TEST REPORT

Dt&C

DT&C Co., Ltd.
42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042
Tel : 031-321-2664, Fax : 031-321-1664

1. Report No. : DREFCC2007-0174(1)

2. Client / Applicant

   • Name : Cresyn Co.,Ltd

   • Address : 5 Gangnam-daero 107-gil, Seocho-gu, Seoul, Korea (137-702)

3. Use of Report : Grant of Certification

4. Product Name / Model Name : Bluetooth Headphone / PPU-BN0600BK01
   (FCC ID : V2R-900LEGACY)

5. Test Standard : ANSI C 63.4 : 2014
   FCC Part 15 Subpart B
   (Other Class B digital devices & peripherals)

6. Date of Test : Jun. 23. 2020

7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

8. Testing Environment : Temperature (23) °C , Humidity (44 ~ 55) % R.H.

9. Test Result : Refer to the attached Test Result

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Affirmation	Tested by Name : JunSeo Park (Signature)	Reviewed by Name : KyoungHwan Bae (Signature)

Jul. 20. 2020

DT&C Co., Ltd.

Not abided by KS Q ISO / IEC 17025 and KOLAS accreditation.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

CONTENTS

1. General Remarks

This report contains the result of tests performed by :

DT&C Co., Ltd.
42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042
http://www.dtnc.net
Tel: +82-31-321-2664 Fax: +82-31-321-1664

2. Test Laboratory

DT&C Co., Ltd. has been accredited / filed / authorized by the agencies listed in the following table;

Certificate	Nation	Agency	Code	Remark
Accreditation	Korea	KOLAS	393	ISO/IEC 17025
	South Africa	SABS	0006	ISO/IEC 17025
	Ghana	NCA	NCA agreement 23rd,Oct,2018	-
Site Filing	USA	FCC	KR0034 101842 678747, 596748, 804488, 165783	Accredited 2.948 Listed
	Canada	IC	5740A-3 5740A-4	Registered
	Japan	VCCI	C-1427, R-3385, R-14076, R-4180, R-4496, T-1442, G-10338, G-10754, G-10815, G-20051	Registered
Certification	Korea	KC	KR0034	Designation
	Germany	TUV	CARAT 089112 0006 Rev.00	ISO/IEC 17025
	Russia	RMRS	17.10189.296	ISO/IEC 17025

Quality control in the testing laboratory is implemented as per ISO/IEC 17025
which is the “General requirements for the competent of calibration and testing laboratory”.

3. General Information of EUT

Applicant	Cresyn Co.,Ltd 5 Gangnam-daero 107-gil, Seocho-gu, Seoul, Korea (137-702)
Manufacturer	Cresyn CRESYN Electronics(DongGuan) Co.,LTD. Number 10, LIYUDI Industrial Zone, LIN Village, TangXia Town, Dong-Guan, Guang-Dong, China
Factory	Cresyn CRESYN Electronics(DongGuan) Co.,LTD. Number 10, LIYUDI Industrial Zone, LIN Village, TangXia Town, Dong-Guan, Guang-Dong, China
Product Name	Bluetooth Headphone
Model Name	PPU-BN0600BK01
Add Model Name	PPU-BN0600WH01
Add Model Difference	PPU-BN0600BK01 (Black Color) , PPU-BN0600WH01 (White Color)
H/W version	V1.0
S/W version	V1.0
Maximum Internal Frequency	32 MHz
Rated Power	DC 3.7 V
FCC ID	V2R-900LEGACY
Remarks	Wireless Frequency - BT : 2,402 ~ 2,480 MHz

Related Submittal(s) / Grant(s)
Original submittal only

4. EUT Operations and Test Configurations

4.1 Principle of Configuration Selection

Emission :
The equipment under test (EUT) was configured to measure its highest possible radiation level.
The test modes were adapted accordingly in reference to the instructions for use.
For each testing mode different configurations were used,
Refer to the individual tests.

4.2 EUT Operation Mode

No.	Mode	Description
1	Normal Operation	The EUT under test is connected to a cell phone and an audio port while charging and is playing a 1kHz sound source.

4.3 Test Configuration Mode

No.	Mode	Description
1	Normal Operation	The EUT under test is charged with a C-type cable and is connected to the cell phone through an audio port.

4.4 Supported Equipment

Used*	Product Type	Manufacturer	Model	Remarks
AE	Cell Phone	Samsung electronics Inc.	SHV-E300S	R33D60CAZ6E
AE	Charger	Samsung electronics Inc.	EP-TA12KWK	RT4K406zS/B-E

*Abbreviations:
AE - Auxiliary/Associated Equipment, or
SIM - Simulator

4.5 EUT In/Output Port

Name	Type*	Cable Max. >3 m	Cable Shielded	Cable Back shell	Remarks
USB C	DC	0.5	Non shield	Plastic	Transmitter
AUX	I/O	1.3	Non shield	Plastic	Receiver

*Abbreviations:
AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port
TP = Telecommunication Ports

4.6 Test Voltage and Frequency

Case	Voltage (V)	Frequency (Hz)	Phases	Remarks
1	AC 120	60	Single	None

5. Test Summary

Test Items	Applied Standards	Results
Conducted Disturbance	ANSI C63.4 : 2014	**C**
Radiated Disturbance	ANSI C63.4 : 2014	**C**
C=Comply N/C=Not Comply N/T=Not Tested N/A=Not Applicable		

-Conducted Disturbance

Frequency [MHz]	Phase	Result [dBµV]	Detector	Limit [dBµV]	Margin [dB]
0.60005	L1	29.27	Quasi - Peak	56.00	26.73

-Radiated Disturbance

Frequency [MHz]	Pol.	Result [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]
17020.540	H	43.04	Quasi - Peak	54.00	10.96

6. Test Environment

Test Items	Test date (YYYY-MM-DD)	Temp. (℃)	Humidity (% R.H.)	Pressure (kPa)
Conducted Disturbance	2020-06-23	23	55	100.3
Radiated Disturbance	2020-06-23	23	44	-

7. Test Results : Emission

7.1 Conducted Disturbance

ANSI C63.4	Mains terminal disturbance voltage	Result
Method:	The AMN placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment were at least 0,8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN. The measuring port of the LISN for EUT was connected to spectrum analyzer. Using conducted emission test software, the emissions were scanned with peak detector mode. After scanning over the frequency range, suspected emissions were selected to perform final measurement. When performing final measurement, the receiver was used which has Quasi-Peak detector and CISPR Average detector. For (0.15 ~ 30) MHz frequency range, Quasi-Peak detector with 10 kHz RBW and 30 kHz VBW was used. By varying the configuration of the test sample and the cable routing it was attempted to maximize the emission.	**Comply**

Fully configured sample scanned over the following frequency range	**Frequency range on each side of line**	**Measurement Point**
	150 kHz to 30 MHz	**Mains**
EUT mode (Refer to clauses 4)	**Test configuration mode**	**1**
	EUT Operation mode	**1**

Limits – Class A

Frequency (MHz)	**Limit dBµV**	
	Quasi-Peak	**Average**
0.15 to 0.50	79	66
0.50 to 30	73	60

Limits – Class B

Frequency (MHz)	**Limit dBµV**	
	Quasi-Peak	**Average**
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Measurement Instrument					
Description	**Model**	**Manufacturer**	**Identifier**	**Cal. Date**	**Cal. Due**
MEASUREMENT SOFTWARE	EMI-C VER. 2.00.0171	TSJ	N/A	N/A	N/A
EMI TEST RECEIVER	ESCI	ROHDE&SCHWARZ	100364	2020.02.25	2021.02.25
TWO-LINE V-NETWORK	ENV216	ROHDE&SCHWARZ	101979	2019.12.06	2020.12.06
TRANSIENT LIMITER	TL-B0930A	EMCIS	11002	2019.08.30	2020.08.30

Mains terminal disturbance voltage _Measurement data			
Test configuration mode	**1**	**EUT Operation mode**	**1**
Test voltage (V)	**AC 120**	**Test Frequency (Hz)**	**60**

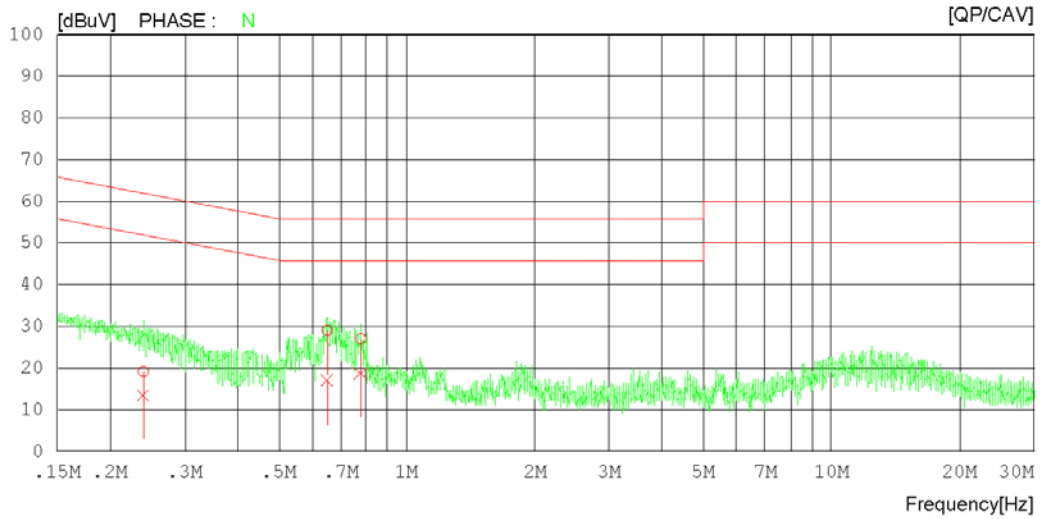
Results of Conducted Emission

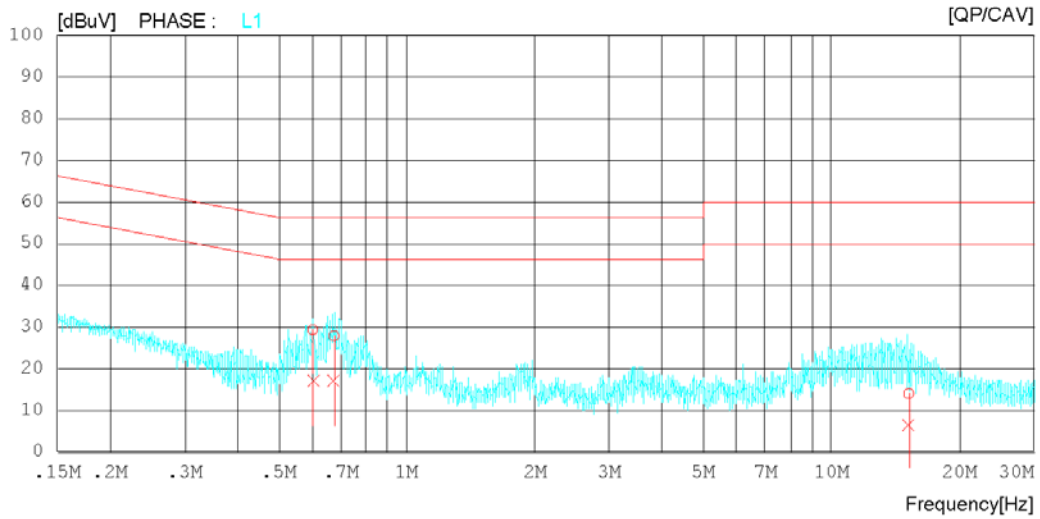
DT&C
Date 2020-06-23

Order No. DTNC2006-04614
Power Supply 120 VAC 60 Hz
Temp/Humi/Atm 23 'C 55 % R.H. 100.3 kPa
Test Condition Nomal Operation

Memo

LIMIT : CISPR32_B QP
CISPR32_B AV





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DT&C
Date 2020-06-23

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Power Supply 120 VAC 60 Hz
Temp/Humi/Atm 23 'C 55 % R.H. 100.3 kPa
Test Condition Nomal Operation

Memo

LIMIT : CISPR32_B QP
CISPR32_B AV

NO	FREQ	READING QP [dBuV]	READING CAV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT CAV [dBuV]	LIMIT QP [dBuV]	LIMIT CAV [dBuV]	MARGIN QP [dBuV]	MARGIN CAV [dBuV]	PHASE
	[MHz]										
1	0.23942	-0.64	-6.30	19.85	19.21	13.55	62.12	52.12	42.91	38.57	N
2	0.64934	8.83	-3.19	20.19	29.02	17.00	56.00	46.00	26.98	29.00	N
3	0.77988	6.95	-1.16	20.14	27.09	18.98	56.00	46.00	28.91	27.02	N
4	0.60005	9.03	-3.38	20.24	29.27	16.86	56.00	46.00	26.73	29.14	L1
5	0.67361	7.56	-3.44	20.17	27.73	16.73	56.00	46.00	28.27	29.27	L1
6	15.22220	-7.31	-14.64	21.16	13.85	6.52	60.00	50.00	46.15	43.48	L1

Calculation

N : Neutral phase, L1 : Live phase
C.FACTOR(dB) : Pulse Limiter(dB) + Cable loss(dB) + Insertion loss of LISN(dB)
Result(dBµV) : Reading Value(dBµV) + C.FACTOR(dB)
Margin(dB) : Limit(dBµV) - Result(dBµV)

7.2 Radiated Disturbance

ANSI C63.4	Radiated disturbance 30 MHz – 40 GHz	Result
Method: Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10 or 3 meter below 1GHz and 3 meter above 1GHz. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable. For final measurement below 1 GHz frequency range, Quasi-Peak detector with (RBW = 120 kHz Bandwidth) was used. For final measurement above 1 GHz frequency range, Peak detector with (RBW = 1 MHz Bandwidth) and CISPR Average detector with (RBW = 1 MHz Bandwidth) were used.		**Comply**

EUT mode (Refer to clauses 4)	**Test configuration mode**	**1**
	EUT Operation mode	**1**

Radiated Disturbance below 1 000 MHz

Frequency range (MHz)	**Quasi-peak limit dBµV/m**		
	Class A		**Class B**
	3 m distance	**10 m distance**	**3 m distance**
30 to 88	49.1	39.1	40
88 to 216	53.5	43.5	43.5
216 to 960	56.4	46.4	46
960 to 1 000	59.5	49.5	54

According to 15.109(g), as an alternative to the radiated emission limit shown above, digital devices may be shown to comply with the standards contained in Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22 shown.

Frequency range (MHz)	**Quasi-peak limit dBµV/m**	
	Class A (10 m distance)	**Class B (10 m distance)**
30 to 230	40	30
230 to 1 000	47	37

Radiated Disturbance for above 1 000 MHz at a measurement distance of 3 m

Frequency range (GHz)	**Peak limit dBµV/m**		**Average limit dBµV/m**	
	Class A	**Class B**	**Class A**	**Class B**
1 to 40	80	74	60	54

The test frequency range of Radiated Disturbance measurements are listed below.

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	**Upper frequency of measurement range (MHz)**
Below 108	1 000
108 – 500	2 000
500 – 1 000	5 000
Above 1 000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

Measurement Instrument					
Description	**Model**	**Manufacturer**	**Identifier**	**Cal. Date**	**Cal. Due**
MEASUREMENT SOFTWARE	EMI-R VER. 2.00.0177	TSJ	N/A	N/A	N/A
EMI TEST RECEIVER	ESU40	ROHDE&SCHWARZ	100525	2019.12.20	2020.12.20
TRILOG BROADBAND TEST-ANTENNA WITH 6DB ATT	VULB9160	SCHWARZBECK	9160-3339	2018.10.22	2020.10.22
	8491B	HP	18403	2018.10.22	2020.10.22
LOW NOISE PRE AMPLIFIER	MLA-100K01-B01-26	TSJ	1252741	2020.02.13	2021.02.13
HORN ANTENNA	3117	ETS-LINDGREN	00152093	2020.03.26	2021.03.26
PRE AMPLIFIER	8449B	H.P	3008A00887	2019.08.26	2020.08.26
HORN ANTENNA WITH PREAMPLIFIER	EM-6969	ELECTRO-METRICS	156	2019.02.13	2021.02.13
	MLA-0618-B03-34	TSJ	1785642	2019.12.31	2020.12.31
(NOTE : THE MEASUREMENT ANTENNAS WERE CALIBRATED IN ACCORDANCE TO THE REQUIREMENTS OF C63.5-2017.)					

Radiated disturbance at (30 ~ 1000) MHz _Measurement data			
Test configuration mode	**1**	**EUT Operation mode**	**1**
Test voltage (V)	**AC 120**	**Test Frequency (Hz)**	**60**

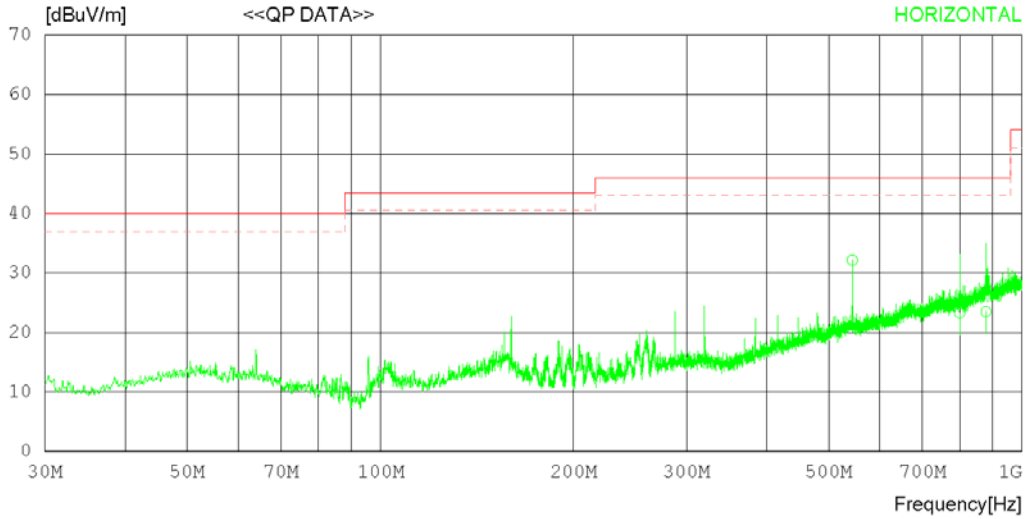
RADIATED EMISSION

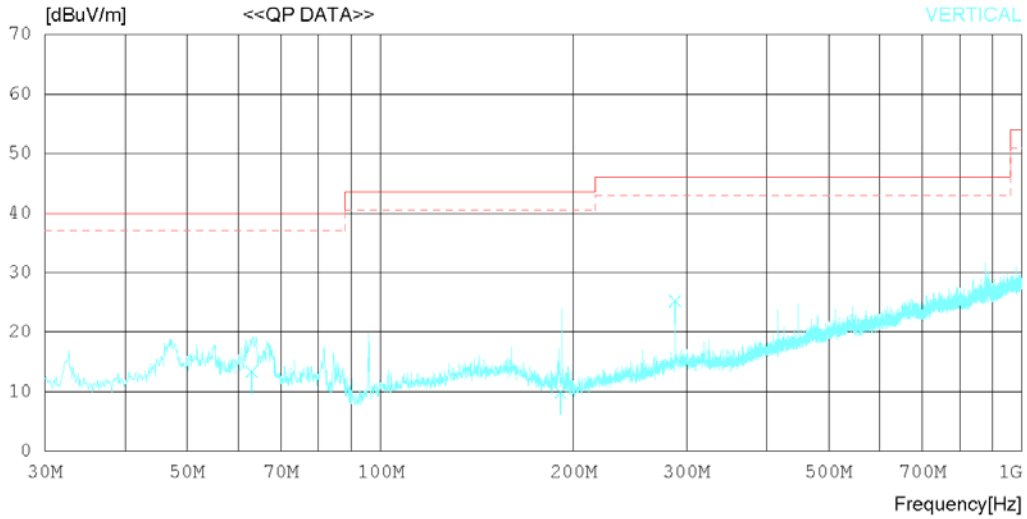
Date 2020-06-23

Order No. DTNC2006-04614
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 44 % R.H.
Test Condition Normal Operating

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB





RADIATED EMISSION

Date 2020-06-23

Order No. DTNC2006-04614
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 44 % R.H.
Test Condition Normal Operating

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB

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	544.018	30.80	25.02	2.68	26.35	32.15	46.00	13.85	231	78
2	799.975	18.00	28.20	3.17	26.14	23.23	46.00	22.77	223	102
3	878.983	17.20	29.11	3.61	26.44	23.48	46.00	22.52	211	305
----- Vertical ------										
4	63.026	21.40	17.80	0.85	26.68	13.37	40.00	26.63	232	243
5	190.961	18.30	16.54	1.64	26.66	9.82	43.50	33.68	231	151
6	288.016	30.00	19.44	2.36	26.57	25.23	46.00	20.77	235	243

Radiated disturbance at (1 ~ 6) GHz _Peak measurement data			
Test configuration mode	**1**	**EUT Operation mode**	**1**
Test voltage (V)	**AC 120**	**Test Frequency (Hz)**	**60**

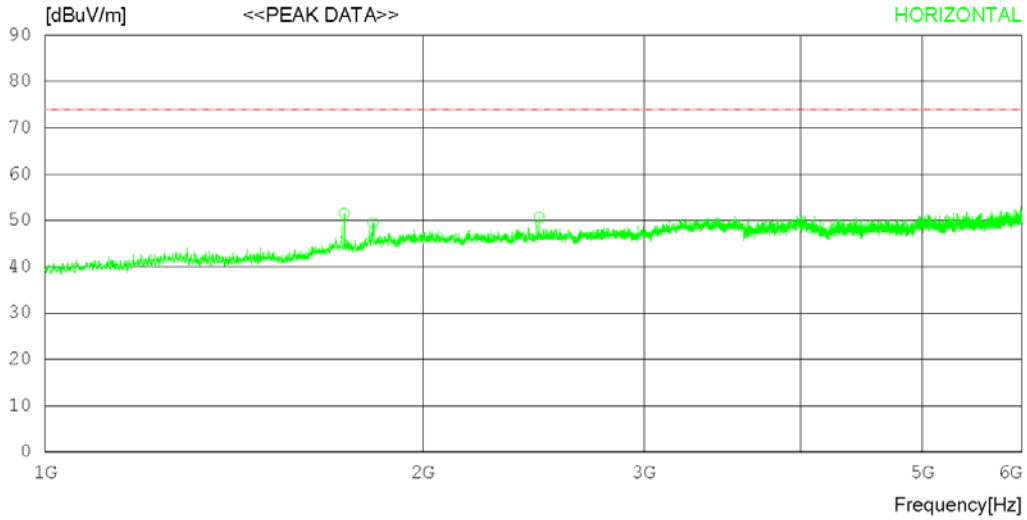
RADIATED EMISSION

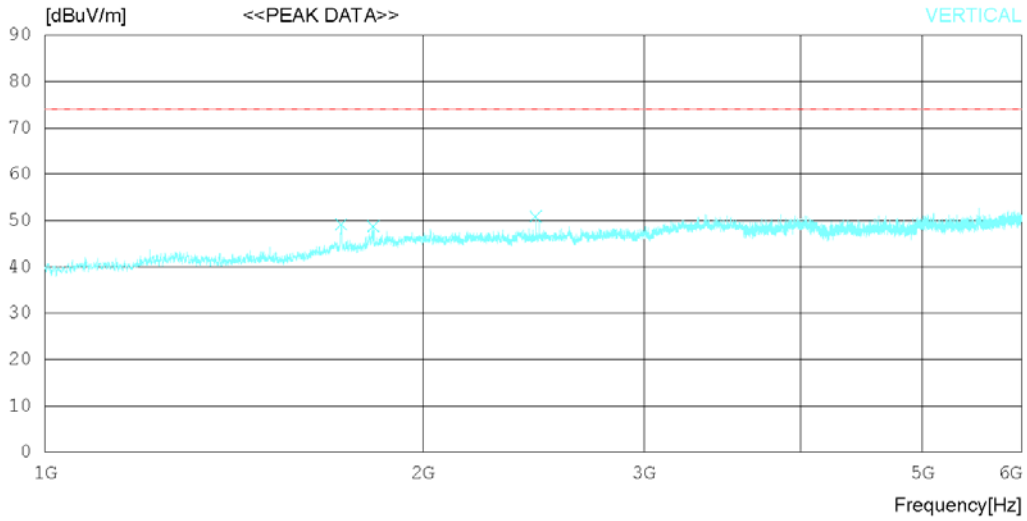
Date 2020-06-23

Order No. DTNC2006-04614
Power Supply 120 V 60 Hz
Temp/Humi 23 ' C 44 % R.H.
Test Condition Nomal Operation

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Peak)
FCC Part15 Subpart.B Class B (3m) - GHz(Peak)





RADIATED EMISSION

Date 2020-06-23

Order No. DTNC2006-04614
Power Supply 120 V 60 Hz
Temp/Humi 23 ' C 44 % R.H.
Test Condition Nomal Operation

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Peak)
FCC Part15 Subpart.B Class B (3m) - GHz(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	1731.875	49.50	29.64	7.06	34.72	51.48	74.0	22.52	162	82
2	1824.375	46.50	30.59	7.01	34.59	49.51	74.0	24.49	133	195
3	2475.625	45.90	32.20	7.19	34.62	50.67	74.0	23.33	125	1
----- Vertical ------										
4	1721.875	47.20	29.66	7.05	34.73	49.18	74.0	24.82	274	135
5	1825.625	45.70	30.61	7.02	34.59	48.74	74.0	25.26	122	0
6	2460.000	46.10	32.20	7.17	34.61	50.86	74.0	23.14	322	87

Radiated disturbance at (1 ~ 6) GHz _Average measurement data			
Test configuration mode	**1**	**EUT Operation mode**	**1**
Test voltage (V)	**AC 120**	**Test Frequency (Hz)**	**60**

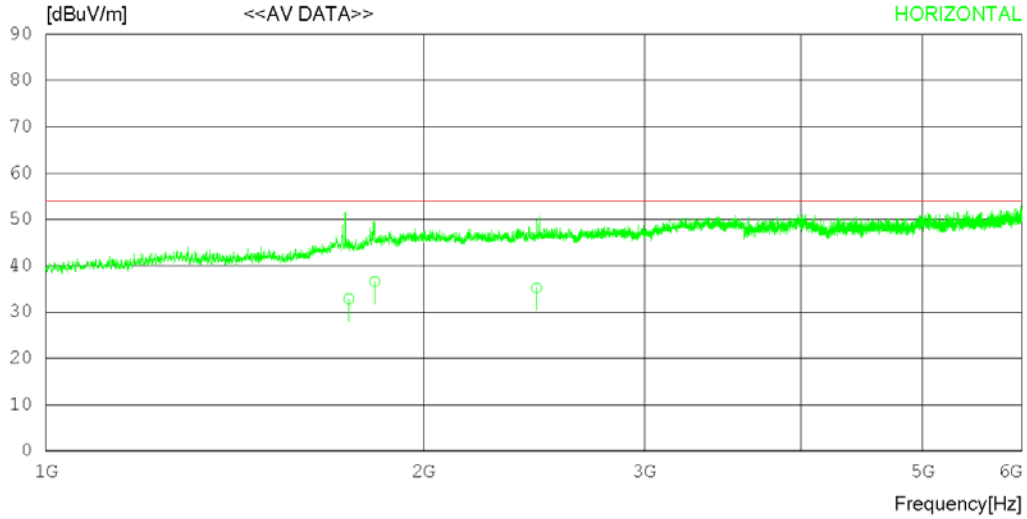
RADIATED EMISSION

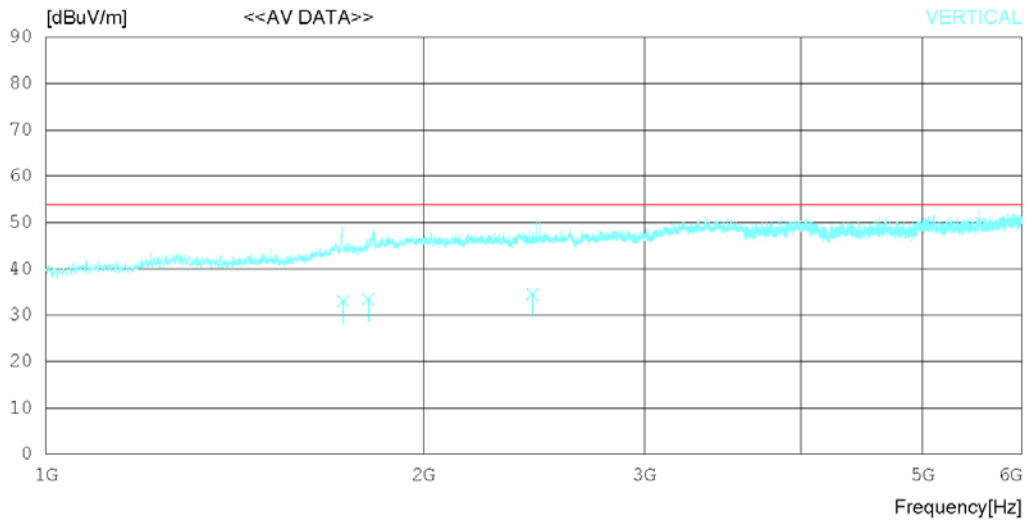
Date 2020-06-23

Order No. DTNC2006-04614
Power Supply 120 V 60 Hz
Temp/Humi 23 ' C 44 % R.H.
Test Condition Nomal Operation

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Average)
FCC Part15 Subpart.B Class B (3m) - GHz(Average)





RADIATED EMISSION

Date 2020-06-23

Order No.	DTNC2006-04614
Power Supply	120 V 60 Hz
Temp/Humi	23 ' C 44 % R.H.
Test Condition	Nomal Operation

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Average)
FCC Part15 Subpart.B Class B (3m) - GHz(Average)

No.	FREQ [MHz]	READING CAV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	1743.568	30.90	29.61	7.06	34.70	32.87	54.00	21.13	274	96
2	1828.356	33.50	30.65	7.01	34.58	36.58	54.00	17.42	147	124
3	2461.581	30.40	32.20	7.17	34.61	35.16	54.00	18.84	211	268
----- Vertical ------										
4	1726.015	31.00	29.65	7.06	34.73	32.98	54.00	21.02	234	165
5	1806.587	30.70	30.31	7.04	34.61	33.44	54.00	20.56	122	32
6	2442.131	29.80	32.20	7.13	34.60	34.53	54.00	19.47	354	103

Radiated disturbance at (6 ~ 18) GHz _Peak measurement data			
Test configuration mode	**1**	**EUT Operation mode**	**1**
Test voltage (V)	**AC 120**	**Test Frequency (Hz)**	**60**

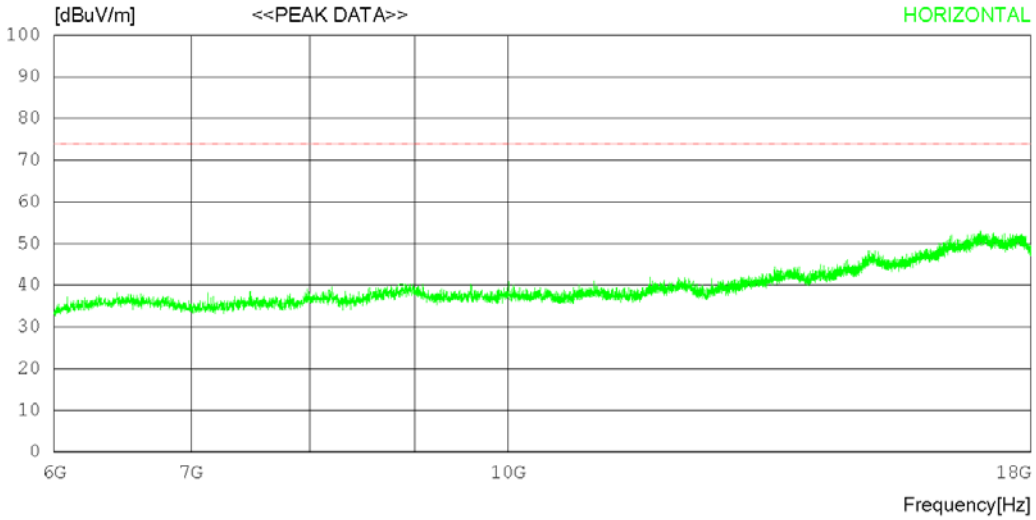
RADIATED EMISSION

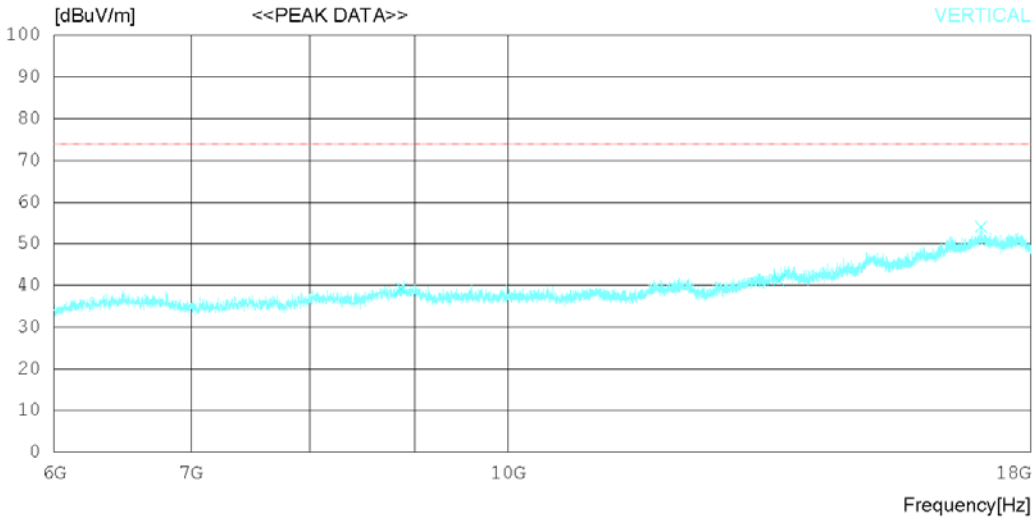
Date 2020-06-23

Order No. DTNC2006-04614
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 44 % R.H.
Test Condition Normal Operating

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Peak)
FCC Part15 Subpart.B Class B (3m) - GHz(Peak)





RADIATED EMISSION

Date 2020-06-23

Order No.	DTNC2006-04614
Power Supply	120 V 60 Hz
Temp/Humi	23 'C 44 % R.H.
Test Condition	Normal Operating

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Peak)
FCC Part15 Subpart.B Class B (3m) - GHz(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	8866.500	29.40	31.99	15.06	37.42	39.03	74.0	34.97	99	146
2	13563.000	27.70	33.75	18.15	37.41	42.19	74.0	31.81	99	313
3	17020.500	26.00	37.57	23.65	36.42	50.80	74.0	23.2	322	303
----- Vertical ------										
4	8866.500	29.50	31.99	15.06	37.42	39.13	74.0	34.87	99	173
5	13563.000	26.70	33.75	18.15	37.41	41.19	74.0	32.81	122	5
6	17020.500	29.20	37.57	23.65	36.42	54.00	74.0	20	245	358

Radiated disturbance at (6 ~ 18) GHz _Average measurement data			
Test configuration mode	**1**	**EUT Operation mode**	**1**
Test voltage (V)	**AC 120**	**Test Frequency (Hz)**	**60**

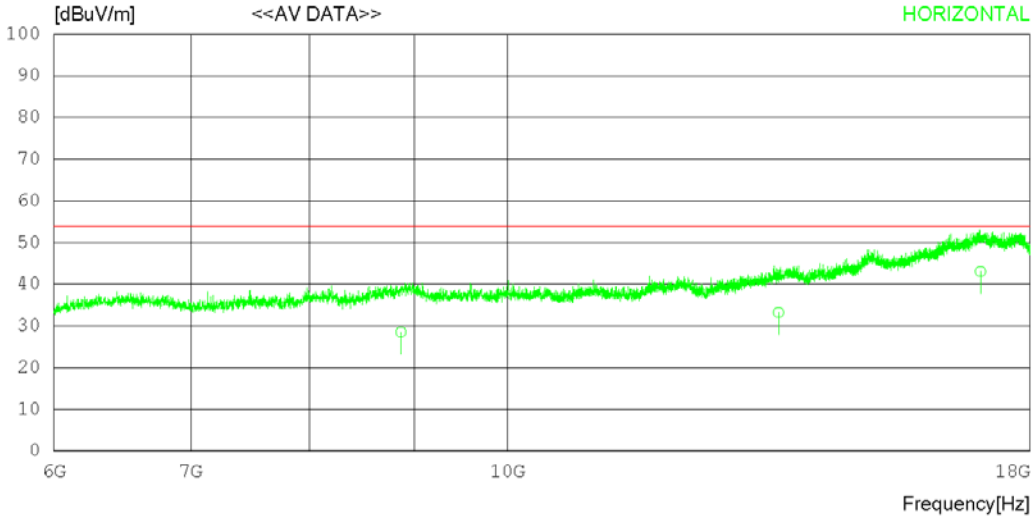
RADIATED EMISSION

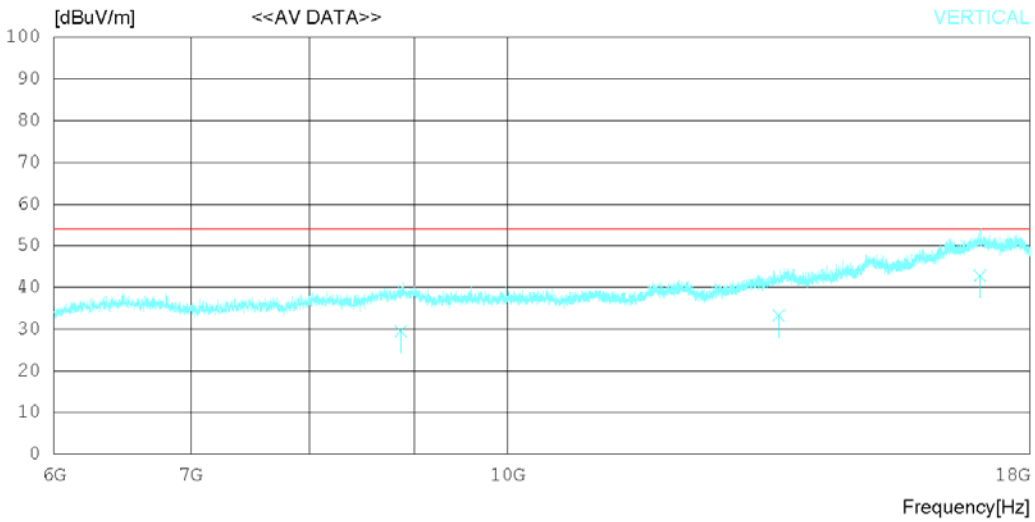
Date 2020-06-23

Order No. DTNC2006-04614
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 44 % R.H.
Test Condition Normal Operating

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Average)
FCC Part15 Subpart.B Class B (3m) - GHz(Average)





RADIATED EMISSION

Date 2020-06-23

Order No. DTNC2006-04614
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 44 % R.H.
Test Condition Normal Operating

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Average)
FCC Part15 Subpart.B Class B (3m) - GHz(Average)

No.	FREQ [MHz]	READING CAV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	8866.121	18.93	31.99	15.05	37.42	28.55	54.00	25.46	120	78
2	13563.360	18.72	33.75	18.15	37.41	33.21	54.00	20.79	232	110
3	17020.540	18.24	37.57	23.65	36.42	43.04	54.00	10.96	133	325
----- Vertical ------										
4	8866.255	19.90	31.99	15.06	37.42	29.53	54.00	24.47	120	78
5	13562.970	18.80	33.75	18.15	37.41	33.29	54.00	20.71	232	110
6	17020.010	18.00	37.57	23.65	36.42	42.80	54.00	11.20	122	322

Calculation

Result(dBuV/m) : Reading Value(dBuV) + Cable loss(dB) - Pre amplifier gain(dB) + Ant. Factor(dB)
Margin : Limit(dBuV/m) - Result(dBuV/m)

8. Revision History

Date	Description	Revised By	Reviewed By
Jul. 10. 2020	Initial report	JunSeo Park	KyoungHwan Bae
Jul. 20. 2020	Changed FCC SDoC > CoC	JunSeo Park	KyoungHwan Bae

-End of test report-