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 : DREFCC2005-0120

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 / MS300ACN7 / BP9-MS300ACN7

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 Name : GiHyun Kim (Signature)	Technical Manager 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

This report contains the result of tests performed by :

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

2. Test Laboratory

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

Certificate	Nation	Agency	Code	Remark
Accreditation	Korea	KOLAS	393	ISO/IEC 17025
	South Africa	SABS	0006	ISO/IEC 17025
	Ghana	NCA	NCA agreement 23rd,Oct,2018	-
Site Filing	USA	FCC	KR0034 101842 678747, 596748, 804488, 165783	Accredited 2.948 Listed
	Canada	IC	5740A-3 5740A-4	Registered
	Japan	VCCI	C-1427 R-3385, R-4076, R-4180, R-4496, T-1442, G-10338, G-754, G-10815, G-20051	Registered
Certification	Korea	KC	KR0034	Designation
	Germany	TUV	CARAT 089112 0006 Rev.00	ISO/IEC 17025
	Russia	RMRS	17.10189.296	ISO/IEC 17025

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

3. General Information of EUT

Applicant	MOTREX CO., LTD. Seoyoung Bldg., 25, Hwangsaeul-ro 258beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
Manufacturer	MOTREX CO., LTD. Seoyoung Bldg., 25, Hwangsaeul-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	MS300ACN7
Add Model Name	None
Maximum Internal Frequency	1 000 MHz
Software Version	DEP.MEX.0000.009.190701
Hardware Version	Rev0.1
Rated Power	DC 12 V
FCC ID	BP9-MS300ACN7
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 ll). 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 [dBµV]	Detector	Limit [dBµV]	Margin [dB]
-	-	-	-	-	-

-Radiated Disturbance

Frequency [MHz]	Pol.	Result [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]
39117.210	V	49.77	Cispr - Average	54.00	4.23

-Antenna Power Conduction

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

6. Test Environment

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

EUT mode (Refer to clauses 4)	**Test configuration mode**	**1, 2**
	EUT Operation mode	**1, 2, 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	40	30
230 to 1 000	47	37

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

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

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

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

Measurement Instrument					
Description	**Model**	**Manufacturer**	**Identifier**	**Cal. Date**	**Cal. Due**
MEASUREMENT SOFTWARE	EMI-R VER. 2.00.0177	TSJ	N/A	N/A	N/A
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	100525	2019.12.20	2020.12.20
TRILOG BROADBAND TEST-ANTENNA WITH 6DB ATT	VULB9160	SCHWARZBECK	9160-3339	2018.10.22	2020.10.22
	8491B	HP	18403	2018.10.22	2020.10.22
LOW NOISE PRE AMPLIFIER	MLA-100K01-B01-26	TSJ	1252741	2020.02.13	2021.02.13
HORN ANTENNA	3117	ETS-LINDGREN	00152093	2020.03.26	2021.03.26
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)**	**-**

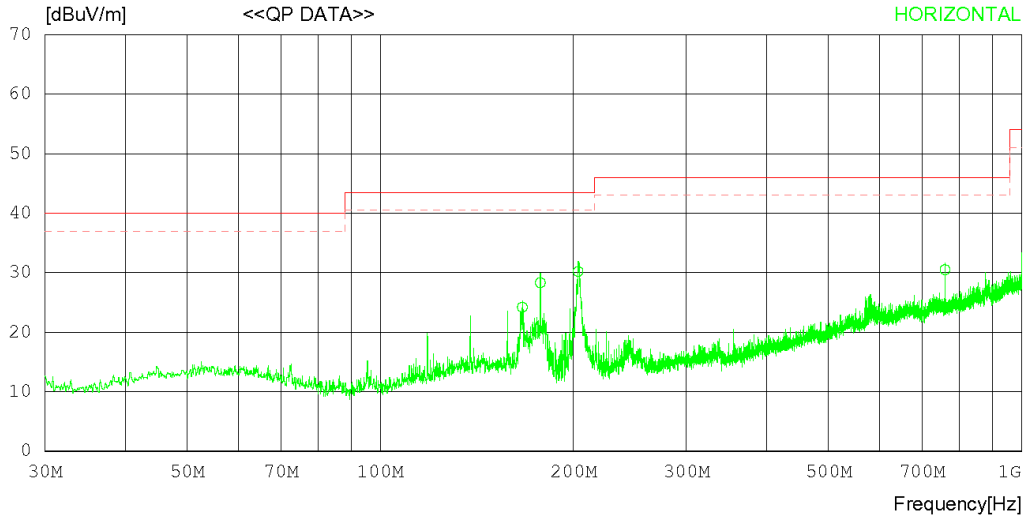
RADIATED EMISSION

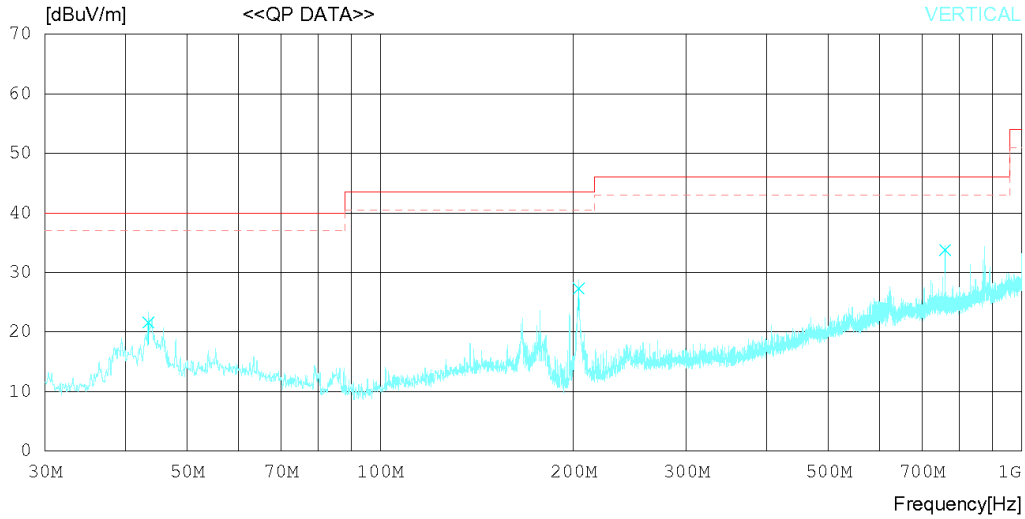
Date 2020-03-20

Order No. DTNC2003-02058
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





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Date 2020-03-20

Order No. DTNC2003-02058
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

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	166.524	30.21	18.38	1.26	25.65	24.20	43.50	19.30	134	67
2	177.679	35.36	17.26	1.33	25.63	28.32	43.50	15.18	232	0
3	203.505	38.24	16.18	1.39	25.61	30.20	43.50	13.30	192	11
4	760.088	25.12	28.40	2.79	25.81	30.50	46.00	15.50	134	207
----- Vertical ------										
5	43.459	29.12	17.60	0.71	25.81	21.62	40.00	18.38	154	1
6	203.747	35.33	16.19	1.39	25.61	27.30	43.50	16.20	109	224
7	760.088	28.37	28.40	2.79	25.81	33.75	46.00	12.25	142	311

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)**	**-**

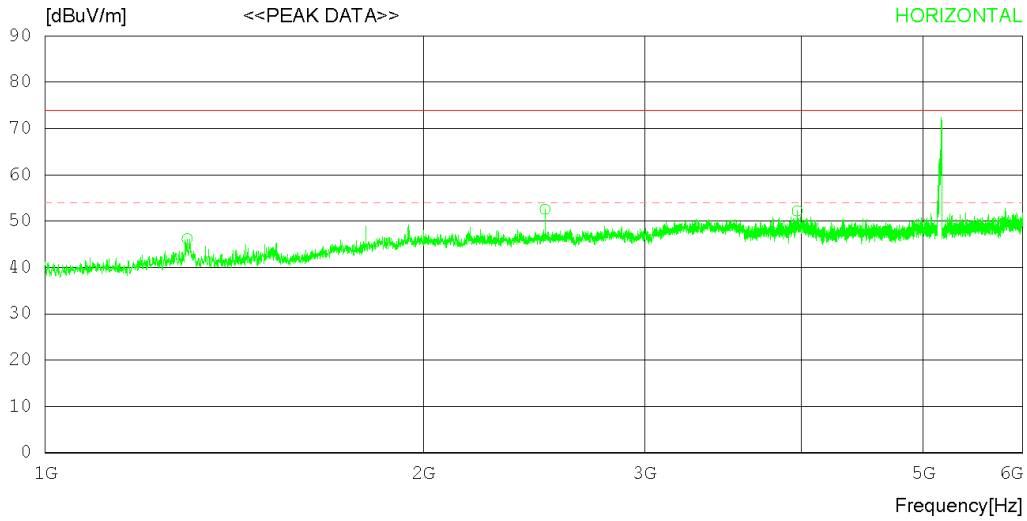
RADIATED EMISSION

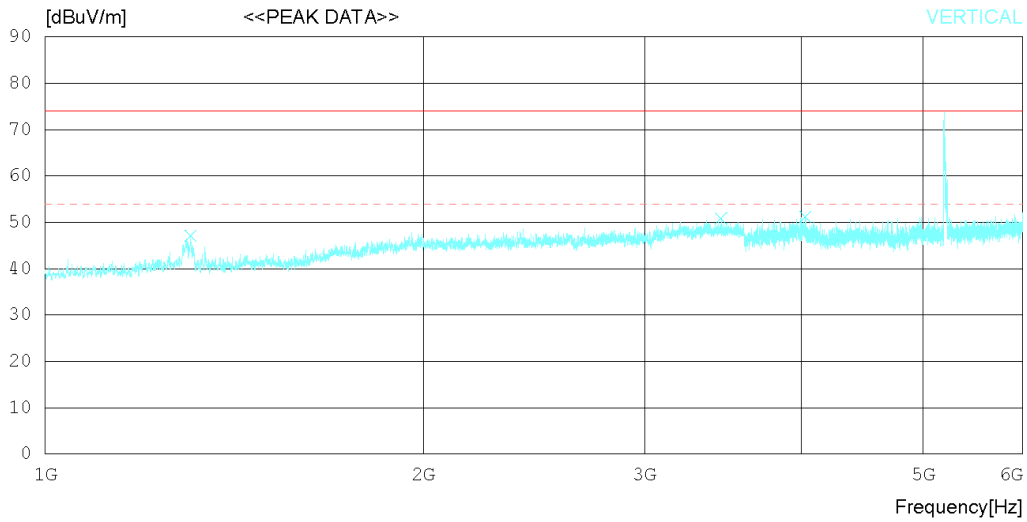
Date 2020-04-07

Order No. DTNC2003-02058
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.	DTNC2003-02058
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	1296.875	47.10	29.31	5.13	35.33	46.21	74.0	27.79	336	357
2	2500.000	47.80	32.20	7.23	34.64	52.59	74.0	21.41	205	165
3	3968.750	42.60	33.56	9.63	33.58	52.21	74.0	21.79	167	353
----- Vertical ------										
4	1305.625	48.00	29.22	5.17	35.32	47.07	74.0	26.93	327	343
5	3453.125	43.30	33.40	8.47	34.30	50.87	74.0	23.13	109	222
6	4029.375	41.60	33.50	9.65	33.58	51.17	74.0	22.83	268	227

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)**	**-**

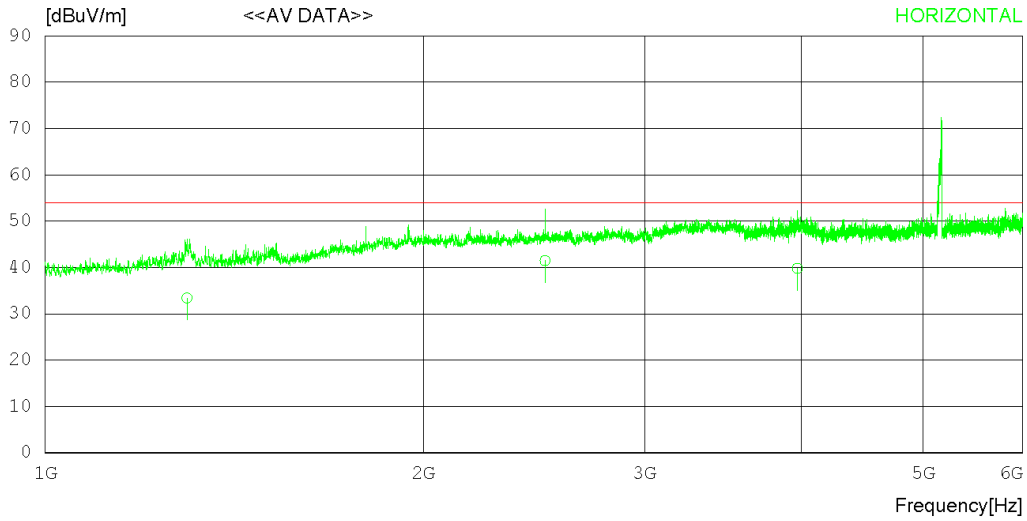
RADIATED EMISSION

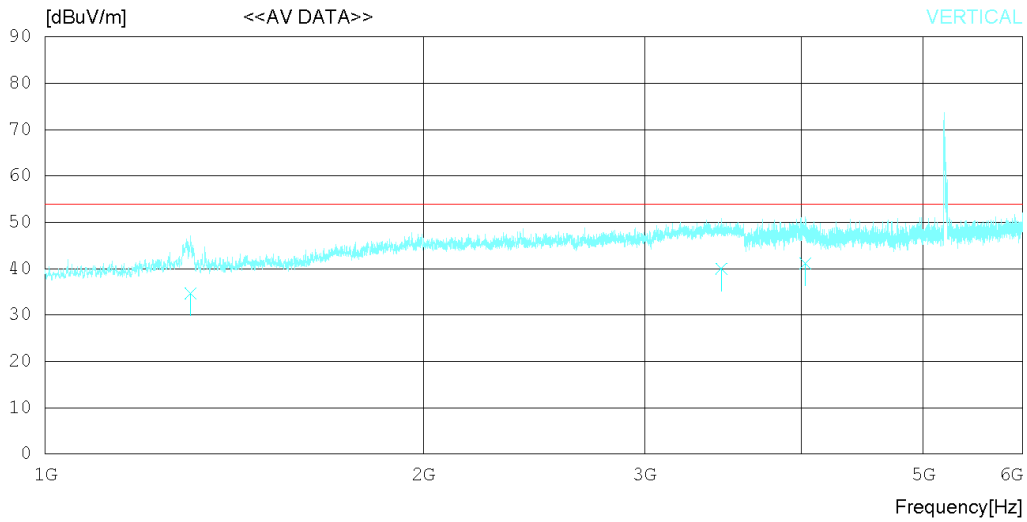
Date 2020-04-07

Order No. DTNC2003-02058
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)





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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	1296.667	34.30	29.31	5.13	35.33	33.41	54.00	20.59	196	341
2	2499.965	36.70	32.20	7.22	34.63	41.49	54.00	12.51	296	133
3	3968.552	30.20	33.56	9.63	33.58	39.81	54.00	14.19	205	307
----- Vertical ------										
4	1305.234	35.60	29.23	5.17	35.32	34.68	54.00	19.32	167	208
5	3453.687	32.40	33.40	8.47	34.30	39.97	54.00	14.03	354	205
6	4029.375	31.50	33.50	9.65	33.58	41.07	54.00	12.93	134	254

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)**	**-**

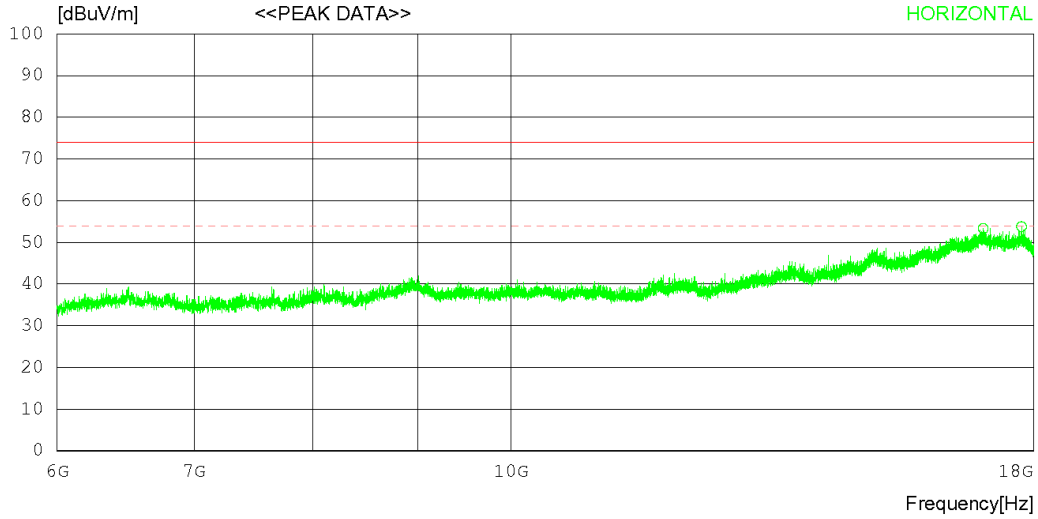
RADIATED EMISSION

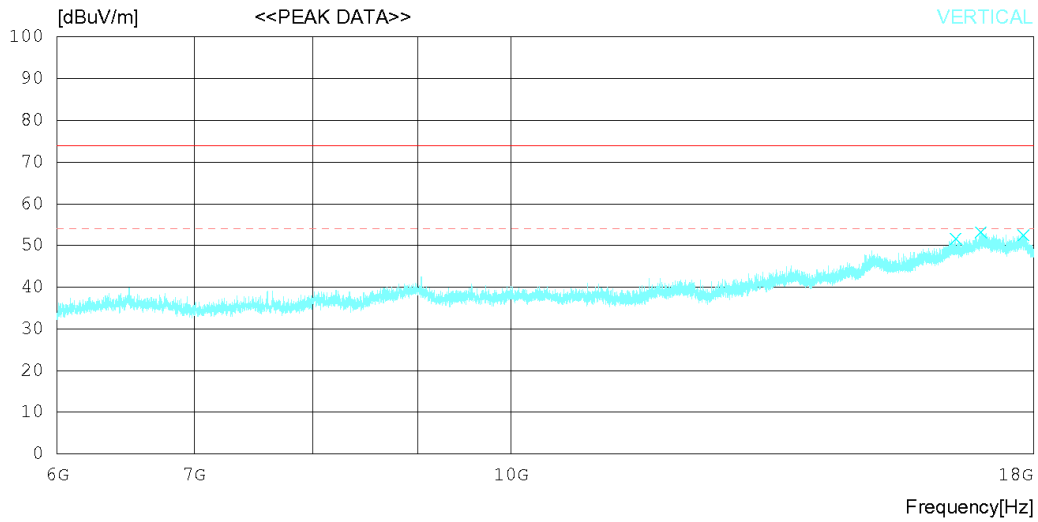
Date 2020-04-07

Order No. DTNC2003-02058
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)





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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	17010.000	28.40	37.56	23.73	36.41	53.28	74.0	20.72	350	358
2	17760.000	30.30	38.14	22.74	37.42	53.76	74.0	20.24	100	358
----- Vertical ------										
3	16490.250	28.90	36.97	21.88	36.11	51.64	74.0	22.36	254	358
4	16959.000	28.60	37.50	23.46	36.38	53.18	74.0	20.82	168	354
5	17797.500	29.00	38.16	22.80	37.48	52.48	74.0	21.52	168	358

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)**	**-**

RADIATED EMISSION

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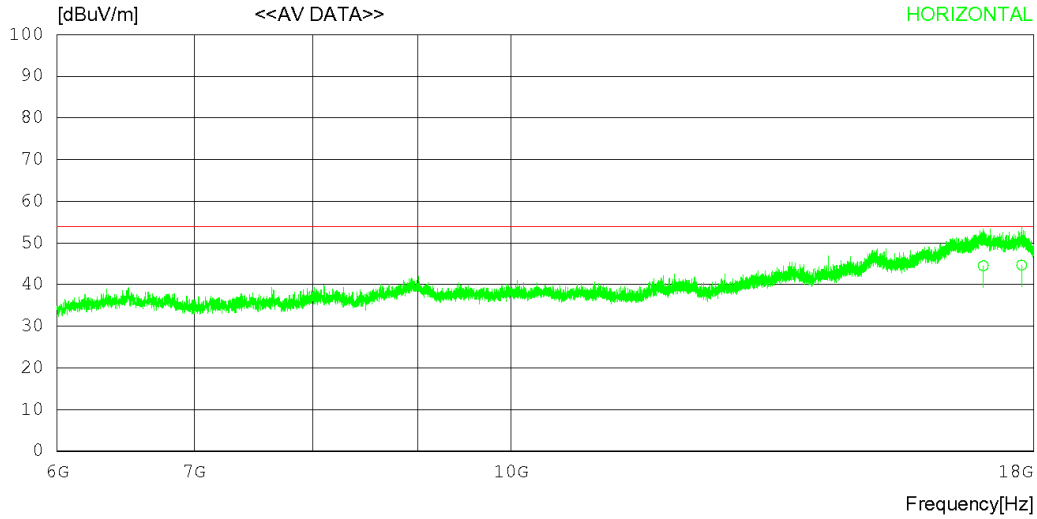
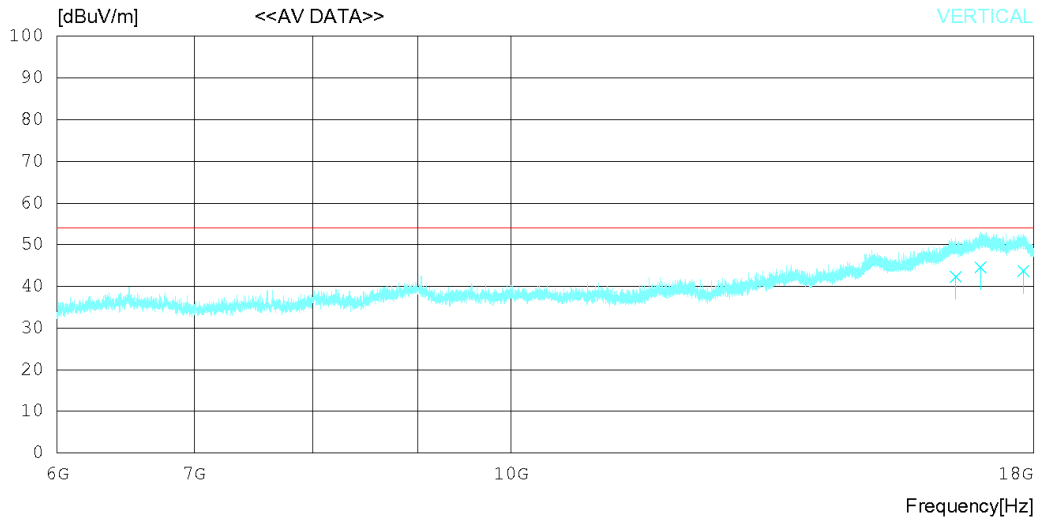
FCC Part15 Subpart.B Class B (3m) - GHz(Average)





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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	17013.340	19.68	37.56	23.71	36.42	44.53	54.00	9.47	212	321
2	17762.610	21.21	38.14	22.75	37.42	44.68	54.00	9.32	165	198
----- Vertical ------										
3	16490.320	19.53	36.97	21.88	36.11	42.27	54.00	11.73	154	354
4	16958.370	19.98	37.50	23.46	36.38	44.56	54.00	9.44	103	198
5	17796.320	20.16	38.16	22.81	37.47	43.66	54.00	10.34	227	322

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)**	**-**

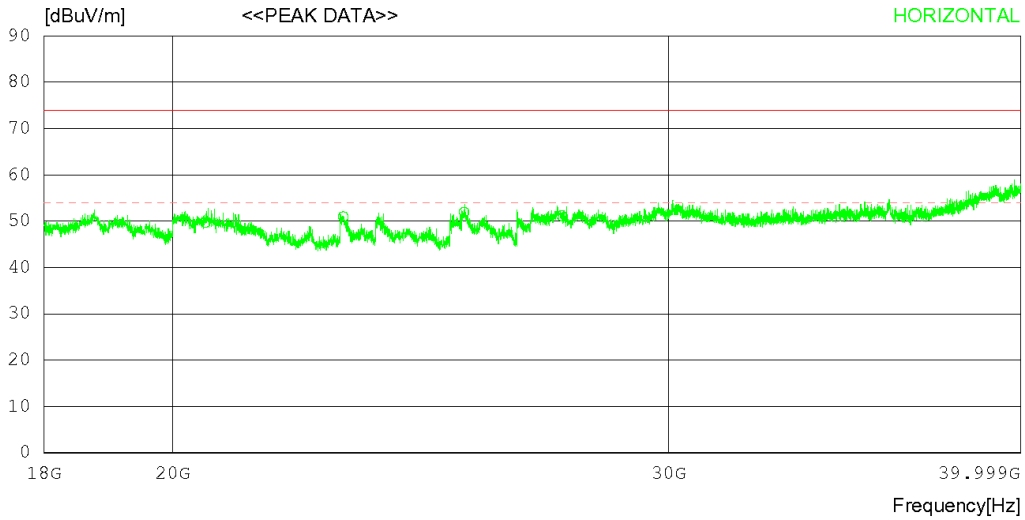
RADIATED EMISSION

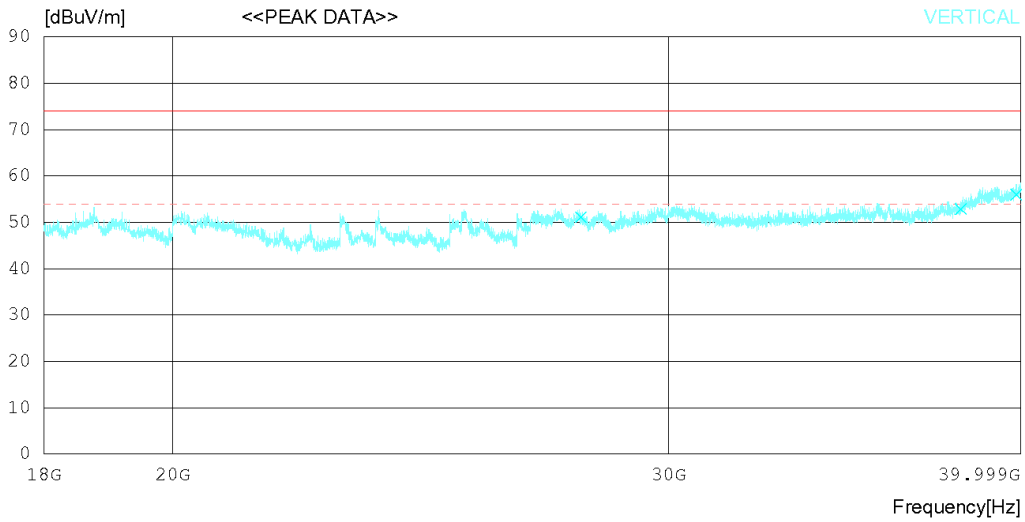
Date 2020-04-07

Order No. DTNC2003-02058
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. DTNC2003-02058
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	20538.250	37.90	45.44	19.63	53.24	49.73	74.0	24.27	124	358
2	22991.250	39.60	45.30	20.04	54.00	50.94	74.0	23.06	325	358
3	25381.000	39.00	45.70	20.90	53.69	51.91	74.0	22.09	287	17
4	27479.250	37.00	46.00	21.19	53.02	51.17	74.0	22.83	135	9
----- Vertical ------										
5	27916.500	36.60	46.13	21.26	52.88	51.11	74.0	22.89	184	300
6	38091.500	34.20	46.29	24.69	52.30	52.88	74.0	21.12	202	341
7	39854.250	34.70	49.01	24.52	52.21	56.02	74.0	17.98	160	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)**	**-**

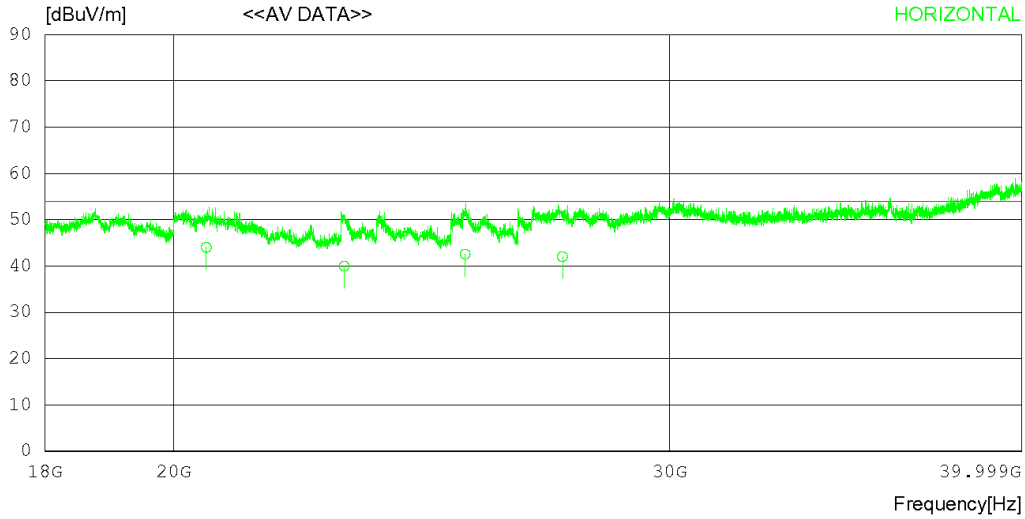
RADIATED EMISSION

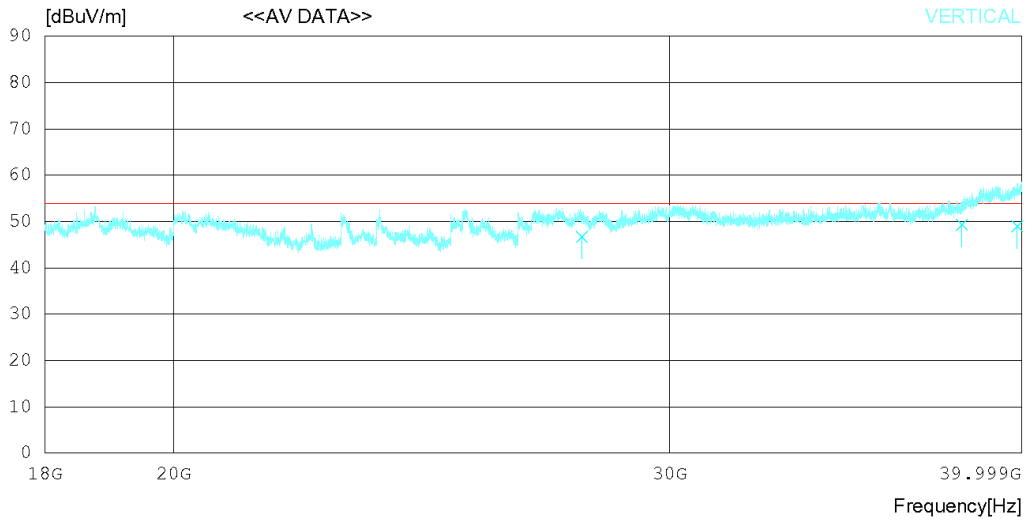
Date 2020-04-07

Order No. DTNC2003-02058
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. DTNC2003-02058
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	20538.140	32.20	45.44	19.63	53.24	44.03	54.00	9.97	124	12
2	22991.220	28.63	45.30	20.04	54.00	39.97	54.00	14.03	335	335
3	25381.070	29.65	45.70	20.90	53.69	42.56	54.00	11.44	235	278
4	27479.240	27.84	46.00	21.19	53.02	42.01	54.00	11.99	177	165
----- Vertical ------										
5	27916.510	32.22	46.13	21.26	52.88	46.73	54.00	7.27	120	272
6	38091.200	30.62	46.29	24.69	52.30	49.30	54.00	4.70	243	113
7	39854.270	27.66	49.01	24.52	52.21	48.98	54.00	5.02	323	235

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)**	**-**

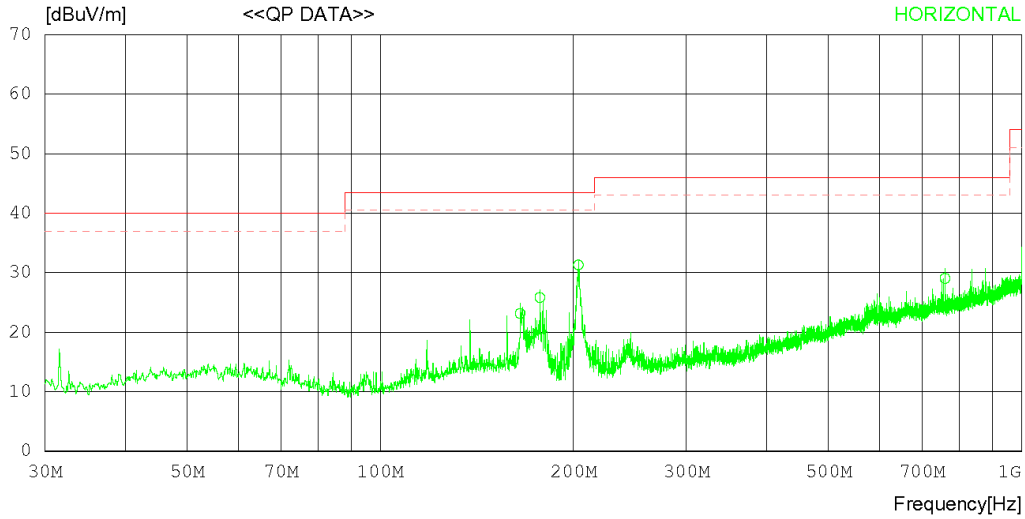
RADIATED EMISSION

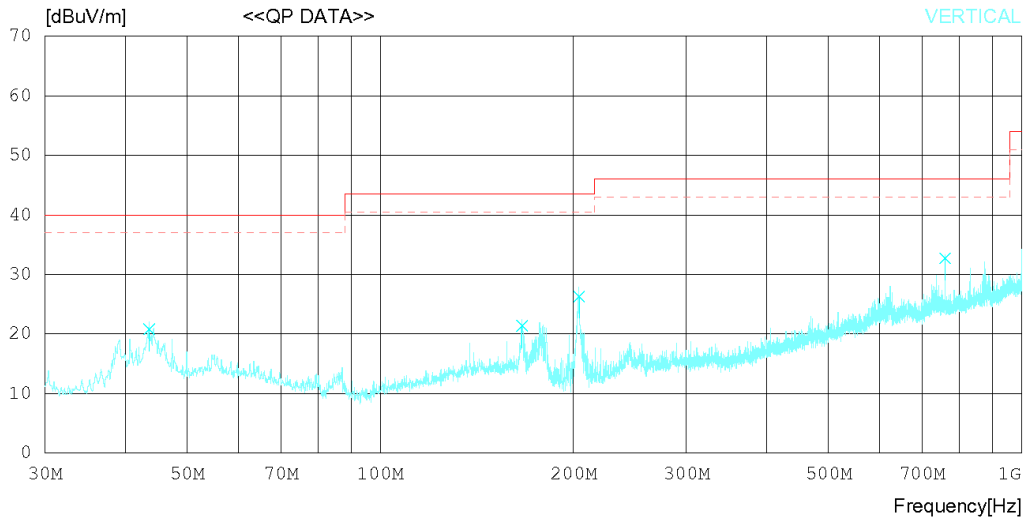
Date 2020-03-20

Order No. DTNC2003-02058
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. DTNC2003-02058
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

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	165.191	29.05	18.48	1.26	25.65	23.14	43.50	20.36	234	0
2	177.315	32.84	17.30	1.31	25.63	25.82	43.50	17.68	154	222
3	203.747	39.32	16.19	1.39	25.61	31.29	43.50	12.21	129	169
4	760.088	23.67	28.40	2.79	25.81	29.05	46.00	16.95	207	359
----- Vertical ------										
5	43.580	28.32	17.60	0.71	25.81	20.82	40.00	19.18	135	21
6	166.403	27.41	18.39	1.26	25.65	21.41	43.50	22.09	164	127
7	204.111	34.36	16.21	1.39	25.61	26.35	43.50	17.15	187	243
8	760.088	27.36	28.40	2.79	25.81	32.74	46.00	13.26	121	1

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)**	**-**

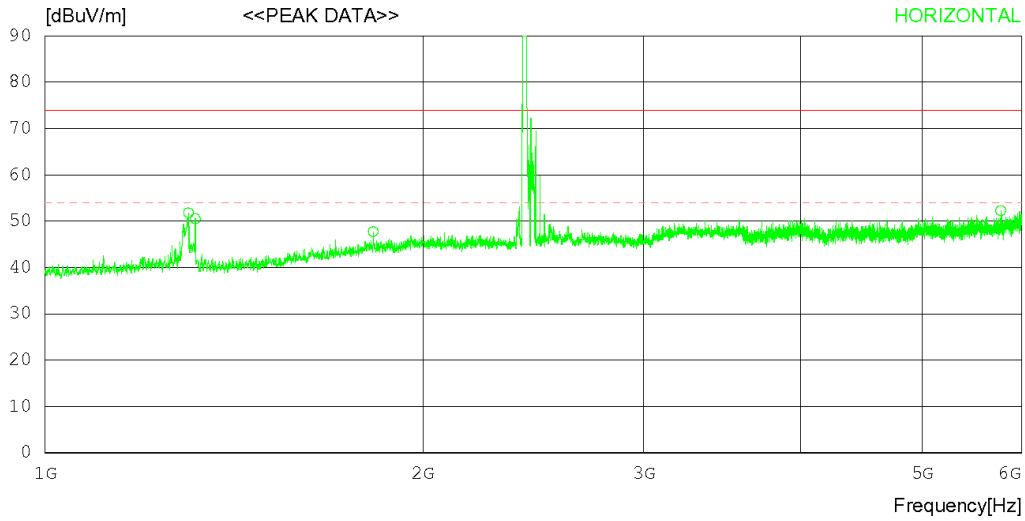
RADIATED EMISSION

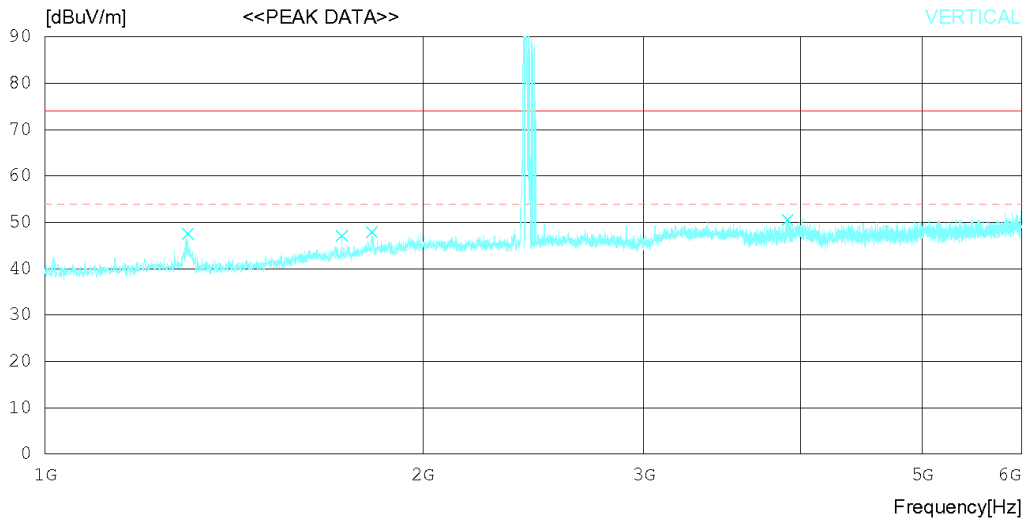
Date 2020-03-20

Order No. DTNC2003-02058
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. DTNC2003-02058
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	1301.250	53.20	28.78	5.15	35.33	51.80	74.0	22.2	236	130
2	1317.500	52.10	28.52	5.20	35.30	50.52	74.0	23.48	156	229
3	1826.250	44.80	30.51	7.02	34.58	47.75	74.0	26.25	165	358
4	5775.000	41.50	34.70	11.07	34.97	52.30	74.0	21.7	125	358
----- Vertical ------										
5	1299.375	48.90	28.80	5.14	35.33	47.51	74.0	26.49	202	57
6	1723.750	45.50	29.29	7.05	34.73	47.11	74.0	26.89	274	1
7	1820.625	45.00	30.48	7.02	34.59	47.91	74.0	26.09	132	77
8	3905.000	41.30	33.48	9.42	33.67	50.53	74.0	23.47	236	1

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)**	**-**

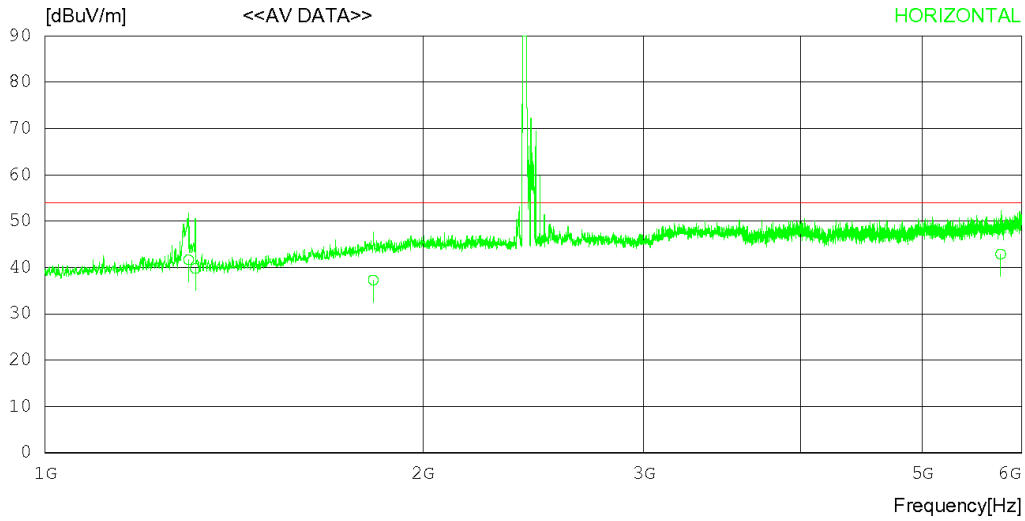
RADIATED EMISSION

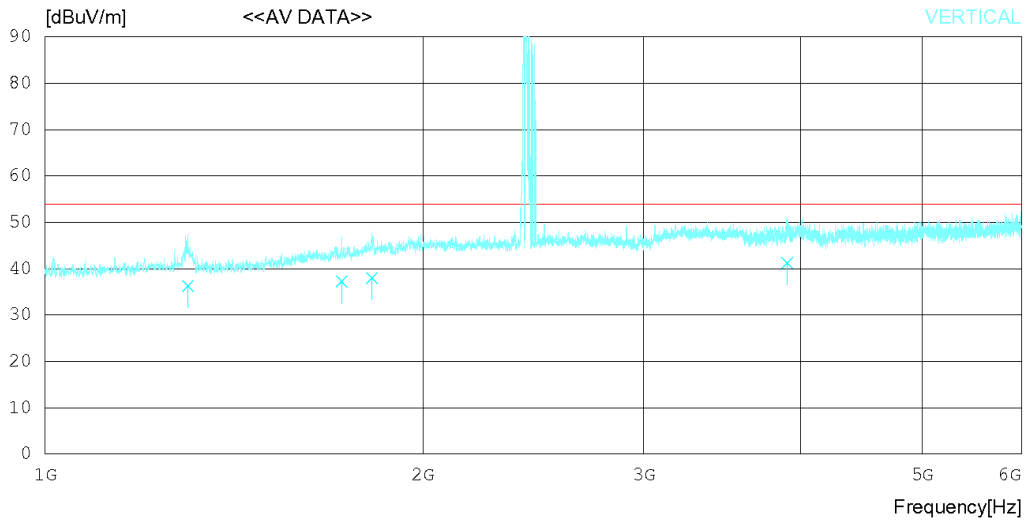
Date 2020-03-20

Order No. DTNC2003-02058
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. DTNC2003-02058
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)

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	1301.250	43.06	28.78	5.15	35.33	41.66	54.00	12.34	235	134
2	1317.500	41.38	28.52	5.20	35.30	39.80	54.00	14.20	251	221
3	1826.250	34.32	30.51	7.02	34.58	37.27	54.00	16.73	123	326
4	5775.000	32.09	34.70	11.07	34.97	42.89	54.00	11.11	268	302
----- Vertical ------										
5	1299.351	37.64	28.80	5.14	35.33	36.25	54.00	17.75	134	61
6	1723.354	35.62	29.28	7.05	34.73	37.22	54.00	16.78	105	165
7	1821.032	35.06	30.48	7.02	34.59	37.97	54.00	16.03	236	225
8	3902.351	32.03	33.49	9.42	33.68	41.26	54.00	12.74	194	54

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)**	**-**

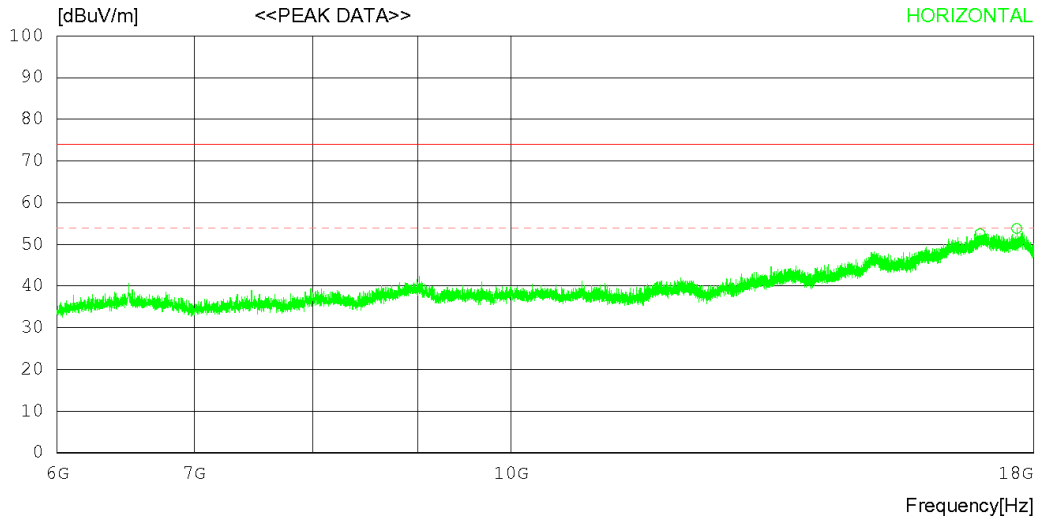
RADIATED EMISSION

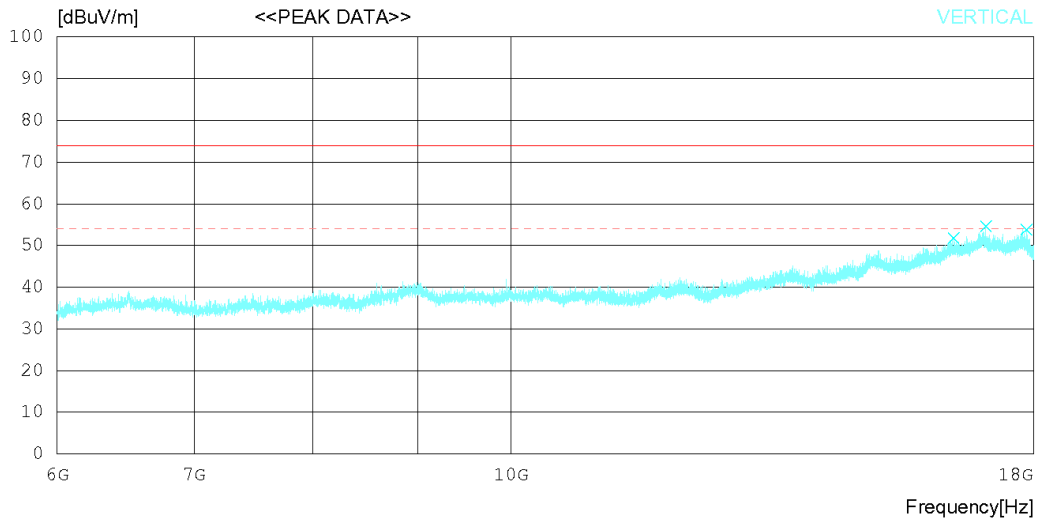
Date 2020-04-07

Order No. DTNC2003-02058
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. DTNC2003-02058
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)

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	16949.250	28.00	37.49	23.38	36.37	52.50	74.0	21.5	217	95
2	17664.000	30.40	38.06	22.58	37.26	53.78	74.0	20.22	188	230
----- Vertical ------										
3	16451.250	29.10	36.93	21.92	36.13	51.82	74.0	22.18	136	358
4	17061.750	30.10	37.60	23.32	36.47	54.55	74.0	19.45	202	58
5	17853.000	30.60	38.21	22.53	37.56	53.78	74.0	20.22	154	334

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)**	**-**

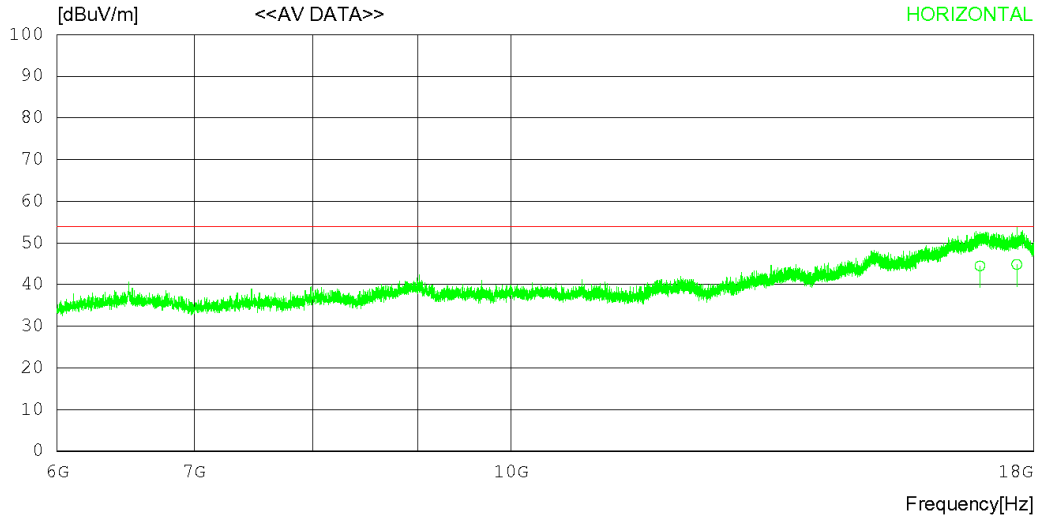
RADIATED EMISSION

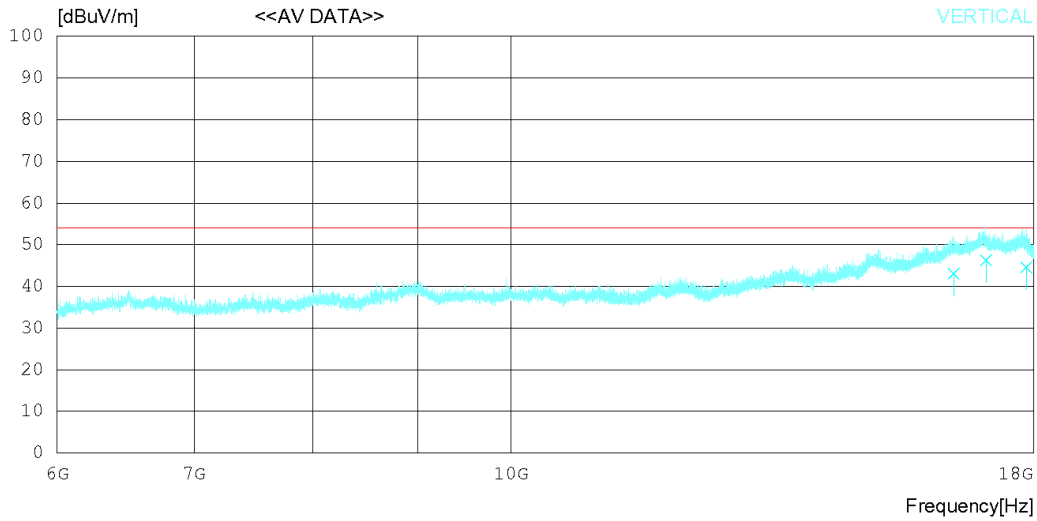
Date 2020-04-07

Order No. DTNC2003-02058
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. DTNC2003-02058
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)

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	16948.370	20.00	37.49	23.37	36.37	44.49	54.00	9.51	327	84
2	17663.350	21.46	38.06	22.58	37.26	44.84	54.00	9.16	264	206
----- Vertical ------										
3	16452.030	20.36	36.93	21.92	36.13	43.08	54.00	10.92	132	314
4	17062.330	21.84	37.60	23.31	36.47	46.28	54.00	7.72	154	35
5	17854.140	21.39	38.21	22.52	37.57	44.55	54.00	9.45	184	202

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)**	**-**

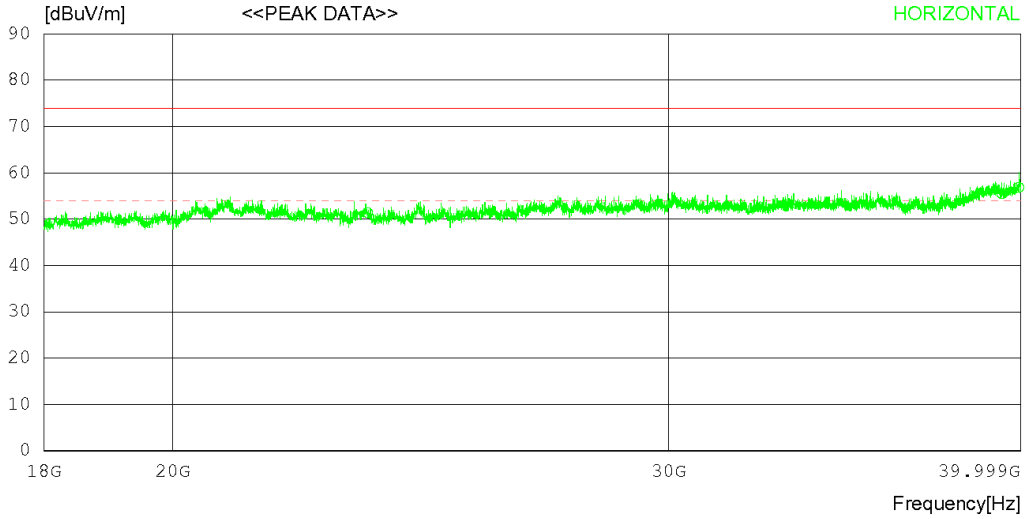
RADIATED EMISSION

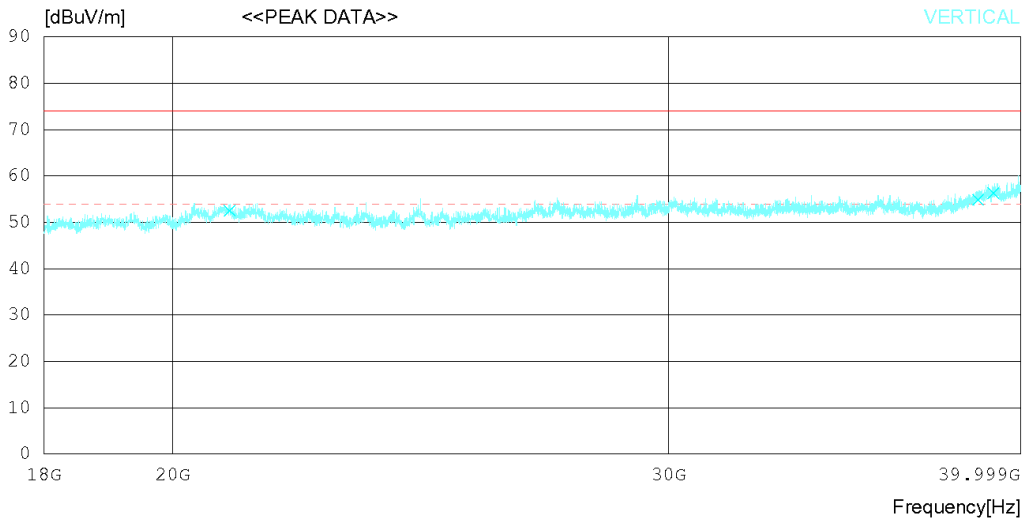
Date 2020-04-07

Order No. DTNC2003-02058
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. DTNC2003-02058
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)

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	23453.250	40.00	45.25	20.25	54.05	51.45	74.0	22.55	164	25
2	39397.750	34.40	48.10	25.19	52.23	55.46	74.0	18.54	230	359
3	39942.250	35.50	49.18	24.39	52.20	56.87	74.0	17.13	100	359
----- Vertical ------										
4	20950.750	39.90	45.60	20.43	53.43	52.50	74.0	21.5	201	0
5	38636.000	34.80	47.01	25.34	52.27	54.88	74.0	19.12	335	84
6	39117.250	35.20	47.73	25.61	52.24	56.30	74.0	17.7	154	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)**	**-**

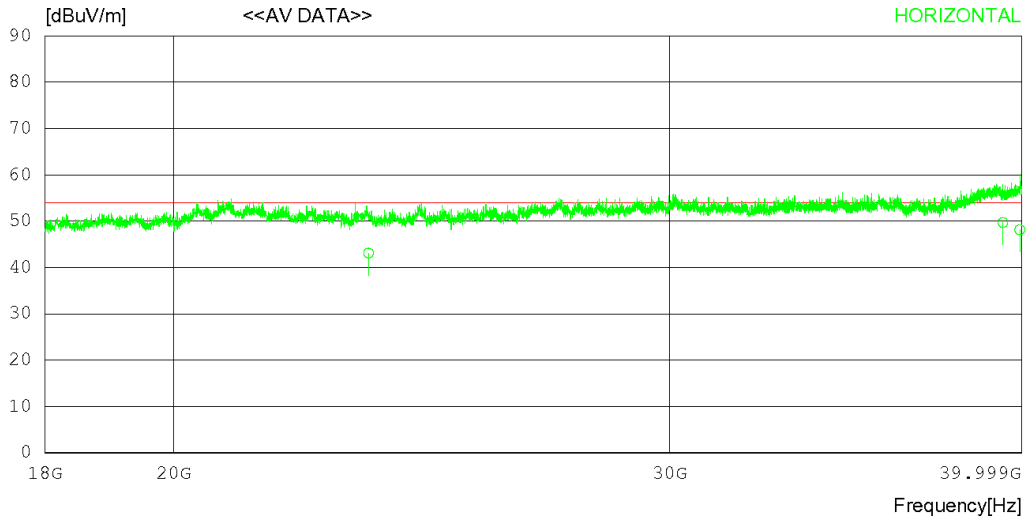
RADIATED EMISSION

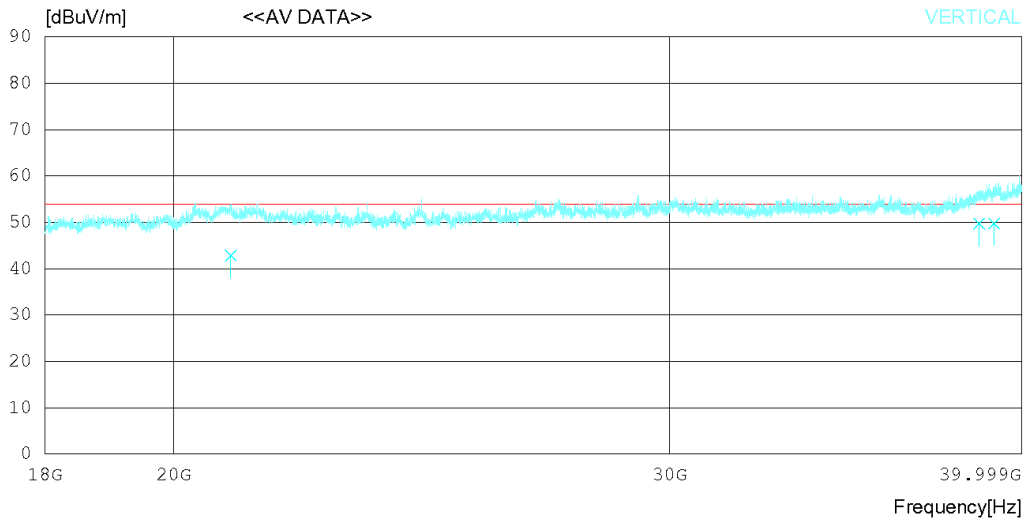
Date 2020-04-07

Order No. DTNC2003-02058
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. DTNC2003-02058
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)

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	23453.120	31.65	45.25	20.25	54.05	43.10	54.00	10.90	243	223
2	39397.410	28.62	48.10	25.19	52.23	49.68	54.00	4.32	223	305
3	39942.210	26.78	49.18	24.39	52.20	48.15	54.00	5.85	237	178
----- Vertical ------										
4	20950.120	30.25	45.60	20.42	53.43	42.84	54.00	11.16	202	72
5	38636.350	29.62	47.01	25.34	52.27	49.70	54.00	4.30	334	234
6	39117.210	28.67	47.73	25.61	52.24	49.77	54.00	4.23	178	223

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)**	**-**

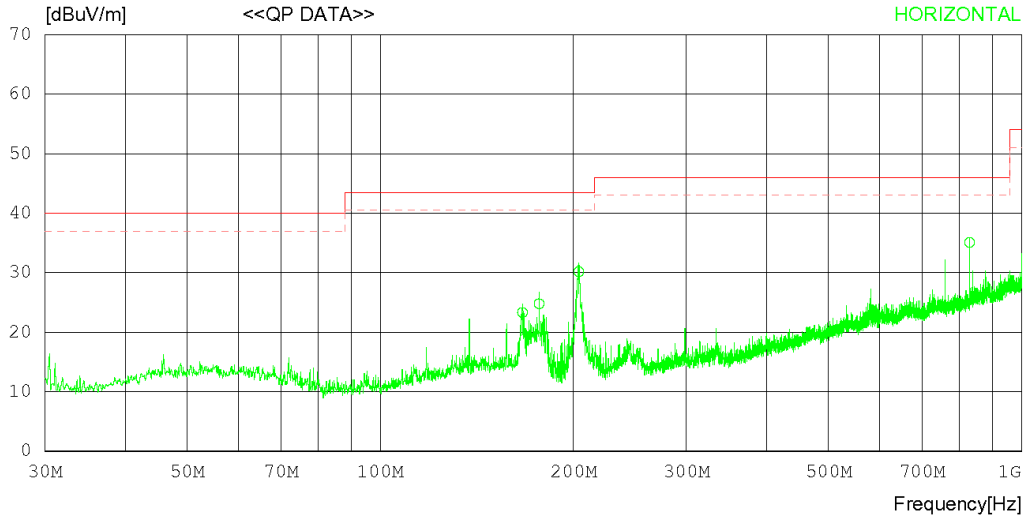
RADIATED EMISSION

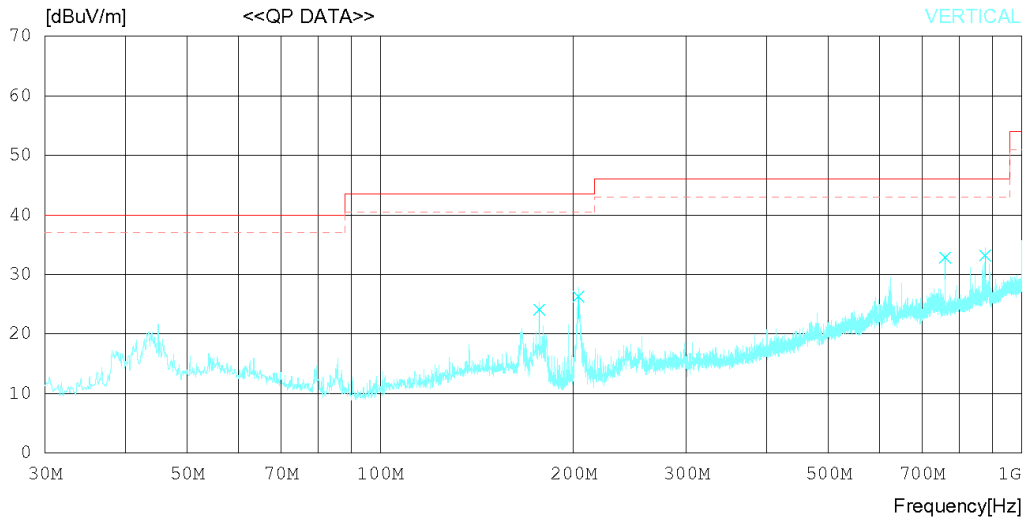
Date 2020-03-20

Order No. DTNC2003-02058
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. DTNC2003-02058
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

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	166.646	29.32	18.37	1.26	25.65	23.30	43.50	20.20	154	53
2	176.952	31.75	17.34	1.31	25.63	24.77	43.50	18.73	239	238
3	203.990	38.16	16.20	1.39	25.61	30.14	43.50	13.36	192	344
4	829.943	29.17	28.70	2.96	25.75	35.08	46.00	10.92	303	0
----- Vertical ------										
5	176.830	31.03	17.35	1.31	25.63	24.06	43.50	19.44	134	1
6	203.747	34.32	16.19	1.39	25.61	26.29	43.50	17.21	156	229
7	760.088	27.46	28.40	2.79	25.81	32.84	46.00	13.16	127	306
8	877.726	26.91	29.12	2.97	25.80	33.20	46.00	12.80	106	306

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)**	**-**

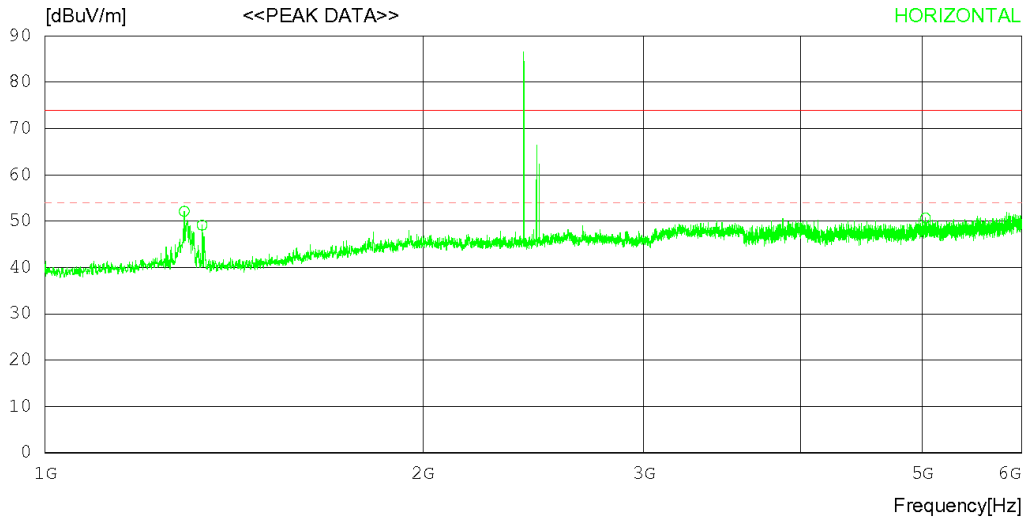
RADIATED EMISSION

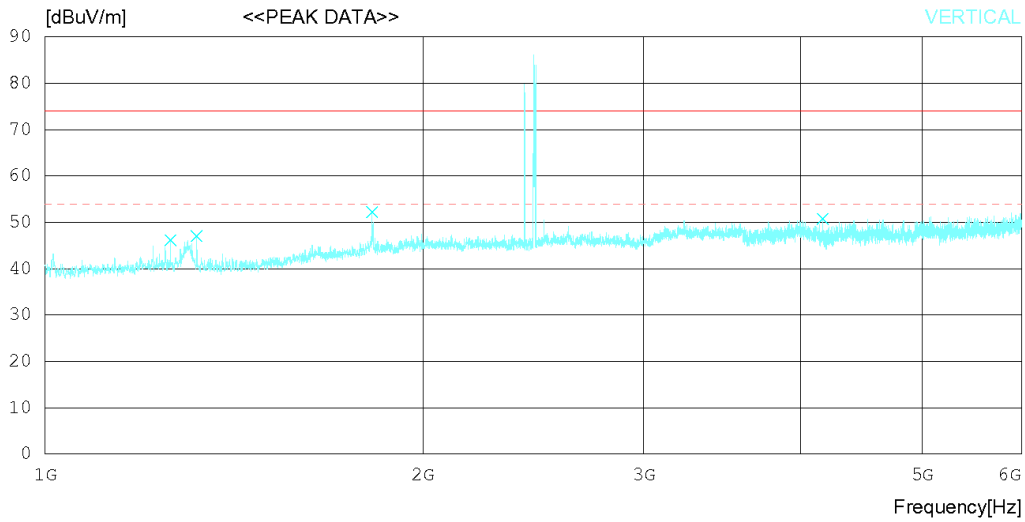
Date 2020-03-20

Order No. DTNC2003-02058
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. DTNC2003-02058
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	1291.250	53.60	28.78	5.11	35.34	52.15	74.0	21.85	154	124
2	1334.375	50.90	28.25	5.27	35.28	49.14	74.0	24.86	132	358
3	5031.250	41.00	34.16	10.40	34.86	50.70	74.0	23.3	134	309
----- Vertical ------										
4	1258.750	47.80	28.72	4.99	35.39	46.12	74.0	27.88	124	1
5	1320.625	48.70	28.47	5.22	35.30	47.09	74.0	26.91	165	258
6	1821.875	49.30	30.49	7.02	34.59	52.22	74.0	21.78	126	194
7	4165.625	42.10	33.23	9.19	33.76	50.76	74.0	23.24	250	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)**	**-**

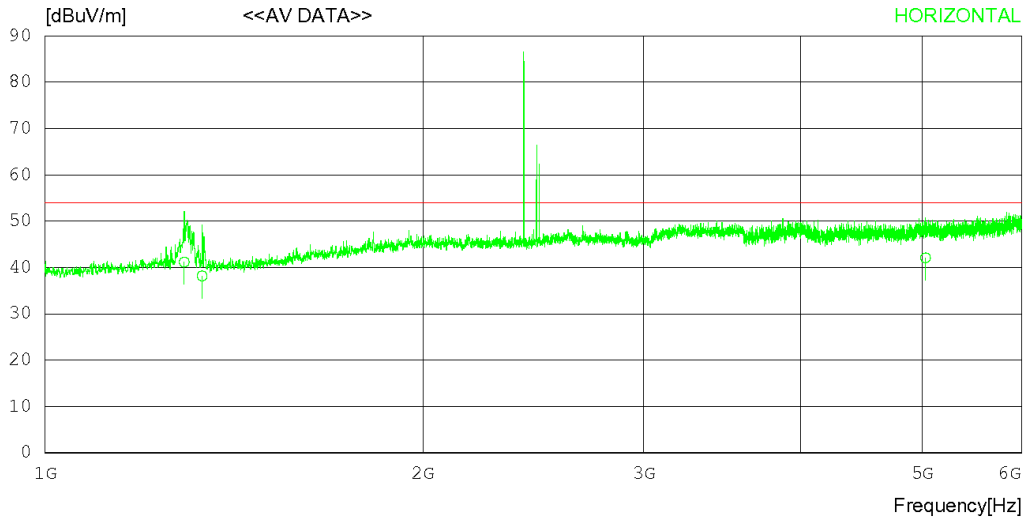
RADIATED EMISSION

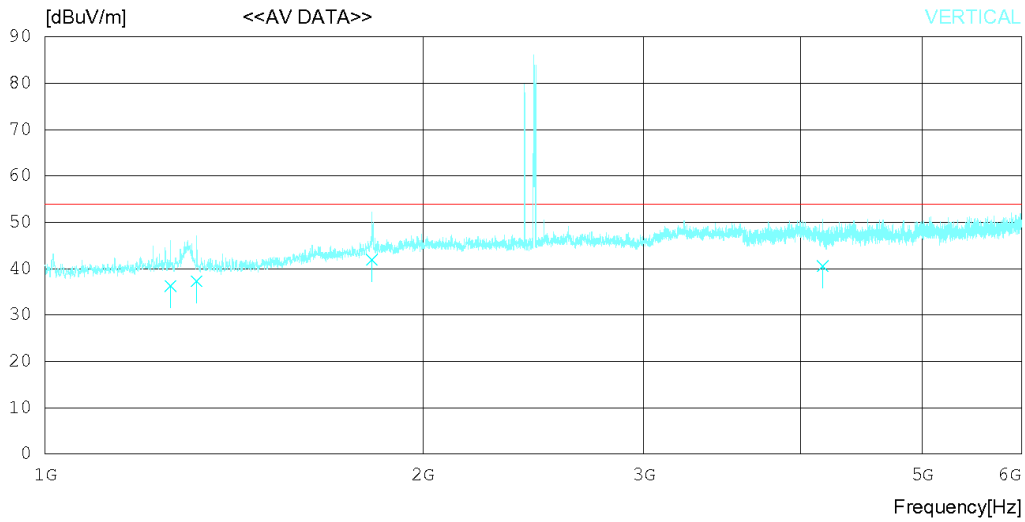
Date 2020-03-20

Order No. DTNC2003-02058
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. DTNC2003-02058
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)

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	1291.250	42.62	28.78	5.11	35.34	41.17	54.00	12.83	134	165
2	1334.375	39.91	28.25	5.27	35.28	38.15	54.00	15.85	235	354
3	5031.250	32.39	34.16	10.40	34.86	42.09	54.00	11.91	321	291
----- Vertical ------										
4	1258.354	37.94	28.72	4.99	35.39	36.26	54.00	17.74	134	37
5	1321.035	38.92	28.46	5.23	35.30	37.31	54.00	16.69	184	222
6	1821.374	39.01	30.49	7.02	34.59	41.93	54.00	12.07	232	184
7	4165.398	31.92	33.23	9.19	33.76	40.58	54.00	13.42	106	54

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)**	**-**

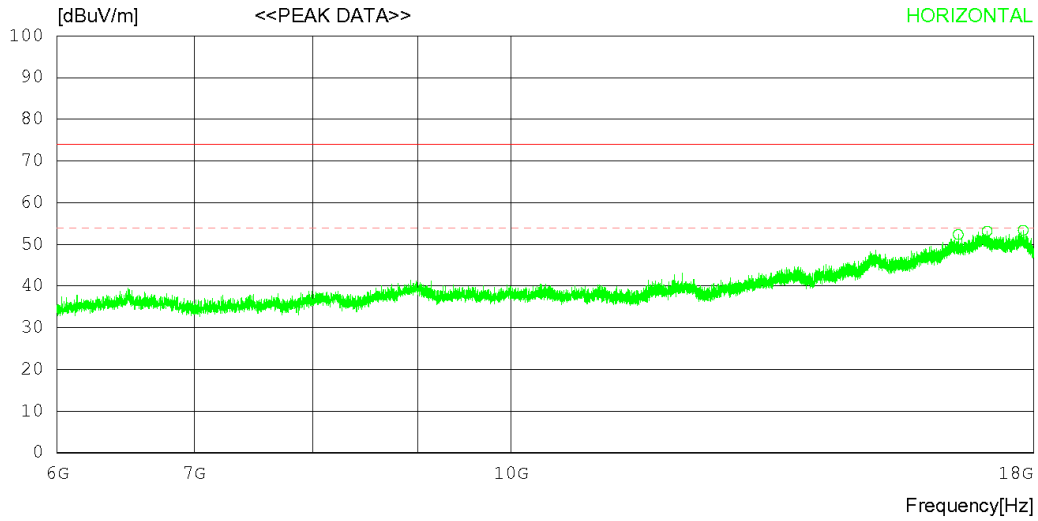
RADIATED EMISSION

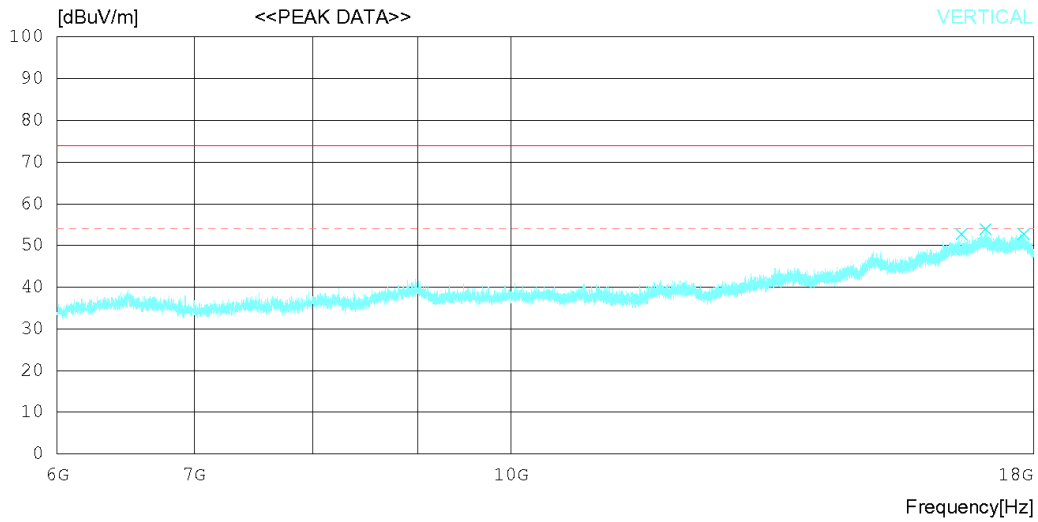
Date 2020-04-07

Order No. DTNC2003-02058
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. DTNC2003-02058
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	16537.500	29.60	37.03	21.83	36.12	52.34	74.0	21.66	203	358
2	17085.000	28.90	37.62	23.13	36.50	53.15	74.0	20.85	136	358
3	17791.500	29.90	38.16	22.79	37.47	53.38	74.0	20.62	180	358
----- Vertical ------										
4	16597.500	30.10	37.10	21.75	36.16	52.79	74.0	21.21	370	92
5	17052.000	29.40	37.59	23.40	36.46	53.93	74.0	20.07	154	145
6	17801.250	29.30	38.17	22.81	37.48	52.80	74.0	21.2	154	198

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)**	**-**

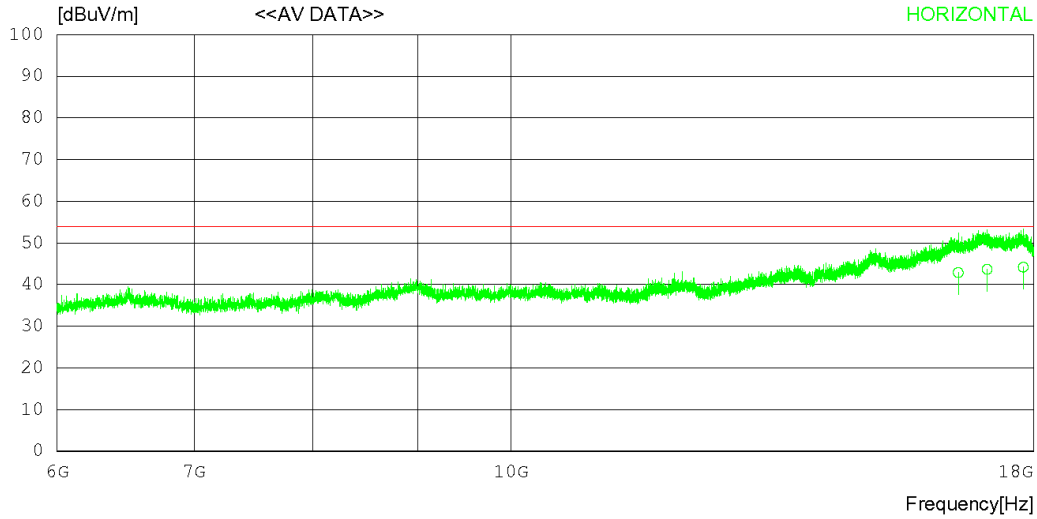
RADIATED EMISSION

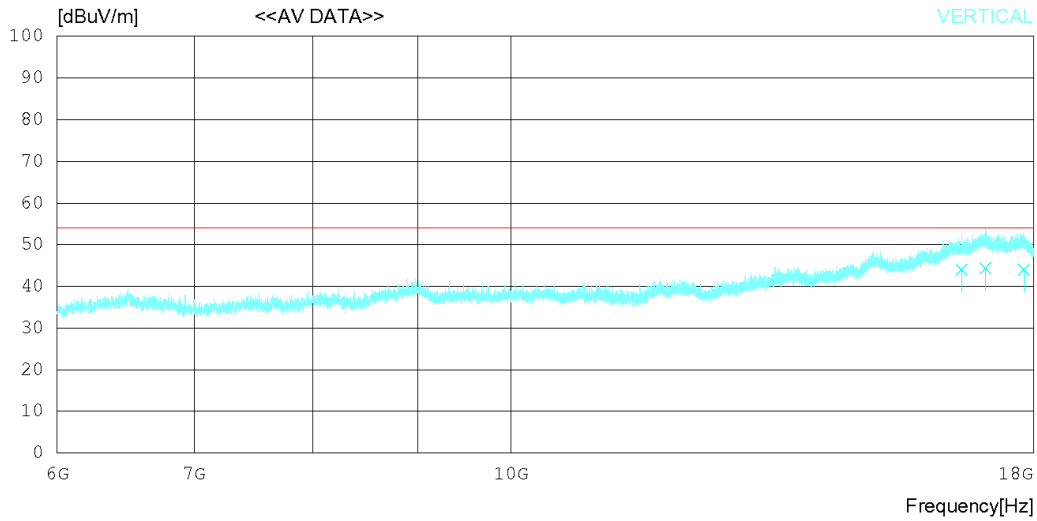
Date 2020-04-07

Order No. DTNC2003-02058
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. DTNC2003-02058
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)

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	16537.210	20.14	37.03	21.83	36.12	42.88	54.00	11.12	235	321
2	17084.370	19.37	37.61	23.14	36.50	43.62	54.00	10.38	361	246
3	17792.040	20.71	38.16	22.79	37.47	44.19	54.00	9.81	198	154
----- Vertical ------										
4	16598.210	21.36	37.10	21.75	36.16	44.05	54.00	9.95	132	84
5	17051.400	19.84	37.59	23.40	36.46	44.37	54.00	9.63	194	202
6	17802.370	20.45	38.17	22.80	37.48	43.94	54.00	10.06	122	147

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)**	**-**

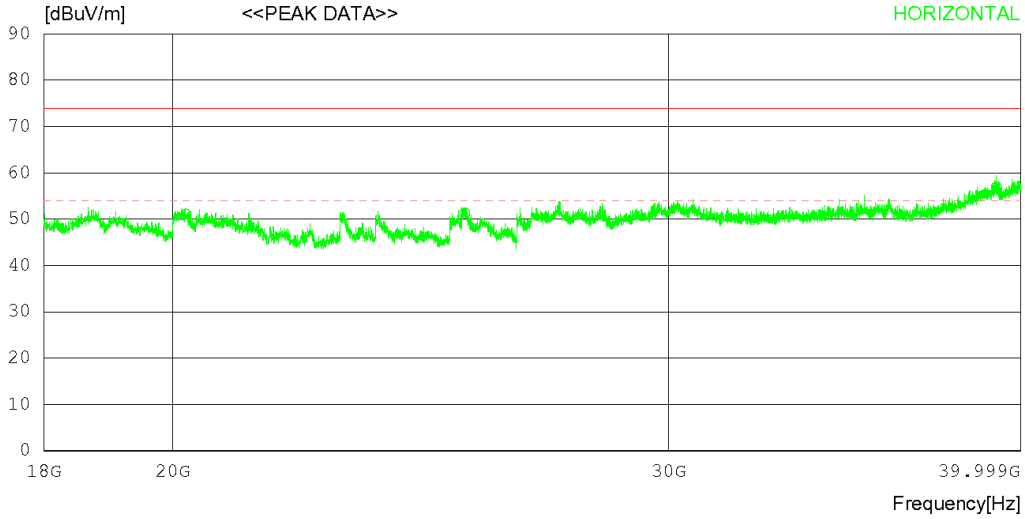
RADIATED EMISSION

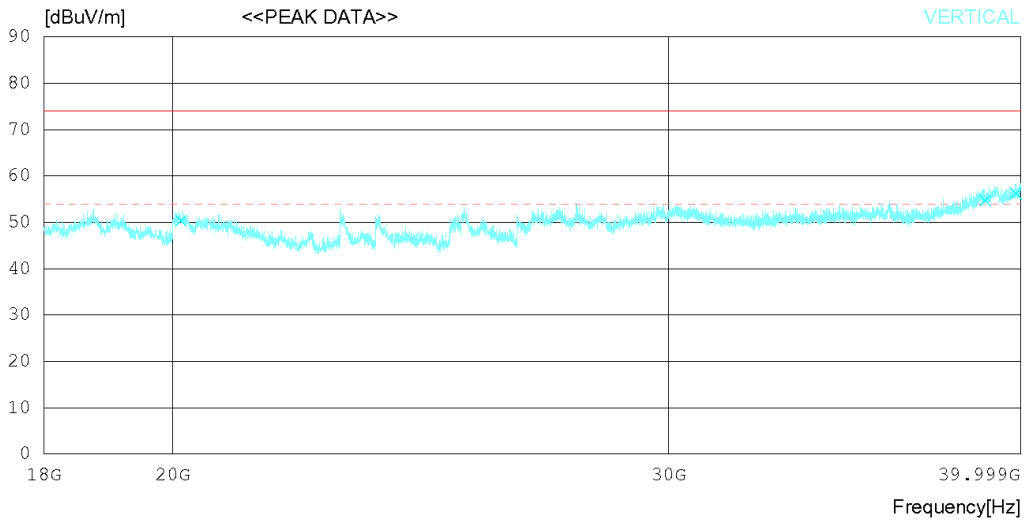
Date 2020-04-07

Order No. DTNC2003-02058
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. DTNC2003-02058
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	20211.000	39.90	45.30	18.99	53.09	51.10	74.0	22.9	135	119
2	25394.750	38.40	45.70	20.90	53.68	51.32	74.0	22.68	374	58
3	39224.500	35.80	47.92	25.45	52.24	56.93	74.0	17.07	150	215
----- Vertical ------										
4	20131.250	39.30	45.30	18.84	53.06	50.38	74.0	23.62	210	0
5	38856.000	34.00	47.41	25.61	52.26	54.76	74.0	19.24	214	0
6	39846.000	34.90	48.99	24.53	52.21	56.21	74.0	17.79	198	25

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)**	**-**

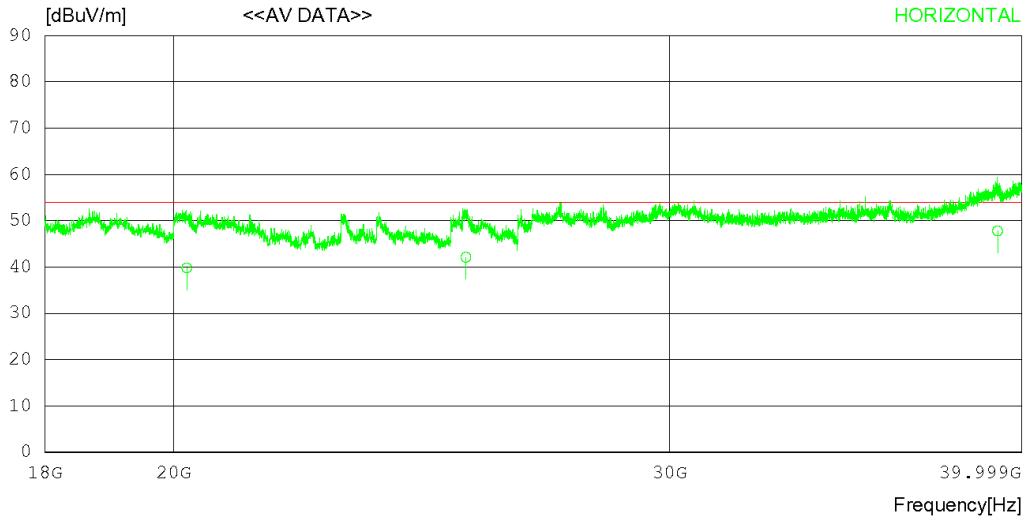
RADIATED EMISSION

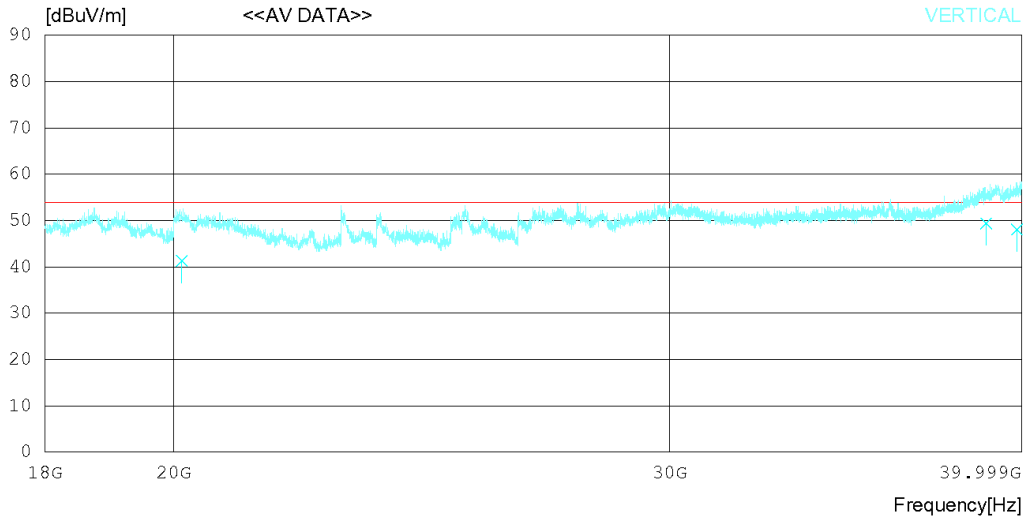
Date 2020-04-07

Order No. DTNC2003-02058
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. DTNC2003-02058
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)

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	20211.240	28.62	45.30	18.99	53.10	39.81	54.00	14.19	178	120
2	25394.110	29.20	45.70	20.90	53.68	42.12	54.00	11.88	137	273
3	39224.570	26.66	47.92	25.45	52.24	47.79	54.00	6.21	243	112
----- Vertical ------										
4	20131.280	30.20	45.30	18.84	53.06	41.28	54.00	12.72	120	305
5	38856.070	28.62	47.41	25.61	52.26	49.38	54.00	4.62	243	224
6	39846.220	26.77	48.99	24.53	52.21	48.08	54.00	5.92	274	17

Calculation

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

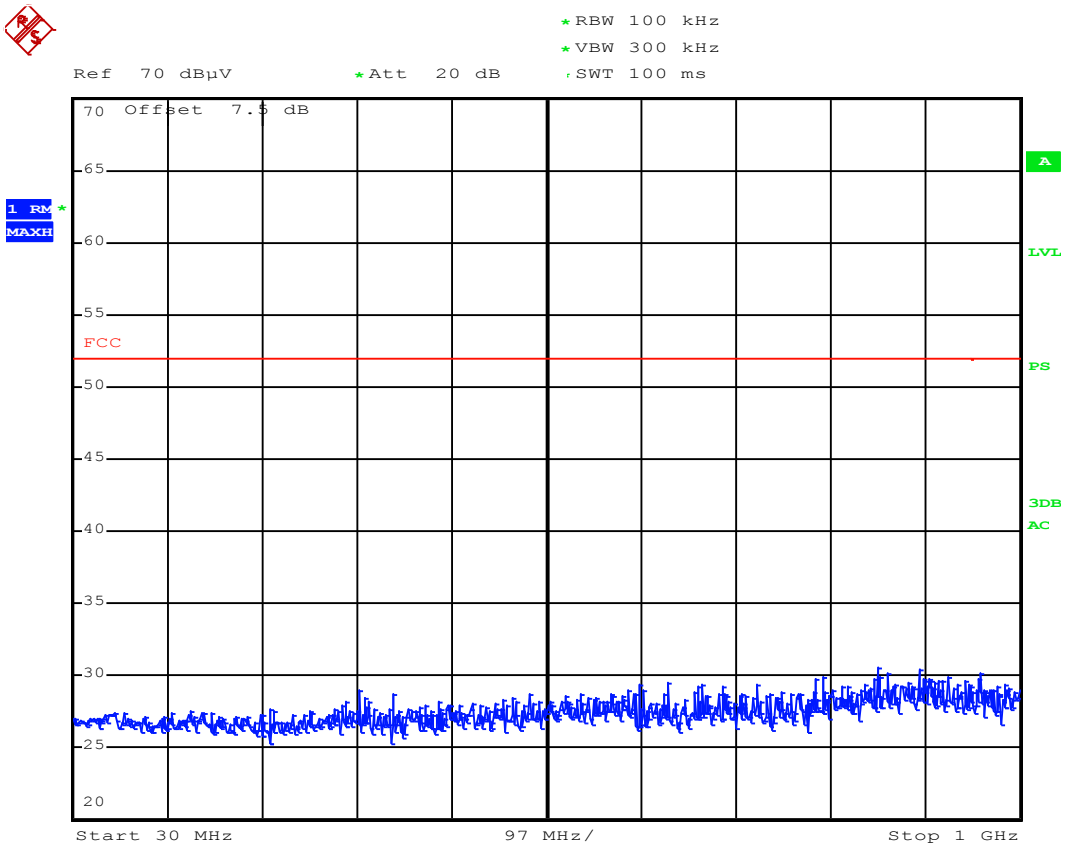
7.3 Antenna Power Conduction

ANSI C63.4	Antenna power conduction	Result
Method: 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	**Test configuration mode**	**1**
(Refer to clauses 4)	**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 TECNOLOGIES	16012	2019.12.10	2020.12.10
SPLITTER	ZFRSC-123-S+	MINI CIRCUITS	SF139801142	2019.07.15	2020.07.15

Antenna Power Conduction _Measurement data graph			
Test configuration mode	1	EUT Operation mode	2
Test voltage (V)	DC 12 V	Test Frequency (Hz)	-



8. Revision History

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

-End of test report-