



TEST REPORT

Report No.: SRTC2019-9003(F)-0049
Product Name: LTE Ufi
Model Name: MF79U
Applicant: ZTE Corporation
Manufacturer: ZTE Corporation
Specification: FCC Part15B (Certification)
(2019 edition)
FCC ID: SRQ-MF79U

The State Radio_monitoring_center Testing Center (SRTC)
15th Building, No.30 Shixing Street, Shijingshan District,
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1. General information

1.1 Notes of the test report

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The test results relate only to individual items of the samples which have been tested.

1.2 Information about the testing laboratory

Company: The State Radio_monitoring_center Testing Center (SRTC)
Address: 15th Building, No.30 Shixing Street, Shijingshan District
Testing location: No.80, Zhaojiachang, BeizangCun, Daxing District, Beijing, China.
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Contacted person: Liu Jia
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1.3 Applicant's details

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City: Shenzhen
Country or Region: P.R.China
Contacted person: Yang Hua
Tel: + 86-29-83637986
Fax: ---
Email: yang.hua3@zte.com.cn

1.4 Manufacturer's details

Company: ZTE Corporation
Address: ZTE Plaza, Keji Road South,Hi-Tech, Industrial Park, Nanshan District,Shenzhen, P.R.China,
City: Shenzhen
Country or Region: P.R.China
Contacted person: Yang Hua
Tel: + 86-29-83637986
Email: yang.hua3@zte.com.cn

1.5 Application details

Date of reception of test sample: 25th Oct. 2019

Date of test: 25th Oct. 2019 to 8th Nov. 2019

1.6 Reference specification

FCC Part 15B, 2019 (Certification)

1.7 Information of EUT

1.7.1 General information

Name of EUT	LTE Ufi
FCC ID	SRQ-MF79U
Rated Power Supply Voltage	5V
Extreme Temperature	Lowest: -10°C Highest: +55°C
Extreme Voltage	Minimum: 4.8V Maximum: 5.2V
HW Version	dwqB
SW Version	BD_MF79UV1.0.0B01

1.7.2 EUT details

Product Name	Model Name	IMEI
LTE Ufi	MF79U	868916040002246

1.7.3 Auxiliary equipment details

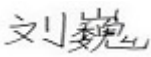
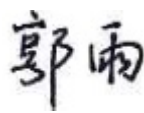
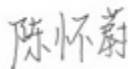
AE (Auxiliary Equipment) 1#: Computer

Manufacturer	Lenovo
Model Number	7000
S/N	MP1969S2

2. Test information

2.1 Summary of the test results

No.	Test case	FCC reference	Verdict
1	Conducted emissions	15.107	Pass
2	Radiated emissions	15.109	Pass

Approved By: Director of the test department 	Checked By: Vice director of the test department 
Tested By: Mr Chen Huaiwei 	Issued date: 2019.11.20

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
23.5°C	40.3%	100.6kPa

Test Setup with laptop:

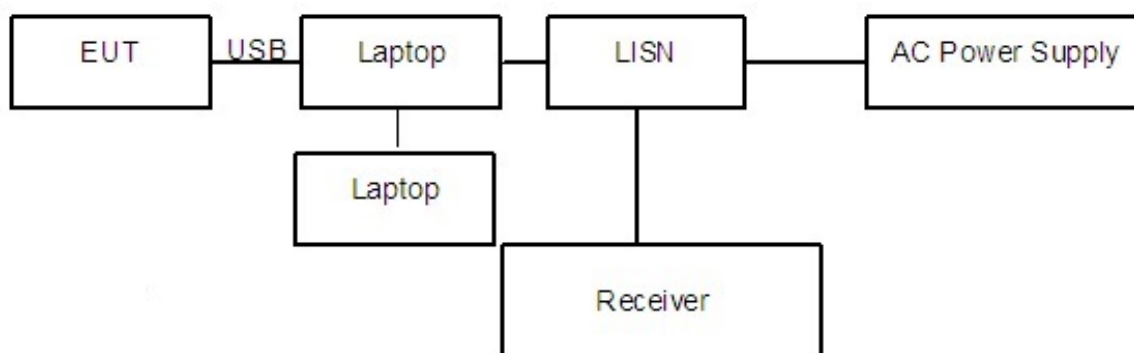


Figure 1

Test Procedure:

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The accessories of the EUT are connected with the EUT. The EUT was connected with a laptop. The laptop's LAN port is connected with another laptop via cable. And the data transferring between two laptops is maintained.

The AC main power supply of the laptop is connected to LISN and LISN is connected to the reference ground. The test set-up and the test methods are performed according to ANSI C63.4:2014.

Then start the test software EMC32. Sweep the whole frequency band through the range from 150 KHz to 30 MHz with RBW 9kHz, VBW 30kHz. The measurement should be done for both L line and N line. During pre-test, the receiver uses both peak detector and average detector. And the final test, the receiver uses both average detector and Quasi-peak detector.

The data of cable loss has been calibrated in full testing frequency range before the testing.

A “reference path loss” Corr.(dB) is established and the $L_{cable}+ATT+VDF$ is the attenuation of “reference path loss”, and including the cable loss, the attenuation of the attenuator, the voltage division factor of AMN.

The measurement results are obtained as described below:

$$P_{result}=P_{mea}+ Corr.(dB)$$

Sample calculation: $(41.10 \text{ dB}\mu\text{V}) = (11.4 \text{ dB}\mu\text{V}) + (29.7 \text{ dB})$, the corresponding frequency is 0.171321MHz.

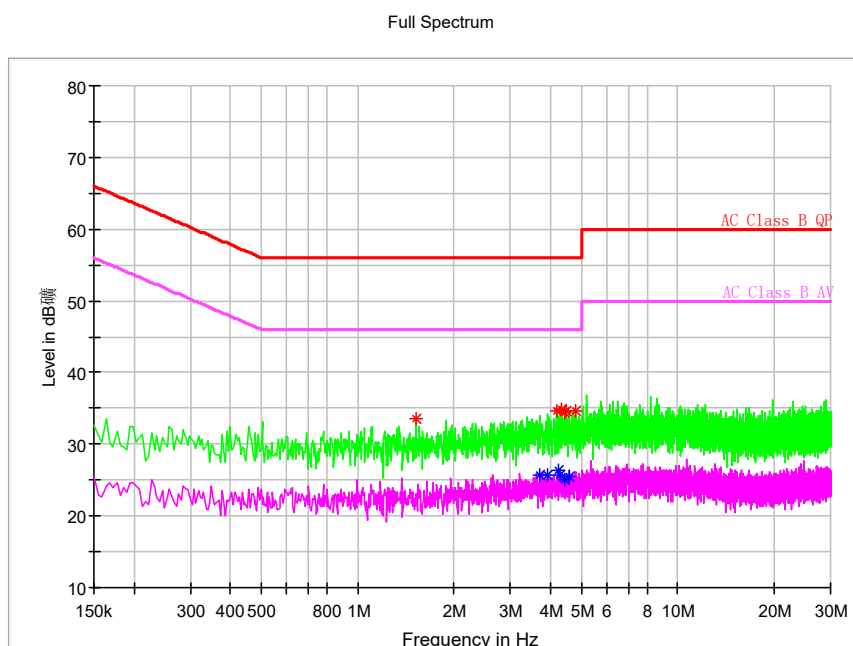
Limit:

Frequency of Emission(MHz)	Limits(dB μ V)	
	Quasi-peak	Average
0.15~0.5	66 to 56*	56 to 46*
0.5~5	56	46
5~30	60	50

Note: * Decreases with the logarithm of the frequency

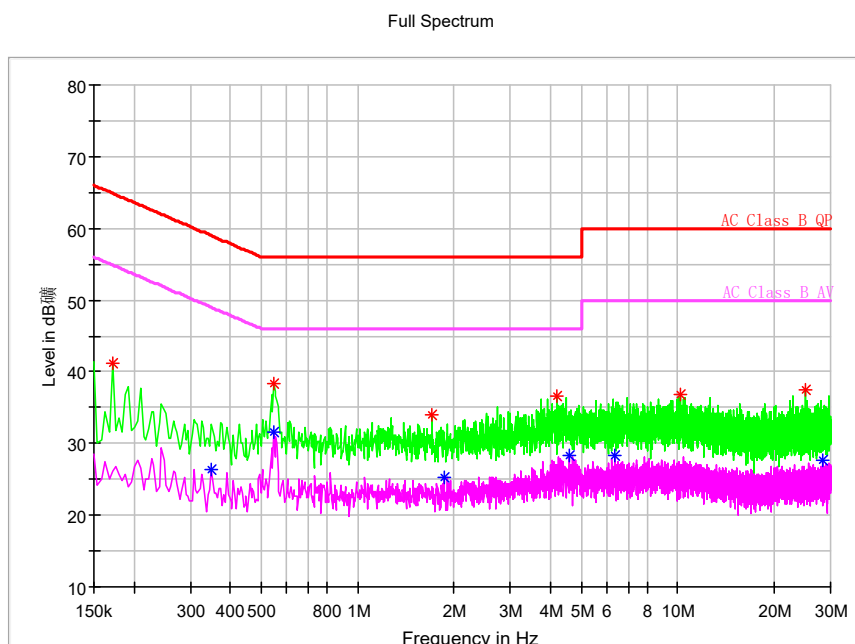
Test result:

Noise Level of the Measuring Instrument



Pic1.Conducted emission L and N Line

EUT + Laptop:



Pic2. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	Peak QuasiPeak (dBµV)	Peak Average (dBµV)
0.171321	41.10	---	64.90	23.79	L1	29.7	11.4	---
0.350421	---	26.43	48.95	22.52	L1	29.7	---	-3.27
0.546579	38.26	---	56.00	17.74	L1	29.7	8.56	---
0.546579	---	31.64	46.00	14.36	L1	29.7	---	1.94
1.702200	34.09	---	56.00	21.91	L1	29.8	4.29	---
1.855714	---	25.37	46.00	20.63	L1	29.8	---	-4.43
4.184014	36.69	---	56.00	19.31	N	29.8	6.89	---
4.580593	---	28.41	46.00	17.59	L1	29.8	---	-1.39
6.324686	---	28.25	50.00	21.75	L1	29.8	---	-1.55
10.166807	36.84	---	60.00	23.16	N	29.9	6.94	---
25.044900	37.54	---	60.00	22.46	N	29.9	7.64	---
28.336929	---	27.74	50.00	22.26	L1	29.9	---	-2.16

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
23.5°C	40.3%	100.6kPa

Test Setup:

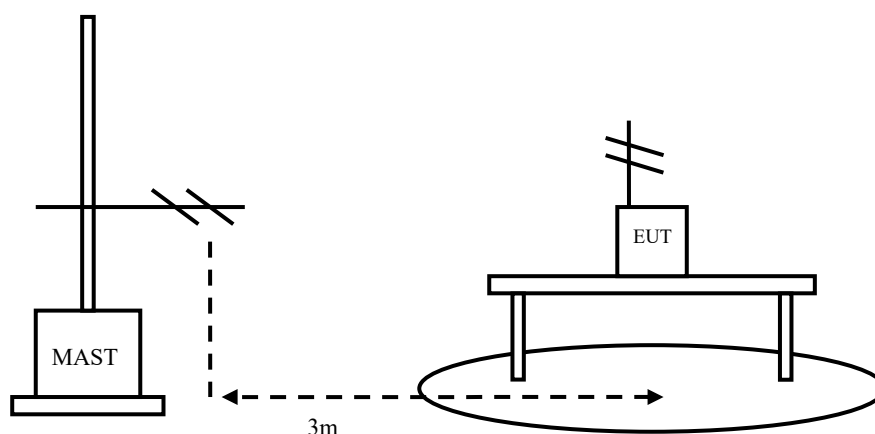


Figure 2

Test Procedure:

EUT+Laptop:

The EUT should be placed on a non-metallic table 80cm above the ground plane. The receive antennas shall be moved from 1 to 4 meters. The distance between EUT and receive antenna should be 3 meters.

The accessories of the EUT are connected with the EUT. The EUT was connected with a laptop. The test set-up and the test methods are performed according to ANSI C63.4:2014

Then start the test software EMC32. Sweep the whole frequency band through the range from 30MHz to 1GHz, using receive log period antenna HL562.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The EUT is laid in two modes as follow:
1. put the EUT in horizontal direction; 2. put the EUT in vertical direction.

The data of cable loss and antenna factor have been calibrated in full testing frequency range before the testing. All test results are performed with max hold at

the horizontal and vertical polarity.

RBW=120kHz, VBW=300kHz, when the test frequency: 30MHz<f<1GHz

RBW=1MHz, VBW=3MHz, when the test frequency: f>1GHz

A “reference path loss” is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{mea}} + A_{Rpl}$$

Limit:

Frequency of Emission(MHz)	Limits	
	Detector	Unit (dB μ V/m)
30~88	Quasi-peak	40
88~216	Quasi-peak	43.5
216~960	Quasi-peak	46
960~1000	Quasi-peak	54
1000~5th harmonic of the highest frequency or 40GHz, whichever is lower	Average	54
	Peak	74

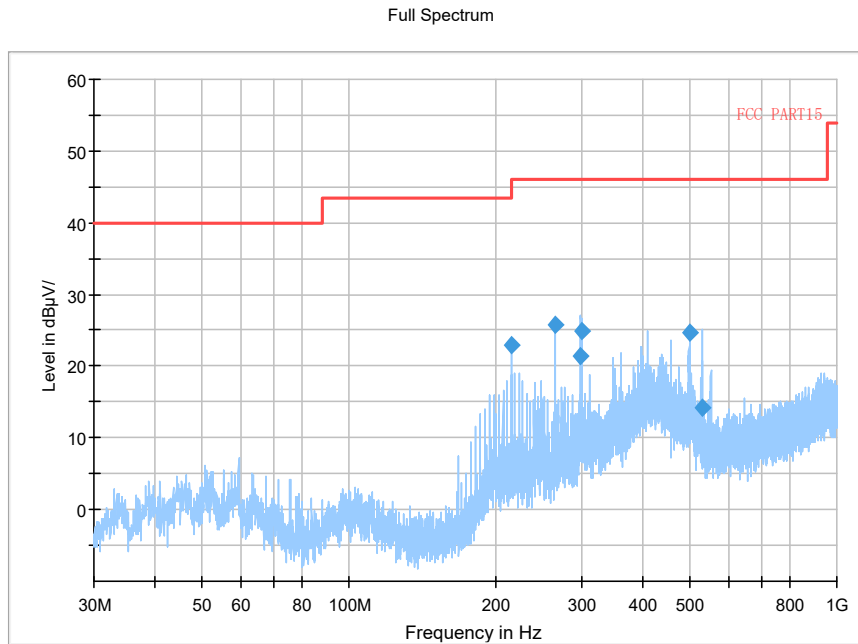
Test result:

Sample calculation: (22.92 dB μ V/m) = (47.02 dB μ V/m) + (-24.1 dB), the corresponding frequency is 215.997500MHz.

EUT+Laptop

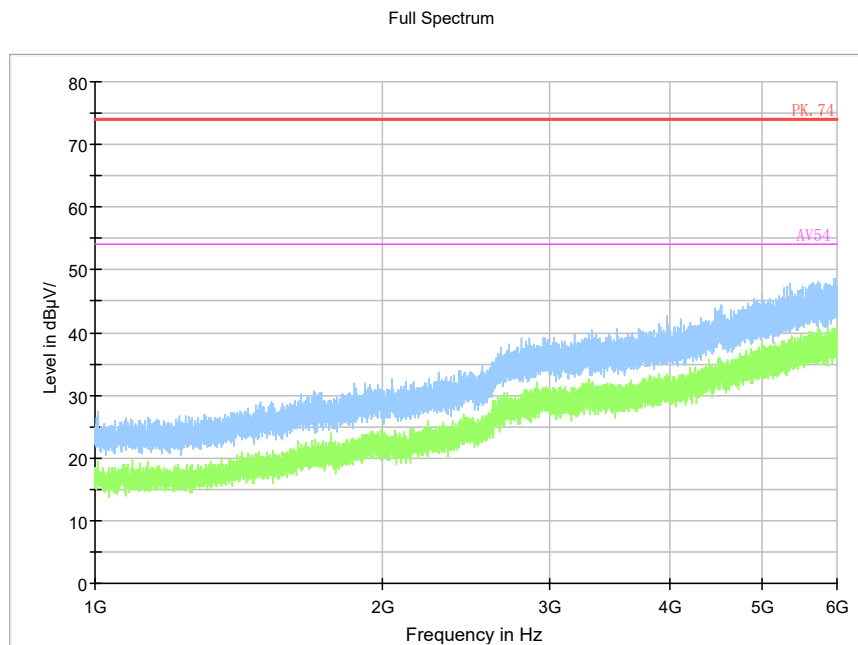
Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB)	Pmea (dB μ V/m)	Polarity
215.997500	22.92	43.50	-24.1	47.02	V
264.012500	25.68	46.00	-22.2	47.88	V
298.544500	21.50	46.00	-21.1	42.60	V
299.902500	24.80	46.00	-21.1	45.90	V
497.831000	24.69	46.00	-15.4	40.09	V
530.956500	14.25	46.00	-14.9	29.15	V

EUT + Laptop: refer to Pic3, Pic4, Pic5, Pic6, Pic7



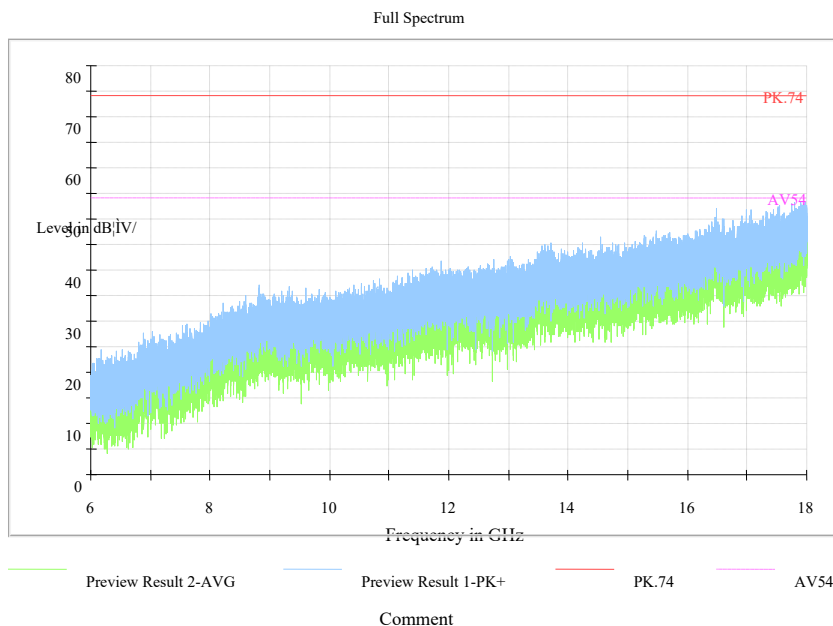
Pic3. Radiated emission(30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



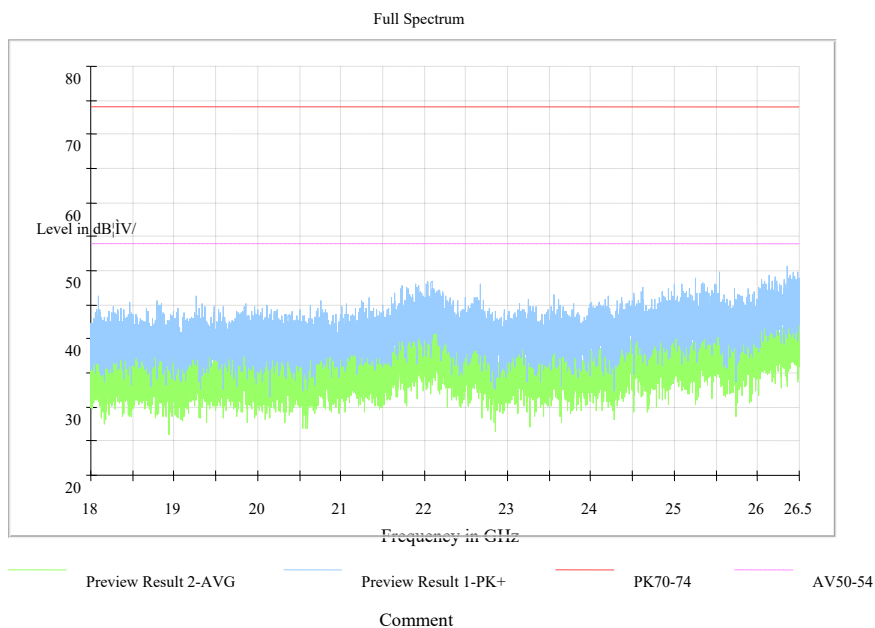
Pic4. Radiated emission (1GHz –6GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical.



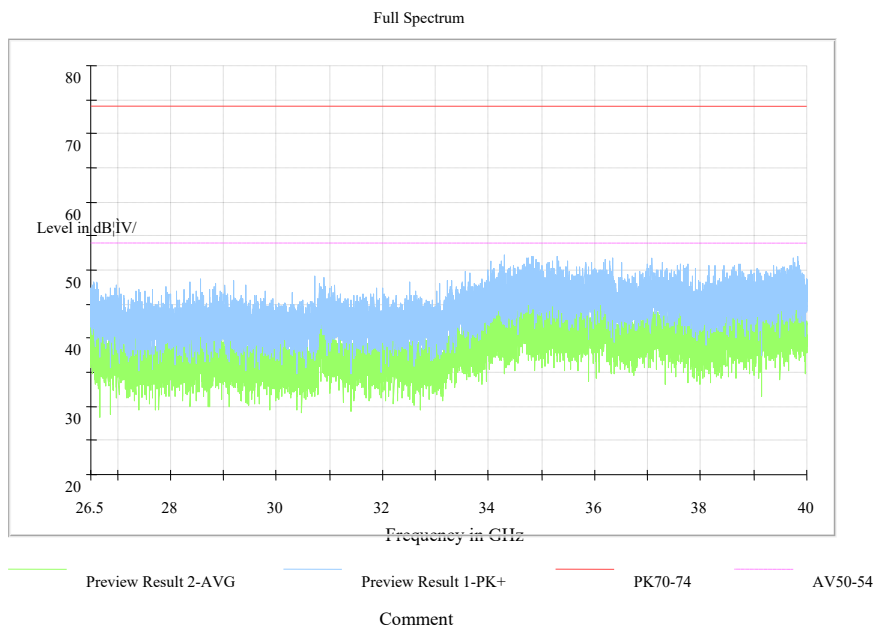
Pic5. Radiated emission(6GHz – 18GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic6. Radiated emission (18GHz –26.5GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical.



Pic7. Radiated emission (26.5GHz -40GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical.

2.3. List of test equipments

No.	Name/Model	Manufacturer	S/N	Calibration Due Date	Calibration Date
1	23.18m×16.88m×9.60mS emi-AnechoicChamber	FRANKONIA	-----	5th Sep. 2021	6th Sep. 2016
2	ESW EMI test receiver	R&S	101574	20th Aug. 2020	20th Aug. 2019
3	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	5th Sep. 2021	6th Sep. 2016
4	ENV216 AMN	R&S	3560.6550. 12	20th Aug. 2020	20th Aug. 2019
5	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100513	20th Aug. 2020	20th Aug. 2019
6	PS2000 Turn Table	FRANKONIA	-----	-----	-----
7	MA260 Antenna Master	FRANKONIA	-----	-----	-----
8	EMC32EMI test software	R&S	V10.20.01	-----	-----
9	VULB9163 Receive antenna	R&S	886	20th Aug. 2020	20th Aug. 2019

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