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Report No.: 1710RSU02509 Report Version: V01 Issue Date: 11-17-2017

# **DFS MEASUREMENT REPORT**

# FCC PART 15.407

FCC ID:	2AI3G-A7215
APPLICANT:	Pico Technology Co., Ltd.
Application Type:	Certification
Product:	VR All-In-One Headset
Model No.:	A7215
Brand Name:	⊗Pico
FCC Classification:	Unlicensed National Information Infrastructure (UNII)
FCC Rule Part(s):	Part 15.407(h)(2), KDB 905462 D02v02,
	KDB 905462 D03v01r02, KDB 905462 D04v01
Type of Device:	Client Device without radar detection
Test Date:	November 14 ~ 17, 2017

**Reviewed By** 

Approved By

Jame yuan (Jame Yuan) Marlinchen

(Marlin Chen)



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB 905462 D02v02. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.



# **Revision History**

Report No.	Version	Description	Issue Date	Note
1710RSU02509	Rev. 01	Initial report	11-17-2017	Valid



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Applicant:	Pico Technology Co., Ltd.					
Applicant Address:	Room 2101, Shining Tower, No.35 Xueyuan Road, HaiDian District,					
	Beijing, The People's Republic of China					
Manufacturer:	Pico Technology Co., Ltd.					
Manufacturer Address:	Room 2101, Shining Tower, No.35 Xueyuan Road, HaiDian District,					
	Beijing, The People's Republic of China					
Test Site:	MRT Technology (Suzhou) Co., Ltd					
Test Site Address:	D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong					
	Economic Development Zone, Suzhou, China					
MRT FCC Registration No.:	893164					
Model:	A7215					
FCC ID:	2AI3G-A7215					
Test Device Serial No.:	N/A Production Pre-Production Engineering					
FCC Classification	Unlicensed National Information Infrastructure (UNII)					

# Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is a FCC registered (MRT Reg. No. 893164) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-4179, G-814, C-4664, T-2206) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.

IA	
Acc	redited Laboratory
	A2LA has accredited
	IOLOGY (SUZHOU) CO., LTD. Jiangsu, People's Republic of China
	for technical competence in the field of
	Electrical Testing
General requirements for the compete technical competence for a define	ordance with the recognized international Standard ISO/IEC 170232003 more of feating and catibration laboratories. This accreditation demonstr to scope and the operation of a baboratory quality management system ISO-EAC-IAF Communiqué dated 8 January 2009).
	Presented this 6 <sup>th</sup> day of 3eptember 2016.
	Serier Director of Quality and Communications



# 1. INTRODUCTION

## 1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

# 1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.





# 2. PRODUCT INFORMATION

# 2.1. Equipment Description

Product Name	VR All-In-One Headset				
Model No.	A7215				
Radio Type	Intentional Transceiver				
Operation Mode	Client device without radar detection				
Frequency Range	For 802.11a/n-HT20:				
	5260~5320MHz, 5500~5700MHz				
	For 802.11ac-VHT20:				
	5260~5320MHz, 5500~5720MHz				
	For 802.11n-HT40:				
	5270~5310MHz, 5510~5670MHz				
	For 802.11ac-VHT40:				
	5270~5310MHz, 5510~5710MHz				
	For 802.11ac-VHT80:				
	5290MHz, 5530MHz, 5610MHz, 5690MHz				
Maximum Average Output	802.11a: 12.96dBm				
Power	802.11n-HT20: 12.73dBm				
	802.11n-HT40: 13.05dBm				
	802.11ac-VHT20: 12.80dBm				
	802.11ac-VHT40: 13.17dBm				
	802.11ac-VHT80: 12.35dBm				
Type of Modulation	802.11a/n/ac: OFDM				
Uniform Spreading	For the 5250-5350MHz, 5470-5725 MHz bands, the Master device				
	provides, on aggregate, uniform loading of the spectrum across all				
	devices by selecting an operating channel among the available				
	channels using a random algorithm.				



# 2.2. DFS Band Carrier Frequencies Operation

#### 802.11a/n-HT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
52	5260 MHz	56	5280 MHz	60	5300 MHz
64	5320 MHz	100	5500 MHz	104	5520 MHz
108	5540 MHz	112	5560 MHz	116	5580 MHz
120	5600 MHz	124	5620 MHz	128	5640 MHz
132	5660 MHz	136	5680 MHz	140	5700 MHz

## 802.11ac-VHT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
52	5260 MHz	56	5280 MHz	60	5300 MHz
64	5320 MHz	100	5500 MHz	104	5520 MHz
108	5540 MHz	112	5560 MHz	116	5580 MHz
120	5600 MHz	124	5620 MHz	128	5640 MHz
132	5660 MHz	136	5680 MHz	140	5700 MHz
144	5720 MHz				

#### 802.11n-HT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz	102	5510 MHz
110	5550 MHz	118	5590 MHz	126	5630 MHz
134	5670 MHz				

# 802.11ac-VHT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz	102	5510 MHz
110	5550 MHz	118	5590 MHz	126	5630 MHz
134	5670 MHz	142	5710 MHz		

#### 802.11ac-VHT80

Channel	Frequency	Channel	Frequency	Channel	Frequency
58	5290 MHz	106	5530 MHz	122	5610 MHz
138	5690 MHz				



# 3. DFS DETECTION THRESHOLDS AND RADAR TEST WAVEFORMS

# 3.1. Applicability

The following table from FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 lists the applicable requirements for the DFS testing.

Requirement	Operational Mode				
	Master Client Without Client Wi		Client With Radar		
		Radar Detection	Detection		
Non-Occupancy Period	Yes	Not required	Yes		
DFS Detection Threshold	Yes	Not required	Yes		
Channel Availability Check Time	Yes	Not required	Not required		
U-NII Detection Bandwidth	Yes	Not required	Yes		

Table 3-1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode			
	Master Device or Client With Radar Detection	Client Without Radar Detection		
DFS Detection Threshold	Yes	Not required		
Channel Closing Transmission Time	Yes	Yes		
Channel Move Time	Yes	Yes		
U-NII Detection Bandwidth	Yes	Not required		

Additional requirements for devices	Master Device or Client	Client Without Radar			
with multiple bandwidth modes	with Radar Detection	Detection			
U-NII Detection Bandwidth and	All BW modes must be	Not required			
Statistical Performance Check	tested				
Channel Move Time and Channel	Test using widest BW	Test using the widest BW			
Closing Transmission Time mode available mode available for the link					
All other tests Any single BW mode Not required					
Note: Frequencies selected for statistical performance check should include several frequencies					
within the radar detection bandwidth and	frequencies near the edge of	the radar detection			

bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.

### Table 3-2: Applicability of DFS Requirements during normal operation

# 3.2. DFS Devices Requirements

#### Per FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 the following are

#### the requirements for Client Devices:

a) A Client Device will not transmit before having received appropriate control signals from a Master Device.

b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing transmission time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.

c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform.

d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.

e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear.

# Channel Move Time and Channel Closing Transmission Time requirements are listed in the

#### following table.

Parameter	Value			
Non-occupancy period	Minimum 30 minutes			
Channel Availability Check Time	60 seconds			
Channel Move Time	10 seconds			
	See Note 1.			
	200 milliseconds + an aggregate of 60			
Channel Closing Transmission Time	milliseconds over remaining 10 second period.			
	See Notes 1 and 2.			
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission			
	power bandwidth. See Note 3.			
Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with				
Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.				
Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the				
beginning of the Channel Move Time plus any a	dditional intermittent control signals required to			

facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between



#### transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

### **Table 3-3: DFS Response Requirements**

# 3.3. DFS Detection Threshold Values

The DFS detection thresholds are defined for Master devices and Client Devices with In-service monitoring. These detection thresholds are listed in the following table.

Maximum Transmit Power	Value				
	(See Notes 1, 2, and 3)				
EIRP ≥ 200 milliwatt	-64 dBm				
EIRP < 200 milliwatt and	-62 dBm				
power spectral density < 10 dBm/MHz					
EIRP < 200 milliwatt that do not meet the power spectral density	-64 dBm				
requirement					
Note 1: This is the level at the input of the receiver assuming a 0 dBi r	eceive antenna.				
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the					
test transmission waveforms to account for variations in measurement equipment. This will ensure					
that the test signal is at or above the detection threshold level to trigger a DFS response.					
Note3: EIRP is based on the highest antenna gain. For MIMO devices	s refer to KDB Publication				
662911 D01.					

Table 3-4: Detection Thresholds for Master Devices and Client Devices with Radar Detection



# 3.4. Parameters of DFS Test Signals

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 3-6 Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A	$\operatorname{Roundup} \left\{ \begin{pmatrix} \frac{1}{360} \end{pmatrix} \cdot \\ \begin{pmatrix} \frac{19 \cdot 10^{6}}{PRI_{usec}} \end{pmatrix} \right\}$	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Note 1: S			used for the detection ba	80% andwidth test, cha	120 nnel move

#### Short Pulse Radar Test Waveforms

### Table 3-5: Parameters for Short Pulse Radar Waveforms



A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms.

Pulse Repetition Frequency	Pulse Repetition Frequency	Pulse Repetition Interval
Number	(Pulses Per Second)	(Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

 Table 3-6: Pulse Repetition Intervals Values for Test A



### Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50 - 100	5 - 20	1000 - 2000	1 - 3	8 - 20	80%	30

## Table 3-7: Parameters for Long Pulse Radar Waveforms

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type waveforms, then each additional waveform must also be unique and not repeated from the previous waveforms.

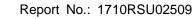
Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses Per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

## Frequency Hopping Radar Test Waveform

### Table 3-8: Parameters for Frequency Hopping Radar Waveforms

For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.





# 3.5. Conducted Test Setup

The FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01 describes a radiated test setup and a conducted test setup. The conducted test setup was used for this testing. Figure 3-1 shows the typical test setup.

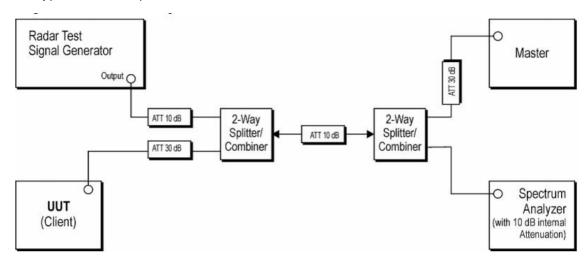


Figure 3-1: Conducted Test Setup where UUT is a Client and Radar Test Waveforms are injected into the Masters



# 4. TEST EQUIPMENT CALIBRATION DATE

Dynamic Frequency Selection - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2018/05/08
ESG Vector Signal Generator	Agilent	E4438C	MRTSUE06026	1 year	2017/12/08
Temperature/Humidity Meter	Yuhuaze	HTC-2	N/A	1 year	2017/12/20

Master Device	Manufacturer	Туре No.	FCC ID
Wireless LAN Access Point	TP-Link	RE450	TE7RE450V2

Software	Version	Manufacturer	Function
Pulse Building	N/A	Agilent	Radar Signal Generation Software
DFS Tool	V 6.9.2	Agilent	DFS Test Software



# 5. TEST RESULT

# 5.1. Summary

Product Name:	VR All-In-One Headset
FCC ID:	<u>2AI3G-A7215</u>
FCC Classification:	Unlicensed National Information Infrastructure (UNII)

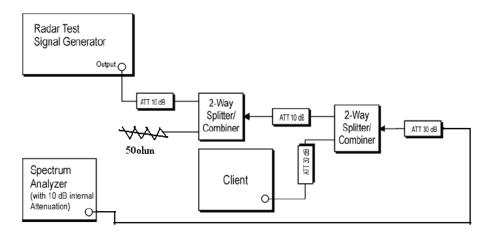
Parameter	Limit	Test Result	Reference
Occupied Bandwidth Measurement,			
Channel Move Time, Channel Closing	Refer Table 3-3	Pass	Section 5.4
Transmission Time			

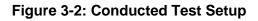


# 5.2. Radar Waveform Calibration

### 5.2.1.Calibration Setup

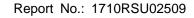
The conducted test setup was used for this calibration testing. Figure 3-2 shows the typical test setup.





## 5.2.2.Calibration Procedure

The Interference Radar Detection Threshold Level is (-64dBm) + (0) [dBi] + 1 dB= -63 dBm that had been taken into account the output power range and antenna gain. The above equipment setup was used to calibrate the conducted Radar Waveform. A vector signal generator was utilized to establish the test signal level for each radar type. During this process there were replace 50ohm terminal form Master and Client device and no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) at the frequency of the Radar Waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to at least 3MHz. The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was (-64dBm) + (0) [dBi] + 1 dB= -63dBm. Capture the spectrum analyzer plots on short pulse radar types, long pulse radar type and hopping radar waveform.



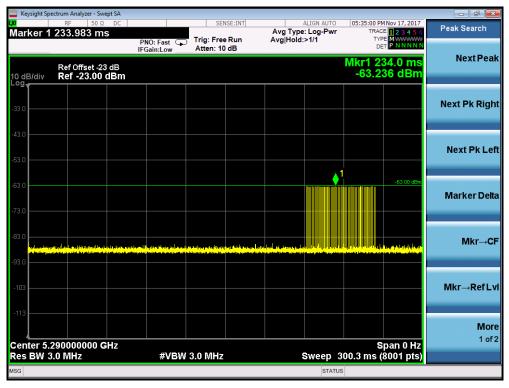


## 5.2.3.Cablibration Result

RF 50 Q DC		SENSE: JNT	ALIGN AUTO	05:35:28 PM Nov 17, 2017	
147.243 ms				TRACE 1 2 3 4 5 6 TYPE MWWWW DET P NNNNN	Peak Search
Ref Offset -23 dB Ref -23.00 dBn	n			Mkr1 147.2 ms -63.266 dBm	Next Pe
					Next Pk Rig
					Next Pk L
				-63.00 dBm	Marker De
h filmeri de angeler de deserte later			i je dan se internet og som det som	line galline depend foil a training a characteristic a second as a	Mkr→0
					Mkr→RefL
					<b>M</b> c 1 o
290000000 GHz 3.0 MHz	#VBV	V 3.0 MHz	Sweep	Span 0 Hz 300.3 ms (8001 pts)	
	Ref Offset -23 dB           Ref -23.00 dBn           Human And And And And And And And And And An	RF 50 Q DC 147.243 ms PNO: Fast Co IFGain:Low Ref Offset -23 dB Ref -23.00 dBm	RF     50 Ω     DC     SENSE:INT       147.243 ms     PNO: Fast IFGain:Low     Trig: Free Run Atten: 10 dB       Ref Offset -23 dB Ref -23.00 dBm     1	RF     50 Ω     DC     SENSE:INT     ALIGN AUTO       147.243 ms     PNO: Fast IFGain:Low     Trig: Free Run Atten: 10 dB     Avg Type: Log-Pwr Avg Hold:>1/1       Ref Offset 23 dB Ref -23.00 dBm     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)       Image: Sense (N)     Image: Sense (N)     Image: Sense (N)     Image: Sense (N)	RF       50 Ω DC       SENSE:INT       ALIGN AUTO       (05:35:28 PM Nov 17, 2017         147.243 ms       PNO: Fast IFGain:Low       Trig: Free Run Atten: 10 dB       Avg Type: Log-Pwr AvgHold:>1/1       Tree D 2:33:28 PM Nov 17, 2017         Ref Offset -23 dB Ref -23.00 dBm       Mikr1 147.2 ms -63.266 dBm       Mikr1 147.2 ms -63.266 dBm         Image: Autor of the set of the s

Radar #0 DFS detection threshold level and the burst of pulses on the Channel frequency

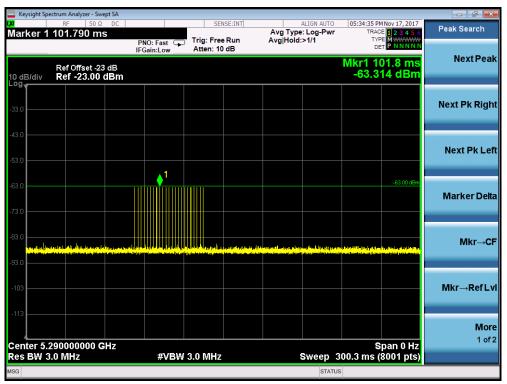
Radar #1(Test A) DFS detection threshold level and the burst of pulses on the Channel frequency



PRI = 858us and the number of pulses = 62

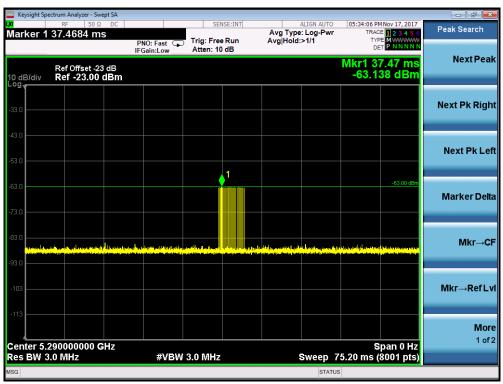


Radar #1(Test B) DFS detection threshold level and the burst of pulses on the Channel frequency



PRI = 2.371ms and the number of pulses = 23

Radar #2 DFS detection threshold level and the burst of pulses on the Channel frequency

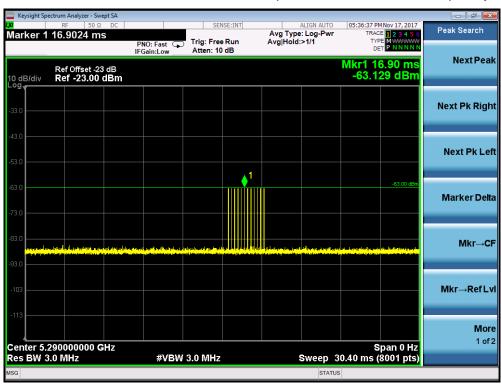




Keysight Sp	ectrum Analyzer - Swept SA				
<mark>x</mark> Marker 1	RF 50 Ω DC 43.5283 ms	PNO: Fast Figure Atten: 10 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>1/1	05:35:57 PM Nov 17, 2017 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N	Peak Search
10 dB/div Log	Ref Offset -23 dB <b>Ref -23.00 dBm</b>			Mkr1 43.53 ms -63.188 dBm	Next Pea
.33.0					Next Pk Rig
43.0 53.0					Next Pk L
63.0				-63.00 dBm	Marker De
83.0	fostere is the state of the state state of the	He distance with the set of the s	(1) gan a salah salah salah gan gan gan salah	darman kiliki mahiyini da daman yang tu atin	Mkr→
-103					Mkr→RefL
-113					<b>M</b> c 1 c
Center 5. Res BW 3	290000000 GHz 3.0 MHz	#VBW 3.0 MHz	Sweep 1	Span 0 Hz (00.3 ms (8001 pts)	
Res BW 3	3.0 MHz	#VBW 3.0 MHz	Sweep 1		

Radar #3 DFS detection threshold level and the burst of pulses on the Channel frequency

Radar #4 DFS detection threshold level and the burst of pulses on the Channel frequency



FCC ID: 2AI3G-A7215



ectrum Analyzer - Swept SA									- # <b>*</b>
	PNO: F	ast 🖵	Trig: Free	e Run	Avg Type	: Log-Pwr	TRAC	E 1 2 3 4 5 6	Peak Search
Ref Offset -23 dB Ref -23.00 dBn	ı						Mkr1 -63.5	16.92 s 93 dBm	Next Pea
									Next Pk Righ
									Next Pk Le
							<b>↓</b> 1	-63.00 dBm	Marker Del
ng tera-Tang terangkala ing katalan kanang ang terangkalan kanang terangkalan kanang terangkalan kanang terang	an and a state of the second state of the seco	ay dat by skibb	, data a segura	a na poste al la compacta		dunta udstatu na	instantin di santi	sa internet da sa la jula.	Mkr→C
									Mkr→RefL
									Moi 1 of
290000000 GH2 8.0 MHz		#VBW :	3.0 MHz			Sweep	S 20.00 s (	pan 0 Hz 8001 pts)	1 01
	Rf         50 Ω         DC           16.9225 s         3           Ref Offset -23 dB         4           10.925 s         3	Ref         50 Ω         DC           16.9225 S         PNO: F           Ref Offset -23 dB         POO: F           Ref -23.00 dBm         I           I	Ref         50 Ω         DC           16.9225 s         PNO: Fast IFGaint.ow         PNO: Fast IFGaint.ow           Ref Offset -23 dB Ref -23.00 dBm         Image: Comparison of the set o	PF       50 Ω       DC       SET         16.9225 S       PNO: Fast       Trig: Free Atten: 10         Ref Offset -23 dB       PNO: Fast       Trig: Free Atten: 10         Ref -23.00 dBm       Image: Set of the set of	RF       50 Ω       DC       SENSE:INT         16.9225 S       PNO: Fast IFGain:Low       Trig: Free Run Atten: 10 dB         Ref Offset -23 dB Ref -23.00 dBm       Image: Comparison of the sense of the se	Ref       50 Ω       PNO: Fast IFGain:Low       Trig: Free Run Atten: 10 dB       Avg Type Avg Hold:         Ref Offset -23 dB Ref -23.00 dBm       Image: Comparison of the second	Ref       59 Ω       ALIGN AUTO         16.9225 s       PNO: Fast IFGain:Low       Trig: Free Run Atten: 10 dB       Avg Type: Log-Pwr Avg Hold: 1/1         Ref Offset-23 dB Ref - 23.00 dBm       Image: Second Secon	RF       50 Ω       DC       SENSE:INT       ALIGN AUTO       06:37:54 PV         16.9225 S       PNO: Fast       Trig: Free Run Atten: 10 dB       Avg Type: Log-Pwr AvgIHold: 1/1       Trip: Trip: Trip: Free Run Atten: 10 dB       Avg Type: Log-Pwr AvgIHold: 1/1       Trip: Trip: Trip: Free Run AvgIHold: 1/1       Mkr1 -63.51         Ref Offset -23 dB       Image: Avg Type: Log-Pwr AvgIHold: 1/1       Mkr1 -63.51         Ref Offset -23 dB       Image: Avg Type: Log-Pwr AvgIHold: 1/1       Mkr1 -63.51         Image: Avg Type: Log-Pwr AvgIHold: 1/1       Image: Avg Type: Log-Pwr AvgIHold: 1/1       Mkr1 -63.51         Image: Avg Type: Log-Pwr Avg Type: Log-Pwr Avg Type: Log-Pwr -63.51       Image: Avg Type: Log-Pwr Avg Type: Log-Pwr -63.51         Ref Offset -23 dB       Image: Avg Type: Log-Pwr -63.51       Image: Avg Type: Log-Pwr -63.51         Ref Offset -23 dB       Image: Avg Type: Log-Pwr -63.51       Image: Avg Type: Log-Pwr -63.51         Image: Avg Type: Log-Pwr -7       Image: Avg Type: Log-Pwr -7       Image: Avg Type: Log-Pwr -63.51         Image: Avg Type: Log-Pwr -7       Image: Avg Type: Log-Pwr -7       Image: Avg Type: Log-Pwr -7       Image: Avg Type: Log-Pwr -7         Image: Avg Type: Log-Pwr -7       Image: Avg Type: Log-Pwr -7       Image: Avg Type: Log-Pwr -7       Image: Avg Type	RF       50 Ω       DC       SENSE:INT       ALIGN AUTO       05:37:54 PM Nov 17,2017         16.9225 S       PNO: Fast IFGain:Low       Trig: Free Run Atten: 10 dB       Avg Type: Log-Pwr Avg Hold: 1/1       Tride: II 2.4 ± 5.6 Tride: D2.4 ± 5.6 Tride: Comparison of the comparison of th

Radar #5 DFS detection threshold level and 12sec long burst on the Channel frequency

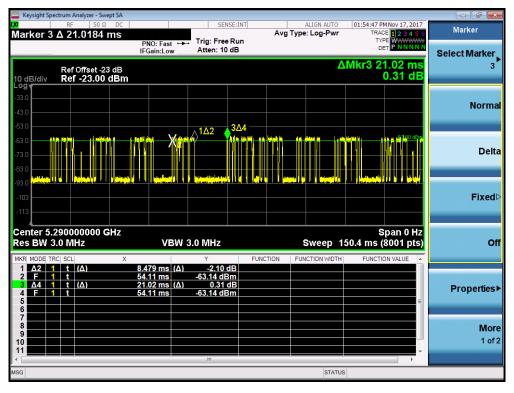
Radar #6 DFS detection threshold level and a single hop (9 pulses) on the Channel frequency within UNII detection bandwidth

🔤 Keys		nalyzer - Swept SA								- 7 💌
<mark>(X)</mark> Mark	er 1 19.3	50Ω DC			SENSE:INT		ALIGN AUTO		MNov 17, 2017	Peak Search
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10 dB Log	Ref ( /div <b>Ref</b>	offset -23 dB -23.00 dBr	n					Mkr1 1 -63.4	9.39 ms 59 dBm	Next Peak
-33.0 -										Next Pk Right
-43.0 - -53.0 -										Next Pk Left
-63.0 - -73.0 -									-63.00 dBm	Marker Delta
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-93.0 - -103 -										Mkr→RefLvl
-113 -	er 5.29000	0000 CH-							pan 0 Hz	More 1 of 2
	er 5.29000 BW 3.0 MF		#	VBW 3.0 MH	z		Sweep 1	ہ 100.3 ms (	8001 pts)	
MSG							STATU	s		



# 5.3. Channel Loading Test Result

System testing was performed with the designated MPEG test file that streams full motion video from the VR All-In-One Headset to the Client in full motion video mode using the media player with the V2.61 Codec package. This file is used by IP and Frame based systems for loading the test channel during the In-service compliance testing of the U-NII device



## Channel Loading Plot - 802.11ac-VHT80 - 5290MHz

Test Mode	Packet ratio	Requirement ratio	Test Result
11ac-VHT80 - 5290MHz	40.34%	>17%	Pass



# 5.4. In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period Measurement

## 5.4.1.Test Limit

The EUT has In-Service Monitoring function to continuously monitor the radar signals. If the radar is detected, must leave the channel (Shutdown). The Channel Move Time to cease all transmissions on the current channel upon detection of a Radar Waveform above the DFS Detection Threshold within 10 sec. The total duration of Channel Closing Transmission Time is 260ms, consisting of data signals and the aggregate of control signals, by a U-NII device during the Channel Move Time. The Non-Occupancy Period time is 30 minute during which a Channel will not be utilized after a Radar Waveform is detected on that Channel.

## 5.4.2.Test Procedure Used

1. The test should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0.

 When the radar burst with a level equal to the DFS Detection Threshold + 1dB is generated on the Operating Channel of the U-NII device. A U-NII device operating as a Master Device will associate with the Client Device at Channel. Stream the MPEG test file from the Master Device to the Client Device on the selected Channel for the entire period of the test. At time T0 the Radar Waveform generator sends a Burst of pulses for each of the radar types at Detection Threshold + 1dB.
 Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the EUT during the observation time (Channel Move Time).

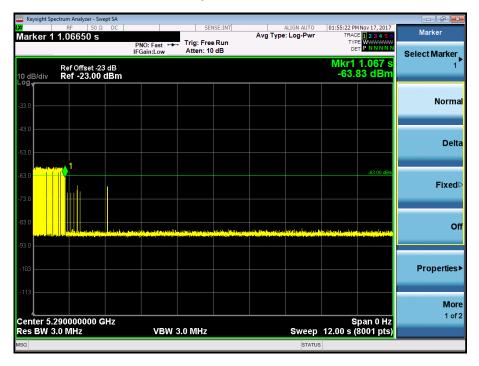
3. Measurement of the aggregate duration of the Channel Closing Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (1.5ms) = S (12 sec) / B (8000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is the sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: 80MHz: C = N X Dwell; where C is the Closing Time, N is the number of spectrum analyzer sampling bins showing a U-NII transmission and Dwell is the dwell time per bin.

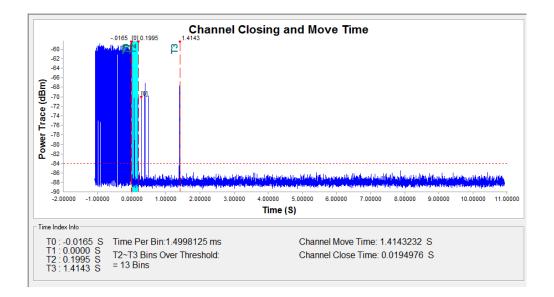
4. Measure the UUT for more than 30 minutes following the channel close/move time to verify that the UUT does not resume any transmissions on this Channel.



### 5.4.3.Test Result

Channel Move Time and Channel Closing Transmission Time for 802.11ac-VHT80 - 5290MHz







Non-Occupancy Period for 802.11ac-VHT80 - 5290MHz

Keysight Sp	ectrum Analyzer - Swept SA				_	- 7
enter F	RF 50 Ω DC req 5.290000000	PNO: Fast ↔	SENSE:INT Trig: Free Run Atten: 10 dB	ALIGN AUTO Avg Type: Log-Pwr	02:31:36 PM Nov 17, 2017 TRACE 1 2 3 4 5 6 TYPE WWWWW DET P NNNNN	Frequency
) dB/div	Ref Offset -23 dB <b>Ref -23.00 dB</b> m				∆Mkr1 1.800 ks -26.48 dB	Auto Tur
3.0						Center Fre 5.290000000 G⊦
3.0						Start Fre 5.290000000 G⊦
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enter 5. es BW 3		VBW 3	.0 MHz	Sweep 2	2.000 ks (8001 pts)	_
G				STATUS		

Parameter	Test Result	Limit
	Туре 0	
Channel Move Time (s)	1.414s	<10s
Channel Closing Transmission Time (ms)	10 Emo	< 60mg
(Note)	19.5ms	< 60ms
Non-Occupancy Period (min)	≥ 30min	≥ 30 min

Note: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 seconds period. The aggregate duration of control signals will not count quiet periods in between transmissions.



# 6. CONCLUSION

The data collected relate only the item(s) tested and show that the VR All-In-One Headset FCC ID:

2AI3G-A7215 is in compliance with Part 15E of the FCC Rules and IC Rules.

The End