



FCC Test Report

Report No.: AGC01324131101FE01

FCC ID : 2ABDRSERAPHI

PRODUCT DESIGNATION : seraphi aircraft

BRAND NAME : yunyi-flight

MODEL NAME : seraphi

CLIENT : Shenzhen Yunyi flight Technology Co., Ltd

DATE OF ISSUE : Nov.25, 2013

STANDARD(S) : FCC Part 15 Rules

REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov.25, 2013	Valid	Original Report

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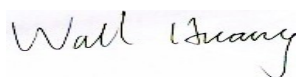
1. VERIFICATION OF CONFORMITY

Applicant	Shenzhen Yunyi flight Technology Co., Ltd.
Address	Room9A01, 9/F, YiLiDa Building, Nanshan Road, Nanshan District, SZ PRC. Zip Code:518054 China.
Manufacturer	Shenzhen Yunyi flight Technology Co., Ltd.
Address	Room9A01, 9/F, YiLiDa Building, Nanshan Road, Nanshan District, SZ PRC. Zip Code:518054 China.
Product Designation	seraphi aircraft
Brand Name	yunyi-flight
Test Model	seraphi
Measurement Procedure	ANSI C63.4: 2003
Date of test	Nov.20, 2013 to Nov.23, 2013
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-IT/DC(2013-03-01)

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, the measurement procedure according to ANSI C63.4:2003. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Prepared By



Wall Huang

Nov.25, 2013

Checked By



Kidd Yang

Nov.25, 2013

Authorized By



Solger Zhang

Nov.25, 2013

2. SYSTEM DESCRIPTION

A major technical description of EUT is described as following:

Receiver Frequency Range(2.4G)	2400MHz~2483.5MHz
Receiver Frequency Range(GPS)	1575.42MHz
Hardware Version	v1.0
Software Version	v1.0
Power Supply	DC 11.1V by Battery

Note: The EUT is a receiver.

TEST MODE DESCRIPTION		
NO.	EMI TEST MODE DESCRIPTION	WORST
1	Normal Operating	
2	Connecting to PC	
3	Receiving(2.4G)	
4	Receiving(GPS)	
5	Standby	
NO.	EMS TEST MODE DESCRIPTION	
1	Normal Operating	
2	Connecting to PC	
3	Receiving(2.4G)	
4	Receiving(GPS)	
5	Standby	

Note: 1. V means EMI worst mode.
2. All the modes had been tested, but only the worst data recorded in the report if no any other data.

3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 2.75dB

Radiated measurement: +/- 3.2dB

4. PRODUCT INFORMATION

Housing Type	Plastic and Metal
EUT Input Rating	DC 11.1V by battery

I/O Port Information (☒Applicable ☐Not Applicable)

I/O Port of EUT			
I/O Port Type	Number	Cable Description	Tested With
DC INPUT PORT	1	0	1
USB PORT	1	0	1

5. SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
--	--	--	--	--	--

Note:

1. "-- "means no any support device during testing.

6. TEST FACILITY

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	2/F., Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2003.

TEST EQUIPMENT OF LINE CONDUCTED EMISSION TEST

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	100694	04/02/2013	04/01/2014
LISN	R&S	ESH3-Z5	8389791009	07/16/2013	07/15/2014

TEST EQUIPMENT OF RADIATED EMISSION

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
SPECTRUM ANALYZER	AGILENT	E4440A	US41421290	07/16/2013	07/15/2014
ANTENNA	A.H.	SAS-521-4	128	06/07/2013	06/06/2014
HORN ANTENNA	EM	EM-AH-10180	N/A	04/21/2012	04/20/2014
AMPLIFIER	EM	EM30180	0607030	02/28/2013	02/27/2014
POSITIONING CONTROLLER	MF	MF-7802	MF780208147	--	--

Note: "--" means it's not applicable.

7. FCC RADIATED EMISSION TEST

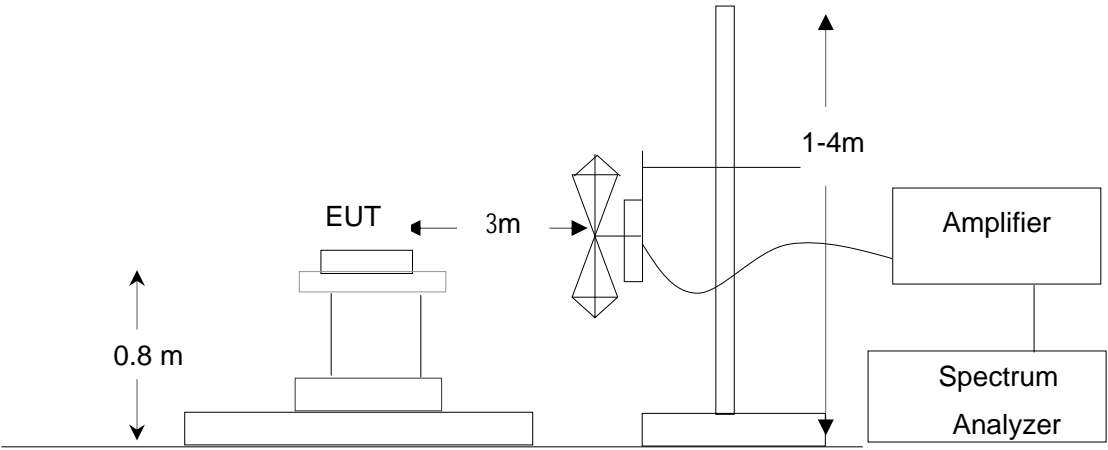
7.1. LIMITS OF RADIATED EMISSION TEST

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m/ Q.P.)
30~88	3	40.0
88~216	3	43.5
216~960	3	46.0
Above 960	3	54.0

Note: The lower limit shall apply at the transition frequency.

7.2. BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators



7.3. PROCEDURE OF RADIATED EMISSION TEST

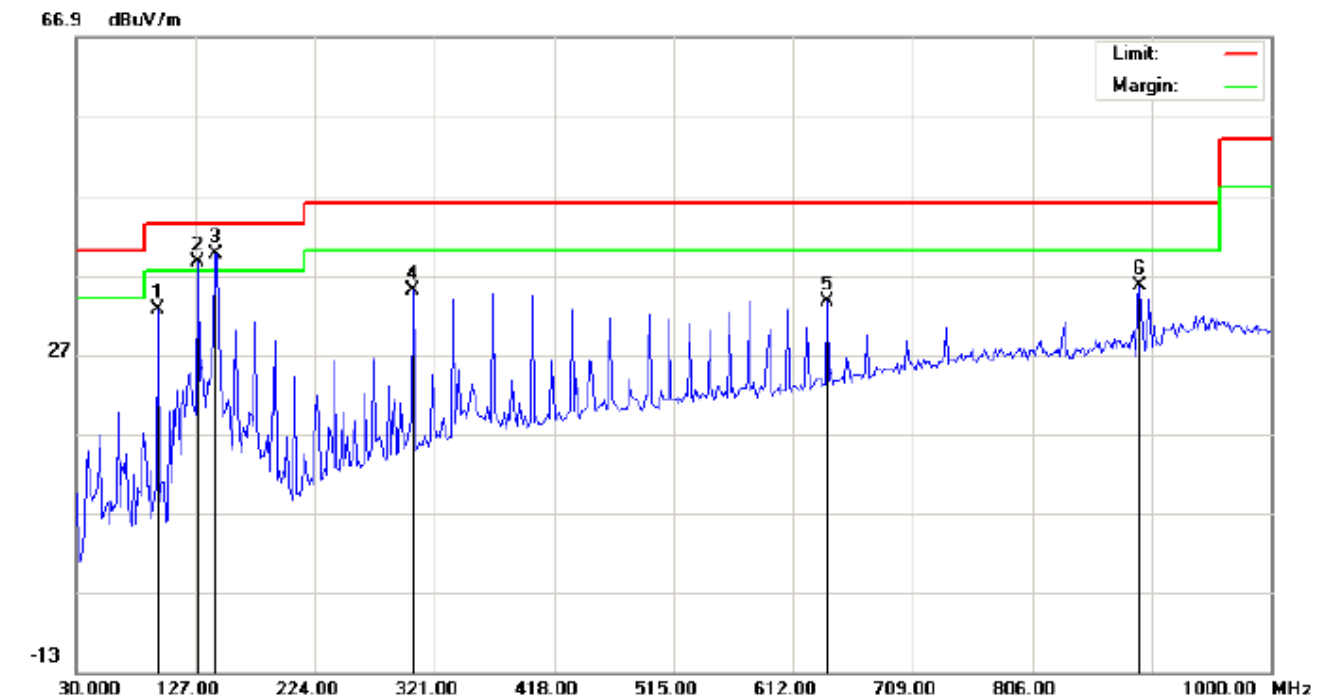
- (1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- (2) Support equipment, if needed, was placed as per ANSI C63.4.
- (3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- (4) The EUT receive DC 11.1V by battery.
- (5) The antenna was placed at 3 meter away from the EUT as stated in FCC Part 15. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
- (6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- (7) The test mode(s) were scanned during the test:
- (8) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P./Peak reading is presented.

The test data of the worst case condition (mode 1) was reported on the Summary Data page.

7.4. TEST RESULT OF RADIATED EMISSION TEST

RADIATED EMISSION BELOW 1GHZ (Mode 1)

Radiated Emission Test at 3m Distance-Horizontal

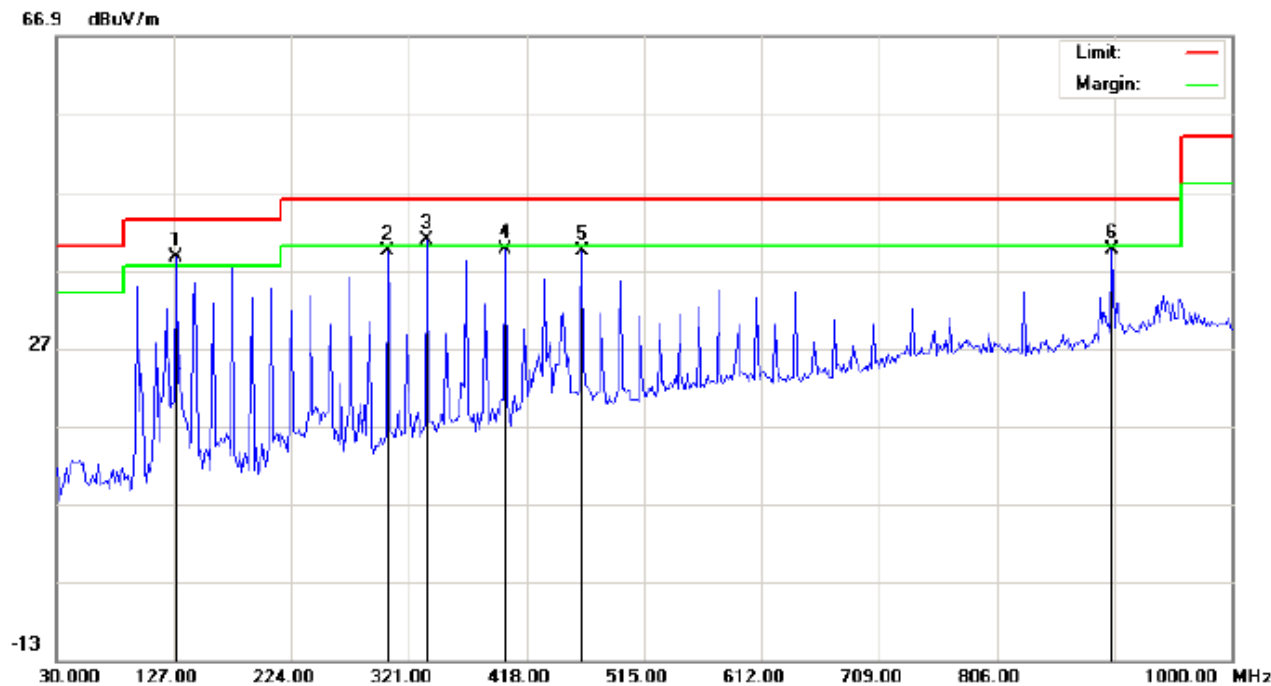


Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 26
Limit: FCC Class B 3M Radiation	Power:	Humidity: 60 %
EUT: seraphi aircraft	Distance: 3m	
M/N: seraphi		
Mode: Mode 1		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		96.2833	32.48	0.05	32.53	43.50	-10.97	peak			
2	!	128.6167	28.11	10.45	38.56	43.50	-4.94	peak			
3	*	143.1667	24.42	15.22	39.64	43.50	-3.86	peak			
4		303.2167	19.34	15.62	34.96	46.00	-11.04	peak			
5		639.4833	9.99	23.61	33.60	46.00	-12.40	peak			
6		893.3000	7.17	28.44	35.61	46.00	-10.39	peak			

RESULT: PASS

Radiated Emission Test at 3m Distance-Vertical



Site: site #1
Limit: FCC Class B 3M Radiation
EUT: seraphi aircraft
M/N: seraphi
Mode: Mode 1
Note:

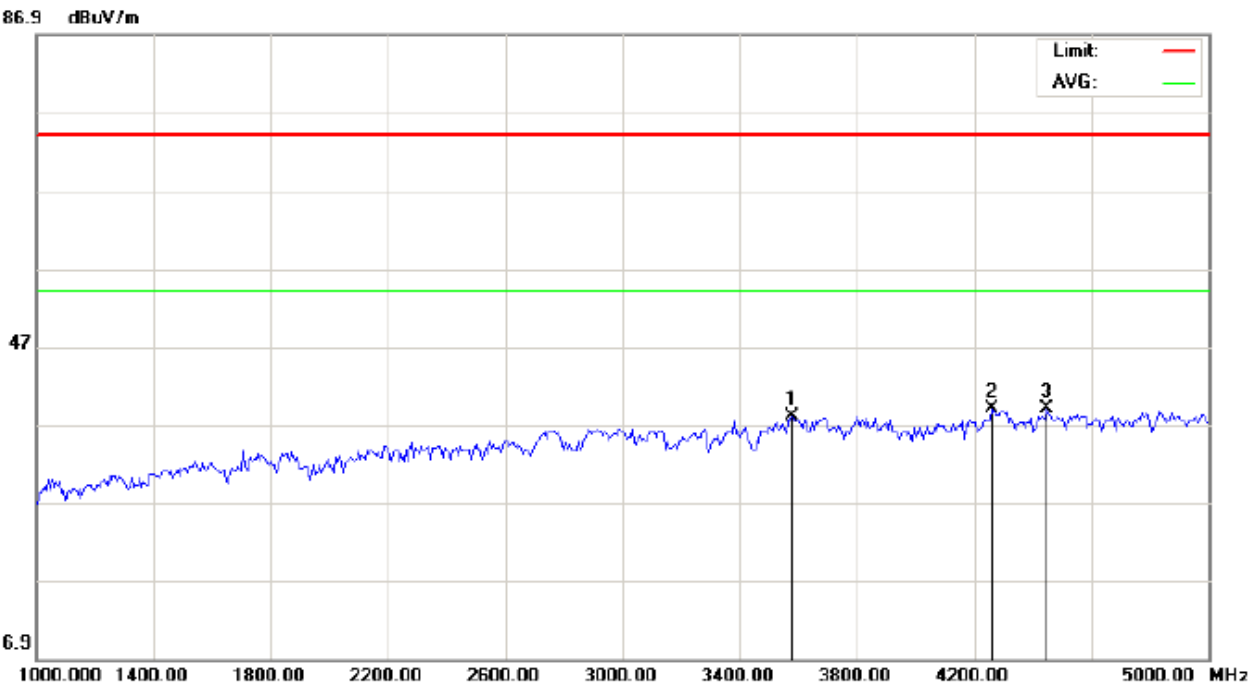
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	128.6167	25.29	13.30	38.59	43.50	-4.91	peak			
2		303.2167	23.74	15.62	39.36	46.00	-6.64	peak			
3	!	335.5500	23.04	17.78	40.82	46.00	-5.18	peak			
4		400.2167	20.51	19.08	39.59	46.00	-6.41	peak			
5		463.2667	18.70	20.73	39.43	46.00	-6.57	peak			
6		901.3833	11.01	28.65	39.66	46.00	-6.34	peak			

RESULT: PASS

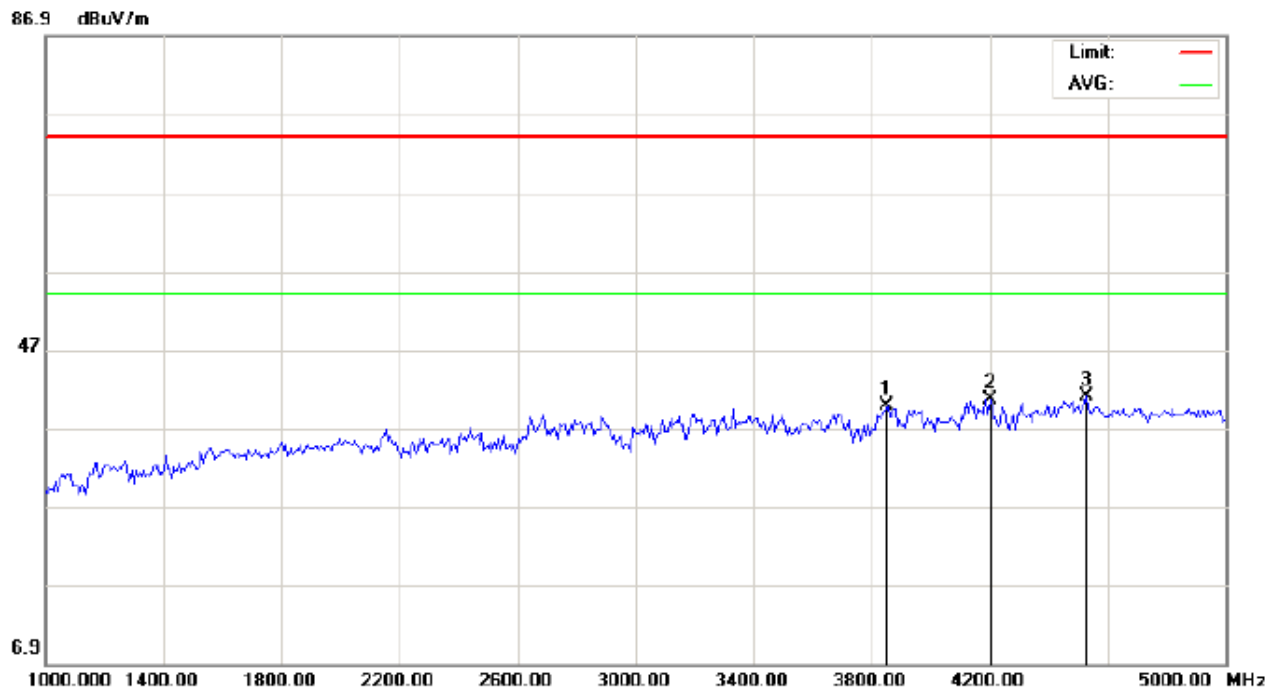
RADIATED EMISSION ABOVE 1GHZ (Mode 1)
RADIATED EMISSION TEST- HORIZONTAL



Site: site #1 Polarization: *Horizontal* Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: seraphi aircraft Distance: 3m
M/N: seraphi
Mode: Mode 1
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		3580.000	45.49	-7.52	37.97	74.00	-36.03	peak			
2		4260.000	44.71	-5.73	38.98	74.00	-35.02	peak			
3	*	4446.667	43.73	-4.73	39.00	74.00	-35.00	peak			

RADIATED EMISSION TEST -VERTICAL



Site: site #1

Polarization: *Vertical*

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: seraphi aircraft

Distance: 3m

M/N: seraphi

Mode: Mode 1

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		3853.333	47.13	-7.26	39.87	74.00	-34.13	peak			
2		4200.000	46.70	-6.05	40.65	74.00	-33.35	peak			
3	*	4526.667	45.37	-4.38	40.99	74.00	-33.01	peak			

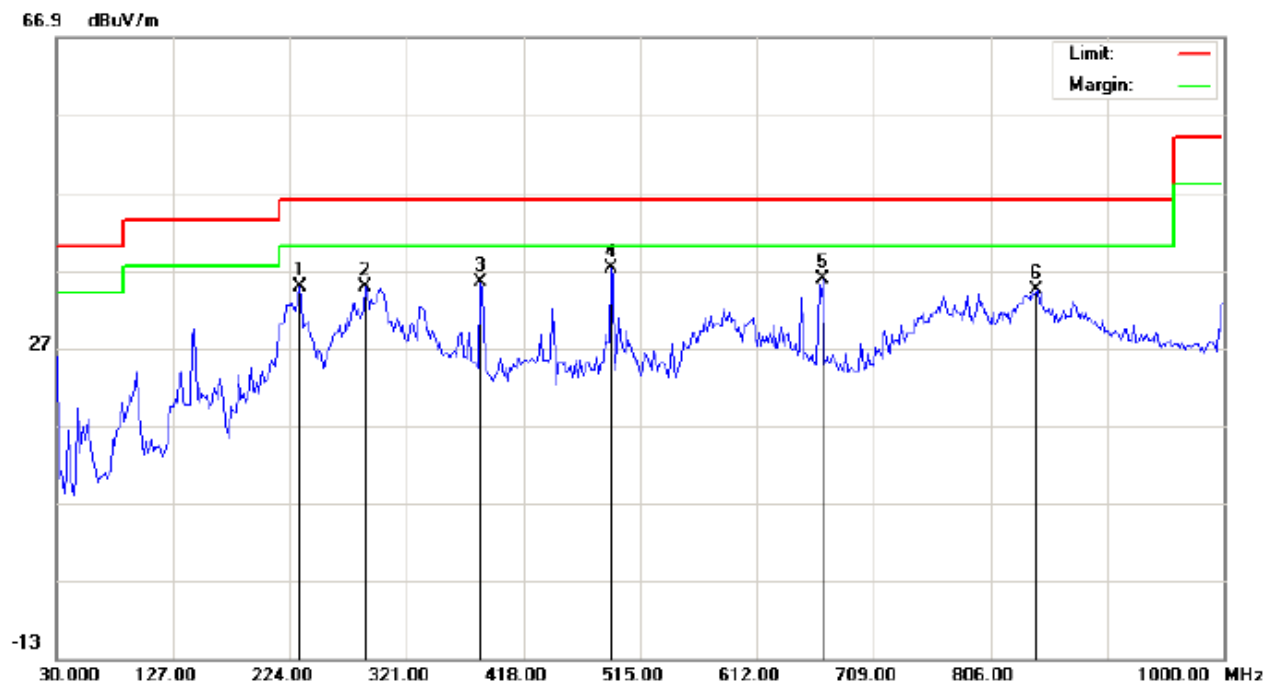
RESULT: PASS

Note: Factor=Antenna Factor+ Cable loss-Amplifier gain, Margin=Measurement-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

RADIATED EMISSION BELOW 1GHZ (Mode 2)

Radiated Emission Test at 3m Distance-Horizontal

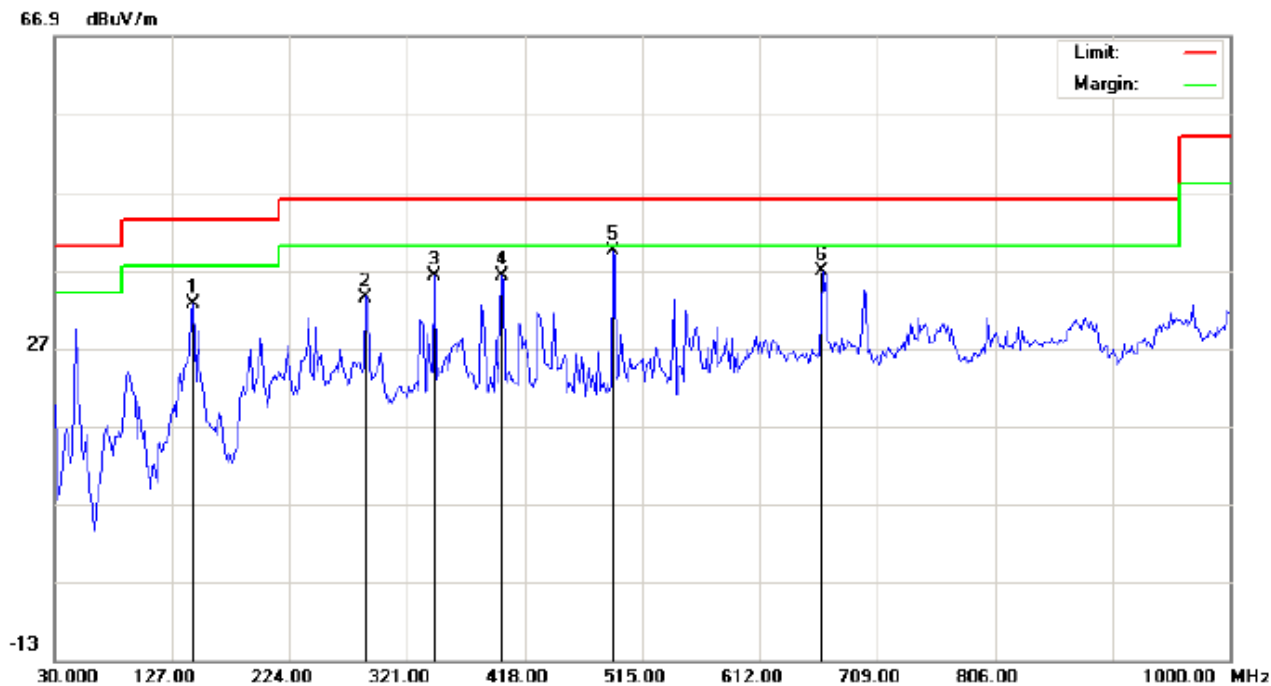


Site: site #1 Polarization: *Horizontal* Temperature: 26
Limit: FCC Class B 3M Radiation Power: Humidity: 60 %
EUT: seraphi aircraft Distance: 3m
M/N: seraphi
Mode: Mode 2
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		232.0833	22.75	12.03	34.78	46.00	-11.22	peak			
2		287.0500	17.40	17.41	34.81	46.00	-11.19	peak			
3		382.4331	16.16	19.20	35.36	46.00	-10.64	peak			
4	*	490.7500	15.04	22.15	37.19	46.00	-8.81	peak			
5		666.9664	11.63	24.19	35.82	46.00	-10.18	peak			
6		844.7998	2.38	32.04	34.42	46.00	-11.58	peak			

RESULT: PASS

Radiated Emission Test at 3m Distance-Vertical



Site: site #1
Limit: FCC Class B 3M Radiation
EUT: seraphi aircraft
M/N: seraphi
Mode: Mode 2
Note:

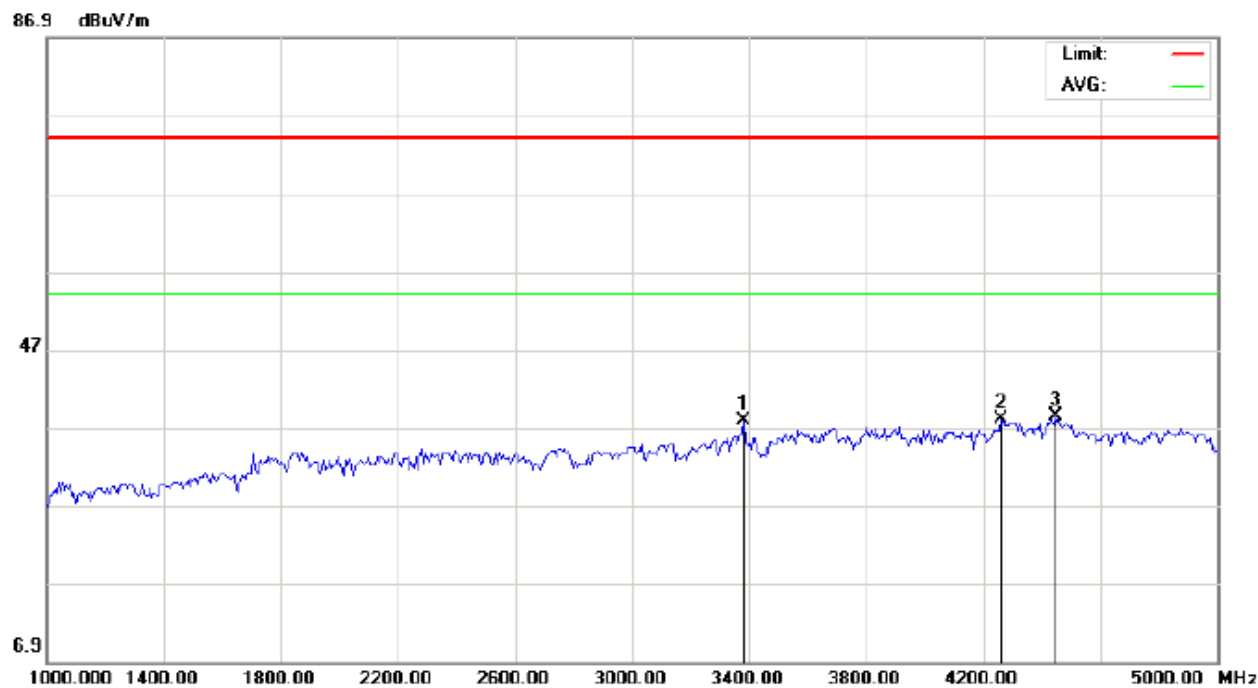
Polarization: **Vertical**
Power:
Distance: 3m
Temperature: 26
Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		144.7829	27.15	5.47	32.62	43.50	-10.88	peak			
2		287.0500	16.09	17.41	33.50	46.00	-12.50	peak			
3		343.6333	15.86	20.30	36.16	46.00	-9.84	peak			
4		398.6000	17.07	19.07	36.14	46.00	-9.86	peak			
5	*	490.7500	17.19	22.15	39.34	46.00	-6.66	peak			
6		663.7332	10.76	26.11	36.87	46.00	-9.13	peak			

RESULT: PASS

RADIATED EMISSION ABOVE 1GHZ (Mode 2)

RADIATED EMISSION TEST- HORIZONTAL



Site: site #1

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

EUT: seraphi aircraft

M/N: seraphi

Mode: Mode 2

Note:

Polarization: *Horizontal*

Power:

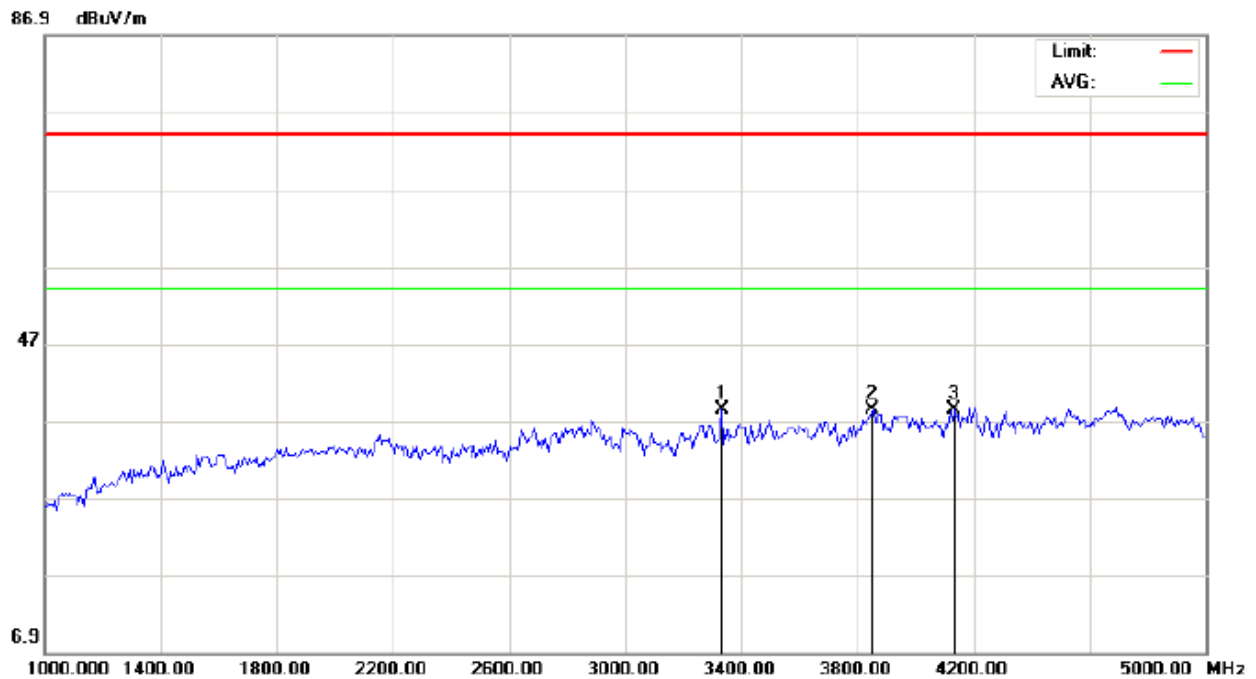
Distance: 3m

Temperature: 26

Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		3380.000	45.70	-7.88	37.82	74.00	-36.18	peak			
2		4260.000	43.71	-5.73	37.98	74.00	-36.02	peak			
3	*	4446.667	43.23	-4.73	38.50	74.00	-35.50	peak			

RADIATED EMISSION TEST -VERTICAL



Site: site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: seraphi aircraft Distance: 3m
M/N: seraphi
Mode: Mode 2
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	3333.333	46.44	-7.98	38.46	74.00	-35.54	peak			
2		3853.333	45.63	-7.26	38.37	74.00	-35.63	peak			
3		4133.333	44.81	-6.41	38.40	74.00	-35.60	peak			

RESULT: PASS

Note: Factor=Antenna Factor+ Cable loss-Amplifier gain, Margin=Measurement-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

8. FCC LINE CONDUCTED EMISSION TEST

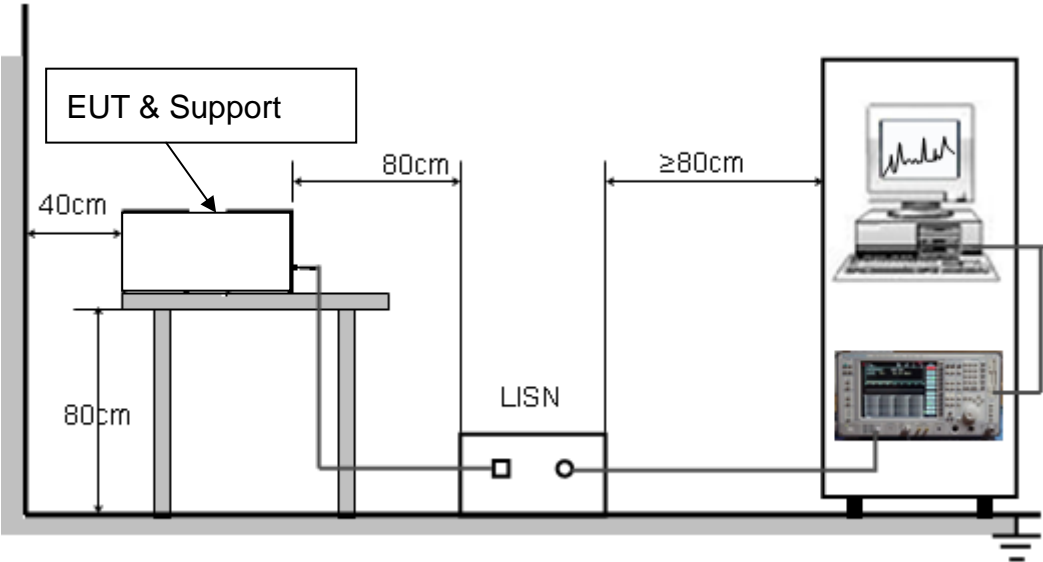
8.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

8.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



8.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.4.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hz power by a LISN..
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

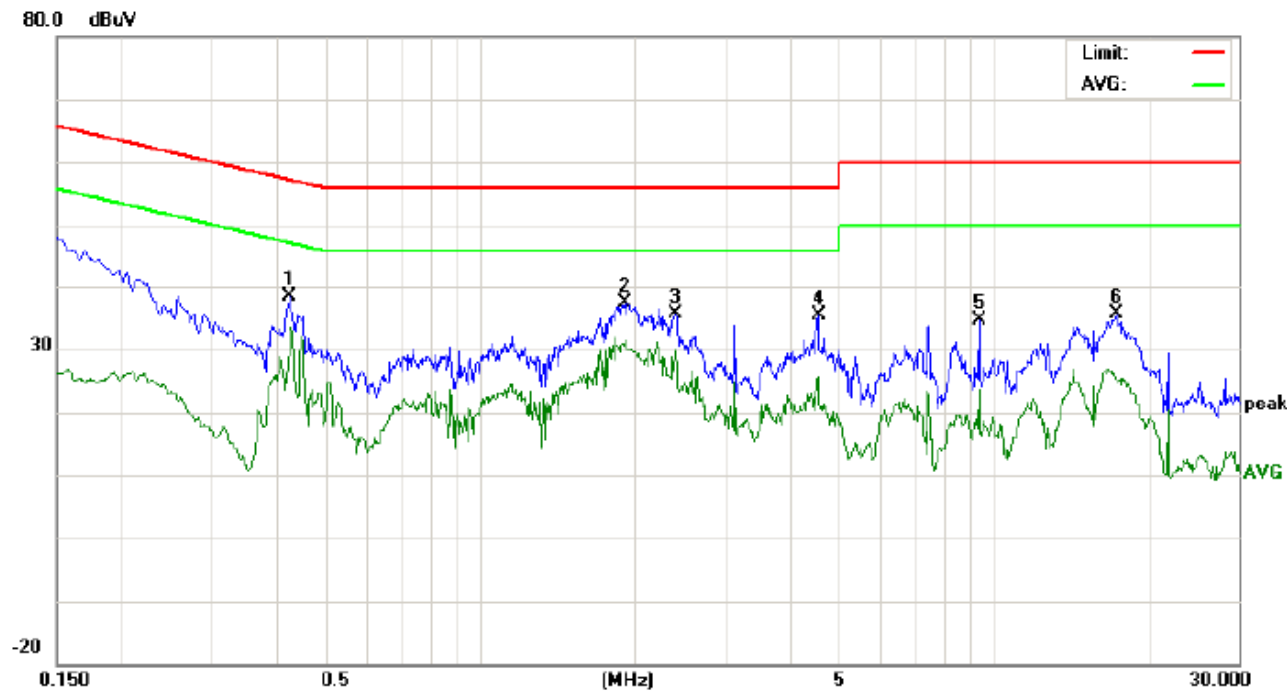
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

8.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

8.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION TEST LINE 1-L

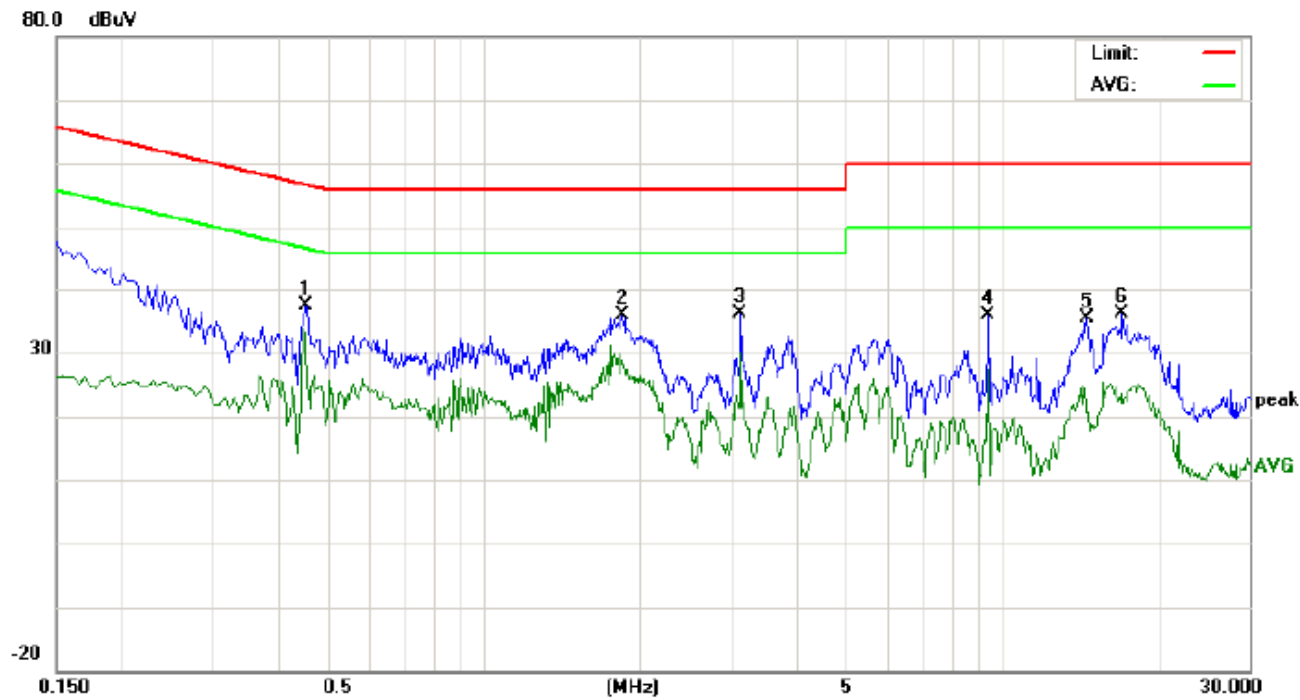


Site: Conduction
Limit: FCC Class B Conduction(QP)
EUT: seraphi aircraft
M/N: seraphi
Mode: Mode 2
Note:

Phase: **L1**
Power:
Temperature: 26
Humidity: 60 %

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.4260	28.11		23.11	10.35	38.46		33.46	57.33	47.33	-18.87	-13.87	P	
2	1.9140	27.12		21.12	10.25	37.37		31.37	56.00	46.00	-18.63	-14.63	P	
3	2.4060	25.28		19.40	10.39	35.67		29.79	56.00	46.00	-20.33	-16.21	P	
4	4.5500	25.23		15.31	10.21	35.44		25.52	56.00	46.00	-20.56	-20.48	P	
5	9.3979	24.26		13.30	10.35	34.61		23.65	60.00	50.00	-25.39	-26.35	P	
6	17.3100	25.44		14.89	10.13	35.57		25.02	60.00	50.00	-24.43	-24.98	P	

Line Conducted Emission Test Line 2-N



Site: Conduction

Limit: FCC Class B Conduction(QP)

EUT: seraphi aircraft

M/N: seraphi

Mode: Mode 2

Note:

Phase: *N*

Power:

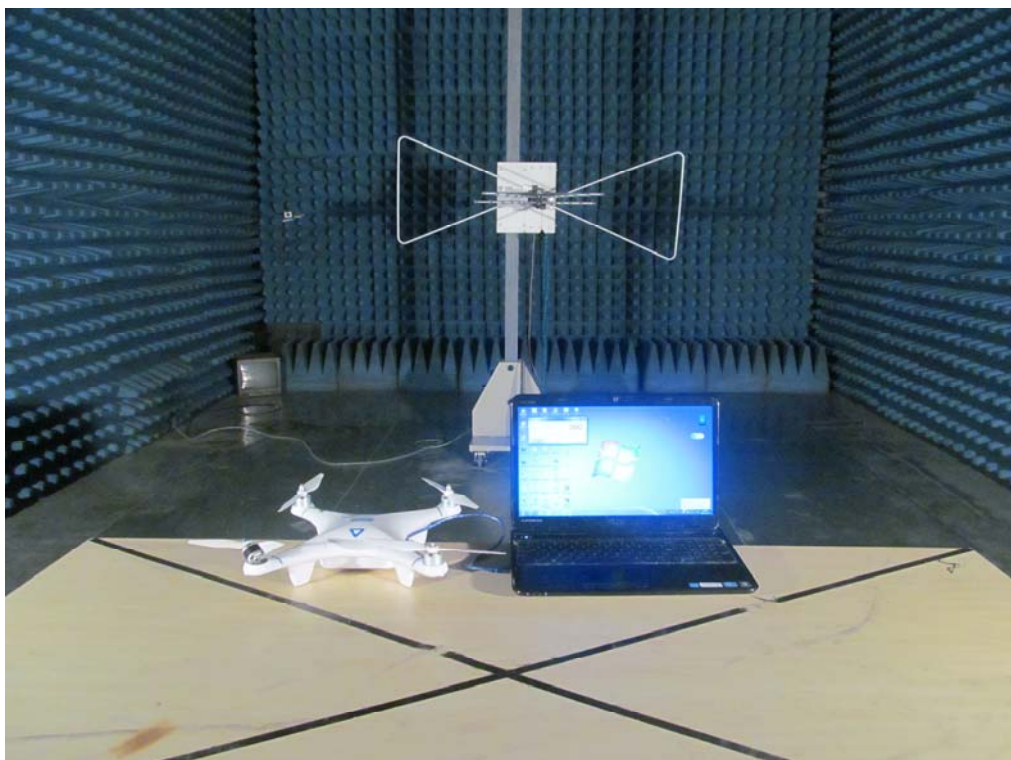
Temperature: 26

Humidity: 60 %

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.4540	26.99		20.90	10.37	37.36		31.27	56.80	46.80	-19.44	-15.53	P	
2	1.8580	25.60		17.78	10.27	35.87		28.05	56.00	46.00	-20.13	-17.95	P	
3	3.1340	25.46		19.64	10.54	36.00		30.18	56.00	46.00	-20.00	-15.82	P	
4	9.4020	25.42		17.00	10.35	35.77		27.35	60.00	50.00	-24.23	-22.65	P	
5	14.5540	25.25		11.10	10.12	35.37		21.22	60.00	50.00	-24.63	-28.78	P	
6	17.1020	26.12		11.93	10.13	36.25		22.06	60.00	50.00	-23.75	-27.94	P	

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC RADIATED EMISSION TEST SETUP



FCC LINE CONDUCTED EMISSION TEST SETUP



APPENDIX B: PHOTOGRAPHS OF EUT

ALL VIEW OF EUT



TOP VIEW OF EUT



BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



BACK VIEW OF EUT



LEFT VIEW OF EUT



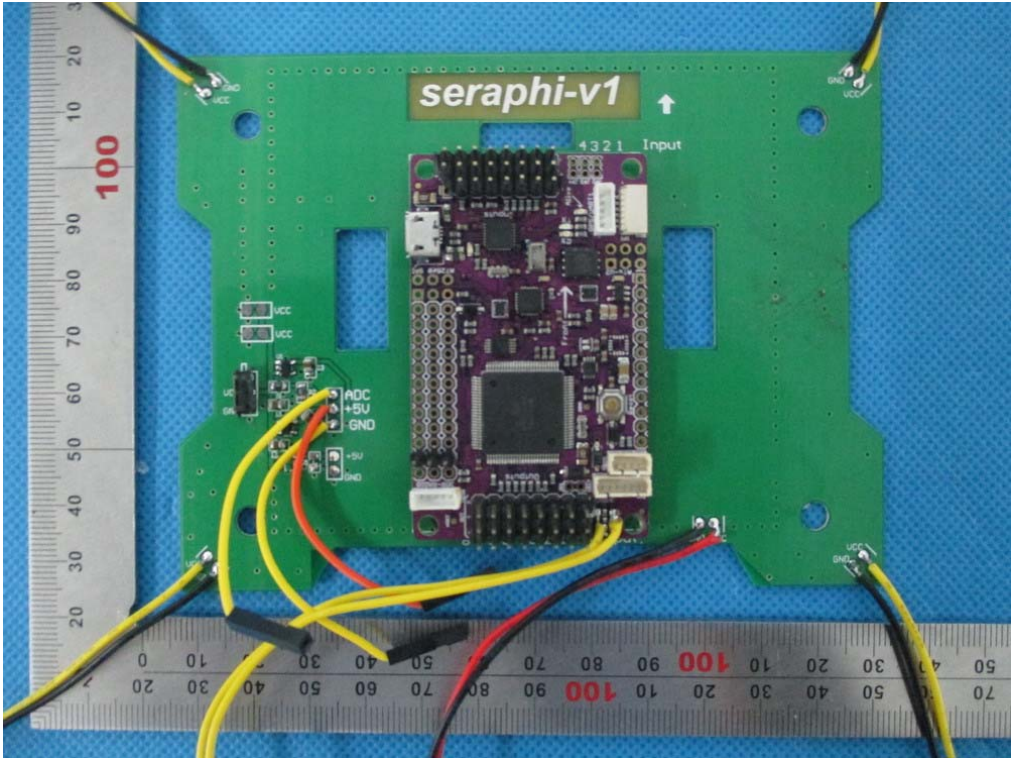
RIGHT VIEW OF EUT



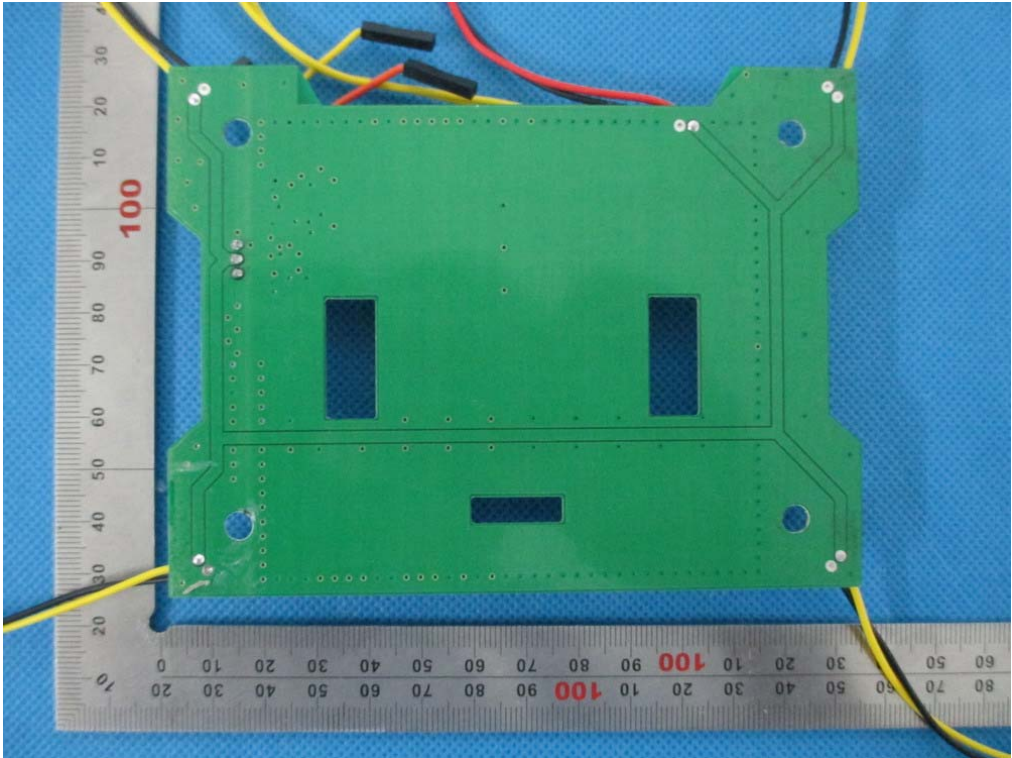
OPEN VIEW OF EUT-1



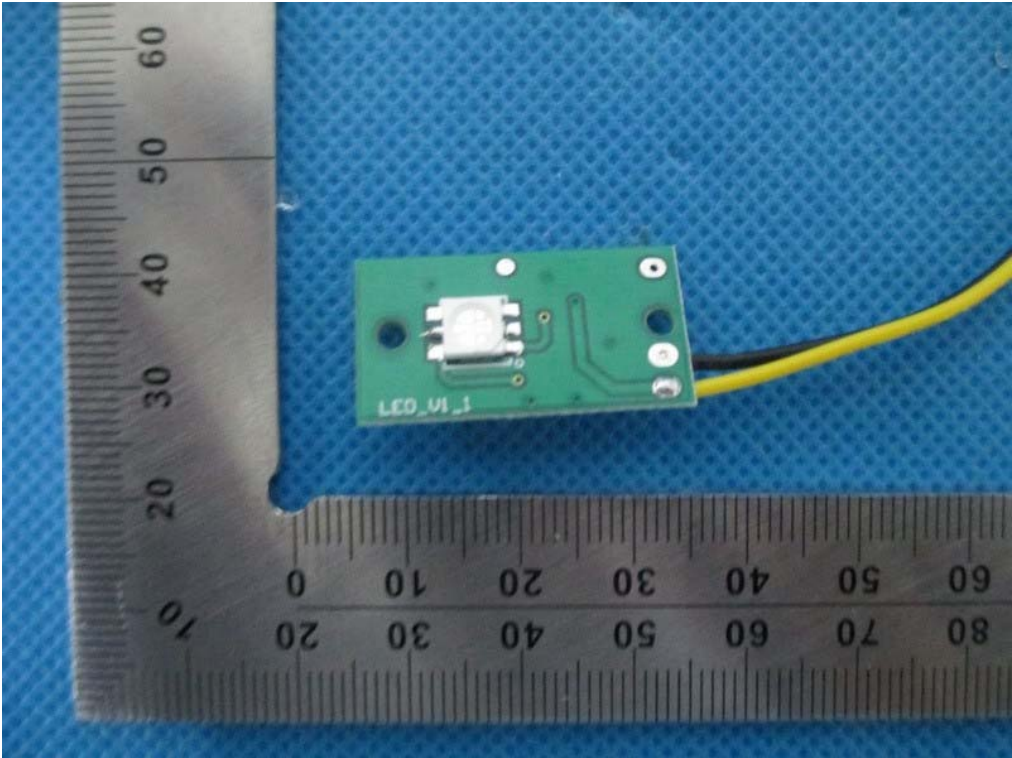
INTERNAL VIEW OF EUT-1



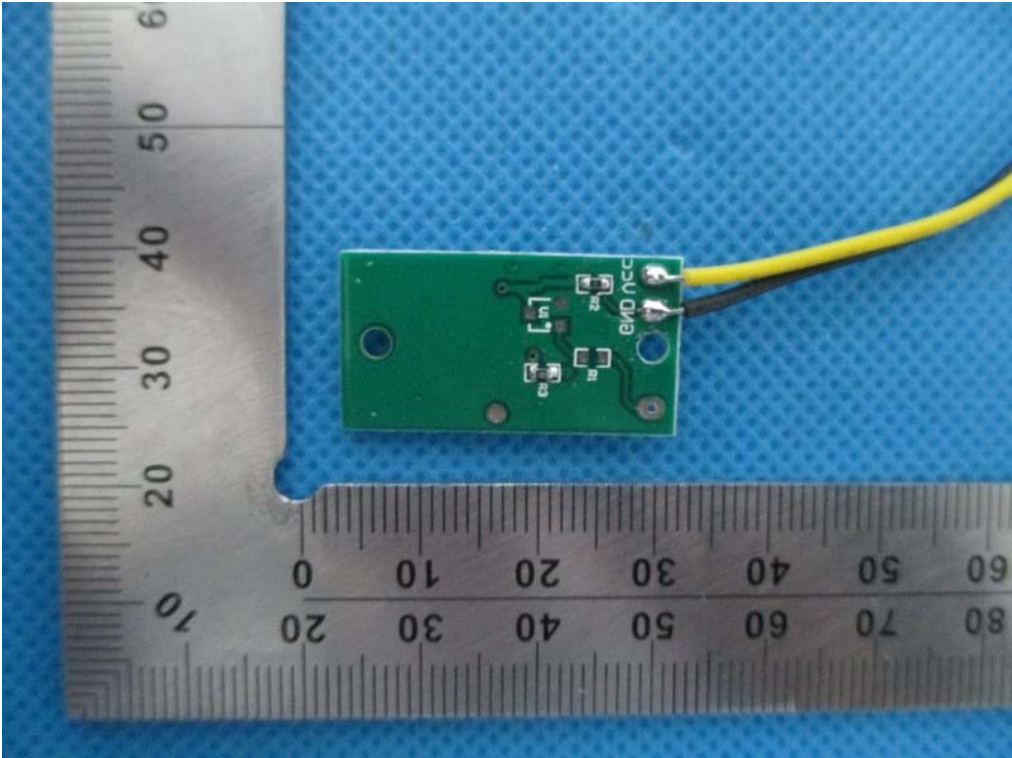
INTERNAL VIEW OF EUT-2



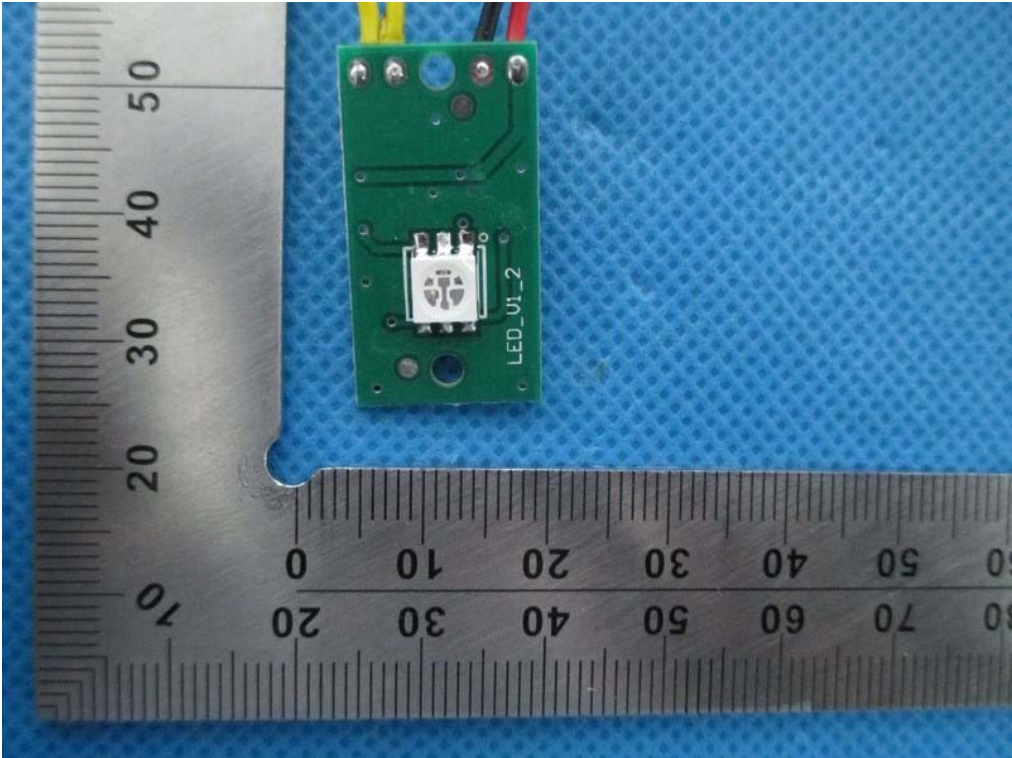
INTERNAL VIEW OF EUT-3



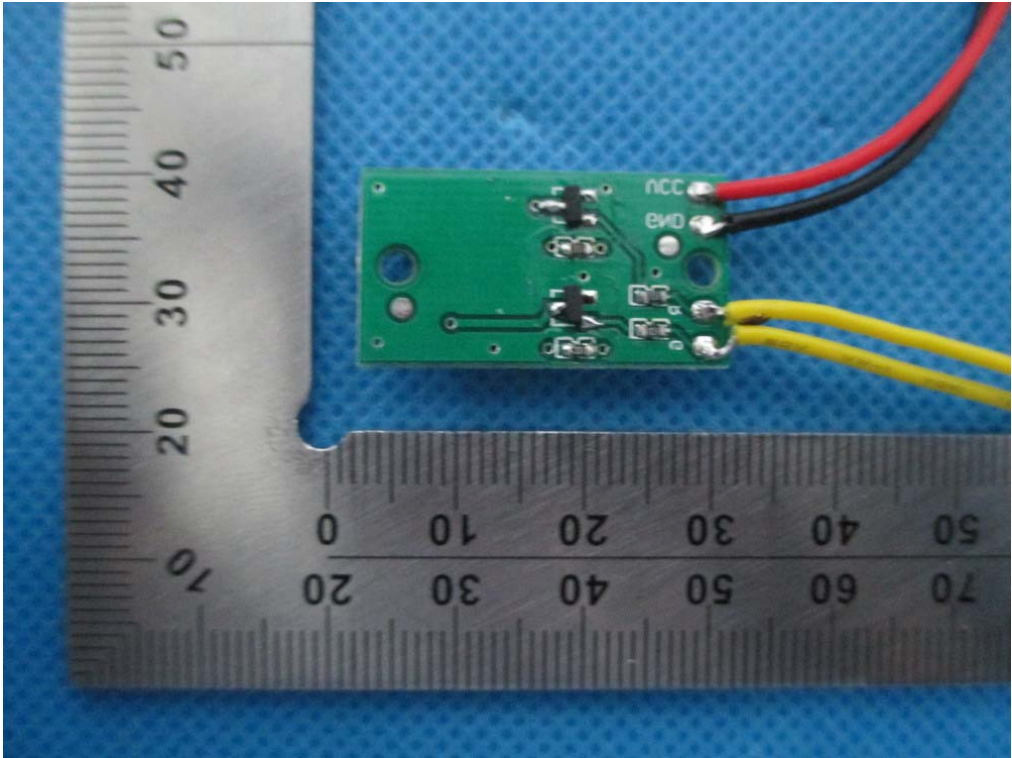
INTERNAL VIEW OF EUT-4



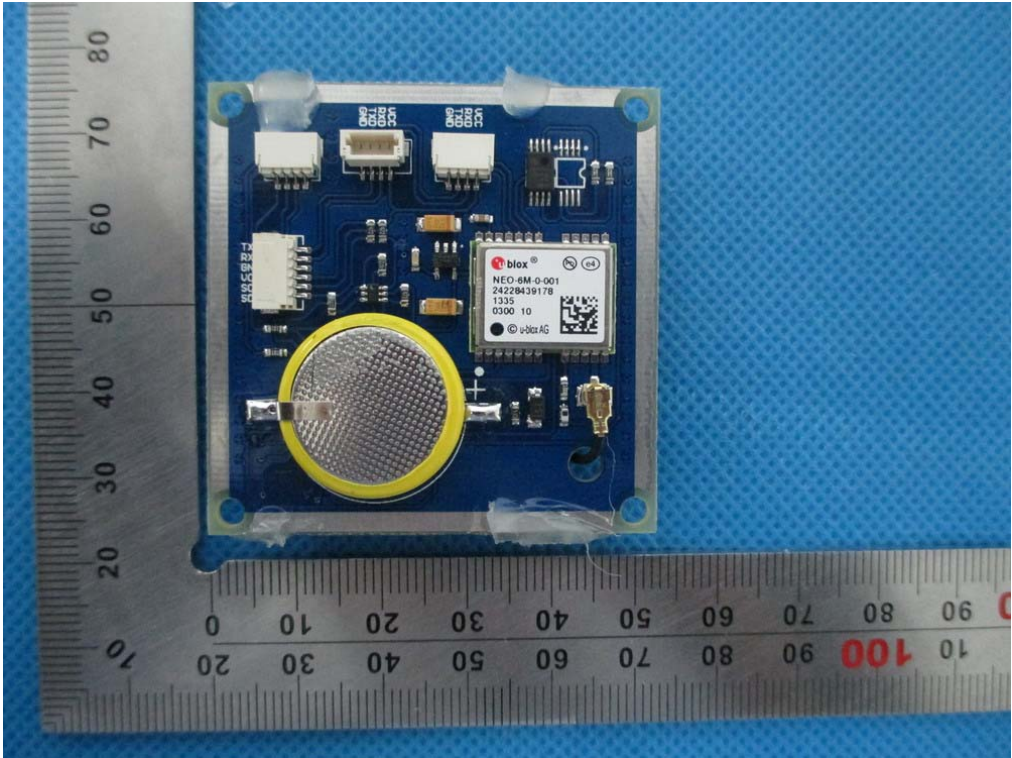
INTERNAL VIEW OF EUT-5



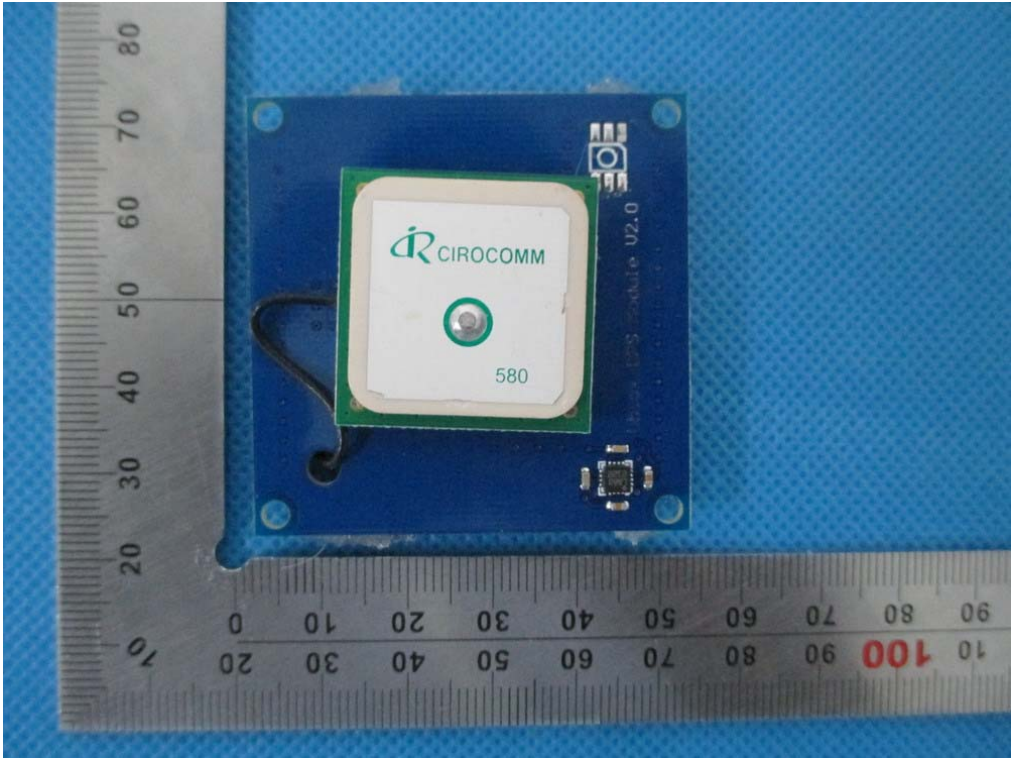
INTERNAL VIEW OF EUT-6



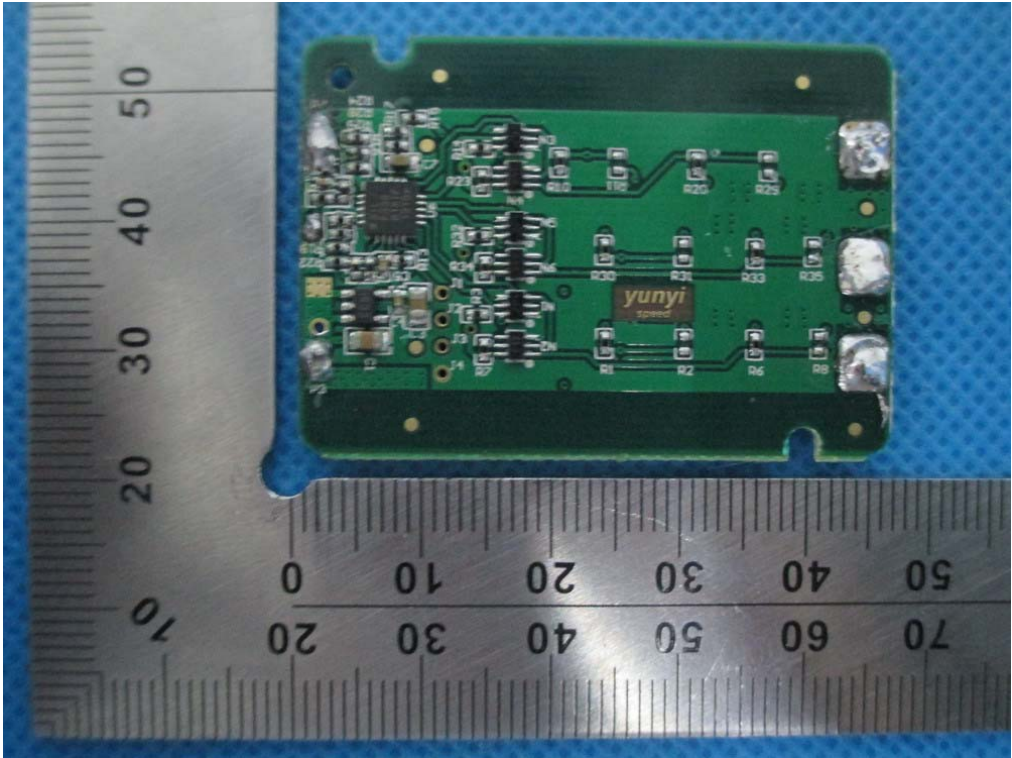
INTERNAL VIEW OF EUT-7



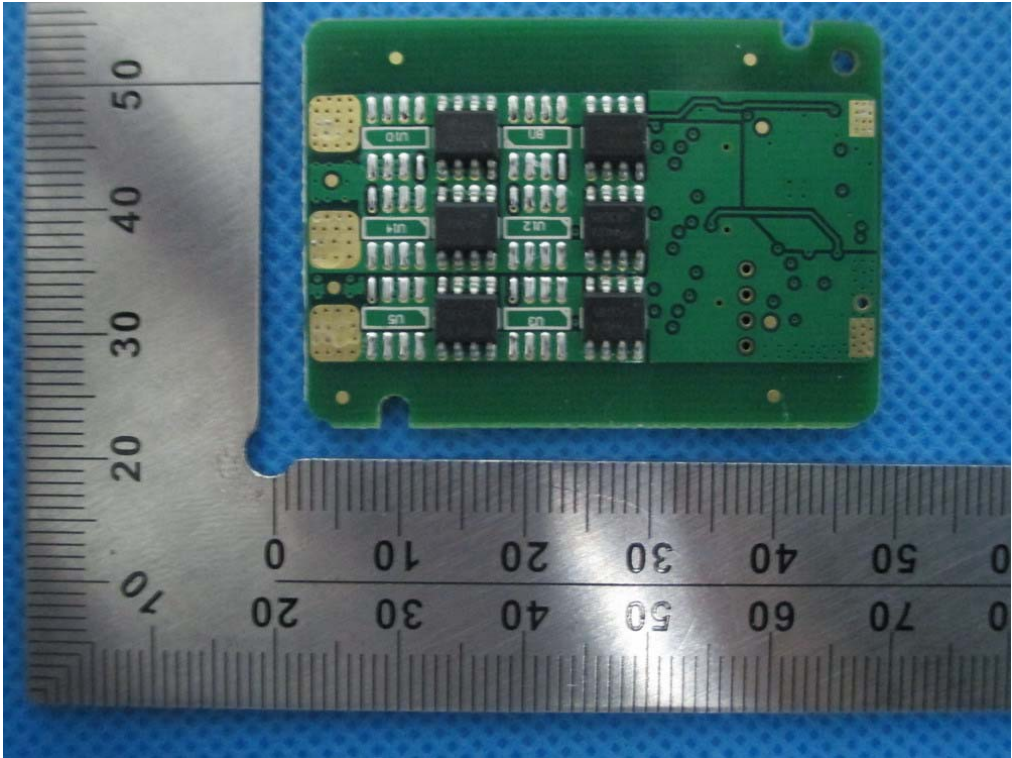
INTERNAL VIEW OF EUT-8



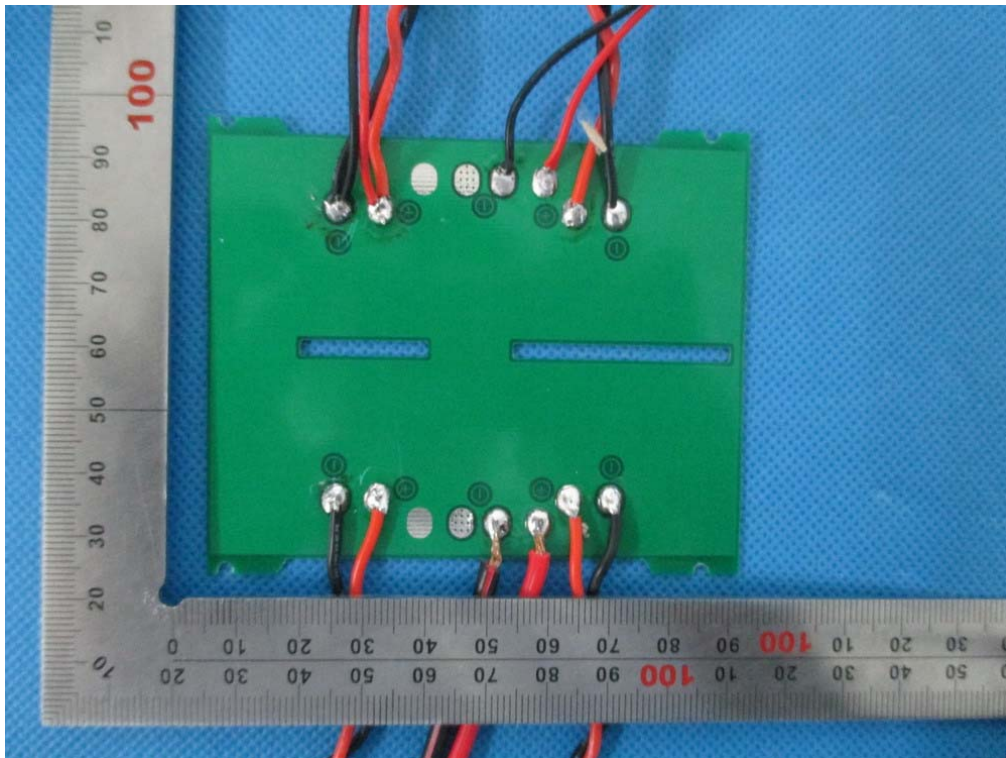
INTERNAL VIEW OF EUT-9



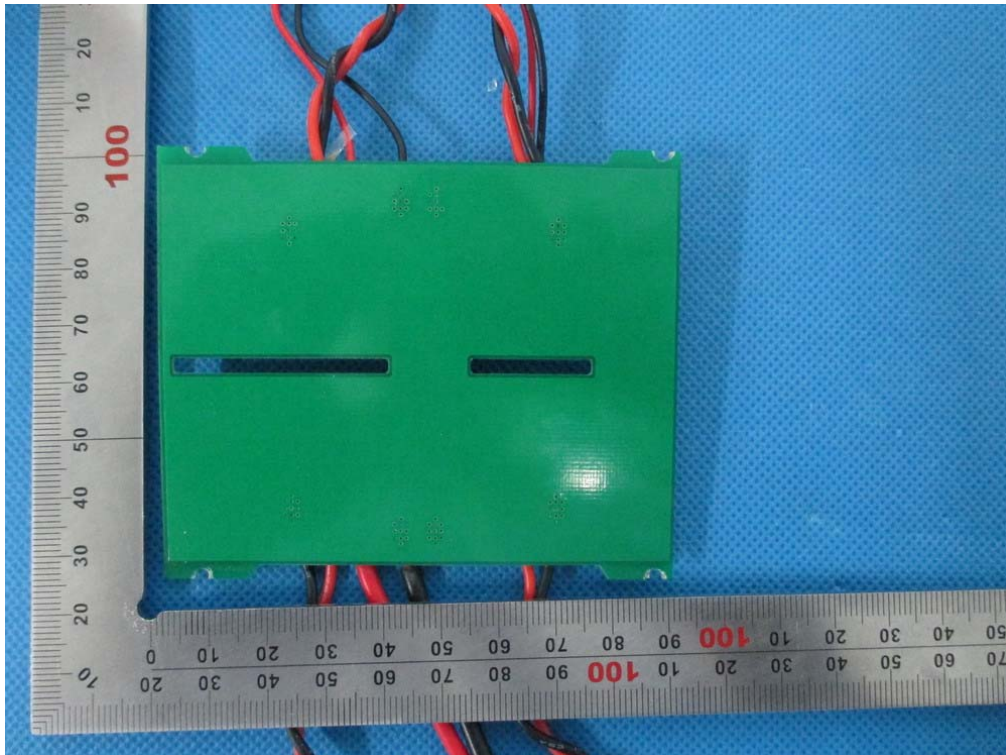
INTERNAL VIEW OF EUT-10



INTERNAL VIEW OF EUT-11



INTERNAL VIEW OF EUT-12



----END OF REPORT----