

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 : DREFCC2005-0119

2. Customer

• Name : MOTREX CO., LTD.

• Address : Seoyoung Bldg., 25, Hwangsaeul-ro 258beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea

3. Use of Report : Grant of Certification

4. Product Name / Model Name / FCC ID : SMART DISPLAY / MS300ATMFL / BP9-MS300ATMFL

5. Test Method Used : ANSI C63.4:2014

FCC Part 15 Subpart B

(FM Broadcast receiver)

6. Date of Test : Mar. 19. 2020 ~ Apr. 07. 2020

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

8. Testing Environment : Temperature (18 ~ 21) °C , Humidity (39 ~ 42) % R.H.

9. Test Result : Refer to the attached Test Result

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

Affirmation	Tested by	Technical Manager
	Name : GiHyun Kim (Signature)	Name : HyungJun Kim (Signature)

May. 08. 2020 .

DT&C Co., Ltd.

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

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

CONTENTS

1. General Remarks	3
2. Test Laboratory.....	3
3. General Information of EUT.....	4
4. EUT Operations and Test Configurations	5
4.1 Principle of Configuration Selection	5
4.2 EUT Operation Mode	5
4.3 Test Configuration Mode.....	5
4.4 Supported Equipment	6
4.5 EUT In/Output Port	6
4.6 Test Voltage and Frequency	6
5. Test Summary	7
6. Test Environment.....	7
7. Test Results : Emission.....	8
7.1 Conducted Disturbance	8
7.2 Radiated Disturbance	10
7.3 Antenna Power Conduction	54
8. Revision History.....	56

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 rd , 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	MOTREX CO., LTD. Seoyoung Bldg., 25, Hwangsaеul-ro 258beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
Manufacturer	MOTREX CO., LTD. Seoyoung Bldg., 25, Hwangsaеul-ro 258beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
Factory	MOTREX CO., LTD. 62-7,Pungsesandan 4-ro,Pungse-myeon,Dongnam-gu,Cheonan-si,Chungcheongnam-do, Korea
Product Name	SMART DISPLAY
Model Name	MS300ATMFL
Add Model Name	None
Maximum Internal Frequency	1 000 MHz
Software Version	TMF.CIS.0000.027.191031
Hardware Version	Rev0.1
Rated Power	DC 12 V
FCC ID	BP9-MS300ATMFL
Remarks	

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	AM	The EUT is connected to the SIGNAL GENERATOR and is receiving radio frequency(MF). The EUT is wirelessly connected to the router and continuously sends and receives data. And we have verified the data.(WIFI5G)
2	FM	The EUT is connected to the SIGNAL GENERATOR and is receiving radio frequency(VHF II). The EUT is wirelessly connected to the router and continuously sends and receives data. And we have verified the data.(WIFI2.4G)
3	USB	The EUT is connected to USB memory to play the music. (1 kHz tone). The EUT is wirelessly connected to the phone and continuously sends and receives data.(Bluetooth)

4.3 Test Configuration Mode

No.	Mode	Description
1	Receiving (AM/FM)	EUT is connected to DC power EUT is connected to the SIGNAL GENERATOR EUT is wirelessly connected to the router
2	USB	EUT is connected to DC power EUT is connected to USB memory The EUT is wirelessly connected to the phone

4.4 Supported Equipment

Used*	Product Type	Manufacturer	Model	Remarks
AE	MULTI MEDIABOX	N/A	N/A	None
AE	Speaker	N/A	N/A	None
AE	PHONE	LG	VS-980	None
AE	USB MEMORY	Sandisk	ULTRA FLAIR 3.0	None
AE	ANT.	N/A	N/A	None
AE	ROUTER	RoHS	NEXT-7004N	None
*Abbreviations: AE - Auxiliary/Associated Equipment, or SIM - Simulator				

4.5 EUT In/Output Port

Name	Type*	Cable Max. >3m	Cable Shielded	Cable Back shell	Remarks
DC IN	DC	1.8 m	Non shield	Plastic	None
Antenna	I/O	3.0 m	Shield	Plastic	None
Multimedia box	I/O	1.5 m	Non shield	Plastic	None
SPEAKER	I/O	1.6 m	Non shield	Plastic	None
*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	12 V	DC	-	None

5. Test Summary

Test Items	Applied Standards	Results
Conducted Disturbance	ANSI C63.4 : 2014	N/A (Note 1)
Radiated Disturbance	ANSI C63.4 : 2014	C
Antenna Power Conduction	ANSI C63.4 : 2014	C
Note 1) The EUT is not a device connected to the AC mains.		
C=Comply N/C=Not Comply N/T=Not Tested N/A=Not Applicable		

The data in this test report are traceable to the national or international standards.

-Conducted Disturbance

Frequency [MHz]	Phase	Result [dB μ V]	Detector	Limit [dB μ V]	Margin [dB]
-	-	-	-	-	-

-Radiated Disturbance

Frequency [MHz]	Pol.	Result [dB μ V/m]	Detector	Limit [dB μ V/m]	Margin [dB]
39153.040	V	49.76	Cispr - Average	54.00	4.25

-Antenna Power Conduction

Frequency [MHz]	Result [dB μ V/m]	Detector	Limit [dB μ V/m]	Margin [dB]
-	-	-	-	-

6. Test Environment

Test Items	Test date (YYYY-MM-DD)	Temp. (°C)	Humidity (% R.H.)	Pressure (kPa)
Radiated Disturbance	2020-03-20 2020-04-07	18 21	39 42	-
Antenna Power Conduction	2020-03-19	20	40	

7. Test Results : Emission

7.1 Conducted Disturbance

ANSI C63.4	Mains terminal disturbance voltage			Result	
<u>Method:</u> 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.				Not Applicable	
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		N/A		
	EUT Operation mode		N/A		
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
-	-	-	-	-	-

Mains terminal disturbance voltage _ Measurement data			
Test configuration mode	N/A	EUT Operation mode	N/A
Test voltage (V)	N/A	Test Frequency (Hz)	N/A

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 BETS-7	Radiated disturbance 30 MHz –40 GHz**			Result
<u>Method:</u> 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, 3	
Radiated Disturbance below 1 000 MHz				
Frequency range (MHz)	Quasi-peak limit dBµV/m			
	Class A		Class B	
	3 m distance	10 m distance	3 m distance	
30 to 88	49.1	39.1	40	
88 to 216	53.5	43.5	43.5	
216 to 960	56.4	46.4	46	
960 to 1 000	59.5	49.5	54	
According to 15.109(g), as an alternative to the radiated emission limit shown above, digital devices may be shown to comply with the standards(CISPR), Pub. 22 shown as below.				
Frequency range (MHz)	Quasi-peak limit dBµV/m			
	Class A (10 m distance)		Class B (10 m distance)	
	30 to 230		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
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		5 th harmonic of the highest frequency or 40 GHz, whichever is lower		

Measurement Instrument					
Description	Model	Manufacturer	Identifier	Cal. Date	Cal. Due
MEASUREMENT SOFTWARE	EMI-R VER. 2.00.0177	TSJ	N/A	N/A	N/A
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	100525	2019.12.20	2020.12.20
TRILOG BROADBAND TEST-ANTENNA WITH 6DB ATT	VULB9160	SCHWARZBECK	9160-3339	2018.10.22	2020.10.22
	8491B	HP	18403	2018.10.22	2020.10.22
LOW NOISE PRE AMPLIFIER	MLA-100K01-B01-26	TSJ	1252741	2020.02.13	2021.02.13
HORN ANTENNA	3117	ETS-LINDGREN	00152093	2020.03.26	2021.03.26
HORN ANTENNA	EM-6969	ELECTRO-METRICS	156	2019.02.13	2021.02.13
PREAMPLIFIER	MLA-0618-B03-34	TSJ	1785642	2019.12.31	2020.12.31
HORN ANTENNA WITH	3116C	ETS-LINDGREN	00213177	2019.12.12	2021.12.12
PREAMPLIFIER	JS44-18004000-35-8P	L3 NARDA-MITEQ	2046884	2019.11.04	2020.11.04
(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)	DC 12 V	Test Frequency (Hz)	-

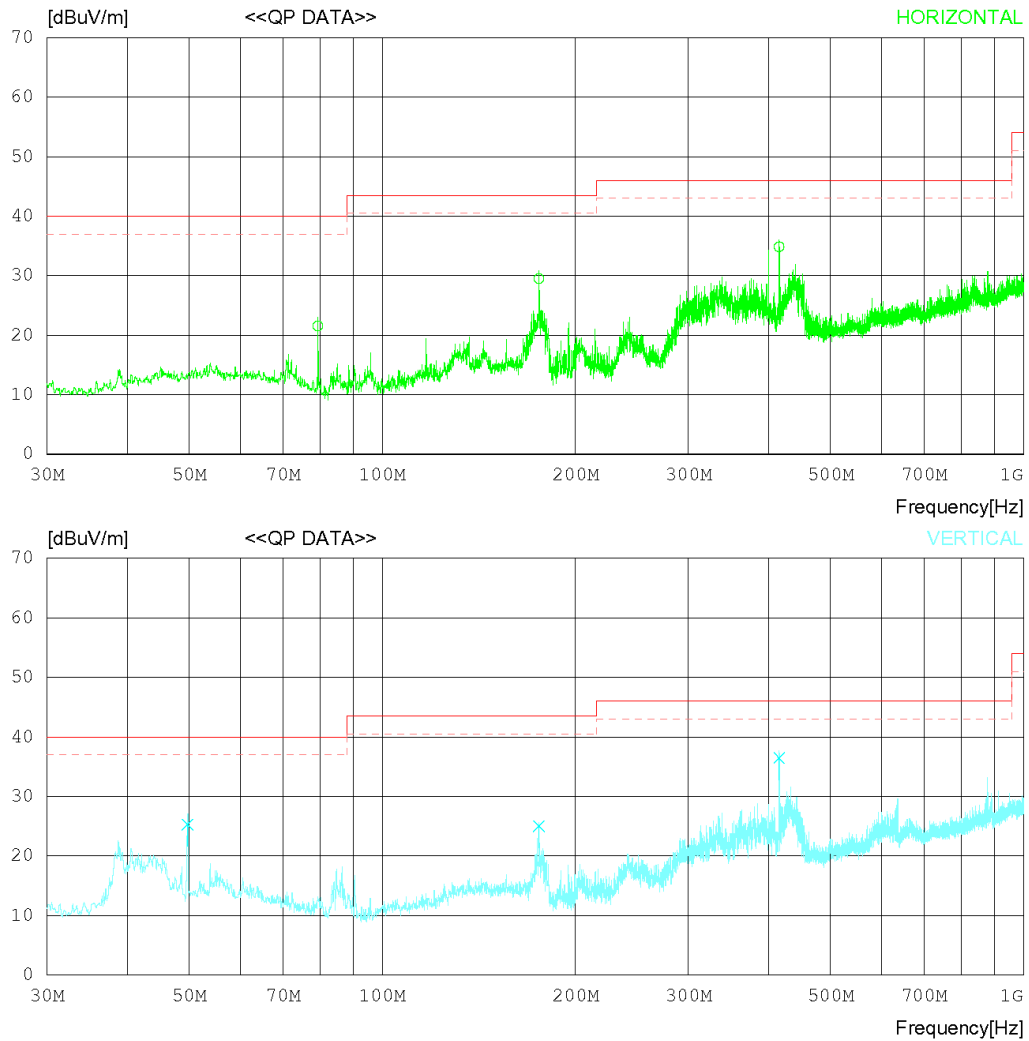
RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 18 'C 39 % R.H.
Test Condition AM

Memo

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



RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 18 °C 39 % R.H.
Test Condition AM

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	79.348	31.76	14.66	0.90	25.74	21.58	40.00	18.42	380	1
2	175.497	36.34	17.50	1.30	25.63	29.51	43.50	13.99	126	246
3	415.928	36.71	21.90	2.01	25.77	34.85	46.00	11.15	212	208
----- Vertical -----										
4	49.643	32.04	18.26	0.77	25.80	25.27	40.00	14.73	132	54
5	175.497	31.84	17.50	1.30	25.63	25.01	43.50	18.49	232	155
6	415.928	38.32	21.90	2.01	25.77	36.46	46.00	9.54	147	1

Radiated disturbance at (1 ~ 6) GHz _Peak measurement data			
Test configuration mode	1	EUT Operation mode	1
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

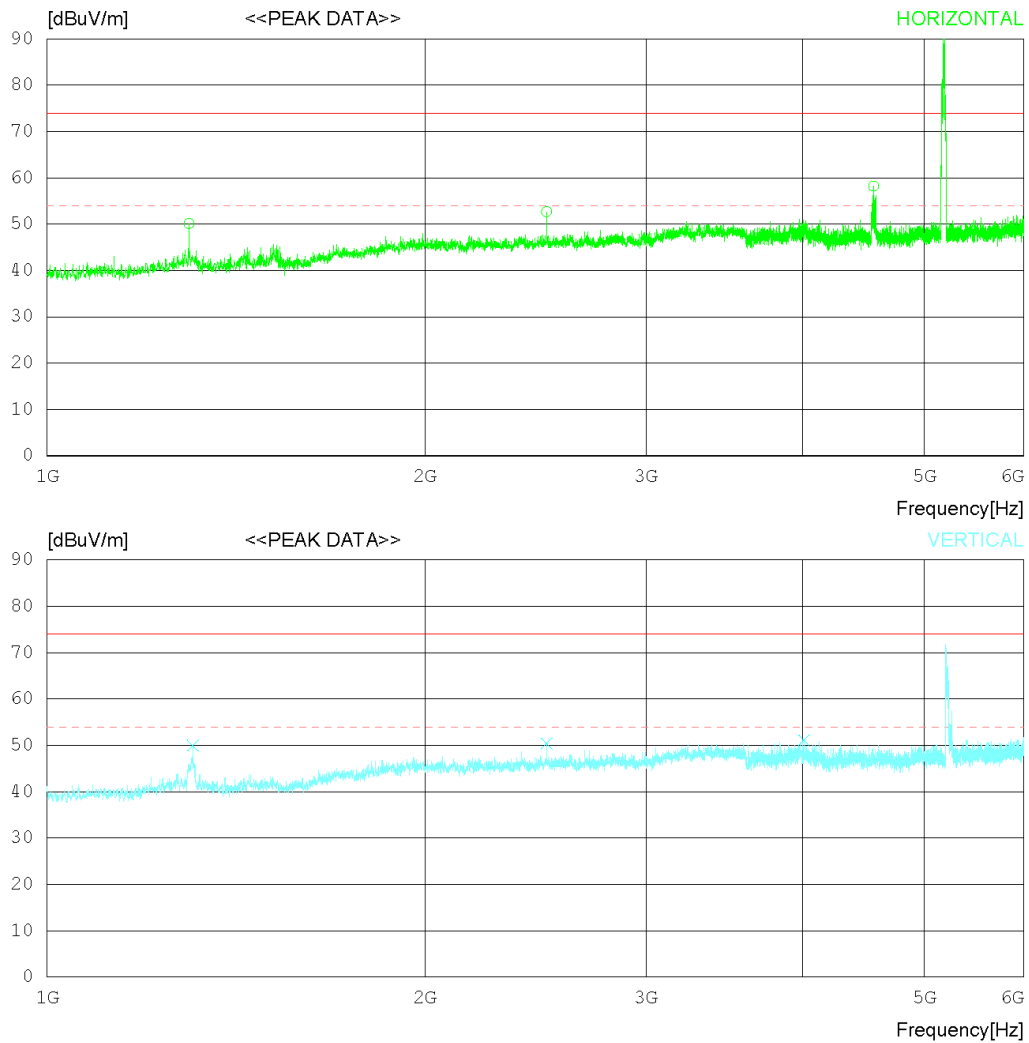
RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition AM

Memo

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



*Remark : (5,150 ~ 5,350) MHz is WIFI 5 G frequency.

RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 °C 42 % R.H.
Test Condition AM

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	1297.500	51.00	29.31	5.13	35.33	50.11	74.0	23.89	325	139
2	2500.000	47.90	32.20	7.23	34.64	52.69	74.0	21.31	157	163
3	4553.750	48.90	33.91	9.65	34.27	58.19	74.0	15.81	251	270
----- Vertical -----										
4	1306.875	50.90	29.20	5.17	35.32	49.95	74.0	24.05	198	89
5	2500.000	45.60	32.20	7.23	34.64	50.39	74.0	23.61	151	157
6	4008.750	41.40	33.50	9.71	33.55	51.06	74.0	22.94	204	118

Radiated disturbance at (1 ~ 6) GHz _Average measurement data			
Test configuration mode	1	EUT Operation mode	1
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

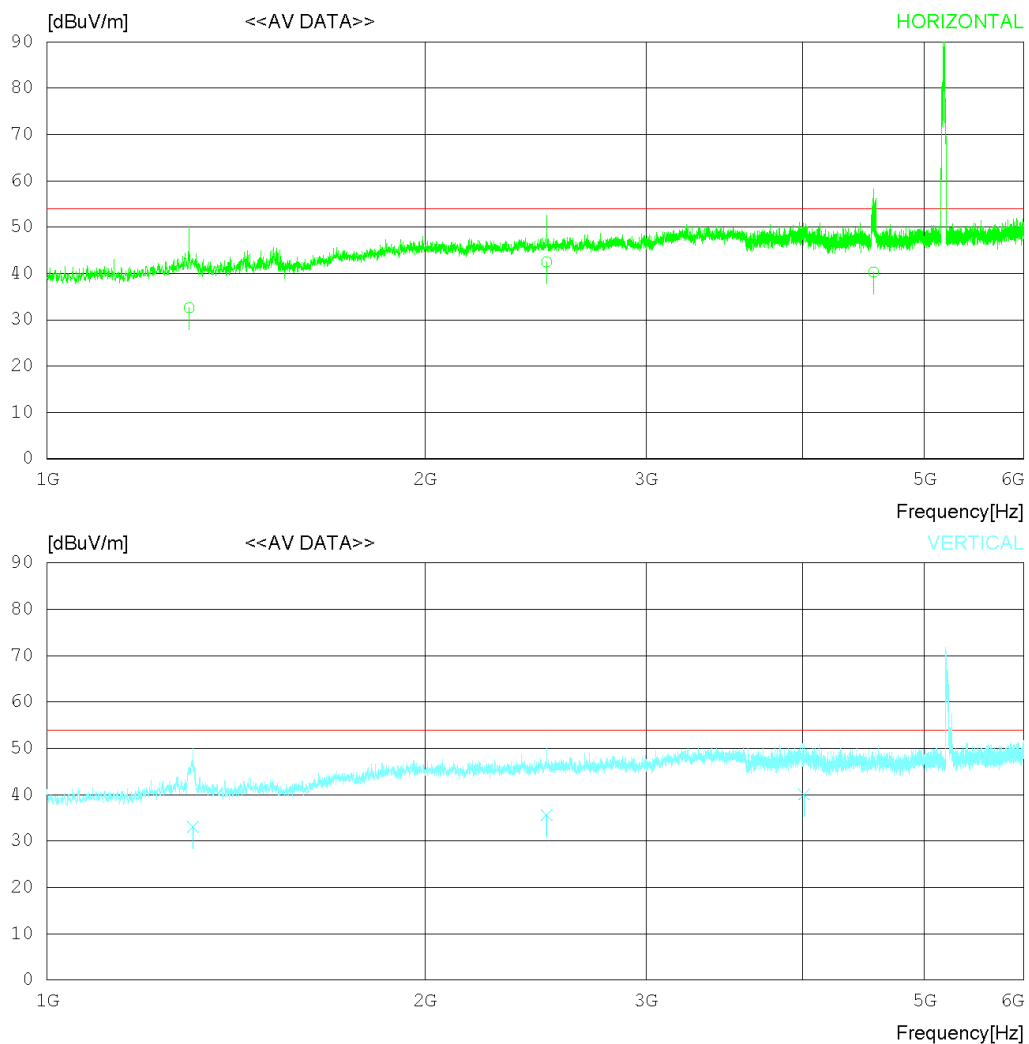
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Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition AM

Memo

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



*Remark : (5,150 ~ 5,350) MHz is WIFI 5 G frequency.

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Date 2020-04-07

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Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition AM

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	1297.857	33.50	29.30	5.13	35.33	32.60	54.00	21.40	307	112
2	2499.956	37.70	32.20	7.22	34.63	42.49	54.00	11.51	267	203
3	4553.728	31.00	33.91	9.65	34.27	40.29	54.00	13.71	134	306
----- Vertical -----										
4	1307.080	34.00	29.20	5.17	35.32	33.05	54.00	20.95	305	104
5	2500.380	30.80	32.20	7.23	34.64	35.59	54.00	18.41	277	203
6	4008.342	30.40	33.50	9.71	33.55	40.06	54.00	13.94	105	208

Radiated disturbance at (6 ~ 18) GHz _Peak measurement data			
Test configuration mode	1	EUT Operation mode	1
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

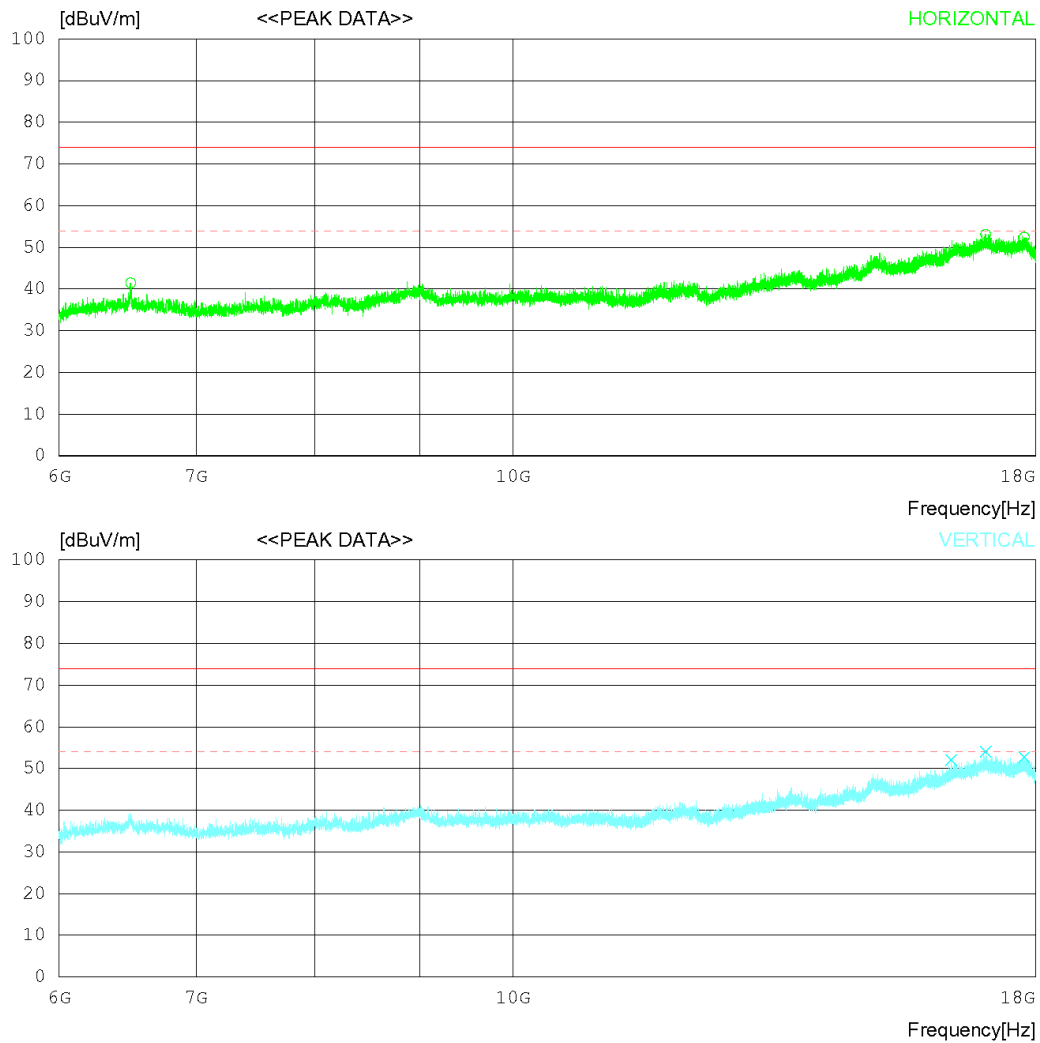
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Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition AM

Memo

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



RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 °C 42 % R.H.
Test Condition AM

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	6504.000	37.30	31.58	11.43	38.80	41.51	74.0	32.49	265	153
2	17016.750	28.30	37.56	23.68	36.42	53.12	74.0	20.88	165	272
3	17772.000	29.00	38.14	22.76	37.44	52.46	74.0	21.54	100	358
----- Vertical -----										
4	16371.000	29.60	36.84	21.74	36.18	52.00	74.0	22	320	358
5	17016.750	29.20	37.56	23.68	36.42	54.02	74.0	19.98	184	241
6	17770.500	29.20	38.14	22.76	37.43	52.67	74.0	21.33	140	280

Radiated disturbance at (6 ~ 18) GHz _Average measurement data			
Test configuration mode	1	EUT Operation mode	1
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

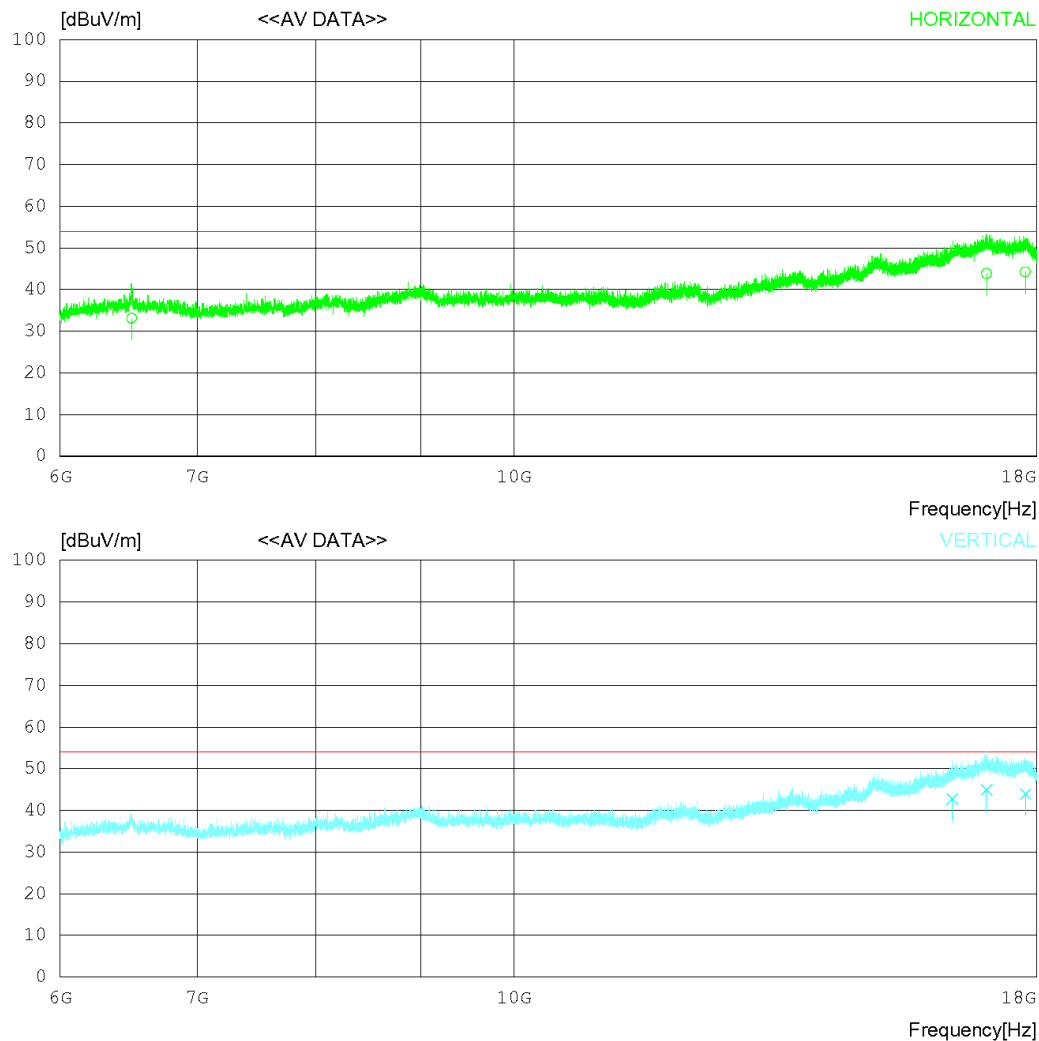
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LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Average)
FCC Part15 Subpart.B Class B (3m) - GHz(Average)



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Memo

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

No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	CAV [dBuV]	FACTOR [dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	6503.284	28.94	31.58	11.43	38.80	33.15	54.00	20.85	321	142
2	17015.400	19.00	37.56	23.69	36.42	43.83	54.00	10.17	274	210
3	17771.610	20.78	38.14	22.77	37.43	44.26	54.00	9.74	194	325
----- Vertical -----										
4	16372.030	20.36	36.84	21.74	36.18	42.76	54.00	11.24	134	320
5	17016.240	20.12	37.56	23.68	36.42	44.94	54.00	9.06	158	202
6	17772.010	20.46	38.14	22.76	37.44	43.92	54.00	10.08	167	184

Radiated disturbance at (18 ~ 40) GHz _Peak measurement data			
Test configuration mode	1	EUT Operation mode	1
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

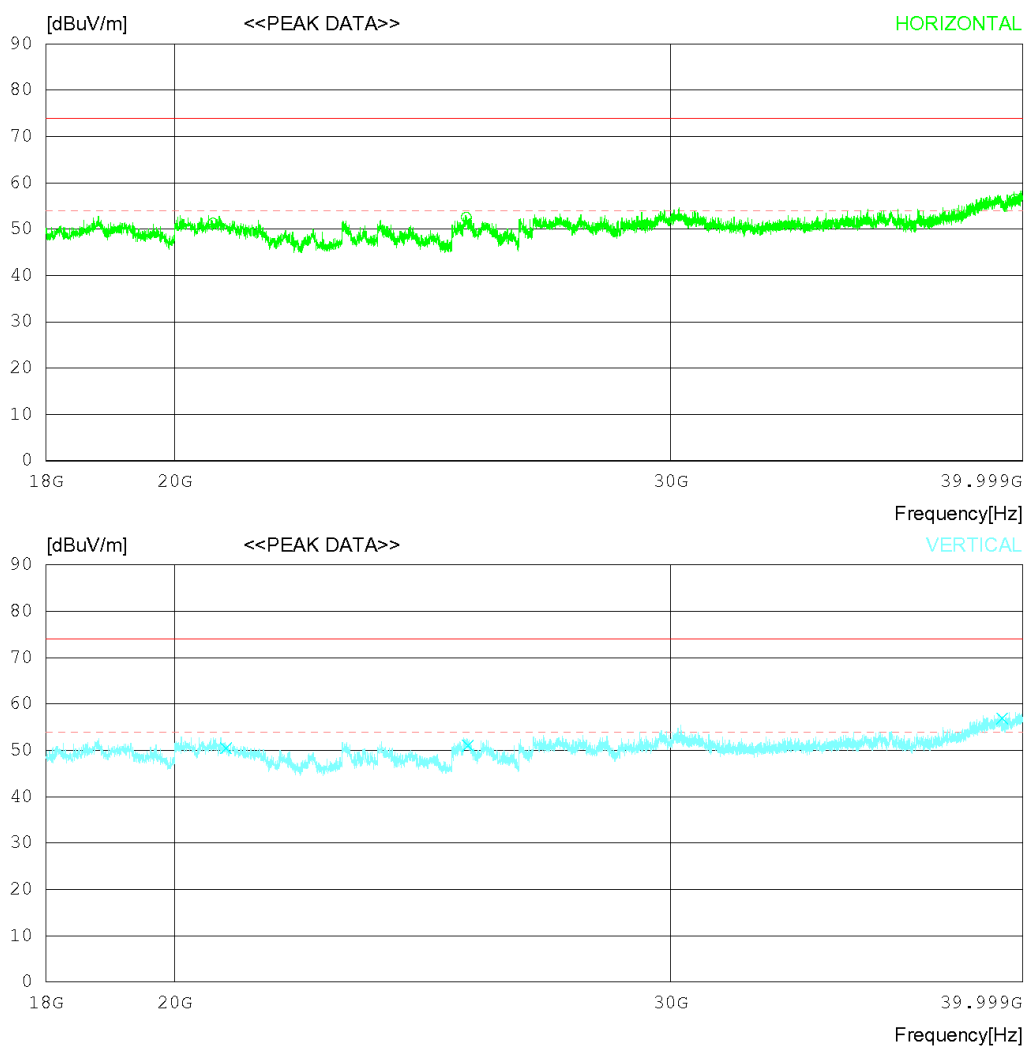
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LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Peak)
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LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Peak)
FCC Part15 Subpart.B Class B (3m) - GHz(Average)

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	20634.500	39.30	45.50	19.81	53.29	51.32	74.0	22.68	154	358
2	25383.750	39.60	45.70	20.90	53.68	52.52	74.0	21.48	321	271
3	39749.750	35.20	48.80	24.68	52.21	56.47	74.0	17.53	213	186
----- Vertical -----										
4	20849.000	38.00	45.60	20.23	53.38	50.45	74.0	23.55	132	0
5	25411.250	38.10	45.71	20.91	53.68	51.04	74.0	22.96	120	138
6	39329.000	35.80	48.03	25.30	52.23	56.90	74.0	17.1	189	0

Radiated disturbance at (18 ~ 40) GHz _Average measurement data			
Test configuration mode	1	EUT Operation mode	1
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

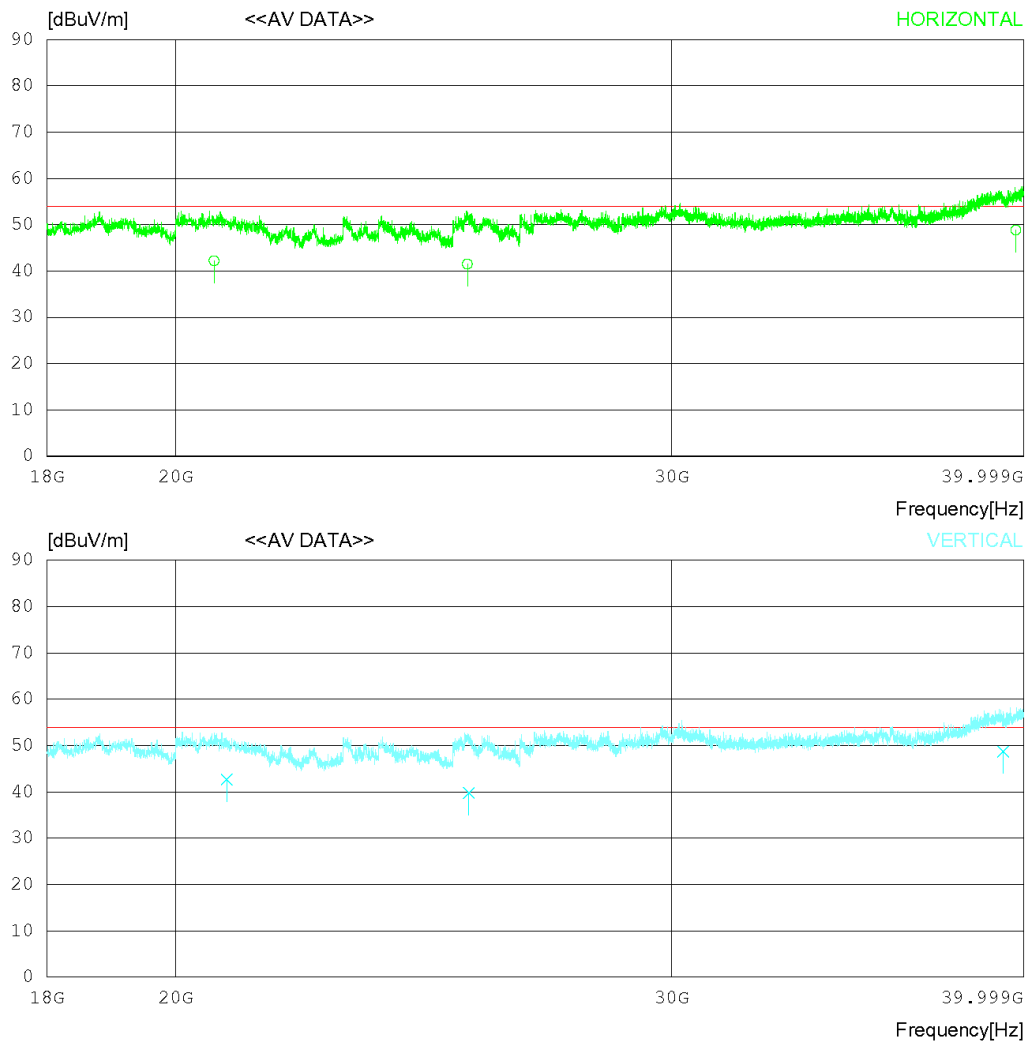
RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition AM

Memo

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



RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 21 'C 42 % R.H.
Test Condition AM

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	20634.120	30.20	45.50	19.81	53.29	42.22	54.00	11.78	120	233
2	25383.110	28.60	45.70	20.90	53.69	41.51	54.00	12.49	334	16
3	39749.730	27.62	48.80	24.68	52.21	48.89	54.00	5.11	224	78
----- Vertical -----										
4	20849.020	30.20	45.60	20.23	53.38	42.65	54.00	11.35	120	124
5	25411.210	26.80	45.71	20.91	53.68	39.74	54.00	14.26	243	78
6	39329.070	27.62	48.03	25.30	52.23	48.72	54.00	5.28	322	302

Radiated disturbance at (30 ~ 1000) MHz _Measurement data			
Test configuration mode	1	EUT Operation mode	2
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

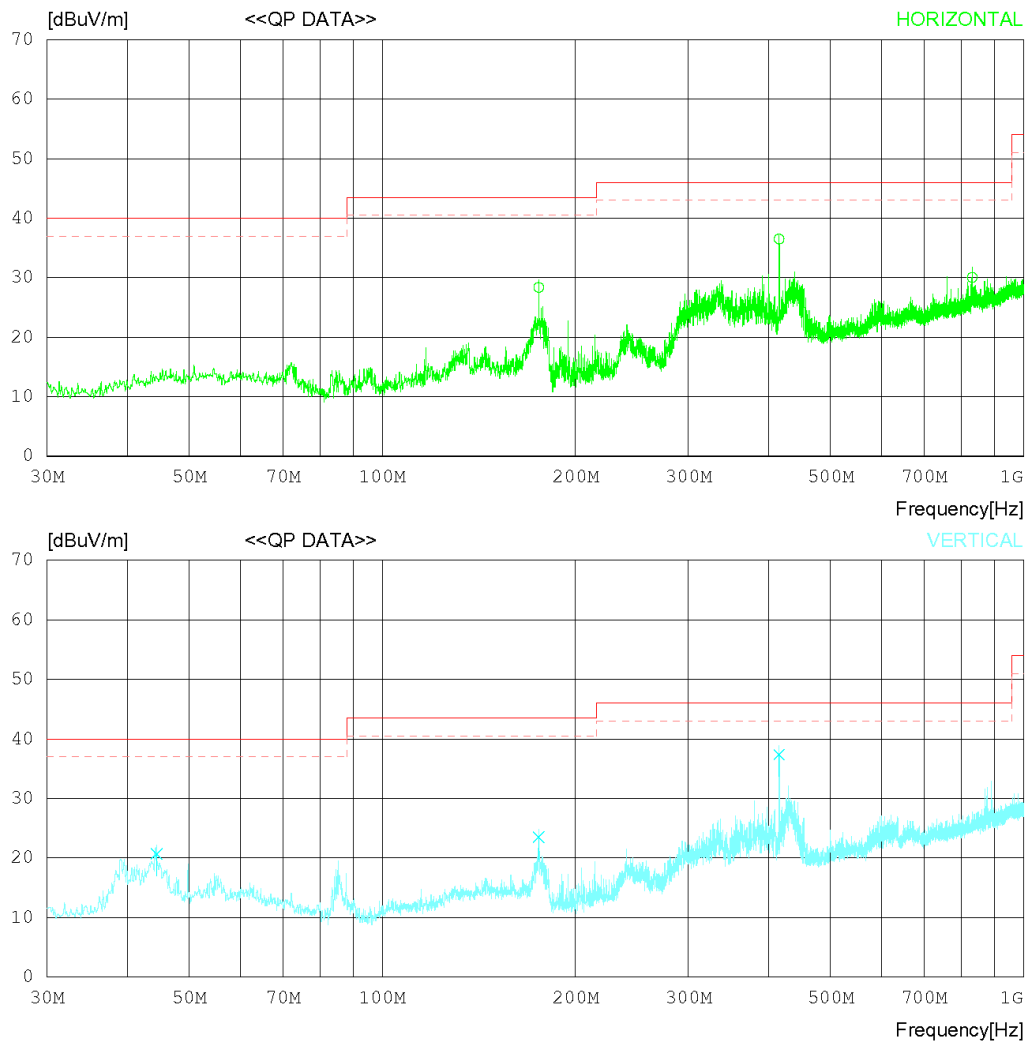
RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 18 'C 39 % R.H.
Test Condition FM

Memo

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



RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 18 °C 39 % R.H.
Test Condition FM

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	175.375	35.17	17.51	1.30	25.63	28.35	43.50	15.15	237	32
2	415.928	38.36	21.90	2.01	25.77	36.50	46.00	9.50	184	1
3	831.520	24.06	28.76	2.96	25.75	30.03	46.00	15.97	194	359
----- Vertical -----										
4	44.429	28.14	17.64	0.71	25.81	20.68	40.00	19.32	132	262
5	175.375	30.33	17.51	1.30	25.63	23.51	43.50	19.99	209	178
6	415.928	39.24	21.90	2.01	25.77	37.38	46.00	8.62	111	171

Radiated disturbance at (1 ~ 6) GHz _Peak measurement data			
Test configuration mode	1	EUT Operation mode	2
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

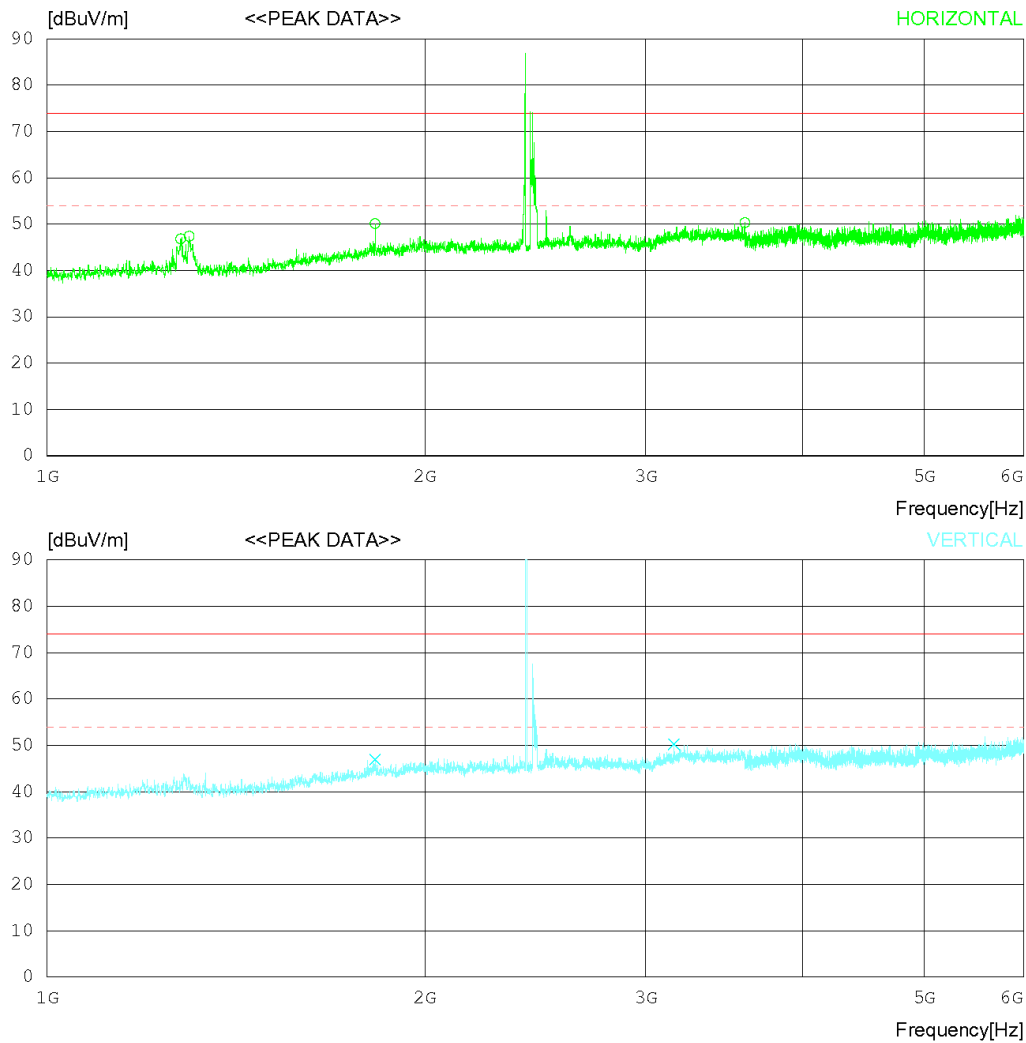
RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 18 'C 39 % R.H.
Test Condition FM

Memo

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



*Remark : (2,412 ~ 2,472) MHz is WIFI 2.4 G frequency.

RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 18°C 39 % R.H.
Test Condition FM

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	1278.125	48.40	28.76	5.06	35.36	46.86	74.0	27.14	165	1
2	1298.125	48.80	28.80	5.13	35.33	47.40	74.0	26.6	232	216
3	1825.625	47.20	30.50	7.02	34.59	50.13	74.0	23.87	137	359
4	3598.125	42.70	33.48	8.24	34.10	50.32	74.0	23.68	230	211
----- Vertical -----										
5	1825.625	44.00	30.50	7.02	34.59	46.93	74.0	27.07	201	358
6	3159.375	43.60	33.04	8.31	34.71	50.24	74.0	23.76	164	140

Radiated disturbance at (1 ~ 6) GHz _Average measurement data			
Test configuration mode	1	EUT Operation mode	2
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

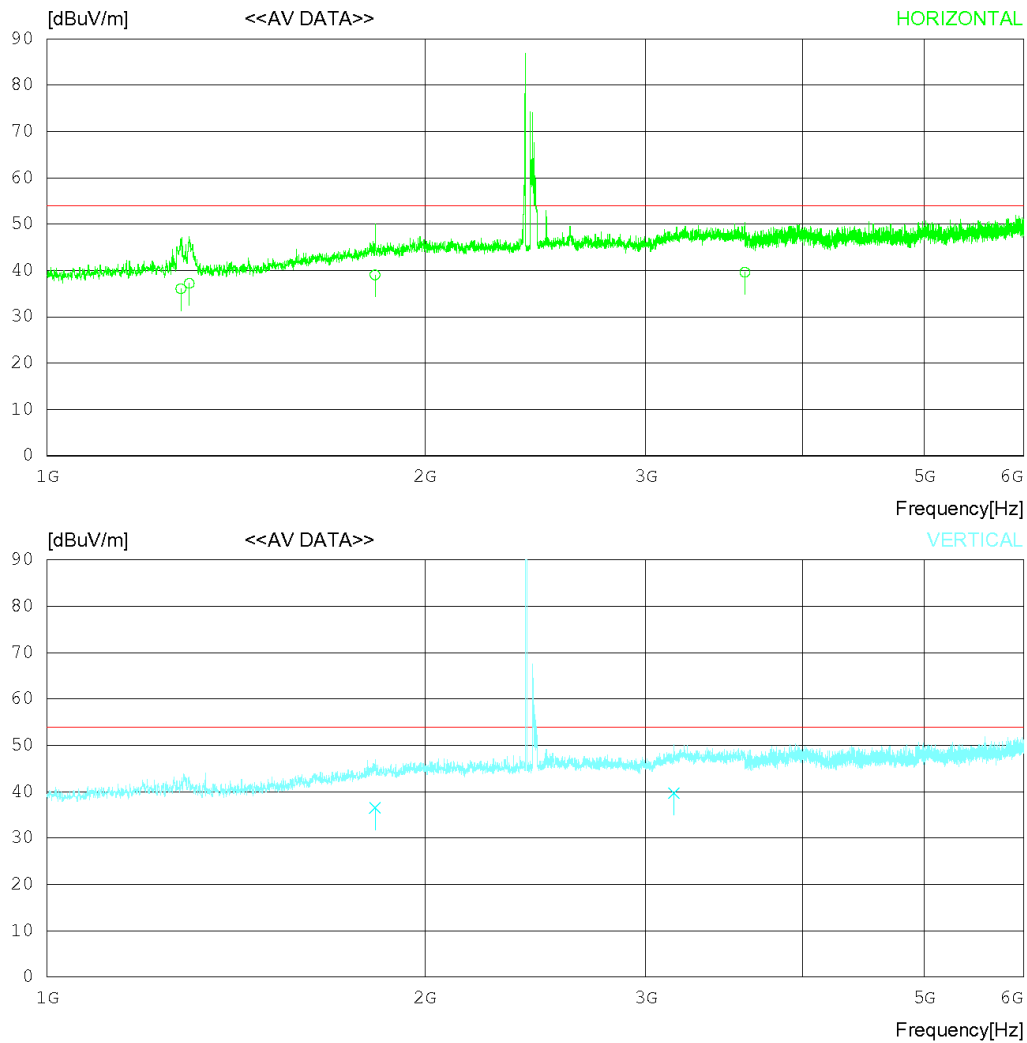
RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 18 'C 39 % R.H.
Test Condition FM

Memo

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



*Remark : (2,412 ~ 2,472) MHz is WIFI 2.4 G frequency.

RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 18 °C 39 % R.H.
Test Condition FM

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	1278.323	37.62	28.76	5.06	35.36	36.08	54.00	17.92	132	32
2	1298.324	38.64	28.80	5.13	35.33	37.24	54.00	16.76	262	202
3	1825.304	36.09	30.50	7.02	34.59	39.02	54.00	14.98	154	340
4	3598.074	32.01	33.48	8.24	34.10	39.63	54.00	14.37	280	202
----- Vertical -----										
5	1825.323	33.65	30.50	7.02	34.59	36.58	54.00	17.42	132	323
6	3159.625	33.06	33.04	8.31	34.71	39.70	54.00	14.30	202	132

Radiated disturbance at (6 ~ 18) GHz _Peak measurement data			
Test configuration mode	1	EUT Operation mode	2
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

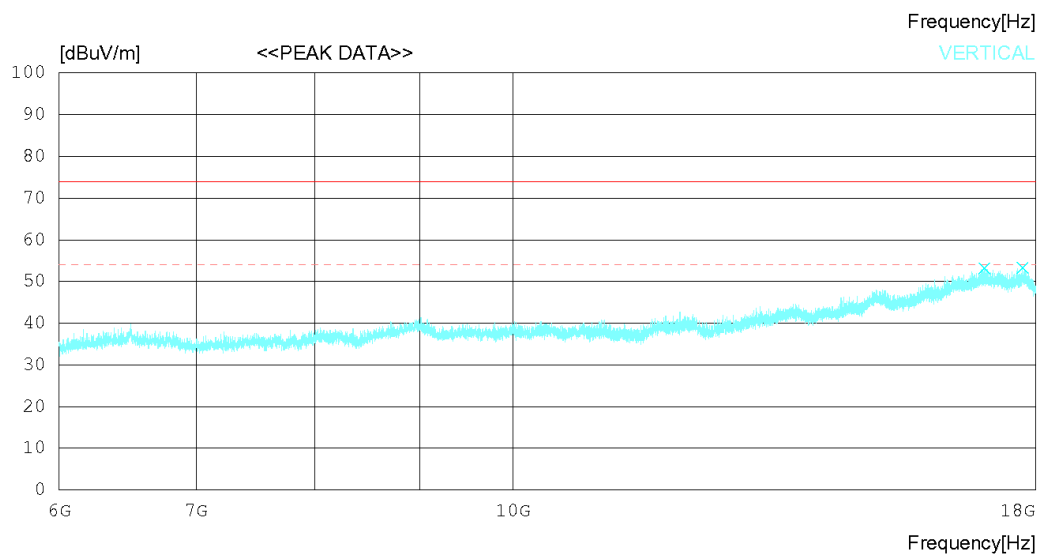
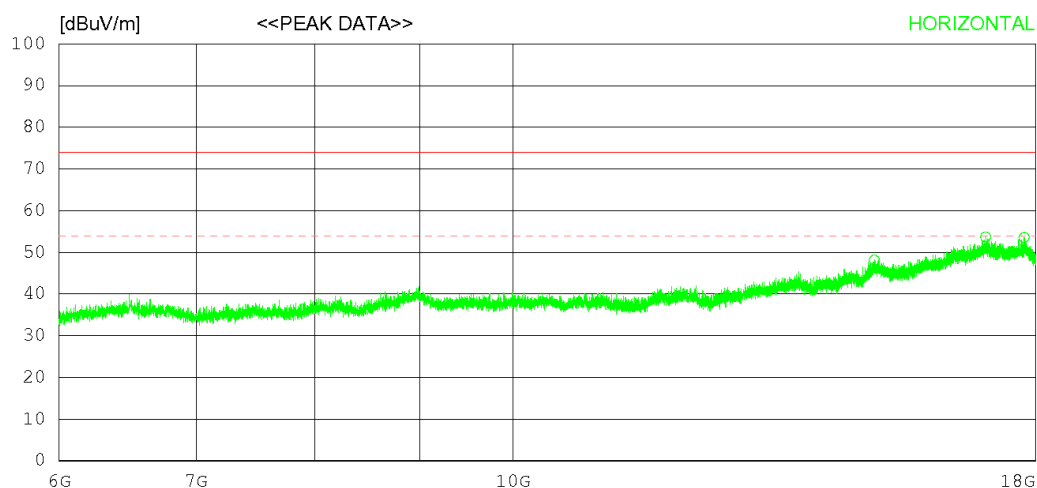
RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition FM

Memo

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



RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 21°C 42% R.H.
Test Condition FM

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	15014.250	29.00	35.46	20.68	36.99	48.15	74.0	25.85	312	353
2	17018.250	28.90	37.56	23.67	36.42	53.71	74.0	20.29	220	358
3	17773.500	30.10	38.15	22.76	37.44	53.57	74.0	20.43	121	358
----- Vertical -----										
4	16992.000	28.30	37.54	23.74	36.40	53.18	74.0	20.82	267	358
5	17738.250	29.80	38.12	22.71	37.38	53.25	74.0	20.75	156	358

Radiated disturbance at (6 ~ 18) GHz _Average measurement data			
Test configuration mode	1	EUT Operation mode	2
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

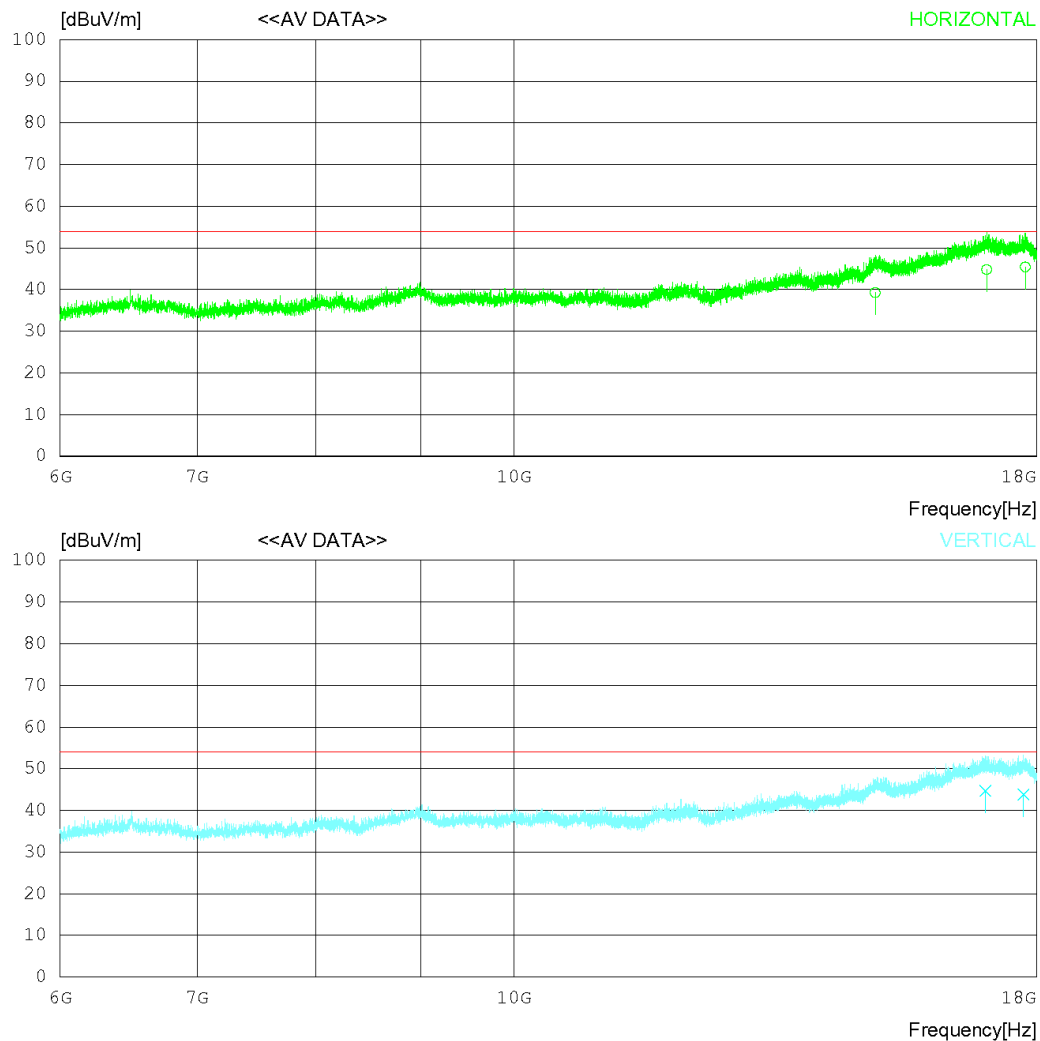
RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition FM

Memo

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



RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 21 'C 42 % R.H.
Test Condition FM

Memo

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

No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	CAV [dBuV]	FACTOR [dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	15013.250	20.14	35.46	20.68	36.99	39.29	54.00	14.71	235	135
2	17018.370	20.02	37.56	23.66	36.42	44.82	54.00	9.18	184	248
3	17773.950	21.95	38.15	22.76	37.44	45.42	54.00	8.58	167	329
----- Vertical -----										
4	16992.350	19.84	37.54	23.74	36.40	44.72	54.00	9.28	134	251
5	17737.360	20.36	38.12	22.70	37.38	43.80	54.00	10.20	169	320

Radiated disturbance at (18 ~ 40) GHz _Peak measurement data			
Test configuration mode	1	EUT Operation mode	2
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

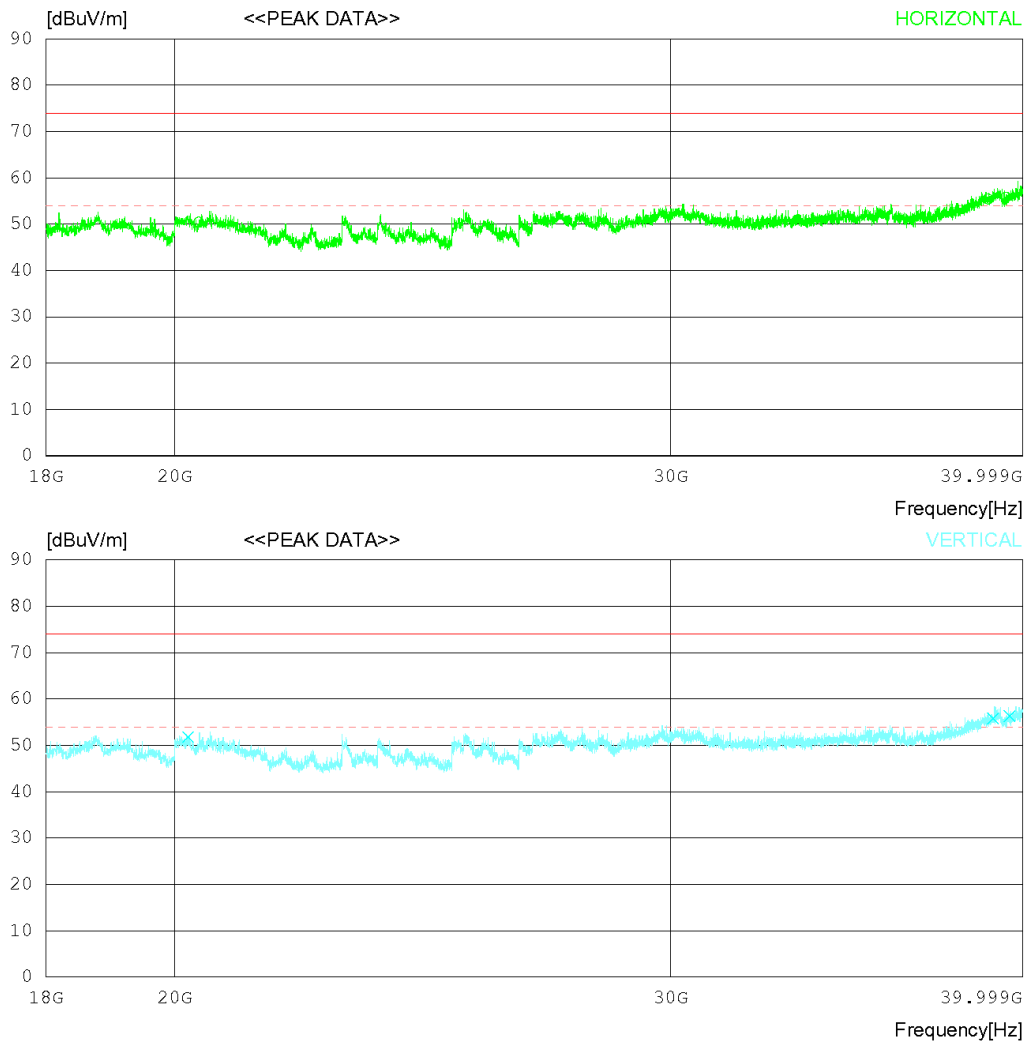
RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition FM

Memo

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



RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 21°C 42% R.H.
Test Condition FM

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	20395.250	38.90	45.40	19.35	53.18	50.47	74.0	23.53	320	359
2	38886.250	34.60	47.47	25.64	52.26	55.45	74.0	18.55	147	9
3	39455.500	34.70	48.21	25.11	52.23	55.79	74.0	18.21	220	292
----- Vertical -----										
4	20216.500	40.60	45.30	19.00	53.10	51.80	74.0	22.2	154	85
5	39034.750	34.70	47.63	25.73	52.25	55.81	74.0	18.19	165	349
6	39576.500	35.20	48.45	24.93	52.22	56.36	74.0	17.64	167	0

Radiated disturbance at (18 ~ 40) GHz _Average measurement data			
Test configuration mode	1	EUT Operation mode	2
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

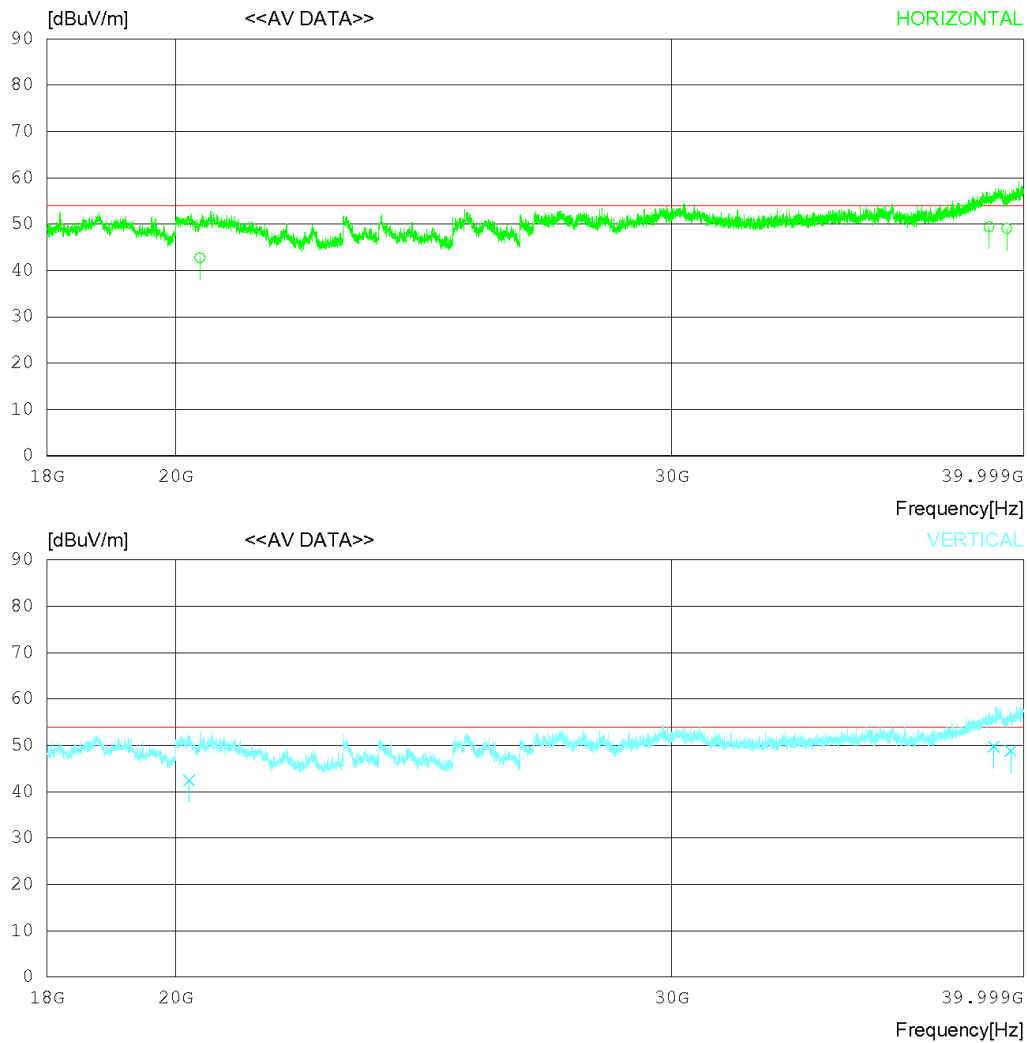
RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition FM

Memo

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



RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 21 'C 42 % R.H.
Test Condition FM

Memo

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

No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	CAV [dBuV]	FACTOR [dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	20395.210	31.20	45.40	19.35	53.18	42.77	54.00	11.23	120	124
2	38886.420	28.62	47.47	25.65	52.26	49.48	54.00	4.52	223	232
3	39455.580	27.99	48.21	25.11	52.23	49.08	54.00	4.92	371	214
----- Vertical -----										
4	20216.420	31.26	45.30	19.00	53.10	42.46	54.00	11.54	120	158
5	39034.710	28.62	47.63	25.73	52.25	49.73	54.00	4.27	235	166
6	39576.240	27.66	48.45	24.93	52.22	48.82	54.00	5.18	178	263

Radiated disturbance at (30 ~ 1000) MHz _Measurement data			
Test configuration mode	2	EUT Operation mode	3
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

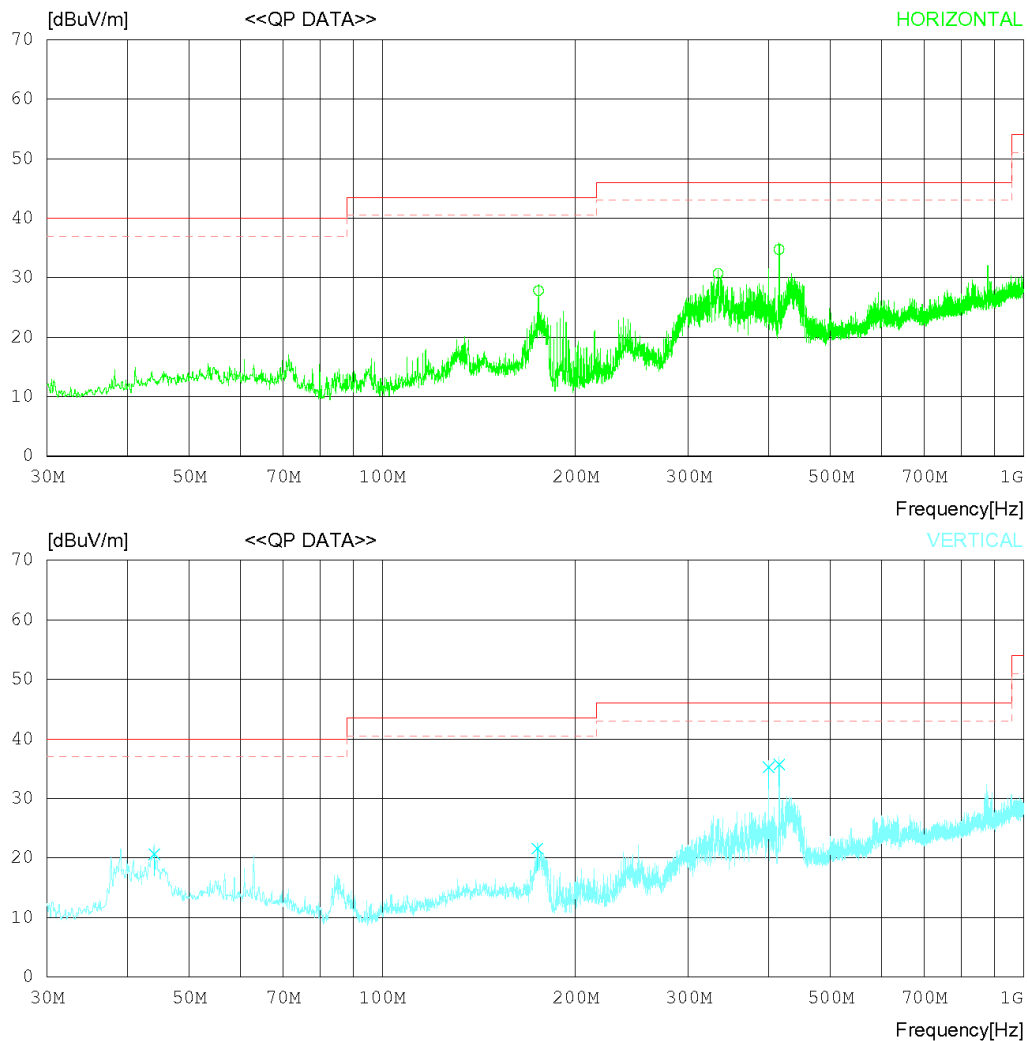
RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 18 'C 39 % R.H.
Test Condition USB

Memo

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



RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 18 °C 39 % R.H.
Test Condition USB

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	175.254	34.62	17.52	1.30	25.63	27.81	43.50	15.69	236	257
2	334.087	34.92	19.88	1.79	25.88	30.71	46.00	15.29	201	251
3	415.928	36.61	21.90	2.01	25.77	34.75	46.00	11.25	154	358
----- Vertical -----										
4	44.065	28.12	17.61	0.71	25.81	20.63	40.00	19.37	134	1
5	174.527	28.33	17.60	1.30	25.64	21.59	43.50	21.91	237	358
6	399.924	37.61	21.50	1.98	25.84	35.25	46.00	10.75	124	54
7	415.928	37.62	21.90	2.01	25.77	35.76	46.00	10.24	106	18

Radiated disturbance at (1 ~ 6) GHz _Peak measurement data			
Test configuration mode	2	EUT Operation mode	3
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

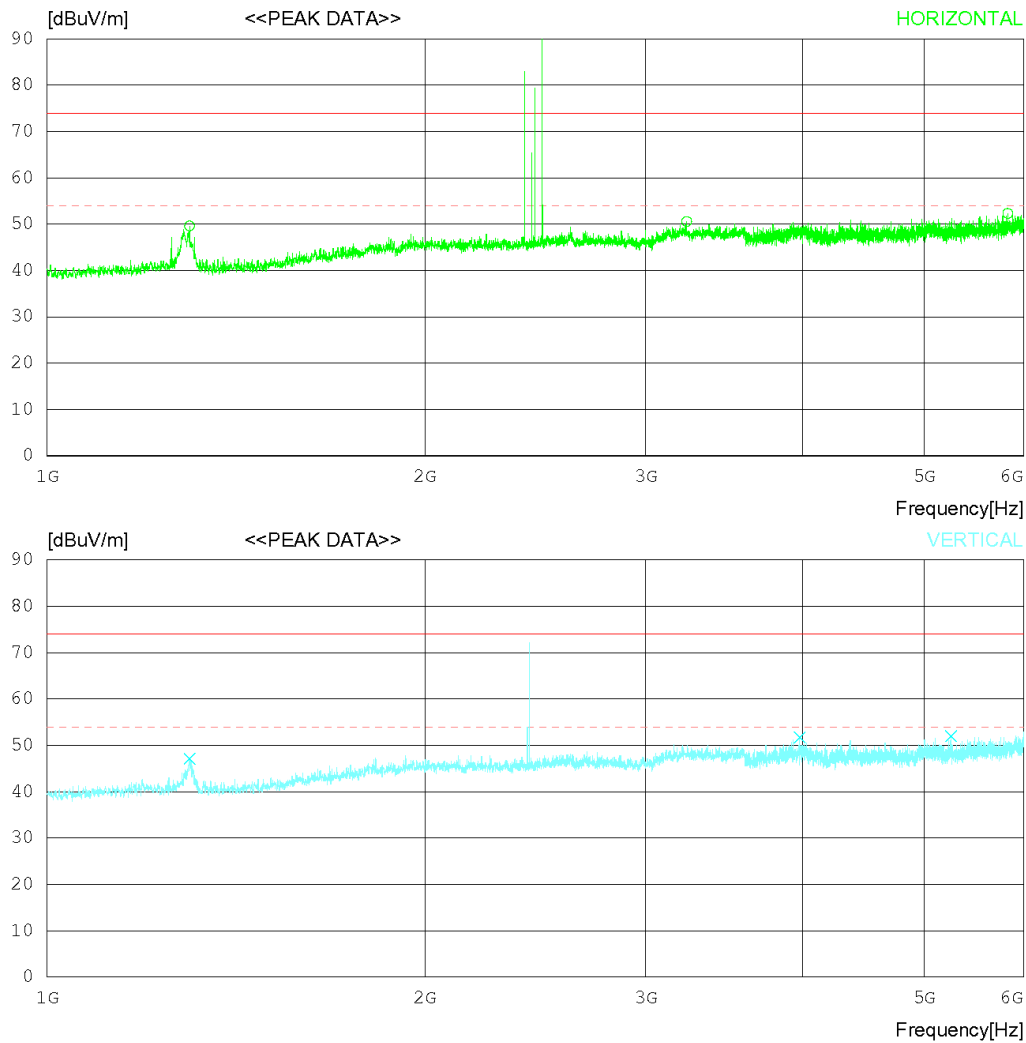
RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 18 'C 39 % R.H.
Test Condition USB

Memo

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



*Remark : (2,402 ~ 2,480) MHz is BT frequency.

RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 18°C 39 % R.H.
Test Condition USB

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	1298.750	51.00	28.80	5.14	35.33	49.61	74.0	24.39	107	358
2	3234.375	43.60	33.06	8.54	34.60	50.60	74.0	23.4	224	96
3	5830.000	41.30	34.82	11.19	34.98	52.33	74.0	21.67	197	267
----- Vertical -----										
4	1299.375	48.50	28.80	5.14	35.33	47.11	74.0	26.89	267	1
5	3978.125	42.30	33.30	9.67	33.57	51.70	74.0	22.3	304	1
6	5254.375	42.20	34.31	10.37	34.90	51.98	74.0	22.02	107	1

Radiated disturbance at (1 ~ 6) GHz _Average measurement data			
Test configuration mode	2	EUT Operation mode	3
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

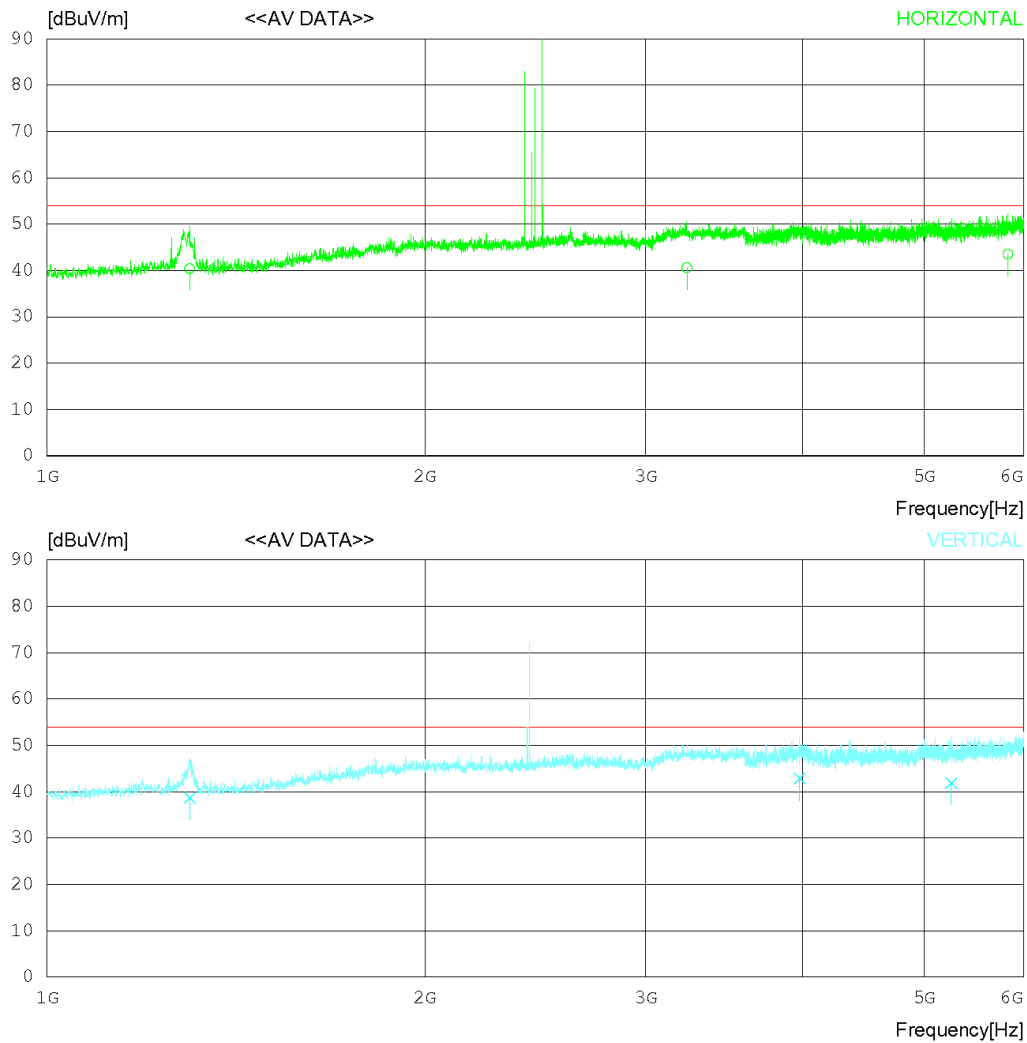
RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 18 'C 39 % R.H.
Test Condition USB

Memo

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



*Remark : (2,402 ~ 2,480) MHz is BT frequency.

RADIATED EMISSION

Date 2020-03-20

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 18 °C 39 % R.H.
Test Condition USB

Memo

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

No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	CAV [dBuV]	FACTOR [dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	1298.657	41.80	28.80	5.14	35.33	40.41	54.00	13.59	104	358
2	3234.787	33.60	33.06	8.54	34.60	40.60	54.00	13.40	207	137
3	5830.278	32.50	34.82	11.19	34.98	43.53	54.00	10.47	102	299
----- Vertical -----										
4	1299.663	40.10	28.80	5.14	35.33	38.71	54.00	15.29	169	56
5	3978.368	33.50	33.30	9.67	33.57	42.90	54.00	11.10	187	37
6	5254.678	32.10	34.31	10.37	34.90	41.88	54.00	12.12	335	56

Radiated disturbance at (6 ~ 18) GHz _Peak measurement data			
Test configuration mode	2	EUT Operation mode	3
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

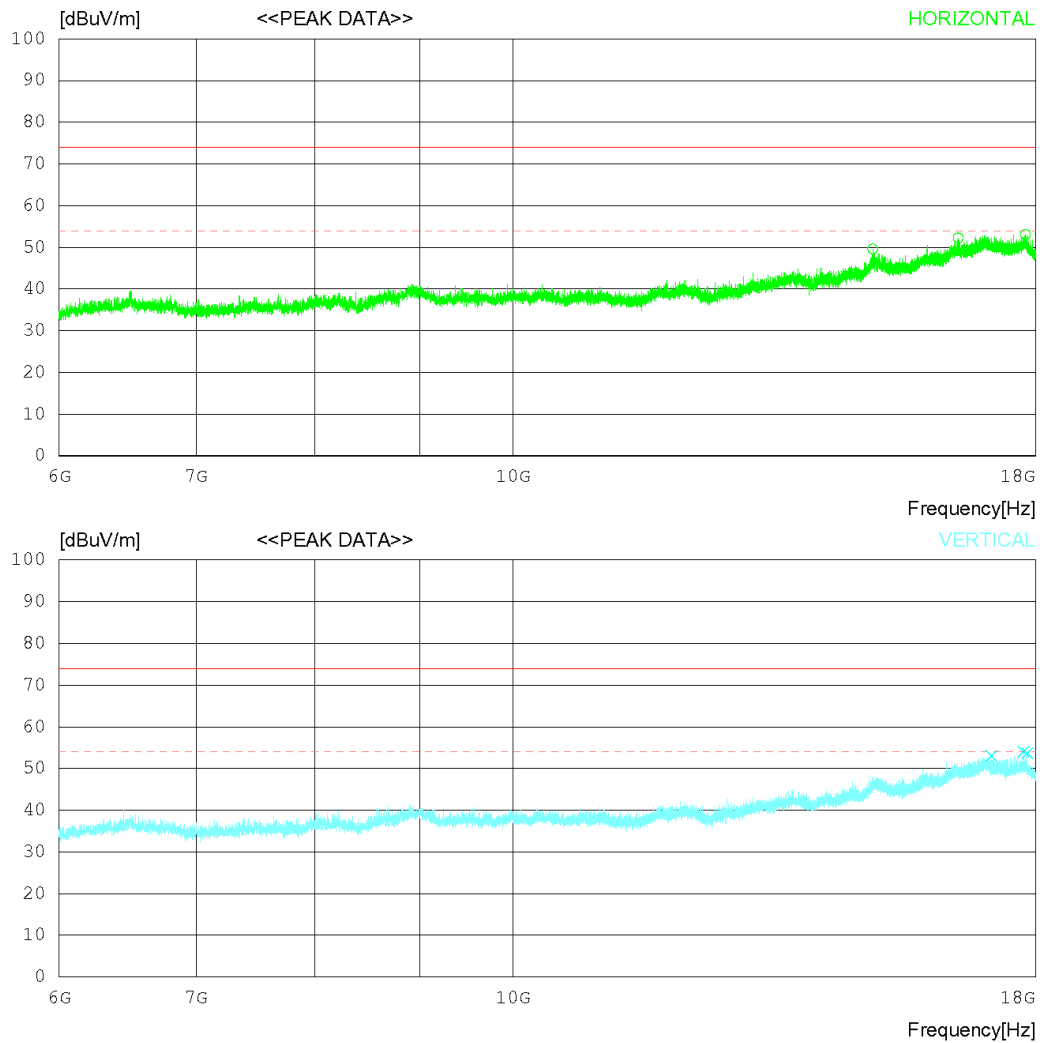
RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition USB

Memo

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



RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 21°C 42% R.H.
Test Condition USB

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	14987.250	30.60	35.43	20.61	37.02	49.62	74.0	24.38	256	358
2	16501.500	29.50	36.99	21.86	36.10	52.25	74.0	21.75	340	358
3	17802.000	29.60	38.17	22.80	37.48	53.09	74.0	20.91	103	358
----- Vertical -----										
4	17130.000	29.20	37.65	22.78	36.56	53.07	74.0	20.93	358	39
5	17751.000	30.60	38.13	22.73	37.40	54.06	74.0	19.94	124	229
6	17836.500	30.40	38.19	22.62	37.54	53.67	74.0	20.33	168	358

Radiated disturbance at (6 ~ 18) GHz _Average measurement data			
Test configuration mode	2	EUT Operation mode	3
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

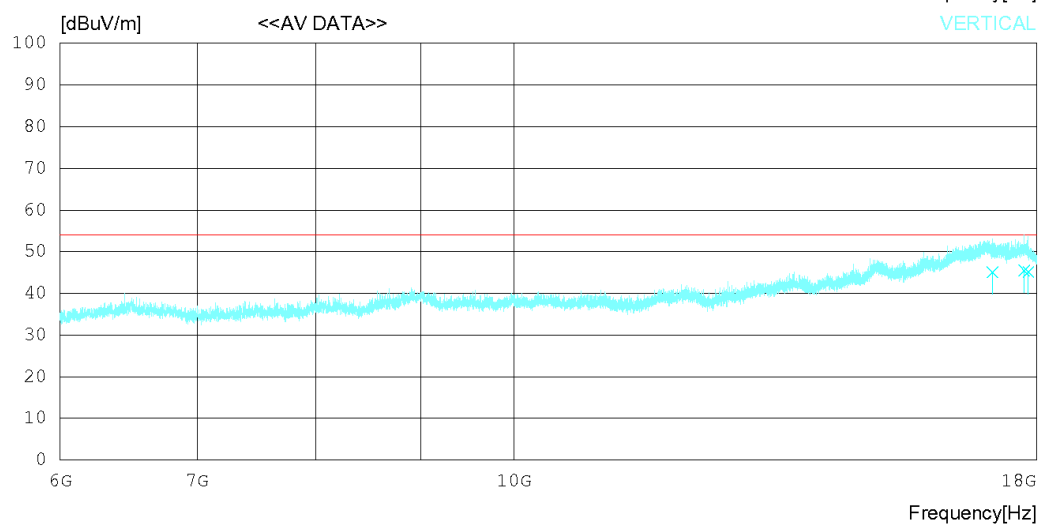
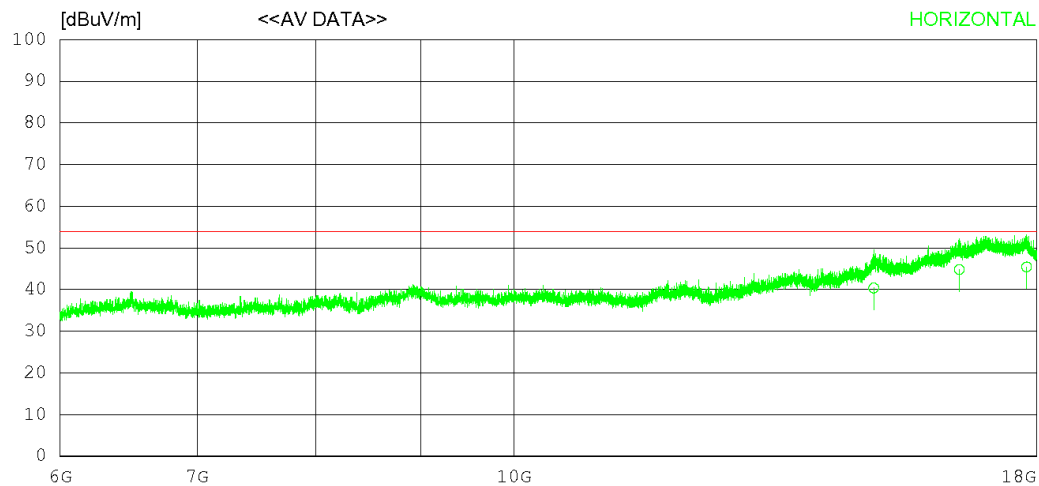
RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition USB

Memo

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



RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 21 'C 42 % R.H.
Test Condition USB

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	14987.330	21.37	35.43	20.61	37.02	40.39	54.00	13.61	236	321
2	16501.270	22.07	36.99	21.86	36.10	44.82	54.00	9.18	341	245
3	17801.340	21.95	38.17	22.80	37.48	45.44	54.00	8.56	320	303
----- Vertical -----										
4	17131.010	21.21	37.65	22.77	36.56	45.07	54.00	8.93	154	84
5	17752.020	22.01	38.13	22.73	37.40	45.47	54.00	8.53	203	194
6	17835.320	21.84	38.19	22.62	37.54	45.11	54.00	8.89	121	360

Radiated disturbance at (18 ~ 40) GHz _Peak measurement data			
Test configuration mode	2	EUT Operation mode	3
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

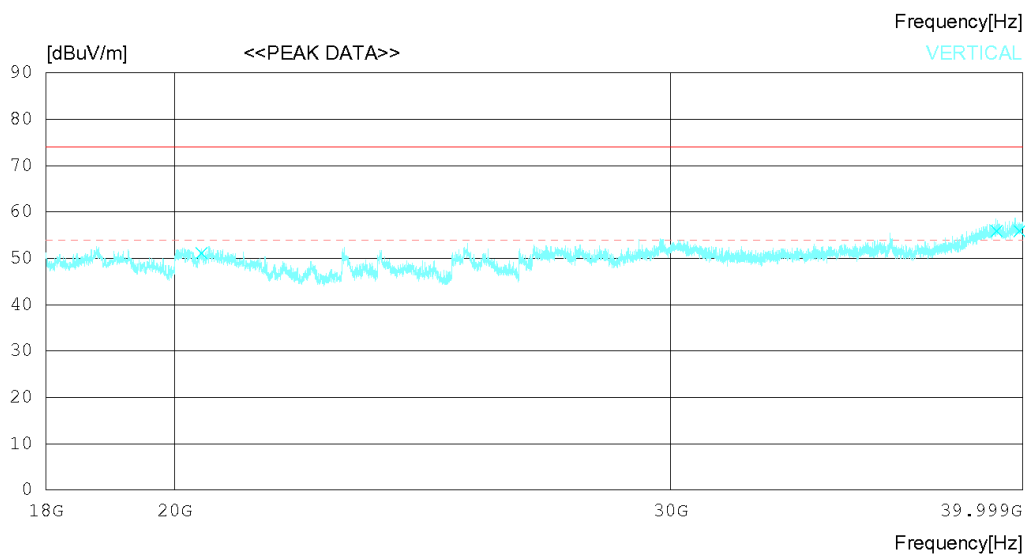
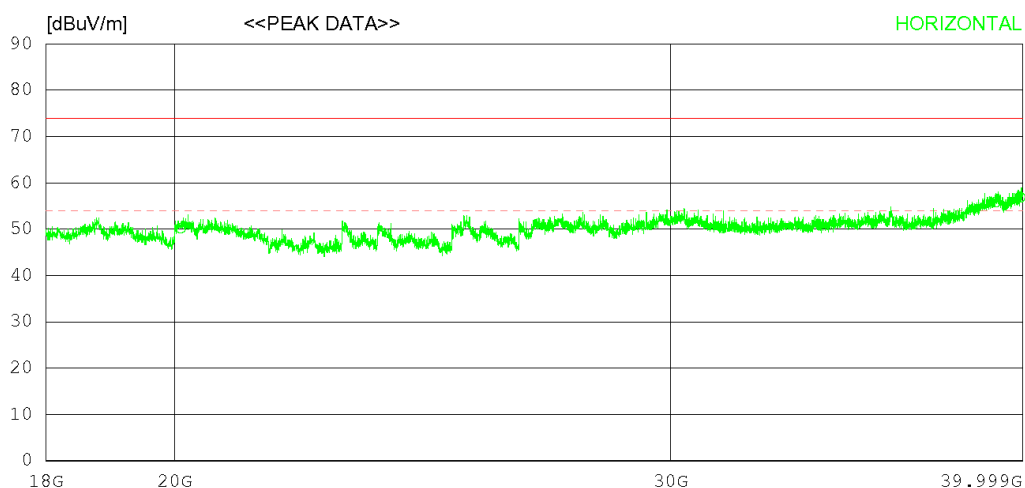
RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition USB

Memo

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



RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 °C 42 % R.H.
Test Condition USB

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	20095.500	39.20	45.30	18.77	53.04	50.23	74.0	23.77	154	358
2	39131.000	34.70	47.76	25.59	52.24	55.81	74.0	18.19	287	191
3	39920.250	35.50	49.14	24.42	52.20	56.86	74.0	17.14	184	32
----- Vertical -----										
4	20442.000	39.50	45.40	19.44	53.20	51.14	74.0	22.86	320	335
5	39153.000	34.80	47.81	25.56	52.24	55.93	74.0	18.07	121	0
6	39898.250	34.50	49.10	24.46	52.21	55.85	74.0	18.15	198	0

Radiated disturbance at (18 ~ 40) GHz _Average measurement data			
Test configuration mode	2	EUT Operation mode	3
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-

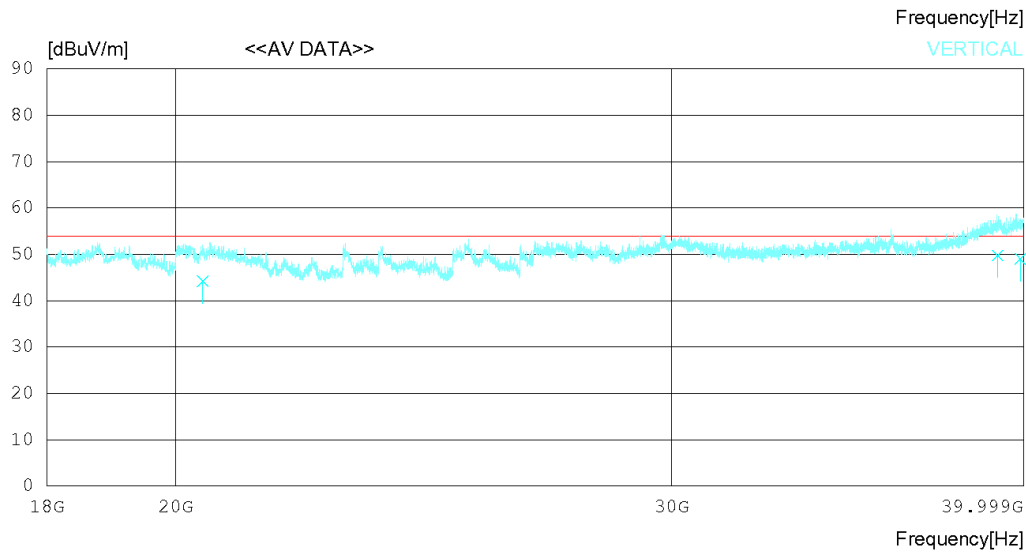
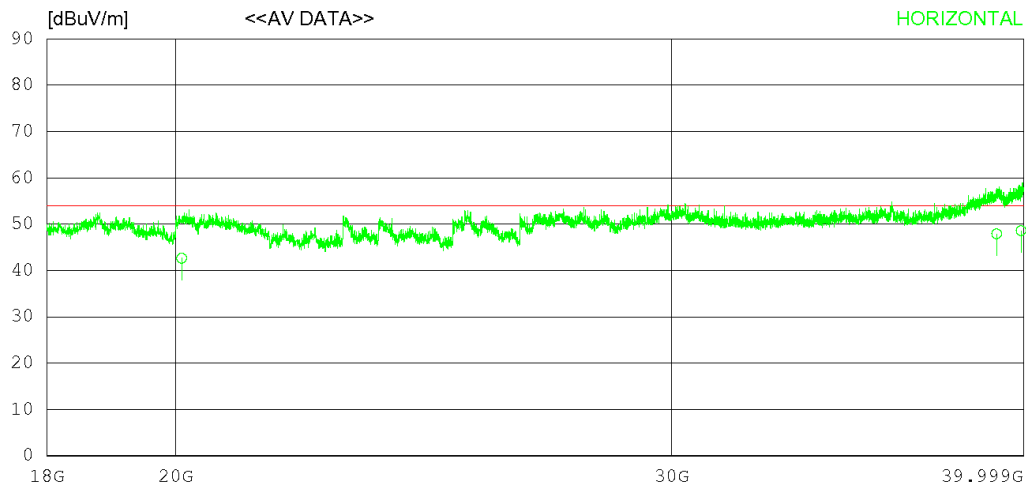
RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12 V
Temp/Humi 21 'C 42 % R.H.
Test Condition USB

Memo

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



RADIATED EMISSION

Date 2020-04-07

Order No. DTNC2003-02055
Power Supply DC 12V
Temp/Humi 21 'C 42 % R.H.
Test Condition USB

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	20095.540	31.62	45.30	18.77	53.04	42.65	54.00	11.35	120	134
2	39131.040	26.80	47.76	25.59	52.24	47.91	54.00	6.09	335	32
3	39920.270	27.23	49.14	24.42	52.20	48.59	54.00	5.41	277	117
----- Vertical -----										
4	20442.270	32.60	45.40	19.44	53.20	44.24	54.00	9.76	120	223
5	39153.040	28.63	47.81	25.56	52.24	49.76	54.00	4.25	234	305
6	39898.210	27.66	49.10	24.46	52.21	49.01	54.00	4.99	127	278

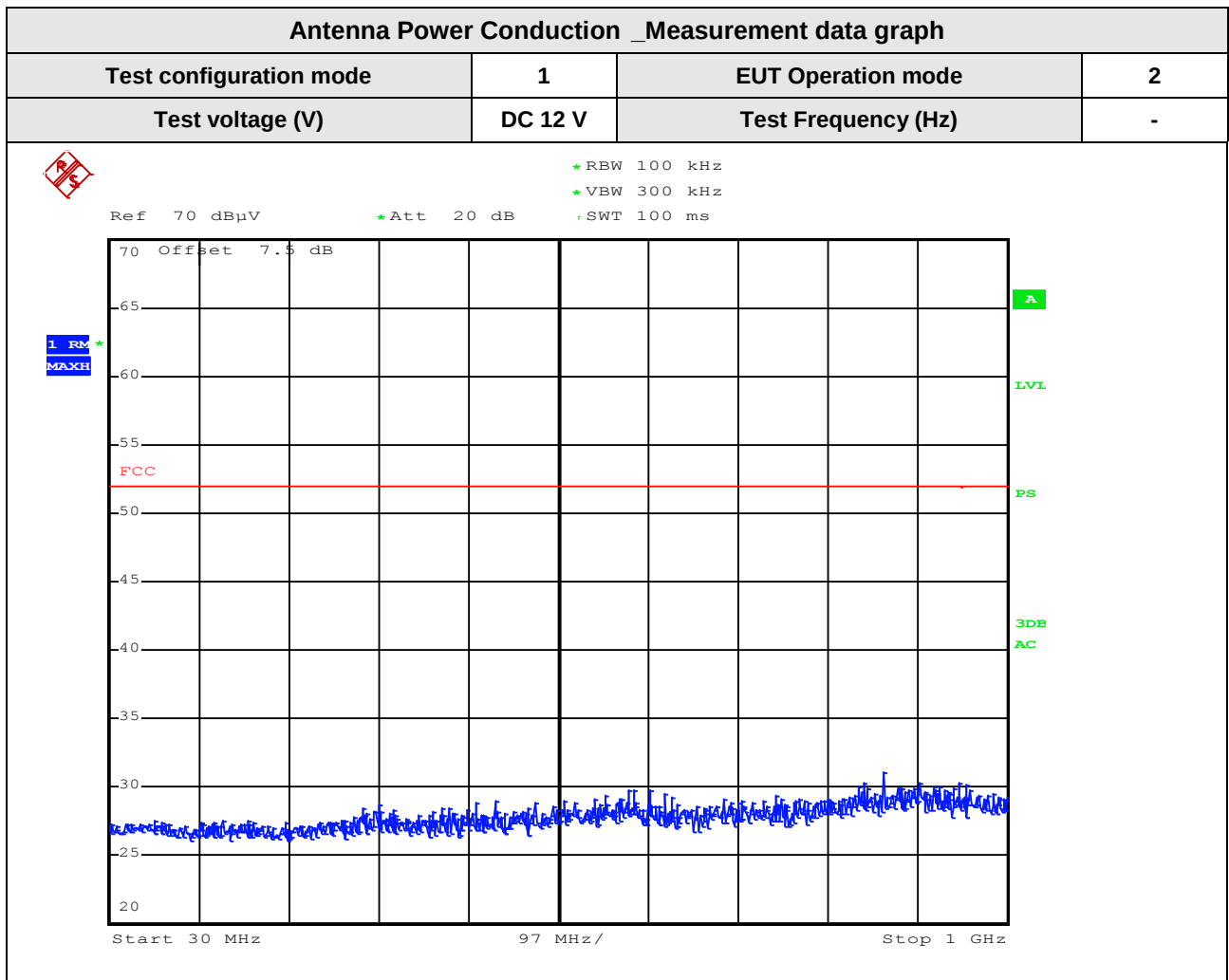
Calculation

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

7.3 Antenna Power Conduction

ANSI C63.4	Antenna power conduction		Result
<u>Method:</u> Power on the receive antenna terminals was to be determined by measurement of the voltage present at these terminals. Antenna conducted power measurements was performed with the EUT antenna terminals connected directly to measuring instrument using a impedance-Matching network to connect the measurement Instrument to the antenna terminals of the EUT. The losses in decibels in impedance-matching network and cables was added to the measured values in dBμV. The measurements were repeated with the receiver tuned to a frequency until all of frequencies had been successively measured. Power in the receive antenna terminals in the ratio of V ² /R, where V is the loss-corrected voltage measured at the antenna terminals, and R is the impedance of the measuring instrument			Comply
Fully configured sample scanned over the following frequency range	Frequency range on each side of line	Limit	
	30 MHz to 2 150 MHz	2 nW (51.7 dBμV)	
	54 MHz to 300 MHz 300 MHz to 450 MHz 450 MHz to 804 MHz	-26 dBmV (34 dBμV) -20 dBmV (40 dBμV) -15 dBmV (45 dBμV)	
Measurement Point	Tuner port		
EUT mode (Refer to clauses 4)	Test configuration mode	1	
	EUT Operation mode	2	

Measurement Instrument					
Description	Model	Manufacturer	Identifier	Cal. Date	Cal. Due
EMI TEST RECEIVER	ESCI	ROHDE & SCHWARZ	100364	2020.02.25	2021.02.25
IMPEDANCE MATCHING PAD	8AP50NM75NF	COPPER MOUNTAIN TECHNOLOGIES	16012	2019.12.10	2020.12.10
SPLITTER	ZFRSC-123-S+	MINI CIRCUITS	SF139801142	2019.07.15	2020.07.15



8. Revision History

Date	Description	Revised By	Reviewed By
May. 08. 2020	Initial report	GiHyun Kim	HyungJun Kim

-End of test report-