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. : DREFCC2001-0028
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 / OA2001 / ZNFOA2001
5. Test Standard : ANSI C 63.4 : 2014
   FCC Part 15 Subpart B
   (Class B personal computers and peripherals)
6. Date of Test : Dec. 10. 2019 ~ Jan. 14. 2020
7. Testing Environment : Temperature (23 ~ 26) °C , Humidity (42 ~ 48) % R.H.
8. Test Result : Refer to the attached Test Result

Affirmation	Tested by Name : JunSeo Park (Signature)	Reviewed by Name : KyoungHwan Bae (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.
This test report shall not be reproduced except in full, without the written approval of DT&C Co., Ltd.

Jan. 15. 2020

DT&C Co., Ltd.

'This test report is not related to KS Q ISO/IEC 17025 and KOLAS accreditation.'

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

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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
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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	OA2001
Add Model Name	KA2004
FCC ID	ZNFOA2001
Rated Power	DC 3.85 V
Remarks	None

Accessory

Equipment	No.	Manufacturer	Model Name	Product Number
Earphone	1	Cresyn	EMB-LGE53	EAB63728251
Cable	1	Ningbo	LG0179	EAD65830102
Dual Screen	1	LG Electronics	LM-V605N	N/A

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	DATA COMMUNICAITON	EUT was connected NOTEBOOK by USB cable C type and continuously operated
2	DATA COMMUNICAITON (DUAL SCREEN)	EUT was connected Dual screen and NOTEBOOK by USB cable C type and continuously operated

4.3 Test Configuration Mode

No.	Mode	Description
1	DATA COMMUNICAITON	The EUT is reading, writing, internal storage
2	DATA COMMUNICAITON (DUAL SCREEN)	The EUT is reading, writing, internal storage

4.4 Supported Equipment

Used*	Product Type	Manufacturer	Model	Remarks
AE	NOTEBOOK	LG	LG15Z96	MODE 1,2
AE	NOTEBOOK ADAPTOR	Genmao Electronics	LCAP48-WK	MODE 1,2
AE	SSD	SAMSUNG	MU-PT250B	MODE 1,2
AE	KEYBOARD	Logitech	Y-U0011	MODE 1
AE	MOUSE	Logitech	M-U0026	MODE 1,2
AE	LCD MONITOR	DELL	P2217H	MODE 1,2
AE	Ear MIC	Lenovo	PB2	MODE 1,2
AE	KEYBOARD	HP	KB-065	MODE 2
AE	Earphone	CRESYN	EMB-LGE53	MODE 1,2
AE	cable	NINGBO	LG0179	MODE 1,2
AE	Dual Screen	LG Electronics	LM-V605N	MODE 2

*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
AUX	I/O	1.5	Non shield	Plastic	EUT
USB	I/O	1.5	Shield	Plastic	EUT
USB(EUT) USB(MOUSE) USB(KEYBOARD) USB(SSD) HDMI(MONITOR) AUX(EAR MIC) DC IN(ADAPTOR)	I/O I/O I/O I/O I/O I/O DC	1.3 1.8 1.8 1.0 1.8 1.8 1.8	Non shield Non shield Non shield Non shield shield Non shield Non shield	Plastic Plastic Plastic Plastic Plastic Plastic Plastic	NOTEBOOK
DC OUT POEWER	DC AC	1.8 -	Non shield Non shield	Plastic Plastic	NOTEBOOK ADAPTOR

*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]
0.26885	N	40.54	Cispr - Average	51.15	10.61

-Radiated Disturbance

Frequency [MHz]	Pol.	Result [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]
263.996	H	44.41	Quasi - Peak	46.00	1.59

6. Test Environment

Test Items	Test date (YYYY-MM-DD)	Temp. (℃)	Humidity (% R.H.)	Pressure (kPa)
Conducted Disturbance	2019-12-10 2020-01-14	24 23	42 48	-
Radiated Disturbance	2019-12-11 2019-12-11 2020-01-13	23 23 26	47 44 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	2019.10.24	2020.10.24
LISN	ENV216	ROHDE & SCHWARZ	101979	2019.12.09	2020.12.20
LISN	LISN1600	TTI	197204	2019.06.04	2020.06.04
TRANSIENT LIMITER	TL-B0930A	EMCIS	11002	2019.08.30	2020.08.30
50 OHM TERMINATOR	CT-01	TME	N/A	2019.12.16	2020.12.16

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

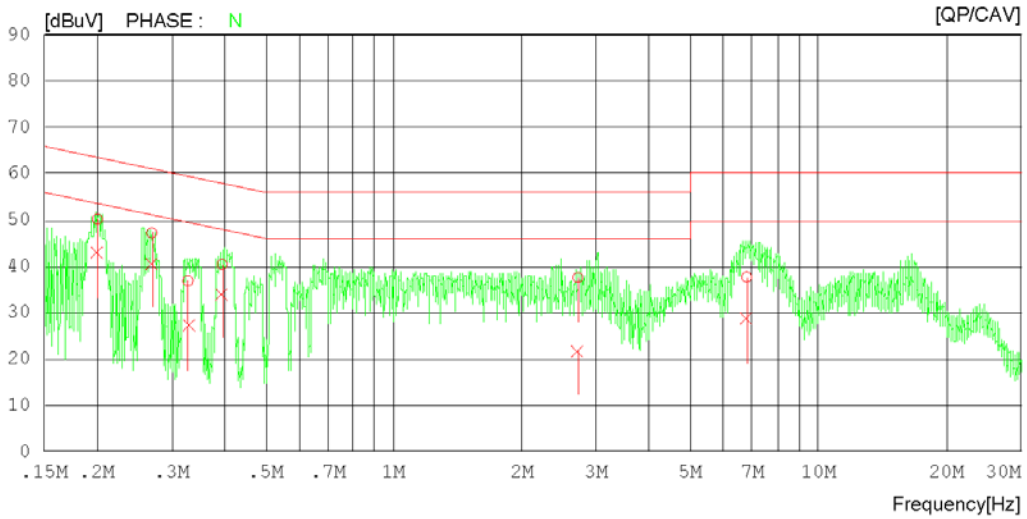
Results of Conducted Emission

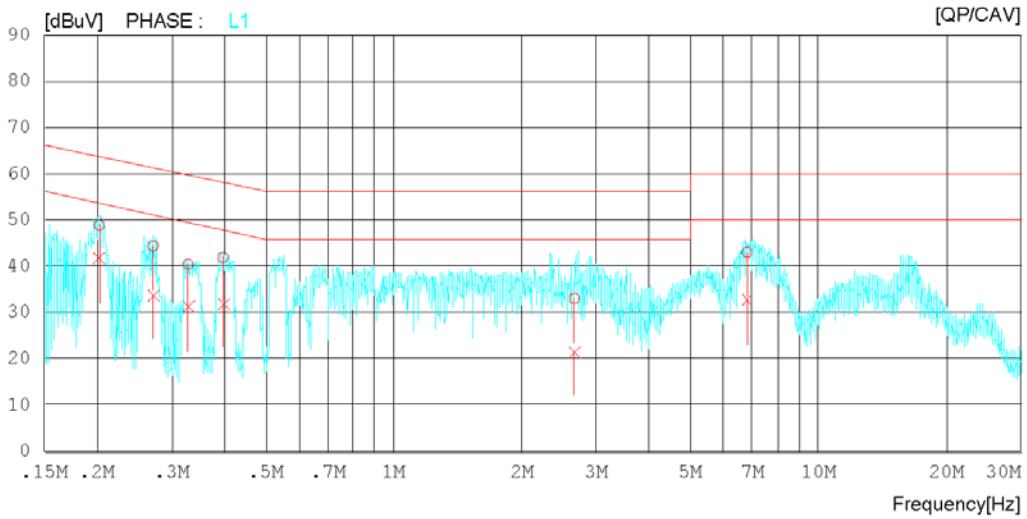
DT&C
Date 2019-12-10

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi/Atm 24 'C 42 % R.H.
Test Condition DATA COMMUNICATION

Memo

LIMIT : CISPR32_B QP
CISPR32_B AV





Results of Conducted Emission

DT&C
Date 2019-12-10

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi/Atm 24 'C 42 % R.H.
Test Condition DATA COMMUNICATION

Memo

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	0.20044	30.20	22.89	20.00	50.20	42.89	63.59	53.59	13.39	10.70	N
2	0.26885	27.40	20.69	19.85	47.25	40.54	61.15	51.15	13.90	10.61	N
3	0.32750	16.90	7.16	19.99	36.89	27.15	59.51	49.51	22.62	22.36	N
4	0.39450	20.20	13.85	20.17	40.37	34.02	57.97	47.97	17.60	13.95	N
5	2.71476	17.42	1.72	20.11	37.53	21.83	56.00	46.00	18.47	24.17	N
6	6.78493	17.28	8.26	20.39	37.67	28.65	60.00	50.00	22.33	21.35	N
7	0.20249	28.89	21.70	19.99	48.88	41.69	63.51	53.51	14.63	11.82	L1
8	0.27150	24.52	13.90	19.85	44.37	33.75	61.07	51.07	16.70	17.32	L1
9	0.32750	20.41	11.31	19.99	40.40	31.30	59.51	49.51	19.11	18.21	L1
10	0.39597	21.71	11.70	20.17	41.88	31.87	57.94	47.94	16.06	16.07	L1
11	2.66440	12.89	1.38	20.12	33.01	21.50	56.00	46.00	22.99	24.50	L1
12	6.79679	22.49	12.16	20.49	42.98	32.65	60.00	50.00	17.02	17.35	L1

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

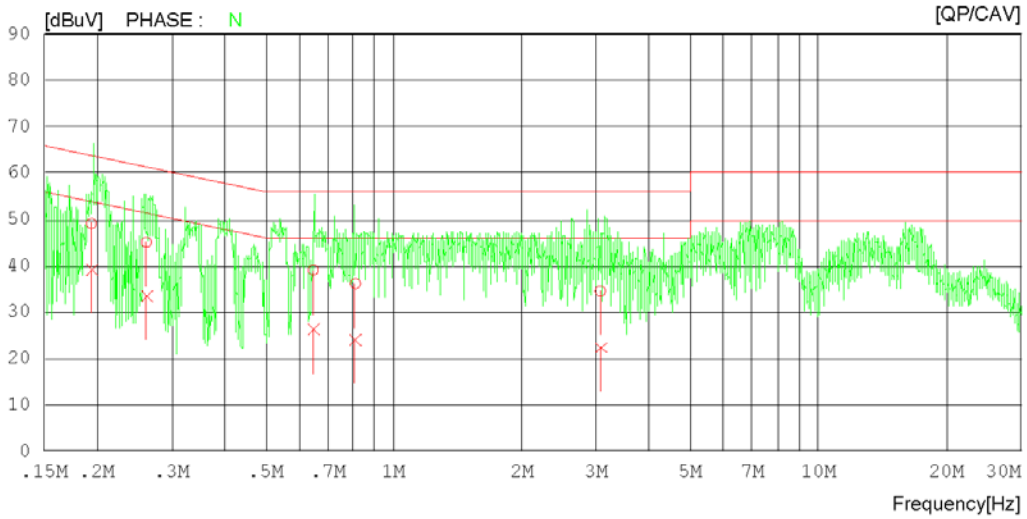
Results of Conducted Emission

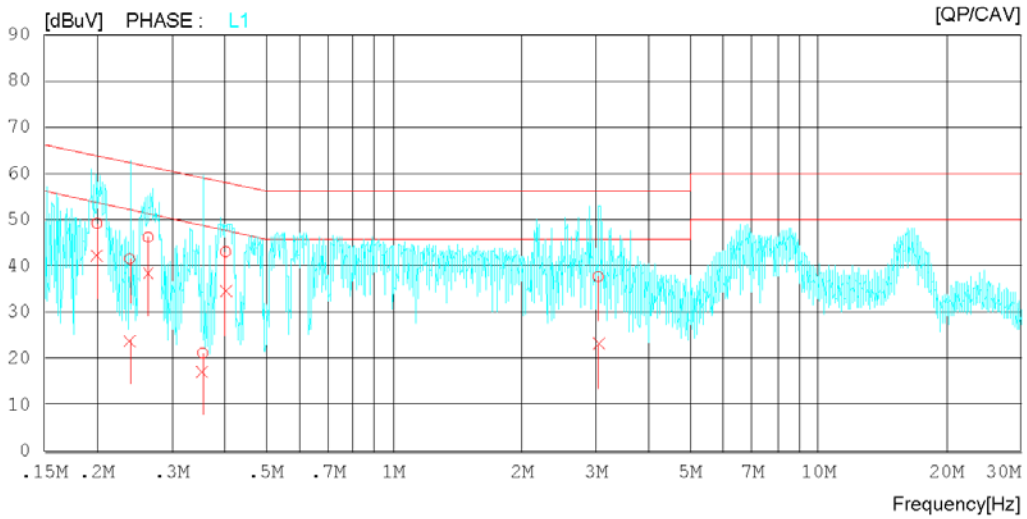
DT&C
Date 2020-01-14

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi/Atm 23 'C 48 % R.H.
Test Condition DATA COMMUNICATION

Memo Dual Screen

LIMIT : CISPR32_B QP
CISPR32_B AV





Results of Conducted Emission

DT&C
Date 2020-01-14

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi/Atm 23 'C 48 % R.H.
Test Condition DATA COMMUNICATION

Memo Dual Screen

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	0.19396	29.07	19.08	20.04	49.11	39.12	63.87	53.87	14.76	14.75	N
2	0.26155	25.26	13.83	19.83	45.09	33.66	61.38	51.38	16.29	17.72	N
3	0.64679	18.88	6.13	20.19	39.07	26.32	56.00	46.00	16.93	19.68	N
4	0.81292	16.00	3.91	20.14	36.14	24.05	56.00	46.00	19.86	21.95	N
5	3.06520	14.46	2.23	20.08	34.54	22.31	56.00	46.00	21.46	23.69	N
6	0.19994	29.24	22.29	20.00	49.24	42.29	63.61	53.61	14.37	11.32	L1
7	0.23872	21.68	4.04	19.86	41.54	23.90	62.14	52.14	20.60	28.24	L1
8	0.26378	26.39	18.73	19.84	46.23	38.57	61.31	51.31	15.08	12.74	L1
9	0.35467	1.16	-2.80	20.06	21.22	17.26	58.85	48.85	37.63	31.59	L1
10	0.40164	22.92	14.33	20.18	43.10	34.51	57.82	47.82	14.72	13.31	L1
11	3.02920	17.63	3.07	20.08	37.71	23.15	56.00	46.00	18.29	22.85	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 (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	2019.06.12	2020.06.12
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	2019.02.18	2020.02.18
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	SAS-574	A.H.SYSTEMS INC.	155	2019.07.03	2021.07.03
PREAMPLIFIER	MLA-1840-J02-45	TSJ	16966-10728	2019.06.27	2020.06.27
(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**

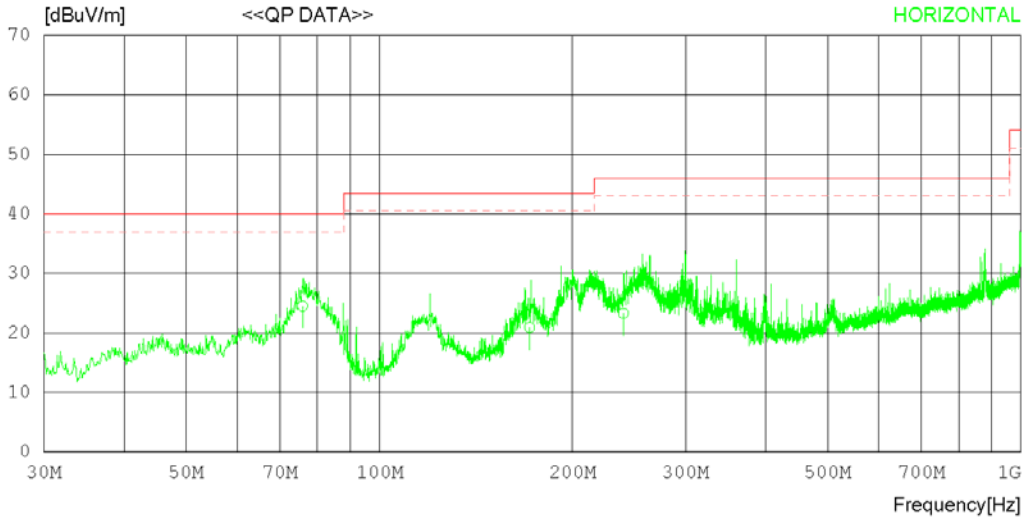
RADIATED EMISSION

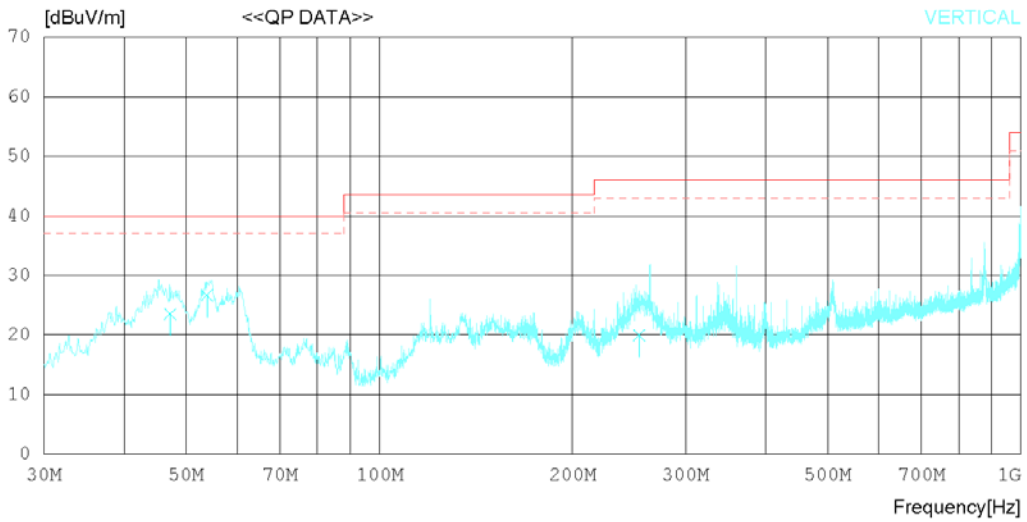
Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

Memo

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





RADIATED EMISSION

Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

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	240.000	28.80	18.10	2.07	25.71	23.26	46.00	22.74	120	24
2	75.832	33.20	15.63	1.43	25.75	24.51	40.00	15.49	273	113
3	171.374	26.80	17.95	1.81	25.64	20.92	43.50	22.58	134	308
----- Vertical ------										
4	47.218	30.20	17.90	1.26	25.80	23.56	40.00	16.44	120	124
5	53.886	32.60	18.59	1.29	25.79	26.69	40.00	13.31	230	236
6	253.943	25.60	18.04	2.10	25.75	19.99	46.00	26.01	277	166

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**

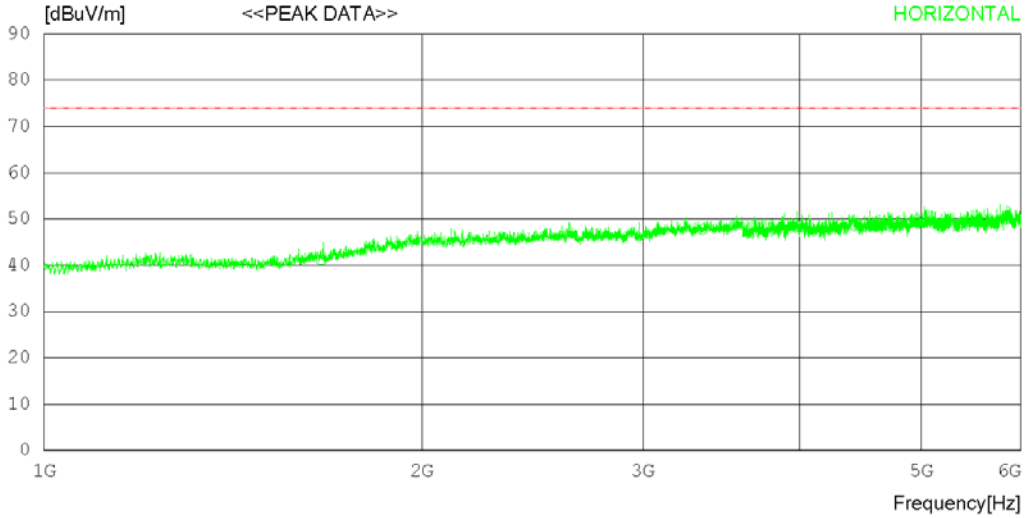
RADIATED EMISSION

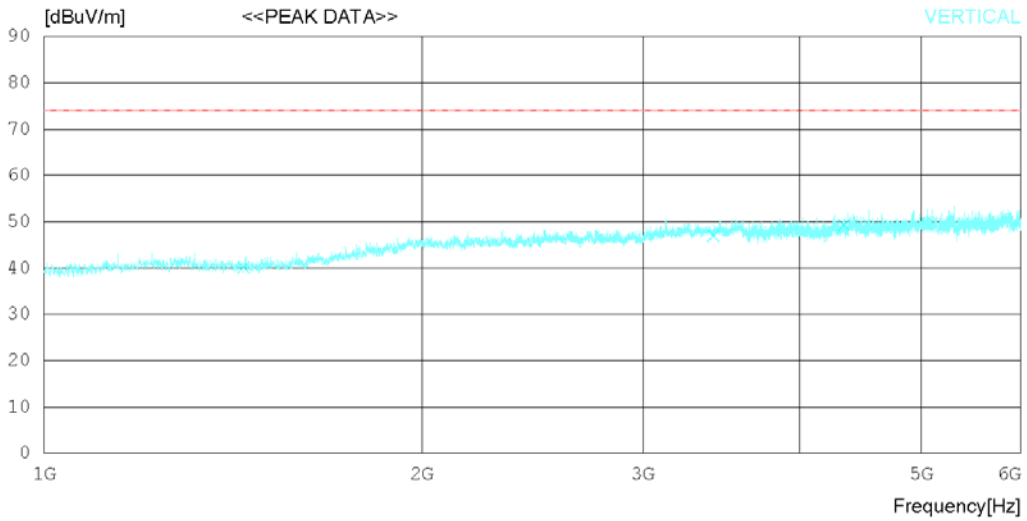
Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

Memo

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





RADIATED EMISSION

Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

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	1663.125	41.50	28.93	5.59	34.81	41.21	74.0	32.79	123	252
2	3345.000	41.20	32.81	8.18	34.45	47.74	74.0	26.26	203	0
3	4425.625	38.70	33.85	10.12	34.10	48.57	74.0	25.43	237	273
----- Vertical ------										
4	1441.875	42.10	27.93	5.25	35.13	40.15	74.0	33.85	302	357
5	3414.375	40.20	32.80	8.29	34.35	46.94	74.0	27.06	336	1
6	4336.875	39.70	33.67	9.94	33.98	49.33	74.0	24.67	127	93

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**

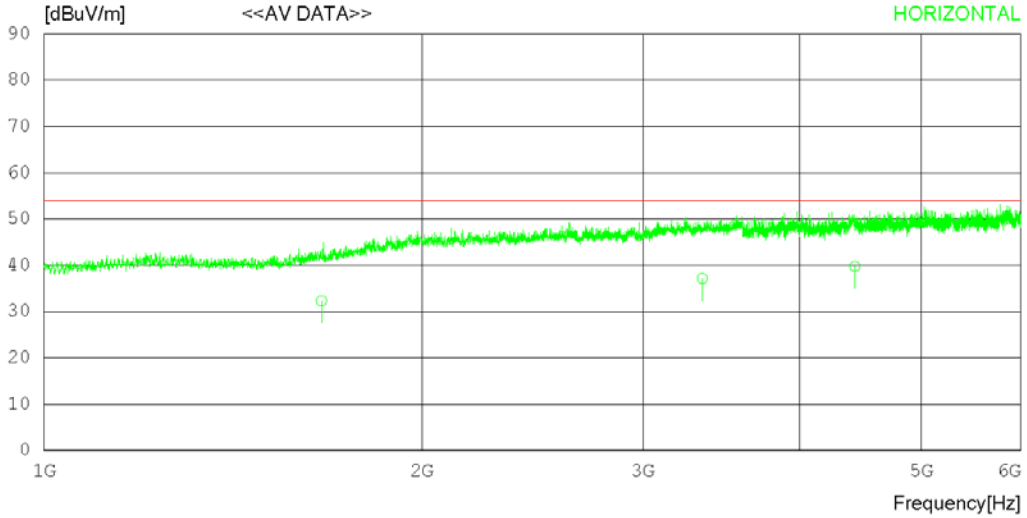
RADIATED EMISSION

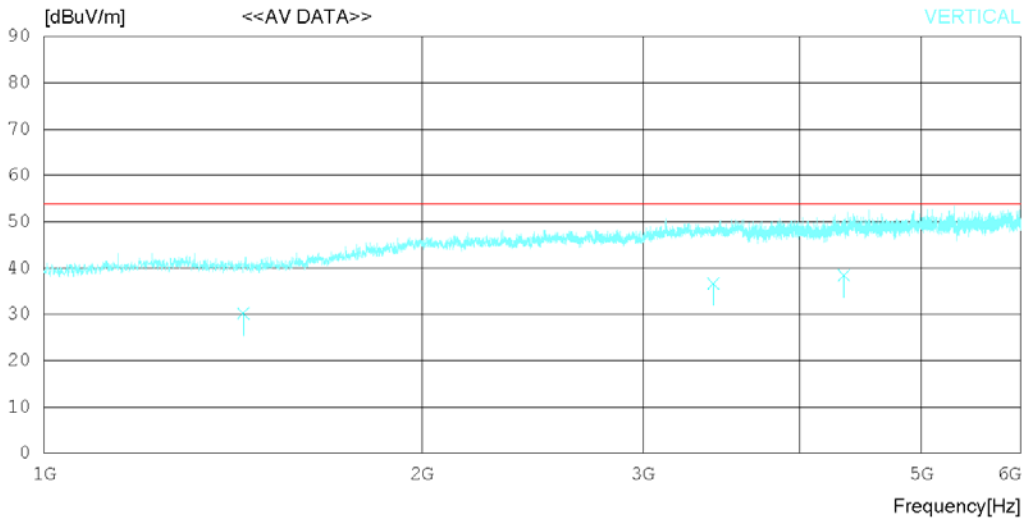
Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

Memo

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





RADIATED EMISSION

Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

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	1663.124	32.60	28.93	5.59	34.81	32.31	54.00	21.69	282	301
2	3345.011	30.60	32.81	8.18	34.45	37.14	54.00	16.86	266	112
3	4425.133	29.90	33.85	10.12	34.10	39.77	54.00	14.23	227	272
----- Vertical ------										
4	1441.224	32.20	27.94	5.25	35.13	30.26	54.00	23.74	124	120
5	3414.311	29.90	32.80	8.29	34.35	36.64	54.00	17.36	308	272
6	4336.811	28.80	33.67	9.94	33.98	38.43	54.00	15.57	164	308

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**

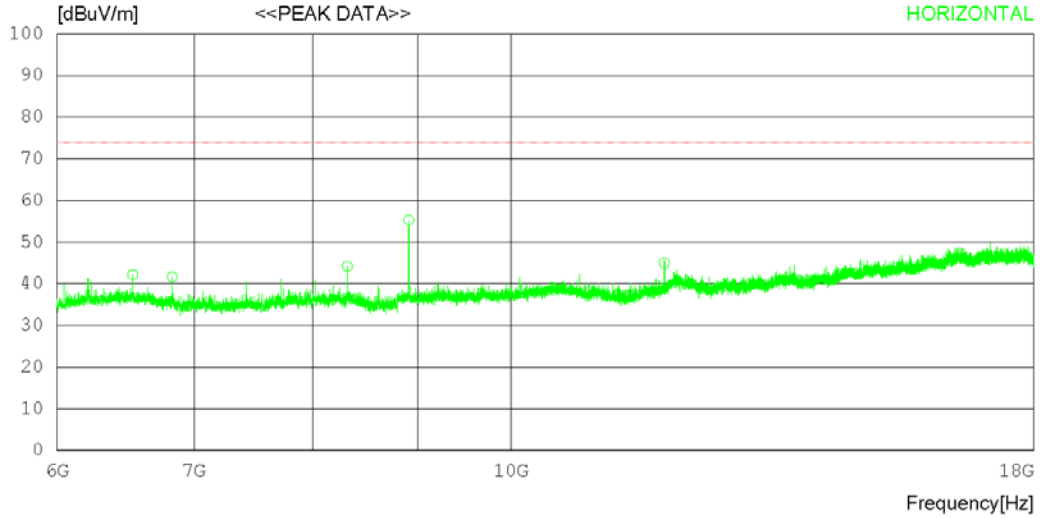
RADIATED EMISSION

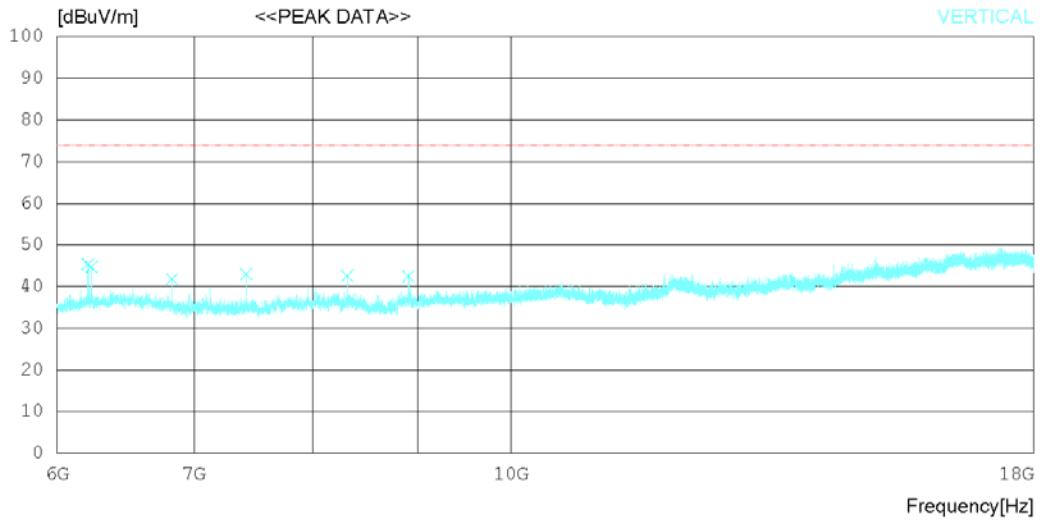
Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

Memo

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





RADIATED EMISSION

Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

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	6533.250	37.90	31.58	11.21	38.50	42.19	74.0	31.81	223	202
2	6830.250	37.40	31.50	11.31	38.55	41.66	74.0	32.34	243	0
3	8316.000	37.50	31.55	12.86	37.70	44.21	74.0	29.79	137	0
4	8910.000	48.60	32.03	13.38	38.69	55.32	74.0	18.68	324	0
5	11880.000	34.10	33.33	15.44	37.86	45.01	74.0	28.99	208	0
----- Vertical ------										
6	6212.250	41.90	31.66	10.79	38.95	45.40	74.0	28.6	302	225
7	6236.250	41.10	31.66	10.84	38.91	44.69	74.0	29.31	226	248
8	6830.250	37.50	31.50	11.31	38.55	41.76	74.0	32.24	127	225
9	7425.000	38.20	31.39	11.80	38.40	42.99	74.0	31.01	308	214
10	8315.250	35.90	31.55	12.86	37.70	42.61	74.0	31.39	336	0
11	8909.250	35.80	32.03	13.38	38.69	42.52	74.0	31.48	207	0

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**

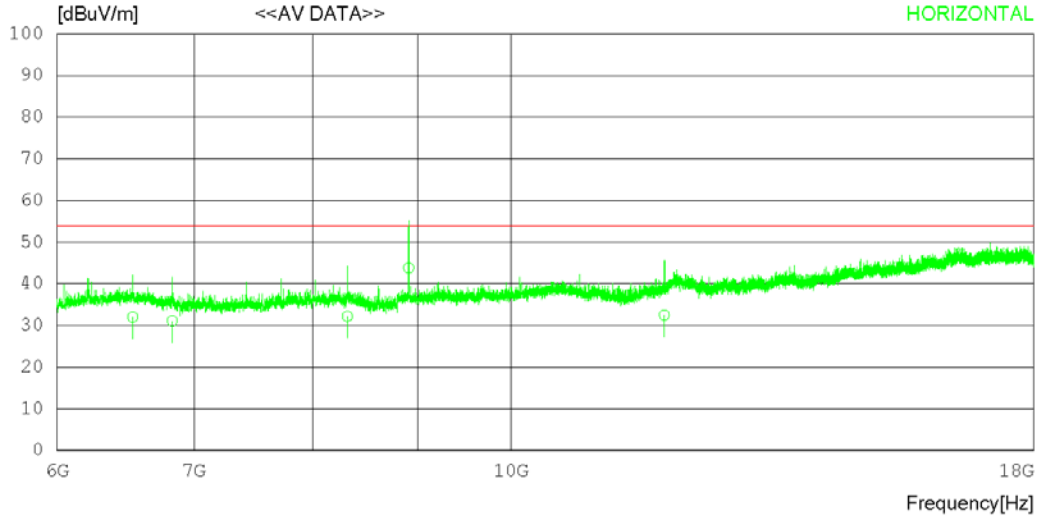
RADIATED EMISSION

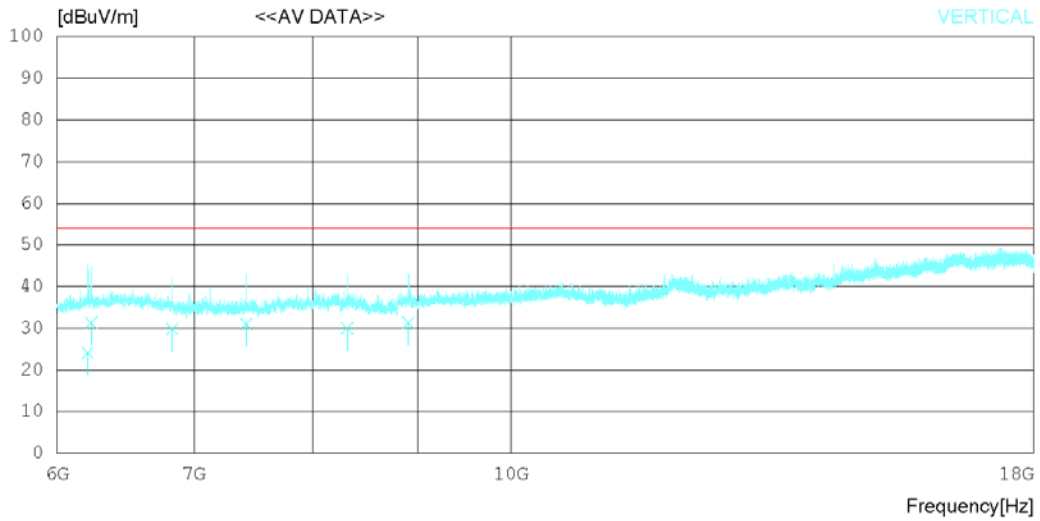
Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

Memo

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





RADIATED EMISSION

Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

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	6533.244	27.70	31.58	11.21	38.50	31.99	54.00	22.01	120	117
2	6830.211	26.80	31.50	11.31	38.55	31.06	54.00	22.94	277	132
3	8316.242	25.50	31.55	12.86	37.70	32.21	54.00	21.79	131	246
4	8910.033	37.10	32.03	13.38	38.69	43.82	54.00	10.18	277	131
5	11880.120	21.60	33.33	15.44	37.86	32.51	54.00	21.49	152	244
----- Vertical ------										
6	6212.242	20.60	31.66	10.79	38.95	24.10	54.00	29.90	124	120
7	6235.842	27.70	31.66	10.84	38.91	31.29	54.00	22.71	325	27
8	6831.002	25.50	31.50	11.31	38.55	29.76	54.00	24.24	290	31
9	7425.022	26.20	31.39	11.80	38.40	30.99	54.00	23.01	176	227
10	8314.250	23.30	31.55	12.86	37.70	30.01	54.00	23.99	314	130
11	8909.242	24.60	32.03	13.38	38.69	31.32	54.00	22.68	244	308

Radiated disturbance at (18 ~ 40) GHz _Peak measurement data			
Test configuration mode	**1**	**EUT Operation mode**	**1**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

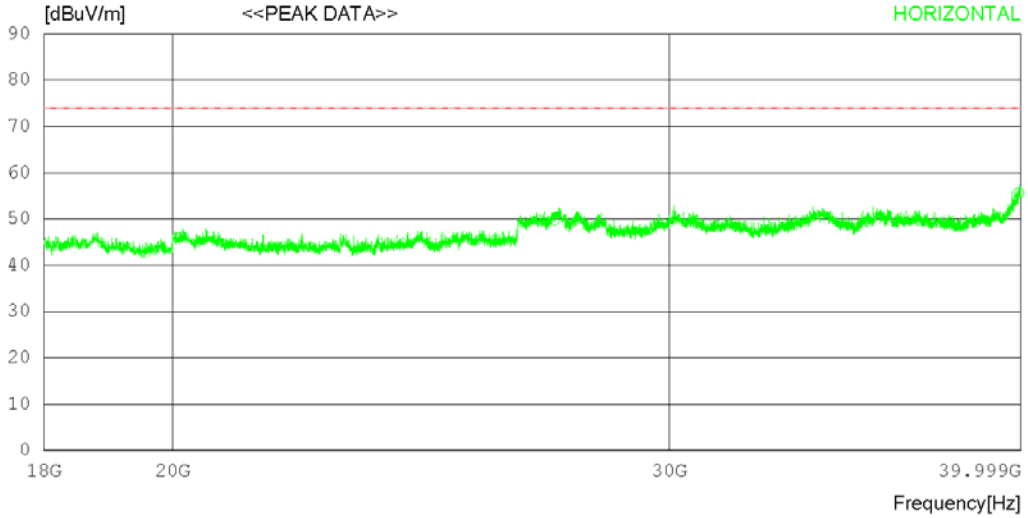
RADIATED EMISSION

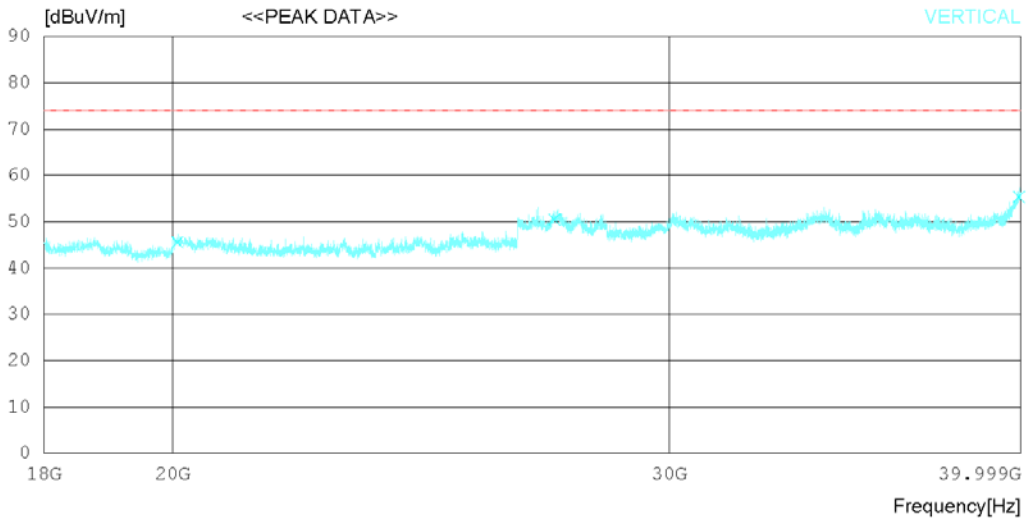
Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

Memo

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





RADIATED EMISSION

Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

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	20073.500	32.10	39.60	19.31	45.07	45.94	74.0	28.06	308	226
2	27319.750	35.30	38.77	21.08	45.36	49.79	74.0	24.21	226	0
3	39934.000	35.30	43.33	23.98	46.97	55.64	74.0	18.36	321	65
----- Vertical ------										
4	20073.500	31.70	39.60	19.31	45.07	45.54	74.0	28.46	226	358
5	27319.750	36.00	38.77	21.08	45.36	50.49	74.0	23.51	127	358
6	39934.000	35.00	43.33	23.98	46.97	55.34	74.0	18.66	312	358

Radiated disturbance at (18 ~ 40) GHz _Average measurement data			
Test configuration mode	**1**	**EUT Operation mode**	**1**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

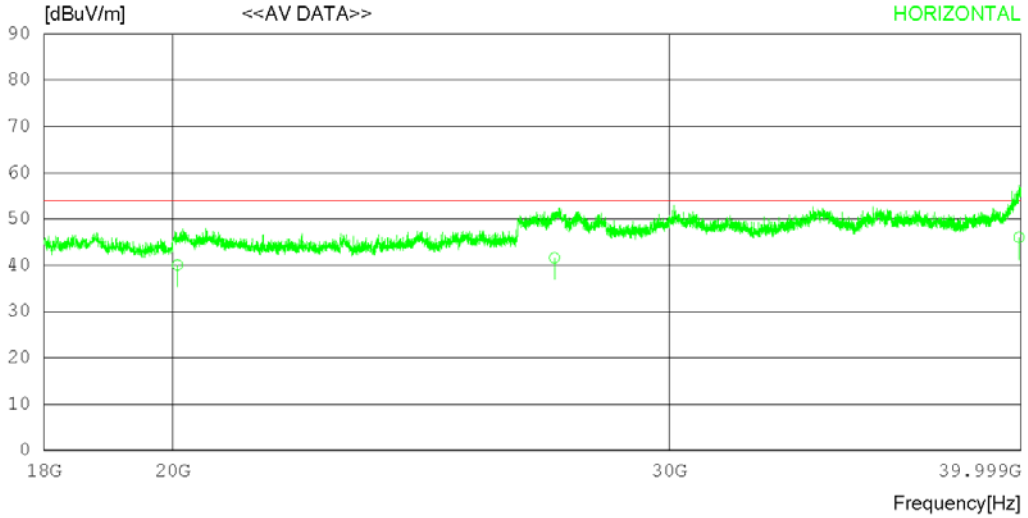
RADIATED EMISSION

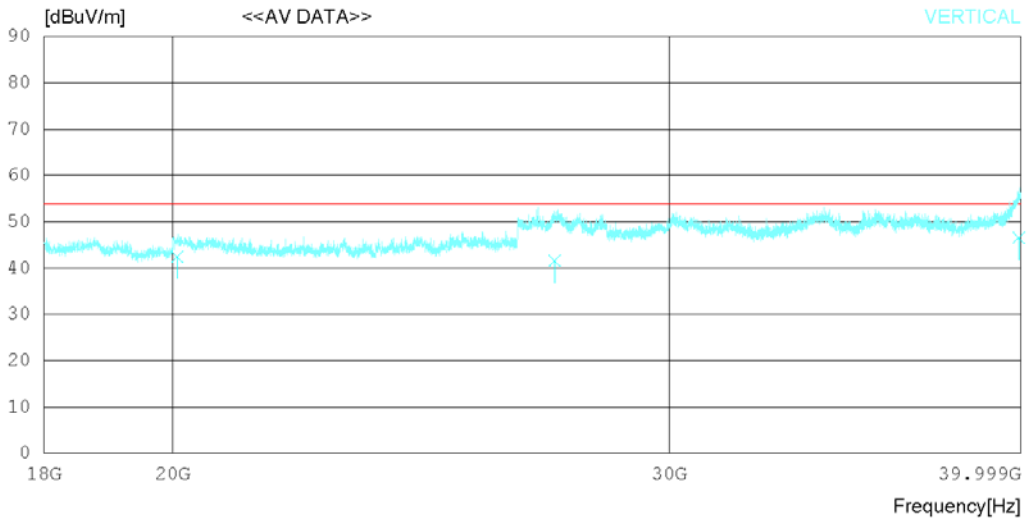
Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

Memo

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





RADIATED EMISSION

Date 2019-12-11

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 23 'C 47 % R.H.
Test Condition DATA COMMUNICATION

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	20073.42026.20	39.60	19.31	45.07	40.04	54.00	13.96	120	162	
2	27319.13027.10	38.77	21.08	45.36	41.59	54.00	12.41	203	78	
3	39934.04025.66	43.33	23.98	46.97	46.00	54.00	8.00	279	156	
----- Vertical ------										
4	20073.42028.60	39.60	19.31	45.07	42.44	54.00	11.56	120	177	
5	27319.41027.10	38.77	21.08	45.36	41.59	54.00	12.41	308	203	
6	39934.07026.22	43.33	23.98	46.97	46.56	54.00	7.44	243	246	

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

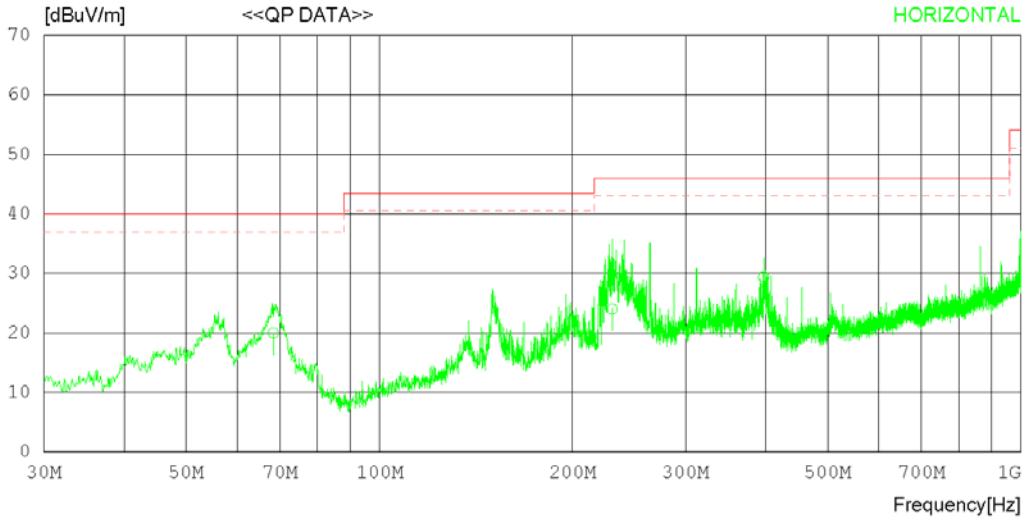
RADIATED EMISSION

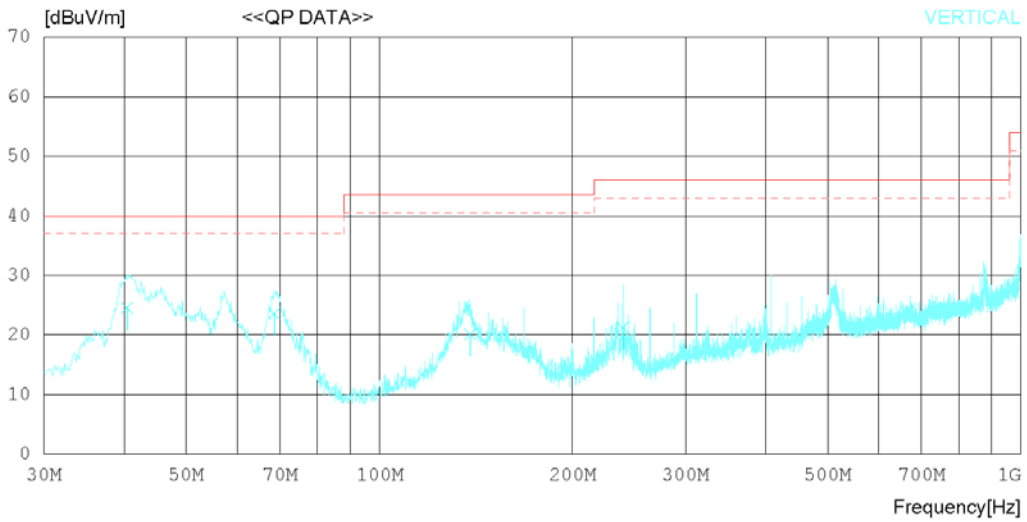
Date 2020-01-13

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 26 'C 44 % R.H.
Test Condition DATA COMMUNICATION

Memo DualScreen

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





RADIATED EMISSION

Date 2020-01-13

Order No.	DTNC1911-09601
Power Supply	120 V 60 Hz
Temp/Humi	26 'C 44 % R.H.
Test Condition	DATA COMMUNICATION
Memo	DualScreen

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	68.315	27.62	16.77	1.35	25.76	19.98	40.00	20.02	234	120
2	230.664	30.22	17.45	2.04	25.69	24.02	46.00	21.98	113	227
3	397.135	31.26	21.44	2.53	25.84	29.39	46.00	16.61	325	17
----- Vertical ------										
4	40.428	32.20	17.01	1.20	25.81	24.60	40.00	15.40	102	205
5	68.557	31.27	16.74	1.36	25.76	23.61	40.00	16.39	323	78
6	138.517	25.55	18.60	1.68	25.68	20.15	43.50	23.35	277	113
7	239.879	26.82	18.09	2.07	25.71	21.27	46.00	24.73	145	273

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**

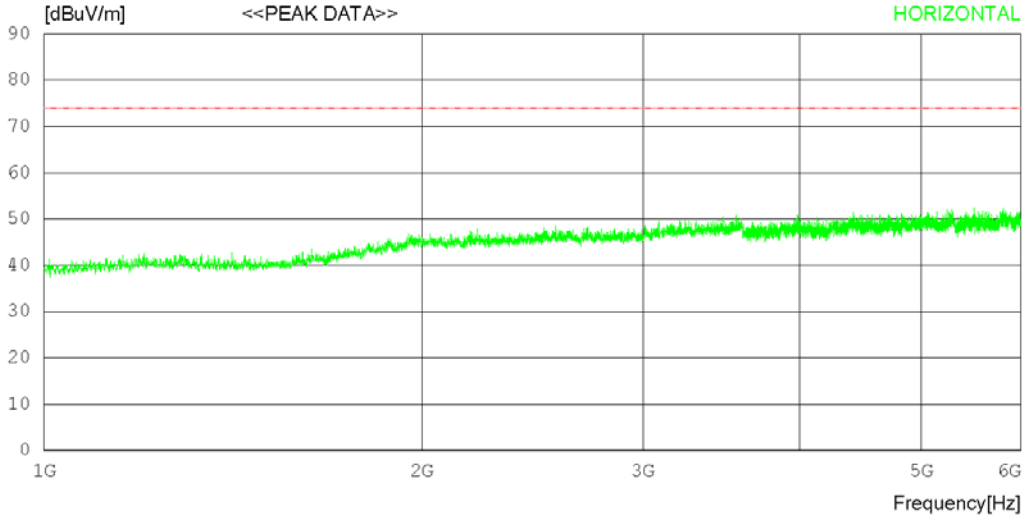
RADIATED EMISSION

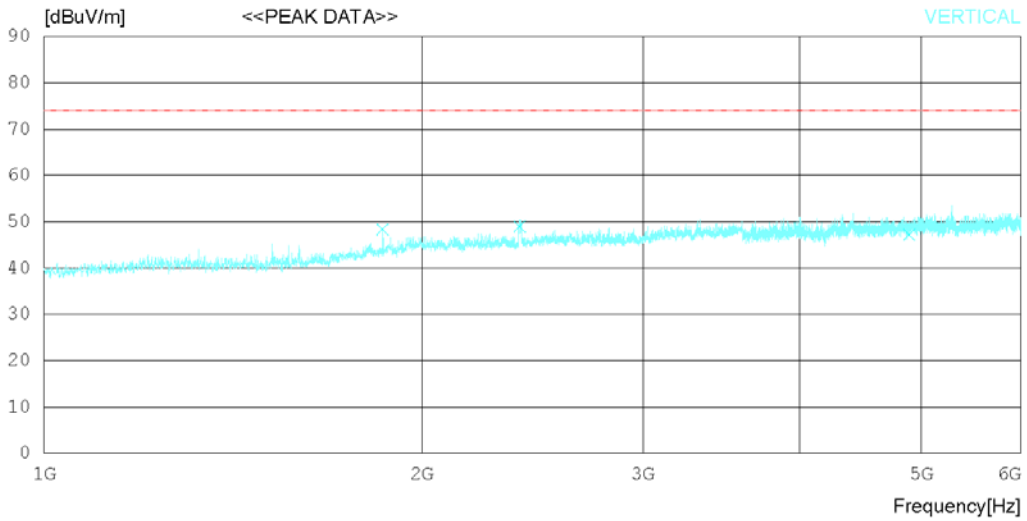
Date 2020-01-13

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 26 'C 44 % R.H.
Test Condition DATA COMMUNICATION

Memo DualScreen

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





RADIATED EMISSION

Date 2020-01-13

Order No.	DTNC1911-09601
Power Supply	120 V 60 Hz
Temp/Humi	26 'C 44 % R.H.
Test Condition	DATA COMMUNICATION
Memo	DualScreen

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	2570.000	41.50	32.54	7.05	34.68	46.41	74.0	27.59	123	358
2	3165.000	41.20	33.06	7.91	34.70	47.47	74.0	26.53	335	358
3	3456.875	41.80	32.80	8.32	34.29	48.63	74.0	25.37	127	184
----- Vertical ------										
4	1861.250	46.20	30.71	5.99	34.54	48.36	74.0	25.64	332	0
5	2393.125	44.90	31.79	6.85	34.57	48.97	74.0	25.03	205	0
6	4889.375	36.90	34.08	10.96	34.71	47.23	74.0	26.77	142	0

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**

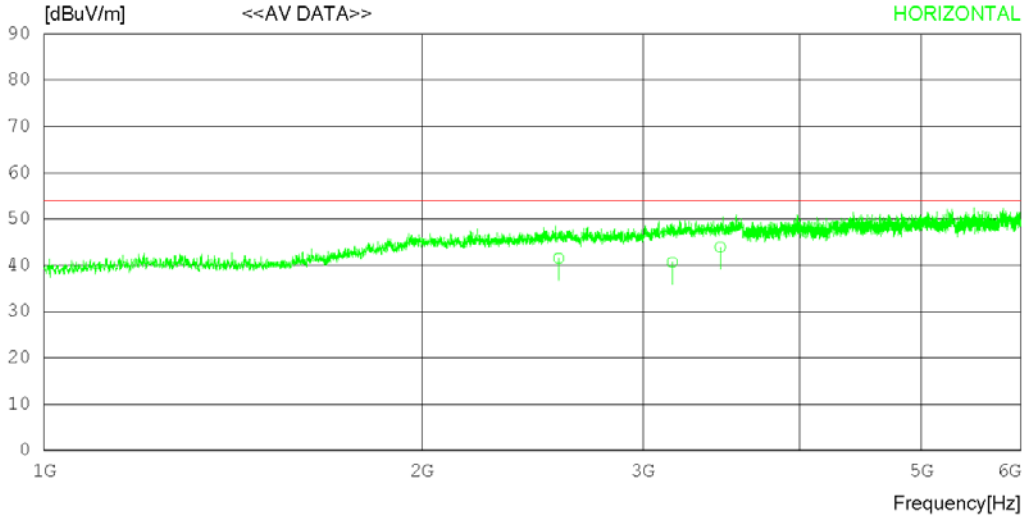
RADIATED EMISSION

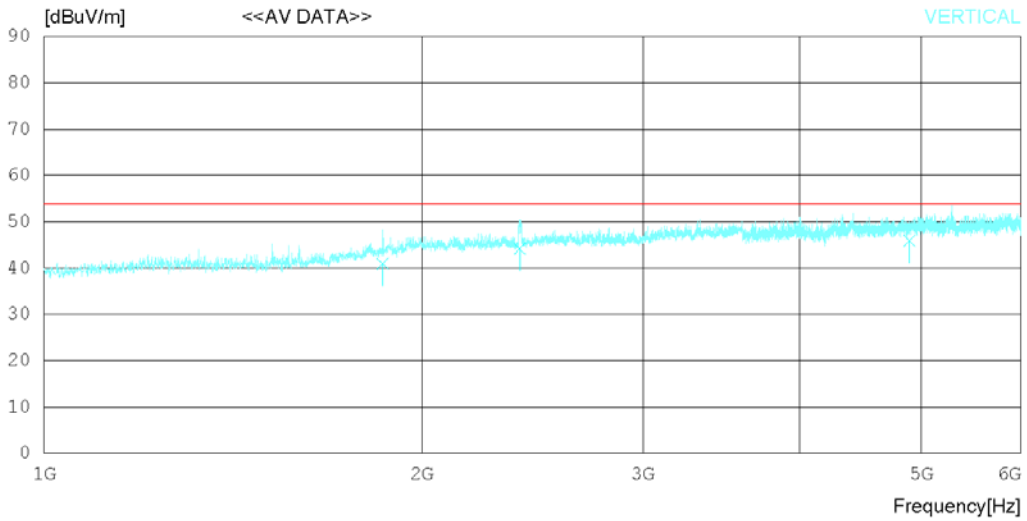
Date 2020-01-13

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 26 'C 44 % R.H.
Test Condition DATA COMMUNICATION

Memo DualScreen

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





RADIATED EMISSION

Date 2020-01-13

Order No.	DTNC1911-09601
Power Supply	120 V 60 Hz
Temp/Humi	26 'C 44 % R.H.
Test Condition	DATA COMMUNICATION
Memo	DualScreen

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	2570.011	36.60	32.54	7.05	34.68	41.51	54.00	12.49	201	120
2	3165.302	34.40	33.06	7.91	34.70	40.67	54.00	13.33	277	223
3	3456.110	37.10	32.80	8.32	34.30	43.92	54.00	10.08	265	166
----- Vertical ------										
4	1861.142	38.80	30.71	5.99	34.54	40.96	54.00	13.04	246	120
5	2393.127	40.10	31.79	6.85	34.57	44.17	54.00	9.83	177	233
6	4889.378	35.60	34.08	10.96	34.71	45.93	54.00	8.07	237	122

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**

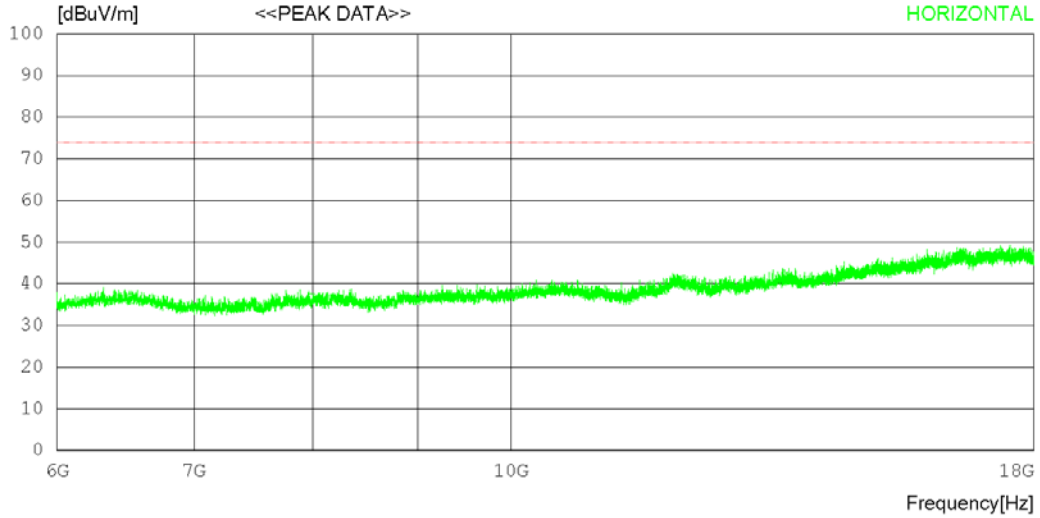
RADIATED EMISSION

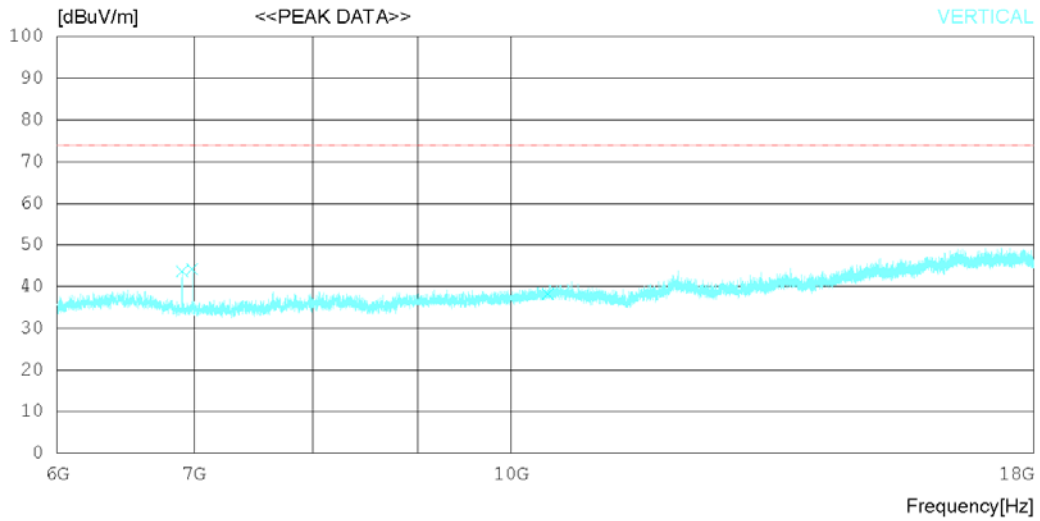
Date 2020-01-13

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 26 'C 44 % R.H.
Test Condition DATA COMMUNICATION

Memo DualScreen

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





RADIATED EMISSION

Date 2020-01-13

Order No.	DTNC1911-09601
Power Supply	120 V 60 Hz
Temp/Humi	26 'C 44 % R.H.
Test Condition	DATA COMMUNICATION
Memo	DualScreen

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	6510.000	32.10	31.58	11.20	38.52	36.36	74.0	37.64	342	241
2	7990.500	30.80	31.30	12.26	37.89	36.47	74.0	37.53	224	66
3	11734.500	27.80	33.18	15.33	38.11	38.20	74.0	35.8	273	141
----- Vertical ------										
4	6906.000	39.30	31.48	11.52	38.62	43.68	74.0	30.32	114	358
5	6986.250	39.70	31.45	11.74	38.70	44.19	74.0	29.81	224	352
6	10423.500	29.30	32.49	14.56	38.10	38.25	74.0	35.75	246	358

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**

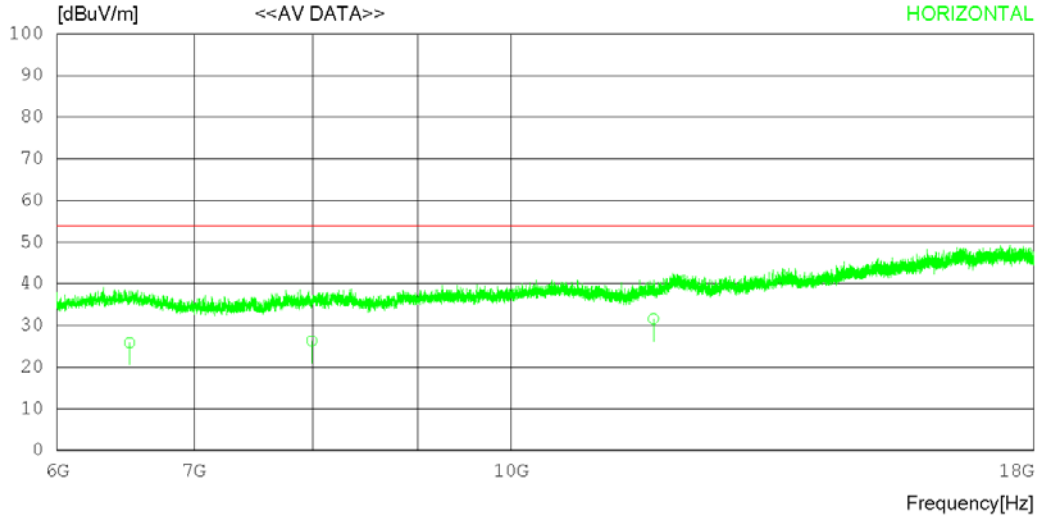
RADIATED EMISSION

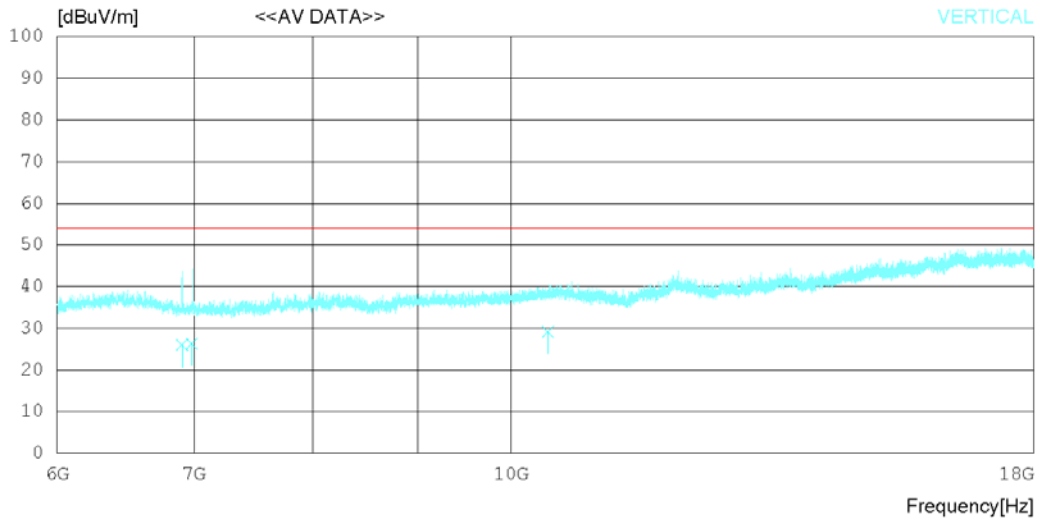
Date 2020-01-13

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 26 'C 44 % R.H.
Test Condition DATA COMMUNICATION

Memo DualScreen

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





RADIATED EMISSION

Date 2020-01-13

Order No.	DTNC1911-09601
Power Supply	120 V 60 Hz
Temp/Humi	26 'C 44 % R.H.
Test Condition	DATA COMMUNICATION
Memo	DualScreen

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	6510.041	21.60	31.58	11.20	38.52	25.86	54.00	28.14	120	124
2	7990.511	20.60	31.30	12.26	37.89	26.27	54.00	27.73	273	233
3	11734.300	21.20	33.18	15.33	38.11	31.60	54.00	22.40	324	177
----- Vertical ------										
4	6905.828	21.60	31.48	11.52	38.62	25.98	54.00	28.02	124	208
5	6985.244	21.80	31.45	11.73	38.70	26.28	54.00	27.72	277	308
6	10423.540	20.20	32.49	14.56	38.10	29.15	54.00	24.85	308	11

Radiated disturbance at (18 ~ 40) GHz _Peak measurement data			
Test configuration mode	**2**	**EUT Operation mode**	**2**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

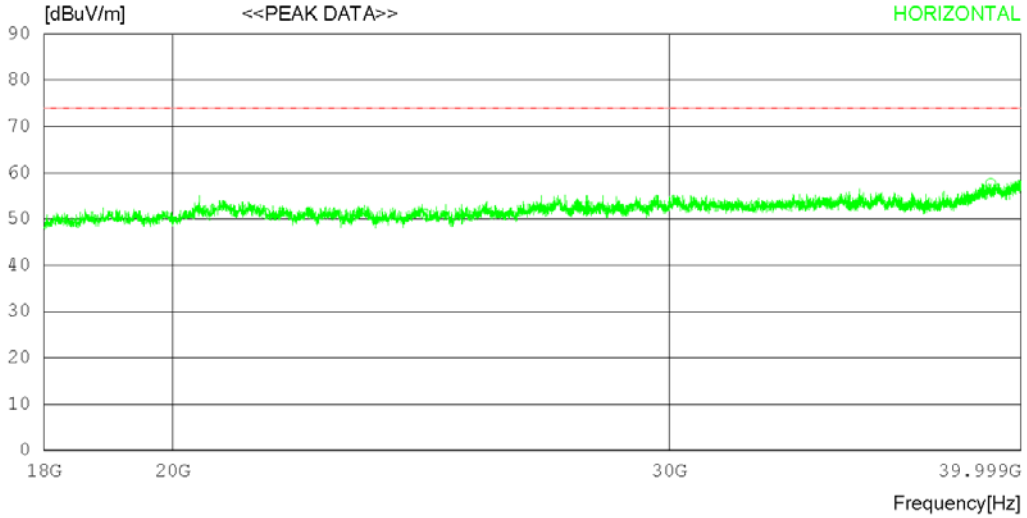
RADIATED EMISSION

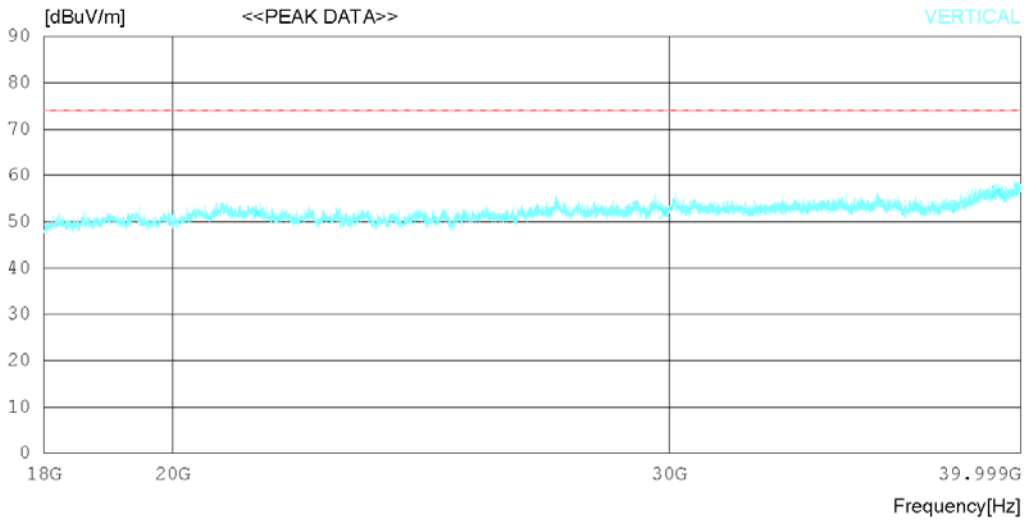
Date 2020-01-13

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 26 'C 44 % R.H.
Test Condition DATA COMMUNICATION

Memo DualScreen

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





RADIATED EMISSION

Date 2020-01-13

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Temp/Humi	26 'C 44 % R.H.
Test Condition	DATA COMMUNICATION
Memo	DualScreen

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	21566.750	39.30	45.40	20.19	53.71	51.18	74.0	22.82	224	266
2	24586.250	38.80	45.50	20.64	53.92	51.02	74.0	22.98	124	349
3	39026.500	36.50	47.63	25.75	52.25	57.63	74.0	16.37	273	244
----- Vertical ------										
4	21440.250	39.90	45.40	20.26	53.65	51.91	74.0	22.09	352	66
5	29899.250	34.80	47.50	21.86	52.23	51.93	74.0	22.07	144	355
6	39252.000	35.40	47.95	25.41	52.24	56.52	74.0	17.48	250	183

Radiated disturbance at (18 ~ 40) GHz _Average measurement data			
Test configuration mode	**2**	**EUT Operation mode**	**2**
Test voltage (V)	**120**	**Test Frequency (Hz)**	**60**

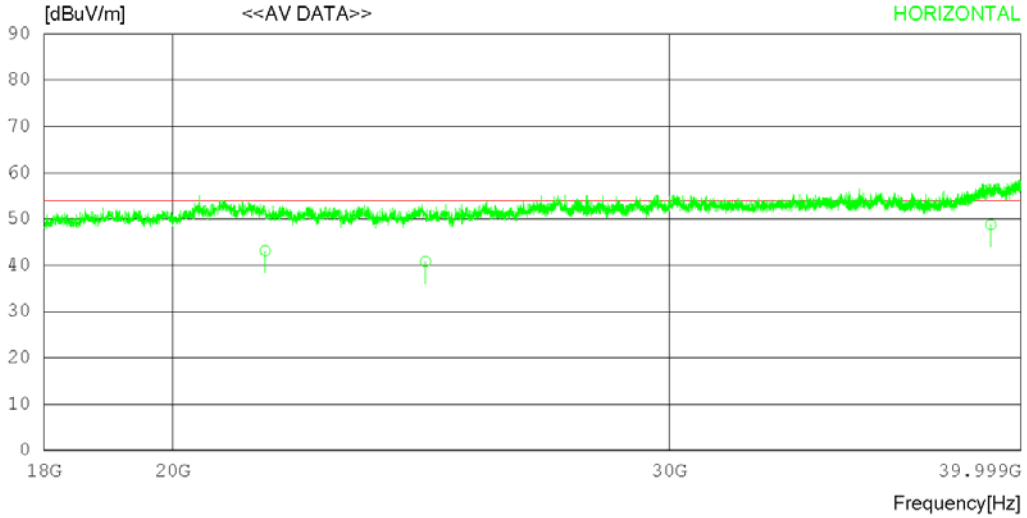
RADIATED EMISSION

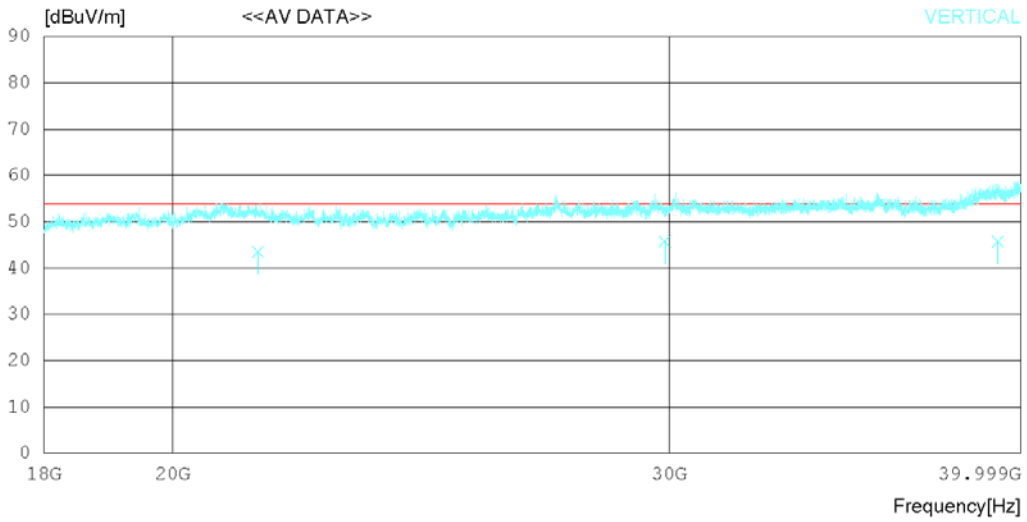
Date 2020-01-13

Order No. DTNC1911-09601
Power Supply 120 V 60 Hz
Temp/Humi 26 'C 44 % R.H.
Test Condition DATA COMMUNICATION

Memo DualScreen

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





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Date 2020-01-13

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Power Supply	120 V 60 Hz
Temp/Humi	26 'C 44 % R.H.
Test Condition	DATA COMMUNICATION
Memo	DualScreen

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	21566.71031.25	45.40	20.19	53.71	43.13	54.00	10.87	256	71	
2	24586.27028.62	45.50	20.64	53.92	40.84	54.00	13.16	332	195	
3	39026.42027.66	47.63	25.75	52.25	48.79	54.00	5.21	278	223	
----- Vertical ------										
4	21440.42031.52	45.40	20.26	53.65	43.53	54.00	10.47	227	147	
5	29899.27028.62	47.50	21.86	52.23	45.75	54.00	8.25	223	45	
6	39252.72024.62	47.95	25.41	52.24	45.74	54.00	8.26	372	133	

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
Jan. 15. 2020	Initial report	JunSeo Park	KyoungHwan Bae

-End of test report-