

CERTIFICATION
On Behalf of
Audiovox Corporation

License Plate Rear Mounted Camera
Model No.: ACA200

FCC ID: BGA-ACA200

Prepared for : Audiovox Corporation
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Report Number : ATE20072695
Date of Test : November 09, 2007
Date of Report : November 12, 2007

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Test Report Certification

Applicant : Audiovox Corporation
Manufacturer : Meihua Mediaview Technologies Corporation
EUT Description : License Plate Rear Mounted Camera
(A) MODEL NO.: ACA200
(B) SERIAL NO.: N/A
(C) POWER SUPPLY: DC 12V

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.249: 2007 & ANSI C63.4: 2003

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.249 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : November 09, 2007

Prepared by : 
(Engineer)

Reviewer : 
(Quality Manager)

Approved & Authorized Signer : 
(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : License Plate Rear Mounted Camera
 Model Number : ACA200
 Power Supply : DC12V
 Operate Frequency : 2468MHz
 Channel Number : 1
 Applicant : Audiovox Corporation
 Address : 150 Marcus Blvd., Hauppauge, NY 11788
 Manufacturer : Meihua Mediaview Technologies Corporation
 Address : 13 C2 Tianxiang Building, Tianan Cyber Park, Futian District, Shenzhen, China
 Date of sample received : November 01, 2007
 Date of Test : November 09, 2007

1.2. Description of Test Facility

EMC Lab : Listed by FCC
 The Registration Number is 274801

 Listed by Industry Canada
 The Registration Number is IC4174

 Accredited by China National Accreditation Committee
 for Laboratories
 The Certificate Registration Number is L0579

 Name of Firm : Shenzhen Academy of Metrology & Quality Inspection
 Site Location : Bldg. Metrology & Quality Inspection, Longzhu Road,
 Nanshan, Shenzhen, Guangdong, P.R. China

1.3. Measurement Uncertainty

Conducted emission expanded uncertainty = 3.5dB, k=2
 Radiated emission expanded uncertainty = 4.5dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	03.31.2008
EMI Test Receiver	Rohde&Schwarz	ESI26	838786/013	01.24.2008
Bilog Antenna	Schwarzbeck	VULB9163	9163-194	03.31.2008
Bilog Antenna	Chase	CBL6112B	2591	01.24.2008
Horn Antenna	Rohde&Schwarz	HF906	100013	01.24.2008
Spectrum Analyzer	Anritsu	MS2651B	6200238856	03.31.2008
Pre-Amplifier	Agilent	8447D	2944A10619	03.31.2008
L.I.S.N.	Rohde&Schwarz	ESH3-Z5	100305	03.31.2008
L.I.S.N.	Rohde&Schwarz	ESH3-Z5	100310	03.31.2008

3. FUNDAMENTAL AND HARMONICS RADIATED EMISSION MEASUREMENT

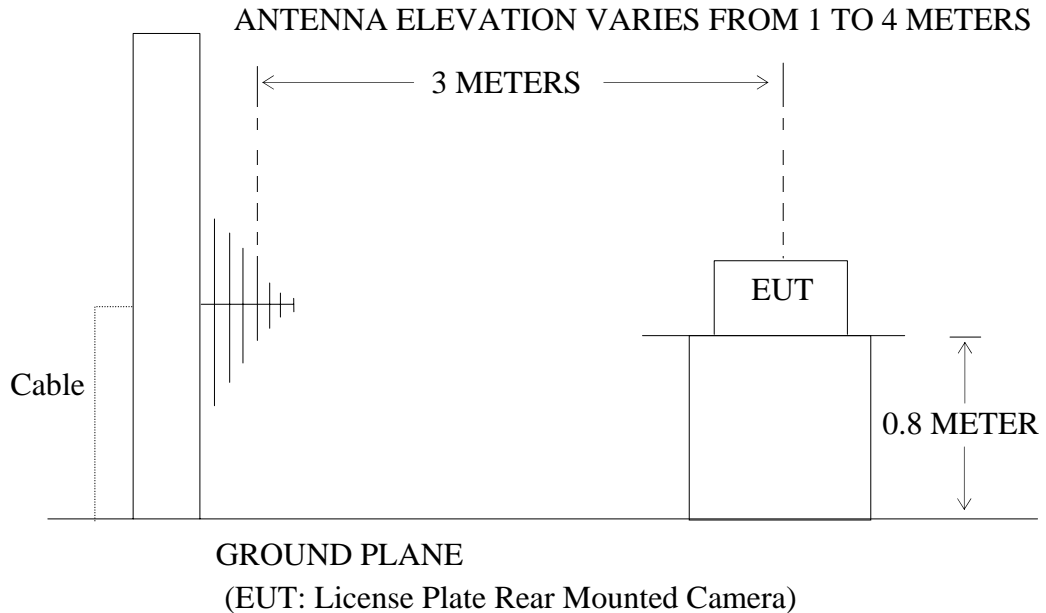
3.1. Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



(EUT: License Plate Rear Mounted Camera)

3.1.2. Anechoic Chamber Test Setup Diagram



3.2. The Emission Limit

3.2.1 FCC Part 15 Subpart C Section 15.249(a): Operation within the frequency band of 2.4 to 2.4835GHz, The fundamental field strength shall not exceed 94 dBμV/m and the harmonics shall not exceed 54 dBμV/m.

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of harmonics (microvolts/meter)
902-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

According to section 15.249(e), as shown in section 15.35(b), The peak field strength

of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

3.2.2 Restricted Band Radiation Emission Measurement Limits According to FCC part 15 Section 15.205 and Section 15.209.

3.3. Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.3.1. License Plate Rear Mounted Camera (EUT)

Model Number : ACA200
Serial Number : N/A
Manufacturer : Meihua Mediaview Technologies Corporation

3.4. Operating Condition of EUT

3.4.1. Setup the EUT and simulator as shown as Section 3.1.

3.4.2. Turn on the power of all equipment.

3.4.3. Let the EUT work in TX modes measure it.

3.5. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver (R&S ESI26) is set at 1MHz.

3.6. The Field Strength of Radiation Emission Measurement Results

PASS.

Date of Test:	<u>November 09, 2007</u>	Temperature:	<u>23°C</u>
	<u>License Plate Rear Mounted</u>		
EUT:	<u>Camera</u>	Humidity:	<u>57%</u>
Model No.:	<u>ACA200</u>	Power Supply:	<u>DC 12V</u>
Test Mode:	<u>TX</u>	Test Engineer:	<u>Andy</u>

Fundamental Radiated Emissions

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2468.170	61.6	70.5	-3.4	58.2	67.1	94	114	35.8	46.9	Vertical
2468.178	61.0	68.1	-3.4	57.6	64.7	94	114	36.4	49.3	Horizontal

Harmonics Radiated Emissions

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
*4936.150	40.3	50.5	2.2	42.5	52.7	54	74	11.5	21.3	Vertical
*4936.659	37.3	49.6	2.2	39.5	51.8	54	74	14.5	22.2	Horizontal
*7404.209	23.2	33.7	7.4	30.6	41.1	54	74	23.4	32.9	Horizontal

The spectral diagrams in appendix I display the measurement of peak values.

Note:

1. The emission emitted by the EUT is too low to be measured except the emission listed above.
2. *: Denotes restricted band of operation.
3. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

4. RADIATED EMISSION FOR FCC PART 15 SECTION 15.249(D)

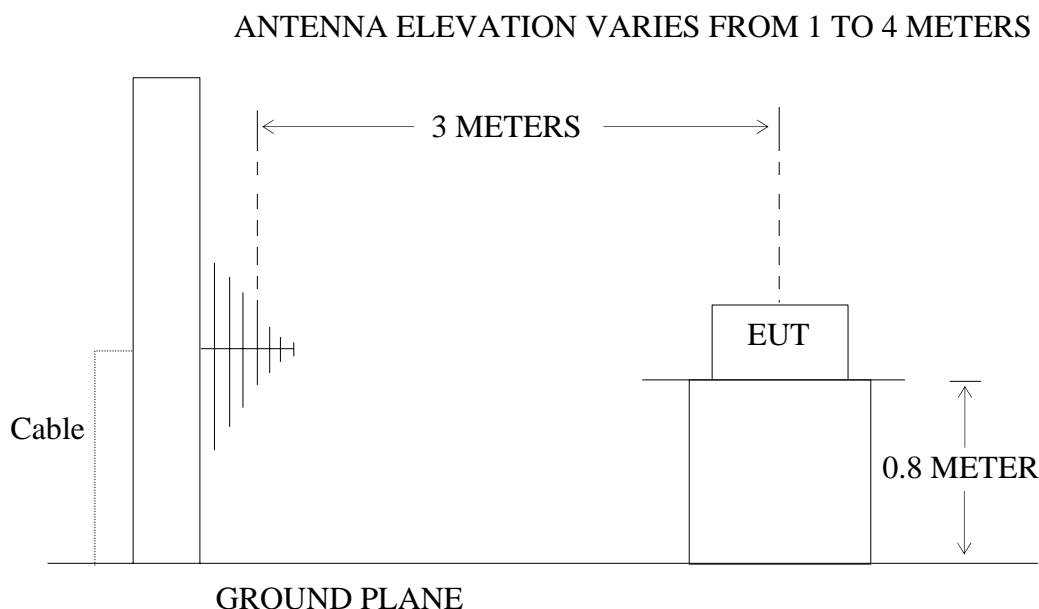
4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



(EUT: License Plate Rear Mounted Camera)

4.1.2. Anechoic Chamber Test Setup Diagram



(EUT: License Plate Rear Mounted Camera)

4.2. The Emission Limit

4.2.1 FCC Part 15 Subpart C Section 15.249(d): Emission radiated outside of the specified frequency bands, except for harmonics, shall be comply with the general radiated emission limits in Section 15.209.

Frequency (MHz)	Limit,		The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector.
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dBμV/m)	
30 - 88	100	40	

88 - 216	150	43.5	Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
216 - 960	200	46	
Above 960	500	54	

4.3. EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.3.1. License Plate Rear Mounted Camera (EUT)

Model Number : ACA200
Serial Number : N/A
Manufacturer : Meihua Mediaview Technologies Corporation

4.4. Operating Condition of EUT

4.4.1. Setup the EUT and simulator as shown as Section 4.1.

4.4.2. Turn on the power of all equipment.

4.4.3. Let the EUT work in TX modes measure it.

4.5. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver (R&S ESI26) is set at 120KHz in 30-1000MHz. and set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 25000MHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

4.6. The Emission Measurement Result

PASS.

Date of Test:	November 09, 2007	Temperature:	23°C
EUT:	Wireless Reverse Video System	Humidity:	57%
Model No.:	ACA200	Power Supply:	DC 12V
Test Mode:	TX	Test Engineer:	Andy

Below 1GHz:

Frequency (MHz)	Reading (dBμV/m)	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin (dBμV/m)	Polarization
	QP		QP	QP	QP	
52.232	63.6	-26.2	37.4	40.0	2.6	Vertical
107.996	61.5	-21.1	40.4	43.5	3.1	Vertical
292.425	56.8	-19.6	37.2	46.0	8.8	Horizontal
918.356	49.6	-11.8	37.8	46.0	8.2	Horizontal
945.571	51.2	-11.6	39.6	46.0	6.4	Horizontal

Above 1GHz:

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
1002.551	41.6	51.5	-8.5	33.1	43.0	54.0	74.0	20.9	31.0	Vertical
1002.549	41.3	51.0	-8.5	32.8	42.5	54.0	74.0	21.2	31.5	Horizontal

The spectral diagrams in appendix I display the measurement of peak values.

Note:

1. -: Denotes the output Field Strength of all the spurious frequency is at least 15dB down to the limit.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

5. BAND EDGES

5.1. The Requirement

- 5.1.1. Band Edge from 2400MHz to 2483.5MHz. Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in FCC part 15 Section 15.209 limit, whichever is the lesser attenuation.

5.2. EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.2.1. License Plate Rear Mounted Camera (EUT)

Model Number : ACA200
Serial Number : N/A
Manufacturer : Meihua Mediaview Technologies Corporation

5.3. Operating Condition of EUT

- 5.3.1. Setup the EUT and simulator as shown as Section 5.1.
- 5.3.2. Turn on the power of all equipment.
- 5.3.3. Let the EUT work in TX modes measure it.

5.4. Test Procedure

- 5.4.1. Measure the fundamental amplitude appearing on spectral display and set it as a reference level. measure the lower band edge amplitude. Get the delta amplitude and edge frequency.
- 5.4.2. Repeat above procedures , Measure the fundamental amplitude appearing on spectral display and set it as a reference level. measure the upper band edge amplitude. Get the delta amplitude and edge frequency.

5.5. The Measurement Result

Pass

5.5.1 Lower band edge: Emission radiated outside of the lower band edge are 37.3 dB below the level of the fundamental.

The emission of carrier power strength (dB μ V/m)	The maximum field strength in restrict band (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
67.1	29.8	74	44.2	Peak
58.2	20.9	54	33.1	Average

5.5.2 Upper band edge: Emission radiated outside of the upper band edge are 36.3 dB below the level of the fundamental.

The emission of carrier power strength (dB μ V/m)	The maximum field strength in restrict band (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
67.1	30.8	74	43.2	Peak
58.2	21.9	54	32.1	Average

comply with the general radiated emission limits in Section 15.209.

All the spectral waveforms are attached in Appendix I.

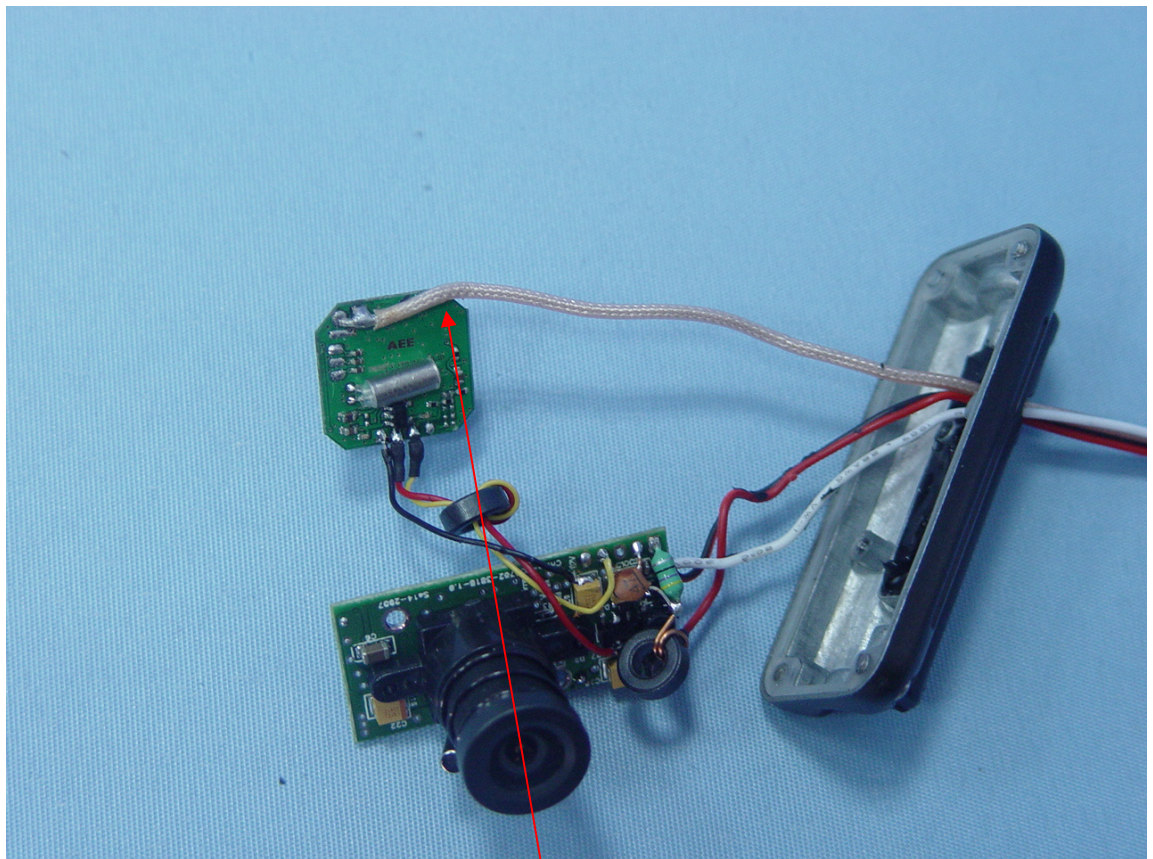
6. ANTENNA REQUIREMENT

6.1. The Requirement

7.1.1. According to Section 15.203, An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

6.2. Antenna Construction

The transmitter utilizes dipole antenna. The antenna was solder to PCB. The antenna is 0.5 meter in length along with DC power wire (red & black wire) both be wrapped into black insulation tube. The antenna is not connected to DC +, - polarity. It is not considered to be user replaceable.



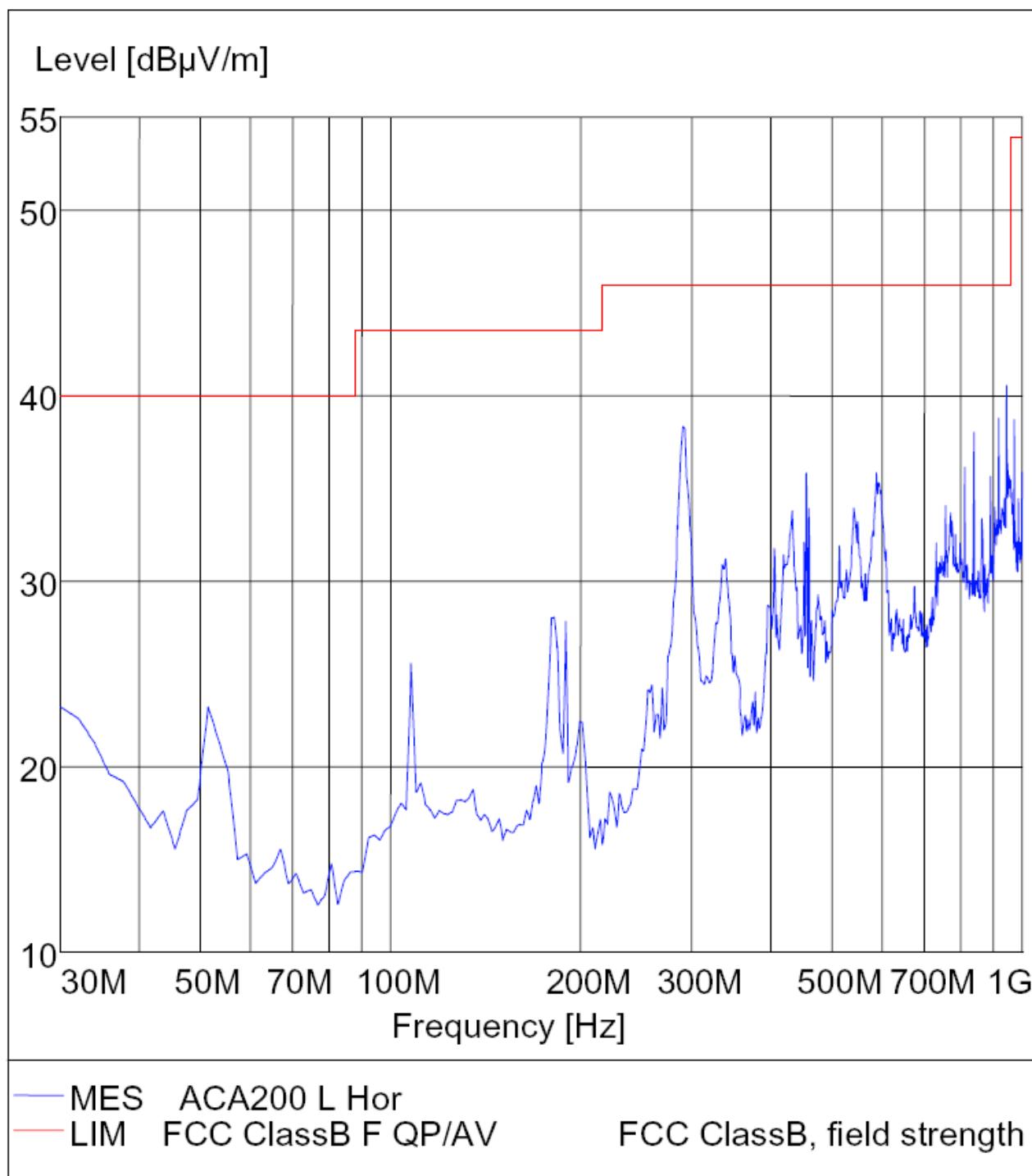
Antenna

APPENDIX I (Test Curves)

Radiated Disturbance

FCC Part 15

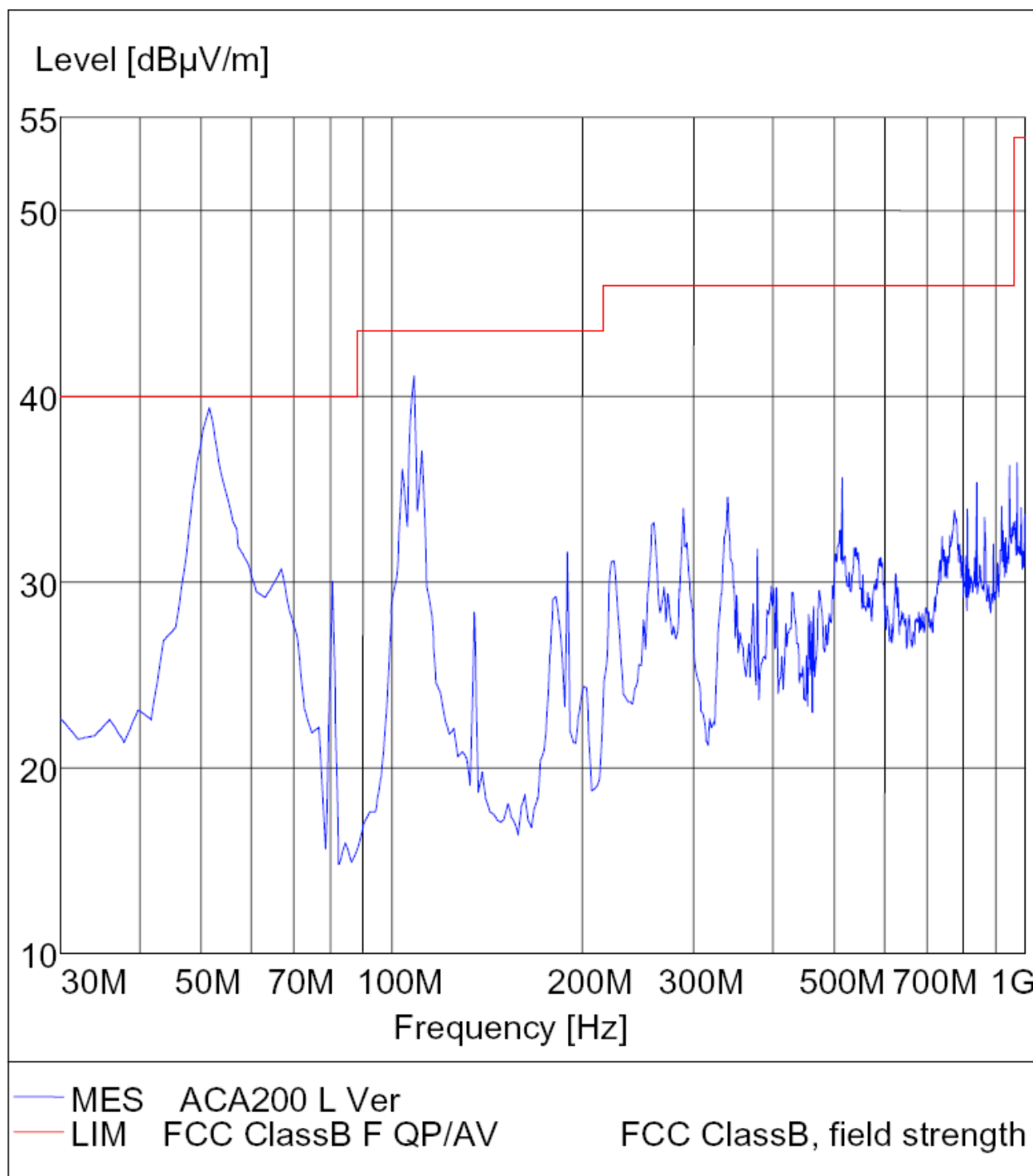
EUT: License Plate Rear Mounted Camera M/N:ACA200
 Manufacturer: Meihua Mediaview Technologies Corporation
 Operating Condition: TX
 Test Site: ATC EMC Lab.SAC
 Operator: Andy
 Test Specification: Horizontal
 Comment : DC 12V



Radiated Disturbance

FCC Part 15

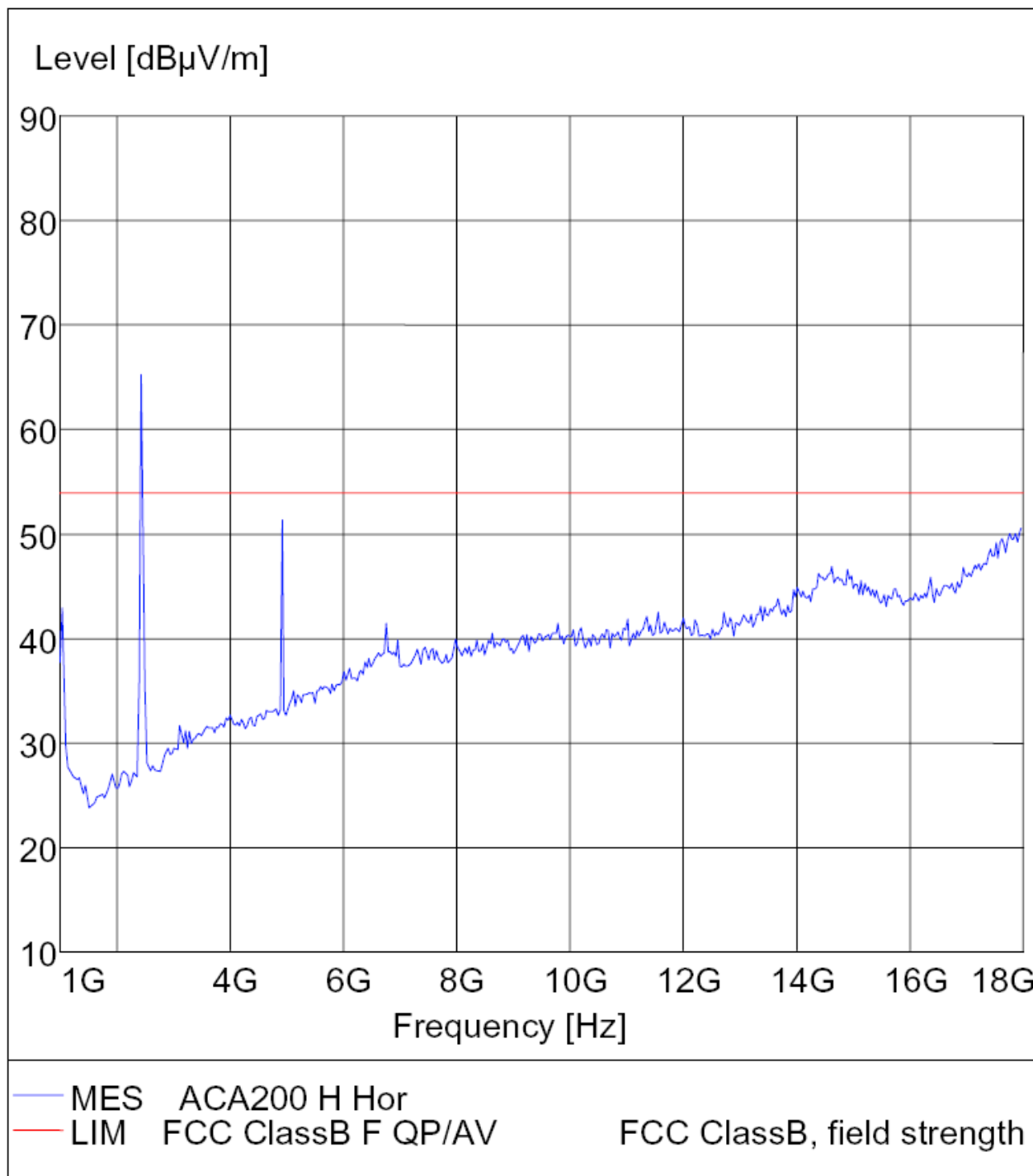
EUT: License Plate Rear Mounted Camera M/N:ACA200
 Manufacturer: Meihua Mediaview Technologies Corporation
 Operating Condition: TX
 Test Site: ATC EMC Lab.SAC
 Operator: Andy
 Test Specification: Vertical
 Comment : DC 12V



Radiated Disturbance

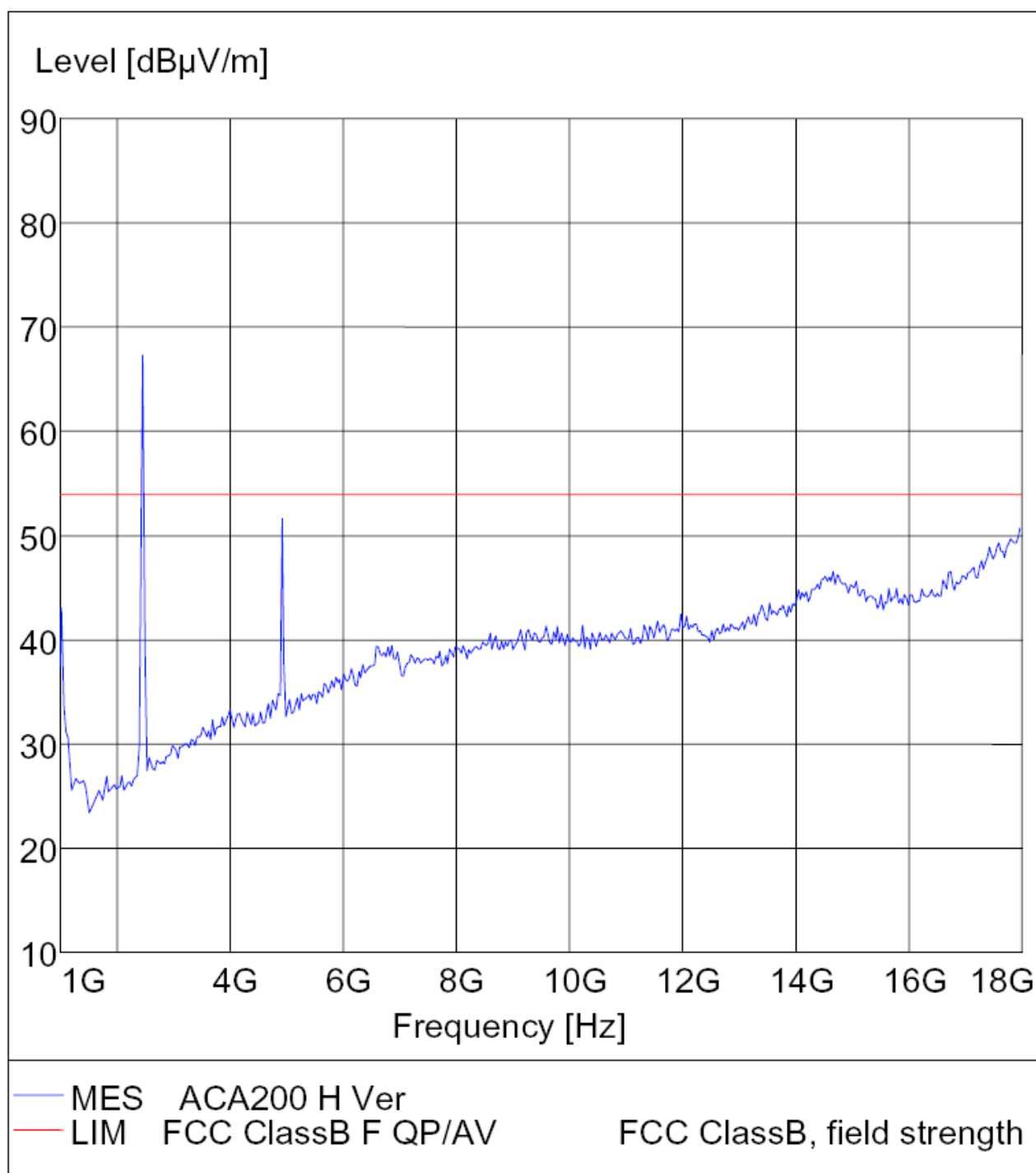
FCC Part 15

EUT: License Plate Rear Mounted Camera M/N:ACA200
 Manufacturer: Meihua Mediaview Technologies Corporation
 Operating Condition: TX
 Test Site: ATC EMC Lab.SAC
 Operator: Andy
 Test Specification: Horizontal
 Comment: DC 12V



Radiated Disturbance**FCC Part 15**

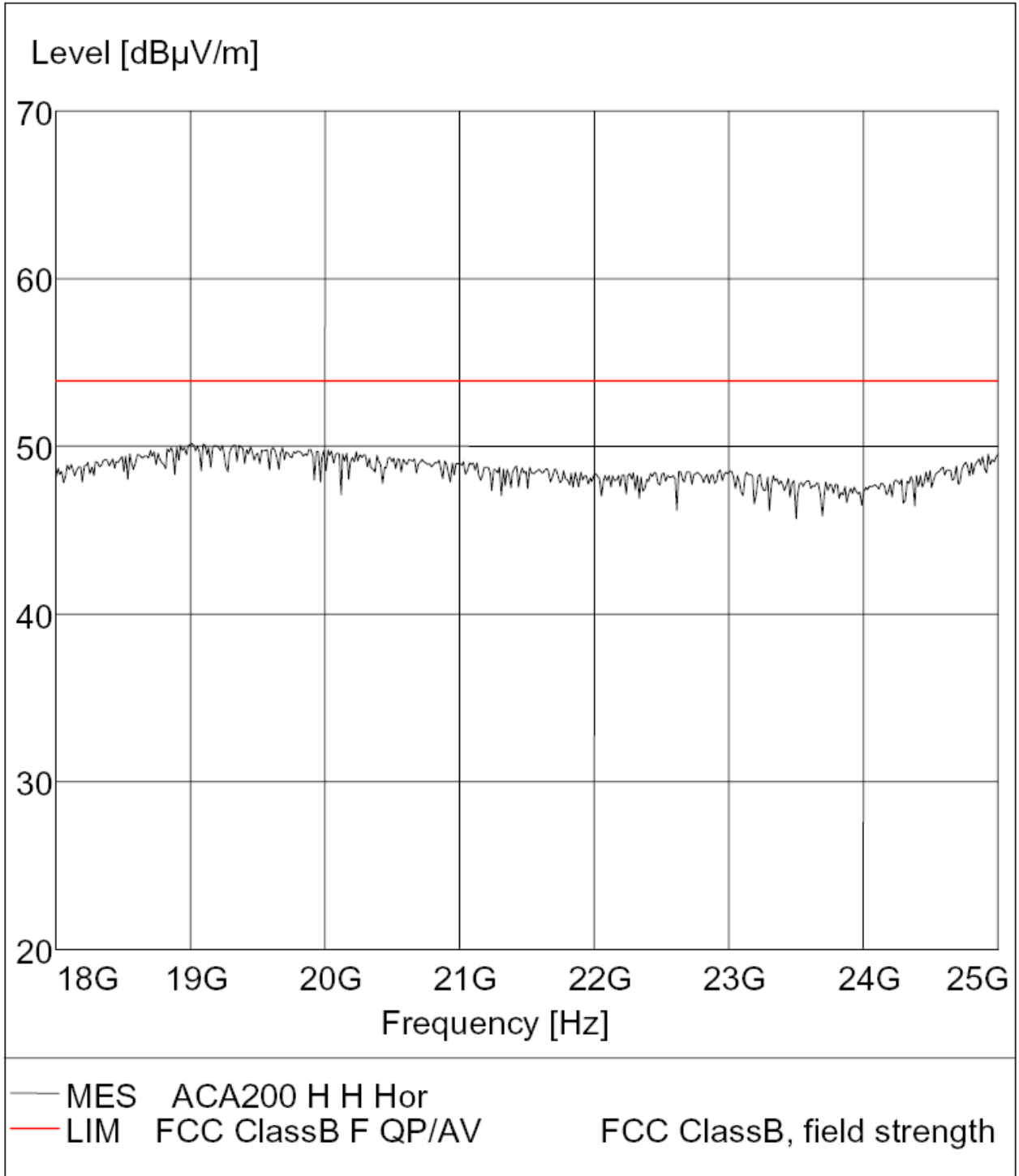
EUT: License Plate Rear Mounted Camera M/N:ACA200
Manufacturer: Meihua Mediaview Technologies Corporation
Operating Condition: TX
Test Site: ATC EMC Lab.SAC
Operator: Andy
Test Specification: Vertical
Comment: DC 12V



Radiated Disturbance

FCC Part 15

EUT: License Plate Rear Mounted Camera M/N:ACA200
Manufacturer: Meihua Mediaview Technologies Corporation
Operating Condition: TX
Test Site: ATC EMC Lab.SAC
Operator: Andy
Test Specification: Horizontal
Comment: DC 12V



Radiated Disturbance

FCC Part 15

EUT: License Plate Rear Mounted Camera M/N:ACA200
Manufacturer: Meihua Mediaview Technologies Corporation
Operating Condition: TX
Test Site: ATC EMC Lab.SAC
Operator: Andy
Test Specification: Vertical
Comment: DC 12V

