



# 시험 성적서 TEST REPORT

페이지(page) : ( 1 ) / ( 총(Total) 25 )

성적서 번호 Report No.	ICRT-TR-E211340-0B	
신청자 Client	기관명 Name	RADWAG Wagi Elektroniczne Witold Lewandowski
	주 소 Address	ul. Torunska 5, 26-600 Radom
시험대상품목 Sample description	Weighting scale	
모델명 Type designation	WTC 600.1	
정격 Ratings	DC 12 V	
시험장소 Place of test	<input checked="" type="checkbox"/> 고정시험(Inside test) <input type="checkbox"/> 현장시험(Field test) 주소지(Address): 112, 113, Hwanggeum3-ro 7beon-gil, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea	
시험기간 Date of test	2021. 06. 14 ~ 2021. 06. 15	
시험방법/항목 Test Method/Item	FCC 47 CFR Part 15 Subpart B	
시험결과 Test Results	Refer to summary of test results	
확인 Affirmation	작성자 Tested by 성명 Name      이성준 (서명) Lee, SangJun (Signature)	기술책임자 Technical Manager 성명 Name      박명철 (서명) Park, Myeongcheol (Signature)

위 성적서는 고객이 제공한 시료에 대한 시험결과입니다.

This is certified that the above mentioned products have been tested for the sample

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The above test report is not related to accreditation by KS Q ISO/IEC 17025 and Korea Laboratory Accreditation scheme.

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The test report is prohibited for some reproduction without the approval of the ICR.

2021. 10. 28

주식회사 아이씨알 대표이사

The head of INTERNATIONAL CERTIFICATION REGISTRAR



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The authenticity of the test report can be checked on the G4B or ICR website.

경기도 김포시 양촌읍 황금 3로 7번길 112 / Tel: 02-6351-9001 ~ 6



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## 1. Applicant Information

### 1.1 Applicant

**Applicant** : RADWAG Wagi Elektroniczne Witold Lewandowski  
**Address** : ul. Torunska 5, 26-600 Radom  
**Contact person** : Piotr Cieplucha  
**Telephone No.** : 48483866240  
**Faxsimile No.** : -  
**E-mail** : p.cieplucha@radwag.pl

### 1.2 Manufacture

**Manufacture** : RADWAG Wagi Elektroniczne Witold Lewandowski  
**Address** : ul. Torunska 5, 26-600 Radom  
**Contact person** : Piotr Cieplucha  
**Telephone No.** : 48483866240  
**Faxsimile No.** : -  
**E-mail** : p.cieplucha@radwag.pl

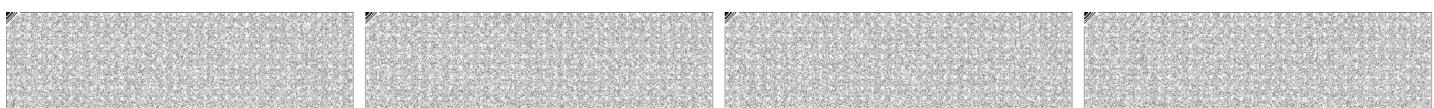
## 2. Laboratory

### 2.1 Information

**Laboratory** : ICR Co., Ltd  
**Address** : 112, 113, Hwanggeum 3-ro 7beon-gil, Hagun-ri, Yangchon-eup, Gimpo-si,  
Gyeonggi-do, Korea  
**Telephone No.** : +82-2-6351-9001  
**Faxsimile No.** : +82-2-6351-9007  
  
**KOLAS No.** : KT652  
**RRA No.** : KR0165

## 3. Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
ICRT-TR-E211340-0A	2021. 06. 16	-	-
ICRT-TR-E211340-0B	2021. 10. 28	Deletion of photos(Page 26-33)	-





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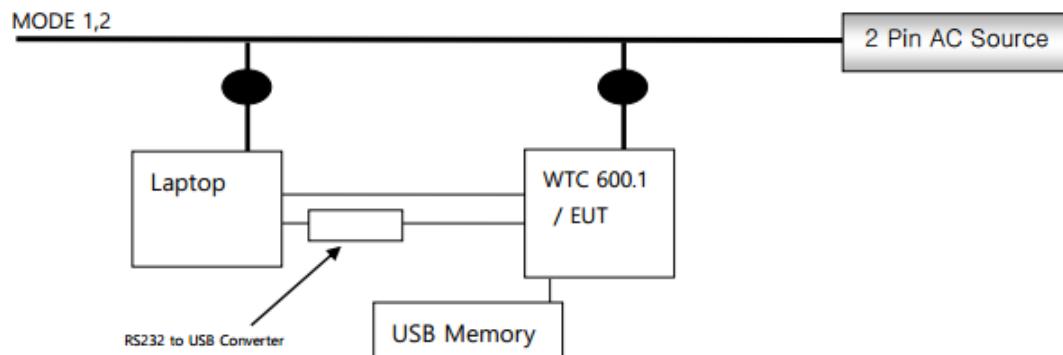
#### 4. List of EUT and Accessory

##### 4.1 Used equipment

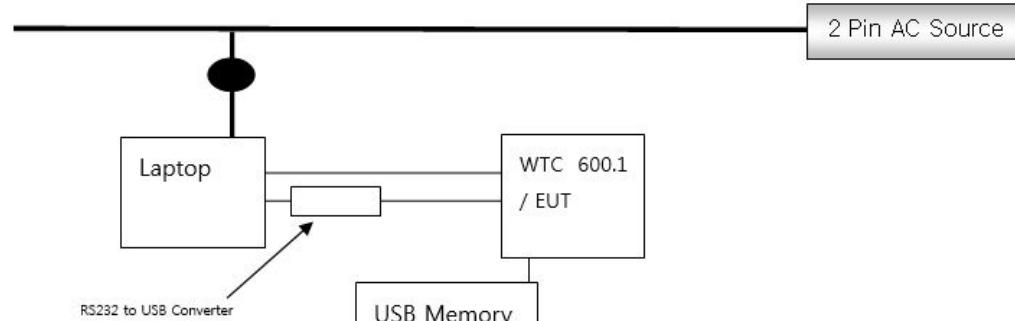
Description	Model	Manufacturer	Remark
Weighting scale	WTC 600.1	RADWAG Wagi Elektroniczne Witold Lewandowski	EUT
Adapter	MSA-C1200CS12.0-18F-DE	MOSO	AE
Laptop	81DC	Lenovo	AE
Adapter	ADL45WCE	Lenovo	AE
USB Memory	-	-	AE
RS232 to USB Converter	-	-	AE

##### 4.2 Test Configuration

###### MODE 1, MODE 2



###### MODE 3, MODE 4



—— : Signal line    —— : Power line    △ : GROUND    ● : Adapter



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#### 4.3 Cable List

Equipment	Port	Equipment	Port	Length (m)	Shielded
EUT (MODE 1, 2)	USB B-Type	Laptop	USB A-Type	0.3	Unshielded
	USB A-Type	USB Memory	USB A-Type	1.1	Unshielded
	RS 232	RS232 to USB Converter	RS 232	1.8	Shielded
	DC IN	Adapter	DC OUT	1.4	Unshielded
EUT (MODE 3, 4)	USB B-Type	Laptop	USB A-Type	0.3	Unshielded
	USB A-Type	USB Memory	USB A-Type	1.1	Unshielded
	RS 232	RS232 to USB Converter	RS 232	1.8	Shielded

#### 4.4 Mode of Operating during the test

After placing the EUT as the above layout, test it in the following operating conditions.

- MODE 1 : Continuous weighing(RS232 communication)
- MODE 2 : Continuous communication with PC(USB communication)
- MODE 3 : Continuous weighing(RS232 communication)
- MODE 4 : Continuous communication with PC(USB communication)

(Mode 1,2 : Charger Mode, Mode 3,4 Battery Mode)

#### 4.5 EUT Modifications

- None.



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#### 4.6 Family Model Name

Family model name	Differential point	Comments																											
WTC xxx.yy	<p>Product name: <b>WTC weighing scale</b></p> <p>Type name: <b>WTC xxx.yy</b></p> <p>Type description:</p> <p>WTC – family name</p> <p>xxx – weighing range (in grams) (100 + 3500)</p> <p>yy – option (1 - versions not introduced to legal metrology certification, may include a not certified load cell)</p> <p>Sample name according the above: <b>WTC 600.1</b></p> <p><b>Examples of scales within the family</b></p> <table border="1"> <thead> <tr> <th>Scale name</th><th>Weighing range in grams</th><th>Reading accuracy in grams</th></tr> </thead> <tbody> <tr> <td>WTC 200</td><td>200</td><td>0.001</td></tr> <tr> <td>WTC 200.1</td><td>200</td><td>0.001 or 0.0001</td></tr> <tr> <td>WTC 600</td><td>600</td><td>0.01</td></tr> <tr> <td>WTC 600.1</td><td>600</td><td>0.01 or 0.001</td></tr> <tr> <td>WTC 2000</td><td>2000</td><td>0.01</td></tr> <tr> <td>WTC 2000.1</td><td>2000</td><td>0.01 or 0.001</td></tr> <tr> <td>WTC 3000</td><td>3100</td><td>0.1</td></tr> <tr> <td>WTC 3000.1</td><td>3100</td><td>0.1 or 0.01</td></tr> </tbody> </table>	Scale name	Weighing range in grams	Reading accuracy in grams	WTC 200	200	0.001	WTC 200.1	200	0.001 or 0.0001	WTC 600	600	0.01	WTC 600.1	600	0.01 or 0.001	WTC 2000	2000	0.01	WTC 2000.1	2000	0.01 or 0.001	WTC 3000	3100	0.1	WTC 3000.1	3100	0.1 or 0.01	-
Scale name	Weighing range in grams	Reading accuracy in grams																											
WTC 200	200	0.001																											
WTC 200.1	200	0.001 or 0.0001																											
WTC 600	600	0.01																											
WTC 600.1	600	0.01 or 0.001																											
WTC 2000	2000	0.01																											
WTC 2000.1	2000	0.01 or 0.001																											
WTC 3000	3100	0.1																											
WTC 3000.1	3100	0.1 or 0.01																											



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## 5. Summary of test result

### 5.1 Test Summary

Standard	Test items	Applied	Results
FCC Part 15.109 Class B	Radiated disturbance	<input checked="" type="checkbox"/>	Pass
FCC Part 15.107 Class B	Conducted disturbance	<input checked="" type="checkbox"/>	Pass

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

#### Frequency range to be scanned:

0.15 MHz to 30 MHz as Conducted measurement

5<sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower as Radiated measurement

#### Bandwidth:

Measured by the CISPR quasi-peak function Bandwidth is 9 kHz in the frequency 0.15 MHz ~ 30 MHz and 120 kHz in the frequency 30 MHz ~ 1 000 MHz.

Measured by the CISPR Peak function Bandwidth is 1 MHz in the frequency 1 GHz ~ 40 GHz.

- Maximum operating frequency: 120 MHz



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## 6. Test Description

### 6.2 Facility

All the testing facilities are periodically serviced as a daily check for equipment and cables systems, an every 6 months facility check for the facilities and a monthly check and annual calibration for testing equipment according to ISO/IEC 17025. All the testing facilities are used as the same specifications shown below. There are descriptions both for radiated disturbance measurement and conducted disturbance measurement conformed by ANSI C 63.4-2014.

### 6.3 Test Procedure

#### 6.3.1 Radiated Disturbance Measurements – Below 1 GHz

- Test site is met the requirements of ANSI C 63.4-2014 and the distance between the EUT and the antenna is adjusted 3 m/10 m.
- The turntable can be rotated 360 degrees.
- The antenna can be adjusted between 1 m and 4 m in height above the ground.
- The EUT is placed on the non-conducting table with 0.8 m height on the turntable.
- Measurements are carried out using a EMI test receiver with peak detectors (100 kHz bandwidth) and an EMI receiver with quasi-peak detectors(120 kHz bandwidth).
- Refer to the list of test equipment used for the test.
- Trilog antenna are used as Broadband antenna.
- The Trilog antenna is used in the frequency range of 30 ~ 1 000MHz, the Horn antenna is used in the frequency range of 1 GHz ~ 18 GHz.
- A variable attenuator is used for verifying amplifier's linearity.
- Rotating the turntable and adjusting the height of the antenna are carried out by control buttons on the console.
- Refer to "Brief Information"(page 4-5) about details of the EUT and configuration of the cables.
- Measurement is carried out by a ICR operator as manual operation.
- searching for some of High disturbance frequency points than the other points with the following settings;  
bandwidth 100 kHz, frequency range 10 MHz between 30 MHz and 300 MHz and frequency range 50 MHz between 300 MHz and 1 GHz.
- searching the worst direction with the maximum level of the disturbance wave in rotating the turntable 360 degrees at each searched frequency point.
- setting the height of the antenna with the maximum level of the disturbance wave from 1 m ~ 4 m.
- reading the disturbance level by the EMI receiver with quasi-peak detectors (120 kHz bandwidth) according to ANSI C 63.4-2014.
- measuring to vertical and horizontal polarization.
- calculating the measurement result with the following formula or equation:  
[Measurement result= measured value + Antenna factor + Cable loss - (Amp.)]

#### 6.3.2 Radiated Disturbance Measurements – Above 1 GHz

- Test site is met the requirements of ANSI C 63.4-2014 and the distance between the EUT and the antenna is adjusted 3 m.
- The turntable can be rotated 360 degrees.
- The antenna can be adjusted between 1 m in height above the ground.
- The EUT is placed on the non-conducting table with 1 m height on the turntable.
- Measurements are carried out using a EMI test receiver with peak detectors (1 MHz bandwidth) and an EMI receiver with peak and average detectors(1 MHz bandwidth).
- Refer to the list of test equipment used for the test.
- HORN ANTENNA are used as WIDEBAND ANTENNA.
- The HORN ANTENNA is used in the frequency range of 1 GHz ~ 18 GHz.
- A variable attenuator is used for verifying amplifier's linearity.
- Rotating the turntable and adjusting the height of the antenna are carried out by control buttons on the console.
- Refer to "Brief Information"(page 4-5) about details of the EUT and configuration of the cables.



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- Measurement is carried out by a ICR operator as manual operation.
- searching the worst direction with the maximum level of the disturbance wave in rotating the turntable 360 degrees at each searched frequency point.
- setting the height of the antenna with the maximum level of the disturbance wave from 1 m
- reading the disturbance level by the EMI receiver with peak and average detectors (1 MHz bandwidth) according to ANSI C 63.4-2014.
- measuring to vertical and horizontal polarization.
- calculating the measurement result with the following formula or equation:  
[Measurement result = measured value + Antenna factor + Cable loss - (Amp.)]

### 6.3.3 Conducted Disturbance Measurements

- The measurement is carried out on an open site with horizontal and metallic ground plane.
- An AMN(Artificial Mains Network) with a nominal impedance ( $50 \Omega/50 \mu\text{H}$ ) as defined in ANSIC 63.4-2014., shall be utilized.
- The AMN is grounded on a horizontal metal ground plane.
- Measurement is carried out using an EMI receiver with quasi-peak detectors and average detector. (Refer to the List of test equipment used for the test.)
- The shortest distance between the EUT and the AMN is 0.8 m.
- The EUT is placed on the non-conducting table with 0.8 m height.
- A remote switch is used for changing phases between Line (L) and Neutral (N).
- Refer to "Brief Information"(page 4-5) about details of the EUT and configuration of the cables.
- Measurement is carried out as manual operation.
  - detecting the maximized emission level using the maxhold function after setting the spectrum analyzer bandwidth 1 kHz and the frequency range from 150 kHz ~ 1 MHz, 1 MHz ~ 5 MHz and 5 MHz ~ 30 MHz.
  - searching the maximum frequency point of the disturbance wave in each frequency range.
  - reading the disturbance level of quasi-peak, average and Line (L) and Neutral (N) in 9 kHz bandwidth by the EMI receiver.
- calculating the measurement result with the following formula or equation.  
(Result = Reading + Corr)  
(Margin = Limit - Result)





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## 7. EMISSION

### 7.1 Radiated disturbance

**Definition:**

The test assesses the ability of ancillary equipment to limit their internal noise from being radiated from the enclosure.

Test method	: FCC Part 15.109, Class B
Test Date	: 2021. 06. 15
Temperature, Humidity	: 22.3 °C ~ 22.5 °C, 40.3 % R.H. ~ 40.4 % R.H. (Below 1 GHz) : 23.5 °C ~ 23.7 °C, 41.3 % R.H. ~ 41.4 % R.H. (Above 1 GHz)
Measurement Distance	: 3 m (Below 1 GHz), 3 m (Above 1 GHz)
Measurement Frequency range	: 30 MHz ~ 18 GHz
Measurement RBW	: 120 kHz, 1 000 kHz
Test mode	: MODE 1, 2, 3, 4
Result	: Pass

**A sample calculation:**

- Corr (correction factor) = Ant. Factor + Cable loss – (Amp.)
  - Emission Level = meter reading + Corr
  - Sample calculation; MODE 1
  - Below 1 GHz (Quasi-Peak)
- At Frequency : 52.601 MHz Result = Reading + Corr = 52.9 dB( $\mu$ V/m) + (-19.2) dB = 33.70 dB( $\mu$ V/m)
- Above 1 GHz (CISPR-Average)
- At Frequency : 17 836.800 MHz Result = Reading + Corr = 34.61 dB( $\mu$ V/m) + 11.0 dB = 45.61 dB( $\mu$ V/m)
- Measurement Data kept in ICR



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**Limits of below 1 GHz - CLASS A**

Frequency Range (MHz)	Field strength ( $\mu$ V/m)	Distance (m)
30 ~ 88	90	10
88 ~ 216	150	
216 ~ 960	210	
Above 960	300	

**Limits of below 1 GHz - CLASS B**

Frequency Range (MHz)	Field strength ( $\mu$ V/m)	Distance (m)
30 ~ 88	100	3
88 ~ 216	150	
216 ~ 960	200	
Above 960	500	

**Used equipments:****- Below 1 GHz**

Used	Equipment	Model name	Manufacturer	Serial No.	Next Cal.
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR26	R&S	101461	2022. 04. 14
<input checked="" type="checkbox"/>	TRILOG BROAD BAND ANTENNA	VULB 9162	SCHWARZBECK	120	2022. 12. 15
<input type="checkbox"/>	FERRITE CLAMP	EZ-24	R&S	100262	2021. 12. 07
<input checked="" type="checkbox"/>	RF Pre Amplifier	SCU 08	R&S	100745	2022. 04. 14
<input checked="" type="checkbox"/>	HUMIDITY/TEMP. DATA RECORDER	MHT-381SD	LUTRON	AI.63107	2022. 02. 25

**- Above 1 GHz**

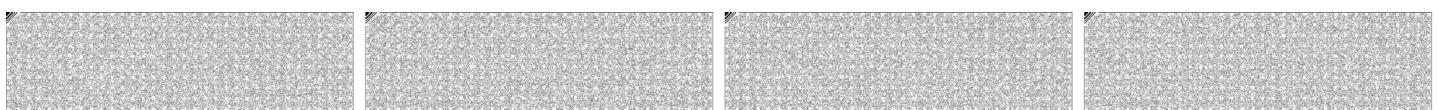
Used	Equipment	Model name	Manufacturer	Serial No.	Next Cal.
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR26	R&S	101462	2022. 04. 14
<input checked="" type="checkbox"/>	HORN ANTENNA (KOLAS)	HF907	R&S	102556	2021. 08. 21
<input checked="" type="checkbox"/>	RF Pre Amplifier	SCU 18	R&S	102342	2022. 04. 14
<input checked="" type="checkbox"/>	HUMIDITY/TEMP. DATA RECORDER	MHT-381SD	LUTRON	AI.63106	2022. 02. 25

**Test Software:**

Used	Description	Model name	Manufacturer	Version.
<input checked="" type="checkbox"/>	EMI Test Software	EMC32	R & S	10.01.00

**Measurement Data:**

- Refer to the Next page.

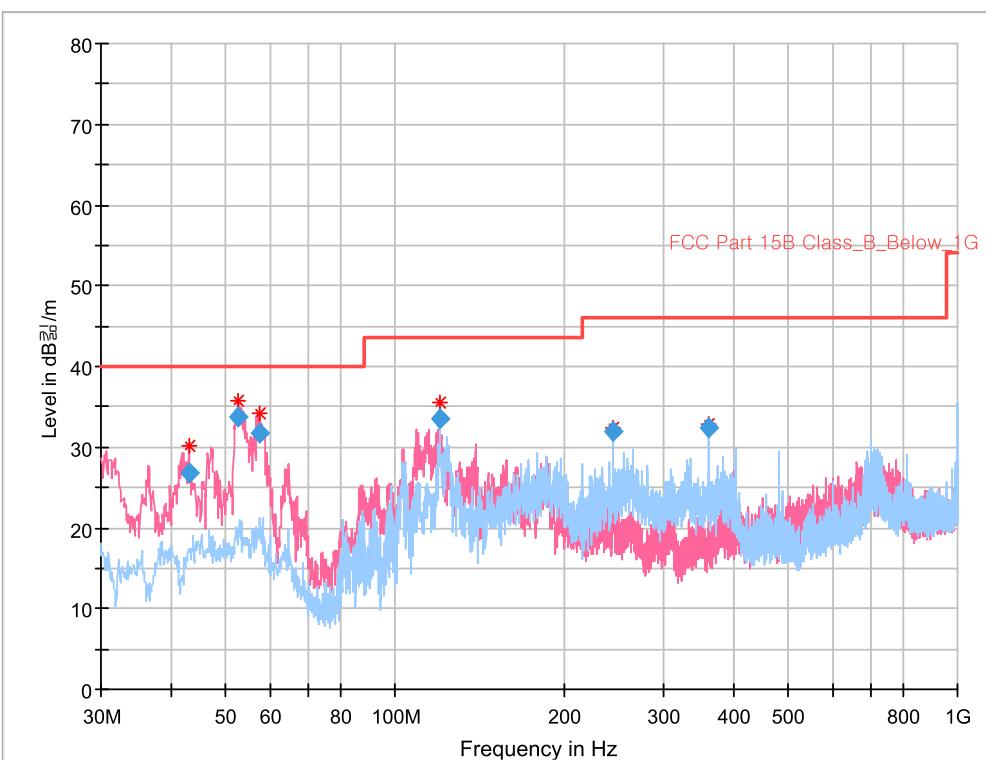




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**DATA (Below 1 GHz\_MODE 1)****Test Report****Common Information**

Test Description: WTC 600.1  
 Operating Conditions: ICR 3 m Chamber  
 Operator Name: LEE S J  
 Comment: RE Below MODE 1

**Final\_Result**

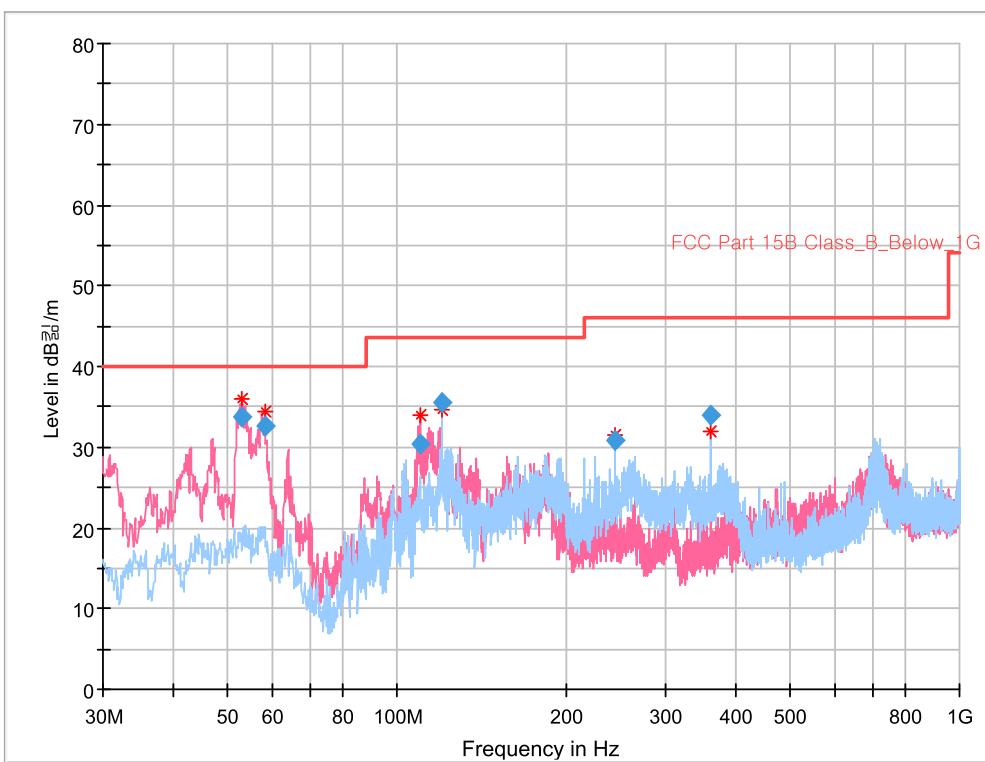
Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
43.095	26.72	40.00	13.28	15000.0	120.000	100.0	V	98.0	-19.5
52.601	33.70	40.00	6.30	15000.0	120.000	200.0	V	80.0	-19.2
57.257	31.62	40.00	8.38	15000.0	120.000	100.0	V	42.0	-19.7
120.016	33.62	43.50	9.88	15000.0	120.000	100.0	V	307.0	-22.9
244.370	31.88	46.00	14.12	15000.0	120.000	400.0	H	42.0	-19.4
360.091	32.50	46.00	13.50	15000.0	120.000	200.0	H	33.0	-16.9



페이지(page) : ( 13 ) / ( 총(Total) 25 )

**DATA (Below 1 GHz\_MODE 2)****Test Report****Common Information**

Test Description: WTC 600.1  
 Operating Conditions: ICR 3 m Chamber  
 Operator Name: LEE S J  
 Comment: RE Below MODE 2

**Final\_Result**

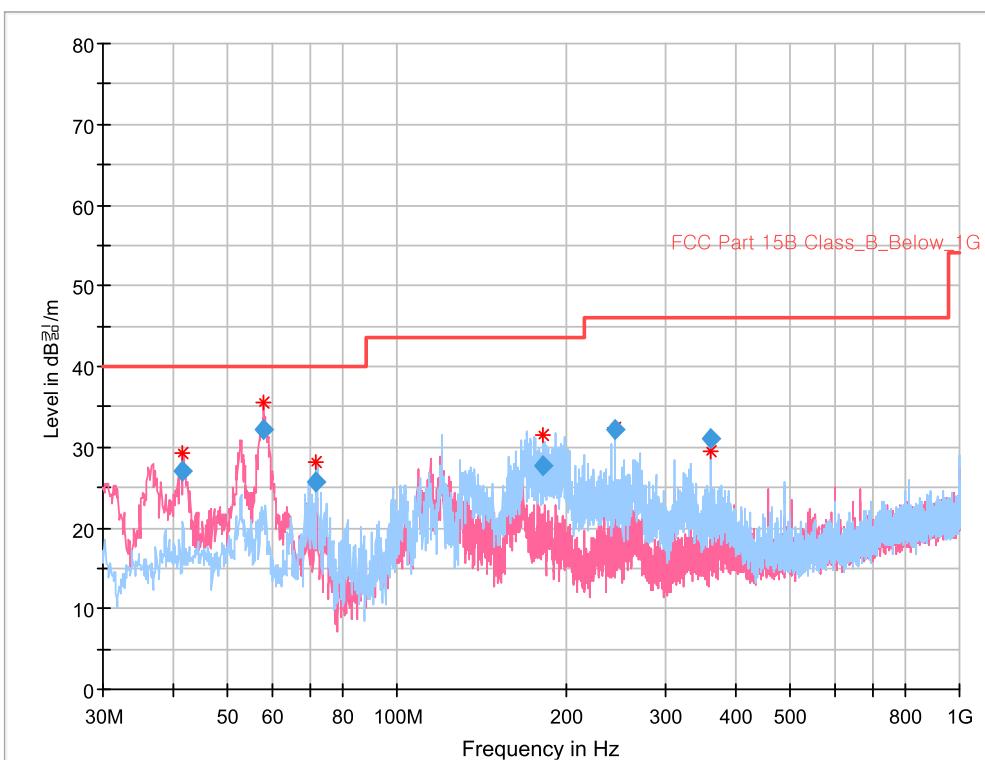
Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
53.086	33.67	40.00	6.33	15000.0	120.000	100.0	V	30.0	-19.3
58.130	32.65	40.00	7.35	15000.0	120.000	200.0	V	0.0	-19.9
109.831	30.41	43.50	13.09	15000.0	120.000	100.0	V	156.0	-21.0
120.016	35.61	43.50	7.89	15000.0	120.000	400.0	H	0.0	-22.9
244.661	30.93	46.00	15.07	15000.0	120.000	200.0	H	44.0	-19.4
359.994	34.08	46.00	11.92	15000.0	120.000	100.0	H	22.0	-17.0



페이지(page) : ( 14 ) / ( 총(Total) 25 )

**DATA (Below 1 GHz\_MODE 3)****Test Report****Common Information**

Test Description: WTC 600.1  
 Operating Conditions: ICR 3 m Chamber  
 Operator Name: LEE S J  
 Comment: RE Below MODE 3

**Final\_Result**

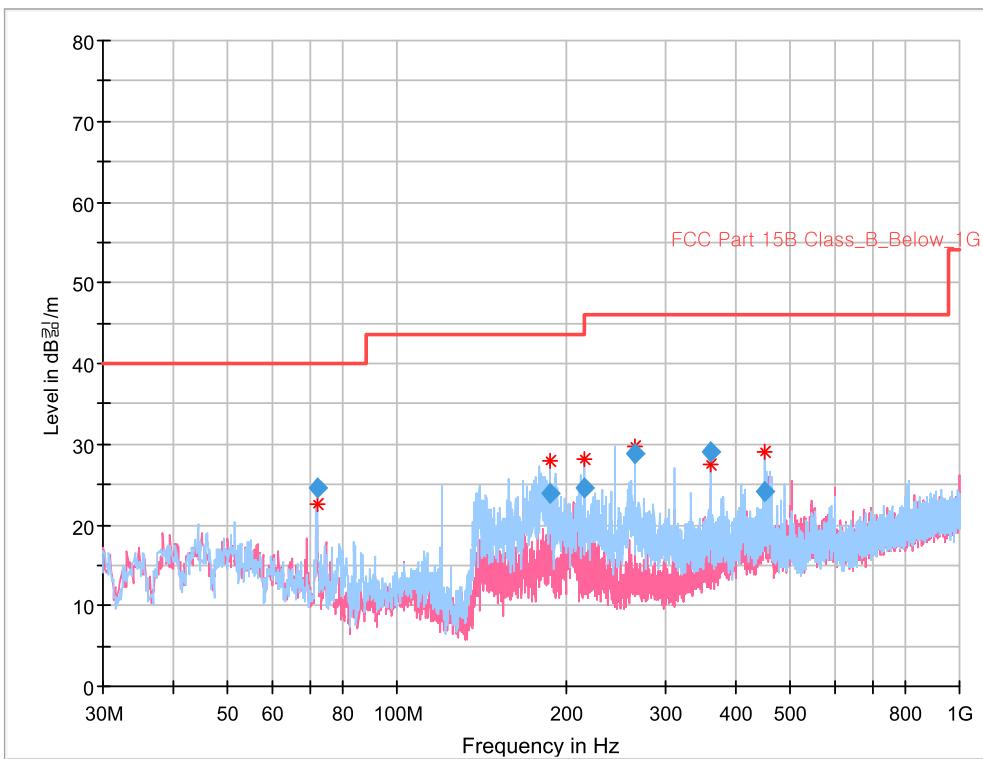
Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
41.640	26.99	40.00	13.01	15000.0	120.000	100.0	V	274.0	-19.8
57.936	32.24	40.00	7.76	15000.0	120.000	100.0	V	260.0	-19.9
71.904	25.81	40.00	14.19	15000.0	120.000	400.0	H	343.0	-24.4
182.096	27.81	43.50	15.69	15000.0	120.000	300.0	H	3.0	-22.8
244.467	32.14	46.00	13.86	15000.0	120.000	100.0	H	287.0	-19.4
360.091	31.05	46.00	14.95	15000.0	120.000	100.0	H	3.0	-16.9



페이지(page) : ( 15 ) / ( 총(Total) 25 )

**DATA (Below 1 GHz\_MODE 4)****Test Report****Common Information**

Test Description: WTC 600.1  
 Operating Conditions: ICR 3 m Chamber  
 Operator Name: LEE S J  
 Comment: RE Below MODE 4

**Final\_Result**

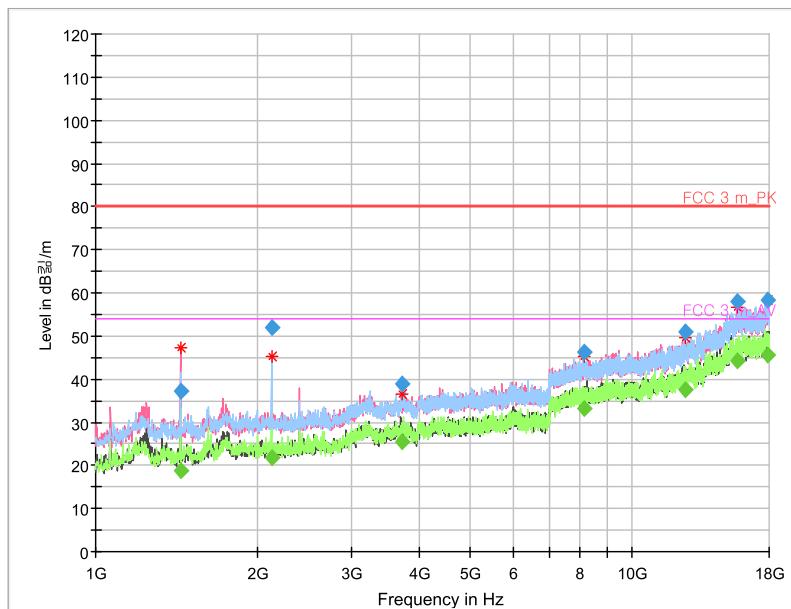
Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
72.001	24.51	40.00	15.49	15000.0	120.000	400.0	H	313.0	-24.4
186.946	23.89	43.50	19.61	15000.0	120.000	100.0	H	359.0	-22.3
215.949	24.57	43.50	18.93	15000.0	120.000	200.0	H	345.0	-21.3
263.964	28.74	46.00	17.26	15000.0	120.000	200.0	H	233.0	-18.1
359.994	29.13	46.00	16.87	15000.0	120.000	100.0	H	70.0	-17.0
451.077	24.13	46.00	21.87	15000.0	120.000	100.0	H	110.0	-14.4



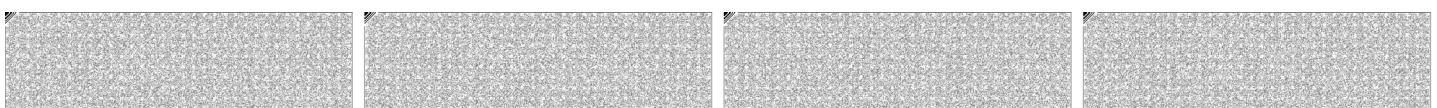
페이지(page) : ( 16 ) / ( 총(Total) 25 )

**DATA (Above 1 GHz\_MODE 1)****Test Report****Common Information**

Test Description: WTC 600.1  
 Test Site: ICR 3 m Chamber  
 Operator Name: LEE S J  
 Comment: ABOVE\_MODE 1

**Final Result**

Frequency (MHz)	MaxPeak (dB $\mu$ V/m)	CAverage (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1438.600	---	18.87	54.00	35.13	3000.0	1000.000	200.0	V	160.0	-17.6
1438.600	37.17	---	80.00	42.83	3000.0	1000.000	200.0	V	160.0	-17.6
2130.500	---	21.80	54.00	32.20	3000.0	1000.000	100.0	H	0.0	-13.3
2130.500	51.81	---	80.00	28.19	3000.0	1000.000	100.0	H	0.0	-13.3
3731.900	---	25.50	54.00	28.50	3000.0	1000.000	300.0	H	238.0	-6.9
3731.900	38.93	---	80.00	41.07	3000.0	1000.000	300.0	H	238.0	-6.9
8138.300	---	33.07	54.00	20.93	3000.0	1000.000	100.0	V	333.0	0.7
8138.300	46.21	---	80.00	33.79	3000.0	1000.000	100.0	V	333.0	0.7
12539.600	---	37.46	54.00	16.54	3000.0	1000.000	200.0	H	102.0	4.5
12539.600	50.92	---	80.00	29.08	3000.0	1000.000	200.0	H	102.0	4.5
15701.600	---	44.11	54.00	9.89	3000.0	1000.000	200.0	V	1.0	8.9
15701.600	57.99	---	80.00	22.01	3000.0	1000.000	200.0	V	1.0	8.9
17836.800	---	45.61	54.00	8.39	3000.0	1000.000	100.0	H	195.0	11.0
17836.800	58.40	---	80.00	21.60	3000.0	1000.000	100.0	H	195.0	11.0

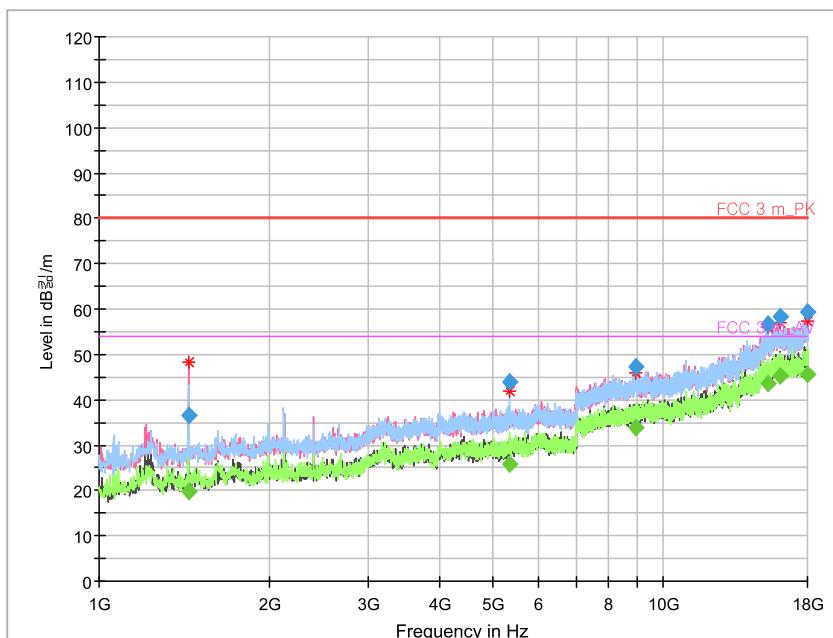




페이지(page) : ( 17 ) / ( 총(Total) 25 )

**DATA (Above 1 GHz\_MODE 2)****Test Report****Common Information**

Test Description: WTC 600.1  
 Test Site: ICR 3 m Chamber  
 Operator Name: LEE S J  
 Comment: ABOVE\_MODE 2

**Final Result**

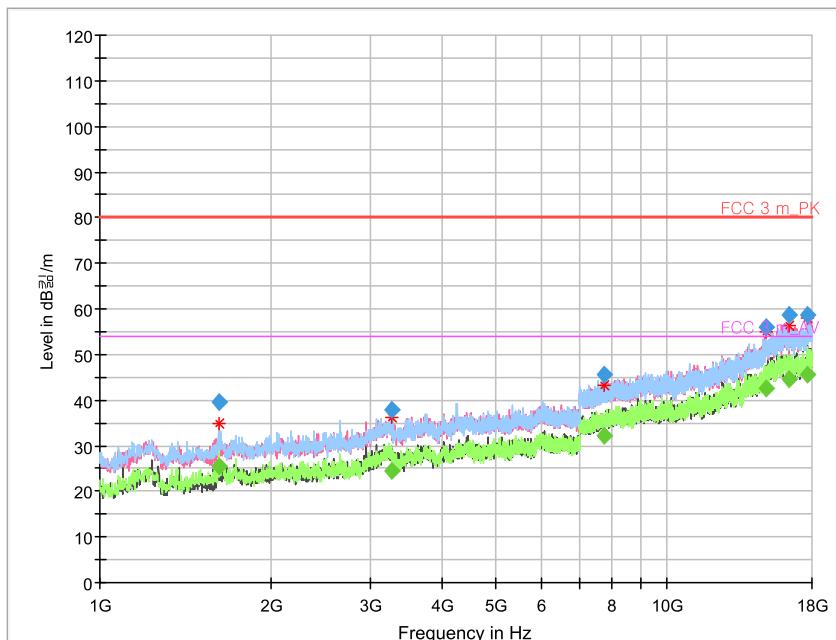
Frequency (MHz)	MaxPeak (dB $\mu$ V/m)	CAverage (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1438.600	36.37	---	80.00	43.63	3000.0	1000.000	200.0	V	129.0	-17.6
1438.600	---	19.92	54.00	34.08	3000.0	1000.000	200.0	V	129.0	-17.6
5324.800	---	25.87	54.00	28.13	3000.0	1000.000	200.0	H	0.0	-3.6
5324.800	43.97	---	80.00	36.03	3000.0	1000.000	300.0	H	0.0	-3.6
8906.700	47.34	---	80.00	32.66	3000.0	1000.000	300.0	H	262.0	1.4
8906.700	---	33.89	54.00	20.11	3000.0	1000.000	200.0	H	262.0	1.4
15324.200	---	43.41	54.00	10.59	3000.0	1000.000	200.0	V	0.0	9.0
15324.200	56.62	---	80.00	23.38	3000.0	1000.000	200.0	V	0.0	9.0
16099.400	58.27	---	80.00	21.73	3000.0	1000.000	200.0	H	125.0	9.3
16099.400	---	45.19	54.00	8.81	3000.0	1000.000	200.0	H	125.0	9.3
17989.800	59.21	---	80.00	20.79	3000.0	1000.000	100.0	H	164.0	11.8
17989.800	---	45.60	54.00	8.40	3000.0	1000.000	100.0	H	164.0	11.8



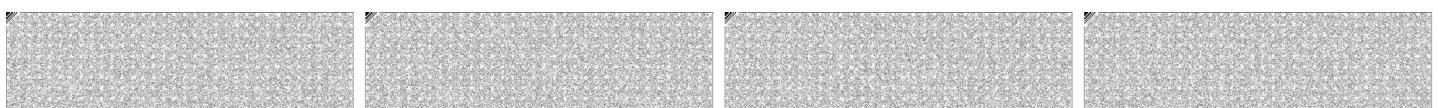
페이지(page) : ( 18 ) / ( 총(Total) 25 )

**DATA (Above 1 GHz\_MODE 3)****Test Report****Common Information**

Test Description: WTC 600.1  
 Test Site: ICR 3 m Chamber  
 Operator Name: LEE S J  
 Comment: ABOVE\_MODE 3

**Final Result**

Frequency (MHz)	MaxPeak (dB $\mu$ V/m)	CAverage (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1622.200	39.71	---	80.00	40.29	3000.0	1000.000	200.0	H	358.0	-16.2
1622.200	---	25.62	54.00	28.38	3000.0	1000.000	200.0	H	358.0	-16.2
3271.200	37.81	---	80.00	42.20	3000.0	1000.000	100.0	H	31.0	-8.1
3271.200	---	24.32	54.00	29.68	3000.0	1000.000	100.0	H	31.0	-8.1
7759.200	45.52	---	80.00	34.48	3000.0	1000.000	100.0	H	165.0	0.1
7759.200	---	32.13	54.00	21.87	3000.0	1000.000	200.0	H	165.0	0.1
14943.400	---	42.47	54.00	11.53	3000.0	1000.000	100.0	V	242.0	8.9
14943.400	55.83	---	80.00	24.17	3000.0	1000.000	200.0	V	242.0	8.9
16447.900	58.61	---	80.00	21.39	3000.0	1000.000	400.0	V	242.0	9.0
16447.900	---	44.57	54.00	9.43	3000.0	1000.000	100.0	V	242.0	9.0
17700.800	---	45.53	54.00	8.47	3000.0	1000.000	200.0	V	270.0	10.5
17700.800	58.57	---	80.00	21.43	3000.0	1000.000	200.0	V	270.0	10.5

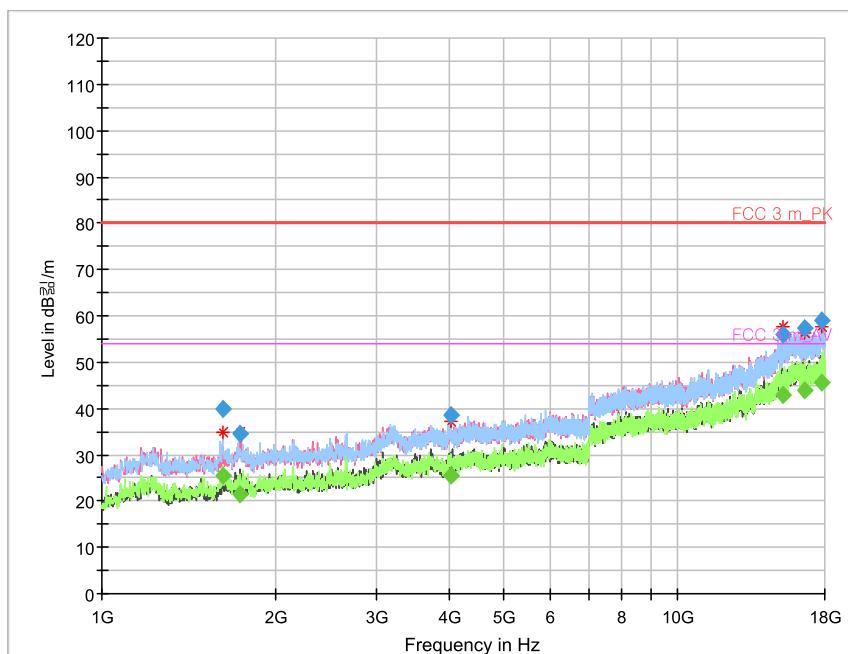




페이지(page) : ( 19 ) / ( 총(Total) 25 )

**DATA (Above 1 GHz\_MODE 4)****Test Report****Common Information**

Test Description: WTC 600.1  
 Test Site: ICR 3 m Chamber  
 Operator Name: LEE S J  
 Comment: ABOVE\_MODE 4

**Final Result**

Frequency (MHz)	MaxPeak (dB $\mu$ V/m)	CAverage (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1620.500	---	25.34	54.00	28.66	3000.0	1000.000	200.0	H	344.0	-16.2
1620.500	<b>39.95</b>	---	80.00	40.05	3000.0	1000.000	200.0	H	344.0	-16.2
1734.400	---	21.31	54.00	32.69	3000.0	1000.000	100.0	V	60.0	-15.4
1734.400	<b>34.57</b>	---	80.00	45.43	3000.0	1000.000	100.0	V	60.0	-15.4
4039.600	---	25.52	54.00	28.48	3000.0	1000.000	300.0	V	0.0	-6.4
4039.600	<b>38.67</b>	---	80.00	41.33	3000.0	1000.000	200.0	V	0.0	-6.4
15235.800	---	43.03	54.00	10.97	3000.0	1000.000	100.0	V	268.0	9.1
15235.800	<b>56.08</b>	---	80.00	23.92	3000.0	1000.000	100.0	V	268.0	9.1
16563.500	---	44.01	54.00	9.99	3000.0	1000.000	100.0	H	130.0	9.1
16563.500	<b>57.28</b>	---	80.00	22.72	3000.0	1000.000	100.0	H	130.0	9.1
17804.500	---	45.60	54.00	8.40	3000.0	1000.000	200.0	H	109.0	10.9
17804.500	<b>59.10</b>	---	80.00	20.90	3000.0	1000.000	200.0	H	109.0	10.9





페이지(page) : ( 20 ) / ( 총(Total) 25 )

## 7.2 Conducted disturbance

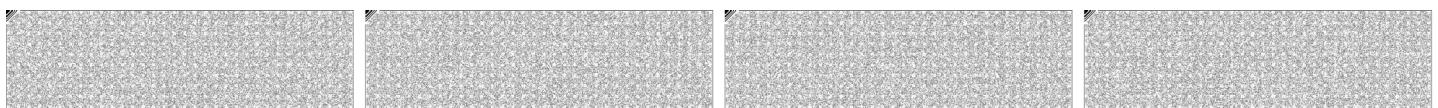
### Definition:

The test assesses the ability of the EUT to limit its internal noise from being present on the AC mains Power and Signal Line In / Output ports.

Test method	: FCC Part 15.107, Class B
Test Date	: 2021. 06. 14
Temperature, Humidity	: 22.7 °C ~ 22.8 °C, 40.6 % R.H. ~ 40.7 % R.H.
Measurement Frequency range and RBW	: 150 kHz ~ 30 MHz
Test mode	: MODE 1, 2
Result	: Pass

### A sample calculation:

- Corr (correction factor) = LISN Insertion loss + Cable loss
- Emission Level = meter reading + Corr
- Sample calculation; Neutral(MODE 1)
- At Frequency: 0.429 MHz Result = Reading + Corr = 23.31 dB( $\mu$ V) + 9.9 dB = 33.21 dB( $\mu$ V)  
 Quasi-peak,  CISPR-Average
- Measurement Data kept in ICR





페이지(page) : ( 21 ) / ( 총(Total) 25 )

Limits for conducted emissions from the AC mains ports of class A equipment.

Applicable to AC mains power port		
Frequency Range (MHz)	Quasi-Peak [dB(µV)]	CISPR-Average [dB(µV)]
0.15 ~ 0.5	79	66
0.5 ~ 30	73	60

Limits for conducted emissions from the AC mains ports of class B equipment.

Applicable to AC mains power port		
Frequency Range (MHz)	Quasi-Peak [dB(µV)]	CISPR-Average [dB(µV)]
0.15 ~ 0.5	66 ~ 56*	56 ~ 46*
0.5 ~ 5	56	46
5 ~ 30	60	50

\* Decreases with the logarithm of the frequency

Used equipments:

Used	Equipment	Model no.	Makers	Serial no.	Next Cal.
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR3	R&S	102119	2022. 04. 14
<input checked="" type="checkbox"/>	LISN(main)	ENV216	R&S	102194	2022. 04. 15
<input checked="" type="checkbox"/>	LISN(sub)	ENV216	R&S	102193	2022. 04. 15
<input type="checkbox"/>	LISN	NNLK 8130	SCHWARZBECK	05184	2021. 08. 13
<input type="checkbox"/>	HIGH POWER VOLTAGE PROBE	TK 9421	SCHWARZBECK	271	2021. 08. 14
<input checked="" type="checkbox"/>	HUMIDITY/TEMP. DATA RECORDER	MHT-381SD	LUTRON	AI.63101	2022. 02. 25

Test Software:

Used	Description	Model name	Manufacturer	Version.
<input checked="" type="checkbox"/>	EMI Test Software	EMC32	R & S	10.01.02

Measurement Data:

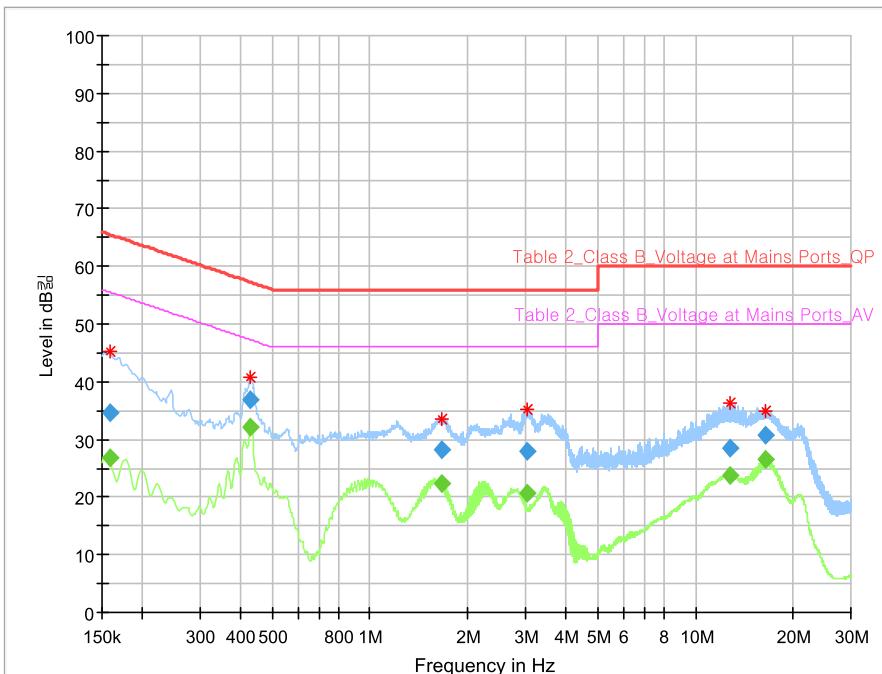
- Refer to the Next page.



페이지(page) : ( 22 ) / ( 총(Total) 25 )

**DATA - Live(MODE 1)****Test Report****Common Information**

Test Description: WTC 600.1  
 Test Site ICR Shield Room  
 Operator Name: LEE S J  
 Comment: CE L / MODE 1

**Final Result**

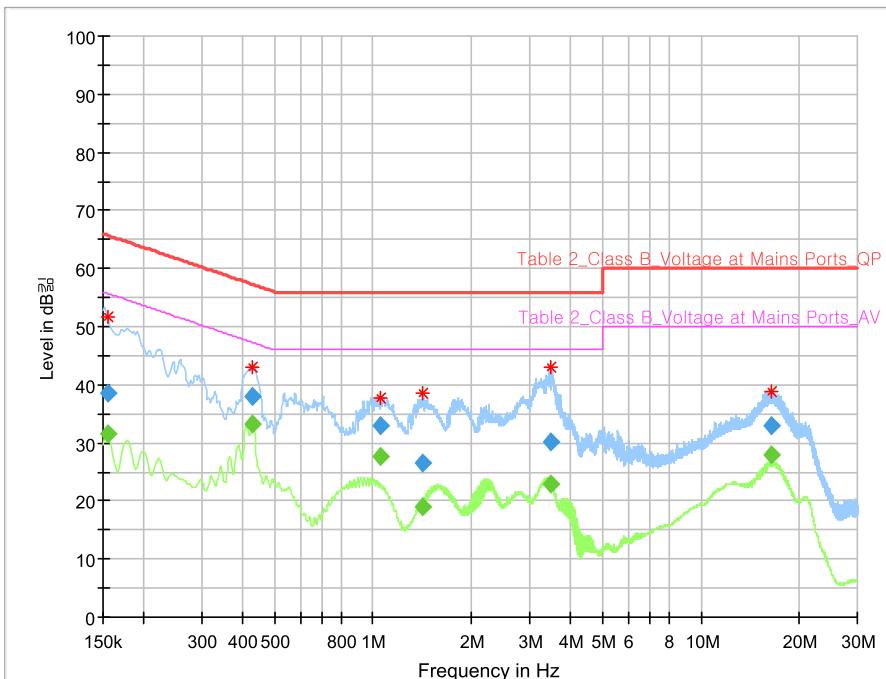
Frequency (MHz)	QuasiPeak (dB $\mu$ V)	CAverage (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.159	---	26.83	55.52	28.68	5000.0	9.000	L1	ON	9.9
0.159	34.51	---	65.52	31.00	5000.0	9.000	L1	ON	9.9
0.429	---	32.04	47.27	15.23	5000.0	9.000	L1	ON	9.9
0.429	36.84	---	57.27	20.43	5000.0	9.000	L1	ON	9.9
1.658	---	22.37	46.00	23.63	5000.0	9.000	L1	ON	9.7
1.658	28.11	---	56.00	27.89	5000.0	9.000	L1	ON	9.7
3.053	---	20.80	46.00	25.20	5000.0	9.000	L1	ON	9.7
3.053	28.06	---	56.00	27.94	5000.0	9.000	L1	ON	9.7
12.701	---	23.63	50.00	26.37	5000.0	9.000	L1	ON	9.8
12.701	28.44	---	60.00	31.56	5000.0	9.000	L1	ON	9.8
16.440	---	26.44	50.00	23.56	5000.0	9.000	L1	ON	9.8
16.440	30.64	---	60.00	29.36	5000.0	9.000	L1	ON	9.8



페이지(page) : ( 23 ) / ( 총(Total) 25 )

**DATA - Neutral(MODE 1)****Test Report****Common Information**

Test Description: WTC 600.1  
 Test Site ICR Shield Room  
 Operator Name: LEE S J  
 Comment: CE N / MODE 1

**Final Result**

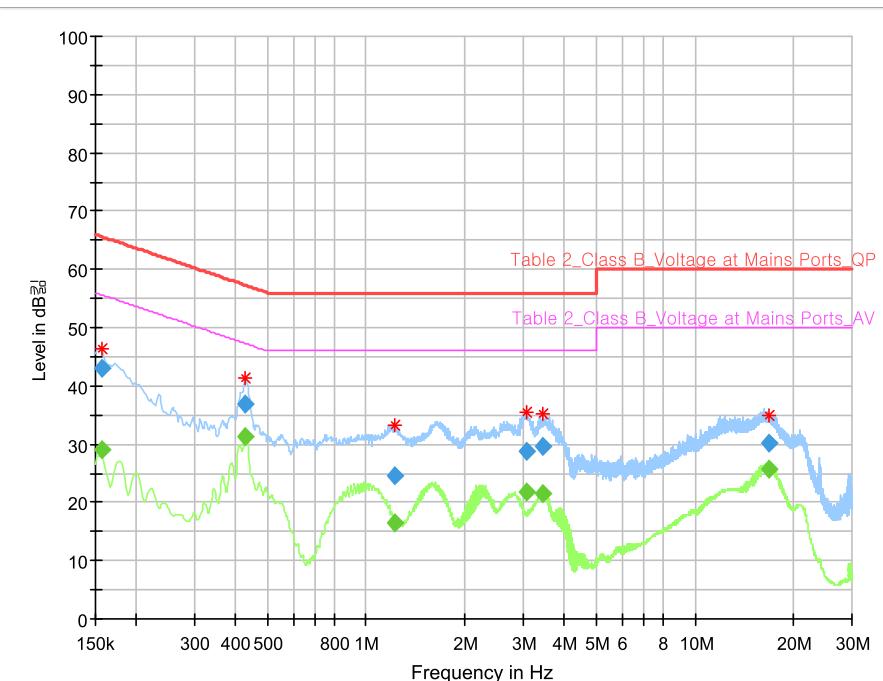
Frequency (MHz)	QuasiPeak (dB $\mu$ V)	CAverage (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.155	---	31.49	55.75	24.27	5000.0	9.000	N	ON	9.8
0.155	38.46	---	65.75	27.29	5000.0	9.000	N	ON	9.8
0.429	---	33.21	47.27	14.06	5000.0	9.000	N	ON	9.9
0.429	38.05	---	57.27	19.23	5000.0	9.000	N	ON	9.9
1.057	---	27.62	46.00	18.38	5000.0	9.000	N	ON	9.8
1.057	32.94	---	56.00	23.06	5000.0	9.000	N	ON	9.8
1.421	---	19.01	46.00	26.99	5000.0	9.000	N	ON	9.7
1.421	26.65	---	56.00	29.35	5000.0	9.000	N	ON	9.7
3.478	---	23.01	46.00	22.99	5000.0	9.000	N	ON	9.7
3.478	30.30	---	56.00	25.70	5000.0	9.000	N	ON	9.7
16.370	---	28.03	50.00	21.97	5000.0	9.000	N	ON	9.8
16.370	33.06	---	60.00	26.94	5000.0	9.000	N	ON	9.8



페이지(page) : ( 24 ) / ( 총(Total) 25 )

**DATA - Live(MODE 2)****Test Report****Common Information**

Test Description: WTC 600.1  
 Test Site ICR Shield Room  
 Operator Name: LEE S J  
 Comment: CE L / MODE 2

**Final Result**

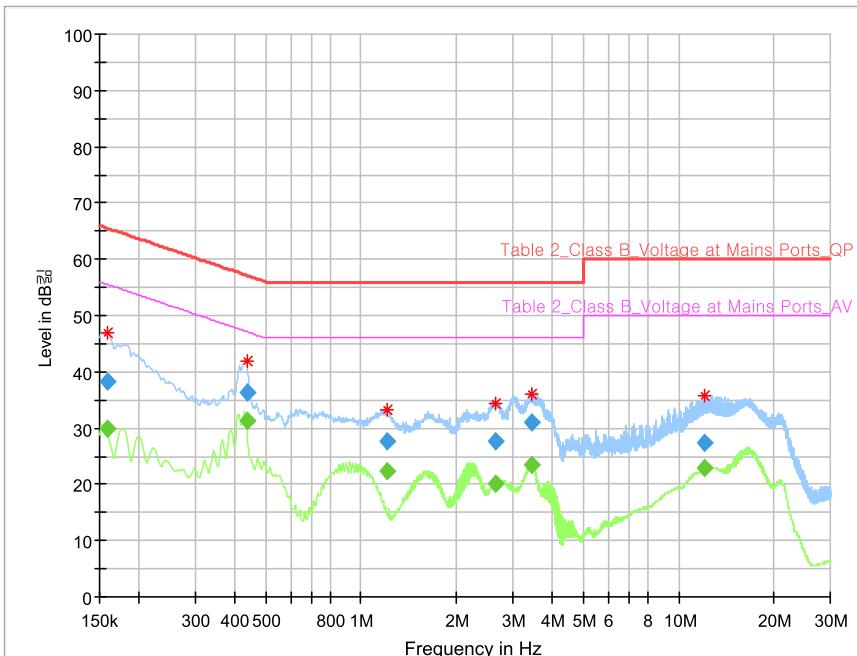
Frequency (MHz)	QuasiPeak (dB <sub>μV</sub> )	CAverage (dB <sub>μV</sub> )	Limit (dB <sub>μV</sub> )	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.157	---	29.17	55.63	26.47	5000.0	9.000	L1	ON	9.8
0.157	42.97	---	65.63	22.67	5000.0	9.000	L1	ON	9.8
0.427	---	31.41	47.32	15.91	5000.0	9.000	L1	ON	9.9
0.427	36.94	---	57.32	20.37	5000.0	9.000	L1	ON	9.9
1.226	---	16.56	46.00	29.44	5000.0	9.000	L1	ON	9.7
1.226	24.65	---	56.00	31.35	5000.0	9.000	L1	ON	9.7
3.064	---	21.67	46.00	24.33	5000.0	9.000	L1	ON	9.7
3.064	28.67	---	56.00	27.33	5000.0	9.000	L1	ON	9.7
3.437	---	21.63	46.00	24.37	5000.0	9.000	L1	ON	9.7
3.437	29.54	---	56.00	26.46	5000.0	9.000	L1	ON	9.7
16.710	---	25.73	50.00	24.27	5000.0	9.000	L1	ON	9.8
16.710	30.24	---	60.00	29.76	5000.0	9.000	L1	ON	9.8



페이지(page) : ( 25 ) / ( 총(Total) 25 )

**DATA - Neutral(MODE 2)****Test Report****Common Information**

Test Description: WTC 600.1  
 Test Site ICR Shield Room  
 Operator Name: LEE S J  
 Comment: CE N / MODE 2

**Final Result**

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	CAverage (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.159	---	29.86	55.52	25.66	5000.0	9.000	N	ON	9.9
0.159	38.22	---	65.52	27.29	5000.0	9.000	N	ON	9.9
0.436	---	31.20	47.14	15.94	5000.0	9.000	N	ON	9.9
0.436	36.21	---	57.14	20.93	5000.0	9.000	N	ON	9.9
1.201	---	22.45	46.00	23.55	5000.0	9.000	N	ON	9.7
1.201	27.78	---	56.00	28.22	5000.0	9.000	N	ON	9.7
2.657	---	20.14	46.00	25.86	5000.0	9.000	N	ON	9.7
2.657	27.71	---	56.00	28.29	5000.0	9.000	N	ON	9.7
3.455	---	23.46	46.00	22.54	5000.0	9.000	N	ON	9.7
3.455	31.11	---	56.00	24.89	5000.0	9.000	N	ON	9.7
11.996	---	22.91	50.00	27.09	5000.0	9.000	N	ON	9.8
11.996	27.45	---	60.00	32.55	5000.0	9.000	N	ON	9.8

- END -

