FCC 47 CFR PART 15 SUBPART B

(ICES-003) TEST REPORT

Test Report No.	**: OT-215-RED-235**
Reception No.	**: 2104002293**
Applicant	**: Audio-Technica Corporation**
Address	**: (194-8666) 2-46-1 Nishi-naruse, Machida, Tokyo**
Manufacturer	**: Audio-Technica Corporation**
Address	**: (194-8666) 2-46-1 Nishi-naruse, Machida, Tokyo**
Type of Equipment	**: STEREO TRANSMITTER**
Model Name	**: ATW-T3205DF2**
Multiple Model Name	**: N/A**
FCC ID	**: JFZT3205DF2**
Serial number	**: N/A**
Total page of Report	**: 20 pages (including this page)**
Date of Incoming	**: May 18, 2021**
Date of Issuing	**: May 31, 2021**

SUMMARY

The equipment complies with the requirement of ***FCC CFR 47 Part 15 Subpart B, Section 15.101. and ICES-003 Issue 7 / CAN/CSA-CISPR 32:17***

This test report contains only the results of a single test of the sample supplied for the examination.

It is not a general valid assessment of the features of the respective products of the mass-production.

Reviewed by: Eung-Chan, Kim / General Manager
ONETECH Corp.

Approved by: Gea-Won, Lee / Exe. Managing Director
ONETECH Corp.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

CONTENTS

Page

1. VERIFICATION OF COMPLIANCE 4

2. TEST FACILITY 5

3. PRODUCT INFORMATION 6

3.1 DESCRIPTION OF EUT 6
3.2 MODEL DIFFERENCES 6
3.3 SUPPORT EQUIPMENT 6
3.4 SYSTEM CONFIGURATION 6
3.5 CABLE DESCRIPTION 7
3.6 EQUIPMENT MODIFICATIONS 7

4. DESCRIPTION OF TESTS 8

4.1 TEST STANDARDS AND RESULT 8
4.2 TEST CONDITION 8
4.3 CONDUCTED EMISSION 9
4.4 RADIATED EMISSION 9

5. FINAL RESULT OF MEASUREMENT 10

5.1 CONDUCTED EMISSION TEST 10
5.1.1 Operating Environment 10
5.1.2 Test Setup 10
5.1.3 Measurement uncertainty 10
5.1.4 Limit 10
5.1.5 Test Equipment used 10
5.1.6 Test Data 11
5.2 RADIATED EMISSION TEST 13
5.2.1 Operating Environment 13
5.2.2 Test Setup 13
5.2.3 Measurement uncertainty 13
5.2.4 Limit 14
5.2.5 Test Equipment used 15
5.2.6 Test Data 16

6. SAMPLE CALCULATIONS 20

APPENDIX A – LABELLING REQUIREMENTS / INFORMATION TO THE USER IN USER'S MANUAL

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

Revision History

Rev. No.	Issued Report No.	Issued Date	Revisions	Section Affected
0	OT-215-RED-235	May 31, 2021	Initial Issue	All

* Please contact us (e-mail: info@onetech.co.kr) for verification of this test report.

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1. VERIFICATION OF COMPLIANCE

-. APPLICANT : Audio-Technica Corporation

-. ADDRESS : (194-8666) 2-46-1 Nishi-naruse, Machida, Tokyo

-. Manufacturer : Audio-Technica Corporation

-. ADDRESS : (194-8666) 2-46-1 Nishi-naruse, Machida, Tokyo

-. Factory : AUDIO-TECHNICA HAINING CO.,LTD

-. ADDRESS : No.6 Haihua Road Economic Development Zone Haining Zhejiang China

-. MODEL NAME : ATW-T3205DF2

-. SERIAL NUMBER : N/A

-. BRAND/TRADE NAME : audio-technica

-. DATE : May 31, 2021

EQUIPMENT CLASS	Class B digital devices
E.U.T. DESCRIPTION	STEREO TRANSMITTER
MEASUREMENT PROCEDURES	ANSI C63.4: 2014
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Supplier's Declaration of Conformity (SDoC)
STANDARDS	FCC Part 15, Section 15.101 (Class B) Canadian Standard ICES-003 Issue 7
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	None
FINAL TEST WAS CONDUCTED ON	10 m Semi anechoic chamber

ONETECH Corp. tested the above equipment in accordance with the requirements set forth in the above standard. The test results show that equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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2. TEST FACILITY

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at:

1) 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea

2) 12-5, Jinsaegol-gil 75 beon-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-20122/ C-14617/ G-10666/ T-11842

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

-. Site Accreditation:

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation No. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

These measurement tests were conducted at Onetech Corp.

The 10 m semi anechoic chamber and conducted measurement facilities are located on at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.

Onetech Corp.
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Tel: +82-31-799-9500
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3. PRODUCT INFORMATION

3.1 Description of EUT

The Audio-Technica Corporation, Model ATW-T3205DF2 (referred to as the EUT in this report) is a STEREO TRANSMITTER. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Metal & Plastic
LIST OF EACH OSC. or CRY. FREQ. (FREQ. >= 1 MHz)	1 025.875 MHz
RF FREQUENCY	470 ~ 608 MHz
P. C. Board name	-
NUMBER OF PCB LAYERS	Main Board: 4 Layers Display Board: 2 Layers
ELECTRICAL RATING	DC 12 V / 1 A
EXTERNAL CONNECTOR	RF output jack, LOOP OUT (LEFT), LOOP OUT (RIGHT), IN PUT L/1(MONO), IN PUT R/2, Network interface, Power input jack

3.2 Model Differences

-. The following lists consist of the added models and their differences.: None

3.3 Support Equipment

The model numbers for all the equipment that were used in the tested system is:

Description	Model	Manufacturer	Connected to
STEREO TRANSMITTER (EUT)	ATW-T3205DF2	Audio-Technica Corporation	ADAPTER, Audio Analyzer, Notebook PC, Speaker, Antenna
ADAPTER (EUT)	AD-SC1210AO	Audio-Technica Corporation	EUT
Audio Analyzer	8903B	HP	EUT, Receiver
Receiver	ATW-R3205DF2	Audio-Technica Corporation	Audio Analyzer
Notebook PC	80XH	LENOVO	EUT
Speaker	BZ-M1950	Britz	EUT
Antenna	N/A	Audio-Technica Corporation	EUT

3.4 System Configuration

DEVICE TYPE	MODEL/PART NUMBER	MANUFACTURER	FCC ID
STEREO TRANSMITTER	ATW-T3205DF2	Audio-Technica Corporation	JFZT3205DF2
ADAPTER (EUT)	AD-SC1210AO	Audio-Technica Corporation	-

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3.5 Cable Description

Ports Name	Shielded	Ferrite Bead	Metal Shell	Length (m)	Connected to
Power input jack	Y	N	N	1.2	ADAPTER
Network interface	Y	N	N	3.0	Notebook PC
LOOP OUT (LEFT)	Y	N	N	3.0	Speaker
LOOP OUT (RIGHT)	Y	N	N	3.0	LINE
IN PUT L/1(MONO)	Y	N	N	3.0	Audio Analyzer
IN PUT R/2	Y	N	N	3.0	LINE
RF output jack	-	-	-	-	Antenna

3.6 Equipment Modifications

-. None

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4. DESCRIPTION OF TESTS

4.1 Test standards and result

Test Items	Applied Standards	Results
Conducted Emission	ANSI C63.4: 2014 CAN/CSA-CISPR 32:17	C
Radiated Emission	ANSI C63.4: 2014 CAN/CSA-CISPR 32:17	C
C=Comply N/C=Not Comply N/T=Not Tested N/A=Not Applicable		

4.2 Test Condition

The test conditions of the noted test mode(s) in this test report are;

-. Tested by checking SINAD value using receiver and Audio Analyzer.

-. Test Voltage / Frequency: AC 120 V / 60 Hz

-. Test Mode(s)

Operating Mode 1	Normal operating mode

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4.3 Conducted Emission

The EUT was placed on a non-conductive 2.5 m × 1.5 m table, which is 0.8 m in height above the reference ground plane and 0.4 m away from the vertical conducting plane (over 2 m × 2 m) that is bonded to the reference ground plane.

The power of EUT is fed through a 50 Ω/ 50 μH + 5 Ω LISN and all support equipment is powered from another LISN. Powers to the LISN are filtered by high-current high insertion loss power line filter.

Sufficient time for EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.

The RF output of the LISN was connected to the EMI test receiver.

Exploratory measurements were conducted to identify the highest emission by operating the EUT in a range of typical modes of operation, cable positions, system configuration and arrangement.

Based on exploratory measurements, the final measurements were conducted at the worst test conditions.

Exploratory measurements were scanned using Peak mode of EMI Test receiver from 150 kHz to 30 MHz with 20 ms sweep time. The final measurements were measured with Quasi-Peak and CISPR-Average mode.

The bandwidth of EMI Test Receiver was set to 9 kHz. Interface cables were connected to the available interface ports of the test unit. Excess cable lengths were bundled at center with 30 cm ~ 40 cm.

4.4 Radiated Emission

Exploratory Radiated measurements were conducted at the 3 m semi anechoic chamber in order to identify the highest emission by operating the EUT in a range of typical modes of operation, cable positions, system configuration and arrangement.

Based on exploratory measurements, the final measurements were conducted at the worst test conditions.

Final measurements were made at 10 m semi anechoic chamber that complies with CISPR 16/ANSI C63.4.

Exploratory measurements were scanned using Peak mode of EMI Test receiver and final measurements were measured with Quasi-Peak mode (Below 1 GHz) and Peak & CISPR-Average mode (Above 1 GHz).

The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

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5. FINAL RESULT OF MEASUREMENT

Exploratory measurement was done in normal operation mode. And the final measurement was selected for the maximized emission level.

5.1 Conducted Emission Test

5.1.1 Operating Environment

Temperature : 21.4 °C

Relative humidity : 44.6 % R.H.

5.1.2 Test Setup

The EUT and all local support equipment were placed on a non-conductive table, 0.8 m height above the reference ground plane. The EUT was fed by dc power supply through a 50 Ω / 50 μH + 5 Ω Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

5.1.3 Measurement uncertainty

Conducted emission, quasi-peak detection : ± 3.9 dB

Conducted emission, CISPR average detection : ± 3.9 dB

Measurement uncertainty is calculated in accordance with CISPR 16-4-2. The measurement uncertainty is given with a confidence of 95 % with the coverage factor, k = 2.

5.1.4 Limit

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	CISPR 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		

5.1.5 Test Equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	ESCI	Rohde & Schwarz	Test Receiver	101420	Mar. 23, 2021 (1Y)
■ -	LT32C/10	Afj Instruments	LISN	32032039322	Oct. 22, 2020 (1Y)
■ -	11947A	Hewlett Packard	Transient Limiter	3107A02762	Mar. 22, 2021 (1Y)

All test equipment used is calibrated on a regular basis.

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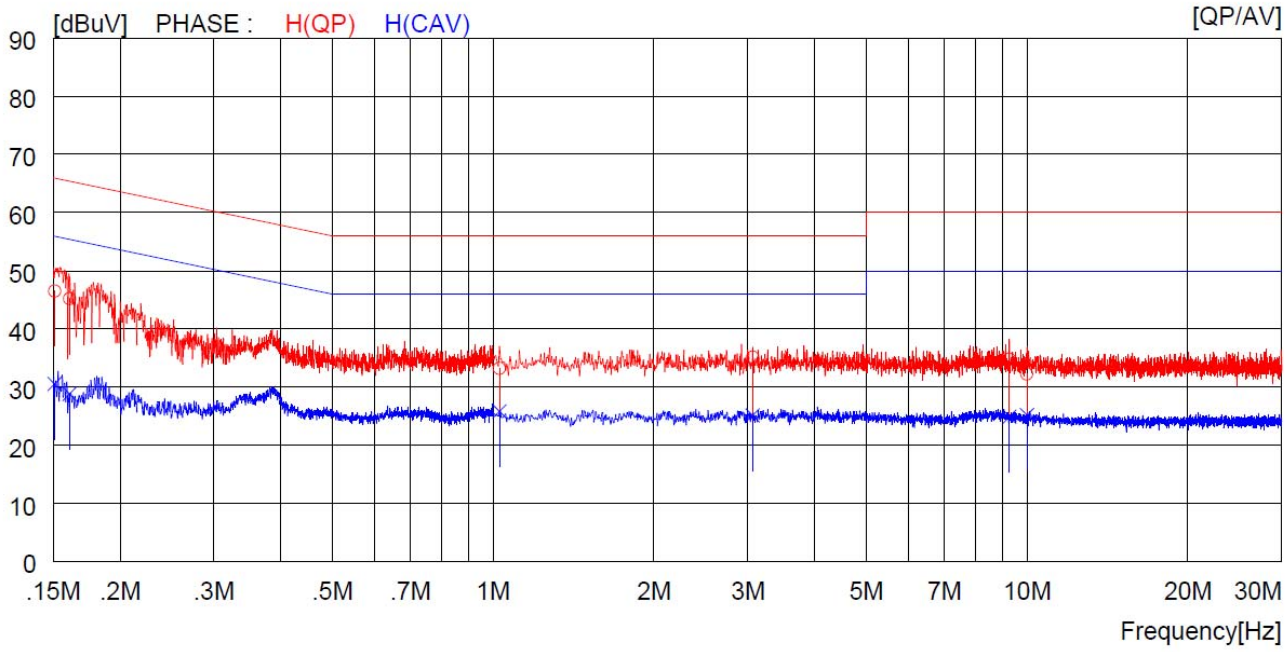
5.1.6 Test Data

-. Test Result : Pass

Tested by: Sun-Teak, Oh / Project Engineer

Operating Mode 1 (Normal operating mode)			
Frequency range	: 0.15 MHz ~ 30 MHz	Test Date	: May 21, 2021
Resolution bandwidth	: 9 kHz	Tested Line	: HOT LINE



NO	FREQ	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15100	25.0	----	21.5	46.5	----	65.9	----	19.4	----	H(QP)
2	0.16100	23.7	----	21.5	45.2	----	65.4	----	20.2	----	H(QP)
3	1.02800	11.6	----	21.6	33.2	----	56.0	----	22.8	----	H(QP)
4	3.06400	13.4	----	21.7	35.1	----	56.0	----	20.9	----	H(QP)
5	9.27000	13.1	----	21.7	34.8	----	60.0	----	25.2	----	H(QP)
6	9.99000	10.5	----	21.7	32.2	----	60.0	----	27.8	----	H(QP)
7	0.15100	----	9.0	21.5	----	30.5	----	55.9	----	25.4	H(CAV)
8	0.16100	----	7.3	21.5	----	28.8	----	55.4	----	26.6	H(CAV)
9	1.02800	----	4.2	21.6	----	25.8	----	46.0	----	20.2	H(CAV)
10	3.06400	----	3.4	21.7	----	25.1	----	46.0	----	20.9	H(CAV)
11	9.27000	----	3.2	21.7	----	24.9	----	50.0	----	25.1	H(CAV)
12	9.99000	----	3.5	21.7	----	25.2	----	50.0	----	24.8	H(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The result level in above table is included the transducer factor that means insertion loss (AMN), cable loss and attenuator.

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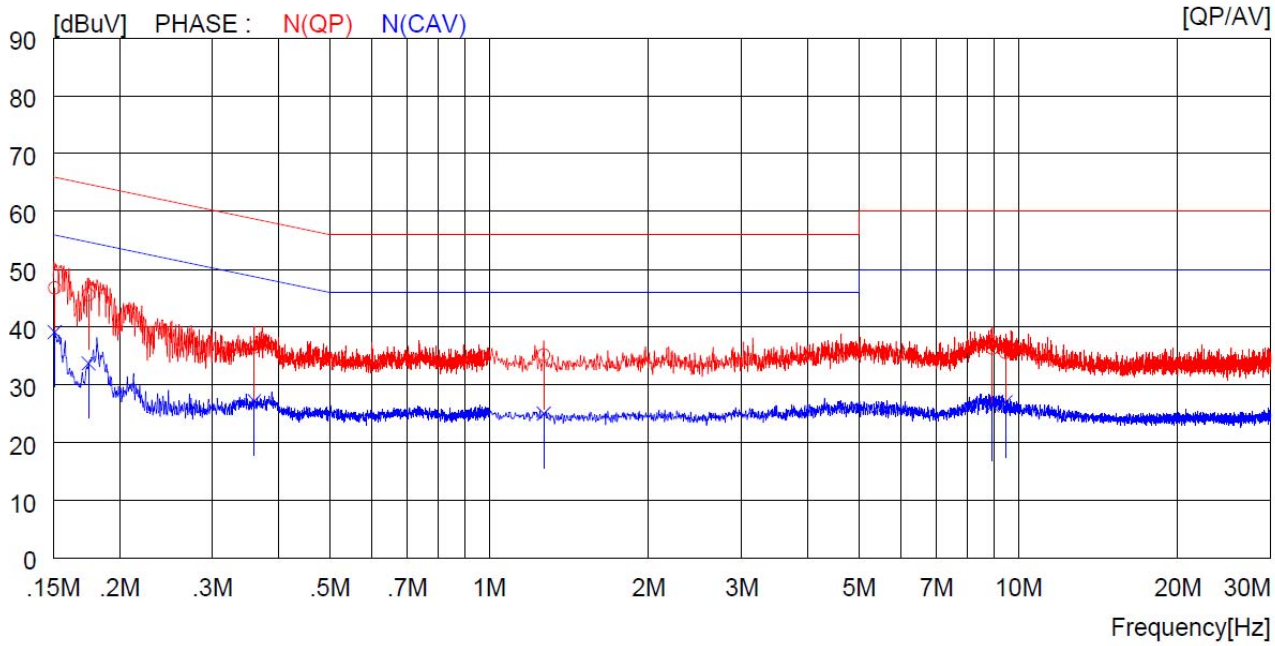
Operating Mode 1 (Normal operating mode)			
Frequency range	: 0.15 MHz ~ 30 MHz	Test Date	: May 21, 2021
Resolution bandwidth	: 9 kHz	Tested Line	: NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15100	25.3	----	21.5	46.8	----	65.9	----	19.1	----	N(QP)
2	0.17500	24.1	----	21.5	45.6	----	64.7	----	19.1	----	N(QP)
3	0.36000	15.0	----	21.5	36.5	----	58.7	----	22.2	----	N(QP)
4	1.26800	13.6	----	21.6	35.2	----	56.0	----	20.8	----	N(QP)
5	8.93000	14.6	----	21.7	36.3	----	60.0	----	23.7	----	N(QP)
6	9.45000	13.9	----	21.7	35.6	----	60.0	----	24.4	----	N(QP)
7	0.15100	----	17.6	21.5	----	39.1	----	55.9	----	16.8	N(CAV)
8	0.17500	----	12.2	21.5	----	33.7	----	54.7	----	21.0	N(CAV)
9	0.36000	----	5.7	21.5	----	27.2	----	48.7	----	21.5	N(CAV)
10	1.26800	----	3.4	21.6	----	25.0	----	46.0	----	21.0	N(CAV)
11	8.93000	----	4.7	21.7	----	26.4	----	50.0	----	23.6	N(CAV)
12	9.45000	----	5.3	21.7	----	27.0	----	50.0	----	23.0	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The result level in above table is included the transducer factor that means insertion loss (AMN), cable loss and attenuator.

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5.2 Radiated Emission Test

5.2.1 Operating Environment

Temperature : 22.3 °C

Relative humidity : 49.6 % R.H.

5.2.2 Test Setup

The radiated emissions measurements were on the 10 m semi anechoic chamber. The EUT and all local support equipments were placed on a non-conductive turntable approximately 0.8 m above the ground plane.

The frequency spectrum from 30 MHz to 1 000 MHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

5.2.3 Measurement uncertainty

Radiated emission electric field intensity, 30 MHz ~ 1 000 MHz : ± 4.6 dB

Radiated emission electric field intensity, 1 GHz ~ 6 GHz : ± 5.9 dB

Measurement uncertainty is calculated in accordance with CISPR 16-4-2. The measurement uncertainty is given with a confidence of 95 % with the coverage factor, k = 2.

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5.2.4 Limit

-. FCC Part 15 Subpart B

Frequency of Emission (MHz)	Resolution bandwidth	Field strength @ 3 m (dBμV/m)	
		Quasi-peak	
30 ~ 88	120 kHz	40.0	
88 ~ 216		43.5	
216 ~ 230		46.0	
230 ~ 960		46.0	
960 ~ 1 000		54.0	
		Peak Limit	CISPR Average Limit
> 1 000	1 MHz	74.0	54.0

*Alternative to Limits for radiated disturbance of CISPR32 class B ITE at a measuring distance of 10 m

Frequency of Emission (MHz)	Resolution bandwidth	Field strength @ 10 m (dBμV/m)
		Quasi-peak
30 ~ 230	120 kHz	30.0
230 ~ 1 000		37.0

-. ICES-003

Frequency of Emission (MHz)	Resolution bandwidth	Field strength @ 3 m (dBμV/m)	Field strength @ 10 m (dBμV/m)
		Quasi-peak	Quasi-peak
30 ~ 88	120 kHz	40.0	30.0
88 ~ 216		43.5	33.1
216 ~ 230		46.0	35.6
230 ~ 960		47.0	37.0
960 ~ 1 000		54.0	43.5
Frequency of Emission (MHz)	Resolution bandwidth	Field strength @ 3 m (dBμV/m)	
		Peak Limit	CISPR Average Limit
> 1 000	1 MHz	74.0	54.0

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5.2.5 Test Equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	ESR	Rohde & Schwarz	Test Receiver	101470	Oct. 20, 2020 (1Y)
■ -	HLP-2008	TDK RF Solutions	Hybrid Antenna	131316	Feb. 27, 2020 (2Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	1201	Jan. 28, 2021 (1Y)
■ -	310N	Sonoma Instrument	Amplifier	312544	Mar. 16, 2021 (1Y)
■ -	PAM-118A	Com-Power	Pre-Amplifer	18040081	Oct. 12, 2020 (1Y)
■ -	CO3000	Innco Systems GmbH	Controller	N/A	N/A
■ -	DT3000	Innco Systems GmbH	Turn Table	N/A	N/A

All test equipment used is calibrated on a regular basis.

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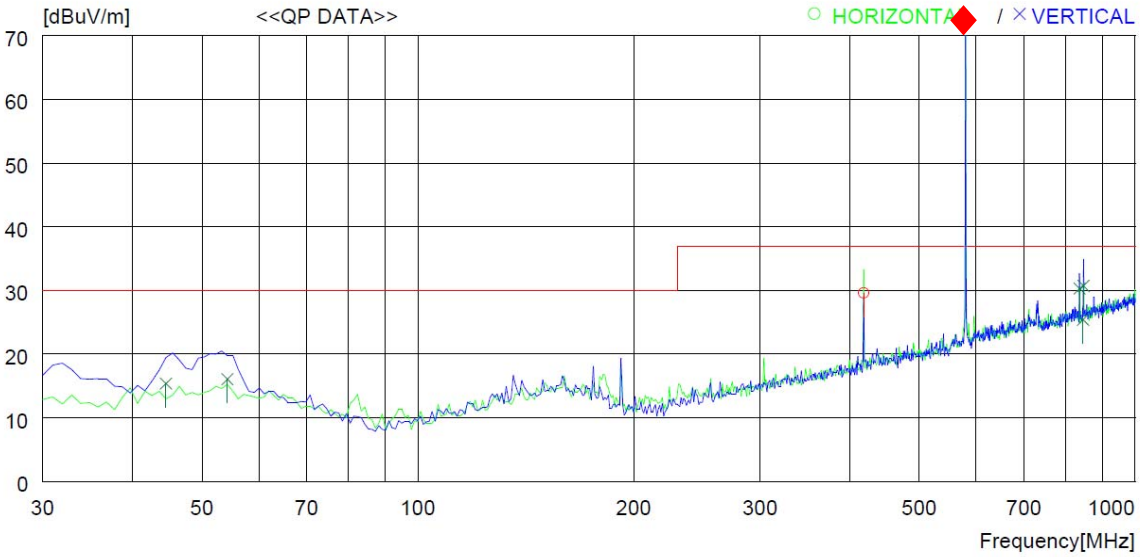
5.2.6 Test Data

-. Test Result : Pass

Tested by: Sun-Teak, Oh / Project Engineer

Operating Mode 1 (Normal operating mode)			
Frequency range	: 30 MHz ~ 1 000 MHz	Applied Standards	: FCC Part 15 Subpart B
Resolution bandwidth	: 120 kHz	Test Date	: May 24, 2021
Detector Mode	: Quasi-Peak	Measurement distance	: 10 m



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	418.001	36.1	22.0	4.5	33.0	29.6	37.0	7.4	300	220
----- Vertical ------										
2	44.550	27.6	19.4	1.5	33.1	15.4	30.0	14.6	100	109
3	54.250	28.0	19.6	1.6	33.1	16.1	30.0	13.9	200	248
4	836.061	28.5	28.5	6.3	33.0	30.3	37.0	6.7	200	217
5	845.761	23.4	28.6	6.4	33.0	25.4	37.0	11.6	100	0
6	846.731	28.7	28.6	6.4	33.0	30.7	37.0	6.3	200	359

Remark: Margin (dB) = Limit – Result

Result = Reading Quasi-Peak + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

* Radiated emissions (Tx/Rx frequencies) from the transceiver shall be ignored.

470 ~ 608 MHz

* Exclusion band Carrier Frequency:◆ , Exclusion band Harmonic Frequency:◆

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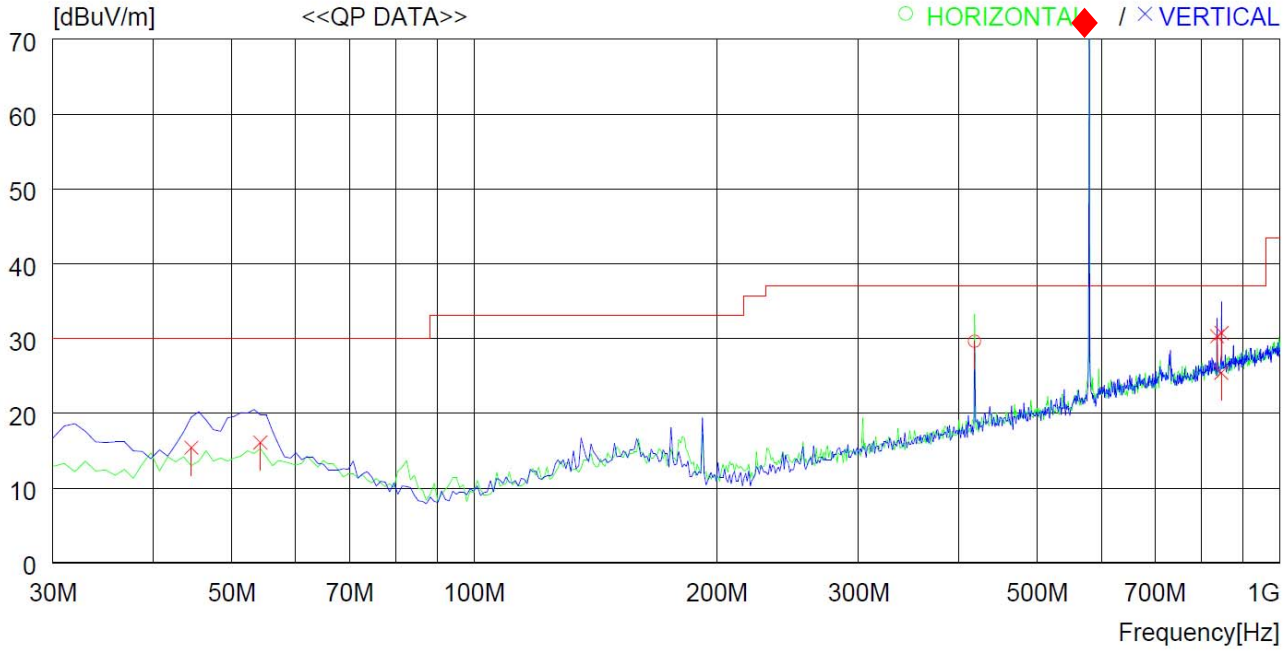
Operating Mode 1 (Normal operating mode)			
Frequency range	: 30 MHz ~ 1 000 MHz	Applied Standards	: ICES-003 Issue 7
Resolution bandwidth	: 120 kHz	Test Date	: May 24, 2021
Detector Mode	: Quasi-Peak	Measurement distance	: 10 m



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	418.001	36.1	22.0	4.5	33.0	29.6	37.0	7.4	300	220
----- Vertical ------										
2	44.550	27.6	19.4	1.5	33.1	15.4	30.0	14.6	100	109
3	54.250	28.0	19.6	1.6	33.1	16.1	30.0	13.9	200	248
4	836.061	28.5	28.5	6.3	33.0	30.3	37.0	6.7	200	217
5	845.761	23.4	28.6	6.4	33.0	25.4	37.0	11.6	100	0
6	846.731	28.7	28.6	6.4	33.0	30.7	37.0	6.3	200	359

Remark: Margin (dB) = Limit – Result

Result = Reading Quasi-Peak + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

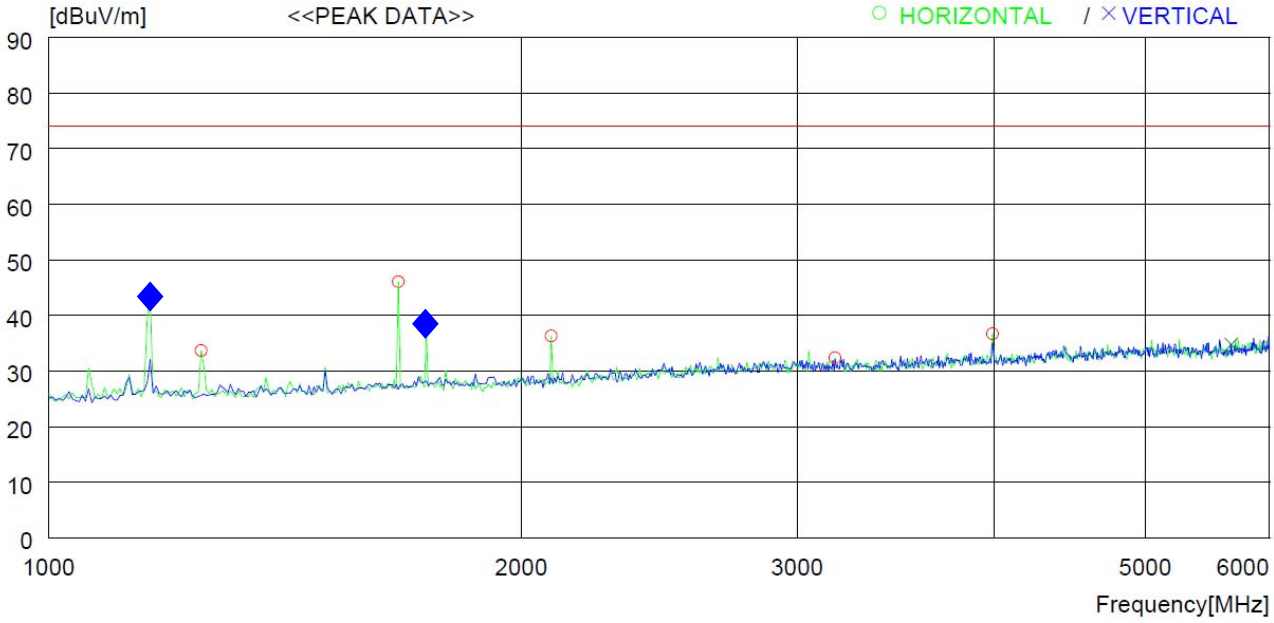
* Radiated emissions (Tx/Rx frequencies) from the transceiver shall be ignored.

470 ~ 608 MHz

* Exclusion band Carrier Frequency:◆ , Exclusion band Harmonic Frequency:◆

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

Operating Mode 1 (Normal operating mode)			
Frequency range	: 1 GHz ~ 6 GHz	Test Date	: May 24, 2021
Resolution bandwidth	: 1 MHz	Measurement distance	: 3 m
Detector Mode	: Peak		



No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	1250.000	46.5	24.9	7.2	44.9	33.7	74.0	40.3	100	359
2	1670.000	57.2	25.6	8.4	45.1	46.1	74.0	27.9	100	359
3	2090.000	45.7	26.5	9.4	45.3	36.3	74.0	37.7	100	359
4	3170.000	37.8	28.6	11.9	45.9	32.4	74.0	41.6	100	359
5	3995.000	39.7	29.7	13.6	46.3	36.7	74.0	37.3	100	359
----- Vertical ------										
6	5670.000	32.4	32.0	16.6	46.2	34.8	74.0	39.2	100	80

Remark: Margin (dB) = Limit – Result

Result = Reading Peak + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

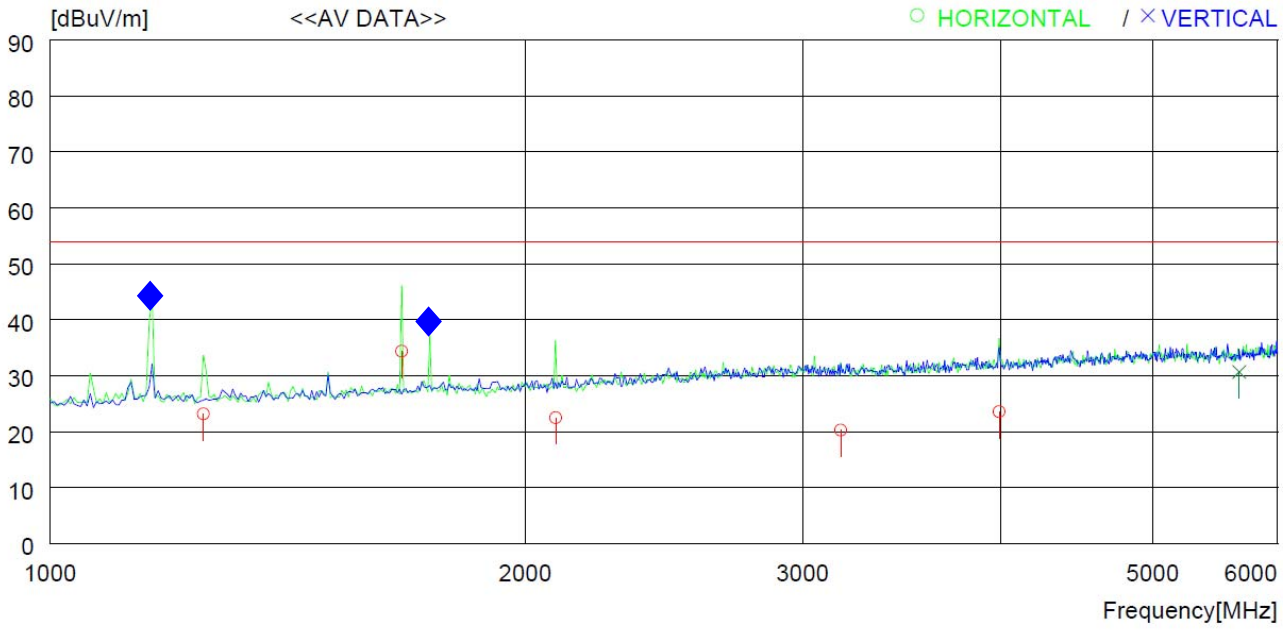
* Radiated emissions (Tx/Rx frequencies) from the transceiver shall be ignored.

470 ~ 608 MHz

* Exclusion band Carrier Frequency: ◆ , Exclusion band Harmonic Frequency: ◆

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

Operating Mode 1 (Normal operating mode)			
Frequency range	: 1 GHz ~ 6 GHz	Test Date	: May 24, 2021
Resolution bandwidth	: 1 MHz	Measurement distance	: 3 m
Detector Mode	: CISPR-Average		



No.	FREQ	READING AV	ANT FACTOR	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal ------										
1	1250.133	36.0	24.9	7.2	44.9	23.2	54.0	30.8	100	359
2	1670.040	45.5	25.6	8.4	45.1	34.4	54.0	19.6	100	359
3	2090.616	31.9	26.5	9.4	45.3	22.5	54.0	31.5	100	359
4	3170.050	25.7	28.6	11.9	45.9	20.3	54.0	33.7	100	359
5	3995.311	26.6	29.7	13.6	46.3	23.6	54.0	30.4	100	359
----- Vertical ------										
6	5670.550	28.3	32.0	16.6	46.2	30.7	54.0	23.3	100	80

Remark: Margin (dB) = Limit – Result

Result = Reading CISPR-Average + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

* Radiated emissions (Tx/Rx frequencies) from the transceiver shall be ignored.

470 ~ 608 MHz

* Exclusion band Carrier Frequency:◆ , Exclusion band Harmonic Frequency:◆

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

6. SAMPLE CALCULATIONS

$$dB\mu V = 20 \log_{10} (\mu V)$$

Margin = Limit - Result

-. Example 1: 0.15100 MHz

Class B Limit	= 55.9 dBμV (CISPR-Average)
Reading	= 17.6 dBμV
Correction Factor	= LISN + Cable Loss + Pulse Limiter
	= 21.5 dB
Total	= 39.1 dBμV
Margin	= 55.9 dBμV – 39.1 dBμV
	= 16.8 dB

-. Example 2: 846.731 MHz

Class B Limit	= 37.0 dBμV/m (Quasi-Peak)
Reading	= 28.7 dBμV
Correction Factor	= Antenna Factor (28.6 dB/m) + Cable Loss (6.4 dB) - Amp. Gain (33.0 dB)
	= 2.0 dB
Total	= 30.7 dBμV/m
Margin	= 37.0 dBμV/m – 30.7 dBμV/m
	= 6.3 dB

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

APPENDIX A

[LABELLING REQUIREMENTS]

[INFORMATION TO THE USER IN USER'S MANUAL]

LABELLING REQUIREMENTS

FCC Part 15 SUBPART B § 15.19 Labeling requirements

(a) In addition to the requirements in part 2 of this chapter, a device subject to certification, or Supplier's Declaration of Conformity shall be labeled as follows:

(1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under part 73 of this chapter, land mobile operation under part 90 of this chapter, etc., shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

(2) A stand-alone cable input selector switch, shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules for use with cable television service.

(3) All other devices shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

(4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified under paragraph (a) of this section is required to be affixed only to the main control unit.

(5) When the device is so small or for such use that it is impracticable to label it with the statement specified under paragraph (a) of this section in a font that is four-point or larger, and the device does not have a display that can show electronic labeling, then the information required by this paragraph shall be placed in the user manual and must also either be placed on the device packaging or on a removable label attached to the device.

For FCC Certification

If the device is subject to Certification: (1) Section 2.925 contains information on identification of the equipment; (2) include a label bearing an FCC Identifier (FCC ID) (Section 2.926) and (3) include the appropriate compliance statement in Section 15.19(a). If the labelling area is considered too small and therefore it is impractical (smaller than the palm of the hand) to display the compliance statement, then the statement may be placed in the user manual or product packaging. However, the device must still be labelled with the FCC ID. If the device is unquestionably too small for the FCC ID to be readable (smaller than 4-6 points), the FCC ID may be placed in the user manual. However, it must be determined that the device itself is too small – the label area allocated to the FCC ID may not be reduced because of over crowded identification of other product and regulatory information. Justification for placing the FCC ID in the manual must be submitted with the initial application for certification for review and approval.

For FCC Supplier's Declaration of Conformity (SDOC)

(a) If a product must be tested and authorized under Supplier's Declaration of Conformity, a compliance information statement shall be supplied with the product at the time of marketing or importation, containing the following information:

(1) Identification of the product, e.g., name and model number;

(2) A compliance statement as applicable, e.g., for devices subject to part 15 of this chapter as specified in §15.19(a)(3) of this chapter, that the product complies with the rules; and

(3) The identification, by name, address and telephone number or Internet contact information, of the responsible party, as defined in §2.909. The responsible party for Supplier's Declaration of Conformity must be located within the United States.

(b) If a product is assembled from modular components (e.g., enclosures, power supplies and CPU boards) that, by themselves, are authorized under a Supplier's Declaration of Conformity and/or a grant of certification, and the assembled product is also subject to authorization under Supplier's Declaration of Conformity but, in accordance with the applicable regulations, does not require additional testing, the product shall be supplied, at the time of marketing or importation, with a compliance information statement containing the following information:

(1) Identification of the assembled product, e.g., name and model number.

(2) Identification of the modular components used in the assembly. A modular component authorized under Supplier's Declaration of Conformity shall be identified as specified in paragraph (a)(1) of this section. A modular component authorized under a grant of certification shall be identified by name and model number (if applicable) along with the FCC Identifier number.

(3) A statement that the product complies with part 15 of this chapter.

(4) The identification, by name, address and telephone number or Internet contact information, of the responsible party who assembled the product from modular components, as defined in §2.909. The responsible party for Supplier's Declaration of Conformity must be located within the United States.

(5) Copies of the compliance information statements for each modular component used in the system that is authorized under Supplier's Declaration of Conformity.

(c) The compliance information statement shall be included in the user's manual or as a separate sheet. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form. The information may be provided electronically as permitted in §2.935.

For ICES-003

The manufacturer, importer or supplier shall meet the labelling requirements set out in this section and in Notice 2014-DRS1003 for electronic labelling for every unit:

i. prior to marketing in Canada, for ITE manufactured in Canada and

ii. prior to importation into Canada, for imported ITE.

Each unit of an ITE model shall bear a label (see below) that represents the manufacturer's or the importer's SDoC with Innovation, Science and Economic Development Canada's ICES-003. This label shall be permanently affixed to the ITE or displayed electronically and its text must be clearly legible. If the dimensions of the device are too small or if it is not practical to place the label on the ITE and electronic labelling has not been implemented, the label shall be, upon agreement with Innovation, Science and Economic Development Canada, placed in a prominent location in the user manual supplied with the ITE. The user manual may be in an electronic format and must be readily available.

Innovation, Science and Economic Development Canada ICES-003 Compliance Label:

CAN ICES-3 (*)/NMB-3(*)

* Insert either "A" or "B" but not both to identify the applicable Class of ITE.

PROPOSED LABEL

The label included following statement will be attached on product or the compliance statement can be observed in a prominent location in the instruction manual.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

PROPOSED LABEL

The label included following statement will be attached on product or the compliance statement can be observed in a prominent location in the instruction manual.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

INFORMATION TO THE USER IN USER'S MANUAL

For FCC: The instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

For a **Class A** digital device or peripheral

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

For a **Class B** digital device or peripheral

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one more of the following measures:

-. Reorient or relocate the receiving antenna.

-. Increase the separation between the equipment and receiver.

-. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-. Consult the dealer or an experienced radio/TV technician for help.

WARNING

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.