apr. 02, 2019	Oct. 11, 2019	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Ma x 30dBm	Aug. 06, 2018	May 15, 2019	Aug. 05, 2019	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44G,MAX 30dB	Apr. 16, 2019	May 15, 2019	Apr. 15, 2020	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 19, 2018	May 15, 2019	Oct. 18, 2019	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	23182	30MHz~2GHz	Dec. 29, 2018	May 15, 2019	Dec. 28, 2019	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 27, 2019	May 15, 2019	Jan. 26, 2020	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz~1GHz	Aug. 06, 2018	May 15, 2019	Aug. 05, 2019	Radiation (03CH02-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5G Hz	Apr. 15, 2019	May 15, 2019	Apr. 14, 2020	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	May 15, 2019	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	May 15, 2019	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	May 15, 2019	NCR	Radiation (03CH02-KS)

NCR: No Calibration Required



5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.9dB
--	-------

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.9dB
--	-------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 10000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0dB
--	-------