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. : DREFCC1904-0129(1)
2. Client / Applicant
   - Name : LG Electronics USA, Inc.
   - Address : 1000 Sylvan Avenue Englewood Cliffs, New Jersey, United States 07632
3. Use of Report : Grant of Certification
4. Product Name / Model Name / FCC ID : Mobile Phone / LM-G810EAW / ZNFG810EAW
5. Test Standard : ANSI C 63.4 : 2014
   FCC Part 15 Subpart B
   (Class B personal computers and peripherals)
6. Date of Test : Mar. 12. 2019 ~ May. 08. 2019
7. Testing Environment : Temperature (19 ~ 21) °C , Humidity (42 ~ 45) % R.H.
8. Test Result : Refer to the attached Test Result

Affirmation	Tested by Name : ChanGeun Lee (Signature)	Reviewed by Name : HyungJun Kim (Signature)

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose.

May. 09. 2019

DT&C Co., Ltd.

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-4076, R-4180, R-4496, T-1442, G-10338, G-754, 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	LG Electronics USA, Inc. 1000 Sylvan Avenue Englewood Cliffs, New Jersey, United States 07632
Manufacturer	LG Electronics USA, Inc. 1000 Sylvan Avenue Englewood Cliffs, New Jersey, United States 07632
Factory	LG Electronics USA, Inc. 1000 Sylvan Avenue Englewood Cliffs, New Jersey, United States 07632
Product Name	Mobile Phone
Model Name	LM-G810EAW
Add Model Name	LMG810EAW, G810EAW, LM-G810EA, LMG810EA, G810EA, LM-G810RA, LMG810RA, G810RA
FCC ID	ZNFG810EAW
Rated Power	DC 4 V
Remarks	Earphone 1. Manufacturer : CRESYN 2. Model no. : EAB63728244 USB Cable 1. Manufacturer : NINGBO 2. Model no. : EAD64746102

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	'READ' & 'WRITE' & 'DELETE'	The EUT is reading, writing, and erasing internal storage
2	Wireless charging	The EUT test monitors the continuous state of charging by receiving w ireless power from the wireless charger. EUT continuously plays MP4

4.3 Test Configuration Mode

No.	Mode	Description
1	PC LINK	EUT was connected PC by USB cable and continuously operated
2	Wireless charging	The EUT is placed on the wireless charger pad Connected Earphone

4.4 Supported Equipment

Used*	Product Type	Manufacturer	Model	Remarks
AE	KEYBOARD	Microsoft	1406	20076223340
AE	MOUSE	LG	SM-9023	58Q02801
AE	LCD MONITOR	DELL	UP2414Qt	CN-OJJRX2-74261-67B-4P4U-A00
AE	PC	DELL	DCNE	N/A
AE	SSD 3.0	SAMSUNG	MU-PT250B	S2WKNAAH32059X
AE	PRINTER	Bixolon	SRP-770	N/A
AE	Headset	SAMSUNG	SHS-150V/M	N/A
AE	WIRELESS CHARGER	LG Innotek	PWMA-W815A	N/A
AE	WIRELESS CHARGER Adapter	LG Innotek	S024AMV1200200	N/A

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

4.5 EUT In/Output Port

(MODE 1)

Name	Type*	Cable Max. >3 m	Cable Shielded	Cable Back shell	Remarks
USB	I/O	1.7	Shield	Plastic	KEYBOARD
USB	I/O	1.7	Shield	Plastic	MOUSE
POWER IN DSUB OUT	AC I/O	1.8 1.8	Non-Shield Shield	Plastic Plastic	LCD MONITOR
POWER IN DSUB IN PARALLEL IN SERIAL IN USB USB USB USB STEREO IN/OUT	AC I/O I/O I/O I/O I/O I/O I/O I/O	1.8 1.8 2.0 1.9 1.7 1.7 1.0 1.0 2.0	Non-Shield Shield Shield Shield Shield Shield Shield Shield Non-Shield	Plastic Plastic Plastic Plastic Plastic Plastic Plastic Plastic Plastic	PC
USB	I/O	1.0	Shield	Plastic	SSD 3.0
PARALLEL OUT SERIAL OUT	I/O I/O	2.0 1.9	Shield Shield	Plastic Plastic	PRINTER
STEREO IN/OUT	I/O	2.0	Non-Shield	Plastic	Headset
AUX	I/O	1.8	Non-Shield	Plastic	EUT
USB	I/O	1.0	Non-Shield	Plastic	

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

(MODE 2)

Name	Type*	Cable Max. >3 m	Cable Shielded	Cable Back shell	Remarks
POWER IN	DC	1.5	Non-Shield	Plastic	WIRELESS CHARGER
POWER IN	AC	-	-	-	WIRELESS CHARGER Adapter
AUX	I/O	1.5	Non-Shield	Plastic	EUT

*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]
1.08010	L1	41.90	CAV	46.00	4.10

-Radiated Disturbance

Frequency [MHz]	Pol.	Result [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]
45.763	V	36.50	QP	40.00	3.50

6. Test Environment

Test Items	Test date (YYYY-MM-DD)	Temp. (℃)	Humidity (% R.H.)	Pressure (kPa)
Conducted Disturbance	2019-03-12 2019-05-08	19 22	42 42	100.6 100.2
Radiated Disturbance	2019-03-12 2019-03-12 2019-03-12 2019-05-08	21 20 21 20	43 44 45 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, 2**
	EUT Operation mode	**1, 2**

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	ESR7	ROHDE & SCHWARZ	101109	2018.10.29	2019.10.29
LISN	ENV216	ROHDE & SCHWARZ	101979	2018.12.06	2019.12.06
LISN	LISN1600	TTI	197204	2018.06.07	2019.06.07
TRANSIENT LIMITER	TL-B0930A	EMCIS	11002	2018.09.05	2019.09.05
50 OHM TERMINATOR	CT-01	TME	N/A	2018.12.19	2019.12.19
EMI TEST RECEIVER	ESCI7	ROHDE & SCHWARZ	100910	2019.01.30	2020.01.30
PULSE LIMITER	ESH3-Z2	ROHDE & SCHWARZ	101333	2018.09.27	2019.09.27
LISN	NNLK 8121	SCHWARZBECK	06183	2019.03.19	2020.03.19

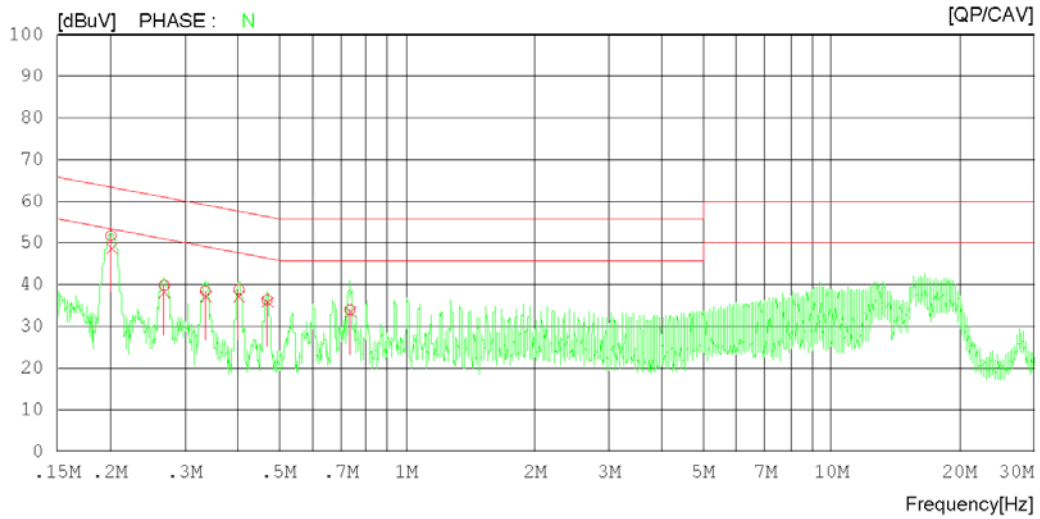
Mains terminal disturbance voltage _Measurement data			
Test configuration mode	**1**	**EUT Operation mode**	**1**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

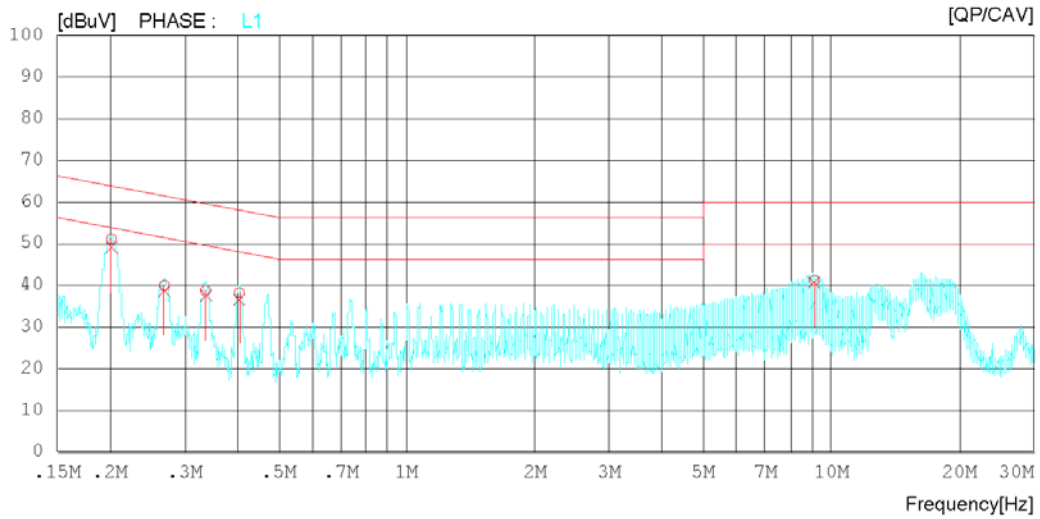
Results of Conducted Emission

DT&C
Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi/Atm 19 'C 42 %.R.H. 100.6 kPa
Test Condition PC Link

LIMIT : CISPR32_B QP
CISPR32_B AV





Results of Conducted Emission

DT&C
Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi/Atm 19 'C 42 %.R.H. 100.6 kPa
Test Condition PC Link

LIMIT : CISPR32_B QP
CISPR32_B AV

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.20110	31.75	28.75	20.03	51.78	48.78	63.57	53.57	11.79	4.79	N
2	0.26824	20.05	18.62	19.80	39.85	38.42	61.17	51.17	21.32	12.75	N
3	0.33528	18.70	17.33	19.90	38.60	37.23	59.32	49.32	20.72	12.09	N
4	0.40243	18.87	17.33	20.03	38.90	37.36	57.80	47.80	18.90	10.44	N
5	0.46850	16.34	15.82	20.03	36.37	35.85	56.54	46.54	20.17	10.69	N
6	0.73550	14.02	13.61	20.02	34.04	33.63	56.00	46.00	21.96	12.37	N
7	0.20131	30.95	28.96	20.02	50.97	48.98	63.56	53.56	12.59	4.58	L1
8	0.26843	20.00	18.73	19.80	39.80	38.53	61.17	51.17	21.37	12.64	L1
9	0.33562	18.69	17.44	19.90	38.59	37.34	59.31	49.31	20.72	11.97	L1
10	0.40279	18.09	16.57	20.03	38.12	36.60	57.80	47.80	19.68	11.20	L1
11	9.13271	20.53	19.84	20.52	41.05	40.36	60.00	50.00	18.95	9.64	L1

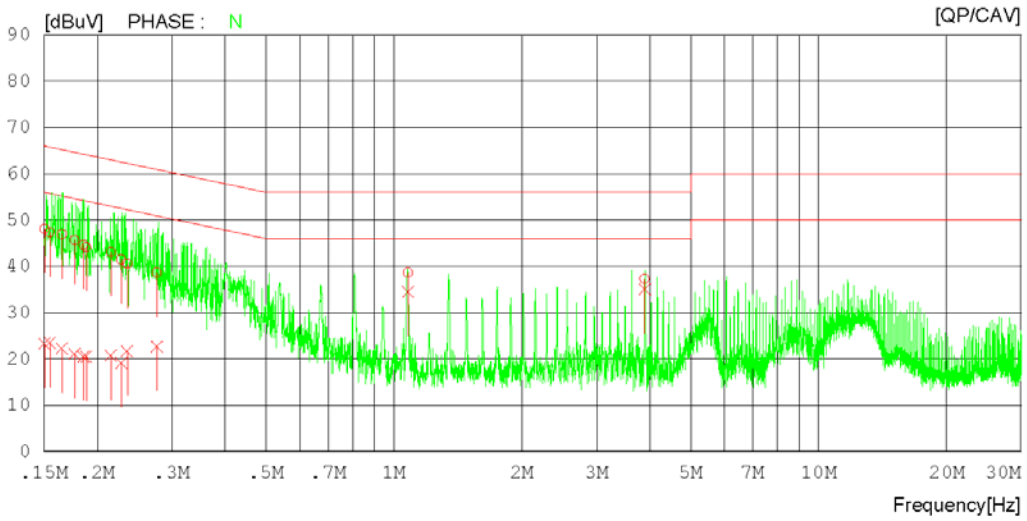
Mains terminal disturbance voltage _Measurement data			
Test configuration mode	**2**	**EUT Operation mode**	**2**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

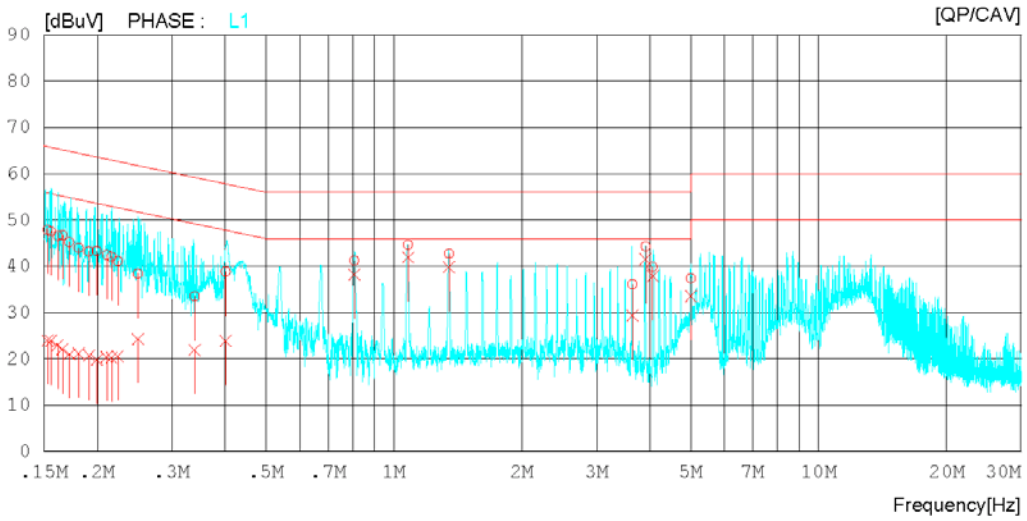
Results of Conducted Emission

DTNC Date 2019-05-08

Order No.	DTNC1903-02000
Power Supply	120 VAC 60 Hz
Temp/Humi	22 'C 42 %.R.H. 100.2 kPa
Test Codition	Wireless Charging

LIMIT : CISPR32_B QP
CISPR32_B AV





Results of Conducted Emission

DTNC Date 2019-05-08

Order No.	DTNC1903-02000
Power Supply	120 VAC 60 Hz
Temp/Humi	22 'C 42 %.R.H. 100.2 kPa
Test Codition	Wireless Charging

LIMIT : CISPR32_B QP
CISPR32_B AV

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15032	38.16	13.30	9.94	48.10	23.24	65.98	55.98	17.88	32.74	N
2	0.15478	37.41	13.54	9.94	47.35	23.48	65.74	55.74	18.39	32.26	N
3	0.16513	36.99	12.26	9.94	46.93	22.20	65.20	55.20	18.27	33.00	N
4	0.17683	35.79	11.14	9.94	45.73	21.08	64.63	54.63	18.90	33.55	N
5	0.18576	34.76	10.61	9.94	44.70	20.55	64.22	54.22	19.52	33.67	N
6	0.18849	34.22	10.59	9.94	44.16	20.53	64.10	54.10	19.94	33.57	N
7	0.21556	33.15	10.80	9.94	43.09	20.74	62.99	52.99	19.90	32.25	N
8	0.22778	31.52	9.20	9.94	41.46	19.14	62.53	52.53	21.07	33.39	N
9	0.23527	30.58	11.67	9.94	40.52	21.61	62.26	52.26	21.74	30.65	N
10	0.27662	28.67	12.77	9.94	38.61	22.71	60.92	50.92	22.31	28.21	N
11	1.08020	28.73	24.50	9.97	38.70	34.47	56.00	46.00	17.30	11.53	N
12	3.89600	27.10	24.96	10.12	37.22	35.08	56.00	46.00	18.78	10.92	N
13	0.15301	37.86	14.05	9.94	47.80	23.99	65.83	55.83	18.03	31.84	L1
14	0.15565	37.55	13.93	9.94	47.49	23.87	65.69	55.69	18.20	31.82	L1
15	0.16148	36.67	12.96	9.94	46.61	22.90	65.39	55.39	18.78	32.49	L1
16	0.16555	36.72	12.10	9.94	46.66	22.04	65.18	55.18	18.52	33.14	L1
17	0.17214	35.24	11.05	9.94	45.18	20.99	64.86	54.86	19.68	33.87	L1
18	0.18105	34.05	11.24	9.94	43.99	21.18	64.44	54.44	20.45	33.26	L1
19	0.19150	33.26	10.76	9.94	43.20	20.70	63.97	53.97	20.77	33.27	L1
20	0.19938	33.33	9.86	9.94	43.27	19.80	63.64	53.64	20.37	33.84	L1
21	0.21053	32.48	10.44	9.94	42.42	20.38	63.18	53.18	20.76	32.80	L1
22	0.21618	32.05	10.34	9.94	41.99	20.28	62.96	52.96	20.97	32.68	L1
23	0.22361	31.14	10.59	9.94	41.08	20.53	62.68	52.68	21.60	32.15	L1
24	0.24964	28.42	14.34	9.94	38.36	24.28	61.77	51.77	23.41	27.49	L1
25	0.33909	23.51	11.95	9.94	33.45	21.89	59.23	49.23	25.78	27.34	L1
26	0.40161	28.84	13.93	9.95	38.79	23.88	57.82	47.82	19.03	23.94	L1
27	0.80658	31.29	28.19	9.96	41.25	38.15	56.00	46.00	14.75	7.85	L1
28	1.08010	34.60	31.93	9.97	44.57	41.90	56.00	46.00	11.43	4.10	L1
29	1.34680	32.72	29.81	9.98	42.70	39.79	56.00	46.00	13.30	6.21	L1
30	3.64400	26.03	19.24	10.09	36.12	29.33	56.00	46.00	19.88	16.67	L1
31	3.91200	34.17	31.42	10.11	44.28	41.53	56.00	46.00	11.72	4.47	L1
32	4.06800	29.76	27.79	10.11	39.87	37.90	56.00	46.00	16.13	8.10	L1
33	5.00300	27.15	23.35	10.16	37.31	33.51	60.00	50.00	22.69	16.49	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, 2**
	EUT Operation mode	**1, 2**

Radiated Disturbance below 1 000 MHz

Frequency range (MHz)	**Quasi-peak limit dBµV/m**	
	Class A (10 m distance)	**Class B (3 m distance)**
30 to 88	39.1	40
88 to 216	43.5	43.5
216 to 960	46.4	46
960 to 1 000	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	ESU	ROHDE&SCHWARZ	100469	2018.06.28	2019.06.28
TRILOG BROADBAND TEST-ANTENNA	VULB9160	SCHWARZBECK	9160-3339	2018.10.22	2020.10.22
6DB ATTENUATOR	8491B	HP	18403	2018.10.22	2020.10.22
LOW NOISE PRE AMPLIFIER	MLA-100K01-B01-26	TSJ	1252741	2019.02.18	2020.02.18
PRE AMPLIFIER	8449B	H.P	3008A00887	2018.08.31	2019.08.31
HORN ANTENNA	3117	ETS-LINDGREN	00152093	2018.03.26	2020.03.26
HORN ANTENNA WITH PREAMPLIFIER	EM-6969	ELECTRO-METRICS	156	2019.02.13	2021.02.13
	MLA-0618-B03-34	TSJ	1785642	2019.01.02	2020.01.02
HORN ANTENNA WITH PREAMPLIFIER	JS44-18004000-35-8P	L3 NARDA-MITEQ	2046884	2018.11.09	2019.11.09
	3116C	ETS-LINDGREN	00213177	2017.12.05	2019.12.05
(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)	**120**	**Test Frequency (Hz)**	**60**

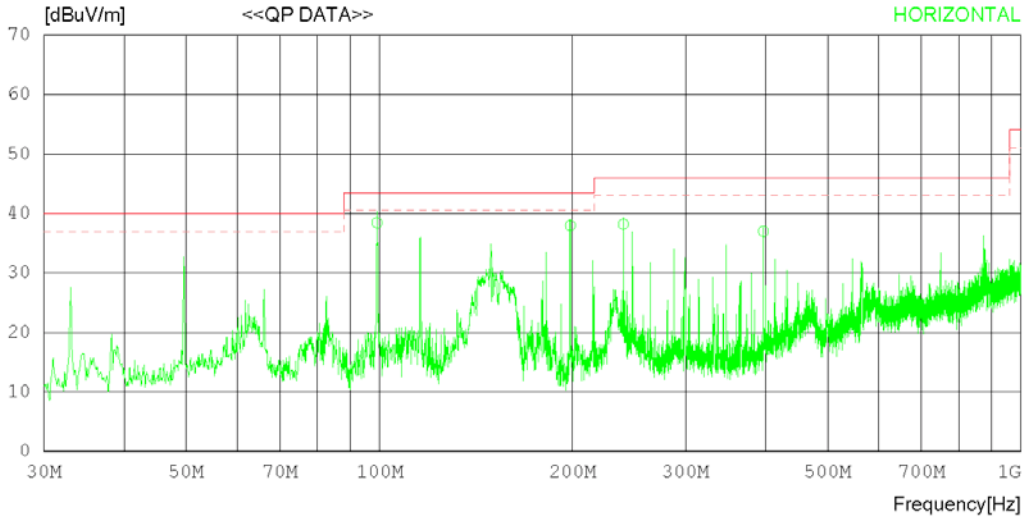
RADIATED EMISSION

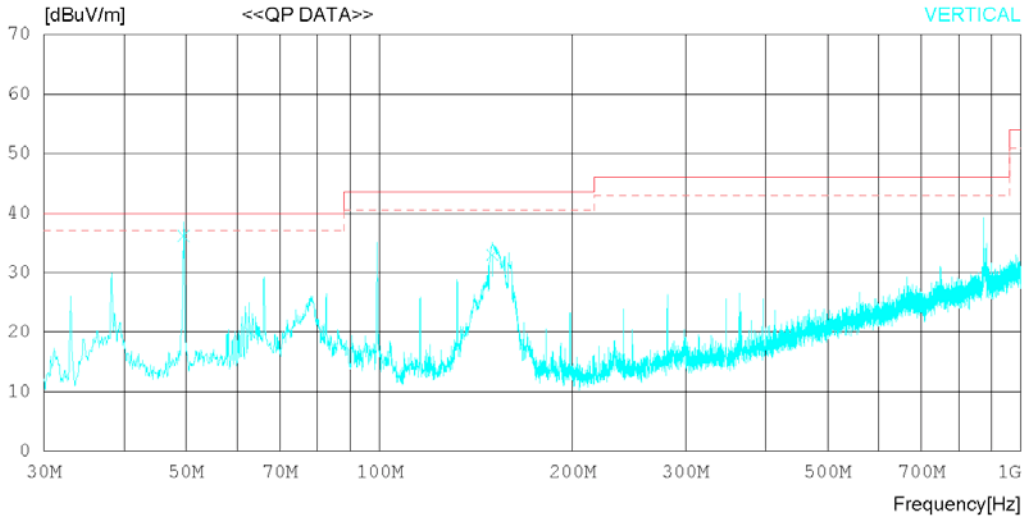
Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 21 'C 43 % R.H.
Test Condition PC Link

Memo

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





RADIATED EMISSION

Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 21 'C 43 % R.H.
Test Condition PC Link

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	99.111	46.40	15.12	2.60	25.70	38.42	43.50	5.08	322	354
2	198.412	44.20	16.10	3.27	25.60	37.97	43.50	5.53	287	21
3	240.000	42.30	18.10	3.49	25.71	38.18	46.00	7.82	388	121
4	396.771	37.10	21.44	4.30	25.84	37.00	46.00	9.00	104	2
----- Vertical ------										
5	49.521	41.60	18.25	2.10	25.80	36.15	40.00	3.85	121	133
6	150.035	36.80	18.90	2.97	25.67	33.00	43.50	10.50	187	5

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

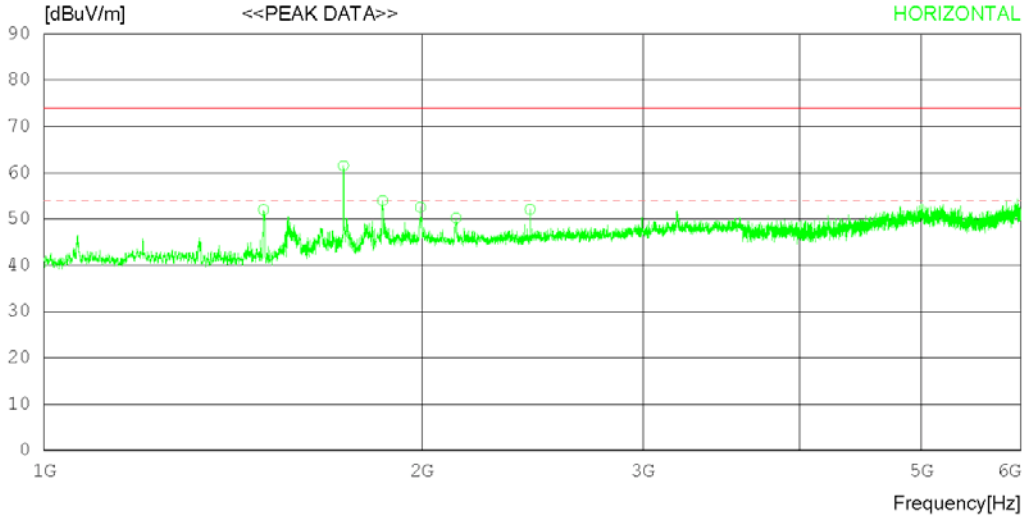
RADIATED EMISSION

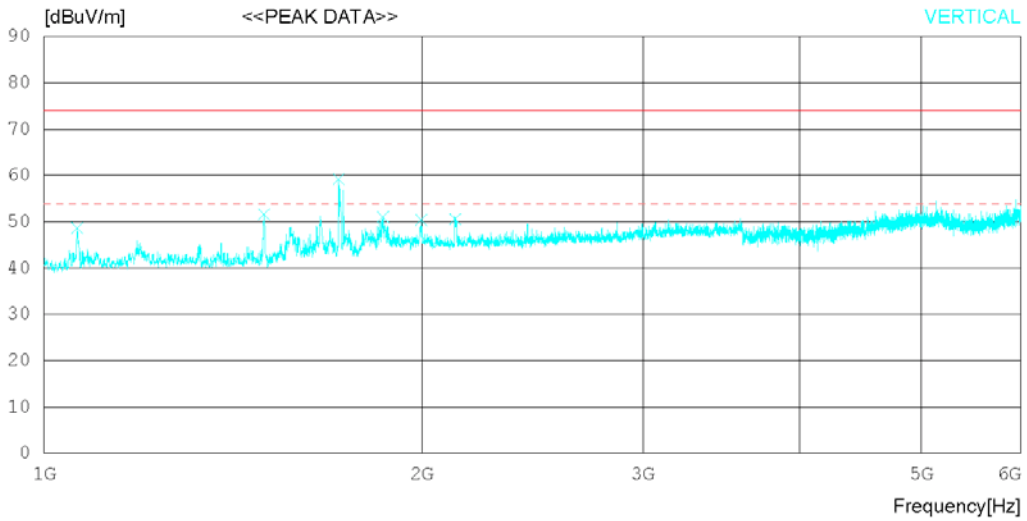
Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 20 'C 44 %.R.H.
Test Condition PC Link

Memo

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





RADIATED EMISSION

Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 20 'C 44 %.R.H.
Test Condition PC Link

Memo

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

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	1495.625	53.70	27.90	5.73	35.34	51.99	74.0	22.01	208	208
2	1731.875	61.20	29.38	6.03	35.10	61.51	74.0	12.49	183	358
3	1860.625	51.90	30.71	6.28	34.96	53.93	74.0	20.07	223	358
4	1994.375	49.20	31.59	6.60	34.83	52.56	74.0	21.44	104	208
5	2129.375	46.60	31.70	6.74	34.82	50.22	74.0	23.78	134	358
6	2438.750	47.80	32.03	7.05	34.83	52.05	74.0	21.95	352	358
----- Vertical ------										
7	1062.500	51.50	27.55	5.39	35.79	48.65	74.0	25.35	117	235
8	1496.875	53.30	27.90	5.73	35.34	51.59	74.0	22.41	136	203
9	1716.875	59.20	29.20	6.00	35.11	59.29	74.0	14.71	109	1
10	1862.500	49.00	30.73	6.29	34.96	51.06	74.0	22.94	184	1
11	1997.500	47.00	31.60	6.61	34.82	50.39	74.0	23.61	121	1
12	2126.875	47.00	31.70	6.73	34.82	50.61	74.0	23.39	253	1

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

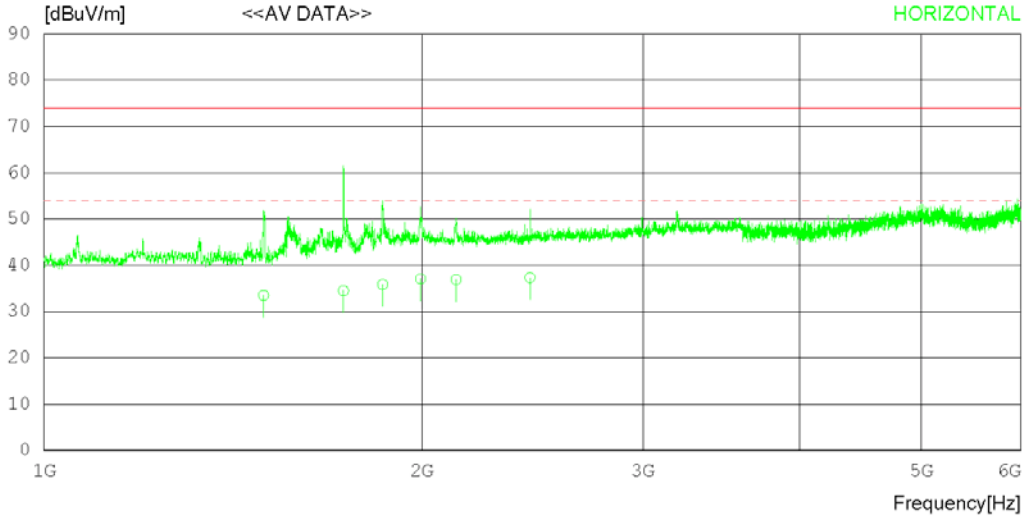
RADIATED EMISSION

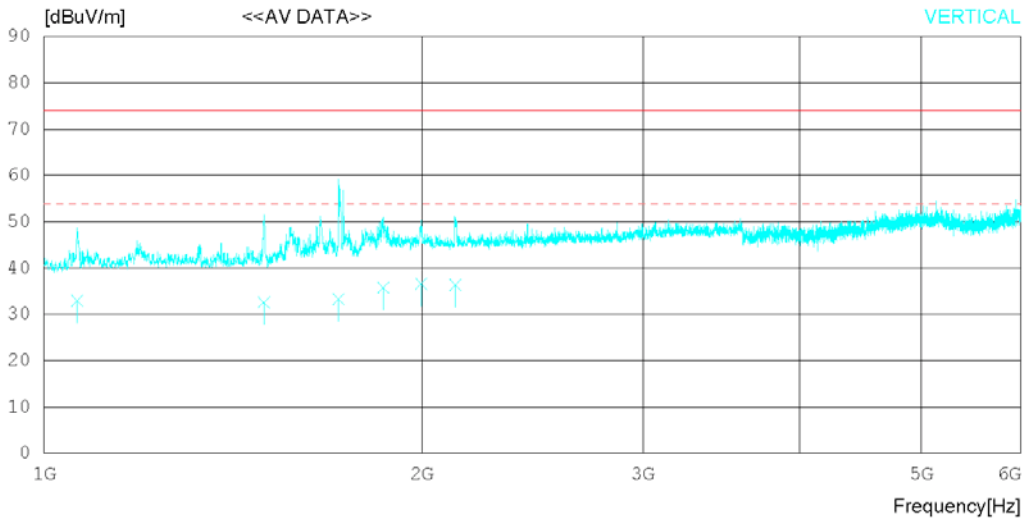
Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 20 'C 44 %.R.H.
Test Condition PC Link

Memo

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





RADIATED EMISSION

Date 2019-03-12

Order No.	DTNC1903-02000
Power Supply	120 VAC 60 Hz
Temp/Humi	20 'C 44 %.R.H.
Test Condition	PC Link

Memo

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

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	1495.765	35.20	27.90	5.73	35.34	33.49	54.00	20.51	208	210
2	1731.925	34.20	29.38	6.03	35.10	34.51	54.00	19.49	183	355
3	1860.775	33.80	30.71	6.28	34.96	35.83	54.00	18.17	223	352
4	1994.825	33.70	31.59	6.60	34.83	37.06	54.00	16.94	104	218
5	2129.175	33.30	31.70	6.74	34.82	36.92	54.00	17.08	134	358
6	2438.360	33.10	32.03	7.05	34.83	37.35	54.00	16.65	352	349
----- Vertical ------										
7	1062.370	35.80	27.55	5.38	35.79	32.94	54.00	21.06	116	242
8	1496.925	34.30	27.90	5.73	35.34	32.59	54.00	21.41	136	213
9	1716.375	33.20	29.20	6.00	35.11	33.29	54.00	20.71	109	5
10	1862.550	33.70	30.73	6.29	34.96	35.76	54.00	18.24	183	3
11	1997.180	33.20	31.59	6.61	34.82	36.58	54.00	17.42	121	14
12	2126.875	32.80	31.70	6.73	34.82	36.41	54.00	17.59	253	10

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

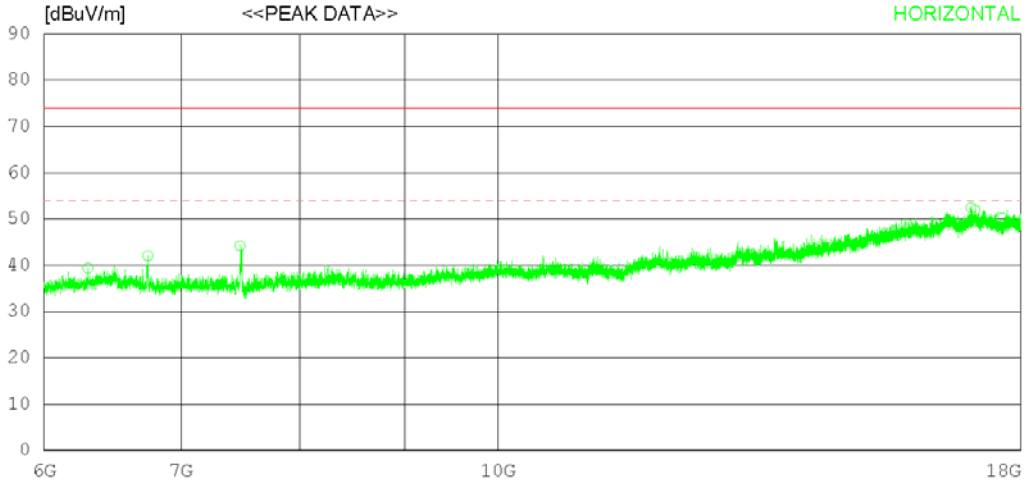
RADIATED EMISSION

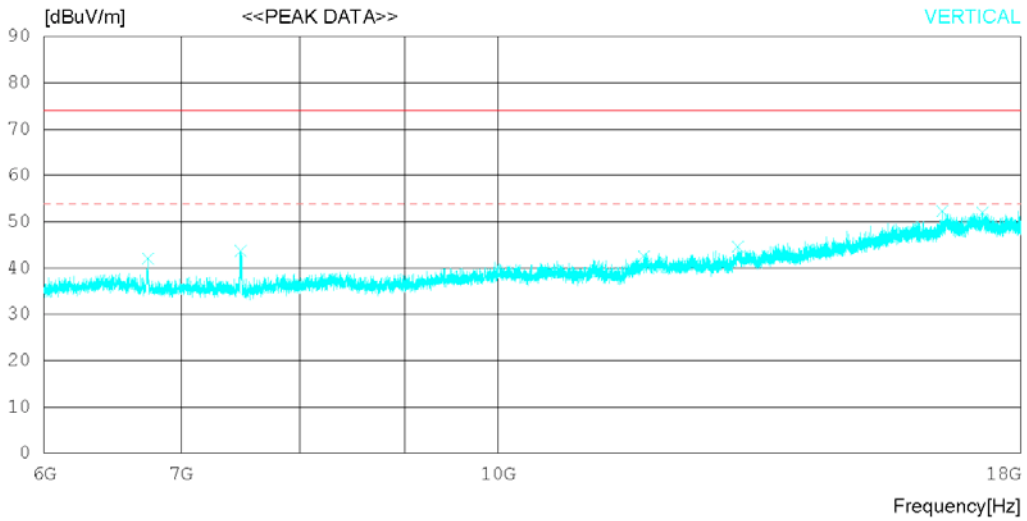
Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 21 'C 45 %.R.H.
Test Condition PC Link

Memo

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





* The measurement is performed above 18 GHz up to 40 GHz and not found emissions above 18 GHz.

RADIATED EMISSION

Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 21 'C 45 %.R.H.
Test Condition PC Link

Memo

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

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	6303.750	35.60	31.64	10.98	38.80	39.42	74.0	34.58	106	275
2	6741.750	37.80	31.52	11.23	38.49	42.06	74.0	31.94	311	199
3	7480.500	39.30	31.38	11.86	38.34	44.20	74.0	29.8	105	179
4	17019.000	32.00	37.56	20.12	37.28	52.40	74.0	21.6	198	318
5	17094.750	31.90	37.62	19.73	37.34	51.91	74.0	22.09	163	358
6	17629.500	30.30	38.03	19.76	37.86	50.23	74.0	23.77	226	358
----- Vertical ------										
7	6745.500	37.80	31.52	11.23	38.50	42.05	74.0	31.95	117	1
8	7484.250	38.80	31.38	11.86	38.34	43.70	74.0	30.3	102	206
9	11781.000	32.10	33.23	15.29	38.03	42.59	74.0	31.41	205	1
10	13096.500	32.70	33.58	16.52	38.15	44.65	74.0	29.35	182	164
11	16476.750	32.70	36.96	19.50	36.81	52.35	74.0	21.65	142	358
12	17241.750	32.40	37.74	19.31	37.46	51.99	74.0	22.01	107	358

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

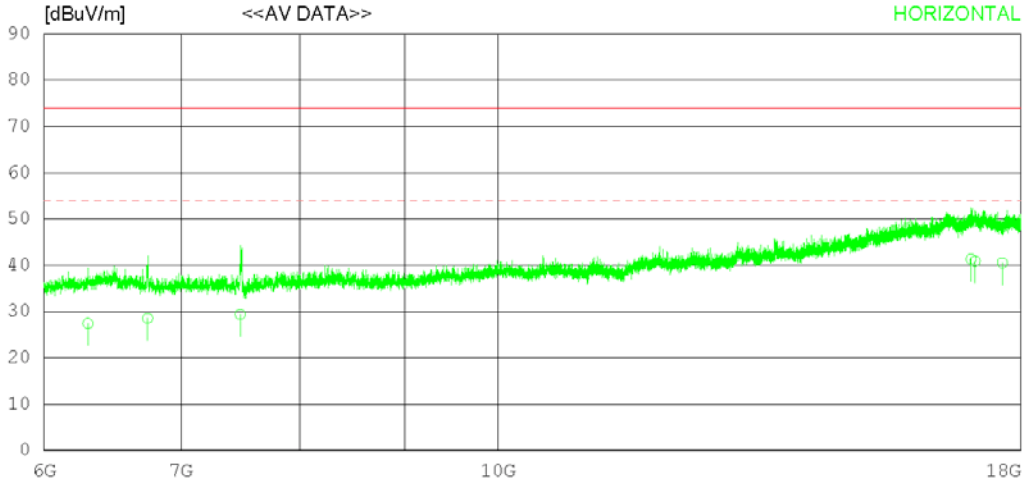
RADIATED EMISSION

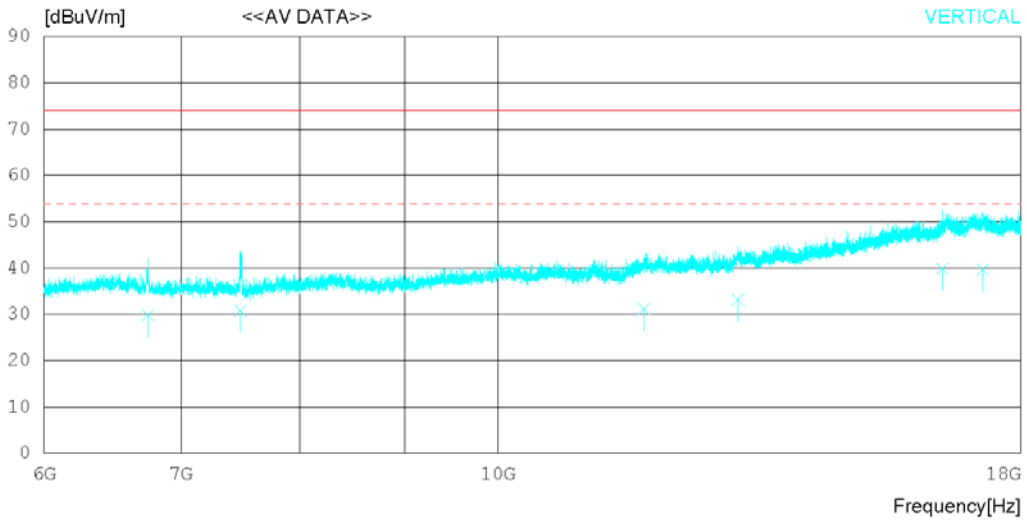
Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 21 'C 45 %.R.H.
Test Condition PC Link

Memo

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





* The measurement is performed above 18 GHz up to 40 GHz and not found emissions above 18 GHz.

RADIATED EMISSION

Date 2019-03-12

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 21 'C 45 %.R.H.
Test Condition PC Link

Memo

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

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	6303.323	23.60	31.64	10.98	38.80	27.42	54.00	26.58	106	277
2	6741.310	24.30	31.52	11.23	38.49	28.56	54.00	25.44	312	211
3	7480.620	24.50	31.38	11.86	38.34	29.40	54.00	24.60	105	187
4	17019.770	20.90	37.57	20.11	37.28	41.30	54.00	12.70	198	322
5	17094.760	20.90	37.62	19.73	37.34	40.91	54.00	13.09	163	357
6	17629.540	20.60	38.03	19.76	37.86	40.53	54.00	13.47	227	344
----- Vertical ------										
7	6745.230	25.60	31.52	11.23	38.50	29.85	54.00	24.15	118	5
8	7484.370	25.90	31.38	11.86	38.34	30.80	54.00	23.20	102	212
9	11781.910	20.70	33.23	15.29	38.03	31.19	54.00	22.81	205	13
10	13096.120	21.20	33.58	16.52	38.15	33.15	54.00	20.85	181	177
11	16477.150	20.20	36.96	19.50	36.81	39.85	54.00	14.15	143	351
12	17241.810	20.10	37.74	19.31	37.46	39.69	54.00	14.31	107	355

Radiated disturbance at (30 ~ 1000) MHz _Measurement data			
Test configuration mode	**2**	**EUT Operation mode**	**2**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

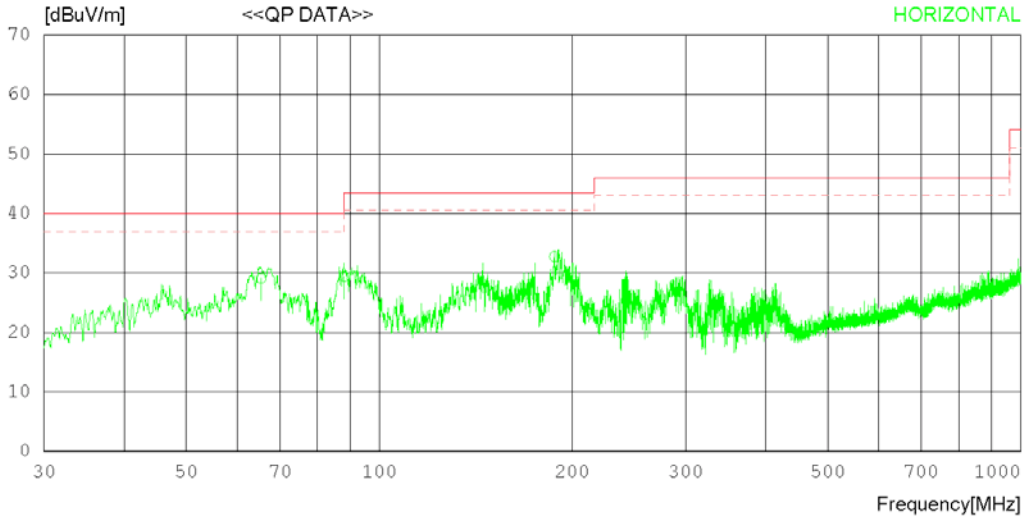
RADIATED EMISSION

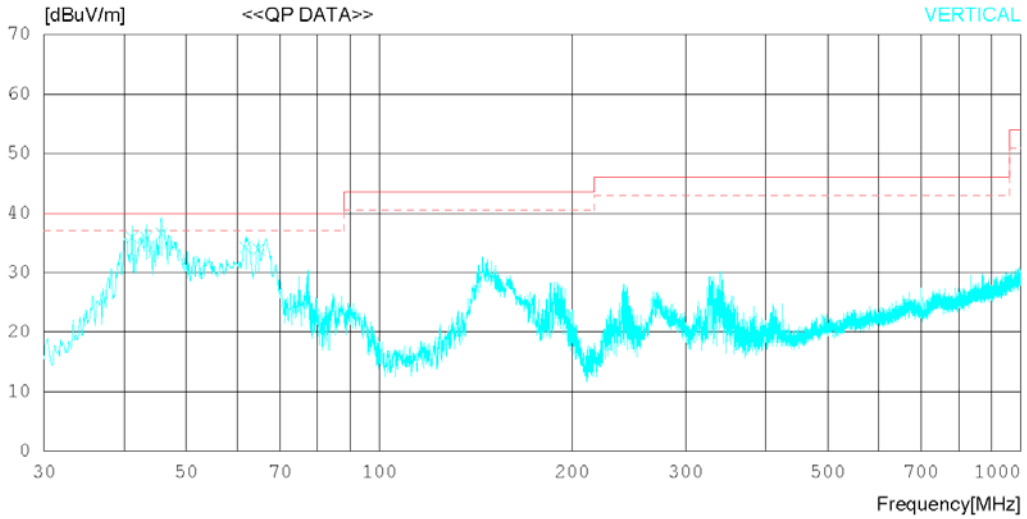
Date 2019-05-08

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 20 'C 44 %.R.H.
Test Condition Wireless Charging

Memo

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





RADIATED EMISSION

Date 2019-05-08

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 20 'C 44 %.R.H.
Test Condition Wireless Charging

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	65.405	36.20	17.32	1.33	25.77	29.08	40.00	10.92	308	104
2	88.078	40.30	13.30	1.49	25.72	29.37	43.50	14.13	208	124
3	187.500	39.80	16.70	1.86	25.62	32.74	43.50	10.76	231	0
----- Vertical ------										
4	41.155	43.20	17.33	1.21	25.81	35.93	40.00	4.07	108	205
5	43.338	42.90	17.60	1.23	25.81	35.92	40.00	4.08	112	326
6	45.763	43.20	17.85	1.25	25.80	36.50	40.00	3.50	103	195
7	61.889	40.80	17.90	1.30	25.78	34.22	40.00	5.78	109	326
8	64.799	40.90	17.46	1.32	25.77	33.91	40.00	6.09	114	326

Radiated disturbance at (1 ~ 6) GHz _Peak measurement data			
Test configuration mode	**2**	**EUT Operation mode**	**2**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

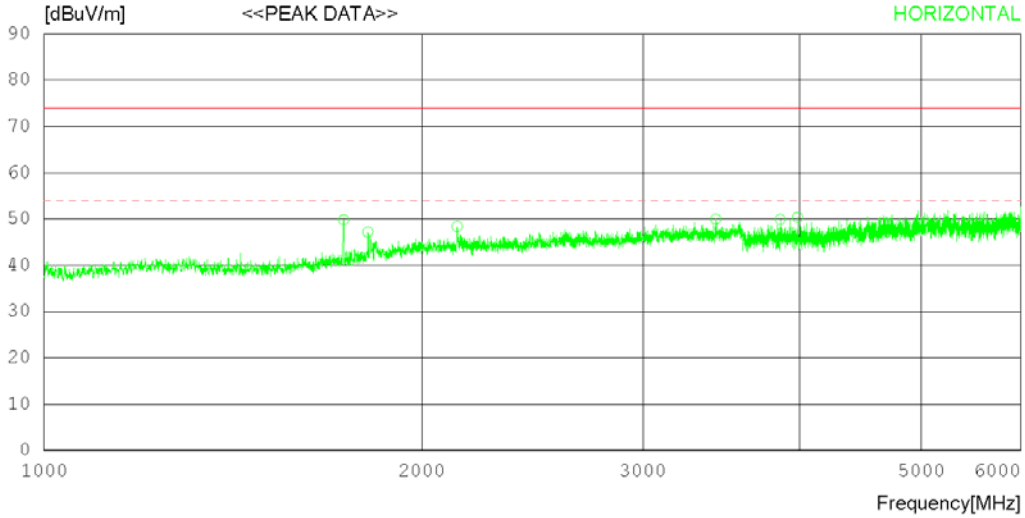
RADIATED EMISSION

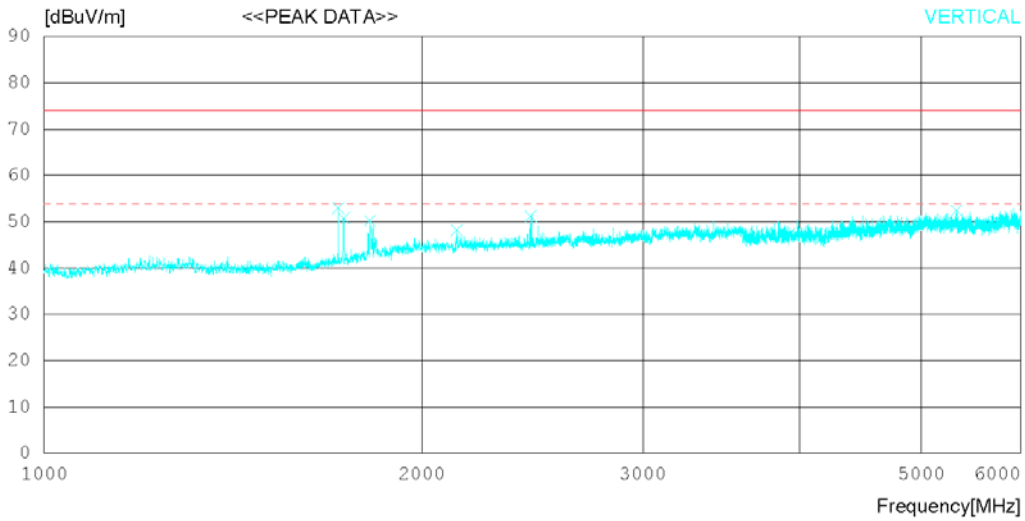
Date 2019-05-08

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 20 'C 44 %.R.H.
Test Condition Wireless Charging

Memo

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





RADIATED EMISSION

Date 2019-05-08

Order No.	DTNC1903-02000
Power Supply	120 VAC 60 Hz
Temp/Humi	20 'C 44 %.R.H.
Test Condition	Wireless Charging

Memo

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

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	1732.500	50.00	29.39	5.51	35.10	49.80	74.0	24.2	109	271
2	1811.250	46.10	30.45	5.67	35.01	47.21	74.0	26.79	112	312
3	2133.750	45.20	31.70	6.31	34.82	48.39	74.0	25.61	106	271
4	3428.125	43.70	32.80	8.10	34.63	49.97	74.0	24.03	102	271
5	3858.125	42.10	33.33	8.91	34.41	49.93	74.0	24.07	107	291
6	3983.750	42.50	33.30	8.90	34.35	50.35	74.0	23.65	106	353
----- Vertical ------										
7	1715.625	53.40	29.19	5.48	35.11	52.96	74.0	21.04	110	357
8	1732.500	51.00	29.39	5.51	35.10	50.80	74.0	23.2	134	0
9	1819.375	49.10	30.48	5.68	35.01	50.25	74.0	23.75	108	358
10	2131.250	45.00	31.70	6.31	34.82	48.19	74.0	25.81	203	251
11	2441.875	47.30	32.05	6.69	34.83	51.21	74.0	22.79	185	358
12	5333.750	41.90	34.47	10.75	34.68	52.44	74.0	21.56	104	358

Radiated disturbance at (1 ~ 6) GHz _Average measurement data			
Test configuration mode	**2**	**EUT Operation mode**	**2**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

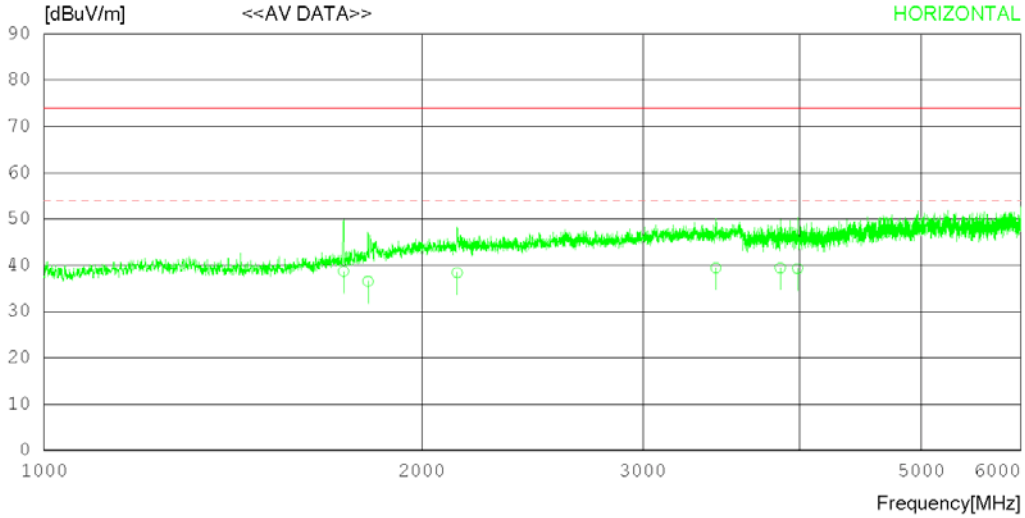
RADIATED EMISSION

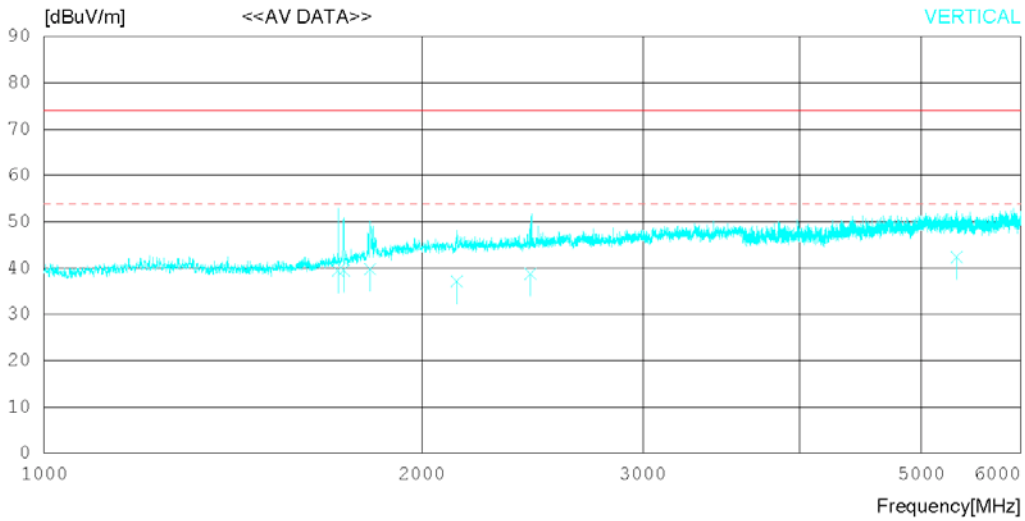
Date 2019-05-08

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 20 'C 44 %.R.H.
Test Condition Wireless Charging

Memo

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





RADIATED EMISSION

Date 2019-05-08

Order No.	DTNC1903-02000
Power Supply	120 VAC 60 Hz
Temp/Humi	20 'C 44 %.R.H.
Test Condition	Wireless Charging

Memo

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

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	1732.180	38.90	29.39	5.51	35.10	38.70	54.00	15.30	108	272
2	1811.720	35.40	30.45	5.67	35.01	36.51	54.00	17.49	111	313
3	2133.370	35.20	31.70	6.31	34.82	38.39	54.00	15.61	105	271
4	3428.375	33.20	32.80	8.10	34.63	39.47	54.00	14.53	102	275
5	3858.445	31.60	33.33	8.92	34.41	39.44	54.00	14.56	107	284
6	3983.670	31.50	33.30	8.90	34.35	39.35	54.00	14.65	106	351
----- Vertical ------										
7	1715.145	39.90	29.18	5.48	35.11	39.45	54.00	14.55	109	337
8	1732.680	39.70	29.39	5.51	35.10	39.50	54.00	14.50	134	0
9	1819.125	38.60	30.48	5.68	35.01	39.75	54.00	14.25	108	324
10	2131.480	33.90	31.70	6.31	34.82	37.09	54.00	16.91	203	254
11	2441.285	34.80	32.05	6.69	34.83	38.71	54.00	15.29	184	353
12	5333.940	31.80	34.47	10.75	34.68	42.34	54.00	11.66	103	352

Radiated disturbance at (6 ~ 18) GHz _Peak measurement data			
Test configuration mode	**2**	**EUT Operation mode**	**2**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

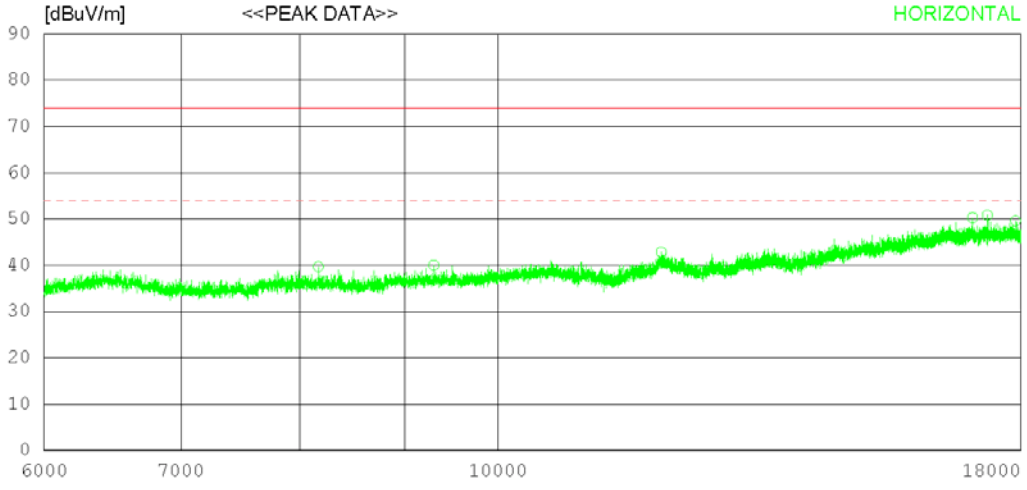
RADIATED EMISSION

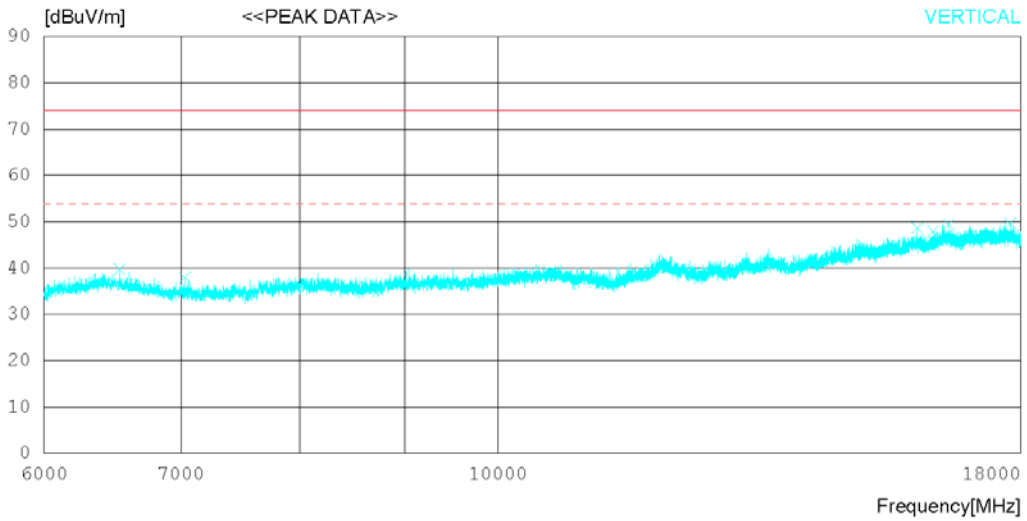
Date 2019-05-08

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 20 'C 44 %.R.H.
Test Condition Wireless Charging

Memo

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





* The measurement is performed above 18 GHz up to 40 GHz and not found emissions above 18 GHz.

RADIATED EMISSION

Date 2019-05-08

Order No.	DTNC1903-02000
Power Supply	120 VAC 60 Hz
Temp/Humi	20 'C 44 %.R.H.
Test Condition	Wireless Charging

Memo

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

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	8168.250	33.40	31.43	12.65	37.79	39.69	74.0	34.31	103	358
2	9300.000	32.90	32.24	13.97	39.11	40.00	74.0	34	107	358
3	12012.750	31.40	33.46	15.67	37.68	42.85	74.0	31.15	115	1
4	17046.750	30.00	37.59	19.97	37.30	50.26	74.0	23.74	102	1
5	17333.250	31.00	37.81	19.56	37.54	50.83	74.0	23.17	108	1
6	17891.250	29.70	38.24	19.88	38.22	49.60	74.0	24.4	109	109
----- Vertical ------										
7	6534.000	35.50	31.58	11.21	38.50	39.79	74.0	34.21	103	358
8	7029.750	33.50	31.45	11.73	38.71	37.97	74.0	36.03	109	122
9	16024.500	30.00	36.45	19.01	36.79	48.67	74.0	25.33	112	1
10	16309.500	29.00	36.77	18.95	36.80	47.92	74.0	26.08	102	1
11	16601.250	29.10	37.10	20.10	36.90	49.40	74.0	24.6	101	27
12	17782.500	29.80	38.15	19.71	38.07	49.59	74.0	24.41	109	1

Radiated disturbance at (6 ~ 18) GHz _Average measurement data			
Test configuration mode	**2**	**EUT Operation mode**	**2**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

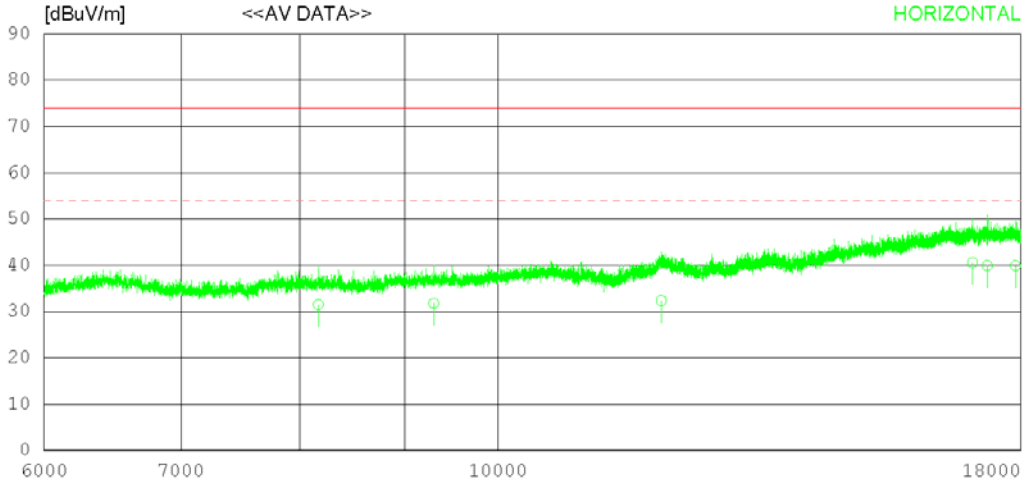
RADIATED EMISSION

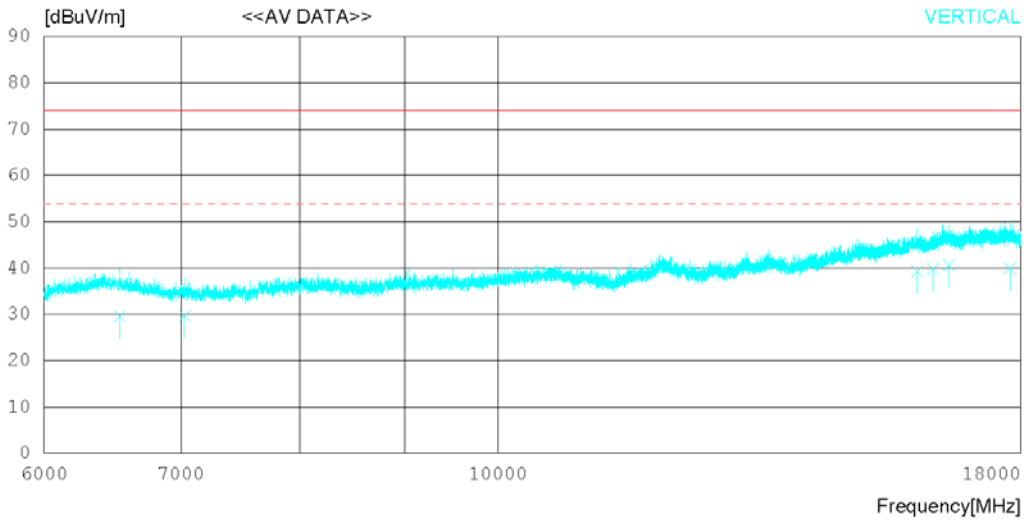
Date 2019-05-08

Order No. DTNC1903-02000
Power Supply 120 VAC 60 Hz
Temp/Humi 20 'C 44 %.R.H.
Test Condition Wireless Charging

Memo

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





* The measurement is performed above 18 GHz up to 40 GHz and not found emissions above 18 GHz.

RADIATED EMISSION

Date 2019-05-08

Order No.	DTNC1903-02000
Power Supply	120 VAC 60 Hz
Temp/Humi	20 'C 44 %.R.H.
Test Condition	Wireless Charging

Memo

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

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	8168.359	25.20	31.43	12.65	37.79	31.49	54.00	22.51	103	356
2	9300.100	24.70	32.24	13.97	39.11	31.80	54.00	22.20	107	357
3	12012.690	20.90	33.46	15.67	37.68	32.35	54.00	21.65	115	0
4	17046.390	20.30	37.59	19.97	37.30	40.56	54.00	13.44	102	0
5	17333.180	20.10	37.81	19.56	37.54	39.93	54.00	14.07	108	0
6	17891.670	20.00	38.24	19.88	38.22	39.90	54.00	14.10	109	114
----- Vertical ------										
7	6534.150	25.30	31.58	11.21	38.50	29.59	54.00	24.41	103	351
8	7029.370	25.20	31.45	11.73	38.71	29.67	54.00	24.33	108	117
9	16024.410	20.60	36.45	19.01	36.79	39.27	54.00	14.73	112	0
10	16309.590	20.80	36.77	18.95	36.80	39.72	54.00	14.28	102	0
11	16601.160	20.30	37.10	20.10	36.90	40.60	54.00	13.40	101	32
12	17782.400	20.10	38.15	19.71	38.07	39.89	54.00	14.11	109	0

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)

8. Revision History

Date	Description	Revised By	Reviewed By
Apr. 17. 2019	Initial report	ChanGeun Lee	HyungJun Kim
May. 09. 2019	Add Wireless charging Test	ChanGeun Lee	HyungJun Kim

-End of test report-