

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 : DREFCC2010-0238(1)

2. Customer

• Name : MOTREX CO., LTD.

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

3. Use of Report : Grant of Certification

4. Product Name / Model Name : SMART DISPLAY / MS310ANX4
(FCC ID : BP9-MS310ANX4)

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

FCC Part 15 Subpart B

(FM Broadcast receiver & digital devices)

6. Date of Test : Sep. 10. 2020 ~ Sep. 17. 2020

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

8. Testing Environment : Temperature (22 ~ 24) °C , Humidity (51 ~ 52) % 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 : Hun Lee 	Name : HyungJun Kim 

Oct. 22. 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

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1. General Remarks

This report contains the result of tests performed by :

DT&C Co., Ltd.

42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042

<http://www.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-14076, R-14180, R-4496, T-11442, G-10338, G-10754, 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	MS310ANX4
Add Model Name	None
Maximum Internal Frequency	1 000 MHz
Software Version	NX4.MEX.0000.004.P2SH.200825
Hardware Version	Rev 0.1
Rated Power	DC 12 V
FCC ID	BP9-MS310ANX4
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) The EUT is wirelessly connected to the GPS SIGNAL GENERATOR and continuously receives data. (GPS)
3	USB	The EUT is connected to USB memory to play the music. (1 kHz tone) The EUT is wirelessly connected to the router and continuously sends and receives data. And we have verified the data. (WIFI5.8G) 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. EUT is wirelessly connected to the GPS SIGNAL GENERATOR.
2	USB	EUT is connected to DC power. EUT is connected to MULT MEDIABOX. MULT MEDIABOX is connected to USB memory. EUT is wirelessly connected to the router. 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	N/A
AE	Speaker	N/A	N/A	N/A
AE	Phone	LG	G5	N/A
AE	USB MEMORY	Sandisk	ULTRA FLAIR 3.0	N/A
AE	ANT.	N/A	N/A	N/A
AE	ROUTER	RoHS	NEXT-7004N	N/A
AE	Monitor	LG Display	LA103WF5	N/A
*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	Non shield	Plastic	None
ANT.	I/O	3.0	Shield	Plastic	None
Multimedia box	I/O	1.5	Non shield	Plastic	None
SPEAKER	I/O	1.6	Non shield	Plastic	None
Monitor	I/O	1.5	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	DC 12 V	-	-	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]
2211.081	H	48.53	Cispr - Average	54.00	5.47

-Antenna Power Conduction

Frequency [MHz]	Result [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]
953.44	38.0	RMS	51.70	13.7

6. Test Environment

Test Items	Test date (YYYY-MM-DD)	Temp. (°C)	Humidity (% R.H.)	Pressure (kPa)
Radiated Disturbance	2020-09-10 2020-09-14	24 22	51 52	-
Antenna Power Conduction	2020-09-17	23	51	

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
-	-	-	-	-	-

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)

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

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	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		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
	2708A	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
PRE AMPLIFIER	8449B	H.P	3008A00887	2020.08.31	2021.08.31
SIGNAL GENERATOR	SMT03	ROHDE & SCHWARZ	100416	2020.06.03	2021.06.03
REGULATED DC POWER SUPPLY	SDP 30-5D	SMTECHNO	305DPB 048	2020.02.12	2021.02.12
GPS GENERATOR	GSS7000	SPIRENT	0242	N/A	N/A
(NOTE : THE MEASUREMENT ANTENNAS WERE CALIBRATED IN ACCORDANCE TO THE REQUIREMENTS OF C63.5-2017.)					

Calculation

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

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)	-

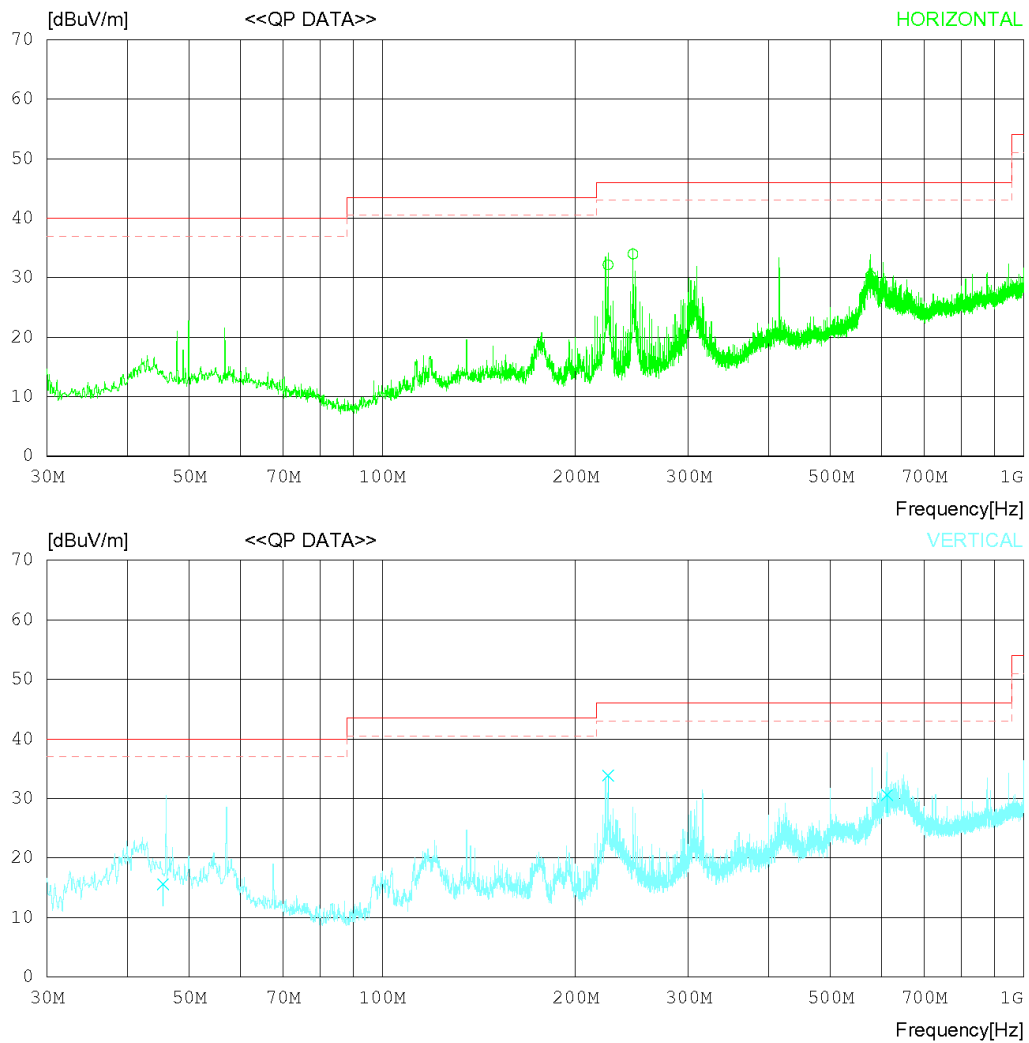
RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 'C 51 % R.H.
Test Condition AM

Memo

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



RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 24 °C 51 % 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	224.993	40.00	17.15	1.63	26.62	32.16	46.00	13.84	105	294
2	246.033	40.70	18.04	1.81	26.59	33.96	46.00	12.04	102	118
3	577.456	28.50	25.35	2.79	26.33	30.31	46.00	15.69	104	344
----- Vertical -----										
4	45.507	23.70	17.80	0.70	26.60	15.60	40.00	24.40	105	55
5	224.995	41.70	17.15	1.63	26.62	33.86	46.00	12.14	102	105
6	612.722	28.40	25.63	2.86	26.29	30.60	46.00	15.40	108	26

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)	-

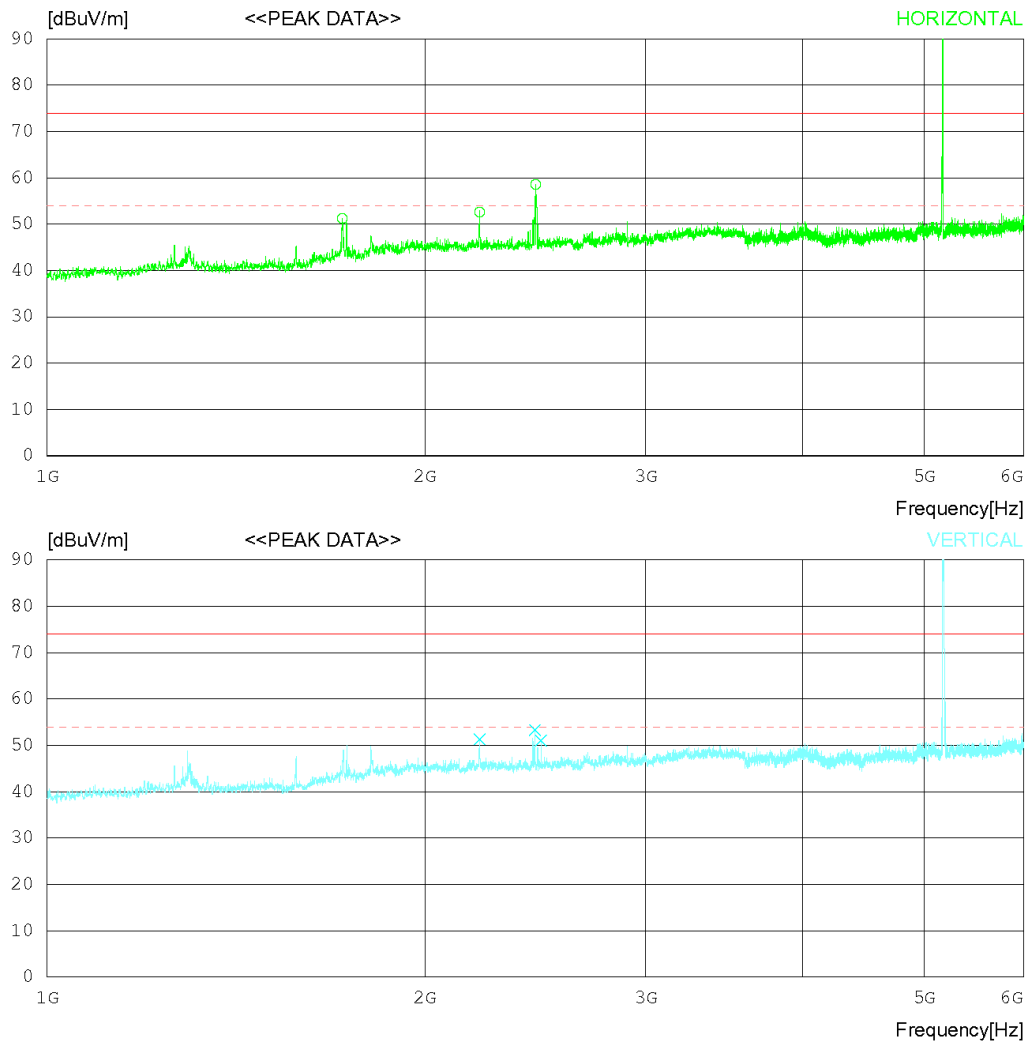
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Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 'C 51 % 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 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 °C 51 % 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	1719.375	49.90	29.66	7.05	35.41	51.20	74.0	22.8	204	358
2	2211.250	49.00	31.86	6.89	35.12	52.63	74.0	21.37	345	31
3	2451.250	54.40	32.20	7.14	35.15	58.59	74.0	15.41	382	358
----- Vertical -----										
4	2211.250	47.70	31.86	6.89	35.12	51.33	74.0	22.67	287	353
5	2446.875	49.10	32.20	7.14	35.14	53.30	74.0	20.7	399	358
6	2475.625	46.80	32.20	7.19	35.15	51.04	74.0	22.96	105	0

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)	-

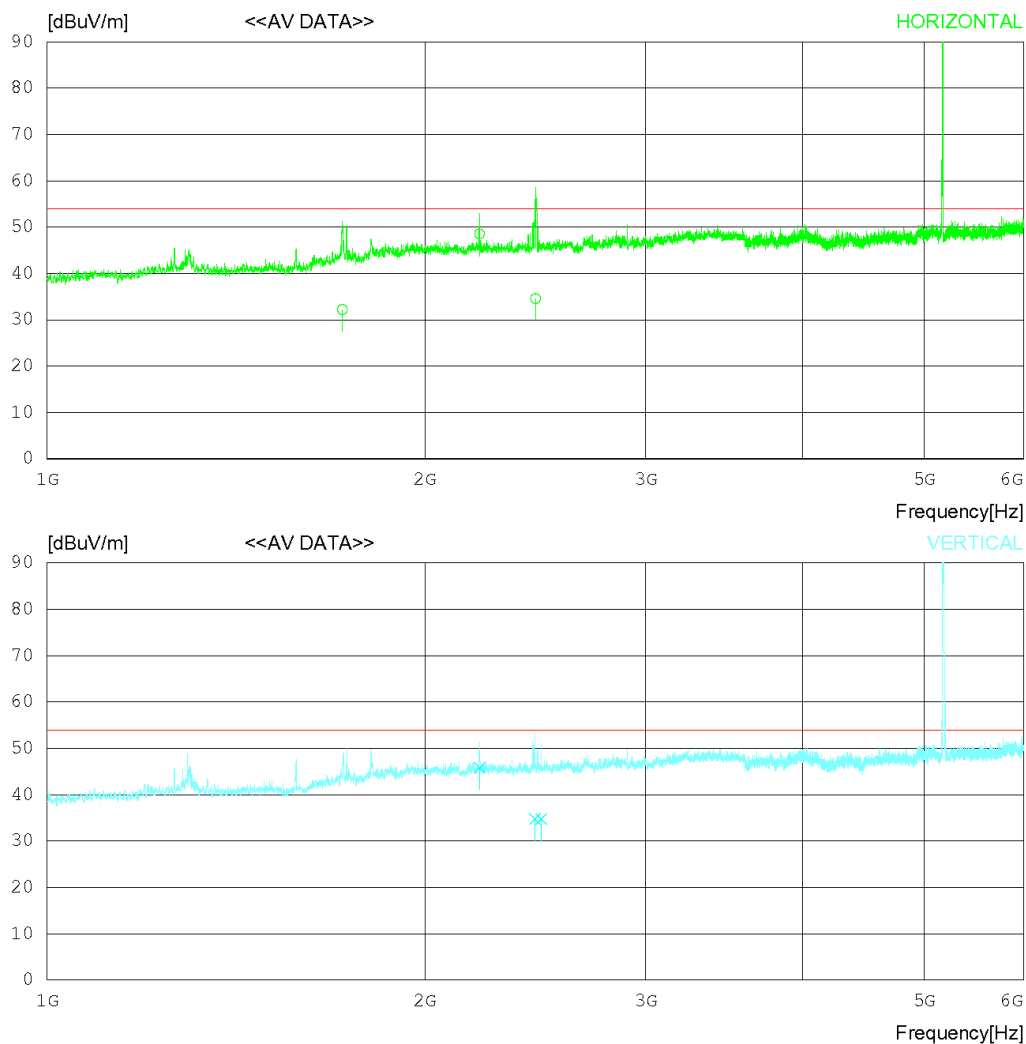
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Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 'C 51 % 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.

RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 24 °C 51 % 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	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	1719.221	30.90	29.66	7.05	35.41	32.20	54.00	21.80	204	298
2	2211.081	44.90	31.86	6.89	35.12	48.53	54.00	5.47	305	80
3	2450.758	30.40	32.20	7.14	35.15	34.59	54.00	19.41	386	345
----- Vertical -----										
4	2211.085	42.20	31.86	6.89	35.12	45.83	54.00	8.17	386	320
5	2447.008	30.60	32.20	7.14	35.14	34.80	54.00	19.20	396	305
6	2475.986	30.50	32.20	7.19	35.15	34.74	54.00	19.26	105	33

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)	-

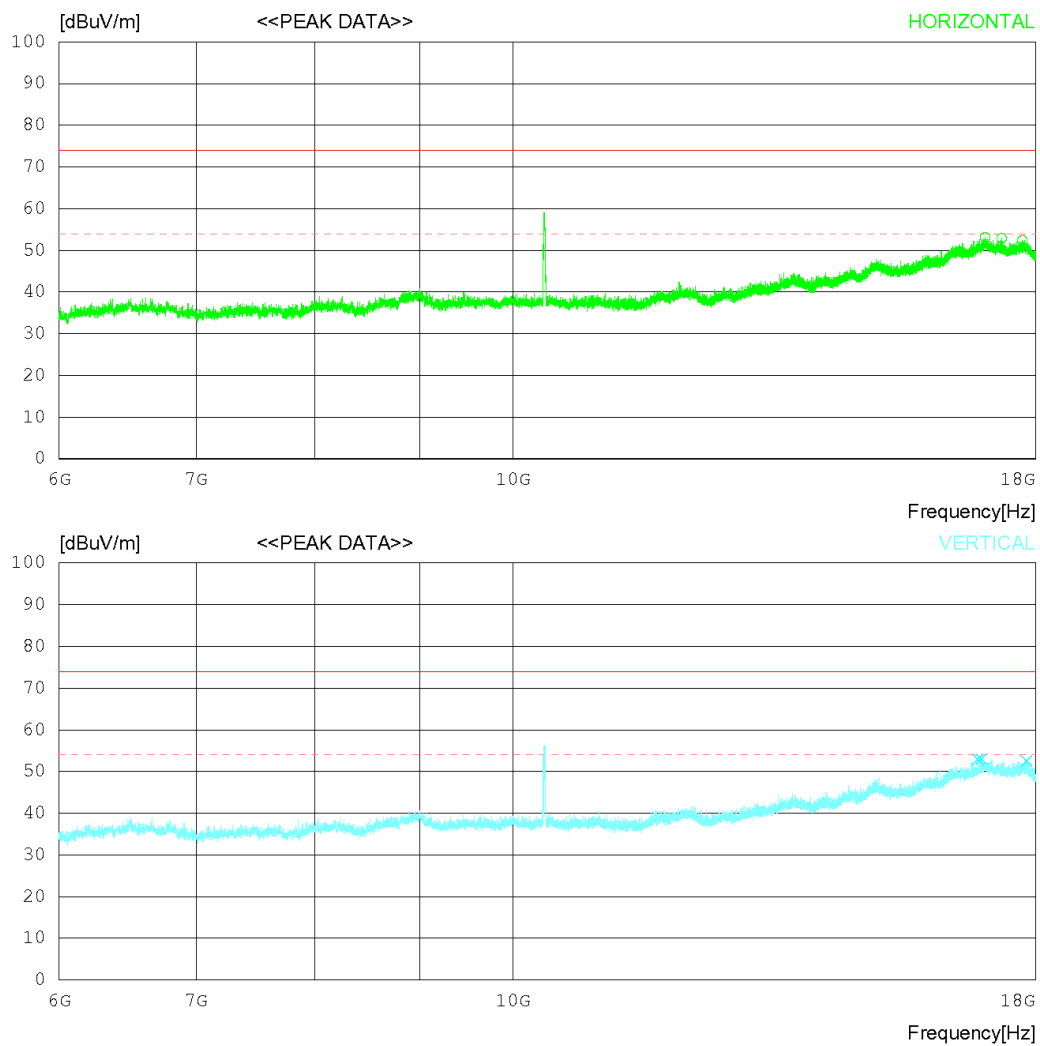
RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 : (10,300 ~ 10,700) MHz is WIFI 5 G harmonics of fundamental.

RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22'C 52 % 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	17011.500	28.20	37.56	23.72	36.41	53.07	74.0	20.93	305	358
2	17324.250	29.80	37.80	22.09	36.79	52.90	74.0	21.1	112	358
3	17737.500	28.90	38.12	22.70	37.38	52.34	74.0	21.66	209	29
----- Vertical -----										
4	16863.000	29.10	37.40	22.65	36.32	52.83	74.0	21.17	202	228
5	16936.500	28.60	37.48	23.27	36.36	52.99	74.0	21.01	204	358
6	17817.750	29.10	38.18	22.71	37.51	52.48	74.0	21.52	211	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)	-

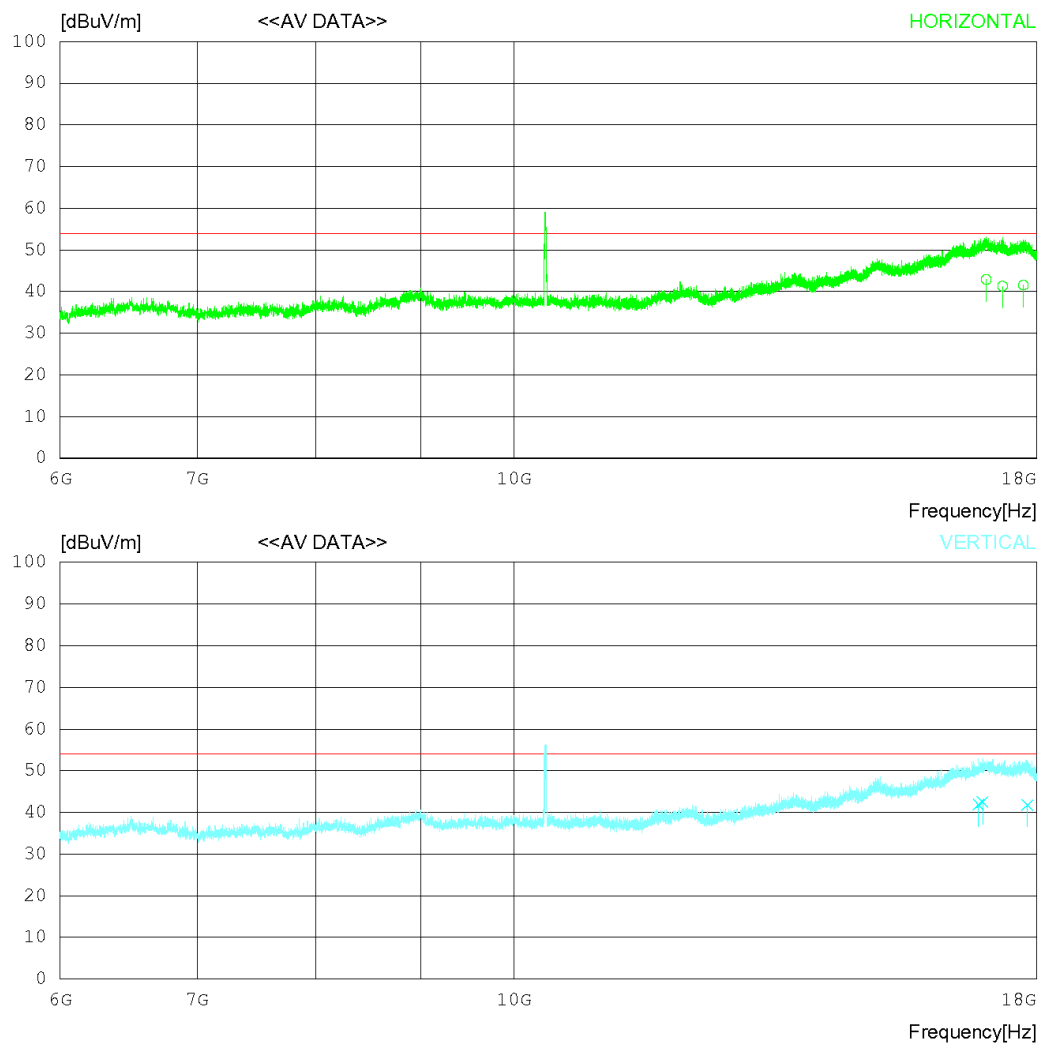
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Power Supply DC 12 V
Temp/Humi 22 'C 52 % R.H.
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Memo

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



*Remark : (10,300 ~ 10,700) MHz is WIFI 5 G harmonics of fundamental.

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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	17011.250	18.00	37.56	23.72	36.41	42.87	54.00	11.13	197	344
2	17324.680	18.20	37.80	22.09	36.79	41.30	54.00	12.70	204	305
3	17737.260	18.10	38.12	22.70	37.38	41.54	54.00	12.46	268	57
----- Vertical -----										
4	16863.050	18.10	37.40	22.65	36.32	41.83	54.00	12.17	124	244
5	16939.620	18.00	37.48	23.29	36.36	42.41	54.00	11.59	221	340
6	17817.450	18.40	38.18	22.71	37.51	41.78	54.00	12.22	234	335

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)	-

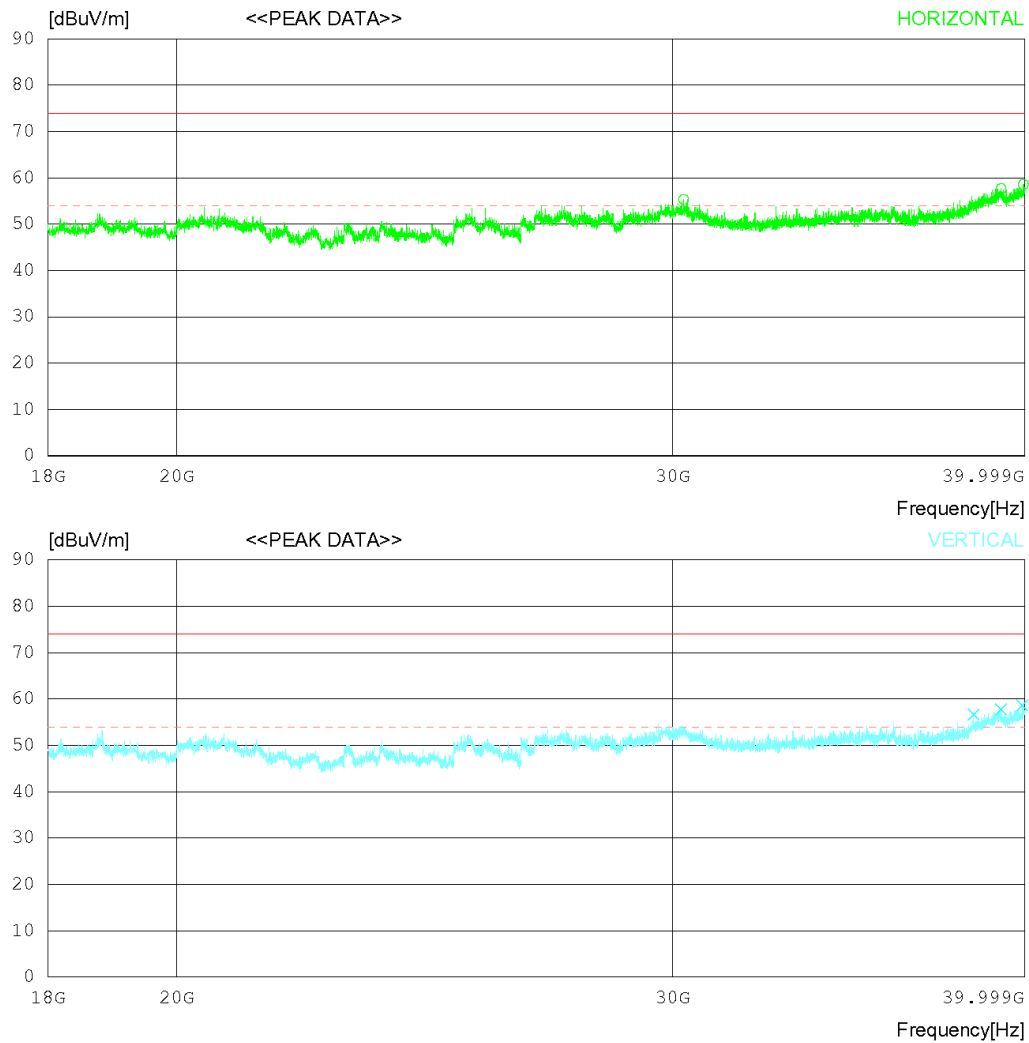
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Date 2020-09-14

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Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22°C 52 % 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	30270.500	37.70	47.50	22.37	52.21	55.36	74.0	18.64	223	0
2	39243.750	36.20	47.94	25.79	52.24	57.69	74.0	16.31	149	86
3	39961.500	36.60	49.22	24.95	52.20	58.57	74.0	15.43	107	313
----- Vertical -----										
4	38369.250	37.20	46.60	25.12	52.28	56.64	74.0	17.36	132	358
5	39235.500	36.30	47.94	25.81	52.24	57.81	74.0	16.19	209	358
6	39923.000	36.70	49.15	24.99	52.20	58.64	74.0	15.36	129	273

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)	-

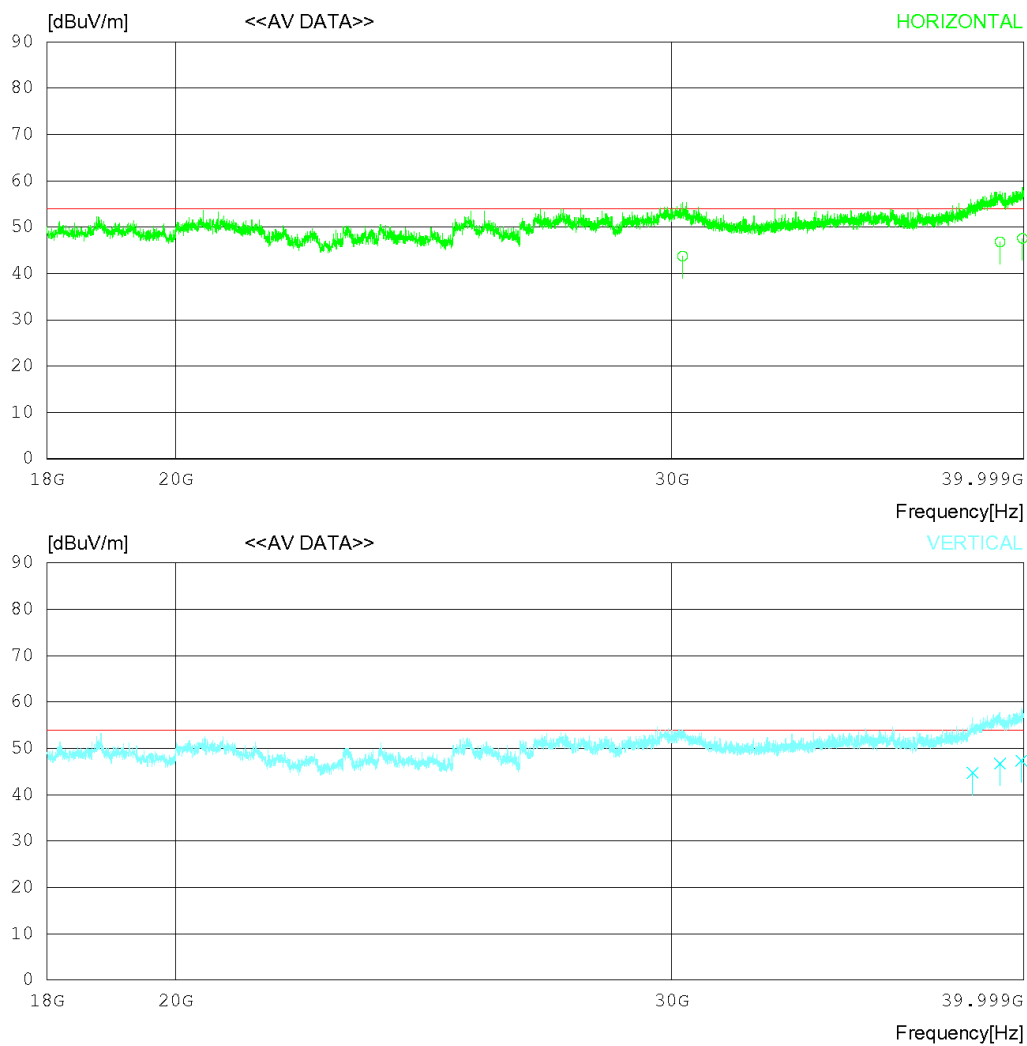
RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 22'C 52 % 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	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	30270.680	26.10	47.50	22.37	52.21	43.76	54.00	10.24	245	107
2	39244.250	25.30	47.94	25.79	52.24	46.79	54.00	7.21	199	105
3	39961.430	25.60	49.22	24.95	52.20	47.57	54.00	6.43	345	333
----- Vertical -----										
4	38369.130	25.30	46.60	25.12	52.28	44.74	54.00	9.26	105	321
5	39235.540	25.20	47.94	25.81	52.24	46.71	54.00	7.29	207	302
6	39923.500	25.40	49.15	24.99	52.20	47.34	54.00	6.66	105	255

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)	-

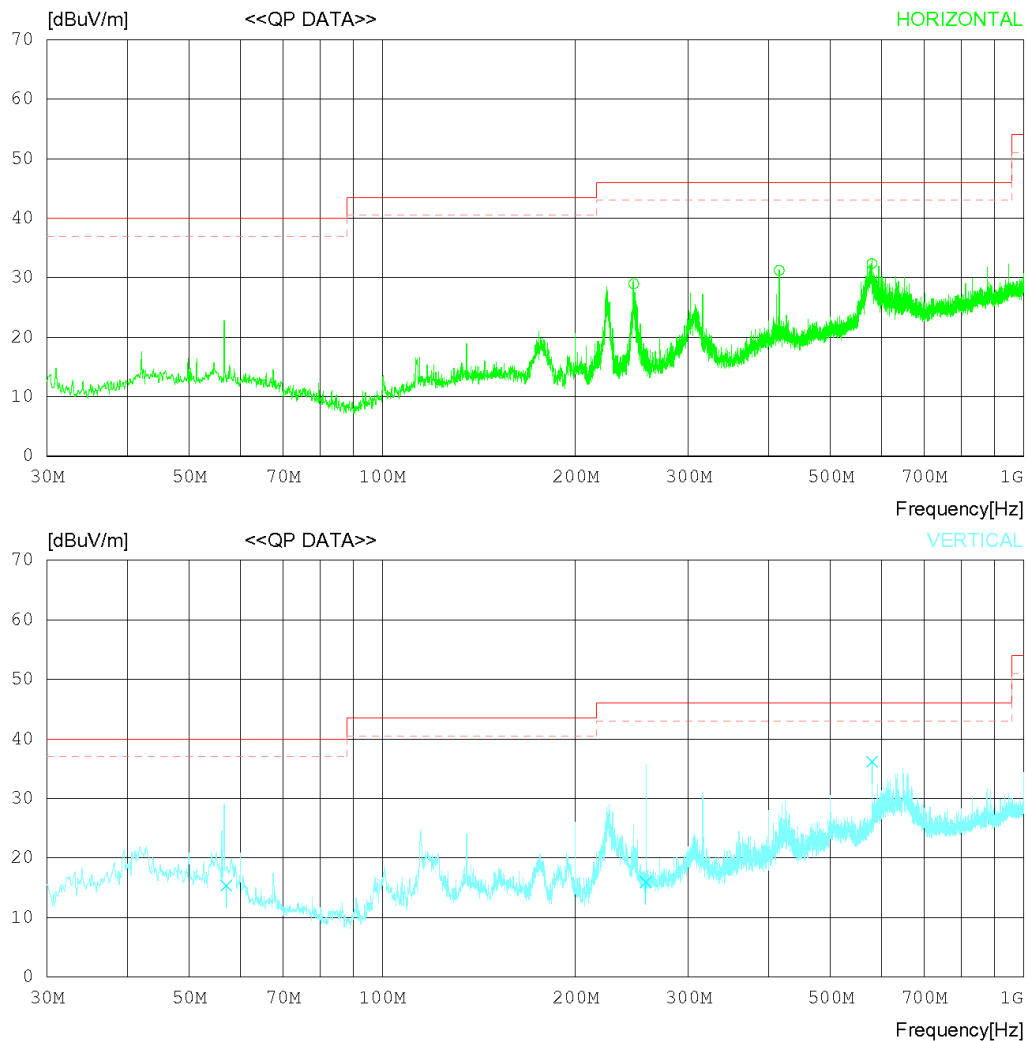
RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 'C 51 % R.H.
Test Condition FM

Memo

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



RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 24 °C 51 % 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	246.774	35.70	18.03	1.83	26.59	28.97	46.00	17.03	102	134
2	415.987	33.20	21.90	2.48	26.36	31.22	46.00	14.78	107	335
3	579.995	30.50	25.40	2.80	26.33	32.37	46.00	13.63	197	194
----- Vertical -----										
4	57.062	23.50	17.72	0.81	26.65	15.38	40.00	24.62	105	132
5	257.364	22.50	18.07	1.95	26.59	15.93	46.00	30.07	205	335
6	580.023	34.30	25.40	2.80	26.33	36.17	46.00	9.83	103	35

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)	-

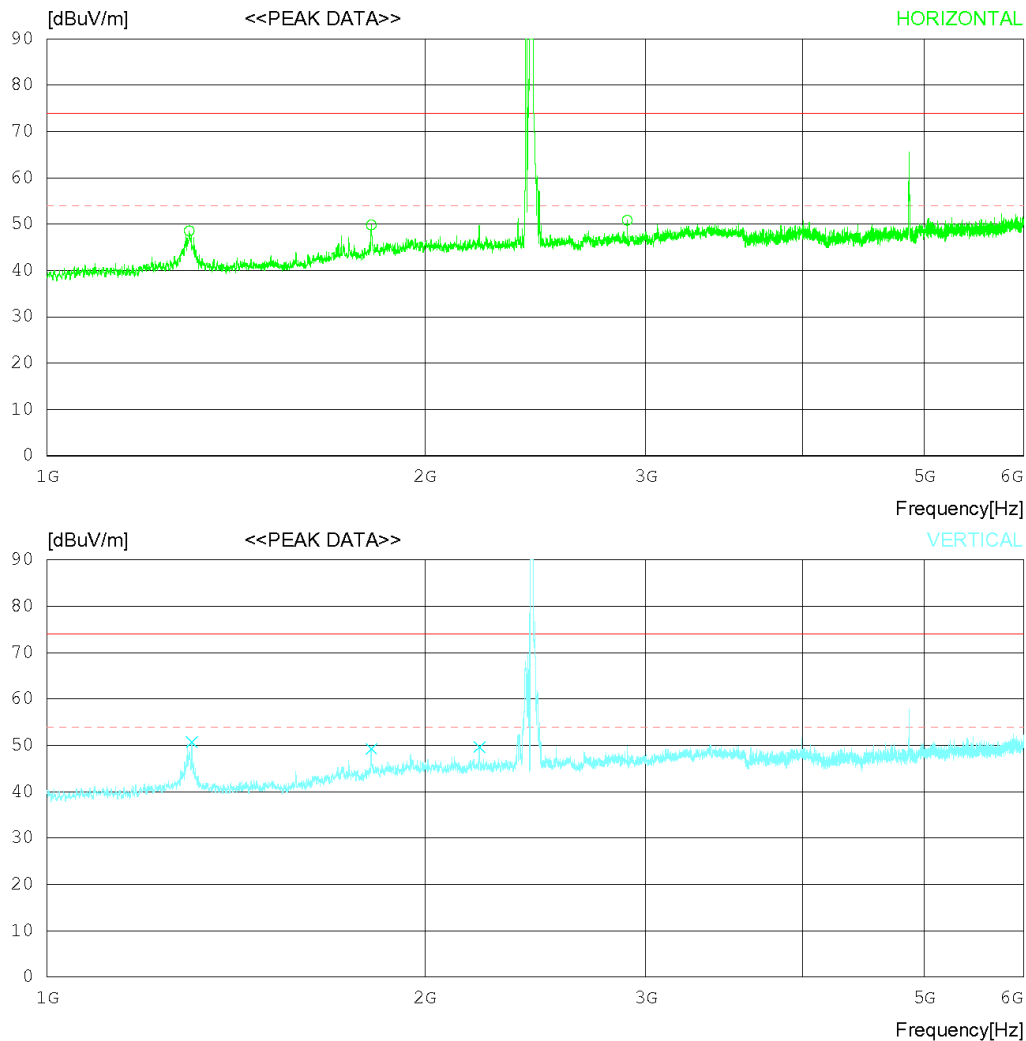
RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 'C 51 % 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.
(4,824 ~ 4,944) MHz is WIFI 2.4 G harmonics of fundamental.

RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 °C 51 % 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	1298.125	50.00	29.30	5.13	35.87	48.56	74.0	25.44	303	149
2	1813.125	47.70	30.41	7.04	35.31	49.84	74.0	24.16	205	352
3	2900.000	45.90	32.60	7.53	35.19	50.84	74.0	23.16	344	144
----- Vertical -----										
4	1304.375	52.20	29.24	5.16	35.87	50.73	74.0	23.27	112	0
5	1812.500	47.10	30.40	7.04	35.31	49.23	74.0	24.77	397	250
6	2210.625	46.00	31.86	6.89	35.12	49.63	74.0	24.37	356	358

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)	-

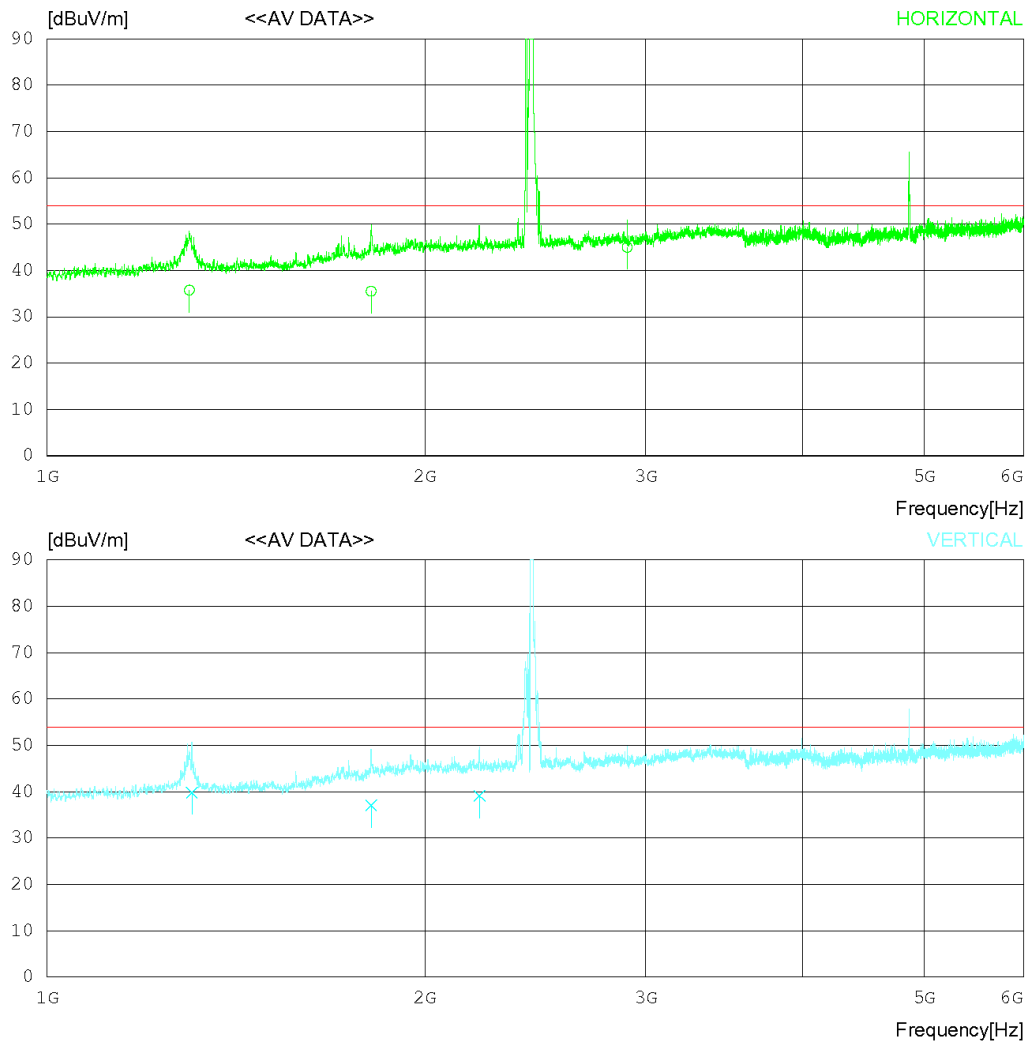
RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 'C 51 % 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.
(4,824 ~ 4,944) MHz is WIFI 2.4 G harmonics of fundamental.

RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 24 °C 51 % 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	1298.551	37.20	29.30	5.14	35.87	35.77	54.00	18.23	185	149
2	1812.628	33.40	30.40	7.04	35.31	35.53	54.00	18.47	105	296
3	2900.060	40.10	32.60	7.52	35.19	45.03	54.00	8.97	385	163
----- Vertical -----										
4	1304.192	41.30	29.24	5.16	35.87	39.83	54.00	14.17	213	65
5	1812.444	34.90	30.40	7.04	35.31	37.03	54.00	16.97	395	266
6	2211.077	35.50	31.86	6.89	35.12	39.13	54.00	14.87	324	342

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)	-

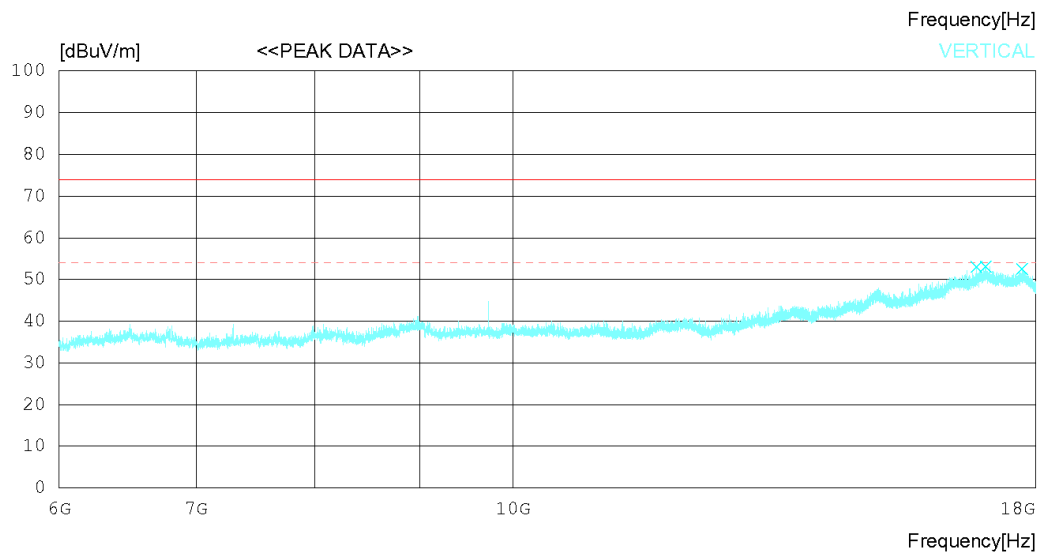
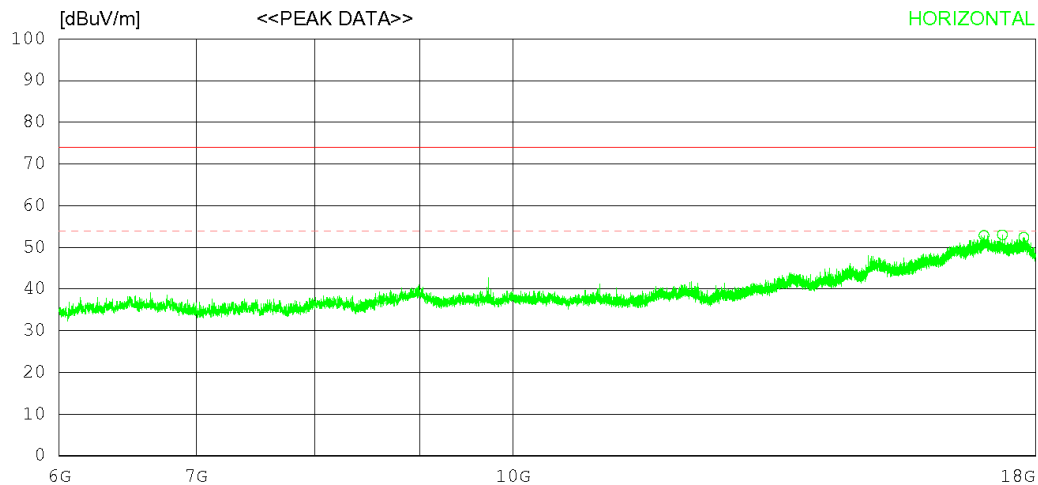
RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22'C 52 % 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	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	PEAK [dBuV]	FACTOR [dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	16989.000	28.00	37.54	23.72	36.39	52.87	74.0	21.13	222	73
2	17338.500	29.90	37.81	22.07	36.81	52.97	74.0	21.03	108	220
3	17764.500	28.90	38.14	22.75	37.42	52.37	74.0	21.63	155	224
----- Vertical -----										
4	16842.000	29.50	37.37	22.47	36.31	53.03	74.0	20.97	204	359
5	17016.750	28.30	37.56	23.68	36.42	53.12	74.0	20.88	235	0
6	17731.500	29.10	38.11	22.69	37.37	52.53	74.0	21.47	202	0

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)	-

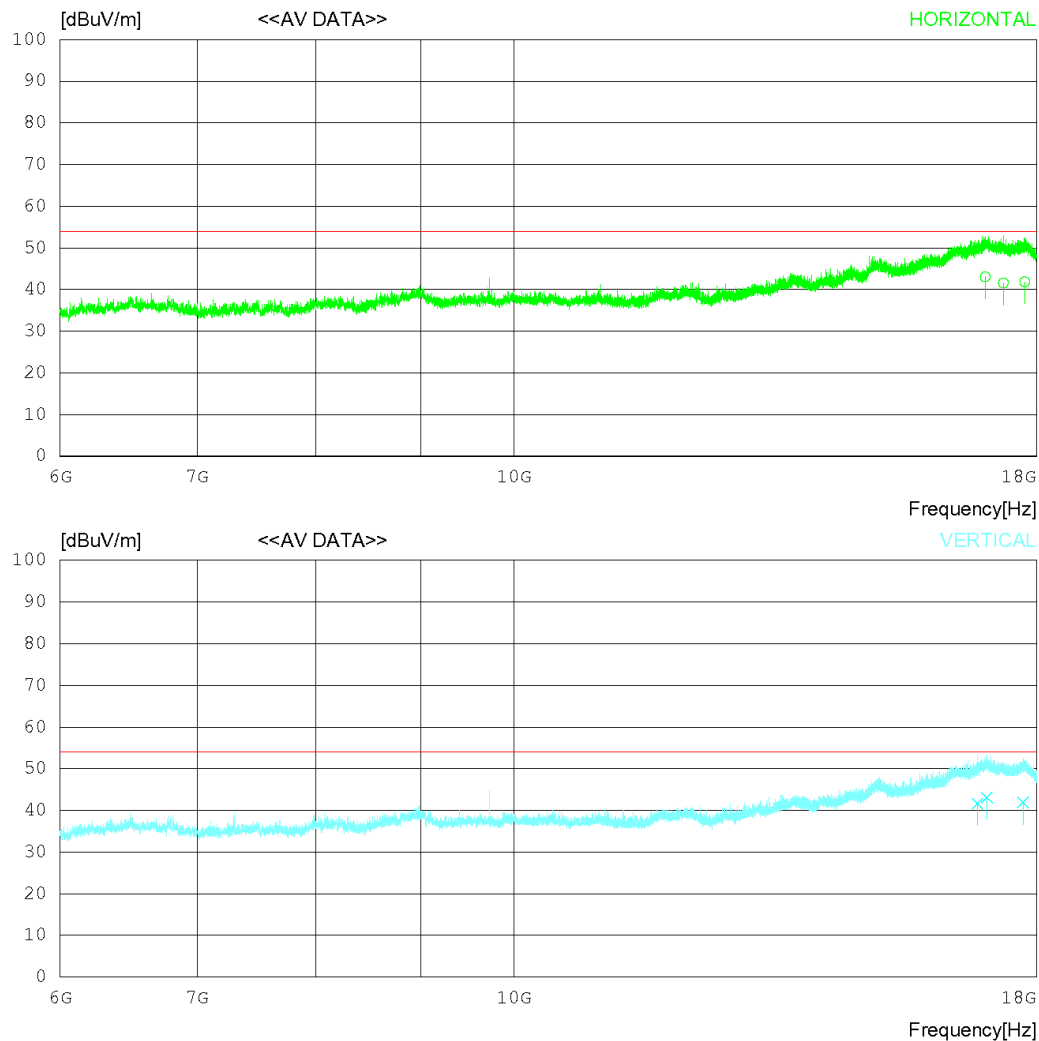
RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 22°C 52 % 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	16989.250	18.20	37.54	23.72	36.39	43.07	54.00	10.93	211	102
2	17338.530	18.50	37.81	22.07	36.81	41.57	54.00	12.43	235	235
3	17764.340	18.40	38.14	22.75	37.42	41.87	54.00	12.13	197	297
----- Vertical -----										
4	16841.930	18.10	37.37	22.47	36.31	41.63	54.00	12.37	107	335
5	17016.320	18.30	37.56	23.68	36.42	43.12	54.00	10.88	208	54
6	17731.560	18.50	38.11	22.69	37.37	41.93	54.00	12.07	112	99

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)	-

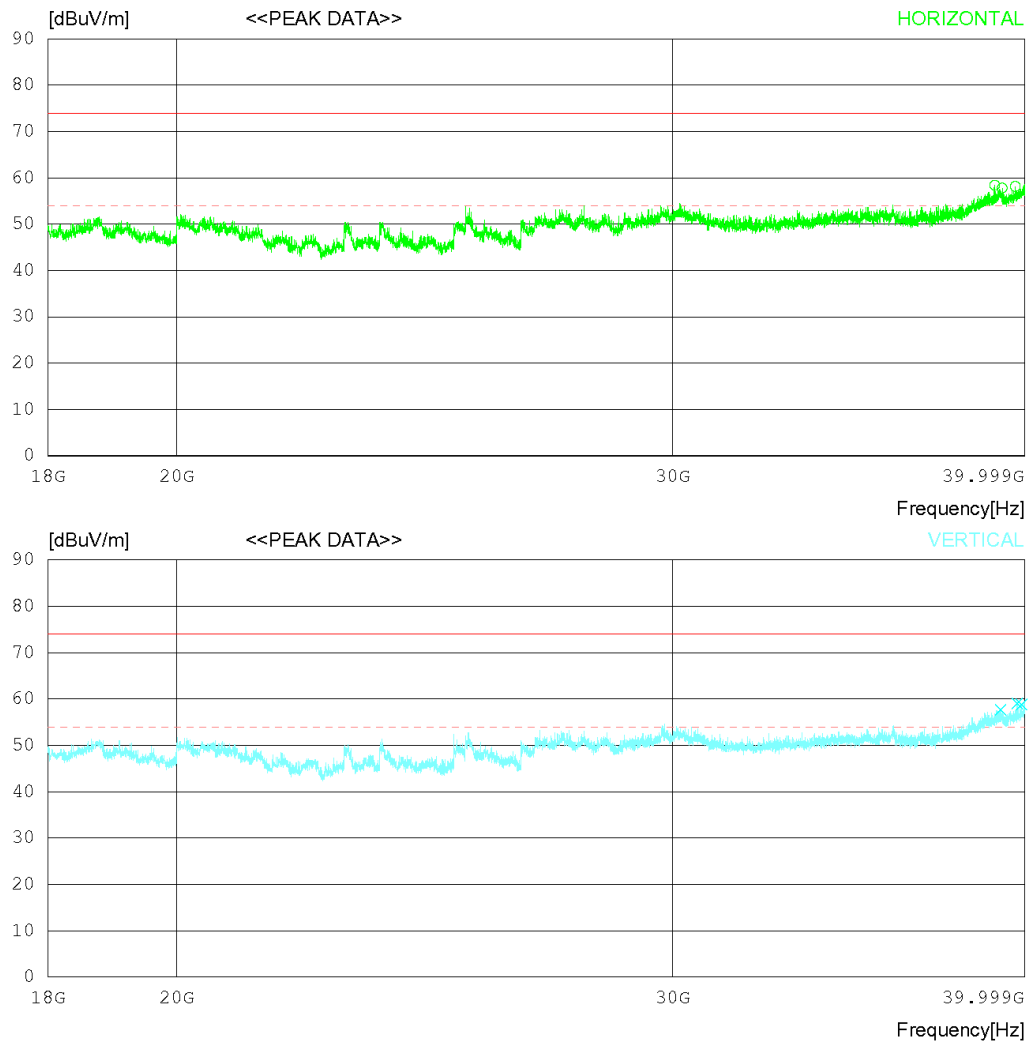
RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22'C 52 % 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	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	PEAK [dBuV]	FACTOR [dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	39040.250	37.00	47.64	26.03	52.25	58.42	74.0	15.58	233	7
2	39276.750	36.30	47.98	25.76	52.24	57.80	74.0	16.2	144	0
3	39700.250	36.40	48.70	25.25	52.21	58.14	74.0	15.86	225	0
----- Vertical -----										
4	39224.500	36.20	47.92	25.81	52.24	57.69	74.0	16.31	105	358
5	39760.750	37.30	48.82	25.18	52.21	59.09	74.0	14.91	305	63
6	39903.750	36.90	49.11	25.02	52.20	58.83	74.0	15.17	166	358

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)	-

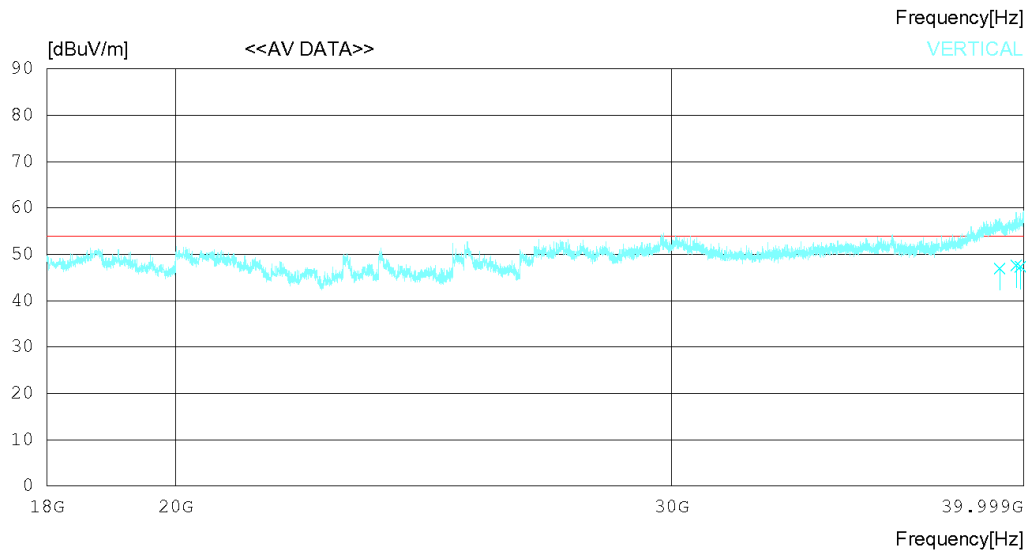
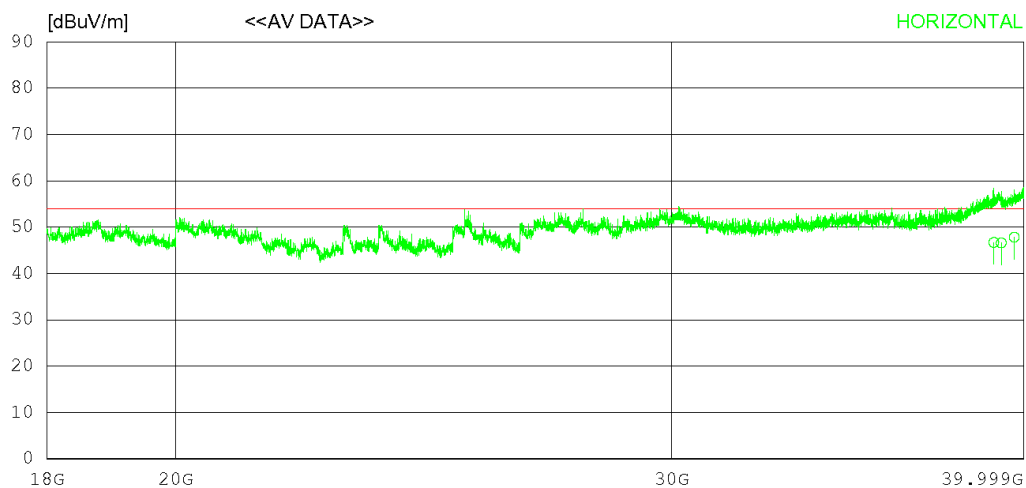
RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 22'C 52 % 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	39040.630	25.30	47.64	26.03	52.25	46.72	54.00	7.28	211	35
2	39276.980	25.10	47.98	25.76	52.24	46.60	54.00	7.40	202	255
3	39700.230	26.10	48.70	25.25	52.21	47.84	54.00	6.16	154	102
----- Vertical -----										
4	39224.550	25.50	47.92	25.81	52.24	46.99	54.00	7.01	121	345
5	39760.370	25.80	48.82	25.19	52.21	47.60	54.00	6.40	244	55
6	39903.590	25.40	49.11	25.02	52.20	47.33	54.00	6.67	124	334

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)	-

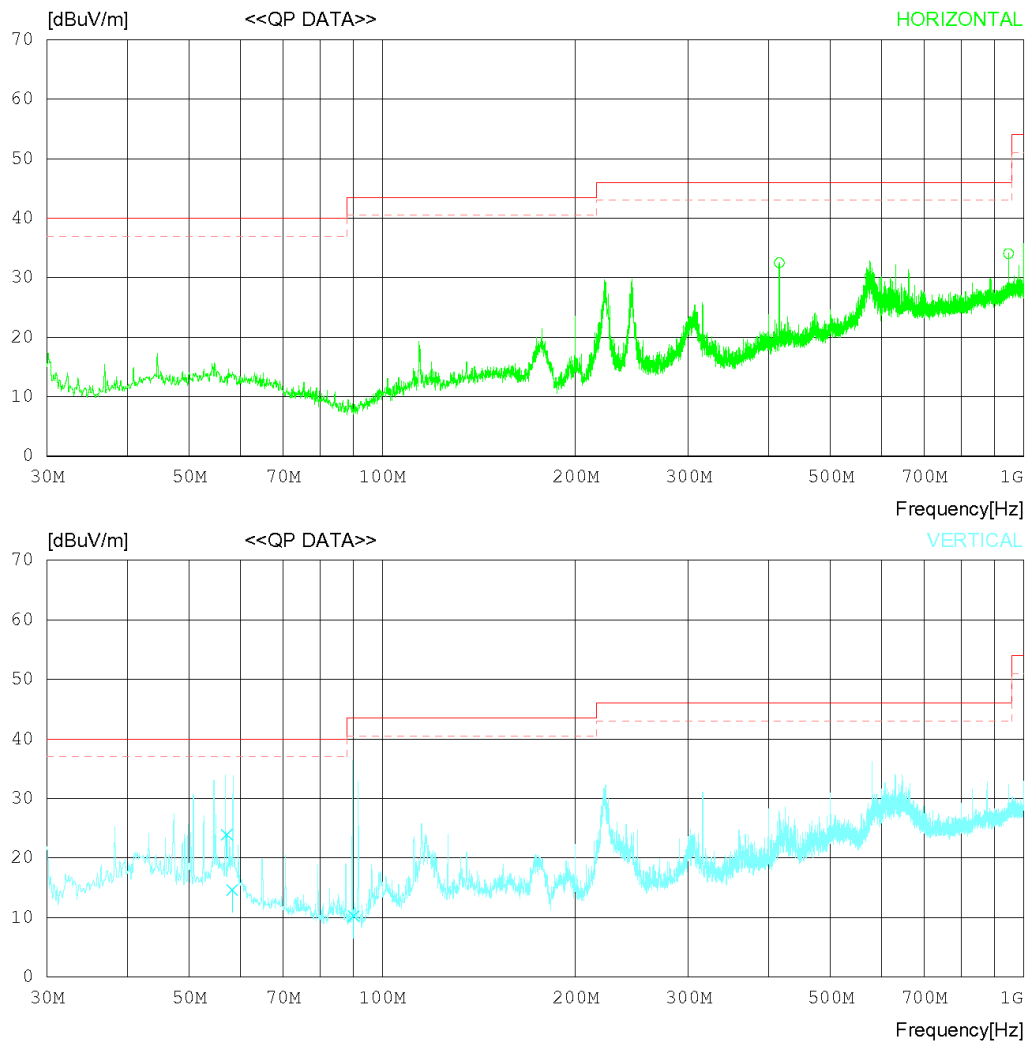
RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 'C 51 % R.H.
Test Condition USB

Memo

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



RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 24 °C 51 % 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	415.988	34.50	21.90	2.48	26.36	32.52	46.00	13.48	104	324
2	576.216	28.40	25.32	2.78	26.33	30.17	46.00	15.83	112	184
3	947.567	26.60	30.40	3.78	26.73	34.05	46.00	11.95	105	205
----- Vertical -----										
4	57.204	32.00	17.76	0.81	26.65	23.92	40.00	16.08	303	190
5	58.325	22.50	17.97	0.82	26.66	14.63	40.00	25.37	297	149
6	90.241	22.60	13.32	1.14	26.80	10.26	43.50	33.24	104	308

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)	-

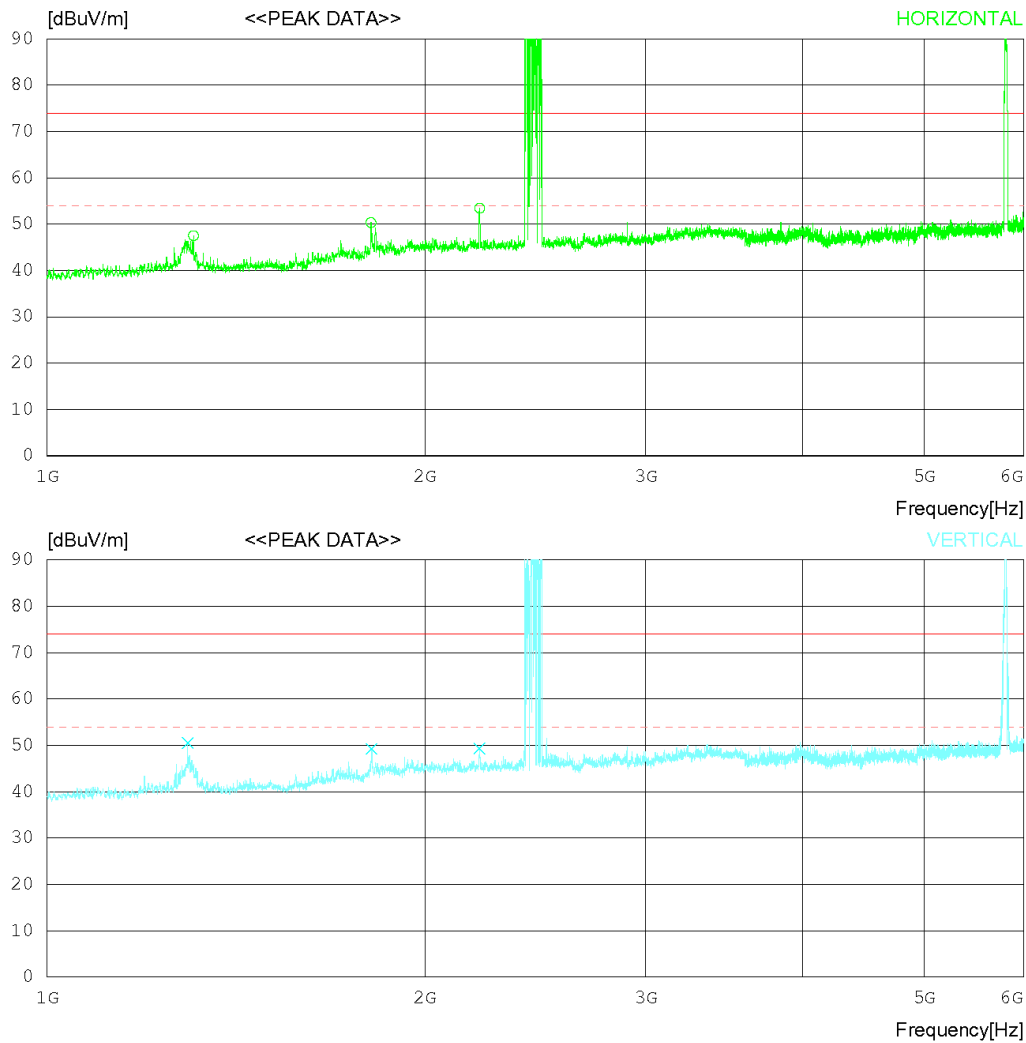
RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 'C 51 % 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.
(5,725 ~ 5,815) MHz are WIFI 5.8 G frequency.

RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 °C 51 % 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	1308.125	49.00	29.19	5.18	35.86	47.51	74.0	26.49	223	245
2	1811.875	48.20	30.39	7.04	35.31	50.32	74.0	23.68	200	0
3	2211.875	49.80	31.85	6.89	35.12	53.42	74.0	20.58	205	25
----- Vertical -----										
4	1294.375	52.00	29.31	5.12	35.88	50.55	74.0	23.45	124	3
5	1813.125	47.10	30.41	7.04	35.31	49.24	74.0	24.76	205	358
6	2211.250	45.70	31.86	6.89	35.12	49.33	74.0	24.67	397	358

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)	-

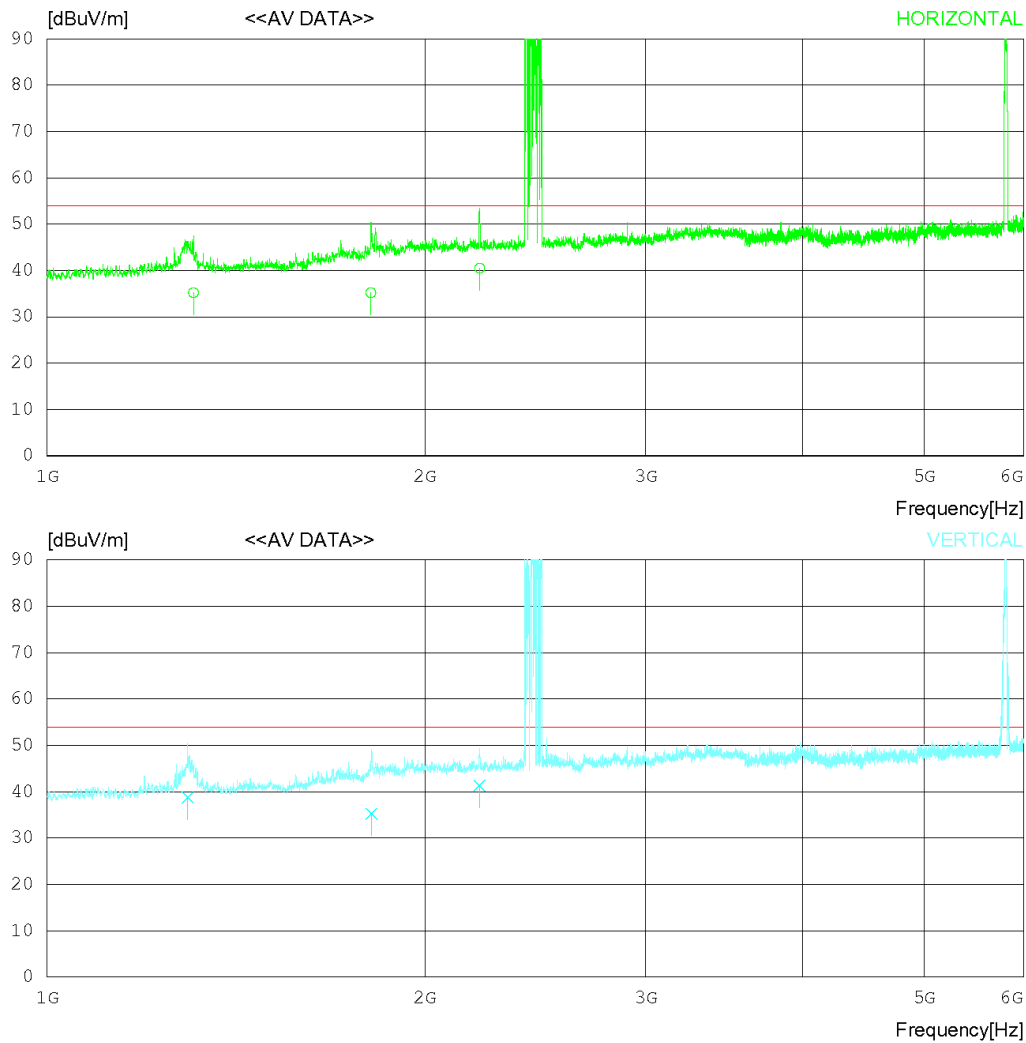
RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 24 'C 51 % 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.
(5,725 ~ 5,815) MHz are WIFI 5.8 G frequency.

RADIATED EMISSION

Date 2020-09-10

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 24 °C 51 % 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	1308.547	36.70	29.18	5.18	35.86	35.20	54.00	18.80	112	225
2	1811.681	33.10	30.39	7.04	35.31	35.22	54.00	18.78	198	25
3	2211.723	36.90	31.85	6.89	35.12	40.52	54.00	13.48	297	48
----- Vertical -----										
4	1294.332	40.20	29.31	5.12	35.88	38.75	54.00	15.25	178	55
5	1813.616	33.10	30.42	7.04	35.31	35.25	54.00	18.75	397	205
6	2211.067	37.70	31.86	6.89	35.12	41.33	54.00	12.67	204	336

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)	-

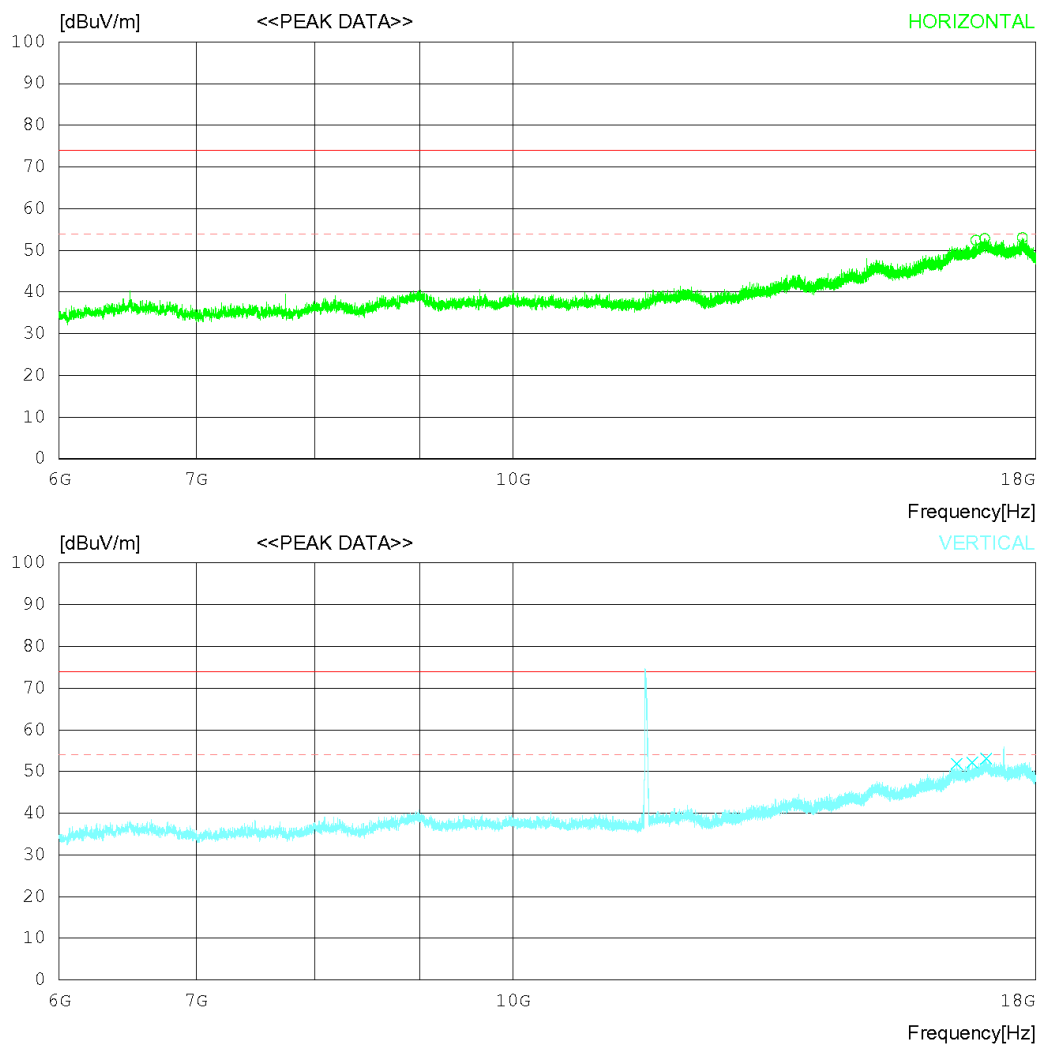
RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 : (11,450 ~ 11,630) MHz are WIFI 5.8 G harmonics of fundamental.

RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22°C 52 % 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	16832.250	29.00	37.36	22.39	36.30	52.45	74.0	21.55	255	0
2	17001.000	27.90	37.55	23.81	36.40	52.86	74.0	21.14	109	348
3	17736.750	29.60	38.12	22.70	37.38	53.04	74.0	20.96	134	0
----- Vertical -----										
4	16469.250	29.10	36.95	21.90	36.12	51.83	74.0	22.17	207	180
5	16765.500	29.10	37.29	22.04	36.26	52.17	74.0	21.83	142	48
6	17027.250	28.30	37.57	23.60	36.43	53.04	74.0	20.96	206	0

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)	-

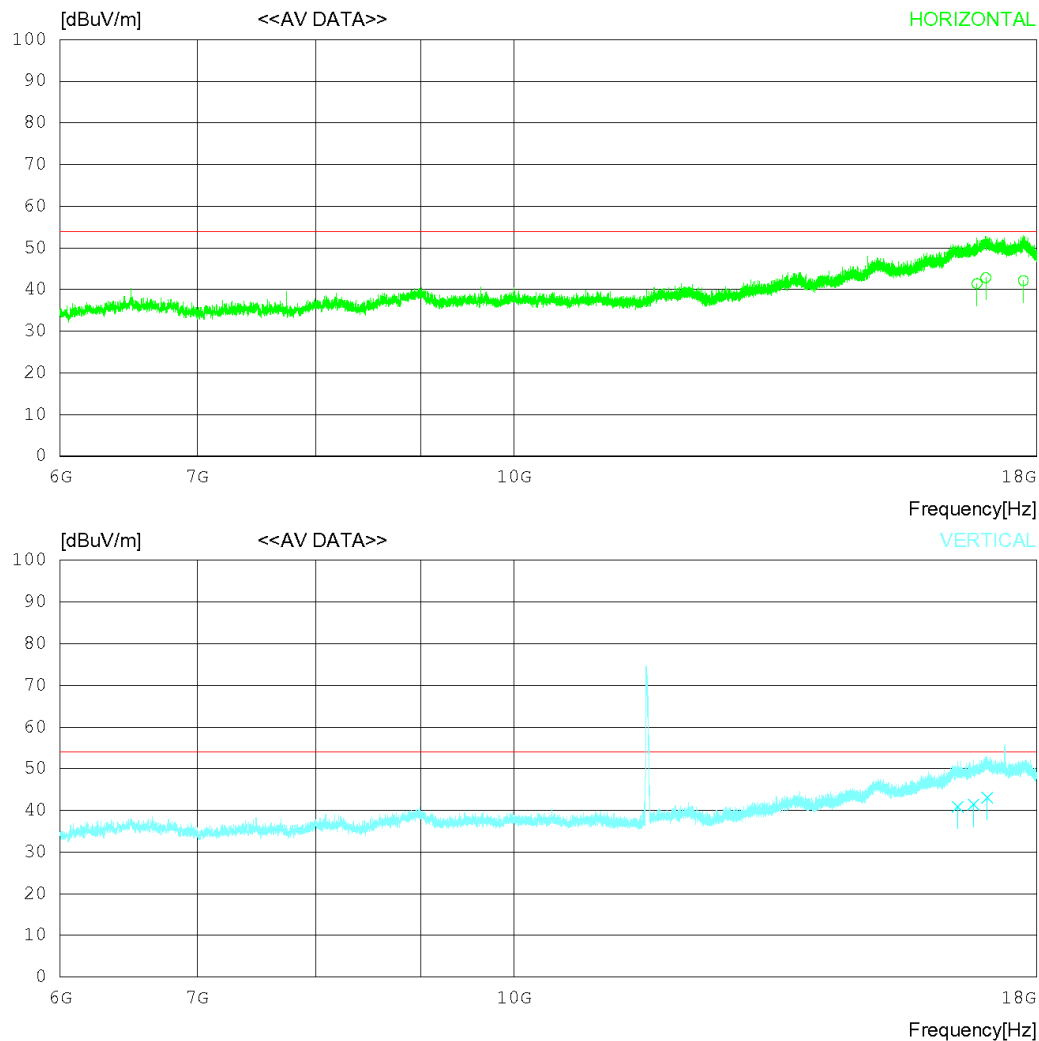
RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 : (11,450 ~ 11,630) MHz are WIFI 5.8 G harmonics of fundamental.

★

RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 22'C 52 % 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	16833.030	18.00	37.36	22.39	36.30	41.45	54.00	12.55	196	35
2	17002.150	17.90	37.55	23.79	36.40	42.84	54.00	11.16	102	305
3	17737.930	18.70	38.12	22.71	37.38	42.15	54.00	11.85	208	56
----- Vertical -----										
4	16468.160	18.10	36.95	21.90	36.12	40.83	54.00	13.17	111	120
5	16766.590	18.30	37.29	22.05	36.26	41.38	54.00	12.62	204	103
6	17026.180	18.30	37.57	23.60	36.43	43.04	54.00	10.96	105	54

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)	-

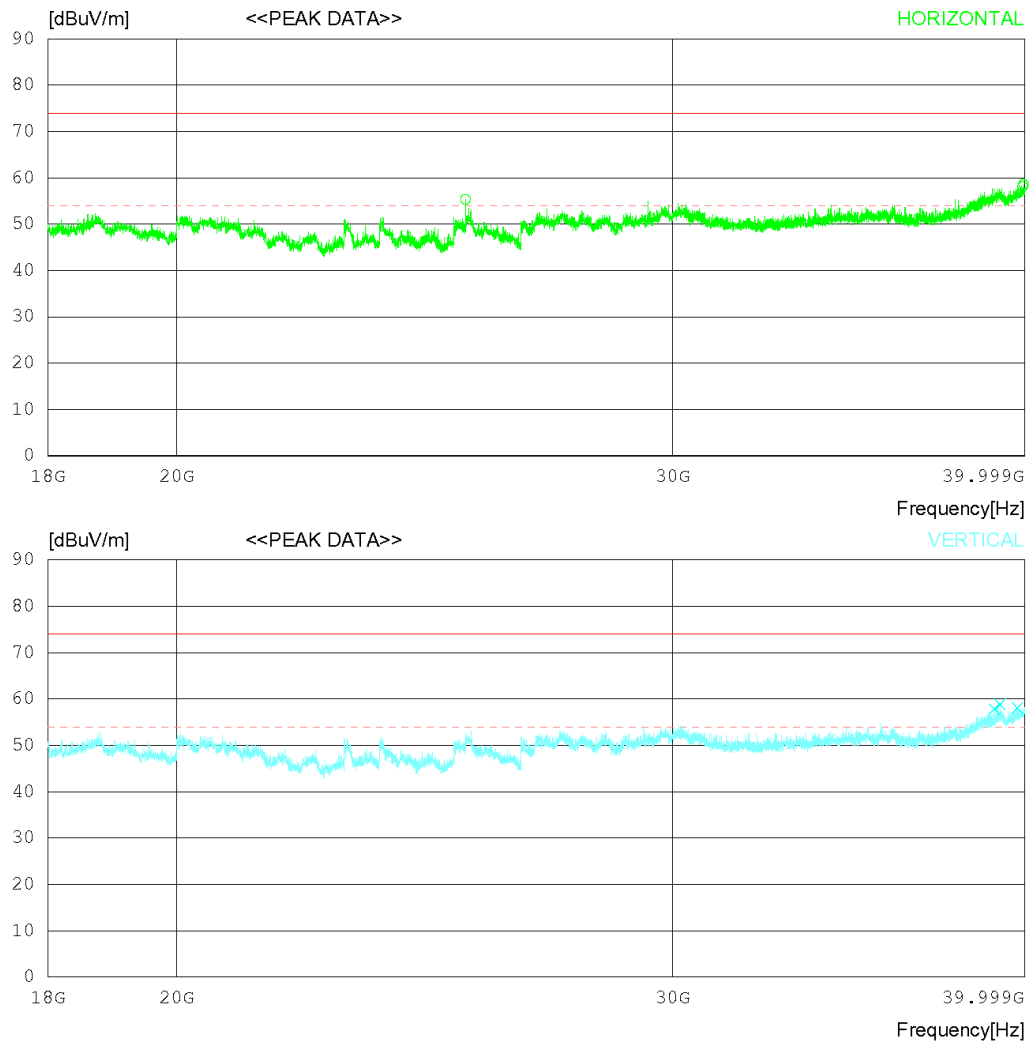
RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22°C 52 % 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	25323.250	41.90	45.70	21.46	53.70	55.36	74.0	18.64	222	0
2	39941.750	36.20	49.18	24.97	52.20	58.15	74.0	15.85	194	0
3	39969.750	36.70	49.24	24.93	52.20	58.67	74.0	15.33	211	344
----- Vertical -----										
4	39029.250	36.40	47.63	26.05	52.25	57.83	74.0	16.17	291	358
5	39199.750	37.30	47.90	25.84	52.24	58.80	74.0	15.2	349	352
6	39758.000	36.30	48.82	25.19	52.21	58.10	74.0	15.9	102	358

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)	-

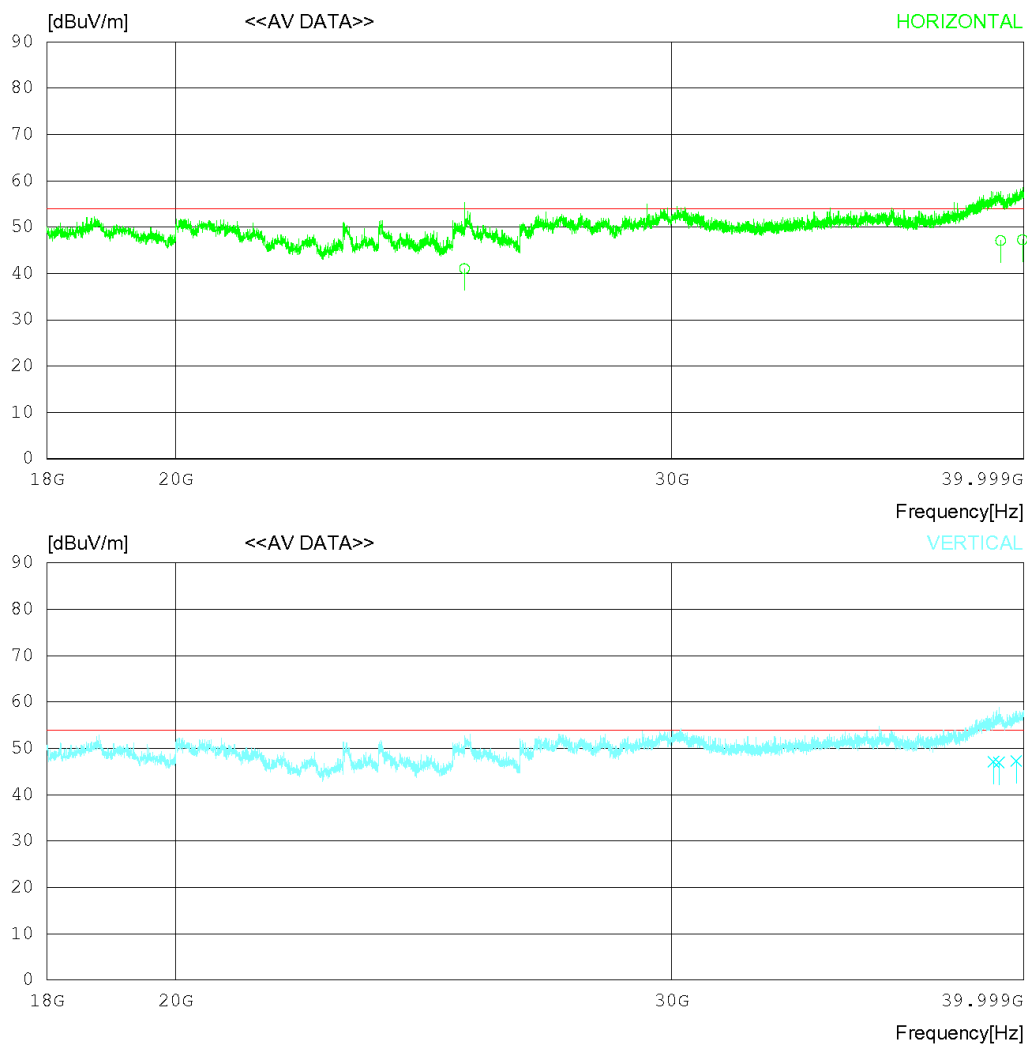
RADIATED EMISSION

Date 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12 V
Temp/Humi 22 'C 52 % 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 2020-09-14

Order No. DTNC2007-06273
Power Supply DC 12V
Temp/Humi 22'C 52 % R.H.
Test Condition USB

Memo

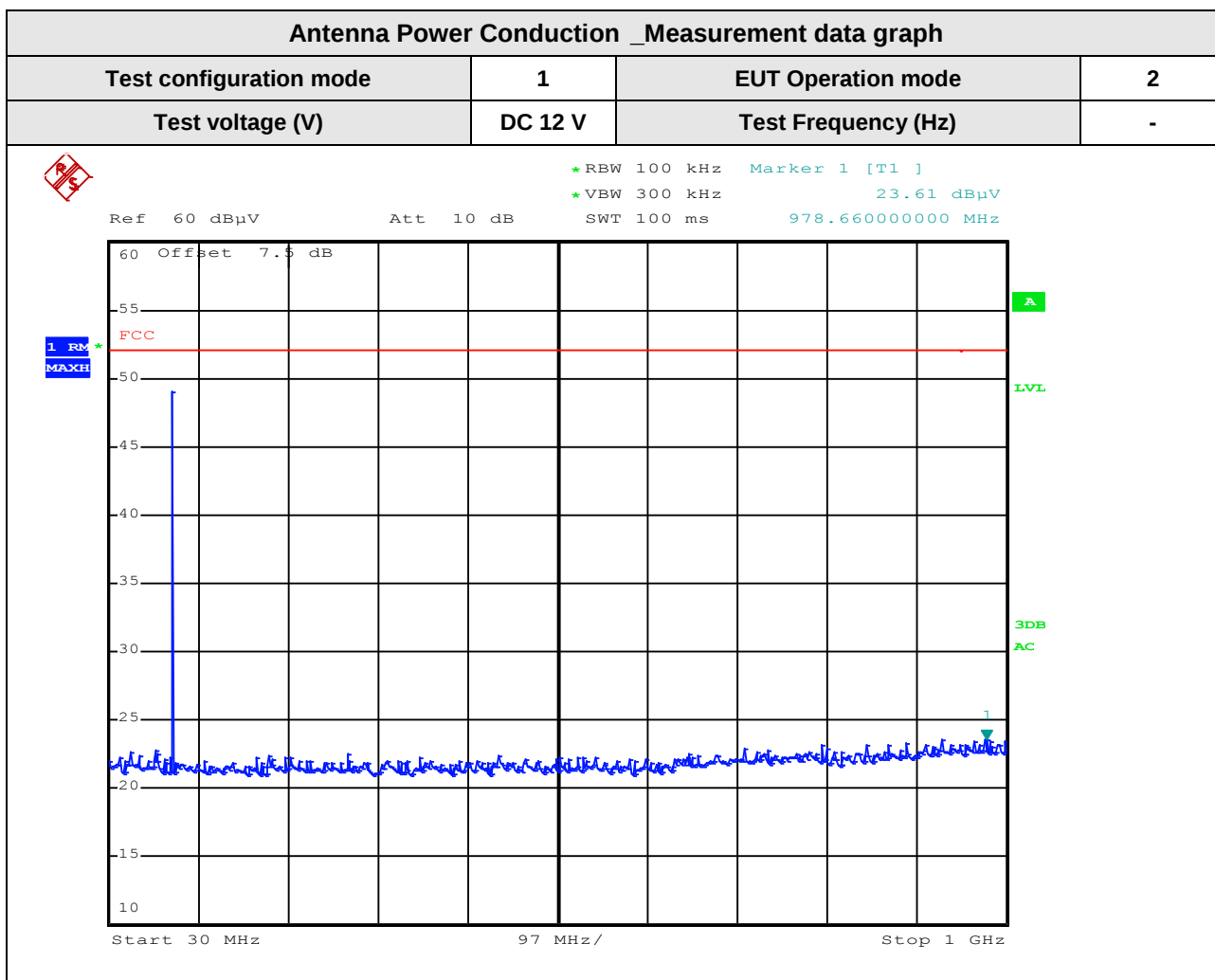
LIMIT : FCC Part15 Subpart.B Class B (3m) - GHz(Average)
FCC Part15 Subpart.B Class B (3m) - GHz(Average)

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	25323.200	27.60	45.70	21.46	53.70	41.06	54.00	12.94	235	33
2	39257.860	25.60	47.96	25.78	52.24	47.10	54.00	6.90	335	102
3	39969.630	25.30	49.24	24.93	52.20	47.27	54.00	6.73	107	105
----- Vertical -----										
4	39029.360	25.70	47.63	26.05	52.25	47.13	54.00	6.87	254	345
5	39199.340	25.40	47.90	25.84	52.24	46.90	54.00	7.10	199	302
6	39758.650	25.50	48.82	25.19	52.21	47.30	54.00	6.70	302	254

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	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 TECHNOLOGIES	16012	2019.12.10	2020.12.10
SPLITTER	ZFRSC-123-S+	MINI CIRCUITS	SF139801142	2020.07.21	2021.07.21
SIGNAL GENERATOR	SMT03	ROHDE & SCHWARZ	100416	2020.06.03	2021.06.03
REGULATED DC POWER SUPPLY	SDP 30-5D	SMTECHNO	305DPB 048	2020.02.12	2021.02.12



8. Revision History

Date	Description	Revised By	Reviewed By
Oct. 16. 2020	Initial report	Hun Lee	HyungJun Kim
Oct. 22. 2020	Changed FCC ID) (BP9-MS310AQY → BP9-MS310ANX4)	Hun Lee	HyungJun Kim

-End of test report-