

TEST REPORT

Applicant Name & Address : BEDJET, LLC
222 Goddard Row, Newport, RI 02840, USA

Sample Description
Product : Forced Air Climate Control System for Bed
FCC ID : 2ADQC-6002NA
Model No. : 6002NA
Electrical Rating : 120V,60 Hz

Date Received : 23 October 2014

Date Test Conducted : 24 October 2014 – 28 December 2014

Test standards : FCC Part 15: 2013 Subpart B

Test Result : Pass

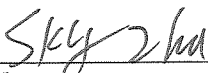
Conclusion : The submitted samples complied with the above rules/standards.

Remark : None.


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Prepared and Checked By:

Approved By:



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 *Signature*

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Sr. Project Engineer
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29 December 2014 *Date*

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1

TEST RESULTS SUMMARY

Classification of EUT: Class B

Test Item	Standard	Result
Conducted disturbance voltage at mains ports	FCC Part 15: 2013, Subpart B	Pass
Radiated emission (30 MHz–1 GHz)	FCC Part 15: 2013, Subpart B	Pass
Radiated emission (Above 1 GHz)	FCC Part 15: 2013, Subpart B	Pass
Remark: Reference publication is used for methods of measurement: ANSI C63.4:2009		

Remark: 1. The symbol “N/A” in above table means Not Applicable.

2. When determining the test results, measurement uncertainty of tests has been considered.

2

Test Results Conclusion

(with Justification)

RE: EMC Testing Pursuant to FCC Part 15, Subpart B Performed on the Forced Air Climate Control System for Bed, Models: 6002NA.

We tested the Forced Air Climate Control System for Bed, Model: 6002NA, to determine if it was in compliance with the relevant FCC rule as marked on the Test Results Summary. We found that the unit met the requirement of FCC Part 15, Subpart B when tested as received. The worst case's test data was presented in this test report.

The Forced Air Climate Control System for Bed was 433MHz receiver.

The receiver is superheterodyne receiver.

The motor function was exempt, in this report only test the wireless receiver function.

Conclusion:

The sample as received complied with the FCC Part 15 requirement.

The production units are required to conform to the initial sample as received when the units are placed on the market.

3

LABORATORY MEASUREMENTS

Configuration Information

Equipment Under Test (EUT):	Forced Air Climate Control System for Bed
Model:	6002NA
Serial No.	Not Labeled
Support Equipment:	N/A
Rated Voltage:	120V/60Hz
Condition of Environment:	Temperature : 22~28°C Relative Humidity: 35~60% Atmosphere Pressure 86~106kPa

Notes:

1. The EMI measurements had been made in the operating mode producing the largest emission in the frequency band being investigated consistent with normal applications.
An attempt had been made to maximize the emission by varying the configuration of the EUT.

2. Test Sites:

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

All tests were performed at:

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City,
GETDD Guangzhou, China

Except Radiated Disturbance was performed at:

Room 101, Block A, No.11 Jing Ye San Street, Yu Shu Industrial Park, Guangzhou Science City,
GETDD Guangzhou

4 TEST RESULTS

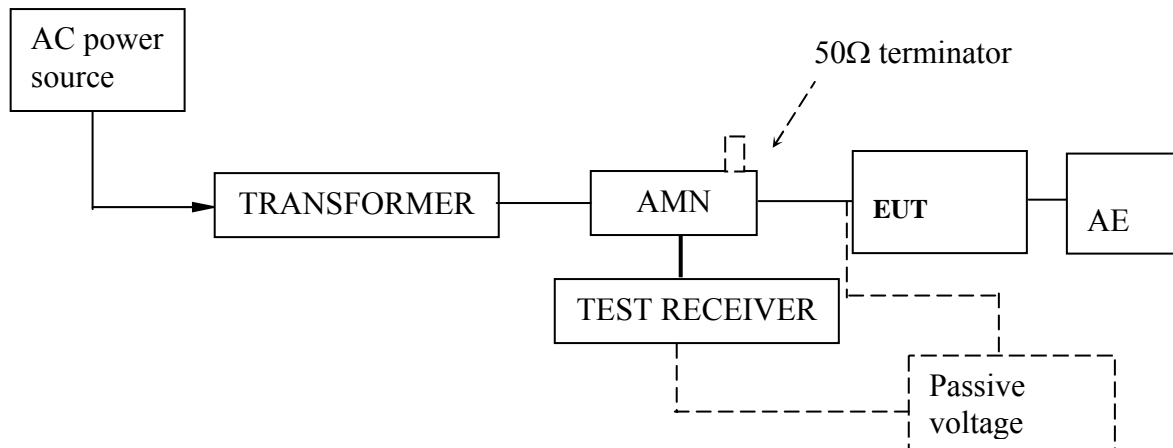
4.1 Conducted Disturbance Voltage at mains ports

Test Result: Pass

4.1.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM004-04	EMC shield Room	8m×3m×3m	Zhongyu
EM080-05	EMI receiver	ESCI	R&S
EM006-05	LISN	ENV216	R&S

4.1.2 Block Diagram of Test Setup



4.1.3 Test Setup and Procedure

Test was performed according to ANSI C63.4: 2009. The EUT was set to achieve the maximum emission level. The mains terminal disturbance voltage was measured with the EUT in a shielded room. The EUT was connected to AC power source through an Artificial Mains Network which provides a 50Ω linear impedance. Artificial hand is used if appropriate (for handheld apparatus). The load/control terminal disturbance voltage was measured with passive voltage probe if appropriate.

The table-top EUT was placed on a 0.8m high non-metallic table above earthed ground plane (Ground Reference Plane). And for floor standing EUT, was placed on a 0.1m high non-metallic supported on GRP. The EUT keeps a distance of at least 0.8m from any other of the metallic surface. The Artificial Mains Network is situated at a distance of 0.8m from the EUT.

During the test, mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.

The bandwidth of test receiver was set at 9 kHz. The frequency range from 150 kHz to 30MHz was checked.

4.1.4 Limit
Class B

Frequency range MHz	AC mains terminals dB (uV)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50

Note 1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.
Note 2: The lower limit is applicable at the transition frequency.



4.1.5 Test Data

Test Voltage: AC120 V, 60 Hz

Tested Wire: Live

Operation Mode: Receiver function

EDIT PEAK LIST (Final Measurement Results)				
TRACE	FREQUENCY	LEVEL dB μ V		DELTA LIMIT dB
Trace1:	FCC15QP			
Trace2:	FCC15AV			
Trace3:	---			
2 Average	150 kHz	23.73 L1		-32.26
1 Quasi Peak	170 kHz	44.93 L1		-20.03
1 Quasi Peak	726 kHz	26.70 L1		-29.29
2 Average	26.522 MHz	18.75 L1		-31.24
1 Quasi Peak	28.122 MHz	34.89 L1		-25.11

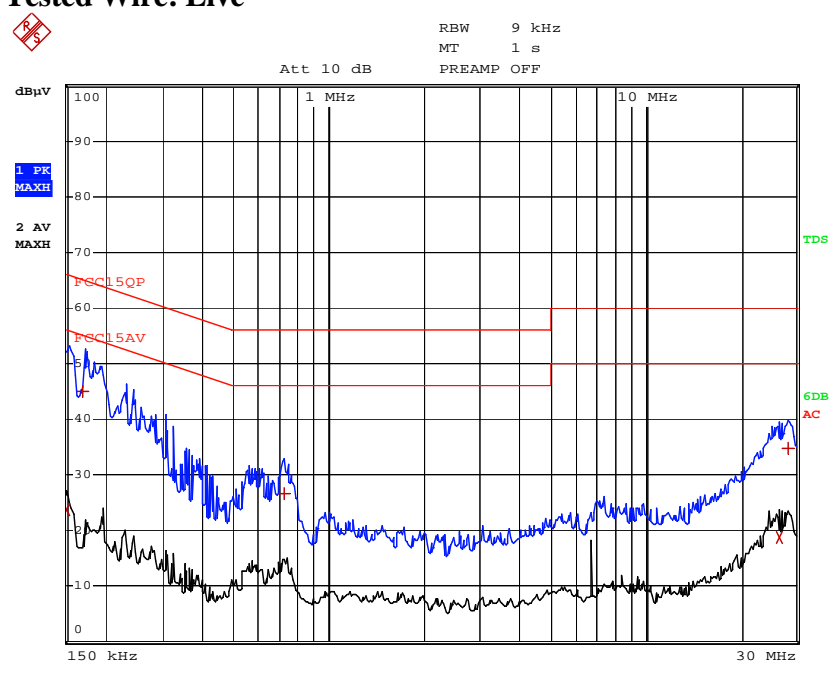
Tested Wire: Neutral

Operation Mode: Receiver function

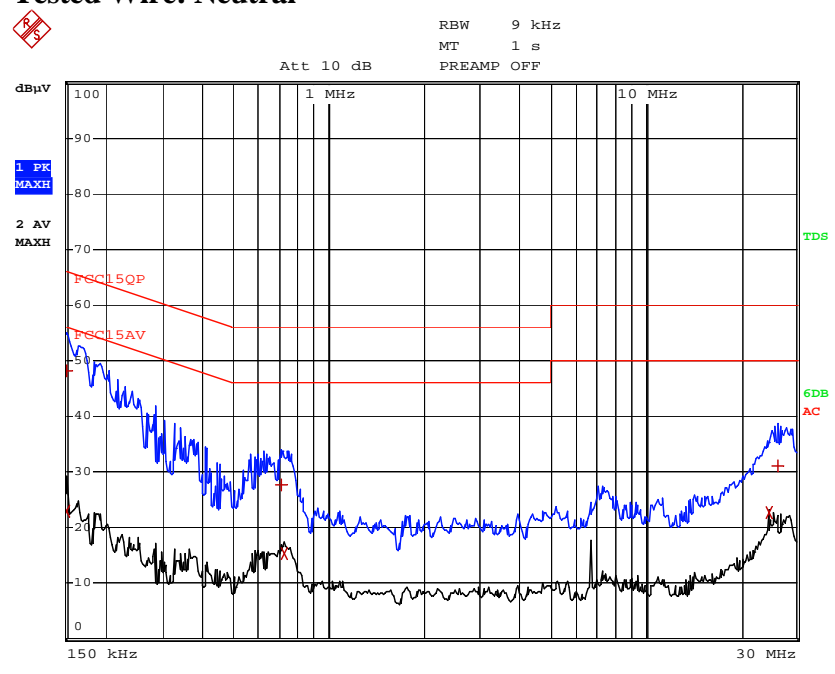
EDIT PEAK LIST (Final Measurement Results)				
TRACE	FREQUENCY	LEVEL dB μ V		DELTA LIMIT dB
Trace1:	FCC15QP			
Trace2:	FCC15AV			
Trace3:	---			
1 Quasi Peak	150 kHz	48.19 L1		-17.80
2 Average	150 kHz	22.86 L1		-33.13
1 Quasi Peak	710 kHz	27.70 L1		-28.29
2 Average	726 kHz	15.43 L1		-30.56
2 Average	24.418 MHz	22.81 L1		-27.18
1 Quasi Peak	26.146 MHz	31.19 L1		-28.80

4.1.6 Emission Curve

Tested Wire: Live



Tested Wire: Neutral



4.1.7 Measurement Uncertainty

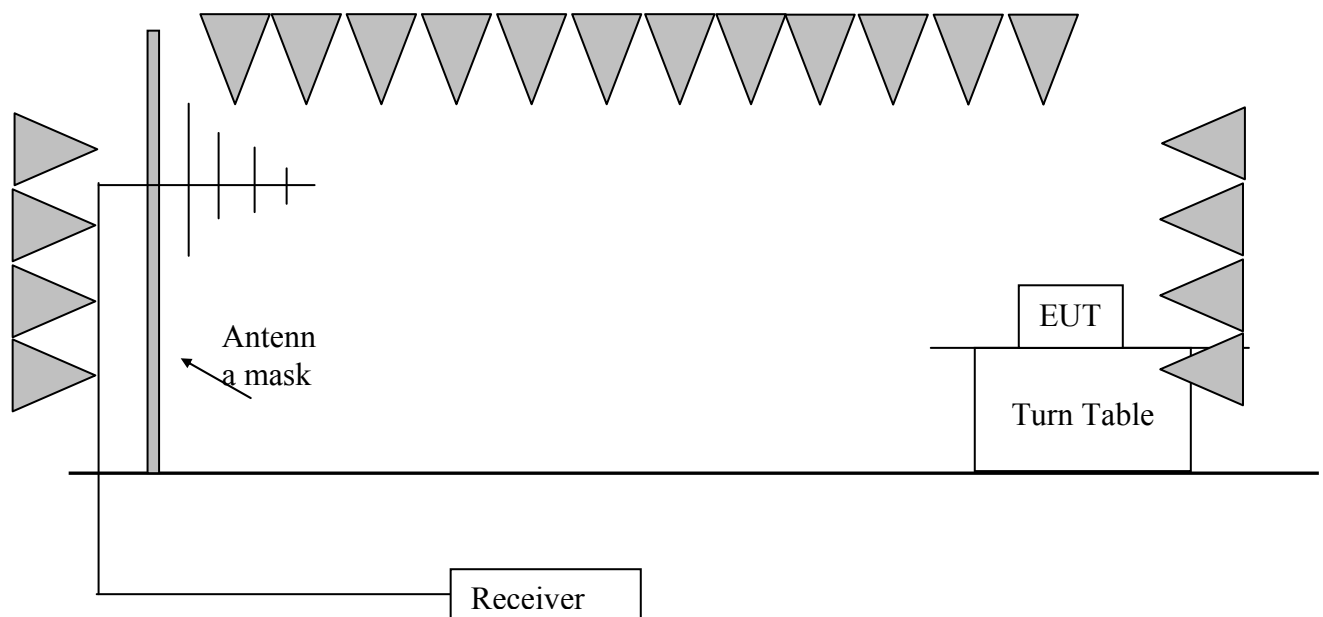
Uncertainty: 2.58 dB at a level of confidence of 95%

4.2 Radiated Emission (30 MHz -1000 MHz)
Test Result: Pass

4.2.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EM030-01	3m Semi-Anechoic Chamber	9×6×6 m3	ETS•LINDGREN
EM030-02	Control room for 3m Semi-Anechoic Chamber	4×4×3 m3	ETS•LINDGREN
EM031-02	EMI Test Receiver (9 kHz~7 GHz)	R&S ESR7	R&S
EM033-01	TRILOG Super Broadband test Antenna (30 MHz-3 GHz)	VULB 9163	SCHWARZBECK
EM031-02-01	Coaxial cable	/	R&S

4.2.2 Block Diagram of Test Setup



4.2.3 Test Setup and Procedure

The measurement was applied in a 3 m semi-anechoic chamber. The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mask. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

Broadband antenna was used as receiving antenna. Both horizontal and vertical polarization of the antenna was set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 requirement during radiated test. The bandwidth setting on R&S Test Receiver was 120 kHz. The frequency range from 30MHz to 1000MHz was checked

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper Frequency of Radiated Measurement
Below 1.705 MHz	30MHz
1.705 MHz – 108 MHz	1 GHz
108 MHz – 500 MHz	2 GHz
500 MHz – 1 GHz	5 GHz
Above 1 GHz	5th harmonic of the highest frequency or 40 GHz, whichever is lower.
At transitional frequencies the lower limit applies.	

Remark: Radiated Emission was performed from 30 MHz to 1 GHz.

4.2.4 Limit

Class B limit at 3m test distance:

Frequency range MHz	Quasi-peak limits dB (μV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
960 to 1000	54
At transitional frequencies the lower limit applies.	

4.2.5 Test Data

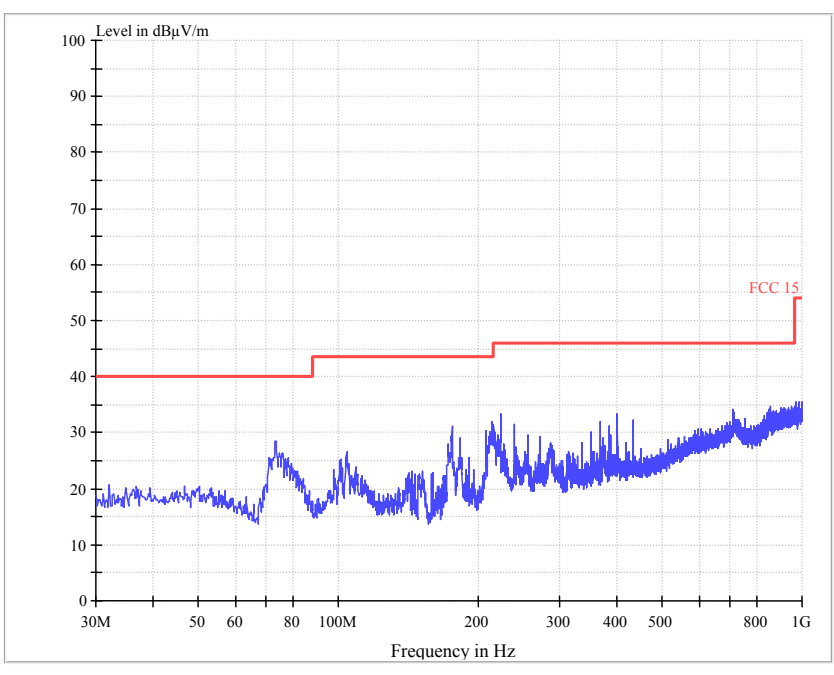
Test Voltage: AC120 V, 60 Hz

Receiver function:

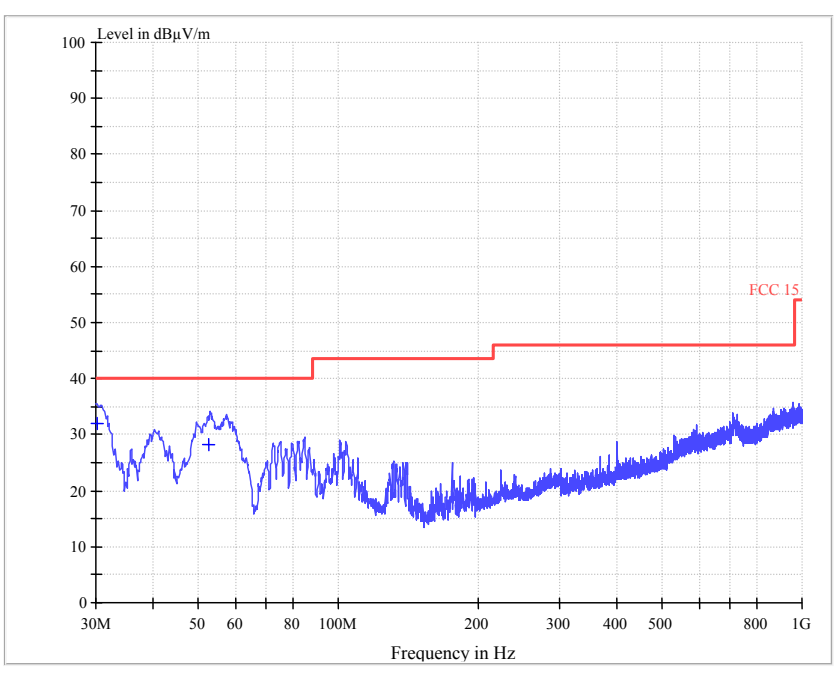
Antenna Polarization	Frequency [MHz]	Measured Net at 3m [dB(μ V/m)]	Limit at 3m [dB(μ V/m)]
Horizontal	200.0	<30	40.0
Horizontal	400.0	<37	47.0
Horizontal	800.0	<37	47.0
Vertical	30.2	32	40.0
Vertical	52.5	28.4	40.0
Vertical	800.0	<37	47.0



4.2.6 Test Curve
Receiver function:
Horizontal:



Vertical



4.2.7 Measurement uncertainty

Uncertainty: 4.87 dB in the frequency range of 30-1000 MHz at a level of confidence of 95%

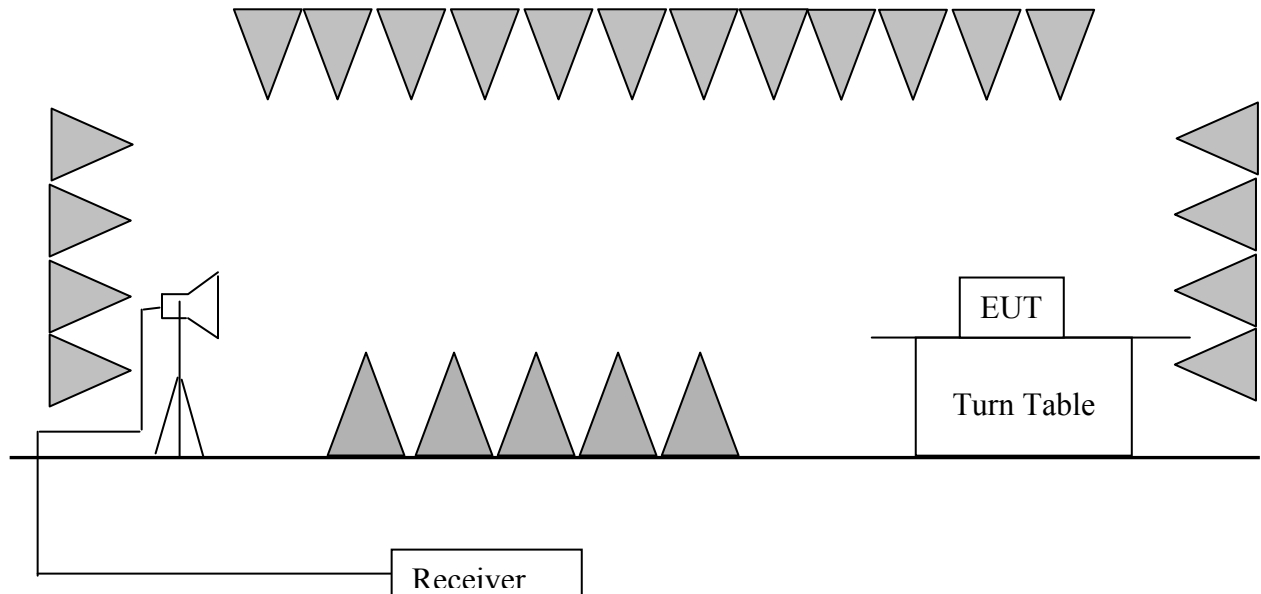
4.3 Radiated Emission above 1 GHz

Test Result: Pass

4.3.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EM030-01	3m Semi-Anechoic Chamber	9×6×6 m ³	ETS•LINDGREN
EM030-02	Control room for 3m Semi-Anechoic Chamber	4×4×3 m ³	ETS•LINDGREN
EM031-02	EMI Test Receiver (9 kHz~7 GHz)	R&S ESR7	R&S
EM031-03	Signal and Spectrum Analyzer (10 Hz~40 GHz)	R&S FSV40	R&S
EM033-02	Bouble-Ridged Waveguide Horn Antenna (800 MHz-18 GHz)	R&S HF907	R&S
EM033-02-02	Coaxial cable	/	R&S

4.3.2 Block Diagram of Test Setup



4.3.3 Test Setup and Procedure

The measurement was applied in a semi-anechoic chamber with absorbing material placed on the ground. The EUT were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turntable varied every 30 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna pole. The antenna was set as same as the height of the radiation centre of the EUT.

Horn antenna was used as receiving antenna. Both horizontal and vertical polarization of the antenna was set on measurement. In order to find the maximum emission, all of the interface cables were manipulated during radiated test.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest Frequency Generated or Used in Device	Upper Frequency of Radiated Measurement
Below 1.705 MHz	30MHz
1.705 MHz – 108 MHz	1 GHz
108 MHz – 500 MHz	2 GHz
500 MHz – 1 GHz	5 GHz
Above 1 GHz	5th harmonic of the highest frequency or 40 GHz, whichever is lower.
At transitional frequencies the lower limit applies.	

4.3.4 Limit

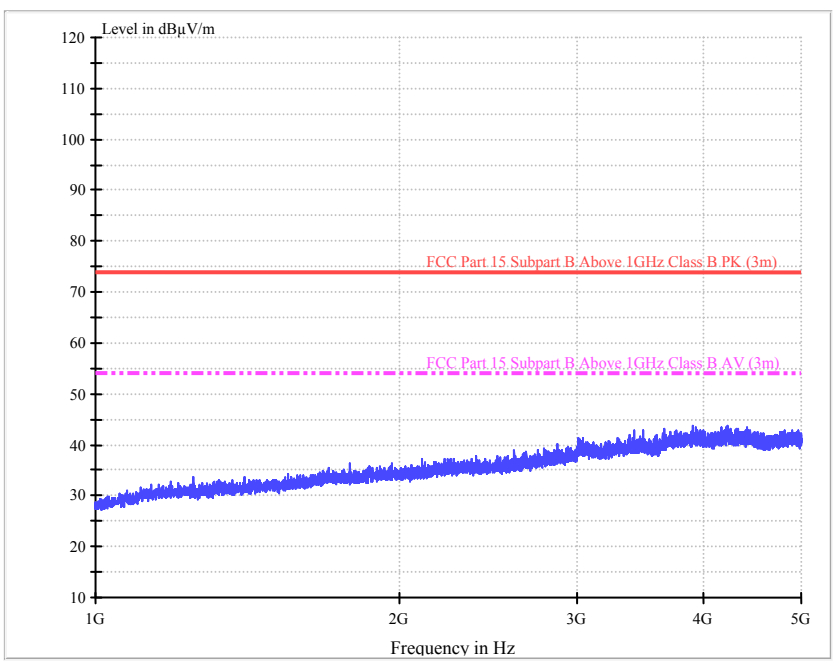
Class B limit at 3m test distance:

Frequency range MHz	Linear Average Detector dB (µV/m)	Peak Detector dB (µV/m)
> 1000	54	74
At transitional frequencies the lower limit applies.		

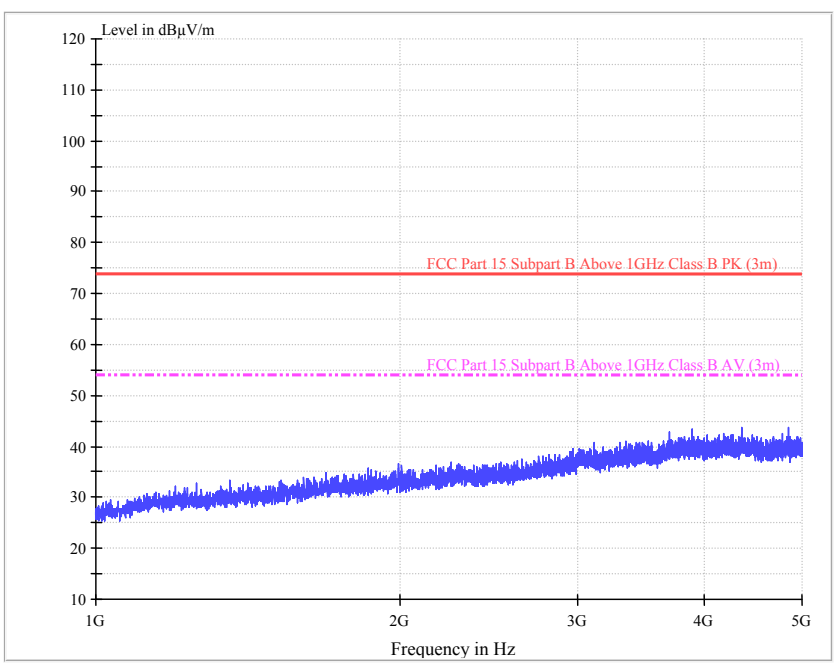
4.3.5 Test Data

Antenna Polarization	Frequency [GHz]	Measured Net [dB(μV/m)]	Limit [dB(μV/m)]	Detector
Horizontal	1.244	35.6	74.0	Peak
Horizontal	1.244	28.7	54.0	AV
Vertical	1.232	36.3	74.0	Peak
Vertical	1.232	29.6	54.0	AV

4.3.6 Test Curve Horizontal



Vertical



4.3.7 Measurement uncertainty

Measurement uncertainty is under consideration according to CISPR 16-4-2:2003.

5 Appendix I - Photos of test setup

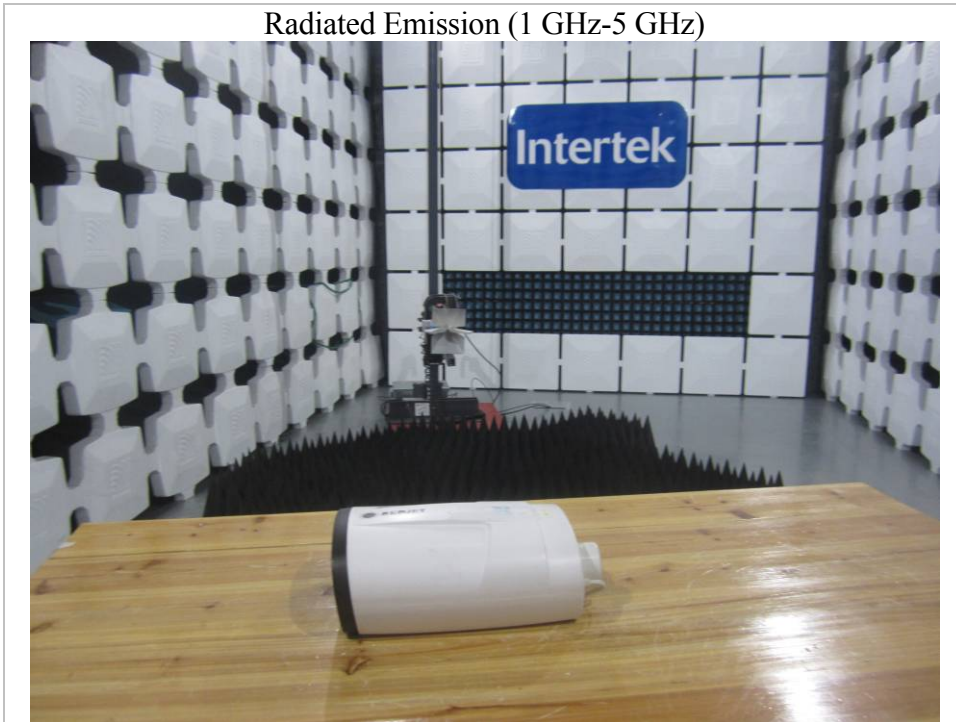
Conducted Emission



Radiated Emission (30 MHz-1 GHz)



Radiated Emission (1 GHz-5 GHz)

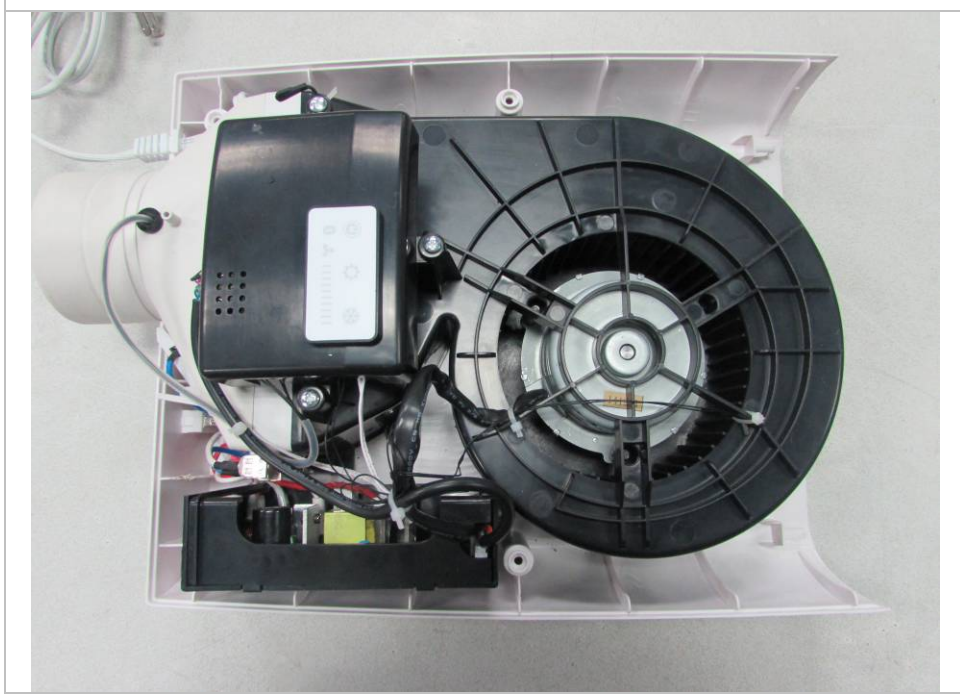
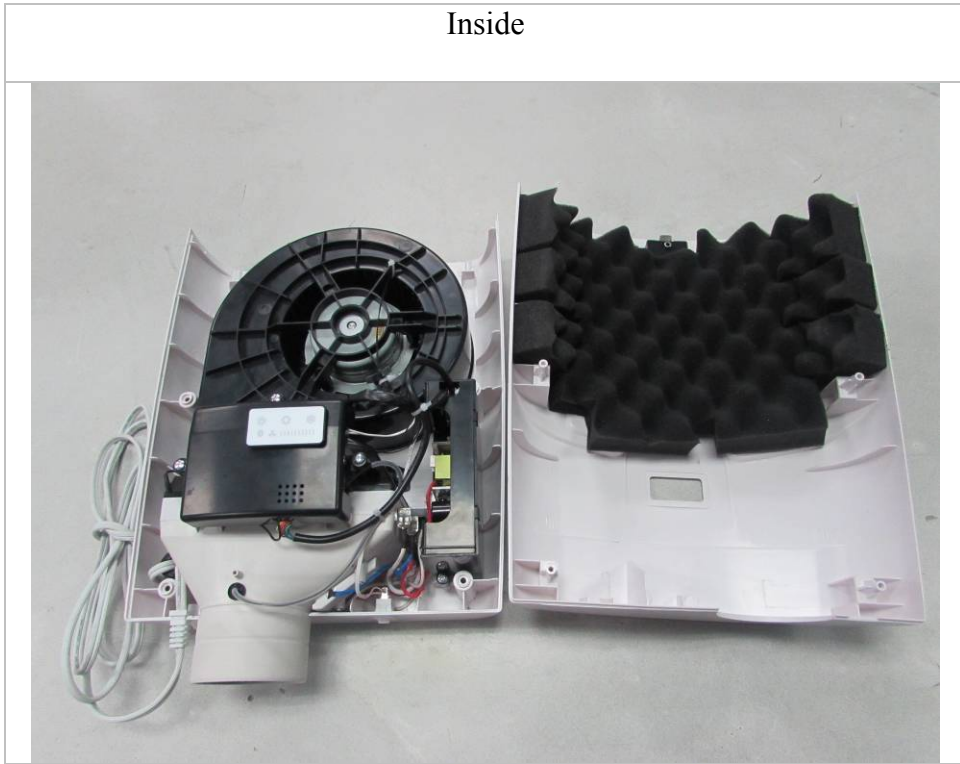


6 Appendix II - Photos of EUT

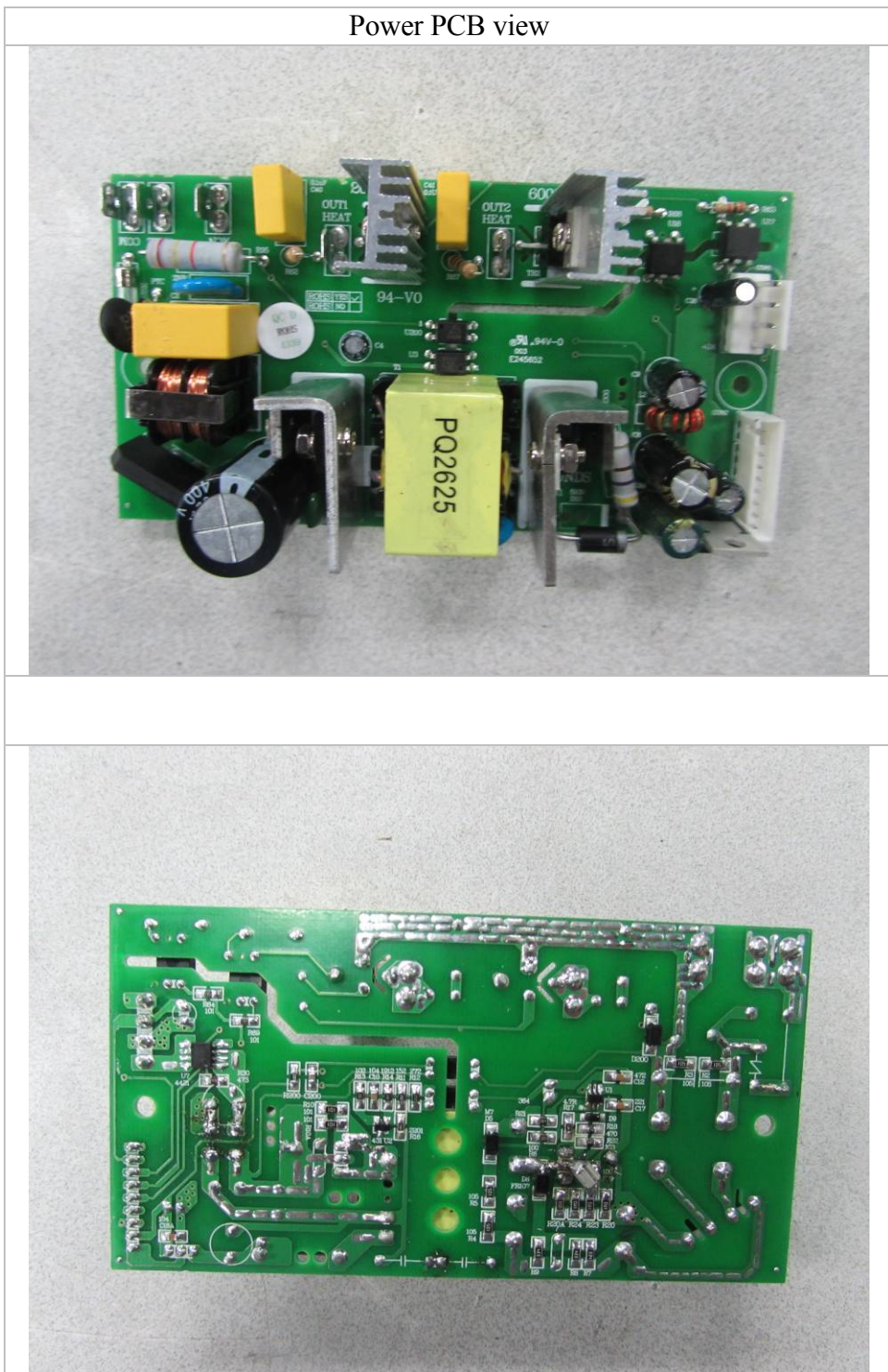
Outside



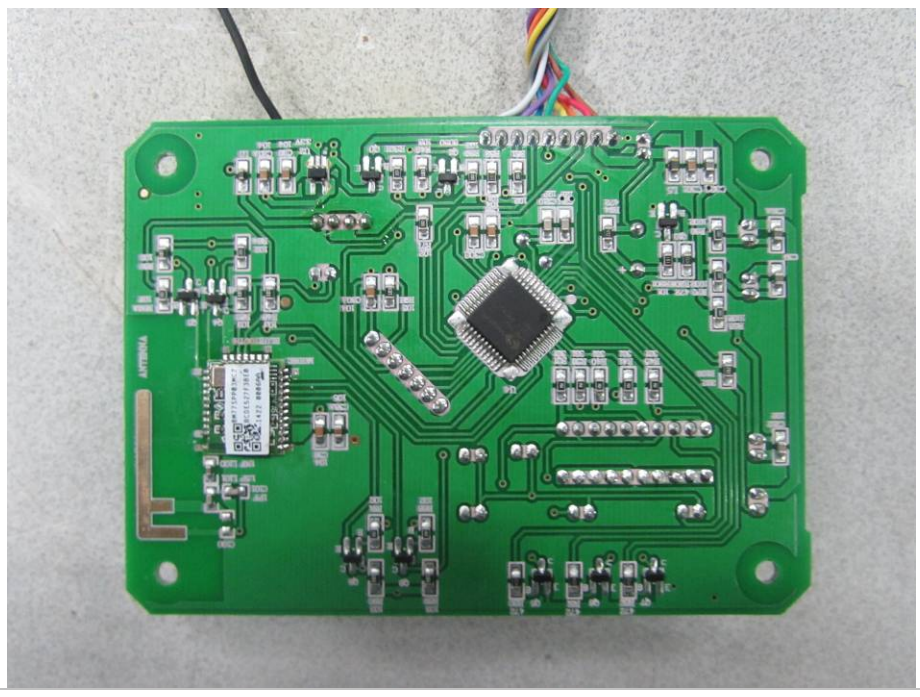
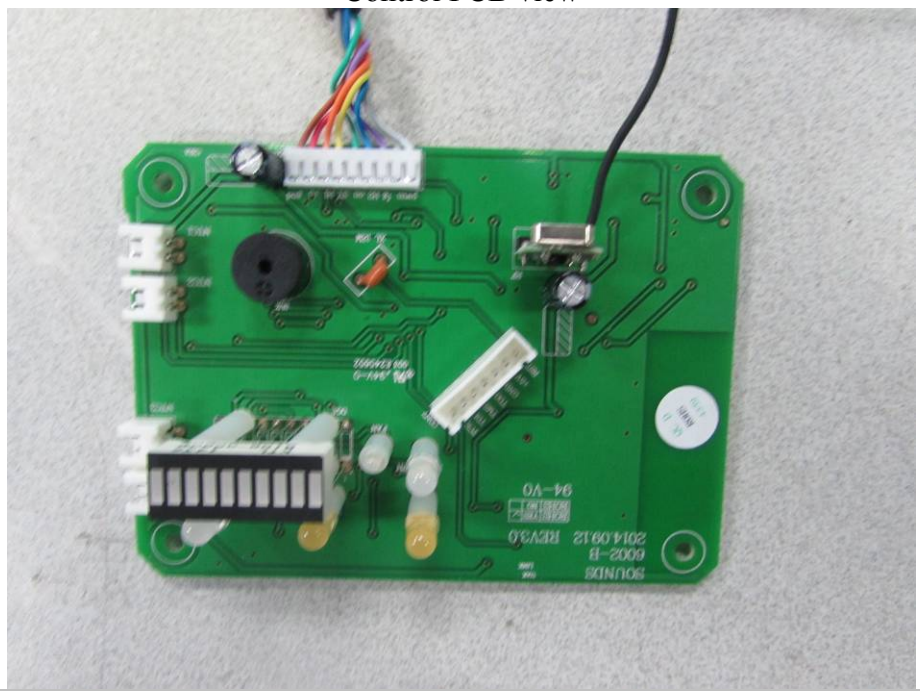
Inside



Power PCB view



Control PCB view



433MHz receiver PCB

