

# FCC TEST REPORT

For

**EMV Android Validator**

**Model Number: FX925F PM, FX925F WM**

**FCC ID: 2AGQIFX925F**

**Report Number : WT198005843**

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## TEST REPORT DECLARATION

Applicant : FAMOCO SAS  
Address : 59 avenue Victor Hugo Paris, France  
Manufacturer : FAMOCO SAS  
Address : 59 avenue Victor Hugo Paris, France  
EUT Description : EMV Android Validator  
Model No. : FX925F PM,FX925F WM  
Trade mark : FAMOCO  
Serial Number : /  
FCC ID : 2AGQIFX925F

Test Standards:

### FCC Part 15 Subpart B 15.107, 15.109 (2018)

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

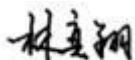
Project  
Engineer:



(Zhou Fangai 周芳媛)

Date: Nov.08, 2019

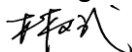
Checked by:



(Lin Yixiang 林奕翔)

Date: Nov.08, 2019

Approved by:



(Lin Bin 林斌)

Date: Nov.08, 2019

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## 1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| Test Items         | FCC Rules | Test Results |
|--------------------|-----------|--------------|
| Conducted Emission | 15.107    | N/A          |
| Radiation Emission | 15.109    | Pass         |

Remark: "N/A" means "Not applicable."

## **2. GENERAL INFORMATION**

### **2.1. Report information**

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

### **2.2. Laboratory Accreditation and Relationship to Customer**

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is Accredited Testing Laboratory of FCC with Designation number CN1165 and Site registration number 582918.

The Laboratory is registered to perform emission tests with Innovation, Science and Economic Development (ISED), and the registration number is 11177A.

### **2.3. Measurement Uncertainty**

Radiated Emission  
30MHz~1000MHz 5.1dB  
1GHz~6GHz 5.04dB  
6GHz~18GHz 5.54dB

### 3. PRODUCT DESCRIPTION

#### 3.1.EUT Description

Table 2 Specification of the Equipment under Test

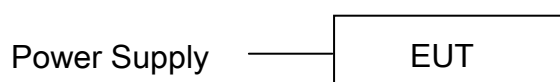
|                        |   |
|------------------------|---|
| Product Type:          | EMV Android Validator   |
| Hardware Version:      | FX925F,1  |
| Software Version :     | MOLY.LR12A.R2.MP.V44.1  |
| FCC-ID:                | 2AGQIFX925F   |
| Frequency:             | GSM850:TX 824MHz~849MHz RX 869MHz~894MHz<br>PCS1900: TX 1850MHz~1910MHz RX 1930MHz~1990MHz<br>WCDMA 850: TX 824MHz~849MHz RX 869MHz~894MHz<br>WCDMA 1700:TX: 1710MHz~1755MHz RX 2110MHz~2155MHz<br>WCDMA 1900:TX 1850MHz~1910MHz RX 1930MHz~1990MHz<br>LTE Band 2: TX 1850MHz~1910MHz RX 1930MHz~1990MHz<br>LTE Band 5:TX 824MHz~849MHz RX 869MHz~894MHz<br>LTE Band 7:TX 2500MHz~2570MHz RX 2620MHz~2690MHz<br>LTE Band 12:TX 699MHz~716MHz RX 729MHz~746MHz<br>LTE Band 13:TX 777MHz~787MHz RX 746MHz~756MHz<br>LTE Band 17:TX 704MHz~716MHz RX 734MHz~746MHz<br>LTE Band 38:TX 2570MHz~2620MHz RX 2570MHz~2620MHz<br>LTE Band 41:TX 2555MHz~2655MHz RX 2555MHz~2655MHz<br>WiFi:2412MHz~2462MHz<br>BT:2402MHz~2480MHz |
| Type(s) of Modulation: | GSM850/PCS1900:GMSK 8PSK<br>WCDMA:QPSK<br>LTE:QPSK, 16QAM<br>DSSS (DBPSK, DQPSK, CCK) for 802.11b<br>OFDM (BPSK, QPSK, 16QAM, 64QAM) for 802.11a/g/n<br>BT: GFSK, pi/4-DQPSK, 8DPSK   |
| Antenna Type:          | GSM/WCDMA/LTE: PIFA ANTENNA<br>699MHz~800MHz: -0.4dBi<br>824MHz~849MHz: -0.39dBi<br>1710MHz~1780MHz: 0.45dBi<br>1850MHz~1910MHz: 0.46dBi<br>2500MHz~2570MHz: 1.17dBi<br>WiFi: PIFA ANTENNA +1.3dBi<br>BT: PIFA ANTENNA +1.3dBi  |
| Operating voltage:     | Battery DC 12V<br>10.8V (Low)/12V (Nominal)/ 13.2V (Max)  |

Remark: 1.FX925F PM compared with FX925F WM, only have different model number and appearance. All of the models' circuit theory, electrical design and the Critical Components are the same. The differences do not affect the RF performance. Unless otherwise specified, the

model FX925F PM was chosen as representative model to perform all the tests.

2. This is test report is for application of FCC ID: 2AGQIFX925F, which consists of reuse data of FCC ID: 2AGQIFX205. The FX925F PM adds scanner and USB HUB function, changes NFC operation on hardware and software. The WWAN, WLAN and Bluetooth's circuit theory, electrical design and the critical components are the same. Considering above changes, in this test report, Radiated emission was re-test.

### 3.2. Block Diagram of EUT Configuration



Test mode 1

### 3.3. Operating Condition of EUT

Test mode 1: DC charging and video recording.

The test mode mentioned above is identified as worst case for this EUT and the test results for this mode are recorded in this report.

The Radiated emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (X plane).

### 3.4. Support Equipment List

Table 3 Support Equipment List

| Name       | Model No | S/N | Manufacturer |
|------------|----------|-----|--------------|
| DC Battery | --       | --  | --           |

Table 4 Support Equipment List

| Name     | Model No | S/N | Manufacturer | FCC |
|----------|----------|-----|--------------|-----|
| Keyboard | SK-2015  | --  | HP           | DOC |
| Mouse    | MSU1465  | --  | HP           | DOC |

### 3.5. Test Conditions

Date of test : Oct.29, 2019-Nov.05, 2019

Date of EUT Receive : Oct.15, 2019

Temperature: 22°C

Relative Humidity: 37%-46%

### 3.6. Modifications

No modification was made.

## 4. TEST EQUIPMENT USED

### 4.1. Test Equipment Used to Measure Radiated Emission

Table 5 Radiated Emission Test Equipment

| No.       | Equipment         | Manufacturer | Model No. | LAST CALIB  | Period  |
|-----------|-------------------|--------------|-----------|-------------|---------|
| SB12943   | Test Receiver     | R&S          | ESR7      | Dec.06,2018 | 1 Year  |
| SB5472/02 | Broadband Antenna | Schwarzbeck  | VULB9163  | May.31,2019 | 1 Year  |
| SB9054/09 | Horn Antenna      | R&S          | HF907     | Sep.04,2019 | 1 Year  |
| SB8501/16 | Pre-Amplifier     | R&S          | SCU 26    | Feb.18,2019 | 1 Year  |
| SB8501/17 | Pre-Amplifier     | R&S          | SCU-18    | Feb.20,2019 | 1 Year  |
| SB8501/11 | Horn Antenna      | R&S          | 3160-09   | Mar.21,2017 | 3 Years |
| SB8501/12 | Horn Antenna      | R&S          | 3160-10   | Mar.21,2017 | 3 Years |



## 5. CONDUCTED EMISSION TEST

### 5.1. Test Standard and Limit

#### 5.1.1. Test Standard

FCC Part 15: Section 15.107

#### 5.1.2. Test Limit

Table 6 Conducted Emission Test Limit (Class B)

| Frequency        | Power Port limits (dB $\mu$ V) |         |
|------------------|--------------------------------|---------|
|                  | Quasi-peak                     | Average |
| 0.15MHz ~ 0.5MHz | 66~56*                         | 56~46*  |
| 0.5MHz ~ 5 MHz   | 56                             | 46      |
| 5 MHz ~ 30MHz    | 60                             | 50      |

\* Decreasing linearly with logarithm of the frequency

### 5.2. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver is used to test the emissions from both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

### 5.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

### 5.4. Test Data

The EUT is powered by DC power, which do not operate from the AC power lines.

## 6. RADIATION EMISSION TEST

### 6.1. Test Standard and Limit

#### 6.1.1. Test Standard

FCC Part 15: Section 15.109

#### 6.1.2. Test Limit

Table 7 Radiation Emission Test Limit for FCC (Class B) (9 kHz-1GHz)

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009~0.490     | 2400/F(KHz)                       | 300                           |
| 0.490~1.705     | 24000/F(KHz)                      | 30                            |
| 1.705~30.0      | 30                                | 30                            |
| 30~88           | 100                               | 3                             |
| 88~216          | 150                               | 3                             |
| 216~960         | 200                               | 3                             |
| 960~1000        | 500                               | 3                             |

Table 8 Radiation Emission Test Limit for FCC (Class B) (Above 1G)

| Frequency (MHz) | (dBuV/m) (at 3 meters) |         |
|-----------------|------------------------|---------|
|                 | PEAK                   | AVERAGE |
| Above 1000      | 74                     | 54      |

\* The lower limit shall apply at the transition frequency.

\* The test distance is 3m.

### 6.2. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set **3 meters** away from the receiving antenna, which is mounted on an antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

RBW = 100 kHz (less than or equal to 1 GHz); 1 MHz (above 1 GHz)

VBW  $\geq 3 \times$  RBW

Detector = Peak & Quasi-Peak (frequency range 30 MHz to 1 GHz);

Peak & Average (frequency range above 1 GHz);

Changing VBW to 10 Hz for average measurement

The use of a higher-than-specified video bandwidth produces a conservative measurement result.

### 6.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in

a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

#### 6.4.Test Data

The emissions don't show in following result tables are more than 20dB below the limits, the test curves are shown in the next page.

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result

which was 20dB lower than the limit line per 15.31(o) was not reported.

Table 9 Radiated Emission Test Data

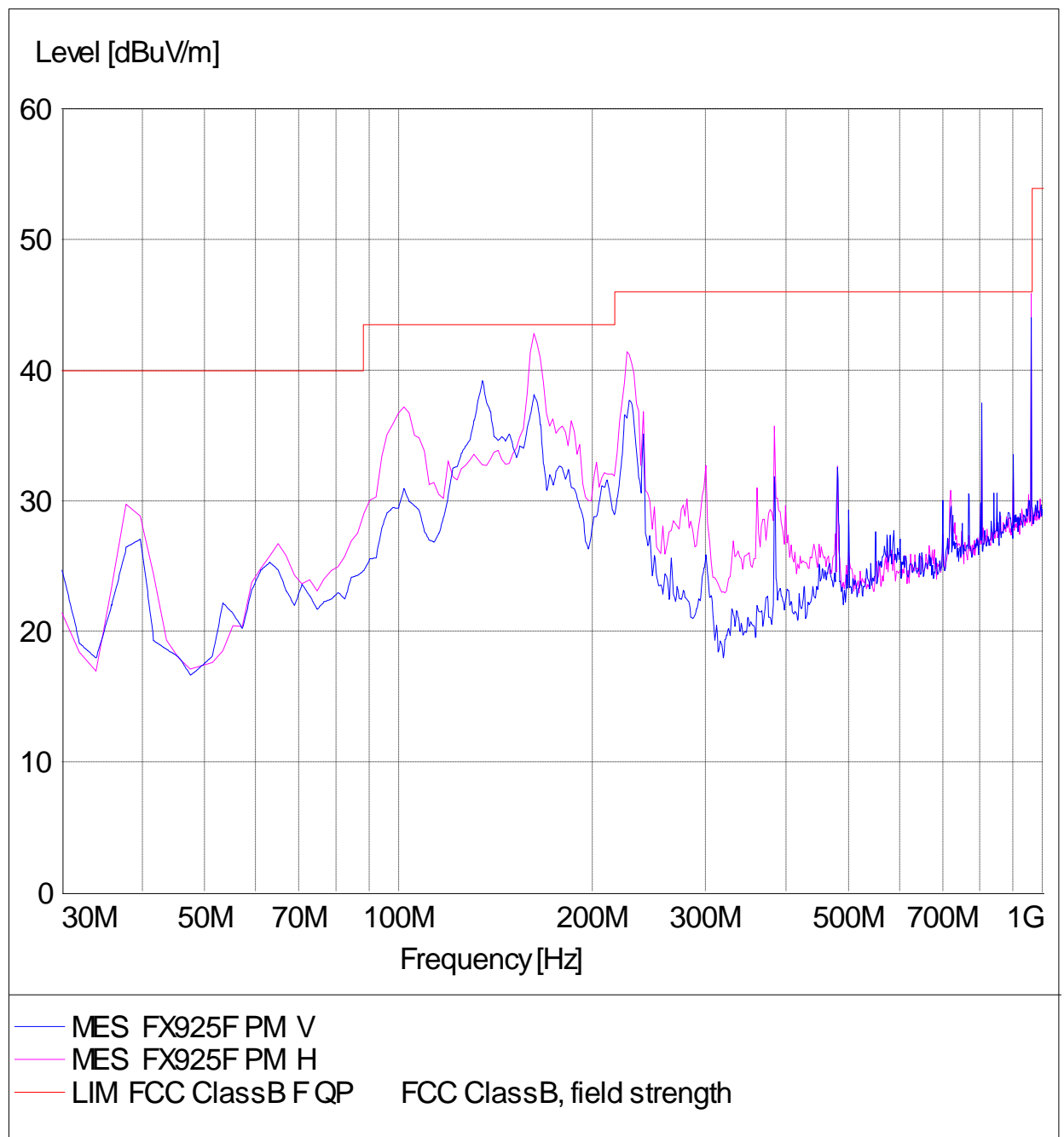
| Model No.: FX925F PM<br>Test mode: 1 |                                  |                           |                     |                   |                   |                   |                |      |
|--------------------------------------|----------------------------------|---------------------------|---------------------|-------------------|-------------------|-------------------|----------------|------|
| Frequency<br>(MHz)                   | Cable<br>Loss<br>+preamp<br>(dB) | Antenna<br>Factor<br>(dB) | Reading<br>(dBμV/m) | Level<br>(dBμV/m) | Polarity<br>(H/V) | Limit<br>(dBμV/m) | Margin<br>(dB) | Note |
| 39.420                               | 0.6                              | 12.3                      | 13.8                | 26.7              | H                 | 40                | 13.3           | QP   |
| 63.251                               | 0.9                              | 12.7                      | 9.9                 | 23.5              | H                 | 40                | 16.5           | QP   |
| 102.927                              | 1.2                              | 13.2                      | 21.6                | 36.0              | H                 | 43.5              | 7.5            | QP   |
| 164.329                              | 1.5                              | 8.7                       | 30.6                | 40.8              | H                 | 43.5              | 2.7            | QP   |
| 226.536                              | 1.7                              | 11.2                      | 26.2                | 39.1              | H                 | 46                | 6.9            | QP   |
| 960.394                              | 3.9                              | 21.1                      | 21.3                | 46.3              | H                 | 54                | 7.7            | QP   |
| 38.514                               | 0.7                              | 12.3                      | 9.5                 | 22.5              | V                 | 40                | 17.5           | QP   |
| 102.919                              | 1.2                              | 13.2                      | 14.8                | 29.2              | V                 | 43.5              | 14.3           | QP   |
| 136.147                              | 1.4                              | 10.5                      | 23.8                | 35.7              | V                 | 43.5              | 7.8            | QP   |
| 162.486                              | 1.5                              | 8.7                       | 26.6                | 36.8              | V                 | 43.5              | 6.7            | QP   |
| 227.614                              | 1.7                              | 11.2                      | 22.0                | 34.9              | V                 | 46                | 11.1           | QP   |
| 960.424                              | 3.9                              | 21.1                      | 18.6                | 43.6              | V                 | 54                | 10.4           | QP   |
| 1170.530                             | -41.0                            | 24.4                      | 53.2                | 36.6              | H                 | 74                | 37.4           | PK   |
| 1306.750                             | -40.9                            | 24.3                      | 54.4                | 37.8              | H                 | 74                | 36.2           | PK   |
| 1681.730                             | -40.7                            | 26.7                      | 48.6                | 34.6              | H                 | 74                | 39.4           | PK   |
| 1918.730                             | -40.4                            | 26.9                      | 48.5                | 35.0              | H                 | 74                | 39.0           | PK   |
| 3351.730                             | -38.8                            | 31.7                      | 45.1                | 38.0              | H                 | 74                | 36.0           | PK   |
| 3827.550                             | -39.1                            | 32.7                      | 46.0                | 39.6              | H                 | 74                | 34.4           | PK   |
| 1170.330                             | -41.0                            | 24.4                      | 46.1                | 29.5              | V                 | 74                | 44.5           | PK   |
| 1408.550                             | -40.7                            | 25.1                      | 47.9                | 32.3              | V                 | 74                | 41.7           | PK   |
| 1690.935                             | -40.6                            | 26.7                      | 45.9                | 32.0              | V                 | 74                | 42.0           | PK   |
| 1785.550                             | -40.5                            | 26.7                      | 48.4                | 34.6              | V                 | 74                | 39.4           | PK   |
| 1919.930                             | -40.4                            | 26.9                      | 52.1                | 38.6              | V                 | 74                | 35.4           | PK   |
| 3829.330                             | -39.1                            | 32.7                      | 45.1                | 38.7              | V                 | 74                | 35.3           | PK   |
| 1170.530                             | -41.0                            | 24.4                      | 53.2                | 23.9              | H                 | 54                | 30.1           | AV   |
| 1306.750                             | -40.9                            | 24.3                      | 54.4                | 24.8              | H                 | 54                | 29.2           | AV   |
| 1681.730                             | -40.7                            | 26.7                      | 48.6                | 21.5              | H                 | 54                | 32.5           | AV   |

|          |       |      |      |      |   |    |      |    |
|----------|-------|------|------|------|---|----|------|----|
| 1918.730 | -40.4 | 26.9 | 48.5 | 23.0 | H | 54 | 31.0 | AV |
| 3351.730 | -38.8 | 31.7 | 45.1 | 24.0 | H | 54 | 30.0 | AV |
| 3827.550 | -39.1 | 32.7 | 46.0 | 25.7 | H | 54 | 28.3 | AV |
| 1170.330 | -41.0 | 24.4 | 46.1 | 12.9 | V | 54 | 41.1 | AV |
| 1408.550 | -40.7 | 25.1 | 47.9 | 16.5 | V | 54 | 37.5 | AV |
| 1690.935 | -40.6 | 26.7 | 45.9 | 16.1 | V | 54 | 37.9 | AV |
| 1785.550 | -40.5 | 26.7 | 48.4 | 18.9 | V | 54 | 35.1 | AV |
| 1919.930 | -40.4 | 26.9 | 52.1 | 23.1 | V | 54 | 30.9 | AV |
| 3829.330 | -39.1 | 32.7 | 45.1 | 23.2 | V | 54 | 30.8 | AV |

Emission level (dBuV)=Read Value(dBuV/m) + Antenna Factor(dB)+ Cable Loss +preamp(dB)

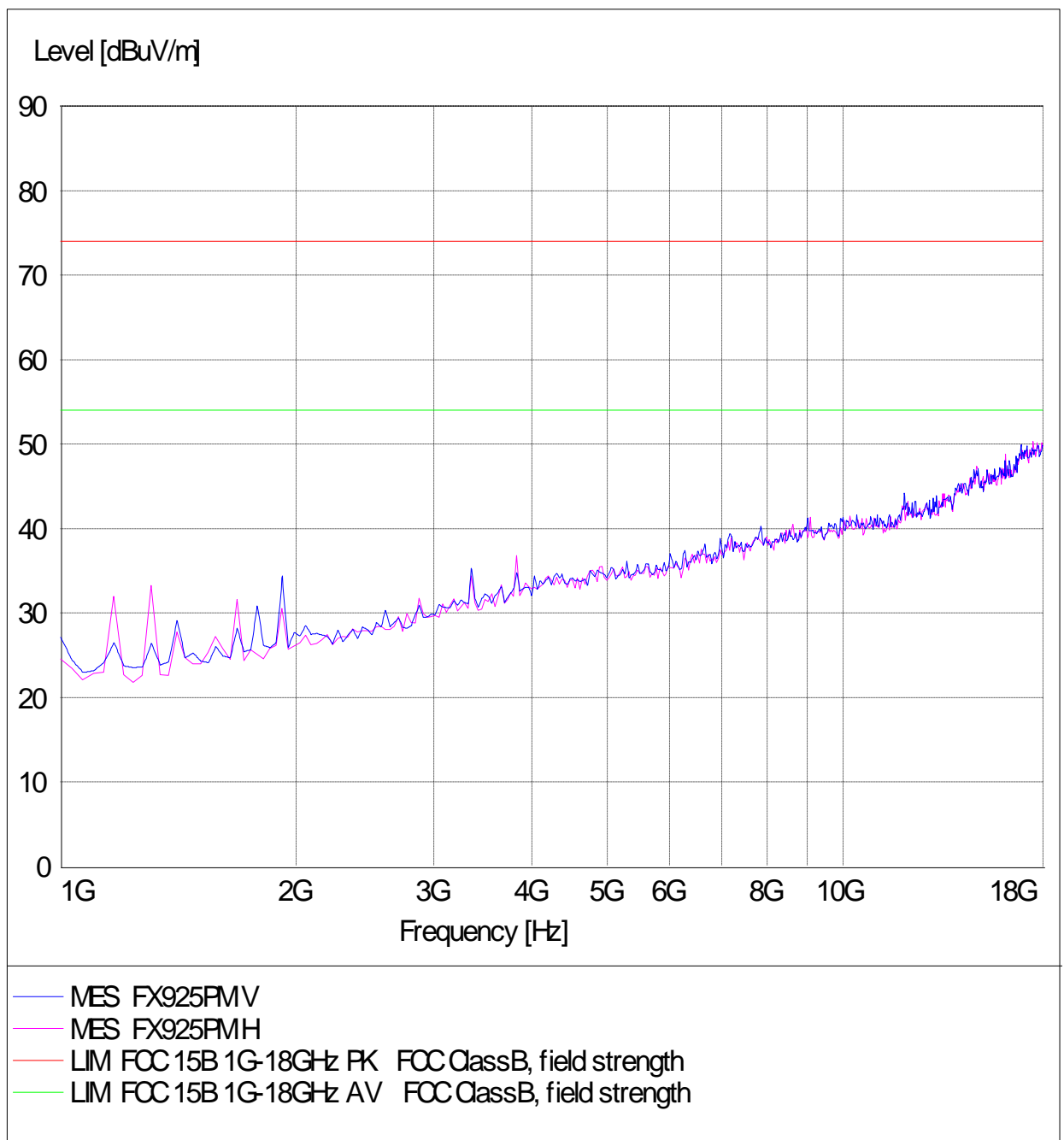
## Radiated Emission

EUT Name: FX925F PM  
Operating Condition: Test Mode 1  
Test site: SMQ NETC EMC Lab.  
Antenna Position: Horizontal & Vertical  
Comment:



## Radiated Emission

EUT Name: FX925F PM  
Operating Condition: Test Mode 1  
Test site: SMQ NETC EMC Lab.3m Chamber  
Antenna Position: Vertical & Horizontal  
Comment:



-----End of Report -----