

EMC TEST REPORT

Report No.: FCC2012-8049

Product: ATA

Model No. : HT701

Brand Name: Grandstream

Applicant: Grandstream Networks, INC

FCC ID: YZZHT701V21

Issued by: CCIC-SET

Lab Location: Electronic Testing Building, Shahe Road, Xili, Nanshan District,
Shenzhen, 518055, P. R. China

Tel: 86 755 26627338 **Fax:** 86 755 26627238



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Test Report

Product: ATA

Model No.: HT701

Applicant.....: Grandstream Networks, INC

Applicant Address: 5F, Bldg #1, No.2 Kefa Rd., Science & Technology Park,
Shenzhen, China

Manufacturer.....: Grandstream Networks, INC

Manufacturer Address: 5F, Bldg #1, No.2 Kefa Rd., Science & Technology Park
Shenzhen, China

Test Standards.....: FCC PART 15 Subpart B
《RADIO FREQUENCY DEVICES》

Test Result.....: PASS

Tested by

Zhn Qi Dec. 11, 2012

Signature, Date

Reviewed by

Shuangwen Zhang Dec. 11, 2012

Signature, Date

Approved by.....:

Sam Li Dec. 11, 2012

Signature, Date

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1 General Information

1.1 Description of EUT

Product: ATA

Model No.: HT701

Brand Name: Grandstream

Rating: DC 12V 0.5A

I/O Ports: LAN,PHONE,POWER

Accessories: Adaptor:

1#

Model:SDF1200050E1BB,SDF1200050A1BB,SDF1200050I1BA

Input: AC 100-240V, 50/60Hz, 0.18A

Output: DC 12V 0.5A

2#

Model:UE06L8-120050SPAU, UE06L8-120050SPAV

Input: AC 100-240V, 50/60Hz, 0.2A

Output: DC 12V 0.5A

Note:

- Adaptor 1# has three models, SDF1200050E1BB, SDF1200050A1BB and SDF1200050I1BA. The models are identical except for plug. Unless otherwise specified, all tests are performed on SDF1200050A1BB to represent other models. Adaptor 2# has two models, UE06L8-120050SPAU and UE06L8-120050SPAV. The models are identical except for plug. Unless otherwise specified, all tests are performed on UE06L8-120050SPAV to represent other models.

1.2 Auxiliary Equipment

| Equipment Name | Manufacturer | Model name | FCC ID/DoC |
|----------------|--------------|------------|------------|
| Computer | IBM | T43 | DoC |
| Phone | DEX | HCD129TSDL | / |

2 Test Facilities and Configuration

2.1 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

2.2 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in Measurement” (GUM) published by ISO.

- Uncertainty of Conducted Emission, $U_c = \pm 1.8\text{dB}$
- Uncertainty of Radiated Emission, $U_c = \pm 5.0\text{dB}$

2.3 Test Facility

CCIC Southern Electronic Product Testing (Shenzhen) CO., Ltd.(CCIC-SET) is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

The EMC chamber site No.1 (EMC12.8×6.8×6.4(m)), and the radiated and conducted Emission test equipments of CCIC--SET are constructed and calibrated to meet the FCC requirements ANSI C63.4and CISPR 22/EN 55022. The FCC Registration Number is 406086.

2.3 Measurement Equipments Used

| Description | Manufacturer | Model No. | Calibration Date | Serial No. |
|-----------------------|---------------|------------------------------|------------------|------------|
| Test Receiver | ROHDE&SCHWARZ | ESCS30 | Jun.10, 2012 | A0304260 |
| LISN | ROHDE&SCHWARZ | ESH2-Z5 | Jun.10, 2012 | A0304221 |
| Shield Room | Nanbo Tech | RF-2 10.5×5×3.2 (m) | Jan 17, 2012 | A0301188 |
| Ultra-Broadband Ant. | SCHWARZBECK | VULB 09160 | Jun.10, 2012 | A0805560 |
| Horn Antenna | ROHDE&SCHWARZ | HF906 | Jun.10, 2012 | / |
| Test Receiver | ROHDE&SCHWARZ | ESU8 | Jun.10, 2012 | A0805559 |
| Semi-Anechoic Chamber | Albatross | SAC-10MAC19. 6*11.8*8.55m | Jun.10, 2012 | A0802520 |

NOTE: Equipments above have been calibrated and are in the period of validation.

3 Summary of Test Results

The EUT has been tested according to the following specifications:

| EMISSION | | |
|----------------------|--|--------|
| Standard | Test Type | Result |
| FCC PART 15, Class B | Conducted Disturbance at Mains Terminals | PASS |
| | Radiated disturbance | PASS |

4 Emission Test

4.1 EUT Setup and Operation

| No. | Power supply |
|--------|--------------------|
| Mode 1 | DC 12V(Adaptor 1#) |
| Mode 2 | DC 12V(Adaptor 2#) |

The EUT and cables, and operation modes were configured to produce the maximum level of emissions for each test.

4.2 Conducted Disturbance at Mains Terminals

4.2.1 Limits

According to FCC §15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

| Frequency range (MHz) | Limits (dBV), Class B ITE | |
|--------------------------|---------------------------|---------|
| | Quasi-peak | Average |
| 0.15 - 0.50 | 66~56 | 56~46 |
| 0.50 – 5 | 56 | 46 |
| 5-30 | 60 | 50 |

NOTE:

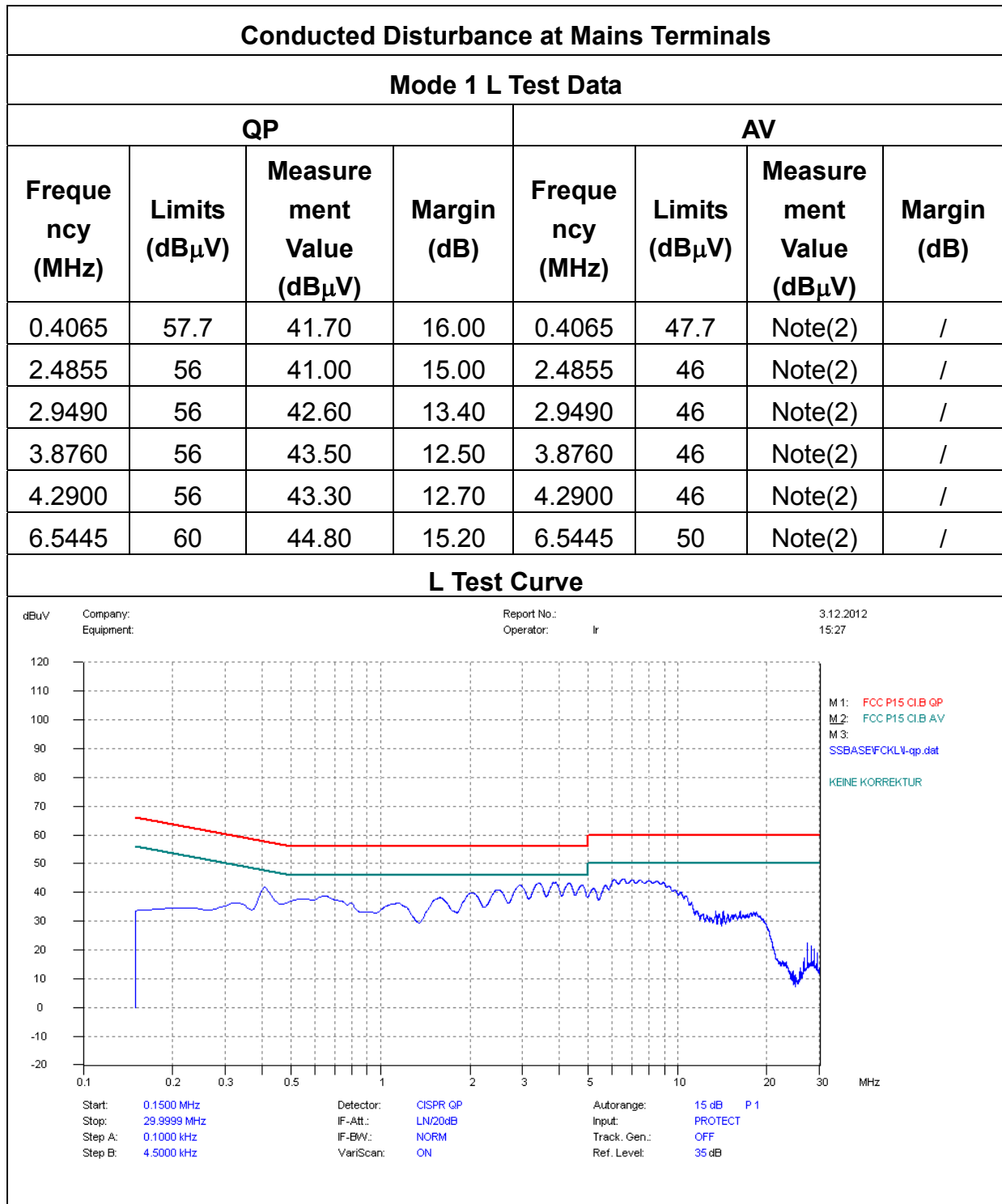
1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.
3. If the quasi-peak value is lower than Average Limits, it is no necessary to conduct the average measurement.

4.2.2 Test Procedure

- a. The EUT was placed 0.4 meters from the conducting wall of shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). The LISN provide 50 Ω /50 μ H of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits are not reported.
- d. The receiver was set to CISPR Quasi-Peak detector and average detector
- e. The resolution bandwidth of the receiver was comparable to the emission bandwidth. VBW=RBW=9kHz

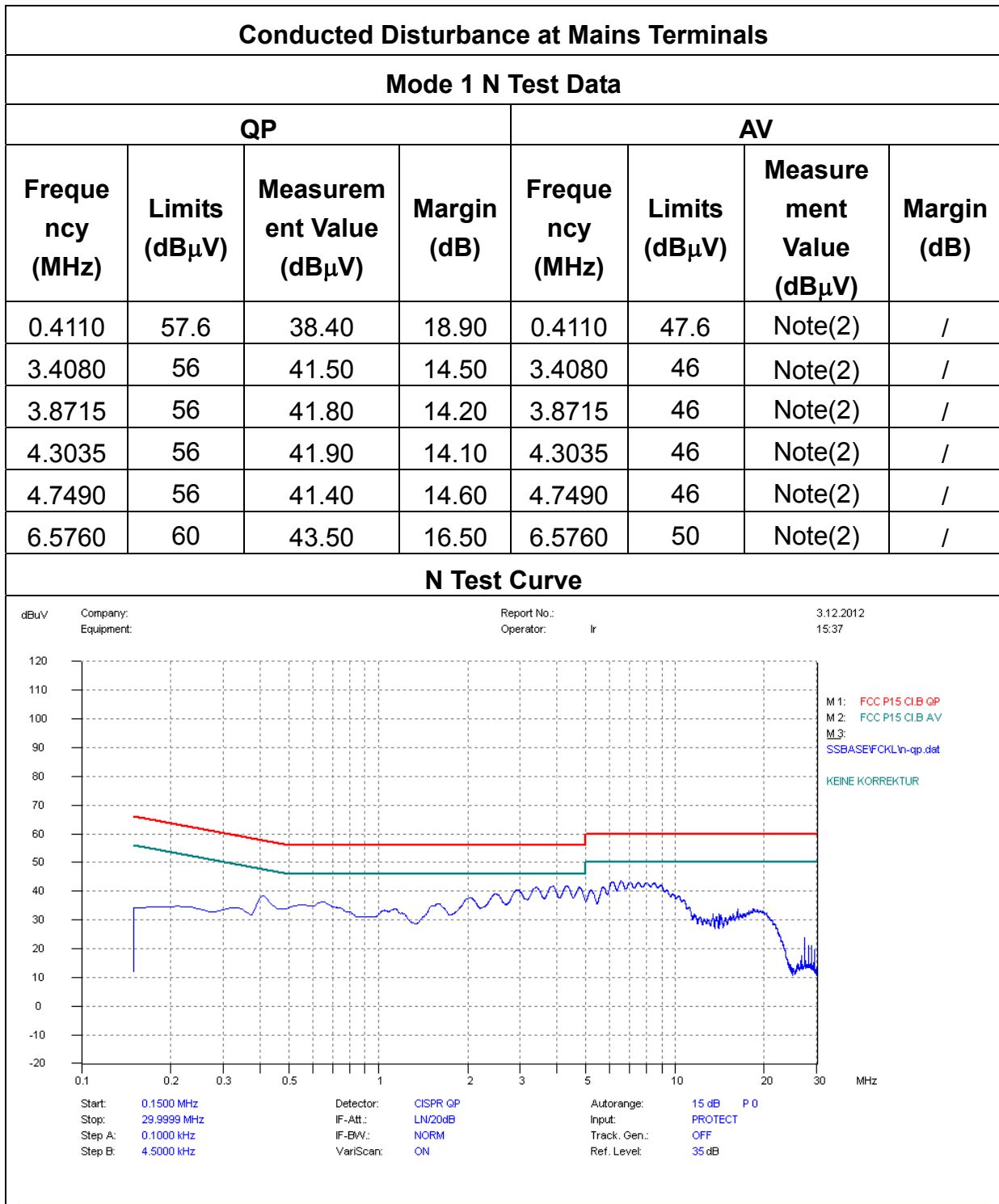
4.2.3 Test Result

1, Conducted Disturbance at Mains Terminals

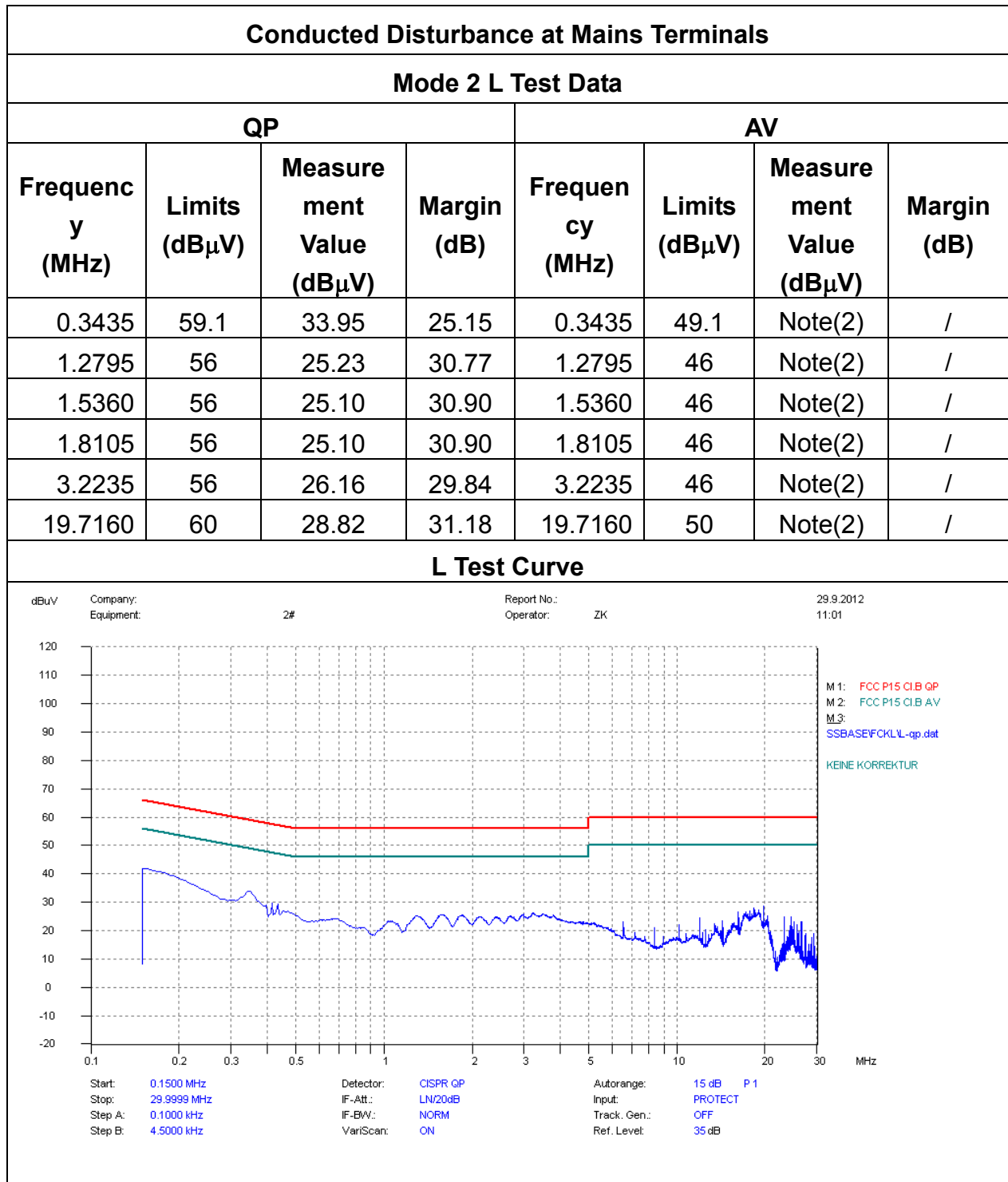


NOTE:

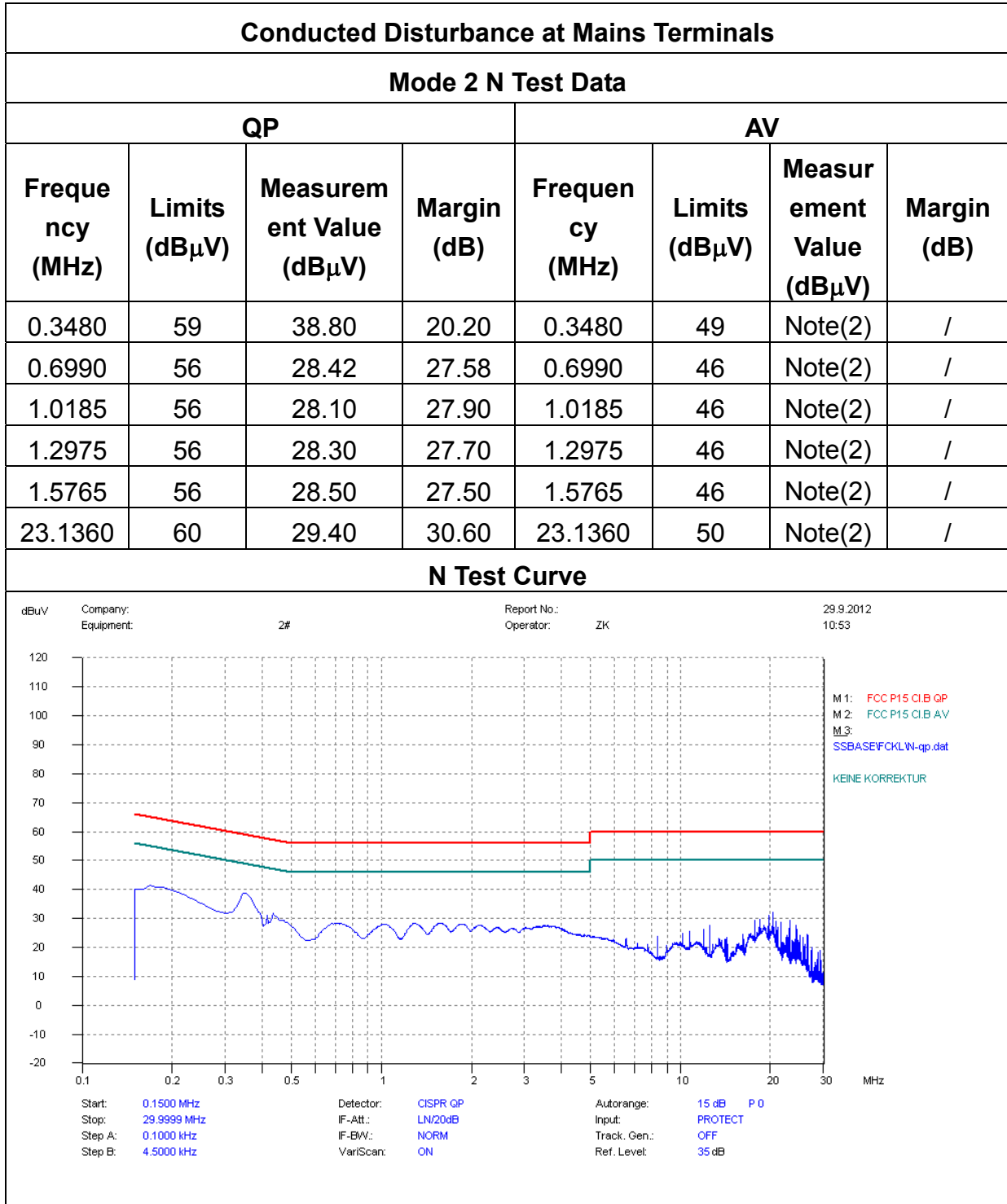
1. The lower limit shall apply at the transition frequencies.
2. If the emission levels measured with QP detector are lower than AV limits, there is unnecessary to measure with AV detector.

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4.3 Radiated Disturbance Measurement

4.3.1 Limits of Radiated Disturbance

According to FCC §15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

| Frequency of Emission (MHz) | Field Strength ($\mu\text{V/m}$) | Field Strength (dB $\mu\text{V/m}$) |
|-----------------------------|------------------------------------|--------------------------------------|
| 30 - 88 | 100 | 40 |
| 88 -216 | 150 | 43.5 |
| 216 - 960 | 200 | 46 |
| Above 960 | 500 | 54 |

NOTE:

1. Field Strength (dB $\mu\text{V/m}$)=20log Field Strength ($\mu\text{V/m}$).
2. In the emission tables above, the tighter limit applies at the band edges.
3. On frequency below or equal to 1000MHz, the limits are based on CISPR quasi-peak detector, on frequency above 1000MHz, the limits are based on average detector. When average radiated emission limits are applied, there is also a limit on a peak level of radiated emissions. The limit of peak detector is 20dB above the average detector.

4.3.2 Test Procedure

- a. The EUT was placed on the top of an insulating table 0.8 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from 1 to 4 meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to the heights from 1 to 4 meters and the ratable table was turned from 0 degrees to 360 degrees to find the maximum reading.

- e. For Radiated Emission test below 1GHz, the test-receiver was set to Peak Detector Function and VBW=RBW=120kHz with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emission that did not have 10dB margin would be retested one by one using the quasi-peak method and the RBW and VBW was also set to 120kHz.
- f. For Radiated Emission test above 1GHz, the test-receiver was set to Peak Detector Function and Average Detector Function, VBW=RBW=1MHz.

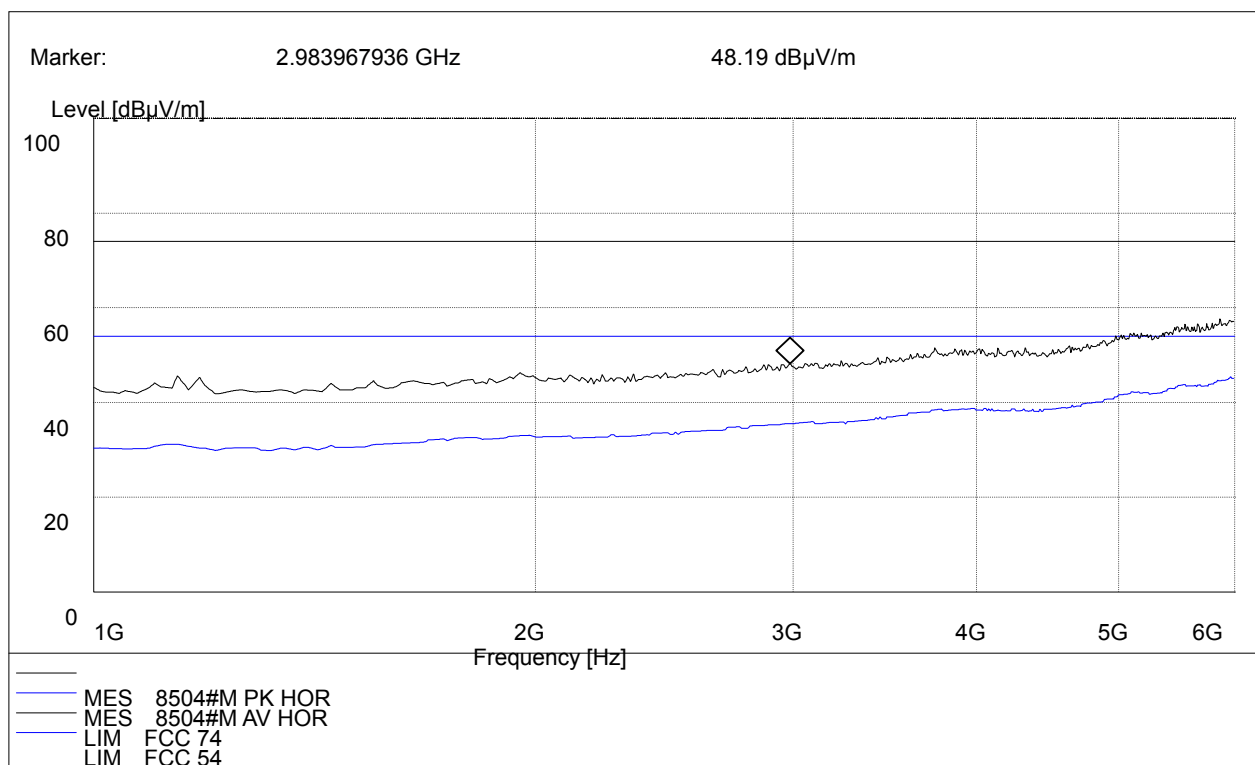
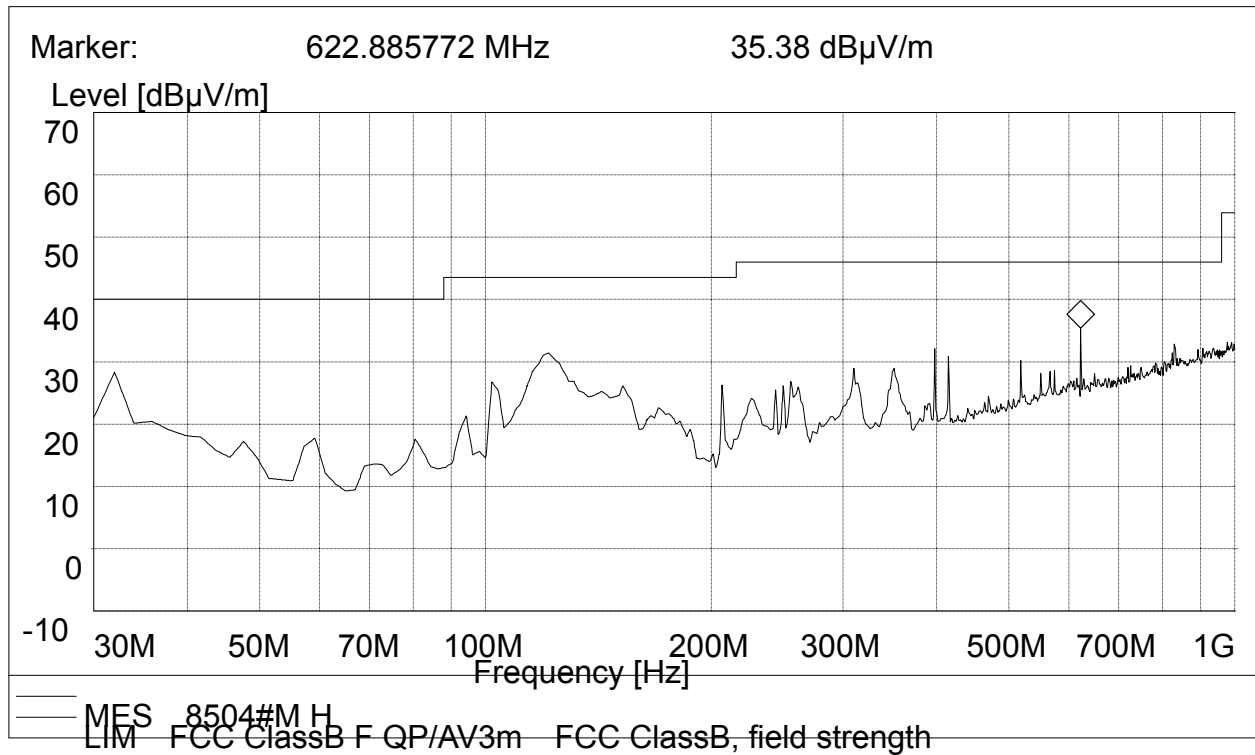
4.3.3 Test Result

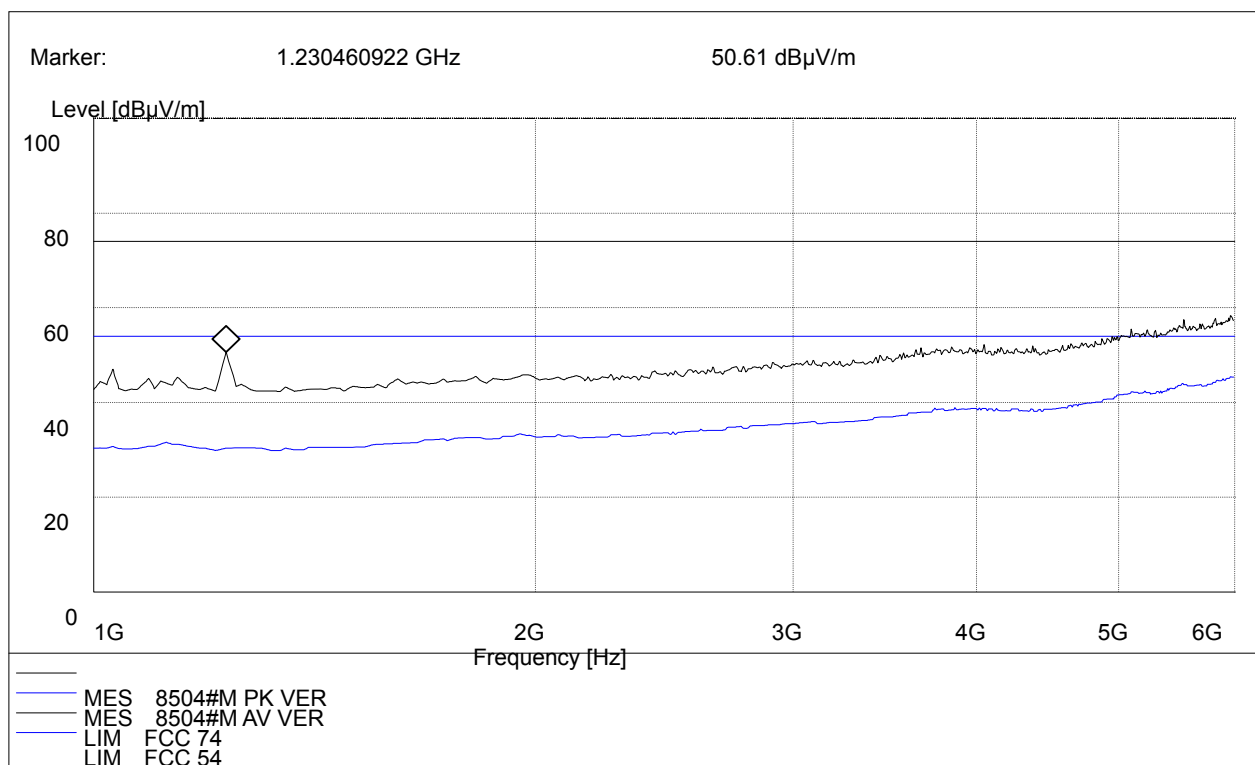
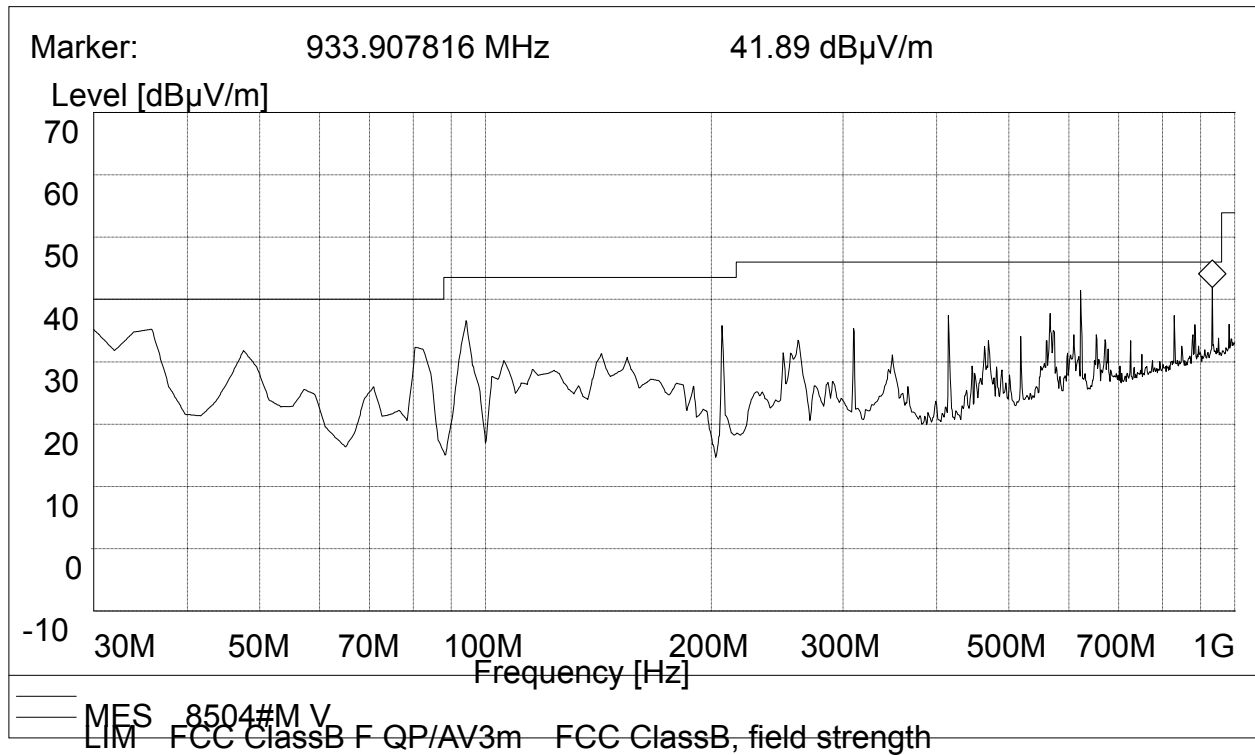
1. Radiated Emission Test data

Mode 1

| No. | Frequency (MHz) | Antenna Polarization | Antenna Height (cm) | Table Angle (Degree) | QP Limits (dB μ V/m) | Emission Level (dB μ V/m) |
|-----|-----------------|----------------------|---------------------|----------------------|--------------------------|-------------------------------|
| 1 | 32.28 | H | 150 | 0 | 40 | 25.18 |
| 2 | 120.95 | H | 150 | 0 | 43.5 | 28.47 |
| 3 | 622.11 | H | 150 | 0 | 46 | 32.43 |
| 4 | 34.65 | V | 100 | 0 | 40 | 33.32 |
| 5 | 94.39 | V | 100 | 0 | 43.5 | 33.14 |
| 6 | 622.11 | V | 100 | 0 | 46 | 39.26 |

| No. | Frequency (MHz) | Antenna Polarization | Antenna Height (cm) | Table Angle (Degree) | Limit Value (dB μ V) | | Emission Level (dB μ V) | |
|-----|-----------------|----------------------|---------------------|----------------------|--------------------------|----|-----------------------------|-----|
| | | | | | PK | AV | PK | AV |
| 1 | 1000-6000 | H | 100-400 | 0-360 | 74 | 54 | <60 | <45 |
| 2 | 1000-6000 | V | 100-400 | 0-360 | 74 | 54 | <60 | <45 |

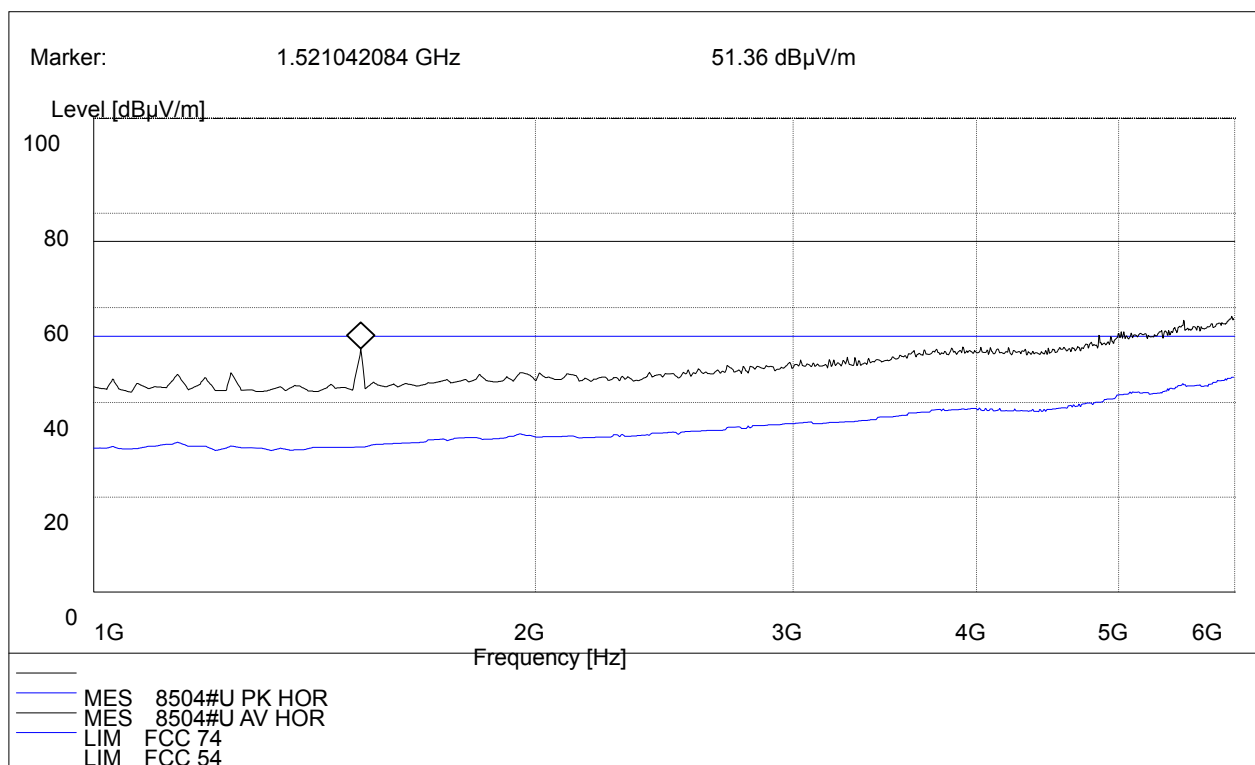
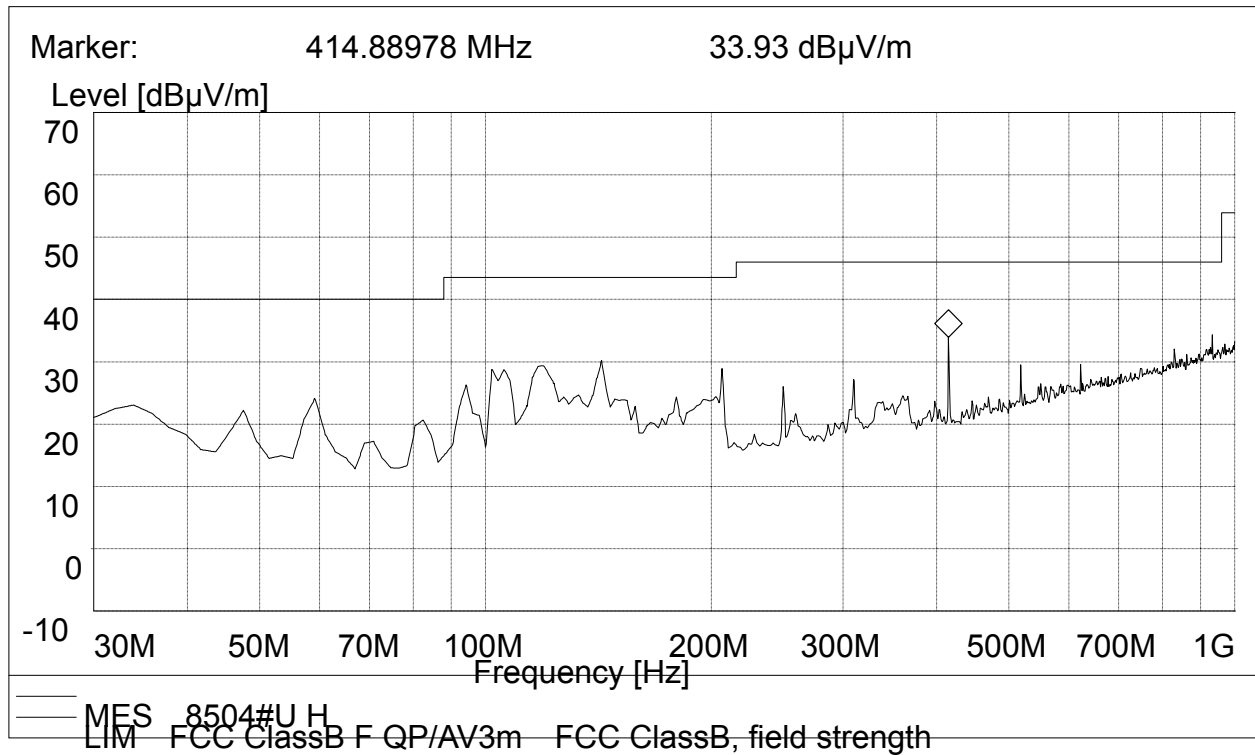
-Horizontal

-Vertical

Mode 2

| No. | Frequency (MHz) | Antenna Polarization | Antenna Height (cm) | Table Angle (Degree) | QP Limits (dB μ V/m) | Emission Level (dB μ V/m) |
|-----|-----------------|----------------------|---------------------|----------------------|--------------------------|-------------------------------|
| 1 | 106.71 | H | 150 | 0 | 43.5 | 24.09 |
| 2 | 119.12 | H | 150 | 0 | 43.5 | 23.57 |
| 3 | 414.75 | H | 150 | 0 | 46 | 32.36 |
| 4 | 34.65 | V | 100 | 0 | 40 | 38.33 |
| 5 | 47.81 | V | 100 | 0 | 40 | 32.56 |
| 6 | 933.13 | V | 100 | 0 | 46 | 43.49 |

| No. | Frequency (MHz) | Antenna Polarization | Antenna Height (cm) | Table Angle (Degree) | Limit Value (dB μ V) | | Emission Level (dB μ V) | |
|-----|-----------------|----------------------|---------------------|----------------------|--------------------------|----|-----------------------------|-----|
| | | | | | PK | AV | PK | AV |
| 1 | 1000-6000 | H | 100-400 | 0-360 | 74 | 54 | <60 | <45 |
| 2 | 1000-6000 | V | 100-400 | 0-360 | 74 | 54 | <60 | <45 |

-Horizontal

-Vertical