

# TEST REPORT



**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. : DREFCC2003-0077
2. Client / Applicant
  - Name : LG Electronics Inc.
  - Address : 1000 Sylvan Avenue, Englewood Cliffs NJ 07632 United States
3. Use of Report : Grant of Certification
4. Product Name / Model Name / FCC ID : Mobile Phone / OA2006 / ZNFOA2006
5. Test Standard : ANSI C 63.4 : 2014  
FCC Part 15 Subpart B  
(Class B personal computers and peripherals)
6. Date of Test : Feb. 18. 2020
7. Testing Environment : Temperature (20 ~ 22) °C , Humidity (44 ~ 50) % R.H.
8. Test Result : Refer to the attached Test Result

Affirmation	Tested by	Reviewed by
	Name : MinSu Park 	Name : KyoungHwan Bae 

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.

**Mar. 06. 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](mailto:report@dtnc.net)

## CONTENTS

<b>1. General Remarks .....</b>	<b>3</b>
<b>2. Test Laboratory.....</b>	<b>3</b>
<b>3. General Information of EUT.....</b>	<b>4</b>
<b>4. EUT Operations and Test Configurations .....</b>	<b>5</b>
4.1 Principle of Configuration Selection .....	5
4.2 EUT Operation Mode .....	5
4.3 Test Configuration Mode.....	5
4.4 Supported Equipment .....	5
4.5 EUT In/Output Port .....	6
4.6 Test Voltage and Frequency .....	6
<b>5. Test Summary .....</b>	<b>7</b>
<b>6. Test Environment.....</b>	<b>7</b>
<b>7. Test Results : Emission.....</b>	<b>8</b>
7.1 Conducted Disturbance .....	8
7.2 Radiated Disturbance .....	11
<b>8. Revision History.....</b>	<b>41</b>

## 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.dtnet.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 23 <sup>rd</sup> , 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 Inc. 1000 Sylvan Avenue, Englewood Cliffs NJ 07632 United States
Manufacturer	LG Electronics Inc. 1000 Sylvan Avenue, Englewood Cliffs NJ 07632 United States
Factory	LG Electronics Vietnam Hai Phong Lot CN2, Trang Due Industrial Park, Le Loi Commune, An Duong district, Hai phong city, Vietnam
Product Name	Mobile Phone
Model Name	OA2006
Add Model Name	None
FCC ID	ZNFOA2006
Rated Power	DC 3.87 V
Remarks	None

\* Accessory

Equipment	No.	Manufacturer	Model Name	Product Number
Ear-Mic	1	CRESYN	EMB-LGE53	EAB63728251

**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	The EUT is reading, writing, internal storage
2	Display	The EUT is connected to the monitor and continuously outputs the 'H' pattern.

### 4.3 Test Configuration Mode

No.	Mode	Description
1	DATA COMMUNICAITON	EUT was connected PC by USB cable C type and continuously operated
2	Display	EUT was connected Monitor by USB cable C type to hdmi and continuously operated.

### 4.4 Supported Equipment

Used*	Product Type	Manufacturer	Model	Remarks
AE	PC	DELL INC	DCN3	J51ZBBX
AE	PRINTER	Bixelon	SRP-770	N/A
AE	SSD	SAMSUNG	MU-PT250B	S2WKNAAH32059X
AE	KEYBOARD	LG	KB25C	N/A
AE	MOUSE	Logitech	G100S	N/A
AE	LED MONITOR	SMASUNG	LT19B300	MQKHYBCA01133P
AE	Headset	DONGGUANENMEY	SHS-150V/W	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
AUX	I/O	1.5	Non shield	Plastic	EUT
USB	I/O	1.1	Shield	Plastic	EUT
USB(EUT)	I/O	1.1	Non shield	Plastic	PC
USB(MOUSE)	I/O	1.8	Non shield	Plastic	
USB(KEYBOARD)	I/O	1.8	Non shield	Plastic	
USB(SSD)	I/O	1.0	Non shield	Plastic	
VGA(MONITOR)	I/O	1.8	shield	Plastic	
AUX(EAR MIC)	I/O	1.8	Non shield	Plastic	
AC IN(POWER)	AC	1.8	Non shield	Plastic	
RS232(Printer)	I/O	1.7	Non shield	Plastic	
Parallel(Printer)	I/O	1.9	Non shield	Plastic	
AC IN	AC	1.6	Non shield	Plastic	Monitor
*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
AUX	I/O	1.5	Non shield	Plastic	EUT
USB	I/O	1.1	Shield	Plastic	EUT
AC IN	AC	1.6	Non shield	Plastic	Monitor
*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
2	DC 3.87	-	-	Battery

## 5. Test Summary

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

-Conducted Disturbance

Frequency [MHz]	Phase	Result [dB $\mu$ V]	Detector	Limit [dB $\mu$ V]	Margin [dB]
0.18376	N	41.58	Cispr - Average	54.31	12.73

-Radiated Disturbance

Frequency [MHz]	Pol.	Result [dB $\mu$ V/m]	Detector	Limit [dB $\mu$ V/m]	Margin [dB]
39172.260	V	49.53	Cispr - Average	54.00	4.47

## 6. Test Environment

Test Items	Test date (YYYY-MM-DD)	Temp. (°C)	Humidity (% R.H.)	Pressure (kPa)
Conducted Disturbance	2020-02-17	23	50	-
Radiated Disturbance	2020-02-18	20	50	-

## 7. Test Results : Emission

### 7.1 Conducted Disturbance

ANSI C63.4	Mains terminal disturbance voltage	Result	
<p><b>Method:</b> 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.</p>		<b>Comply</b>	
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
	EUT Operation mode	1	
<b>Limits – Class A</b>			
Frequency (MHz)	Limit dB $\mu$ V		
	Quasi-Peak	Average	
0.15 to 0.50	79	66	
0.50 to 30	73	60	
<b>Limits – Class B</b>			
Frequency (MHz)	Limit dB $\mu$ V		
	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 uncertainty	
Expended uncertainty $U$ (95 %, Confidence level, $k = 2$ )	2.44 dB
The measurement uncertainties were calculated in accordance with requirements of ANSI C 63.4-2014.	

Measurement Instrument					
Description	Model	Manufacturer	Identifier	Cal. Date	Cal. Due
MEASUREMENT SOFTWARE	EMI-C VER. 2.00.0171	T SJ	N/A	N/A	N/A
EMI TEST RECEIVER	ESR7	ROHDE&SCHWARZ	101109	2019.10.24	2020.10.24
TWO-LINE V-NETWORK	ENV216	ROHDE&SCHWARZ	101979	2019.12.06	2020.12.06
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

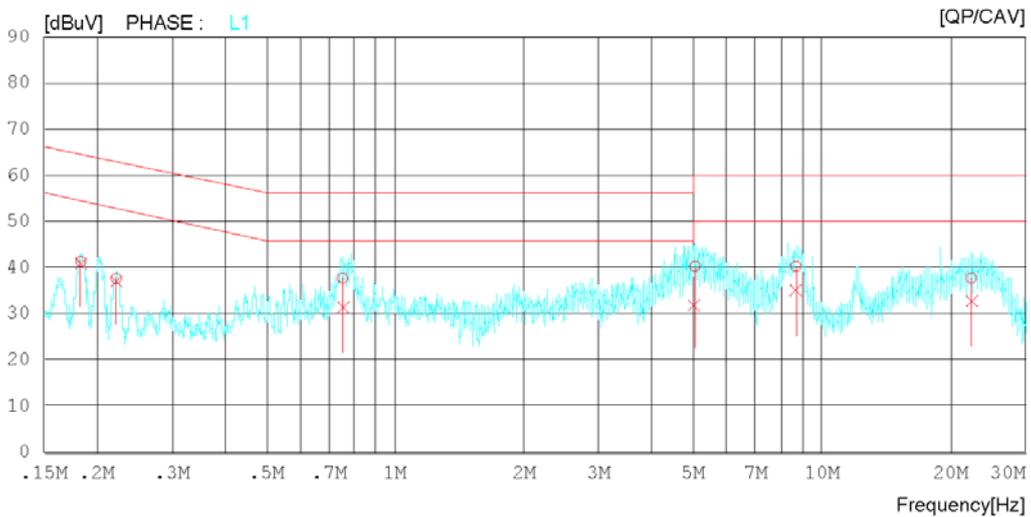
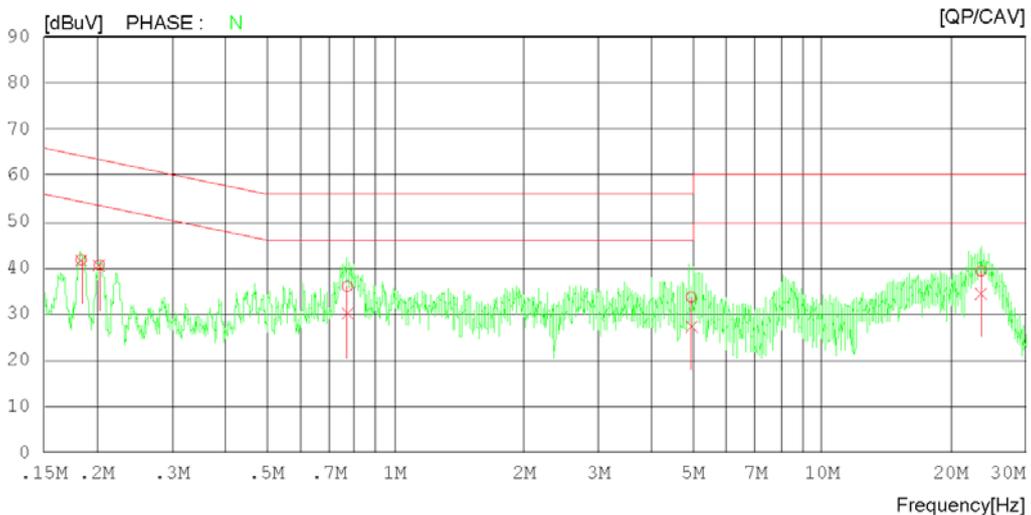
## Results of Conducted Emission

DT&C  
Date 2020-02-17

Order No. DTNC2002-00953  
 Power Supply 120 V 60 Hz  
 Temp/Humi/Atm 23 °C 50 % R.H. 99.8 kPa  
 Test Condition PC LINK

Memo

LIMIT : CISPR32\_B QP  
 CISPR32\_B AV



## Results of Conducted Emission

DT&C  
Date 2020-02-17

Order No. DTNC2002-00953  
 Power Supply 120 V 60 Hz  
 Temp/Humi/Atm 23 °C 50 % R.H. 99.8 kPa  
 Test Condition PC LINK

Memo

LIMIT : CISPR32\_B QP  
 CISPR32\_B AV

NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.18376	21.62	21.47	20.11	41.73	41.58	64.31	54.31	22.58	12.73	N
2	0.20260	20.65	20.51	19.99	40.64	40.50	63.50	53.50	22.86	13.00	N
3	0.77245	15.82	9.80	20.14	35.96	29.94	56.00	46.00	20.04	16.06	N
4	4.95060	13.48	7.33	20.18	33.66	27.51	56.00	46.00	22.34	18.49	N
5	23.64260	18.60	13.81	20.73	39.33	34.54	60.00	50.00	20.67	15.46	N
6	0.18345	21.15	20.79	20.11	41.26	40.90	64.33	54.33	23.07	13.43	L1
7	0.22178	17.72	17.26	19.91	37.63	37.17	62.75	52.75	25.12	15.58	L1
8	0.75292	17.57	11.15	20.14	37.71	31.29	56.00	46.00	18.29	14.71	L1
9	5.04265	20.01	11.62	20.28	40.29	31.90	60.00	50.00	19.71	18.10	L1
10	8.69742	19.59	14.26	20.73	40.32	34.99	60.00	50.00	19.68	15.01	L1
11	22.42002	16.90	11.85	20.84	37.74	32.69	60.00	50.00	22.26	17.31	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
<b>Method:</b> 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.				<b>Comply</b>
<b>EUT mode</b> (Refer to clauses 4)	<b>Test configuration mode</b>		1, 2	
	<b>EUT Operation mode</b>		1, 2	
<b>Radiated Disturbance below 1 000 MHz</b>				
<b>Frequency range</b> (MHz)	<b>Quasi-peak limit dB<math>\mu</math>V/m</b>			
	<b>Class A</b>		<b>Class B</b>	
	<b>3 m distance</b>	<b>10 m distance</b>	<b>3 m distance</b>	
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.				
<b>Frequency range</b> (MHz)	<b>Quasi-peak limit dB<math>\mu</math>V/m</b>			
	<b>Class A (10 m distance)</b>		<b>Class B (10 m distance)</b>	
30 to 230	40		30	
230 to 1 000	47		37	
<b>Radiated Disturbance for above 1 000 MHz at a measurement distance of 3 m</b>				
<b>Frequency range</b> (GHz)	<b>Peak limit dB<math>\mu</math>V/m</b>		<b>Average limit dB<math>\mu</math>V/m</b>	
	<b>Class A</b>	<b>Class B</b>	<b>Class A</b>	<b>Class B</b>
1 to 40	80	74	60	54
<b>The test frequency range of Radiated Disturbance measurements are listed below.</b>				
<b>Highest frequency generated or used in the device or on which the device operates or tunes (MHz)</b>			<b>Upper frequency of measurement range (MHz)</b>	
Below 108			1 000	
108 – 500			2 000	
500 – 1 000			5 000	
Above 1 000			5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower	
<b>Measurement uncertainty</b>				
Expended uncertainty <i>U</i> (95 %, Confidence level, <i>k</i> = 2)			2.89 dB, (30 ~ 1 000) MHz 4.22 dB, (1 GHz Above)	
The measurement uncertainties were calculated in accordance with requirements of ANSI C 63.4-2014.				

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	2020.02.13	2021.02.13
HORN ANTENNA	3117	ETS-LINDGREN	00152093	2018.03.26	2020.03.26
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
HORN ANTENNA WITH PREAMPLIFIER	SAS-574	A.H.SYSTEMS INC.	155	2019.07.03	2021.07.03
	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

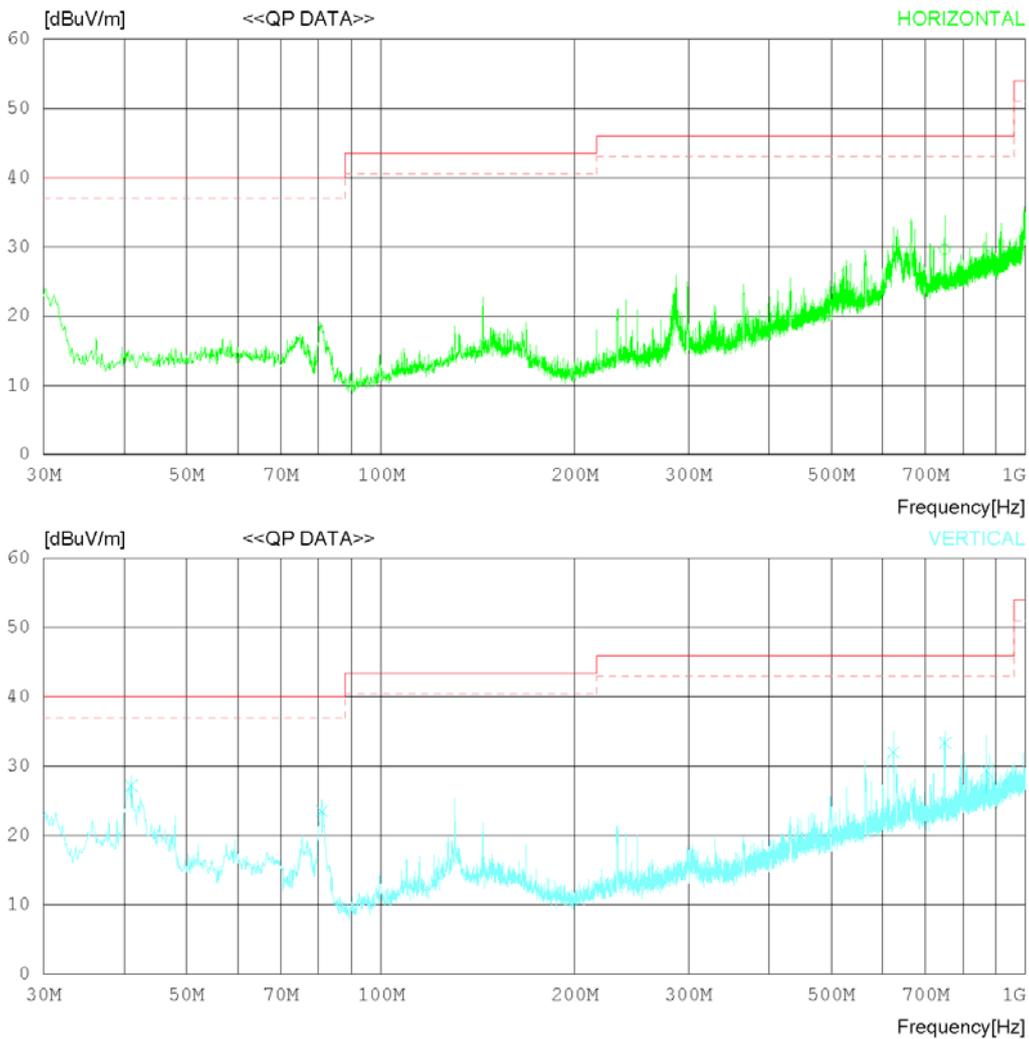
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply 120 V 60 Hz  
 Temp/Humi 20 °C 50 % R.H.  
 Test Condition PC LINK

Memo

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



## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply 120 V 60 Hz  
 Temp/Humi 20 °C 50 % 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	749.454	23.60	28.38	3.43	25.81	29.60	46.00	16.40	211	24
----- Vertical -----										
2	41.038	34.50	17.31	1.21	25.81	27.21	40.00	12.79	131	188
3	81.033	33.60	14.19	1.48	25.74	23.53	40.00	16.47	102	16
4	624.021	28.60	25.82	3.15	25.53	32.04	46.00	13.96	166	41
5	749.460	27.40	28.38	3.43	25.81	33.40	46.00	12.60	174	166
6	870.088	22.40	29.20	3.55	25.78	29.37	46.00	16.63	166	9

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

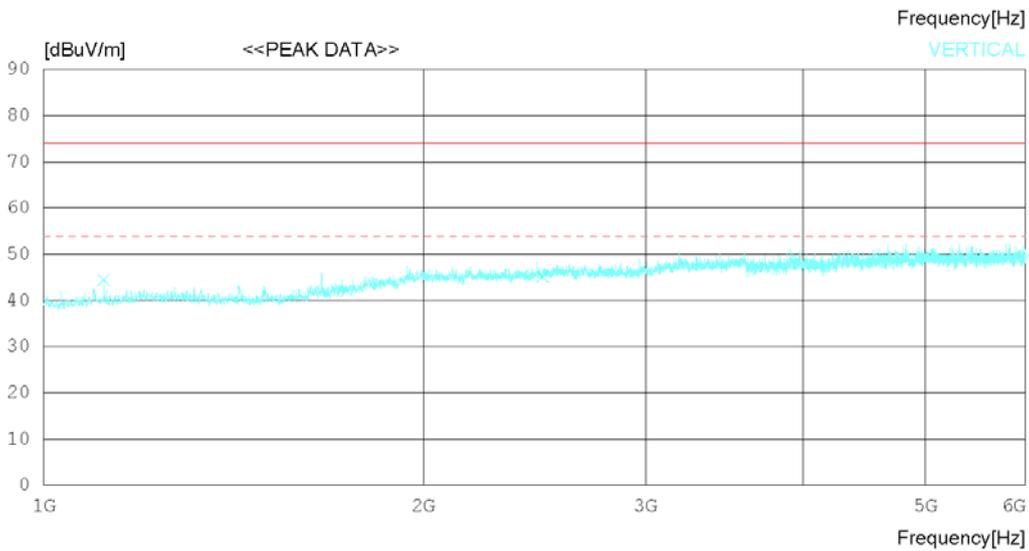
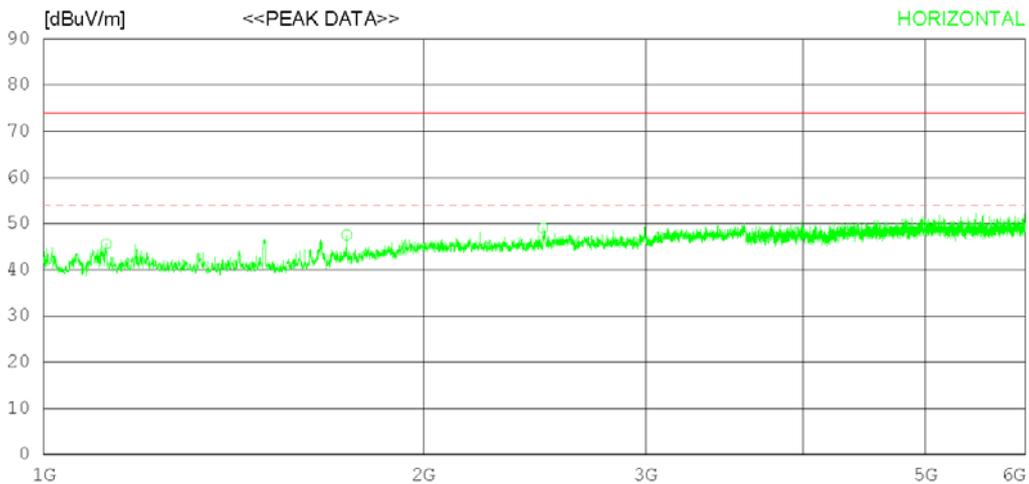
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply 120 V 60 Hz  
 Temp/Humi 20 °C 50 % 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 2020-02-18

Order No. DTNC2002-00953  
Power Supply 120 V 60 Hz  
Temp/Humi 20 °C 50 % 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	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	1121.25	48.6	28.04	4.53	35.58	0	45.59	74	28.41	Hori	165	358
2	1738.75	47.3	29.47	5.52	34.71	0	47.58	74	26.42	Hori	213	358
3	2486.875	44.7	32.25	6.73	34.63	0	49.05	74	24.95	Hori	241	358
4	1116.25	47.5	28.03	4.52	35.59	0	44.46	74	29.54	Vert	200	0
5	1738.75	41.9	29.47	5.52	34.71	0	42.18	74	31.82	Vert	200	91
6	2486.875	40.8	32.25	6.73	34.63	0	45.15	74	28.85	Vert	315	358

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

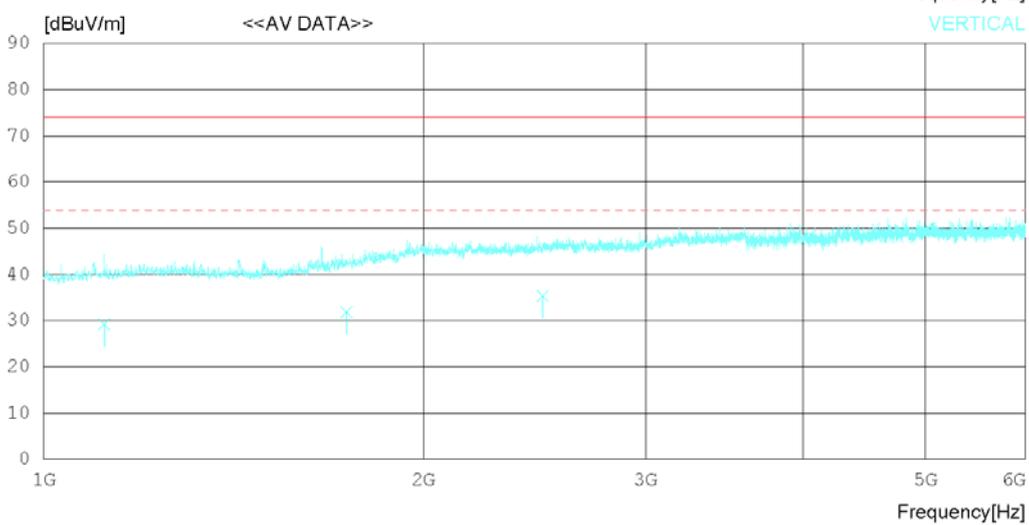
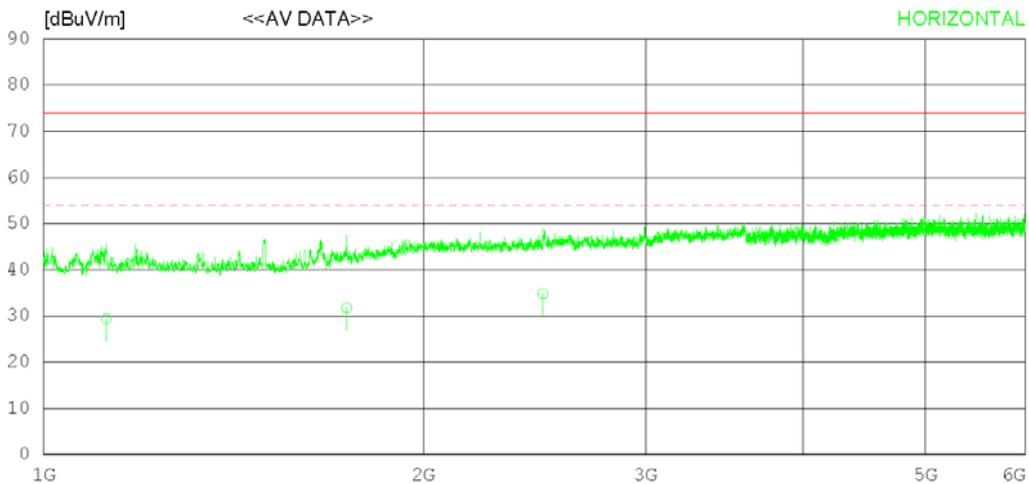
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply 120 V 60 Hz  
 Temp/Humi 20 °C 50 % 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 2020-02-18

Order No. DTNC2002-00953  
Power Supply 120 V 60 Hz  
Temp/Humi 20 °C 50 % 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	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	1116.81	32.2	28.03	4.52	35.59	0	29.16	74	44.84	Vert	157	6
2	1121.138	32.4	28.04	4.53	35.58	0	29.39	74	44.61	Hori	166	334
3	1738.415	31.5	29.46	5.52	34.71	0	31.77	74	42.23	Hori	211	311
4	1739.021	31.6	29.47	5.52	34.71	0	31.88	74	42.12	Vert	157	99
5	2486.876	30.5	32.25	6.73	34.63	0	34.85	74	39.15	Hori	238	315
6	2486.888	31	32.25	6.73	34.63	0	35.35	74	38.65	Vert	322	1

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

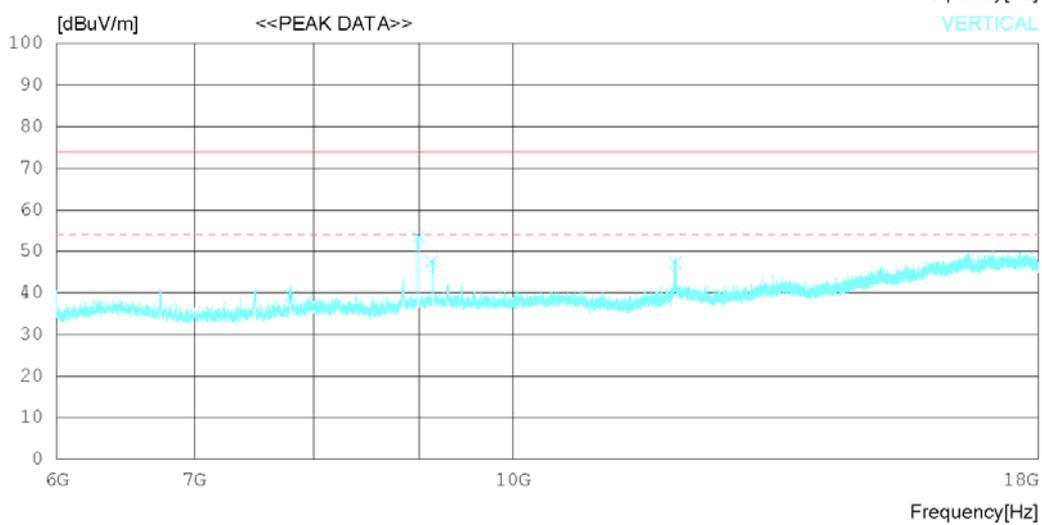
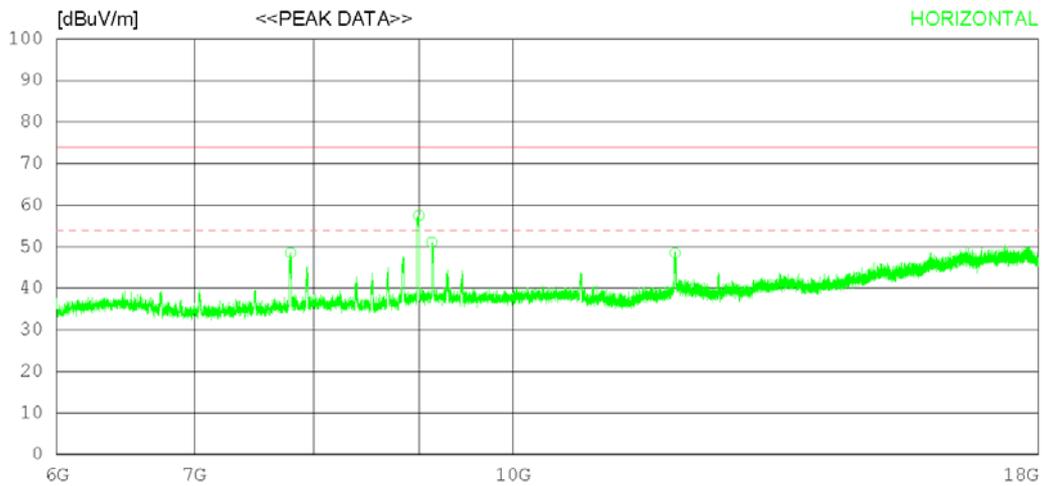
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply 120 V 60 Hz  
 Temp/Humi 20 °C 50 % 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 2020-02-18

Order No. DTNC2002-00953  
Power Supply 120 V 60 Hz  
Temp/Humi 20 °C 50 % 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	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	7795.5	42.4	31.33	12.6	37.8	0	48.53	74	25.47	Hori	123	189
2	8997.75	49.5	32.1	13.4	37.5	0	57.5	74	16.5	Hori	311	198
3	9129	42.9	32.16	13.62	37.6	0	51.08	74	22.92	Hori	108	358
4	11987.25	37.1	33.45	15.66	37.72	0	48.49	74	25.51	Hori	164	358
5	7795.5	33.1	31.33	12.6	37.8	0	39.23	74	34.77	Vert	215	354
6	8997.75	45.5	32.1	13.4	37.5	0	53.5	74	20.5	Vert	106	154
7	9129	39.4	32.16	13.62	37.6	0	47.58	74	26.42	Vert	122	358
8	11987.25	35.9	33.45	15.66	37.72	0	47.29	74	26.71	Vert	206	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

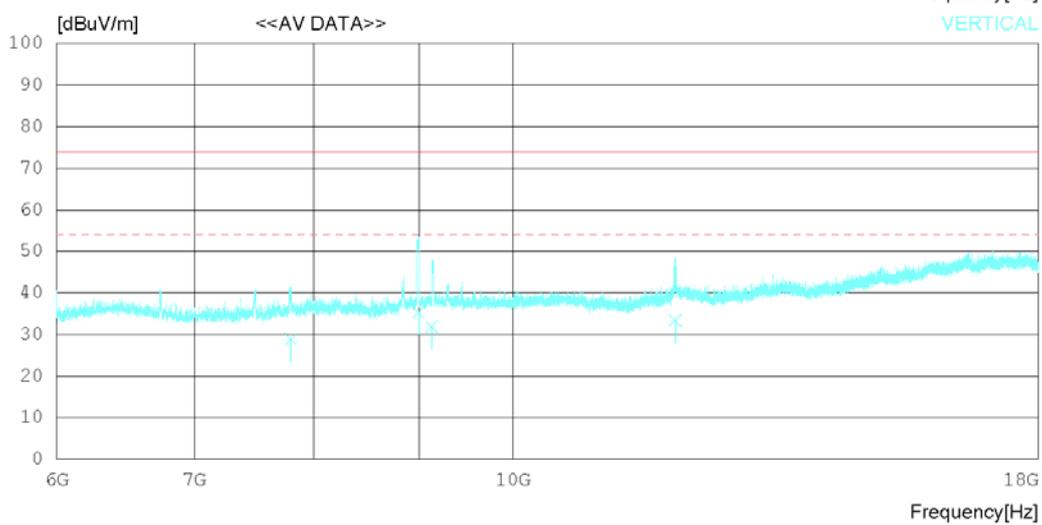
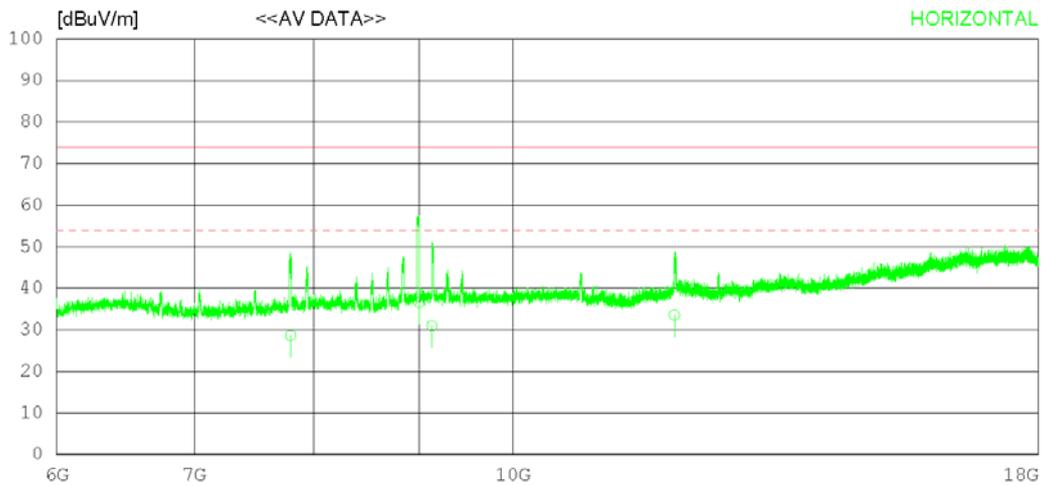
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply 120 V 60 Hz  
 Temp/Humi 20 °C 50 % 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 2020-02-18

Order No. DTNC2002-00953  
Power Supply 120 V 60 Hz  
Temp/Humi 20 °C 50 % 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	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	7795.388	22.5	31.33	12.6	37.8	0	28.63	54	25.37	Hori	126	199
2	7795.517	22.7	31.33	12.6	37.8	0	28.83	54	25.17	Vert	231	305
3	8997.766	28.6	32.1	13.4	37.5	0	36.6	54	17.4	Hori	315	166
4	8997.75	27.3	32.1	13.4	37.5	0	35.3	54	18.7	Vert	109	211
5	9129.066	22.8	32.16	13.62	37.6	0	30.98	54	23.02	Hori	188	205
6	9129.026	23.7	32.16	13.62	37.6	0	31.88	54	22.12	Vert	135	315
7	11976.33	22.2	33.44	15.64	37.73	0	33.55	54	20.45	Hori	167	177
8	11987.11	22	33.45	15.66	37.72	0	33.39	54	20.61	Vert	213	311

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

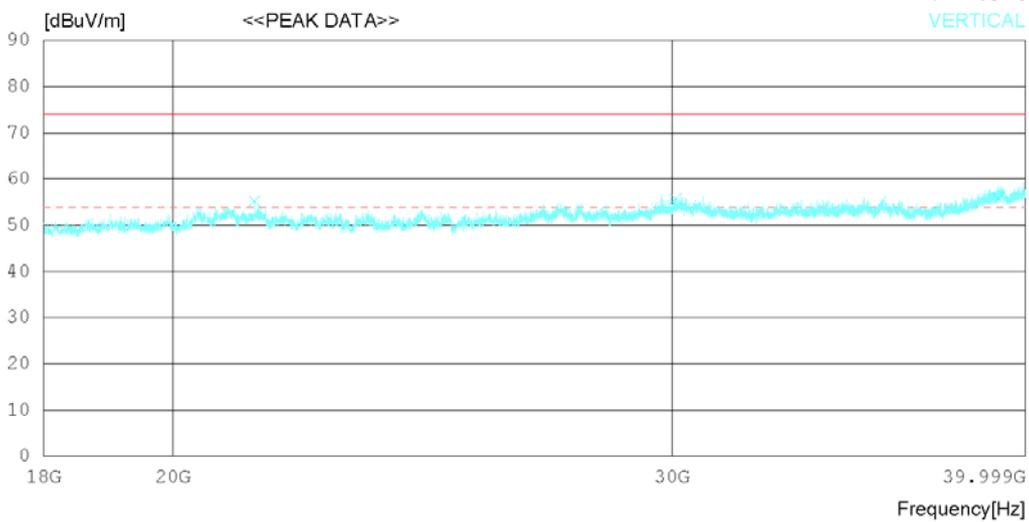
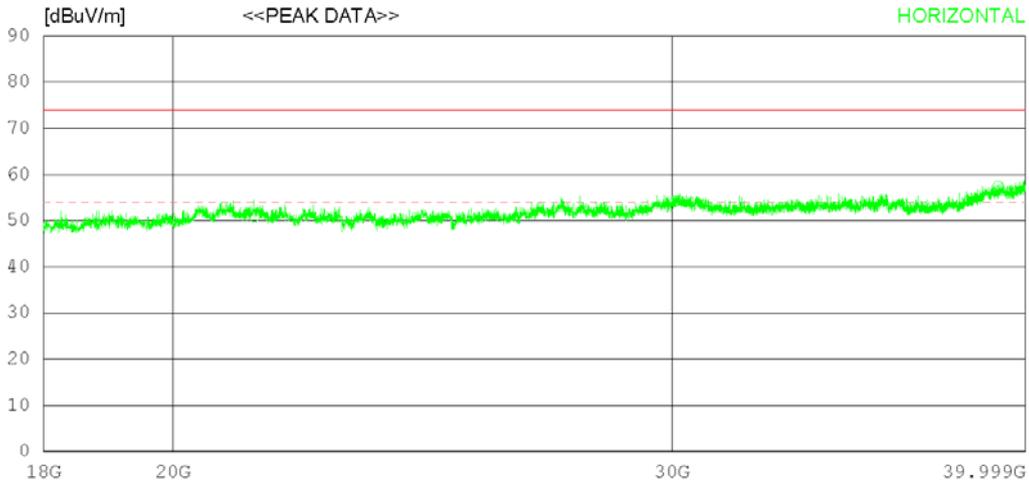
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply 120 V 60 Hz  
 Temp/Humi 20 °C 50 % 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 2020-02-18

Order No. DTNC2002-00953  
Power Supply 120 V 60 Hz  
Temp/Humi 20 °C 50 % 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	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	21368.75	38.8	45.43	20.3	53.62	0	50.91	74	23.09	Hori	153	358
2	30094.5	37	47.5	21.93	52.2	0	54.23	74	19.77	Hori	206	189
3	39128.25	36.4	47.76	25.59	52.24	0	57.51	74	16.49	Hori	355	5
4	21368.75	43.1	45.43	20.3	53.62	0	55.21	74	18.79	Vert	188	265
5	30094.5	38.5	47.5	21.93	52.2	0	55.73	74	18.27	Vert	315	0
6	39128.25	34.7	47.76	25.59	52.24	0	55.81	74	18.19	Vert	274	1

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

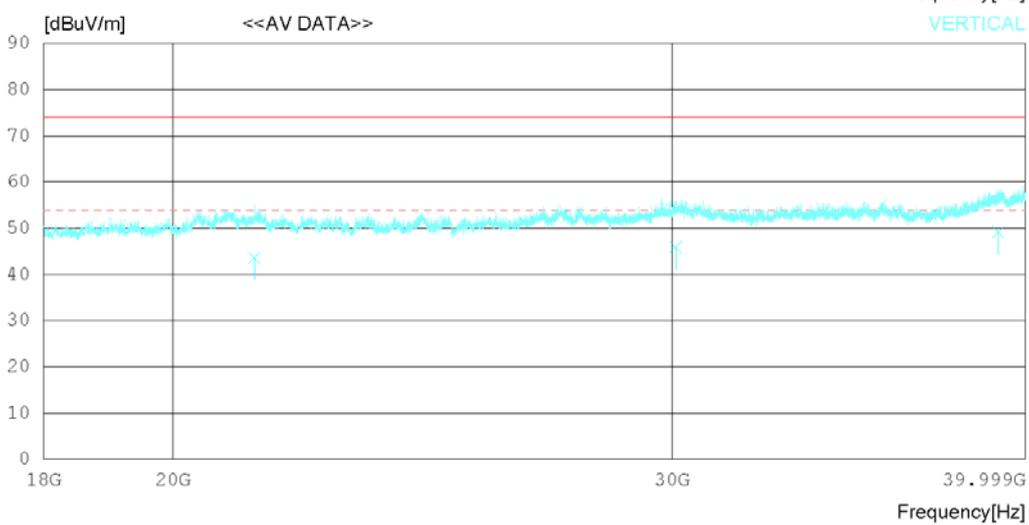
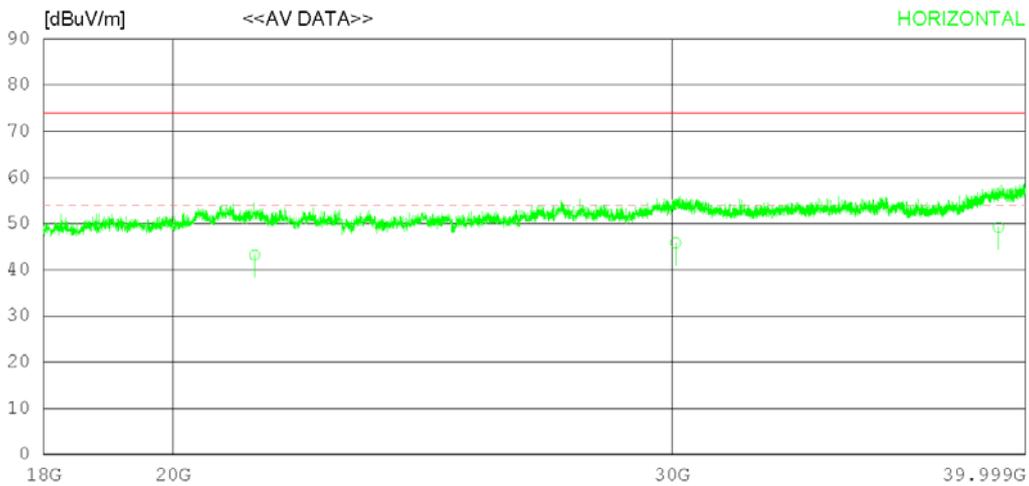
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply 120 V 60 Hz  
 Temp/Humi 20 °C 50 % 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 2020-02-18

Order No. DTNC2002-00953  
Power Supply 120 V 60 Hz  
Temp/Humi 20 °C 50 % 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	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	21368.73	31.1	45.43	20.3	53.62	0	43.21	54	10.79	Hori	166	344
2	21368.74	31.5	45.43	20.3	53.62	0	43.61	54	10.39	Vert	194	277
3	30094.48	28.6	47.5	21.93	52.2	0	45.83	54	8.17	Hori	211	192
4	30094.47	28.7	47.5	21.93	52.2	0	45.93	54	8.07	Vert	322	2
5	39128.36	28.1	47.76	25.59	52.24	0	49.21	54	4.79	Hori	344	16
6	39128.35	28	47.76	25.59	52.24	0	49.11	54	4.89	Vert	266	5

Radiated disturbance at (30 ~ 1000) MHz _ Measurement data			
Test configuration mode	2	EUT Operation mode	2
Test voltage (V)	Battery	Test Frequency (Hz)	-

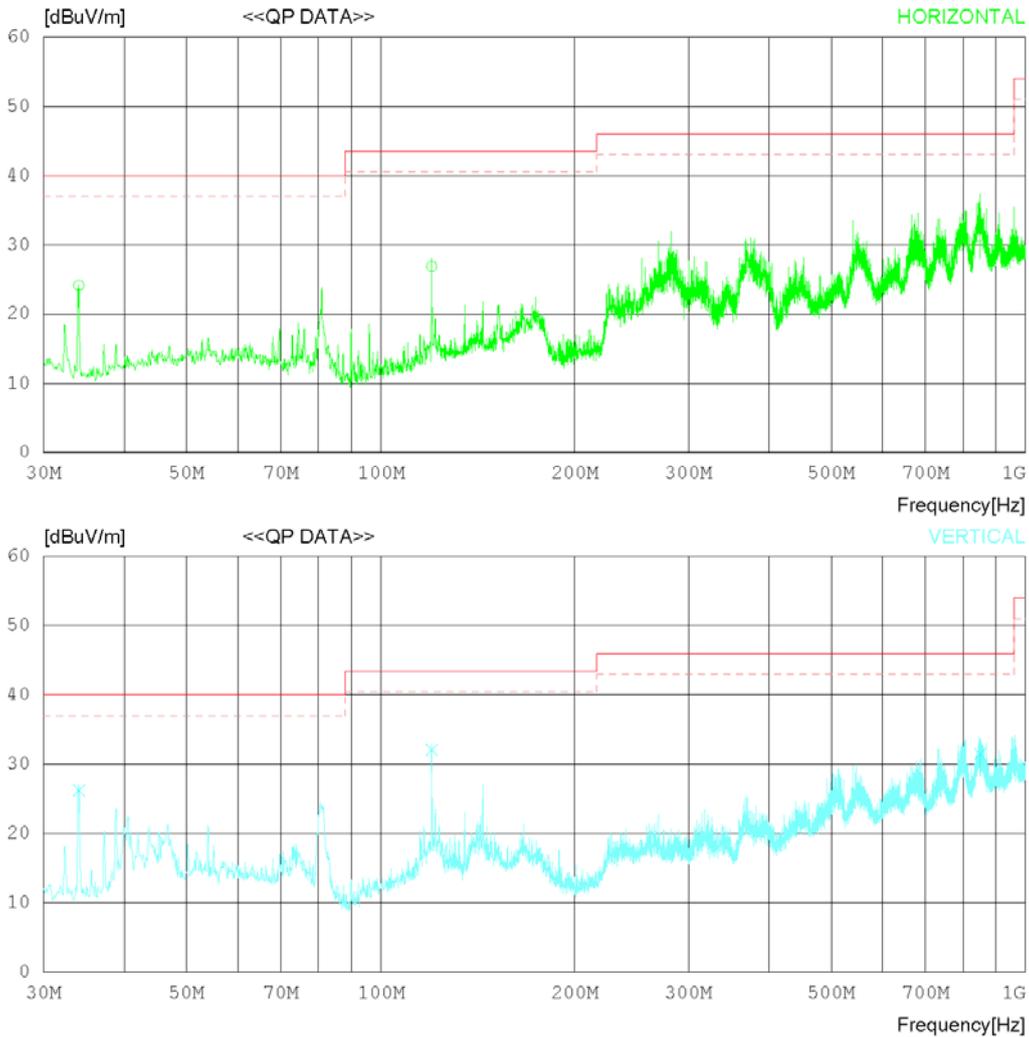
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply Battery  
 Temp/Humi 20 °C 50 % R.H.  
 Test Condition Monitoring

Memo

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



## RADIATED EMISSION

Date 2020-02-18

Order No.	DTNC2002-00953
Power Supply	Battery
Temp/Humi	20 °C 50 % R.H.
Test Condition	Monitoring

**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	34.001	33.10	15.70	1.14	25.82	24.12	40.00	15.88	384	322
2	119.966	34.00	16.90	1.66	25.69	26.87	43.50	16.63	166	6
3	850.803	24.10	29.20	3.61	25.73	31.18	46.00	14.82	213	277
----- Vertical -----										
4	34.025	35.20	15.70	1.14	25.82	26.22	40.00	13.78	132	26
5	120.014	39.20	16.90	1.66	25.69	32.07	43.50	11.43	144	328
6	850.808	24.40	29.20	3.61	25.73	31.48	46.00	14.52	136	288

Radiated disturbance at (1 ~ 6) GHz _ Peak measurement data			
Test configuration mode	2	EUT Operation mode	2
Test voltage (V)	Battery	Test Frequency (Hz)	-

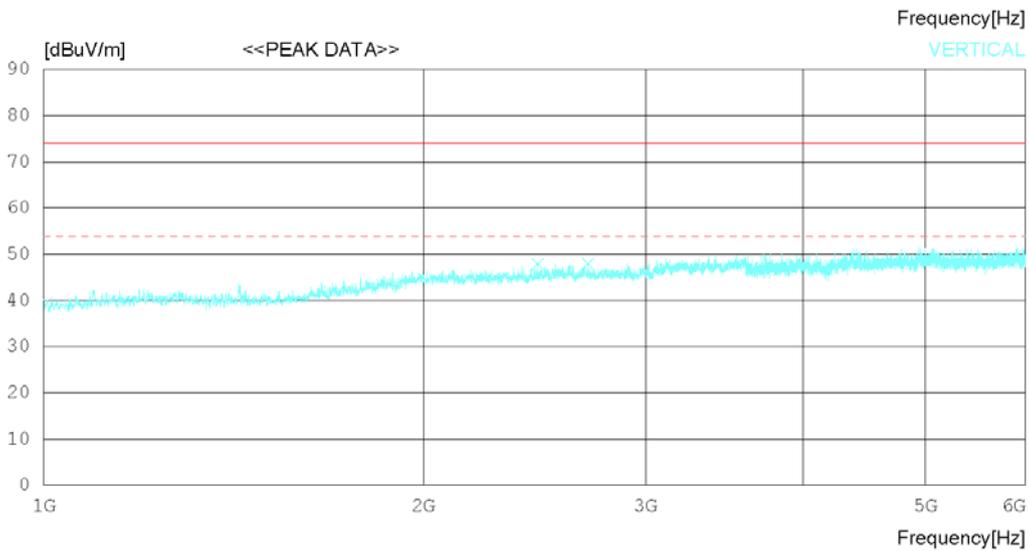
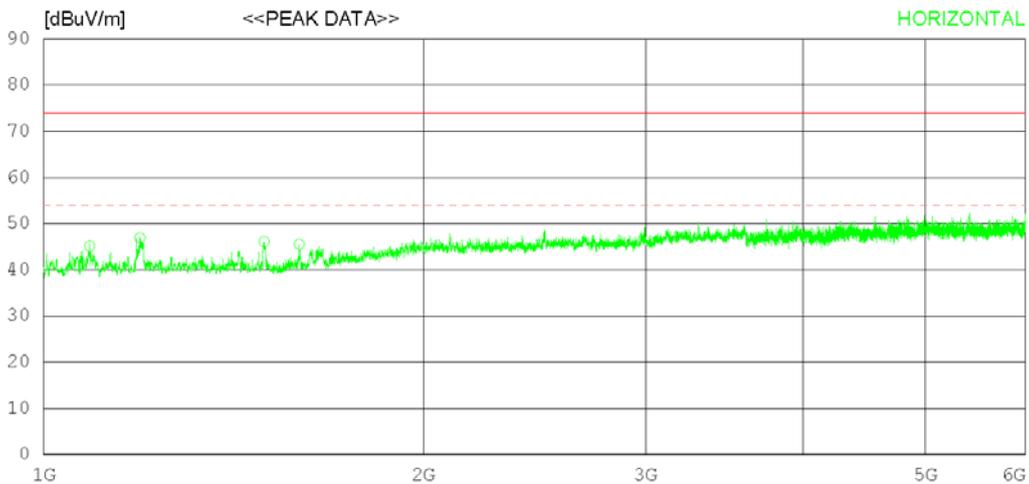
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply Battery  
 Temp/Humi 20 °C 50 % R.H.  
 Test Condition Monitoring

Memo

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



## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
Power Supply Battery  
Temp/Humi 20 °C 50 % R.H.  
Test Condition Monitoring

Memo

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

No	Freq	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	1087.5	48.5	27.85	4.45	35.63	0	45.17	74	28.83	Hori	388	358
2	1191.875	49	28.69	4.73	35.48	0	46.94	74	27.06	Hori	202	314
3	1495.625	48.1	27.9	5.13	35.05	0	46.08	74	27.92	Hori	164	358
4	1594.375	46.8	28.37	5.26	34.91	0	45.52	74	28.48	Hori	105	225
5	2463.125	43.6	32.15	6.71	34.61	0	47.85	74	26.15	Vert	117	353
6	2701.25	43.1	32.6	6.98	34.75	0	47.93	74	26.07	Vert	133	217

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

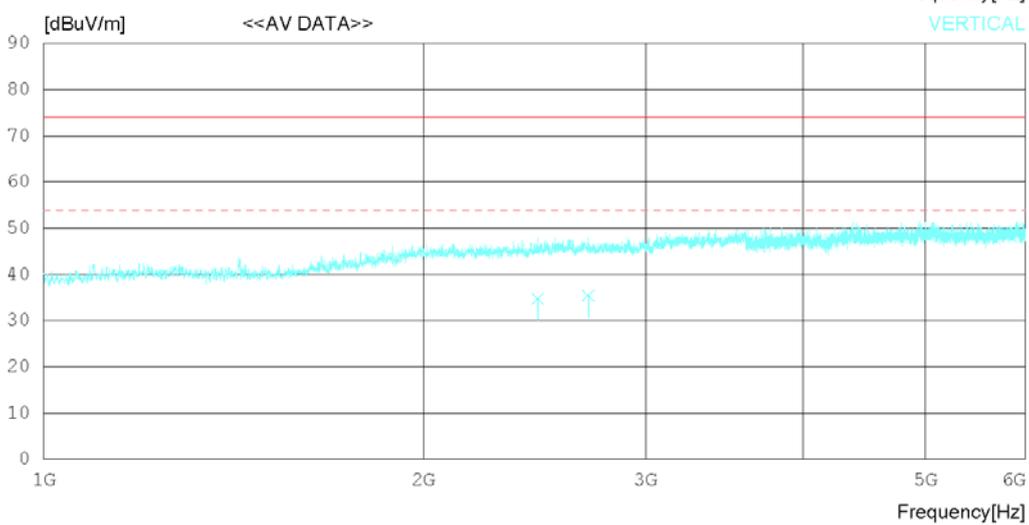
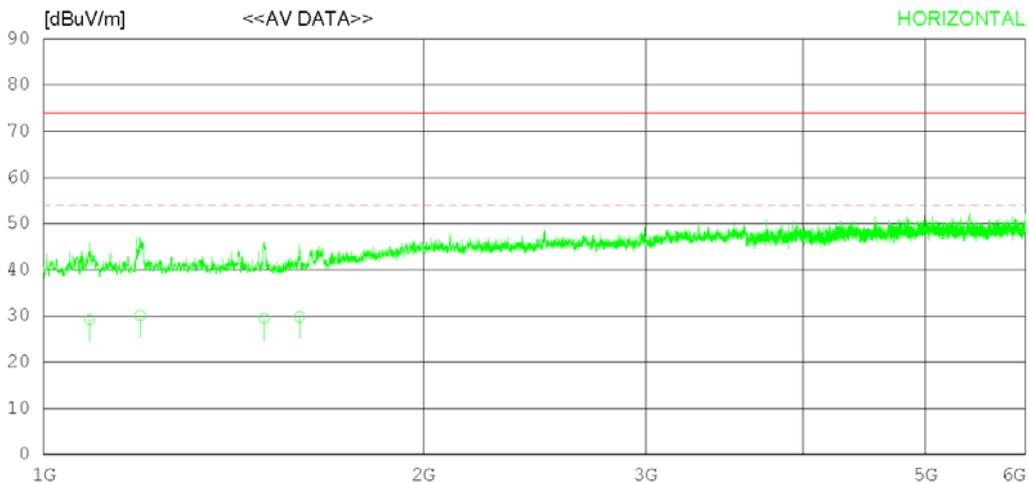
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply Battery  
 Temp/Humi 20 °C 50 % R.H.  
 Test Condition Monitoring

Memo

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



## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
Power Supply Battery  
Temp/Humi 20 °C 50 % R.H.  
Test Condition Monitoring

Memo

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

No	Freq	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	1087.487	32.6	27.85	4.44	35.63	0	29.26	54	24.74	Hori	135	5
2	1192.021	32.1	28.69	4.73	35.48	0	30.04	54	23.96	Hori	255	321
3	1495.125	31.5	27.9	5.12	35.05	0	29.47	54	24.53	Hori	166	3
4	1594.66	31.1	28.37	5.26	34.91	0	29.82	54	24.18	Hori	147	210
5	2463.115	30.5	32.15	6.71	34.61	0	34.75	54	19.25	Vert	213	355
6	2701.454	30.6	32.6	6.98	34.75	0	35.43	54	18.57	Vert	315	222

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

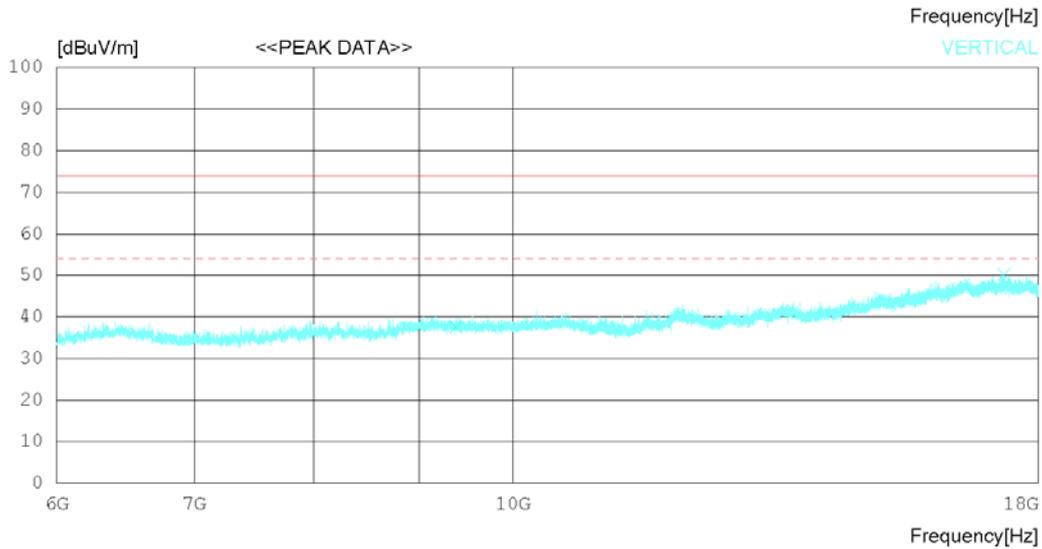
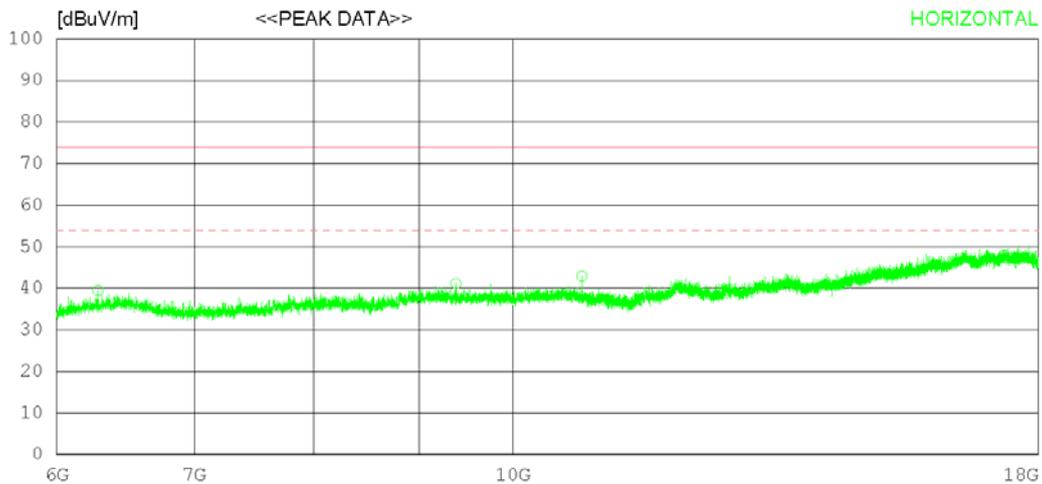
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply Battery  
 Temp/Humi 20 °C 50 % R.H.  
 Test Condition Monitoring

Memo

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



## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
Power Supply Battery  
Temp/Humi 20 °C 50 % R.H.  
Test Condition Monitoring

Memo

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

No	Freq	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	6283.5	35.9	31.64	10.94	39.07	0	39.41	74	34.59	Hori	245	314
2	9379.5	32.5	32.27	14.16	37.8	0	41.13	74	32.87	Hori	105	41
3	10800	34.1	32.44	14.63	38.22	0	42.95	74	31.05	Hori	124	197
4	17317.5	27.5	37.79	19.52	36.78	0	48.03	74	25.97	Hori	138	8
5	9379.5	28.9	32.27	14.16	37.8	0	37.53	74	36.47	Vert	310	22
6	17317.5	29.7	37.79	19.52	36.78	0	50.23	74	23.77	Vert	222	6

Radiated disturbance at (6 ~ 18) GHz _ Average measurement data			
Test configuration mode	2	EUT Operation mode	2
Test voltage (V)	Battery	Test Frequency (Hz)	-

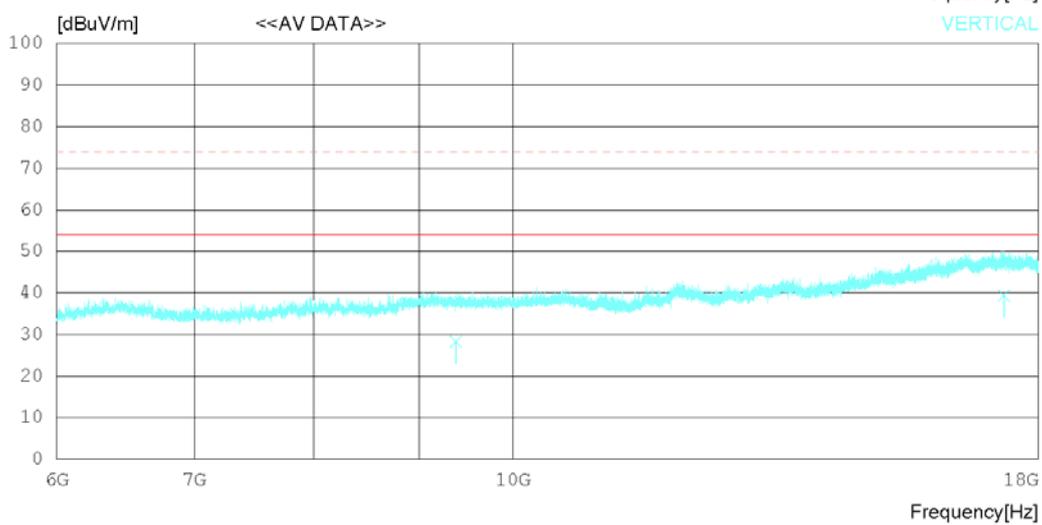
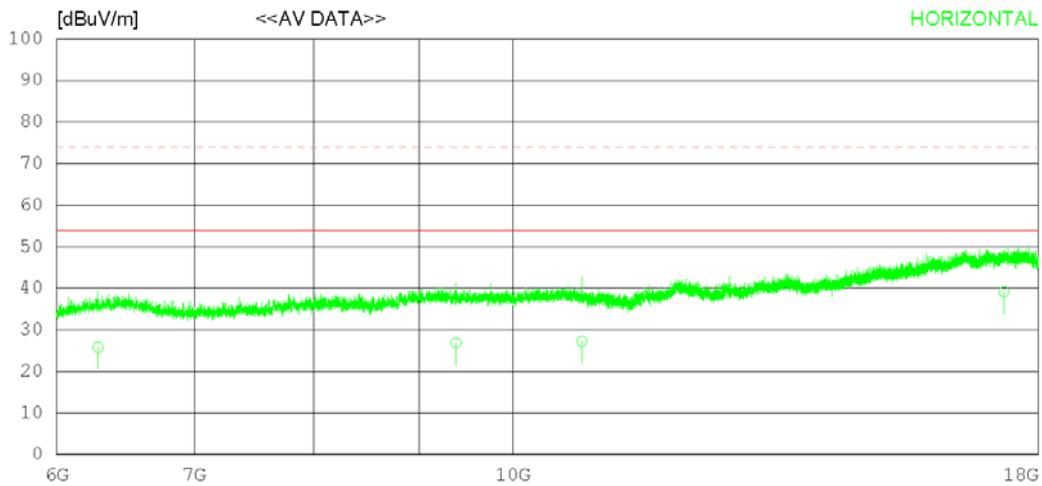
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply Battery  
 Temp/Humi 20 °C 50 % R.H.  
 Test Condition Monitoring

Memo

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



## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
Power Supply Battery  
Temp/Humi 20 °C 50 % R.H.  
Test Condition Monitoring

Memo

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

No	Freq	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	6283.33	22.3	31.64	10.94	39.08	0	25.8	54	28.2	Hori	255	322
2	9379.14	22.6	32.27	14.15	37.8	0	31.22	54	22.78	Vert	312	18
3	9379.39	22.4	32.27	14.16	37.8	0	31.03	54	22.97	Hori	114	40
4	10800.05	22.1	32.44	14.63	38.22	0	30.95	54	23.05	Hori	135	199
5	17317.36	21.6	37.79	19.52	36.78	0	42.13	54	11.87	Hori	147	12
6	17317.45	20.8	37.79	19.52	36.78	0	41.33	54	12.67	Vert	236	8

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

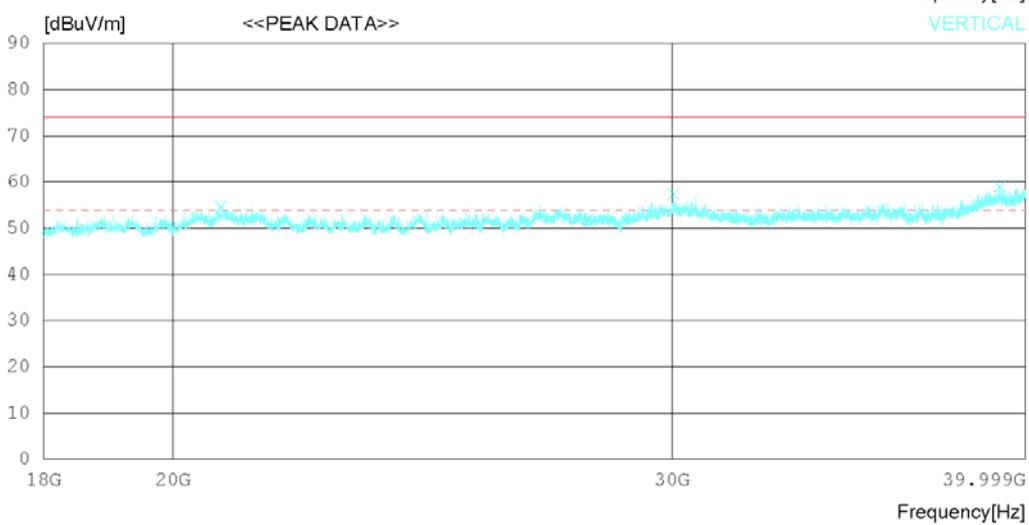
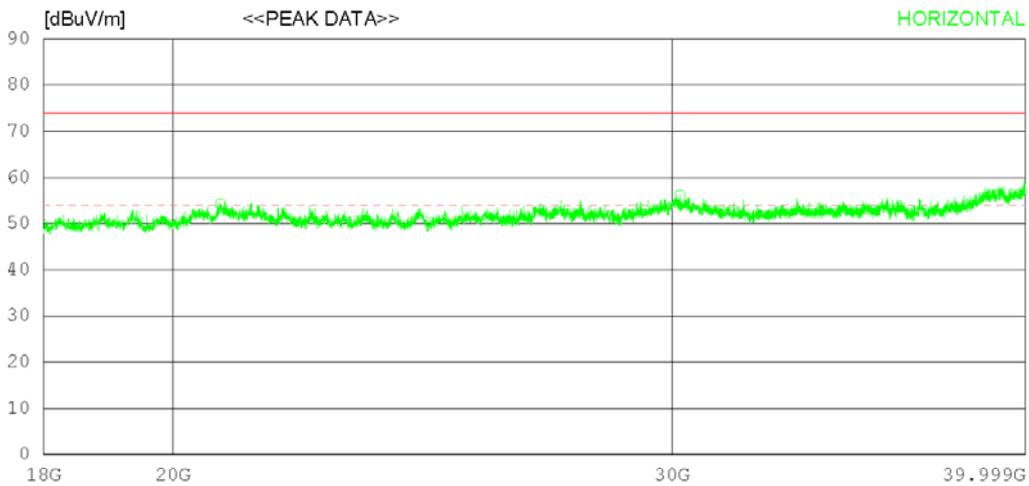
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply Battery  
 Temp/Humi 20 °C 50 % R.H.  
 Test Condition Monitoring

Memo

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



## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
Power Supply Battery  
Temp/Humi 20 °C 50 % R.H.  
Test Condition Monitoring

Memo

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

No	Freq	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	20783	41.9	45.58	20.1	53.35	0	54.23	74	19.77	Hori	216	142
2	30196.25	38.9	47.5	21.99	52.21	0	56.18	74	17.82	Hori	106	310
3	39172.25	35.1	47.84	25.53	52.24	0	56.23	74	17.77	Hori	135	358
4	20794	42.3	45.59	20.12	53.36	0	54.65	74	19.35	Vert	315	0
5	30047.75	40.2	47.5	21.9	52.2	0	57.4	74	16.6	Vert	105	253
6	39172.25	37.9	47.84	25.53	52.24	0	59.03	74	14.97	Vert	121	10

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

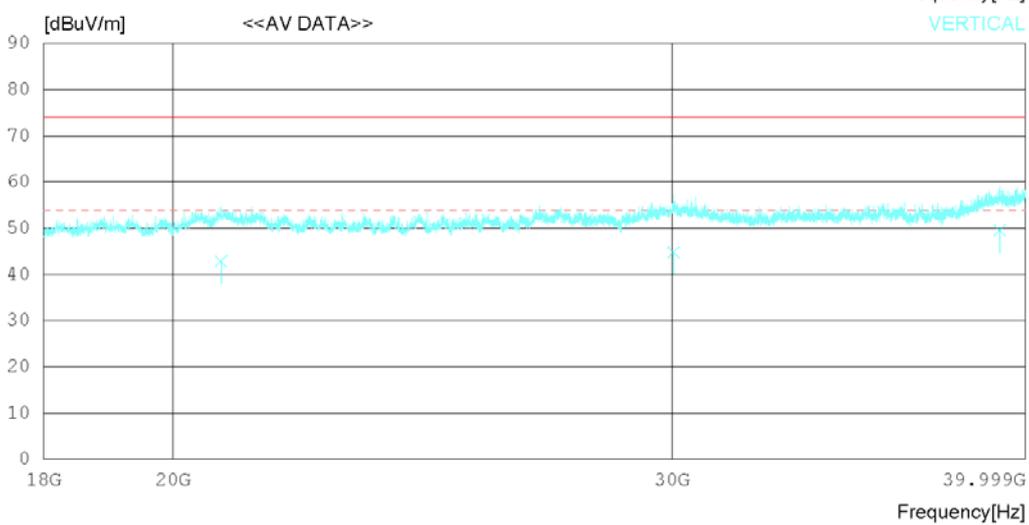
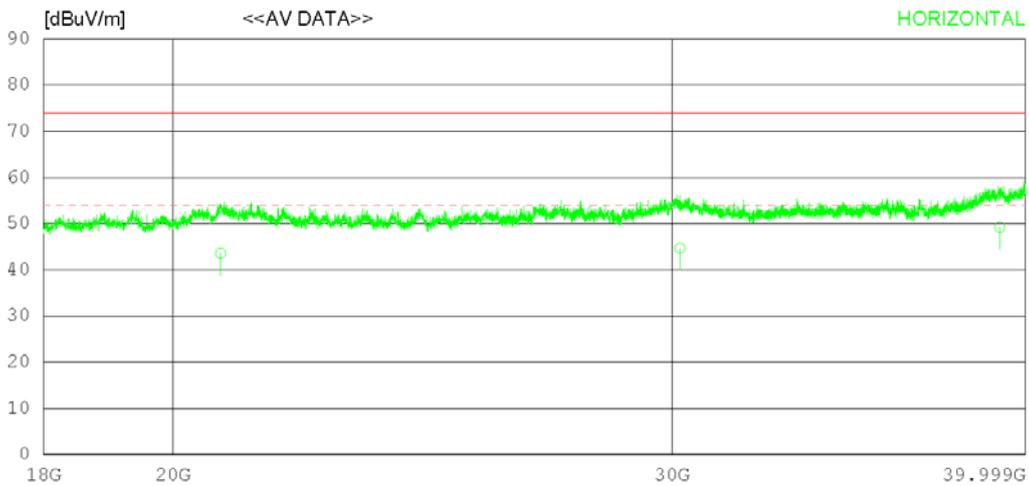
## RADIATED EMISSION

Date 2020-02-18

Order No. DTNC2002-00953  
 Power Supply Battery  
 Temp/Humi 20 °C 50 % R.H.  
 Test Condition Monitoring

Memo

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



## RADIATED EMISSION

Date 2020-02-18

Order No.	DTNC2002-00953
Power Supply	Battery
Temp/Humi	20 °C 50 % R.H.
Test Condition	Monitoring

Memo

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

No	Freq	Reading	Ant.Fac	Loss	Gain	Site.Fac	Result	Limit	Margin	Pola	Height	Angle
1	20783.05	31.2	45.58	20.1	53.35	0	43.53	54	10.47	Hori	222	143
2	20794.13	30.5	45.59	20.12	53.36	0	42.85	54	11.15	Vert	321	5
3	30047.64	27.6	47.5	21.9	52.2	0	44.8	54	9.2	Vert	108	254
4	30196.31	27.4	47.5	21.99	52.21	0	44.68	54	9.32	Hori	109	299
5	39172.26	28.4	47.84	25.53	52.24	0	49.53	54	4.47	Vert	141	16
6	39172.19	28.1	47.84	25.53	52.24	0	49.23	54	4.77	Hori	139	344

### 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
Mar. 06. 2020	Initial report	MinSu Park	KyoungHwan Bae

-End of test report-