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# TEST REPORT

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Report No.: SRTC2018-9003(F)-0006  
Product Name: AViTA BLE Module  
Model Name: AViTA-BLEM01  
Applicant: AViTA CORPORATION  
Manufacturer: AViTA CORPORATION  
Specification: FCC Part15B (Certification)  
(October 1, 2017 edition)  
FCC ID: UV3BMW-18XX

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  
City: Beijing  
Country or Region: P.R.China  
Contacted person: Liu Jia  
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Email: liujiaf@srtc.org.cn

### 1.3 Applicant's details

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Taipei City 24158, Taiwan (R.O.C.)  
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Contacted person: Steven Jhou  
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Email: steven\_jhou@avita.com.tw

### 1.4 Manufacturer's details

Company: AVITA CORPORATION  
Address: 9F, No.78, Sec.1, Kwang-Fu Road, Sanchung Dist., New  
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Contacted person: Steven Jhou  
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Email: steven\_jhou@avita.com.tw

## 1.5 Application details

Date of reception of test sample: 12<sup>th</sup> Apr. 2018

Date of test: 12<sup>th</sup> Apr. 2018 to 17<sup>th</sup> Apr. 2018

## 1.6 Reference specification

FCC Part 15B, 2017 (Certification)

## 1.7 Information of EUT

### 1.7.1 General information

Name of EUT	AViTA-BLEM01
FCC ID	UV3BMW-18XX
Frequency Range	Bluetooth: 2.402~2.480GHz
Antenna Type	PIFA Antenna
Power Supply	DC power supply
Minimum Voltage	1.9V
Nominal Voltage	3.3V
Maximum Voltage	3.6v
HW Version	V1.0
SW Version	V1.0

### 1.7.2 EUT details

Product Name	Model Name	IMEI
AViTA BLE Module	AViTA-BLEM01	/

### 1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Computer

Equipment	Computer
Manufacturer	Lenovo
Model Number	E40

S/N	MP06WE9E
Input Voltage	100V-240V AC
Frequency	50/60Hz

Equipment	DC power supply
Manufacturer	Agilent
Model Number	E3645A
S/N	MY40000739

## 2. Test information

### 2.1 Summary of the test results

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

Approved by Mr. Liu Wei Director of the test department  	Checked by Mr. He Jia Project manager of the test Department  
Tested by Mr. Chen Huaiwei Test engineer  	Issued date:  2018.04.19

## 2.2 Test result

### 2.2.1 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
24.1°C	42.5%	101.2kPa

Test Setup:

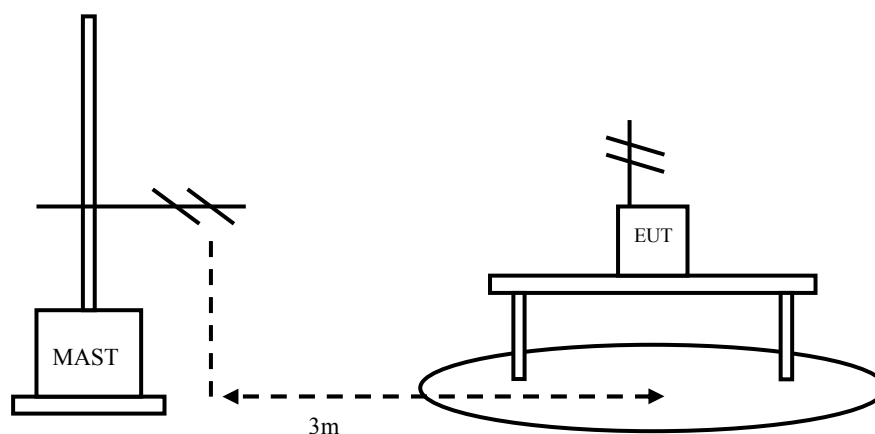


Figure 1

Test Procedure:

EUT+DC power:

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 is powered by a dc source. The EUT was exercised during the testing by data read and write cycles repeated with internal storages connecting with a laptop via the USB cable. The laptop's LAN port is connected with another laptop via cable. And the data transferring between two laptops is maintained. 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.

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:

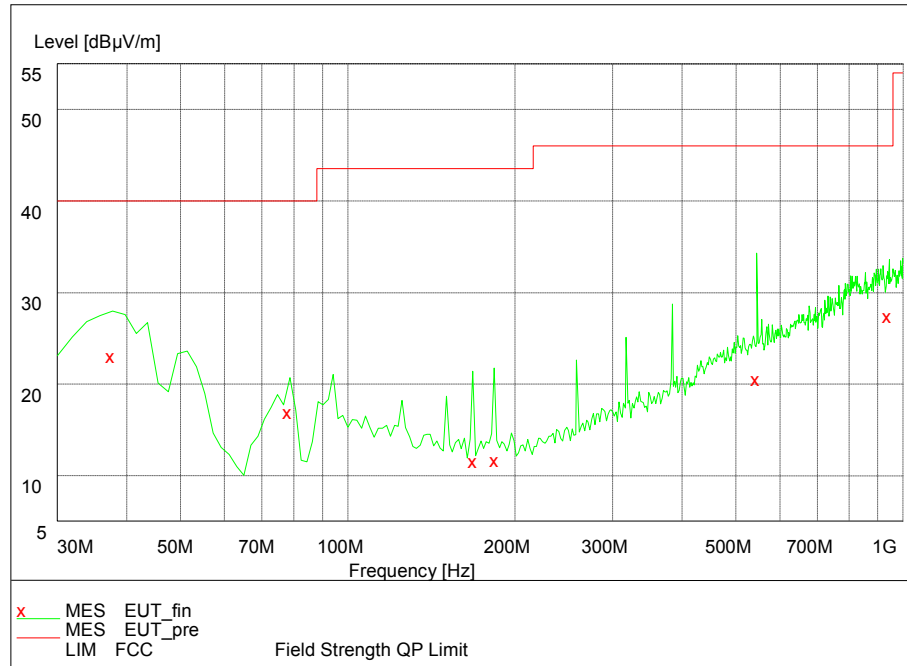
Frequency of Emission(MHz)	Limits	
	Detector	Unit (dB $\mu$ V/m)
30~88	Quasi-peak	40
88~216	Quasi-peak	43.5
216~960	Quasi-peak	46
960~1000	Quasi-peak	54
1000~5th harmonic of the highest frequency or 40GHz, whichever is lower	Average	54
	Peak	74

Test result:

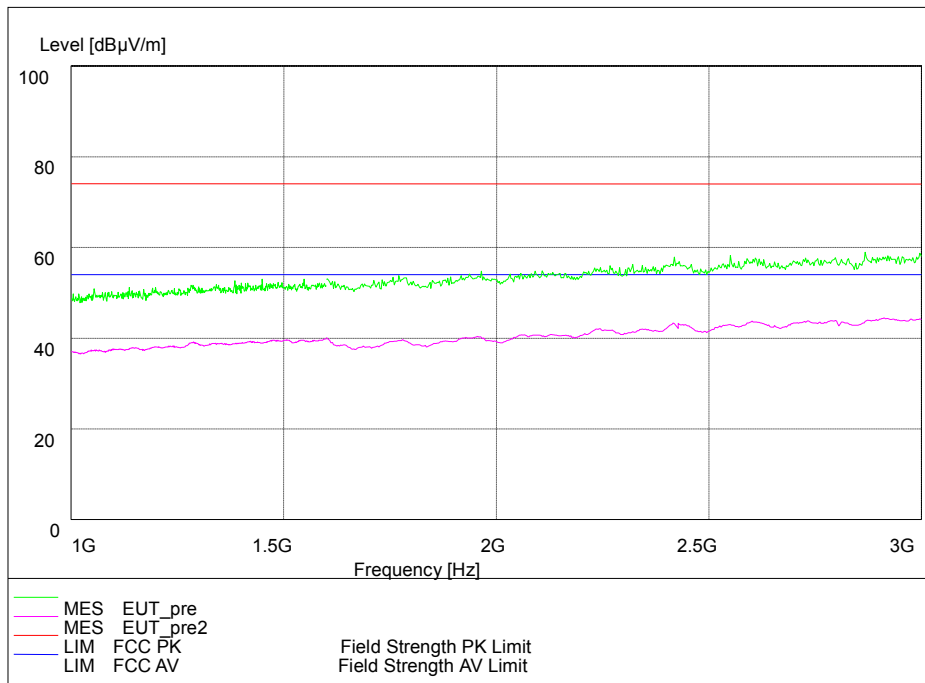
EUT+DC power

Frequency (MHz)	Result (dB $\mu$ V/m)	ARpl (dB)	Pmea (dB $\mu$ V/m)	Polarity	Limit (dB $\mu$ V/m)
37.23	23.81	10.4	13.41	Vertical	40.0
77.94	18.23	10.4	7.83	Vertical	40.0
168.15	12.84	12.1	0.74	Vertical	43.5
181.69	13.49	12.1	1.39	Vertical	43.5
547.20	21.65	13.6	8.05	Vertical	46.0
943.90	28.68	14.8	13.88	Vertical	46.0

EUT+Laptop:

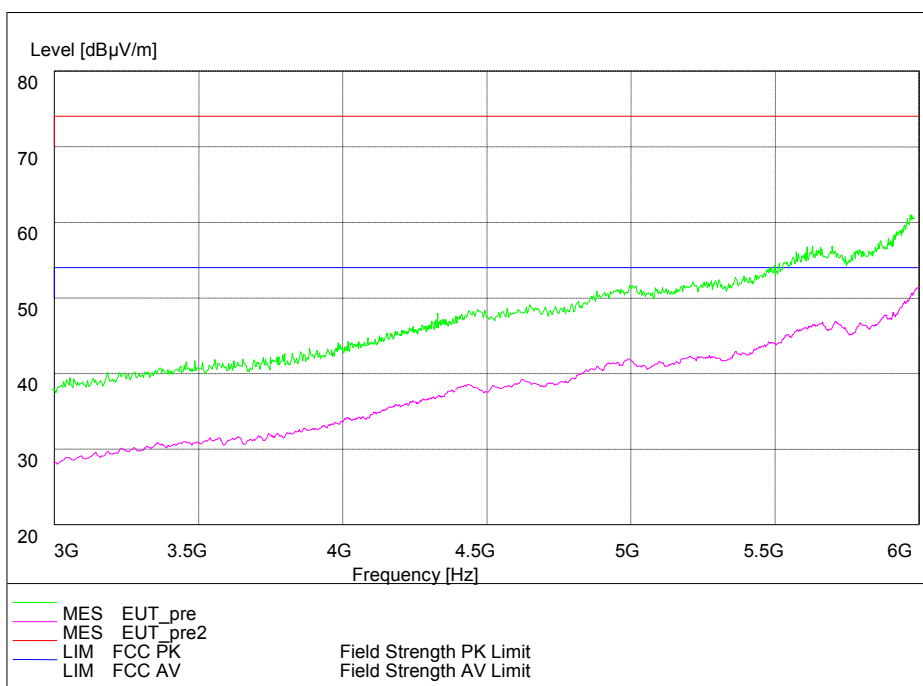


Pic1. Radiated emission(30MHz – 1GHz)



Pic2. Radiated emission (1GHz – 3GHz)





Pic3. Radiated emission (3GHz – 6GHz)

## 2.2.2 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
24.2°C	42.4%	101.2kPa

Test Setup with DC Power:

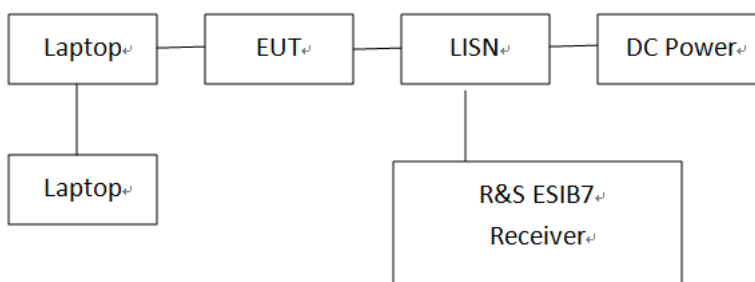


Figure 1

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## Test Procedure:

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The EUT was exercised during the testing by data read and write cycles repeated with internal storages connecting with a laptop via the USB cable. The laptop's LAN port is connected with another laptop via cable. And the data transferring between two laptops is maintained.

The DC main power supply of the EUT 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. 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.

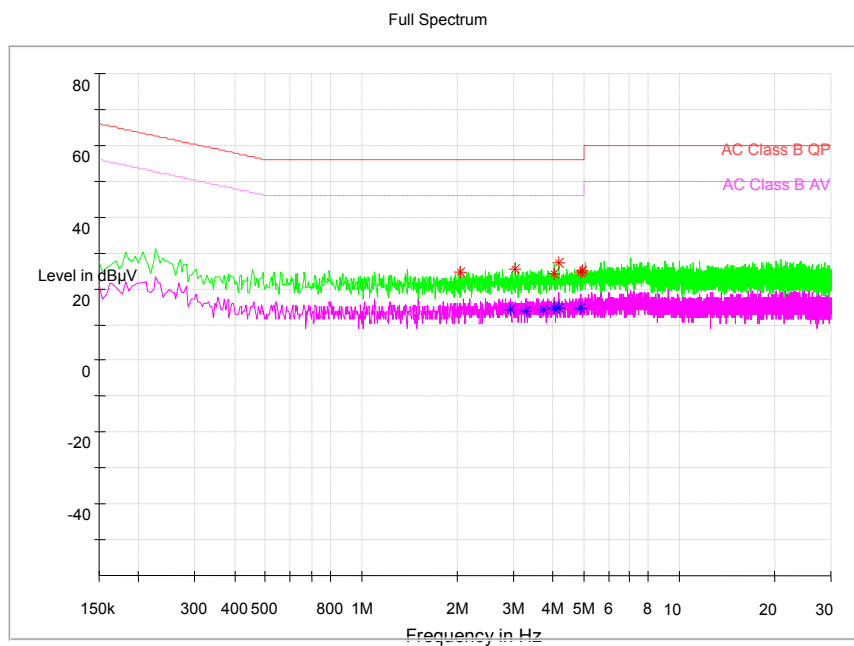
Limit:

Frequency of Emission(MHz)	Limits(dB $\mu$ 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

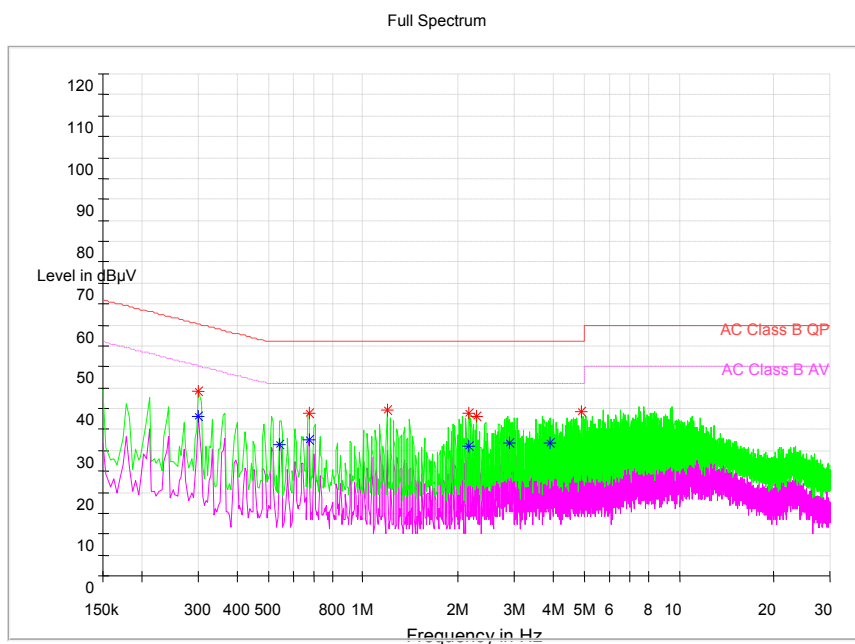
Test result:

### Noise Level of the Measuring Instrument



Pic4. Conducted emission L and N Line

EUT+Laptop:



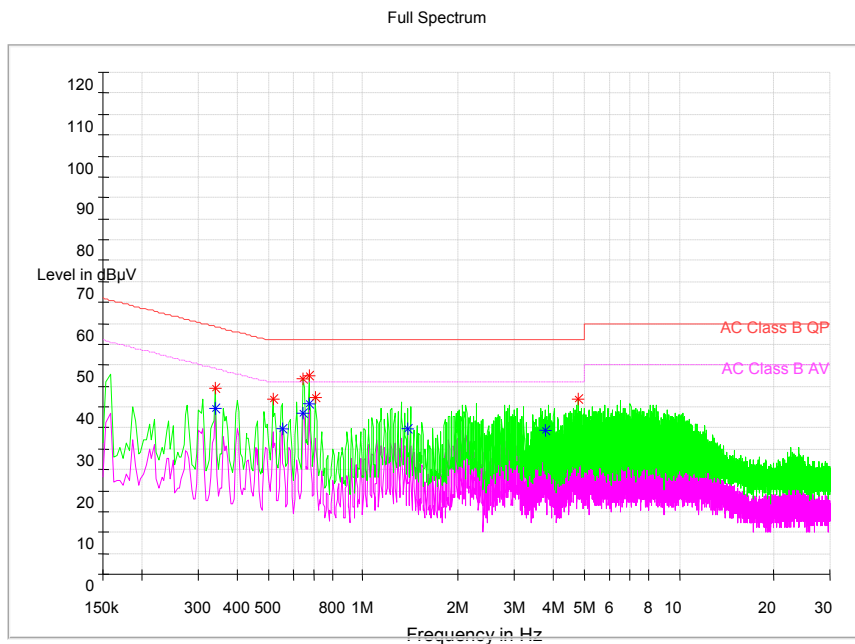
Pic5. Conducted emission L Line

**MEASUREMENT RESULT: "EUT<sub>fin</sub> QP"**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
0.302000	43.96	60.19	16.23	30.1
0.674000	38.85	56.00	17.15	30.1
1.190000	39.75	56.00	16.25	29.9
2.170000	38.76	56.00	17.24	29.9
2.274000	38.27	56.00	17.73	29.9
4.906000	39.30	56.00	16.70	29.9

**MEASUREMENT RESULT: "EUT<sub>fin</sub> AV"**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
0.302000	38.00	50.19	12.19	30.1
0.546000	31.27	46.00	14.73	30.1
0.674000	32.50	46.00	13.50	29.9
2.170000	30.88	46.00	15.12	29.9
2.906000	31.96	46.00	14.04	29.9
3.906000	31.82	46.00	14.18	29.9



Pic6. Conducted emission N Line

**MEASUREMENT RESULT: "EUT\_fin QP"**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
0.342000	44.38	59.16	14.77	30.1
0.518000	41.87	56.00	14.13	30.2
0.646000	46.60	56.00	9.40	30.1
0.674000	47.46	56.00	8.54	30.1
0.706000	42.13	56.00	13.87	30.1
4.806000	41.79	56.00	14.21	29.9

**MEASUREMENT RESULT: "EUT\_fin AV"**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
0.342000	39.47	49.16	9.69	30.1
0.554000	34.70	46.00	11.30	30.2
0.646000	38.53	46.00	7.47	30.1
0.674000	40.61	46.00	5.39	30.1
1.386000	34.61	46.00	11.39	29.9
3.754000	34.32	46.00	11.68	29.9

## 2.3. List of test equipments

NO.	Name	Model	Serial number	Calibration Date	Calibration Due Date
001	Shielding room	9.080m×5.255m×3.525m	---	2017.8.20	2018.8.19
002	Semi-Anechoic Chamber	SAC: 23.18m×16.88m×9.60m	---	2017.8.20	2018.8.19
003	Turn table	Diameter:5m	---		---
004	Antenna master	SAC(MA4.0)	---		---
005	EMI test receiver	ESI 40	100015	2017.8.20	2018.8.19
006	Signal generator	SMR 40	100152	2017.8.20	2018.8.19
007	Radio tester	CMU 200	114667	2017.8.20	2018.8.19
008	Radio tester	CMW 500	160132	2016.12.16	2017.12.15
009	Double-Ridged Waveguide HornAntenna	HF 906	100030	2017.8.20	2018.8.19
010	Ultra log test antenna	HL562	100016	2017.8.20	2018.8.19
011	High Gain Log-Periodic Antenna	HL046	359952/002	2017.8.20	2018.8.19
012	HornAntenna	9120E	391	2017.8.20	2018.8.19
013	ESD generator	FESD1600	H012317	2017.8.20	2018.8.19
014	Signal generator	SMY 01	100092	2017.8.20	2018.8.19
015	Power Amplifier	250W1000	301074	2017.8.20	2018.8.19
016	Power Amplifier	50S1G4A	301351	2017.8.20	2018.8.19
017	Power Amplifier	35S4G8	0330292	2017.8.20	2018.8.19
018	Power Amplifier	100A250	301408	2017.8.20	2018.8.19
019	BCI	F-120-9A	259	2017.8.20	2018.8.19
020	BCI	F-52	52	2017.8.20	2018.8.19
021	Surge test system	PSURGE8000	148906	2017.8.20	2018.8.19
022	CDN	PCD100	147803	2017.8.20	2018.8.19
023	Burst generator	PEFT4010	148946	2017.8.20	2018.8.19
024	General generators	PLINE1610	148712	2017.8.20	2018.8.19
025	Power analyzer	DPA 503	1103-01	2017.8.20	2018.8.19

026	AC power	ACS 503	1003-01	2017.8.20	2018.8.19
027	Audio Analyzer	UPL16	100014	2017.8.20	2018.8.19
028	AMN	ESH3-Z5	100020	2017.8.20	2018.8.19
029	Multi-Channel GPS/SBAS Simulator	GSS6560	01201082	2017.8.20	2018.8.19
030	EMI test receiver	ESIB7	100280	2017.8.20	2018.8.19

## Appendix

### Appendix1 Test Setup