

Test Report

FCC Part15 Subpart E

Product Name : Breeze

Model No. : Flying Camera***** (The “*” can
be 0 to 9, a to z, A to Z, blank or
plus, for marketing purpose.)

FCC ID : 2ACS5-FCA

Applicant : Yuneec Technology Co., Limited

Address : 2/F Man Shung Industrial Building, 7 Lai Yip
Street, Kwun Tong, Hong Kong

Date of Receipt : Mar. 09, 2016

Test Date : Mar. 09, 2016~ Jul. 29, 2016

Issued Date : Aug. 17, 2016

Report No. : 1632039R-RF-US-P09V01

Report Version : V1.1

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by CNAS,TAF any agency of the government.

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Test Report Certification

Issued Date : Aug. 17, 2016

Report No. : 1632039R-RF-US-P09V01



Product Name : Breeze
Applicant : Yuneec Technology Co., Limited
Address : 2/F Man Shung Industrial Building, 7 Lai Yip Street, Kwun Tong, Hong Kong
Manufacturer : Yuneec International (China) Co., Ltd.
Address : No.388 East Zhengwei Road, Jinxi Town, Kunshan, Jiangsu 215324, China
Model No. : Flying Camera***** (The “*” can be 0 to 9, a to z, A to Z, blank or plus, for marketing purpose.)
FCC ID : 2ACS5-FCA
EUT Voltage : DC 12.6V
Brand Name : YUNEEC
Applicable Standard : FCC CFR Title 47 Part 15 Subpart E
ANSI C63.4:2014;
ANSI C63.10:2013;
789033 D02 General UNII Test Procedures New Rules v01
Test Result : Complied
Performed Location : Quietek Corporation - Suzhou EMC Laboratory
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
FCC Registration Number: 800392

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Harry Zhao

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Laboratory Information

We, **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	:	BSMI, NCC, TAF
USA	:	FCC
Japan	:	VCCI
China	:	CNAS

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://www.quietek.com/english/about/certificates.aspx?bval=5>
The address and introduction of Quietek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/index_en.aspx

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1632039R-RF-US-P09V01	V1.0	Initial Issued Report	Aug. 12, 2016
1632039R-RF-US-P09V01	V1.1	Modified a typo at page 47	Aug. 17, 2016

1. General Information

1.1. EUT Description

Product Name	Breeze				
Brand Name	YUNEEC				
Model No.	Flying Camera***** (The “*” can be 0 to 9, a to z, A to Z, blank or plus, for marketing purpose.)				
EUT Voltage	DC 12.6V				
Test Voltage	DC 12.6V				
Type of Modulation	OFDM				
Data Rate	802.11a: 6/9/12/18/24/36/48/54 Mbps				
Channel Control	Auto				
Transmit modes	☒ 802.11a	☐ 802.11n(20MHz)	☐ 802.11n(40MHz)		
	☐ 802.11ac(20MHz)	☐ 802.11ac(40MHz)	☐ 802.11ac(80MHz)		
Support Bands	☐ 5150MHz~5250MHz	☐ Outdoor AP ☐ Indoor AP ☐ Fixed point-to-point AP ☐ Mobile and Portable Client			
	☐ 5250MHz~5350MHz				
	☐ 5470MHz~5725MHz	☐ With TDWR Channels ☐ Without TDWR Channels			
	☒ 5725MHz~5850MHz				

1.2. Antenna information

Antenna Manufacturer	Shanghai Roadeo Technology Co., Ltd																
Antenna Delivery	☐ 1*TX+1*RX	☒ 1*TX+2*RX	☐ 3*TX+3*RX														
Antenna Technology	☒ SISO ☐ MIMO <table border="1" style="margin-left: 20px;"> <tr><td>☐</td><td>Basic methodology with NANT transmit antennas</td></tr> <tr><td>☐</td><td>Sectorized antenna systems</td></tr> <tr><td>☐</td><td>Cross-polarized antennas</td></tr> <tr><td>☐</td><td>Unequal antenna gains, with equal transmit powers</td></tr> <tr><td>☐</td><td>Spatial Multiplexing</td></tr> <tr><td>☐</td><td>Cyclic Delay Diversity (CDD)</td></tr> </table>					☐	Basic methodology with NANT transmit antennas	☐	Sectorized antenna systems	☐	Cross-polarized antennas	☐	Unequal antenna gains, with equal transmit powers	☐	Spatial Multiplexing	☐	Cyclic Delay Diversity (CDD)
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☐	Cyclic Delay Diversity (CDD)																
Antenna Type	External Antenna																

Antenna Information					
No.				Ant Type	Ant Gain/ Direction Gain
☒	SISO	☒	Antenna 0	External Antenna	3.92dBi
		☒	Antenna 1	External Antenna	3.92dBi
		☐	Antenna 2		
☐	Basic				
☐	CDD				
☐	Beam-forming				

Note: There are two antennas and only one antenna can transmit at the same time.

1.3. Working Frequency of Each Channel:

802.11a Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745 MHz	153	5765 MHz	157	5785 MHz	161	5805 MHz
165	5825MHz	N/A	N/A	N/A	N/A	N/A	N/A

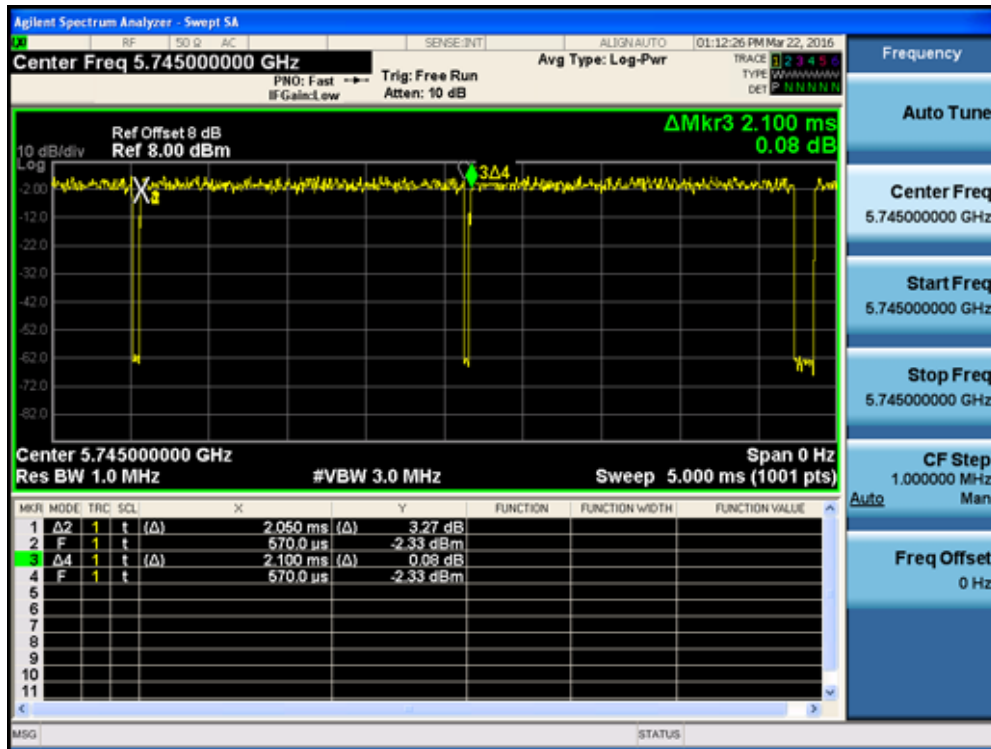
1.4. Power Parameter Value of the test software

Test Mode	Test Channel	Power Setting (Ant0)	Power Setting (Ant1)
802.11a	5745	26	28
	5785	26	28
	5825	22	23

1.5. Duty Cycle

Test Mode	Duty Cycle
802.11a	97.62%

802.11a



1.6. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit by 802.11a

Note 1: Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

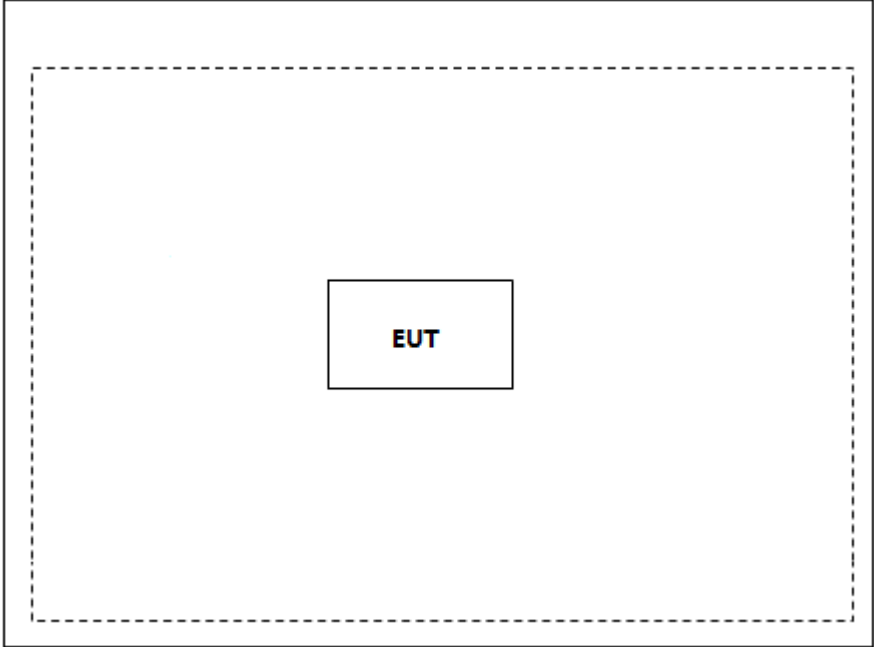
2: For portable device, radiated tests was verified over X, Y, Z axis, and shown the worst case on this report.

1.7. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	Asus	N80V	8BN0AS226971468	None-shielded

1.8. Configuration of Tested System

Connection Diagram		
		
Signal Cable Type		Signal cable Description
A	N/A	N/A

1.9. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Input RF commands, and set the test mode and channel, then press OK to start to continue transmit or receive.

2. Technical Test

2.1. Summary of Test Result

- ☒ No deviations from the test standards
- ☐ Deviations from the test standards as below description:

Performed Test Item	Normative References	Worst case mode	Limit	Result
Conducted Emission	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.207	802.11a	FCC 15.207	PASS
Radiated Emission	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.209	802.11a	FCC 15.209	PASS
26dB Emission Bandwidth	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.407(a)	802.11a	N/A	PASS
Power Output	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.407(a)	802.11a	FCC 15.407(a)	PASS
Peak Power Spectral Density	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.407(a)	802.11a	FCC 15.407(a)	PASS
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.205, 15.407(b)	802.11a	FCC 15.407(b)	PASS
Frequency Stability	FCC CFR Title 47 Part 15 Subpart E: 2015 Section 15.407(g)	802.11a	FCC 15.407(g)	PASS

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

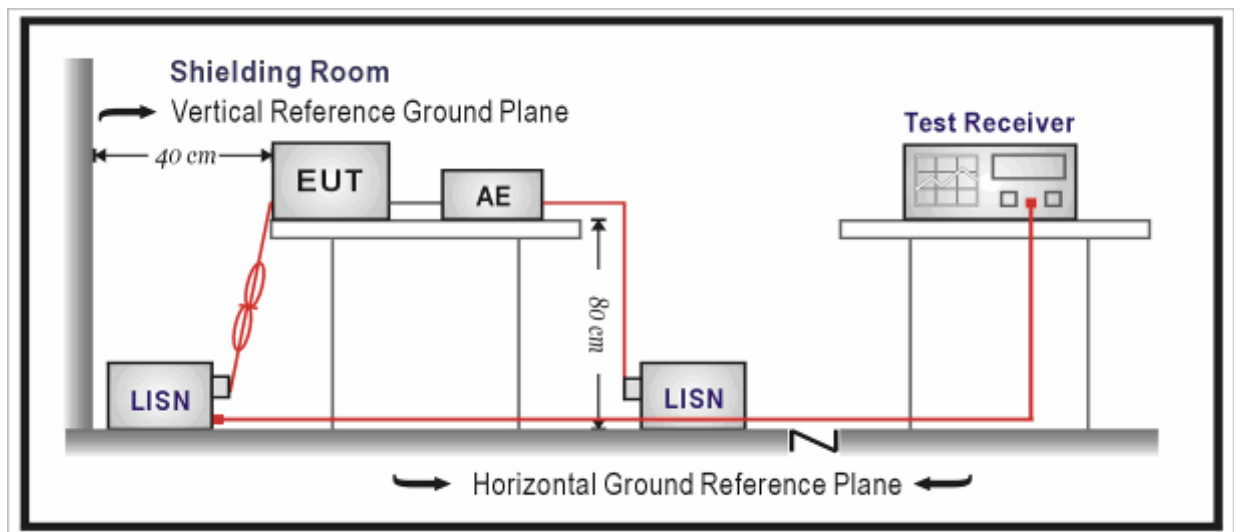
3. Conducted Emission

3.1. Test Equipment

Conducted Emission / TR-1					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100726	2016.03.29	2017.03.28
Two-Line V-Network	R&S	ENV216	100043	2016.03.29	2017.03.28
Two-Line V-Network	R&S	ENV216	100044	2015.09.17	2016.09.16
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2016.03.02	2017.03.01
50ohm Termination	SHX	TF2	07081401	2015.09.17	2016.09.16
Temperature/Humidity Meter	zhichen	ZC1-2	TR1-TH	2016.01.05	2017.01.04

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limit

Frequency (MHz)	QP (dB μ V)	AV (dB μ V)
0.15 - 0.50	66 – 56	56 – 46
0.50 - 5.0	56	46
5.0 - 30	60	50
Note 1: The lower limit shall apply at the transition frequencies. Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

3.4. Test Procedure

Test Method			
	References Rule	Chapter	Item
☒	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices
☒	ANSI C63.4-2014	7	AC power-line conducted emission measurements

3.5. Uncertainty

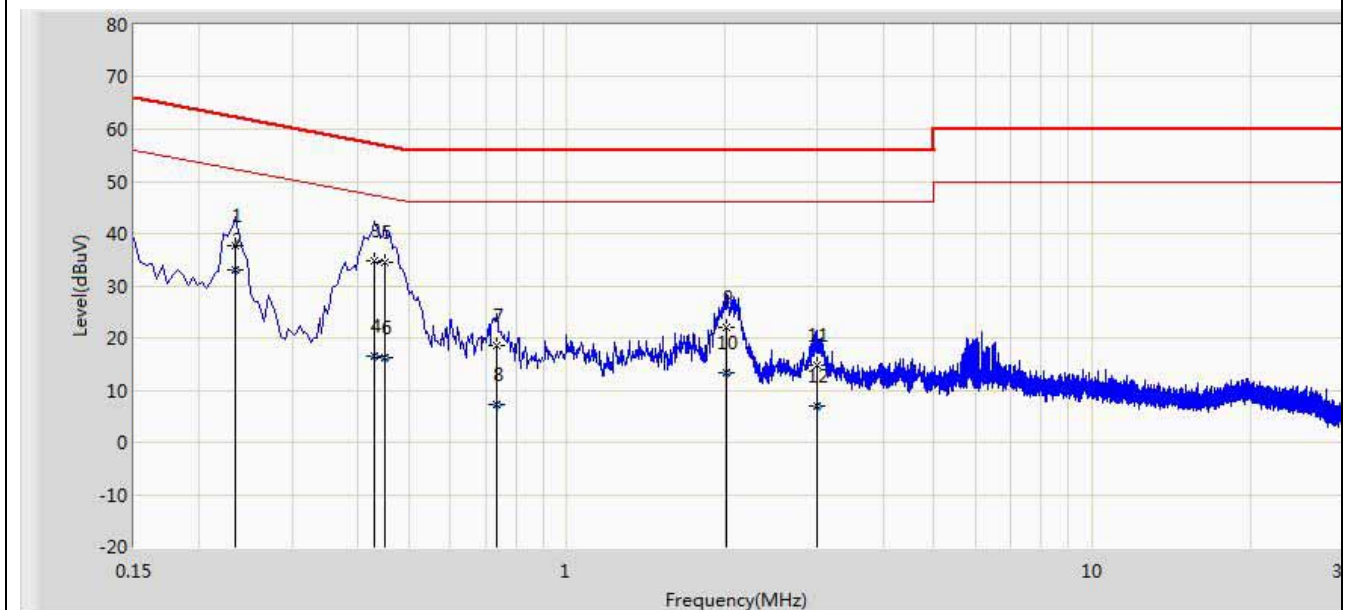
The measurement uncertainty is defined as ± 2.02 dB

3.6. Test Result

Product Name	: Breeze	Polarity	: Line
Test Item	: AC Power Line Conducted Emission	Power	: AC 120V/60Hz
Test Site	: TR1	Test Mode	: Mode 1

No	Frequency (MHz)	Measure Level (dB μ V)	Reading Level (dB μ V)	Over Limit (dB)	Limit (dB μ V)	Probe (dB)	Cable (dB)	Type
1	0.234	37.826	28.206	-24.481	62.307	9.590	0.030	QP
2	0.234	32.950	23.331	-19.356	52.307	9.590	0.030	AV
3	0.430	34.886	25.255	-22.367	57.253	9.590	0.041	QP
4	0.430	16.385	6.754	-30.868	47.253	9.590	0.041	AV
5	0.450	34.533	24.899	-22.342	56.875	9.590	0.044	QP
6	0.450	16.157	6.523	-30.718	46.875	9.590	0.044	AV
7	0.734	18.452	8.809	-37.548	56.000	9.591	0.051	QP
8	0.734	7.175	-2.467	-38.825	46.000	9.591	0.051	AV
9	2.010	22.024	12.325	-33.976	56.000	9.610	0.089	QP
10	2.010	13.468	3.769	-32.532	46.000	9.610	0.089	AV
11	2.990	14.892	5.173	-41.108	56.000	9.613	0.106	QP
12	2.990	6.938	-2.781	-39.062	46.000	9.613	0.106	AV

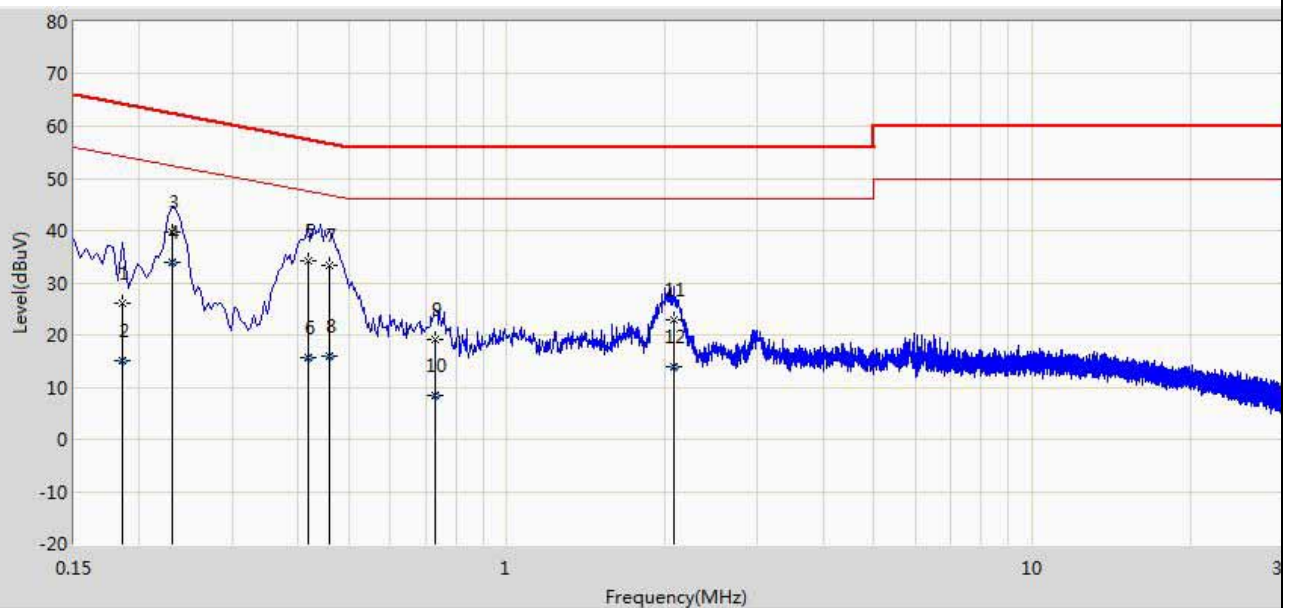
Polarity: Line



Product Name	: Breeze	Polarity	: Neutral
Test Item	: AC Power Line Conducted Emission	Power	: AC 120V/60Hz
Test Site	: TR1	Test Mode	: Mode 1

No	Frequency (MHz)	Measure Level (dB μ V)	Reading Level (dB μ V)	Over Limit (dB)	Limit (dB μ V)	Probe (dB)	Cable (dB)	Type
1	0.186	26.098	16.498	-38.116	64.213	9.573	0.027	QP
2	0.186	14.951	5.351	-39.263	54.213	9.573	0.027	AV
3	0.230	39.777	30.175	-22.673	62.450	9.571	0.030	QP
4	0.230	33.992	24.390	-18.458	52.450	9.571	0.030	AV
5	0.418	34.116	24.499	-23.372	57.488	9.578	0.039	QP
6	0.418	15.512	5.895	-31.976	47.488	9.578	0.039	AV
7	0.458	33.289	23.667	-23.439	56.729	9.579	0.043	QP
8	0.458	16.035	6.413	-30.694	46.729	9.579	0.043	AV
9	0.730	19.050	9.391	-36.950	56.000	9.607	0.052	QP
10	0.730	8.424	-1.235	-37.576	46.000	9.607	0.052	AV
11	2.086	23.002	13.318	-32.998	56.000	9.591	0.093	QP
12	2.086	13.856	4.173	-32.144	46.000	9.591	0.093	AV

Polarity: Neutral



4. Radiated Emission

4.1. Test Equipment

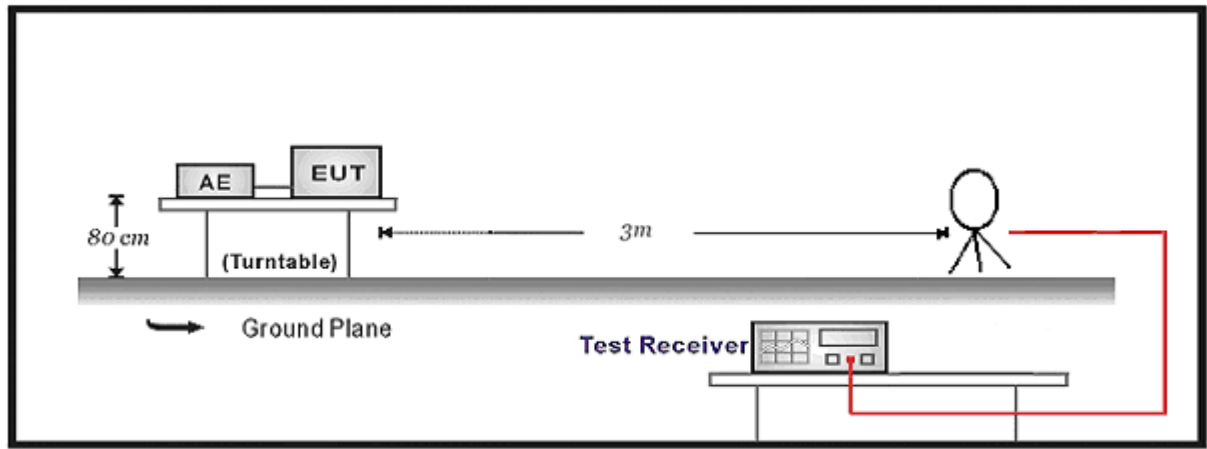
Radiated Emission / AC-2					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2016.03.29	2017.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2015.11.18	2016.11.17
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2015.10.16	2016.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2016.03.02	2017.03.01
Temperature/Humidity Meter	Zhichen	ZC1-2	AC2-TH	2016.01.05	2017.01.04

Radiated Emission / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2016.05.06	2017.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2016.05.06	2017.05.05
DRG Horn	ETS-Lindgren	3117	00165315	2016.07.01	2017.06.30
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2015.11.25	2016.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016.03.02	2017.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016.03.02	2017.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2016.03.02	2017.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2016.07.16	2017.07.16
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016.01.05	2017.01.04

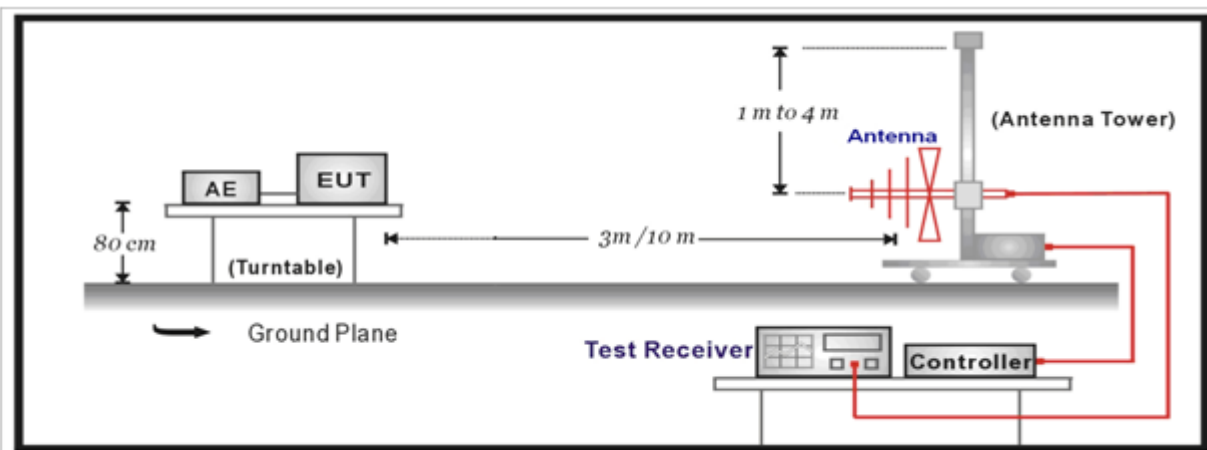
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

4.2. Test Setup

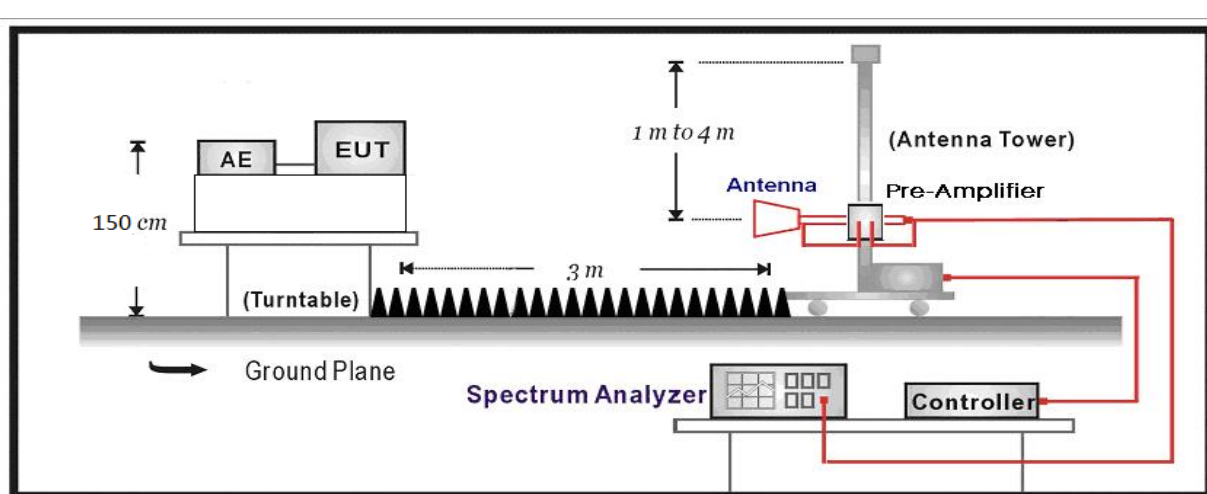
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

FCC Part 15 Subpart C Paragraph 15.209 (Restricted Band Emissions Limit)		
Frequency (MHz)	Distance (m)	Level (dB μ V/m)
0.009-0.490	300	2400/F(kHz)
0.490-1.705	30	24000/F(kHz)
1.705-30.0	30	30
30-88	3	100**
88-216	3	150**
216-960	3	200**
Above 960	3	500

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

FCC Part 15 Subpart C Paragraph 15.205 (Restricted Band)			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.81425 – 8.81475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4	3600 – 4400	
13.36 – 13.41			

FCC Part 15 Subpart C Paragraph 15.407(5)(b) (Unrestricted Band Emissions Limit)		
Operating Frequency Band (MHz)	EIRP Limit (dBm/MHz)	Equivalent Field Strength at 3m (dB μ V/m)
5150 - 5250	-27	68.3
5250 - 5350	-27	68.3
5470 - 5725	-27	68.3
5725 - 5825	-27 [Note(1)]	68.3
	-17 [Note(2)]	78.3
Note1: Outside the frequency range 5715 - 5835MHz. Note2: Within the frequency range from the band edge to 10MHz below or above the band edge, 5715 – 5725MHz and 5825 - 5835MHz.		

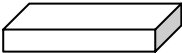
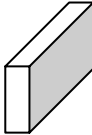
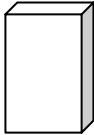
4.4. Test Procedure

Test Method				
	References Rule		Chapter	Description
☐	ANSI C63.10		12.7.3	Emissions in non-restricted frequency bands
☒	ANSI C63.10		12.7.2	Emissions in restricted frequency bands
	☒	ANSI C63.10	12.7.5	Radiated emission measurements
	☒	ANSI C63.10	12.7.6	Procedure for peak unwanted emissions measurements above 1000 MHz
	☒	ANSI C63.10	12.7.7	Procedures for average unwanted emissions measurements above 1000 MHz
	☐	ANSI C63.10	12.7.7.2	Method AD (average detection)—primary method
	☒	ANSI C63.10	12.7.7.3	Method VB-A (Alternative)
	☒	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
	☒	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
	☒	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
☐	FCC KDB 789033 D02v01		G.2	Unwanted Emissions that fall Outside of the Restricted Bands
☐	FCC KDB 789033 D02v01		G.1	Unwanted Emissions in the Restricted Bands
	☐	FCC KDB 789033 D02v01	G.4	Procedure for Unwanted Emissions Measurements below 1000 MHz
	☐	FCC KDB 789033 D02v01	G.5	Procedure for Unwanted Maximum Emissions Measurements above 1000 MHz
	☐	FCC KDB 789033 D02v01	G.6	Procedures for Average Unwanted Emissions Measurements above 1000 MHz
	☐	FCC KDB 789033 D02v01	G.6.c	Method AD (Average detection)—primary method
	☐	FCC KDB 789033 D02v01	G.6.d	Method VB (Averaging using reduced video bandwidth): Alternative method.

4.5. Uncertainty

The measurement uncertainty above 1GHz is defined as ± 3.9 dB
 below 1GHz is defined as ± 3.8 dB

4.6. EUT test Axis definition

Item	Radiated Emissions		
Device Category	☒	Fixed position use	
	☐	Mobile position use	
Test mode	Mode 1		
Axis	X Axis	Y Axis	Z Axis
			
Worst Axis	Worst Axis ☐	Worst Axis ☐	Worst Axis ☒

4.7. Test Result

Mode1: Transmit by 802.11a									
Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBμV/m)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
Ant	149	H	11490.0	28.6	14.4	43.0	54(Note3)	11.0	PK
		V	11490.0	29.8	14.4	44.2	54(Note3)	9.8	PK
		H	17235.0	31.3	18.4	49.8	54(Note3)	4.2	PK
		V	17235.0	31.9	18.4	50.3	54(Note3)	3.7	PK
	157	H	11570.0	30.2	15.2	45.4	54(Note3)	8.6	PK
		V	11570.0	29.8	15.2	45.1	54(Note3)	8.9	PK
		H	17355.0	30.4	19.3	49.7	54(Note3)	4.3	PK
		V	17355.0	31.1	19.3	50.4	54(Note3)	3.6	PK
	165	H	11650.0	27.6	15.3	43.0	54(Note3)	11.0	PK
		V	11650.0	30.9	15.3	46.2	54(Note3)	7.8	PK
		H	17475.0	30.8	19.9	50.7	54(Note3)	3.3	PK
		V	17475.0	30.5	19.9	50.4	54(Note3)	3.6	PK

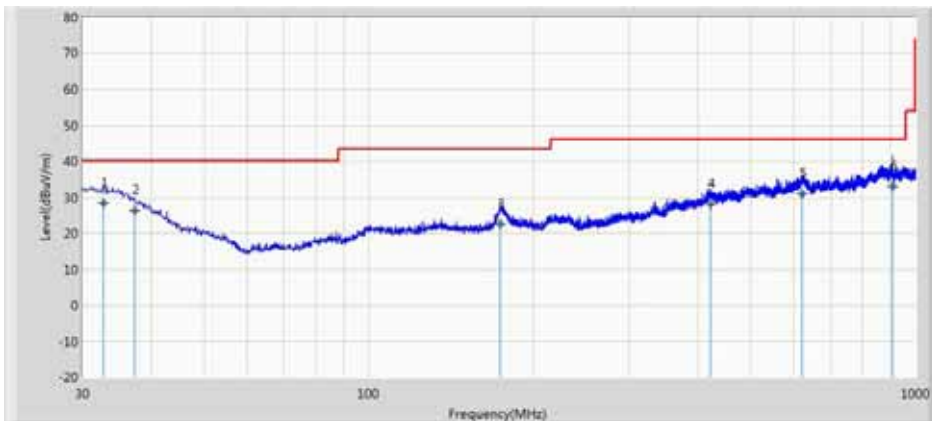
1. Measure Level = Reading Level + Factor.
2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

The worst case of Radiated Emission below 1GHz:

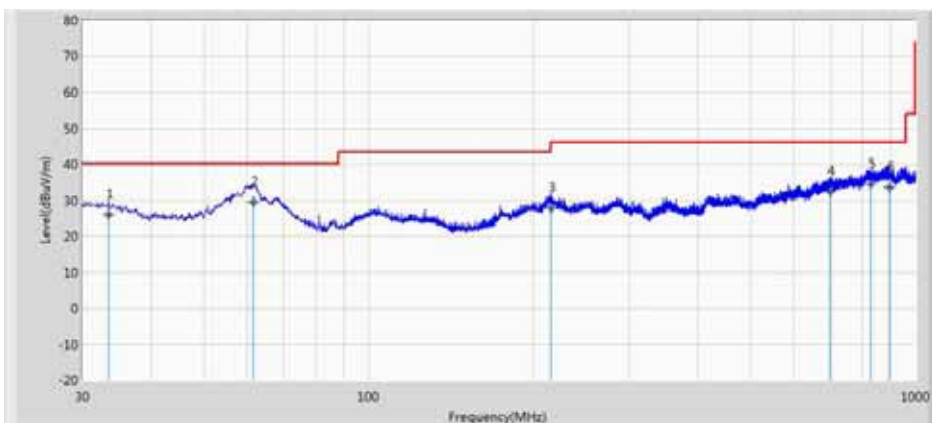
Chain	CH	Antenna	Frequency (MHz)	Reading Level (dB μ V/m)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
Ant	149	H	32.788	33.748	-5.317	28.431	40.000	11.569	QP
		H	37.275	34.252	-7.965	26.287	40.000	13.713	QP
		H	174.045	34.742	-12.172	22.570	43.500	20.930	QP
		H	422.240	32.454	-4.215	28.239	46.000	17.761	QP
		H	619.870	31.898	-0.869	31.029	46.000	14.971	QP
		H	907.000	31.843	1.137	32.980	46.000	13.020	QP
		V	33.516	31.860	-5.752	26.108	40.000	13.892	QP
		V	61.666	45.406	-15.727	29.679	40.000	10.321	QP
		V	215.755	40.162	-12.377	27.785	43.500	15.715	QP
		V	697.360	33.192	-0.685	32.507	46.000	13.493	QP
		V	829.765	33.641	0.973	34.614	46.000	11.386	QP
		V	895.725	32.742	1.011	33.753	46.000	12.247	QP

Note 1: The worst case of Radiated Emission below 1GHz:

Polarity: Horizontal



Polarity: Vertical



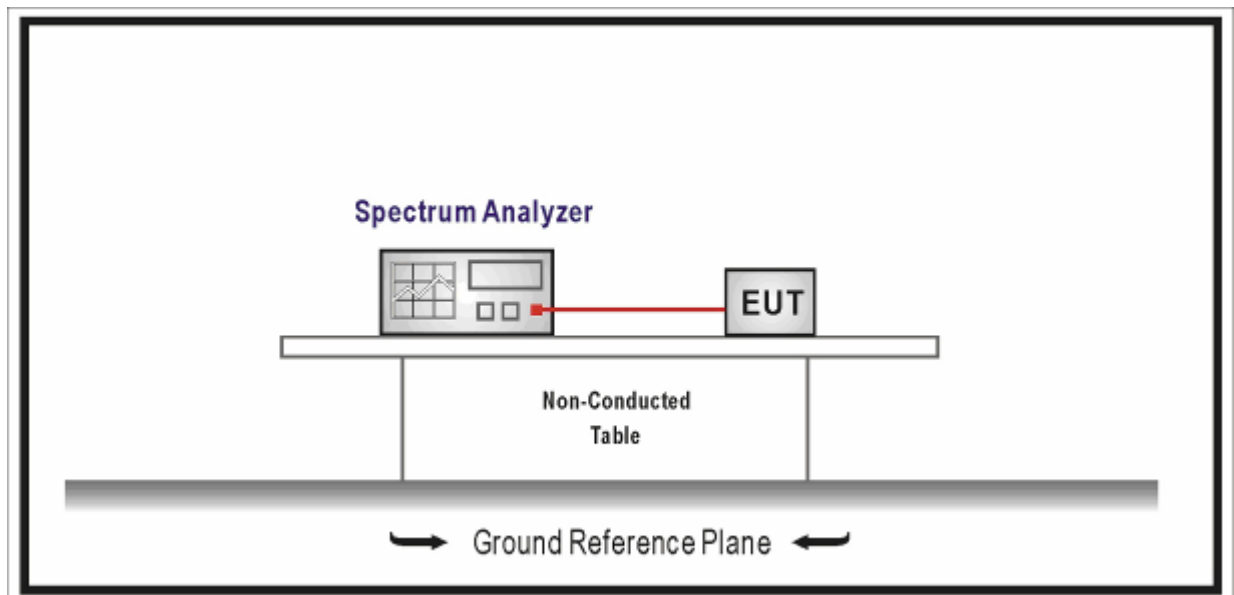
5. Emission bandwidth and occupied bandwidth

5.1. Test Equipment

Emission bandwidth and occupied bandwidth / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.11	2017.03.10
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2016.04.10	2017.04.09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

5.2. Test Setup



5.3. Limit

N/A

5.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
☒	ANSI C63.10	12.4	Emission bandwidth and occupied bandwidth
	☒ ANSI C63.10	12.4.1	Emission bandwidth (26dB)
	☒ ANSI C63.10	12.4.2	Occupied bandwidth (99%)
☒	FCC KDB 789033 D02v01	C	Bandwidth Measurement
	☐ FCC KDB 789033 D02v01	C.1	Emission Bandwidth (26dB)
	☒ FCC KDB 789033 D02v01	C.2	Minimum Emission Bandwidth for the band 5.725-5.85 GHz (6dB)
☐	FCC KDB 789033 D02v01	D	99 Percent Occupied Bandwidth

5.5. Uncertainty

The measurement uncertainty is defined as ± 1 kHz

5.6. Test Result

Product	:	Breeze
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a Ant0

Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Lower/Higher Frequency (MHz)	Result
149	5745	22.04	16.753	5736.6	Pass
157	5785	21.23	16.674	N/A	Pass
165	5825	22.07	16.612	5833.3	Pass

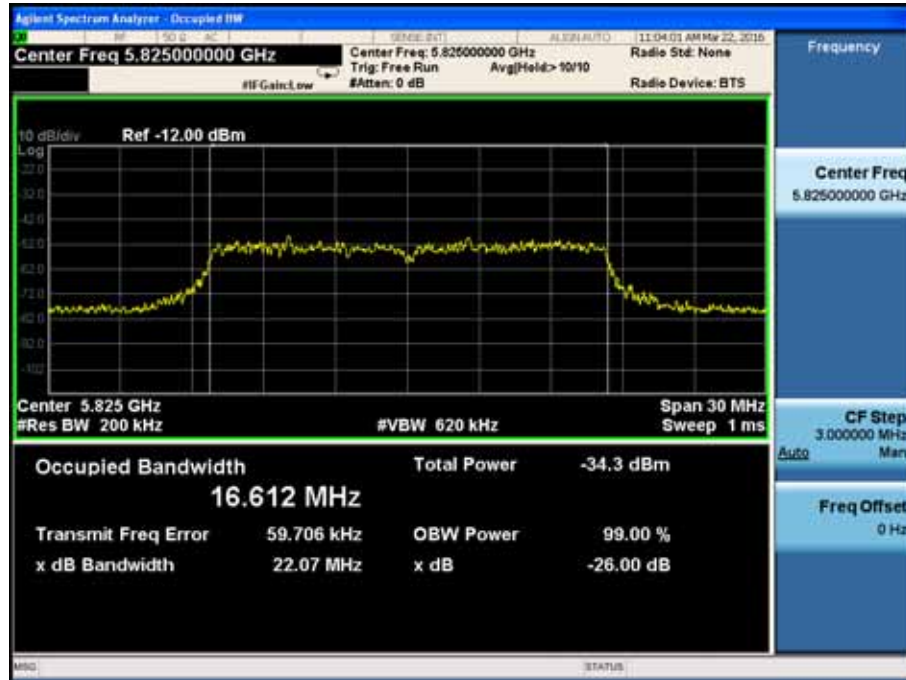
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



Product	:	Breeze
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a Ant1

Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Lower/Higher Frequency (MHz)	Result
149	5745	20.73	16.651	5736.7	Pass
157	5785	20.70	16.641	N/A	Pass
165	5825	20.75	16.573	5833.3	Pass

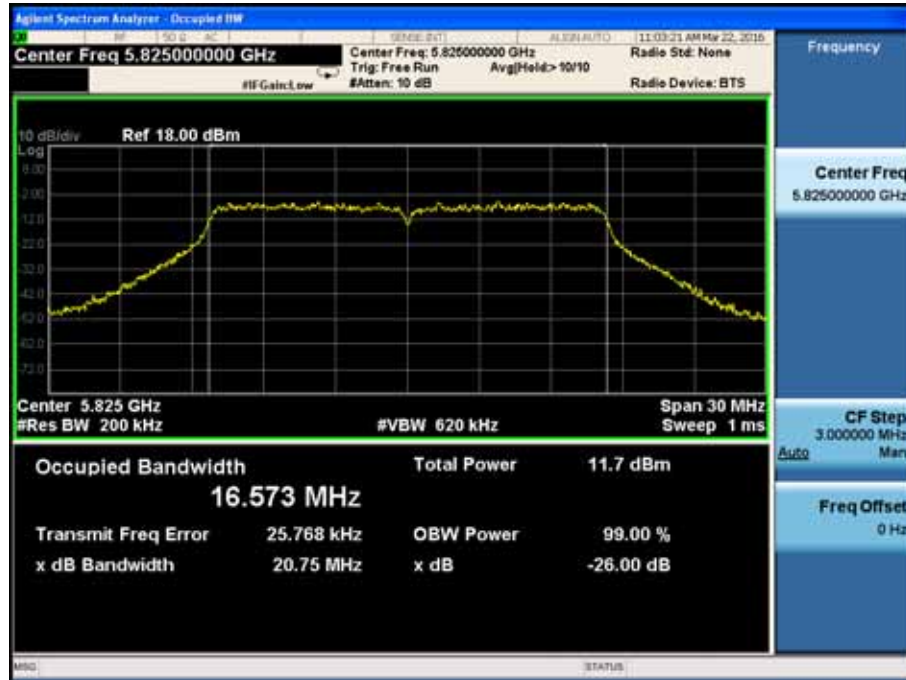
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



6. 6dB Occupied Bandwidth

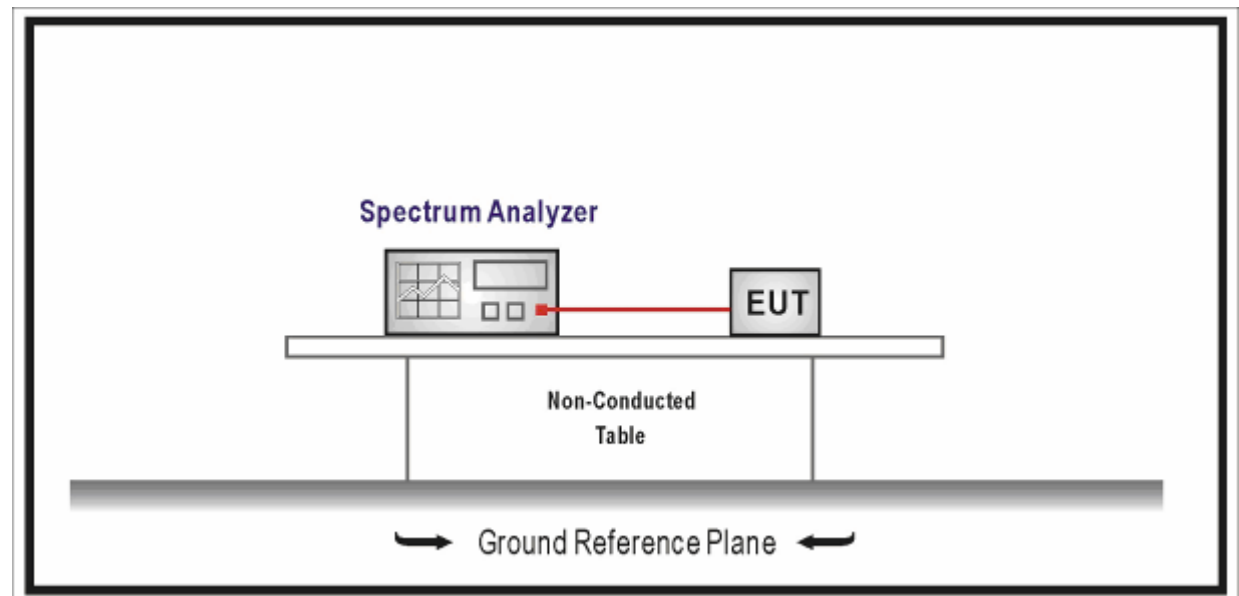
6.1. Test Equipment

Occupied Bandwidth / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2017.03.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2017.04.09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

6.2. Test Setup



6.3. Limit

For FCC&IC

The minimum 6 dB bandwidth shall be 500 kHz.

6.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
☐	ANSI C63.10	12.4	Emission bandwidth and occupied bandwidth
	☐ ANSI C63.10	12.4.1	Emission bandwidth (26dB)
	☐ ANSI C63.10	12.4.2	Occupied bandwidth (99%)
☒	FCC KDB 789033 D02v01	C	Bandwidth Measurement
	☐ FCC KDB 789033 D02v01	C.1	Emission Bandwidth (26dB)
	☒ FCC KDB 789033 D02v01	C.2	Minimum Emission Bandwidth for the band 5.725-5.85 GHz (6dB)
☐	FCC KDB 789033 D02v01	D	99 Percent Occupied Bandwidth

6.5. Uncertainty

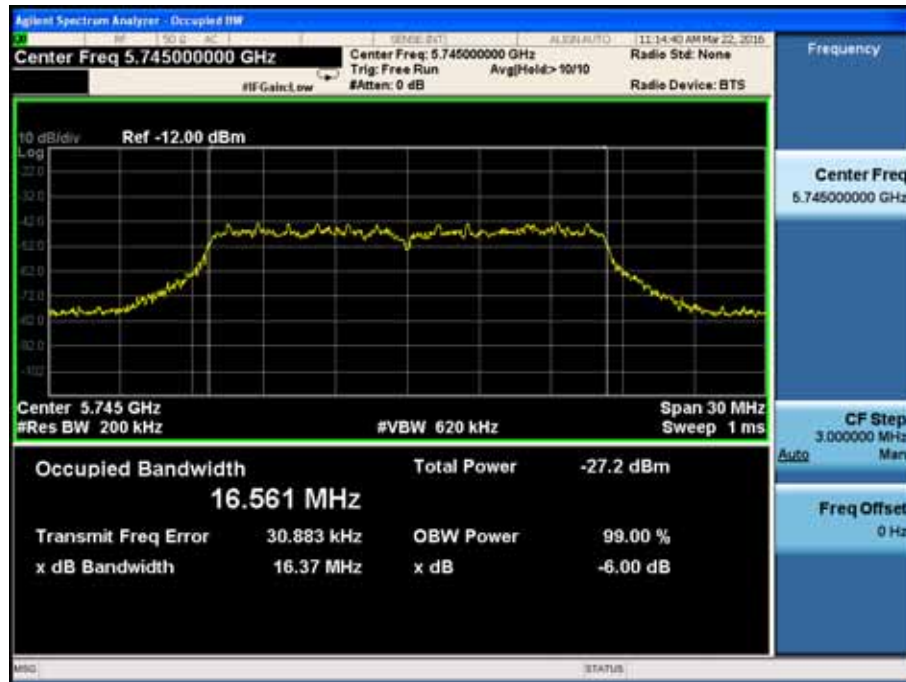
The measurement uncertainty is defined as ± 1 kHz

6.6. Test Result

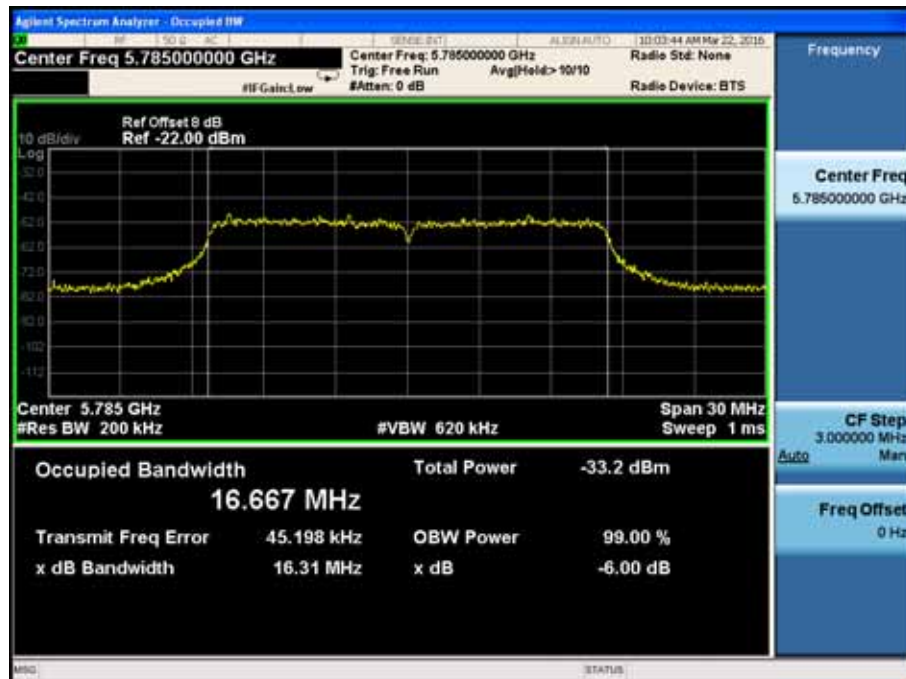
Product	:	Breeze
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a Ant0

Channel No.	Frequency (MHz)	6dB Occupied Bandwidth (MHz)
149	5745	16.37
157	5785	16.31
165	5825	16.16

Channel 149 (5745MHz)



Channel 157(5785MHz)



Channel 165 (5825MHz)



Product	:	Breeze
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a Ant1

Channel No.	Frequency (MHz)	6dB Occupied Bandwidth (MHz)
149	5745	16.39
157	5785	16.37
165	5825	16.38

Channel 149 (5745MHz)



Channel 157(5785MHz)



Channel 165 (5825MHz)

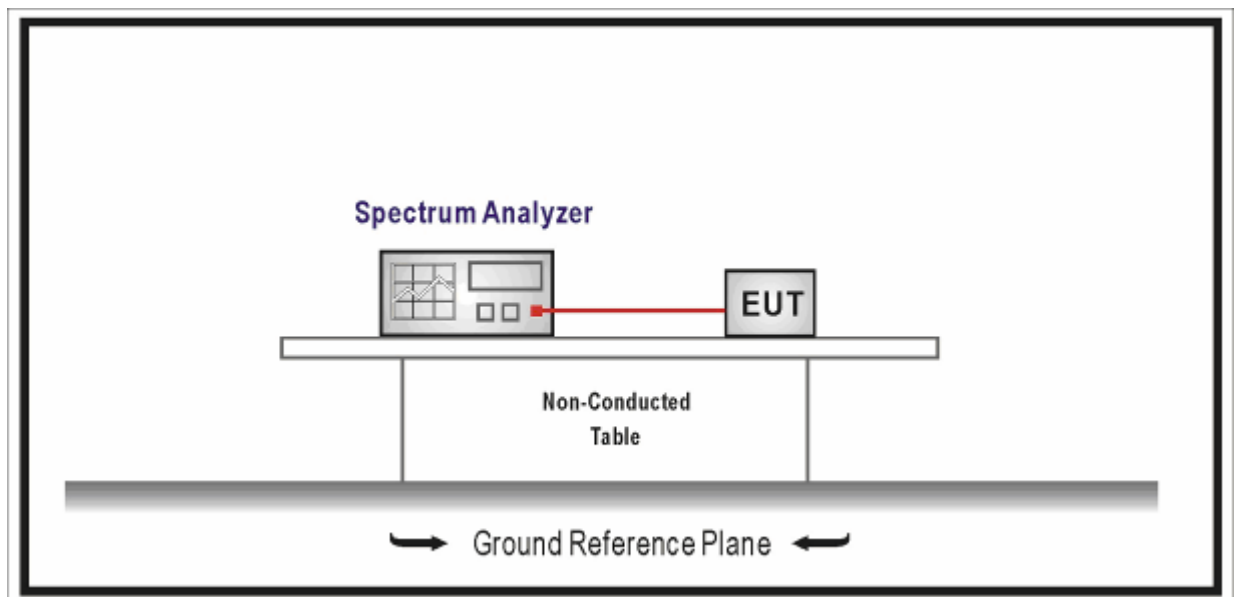


7. Power Output

7.1. Test Equipment

Power Output / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.11	2017.03.10
Power Sensor	Anritsu	MA2411B	0846014	2016.11.11	2017.11.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2016.04.10	2017.04.09
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

7.2. Test Setup



7.3. Limit

Fundamental emission output power Limit	
☐	For the band 5.15-5.25 GHz
☐	Outdoor access point: the maximum conducted output power shall not exceed 1 W. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq 30 - (G_{TX} - 6)$ and $\leq 125\text{mW}$ at any angle above 30 degrees
☐	Indoor access point: the maximum conducted output power shall not exceed 1 W. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq 30 - (G_{TX} - 6)$
☐	Fixed point-to-point access points: the maximum conducted output power shall not exceed 1 W. If $G_{TX} > 23\text{dBi}$, then $P_{out} \leq 30 - (G_{TX} - 23)$
☐	Mobile and portable client devices: the maximum conducted output power shall not exceed 250mW. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq 24 - (G_{TX} - 6)$
☐	For the 5.25-5.35 GHz: the maximum conducted output power shall not exceed 250mW or 11dBm+10 Log B, where B is the 26dB emission bandwidth in MHz. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq (\text{The lesser of } 24 \text{ or } 11\text{dBm}+10 \text{ Log B}) - (G_{TX} - 6)$
☐	For the 5.47-5.725 GHz: the maximum conducted output power shall not exceed 250mW or 11dBm+10 Log B, where B is the 26dB emission bandwidth in MHz. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq (\text{The lesser of } 24 \text{ or } 11\text{dBm}+10 \text{ Log B}) - (G_{TX} - 6)$
☒	For the band 5.725-5.85 GHz:
☒	Point-to-multipoint systems (P2M): the maximum conducted output power (P_{out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6 \text{ dBi}$, then $P_{out} = 30 - (G_{TX} - 6)$
☐	Point-to-point systems (P2P): the maximum conducted output power (P_{out}) shall not exceed the lesser of 1 W
Note 1 : G_{TX} directional gain of transmitting antennas.	
Note 2 : P_{out} is maximum peak conducted output power .	

7.4. Test Procedure

Fundamental emission output power Test Method					
	References Rule		Chapter	Description	
☒	ANSI C63.10		12.3	Maximum conducted output power	
	☐	ANSI C63.10		12.3.2	Maximum conducted output power measurement using a spectrum analyzer (SA) or EMI receiver
		☐	ANSI C63.10	12.3.2.2	Method SA-1
		☐	ANSI C63.10	12.3.2.3	Method SA-1A (alternative)
		☐	ANSI C63.10	12.3.2.4	Method SA-2
		☐	ANSI C63.10	12.3.2.5	Method SA-2A (alternative)
		☐	ANSI C63.10	12.3.2.6	Method SA-3
		☐	ANSI C63.10	12.3.2.7	Method SA-3A (alternative)
	☒	ANSI C63.10		12.3.3	Maximum conducted output power using a power meter
		☐	ANSI C63.10	12.3.3.1	Method PM
		☒	ANSI C63.10	12.3.3.2	Method PM-G
☐	FCC KDB 789033 D02v01		E	Maximum conducted output power	
	☐	FCC KDB 789033 D02v01		E.2	Measurement using a Spectrum Analyzer or EMI Receiver (SA)
		☐	FCC KDB 789033 D02v01	E.2.b	Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep)
		☐	FCC KDB 789033 D02v01	E.2.c	Method SA-1 Alternative (RMS detection with slow sweep and EUT transmitting continuously at full power)
		☐	FCC KDB 789033 D02v01	E.2.d	Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction)
		☐	FCC KDB 789033 D02v01	E.2.e	Method SA-2 Alternative (RMS detection with slow sweep with each spectrum bin averaging across on and off times of the EUT transmissions, followed by duty cycle correction)

		☐	FCC KDB 789033 D02v01	E.2.f	Method SA-3 (RMS detection with max hold)
		☐	FCC KDB 789033 D02v01	E.2.g	Method SA-3 Alternative (Reduced VBW with max hold)
		☐	FCC KDB 789033 D02v01	E.3	Measurement using a Power Meter (PM)
		☐	FCC KDB 789033 D02v01	E.3.a	Method PM (Measurement using an RF average power meter)
		☐	FCC KDB 789033 D02v01	E.3.b	Method PM-G (Measurement using a gated RF average power meter)

7.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

7.6. Test Result

Product	:	Breeze
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a

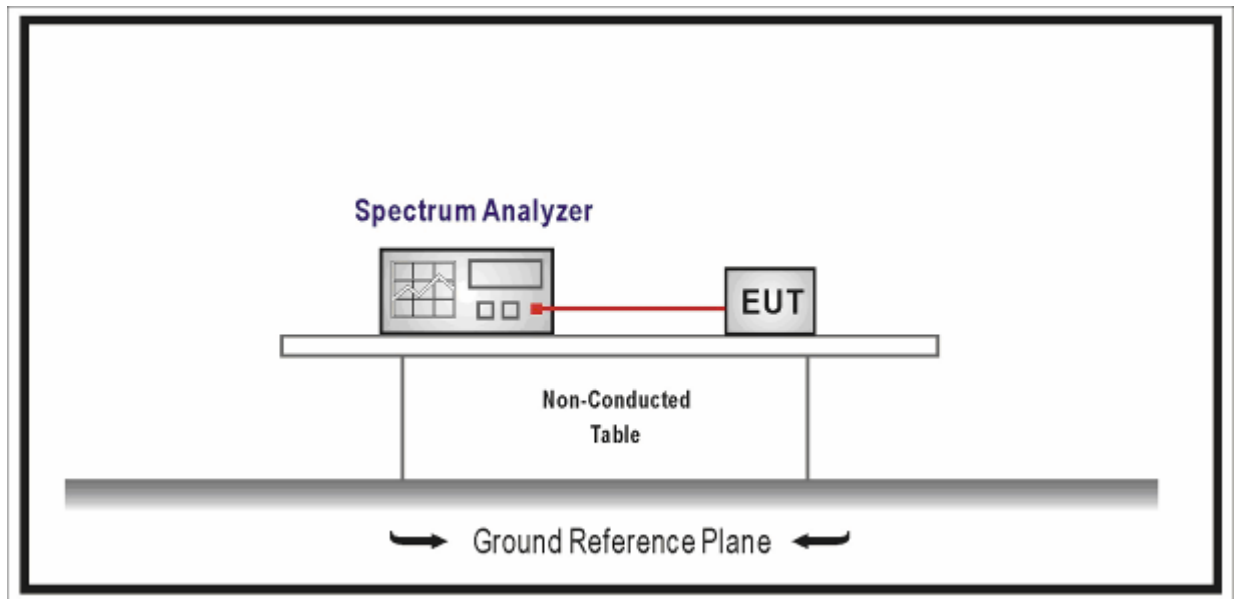
Channel No.	Frequency (MHz)	Measurement Power Output (dBm)		Antenna Gain (dBi)	FCC Limit (dBm)	Result
		Ant 0	Ant 1			
149	5745	17.64	17.36	3.92	30.0	Pass
157	5785	17.40	17.39	3.92	30.0	Pass
165	5825	17.07	17.68	3.92	30.0	Pass

8. Peak Power Spectral Density

8.1. Test Equipment

Peak Power Spectral Density / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.11	2017.03.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2016.04.10	2017.04.09
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

8.2. Test Setup



8.3. Limit

Fundamental emission output power Limit	
☐	For the band 5.15-5.25 GHz
☐	Outdoor access point: the maximum power spectral density shall not exceed 17 dBm/MHz. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq 17 - (G_{TX} - 6)$
☐	Indoor access point: the maximum power spectral density shall not exceed 17 dBm/MHz. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq 17 - (G_{TX} - 6)$
☐	Fixed point-to-point access points: the maximum power spectral density shall not exceed 17 dBm/MHz. If $G_{TX} > 23\text{dBi}$, then $P_{out} \leq 17 - (G_{TX} - 23)$
☐	Mobile and portable client devices: the maximum power spectral density shall not exceed 11 dBm/MHz. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq 11 - (G_{TX} - 6)$
☐	For the 5.25-5.35 GHz: the maximum power spectral density shall not exceed 11 dBm/MHz. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq 11 - (G_{TX} - 6)$
☐	For the 5.47-5.725 GHz: the maximum power spectral density shall not exceed 11 dBm/MHz. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq 11 - (G_{TX} - 6)$
☒	For the band 5.725-5.85 GHz: the maximum power spectral density shall not exceed 30 dBm/500KHz. If $G_{TX} > 6\text{dBi}$, then $P_{out} \leq 30 - (G_{TX} - 6)$
Note 1 : G_{TX} directional gain of transmitting antennas.	
Note 2 : P_{out} is maximum peak conducted output power .	

8.4. Test Procedure

Fundamental emission output power Test Method			
	References Rule	Chapter	Description
☒	ANSI C63.10	12.5	Peak power spectral density
☒	FCC KDB 789033 D02v01	F	Maximum Power Spectral Density (PSD)

8.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

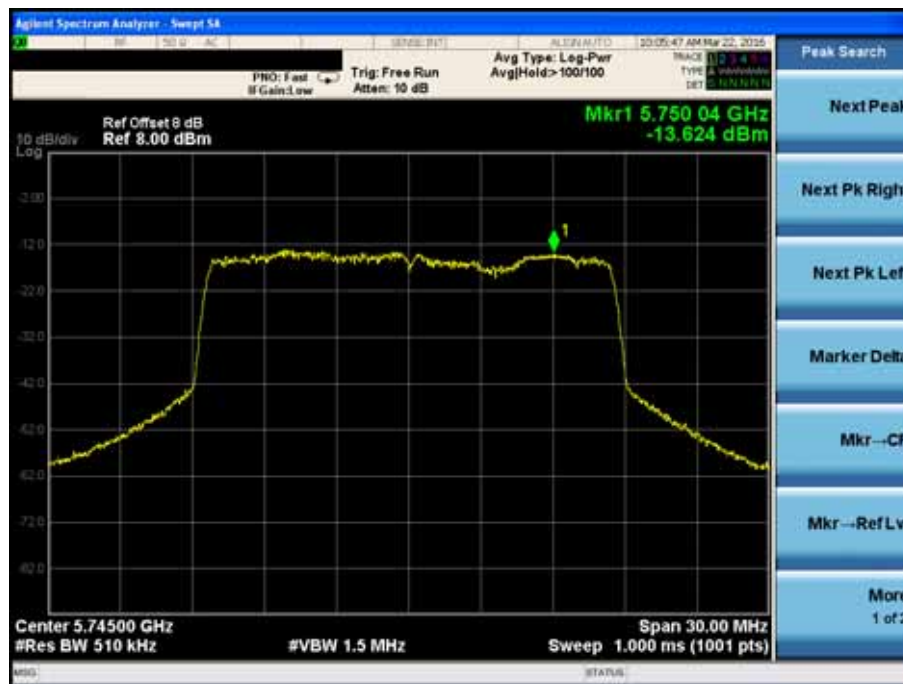
8.6. Test Result

Product	:	Breeze
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a

Channel No.	Frequency (MHz)	Measurement Power Output (dBm/MHz)		Duty Cycle (%)	Total PPSD (dBm/MHz)		Antenna Gain (dBi)	Limit (dBm/500kHz)	Result
		Ant0	Ant1		Ant0	Ant1			
149	5745	-13.624	-13.179	97.62	-13.519	-13.074	3.92	30	Pass
157	5785	-13.675	-13.072	97.62	-13.519	-12.967	3.92	30	Pass
165	5825	-8.556	-8.223	97.62	-8.451	-8.118	3.92	30	Pass

Ant 0

Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



Ant 1 Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



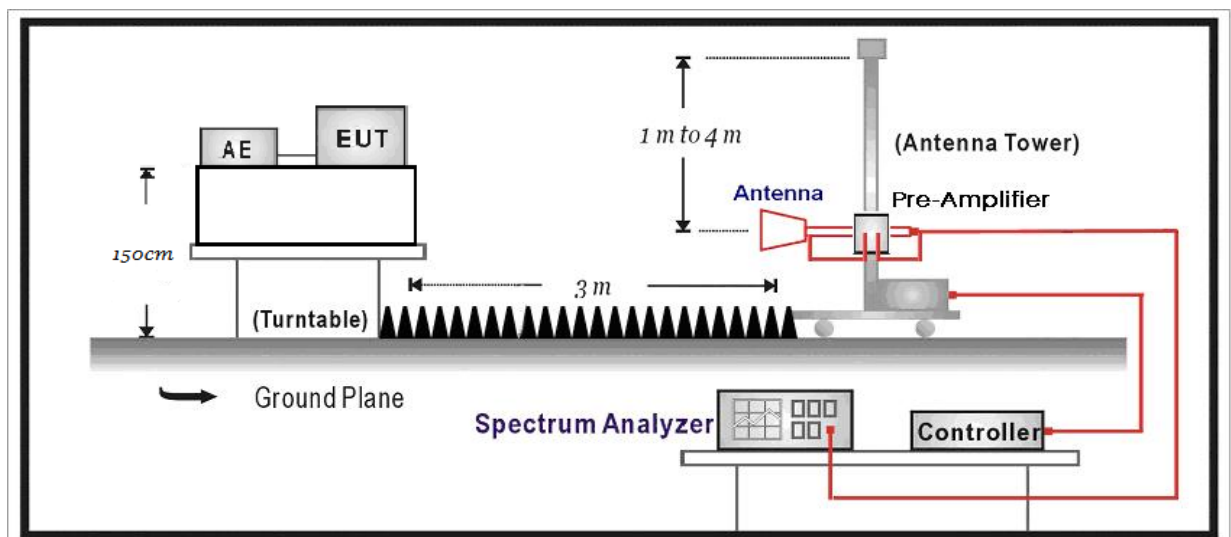
9. Radiated Emission Band Edge

9.1. Test Equipment

Radiated Emission Band Edge / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.11	2017.03.10
Preamplifier	Miteq	NSP1800-25	1364185	2016.05.04	2017.05.03
Preamplifier	QuieTek	AP-040G	CHM-0906001	2016.05.04	2017.05.03
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2015.10.16	2016.10.15
DRG Horn	ETS-Lindgren	3117	00165315	2016.07.01	2017.06.30
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016.03.02	2017.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016.03.02	2017.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2016.03.02	2017.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2016.07.16	2017.07.16
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016.01.05	2017.01.05

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

9.2. Test Setup



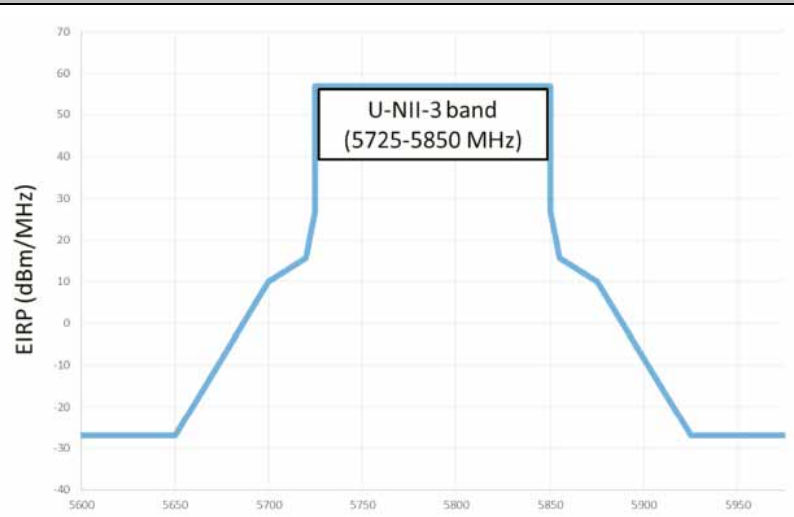
9.3. Limit

FCC Part 15 Subpart C Paragraph 15.209 (Restricted Band Emissions Limit)		
Frequency (MHz)	Distance (m)	Level (dBμV/m)
0.009-0.490	300	2400/F(kHz)
0.490-1.705	30	24000/F(kHz)
1.705-30.0	30	30
30-88	3	100**
88-216	3	150**
216-960	3	200**
Above 960	3	500

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

FCC Part 15 Subpart C Paragraph 15.205 (Restricted Band)			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.81425 – 8.81475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4	3600 – 4400	
13.36 – 13.41			

FCC Part 15 Subpart C Paragraph 15.407(5)(b) (Unrestricted Band Emissions Limit)		
Operating Frequency Band (MHz)	EIRP Limit (dBm/MHz)	Equivalent Field Strength at 3m (dB μ V/m)
5150 - 5250	-27	68.3
5250 - 5350	-27	68.3
5470 - 5725	-27	68.3
5725 - 5825	-27 [Note(1)]	68.3
	-17 [Note(2)]	78.3
Note(1): Outside the frequency range 5715 - 5835MHz. Note(2): Within the frequency range from the band edge to 10MHz below or above the band edge, 5715 – 5725MHz and 5825 - 5835MHz.		
FCC 16-24		
Operating Frequency Band (MHz)	EIRP Limit (dBm/MHz)	
5725 - 5850	 U-NII-3 band (5725-5850 MHz)	

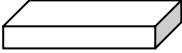
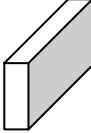
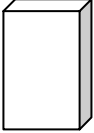
9.4. Test Procedure

Test Method				
	References Rule		Chapter	Description
☐	ANSI C63.10		12.7.3	Emissions in non-restricted frequency bands
☒	ANSI C63.10		12.7.2	Emissions in restricted frequency bands
	☒	ANSI C63.10	12.7.5	Radiated emission measurements
	☒	ANSI C63.10	12.7.6	Procedure for peak unwanted emissions measurements above 1000 MHz
	☒	ANSI C63.10	12.7.7	Procedures for average unwanted emissions measurements above 1000 MHz
	☐	ANSI C63.10	12.7.7.2	Method AD (average detection)—primary method
	☒	ANSI C63.10	12.7.7.3	Method VB-A (Alternative)
	☒	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
	☒	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
	☒	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
☐	FCC KDB 789033 D02v01		G.2	Unwanted Emissions that fall Outside of the Restricted Bands
☐	FCC KDB 789033 D02v01		G.1	Unwanted Emissions in the Restricted Bands
	☐	FCC KDB 789033 D02v01	G.4	Procedure for Unwanted Emissions Measurements below 1000 MHz
	☐	FCC KDB 789033 D02v01	G.5	Procedure for Unwanted Maximum Emissions Measurements above 1000 MHz
	☐	FCC KDB 789033 D02v01	G.6	Procedures for Average Unwanted Emissions Measurements above 1000 MHz
	☐	FCC KDB 789033 D02v01	G.6.c	Method AD (Average detection)—primary method
	☐	FCC KDB 789033 D02v01	G.6.d	Method VB (Averaging using reduced video bandwidth): Alternative method.

9.5. Uncertainty

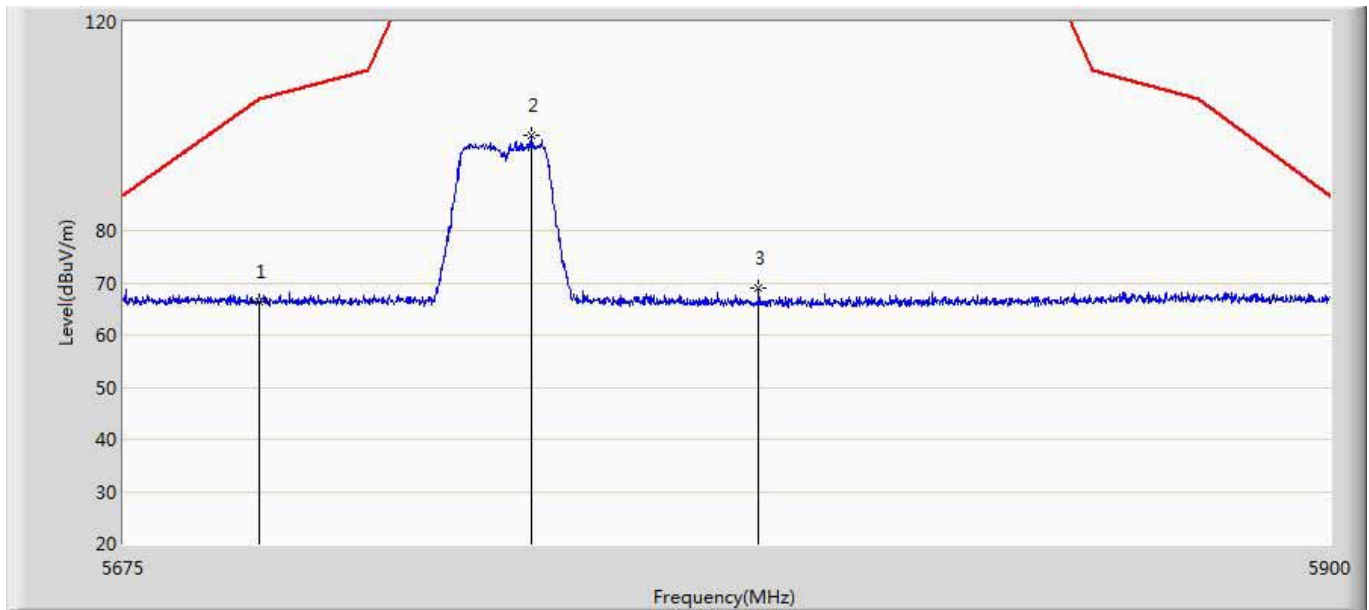
The measurement uncertainty above 1GHz is defined as ± 3.9 dB

9.6. EUT test Axis definition

Item	Radiated Emissions		
Device Category	☒	Fixed position use	
	☐	Mobile position use	
Test mode	Mode 1		
Axis	X Axis	Y Axis	Z Axis
			
Worse Axis	Worst Axis ☐	Worst Axis ☐	Worst Axis ☒

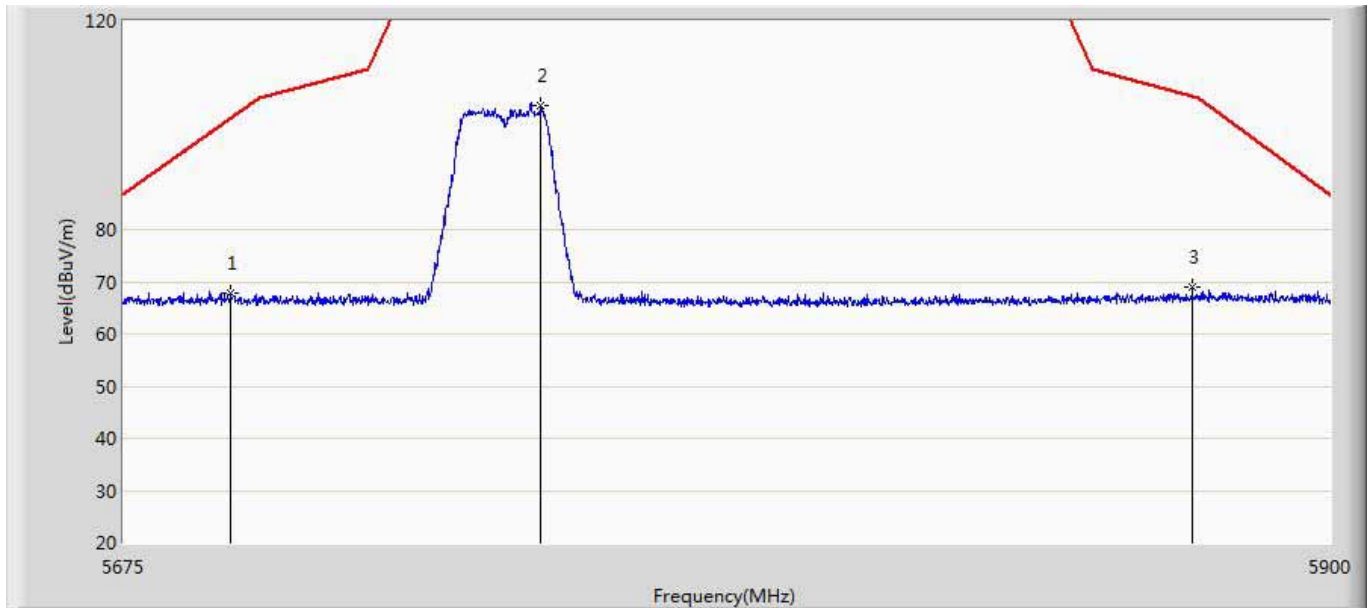
9.7. Test Result

Engineer: Eric	
Site: AC5	Time: 2016/07/19 - 10:31
Limit: FCC-15.407 new new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Flying Camera	Power: By battery
Note: Mode 1:Transmit at CH149 by 802.11a	



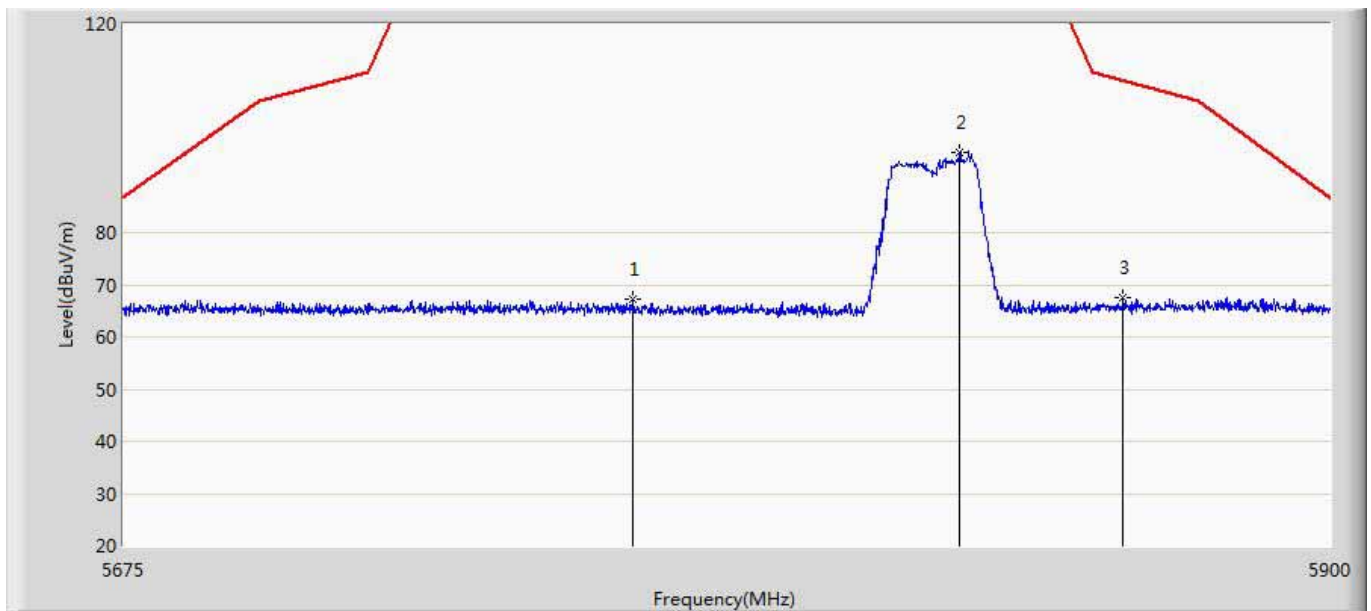
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5700.000	66.269	24.616	-38.931	105.200	41.653	PK
2	*	5750.038	98.147	56.236	-24.053	122.200	41.911	PK
3		5792.450	69.085	27.349	-53.115	122.200	41.736	PK

Engineer: Eric	
Site: AC5	Time: 2016/07/19 - 10:37
Limit: FCC-15.407 new new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Flying Camera	Power: By battery
Note: Mode 1:Transmit at CH149 by 802.11a	



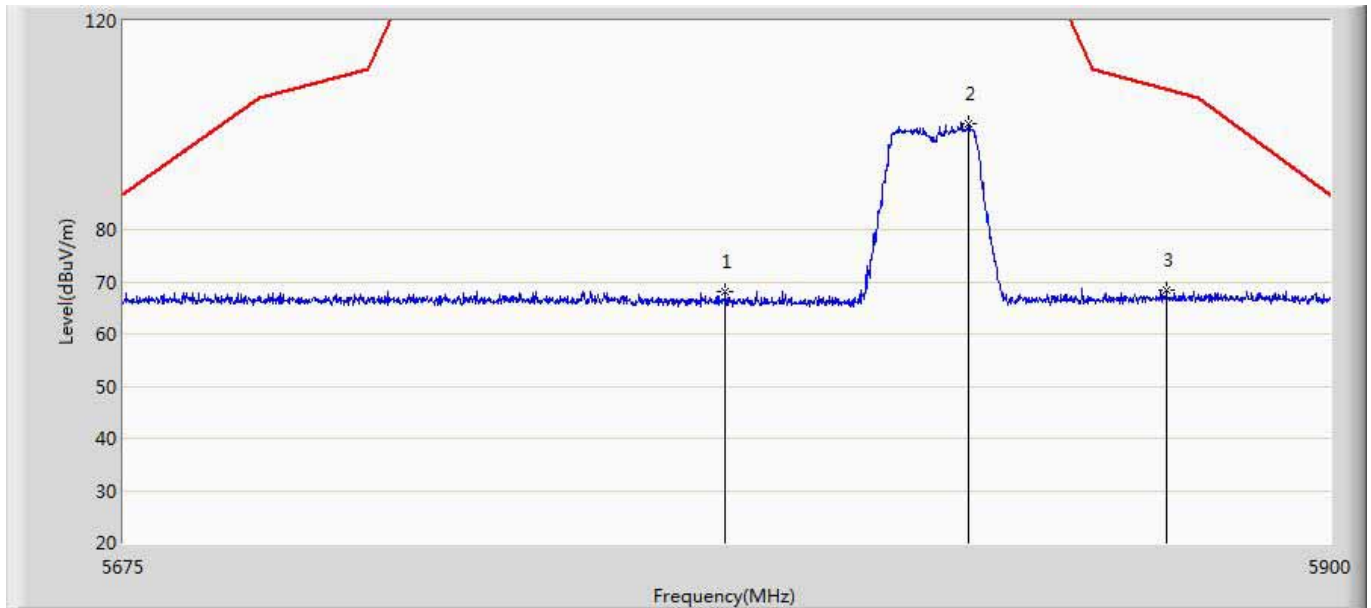
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5694.800	67.727	26.014	-33.625	101.352	41.713	PK
2	*	5751.950	103.725	61.807	-18.475	122.200	41.918	PK
3		5873.900	68.911	26.385	-36.597	105.508	42.526	PK

Engineer: Eric	
Site: AC5	Time: 2016/07/19 - 10:39
Limit: FCC-15.407 new new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Flying Camera	Power: By battery
Note: Mode 1:Transmit at CH165 by 802.11a	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5768.825	67.133	25.279	-55.067	122.200	41.853	PK
2	*	5830.025	95.389	53.362	-26.811	122.200	42.027	PK
3		5860.737	67.553	25.143	-41.640	109.194	42.410	PK

Engineer: Eric	
Site: AC5	Time: 2016/07/19 - 10:48
Limit: FCC-15.407 new new	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Flying Camera	Power: By battery
Note: Mode 1:Transmit at CH165 by 802.11a	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5786.263	68.026	26.278	-54.174	122.200	41.748	PK
2	*	5831.825	100.345	58.307	-21.855	122.200	42.038	PK
3		5869.062	68.449	25.961	-38.414	106.863	42.488	PK

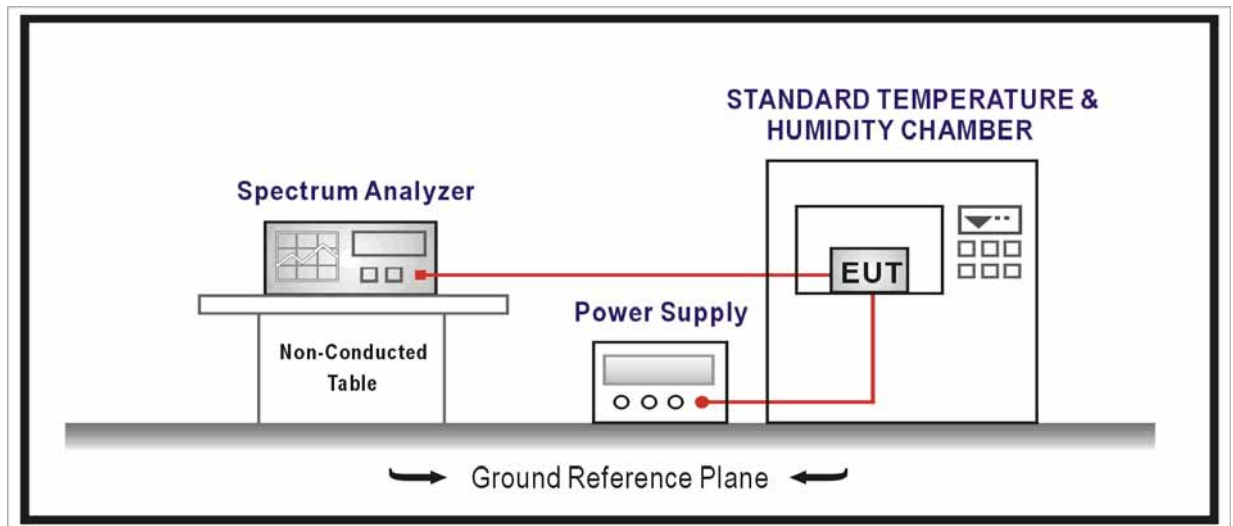
10. Frequency Stability

10.1. Test Equipment

Frequency Stability / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.03
AC Power Supply	IDRC	CF-500TP	979422	2015.09.17	2016.09.16
DC Power Supply	IDRC	CD-035-020PR	977272	2015.09.17	2016.09.16
Programmable Temperature & Humidity Chamber	Gaoyu	TH-1P-B	WIT-05121302	2016.01.04	2017.01.03
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2016.04.10	2017.04.09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

10.2. Test Setup



10.3. Limit

Frequency Stability Limit	
UNII Devices	
☒	In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.
IEEE Std. 802.11n-2009	
☒	The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band and ± 25 ppm maximum for the 2.4 GHz band.

10.4. Test Procedure

Frequency Stability Test Method			
	References Rule	Chapter	Description
☒	ANSI C63.10	6.8	Frequency stability tests
	☒ ANSI C63.10	6.8.1	Frequency stability with respect to ambient temperature
	☒ ANSI C63.10	6.8.2	Frequency stability when varying supply voltage

10.5. Uncertainty

The measurement uncertainty is defined as ± 100 Hz

10.6. Test Result

Product	:	Breeze
Test Item	:	Frequency Stability
Test Site	:	TR-8
Test Mode	:	Carrier Transmit

Frequency Stability under Temperature at 0min

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)
-10	5785.000	-116
0	5785.000	119
10	5785.000	-119
20	5785.000	-194
30	5785.000	225
40	5785.000	-95
50	5785.000	-123
55	5785.000	-45

Frequency Stability under Temperature at 2min

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)
-10	5785.000	-119
0	5785.000	117
10	5785.000	-119
20	5785.000	-195
30	5785.000	227
40	5785.000	-96
50	5785.000	-123
55	5785.000	-48

Frequency Stability under Temperature at 5min

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)
-10	5785.000	-117
0	5785.000	-198
10	5785.000	225
20	5785.000	-95
30	5785.000	-124
40	5785.000	-44
50	5785.000	-96
55	5785.000	123

Frequency Stability under Temperature at 10min

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)
-10	5785.000	-95
0	5785.000	-123
10	5785.000	-47
20	5785.000	-95
30	5785.000	123
40	5785.000	105
50	5785.000	-126
55	5785.000	120

Frequency Stability under Voltage

AC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)
10	5785.000	101
12.6	5785.000	183
14	5785.000	-146

— The End —