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# FCC Test Report

Applicant : Blustream PTY LTD

Address 2440 Australia

Victoria, 3149, Australia

Product Name : Wireless Multiview Presentation Switcher

Report Date : Mar. 23, 2024

Shenzhen Anbotek Compliance Laboratory Limited







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# TEST REPORT

Applicant : Blustream PTY LTD

Manufacturer : Blustream PTY LTD

Product Name : Wireless Multiview Presentation Switcher

Test Model No. : WMF51

Reference Model No. : N/A

Trade Mark : N/A

Rating(s) : Input: 12V-- 1.5A

47 CFR Part 15E

Test Standard(s)

ANSI C63.10-2020

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with above listed standard(s) requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt	· VIII		Jan. 26, 2024

Date of Test: Jan. 26, 2024 ~ Feb. 26, 2024

(Ella Liang)

Indward pan

(Edward Pan

(Edward Pan)



Approved & Authorized Signer:

Prepared By:







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## **Revision History**

	Report Version	Description	Issued Date
	Anbore R00 potek Ant	Original Issue.	Mar. 23, 2024
97	Anbotek Anbotek	Anbotek Anbotek Anbotek	K Anbotek Anbotek Anb
10	ore Ambotek Anbotek	Anbotek Anbotek Anbot	otek Anbotek Anbotek





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## 1. General Information

## 1.1. Client Information

V U P	- 1/4	No. V. No.
Applicant	:	Blustream PTY LTD
Address	:	26 Lionel Rd, Mount Waverley, Melbourne, Victoria, 3149, Australia
Manufacturer	:	Blustream PTY LTD
Address	:	26 Lionel Rd, Mount Waverley, Melbourne, Victoria, 3149, Australia
Factory	:	Blustream PTY LTD
Address	:	26 Lionel Rd, Mount Waverley, Melbourne, Victoria, 3149, Australia

## 1.2. Description of Device (EUT)

Product Name	:	Wireless Multiview Presentation Switcher
Test Model No.	:	WMF51 Anbotek Anbotek Anbotek
Reference Model No.	:	N/A otek Anbotek Anbotek Anbotek Anbotek Anbotek
Trade Mark	:	N/A Anborek Anborek Anborek Anborek Anbore
Test Power Supply	:	DC 5V from adapter input AC 120V/60Hz
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	Model: GME18A-120150FXR Input: 100-240V~ 50-60Hz 0.8A Output: 12.0V 1.5A 18.0W
RF Specification (M	lodı	ıle: RTL8822CS)
Operation Frequency	:	802.11a/n(HT20)/ac(HT20): NII Band 3: 5745MHz to 5825MHz;  802.11n(HT40)/ac(VHT40): NII Band 3: 5755MHz to 5795MHz;  802.11ac(HT80): U-NII Band 3: 5775MHz
Number of Channel	:	802.11a/n(HT20)/ac(HT20): NII Band 3: 5;  802.11n(HT40)/ac(VHT40): NII Band 3: 2;  802.11ac(HT80): U-NII Band 3: 1
Modulation Type	:	802.11a: OFDM(BPSK, QPSK, 16QAM, 64QAM); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Antenna Type	:	ANT1: Rod Antenna ANT2: Rod Antenna







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Antenna Gain(Peak)	:	ANT1: 3.09dBi ANT2: 3.09dBi	Auporen	Aupotek Aupotek	Anbotek	Aupo, apotek
Directional antenna gain	•••	6.10dBi	arek Anbarel	Anbotek	k Anbo,	Anbotek

- (1) All of the RF specification are provided by customer.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (3) Only 802.11n(HT20)/ac(HT20), 802.11n(HT40)/ac(VHT40), 802.11ac(VHT80) support MIMO.





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## 1.3. Auxiliary Equipment Used During Test

	Title		Manufact	urer	M	lodel No.		Sei	rial No	<b>o</b> .	
De.	hotek /	Anbore	Aug. Otek l	<b>Vupotek</b>	Vupo,	1	botek	Anbore	1	And	, re <sup>1</sup>

## 1.4. Operation channel list

Operation Band: U-NII Band 3

Bandwidth:	20MHz	Bandwidth:	40MHz	Bandwidth:	80MHz
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	otek 151 Anbotek	5755	nbo 155 Ant	5775
153	5765	hotek 159 Anbor	5795	h. nb Kek	Tupoles / Aug
nek 157 nbotek	5785	Ans botel An	Joseph / Ando	k Motek	Anbore An
161	5805	Am	Anbotek / Anbo	otek Inbotek	Anboy
165	5825 boots	Al botek	Anbote Ant	otek / Anborel	k Aport



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## 1.5. Description of Test Modes

Pretest Modes	Descriptions
Anbotek TM1 Anbotek	Keep the EUT in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.
otek Anbotek Anbotek	Keep the EUT in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
Anbotek TM3	Keep the EUT in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

## 1.6. Measurement Uncertainty

Parameter	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	3.4dB
Conducted Output Power	0.76dB
Power Spectral Density	0.76dB
Occupied Bandwidth	925Hz
Radiated spurious emissions (above 1GHz)	1G-6GHz: 4.78dB; 6G-18GHz: 4.88dB 18G-40GHz: 5.68dB
Radiated emissions (Below 30MHz)	3.53dB
Radiated spurious emissions (30MHz~1GHz)	Horizontal: 3.92dB; Vertical: 4.52dB

The measurement uncertainty and decision risk evaluated according to AB/WI-RF-F-032. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.









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## 1.7. Test Summary

Test Items	Test Modes	Status
Conducted Emission at AC power line	Mode1,2,3,4	And Potek
Duty Cycle	Mode1,2,3,4	P
Maximum conducted output power	Mode1,2,3,4	P PART
Power spectral density	Mode1,2,3,4	P
Emission bandwidth and occupied bandwidth	Mode1,2,3,4	inpo, b
Band edge emissions (Radiated)	Mode1,2,3,4	Anb P rek
Band edge emissions (Conducted)	Mode1,2,3	P
Undesirable emission limits (below 1GHz)	Mode1,2,3,4	PART
Undesirable emission limits (above 1GHz)	Mode1,2,3,4	P An
Note: P: Pass N: N/A, not applicable	Anbotek Anbotek	Anbotek

## 1.8. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

### FCC-Registration No.: 434132

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 434132.

#### ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

#### **Test Location**

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.





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#### 1.9. Disclaimer

- 1. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- 2. The test report is invalid if there is any evidence and/or falsification.
- The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- 4. This document may not be altered or revised in any way unless done so by Anbotek and all revisions are duly noted in the revisions section.
- 5. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- The authenticity of the information provided by the customer is the responsibility of the customer and the laboratory is not responsible for its authenticity.

The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.







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## 1.10. Test Equipment List

Conducted Emission at AC power line							
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date	
1	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	2023-10-12	2024-10-11	
otek 2	Three Phase V- type Artificial Power Network	CYBERTEK	EM5040DT	E215040D T001	2023-07-05	2024-07-04	
3	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	2023-10-12	2024-10-11	
4	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	tek /Anbotek	ek Pupotek	

**Duty Cycle** 

Maximum conducted output power

Power spectral density

Emission bandwidth and occupied bandwidth

Band edge emissions (Conducted)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
And 1	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ- KHWS80B	N/A	2023-10-16	2024-10-15
2	DC Power Supply	IVYTECH	IV3605	1804D360 510	2023-10-20	2024-10-19
100 3	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	101792	2023-05-26	2024-05-25
4 4	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY505318 23	2023-02-23	2024-02-22
5	Oscilloscope	Tektronix	MDO3012	C020298	2023-10-12	2024-10-11
6	MXG RF Vector Signal Generator	Agilent	N5182A	MY474206 47	2023-02-23	2024-10-22



Hotline



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	edge emissions (Ra sirable emission limi		Aupotek	Anborek	Vupo <sub>tek</sub>	Anboatek
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1 00	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2023-10-12	2024-10-11
2	EMI Preamplifier	SKET Electronic	LNPA- 0118G-45	SKET-PA- 002	2023-10-12	2024-10-11
3	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	2022-10-16	2025-10-15
nbore 4	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	Andotek	Aupolek
5	Horn Antenna	A-INFO	LB-180400- KF	J21106062 8	2023-10-12	2024-10-11
6	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	101792	2023-05-26	2024-05-25
<sup>16</sup> 7	Amplifier	Talent Microwave	TLLA18G40 G-50-30	23022802	2023-05-25	2024-05-24

Undesirable emission limits (below 1GHz)							
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date	
1	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2023-10-12	2024-10-11	
2	Pre-amplifier	SONOMA	310N	186860	2023-10-12	2024-10-11	
34	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	2022-10-23	2025-10-22	
Antotel	Loop Antenna (9K- 30M)	Schwarzbeck	FMZB1519 B	00053	2023-10-12	2024-10-11	
5,nb	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A No	k Vupo,	Anbotek	



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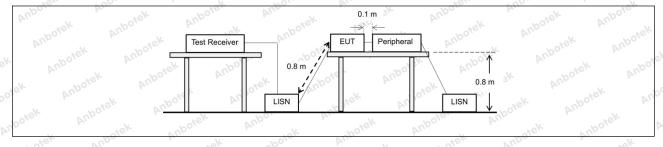
## 2. Conducted Emission at AC power line

Test Requirement:	47 CFR Part 15.207(a)	ok hotek Anbo	ye. Aug
Aug 16k Upotek	Frequency of emission (MHz)	Conducted limit (dBµV)	aboten And
Aupor Ar.	ay anboren Anb	Quasi-peak	Average
K- Lotek Anbo	0.15-0.5	66 to 56*	56 to 46*
Test Limit:	0.5-5	56°	46 300 ter
otek Aupora Ar	5-30 And And	60 Motek Anbo,	50
otek Anbotek	*Decreases with the logarithm of the	ne frequency.	Anbo
Test Method:	ANSI C63.10-2020 section 6.2	And Lek 100	tek Aupore

## 2.1. EUT Operation

Operating Envi	ronment: And tek Andorek Andor K Botek Andore Andore
hotek Anbotek	1: 802.11a mode: Keep the EUT in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.  2: 802.11n mode: Keep the EUT in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data
Test mode:	rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.  3: 802.11ac mode: Keep the EUT in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

## 2.2. Test Setup



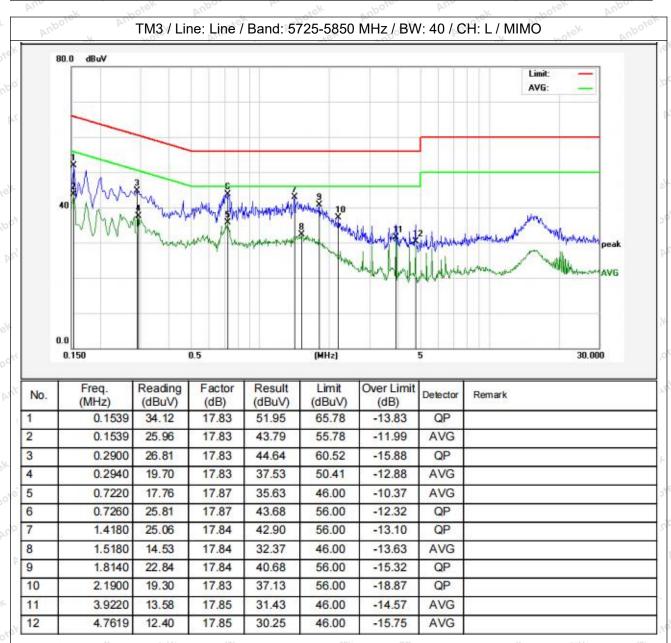




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## 2.3. Test Data

Temperature: 19.2 °C Humidity: 51 % Atmospheric Pressure: 101 kPa

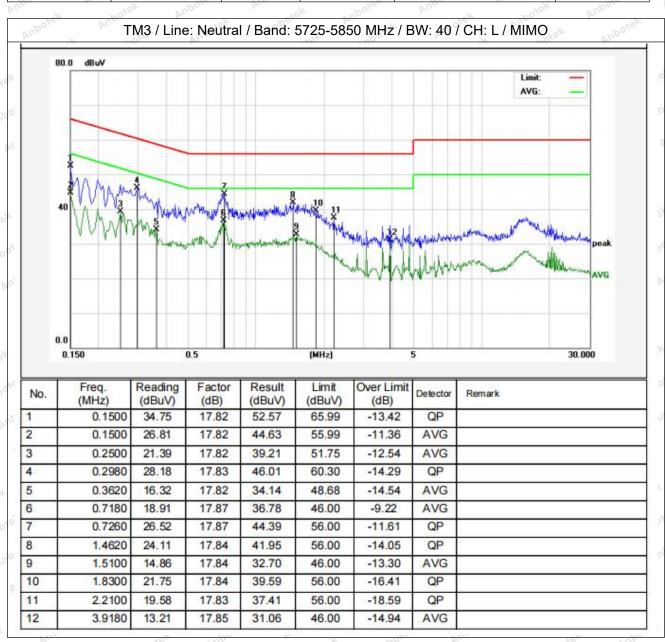






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Temperature: 19.2 °C Humidity: 51 % Atmospheric Pressure: 101 kPa



Note:Only record the worst data 802.11ac(VHT40) MIMO in the report.







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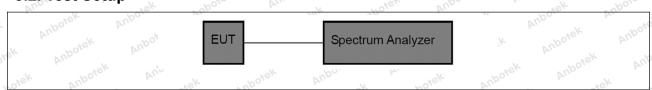
## 3. Duty Cycle

Test Requirement:	All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum-power transmission duration, T, are required for each tested mode of operation.
Test Limit:	No limits, only for report use.
Test Method:	ANSI C63.10-2020 section 12.2 (b)
Anborek Anborek Procedure:	<ul> <li>i) Set the center frequency of the instrument to the center frequency of the transmission.</li> <li>ii) Set RBW &gt;= EBW if possible; otherwise, set RBW to the largest available value.</li> <li>iii) Set VBW &gt;= RBW.</li> </ul>
otek Anbotek Anb	iv) Set detector = peak. v) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T, where T is defined in item a1) of 12.2, and the number of sweep points across duration T exceeds 100.

## 3.1. EUT Operation

Operating Envi	onment:
	1: 802.11a mode: Keep the EUT in continuously transmitting mode with 802.11a
	modulation type. All data rates has been tested and found the data rate @ 6Mbps is
	the worst case. Only the data of worst case is recorded in the report.
, de	2: 802.11n mode: Keep the EUT in continuously transmitting mode with 802.11n
	modulation type. All bandwidth and data rates has been tested and found the data
	rate @ MCS0 is the worst case. Only the data of worst case is recorded in the
	report. Note And the seek national All the seek national and the s
Test mode:	3: 802.11ac mode: Keep the EUT in continuously transmitting mode with 802.11ac
	modulation type. All bandwidth and data rates has been tested and found the data
	rate @ MCS0 is the worst case. Only the data of worst case is recorded in the
	report. The Andrew Andrew Andrew Andrew Andrew
	4: 802.11ax mode: Keep the EUT in continuously transmitting mode with 802.11ax
v votel	modulation type. All bandwidth and data rates has been tested and found the data
	rate @ MCS0 is the worst case. Only the data of worst case is recorded in the
ek abo	report. And the horse And the

## 3.2. Test Setup



## 3.3. Test Data

Temperature: 2	25.3°C	Humidity:	46 %	Atmospheric Pressure:	101 kPa
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Please Refer to Appendix for Details.







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## 4. Maximum conducted output power

NO K	
Test Requirement:	47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)
Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
Test Limit:	For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.  If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that
botek Anbotek An	the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-
	point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Test Method:	ANSI C63.10-2013, section 12.4
Procedure:	Refer to ANSI C63.10-2020 section 12.4

## 4.1. EUT Operation

And	1: 802.11a mode: Keep the EUT in continuously transmitting mode with 802.11a
ek Aupo.	modulation type. All data rates has been tested and found the data rate @ 6Mbps is
. ok . 500	the worst case. Only the data of worst case is recorded in the report.
DOTE ALL	2: 802.11n mode: Keep the EUT in continuously transmitting mode with 802.11n
Lotek Ar	modulation type. All bandwidth and data rates has been tested and found the data
Test mode:	rate @ MCS0 is the worst case. Only the data of worst case is recorded in the
aboter	Aftreport. Notek Anbor And
A. Stek	3: 802.11ac mode: Keep the EUT in continuously transmitting mode with 802.11ac
Anbo	modulation type. All bandwidth and data rates has been tested and found the data
ek spojek	rate @ MCS0 is the worst case. Only the data of worst case is recorded in the
VII.	report, ore know the more all the property of

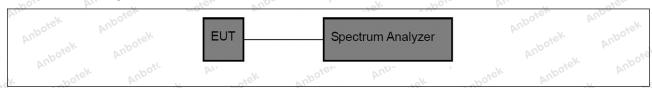






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## 4.2. Test Setup



#### 4.3. Test Data

	0F 2°C		10 01007	VII.	12001
Temperature:	25.3°C	Humidity:	46 %	Atmospheric Pressure:	101 kPa

Please Refer to Appendix for Details.





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## 5. Power spectral density

Test Requirement:	47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)
Anbotek Anbotek  Anbotek Anbotek  Anbotek Anbotek  Anbotek Anbotek  Anbotek Anbotek	For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.  For the band 5.725-5.850 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.
Test Limit: ek Anbotek	If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.  Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Test Method:	ANSI C63.10-2020, section 12.6
Procedure:	Refer to ANSI C63.10-2020, section 12.6

# 5.1. EUT Operation

	Operating Envi	onment:
X-	k Anbotek	1: 802.11a mode: Keep the EUT in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.
, , ,	Test mode:	2: 802.11n mode: Keep the EUT in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
: :		3: 802.11ac mode: Keep the EUT in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

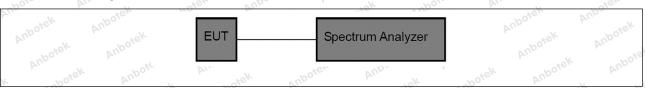






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## 5.2. Test Setup



#### 5.3. Test Data

	0F 2°C		10 01007	VII.	12001
Temperature:	25.3°C	Humidity:	46 %	Atmospheric Pressure:	101 kPa

Please Refer to Appendix for Details.





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## 6. Emission bandwidth and occupied bandwidth

- abotek Anbote	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use.
Test Requirement:	Anbo Anbore Anbore Anborek Anbo
Anbore Arr	U-NII 3, U-NII 4: 47 CFR Part 15.407(e)
Anbotek Anbo	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use.
Test Limit:	U-NII 3, U-NII 4: Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands,
Ar. botek	the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.
Test Method:	ANSI C63.10-2020, section 6.9 & 12.5 KDB 789033 D02, Clause C.2
Aupor Air	700, b. / 20, but
	Emission bandwidth:
	a) Set RBW = approximately 1% of the emission bandwidth.
	b) Set the VBW > RBW.
	c) Detector = peak.
	d) Trace mode = max hold.
	e) Measure the maximum width of the emission that is 26 dB down from the
	peak of the emission.
	Compare this with the RBW setting of the instrument. Readjust RBW and
	repeat measurement
	as needed until the RBW/EBW ratio is approximately 1%.
colek Anbore	An Andrew Andrew Andrew Andrew Andrew Andrew
	Occupied bandwidth:
	a) The instrument center frequency is set to the nominal EUT channel center
	frequency. The
	frequency span for the spectrum analyzer shall be between 1.5 times and
	5.0 times the OBW.
	b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to
	5% of the OBW,
	and VBW shall be approximately three times the RBW, unless otherwise
Procedure:	specified by the
	applicable requirement.
Anbo	c) Set the reference level of the instrument as required, keeping the signal
tek abover A	from exceeding the
	maximum input mixer level for linear operation. In general, the peak of the
	spectral envelope
	shall be more than [10 log (OBW/RBW)] below the reference level. Specific
	guidance is given
	in 4.1.5.2.
	d) Step a) through step c) might require iteration to adjust within the
	specified range.
	e) Video averaging is not permitted. Where practical, a sample detection and
	single sweep mode
notek hotek	shall be used. Otherwise, peak detection and max hold mode (until the trace
	stabilizes) shall be
	used.
	f) Use the 99% power bandwidth function of the instrument (if available) and
	report the measured
	bandwidth.
	g) If the instrument does not have a 99% power bandwidth function, then the
	trace data points are









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recovered and directly summed in linear power terms. The recovered amplitude data points,

beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached:

that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the

total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is

the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument

display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may

be reported in addition to the plot(s).

6 dB emission bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) ≥ 3 >= RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### 6.1. EUT Operation

#### **Operating Environment:**

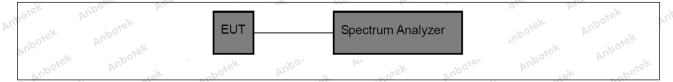
1: 802.11a mode: Keep the EUT in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.

Test mode:

2: 802.11n mode: Keep the EUT in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

3: 802.11ac mode: Keep the EUT in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

## 6.2. Test Setup











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## 6.3. Test Data

- 1		101	100	1 01	VII.	~0~	
1	Temperature:	25 3°C	Humidity: 8	16 %	Atmospheric Pressure:	101 kDa	
1	remperature.	P23.3 C	M Idiffidity.	+O /0   > ·	Authosphichic i ressure.	IUINIA	

Please Refer to Appendix for Details.





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## 7. Band edge emissions (Radiated)

ng in the 5.15-5.25 and shall not exceeding solely in the 5.73 mited to a level of dedge increasing I dedge, and from 2 to a level of 15.6 do not from 5 MHz above of 27 dBm/MH MHz  16.42-16.423  16.69475- 16.80425- 16.80475 25.5-25.67 37.5-38.25 73-74.6  74.8-75.2  108-121.94	d an e.i.r.p. of -2 25-5.850 GHz ba 27 dBm/MHz at inearly to 10 dBn 5 MHz above or IBm/MHz at 5 MHz ve or below the bi z at the band ed MHz 399.9-410 608-614 960-1240 1300-1427 1435-1626.5 1645.5- 1646.5 1660-1710 1718.8-	7 dBm/MHz. and: 75 MHz or mo n/MHz at 25 M below the band dz above or band edge
mited to a level of -d edge increasing I d edge, and from 2 to a level of 15.6 d and from 5 MHz above of 27 dBm/MH MHz 16.42-16.423 16.69475-16.80425-16.80475 25.5-25.67 37.5-38.25 73-74.6	27 dBm/MHz at inearly to 10 dBm 5 MHz above or IBm/MHz at 5 MHve or below the best at the band ed MHz 399.9-410 608-614 960-1240 1300-1427 1435-1626.5 1645.5-1646.5 1660-1710 1718.8-	75 MHz or mon/MHz at 25 Mbelow the bandar above or band edge ge.  GHz 4.5-5.15 5.35-5.46 7.25-7.75 8.025-8.5 9.0-9.2 9.3-9.5
nd from 5 MHz above evel of 27 dBm/MHz 16.42-16.423 16.69475- 16.69525 16.80425- 16.80475 25.5-25.67 37.5-38.25 73-74.6 74.8-75.2 108-121.94	ve or below the k z at the band ed MHz 399.9-410 608-614 960-1240 1300-1427 1435-1626.5 1645.5- 1646.5 1660-1710 1718.8-	band edge ge. GHz 4.5-5.15 5.35-5.46 7.25-7.75 8.025-8.5 9.0-9.2 9.3-9.5
MHz 16.42-16.423 16.69475- 16.69525 16.80425- 16.80475 25.5-25.67 37.5-38.25 73-74.6 74.8-75.2 108-121.94	MHz 399.9-410 608-614 960-1240 1300-1427 1435-1626.5 1645.5- 1646.5 1660-1710 1718.8-	GHz 4.5-5.15 5.35-5.46 7.25-7.75 8.025-8.5 9.0-9.2 9.3-9.5
16.42-16.423 16.69475- 16.69525 16.80425- 16.80475 25.5-25.67 37.5-38.25 73-74.6 74.8-75.2 108-121.94	399.9-410 608-614 960-1240 1300-1427 1435-1626.5 1645.5- 1646.5 1660-1710 1718.8-	4.5-5.15 5.35-5.46 7.25-7.75 8.025-8.5 9.0-9.2 9.3-9.5
16.69475- 16.69525 16.80425- 16.80475 25.5-25.67 37.5-38.25 73-74.6 74.8-75.2 108-121.94	608-614 960-1240 1300-1427 1435-1626.5 1645.5- 1646.5 1660-1710 1718.8-	5.35-5.46 7.25-7.75 8.025-8.5 9.0-9.2 9.3-9.5
16.80425- 16.80475 25.5-25.67 37.5-38.25 73-74.6 74.8-75.2 108-121.94	1300-1427 1435-1626.5 1645.5- 1646.5 1660-1710 1718.8-	8.025-8.5 9.0-9.2 9.3-9.5 10.6-12.7
25.5-25.67 37.5-38.25 73-74.6 74.8-75.2 108-121.94	1435-1626.5 1645.5- 1646.5 1660-1710 1718.8-	9.0-9.2 9.3-9.5 10.6-12.7
37.5-38.25 73-74.6 74.8-75.2 108-121.94	1435-1626.5 1645.5- 1646.5 1660-1710 1718.8-	9.0-9.2 9.3-9.5 10.6-12.7
73-74.6 74.8-75.2 108-121.94	1645.5- 1646.5 1660-1710 1718.8-	9.3-9.5 10.6-12.7
108-121.94	1660-1710 1718.8-	
And	The state of the s	12 DE 12 1
123-138	1722.2	13.25-13.4
	2200-2300	14.47-14.5
149.9-150.05	2310-2390	15.35-16.2
156.52475- 156.52525	2483.5-2500	17.7-21.4
156.7-156.9	2690-2900	22.01-23.12
162.0125-167.17	3260-3267	23.6-24.0
167.72-173.2	3332-3339	31.2-31.8
240-285	3345.8-3358	36.43-36.5
322-335.4	3600-4400	(2) anbot
P.I.	apoles Aup	V
111123 i: 0	156.52525 156.7-156.9 162.0125-167.17 167.72-173.2 240-285 322-335.4 this restricted band ssions appearing when in § 15.209. At with the limits in § 2	156.52525       156.7-156.9     2690-2900       162.0125-167.17     3260-3267       167.72-173.2     3332-3339       240-285     3345.8-3358









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HOTE AM	stek vupo k.	ak bore Am	, siek
Anbotek Anbotek		ere in this subpart, the emission t exceed the field strength levels	
k Anbotek Anbotek	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
oren And	0.009-0.490	2400/F(kHz)	300 notek
otek anbote An	0.490-1.705	24000/F(kHz)	30
up K Potek	1.705-30.0	30 And	30 Mapor
inposer And	30-88	100 **	3 hotek
atek Anbotes	88-216	150 **	3 400
Anbo	216-960	200 **	3,ek anbore
abotek Anbo	Above 960	500 A	3
Anbotek	frequency bands 54-72 MH However, operation within t sections of this part, e.g., § In the emission table above The emission limits shown employing a CISPR quasi-p 90 kHz, 110–490 kHz and a these three bands are base detector.	e, the tighter limit applies at the kin the above table are based on beak detector except for the frequency 1000 MHz. Radiated emised on measurements employing	470-806 MHz. ted under other  pand edges. measurements luency bands 9– ssion limits in
Test Method:	ANSI C63.10-2020, section Above 1GHz:	stek upotek Aupord	ek hotek
Anbotek	meters above the ground a rotated 360 degrees to dete b. The EUT was set 3 mete which was mounted on the c. The antenna height is va ground to determine the mand vertical polarizations of d. For each suspected emis and then the antenna was the state of	T was placed on the top of a rot ta 3 meter fully-anechoic chamlermine the position of the highest away from the interference-retop of a variable-height antennatied from one meter to four meter aximum value of the field strength the antenna are set to make the ssion, the EUT was arranged to tuned to heights from 1 meter to MHz, the antenna was tuned to he	ber. The table was st radiation. eceiving antenna, a tower. ers above the th. Both horizontal e measurement. its worst case 4 meters (for the

#### Procedure:

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

and the rotatable table was turned from 0 degrees to 360 degrees to find the

- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

#### **Shenzhen Anbotek Compliance Laboratory Limited**





maximum reading.



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- i. Repeat above procedures until all frequencies measured was complete. Remark:
- 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
- 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

## 7.1. EUT Operation

#### **Operating Environment:**

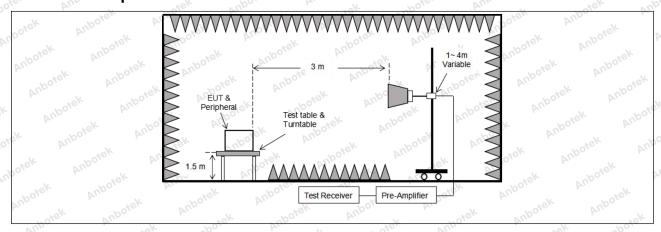
1: 802.11a mode: Keep the EUT in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.

Test mode:

2: 802.11n mode: Keep the EUT in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

3: 802.11ac mode: Keep the EUT in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

#### 7.2. Test Setup









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## 7.3. Test Data

Temperature: 25.3°C Humidity: 46 % Atmospheric Pressure: 101 kPa

	- MO.	Pr.	710.	702	40.	-100.	124
		TM1 / B	and: 5725-5	850 MHz / BV	V: 20 / L		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	38.07	16.37 And	54.44	74.00 M	-19.56	otek H	Peak
5725.00	39.41	16.37	55.78	74.00	-18.22	V-	Peak
5725.00	28.96	16.70	45.66	54.00	-8.34	And Hick	AVG
5725.00	30.06	16.70	46.76	54.00	-7.24	And Stek	AVG
		TM1 / B	and: 5725-58	350 MHz / BV	V: 20 / H		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	39.00	17.21	56.21	68.20	-11.99	H	Peak
5850.00	39.34	17.21	56.55	68.20	-11.65	AUD AUR	Peak
5850.00	29.00	17.21	46.21	54.00	-7.79	An H	AVG
5850.00	29.03	17.21	46.24	54.00	-7.76	Mpole	AVG

#### Remark:

- 1. Result=Reading + Factor
- 2. During the test, pre-scan ANT1 and ANT2 modes, and only the worst case (ANT1) is recorded in the report.

report.	2/_	PO, Di		767	Up.	_\	NO. P
		TM2 / B	and: 5725-58	350 MHz / BV	V: 20 / L		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	38.03	16.37	54.40	74.00	-19.60	H	Peak
5725.00	38.58	16.37	54.95	74.00	-19.05 <sup>1001</sup>	VAND	rek Peak no
5725.00	27.54	16.70	otek 44.24 Anb	54.00	9.76	Pur H	AVG
5725.00	28.04	16.70	44.74	54.00	-9.26	Aupole V	AVG
		TM2 / B	and: 5725-58	350 MHz / BV	V: 20 / H		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.24	17.21	54.45	68.20	-13.75	H	Peak noo
5850.00	37.88	17.21	55.09 And	68.20	13.11	Ofer A VUD	Peak
5850.00	27.48	17.21	44.69	54.00	-9.31	nbotekH A	AVG
5850.00	28.34	17.21	45.55	54.00	-8.45	No NK	AVG
_ ~~	V11.	- 0	-700		210	VIII	-21

- 1. Result=Reading + Factor
- 2. During the test, pre-scan SISO and MIMO modes, and only the worst case (MIMO) is recorded in the report.









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		TM2 / B	and: 5725-58	350 MHz / BV	V: 40 / L		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	37.61	16.37	53.98	74.00	-20.02	k Hupoter	Peak
5725.00	38.46	16.37	54.83	74.00 100°	-19.17	otek V Anbo	Peak
5725.00	26.96	otel 16.70 And	43.66	54.00	-10.34	otekH A	AVG
5725.00	28.34	16.70	45.04	54.00	-8.96	, V	AVG
		TM2 / B	and: 5725-58	350 MHz / BV	V: 40 / H		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.97	17.05	55.02	68.20	-13.18	tek H anboi	Peak
5850.00	38.38	otel 17.05 And	55.43	68.20	-12.77 ·····	V V	Peak
5850.00	28.14	17.05	45.19	54.00	-8.81	Ypo, H	AVG
5850.00	29.26	17.05	46.31	54.00	-7.69	Anboro	AVG

#### Remark:

- 1. Result=Reading + Factor
- 2. During the test, pre-scan SISO and MIMO modes, and only the worst case (MIMO) is recorded in the report.

	-00	P		740. VU.		10-	20.
		TM3 / B	and: 5725-58	350 MHz / BV	V: 20 / L		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	37.28	16.37	53.65	74.00	-20.35	Hotek	Peak
5725.00	37.48	16.37	53.85	74.00	-20.15	V Note	Peak
5725.00	28.23	4 16.70 hor	44.93	54.00	-9.07 nbot	H	Ne AVG
5725.00	28.98	16.70	45.68	54.00	-8.32 pm	Open A Vine	AVG
		TM3 / B	and: 5725-58	350 MHz / BV	V: 20 / H		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	38.02	17.21	55.23	68.20	-12.97	H notel	Peak
5850.00	38.92	17.21	56.13	68.20	-12.07	Value	Peak bot
5850.00	27.91	17.21	ote 45.12 M	54.00	-8.88	otek H Pup.	AVG
5850.00	28.94	17.21	46.15	54.00	-7.85	4 Visions	AVG

- 1. Result=Reading + Factor
- 2. During the test, pre-scan SISO and MIMO modes, and only the worst case (MIMO) is recorded in the report.









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		TM3 / B	and: 5725-58	350 MHz / BV	V: 40 / L		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	36.23	16.37	52.60	74.00	-21.40	PH	Peak
5725.00	37.78	16.37	54.15	74.00	-19.85°	Nupor	Peak
5725.00	27.51	16.70	14.21 Adv. 44.21 Adv. 1	54.00	nek-9.79	otek H Anbo	AVG
5725.00	28.20	16.70	44.90	54.00	-9.10	nbotek V Ar	AVG
		TM3 / B	and: 5725-58	350 MHz / BV	V: 40 / H		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.59	17.21	54.80	68.20	-13.40	H <sup>nb</sup>	Peak
5850.00	38.38	17.21	55.59	68.20	-12.61	isk A Vupo,	Peak
5850.00	27.58	17.21	44.79	54.00	-9.21	Lotek H An	AVG
5850.00	27.17	17.21	44.38	54.00	-9.62	V	AVG

#### Remark:

- 1. Result=Reading + Factor
- 2. During the test, pre-scan SISO and MIMO modes, and only the worst case (MIMO) is recorded in the report.

	<u> </u>	- Pr.		200		- PO.	
		TM3 / B	and: 5725-58	350 MHz / BV	V: 80 / L		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	35.52	16.37	51.89	74.00	-22.11	Hek	Peak
5725.00	37.02	16.37	53.39	74.00	-20.61	And	Peak
5725.00	26.49	16.70	43.19	54.00	-10.81	H	AVG
5725.00	27.11	4 16.70 mo	43.81	54.00	-10.19 <sup>(200</sup>	Vaus	AVG NO
		TM3 / B	and: 5725-58	350 MHz / BV	V: 80 / H		
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.47	17.21	54.68	68.20	-13.52	H	Peak
5850.00	37.80	17.21	55.01	68.20	-13.19	PVV	Peak
5850.00	27.82	17.21	45.03	54.00	-8.97	Hyppone Hyppone	AVG
5850.00	28.19	17.21	45.40	54.00	-8.60	otek V Anbo	AVG

- 1. Result=Reading + Factor
- 2. During the test, pre-scan SISO and MIMO modes, and only the worst case (MIMO) is recorded in the report.







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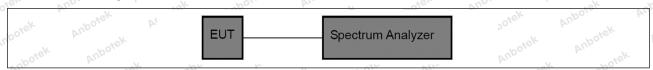
# 8. Band edge emissions (Conducted)

" Up " K	Poly VII.
Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(2)
k Anborek Anbor	For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
Test Limit:	For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
Test Method:	Peak emission levels are measured by setting the instrument as follows:  RBW = 1 MHz.  VBW ≥ [3 × RBW]
	Detector = peak. Sweep time = auto.

## 8.1. EUT Operation

Anbotek An	1: 802.11a mode: Keep the EUT in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is
	the worst case. Only the data of worst case is recorded in the report.
	2: 802.11n mode: Keep the EUT in continuously transmitting mode with 802.11n
	modulation type. All bandwidth and data rates has been tested and found the data
Test mode:	rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
	3: 802.11ac mode: Keep the EUT in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data
	rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

# 8.2. Test Setup



## 8.3. Test Data

Temperature:	25.3 °C	Humidity:	46 %	Atmospheric Pressure	: 101 kPa	

Please Refer to Appendix for Details.







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# 9. Undesirable emission limits (below 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(9)	And aborek Anb	or Aliv
Aupotek Aupotek	Unwanted emissions below strength limits set forth in §	1 GHz must comply with the ge 15.209.	neral field
stek Anbotek An		ere in this subpart, the emissions t exceed the field strength levels	
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490 0.490-1.705	2400/F(kHz) 24000/F(kHz)	300 30
ek Anhorek Anh	1.705-30.0 30-88	30 100 **	30
Test Limit:	88-216 216-960 Above 960	150 ** 200 ** 500	3 3
	** Except as provided in pa intentional radiators operati frequency bands 54-72 MH	ragraph (g), fundamental emissi ing under this section shall not b lz, 76-88 MHz, 174-216 MHz or these frequency bands is permitt	ons from e located in the 470-806 MHz.
	The emission limits shown employing a CISPR quasi-p 90 kHz, 110–490 kHz and a	e, the tighter limit applies at the b in the above table are based on peak detector except for the freq above 1000 MHz. Radiated emis ed on measurements employing	measurements uency bands 9– sion limits in
Test Method:	ANSI C63.10-2020, section	12.7.4, 12.7.5	Vun rek
	meters above the ground a was rotated 360 degrees to b. The EUT was set 3 or 10 antenna, which was mount c. The antenna height is va ground to determine the materials.	T was placed on the top of a rota t a 3 meter semi-anechoic cham determine the position of the hi meters away from the interference ed on the top of a variable-heigh wried from one meter to four meter aximum value of the field strength	ber. The table ghest radiation. nce-receiving t antenna tower. ers above the h. Both horizonta
Procedure:	d. For each suspected emis and then the antenna was t test frequency of below 30N and the rotatable table was maximum reading.	ssion, the EUT was arranged to tuned to heights from 1 meter to MHz, the antenna was tuned to he turned from 0 degrees to 360	its worst case 4 meters (for the neights 1 meter) egrees to find the
	Bandwidth with Maximum If. If the emission level of the limit specified, then testing	n was set to Peak Detect Function Hold Mode.  The EUT in peak mode was 10dB I could be stopped and the peak wise the emissions that did not hat	ower than the values of the EU









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would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.

- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case
- i. Repeat above procedures until all frequencies measured was complete. Remark:
- 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- 2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

#### Above 1GHz:

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case
- i. Repeat above procedures until all frequencies measured was complete. Remark:
- 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB









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below the limit need not be reported.

- 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
- 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

## 9.1. EUT Operation

#### Operating Environment:

1: 802.11a mode: Keep the EUT in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.

2: 802.11n mode: Keep the EUT in continuously transmitting mode with 802.11n

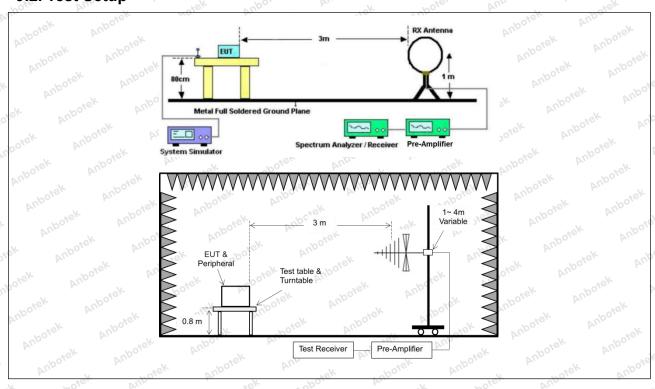
modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the

report.

3: 802.11ac mode: Keep the EUT in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

## 9.2. Test Setup

Test mode:









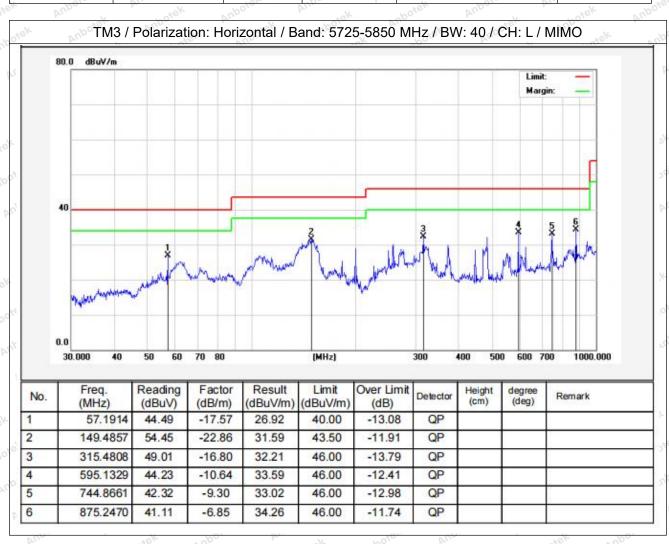


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#### 9.3. Test Data

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Temperature:	22.5 °C	Humidity:	48 %	Atmos	spheric Press	sure: 101 kPa	00.

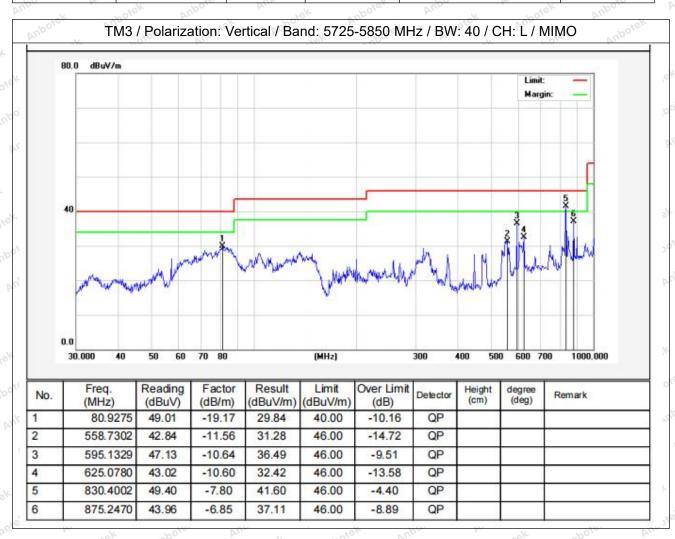






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Temperature: 22.5 °C Humidity: 48 % Atmospheric Pressure: 101 kPa



Note:Only record the worst data 802.11ac(VHT40) MIMO in the report.







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# 10. Undesirable emission limits (above 1GHz)

est Requirement:	47 CFR Part 15.407(b 47 CFR Part 15.407(b 47 CFR Part 15.407(b	)(4)		
Anbotek Anbot	For transmitters opera of the 5.15-5.35 GHz b	ting in the 5.15-5.25		
	For transmitters opera	ting cololy in the 5.73	05 5 050 CU- bo	and: botek
	All emissions shall be			
	above or below the ba			
	above or below the ba			
	edge increasing linear			
	below the band edge,			
	increasing linearly to a	level of 27 dBm/MH	z at the band ed	ge.
nbotek Ant	MHz	MHz	MHz botel	GHz
	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
	10.495-0.505	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
est Limit:	6.26775-6.26825	108-121.94	1718.8- 1722.2	13.25-13.4
St Limit.	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-	2483.5-2500	17.7-21.4
	lek Vupo. W.	156.52525	Ann	potek
	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
k hotek A	8.41425-8.41475	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	$n^{(2)}$
	13.36-13.41	h. Hek	upore, And	1
	Aug CK VA			
	<sup>1</sup> Until February 1, 199	9, this restricted band	l shall be 0.490-	0.510 MHz.
	ok hotek			
	<sup>2</sup> Above 38.6			
	-hotek Anbore	Air.	er Anbe	rotek
	The field strength of e			
	not exceed the limits s			
	1000 MHz, compliance			
	using measurement in			
	detector. Above 1000			
	i io.∠uysnali be demon	strated based on the	average value of	oi ine measured
	emissions. The provisi	one in C 4F OF and the s	a tha a a b == = = = : : ::	ana anta









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octek Anbotek		nere in this subpart, the emissi ot exceed the field strength lev	
Anbotek Anbote	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30 And	otek 30 Aupor
oter And	30-88	100 **	3 hotek
	88-216	150 **	nbor3 And
	216-960	200 **	3,ek Anbor
	Above 960	500	A 3
nbotek Anbotek	sections of this part, e.g., In the emission table above The emission limits shown	these frequency bands is perr §§ 15.231 and 15.241. re, the tighter limit applies at the in the above table are based peak detector except for the fi	e band edges. on measurements
	90 kHz, 110–490 kHz and these three bands are bas	above 1000 MHz. Radiated er sed on measurements employing	mission limits in
est Method:	90 kHz, 110–490 kHz and these three bands are bas detector.  ANSI C63.10-2020, section	above 1000 MHz. Radiated er sed on measurements employi	mission limits in
est Method:	90 kHz, 110–490 kHz and these three bands are bas detector.  ANSI C63.10-2020, section Above 1GHz: a. For above 1GHz, the Emeters above the ground rotated 360 degrees to deb. The EUT was set 3 met which was mounted on the c. The antenna height is wiground to determine the number and vertical polarizations of the cach suspected emand then the antenna was test frequency of below 30 and the rotatable table was maximum reading. e. The test-receiver system Bandwidth with Maximum f. If the emission level of the section of the secti	above 1000 MHz. Radiated ended on measurements employing an 12.7.4, 12.7.6, 12.7.7  UT was placed on the top of a last a 3 meter fully-anechoic chartermine the position of the highers away from the interference of the top of a variable-height antervaried from one meter to four meaximum value of the field strength of the antenna are set to make its	rotating table 1.5 amber. The table wanest radiation. e-receiving antennationatower. the measurement. to its worst case to 4 meters (for the to heights 1 meter) degrees to find the total and Specified

## **Shenzhen Anbotek Compliance Laboratory Limited**



h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst



case.



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- i. Repeat above procedures until all frequencies measured was complete. Remark:
- 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
- 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

### 10.1. EUT Operation

#### **Operating Environment:**

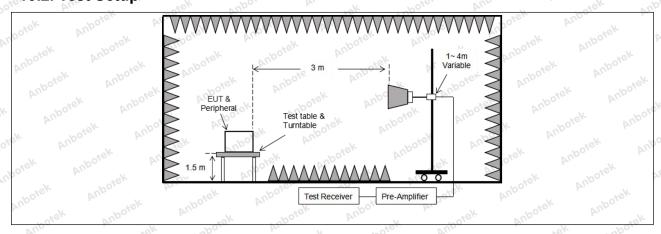
1: 802.11a mode: Keep the EUT in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.

Test mode:

2: 802.11n mode: Keep the EUT in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

3: 802.11ac mode: Keep the EUT in continuously transmitting mode with 802.11ac modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.

#### 10.2. Test Setup









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## 10.3. Test Data

Temperature: 22.5 °C Humidity: 48 % Atmospheric Pressure: 101 kPa

*ek	vupo.	N.	hote.	AUL	ate.K	vupo.	h.
	Т	M3 / Band: 5	725-5850 MI	Hz / BW: 40 /	CH: L / MIM	0	
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
11510.000	28.58	23.36 Am	51.94	68.20	-16.26	workV p	Peak
17265.000	29.12	32.02	61.14	68.20	-7.06	N. N.	Peak
11510.000	29.41	23.36	52.77	68.20	-15.43	AnboH ak	Peak
17265.000	29.38	32.02	61.40	68.20	-6.80	MA	Peak
11510.000	18.29	23.36	41.65	54.00	-12.35	· Vupoter	AVG
17265.000	18.67	32.02	50.69	54.00	-3.31	** V %	AVG (100
11510.000	18.63	23.36	41.99	54.00	-12.01 And	H	AVG
17265.000	19.11	32.02	51.13	54.00	-2.87	upote H A	AVG
	Т	M3 / Band: 5	725-5850 MI	Hz / BW: 40 /	CH: H / MIM	0	
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
11590.00	27.90	23.43	51.33	68.20	-16.87	Nupe	Peak
17385.00	29.08	32.23	61.31	68.20	-6.89	iek V Anbo	Peak
11590.00	28.44	23.43	51.87	68.20	-16.33	stell H	Peak
17385.00	28.66	32.23	60.89	68.20	7.31	H	Peak
11590.00	17.52	23.43	40.95	54.00	-13.05	Aupor A	AVG
17385.00	17.69	32.23	49.92	54.00	-4.08	Antore	AVG
11590.00	18.47	23.43	41.90	54.00	-12.10	Hoolek	AVG
17385.00	18.62	32.23	50.85	54.00	-3.15	y H yor	AVG

#### Remark:

- 1. Result =Reading + Factor
  - 2. Only the worst case 802.11ac(VHT40) MIMO is recorded in the report.



Hotline

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400-003-0500



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## APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph\_RF

## APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

## APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

----- End of Report -----

