

# 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. : DREFCC2012-0285

2. Client / Applicant

• 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 / MS310ABDMFL

(FCC ID : BP9-MS310ABDMFL)

5. Test Standard : ANSI C63.4:2014

FCC Part 15 Subpart B

(FM Broadcast receiver & digital devices)

6. Date of Test : Nov. 29. 2020 ~ Dec. 01. 2020

7. Location of Test :  Permanent Testing Lab  On Site Testing



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

8. Testing Environment : Temperature (20 ~ 22) °C , Humidity (45 ~ 47) % 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.

This laboratory is not accredited for the test results marked. " \* "

Affirmation	Tested by	Reviewed by
	Name : Hun Lee 	Name : HyungJun Kim 

**Dec. 30. 2020.**

**DT&C Co., Ltd.**

KS Q ISO / IEC 17025 and KOLAS accreditation.

If this report is required to confirmation of authenticity, please contact to [report@dtnc.net](mailto:report@dtnc.net)

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## 1. General Remarks

This report contains the result of tests performed by :

### DT&C Co., Ltd.

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

<http://www.dtnc.net>

Tel: +82-31-321-2664 Fax: +82-31-321-1664

## 2. Test Laboratory

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

Certificate	Nation	Agency	Code	Remark
Accreditation	Korea	KOLAS	393	ISO/IEC 17025
	South Africa	SABS	0006	ISO/IEC 17025
	Ghana	NCA	NCA agreement 23 <sup>rd</sup> , Oct, 2018	-
Site Filing	USA	FCC	KR0034 101842 678747, 596748, 804488, 165783	Accredited  2.948 Listed
	Canada	IC	5740A-3 5740A-4	Registered
	Japan	VCCI	C-1427, R-3385, R-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, Hwangsaedul-ro 258beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
Manufacturer	MOTREX CO., LTD. Seoyoung Bldg., 25, Hwangsaedul-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	MS310ABDmFL
Add Model Name	None
Add Model Difference	None
Software Version	BDFL.GEN.0000.B06.K.P21.201020
Hardware Version	Rev 0.1
Maximum Internal Frequency	1 000 MHz
FCC ID	BP9-MS310ABDMFL
Rated Power	DC 12 V
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. (WIFI2.4G)
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. (WIFI5G) The EUT is wirelessly connected to the phone and continuously sends and receives data. (Bluetooth)
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. (WIFI5.8G) The EUT is wirelessly connected to the GPS SIGNAL GENERATOR and continuously receives data. (GPS)

### 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 MULT MEDIABOX. MULT MEDIABOX is connected to USB memory. EUT is wirelessly connected to the router. The EUT is wirelessly connected to the phone. EUT is wirelessly connected to the GPS SIGNAL GENERATOR.

#### 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	TCN	NEXT-7004N	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

\*Abbreviations:  
 AC = AC Power Port                      DC = DC Power Port                      N/E = Non-Electrical  
 I/O = Signal Input or Output Port      GND = Ground                                  PC = Patient-Coupling  
 TP = Telecommunication Ports

#### 4.6 Test Voltage and Frequency

Case	Voltage (V)	Frequency (DC/AC-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 [dB $\mu$ V]	Detector	Limit [dB $\mu$ V]	Margin [dB]
-	-	-	-	-	-

-Radiated Disturbance

Frequency [MHz]	Pol.	Result [dB $\mu$ V/m]	Detector	Limit [dB $\mu$ V/m]	Margin [dB]
39947.86	V	47.36	CAV	54.00	6.64

-Antenna Power Conduction

Frequency [MHz]	Result [dB $\mu$ V/m]	Detector	Limit [dB $\mu$ V/m]	Margin [dB]
955.38	24.04	RMS	51.70	27.66

## 6. Test Environment

Test Items	Test date (YYYY-MM-DD)	Temp. (°C)	Humidity (% R.H.)	Pressure (kPa)
Radiated Disturbance	2020-11-29	20	45	-
	2020-11-30	22	45	
Antenna Power Conduction	2020-12-01	22	47	100.8

## 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.			<b>Not Applicable</b>
Fully configured sample scanned over the following frequency range	Frequency range on each side of line	Measurement Point	
	150 kHz to 30 MHz	Mains	
EUT mode (Refer to clauses 4)	Test configuration mode	N/A	
	EUT Operation mode	N/A	
	Power Interface mode	N/A	
Limits – Class A			
Frequency (MHz)	Limit dB $\mu$ V		
	Quasi-Peak	Average	
0.15 to 0.50	79	66	
0.50 to 30	73	60	
Limits – Class B			
Frequency (MHz)	Limit dB $\mu$ V		
	Quasi-Peak	Average	
0.15 to 0.50	66 to 56	56 to 46	
0.50 to 5	56	46	
5 to 30	60	50	

Measurement 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(dB $\mu$ V) : Reading Value(dB $\mu$ V) + C.FACTOR(dB)
Margin(dB) : Limit(dB $\mu$ V) - Result(dB $\mu$ V)



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

## 7.2 Radiated Disturbance

ANSI C63.4	Radiated disturbance 30 MHz –40 GHz**			Result
Method: Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10 or 3 meter below 1GHz and 3 meter above 1GHz. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable. For final measurement below 1 GHz frequency range, Quasi-Peak detector with (RBW = 120 kHz Bandwidth) was used. For final measurement above 1 GHz frequency range, Peak detector with (RBW = 1 MHz Bandwidth) and CISPR Average detector with (RBW = 1 MHz Bandwidth) were used.				Comply
EUT mode (Refer to clauses 4)	Test configuration mode		1, 2	
	EUT Operation mode		1, 2, 3	
	Power Interface mode		1	
<b>Radiated Disturbance below 1 000 MHz</b>				
Frequency range (MHz)	Quasi-peak limit dB $\mu$ V/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 dB $\mu$ V/m			
	Class A (10 m distance)		Class B (10 m distance)	
	30 to 230		30	
230 to 1 000		37		
<b>Radiated Disturbance for above 1 000 MHz at a measurement distance of 3 m</b>				
Frequency range (GHz)	Peak limit dB $\mu$ V/m		Average limit dB $\mu$ V/m	
	Class A	Class B	Class A	Class B
	1 to 40	80	74	60
<b>The test frequency range of Radiated Disturbance measurements are listed below.</b>				
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 <sup>th</sup> 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	2020.10.05	2022.10.05
	2708A	HP	18403	2020.10.05	2022.10.05
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	2020.01.02	2021.01.02
HORN ANTENNA	3116C	ETS-LINDGREN	00213177	2019.12.12	2020.12.12
PREAMPLIFIER	JS44-18004000-35-8P	L3 NARDA-MITEQ	2046884	2020.11.05	2021.11.05
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

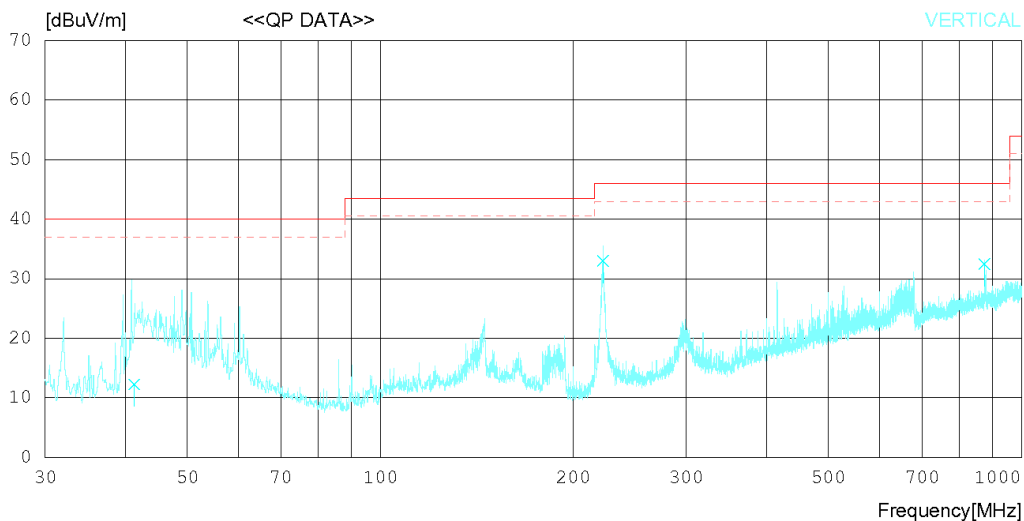
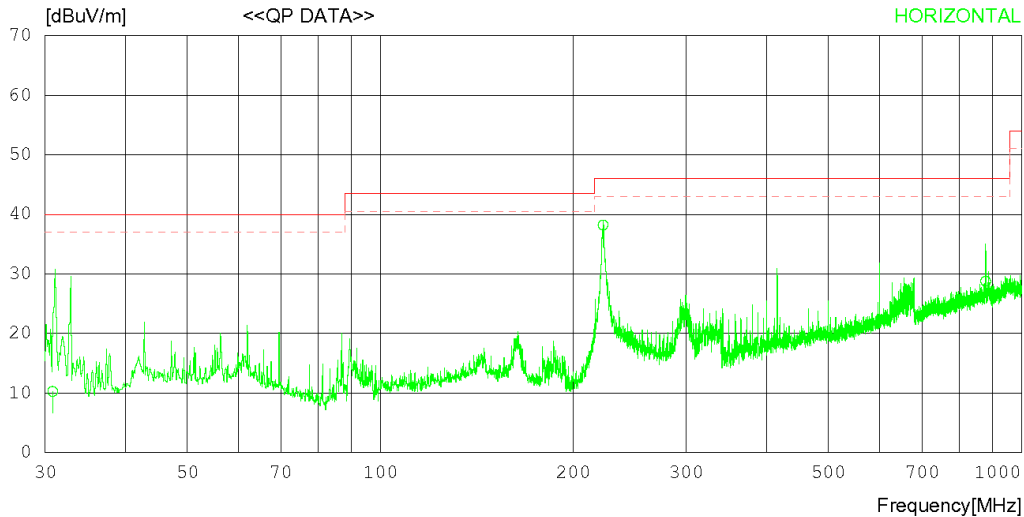
Date 2020-11-29

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 20 °C 45 % R.H.  
 Test Condition AM

Memo

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

- Antenna Factor  
 1. EMC-228\_VULB9160\_9160-3339\_with ATT\_18403\_2020.10.05  
 Cable Loss  
 1. #24\_C1\_ANT to BOTTOM\_3m\_창의\_9K-1G\_2020.04.10  
 2. #25\_C2\_Amp to BOTTOM\_3m\_창의\_9K-1G\_2020.04.10  
 3. #26\_C3\_Amp to Receiver\_3m\_창의\_9K-1G\_2020.02.21  
 Pre Amp Gain  
 1. EMC-110\_AMP\_MLA-100K01-B01-26\_1252741\_2020.02.13



## RADIATED EMISSION

Date 2020-11-29

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 20°C 45% R.H.  
 Test Condition AM

Memo

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

Antenna Factor  
 1. EMC-228\_VULB9160\_9160-3339\_with ATT\_18403\_2020.10.05  
 Cable Loss  
 1. #24\_C1\_ANT to BOTTOM\_3m\_창의\_9K-1G\_2020.04.10  
 2. #25\_C2\_Amp to BOTTOM\_3m\_창의\_9K-1G\_2020.04.10  
 3. #26\_C3\_Amp to Receiver\_3m\_창의\_9K-1G\_2020.02.21  
 Pre Amp Gain  
 1. EMC-110\_AMP\_MLA-100K01-B01-26\_1252741\_2020.02.13

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	30.839	21.00	15.15	0.63	26.52	10.26	40.00	29.74	210	59
2	222.516	46.50	16.70	1.61	26.62	38.19	46.00	7.81	107	341
3	879.498	22.30	29.29	3.61	26.44	28.76	46.00	17.24	103	54
----- VERTICAL -----										
4	41.272	21.50	16.65	0.67	26.58	12.24	40.00	27.76	388	77
5	222.419	41.30	16.69	1.61	26.62	32.98	46.00	13.02	105	230
6	874.471	26.10	29.22	3.60	26.42	32.50	46.00	13.50	102	307

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 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor

1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326

Cable Loss

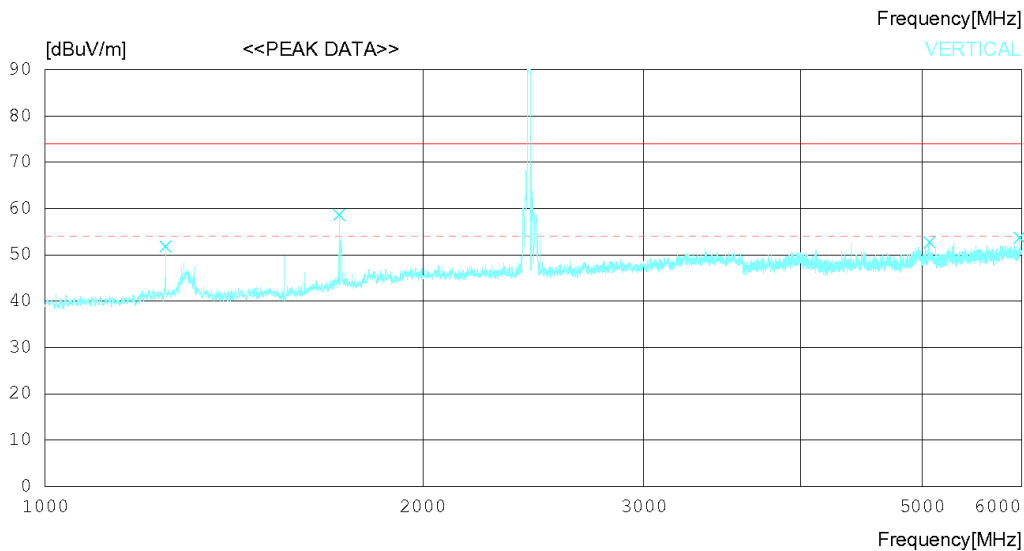
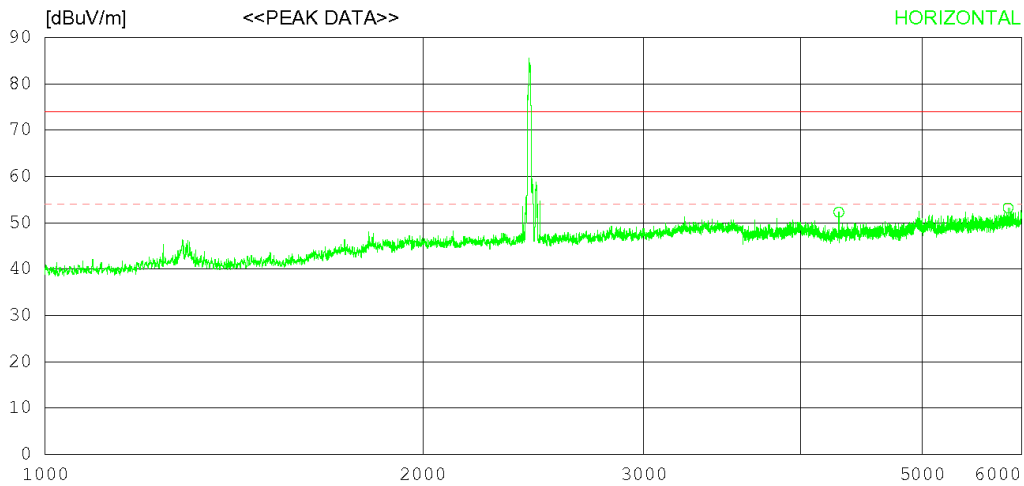
1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04

2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04

3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04

Pre Amp Gain

1. AMP\_8449B\_3008A00887\_2020.08.31



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

## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

- 1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326
- Cable Loss
- 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04
- 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04
- 3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04
- Pre Amp Gain
- 1. AMP\_8449B\_3008A00887\_2020.08.31

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	4291.250	44.40	33.57	9.18	34.82	52.33	74.0	21.67	306	358
2	5855.000	42.30	34.81	11.29	35.19	53.21	74.0	20.79	369	169
----- VERTICAL -----										
3	1247.500	53.40	29.37	4.95	35.93	51.79	74.0	22.21	104	0
4	1715.625	57.30	29.67	7.05	35.41	58.61	74.0	15.39	185	359
5	5068.750	43.40	34.04	10.38	35.11	52.71	74.0	21.29	207	305
6	5976.875	42.10	35.05	11.76	35.20	53.71	74.0	20.29	200	117

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 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor

1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326

Cable Loss

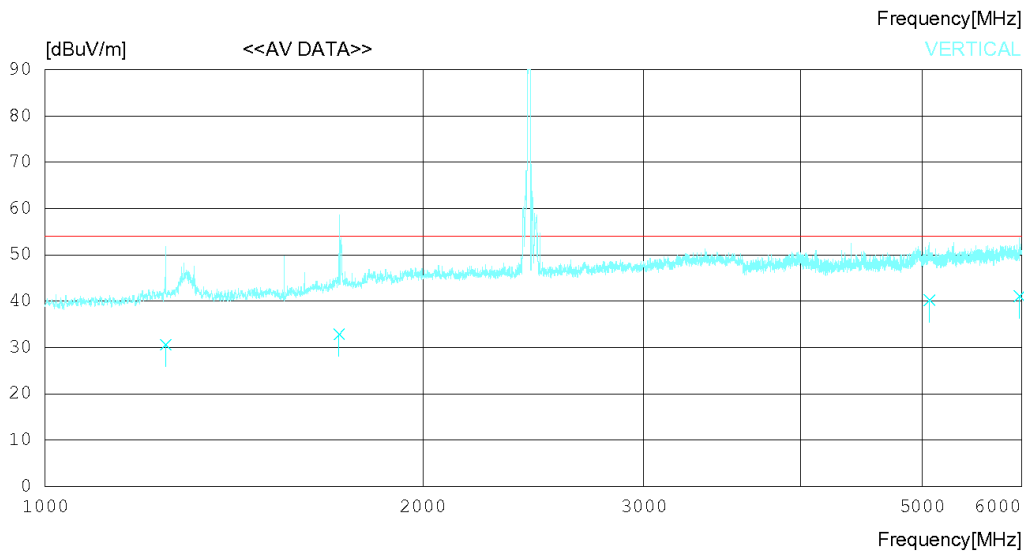
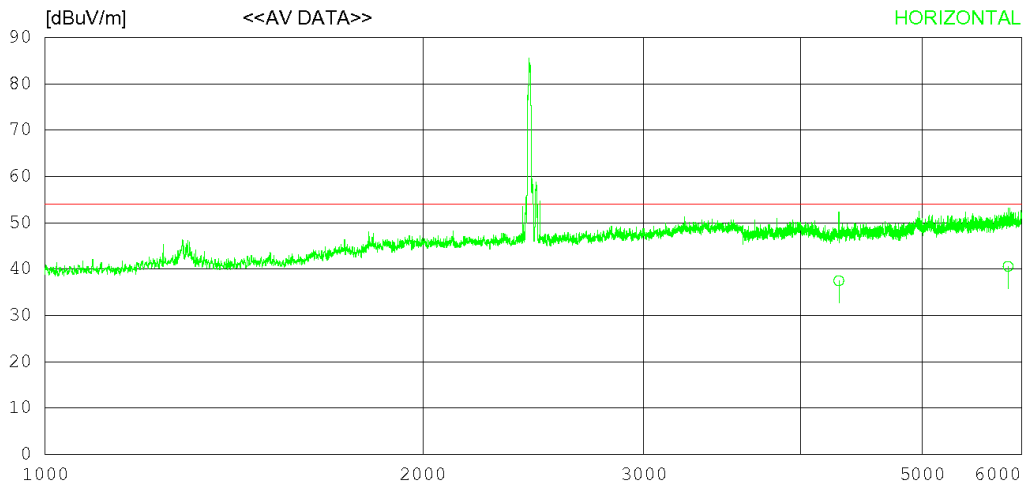
1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04

2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04

3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04

Pre Amp Gain

1. AMP\_8449B\_3008A00887\_2020.08.31



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



## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

- 1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326
- Cable Loss
- 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04
- 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04
- 3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04
- Pre Amp Gain
- 1. AMP\_8449B\_3008A00887\_2020.08.31

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	4290.924	29.60	33.56	9.18	34.82	37.52	54.00	16.48	104	297
2	5854.765	29.70	34.81	11.29	35.19	40.61	54.00	13.39	204	202
----- VERTICAL -----										
3	1247.257	32.20	29.36	4.95	35.93	30.58	54.00	23.42	305	58
4	1715.314	31.50	29.67	7.05	35.41	32.81	54.00	21.19	204	312
5	5069.085	30.90	34.04	10.38	35.11	40.21	54.00	13.79	398	124
6	5977.246	29.40	35.05	11.78	35.20	41.03	54.00	12.97	178	185

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

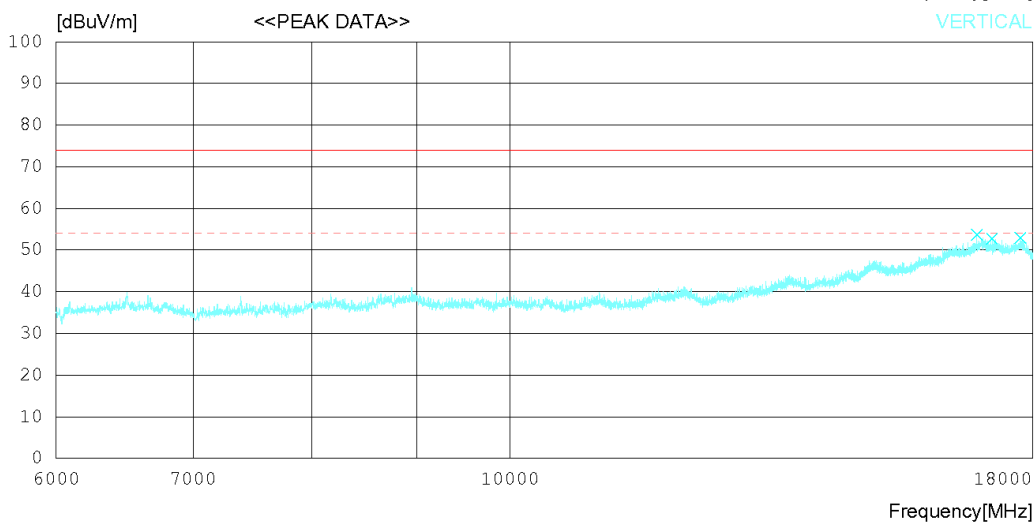
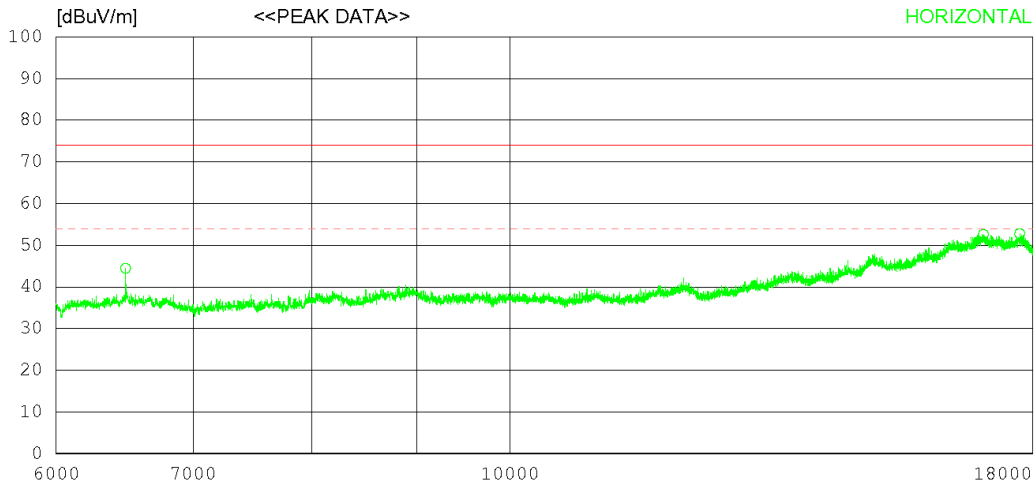
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor  
 1. ANT\_EM-6969\_2019.01.17  
 Cable Loss  
 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04  
 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04  
 Pre Amp Gain  
 1. AMP\_MLA-0618-B03-34\_2019.12.31



## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

1. ANT\_EM-6969\_2019.01.17

Cable Loss

1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04

2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04

Pre Amp Gain

1. AMP\_MLA-0618-B03-34\_2019.12.31

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	6489.000	40.30	31.59	11.38	38.81	44.46	74.0	29.54	224	7
2	17031.000	27.90	37.57	23.56	36.44	52.59	74.0	21.41	305	183
3	17745.000	29.30	38.12	22.72	37.39	52.75	74.0	21.25	287	128
----- VERTICAL -----										
4	16908.000	29.50	37.45	23.03	36.34	53.64	74.0	20.36	150	0
5	17197.500	29.50	37.70	22.24	36.64	52.80	74.0	21.2	187	358
6	17751.000	29.50	38.13	22.73	37.40	52.96	74.0	21.04	299	248

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

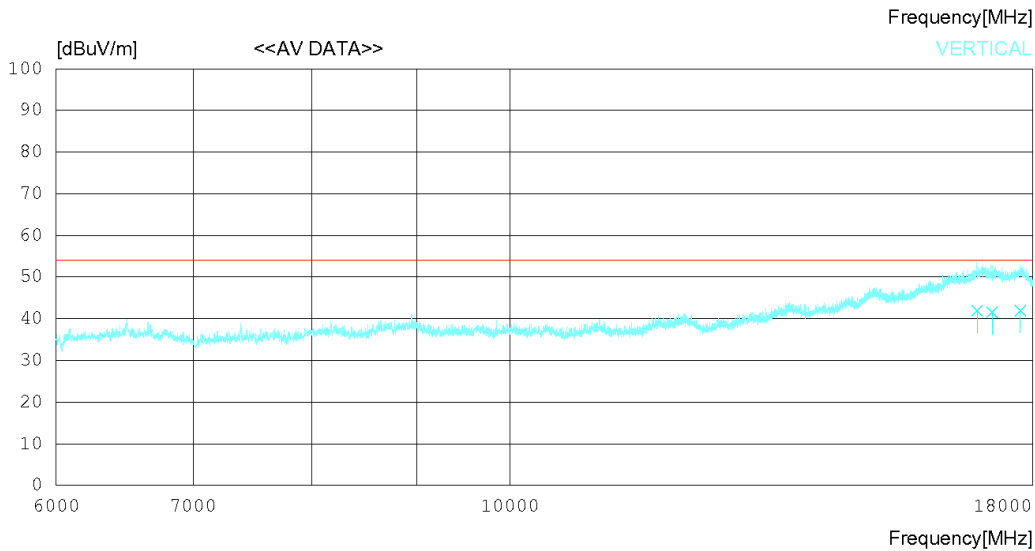
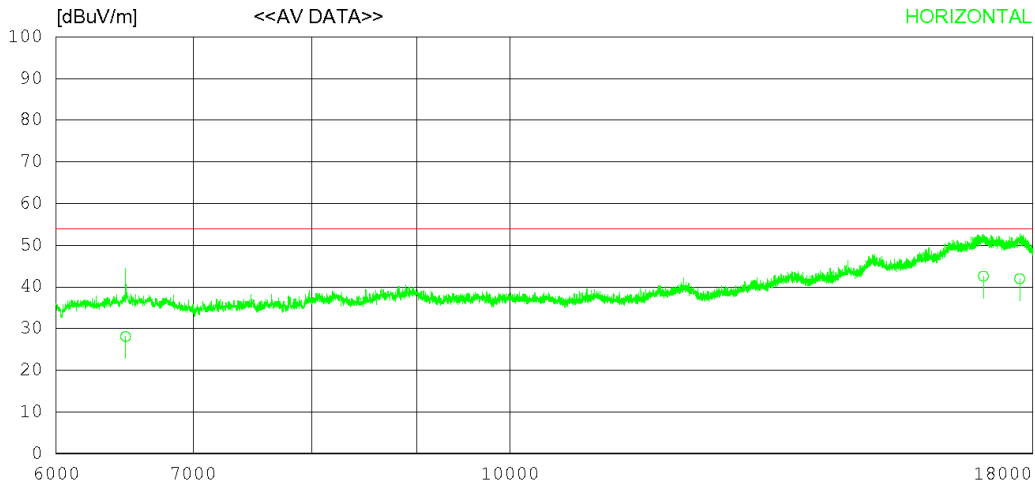
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor  
 1. ANT\_EM-6969\_2019.01.17  
 Cable Loss  
 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04  
 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04  
 Pre Amp Gain  
 1. AMP\_MLA-0618-B03-34\_2019.12.31



## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

- 1. ANT\_EM-6969\_2019.01.17
- Cable Loss
- 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04
- 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04
- Pre Amp Gain
- 1. AMP\_MLA-0618-B03-34\_2019.12.31

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	6489.115	23.90	31.59	11.39	38.81	28.07	54.00	25.93	197	53
2	17031.180	17.90	37.57	23.56	36.44	42.59	54.00	11.41	205	213
3	17745.230	18.50	38.12	22.72	37.39	41.95	54.00	12.05	204	247
----- VERTICAL -----										
4	16908.350	17.80	37.45	23.03	36.35	41.93	54.00	12.07	105	36
5	17197.840	18.20	37.70	22.24	36.64	41.50	54.00	12.50	112	174
6	17750.700	18.50	38.13	22.73	37.40	41.96	54.00	12.04	306	215

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

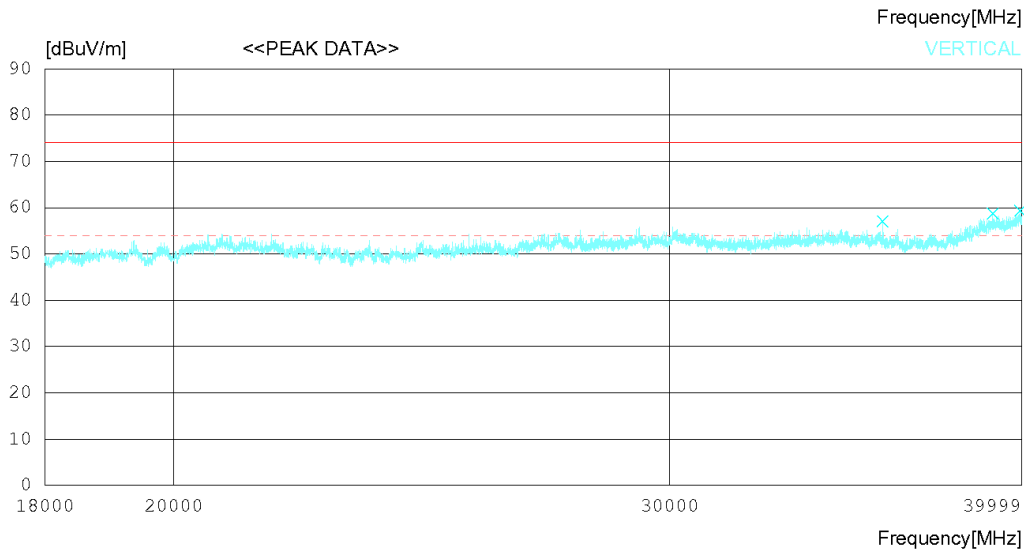
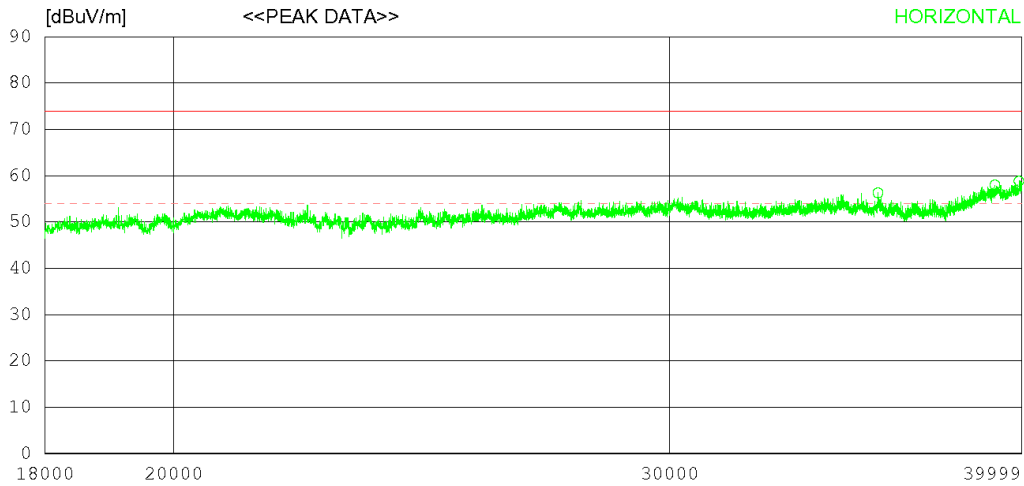
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor  
 1. ANT\_3116C\_00213177\_2019-12-12  
 Cable Loss  
 1. #33\_C2\_Amp to Receiver\_3m\_항의\_18-40G\_2020.08.13  
 2. #32\_C1\_Ant to Amp\_3m\_항의\_18-40G\_2020.08.13  
 Pre Amp Gain  
 1. JS44-18004000-35-8P\_2046884\_2020.11.05



## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22'C 45 % 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)

Antenna Factor

- 1. ANT\_3116C\_00213177\_2019-12-12
- Cable Loss
- 1. #33\_C2\_Amp to Receiver\_3m\_창의\_18-40G\_2020.08.13
- 2. #32\_C1\_Ant to Amp\_3m\_창의\_18-40G\_2020.08.13
- Pre Amp Gain
- 1. JS44-18004000-35-8P\_2046884\_2020.11.05

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	35572.500	39.50	47.00	24.47	54.64	56.33	74.0	17.67	204	125
2	39139.250	36.90	47.78	25.91	52.62	57.97	74.0	16.03	258	0
3	39917.500	37.10	49.14	25.00	52.42	58.82	74.0	15.18	308	201
----- VERTICAL -----										
4	35701.750	40.40	46.90	24.44	54.72	57.02	74.0	16.98	107	185
5	39065.000	37.70	47.67	26.00	52.63	58.74	74.0	15.26	113	358
6	39947.750	37.60	49.20	24.97	52.41	59.36	74.0	14.64	387	358

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

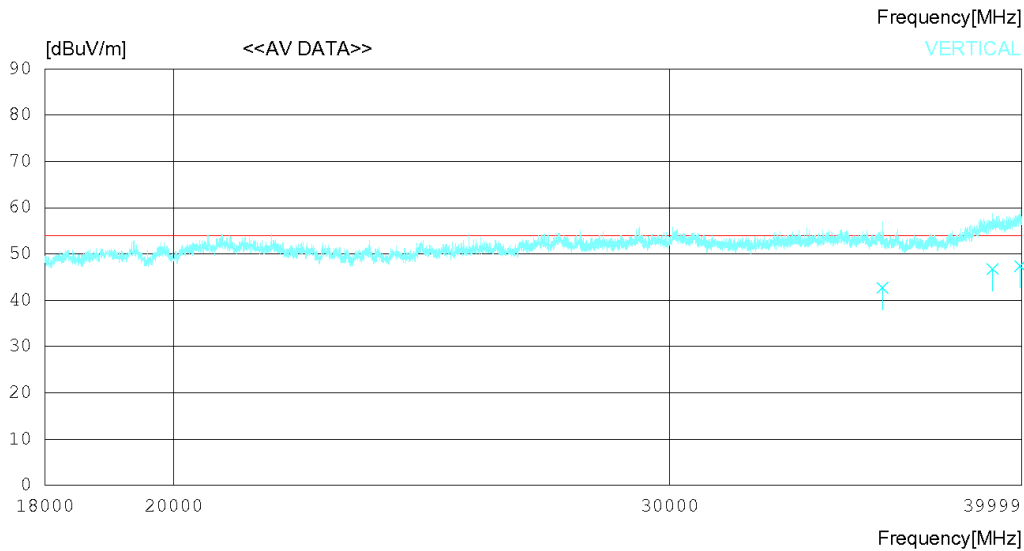
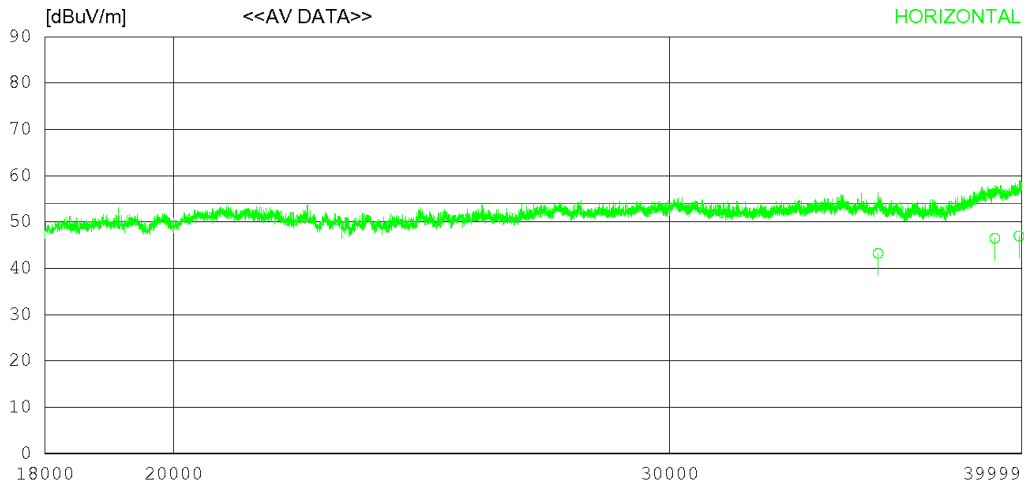
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor  
 1. ANT\_3116C\_00213177\_2019-12-12  
 Cable Loss  
 1. #33\_C2\_Amp to Receiver\_3m\_항의\_18-40G\_2020.08.13  
 2. #32\_C1\_Ant to Amp\_3m\_항의\_18-40G\_2020.08.13  
 Pre Amp Gain  
 1. JS44-18004000-35-8P\_2046884\_2020.11.05





## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

- 1. ANT\_3116C\_00213177\_2019-12-12
- Cable Loss
- 1. #33\_C2\_Amp to Receiver\_3m\_항의\_18-40G\_2020.08.13
- 2. #32\_C1\_Ant to Amp\_3m\_항의\_18-40G\_2020.08.13
- Pre Amp Gain
- 1. JS44-18004000-35-8P\_2046884\_2020.11.05

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	35572.340	26.40	47.00	24.47	54.64	43.23	54.00	10.77	217	135
2	39139.640	25.40	47.78	25.91	52.62	46.47	54.00	7.53	397	55
3	39917.410	25.30	49.13	25.00	52.42	47.01	54.00	6.99	254	137
----- VERTICAL -----										
4	35701.340	26.10	46.90	24.44	54.72	42.72	54.00	11.28	123	302
5	39065.360	25.70	47.67	26.00	52.63	46.74	54.00	7.26	214	267
6	39947.860	25.60	49.20	24.97	52.41	47.36	54.00	6.64	305	314

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

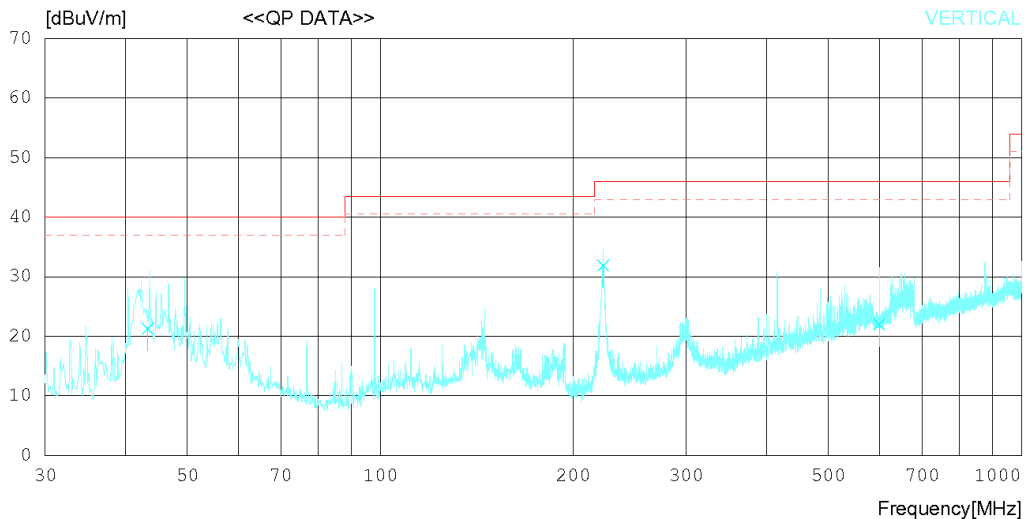
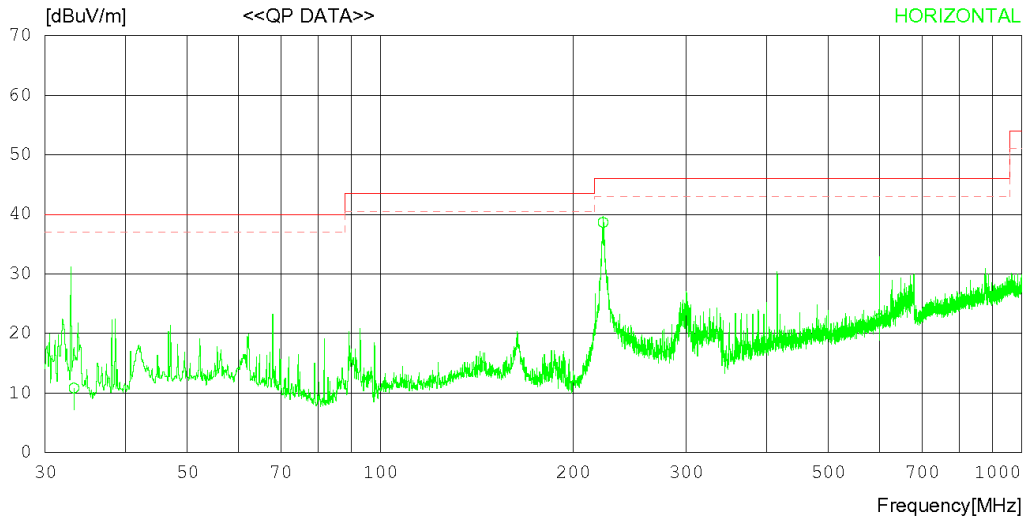
Date 2020-11-29

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 20 °C 45 % R.H.  
 Test Condition FM

Memo

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

- Antenna Factor  
 1. EMC-228\_VULB9160\_9160-3339\_with ATT\_18403\_2020.10.05  
 Cable Loss  
 1. #24\_C1\_ANT to BOTTOM\_3m\_창의\_9K-1G\_2020.04.10  
 2. #25\_C2\_Amp to BOTTOM\_3m\_창의\_9K-1G\_2020.04.10  
 3. #26\_C3\_Amp to Receiver\_3m\_창의\_9K-1G\_2020.02.21  
 Pre Amp Gain  
 1. EMC-110\_AMP\_MLA-100K01-B01-26\_1252741\_2020.02.13



## RADIATED EMISSION

Date 2020-11-29

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 20°C 45% R.H.  
 Test Condition FM

Memo

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

Antenna Factor  
 1. EMC-228\_VULB9160\_9160-3339\_with ATT\_18403\_2020.10.05  
 Cable Loss  
 1. #24\_C1\_ANT to BOTTOM\_3m\_창의\_9K-1G\_2020.04.10  
 2. #25\_C2\_Amp to BOTTOM\_3m\_창의\_9K-1G\_2020.04.10  
 3. #26\_C3\_Amp to Receiver\_3m\_창의\_9K-1G\_2020.02.21  
 Pre Amp Gain  
 1. EMC-110\_AMP\_MLA-100K01-B01-26\_1252741\_2020.02.13

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	33.291	21.80	14.90	0.64	26.54	10.80	40.00	29.20	300	43
2	222.635	46.90	16.72	1.62	26.62	38.62	46.00	7.38	101	58
3	600.225	19.80	26.10	2.88	26.31	22.47	46.00	23.53	102	71
----- VERTICAL -----										
4	43.376	30.20	16.98	0.69	26.59	21.28	40.00	18.72	112	120
5	222.610	40.20	16.71	1.61	26.62	31.90	46.00	14.10	102	312
6	599.617	19.30	26.10	2.88	26.31	21.97	46.00	24.03	107	264

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

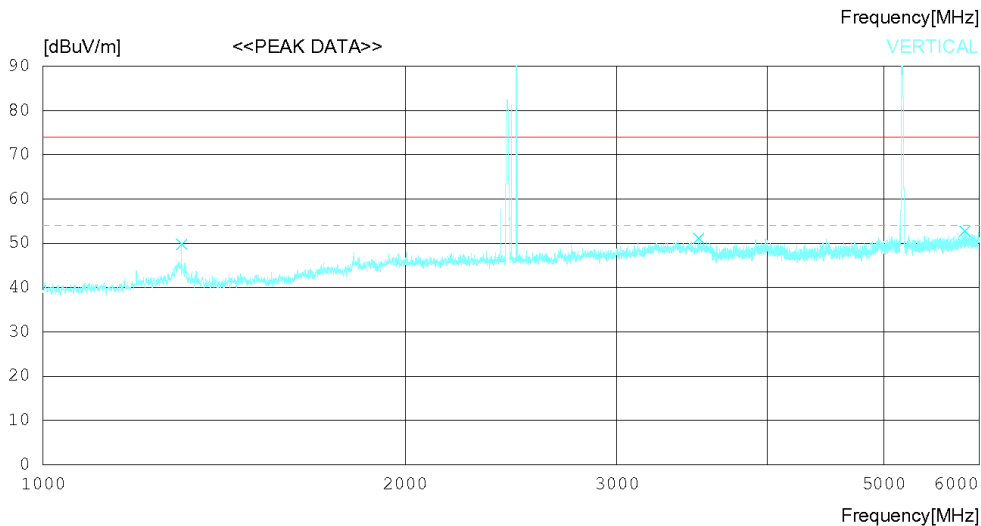
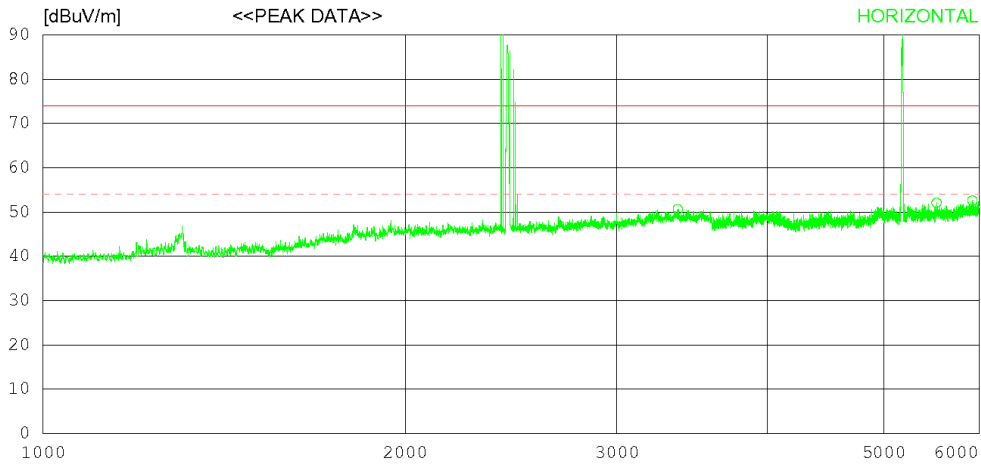
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

- Antenna Factor  
 1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326  
 Cable Loss  
 1. #27\_C1\_Ant to Bottom\_3m\_참의\_1-18G\_2020.03.04  
 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_참의\_1-18G\_2020.03.04  
 3. #29\_C3\_Amp to Receiver\_3m\_참의\_1-18G\_2020.03.04  
 Pre Amp Gain  
 1. AMP\_8449B\_3008A00887\_2020.08.31



\*Remark : (2,402 ~ 2,480) MHz is BT frequency.  
 (5,180 ~ 5,240) MHz is WIFI 5 G frequency.

## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

- 1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326
- Cable Loss
- 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04
- 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04
- 3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04
- Pre Amp Gain
- 1. AMP\_8449B\_3008A00887\_2020.08.31

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	3370.625	43.70	33.40	8.56	35.01	50.65	74.0	23.35	354	266
2	5530.000	41.80	34.60	10.89	35.15	52.14	74.0	21.86	315	0
3	5925.625	41.30	34.95	11.56	35.19	52.62	74.0	21.38	215	50
----- VERTICAL -----										
4	1303.750	51.20	29.25	5.16	35.87	49.74	74.0	24.26	397	358
5	3508.125	44.30	33.40	8.38	34.95	51.13	74.0	22.87	301	358
6	5836.250	41.90	34.80	11.21	35.18	52.73	74.0	21.27	331	292

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

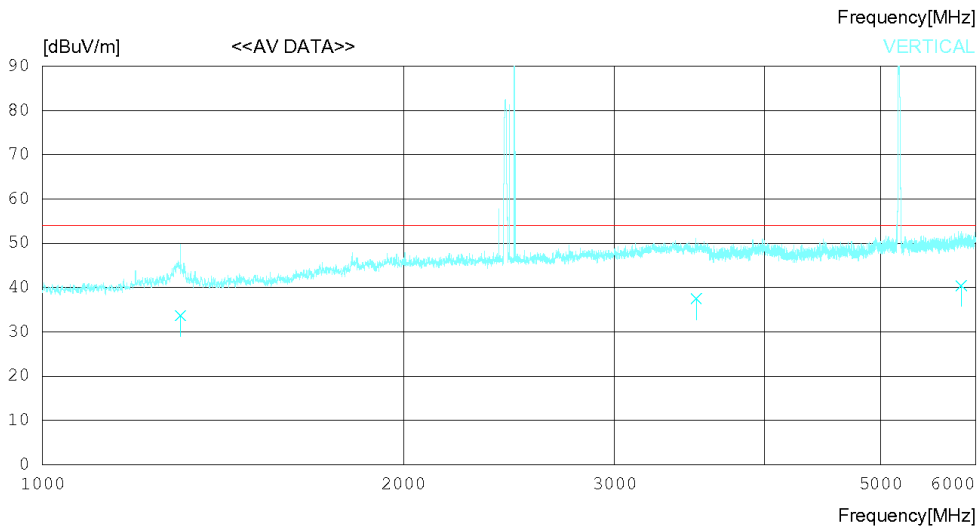
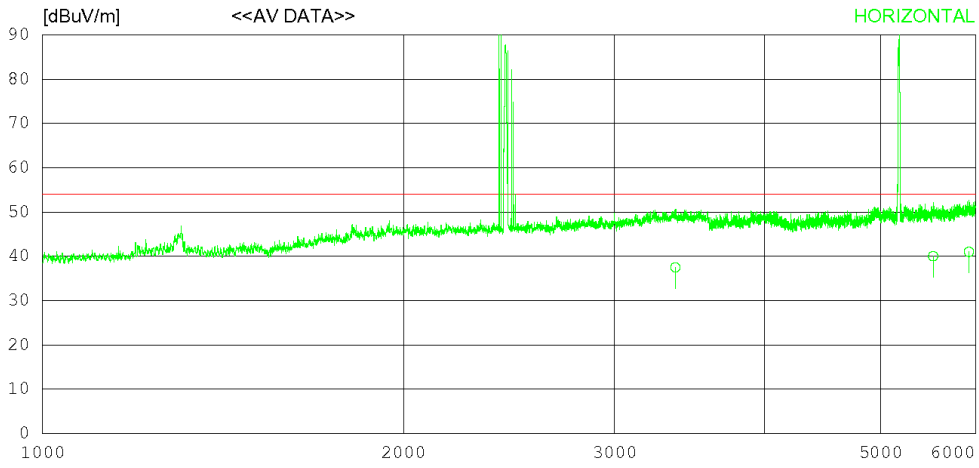
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

- Antenna Factor  
 1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326  
 Cable Loss  
 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04  
 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04  
 3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04  
 Pre Amp Gain  
 1. AMP\_8449B\_3008A00887\_2020.08.31



\*Remark : (2,402 ~ 2,480) MHz is BT frequency.  
 (5,180 ~ 5,240) MHz is WIFI 5 G frequency.

## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326

Cable Loss

1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04

2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04

3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04

Pre Amp Gain

1. AMP\_8449B\_3008A00887\_2020.08.31

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	3370.914	30.60	33.40	8.56	35.01	37.55	54.00	16.45	395	187
2	5530.417	29.70	34.60	10.89	35.15	40.04	54.00	13.96	398	53
3	5925.251	29.70	34.95	11.56	35.19	41.02	54.00	12.98	305	104
----- VERTICAL -----										
4	1303.650	35.10	29.25	5.16	35.87	33.64	54.00	20.36	321	311
5	3508.516	30.60	33.40	8.38	34.95	37.43	54.00	16.57	287	306
6	5836.243	29.60	34.80	11.21	35.18	40.43	54.00	13.57	215	284

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 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 °C 45 % 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)

Antenna Factor

1. ANT\_EM-6969\_2019.01.17

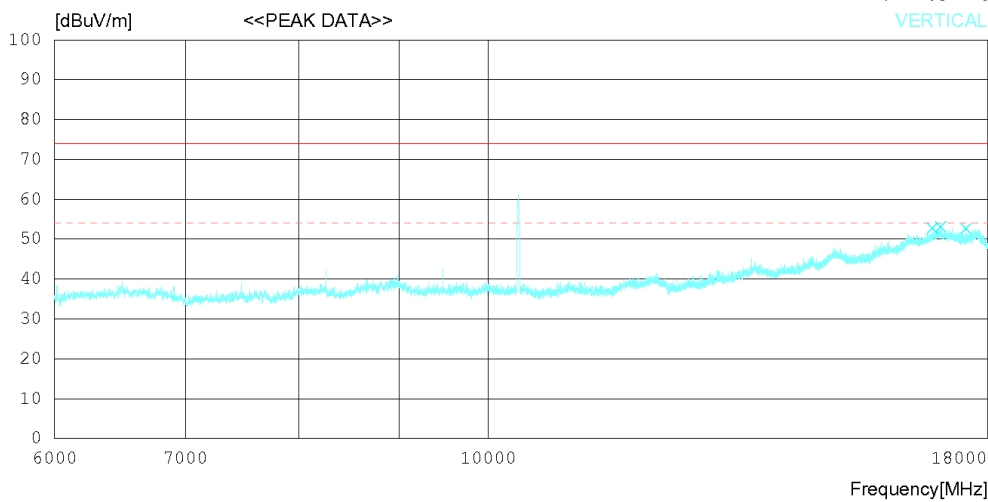
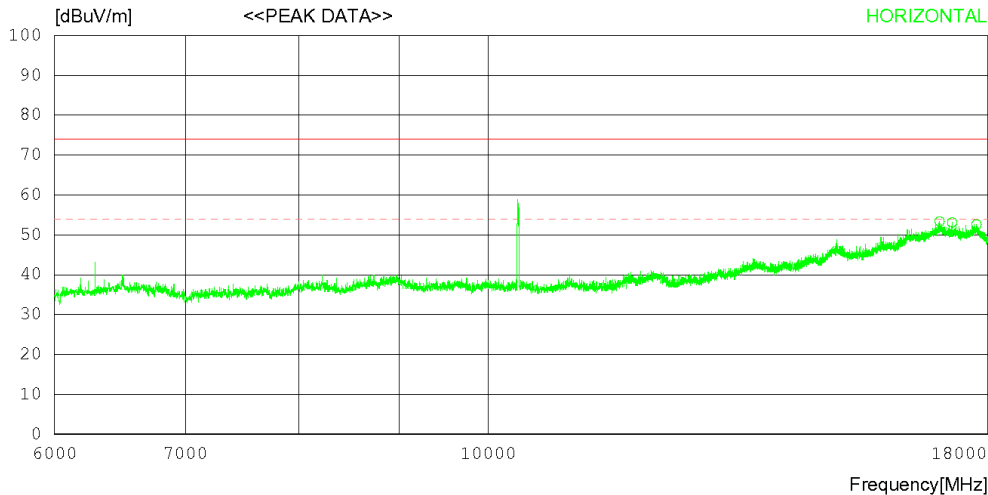
Cable Loss

1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04

2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04

Pre Amp Gain

1. AMP\_MLA-0618-B03-34\_2019.12.31



\*Remark : (10,360 ~ 10,480) MHz is WIFI 5 G harmonics of fundamental.



## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

- 1. ANT\_EM-6969\_2019.01.17
- Cable Loss
- 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04
- 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04
- Pre Amp Gain
- 1. AMP\_MLA-0618-B03-34\_2019.12.31

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	17013.000	28.50	37.56	23.71	36.42	53.35	74.0	20.65	397	55
2	17262.000	29.90	37.75	22.16	36.71	53.10	74.0	20.9	365	0
3	17769.000	29.10	38.14	22.76	37.43	52.57	74.0	21.43	303	358
----- VERTICAL -----										
4	16867.500	29.00	37.40	22.68	36.32	52.76	74.0	21.24	212	21
5	17031.000	28.50	37.57	23.56	36.44	53.19	74.0	20.81	204	138
6	17551.500	29.40	37.97	22.36	37.08	52.65	74.0	21.35	154	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

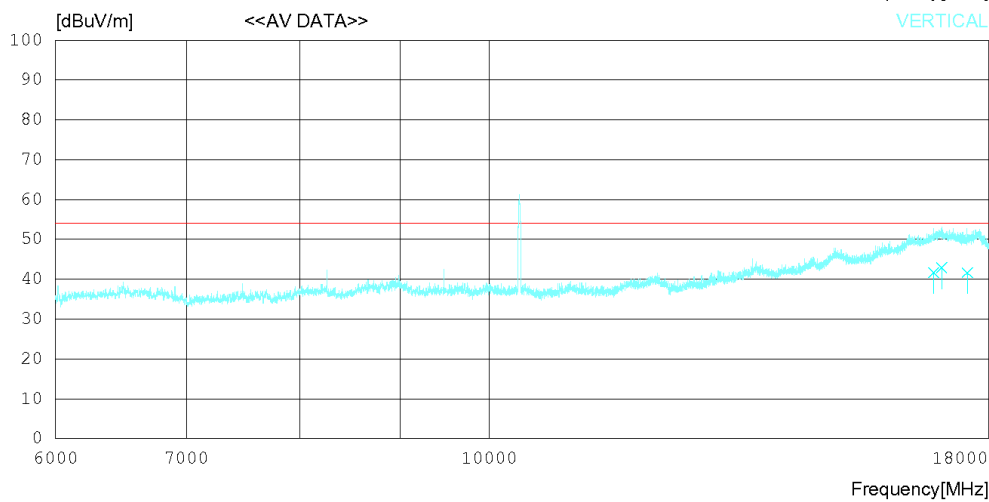
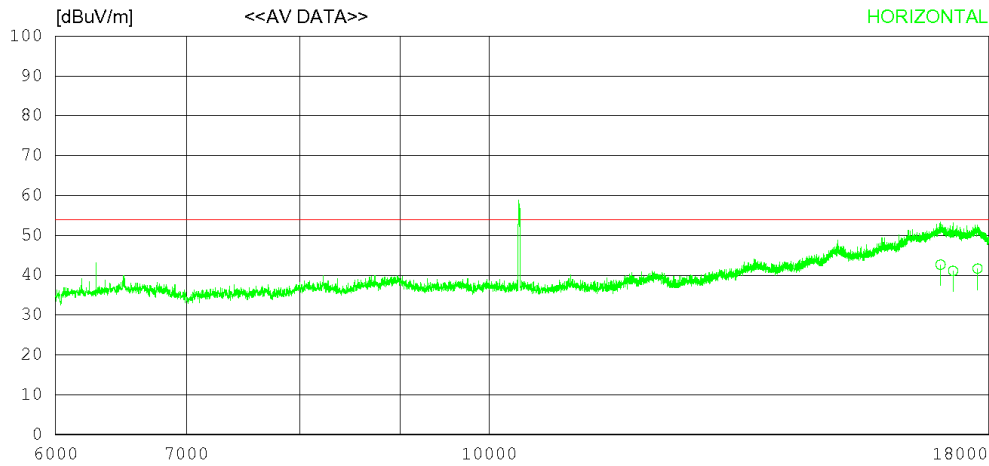
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor  
 1. ANT\_EM-6969\_2019.01.17  
 Cable Loss  
 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04  
 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04  
 Pre Amp Gain  
 1. AMP\_MLA-0618-B03-34\_2019.12.31



\*Remark : (10,360 ~ 10,480) MHz is WIFI 5 G harmonics of fundamental.

## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22'C 45 % 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)

Antenna Factor

1. ANT\_EM-6969\_2019.01.17

Cable Loss

1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04

2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04

Pre Amp Gain

1. AMP\_MLA-0618-B03-34\_2019.12.31

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	17013.640	17.80	37.56	23.70	36.42	42.64	54.00	11.36	167	102
2	17262.370	17.90	37.75	22.16	36.71	41.10	54.00	12.90	398	22
3	17769.380	18.20	38.14	22.76	37.43	41.67	54.00	12.33	264	314
----- VERTICAL -----										
4	16867.310	17.90	37.40	22.68	36.32	41.66	54.00	12.34	397	67
5	17031.650	18.20	37.57	23.56	36.44	42.89	54.00	11.11	196	123
6	17551.790	18.40	37.97	22.36	37.08	41.65	54.00	12.35	289	54

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

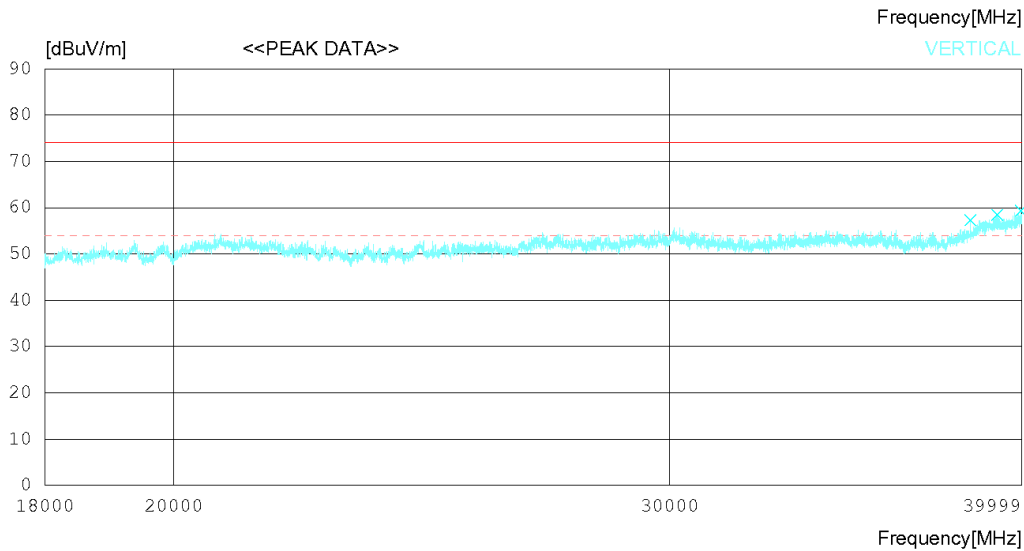
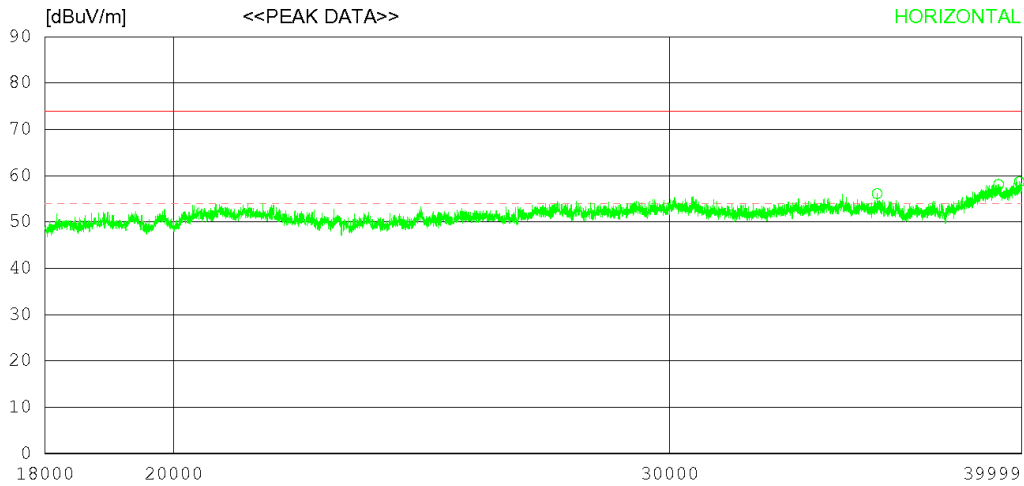
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor  
 1. ANT\_3116C\_00213177\_2019-12-12  
 Cable Loss  
 1. #33\_C2\_Amp to Receiver\_3m\_항의\_18-40G\_2020.08.13  
 2. #32\_C1\_Ant to Amp\_3m\_항의\_18-40G\_2020.08.13  
 Pre Amp Gain  
 1. JS44-18004000-35-8P\_2046884\_2020.11.05



## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

- 1. ANT\_3116C\_00213177\_2019-12-12
- Cable Loss
- 1. #33\_C2\_Amp to Receiver\_3m\_창의\_18-40G\_2020.08.13
- 2. #32\_C1\_Ant to Amp\_3m\_창의\_18-40G\_2020.08.13
- Pre Amp Gain
- 1. JS44-18004000-35-8P\_2046884\_2020.11.05

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	35542.250	39.30	47.00	24.48	54.63	56.15	74.0	17.85	304	0
2	39257.500	37.00	47.96	25.78	52.59	58.15	74.0	15.85	164	9
3	39928.500	37.00	49.16	24.98	52.42	58.72	74.0	15.28	266	55
----- VERTICAL -----										
4	38355.500	38.40	46.60	25.10	52.81	57.29	74.0	16.71	388	357
5	39210.750	37.30	47.91	25.83	52.60	58.44	74.0	15.56	234	358
6	39969.750	37.60	49.24	24.93	52.41	59.36	74.0	14.64	105	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

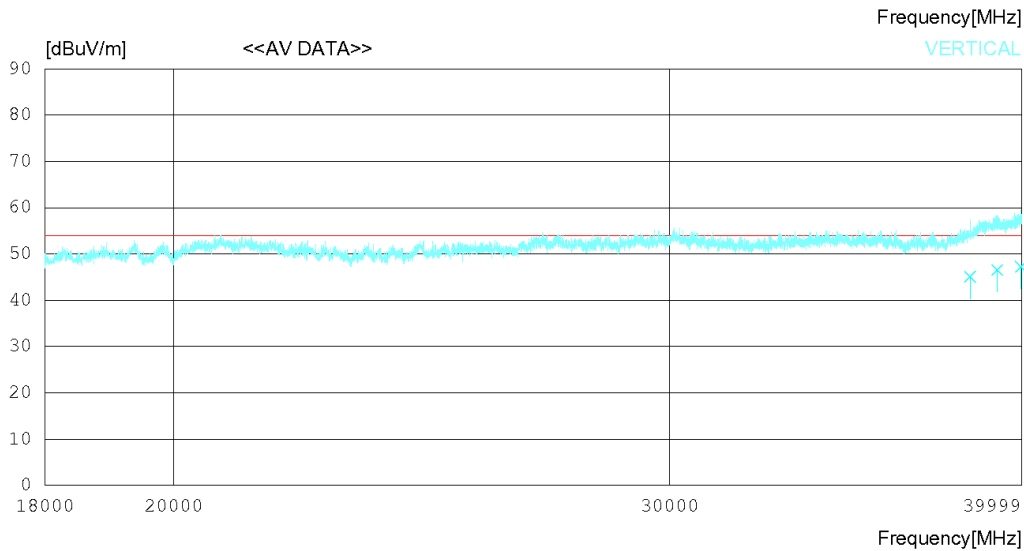
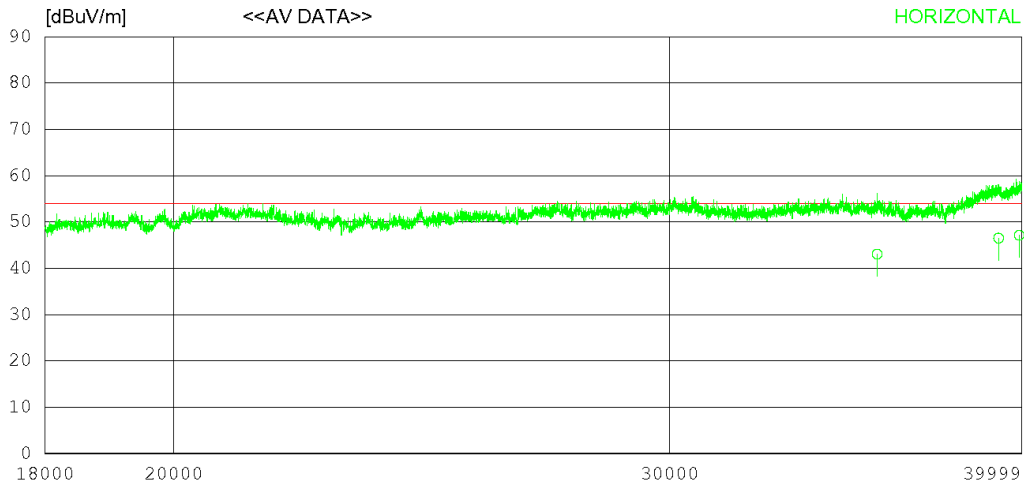
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor  
 1. ANT\_3116C\_00213177\_2019-12-12  
 Cable Loss  
 1. #33\_C2\_Amp to Receiver\_3m\_항의\_18-40G\_2020.08.13  
 2. #32\_C1\_Ant to Amp\_3m\_항의\_18-40G\_2020.08.13  
 Pre Amp Gain  
 1. JS44-18004000-35-8P\_2046884\_2020.11.05



## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

- 1. ANT\_3116C\_00213177\_2019-12-12
- Cable Loss
- 1. #33\_C2\_Amp to Receiver\_3m\_창의\_18-40G\_2020.08.13
- 2. #32\_C1\_Ant to Amp\_3m\_창의\_18-40G\_2020.08.13
- Pre Amp Gain
- 1. JS44-18004000-35-8P\_2046884\_2020.11.05

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	35542.380	26.20	47.00	24.48	54.63	43.05	54.00	10.95	268	53
2	39257.630	25.40	47.96	25.78	52.59	46.55	54.00	7.45	197	107
3	39928.570	25.40	49.16	24.98	52.42	47.12	54.00	6.88	308	112
----- VERTICAL -----										
4	38355.860	26.20	46.60	25.10	52.81	45.09	54.00	8.91	199	312
5	39210.460	25.40	47.91	25.83	52.60	46.54	54.00	7.46	207	225
6	39969.370	25.50	49.24	24.93	52.41	47.26	54.00	6.74	375	267

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

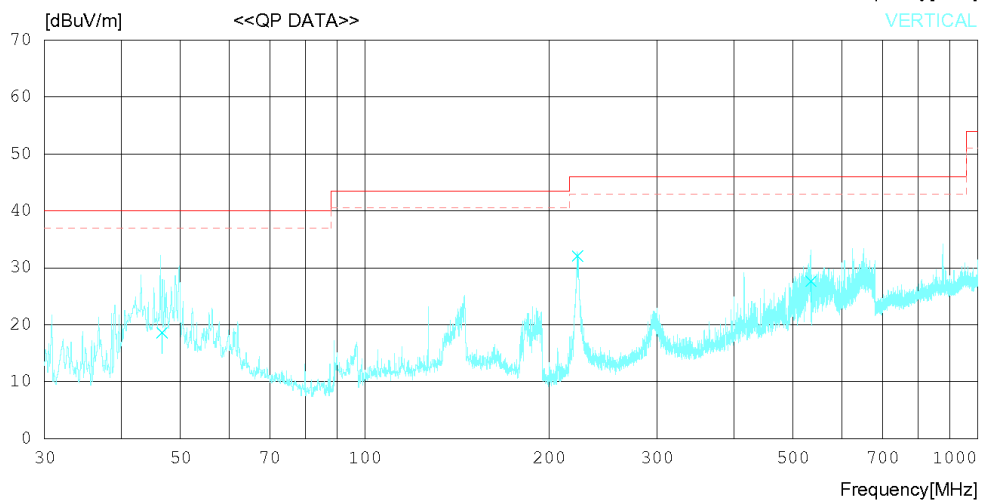
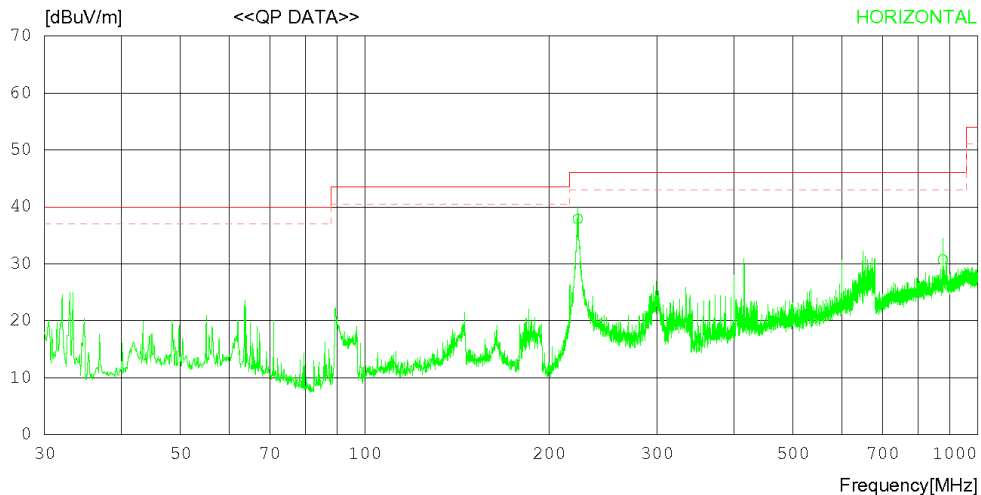
Date 2020-11-29

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 20 °C 45 % R.H.  
 Test Condition USB

Memo

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

- Antenna Factor  
 1. EMC-228\_VULB9160\_9160-3339\_with ATT\_18403\_2020.10.05  
 Cable Loss  
 1. #24\_C1\_ANT to BOTTOM\_3m\_장의\_9K-1G\_2020.04.10  
 2. #25\_C2\_Amp to BOTTOM\_3m\_장의\_9K-1G\_2020.04.10  
 3. #26\_C3\_Amp to Receiver\_3m\_장의\_9K-1G\_2020.02.21  
 Pre Amp Gain  
 1. EMC-110\_AMP\_MLA-100K01-B01-26\_1252741\_2020.02.13





## RADIATED EMISSION

Date 2020-11-29

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 20'C 45 % R.H.  
 Test Condition USB

Memo

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

Antenna Factor

1. EMC-228\_VULB9160\_9160-3339\_with ATT\_18403\_2020.10.05

Cable Loss

1. #24\_C1\_ANT to BOTTOM\_3m\_창의\_9K-1G\_2020.04.10

2. #25\_C2\_Amp to BOTTOM\_3m\_창의\_9K-1G\_2020.04.10

3. #26\_C3\_Amp to Receiver\_3m\_창의\_9K-1G\_2020.02.21

Pre Amp Gain

1. EMC-110\_AMP\_MLA-100K01-B01-26\_1252741\_2020.02.13

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	222.577	46.20	16.71	1.61	26.62	37.90	46.00	8.10	104	349
2	649.659	23.40	26.65	2.79	26.24	26.60	46.00	19.40	197	215
3	877.803	24.30	29.26	3.61	26.43	30.74	46.00	15.26	205	107
----- VERTICAL -----										
4	46.669	27.00	17.47	0.71	26.60	18.58	40.00	21.42	116	245
5	222.384	40.40	16.69	1.61	26.62	32.08	46.00	13.92	105	225
6	534.429	27.00	24.28	2.72	26.34	27.66	46.00	18.34	102	185

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

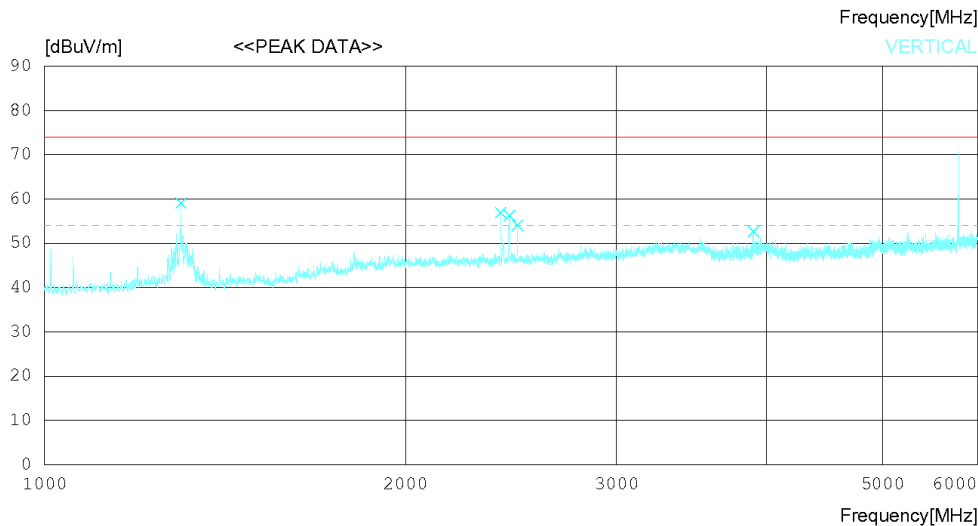
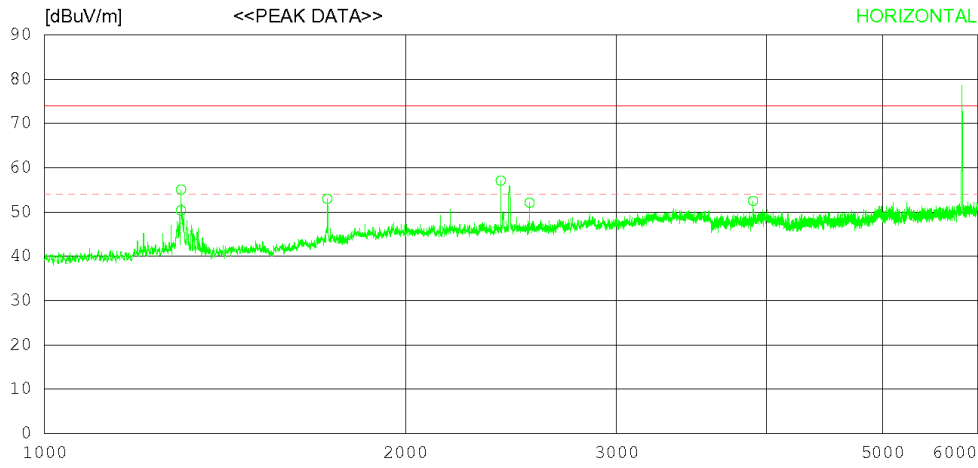
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

- Antenna Factor  
 1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326  
 Cable Loss  
 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04  
 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04  
 3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04  
 Pre Amp Gain  
 1. AMP\_8449B\_3008A00887\_2020.08.31



\*Remark : (5,725 ~ 5,815) MHz is WIFI 5.8 G frequency.

## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

- 1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326
- Cable Loss
- 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04
- 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04
- 3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04
- Pre Amp Gain
- 1. AMP\_8449B\_3008A00887\_2020.08.31

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	1299.833	51.80	29.30	5.14	35.87	50.37	74.0	23.63	105	299
2	1300.000	56.50	29.30	5.15	35.87	55.08	74.0	18.92	120	0
3	1721.250	51.70	29.66	7.05	35.41	53.00	74.0	21	302	358
4	2401.875	53.00	32.20	7.06	35.14	57.12	74.0	16.88	307	344
5	2539.375	47.80	32.20	7.28	35.15	52.13	74.0	21.87	298	344
6	3898.750	44.40	33.50	9.41	34.75	52.56	74.0	21.44	106	0
----- VERTICAL -----										
7	1299.375	60.50	29.30	5.14	35.87	59.07	74.0	14.93	378	0
8	2401.875	52.80	32.20	7.06	35.14	56.92	74.0	17.08	312	0
9	2442.500	52.10	32.20	7.13	35.14	56.29	74.0	17.71	310	0
10	2480.000	49.80	32.20	7.19	35.15	54.04	74.0	19.96	205	57
11	3900.000	44.40	33.50	9.43	34.75	52.58	74.0	21.42	115	0

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

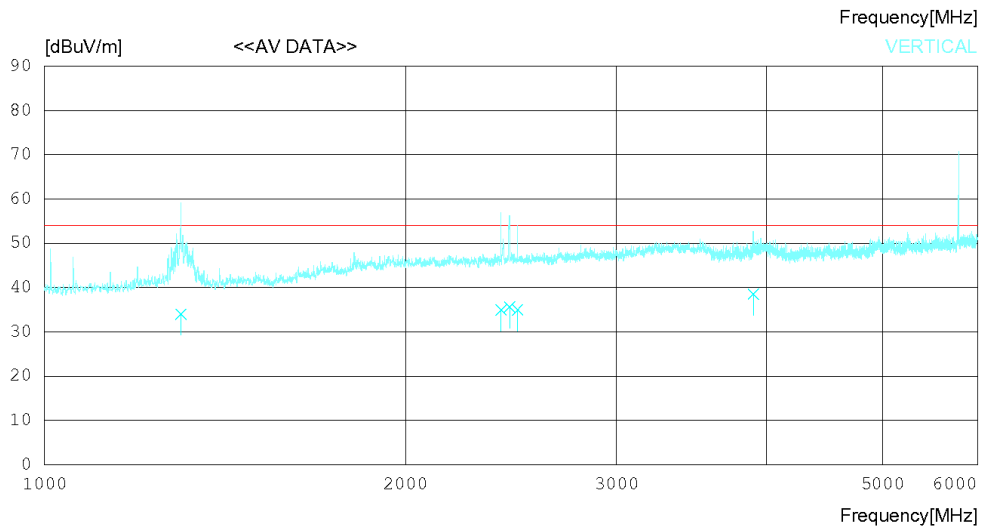
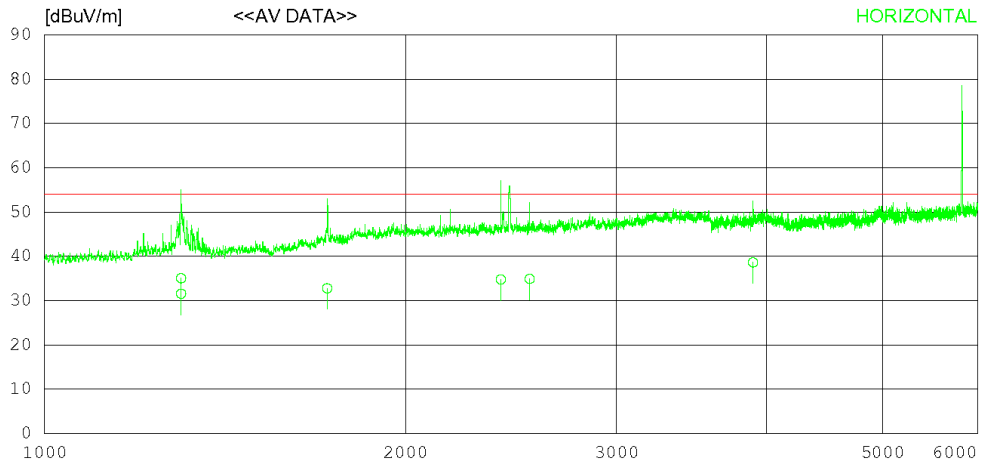
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

- Antenna Factor  
 1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326  
 Cable Loss  
 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04  
 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04  
 3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04  
 Pre Amp Gain  
 1. AMP\_8449B\_3008A00887\_2020.08.31



\*Remark : (5,725 ~ 5,815) MHz is WIFI 5.8 G frequency.

## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

1. EMC-299\_ANT\_3117\_00152093\_ISO3m\_20200326

Cable Loss

1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04

2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04

3. #29\_C3\_Amp to Receiver\_3m\_창의\_1-18G\_2020.03.04

Pre Amp Gain

1. AMP\_8449B\_3008A00887\_2020.08.31

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	1299.983	33.00	29.30	5.14	35.87	31.57	54.00	22.43	387	308
2	1299.955	36.50	29.30	5.14	35.87	35.07	54.00	18.93	102	56
3	1721.307	31.50	29.66	7.05	35.41	32.80	54.00	21.20	105	126
4	2401.917	30.70	32.20	7.06	35.14	34.82	54.00	19.18	297	302
5	2539.186	30.60	32.20	7.28	35.15	34.93	54.00	19.07	311	315
6	3899.189	30.50	33.50	9.41	34.75	38.66	54.00	15.34	305	68
----- VERTICAL -----										
7	1299.295	35.40	29.30	5.14	35.87	33.97	54.00	20.03	306	57
8	2402.137	30.80	32.20	7.06	35.14	34.92	54.00	19.08	215	105
9	2442.985	31.40	32.20	7.13	35.14	35.59	54.00	18.41	286	23
10	2480.108	30.70	32.20	7.19	35.15	34.94	54.00	19.06	102	68
11	3899.777	30.30	33.50	9.41	34.75	38.46	54.00	15.54	113	102

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

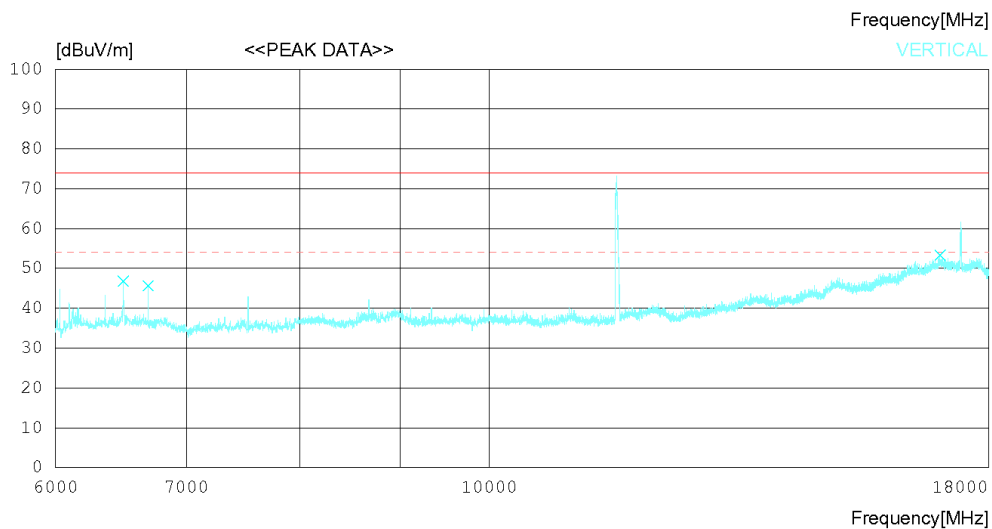
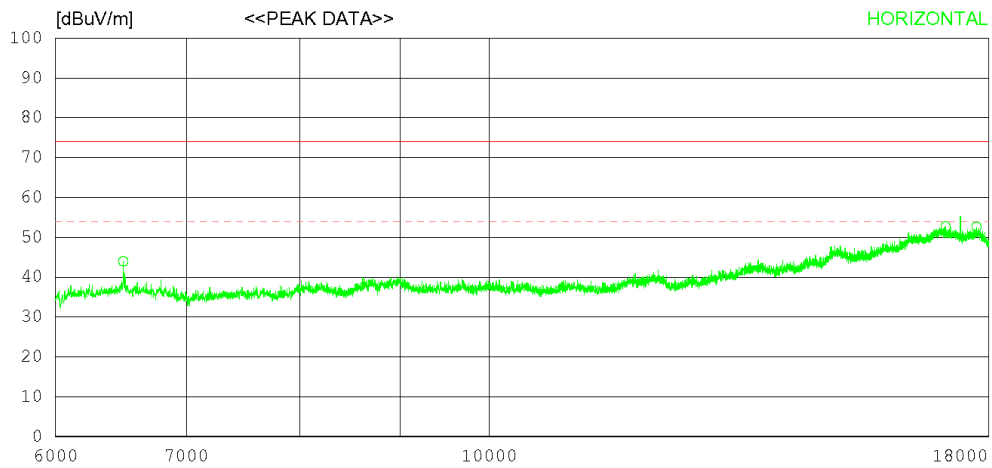
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 °C 45 % 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)

Antenna Factor  
 1. ANT\_EM-6969\_2019.01.17  
 Cable Loss  
 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04  
 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04  
 Pre Amp Gain  
 1. AMP\_MLA-0618-B03-34\_2019.12.31



\*Remark : (11,450 ~ 11,630), (17,175 ~ 17,445) MHz is WIFI 5.8 G harmonics of fundamental.

## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22'C 45 % 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)

Antenna Factor

1. ANT\_EM-6969\_2019.01.17

Cable Loss

1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04

2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04

Pre Amp Gain

1. AMP\_MLA-0618-B03-34\_2019.12.31

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	6499.500	39.80	31.59	11.42	38.80	44.01	74.0	29.99	285	141
2	17113.500	28.70	37.64	22.90	36.54	52.70	74.0	21.3	302	70
3	17749.500	29.20	38.13	22.72	37.40	52.65	74.0	21.35	185	0
----- VERTICAL -----										
4	6499.500	42.60	31.59	11.42	38.80	46.81	74.0	27.19	399	185
5	6691.500	40.60	31.53	12.20	38.70	45.63	74.0	28.37	345	306
6	16999.500	28.40	37.55	23.81	36.40	53.36	74.0	20.64	105	358

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

## RADIATED EMISSION

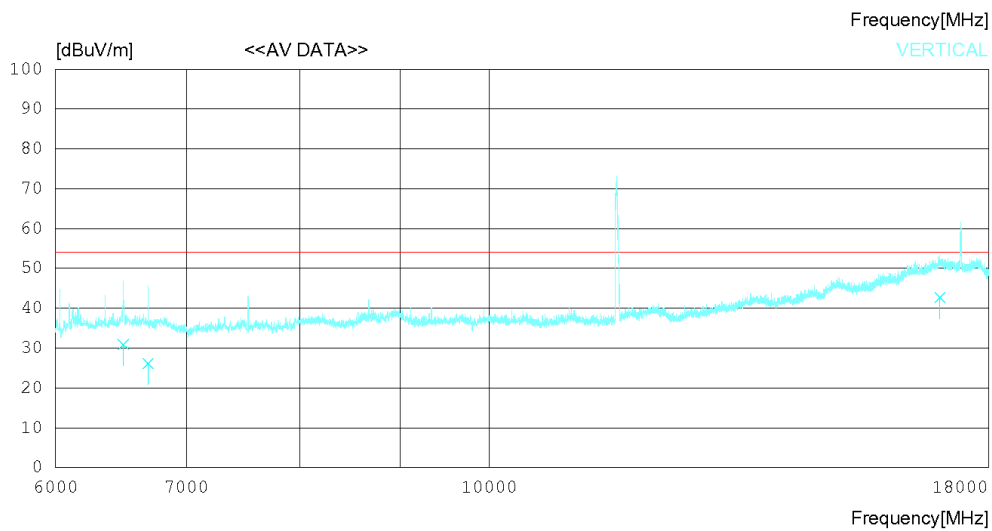
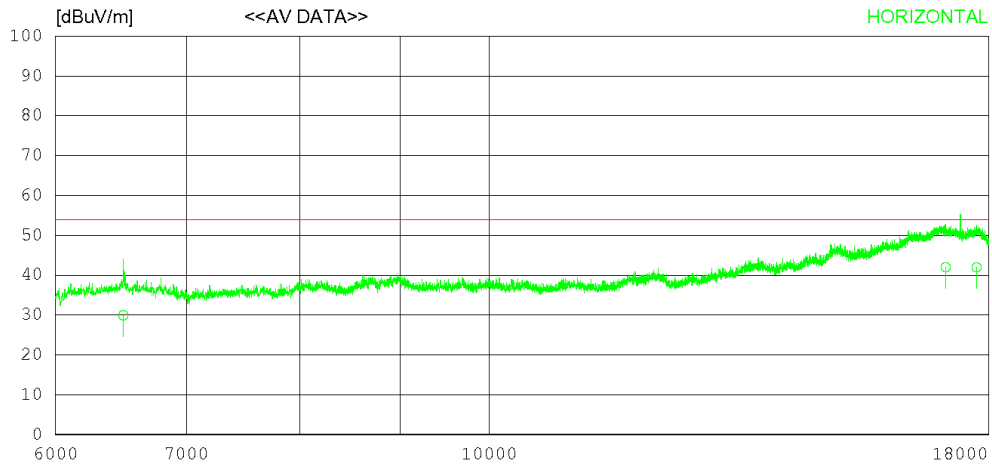
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 °C 45 % 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)

Antenna Factor  
 1. ANT\_EM-6969\_2019.01.17  
 Cable Loss  
 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04  
 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04  
 Pre Amp Gain  
 1. AMP\_MLA-0618-B03-34\_2019.12.31



\*Remark : (11,450 ~ 11,630), (17,175 ~ 17,445) MHz is WIFI 5.8 G harmonics of fundamental.



## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

- 1. ANT\_EM-6969\_2019.01.17
- Cable Loss
- 1. #27\_C1\_Ant to Bottom\_3m\_창의\_1-18G\_2020.03.04
- 2. #28\_C2\_Bottom to Amp(Filter,Receiver)\_3m\_창의\_1-18G\_2020.03.04
- Pre Amp Gain
- 1. AMP\_MLA-0618-B03-34\_2019.12.31

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	6499.330	25.70	31.59	11.42	38.80	29.91	54.00	24.09	297	168
2	17113.930	18.00	37.64	22.90	36.54	42.00	54.00	12.00	385	102
3	17749.650	18.50	38.13	22.72	37.40	41.95	54.00	12.05	396	54
----- VERTICAL -----										
4	6499.442	26.70	31.59	11.42	38.80	30.91	54.00	23.09	104	167
5	6691.584	21.10	31.53	12.21	38.70	26.14	54.00	27.86	306	298
6	16999.190	17.70	37.55	23.81	36.40	42.66	54.00	11.34	189	341

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

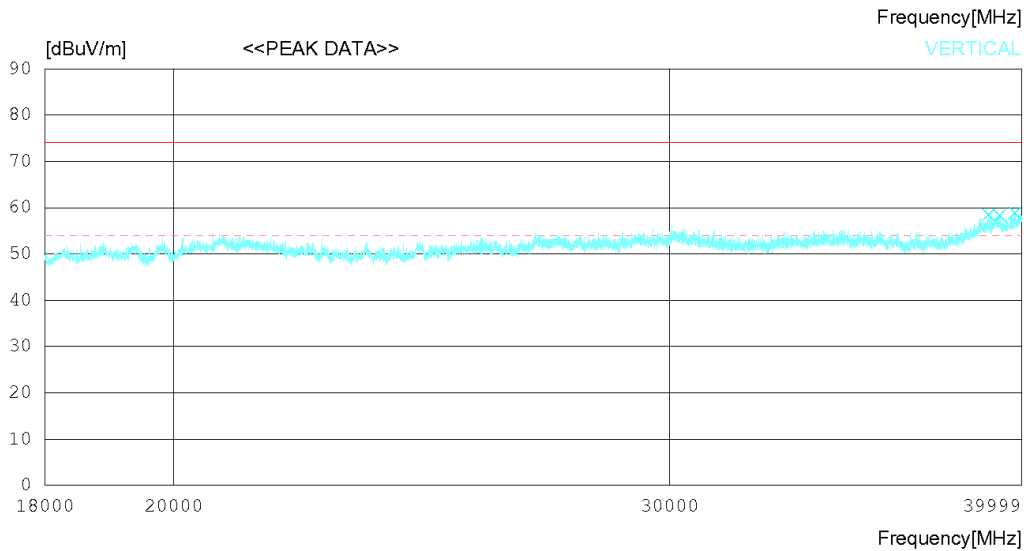
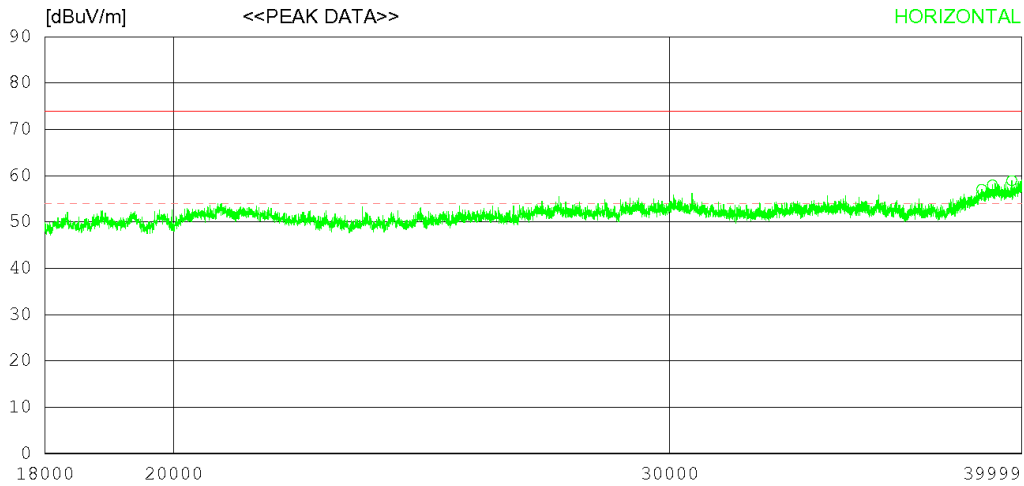
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor  
 1. ANT\_3116C\_00213177\_2019-12-12  
 Cable Loss  
 1. #33\_C2\_Amp to Receiver\_3m\_항의\_18-40G\_2020.08.13  
 2. #32\_C1\_Ant to Amp\_3m\_항의\_18-40G\_2020.08.13  
 Pre Amp Gain  
 1. JS44-18004000-35-8P\_2046884\_2020.11.05



## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45% 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)

Antenna Factor

1. ANT\_3116C\_00213177\_2019-12-12

Cable Loss

1. #33\_C2\_Amp to Receiver\_3m\_창의\_18-40G\_2020.08.13

2. #32\_C1\_Ant to Amp\_3m\_창의\_18-40G\_2020.08.13

Pre Amp Gain

1. JS44-18004000-35-8P\_2046884\_2020.11.05

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	38721.250	36.90	47.22	25.66	52.72	57.06	74.0	16.94	354	265
2	39054.000	37.00	47.65	26.01	52.64	58.02	74.0	15.98	226	0
3	39681.000	37.50	48.66	25.27	52.48	58.95	74.0	15.05	101	3
----- VERTICAL -----										
4	38930.250	37.70	47.53	25.97	52.67	58.53	74.0	15.47	241	358
5	39293.250	37.20	47.99	25.73	52.58	58.34	74.0	15.66	167	326
6	39777.250	37.30	48.85	25.17	52.46	58.86	74.0	15.14	168	211

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

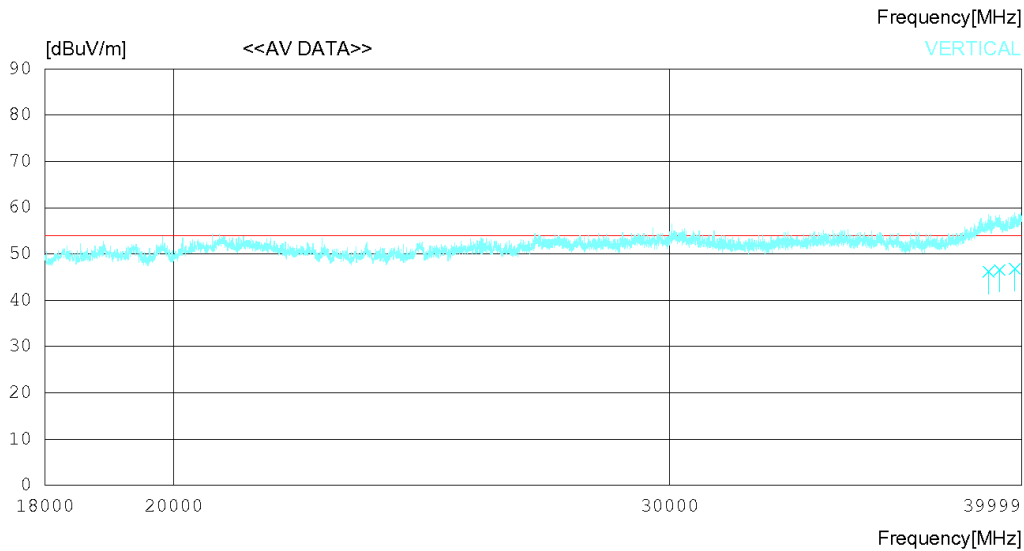
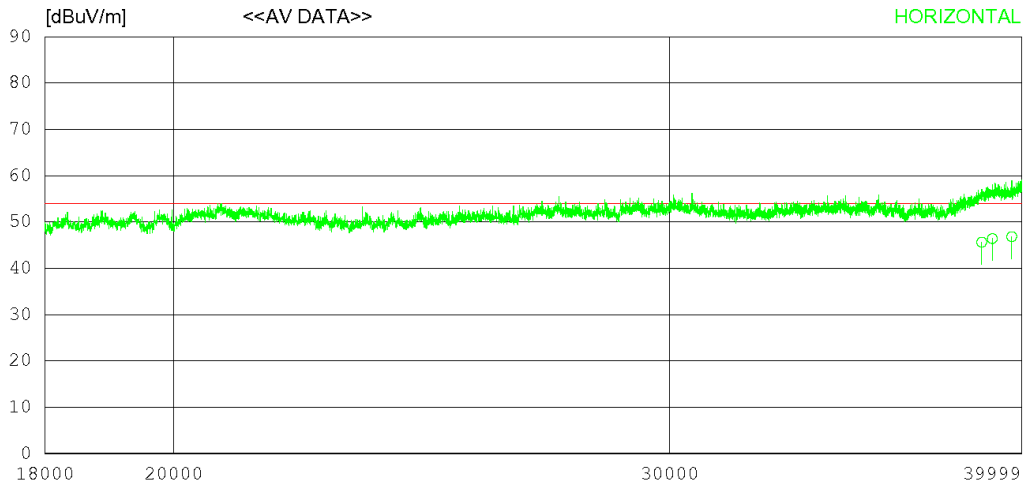
Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12 V  
 Temp/Humi 22 'C 45 % 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)

Antenna Factor  
 1. ANT\_3116C\_00213177\_2019-12-12  
 Cable Loss  
 1. #33\_C2\_Amp to Receiver\_3m\_항의\_18-40G\_2020.08.13  
 2. #32\_C1\_Ant to Amp\_3m\_항의\_18-40G\_2020.08.13  
 Pre Amp Gain  
 1. JS44-18004000-35-8P\_2046884\_2020.11.05



## RADIATED EMISSION

Date 2020-11-30

Order No. DTNC2011-09352  
 Power Supply DC 12V  
 Temp/Humi 22°C 45 % 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)

Antenna Factor

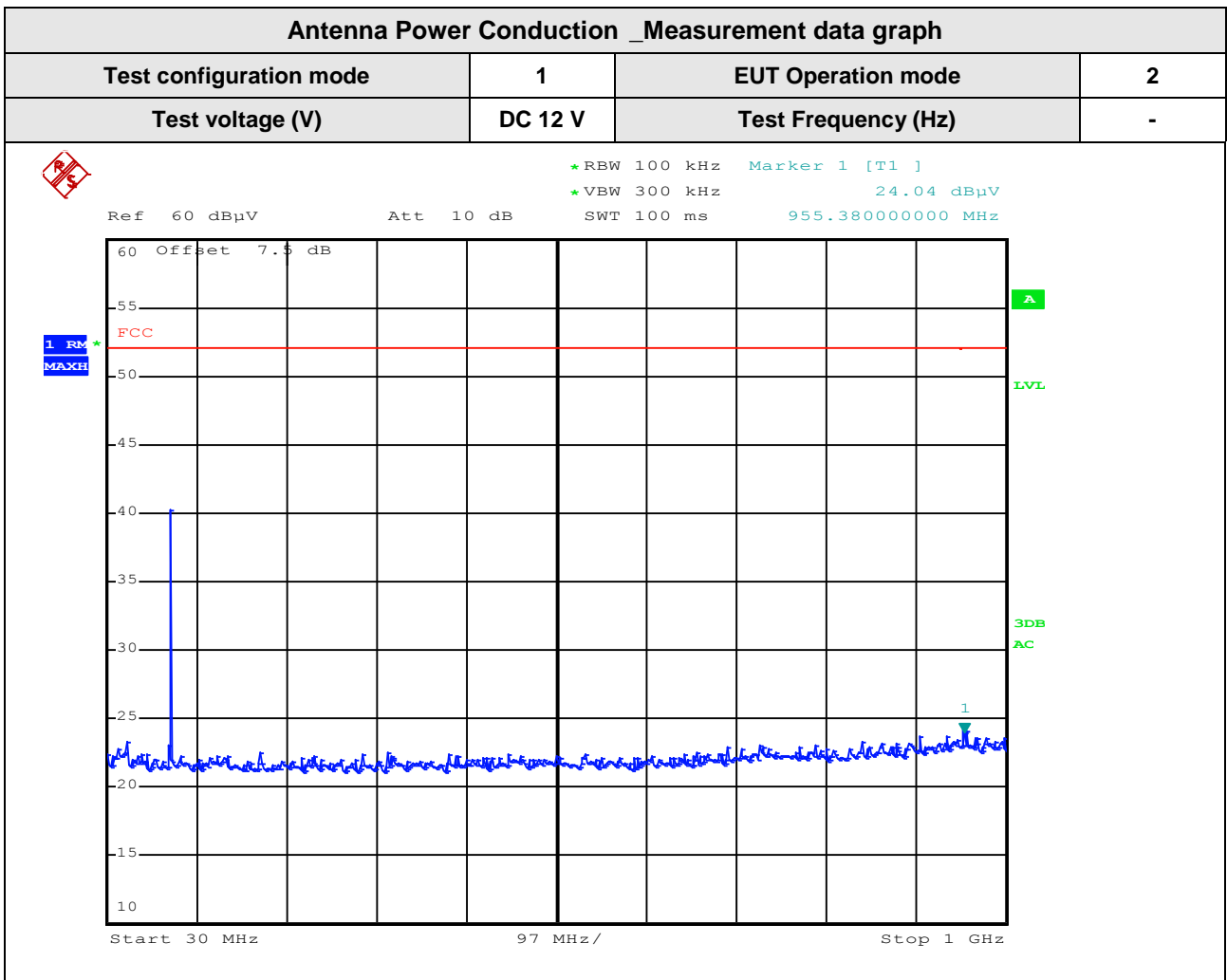
- 1. ANT\_3116C\_00213177\_2019-12-12
- Cable Loss
- 1. #33\_C2\_Amp to Receiver\_3m\_창의\_18-40G\_2020.08.13
- 2. #32\_C1\_Ant to Amp\_3m\_창의\_18-40G\_2020.08.13
- Pre Amp Gain
- 1. JS44-18004000-35-8P\_2046884\_2020.11.05

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	38721.540	25.50	47.22	25.66	52.72	45.66	54.00	8.34	115	321
2	39054.650	25.40	47.65	26.01	52.64	46.42	54.00	7.58	207	57
3	39681.750	25.40	48.66	25.27	52.48	46.85	54.00	7.15	167	106
----- VERTICAL -----										
4	38930.520	25.30	47.53	25.97	52.67	46.13	54.00	7.87	224	312
5	39293.680	25.40	47.99	25.73	52.58	46.54	54.00	7.46	167	65
6	39777.660	25.20	48.86	25.17	52.46	46.77	54.00	7.23	229	135

### 7.3 Antenna Power Conduction

ANSI C63.4	Antenna power conduction		Result
<p><b>Method:</b> 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 <math>V^2/R</math>, where V is the loss-corrected voltage measured at the antenna terminals, and R is the impedance of the measuring instrument</p>			<b>Comply</b>
<b>Fully configured sample scanned over the following frequency range</b>	<b>Frequency range on each side of line</b>	<b>Limit</b>	
	<b>30 MHz to 2 150 MHz</b>	<b>2 nW (51.7 dBμV)</b>	
	<b>54 MHz to 300 MHz 300 MHz to 450 MHz 450 MHz to 804 MHz</b>	<b>-26 dBmV (34 dBμV) -20 dBmV (40 dBμV) -15 dBmV (45 dBμV)</b>	
<b>Measurement Point</b>	<b>Tuner port</b>		
<b>EUT mode (Refer to clauses 4)</b>	<b>Test configuration mode</b>	<b>1</b>	
	<b>EUT Operation mode</b>	<b>2</b>	
	<b>Power Interface mode</b>	<b>1</b>	

Measurement Instrument					
Description	Model	Manufacturer	Identifier	Cal. Date	Cal. Due
IMPEDANCE MATCHING PAD	8AP50NM75NF	COPPER MOUNTAIN TECHNOLOGIES	16012	2020.12.09	2021.12.09
EMI TEST RECEIVER	ESCI	ROHDE&SCHWARZ	100364	2020.02.25	2021.02.25
POWER 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. Photographs of EUT

Front View of Product



Rear View of Product





**Inside View of Product**



## 9. Revision History

Date	Description	Revised By	Reviewed By
Dec. 30. 2020	Initial report	Hun Lee	HyungJun Kim

-End of test report-