

# FCC TEST REPORT

Job No. : GPWE2107000132EC

Applicant Name : SmartWitness USA, LLC

Equipment Under Test (EUT) :

Product Name : Vehicle Recorder

Model Name : KP2-NA

Alt. Model Name : See 1.3 General Information of E.U.T.

FCC Authorization Type : Certification

Applied Standards : FCC Part 15 Subpart B, Class B

ANSI C63.4a:2017

Date of Receipt : July 8, 2021

Date of Test : July 23, 2021

Date of Issue : July 29, 2021

Test Results : Complied

Tested by :



Youngsik Na

Reviewed by :



Paul Kang

**This test report does not assure KOLAS accreditation.**

- 1) The results of this test report are effective only to the items tested.
- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.

**Remarks :**

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## Revision History

| Revision | Report number        | Description |
|----------|----------------------|-------------|
| 0        | F690501-RF-EMC000023 | Initial     |
|          |                      |             |

## 1. General Information

### 1.1 Client Information

|                      |                                                                                |
|----------------------|--------------------------------------------------------------------------------|
| Applicant            | SmartWitness USA, LLC                                                          |
| Applicant Address    | 1016 Lunt Avenue Schaumburg, IL 60193 United States                            |
| Manufacturer         | D-TEG Co., Ltd                                                                 |
| Manufacturer Address | 3F, Jungmin Bldg, 53 Maewha-ro, Bundang-gu, Seongnam, Gyeonggi-do 13505, Korea |
| Factory              | DaWoo Telecom Co., Ltd                                                         |
| Factory Address      | #57, Gunpocheomdansaneop 2-ro, Gunpo-si, Gyeonggi-do, Korea                    |

### 1.2 Test Laboratory

|                        |                                                                                        |
|------------------------|----------------------------------------------------------------------------------------|
| Name and Address       | SGS Korea Co., Ltd.                                                                    |
| - Giheung 1 Laboratory | 35, Giheungdanji-ro 121beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea |
| - Giheung 2 Laboratory | 23, Giheungdanji-ro 24beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea  |
| FCC Registration No.   | KR0150                                                                                 |
| IC Registration No.    | 7837B                                                                                  |
| Phone                  | + 82 31 548 0710                                                                       |
| Fax                    | + 82 31 548 0719                                                                       |
| e-mail                 | <a href="mailto:julia.choi@sgs.com">julia.choi@sgs.com</a>                             |

### 1.3 General Information of E.U.T.

| Classification        | Specification                                                                                                                    |                                                                                                       |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Product Name          | Vehicle Recorder                                                                                                                 |                                                                                                       |
| Model Name            | KP2-NA                                                                                                                           |                                                                                                       |
| Alt. Model Name       | KP2, KP2-VZ, KP2-DFC, KP2-NA-64, KP2-NA-DFC-64, KP2-VZ-64, KP2-VZ-DFC-64, KP2-NA-128, KP2-NA-DFC-128, KP2-VZ-128, KP2-VZ-DFC-128 |                                                                                                       |
| Model Differences     | KP2                                                                                                                              | Printed sentence on appearance is different.                                                          |
|                       | KP2-VZ                                                                                                                           |                                                                                                       |
|                       | KP2-DFC                                                                                                                          |                                                                                                       |
|                       | KP2-NA-64                                                                                                                        | Printed sentence on appearance and inboxed Micro SD card capacity are different.(Micro SD Card 64GB)  |
|                       | KP2-NA-DFC-64                                                                                                                    |                                                                                                       |
|                       | KP2-VZ-64                                                                                                                        |                                                                                                       |
|                       | KP2-VZ-DFC-64                                                                                                                    | Printed sentence on appearance and inboxed Micro SD card capacity are different.(Micro SD Card 128GB) |
|                       | KP2-NA-128                                                                                                                       |                                                                                                       |
|                       | KP2-NA-DFC-128                                                                                                                   |                                                                                                       |
|                       | KP2-VZ-128                                                                                                                       |                                                                                                       |
| KP2-VZ-DFC-128        |                                                                                                                                  |                                                                                                       |
| Serial No             | HQNA62100119                                                                                                                     |                                                                                                       |
| EMI Classification    | Class B                                                                                                                          |                                                                                                       |
| Test Power            | DC 12 V , DC 24 V                                                                                                                |                                                                                                       |
| Rated Power           | DC 12 / 24 V , 1.5 A                                                                                                             |                                                                                                       |
| Internal Clock Freq.  | 2.4 GHz                                                                                                                          |                                                                                                       |
| Operating Temperature | - 10 ~ + 55 ℃                                                                                                                    |                                                                                                       |
| H/W Version           | 1.0.0                                                                                                                            |                                                                                                       |
| S/W Version           | 1.0.0                                                                                                                            |                                                                                                       |
| Port                  | Power Cable(DC IN, TX(Administrator), RX(Administrator)), Micro 5 pin USB(Administrator), USIM slot, MicroSD card slot           |                                                                                                       |
| Function              | It is a vehicle recorder that equipped with Bluetooth, Wi-Fi, LTE, GPS functions and recording video in microSD card             |                                                                                                       |

#### 1.4 Operating Modes and Conditions

| Operating mode                                         | Operating Condition                                                                                                                                                                         |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) Camera + MicroSD card + LTE FDD5 attached _ DC 12 V | It was status that received DC 12 V power through car battery and recorded the video in the SD CARD. And the EUT is on connecting status of the LTE FDD 5 by using CMW500 at the same time. |
| 2) Camera + MicroSD card + LTE FDD5 attached _ DC 24 V | It was status that received DC 24 V power through car battery and recorded the video in the SD CARD. And the EUT is on connecting status of the LTE FDD 5 by using CMW500 at the same time. |

#### 1.5 Peripheral Equipments

| Description  | Model       | Serial No. | Manufacturer |
|--------------|-------------|------------|--------------|
| Car Battery1 | Car battery | GB40R      | -            |
| Car Battery2 | Car battery | GB40R      | -            |
| USIM card    | -           | -          | -            |

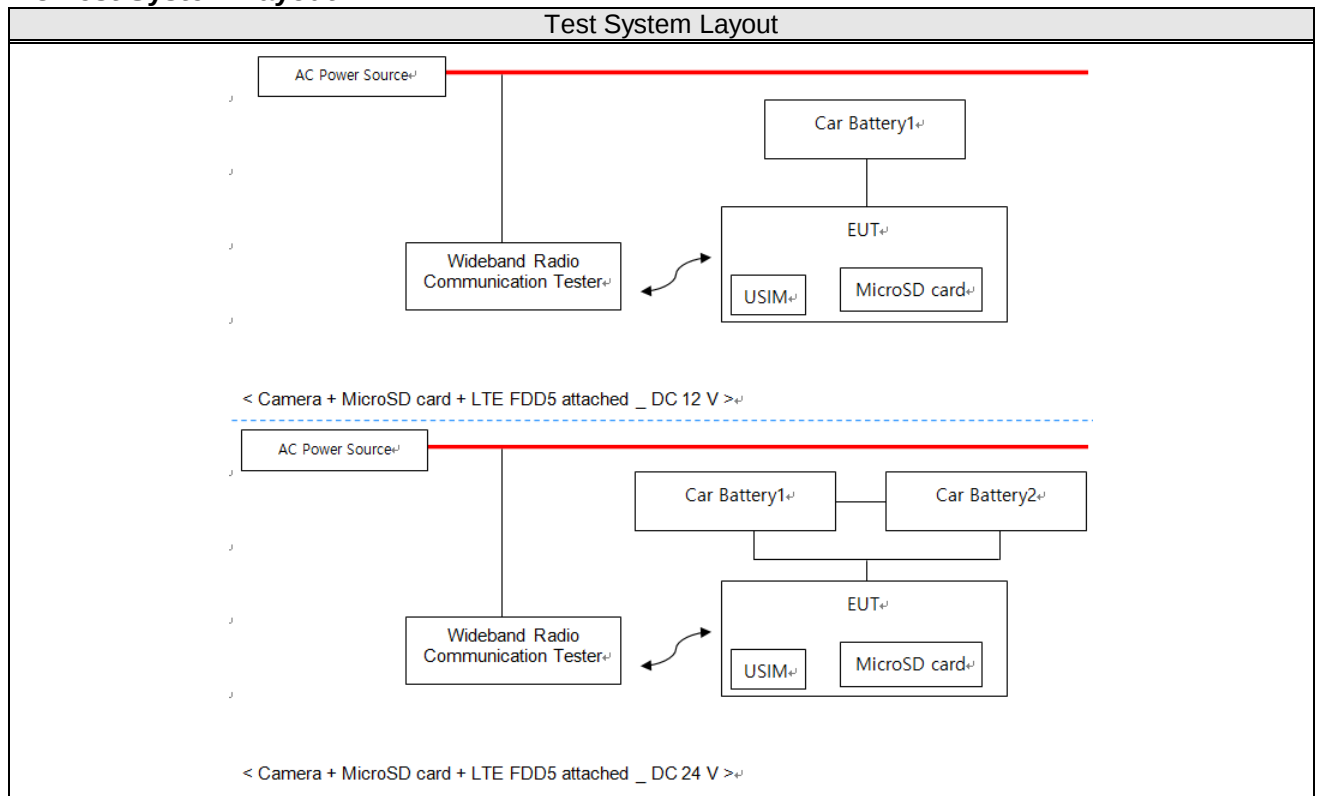
#### 1.6 Cable List

| Start                               |                    | END                                 |           | Cable Spec. |          | Used core |
|-------------------------------------|--------------------|-------------------------------------|-----------|-------------|----------|-----------|
| Name                                | I/O Port           | Name                                | I/O Port  | Length (m)  | Shield   |           |
| < Test Mode 1 >                     |                    |                                     |           |             |          |           |
| EUT                                 | DC IN              | Car Battery1                        | DC OUT    | 5.0         | Unshield | No        |
|                                     | USIM slot          | USIM                                | -         | -           | -        | -         |
|                                     | Micro SD card slot | Micro SD card                       | -         | -           | -        | -         |
|                                     | -                  | Wideband Radio Communication Tester | -         | -           | -        | -         |
| Wideband Radio Communication Tester | AC IN              | AC Power Source                     | -         | 1.6         | Unshield | No        |
| < Test Mode 2 >                     |                    |                                     |           |             |          |           |
| EUT                                 | DC IN(+)           | Car Battery1                        | DC OUT(+) | 5.0         | Unshield | No        |
|                                     | DC IN(-)           | Car Battery2                        | DC OUT(-) | 5.0         | Unshield | No        |
|                                     | USIM slot          | USIM                                | -         | -           | -        | -         |
|                                     | MicroSD card slot  | Micro SD card                       | -         | -           | -        | -         |
|                                     | -                  | Wideband Radio Communication Tester | -         | -           | -        | -         |
| Wideband Radio Communication Tester | AC IN              | AC Power Source                     | -         | 1.6         | Unshield | No        |

#### 1.7 System Configurations

| Description      | Model          | Serial No.     | Manufacturer | Note                       |
|------------------|----------------|----------------|--------------|----------------------------|
| Battery          | WEC6R0505QA    | -              | -            | -                          |
| CCD Board1       | FFS6-B4-V07    | -              | -            | -                          |
| CCD Board2       | PV3209K_IR_FHD | -              | -            | -                          |
| Cradle Board     | CRADLE V100    | -              | PHOENIX      | -                          |
| LTE Main Antenna | -              | -              | PHOENIX      | -                          |
| LTE Sub Antenna  | -              | -              | PHOENIX      | -                          |
| Main Board       | MAIN V100      | MC1C52100095   | PHOENIX      | -                          |
| Sub Board        | SUB V100       | -              | PHOENIX      | -                          |
| Wireless Module  | SC606T-NA      | P1A21AN0F00020 | QUECTEL      | FCC ID :<br>XMR2020SC606NA |
| Micro SD card    | -              | -              | -            | -                          |

## 1.8 Test System Layout



## 1.9 Modifications

- There was no modified item during the test.

## 1.10 Applicable Standards for Testing

| Standards               | Status     | Deviation    |
|-------------------------|------------|--------------|
| FCC Part 15 : Subpart B | Applicable | No Deviation |

## 1.11 Summary of Test Results

| Test Item          | Standards                            | Results  |
|--------------------|--------------------------------------|----------|
| Conducted Emission | FCC Part 15 Subpart B Section 15.107 | N/A      |
| Radiated Emission  | FCC Part 15 Subpart B Section 15.109 | Complied |

Note : Test methods of all test items are performed according to the basic standards in this table.

# EMISSION

## 2.1 Test Results

| Test Items         | Standards                            | Test Results |
|--------------------|--------------------------------------|--------------|
| Conducted Emission | FCC Part 15 Subpart B Section 15.107 | N/A          |
| Radiated Emission  | FCC Part 15 Subpart B Section 15.109 | Complied     |

## 2.2 Test Method and Limits

### 2.2.1 Test Method

| Test Items         | Measuring Frequency Range | RBW     | Measuring Distance |
|--------------------|---------------------------|---------|--------------------|
| Conducted Emission | 0.15 MHz ~ 30 MHz         | 9 kHz   | -                  |
| Radiated Emission  | 30 MHz ~ 1 GHz            | 120 kHz | 10 m & 3 m         |
|                    | Above 1 GHz               | 1 MHz   | 3 m                |

Note : 10 m method of radiated emission measurement is only applied to Class A equipment over the frequency range of 30 MHz ~ 1 GHz. Except this, 3 m method is applied to Class B equipment over the frequency range of 30 MHz ~ 1 GHz and Class A and Class B equipment above 1 GHz.

### 2.2.2 Test Limits

#### -Conducted Emission Limits

| Frequency Range    | Limits(dB $\mu$ V) |          | Class   |
|--------------------|--------------------|----------|---------|
|                    | Quasi-peak         | Average  |         |
| 0.15 MHz ~ 0.5 MHz | 79                 | 66       | Class A |
| 0.5 MHz ~ 30 MHz   | 73                 | 60       |         |
| 0.15 MHz ~ 0.5 MHz | 66 to 56           | 56 to 46 | Class B |
| 0.5 MHz ~ 5 MHz    | 56                 | 46       |         |
| 5 MHz ~ 30 MHz     | 60                 | 50       |         |

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

#### -Radiated Emission Limits below 1 GHz

| Frequency Range   | Limits(dB $\mu$ V/m) | Class                    |
|-------------------|----------------------|--------------------------|
|                   | Quasi-peak           |                          |
| 30 MHz ~ 88 MHz   | 39.0                 | Class A<br>(10 m method) |
| 88 MHz ~ 216 MHz  | 43.5                 |                          |
| 216 MHz ~ 960 MHz | 46.4                 |                          |
| 960 MHz ~ 1 GHz   | 49.5                 |                          |
| 30 MHz ~ 88 MHz   | 40.0                 | Class B<br>(3 m method)  |
| 88 MHz ~ 216 MHz  | 43.5                 |                          |
| 216 MHz ~ 960 MHz | 46.0                 |                          |
| 960 MHz ~ 1 GHz   | 54.0                 |                          |

#### -Radiated Emission Limits above 1 GHz (3 m method)

| Frequency Range | Limits(dB $\mu$ V/m) |      | Class   |
|-----------------|----------------------|------|---------|
|                 | Average              | Peak |         |
| Above 1 GHz     | 59.5                 | 79.5 | Class A |
| Above 1 GHz     | 54.0                 | 74.0 | Class B |

Note : The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/decade because it was measured at 3 m distance not 10 m distance.

## 2.3 Radiated Emission

The initial preliminary exploratory scans were performed over the measuring frequency range (30 MHz to 13 GHz) using a max hold mode incorporating a Peak detector by using the EMI measuring software. The final test data was measured using a Quasi-Peak detector below 1 GHz, Peak and CISPR-Average detector above 1 GHz.

Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

Note. Measuring software

- Giheung 1Lab. : EMC32(V9.26.01) from R&S
- Giheung 2Lab. : EMC32(V10.40.10) from R&S

### 2.3.1 Test Equipments

| Equipment                           | Model     | Manufacturer | Serial No | Cal Due. Date |
|-------------------------------------|-----------|--------------|-----------|---------------|
| EMI TEST RECEIVER                   | ESU40     | R&S          | 100075    | 2021.08.18    |
| Hybrid ANTENNA                      | VULB 9163 | SCHWARZBECK  | 9163-390  | 2022.02.15    |
| Double Ridged Horn Antenna          | HF907     | R&S          | 102578    | 2022.04.15    |
| Low Noise Amplifier                 | TK-PA01S  | 200110-L     | TESTEK    | 2022.06.21    |
| Microwave Preamplifier              | PAM-118A  | Com-Power    | 551074    | 2021.10.13    |
| Wideband Radio Communication Tester | CMW 500   | R&S          | 106844    | 2021.08.11    |

### 2.3.2 Test Site

3m SEMI-ANECHOIC CHAMBER in Giheung 2 Laboratory

### 2.3.3 Environment Conditions

#### ① Below 1 GHz

|                      |                                      |
|----------------------|--------------------------------------|
| Temperature          | (Minimum 21.0, Maximum 22.0) °C      |
| Humidity             | (Minimum 37.0, Maximum 38.0) % R.H.. |
| Atmospheric Pressure | (Minimum 100.4, Maximum 100.4) kPa   |
| Test Date            | July 23, 2021                        |

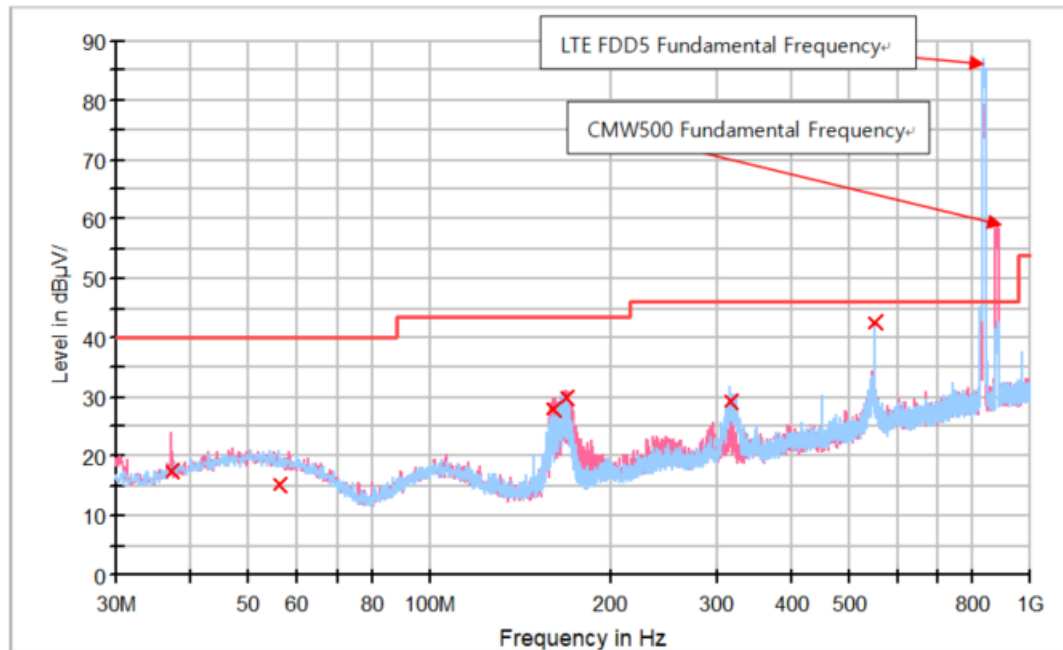
#### ② Above 1 GHz

|                      |                                      |
|----------------------|--------------------------------------|
| Temperature          | (Minimum 21.0, Maximum 22.0) °C      |
| Humidity             | (Minimum 37.0, Maximum 38.0) % R.H.. |
| Atmospheric Pressure | (Minimum 100.4, Maximum 100.4) kPa   |
| Test Date            | July 23, 2021                        |

## 2.3.4 Test Results

### ① Below 1 GHz (3 m method)

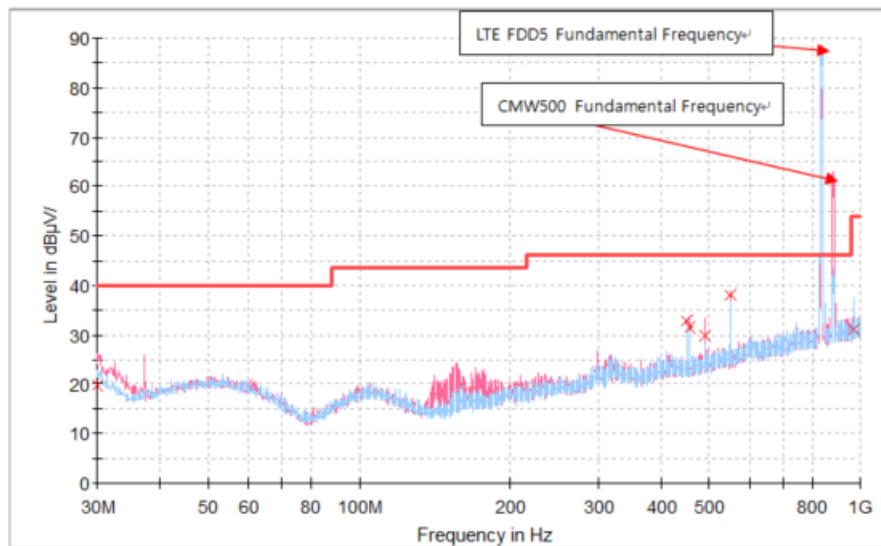
● Test Mode: 1)



### Final Result

| Frequency (MHz) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|-----------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|------------|
| 37.178          | 17.60              | 40.00          | 22.40       | 15 000.0        | 120.000         | 141.0       | V   | 219.0         | -19.8      |
| 56.093          | 15.32              | 40.00          | 24.68       | 15 000.0        | 120.000         | 385.0       | H   | 251.0         | -17.9      |
| 160.756         | 27.81              | 43.50          | 15.69       | 15 000.0        | 120.000         | 114.0       | V   | 139.0         | -22.3      |
| 169.195         | 29.94              | 43.50          | 13.56       | 15 000.0        | 120.000         | 100.0       | V   | 107.0         | -21.9      |
| 316.732         | 29.37              | 46.00          | 16.63       | 15 000.0        | 120.000         | 105.0       | H   | 151.0         | -16.5      |
| 550.017         | 42.56              | 46.00          | 3.44        | 15 000.0        | 120.000         | 216.0       | H   | 51.0          | -11.3      |

●Test Mode: 2)



Final Result

| Frequency (MHz) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|-----------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|------------|
| 30.097          | 19.95              | 40.00          | 20.05       | 15 000.0        | 120.000         | 118.0       | V   | 347.0         | -20.8      |
| 450.010         | 32.81              | 46.00          | 13.19       | 15 000.0        | 120.000         | 150.0       | H   | 62.0          | -13.4      |
| 456.994         | 31.63              | 46.00          | 14.37       | 15 000.0        | 120.000         | 141.0       | V   | 300.0         | -13.3      |
| 489.683         | 29.89              | 46.00          | 16.11       | 15 000.0        | 120.000         | 100.0       | V   | 0.0           | -12.3      |
| 550.017         | 38.02              | 46.00          | 7.98        | 15 000.0        | 120.000         | 109.0       | V   | 239.0         | -11.2      |
| 968.378         | 31.33              | 54.00          | 22.67       | 15 000.0        | 120.000         | 111.0       | H   | 14.0          | -5.4       |

Measurement Uncertainty : See Appendix A

Note : ● POL H = Horizontal

● Margin = Limit – Quasi Peak

● POL V = Vertical

● Corr. = Antenna Factor + Cable loss – Amplifier Gain

Ex) In case

Freq ; 100 MHz, level ; 30 dB(μV/m), AF ; 10 dB/m, CL ; 4 dB, Amp ; 25 dB

Result = Level + AF + CL – Amp

= 30 + 10 + 4 - 25

= 19

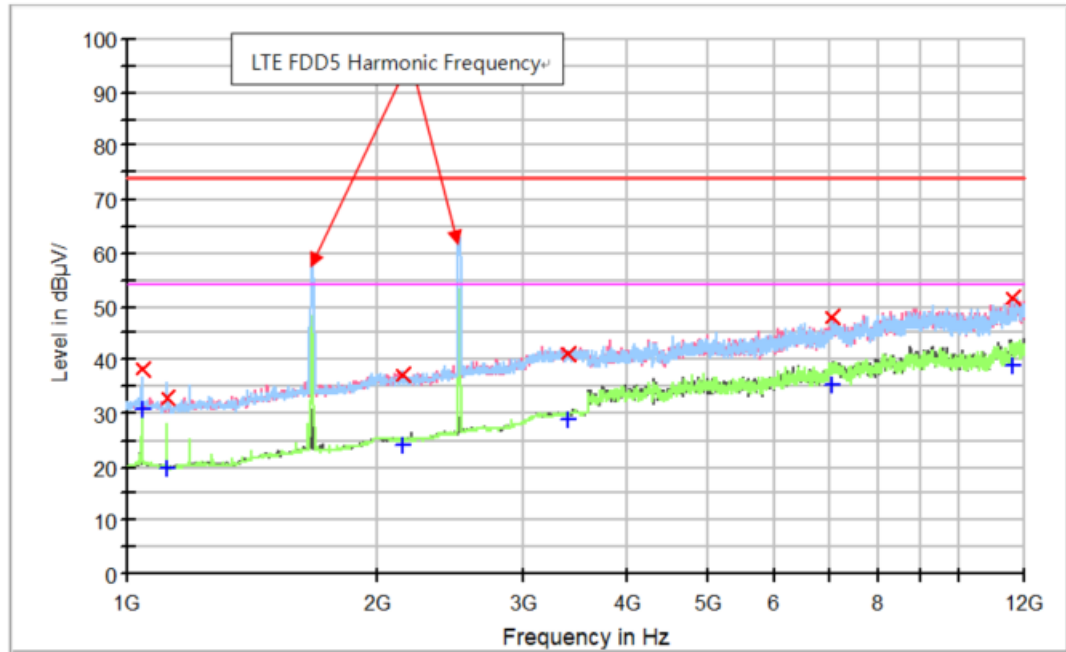
Margin = Limit – Result

= 43.5 – 19

= 24.5

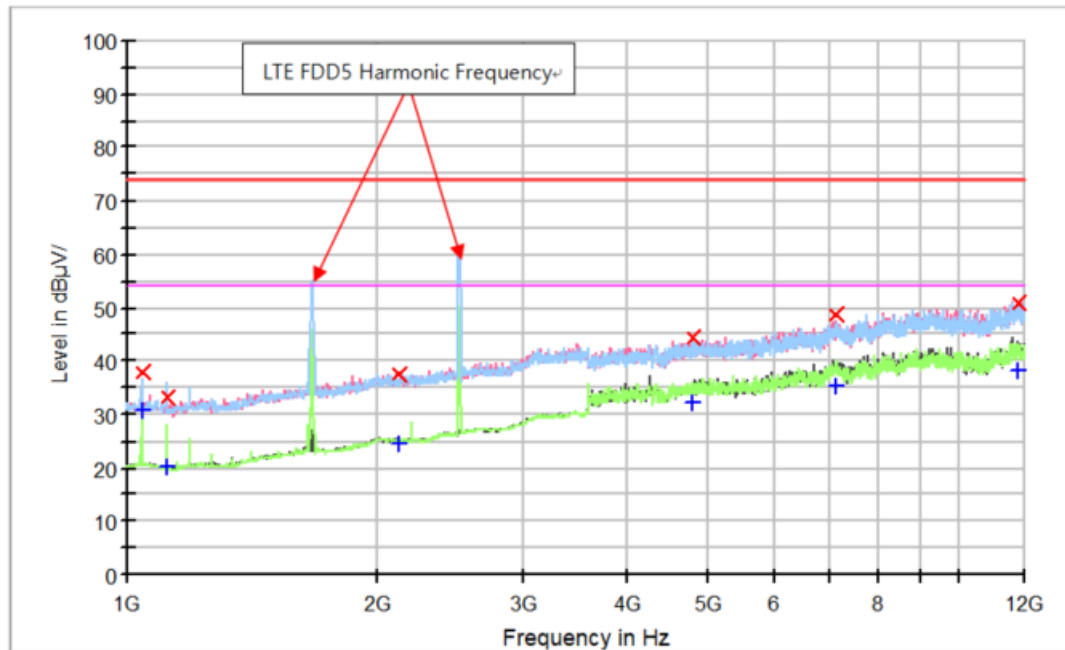
## ② Above 1 GHz (3 m method)

- Test Mode : 1)



| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|------------|
| 1 042.500       | ---              | 30.53             | 54.00          | 23.47       | 15 000.0        | 1 000.000       | 100.0       | H   | 0.0           | -13.6      |
| 1 042.500       | 38.18            | ---               | 74.00          | 35.82       | 15 000.0        | 1 000.000       | 100.0       | H   | 0.0           | -13.6      |
| 1 115.600       | 32.94            | ---               | 74.00          | 41.06       | 15 000.0        | 1 000.000       | 216.0       | H   | 0.0           | -14.0      |
| 1 115.600       | ---              | 20.02             | 54.00          | 33.98       | 15 000.0        | 1 000.000       | 216.0       | H   | 0.0           | -14.0      |
| 2 147.500       | 37.26            | ---               | 74.00          | 36.74       | 15 000.0        | 1 000.000       | 200.0       | H   | 48.0          | -9.4       |
| 2 147.500       | ---              | 24.36             | 54.00          | 29.64       | 15 000.0        | 1 000.000       | 200.0       | H   | 48.0          | -9.4       |
| 3 388.500       | ---              | 28.83             | 54.00          | 25.17       | 15 000.0        | 1 000.000       | 150.0       | H   | 359.0         | -5.5       |
| 3 388.500       | 41.23            | ---               | 74.00          | 32.77       | 15 000.0        | 1 000.000       | 150.0       | H   | 359.0         | -5.5       |
| 7 048.600       | ---              | 35.22             | 54.00          | 18.78       | 15 000.0        | 1 000.000       | 198.0       | H   | 334.0         | 2.8        |
| 7 048.600       | 47.83            | ---               | 74.00          | 26.17       | 15 000.0        | 1 000.000       | 198.0       | H   | 334.0         | 2.8        |
| 11 601.200      | ---              | 39.12             | 54.00          | 14.88       | 15 000.0        | 1 000.000       | 205.0       | V   | 334.0         | 6.7        |
| 11 601.200      | 51.60            | ---               | 74.00          | 22.40       | 15 000.0        | 1 000.000       | 205.0       | V   | 334.0         | 6.7        |

- Test Mode : 2)



| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|------------|
| 1 042.500       | ---              | 30.79             | 54.00          | 23.21       | 15 000.0        | 1 000.000       | 116.0       | H   | 0.0           | -13.6      |
| 1 042.500       | 37.89            | ---               | 74.00          | 36.11       | 15 000.0        | 1 000.000       | 116.0       | H   | 0.0           | -13.6      |
| 1 115.600       | ---              | 20.31             | 54.00          | 33.69       | 15 000.0        | 1 000.000       | 350.0       | H   | 174.0         | -14.0      |
| 1 115.600       | 33.35            | ---               | 74.00          | 40.65       | 15 000.0        | 1 000.000       | 350.0       | H   | 174.0         | -14.0      |
| 2 123.700       | 37.54            | ---               | 74.00          | 36.46       | 15 000.0        | 1 000.000       | 244.0       | V   | 210.0         | -9.5       |
| 2 123.700       | ---              | 24.45             | 54.00          | 29.55       | 15 000.0        | 1 000.000       | 244.0       | V   | 210.0         | -9.5       |
| 4 794.400       | ---              | 32.11             | 54.00          | 21.89       | 15 000.0        | 1 000.000       | 300.0       | V   | 0.0           | -1.5       |
| 4 794.400       | 44.53            | ---               | 74.00          | 29.47       | 15 000.0        | 1 000.000       | 300.0       | V   | 0.0           | -1.5       |
| 7 125.100       | ---              | 35.40             | 54.00          | 18.60       | 15 000.0        | 1 000.000       | 385.0       | V   | 68.0          | 2.8        |
| 7 125.100       | 48.66            | ---               | 74.00          | 25.34       | 15 000.0        | 1 000.000       | 385.0       | V   | 68.0          | 2.8        |
| 11 779.700      | 50.97            | ---               | 74.00          | 23.03       | 15 000.0        | 1 000.000       | 300.0       | H   | 174.0         | 6.8        |
| 11 779.700      | ---              | 38.36             | 54.00          | 15.64       | 15 000.0        | 1 000.000       | 300.0       | H   | 174.0         | 6.8        |

Measurement Uncertainty : See Appendix A

- Note :
- AF = Antenna Factor
  - POL H = Horizontal
  - H = Height
  - CL = Cable Loss
  - POL V = Vertical
  - Margin = Limit – Result
  - AMP = Amplifier Gain
  - A = Angle
  - Result = Level + AF + CL – AMP

## Appendix A : Measurement Uncertainty

### - Giheung 1 Laboratory

| Test Method                 |                                     | Measurement Uncertainty                       |                                               |
|-----------------------------|-------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Conducted Emission          |                                     | ENV216                                        | 3.70 dB (The confidential level is 95 %, k=2) |
|                             |                                     | ESH2-Z5                                       | 3.58 dB (The confidential level is 95 %, k=2) |
|                             |                                     | ESH3-Z6                                       | 3.54 dB (The confidential level is 95 %, k=2) |
| Conducted Emission - Signal |                                     | ISN T800                                      | 5.12 dB (The confidential level is 95 %, k=2) |
|                             |                                     | ISNT8-Cat6                                    | 5.14 dB (The confidential level is 95 %, k=2) |
|                             |                                     | ISN S751                                      | 5.20 dB (The confidential level is 95 %, k=2) |
| Radiated Emission           | 9 kHz ~30 MHz<br>(3m chamber)       | Horizontal                                    | 3.64 dB (The confidential level is 95 %, k=2) |
|                             |                                     | Vertical                                      | 3.64 dB (The confidential level is 95 %, k=2) |
|                             | 30 MHz ~ 1 000 MHz<br>(10m chamber) | Horizontal                                    | 4.26 dB (The confidential level is 95 %, k=2) |
|                             |                                     | Vertical                                      | 4.39 dB (The confidential level is 95 %, k=2) |
|                             | 1 GHz ~ 18 GHz<br>(3m chamber)      | Horizontal                                    | 3.59 dB (The confidential level is 95 %, k=2) |
|                             |                                     | Vertical                                      | 3.59 dB (The confidential level is 95 %, k=2) |
| Radiated Immunity Test      |                                     | 0.86 dB (The confidential level is 95 %, k=2) |                                               |
| Conducted Immunity Test     |                                     | 2.23 dB (The confidential level is 95 %, k=2) |                                               |
| Magnetic Field              |                                     | 5.78 dB (The confidential level is 95 %, k=2) |                                               |

### - Giheung 2 Laboratory

| Test Method                 |                                     | Measurement Uncertainty                       |                                               |
|-----------------------------|-------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Conducted Emission          |                                     | ENV216                                        | 3.54 dB (The confidential level is 95 %, k=2) |
|                             |                                     | ESH2-Z5                                       | 3.53 dB (The confidential level is 95 %, k=2) |
|                             |                                     | ESH3-Z6                                       | 3.49 dB (The confidential level is 95 %, k=2) |
| Conducted Emission - Signal |                                     | ISN T800                                      | 5.03 dB (The confidential level is 95 %, k=2) |
|                             |                                     | ISNT8-Cat6                                    | 5.15 dB (The confidential level is 95 %, k=2) |
|                             |                                     | ISN S751                                      | 5.15 dB (The confidential level is 95 %, k=2) |
| Discontinuous               |                                     | 3.02 dB (The confidential level is 95 %, k=2) |                                               |
| Disturbance Power           |                                     | 3.66 dB (The confidential level is 95 %, k=2) |                                               |
| Radiated Emission           | 9 kHz ~30 MHz<br>(3m chamber)       | Horizontal                                    | 3.84 dB (The confidential level is 95 %, k=2) |
|                             |                                     | Vertical                                      | 3.84 dB (The confidential level is 95 %, k=2) |
|                             | 30 MHz ~ 1 000 MHz<br>(10m chamber) | Horizontal                                    | 5.18 dB (The confidential level is 95 %, k=2) |
|                             |                                     | Vertical                                      | 5.32 dB (The confidential level is 95 %, k=2) |
|                             | 1 GHz ~ 18 GHz<br>(3m chamber)      | Horizontal                                    | 3.62 dB (The confidential level is 95 %, k=2) |
|                             |                                     | Vertical                                      | 3.67 dB (The confidential level is 95 %, k=2) |
| Radiated Immunity Test      |                                     | 1.47 dB (The confidential level is 95 %, k=2) |                                               |
| Conducted Immunity Test     |                                     | 2.23 dB (The confidential level is 95 %, k=2) |                                               |
| Magnetic Field              |                                     | 5.78 dB (The confidential level is 95 %, k=2) |                                               |

- End of Test Report -