
TEST REPORT

Report No.: SRTC2019-9003(F)-0027
Product Name: TD-LTE Wireless Data Terminal
Model Name: easytrans 900
Applicant: IFLYTEK CO.,LTD.
Manufacturer: IFLYTEK CO.,LTD.
Specification: FCC Part15B (Certification)
(2019 edition)
FCC ID: 2AMI5-EASYTRANS-900

The State Radio_monitoring_center Testing Center (SRTC)
15th Building, No.30 Shixing Street, Shijingshan District,
Beijing, China

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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.

City: Beijing

Country or Region: China

Contacted person: Liu Jia

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1.3 Applicant's details

Company: IFLYTEK CO.,LTD.

Address: National Intelligent Speech High-tech Industrialization Base, No. 666, Wangjiang Road West, Hefei City, Anhui Province, China

City: Hefei

Country or Region: China

Contacted person: Yumei Tao

Tel: +86-0-15056085095

Email: ymtao3@iflytek.com

1.4 Manufacturer's details

Company: IFLYTEK CO.,LTD.

Address: National Intelligent Speech High-tech Industrialization Base, No. 666, Wangjiang Road West, Hefei City, Anhui Province, China

City: Hefei

Country or Region: China

Contacted person: Yumei Tao

Tel: +86-0-15056085095

Email: ymtao3@iflytek.com

1.5 Application details

Date of reception of test sample: 14th May 2019

Date of test: 14th May 2019 to 24th May 2019

1.6 Reference specification

FCC Part 15B, 2019 (Certification)

1.7 Information of EUT

1.7.1 General information

Name of EUT	TD-LTE Wireless Data Terminal
Model Name	easytrans 900
Marketing Name	easytrans 900
FCC ID	2AMI5-EASYTRANS-900
Equipment Class	Class B
Antenna Type	Fixed Internal Antenna
Power Supply	Battery or Charger
Rated Power Supply Voltage	3.8V
Extreme Voltage	Minimum: 3.6V Maximum: 4.35V
Extreme Temperature	Lowest: -10°C Highest: +50°C
HW Version	V1.0
SW Version	V1.0

EUT	EUT1	EUT2	EUT3	EUT4	EUT5
Model	easytrans 900	JT-BLUE-DATA	JT-BLUE-WIFI	JT-GREY-DATA	JT-GREY-WIFI
Software Version	V8.1	V9.1	V9.2	V9.1	V9.2
Hardware Version	V1.0	V1.0	V1.0	V1.0	V1.0

Note: The software version, Model and Shell color are only a difference in user experience, the software differences, Model and Shell color listed above will not affect the RF performance of this products.

1.7.2EUT details

Product Name	Model Name	IMEI
TD-LTE Wireless Data Terminal	easytrans 900	865531040033902/865531040033894

1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Laptop

Manufacturer	Lenovo
Model Number	E470c
S/N	PF10VBX6
Input Voltage	100V-240V AC

AE (Auxiliary Equipment)2#: Battery

Type	Li-Lon
Manufacturer	DONGGUAN DRN NEW ENERGYCO.,LTD
Model Number	EASYTRANS 808
Capacity	2500mAh
Nominal Voltage	3.85V

AE (Auxiliary Equipment) 3#: Charger

Manufacturer	SHENZHEN EAST SUN ELECTRONIC CO.,LTD.
Model Number	ES568-U050200XYC
S/N	/
Input Voltage	100V-240V AC
Frequency	50/60Hz

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:Mr. Liu Wei Director of the test department 刘巍	Checked By:Mr. Guo Yu Vice director of the test department 郭雨
Tested By: Mr Chen Huaiwei 陈怀蔚	Issued date: 2019.05.24

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
23.2°C	41.4%	101.8kPa

Test Setup with laptop:

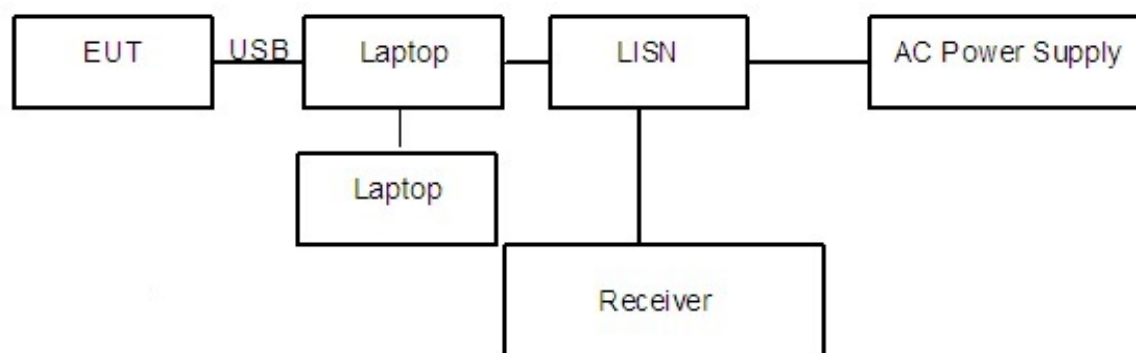


Figure 1

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 such as headset etc. The EUT was connected with a laptop via the USB cable and transferred the data by copying large files from laptop to the EUT. 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.

Test Setup with charger:

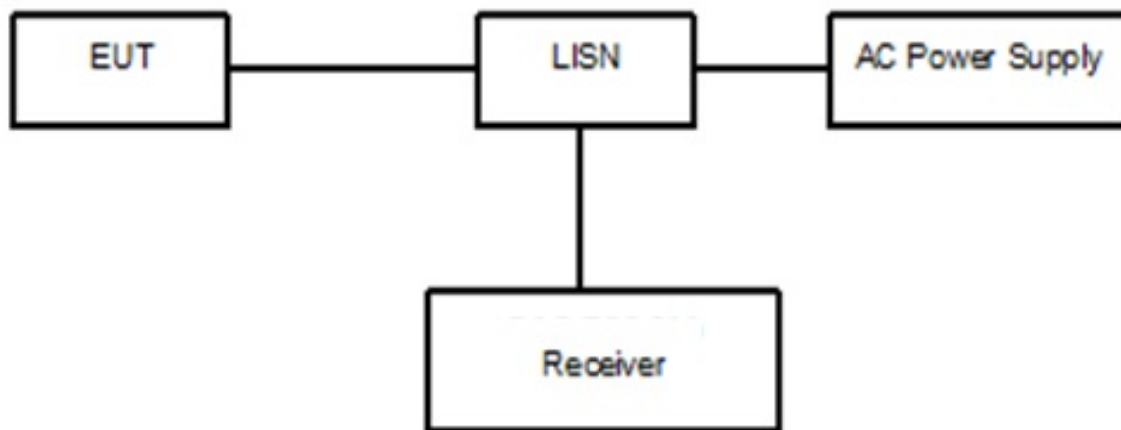


Figure 2

Test Procedure:

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The EUT is connected with LISN via the charger. The LISN is connected to the reference ground. The accessories of the EUT are connected with the EUT such as headset etc. Open the following functions of EUT: Camera, flash lamp, positioning (such as GPS/GLONASS) and video.

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 $L_{\text{cable}} + \text{ATT} + \text{VDF}$ 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:

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

Sample calculation: $(60.51\text{dB}\mu\text{V}) = (30.61\text{dB}\mu\text{V}) + (29.9\text{dB})$, the corresponding frequency is 0.163568MHz.

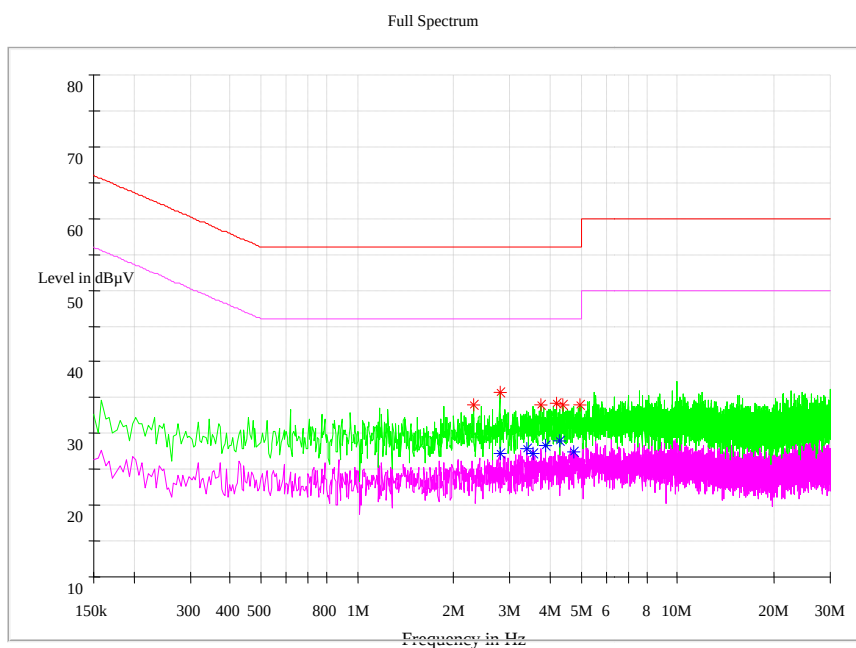
Limit:

Frequency of Emission(MHz)	Limits(dBμV)	
	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

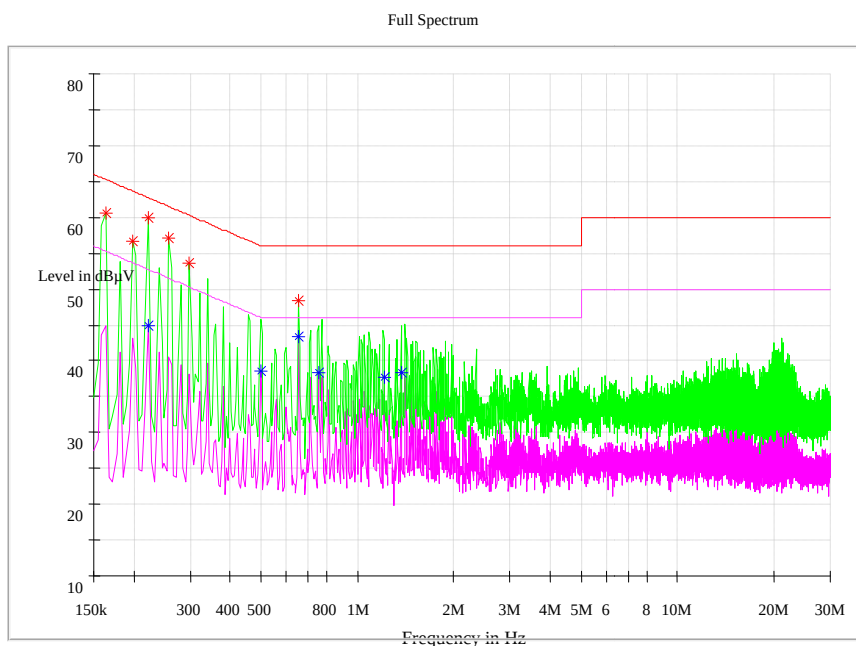
Test result:

Noise Level of the Measuring Instrument



Pic1. Conducted emission L and N Line

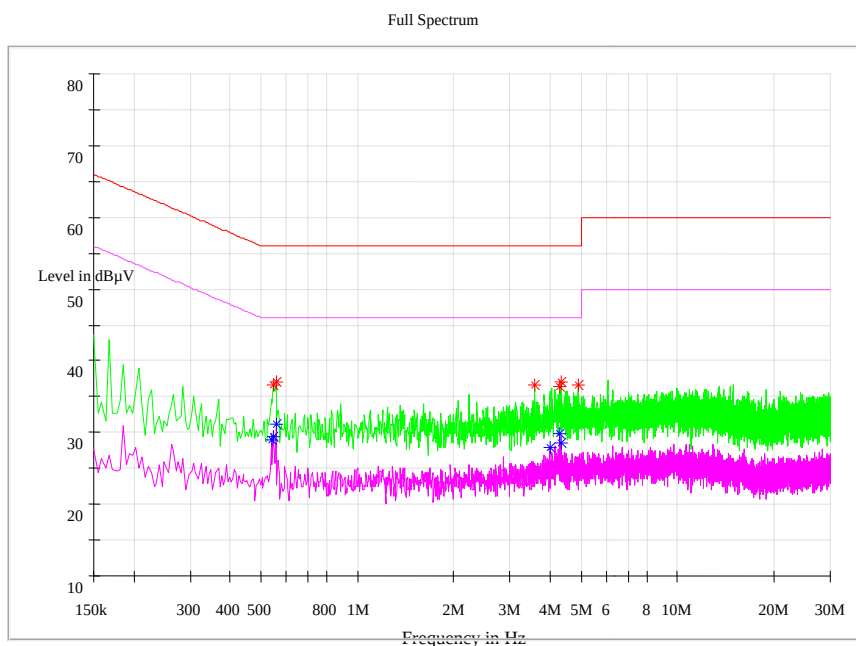
EUT + Charger:



Pic2. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	Pmea Quasi Peak	Pmea Average
0.163568	60.51	---	65.28	4.77	L1	29.9	30.61	---
0.199750	56.60	---	63.62	7.03	L1	29.9	26.7	---
0.222364	59.91	---	62.73	2.82	L1	29.9	30.01	---
0.222364	---	44.95	52.73	7.78	L1	29.9	---	15.05
0.258545	57.17	---	61.48	4.31	L1	29.9	27.27	---
0.299250	53.63	---	60.26	6.63	L1	29.9	23.73	---
0.498250	---	38.49	46.03	7.54	L1	30.0	---	8.49
0.652023	48.37	---	56.00	7.63	L1	30.0	18.37	---
0.656545	---	43.29	46.00	2.71	L1	30.0	---	13.29
0.756045	---	38.31	46.00	7.69	N	29.9	---	8.41
1.212841	---	37.74	46.00	8.26	N	29.9	---	7.84
1.371136	---	38.25	46.00	7.75	N	29.9	---	8.35

EUT + Laptop:



Pic3. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pme a QuasiPeak (dBμV)	Pme a Average (dBμV)
0.538955	---	28.87	46.00	17.13	L1	30.0	---	-1.13
0.548000	36.51	---	56.00	19.49	L1	30.0	6.51	---
0.548000	---	29.46	46.00	16.54	L1	30.0	---	-0.54
0.557045	37.14	---	56.00	18.86	N	30.0	7.14	---
0.557045	---	31.25	46.00	14.76	N	30.0	---	1.25
3.591795	36.61	---	56.00	19.39	L1	29.9	6.71	---
3.985273	---	27.93	46.00	18.07	L1	29.9	---	-1.97
4.297341	36.48	---	56.00	19.52	L1	29.9	6.58	---
4.301864	---	29.76	46.00	16.24	N	29.9	---	-0.14
4.338045	---	28.43	46.00	17.57	N	29.9	---	-1.47
4.338045	37.00	---	56.00	19.00	L1	29.9	7.1	---
4.880773	36.52	---	56.00	19.48	L1	29.9	6.62	---

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
23.2°C	41.4%	101.8kPa

Test Setup:

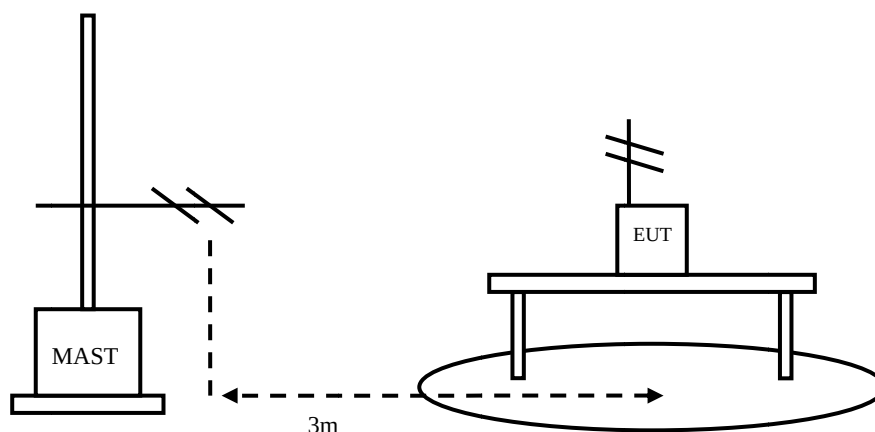


Figure 3

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 such as headset etc. The EUT was connected with a laptop via the USB cable and transferred the data by copying large files from laptop to the EUT.. 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.

EUT+Charger:

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 EUT should work in idle mode. The accessories of the EUT are connected with the EUT such as headset etc. Open the following functions of EUT: Camera, flash lamp, positioning (such as GPS/GLONASS) and video. 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: $30\text{MHz} < f < 1\text{GHz}$

RBW=1MHz, VBW=3MHz, when the test frequency: $f > 1\text{GHz}$

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 (dBμV/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: $(19.82 \text{ dB } \mu \text{ V/m}) = (35.42 \text{ dB } \mu \text{ V/m}) + (-15.6 \text{ dB})$, the corresponding frequency is 63.343750MHz.

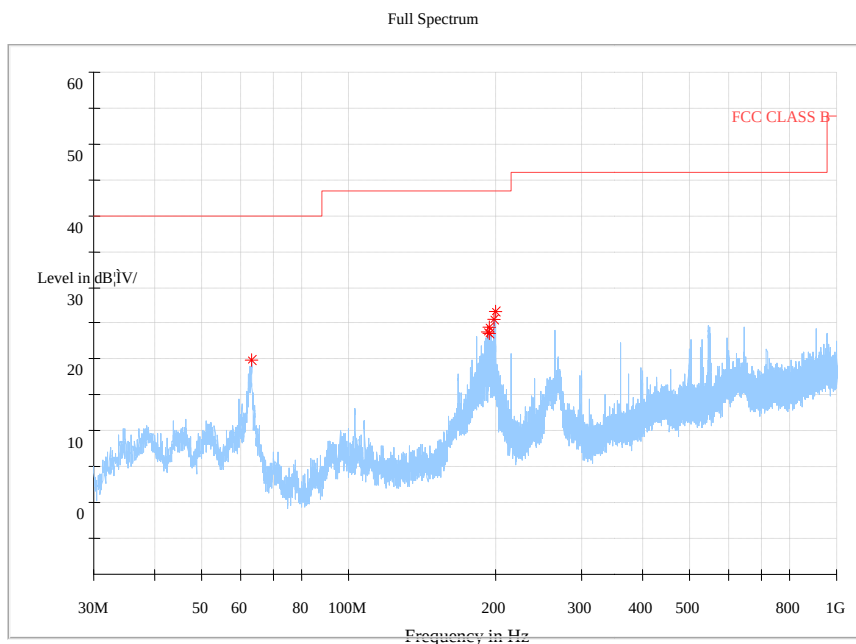
EUT+Laptop

Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB)	Pmea (dB μ V/m)	Polarity
63.343750	19.82	40.00	-15.6	35.42	V
193.202500	23.81	43.50	-19.0	42.81	V
193.849167	23.48	43.50	-18.9	42.38	V
194.738333	24.36	43.50	-18.8	43.16	V
198.780000	25.56	43.50	-19.1	44.66	V
199.830833	26.74	43.50	-18.8	45.54	V

EUT+ charger

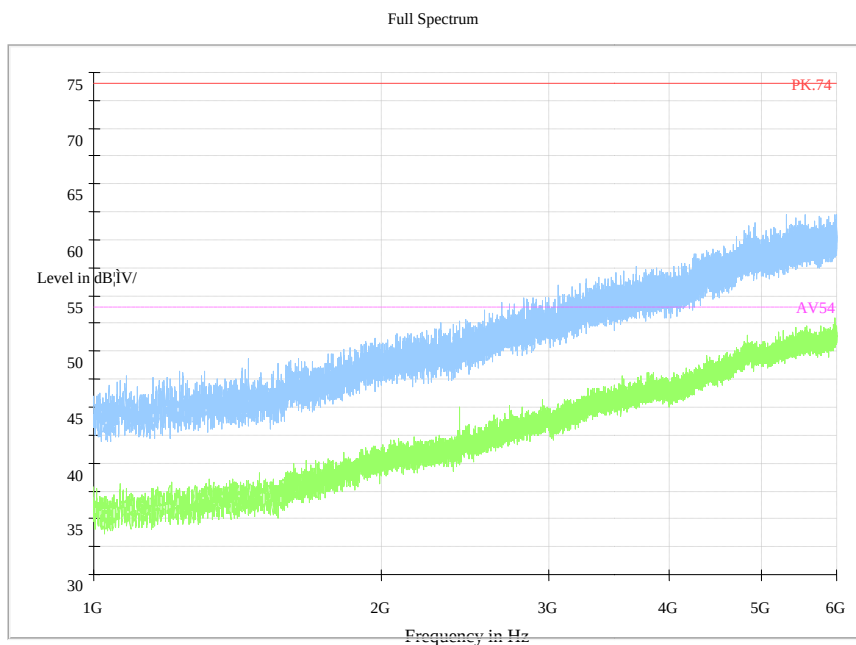
Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB)	Pmea (dB μ V/m)	Polarity
30.242500	24.29	40.00	-14.5	38.79	V
33.880000	24.61	40.00	-14.2	38.81	V
36.587917	23.45	40.00	-14.7	38.15	V
186.291250	26.96	43.50	-15.8	42.76	V
188.756667	25.86	43.50	-16.7	42.56	V
192.596250	28.30	43.50	-17.5	45.8	V

EUT + Laptop: refer to Pic4, Pic5, Pic6, Pic7, Pic8



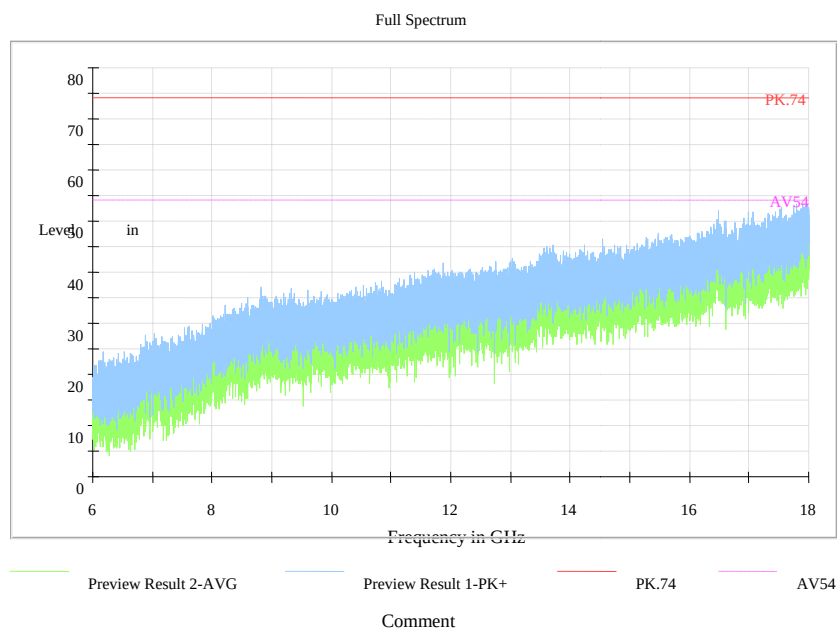
Pic4. Radiated emission(30MHz – 1GHz)

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



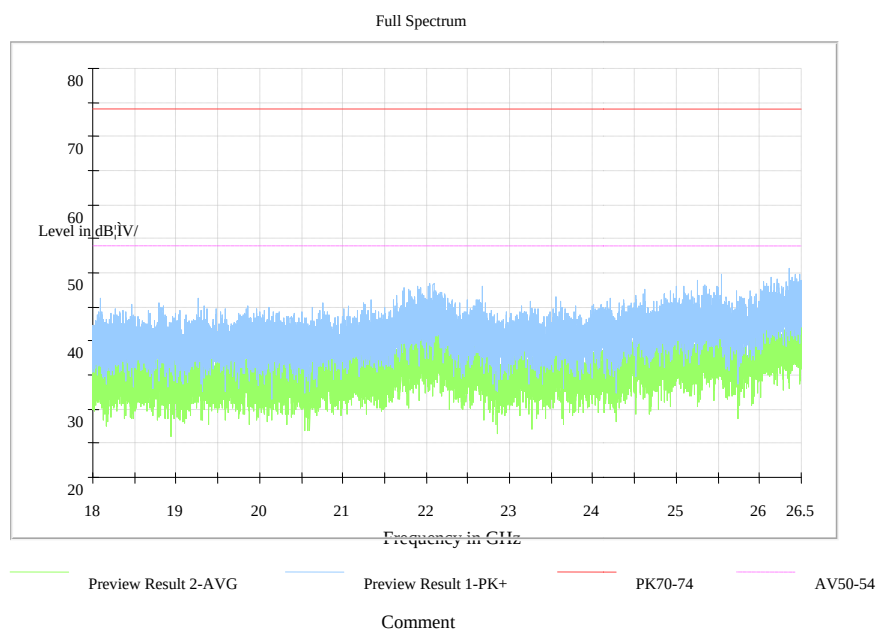
Pic5. Radiated emission (1GHz –6GHz)

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



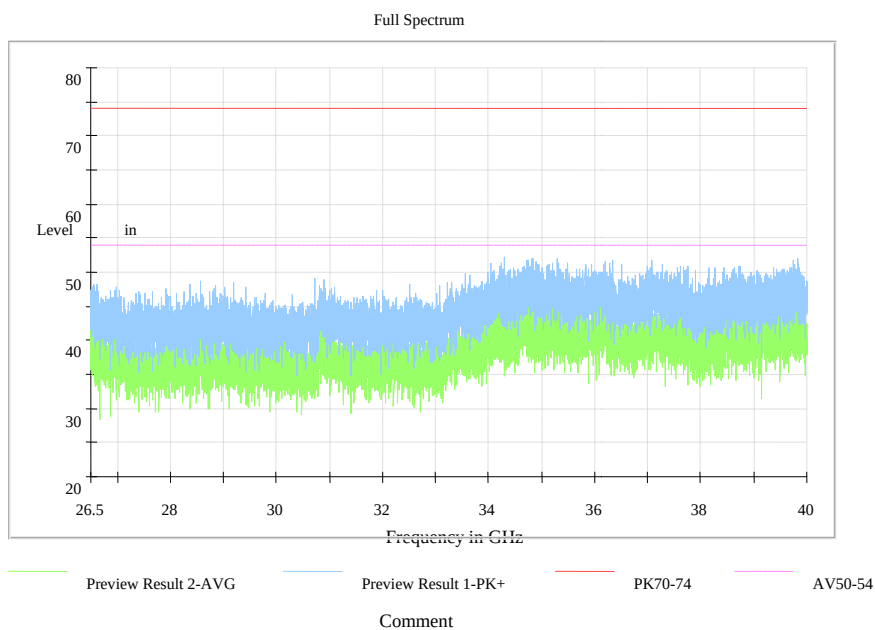
Pic6. Radiated emission(6GHz – 18GHz)

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



Pic7. Radiated emission (18GHz –26.5GHz)

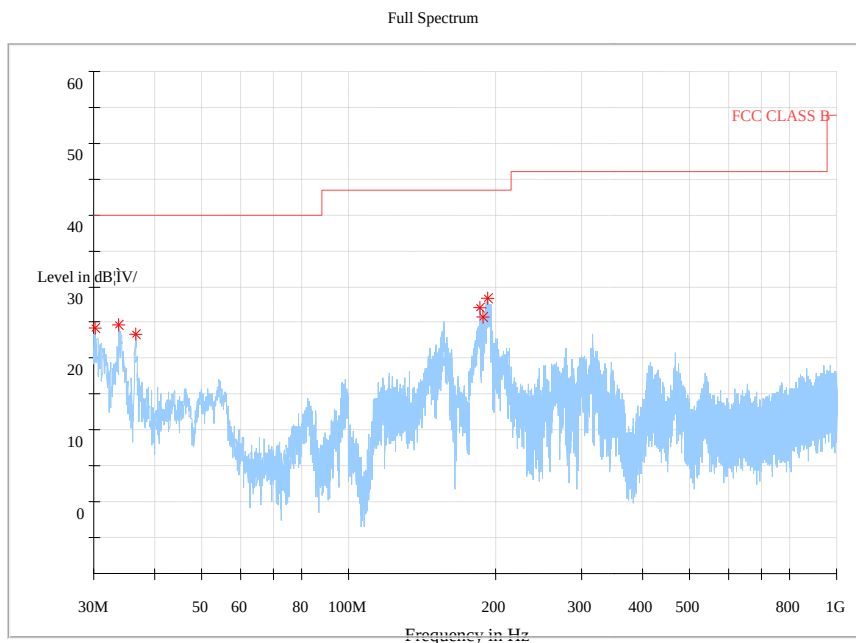
Note : The test data in the graph includes two polarizations: horizontal and vertical.



Pic8. Radiated emission (26.5GHz -40GHz)

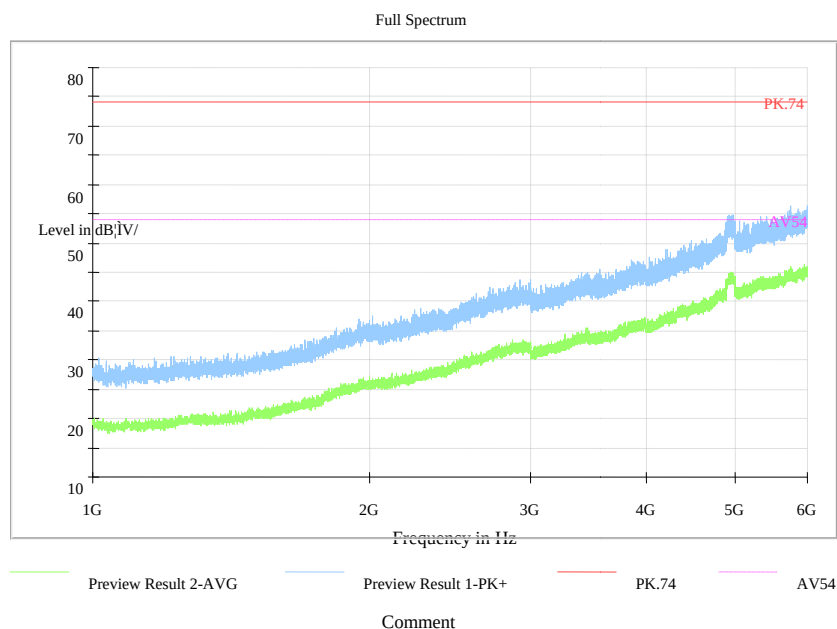
Note : The test data in the graph includes two polarizations: horizontal and vertical.

EUT + charger: refer to Pic9, Pic10, Pic11, Pic12, Pic13



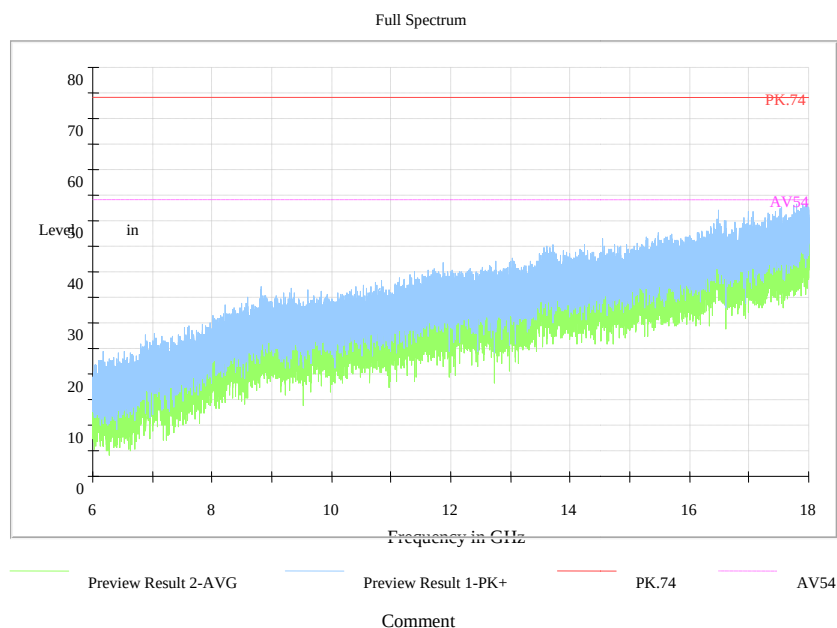
Pic9. Radiated emission(30MHz – 1GHz)

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



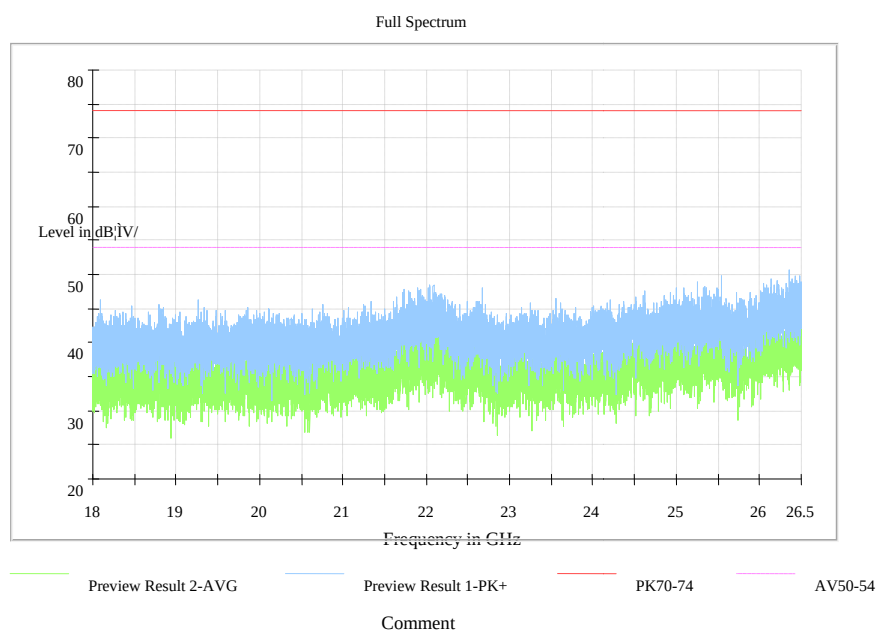
Pic10. Radiated emission (1GHz –6GHz)

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



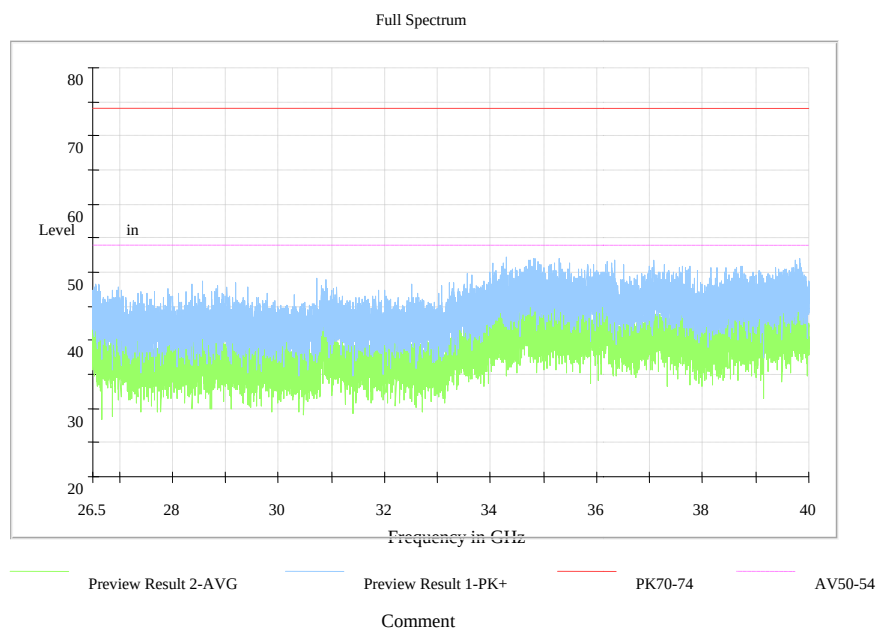
Pic11. Radiated emission(6GHz – 18GHz)

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



Pic12. Radiated emission (18GHz –26.5GHz)

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



Pic13. 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×9.60m Semi-Anechoic Chamber	FRANKONIA	-----	5th Sep. 2021	6th Sep. 2016
2	ESW EMI test receiver	R&S	101574	20th Aug. 2019	20th Aug. 2018
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. 2019	20th Aug. 2018
5	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100513	20th Aug. 2019	20th Aug. 2018
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. 2019	20th Aug. 2018

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