







FCC DFS Test Report

FCC ID : VW3FAST3890V3

Equipment : Docsis 3.1 Voice Gateway

Brand Name : Samgemcom **Model Name** : F@ST3890 V3

Multiple Listing : F@ST3890 V3XXXXXXXXXXXXX

(X=0-9,A-Z or blank for marketing purpose)

Applicant : Sagemcom Broadband SAS

> 250, route de l'Empereur 92848 Rueil-Malmaison cedex - France

Manufacturer : Sagemcom Broadband SAS

> 250, route de l'Empereur 92848 Rueil-Malmaison cedex - France

Standard : 47 CFR FCC Part 15.407

The product was received on May 17, 2019, and testing was started from Oct. 24, 2019 and completed on Oct. 25, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of United States government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

TEL: 886-3-327-3456 : 1 of 132 Page Number FAX: 886-3-327-0973 Issued Date

Report Template No.: HE1-D2 Ver2.3

FCC ID: VW3FAST3890V3

Report Version : 01

: Nov. 18, 2019

FCC DFS Test Report

Table of Contents

HIST	ORY OF THIS TEST REPORT	3
SUM	MARY OF TEST RESULT	4
1	GENERAL DESCRIPTION	5
1.1	Information	5
1.2	Testing Applied Standards	7
1.3	Testing Location Information	7
2	TEST CONFIGURATION OF EUT	8
2.1	Test Channel Frequencies Configuration	8
2.2	The Worst Case Measurement Configuration	8
2.3	Accessories	9
2.4	Support Equipment	9
3	DYNAMIC FREQUENCY SELECTION (DFS) TEST RESULT	10
3.1	General DFS Information	10
3.2	Radar Test Waveform Calibration	13
3.3	UNII Detection Bandwidth	22
3.4	Channel Availability Check (CAC)	25
3.5	In-service Monitoring	29
3.6	Statistical Performance Check	34
4	TEST EQUIPMENT AND CALIBRATION DATA	131
5	MEASUREMENT UNCERTAINTY	132
Appe	endix A. Test Photos	

Photographs of EUT V01

TEL: 886-3-327-3456 FAX: 886-3-327-0973

Report Template No.: HE1-D2 Ver2.3 FCC ID: VW3FAST3890V3

Page Number : 2 of 132 Issued Date : Nov. 18, 2019

Report No.: FZ941813-01

Report Version : 01



History of this test report

Report No.: FZ941813-01

Report No.	Version	Description	Issued Date
FZ941813-01	01	Initial issue of report	Nov. 18, 2019

TEL: 886-3-327-3456 Page Number : 3 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

Report Template No.: HE1-D2 Ver2.3 FCC ID: VW3FAST3890V3



Summary of Test Result

Report No.: FZ941813-01

Report Clause	Ref. Std. Clause	ause Test Items		Remark
3.3	KDB 905462 7.8.1	DFS: UNII Detection Bandwidth Measurement	PASS	100% of the 99% BW
3.4	KDB 905462 7.8.2.1	DFS: Initial Channel Availability Check Time	PASS	CAC ≥ 60 sec
3.4	KDB 905462 7.8.2.2 DFS: Radar Burst at the Beginning of Channel Availability Check Time		PASS	Detection Threshold: -63 dBm
3.4	KDB 905462 7.8.2.3	DFS: Radar Burst at the End of the Channel Availability Check Time	PASS	Detection Threshold: -63 dBm
3.5	KDB 905462 7.8.3	DFS: In-Service Monitoring for Channel Move Time (CMT)	PASS	CMT ≤ 10sec
3.5	KDB 905462 7.8.3	DFS: In-Service Monitoring for Channel Closing Transmission Time (CCTT)	PASS	CCTT ≤ 60 ms starting at CMT 200ms
3.5	KDB 905462 7.8.3	DFS: In-Service Monitoring for Non-Occupancy Period (NOP)	PASS	NOP ≥ 30 min
3.6	KDB 905462 7.8.4	DFS: Statistical Performance Check	PASS	Table 5 - 7 (KDB 905462)
3.1.4	KDB 905462 8.1	User Access Restrictions	PASS	DFS controls

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and explanations:

None

Reviewed by: Jackson Tsai

Report Producer: Ann Hou

TEL: 886-3-327-3456 Page Number : 4 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



1 General Description

1.1 Information

1.1.1 RF General Information

Specification Items	Description					
Product Type	WLAN (4TX, 4RX)					
Radio Type	Inte	ntional Transceiver				
Power Type	From AC Adapter					
Modulation	IEEE 802.11a: OFDM (BPSK / QPSK / 16QAM / 64QAM)					
	IEEE 802.11n/ac: see the below table					
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54)					
	IEEE 802.11n/ac: see the below table					
Channel Bandwidth	20/40/80 MHz operating channel bandwidth					
Operating Mode						
		Client with radar detection				
		Client without radar detection	n			
Communication Mode	\boxtimes	IP Based (Load Based)		Frame Based		
TPC Function	\boxtimes	With TPC		Without TPC		
Weather Band (5600~5650MHz)	z) With 5600~5650MHz					
Power-on cycle	80MHz: Requires 34.67 seconds to complete its power-on cycle.					
Software / Firmware Version	FAS	ST3890V3_SSC-US_sw05.76	6.6.40	I-TES		
Note: EUT employ a TPC mechanis output power.	sm aı	nd TPC have the capability to	opei	rate at least 6 dB below highest RF		

Report No.: FZ941813-01

Antenna & Bandwidth

Antenna & Danawidin	antenna a Banawian							
Antenna	Two (TX)							
Band width Mode	20 MHz	40 MHz	80 MHz					
IEEE 802.11a	V	Х	X					
IEEE 802.11n	V	V	X					
IEEE 802.11ac	V	V	V					

TEL: 886-3-327-3456 Page Number : 5 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



FCC DFS Test Report

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	4	MCS 0-31
802.11n (HT40)	4	MCS 0-31
802.11ac (VHT20)	4	MCS0~9/Nss1-4
802.11ac (VHT40)	4	MCS0~9/Nss1-4
802.11ac (VHT80)	4	MCS0~9/Nss1-4

Report No.: FZ941813-01

- Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40.
- Note 2: HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- Note 3: IEEE Std. 802.11ac modulation consists of VHT20, VHT40 and VHT80 (VHT: Very High Throughput). Then EUT support VHT20, VHT40 and VHT80.
- Note 4: VHT20, VHT40 and VHT80 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- Note 5: Modulation modes consist of below configuration:
 - 11a: IEEE 802.11a, HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac

1.1.2 Antenna Information

Ant.			Gain (dE	Bi)		Antenna	a Connector	Brand	Model Name	
Ant.	Fort	2.4G	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3	Туре	Connector	Connector Brand	Woder Name
1	1	3.04	4.12	3.59	3	3.93	PCB	I-PEX	PEGATRON	FAST3890v3
2	2	3	3.55	4.22	4.39	4.11	PCB	I-PEX	PEGATRON	FAST3890v3
3	3	3.81	3.91	5.03	5.12	4.95	PCB	I-PEX	PEGATRON	FAST3890v3
4	4	3.18	3.44	3.25	3.25	4.1	PCB	I-PEX	PEGATRON	FAST3890v3
	elated ain	7.59	7.38	6.99	7.46	7.8	•	-	•	-

Note 1: The EUT has four antennas.

For 2.4GHz function:

For IEEE 802.11 b/g/n/ac mode (4TX/4RX)

Ant. 1 (port 1), Ant. 2 (port 2), Ant. 3 (port 3) and Ant. 4 (port 4) could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11 a/n/ac mode (4TX/4RX)

Ant. 1 (port 1), Ant. 2 (port 2), Ant. 3 (port 3) and Ant. 4 (port 4) could transmit/receive simultaneously.

TEL: 886-3-327-3456 Page Number : 6 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01

1.1.3 DFS Band Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 52, 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140.

Report No.: FZ941813-01

For 40MHz bandwidth systems, use Channel 54, 62, 102, 110, 134.

For 80MHz bandwidth systems, use Channel 58, 106

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
	52	5260 MHz	60	5300 MHz
5250~5350 MHz	54	5270 MHz	62	5310 MHz
U-NII-2A	56	5280 MHz	64	5320 MHz
	58	5290 MHz	-	-
	100	5500 MHz	112	5560 MHz
	102	5510 MHz	116	5580 MHz
5470~5725 MHz	104	5520 MHz	132	5660 MHz
U-NII-2C	106	5530 MHz	134	5670 MHz
	108	5540 MHz	136	5680 MHz
	110	5550 MHz	140	5700 MHz

1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

1.3 Testing Location Information

	Testing Location							
\boxtimes	HWA YA	ADD) :	No. 52, Huaya	1st Rd., Guisł	nan Di	st., Taoyuan City, Taiwar	n (R.O.C.)
		TEL	:	886-3-327-3450	6 FAX	: 8	86-3-327-0973	
				Test site De	esignation No.	TW11	190 with FCC.	
	JHUBEI	ADD) :	No.8, Lane 724	, Bo-ai St., Jh	ubei C	City, HsinChu County 30	2, Taiwan, R.O.C.
		TEL	:	886-3-656-906	5 FAX	: 8	86-3-656-9085	
				Test site De	esignation No.	TWO	006 with FCC.	
T	Test Condition Test Site No. Test Engineer Test Environment Test Date						Test Date	
DFS Site DFS01-HY		Peng		26.3~26.7°C / 63.4~63.7%	24/Oct/2019 ~ 25/Oct/2019			

TEL: 886-3-327-3456 Page Number : 7 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



2 Test Configuration of EUT

2.1 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration						
IEEE Std. Test Channel Freq. (MH						
802.11ac (VHT20)	5500 MHz					
802.11ac (VHT40)	5510 MHz					
802.11ac (VHT80)	5530 MHz					

Report No.: FZ941813-01

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests					
Tests Item Dynamic Frequency Selection (DFS)					
Test Condition	The EUT shall be configured to operate at the highest transmitter output power setting. If more than one antenna assembly is intended for this power setting, the gain of the antenna assembly with the lowest gain shall be used. The DFS radar test signals have been aligned to the direction corresponding to the EUT's maximum antenna gain.				
Modulation Mode	802.11ac (VHT20), 802.11ac (VHT40), 802.11ac (VHT80)				

TEL: 886-3-327-3456 Page Number : 8 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



2.3 Accessories

Accessories							
	Brand Name	SAGEMCOM	Model Name	NBS42E120350VU			
AC Adapter	Manufacturer	NetBIT	P/N	191476468-xx			
AC Adapter	Power Rating	I/P: 200-240Vac; 1A;	O/P: 12Vdc, 3.5A				
	Power Cord	1.85 meter, non-shielded cable, w/o ferrite core					
	Brand Name	Sagemcom	Model Name	MSA-Z3800IC12.0-48W-P			
Power Cable	Manufacturer	MOSO	P/N	191377516			
	Signal Line	0.9 meter, non-shielded cable, w/o ferrite core					
RJ11 Cable	Brand Name	N/A	Model Name	N/A			
KJII Cable	Power Cord	1.45 meter, non-shielded cable					
D IAE Cable	Brand Name	N/A	Model Name	N/A			
RJ45 Cable	Power Cord	1.45 meter, non-shield	ded cable				

Report No.: FZ941813-01

Reminder: Regarding to more detail and other information, please refer to user manual.

2.4 Support Equipment

Support Equipment						
No. Equipment Brand Name Model Name						
1	Client(Slave)	Samgemcom	FAST3890_V3			
2	NoteBook	DELL	Latitude E5550			
3	Adapter for NB	DELL	FA90PSO-00			
4	NoteBook	DELL	Latitude E5540			
5	Adapter for NB	DELL	FA90PSO-00			
6	Fixture	-	-			

Note: Support equipment No.6 was provided by customer.

TEL: 886-3-327-3456 Page Number : 9 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



3 Dynamic Frequency Selection (DFS) Test Result

3.1 General DFS Information

3.1.1 DFS Parameters

Table D.1: DFS requirement values						
Parameter Value						
Non-occupancy period	Minimum 30 minutes					
Channel Availability Check Time	60 seconds					
Channel Move Time	10 seconds (Note 1).					
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second periods. (Notes 1 and 2).					
U-NII Detection Bandwidth	Minimum 100% of the 99% power bandwidth (Note 3).					

Report No.: FZ941813-01

- 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 additional intermittent control signals required to facilitate Channel changes (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 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.

Table D.2: Interference threshold values					
Maximum Transmit Power	Value (see note)				
EIRP≥ 200 mW	-64 dBm				
EIRP < 200 mW and PSD < 10dBm/MHz	-62 dBm				
EIRP < 200 mW and PSD ≥ 10dBm/MHz	-64 dBm				

- Note 1: This is the level at the input of the receiver assuming a 0 dBi receive 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 refer to KDB Publication 662911.

TEL: 886-3-327-3456 Page Number : 10 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

Report Template No.: HE1-D2 Ver2.3 FCC ID: VW3FAST3890V3



3.1.2 Applicability of DFS Requirements Prior to Use of a Channel

	DFS Operational mode				
Requirement	Master	Client without radar detection	Client with radar detection		
Non-Occupancy Period	Yes	Not required (See the note)	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		

Report No.: FZ941813-01

Note:

According to KDB 905462 D03 Client Without DFS New Rules v01r02 (b) 6."An analyzer plot that contains a single 30-minute sweep on the original channel "

3.1.3 Applicability of DFS Requirements during Normal Operation

	DFS Operational mode				
Requirement	Master	Client without radar detection	Client with radar detection		
DFS Detection Threshold	Yes	Not required	Yes		
Channel Closing Transmission Time	Yes	Yes	Yes		
Channel Move Time	Yes	Yes	Yes		
U-NII Detection Bandwidth	Yes	Not required	Yes		

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required

Note: Frequencies selected for statistical performance check (Section 7.8.4) 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.

TEL: 886-3-327-3456 Page Number : 11 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



FCC DFS Test Report

3.1.4 User Access Restrictions

User Access Restrictions DFS controls (hardware or software) related to radar detection are NOT accessible to the user. Manufacturer statement confirming that information regarding the parameters of the detected Radar Waveforms is not available to the end user.

Report No.: FZ941813-01

3.1.5 Channel Loading/Data Streaming

	The data file (MPEG-4) has been transmitting in a streaming mode.
\boxtimes	Software to ping the client is permitted to simulate data transfer with random ping intervals.
\boxtimes	Minimum channel loading of approximately 17%.
	Unicast protocol has been used.

TEL: 886-3-327-3456 Page Number : 12 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



3.2 **Radar Test Waveform Calibration**

3.2.1 **Short Pulse Radar Test Waveforms**

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1	See Note 1
1A	1	15 unique PRI in KDB 905462 D02 Table 5a	(1) (19×10 ⁶))	60%	15
1B	1	15 unique PRI within 518-3066, Excluding 1A PRI	$Roundup \left(\frac{1}{360} \right) \times \left(\frac{19 \times 10^6}{PRI} \right) $	60%	15
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	4 11-20 200-500		12-16	60%	30
Aggrega	ate (Radar Type	s 1-4)	80%	120	

Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

A minimum of 30 unique waveforms are required for each of the short pulse radar types 1 through 4. If more than 30 waveforms are used for short pulse radar types 1 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4.

3.2.2 Long Pulse Radar Test Waveform

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

Each waveform is defined as follows:

- The transmission period for the Long Pulse Radar test signal is 12 seconds.
- There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst Count.
- Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
- The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
- Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a transmission period will have the same chirp width. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and

TEL: 886-3-327-3456 Page Number : 13 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

: 01

FCC DFS Test Report

ends at 5310 MHz.

• If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the time between the first and second pulses is chosen independently of the time between the second and third pulses.

Report No.: FZ941813-01

: 01

The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst Count. Each interval is of length (12,000,000 / Burst Count) microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and [(12,000,000 / Burst Count) – (Total Burst Length) + (One Random PRI Interval)] microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen independently.

3.2.3 Frequency Hopping Radar Test Waveform

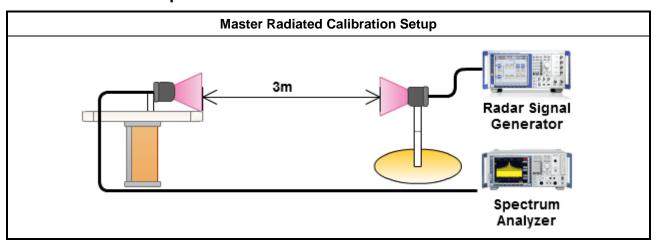
Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (ms)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	0.333	300	70%	30

The FCC Type 6 waveform uses a static waveform with 100 bursts in the instruments ARB. In addition, the RF list mode is operated with a list containing 100 frequencies from a randomly generated list and it had be ensured that at least one of the random frequencies falls into the UNII Detection Bandwidth of the DUT. Each burst from the waveform file initiates a trigger pulse at the beginning that switches the RF list from one item to the next one.

3.2.4 DFS Threshold Level

DFS Threshold Level								
DFS Threshold level:	-63	dBm	at the antenna connector					
1			in front of the antenna					
The Interference Radar Detection Threshold Level is $-64 \text{ dBm} + 0 \text{ [dBi]} + 1 \text{ dB} = -63 \text{ dBm}$. That had been taken into account the output power range and antenna gain.								

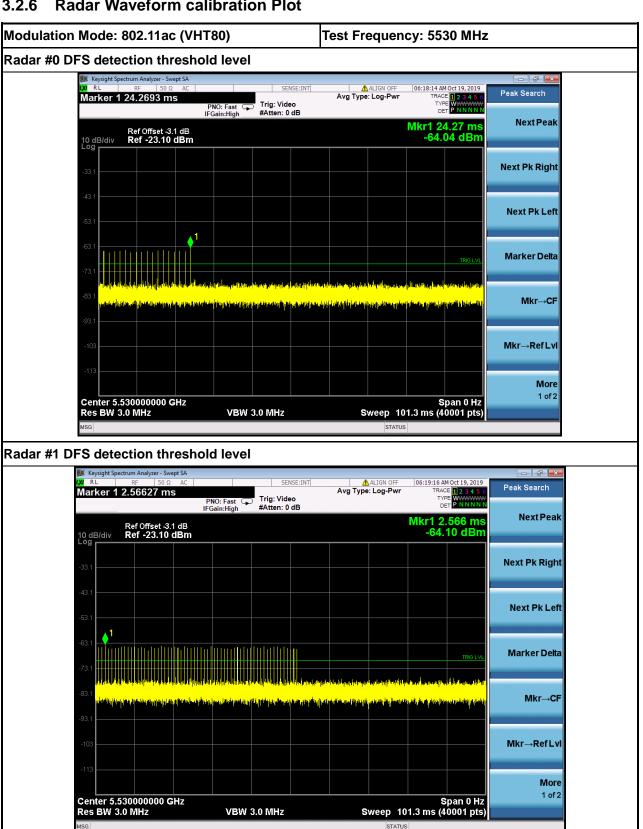
3.2.5 Calibration Setup



TEL: 886-3-327-3456 Page Number : 14 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



3.2.6 **Radar Waveform calibration Plot**



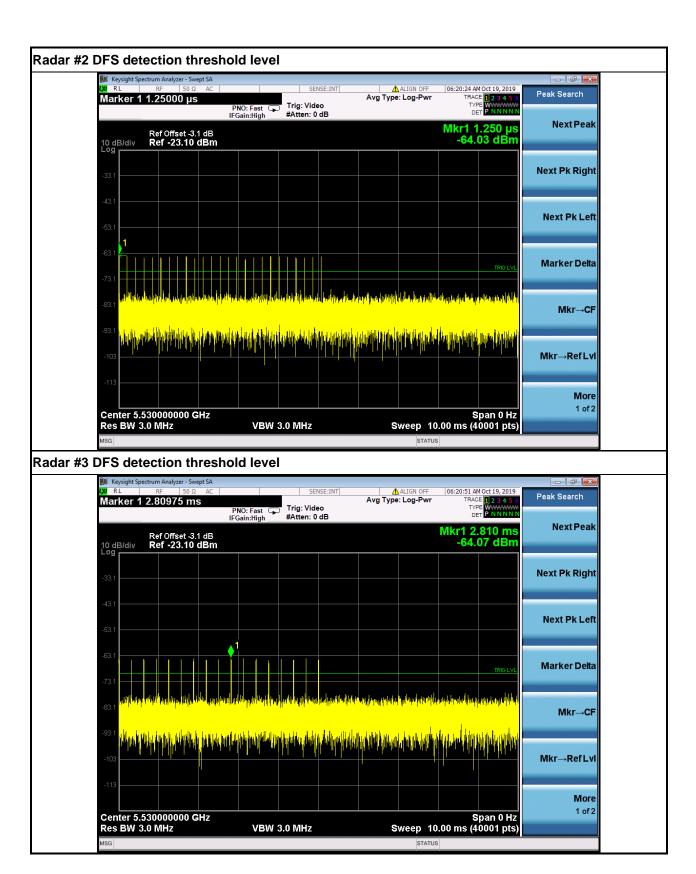
Report No.: FZ941813-01

TEL: 886-3-327-3456 : 15 of 132 Page Number FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

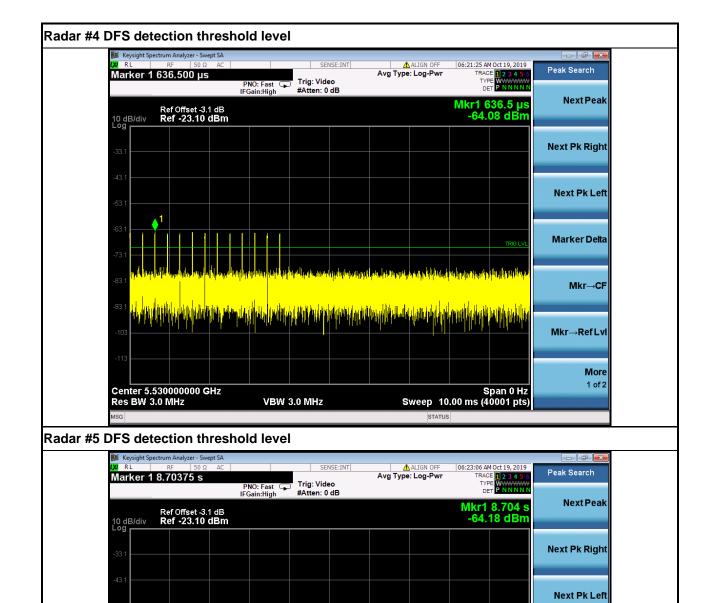
Report Template No.: HE1-D2 Ver2.3



: 01

TEL: 886-3-327-3456 Page Number : 16 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version



Marker Delta

Mkr→CF

Mkr→Ref LvI

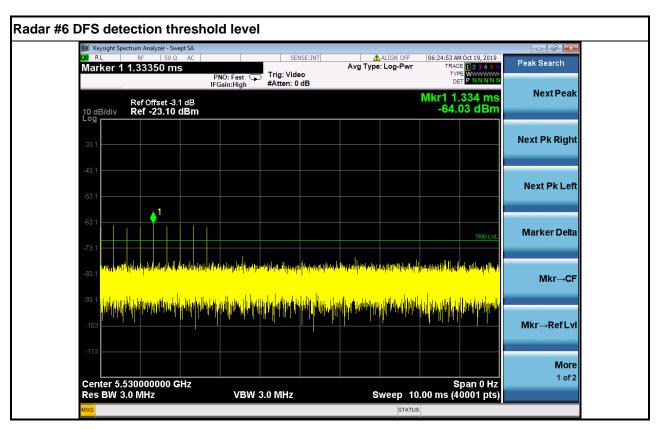
Span 0 Hz Sweep 15.00 s (40001 pts) More 1 of 2

TEL: 886-3-327-3456 Page Number : 17 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01 FCC ID : VW3FAST3890V3

VBW 3.0 MHz

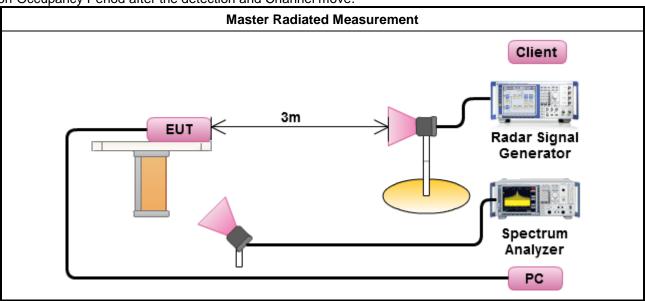
Center 5.530000000 GHz Res BW 3.0 MHz



3.2.7 Test Setup

FCC ID: VW3FAST3890V3

A spectrum analyzer is used as a monitor to verify that the EUT has vacated the Channel within the (Channel Closing Transmission Time and Channel Move Time, and does not transmit on a Channel during the Non-Occupancy Period after the detection and Channel move.

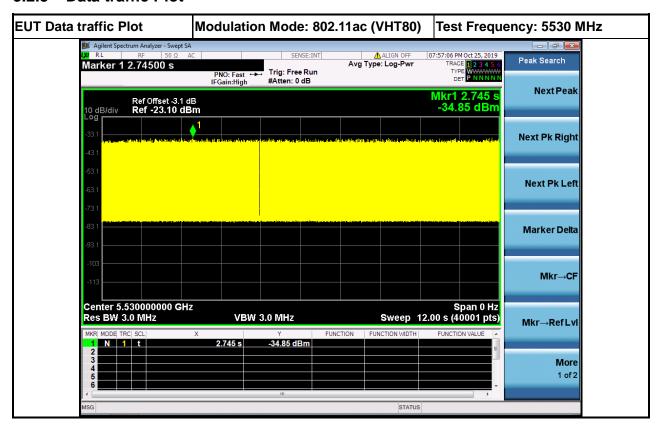


TEL: 886-3-327-3456 Page Number : 18 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01

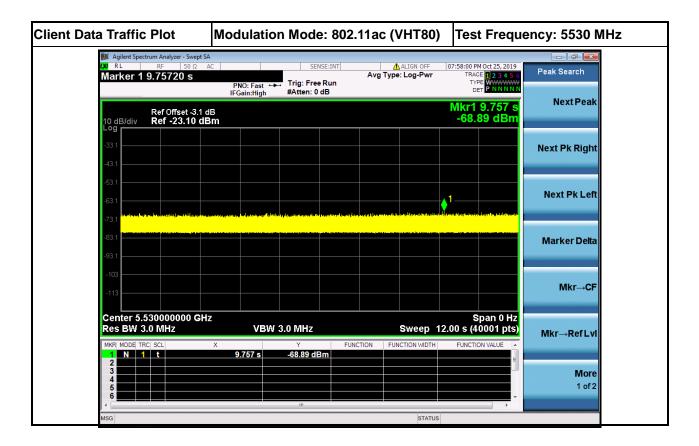


3.2.8 Data traffic Plot



TEL: 886-3-327-3456 Page Number : 19 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

FCC ID: VW3FAST3890V3

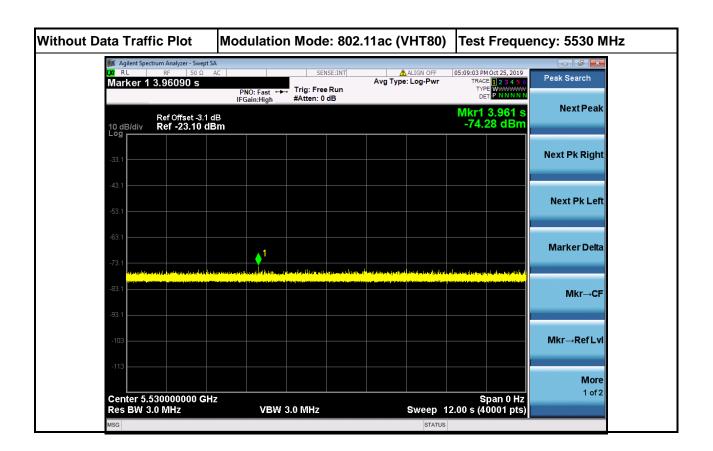


Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 20 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01

FCC DFS Test Report



Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 21 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

3.3 UNII Detection Bandwidth

3.3.1 UNII Detection Bandwidth Limit

Channel Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	UNII Detection Bandwidth Min. Limit (MHz)
20	18.226	19
40	36.498	37
80	76.066	77

Report No.: FZ941813-01

UNII Detection Bandwidth is minimum 100% of the 99% power bandwidth. A single radar Burst is generated for a minimum of 10 trials, and the response of the UUT is noted. The UUT must detect the Radar Waveform 90% or more of the time.

3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method

During the U-NII Detection Bandwidth detection test, radar type 0 is used and for each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic. The EUT is set up as a standalone device (no associated Client and no traffic). The radar frequency is increased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The highest frequency at which detection is greater than or equal to 90% is denoted as F_H. The radar frequency is decreased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The lowest frequency at which detection is greater than or equal to 90% is denoted as F_L. UNII Detection Bandwidth = F_H - F_L.

TEL: 886-3-327-3456 Page Number : 22 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01

3.3.4 Test Result of UNII Detection Bandwidth

	EUT Frequency=5500 MHz										
Channel Bandwidth (MHz)	20										
		DF	S De	tecti	on Tr	ials (1=De	tecti	on, 0	= No	Detection)
Radar Frequency (MHz)	1	2	3	4	5	6	7	8	9	10	Detection Rate
			3	4	,	O	,	0	9	10	(%)
5489	0	0	0	0	0	0	0	0	0	0	0%
5490	1	1	1	1	1	1	1	1	1	1	100%
5495	1	1	1	1	1	1	1	1	1	1	100%
5500	1	1	1	1	1	1	1	1	1	1	100%
5505	1	1	1	1	1	1	1	1	1	1	100%
5510	1	1	1	1	1	1	1	1	1	1	100%
5511	0	0	0	0	0	0	0	0	0	0	0%
Radar Type 0-Detection Bandwidth (MHz) =							20				
UNII Detection Bandwidth Min. Limit (MHz) =						19					
Test Result	•		•		•	•	•				Complied

Report No.: FZ941813-01

	EU	T Fre	quer	ncy=5	510	MHz					
Channel Bandwidth (MHz)	40										
		DF	S De	tecti	on Tr	ials (1=De	tecti	on, 0	= No	Detection)
Radar Frequency (MHz)	4	2	3	4	5	6	7	8	9	10	Detection Rate
			3	-	3	U	'	0	9	10	(%)
5490	1	1	1	1	1	1	1	1	1	1	100%
5495	1	1	1	1	1	1	1	1	1	1	100%
5500	1	1	1	1	1	1	1	1	1	1	100%
5505	1	1	1	1	1	1	1	1	1	1	100%
5510	1	1	1	1	1	1	1	1	1	1	100%
5515	1	1	1	1	1	1	1	1	1	1	100%
5520	1	1	1	1	1	1	1	1	1	1	100%
5525	1	1	1	1	1	1	1	1	1	1	100%
5530 1 1 1 1 1 1 1 1 1 1								100%			
Radar Type 0-Detection Bandwidth (MHz) =							40				
UNII Detection Bandwidth Min. Limit (MHz) =						37					
Test Result						Complied					

TEL: 886-3-327-3456 Page Number : 23 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



FCC ID: VW3FAST3890V3

FCC DFS Test Report

	EU	T Fre	quer	ncv=5	530	MHz					
Channel Bandwidth (MHz)	80		•								
` ,	DFS Detection Trials (1=Detection, 0= No Detection)						Detection)				
Radar Frequency (MHz)	1	2	3	4	5	6	7	8	9	10	Detection Rate (%)
5490	1	1	1	1	1	1	1	1	1	1	100%
5495	1	1	1	1	1	1	1	1	1	1	100%
5500	1	1	1	1	1	1	1	1	1	1	100%
5505	1	1	1	1	1	1	1	1	1	1	100%
5510	1	1	1	1	1	1	1	1	1	1	100%
5515	1	1	1	1	1	1	1	1	1	1	100%
5520	1	1	1	1	1	1	1	1	1	1	100%
5525	1	1	1	1	1	1	1	1	1	1	100%
5530	1	1	1	1	1	1	1	1	1	1	100%
5535	1	1	1	1	1	1	1	1	1	1	100%
5540	1	1	1	1	1	1	1	1	1	1	100%
5545	1	1	1	1	1	1	1	1	1	1	100%
5550	1	1	1	1	1	1	1	1	1	1	100%
5555	1	1	1	1	1	1	1	1	1	1	100%
5560	1	1	1	1	1	1	1	1	1	1	100%
5565	1	1	1	1	1	1	1	1	1	1	100%
5570 1 1 1 1 1 1 1 1 1 1								100%			
adar Type 0-Detection Bandwidth (MHz) =							80				
NII Detection Bandwidth Min. Limit (MHz) =						77					
st Result						Complied					

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 24 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01

3.4 Channel Availability Check (CAC)

3.4.1 Channel Availability Check Limit

Channel Availability Check Limit

Report No.: FZ941813-01

The EUT shall perform a Channel Availability Check to ensure that there is no radar operating on the channel. After power-up sequence, receive at least 1 minute (60 sec) on the intended operating frequency.

3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method

- For Initial Channel Availability Check Time. The EUT does not emit beacon, control, or data signals on the test Channel until the power-up sequence has been completed and the UNII device checks for Radar Waveforms for one minute on the test Channel. This test does not use any Radar Waveforms.
- For Radar Burst at the Beginning of the Channel Availability Check Time. To verify successful radar detection on the selected Channel during a period equal to the Beginning of the Channel Availability Check Time.
- For Radar Burst at the End of the Channel Availability Check Time. To verify successful radar detection on the selected Channel during a period equal to the End of the Channel Availability Check Time.

TEL: 886-3-327-3456 Page Number : 25 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



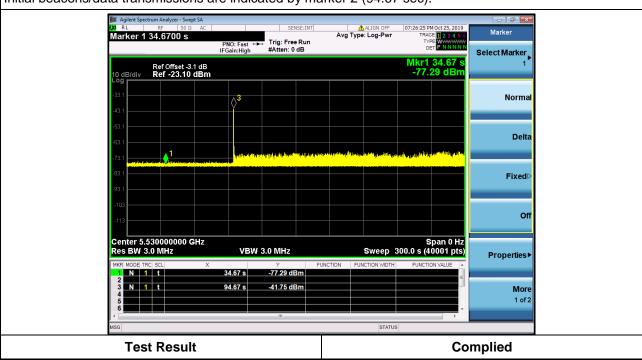
FCC ID: VW3FAST3890V3

3.4.4 Test Result of Initial Channel Availability Check Time

Modulation Mode	Freq.	Radar Test Signal
802.11ac (VHT80)	5530 MHz	N/A

Report No.: FZ941813-01

The EUT does not transmit any beacon or data transmissions until at least 1 minute after the completion of the power-on cycle (34.67 sec). The initial power up time of the EUT is indicated by marker 1 (34.67 sec). Initial beacons/data transmissions are indicated by marker 2 (94.67 sec).



TEL: 886-3-327-3456 Page Number : 26 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01

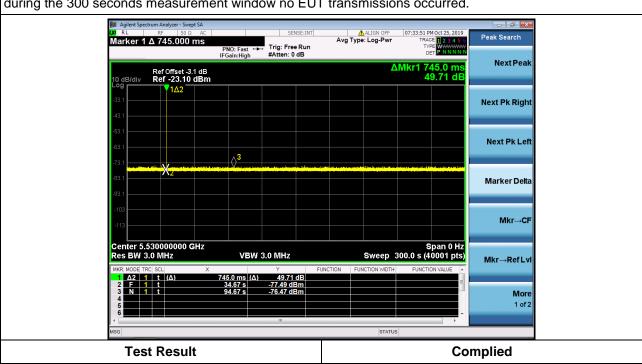


3.4.5 Test Result of Radar Burst at the Beginning of the Channel Availability Check Time

Report No.: FZ941813-01

Modulation Mode	Freq. (MHz)	Radar Type Signal
802.11ac (VHT80)	5530 MHz	0

Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions will continue for 60 seconds after the radar Burst has been generated. Verify that during the 300 seconds measurement window no EUT transmissions occurred.



TEL: 886-3-327-3456 Page Number : 27 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

Report Template No.: HE1-D2 Ver2.3 FCC ID: VW3FAST3890V3

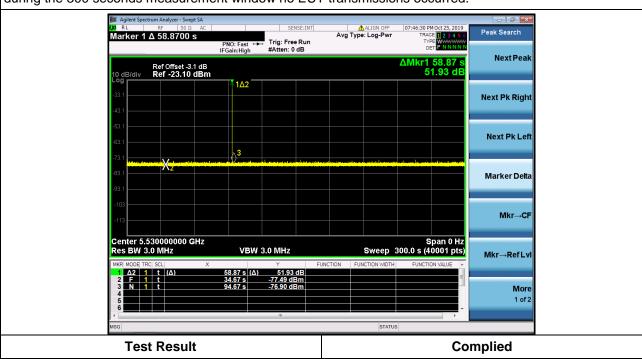


3.4.6 Test Result of Radar Burst at the End of the Channel Availability Check Time

Modulation Mode	Freq. (MHz)	Radar Type Signal
802.11ac (VHT80)	5530 MHz	0

Report No.: FZ941813-01

Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions will continue for 60 seconds after the radar Burst has been generated. Verify that during the 300 seconds measurement window no EUT transmissions occurred.



TEL: 886-3-327-3456 Page Number : 28 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

Report Template No.: HE1-D2 Ver2.3 FCC ID: VW3FAST3890V3

3.5 In-service Monitoring

3.5.1 In-service Monitoring Limit

In-service Monitoring Limit						
Channel Move Time	10 sec					
Channel Closing Transmission Time	200 ms + an aggregate of 60 ms over remaining 10 sec periods.					
Non-occupancy period	Minimum 30 minutes					

Report No.: FZ941813-01

3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method

- ✓ Verified during In-Service Monitoring; Channel Closing Transmission Time, Channel Move Time. Client Device will associate with the EUT. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Channel Move Time). Compare the Channel Move Time and Channel Closing Transmission Time limits.
- ✓ Verified during In-Service Monitoring; Channel Closing Transmission Time, Channel Move Time. One 12 sec plot needs to be reported for the Short Pulse Radar Types 0. And zoom-in a 60 ms plot verified channel closing time for the aggregate transmission time starting from 200ms after the end of the radar signal to the completion of the channel move.
- ✓ Verified during In-Service Monitoring; Non-Occupancy Period. Client Device will associate with the EUT. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Non-Occupancy Period). Compare the Non-Occupancy Period limits.

TEL: 886-3-327-3456 Page Number : 29 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



FCC DFS Test Report

3.5.4 Test Result of In-service Monitoring

Modulation Mode: 802.11ac (VHT80)

Barrantan	Test Result	1 : :4	
Parameter	Type 0	Limit	
Test Channel (MHz)	5530 MHz	-	
Channel Move Time (sec.)	0.695	< 10s	
Channel Closing Transmission Time (ms) (Note)	3.850	< 60ms	
Non-Occupancy Period (min.)	≥30	≥ 30 min	

Report No.: FZ941813-01

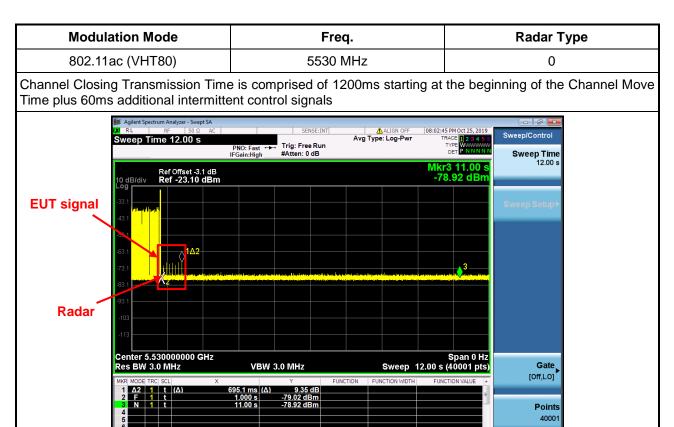
Note: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 seconds period. The aggregate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

TEL: 886-3-327-3456 Page Number : 30 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



FCC ID: VW3FAST3890V3

3.5.5 Test Plot of In-Service Monitoring for Channel Move Time



Report No.: FZ941813-01

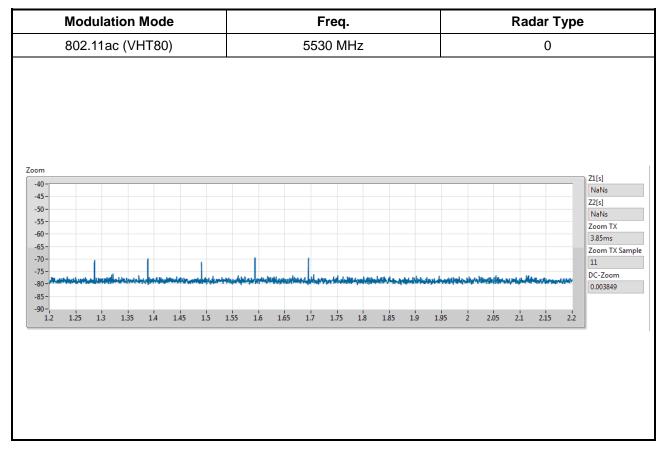
TEL: 886-3-327-3456 Page Number : 31 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



3.5.6 Test Plot of In-Service Monitoring for Channel Closing Transmission Time

Report No.: FZ941813-01



TEL: 886-3-327-3456 Page Number : 32 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



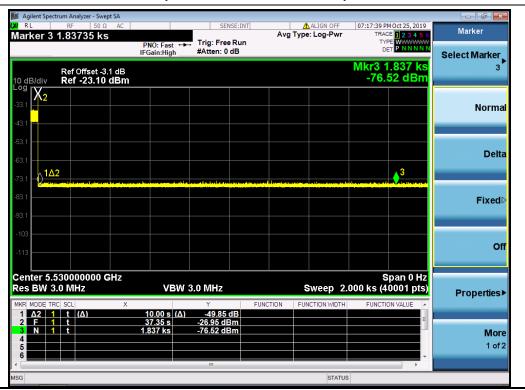
3.5.7 Test Plot of In-Service Monitoring for Non-Occupancy Period

Modulation Mode	Freq.
802.11ac (VHT80)	5530 MHz

Report No.: FZ941813-01

Non-Occupancy Period

During the 30 minutes observation time, UUT did not make any transmissions on a channel after a radar signal was detected on that channel by either the Channel Availability Check or the In-Service Monitoring.



TEL: 886-3-327-3456 Page Number : 33 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



3.6 **Statistical Performance Check**

3.6.1 Statistical Performance Check Limit

Radar Type	Minimum Percentage of Successful Detection (Pd)	Minimum Trials
1	60%	30
2	60%	30
3	60%	30
4	60%	30
Aggregate (Radar Types 1-4)	80%	120
5	80%	30
6	70%	30

Report No.: FZ941813-01

The percentage of successful detection is calculated by:

TotalWaveformDetecti ons ____ ×100 = Probability of Detection Radar Waveform TotalWavef ormTrails

In addition an aggregate minimum percentage of successful detection across all Short Pulse Radar Types 1-4 is required and is calculated as follows:

Pd1 + Pd2 + Pd3 + Pd4

4

3.6.2 **Measuring Instruments**

Refer a test equipment and calibration data table in this test report.

3.6.3 **Test Procedures**

FCC ID: VW3FAST3890V3

Test Method

For Statistical Performance Check test. Demonstrating a minimum channel loading of approximately 17% or greater of the test. Observe the transmissions of the UUT at the end of the Burst on the Operating Channel for duration greater than 10 seconds for Short Pulse Radar Types 1-4 and 6 to ensure detection occurs. Then Observe the transmissions of the UUT at the end of the Burst on the Operating Channel for duration greater than 22 seconds for Long Pulse Radar Type 5 to ensure detection occurs. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trial runs.

TEL: 886-3-327-3456 : 34 of 132 Page Number FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01

3.6.4 Test Result of Statistical Performance Check

Modulation Mode: 802.11ac (VHT20)

Type 1 Radar Statistical Performance

Trial #	Test Freq. (MHz)	Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulse Per Second)	PRI (us)	1=Detection 0=No Detection
1	5493	1	1930.5	518	1
2	5491	23	326.2	3066	1
3	5495	19	1139.0	878	1
4	5496	12	1355.0	738	1
5	5497	4	1730.1	578	1
6	5498	8	1519.8	658	1
7	5499	15	1253.1	798	1
8	5500	6	1618.1	618	1
9	5501	14	1285.3	778	1
10	5502	3	1792.1	558	1
11	5503	13	1319.3	758	1
12	5504	9	1474.9	678	1
13	5505	7	1567.4	638	1
14	5506	17	1193.3	838	1
15	5507	10	1432.7	698	1
16	5506	-	1692.0	591	1
17	5505	-	328.1	3048	1
18	5504	-	373.4	2678	1
19	5503	-	574.4	1741	1
20	5509	-	1216.5	822	1
21	5501	-	801.3	1248	1
22	5500	-	488.5	2047	0
23	5499	-	956.0	1046	1
24	5498	-	517.6	1932	1
25	5497	-	1422.5	703	1
26	5496	-	542.0	1845	1
27	5495	-	741.3	1349	1
28	5494	-	881.8	1134	1
29	5493	-	427.4	2340	1
30	5494	-	628.9	1590	1
'		Detection Percentage	(%)		96.667
Limit					60%
Test Res	ult				Complied

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 35 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



FCC DFS Test Report

Type 2 Radar Statistical Performance

FCC ID: VW3FAST3890V3

Trial #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5493	2.6	221	23	1
2	5491	4.6	198	27	1
3	5495	1.1	184	29	1
4	5496	4.8	203	24	1
5	5497	2.4	162	25	1
6	5498	3.4	204	28	0
7	5499	2.3	170	27	0
8	5500	3.5	184	23	1
9	5501	4.9	150	27	1
10	5502	4.6	211	29	1
11	5503	2.9	158	23	1
12	5504	2.6	226	27	1
13	5505	1.6	204	26	1
14	5506	3.9	181	25	0
15	5507	4.6	202	24	1
16	5506	4.1	194	27	1
17	5505	2.3	193	28	1
18	5504	3.9	173	29	1
19	5503	4.3	188	23	1
20	5509	1.5	215	26	1
21	5501	4.9	227	27	1
22	5500	1.1	199	23	0
23	5499	4.5	155	29	1
24	5498	4.0	190	27	1
25	5497	2.4	151	23	1
26	5496	2.5	180	28	1
27	5495	2.5	228	23	1
28	5494	2.5	203	25	1
29	5493	1.5	188	25	0
30	5494	1.9	217	24	1
	D	etection Percentage (%	6)	•	83.333
.imit		5 - (·	,		60%
est Res	ult				Complied

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 36 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



Type 3 Radar Statistical Performance

Trial #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection ; 0=No Detection						
1	5493	8.0	205	16	1						
2	5491	6.7	382	18	1						
3	5495	8.6	418	16	1						
4	5496	9.4	351	17	1						
5	5497	7.4	383	18	0						
6	5498	9.8	232	16	1						
7	5499	9.1	377	17	1						
8	5500	9.6	457	16	1						
9	5501	8.0	471	18	1						
10	5502	9.0	304	18	1						
11	5503	8.0	316	17	1						
12	5504	9.8	325	16	1						
13	5505	8.0	409	17	1						
14	5506	9.9	200	17	1						
15	5507	8.8	458	16	1						
16	5506	8.0	232	18	1						
17	5505	8.3	250	16	1						
18	5504	8.7	270	16	1						
19	5503	7.7	350	17	1						
20	5509	7.1	230	16	0						
21	5501	7.3	416	18	1						
22	5500	7.6	498	18	1						
23	5499	7.3	286	17	1						
24	5498	7.3	287	16	1						
25	5497	7.5	462	17	1						
26	5496	6.2	300	17	1						
27	5495	6.4	323	18	1						
28	5494	7.1	420	16	1						
29	5493	7.2	395	18	1						
30											
	Detection Percentage (%)										
_imit											
Test Res	ult				60% Complied						

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 37 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01 FCC ID : VW3FAST3890V3



Type 4 Radar Statistical Performance

Trial #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection						
1	5493	18.0	242	15	1						
2	5491	19.9	279	12	1						
3	5495	12.9	487	14	1						
4	5496	15.0	452	13	1						
5	5497	16.3	230	12	0						
6	5498	19.8	238	13	1						
7	5499	18.2	420	16	1						
8	5500	16.3	452	15	1						
9	5501	14.2	495	12	0						
10	5502	17.8	228	16	1						
11	5503	19.1	211	16	1						
12	5504	18.4	283	15	0						
13	5505	11.8	411	12	1						
14	5506	14.2	284	13	1						
15	5507	13.9	202	12	1						
16	5506	17.8	340	14	1						
17	5505	15.6	290	16	0						
18	5504	14.6	250	16	0						
19	5503	14.4	484	15	1						
20	5509	18.9	387	13	0						
21	5501	11.1	348	15	1						
22	5500	13.8	291	16	1						
23	5499	14.3	295	12	1						
24	5498	12.5	300	12	1						
25	5497	12.5	322	14	1						
26	5496	12.5	383	13	1						
27	5495	15.7	322	16	1						
28	5494	19.8	469	13	1						
29	5493	18.6	406	15	0						
30	30 5494 15.9 238 14										
•	76.667										
imit		etection Percentage (%			60%						
est Resi	ult				Complied						

Report No.: FZ941813-01

Total Type 1~4 Radar Statistical Performance

Radar Type #	Detection Percentage (%)
1	96.667
2	83.333
3	93.333
4	76.667
Aggregate (Radar Types 1-4)	87.500
Limit	80%
Test Result	Complied

TEL: 886-3-327-3456 Page Number : 38 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01
FCC ID : VW3FAST3890V3



Type 5 Radar Statistical Performance

Center Freq. (MHz)	Low Edge (MHz)	High Edge (MHz)								
5500	5490.5	5509.5	VSG Freq. (MHz)	Detection						
Trial	Chirp	Offset								
1	11	0	5500.00	1						
2	5	0	5500.00	1						
3	20	0	5500.00	1						
4	13	0	5500.00	1						
5	11	0	5500.00	1						
6	16	0	5500.00	1						
7	11	0	5500.00	1						
8	20	0	5500.00	1						
9	9	0	5500.00	1						
10	15	0	5500.00	1						
11	20	1.50	5498.50	1						
12	6	7.10	5492.90	0						
13	13	4.30	5495.70	1						
14	10	5.50	5494.50	1						
15	16	3.10	5496.90	0						
16	11	5.10	5494.90	1						
17	7	6.70	5493.30	1						
18	15	3.50	5496.50	1						
19	7	6.70	5493.30	1						
20	20	1.50	5498.50	1						
21	6	7.10	5507.10	1						
22	11	5.10	5505.10	1						
23	16	3.10	5503.10	0						
24	6	7.10	5507.10	1						
25	9	5.90	5505.90	1						
26	10	5.50	5505.50	1						
27	18	2.30	5502.30	1						
28	19	1.90	5501.90	1						
29	14	3.90	5503.90	1						
30	13	4.30	5504.30	1 27						
Total										
	Detection Per	centage (%)		90%						
mit		<u> </u>		80%						
est Result				Complied						

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 39 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01 FCC ID : VW3FAST3890V3



Data Sheet for Radar Type 5

Report No.: FZ941813-01

	Statistical Performance Check Result												
			Statis	tical F	ertorm	ance C	heck I	Result					
Radar Tes	st Signal (#)			5 Trail #				rail #	1				
Burst of Number	13		Burst 0.92307		30769	9 Waveform Length(s)		12		Frequency	Center		
Burst Offset (us)	Pulse Wid	dth		Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		RI-2 (us)	PRI-3 (us)		
591291	70		11		2	2	,	1208		1481	-		
815216	51.8		11	11		1	,	1896		-	-		
117197	97.9		11		3		1255		1463		1169		
340497	75.4		11		2		,	1776		1116	-		
563700	70.6		11		2			1361		1483	-		
786312	85.5		11		3		1168			1155	1192		
89901	70.6		11		2	2	1078			1126	-		
312423	97.5		11		3	3		1237		1833	1540		
536877	64.5		11			ĺ		1698	698 -		-		
759212	81.4		11		2	2		1575 1		1490	-		
62185	99.2		11		3	3		1350		1350 1982		1982	1902
285880	54.7		11		1			1722		-	-		
508479	75.7		11		2		1594			1682	-		

			Statis	tical F	Perform	ance C	heck	Result			
Radar Tes	st Signal (#))	5				Т	rail #		2	
Burst of Number	8	_	Burst riod(s)	,	1.5	Wavef Lengt		12		Frequency	Center
Burst Offset (us)	fset Pulse Width (us)		Chirp Width (MHz) Number Pulses p		s per	PRI-1 (us)		Р	RI-2 (us)	PRI-3 (us)	
1190042	68.2		5		2		,	1790		1952	-
56652	84.7		5		3			1714		1515	1061
419783	69.6		5		2		1458			1500	-
783608	56.5		5		1		1533			-	-
1144211	84.2		5		3		1322			1988	1910
11992	56.5	56.5 5			,		,	1411		-	-
374471	4471 97.5		5 3		3	,	1353		1981	1974	
738925	54.4		5		1		1365			-	-

TEL: 886-3-327-3456 Page Number : 40 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



	Statistical Performance Check Result												
Radar Te	st Signal (#)				5		Т	rail #		3			
Burst of Number	20		Burst riod(s)	(0.6 Wavet		1.7			Frequency	Center		
Burst Offset (us)	Pulse Wid (us)	dth	Chirp Width (MHz)		Numb Pulse Bu	s per	PR	PRI-1 (us)		RI-2 (us)	PRI-3 (us)		
439705	70		20	20		2	•	1001		1246	-		
583092	84.7		20		3	3	,	1198		1120	1552		
132117	55.3		20		1		•	1264		-	-		
277048	64.5		20		1		•	1871		-	-		
421122	68.6		20		2	2	•	1381		1894	-		
564997	93.7		20		3	3	•	1306		1111	1754		
113465	96.8		20		3			1996		1535	1742		
258948	78.3		20		2		•	1239		1166	-		
403936	76.7		20		2	2		1221		1107	-		
545928	86.2		20		3	3	•	1947		1800	1806		
96115	72.3		20		2			1504		1176	-		
241508	64.6		20		1			1382		-	-		
384855	95.4		20		3	3	•	1598		1117	1511		
528969	85.4		20		3	3	•	1631		1870	1152		
78179	73.2		20		2	2	1729			1649	-		
223000	77.7		20		2	2	-	1815		1238	-		
368464	65.7		20		1			1941		-	-		
510325	90.2		20		3			1899		1935	1819		
60248	98.9		20		3	3		1194		1675	1570		
205316	79.6		20		2		•	1245		1375	-		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 41 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	Perform	ance C	heck l	Result											
Radar Tes	t Signal (#)			,	5			rail #	4										
Burst of Number	14	_	Burst riod(s)	0.85	71429	Wave Lengt		1 12		Frequency	Center								
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V (MH		Numb Pulse Bu	s per	PR	PRI-1 (us) P		RI-2 (us)	PRI-3 (us)								
501575	51		13		1			1542		-	-								
707132	98.7		13		3	3	1613			1219	1066								
60818	91.5		13		3		1072		72 1397		1549								
267493	87		13		3	3	,	1253		1748	1762								
475767	66.3		13				,	1987		-	-								
680475	86.6		13		3	3	,	1785		1777	1797								
35313	95.2		13		3	3	,	1482		1137	1844								
242662	73.5		13		2	2	,	1059		1059 147		1475	-						
449288	98		13		3	3	,	1180	180 1480		1096								
657034	74.6		13		2	2	,	1324		1427	-								
9842	92.4		13		3	3 11		1133		1753	1378								
217141	82		13		2	2	,	1236		1236		1236		1236		1236		1259	-
422905	87.8		13		3	3		1803		1803 1842		1842	1900						
631115	72.9		13		2	2	,	1559		1726	-								

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 42 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statis	tical F	erform	ance C	heck l	Result					
Radar Tes	t Signal (#)			;	5		Т	rail #		5			
Burst of Number	13		Burst riod(s)	0.92	30769	9 Waveform 12			Frequency	Center			
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V (MH		Pulse	per of es per rst	PRI-1 (us)		Р	RI-2 (us)	PRI-3 (us)		
902081	100		11		3	3	,	1258		1396	1493		
206352	67.1		11		2	2	1492			1179	-		
429145	92.5		11		3		1410		1150		1042		
653709	60.9		11		1			1399		-	-		
877441	52		11		1			1193		-	-		
178469	91.8		11		3	3		1686		1403	1569		
402251	73.8		11		2	2		1067		1218	-		
625039	69.2		11		2	2		1841		1841 1229		1229	-
847087	87.9		11		3	3		1073		1416	1755		
151064	95.2		11		3	3		1197		1512	1756		
374324	76.8		11		2	2		1437		1437 18		1879	-
596338	90.1		11		3	3		1352		1352 1925		1666	
820999	80.4		11		2	2	1586			1132	-		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 43 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statis	tical F	Perform	ance C	heck	Result				
Radar Tes	t Signal (#)			;	5		Т	rail #		6		
Burst of Number	17		Burst eriod(s) 0.70588		58824	Waveform Length(s)		12		Frequency	Center	
Burst Offset (us)	Pulse Wid (us)	lth	Chirp V (MH				PRI-1 (us)		PRI-2 (us)		PRI-3 (us)	
94587	82.8		16		2	2	,	1332		1689	-	
265527	61.5		16		,	1	,	1764		-	-	
435227	91.9		16		;	3	,	1301		1024	1167	
605381	90.8		16	;		3	,	1277		1091	1354	
73476	94		16		3		1185		1805		1109	
244588	57.6		16		•	1		1487		-	-	
414781	67.8		16		2	2		1026		1554	-	
586578	53.4		16		1		1110		1110		-	
52576	71.4		16		2	2	1583		1653		-	
222476	93.3		16			3		1791	1766		1296	
393218	68.4		16		2	2		1678		1890	-	
562777	98.2		16		3	3		1510		1605	1418	
31603	82		16	16 2 1300 1523		1523	-					
201756	98.6		16		3	3		1020	1070		1990	
372162	73.3		16		2	2		1999	999 170		-	
542921	80.3		16		2		1205		1908		-	
10620	52		16		1		1445			-	-	

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 44 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statis	tical F	erform	ance C	heck l	Result					
Radar Tes	st Signal (#)			;	5 T I			rail #		7			
Burst of Number	13	_	Burst riod(s)	0.92	30769	Wave Lengt	-	12	Frequency		Center		
Burst Offset (us)	Pulse Wid	dth	Chirp V (MH		Pulse	per of es per rst	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)		
236763	93.9		11		3	3		1325		1401	1265		
458923	90.3		11		;	3	1962		1647		1876		
683506	76.8		11	:		1499		1499		1242	-		
906848	72.4		11		2			1595		1013	-		
209338	85.5		11		3		1048			1368	1438		
433316	56		11		1		1646			-	-		
654365	85.2		11		;	3		1784		1878	1389		
880256	54.8		11		,	1	1659		-		-		
181618	88.1		11		(3	,	1927		1928	1307		
405781	57.1		11		,	1		1664		-	-		
629680	55.8		11		1		,	1039		1039 -		-	-
852332	81.8	1.8		11 2		2	1050		1050 1038		-		
154801	60.7	60.7			1		1557			-	-		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 45 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

		Stati	stical F	Perform	ance CI	neck l	Result					
Radar Tes	st Signal (#)			5		Т	rail #		8			
Burst of Number	20	Burst Period(s)	(0.6 Wave		1 17			Frequency	Center		
Burst Offset (us)	Pulse Wid		Width Hz)	Number of Pulses per Burst		PRI-1 (us)		Р	RI-2 (us)	PRI-3 (us)		
244340	96.4	2	:0	3	3	1	1226		1572	2000		
390950	60.1	2	:0	,	1	1	1346		-	-		
534907	76.3	2	:0	2	2	1	1441		1284	-		
82690	56.2	2	:0	,	1	1	1273		-	-		
227993	62.4	2	20		1	1031			-	-		
372695	62	2	20		1		1940		-	-		
517788	56	2	20		1		1889		-	-		
64471	83.9	2	20		3		1106		1311	1930		
209097	98.4	2	20		3		1260		1022	1606		
354143	74.3	2	:0	2		1178			1917	-		
499561	70	2	:0	2		1069		1069		-		
46749	69.5	2	.0	2	2	,	1773		1652	-		
191589	78.6	2	:0	2	2	,	1347		1603	-		
336486	73.9	2	:0	2	2	,	1177		1608	-		
481767	74.1	2	:0	2	2	,	1153		1089	-		
28998	62.7	2	:0	,	1	1	1944		-	-		
173769	70.1	2	20		2	1	1224		1672	-		
317895	93.3	2	20		3		1217		1217		1015	1957
464152	50.5	2	0	,	1	,	1929		-	-		
11067	89	2	20 3		3 19		1945		1615	1847		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 46 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



	Statistical Performance Check Result												
Radar Tes	st Signal (#)			,	5		Т	rail #		9)		
Burst of Number	11	_	Burst riod(s)		09091 Wavef Lengt			12		Frequency	Center		
Burst Offset (us)	Pulse Wid	lth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		PRI-2 (us)		PRI-3 (us)		
283763	85.8		9		3		1451		1023		1821		
548478	51.3		9		1		1960			-	-		
809743	86.6		9		3			1998		1989	1778		
1077369	63.2		9		1		•	1270		-	-		
251895	57.9		9		1		1730			-	-		
514624	97.4		9		3	3		1488		1953	1309		
780737	55.4		9		,			1002	-		-		
1044449	56.6		9		,		•	1654		-	-		
218719	86		9		3	3	•	1683		1425	1787		
483655	55.9		9		,		•	1417	-		-		
747738	50.5		9		1		1641			-	-		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 47 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01 FCC ID : VW3FAST3890V3



	Statistical Performance Check Result Radar Test Signal (#) 5 Trail # 10												
Radar Tes	st Signal (#)			5		Т	rail #		10				
Burst of Number	9	Burst Period(s)			0.75 Wavef Lengt		1 17		Frequency	Center			
Burst Offset (us)	Pulse Wid (us)	th Chirp (MF				PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)			
695151	61.9	15	15		1		1713		-	-			
128132	71.6	15	5	2		1320		1648		-			
309769	60.6	15	5	,	1		1862		-	-			
489296	97	15	5	3		1244		1669		1873			
672580	58.2	15	5	,	1		1954		-	-			
105804	71.9	15	15		2	,	1694		1351	-			
286805	75.7	15	5	2		,	1869		1591	-			
467329	86.1	15	5	;	3	1161		1266		1887			
650589	61.2	15	5	,	1	,	1544		-	-			
83455	74.3	15	5	2	2	,	1934		1415	-			
264701	68.2	15	5	2	2	,	1422		1478	-			
444952	95.5	15	5	;	3	,	1657		1214	1610			
628454	65.9	15	15		1	,	1276		-	-			
61315	56.8	15	5	,	1	,	1335		-	-			
242712	52.9	15	15		1		1881		-	-			
424295	56.8	15	5	1		1634		-		-			

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 48 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

	Statistical Performance Check Result Radar Test Signal (#) 5 Trail # 11												
Radar Tes	t Signal (#)			5		Т	rail #		11				
Burst of Number	20	Burst Period(s)	(0.6	Wavef Lengt	-	12		Frequency	F _L +(0.4*Chirp width)			
Burst Offset (us)	Pulse Wid (us)		Width Hz)	Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)			
483494	82.2	2	20	2	2	1691		1029		-			
31130	61.1	2	:0	1	I	•	1623		-	-			
175309	92.1	2	20		3	1303			1697	1836			
320742	68	2	20	2	2	1362		1450		-			
466659	63.9	2	20		I	1426			-	-			
13250	55.3	2	:0	1	I	1823			-	-			
157701	92.9	2	20	3	3		1232		1191	1763			
302865	75	2	20		2		1571		1312	-			
446764	95	2	20	3	3		1254		1650	1207			
591996	73.6	2	20	2	2	1550			1846	-			
140621	63	2	20	1		1121		-		-			
283899	98.4	2	20	3	3	,	1343		1977	1926			
430680	65.1	2	20	1			1725		-	-			
575746	56.5	2	20	1			1761		-	-			
122072	99.4	2	:0	3	3		1241		1118	1973			
266724	98	2	20	3	3		1588		1304	1028			
410761	92.5	2	20		3		1484		1733	1473			
556827	73.8	2	20	2	2		1574		1310	-			
104794	58	2	20	1	I		1380		-	-			
248823	97.9	2	.0	3	3	1443			1326	1376			

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 49 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	Perform	ance C	heck	Result				
Radar Tes	st Signal (#)				5		Trail #		12			
Burst of Number	9		Burst riod(s)		33333	Wave Lengt		12		Frequency	F _L +(0.4*Chirp width)	
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		P	RI-2 (us)	PRI-3 (us)	
878323	68		6		2		1562		1223		-	
1201036	77		6			2	,	1576		1195	-	
193430	65.9		6		,	1	,	1019		-	-	
515373	90.9		6		;	3	1728			1142	1206	
837168	94.4		6		3	3	1333			1997	1685	
1162414	57.1		6		,	1	,	1479	-		-	
153280	89.3		6		3		1447			1536	1062	
476708	64.6		6		1		1156			-	-	
798519	67.6		6		2		1975			1319	-	

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 50 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

Report Template No.: HE1-D2 Ver2.3

FCC ID: VW3FAST3890V3

	Statistical Performance Check Result Radar Test Signal (#) 5 Trail # 13												
Radar Tes	st Signal (#)			;	5		Т	rail #		13	3		
Burst of Number	14	_	Burst 0.85714		71429	71429 Wavef Lengt		1 12		Frequency	F _L +(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid	dth	(MHz) Puls		Pulse	umber of ulses per Burst		PRI-1 (us)		RI-2 (us)	PRI-3 (us)		
721573	55.9		13		1	1		1087		-	-		
72983	70.6		13		2		1516			1373	-		
280517	56.4		13		1		,	1822		-	-		
488047	54.9		13	}			,	1667		-	-		
692783	90.5		13		3	3	,	1636		1670	1736		
47463	73.3		13		2	2	,	1462		1435	-		
253983	95.6		13		3	3		1681		1681		1897	1538
460713	94		13		3	3		1555		1620	1780		
667923	87.9		13		3	3	,	1140		1812	1329		
21923	86.7		13		3	3	,	1095		1456	1097		
229477	56.6		13		1		,	1581		-	-		
436459	78.8		13		2			1308		1289	-		
642305	85.7		13	13 3		3	1299			1852	1315		
852309	51.9		13		1	1		1250		-	-		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 51 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



	Statistical Performance Check Result													
Radar Tes	t Signal (#)			,	5		Т	rail #		14	1			
Burst of Number	12	_	Burst riod(s)		1	1 Wavef Lengt		1 12		Frequency	F _L +(0.4*Chirp width)			
Burst Offset (us)	Pulse Wid (us)	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		P	RI-2 (us)	PRI-3 (us)			
237287	84.6		10		3		1314		1508		1611			
480167	58.8		10		1		1472		-		-			
721239	77.4		10	10		2	,	1092		1904	-			
963224	71		10		2			1139		1671	-			
208121	54.6		10		1		,	1673		-	-			
449554	74.9		10		2	2	1469			1738	1			
691801	70.3		10		2	2	,	1233		1263	-			
934484	52.9		10		1		,	1687		-	-			
177771	92.1		10		3	3		1433		1826	1355			
419126	98.9		10		3	3		1915		1407	1428			
662911	55.1		10		1	<u> </u>		1125		-	-			
902272	88.9	_	10		3		1635			1045	1643			

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 52 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

		Stat	istical F	Perform	ance C	heck l	Result			
Radar Te	st Signal (#)			5		Т	rail #		15	5
Burst of Number	17	Burst Period(s)	0.70	58824	Wave Lengt		12		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid		Width Hz)	Number of Pulses per Burst		PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
104782	55.1		16	,	1	1331		-		-
274485	95.2	,	16	3	3		1288		1262	1779
446644	51.1	,	16	,	1	1157		-		-
615134	73.6			2	2	1965		1963		-
83697	56.7		16	-	1	,	1637		-	-
254526	66		16	,	1	,	1563		-	-
424104	78.2		16	2		,	1872		1746	-
596368	57.3		16	,	1	1323		-		-
62396	89.1		16	3	3	,	1882		1328	1370
233528	53		16	,	1	,	1432		-	-
404155	56.6		16	,	1	,	1824		-	-
572746	93.4	,	16	3	3	,	1699		1269	1507
41534	74.7		16	2	2	,	1498		1593	-
211866	83.3		16	2	2	,	1585		1892	-
383319	53.8		16		1		1460		-	-
553954	53.9		16	-	1	-	1727		-	-
20589	54.5		16	,	1	1356			-	-

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 53 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical P	erform	ance C	heck F	Result			
Radar Tes	st Signal (#)			;	5		Т	rail #		16	}
Burst of Number	13		Burst 0.9230		30769	30769 Wavef Lengt		1 17		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		PRI-2 (us)		PRI-3 (us)
249549	87.2		11		3	3	1	1529		1868	1392
473814	51.3		11		1		1772		-		-
696747	69.1		11		2		1145		1305		-
919852	82.3		11		2		1	1614		1012	-
222458	75		11		2		1	1477		1898	-
445510	81.4		11		2		1625		1760		-
669234	82		11		2	2	1290		1173		-
891674	66.9		11		2	2	1	1526		1801	-
194770	86.2		11		3	3	1	1172		1980	1227
417571	84.6		11		3	3	1	1932		1394	1079
640275	89.8		11		3	3	1	1601		1071	1880
862582	97.4		11		3	3	1	1985		1745	1316
167886	52.9		11		1		1294			-	-

Report No.: FZ941813-01

	Statistical Performance Check Result												
Radar Tes	st Signal (#)				5		Т	rail#		17	7		
Burst of Number	9		Burst eriod(s)		33333	33333 Wavef Lengt		1 12		Frequency	F _L +(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid (us)	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		Р	PRI-2 (us)	PRI-3 (us)		
564844	78.5		7		2		1406		1829		-		
888379	57.6		7		1			1820		-	-		
1208797	99.8		7		3			1248		1692	1645		
202812	51.5		7		,	1	1298			-	-		
525477	68.1		7		2	2	1088			1213	-		
848768	50.3		7		,	1	•	1558	-		-		
1169382	92.8		7		3	3		1580	1573		1114		
162951	64.2		7		1		1854				-		
485678	79.9		7		2		1011			1387	-		

TEL: 886-3-327-3456 Page Number : 54 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019 Report Version : 01

	Statistical Performance Check Result Radar Test Signal (#) 5 Trail # 18												
Radar Tes	st Signal (#)				5		Т	rail #		18			
Burst of Number	16		Burst riod(s)		.75 Wavef Lengt		1 12			Frequency	F _L +(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid (us)	dth	Chirp Width (MHz)			per of es per rst	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)		
452762	90.6		15		3		1885		1390		1371		
636546	50.5		15		1		1103			-	-		
69136	78.3		15		2		1485		1175		-		
250688	62.9		15		1		1768		-		-		
431876	81.6		15		2	2		1211		1044	-		
613696	52.2		15		1			1684		-	-		
46710	84		15		3			1704		1338	1209		
227355	96.3		15		3	3	1920		20 1674		1384		
409287	71.3		15		2	2	1292			1421	-		
590397	71.1		15		2	2		1818		1060	-		
24536	66.3		15		•			1055		-	-		
205244	98.5		15	_	3	3		1712		1448	1291		
387827	54.9		15		,		,	1043		-	-		
566988	97.5		15		3			1749 1		1158	1404		
2150	86.1		15		3	3		1607		1867	1436		
183641	56.5		15	_	1		1721			-	-		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 55 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



	Statistical Performance Check Result												
Radar Tes	st Signal (#)				5		Т	rail #	19		9		
Burst of Number	9	_	Burst riod(s)		33333	Wave Lengt		19		Frequency	F _L +(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		PRI-2 (us)		PRI-3 (us)		
649004	80.2		7		2		1476		1792		-		
972632	63.8		7	7		I	,	1837		-	-		
1294265	69.1		7		2			1455		1715	-		
287125	56.7		7		1		1234			-	-		
609502	70.5		7		2	2	1127			1633	-		
931751	81.5		7		2	2	1629		1783		-		
1253215	88.5		7		3	3		1147	1810		1604		
247305	60		7		1		1363			-	-		
568977	86.1		7		3		1212			1662	1696		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 56 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statist	tical P	Perform	ance C	neck F	Result	1		
Radar Tes	st Signal (#)			;	5		Т	rail#		20)
Burst of Number	20	Bui Perio		C	0.6	Wavet Lengt		12		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid	dth	hirp W (MH		Numb Pulse Bu	s per	PR	l-1 (us)	Р	RI-2 (us)	PRI-3 (us)
400523	74.5		20		2	2	1	1775		1082	-
544232	99.1		20		3	3	1564		1074		1442
92772	93.7		20		3	3	,	1995		1235	1293
238062	73.1		20		2	2	1	1006		1337	-
383830	65.2		20		1		1	1068		-	-
529131	53.4		20		1		,	1021		-	-
75357	61.2		20		1		1	1553		-	-
219129	90.3		20		3	3	1	1807		1912	1551
365634	57.2		20		1		1	1565		-	-
510479	60.8		20		1		1909		-		-
57360	68.5		20		2	2	,	1626		1163	-
202693	54		20		1		1	1340		-	-
347847	62.1		20		1		1	1408		-	-
490344	99.8		20		3	3	1	1556		1877	1230
39483	79.7		20		2	2	1	1701		1622	-
184461	82.9		20		2	2	•	1302		1164	-
328025	89.9		20		3	3	1	1520		1638	1769
475199	63.2		20		1		1	1336		-	-
21678	68.6		20		2	2	1	1502		1256	-
166512	81		20		2	2	1	1398		1420	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 57 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statis	tical F	Perform	ance C	heck l	Result			
Radar Te	st Signal (#)				5		Т	rail #	21		
Burst of Number	9		Burst riod(s)	1.33	333333 Wavefo		12			Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V (MH		Pulse	per of es per rst	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
694608	54.5		6		•	1	1	1034		-	-
1016456	73.6		6		4	2	,	1590		1115	-
8551	60.1		6		•	1	,	1933		-	-
331564	63.7		6		•	1	1	1505		-	-
653496	95.1		6		(3	1	1405		1075	1220
975332	88		6		- (3	1	1628		1744	1202
1297079	86.6		6		- (3	-	1271		1914	1921
291425	73.6		6		4	2	,	1188		1924	-
614597	57.5		6		•	1	•	1916		-	-

Report No.: FZ941813-01

: 01

			Statis	tical F	erform	ance C	heck l	Result			
Radar Tes	t Signal (#)				5		Т	rail #		2:	2
Burst of Number	13	_	urst iod(s)		230769 Wavef Lengt			12		Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	lth	Chirp V (MH		Pulse	per of es per rst	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
648947	59.4		11		,	1	1	1464		-	-
872834	59.1		11		,	I	1	1077		-	-
174442	62		11		,	1		1104		-	-
397033	68.2		11		2	2	1	1747		1711	-
619847	76.8		11		2	2	1	1972		1816	-
844713	57		11		,	1	1	1706		-	-
146857	53.2		11		•	1	1	1367		-	-
369203	90.4		11		3	3	1	1731		1446	1170
592949	73.2		11		2	2	1	1201		1710	-
817479	56.1		11		,	1	1	1377		-	-
119201	67.7		11		2			1130 1171		1171	-
342999	55.1		11		1		1007		-		-
566579	58.1		11		1		1090			-	-

TEL: 886-3-327-3456 Page Number : 58 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version FCC ID: VW3FAST3890V3



	Statistical Performance Check Result Radar Test Signal (#) 5 Trail # 23													
Radar Tes	st Signal (#)			;		Т	rail #		23	3				
Burst of Number	17		Burst 0.70588		58824	Wave Lengt		12		Frequency	F _H -(0.4*Chirp width)			
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V (MH		Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)			
601322	97.7		16		3	3		1345		1186	1735			
69798	86.6		16		3	3	,	1578		1884	1521			
240236	67.6		16		2	2	,	1861		1813	-			
411573	52.4		16		,		,	1913		-	-			
581299	68		16		2	2	,	1719		1414	-			
49079	64		16		,		,	1828		-	-			
218917	89.4		16		3	3	,	1765		1548	1453			
389991	73.8		16		2	2	,	1690		1216	-			
560724	80.6		16		2	2		1327		1280	-			
27969	68.2		16		2	2		1893		1857	-			
198477	69.9		16		2	2		1474		1501	-			
368635	79		16		2	2		1619		1964	-			
539754	81.5		16		2	2		1395		1160	-			
7017	50.9		16		,			1366		-	-			
177018	88.9		16		3	3		1080		1978	1740			
347849	80		16		2		1339		1850		-			
518155	78.1		16		2	2		1503		1848	-			

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 59 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	Perform	ance C	heck	Result			
Radar Tes	st Signal (#)				5		T	rail #		2	4
Burst of Number	9	_	Burst 1.3333333 Wavefor Length(12		Frequenc		F _H -(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid	dth	Chirp V (MH		Pulse	per of es per rst	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
1303061	77.3		6		2	2	,	1858		1937	-
296120	66.9		6		2	2		1452		1703	-
618053	87.6		6		3	3		1461		1679	1471
941705	82.8		6		2	2		1058		1582	-
1262467	97.9		6		3	3		1561	1786		1369
256754	51.6		6		,	1		1225	225 -		=
579778	56.4		6 1		1		1349 -		-	-	
900681	85.8		6 3		3	1708			1025	1781	
1223080	85.3		6	6		3		1357		1971	1057

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 60 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statis	tical F	erform	ance C	heck l	Result			
Radar Tes	st Signal (#)				5		Т	rail #		25	
Burst of Number	11		1 1 11414141		Wavef Lengt	1 17			Frequency	F _H -(0.4*Chirp width)	
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V (MH		Pulse	per of es per rst	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
177128	92.7		9		;	3		1040		1064	1252
441120	76.5		9		2	2		1567		1231	-
703834	92.6		9		;	3		1739		1434	1457
968288	66.7		9		2	2		1774		1737	-
144880	57.1		9		•	1		1532		-	-
408948	50.9		9		·	1	,	1907		-	
672738	75.9		9		2	2		1054		1383	-
935219	96.5		9		;	3		1802		1341	1046
112148	75.9		9		2	2		1951		1400	-
376130	73.5		9		2	2		1053		1677	-
638910	96.2		9			3		1531		1865	1268

Report No. : FZ941813-01

: 01

			Statist	tical F	erform	ance C	heck l	Result			
Radar Tes	t Signal (#)				5		Т	rail #		26	1
Burst of Number	12		Burst riod(s)		1	Wavef Lengt		12		Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp W (MH		Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
826712	92.6		10		3	3	,	1834		1000	1983
72998	69.9		10		2	2		1849		1518	-
314688	72.5		10		2	2		1489		1958	-
555527	84.2		10		3	3		1831		1182	1967
797115	83.8		10		3	3		1843		1348	1459
43224	78.8		10		2	2	•	1412		1979	-
284734	91		10		3	3	•	1295		1086	1705
526386	92.2		10		3	3	•	1003		1723	1148
767431	89.3		10		3	3	,	1660		1724	1200
13435	95.4		10		3	3	,	1439		1190	1942
255680	56.1		10		1		,	1358		-	-
497683	64.3		10		1		,	1759		-	-

TEL: 886-3-327-3456 Page Number : 61 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019 Report Version



			Statist	tical F	Perform	ance Cl	heck l	Result			
Radar Te	st Signal (#)			,	5		Т	rail #		27	
Burst of Number	19		Burst riod(s)		15789	Wavef Lengt	-	12		Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp W		Numb Pulse Bu	s per	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
466662	60.4		18		1		,	1883		-	-
616742	95.2		18		3	3		1991		1243	1334
142355	78.8		18		2	2		1016		1100	-
295519	50.7		18		1			1051		-	-
446771	67.6		18		2	2		1527		1874	-
599225	75.4		18		2	2		1809		1486	-
123039	99.9		18		3	3		1010		1970	1741
275129	85		18		3	3		1330		1318	1943
428981	61.1		18		1			1968		-	-
580996	66.7		18		2	2		1644		1065	-
104670	82.7		18		2	2		1313		1261	-
257432	71.4		18		2	2		1027		1037	-
410696	62.9		18		1			1162		-	-
561441	81.3		18		2	2		1939		1630	-
86077	63.9		18		1			1122		-	-
239011	61.1		18		1			1047		-	-
390966	68.9		18		2	2		1204		1402	-
544078	53.1		18		1		•	1950		-	-
66876	85.1		18	18		3		1468		1129	1959

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 62 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



		Sta	atistical	Perform	ance Cl	heck l	Result			
Radar Tes	st Signal (#)			5		Т	rail #		28	
Burst of Number	20	Burst Period(1 (1		Wavef Lengt		12		Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)		p Width MHz)	Pulse	per of es per erst	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
208292	75.1		19	2	2	,	1577		1919	-
354271	65.3		19	,	1	,	1286		-	-
495997	83.9		19	;	3	,	1955		1534	1969
45716	85.5		19	;	3	,	1624		1587	1386
191235	57.3		19	,	1		1105		-	-
334080	94.4		19	;	3	,	1901		1992	1495
481017	53.3		19		1	2	2000		-	-
27921	99		19	;	3	,	1379		1789	1592
172578	69.1		19	2	2	,	1922		1830	-
318204	60.7		19	,	1		1839		-	-
463599	64.3		19	,	1	,	1423		-	-
10138	96.6		19	;	3	,	1680		1440	1702
154700	90		19	;	3	,	1798		1009	1196
298982	86.6		19	;	3	,	1413		1524	1596
445818	62.1		19		1	,	1287		-	-
589319	82.1		19	2	2		1159		1856	-
137185	71.5		19	2	2	,	1621		1119	-
281563	78.3		19	2	2	,	1888		1860	-
427881	50.1		19	,	1	,	1359		-	-
572624	58.3		19		1	,	1825		-	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 63 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



		;	Statist	ical F	Perform	ance C	heck l	Result			
Radar Tes	st Signal (#)				5		Т	rail #		29)
Burst of Number	15		Burst 0.8 Waveferiod(s) Lengtl		-	12		Frequency	F _H -(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid	dth	hirp W (MHz		Numk Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
159228	71		14		2	<u> </u>		1700		1429	-
352518	76		14		2	<u>)</u>		1895		1181	-
544323	88.6		14		3	3		1364		1961	1903
737838	85		14		3	3		1757		1281	1372
135567	75.8		14		2	2	,	1099		1174	-
328212	87.2		14		3	3	,	1285		1014	1984
522698	51.1		14		1		,	1994		-	-
715290	71.3		14		2	2	,	1525		1528	-
111884	52.4		14		1		,	1210		-	-
305327	64.8		14		1		,	1966		-	-
497761	79.9		14		2	<u> </u>		1938		1811	-
691696	73.2		14		2	<u> </u>		1661		1143	-
87610	86.1		14		3	3		1993		1282	1665
281813	60.2		14 1		1 1041 -		1041			-	
474637	81.1		14		2	2		1617		1017	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 64 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	erform	ance C	heck l	Result			
Radar Tes	t Signal (#)			;	5		Т	rail #		30)
Burst of Number	14	_	Burst riod(s)	0.85	71429	Wavef Lengt		19		Frequency	F _H +(0.4*Chir p width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V (MH		Numb Pulse Bu		PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
713761	99.1		13		3	3	•	1466		1853	1864
68606	76.6		13		2	2		1948		1018	-
276396	59.6		13		,			1030		-	-
482744	71.4		13		2	2		1513		1793	-
691089	56.4		13		,			1743		-	-
43150	64.2		13		,		,	1752		-	-
250293	76.4		13		2	2		1251		1579	-
457068	80.8		13		2	2		1838		1782	-
665070	74.2		13		2	2		1093		1247	-
17534	96.8		13		3	3	•	1855		1771	1135
224742	70.1		13		2	2	,	1658		1283	-
430908	92.7		13		3	3	•	1618		1514	1795
638128	84.8		13		3	3	•	1430		1279	1509
847663	50.7		13		•		,	1519		-	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 65 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



Type 6 Radar Statistical Performance

FCC ID: VW3FAST3890V3

Trial #	Test Freq. (MHz)	Pulses / Hop	Pulse Width (us)	PRI (us)	1=Detection 0=No Detection
1	5500	9	1	333	1
2	5500	9	1	333	1
3	5500	9	1	333	1
4	5500	9	1	333	1
5	5500	9	1	333	1
6	5500	9	1	333	1
7	5500	9	1	333	1
8	5500	9	1	333	1
9	5500	9	1	333	1
10	5500	9	1	333	1
11	5500	9	1	333	1
12	5500	9	1	333	1
13	5500	9	1	333	1
14	5500	9	1	333	1
15	5500	9	1	333	1
16	5500	9	1	333	1
17	5500	9	1	333	1
18	5500	9	1	333	1
19	5500	9	1	333	1
20	5500	9	1	333	1
21	5500	9	1	333	1
22	5500	9	1	333	1
23	5500	9	1	333	1
24	5500	9	1	333	1
25	5500	9	1	333	1
26	5500	9	1	333	1
27	5500	9	1	333	1
28	5500	9	1	333	1
29	5500	9	1	333	1
30	5500	9	1	333	1
		etection Percenta	ge (%)		100
imit			O ()		70%
est Res	ult				Complied

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 66 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



Modulation Mode: 802.11ac (VHT40)

Type 1 Radar Statistical Performance

FCC ID: VW3FAST3890V3

Trial #	Test Freq. (MHz)	Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulse Per Second)	PRI (us)	1=Detection 0=No Detection
1	5496	1	1930.5	518	1
2	5497	23	326.2	3066	1
3	5498	19	1139.0	878	1
4	5499	12	1355.0	738	1
5	5500	4	1730.1	578	1
6	5501	8	1519.8	658	1
7	5502	15	1253.1	798	1
8	5503	6	1618.1	618	1
9	5504	14	1285.3	778	1
10	5505	3	1792.1	558	0
11	5506	13	1319.3	758	1
12	5507	9	1474.9	678	1
13	5508	7	1567.4	638	1
14	5509	17	1193.3	838	1
15	5510	10	1432.7	698	1
16	5511	-	1692.0	591	1
17	5512	-	328.1	3048	1
18	5513	-	373.4	2678	1
19	5514	-	574.4	1741	1
20	5515	-	1216.5	822	1
21	5516	-	801.3	1248	0
22	5517	-	488.5	2047	1
23	5518	-	956.0	1046	1
24	5519	-	517.6	1932	1
25	5520	-	1422.5	703	1
26	5521	-	542.0	1845	1
27	5522	-	741.3	1349	1
28	5523	-	881.8	1134	1
29	5524	-	427.4	2340	1
30	5525	-	628.9	1590	1
		Detection Percentage			93.333
Limit		<u> </u>			60%
Test Res	ult				Complied

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 67 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



Type 2 Radar Statistical Performance

FCC ID: VW3FAST3890V3

Trial #	Test Freq. (MHz)	req. (MHz) Pulse Width (us)		Pulses / Burst	1=Detection 0=No Detection
1	5496	2.6	221	23	1
2	5497	4.6	198	27	1
3	5498	1.1	184	29	1
4	5499	4.8	203	24	1
5	5500	2.4	162	25	1
6	5501	3.4	204	28	0
7	5502	2.3	170	27	1
8	5503	3.5	184	23	1
9	5504	4.9	150	27	0
10	5505	4.6	211	29	1
11	5506	2.9	158	23	1
12	5507	2.6	226	27	0
13	5508	1.6	204	26	1
14	5509	3.9	181	25	1
15	5510	4.6	202	24	1
16	5511	4.1	194	27	1
17	5512	2.3	193	28	1
18	5513	3.9	173	29	1
19	5514	4.3	188	23	0
20	5515	1.5	215	26	1
21	5516	4.9	227	27	1
22	5517	1.1	199	23	1
23	5518	4.5	155	29	1
24	5519	4.0	190	27	1
25	5520	2.4	151	23	0
26	5521	2.5	180	28	1
27	5522	2.5	228	23	1
28	5523	2.5	203	25	1
29	5524	1.5	188	25	1
30	5525	1.9	217	24	1
	83.333				
imit		etection Percentage (9	•		60%
est Res	Complied				

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 68 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



Type 3 Radar Statistical Performance

Trial #	Test Freq. (MHz)			Pulses / Burst	1=Detection 0=No Detection
1	5496	8.0	205	16	1
2	5497	6.7	382	18	1
3	5498	8.6	418	16	1
4	5499	9.4	351	17	1
5	5500	7.4	383	18	1
6	5501	9.8	232	16	0
7	5502	9.1	377	17	1
8	5503	9.6	457	16	1
9	5504	8.0	471	18	1
10	5505	9.0	304	18	1
11	5506	8.0	316	17	1
12	5507	9.8	325	16	0
13	5508	8.0	409	17	1
14	5509	9.9	200	17	1
15	5510	8.8	458	16	1
16	5511	8.0	232	18	1
17	5512	8.3	250	16	0
18	5529	8.7	270	16	1
19	5514	7.7	350	17	1
20	5515	7.1	230	16	1
21	5516	7.3	416	18	1
22	5517	7.6	498	18	0
23	5492	7.3	286	17	1
24	5519	7.3	287	16	1
25	5520	7.5	462	17	1
26	5521	6.2	300	17	1
27	5522	6.4	323	18	1
28	5523	7.1	420	16	1
29	5524	7.2	395	18	1
30	5525	8.4	377	16	1
	86.667				
imit		• .			60%
est Resi	Complied				

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 69 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01

FCC ID: VW3FAST3890V3



Type 4 Radar Statistical Performance

Trial #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5496	18.0	242	15	1
2	5497	19.9	279	12	0
3	5498	12.9	487	14	0
4	5499	15.0	452	13	1
5	5500	16.3	230	12	1
6	5501	19.8	238	13	1
7	5502	18.2	420	16	1
8	5529	16.3	452	15	0
9	5504	14.2	495	12	1
10	5505	17.8	228	16	1
11	5506	19.1	211	16	1
12	5507	18.4	283	15	1
13	5508	11.8	411	12	0
14	5509	14.2	284	13	1
15	5510	13.9	202	12	1
16	5511	17.8	340	14	1
17	5512	15.6	290	16	1
18	5513	14.6	250	16	0
19	5514	14.4	484	15	1
20	5515	18.9	387	13	1
21	5516	11.1	348	15	1
22	5517	13.8	291	16	1
23	5518	14.3	295	12	1
24	5519	12.5	300	12	1
25	5520	12.5	322	14	0
26	5521	12.5	383	13	1
27	5522	15.7	322	16	1
28	5523	19.8	469	13	1
29	5524	18.6	406	15	1
30	5492	15.9	238	14	0
	76.667				
_imit		etection Percentage (9	,		60%
Test Resu	ılt				Complied

Report No.: FZ941813-01

Total Type 1~4 Radar Statistical Performance

FCC ID: VW3FAST3890V3

Radar Type #	Detection Percentage (%)
1	93.333
2	83.333
3	86.667
4	76.667
Aggregate (Radar Types 1-4)	85.000
Limit	80%
Test Result	Complied

TEL: 886-3-327-3456 Page Number : 70 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



Type 5 Radar Statistical Performance

Center Freq. (MHz)	Low Edge (MHz)	High Edge (MHz)						
5510	5491.5	5528.5	VSG Freq. (MHz)	Detection				
Trial	Chirp	Offset						
1	11	0	5510.00	1				
2	5	0	5510.00	0				
3	20	0	5510.00	1				
4	13	0	5510.00	1				
5	11	0	5510.00	1				
6	16	0	5510.00	1				
7	11	0	5510.00	1				
8	20	0	5510.00	1				
9	9	0	5510.00	1				
10	15	0	5510.00	1				
11	20	10.5	5499.50	0				
12	6	16.1	5493.90	1				
13	13	13.3	5496.70	1				
14	10	14.5	5495.50	1				
15	16	12.1	5497.90	1				
16	11	14.1	5495.90	0				
17	7	15.7	5494.30	1				
18	15	12.5	5497.50	1				
19	7	15.7	5494.30	1				
20	20	10.5	5499.50	1				
21	6	16.1	5526.10	1				
22	11	14.1	5524.10	1				
23	16	12.1	5522.10	1				
24	6	16.1	5526.10	1				
25	9	14.9	5524.90	1				
26	10	14.5	5524.50	1				
27	18	11.3	5521.30	1				
28	19	10.9	5520.90	1				
29	14	12.9	5522.90	1				
30	13	13.3	5523.30	1				
Total								
Detection Percentage (%)								
Limit								
est Result								

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 71 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01 FCC ID : VW3FAST3890V3



Data Sheet for Radar Type 5

Report No.: FZ941813-01

Statistical Performance Check Result											
Radar Tes	5 Trail #			rail #	1						
Burst of Number	13		Burst riod(s)	0.92	30769	Wavef Lengt	1.7			Frequency	Center
Burst Offset (us)	Pulse Wid (us)	ith	Chirp V			per of s per rst	PRI-1 (us)		PRI-2 (us)		PRI-3 (us)
591291	70		11		2	2	1	1208		1481	-
815216	51.8		11		,	1		1896		-	-
117197	97.9		11		3		1255			1463	1169
340497	75.4		11		2	2 1		1776		1116	-
563700	70.6		11		2		1	1361		1483	-
786312	85.5		11		3		,	1168		1155	1192
89901	70.6		11		2		1	1078		1126	-
312423	97.5		11		3		1237			1833	1540
536877	64.5		11		1		1698		-		-
759212	81.4		11		2		1575			1490	-
62185	99.2		11		3	3		1350		1982	1902
285880	54.7		11		1		1722			-	-
508479	75.7		11		2	2	1594			1682	-

Statistical Performance Check Result											
Radar Tes	st Signal (#)	5				Т	Trail #		2		
Burst of Number	8	8 Burst 1.5 Wavef Lengt		1 17		Frequency		Center			
Burst Offset (us)	Pilises her PRI-1 (ils		I-1 (us)	Р	RI-2 (us)	PRI-3 (us)					
1190042	68.2		5		2		,	1790		1952	-
56652	84.7		5 3		3 1714			1515	1061		
419783	69.6		5		2	2		1458		1500	-
783608	56.5		5 1		1533			-	-		
1144211	1144211 84.2		5		3 132		1322		1988	1910	
11992	56.5		5		1		1411			-	-
374471	97.5		5		3	3		1353		1981	1974
738925 54.4		5		1		1365			-	-	

TEL: 886-3-327-3456 Page Number : 72 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statist	ical P	erform	ance Cl	heck l	Result			
Radar Tes	st Signal (#)			5	5		Т	rail #		3	
Burst of Number	20		ırst od(s)	0	0.6	Wavef Lengt	-	12		Frequency	Center
Burst Offset (us)	Pulse Wid (us)	dth	Chirp W (MHz		Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
439705	70		20		2	2	,	1001		1246	-
583092	84.7		20		3	3	1198			1120	1552
132117	55.3		20		1	1		1264		-	-
277048	64.5		20		1	1		1871		-	-
421122	68.6		20		2	2		1381		1894	-
564997	93.7		20			3		1306		1111	1754
113465	96.8		20			3		1996		1535	1742
258948	78.3		20		2	2	,	1239		1166	-
403936	76.7		20		2	2		1221		1107	-
545928	86.2		20		3	3		1947		1800	1806
96115	72.3		20		2	2	1504			1176	-
241508	64.6		20		1		•	1382		-	-
384855	95.4		20		3	3		1598		1117	1511
528969	85.4		20		3	3	•	1631		1870	1152
78179	73.2		20		2	2	•	1729		1649	-
223000	77.7		20		2	2	,	1815		1238	-
368464	65.7		20		1		,	1941		-	-
510325	90.2		20		3	3	,	1899		1935	1819
60248	98.9		20		3	3		1194		1675	1570
205316	79.6		20		2		,	1245		1375	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 73 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019 Report Version : 01



			Statis	tical F	Perform	ance C	heck l	Result					
Radar Tes	st Signal (#)				5		Т	rail #		4			
Burst of Number	14		Burst riod(s)	0.85	71429	Wave Lengt	-	12	Frequency		Center		
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz) Number Bu		s per	PR	I-1 (us)	PRI-2 (us)		PRI-3 (us)			
501575	51		13 1				1542	-		-			
707132	98.7		13	13		3		1613		1219	1066		
60818	91.5		13	13		3		1072		1397	1549		
267493	87		13			3		1253		1748	1762		
475767	66.3		13		1			1987		-	-		
680475	86.6		13		3	3	1785		785 1777		1797		
35313	95.2		13		3	3	,	1482		1482 1137		1137	1844
242662	73.5		13		2	2	,	1059		1475	-		
449288	98		13		3	3	,	1180		1480	1096		
657034	74.6		13		2	2	,	1324		1427	-		
9842	92.4		13		3	3		1133		1753	1378		
217141	82		13		2		1236		1236 12		-		
422905	87.8		13		3	3	,	1803		1842	1900		
631115	72.9		13 2		2	1559		1726		-			

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 74 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statis	tical F	erform	ance C	heck l	Result			
Radar Tes	st Signal (#)			,	5		Т	rail #		5	
Burst of Number	13	_	Burst riod(s)	0.92	30769	Wave Lengt		12		Frequency	Center
Burst Offset (us)	Pulse Wid	dth	Chirn Width		Pulse	per of es per rst	PRI-1 (us)		Р	RI-2 (us)	PRI-3 (us)
902081	100		11		3		1258		1396		1493
206352	67.1		11		2		1492		1179		-
429145	92.5		11		3	3	,	1410		1150	1042
653709	60.9		11		,		,	1399		-	-
877441	52		11		1		,	1193		-	-
178469	91.8		11		3	3		1686		1403	1569
402251	73.8		11		2	2	1067		67 1218		-
625039	69.2		11		2	2		1841 1229		1229	-
847087	87.9		11		3	3		1073		1416	1755
151064	95.2		11		3	3	,	1197		1512	1756
374324	76.8		11		2	2		1437		1879	
596338	90.1		11		3	3	1352			1925	1666
820999	80.4		11		2	2		1586		1132	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 75 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statist	ical F	erform	ance C	heck l	Result			
Radar Tes	st Signal (#)			;	5		Т	rail #		6	
Burst of Number	17		ırst od(s)	0.70	58824	Wavef Lengt		12		Frequency	Center
Burst Offset (us)	Pulse Wid (us)	dth	Chirp W (MH		Numb Pulse Bu	s per	PR	l-1 (us)	P	RI-2 (us)	PRI-3 (us)
94587	82.8		16		2	2	1	1332	1689		-
265527	61.5		16		1		1	1764	-		-
435227	91.9		16		3	3	1301		301		1167
605381	90.8		16		3		1	1277		1091	1354
73476	94		16		3	3	-	1185		1805	1109
244588	57.6		16		1		1	1487		-	-
414781	67.8		16		2	2	1	1026		1554	-
586578	53.4		16		1		•	1110		-	-
52576	71.4		16		2	2	1	1583		1653	-
222476	93.3		16		3	3	1	1791		1766	1296
393218	68.4		16		2	2	1	1678		1890	-
562777	98.2		16		3	3	1	1510		1605	1418
31603	82		16		2	2	1	1300		1523	-
201756	98.6		16		3	3	1	1020		1070	1990
372162	73.3		16		2	2	1	1999		1709	-
542921	80.3		16		2	2	1	1205		1908	-
10620	52		16		1		1445			-	-

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 76 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statis	tical F	erform	ance C	heck l	Result			
Radar Tes	t Signal (#)			;	5		Т	rail #		7	
Burst of Number	13	_	Burst riod(s)	0.92	30769	Wavet Lengt	-	12	Frequenc		Center
Burst Offset (us)	Pulse Wid (us)	dth	Chirp Width (MHz) Number of Pulses per Burst		PR	I-1 (us)	s) PRI-2 (us		PRI-3 (us)		
236763	93.9		11	11 3		1325		1401		1265	
458923	90.3		11		3		1962		1647		1876
683506	76.8		11		2		1499		1242		-
906848	72.4		11		2	2		1595		1013	-
209338	85.5		11		3	3		1048		1368	1438
433316	56		11		,		1646			-	-
654365	85.2		11		3	3		1784 1878		1878	1389
880256	54.8		11		•		,	1659		-	-
181618	88.1		11		3	3		1927		1928	1307
405781	57.1		11				•	1664		-	-
629680	55.8		11		1		1039 -		-	-	
852332	81.8		11		2		1050		1050 1038		-
154801	60.7		11	1 1		1557			-	-	

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 77 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

FCC DFS Test Report No.: FZ941813-01

		Statis	tical P	erform	ance Cl	heck l	Result			
Radar Tes	st Signal (#)		5	5		Т	rail #		8	
Burst of Number	20	Burst Period(s)	0	.6	Wavef Lengt		12		Frequency	Center
Burst Offset (us)	Pulse Wid (us)	dth Chirp V (MH		Numb Pulse Bu	s per	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
244340	96.4	20		3	3	,	1226		1572	2000
390950	60.1	20		1		,	1346		-	-
534907	76.3	20		2)	,	1441		1284	-
82690	56.2	20		1		,	1273		-	-
227993	62.4	20		1		1031			-	-
372695	62	20		1	1		1940		-	-
517788	56	20		1		,	1889		-	-
64471	83.9	20		3	3	,	1106		1311	1930
209097	98.4	20		3	3	,	1260		1022	1606
354143	74.3	20		2)		1178		1917	-
499561	70	20		2)	,	1069		1249	-
46749	69.5	20		2)	,	1773		1652	-
191589	78.6	20		2	2	,	1347		1603	-
336486	73.9	20		2	2		1177		1608	-
481767	74.1	20		2	2		1153		1089	-
28998	62.7	20		1		,	1944		-	-
173769	70.1	20		2	2	,	1224		1672	-
317895	93.3	20		3	3	,	1217		1015	1957
464152	50.5	20		1		,	1929		-	-
11067	89	20		3		1945			1615	1847

TEL: 886-3-327-3456 Page Number : 78 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



		Statis	tical F	Perform	ance C	heck l	Result			
Radar Tes	t Signal (#)			5		Т	rail #		9	
Burst of Number	11 P	Burst eriod(s)	1.09	09091	Wavef Lengt		12	Frequency		Center
Burst Offset (us)	Pulse Width (us)		Chirn Width		per of es per rst	PRI-1 (us)		P	RI-2 (us)	PRI-3 (us)
283763	85.8	9			3		1451		1023	1821
548478	51.3	9	9		1		1960		-	-
809743	86.6	9		3		,	1998		1989	1778
1077369	63.2	9		1		,	1270		-	-
251895	57.9	9		,	1	1730			-	-
514624	97.4	9		;	3	,	1488		1953	1309
780737	55.4	9		,	1	,	1002		-	-
1044449	56.6	9			I	,	1654		-	-
218719	86	9		;	3	,	1683		1425	1787
483655	55.9	9		,	1		1417		-	-
747738	50.5	9	9		1		1641		-	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 79 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



		St	atistical F	Perform	ance C	heck	Result			
Radar Tes	st Signal (#)			5		Т	rail #		10)
Burst of Number	9	Burst Period(1 ().75	Wave Lengt	-	12		Frequency	Center
Burst Offset (us)	Pulse Wid (us)		rp Width MHz)	Pulse	per of es per rst	PR	I-1 (us)	Ρ	RI-2 (us)	PRI-3 (us)
695151	61.9		15		1		1713	-		-
128132	71.6		15	2	2	1320			1648	-
309769	60.6		15		1	1862			-	-
489296	97		15	:	3	1244		1669		1873
672580	58.2		15		1	,	1954		-	-
105804	71.9		15				1694		1351	-
286805	75.7		15	2		,	1869		1591	-
467329	86.1		15	(3		1161		1266	1887
650589	61.2		15		1	1544		-		-
83455	74.3		15	2	2		1934		1415	-
264701	68.2		15	2	2	,	1422		1478	-
444952	95.5		15	(3		1657		1214	1610
628454	65.9		15		1	,	1276		-	-
61315	56.8		15		1	,	1335		-	-
242712	52.9		15		I		1881		-	-
424295	56.8		15	1		1634			-	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 80 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

		Stat	stical F	Perform	ance Cł	neck l	Result			
Radar Tes	t Signal (#)			5		Т	rail #		11	
Burst of Number	20	Burst Period(s)	(0.6	Wavef Lengt	-	12		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)		Width Hz)	Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
483494	82.2	2	20	2	2		1691		1029	-
31130	61.1	2	:0	1	I	•	1623		-	-
175309	92.1	2	20	3	3		1303		1697	1836
320742	68	2	20	2	2	,	1362		1450	-
466659	63.9	2	:0	1	I	•	1426		-	-
13250	55.3	2	:0	1	l	•	1823		-	-
157701	92.9	2	20	3	3		1232		1191	1763
302865	75	2	20	2	2		1571		1312	-
446764	95	2	20	3	3		1254		1650	1207
591996	73.6	2	20	2	2	·	1550		1846	-
140621	63	2	20	1			1121		-	1
283899	98.4	2	20	3	3	,	1343		1977	1926
430680	65.1	2	20	1			1725		-	-
575746	56.5	2	:0	1	l	•	1761		-	-
122072	99.4	2	.0	3	3		1241		1118	1973
266724	98	2	:0	3	3	•	1588		1304	1028
410761	92.5	2	:0	3	3	•	1484		1733	1473
556827	73.8	2	20	2	2		1574		1310	-
104794	58	2	:0	1	l	•	1380		-	-
248823	97.9	2	:0	3	3	•	1443		1326	1376

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 81 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	Perform	ance C	heck	Result			
Radar Tes	st Signal (#)				5		Т	rail #	12		
Burst of Number	9		Burst riod(s)	1.33	33333 Waveform Length(s)		12		Frequency	F _L +(0.4*Chirp width)	
Burst Offset (us)	Pulse Wid	dth		Chirp Width Number of		PRI-1 (us)		P	RI-2 (us)	PRI-3 (us)	
878323	68		6		2		1562		1223		-
1201036	77		6		2	2	,	1576		1195	-
193430	65.9		6		1		,	1019		-	-
515373	90.9		6		;	3	1728			1142	1206
837168	94.4		6		3	3	1333		1333		1685
1162414	57.1		6		,	1	,	1479		-	-
153280	89.3		6		(3	,	1447		1536	1062
476708	64.6		6		,	1	1156			-	-
798519	67.6		6		2		1975			1319	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 82 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	erform	ance C	heck l	Result					
Radar Tes	st Signal (#)			,	5		Т	rail #		13	3		
Burst of Number	14		Burst riod(s)	0.85	71429	Wave Lengt	-	12		Frequency	F _L +(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid	dth	Chirp V (MH			PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)			
721573	55.9		13		1		1087		-		-		
72983	70.6		13	13		2		1516		1373	-		
280517	56.4		13	13		1		1822		-	-		
488047	54.9		13		1			1667		-	-		
692783	90.5		13		3	3		1636		1670	1736		
47463	73.3		13		2	2	,	1462		1435	-		
253983	95.6		13		3	3	,	1681		1681		1897	1538
460713	94		13		3	3	,	1555		1620	1780		
667923	87.9		13		3	3		1140		1812	1329		
21923	86.7		13		3	3		1095		1456	1097		
229477	56.6		13		1			1581		-	-		
436459	78.8		13		2	2		1308		1308		1289	-
642305	85.7		13		3	3		1299		1852	1315		
852309	51.9		13		1		1250			-	-		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 83 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

		Statis	stical F	Perform	ance C	heck l	Result				
Radar Tes	t Signal (#)			5		Т	rail #		14	ļ	
Burst of Number	12	Burst Period(s)		1	Wave Lengt		12	•	Frequency	F _L +(0.4*Chirp width)	
Burst Offset (us)	Pulse Wid	dth Chirp (MF		Pulse	per of es per erst	PRI-1 (us)		P	RI-2 (us)	PRI-3 (us)	
237287	84.6	10)	(3		1314		1508	1611	
480167	58.8	10	10		1	1472		-		-	
721239	77.4	10	10		2		1092		1904	-	
963224	71	10)	2		,	1139		1671	-	
208121	54.6	10)	,	1	1673			-	-	
449554	74.9	10)	2	2	,	1469		1738	-	
691801	70.3	10)	2	2	,	1233		1263	-	
934484	52.9	10)	,	1	,	1687		-	-	
177771	92.1	10)	;	3	,	1433		1826	1355	
419126	98.9	10)	3			1915		1407	1428	
662911	55.1	10)		1		1125		-	-	
902272	88.9	10)	3		1635		1045		1643	

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 84 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statist	ical F	erform	ance C	neck F	Result			
Radar Tes	st Signal (#)				 5		Т	rail #		1:	5
Burst of Number	17		urst iod(s)	0.70	58824	Wavet Lengt	-	12		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp Width (MHz)		Numb Pulse Bu	s per	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
104782	55.1		16		1		1331		-		-
274485	95.2		16	3		3	1288		1262		1779
446644	51.1			16		1		1157	-		-
615134	73.6	73.6		16		2	1965		1963		-
83697	56.7		16		1		,	1637		-	-
254526	66		16		1		,	1563		-	-
424104	78.2		16		2	2	,	1872		1746	-
596368	57.3		16		1		,	1323	-		-
62396	89.1		16		3	3	,	1882		1328	1370
233528	53		16		1		,	1432		-	-
404155	56.6		16		1		,	1824		-	-
572746	93.4		16		3	3	1	1699		1269	1507
41534	74.7		16		2	2	1	1498		1593	-
211866	83.3		16		2	2	1	1585		1892	-
383319	53.8		16		1		1	1460		-	-
553954	53.9		16		1		1	1727		-	-
20589	54.5		16		1		1356			-	-

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 85 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statis	tical F	erform	ance C	heck l	Result				
Radar Tes	st Signal (#)			;	5		Т	rail #		16	6	
Burst of Number	13	_	Burst riod(s)		30769 Wavef Lengt		1 17			Frequency	F _L +(0.4*Chirp width)	
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Number of Pulses per Burst		PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)	
249549	87.2		11	11		3		1529		1868	1392	
473814	51.3		11		1		1772		-		-	
696747	69.1		11		2			1145		1305	-	
919852	82.3		11		2	2		1614		1012	-	
222458	75		11		2		,	1477		1898	-	
445510	81.4		11		2		1625			1760	-	
669234	82		11		2	2	1290			1173	-	
891674	66.9		11		2	2	,	1526	1801		-	
194770	86.2		11	_	3	3		1172		1980	1227	
417571	84.6		11	_	3	3		1932		1394	1079	
640275	89.8		11	·	3	3		1601		1071	1880	
862582	97.4		11		3	3		1985		1745	1316	
167886	52.9		11		,		1294		-	-	-	

Report No.: FZ941813-01

: 01

			Statis	tical F	Perform	ance C	heck	Result			
Radar Tes	st Signal (#)				5		Т	rail #		1	7
Burst of Number	9		Burst riod(s)	1.33	333333 Wave Leng		12		Frequency		F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		P	RI-2 (us)	PRI-3 (us)
564844	78.5		7		2		1406			1829	-
888379	57.6		7		•	1	,	1820		-	-
1208797	99.8		7		3		,	1248		1692	1645
202812	51.5		7		1		1298			-	-
525477	68.1		7		2	2	1088			1213	-
848768	50.3		7			1		1558		-	-
1169382	92.8		7		3	3		1580		1573	1114
162951	64.2		7		•	1	,	1854		-	-
485678	79.9		7		2	2		1011		1387	-

TEL: 886-3-327-3456 Page Number : 86 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019 Report Version

			Statistica	al P	erform	ance C	heck	Result			
Radar Tes	t Signal (#)			,	5		Т	rail #		18	3
Burst of Number	16		Burst eriod(s)		.75	Wavefor Length(s		1 12		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	lth (Chirp Wid (MHz)	th	Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
452762	90.6		15		3	3	1885		1390		1371
636546	50.5		15		1		1103		-		-
69136	78.3		15)	,	1485		1175	-
250688	62.9		15		1		,	1768		-	-
431876	81.6		15		2	2		1211		1044	-
613696	52.2		15		1		,	1684		-	-
46710	84		15		3		1704			1338	1209
227355	96.3		15		3	3	,	1920		1674	1384
409287	71.3		15		2	2	,	1292		1421	-
590397	71.1		15		2	2	,	1818		1060	-
24536	66.3		15		1			1055		-	-
205244	98.5		15		3	3		1712		1448	1291
387827	54.9		15		1		,	1043		-	-
566988	97.5		15		3	3	,	1749		1158	1404
2150	86.1		15		3	3		1607		1867	1436

1

1721

Report Version

: 01

15

56.5

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 87 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 FCC ID: VW3FAST3890V3

183641



			Statis	tical F	Perform	ance C	heck	Result			
Radar Tes	st Signal (#)				5		T	rail #		19	9
Burst of Number	9		Burst riod(s)	1.33	.3333333 Wavef Lengt			19		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		Р	PRI-2 (us)	PRI-3 (us)
649004	80.2		7	7		2		1476		1792	-
972632	63.8		7		,	1		1837		-	-
1294265	69.1		7		2			1455		1715	-
287125	56.7		7		,	1		1234		-	-
609502	70.5		7		2	2	1127			1633	-
931751	81.5		7		2	2	,	1629		1783	-
1253215	88.5		7		3	3		1147		1810	1604
247305	60		7		,	1		1363		-	-
568977	86.1		7		3	3		1212		1662	1696

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 88 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statist	tical F	Perform	ance Cl	heck l	Result			
Radar Te	st Signal (#)	,			5		Т	rail #		20)
Burst of Number	20		Burst riod(s)	(0.6	Wavef Lengt	-	12		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid	dth	Chirp W		Numk Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
400523	74.5		20		2		,	1775	1082		-
544232	99.1		20	3		3	1564			1074	1442
92772	93.7		20		3		1	1995		1235	1293
238062	73.1		20			2 1		1006		1337	-
383830	65.2		20		1		1	1068		-	-
529131	53.4		20		1		1	1021		-	-
75357	61.2		20		1		1	1553		-	-
219129	90.3		20	;		3	1	1807		1912	1551
365634	57.2		20		1		1	1565		-	-
510479	60.8		20		1		1909			-	-
57360	68.5		20		2	2	1	1626		1163	-
202693	54		20		1		1	1340		-	-
347847	62.1		20		1		1	1408		-	-
490344	99.8		20		3	3	1	1556		1877	1230
39483	79.7		20		2	2	1	1701		1622	-
184461	82.9		20		2	2	1	1302		1164	-
328025	89.9		20		3	3	1	1520		1638	1769
475199	63.2		20		1		1	1336		-	-
21678	68.6		20		2	2	1	1502		1256	-
166512	81		20		2	2	1398			1420	-

Report No.: FZ941813-01

: 01

TEL: 886-3-327-3456 Page Number : 89 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019 Report Version



Statistical Performance Check Result Radar Test Signal (#) 5 Trail # 21 **Burst of Burst** Waveform F_H-(0.4*Chirp Frequency 9 1.3333333 12 width) Number Period(s) Length(s) Number of **Burst Offset Pulse Width Chirp Width** PRI-2 (us) PRI-3 (us) Pulses per PRI-1 (us) (MHz) (us) (us) Burst 694608 54.5 6 1 1034 2 1016456 73.6 6 1590 1115 8551 6 60.1 1 1933 331564 63.7 6 1 1505 653496 95.1 6 3 1405 1075 1220 88 6 3 1628 975332 1744 1202 1297079 86.6 6 3 1271 1914 1921 291425 73.6 6 2 1188 1924 -6 1 614597 57.5 1916 _

Report No.: FZ941813-01

			Statis	tical F	erform	ance C	heck l	Result			
Radar Tes	t Signal (#)				5		Т	rail #		22	2
Burst of Number	13		1 0 0230760 1		Wavef Lengt	-	1 12		Frequency	F _H -(0.4*Chirp width)	
Burst Offset (us)	Pulse Wid (us)	lth	Chirp Width (MHz)		Number of Pulses per Burst		PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
648947	59.4		11		1		,	1464		-	-
872834	59.1		11	11		1		1077	-		-
174442	62		11		1		,	1104		-	-
397033	68.2		11		2	2		1747		1711	-
619847	76.8		11		2	2		1972		1816	-
844713	57		11		1		1706			-	-
146857	53.2		11		1		1367			-	-
369203	90.4		11		3	3		1731	1446		1170
592949	73.2		11		2	2		1201		1710	-
817479	56.1		11		1			1377		-	-
119201	67.7		11		2	2	,	1130		1171	-
342999	55.1		11		1		,	1007		-	-
566579	58.1		11		1			1090		-	-

TEL: 886-3-327-3456 Page Number : 90 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statist	ical P	erform	ance C	heck l	Result			
Radar Tes	st Signal (#)				5		Т	rail #		23	
Burst of Number	17		Burst 0.7058824		58824	Waveforn Length(s)		12	Frequenc		F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	ith C	Chirp W (MH			s per	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
601322	97.7		16		3	3	1345		1186		1735
69798	86.6		16		3		1578		1884		1521
240236	67.6		16		2	2		1861	1813		-
411573	52.4		16					1913	-		-
581299	68		16		2			1719		1414	-
49079	64		16		1			1828		-	-
218917	89.4		16		3			1765		1548	1453
389991	73.8		16		2		1690		1216		-
560724	80.6		16		2	2	1327		27 1280		-
27969	68.2		16		2	2		1893		1857	-
198477	69.9		16		2	2	•	1474		1501	-
368635	79		16		2	2	•	1619		1964	-
539754	81.5		16		2	<u> </u>	•	1395		1160	-
7017	50.9		16		1			1366		-	-
177018	88.9		16		3	3		1080		1978	1740
347849	80		16		2	2	•	1339		1850	-
518155	78.1		16		2		1503			1848	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 91 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	Perform	ance C	heck	Result			
Radar Tes	st Signal (#)				5		Т	rail #		2	4
Burst of Number	9		Burst riod(s)		333333 Wavef Lengt		19		Frequency		F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		P	RI-2 (us)	PRI-3 (us)
1303061	77.3		6	6		2		1858		1937	-
296120	66.9		6		2	2		1452		1703	-
618053	87.6		6		3			1461		1679	1471
941705	82.8		6		2		1058			1582	-
1262467	97.9		6		3	3	1561			1786	1369
256754	51.6		6		•	1	1225			-	-
579778	56.4		6		,	1		1349		-	-
900681	85.8		6		3	3	,	1708		1025	1781
1223080	85.3		6		3	3		1357		1971	1057

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 92 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statis	tical F	Perform	ance C	heck l	Result				
Radar Tes	st Signal (#)				5		Т	rail #		25	5	
Burst of Number	11	_	surst riod(s)		D9091 Wavef Lengt			10		Frequency	F _H -(0.4*Chirp width)	
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		Р	RI-2 (us)	PRI-3 (us)	
177128	92.7		9		3		1040		1064		1252	
441120	76.5		9		2		1567		1231		-	
703834	92.6		9		3	3	1	1739		1434	1457	
968288	66.7		9		2		1	1774		1737	-	
144880	57.1		9		1		1532			-	_	
408948	50.9		9		,		1907			-	-	
672738	75.9		9		2	2	1	1054		1383	-	
935219	96.5		9		3	3	1	1802		1341	1046	
112148	75.9		9		2	2	1	1951		1400	-	
376130	73.5		9		2	2	1	1053		1677	-	
638910	96.2		9		3		1531			1865	1268	

Report No.: FZ941813-01

: 01

		Sta	atistical I	Perform	ance C	heck l	Result				
Radar Tes	st Signal (#)			5		Т	rail #		26	6	
Burst of Number	12	Burst Period(Wavefo Length		12		Frequency	F _H -(0.4*Chirp width)	
Burst Offset (us)	Pulse Wid (us)		p Width MHz)	Number of Pulses per Burst		PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)	
826712	92.6		10	;	3		1834		1000	1983	
72998	69.9		10	2	2		1849		1518	-	
314688	72.5		10	2	2	,	1489		1958	-	
555527	84.2		10	;	3	,	1831		1182	1967	
797115	83.8		10	;	3		1843		1348	1459	
43224	78.8		10	2	2	1412			1979	-	
284734	91		10	;	3	,	1295		1086	1705	
526386	92.2		10	;	3	,	1003		1723	1148	
767431	89.3		10	;	3	,	1660		1724	1200	
13435	95.4		10	;	3	•	1439		1190	1942	
255680	56.1		10		1	,	1358		-	-	
497683	64.3		10	•	1	,	1759		-	-	

TEL: 886-3-327-3456 Page Number : 93 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019 Report Version



			Statis	tical F	Perform	ance C	heck l	Result			
Radar Te	st Signal (#))		,	5		Т	rail #		27	
Burst of Number	19		Burst riod(s)	0.63	15789	Wavef Lengt	-	12		Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V (MH:		Numb Pulse Bu	s per	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
466662	60.4		18		1			1883		-	-
616742	95.2		18		3	3	1991		1243		1334
142355	78.8		18		2	2	1016		1100		-
295519	50.7		18		1		1051			-	-
446771	67.6		18			2		1527	1874		-
599225	75.4		18			2		1809		1486	-
123039	99.9		18	;		3		1010		1970	1741
275129	85		18		3	3	,	1330		1318	1943
428981	61.1		18					1968		-	-
580996	66.7		18		2	2	1644		1065		-
104670	82.7		18		2	2	1313			1261	-
257432	71.4		18		2	2	,	1027		1037	-
410696	62.9		18		1			1162		-	-
561441	81.3		18		2	2	,	1939		1630	-
86077	63.9		18		1			1122		-	-
239011	61.1		18		1			1047		-	-
390966	68.9		18		2	2		1204		1402	-
544078	53.1		18		1		•	1950		-	-
66876	85.1		18		3	3		1468		1129	1959

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 94 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

Report Template No.: HE1-D2 Ver2.3

FCC ID: VW3FAST3890V3



	Statistical Performance Check Result										
Radar Tes	st Signal (#)		5				Т	rail #		28	
Burst of Number	20		urst iod(s)	1 1 1			Waveform Length(s)			Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp W (MHz		Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
208292	75.1		19		2	2	,	1577		1919	-
354271	65.3		19		1		,	1286		-	-
495997	83.9		19	İ	3	3	,	1955		1534	1969
45716	85.5		19		3	3	,	1624		1587	1386
191235	57.3		19		1			1105		-	-
334080	94.4		19		3		1901			1992	1495
481017	53.3		19		1		2	2000		-	-
27921	99		19		3		,	1379		1789	1592
172578	69.1		19		2)	,	1922		1830	-
318204	60.7		19		1		,	1839		-	-
463599	64.3		19		1		,	1423		-	-
10138	96.6		19		3	3	·	1680		1440	1702
154700	90		19		3	3		1798		1009	1196
298982	86.6		19		3	3		1413		1524	1596
445818	62.1		19		1			1287		-	-
589319	82.1		19	19		<u>)</u>		1159		1856	-
137185	71.5		19		2		•	1621	1119		-
281563	78.3		19		2	<u>)</u>	•	1888		1860	-
427881	50.1		19		1			1359		-	-
572624	58.3		19		1		,	1825		-	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 95 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



		;	Statist	ical F	Perform	ance C	heck l	Result			
Radar Tes	st Signal (#)				5		Т	rail #	29		
Burst of Number	15	Bur Perio	0.8		-	12		Frequency	F _H -(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid	dth	hirp W (MHz		Numk Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
159228	71		14		2	<u> </u>		1700		1429	-
352518	76		14		2	<u>)</u>		1895		1181	-
544323	88.6		14		3	3	1364		1961		1903
737838	85		14		3		1757			1281	1372
135567	75.8		14		2		,	1099		1174	-
328212	87.2		14		3		,	1285		1014	1984
522698	51.1		14		1		,	1994		-	-
715290	71.3		14		2	2	,	1525 1528		1528	-
111884	52.4		14		1		,	1210		-	-
305327	64.8		14		1		,	1966		-	-
497761	79.9		14		2	<u> </u>		1938		1811	-
691696	73.2		14		2	<u> </u>		1661	661 1143		-
87610	86.1		14		3			1993 1282		1282	1665
281813	60.2		14		1			1041 -			-
474637	81.1		14		2	2		1617		1017	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 96 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	erform	ance C	heck l	Result			
Radar Tes	t Signal (#)				5 T				rail #)
Burst of Number	14	_	Burst riod(s)	0.85	71429	Wave Lengt		1 19		Frequency	F _H +(0.4*Chir p width)
Burst Offset (us)	Pulse Wid	dth	Chirp V (MH		Numb Pulse Bu		PR	PRI-1 (us)		RI-2 (us)	PRI-3 (us)
713761	99.1		13		3	3		1466		1853	1864
68606	76.6		13		2	2	1948			1018	-
276396	59.6		13		1		1030			-	-
482744	71.4		13		2		,	1513		1793	-
691089	56.4		13		,		1743			-	-
43150	64.2		13		,		,	1752		-	-
250293	76.4		13		2	2	,	1251		1579	-
457068	80.8		13		2	2	,	1838		1782	-
665070	74.2		13		2	2	,	1093		1247	-
17534	96.8		13		3	3	,	1855		1771	1135
224742	70.1		13		2	2	1658		1658 1283		-
430908	92.7		13		3	3	1618			1514	1795
638128	84.8		13		3	3	1430		1430 12		1509
847663	50.7		13		,		,	1519		-	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 97 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



Type 6 Radar Statistical Performance

FCC ID: VW3FAST3890V3

Trial #	Test Freq. (MHz)	Pulses / Hop	Pulse Width (us)	PRI (us)	1=Detection 0=No Detection
1	5510	9	1	333	1
2	5510	9	1	333	1
3	5510	9	1	333	1
4	5510	9	1	333	1
5	5510	9	1	333	1
6	5510	9	1	333	1
7	5510	9	1	333	1
8	5510	9	1	333	1
9	5510	9	1	333	1
10	5510	9	1	333	1
11	5510	9	1	333	1
12	5510	9	1	333	1
13	5510	9	1	333	1
14	5510	9	1	333	1
15	5510	9	1	333	1
16	5510	9	1	333	1
17	5510	9	1	333	1
18	5510	9	1	333	1
19	5510	9	1	333	1
20	5510	9	1	333	1
21	5510	9	1	333	1
22	5510	9	1	333	1
23	5510	9	1	333	1
24	5510	9	1	333	1
25	5510	9	1	333	1
26	5510	9	1	333	1
27	5510	9	1	333	1
28	5510	9	1	333	1
29	5510	9	1	333	1
30	5510	9	1	333	1
		etection Percenta	age (%)		100
imit					70%
est Res	ult				Complied

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 98 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



Modulation Mode: 802.11ac (VHT80)

Type 1 Radar Statistical Performance

FCC ID: VW3FAST3890V3

Trial #	Test Freq. (MHz)	Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulse Per Second)	PRI (us)	1=Detection 0=No Detection
1	5516	1	1930.5	518	1
2	5517	23	326.2	3066	1
3	5518	19	1139.0	878	1
4	5519	12	1355.0	738	1
5	5520	4	1730.1	578	1
6	5521	8	1519.8	658	1
7	5522	15	1253.1	798	1
8	5523	6	1618.1	618	1
9	5524	14	1285.3	778	1
10	5525	3	1792.1	558	1
11	5526	13	1319.3	758	1
12	5527	9	1474.9	678	1
13	5528	7	1567.4	638	1
14	5529	17	1193.3	838	1
15	5530	10	1432.7	698	1
16	5531	-	1692.0	591	1
17	5532	-	328.1	3048	1
18	5533	-	373.4	2678	1
19	5534	-	574.4	1741	1
20	5535	-	1216.5	822	1
21	5536	-	801.3	1248	1
22	5537	-	488.5	2047	1
23	5538	-	956.0	1046	1
24	5539	-	517.6	1932	1
25	5540	-	1422.5	703	1
26	5541	-	542.0	1845	1
27	5542	-	741.3	1349	1
28	5543	-	881.8	1134	0
29	5544	-	427.4	2340	1
30	5545	-	628.9	1590	1
		Detection Percentage	(%)		96.667
_imit					60%
Test Res	ult				Complied

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 99 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



Type 2 Radar Statistical Performance

FCC ID: VW3FAST3890V3

Trial #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5516	2.6	221	23	1
2	5517	4.6	198	27	1
3	5518	1.1	184	29	1
4	5519	4.8	203	24	1
5	5520	2.4	162	25	1
6	5521	3.4	204	28	1
7	5522	2.3	170	27	1
8	5523	3.5	184	23	0
9	5524	4.9	150	27	1
10	5525	4.6	211	29	1
11	5526	2.9	158	23	1
12	5527	2.6	226	27	1
13	5528	1.6	204	26	1
14	5529	3.9	181	25	1
15	5530	4.6	202	24	1
16	5531	4.1	194	27	1
17	5532	2.3	193	28	1
18	5533	3.9	173	29	1
19	5534	4.3	188	23	1
20	5535	1.5	215	26	1
21	5536	4.9	227	27	1
22	5537	1.1	199	23	1
23	5538	4.5	155	29	1
24	5539	4.0	190	27	1
25	5540	2.4	151	23	1
26	5541	2.5	180	28	1
27	5542	2.5	228	23	1
28	5543	2.5	203	25	1
29	5544	1.5	188	25	1
30	5545	1.9	217	24	1
	D	etection Percentage (%)		96.667
_imit					60%
Test Resu	ult				Complied

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 100 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



Type 3 Radar Statistical Performance

Trial #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5516	8.0	205	16	1
2	5517	6.7	382	18	1
3	5518	8.6	418	16	1
4	5519	9.4	351	17	0
5	5520	7.4 383 18		18	1
6	5521	9.8	232	16	1
7	5522	9.1	377	17	1
8	5523	9.6	457	16	1
9	5524	8.0	471	18	1
10	5525	9.0	304	18	1
11	5526	8.0	316	17	1
12	5527	9.8	325	16	1
13	5528	8.0	409	17	0
14	5529	9.9	200	17	1
15	5530	8.8	458	16	1
16	5531	8.0	232	18	0
17	5532	8.3	250	16	1
18	5533	8.7	270	16	1
19	5534	7.7	350	17	1
20	5535	7.1	230	16	1
21	5536	7.3	416	18	0
22	5537	7.6	498	18	1
23	5538	7.3	286	17	1
24	5539	7.3	287	16	1
25	5540	7.5	462	17	1
26	5541	6.2	300	17	1
27	5542	6.4	323	18	1
28	5543	7.1	420	16	1
29	5544	7.2	395	18	1
30	5545	8.4	377	16	1
	D	etection Percentage (9	%)		86.667
imit			•		60%
est Resi	ult				Complied

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 101 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01

FCC ID: VW3FAST3890V3



Type 4 Radar Statistical Performance

Trial #	Test Freq. (MHz)	Pulse Width (us)	PRI (us)	Pulses / Burst	1=Detection 0=No Detection
1	5516	18.0	242	15	1
2	5517	19.9	279	12	1
3	5518	12.9	487	14	0
4	5519	15.0	452	13	1
5	5520	16.3	230	12	0
6	5521	19.8	238	13	1
7	5522	18.2	420	16	1
8	5523	16.3	452	15	1
9	5524	14.2	495	12	1
10	5525	17.8	228	16	0
11	5526	19.1	211	16	1
12	5527	18.4	283	15	1
13	5528	11.8	411	12	1
14	5529	14.2	284	13	1
15	5530	13.9	202	12	1
16	5531	17.8	340	14	1
17	5532	15.6	290	16	1
18	5533	14.6	250	16	1
19	5534	14.4	484	15	1
20	5535	18.9	387	13	1
21	5536	11.1	348	15	0
22	5537	13.8	291	16	1
23	5538	14.3	295	12	1
24	5539	12.5	300	12	0
25	5540	12.5	322	14	1
26	5541	12.5	383	13	1
27	5542	15.7	322	16	1
28	5543	19.8	469	13	1
29	5544	18.6	406	15	0
30	5545	15.9	238	14	1
	D	etection Percentage (9	%)		80
_imit					60%
Test Resu	ult				Complied

Report No.: FZ941813-01

Total Type 1~4 Radar Statistical Performance

Radar Type #	Detection Percentage (%)
1	96.667
2	96.667
3	86.667
4	80.000
Aggregate (Radar Types 1-4)	90.000
Limit	80%
Test Result	Complied

TEL: 886-3-327-3456 Page Number : 102 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01

FCC ID: VW3FAST3890V3



Type 5 Radar Statistical Performance

Center Freq. (MHz)	Low Edge (MHz)	High Edge (MHz)		
5530	5491.5	5568.5	VSG Freq. (MHz)	Detection
Trial	Chirp	Offset		
1	11	0	5530.00	1
2	5	0	5530.00	1
3	20	0	5530.00	1
4	13	0	5530.00	1
5	5 11 0 5530.00		5530.00	1
6	16	0	5530.00	1
7	11	0	5530.00	1
8	20	0	5530.00	1
9	9	0	5530.00	1
10	15	0	5530.00	1
11	20	30.50	5499.50	1
12	6	36.10	5493.90	1
13	13	33.30	5496.70	1
14	10	34.50	5495.50	1
15	16	32.10	5497.90	1
16	11	34.10	5495.90	1
17	7	35.70	5494.30	1
18	15	32.50	5497.50	0
19	7	35.70	5494.30	1
20	20	30.50	5499.50	1
21	6	36.10	5566.10	1
22	11	34.10	5564.10	1
23	16	32.10	5562.10	0
24	6	36.10	5566.10	1
25	9	34.90	5564.90	1
26	10	34.50	5564.50	1
27	18	31.30	5561.30	0
28	19	30.90	5560.90	1
29	14	32.90	5562.90	1
30	13	33.30	5563.30	1
	To	otal		27
		90%		
mit	Detection Per	U , ,		80%
est Result				Complied

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 103 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01 FCC ID : VW3FAST3890V3



Data Sheet for Radar Type 5

Report No. : FZ941813-01

	Statistical Performance Check Result										
Radar Tes	st Signal (#)			;	 5		Т	rail #		1	
Burst of Number	13	_	Burst riod(s)	0.92	30769	Wavet Lengt	-	1.)		Frequency	Center
Burst Offset (us)	Pulse Wid	dth	Chirp V			per of es per rst	PR	PRI-1 (us)		RI-2 (us)	PRI-3 (us)
591291	70		11		2	2	1	1208		1481	-
815216	51.8		11		,		1896		-		-
117197	97.9		11	11		3		1255		1463	1169
340497	75.4		11		2		1	1776		1116	-
563700	70.6		11		2		1	1361		1483	-
786312	85.5		11		3	3	1168			1155	1192
89901	70.6		11		2	2	1	1078		1126	-
312423	97.5		11		3	3	1	1237		1833	1540
536877	64.5		11		,	l	1	1698	-		-
759212	81.4		11	11		2	1	1575		1490	-
62185	99.2		11		3			1350		350 1982	
285880	54.7		11	11 1		1	1722		722 -		-
508479	75.7		11		2	2	1	1594		1682	-

			Statis	tical F	Perform	ance C	heck	Result				
Radar Tes	Radar Test Signal (#)				5					2		
Burst of Number	8	_	Burst riod(s)	1 5			1 17		Frequency	Center		
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V		Number of Pulses per Burst		PRI-1 (us)		PRI-2 (us)		PRI-3 (us)	
1190042	68.2		5	5		2		1790		1952	-	
56652	84.7		5		3			1714		1515	1061	
419783	69.6		5		2		1458			1500	-	
783608	56.5		5		,		1533			-	-	
1144211	84.2		5		3	3		1322		1988	1910	
11992	56.5		5	5		1		1411		-	-	
374471	97.5		5	5		3		1353		1981	1974	
738925	54.4		5		,	1		1365		-	-	

TEL: 886-3-327-3456 Page Number : 104 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



Statistical Performance Check Result											
Radar Tes	Radar Test Signal (#)			5					3		
Burst of Number	20	Burst Period(s)	1) 6		orm h(s)	12		Frequency	Center	
Burst Offset (us)	Pulse Wid (us)		Width (Hz)			PR	PRI-1 (us)		RI-2 (us)	PRI-3 (us)	
439705	70		20	2	2		1001		1246	-	
583092	84.7		20	:	3		1198		1120	1552	
132117	55.3		20		1	,	1264		-	-	
277048	64.5		20	1		,	1871		-	-	
421122	68.6		20	2		1381		1894		-	
564997	93.7		20		3		1306		1111	1754	
113465	96.8		20		3		1996		1535	1742	
258948	78.3		20		2		1239		1166	-	
403936	76.7		20		2	,	1221		1107	-	
545928	86.2		20		3		1947		1800	1806	
96115	72.3		20		2		1504		1176	-	
241508	64.6		20		1		1382		-	-	
384855	95.4		20	(3	,	1598		1117	1511	
528969	85.4		20	3		1631		1870		1152	
78179	73.2		20	2	2	1729		1649		-	
223000	77.7		20		2		1815		1238	-	
368464	65.7		20	,	1		1941		-	-	
510325	90.2		20	3		1899		1935		1819	
60248	98.9		20	(3		1194		1675	1570	
205316	79.6		20		2	1245		1375		-	

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 105 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



Statistical Performance Check Result											
Radar Test Signal (#)						5			rail #		
Burst of Number	14		Burst riod(s)		71429 Wave		1 12		Frequency		Center
Burst Offset (us)	Pulse Wid	dth	Chirp V (MH		Number of Pulses per Burst		PRI-1 (us)		PRI-2 (us)		PRI-3 (us)
501575	51		13		1		1542		-		-
707132	98.7		13		3		1613		1219		1066
60818	91.5		13		3		1072		1397		1549
267493	87		13		3		1253		1748		1762
475767	66.3	66.3		13		1		1987		-	-
680475	86.6	86.6		13		3		1785		1777	1797
35313	95.2		13		3		1482		1137		1844
242662	73.5		13		2	2	1059			1475	-
449288	98		13		3		1180		1480		1096
657034	74.6		13		2	2	1324		1427		-
9842	92.4		13		3		1133		1753		1378
217141	82		13		2		1236		1259		-
422905	87.8		13		3		1803		1842		1900
631115	72.9		13		2		1559		1726		-

Report No. : FZ941813-01

: 01

TEL: 886-3-327-3456 Page Number : 106 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version FCC ID: VW3FAST3890V3

Statistical Performance Check Result											
Radar Tes		5			Т	Trail #		5			
Burst of Number	13	_	Burst 0.92		30769 Wave		1 17		Frequency		Center
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		PRI-2 (us)		PRI-3 (us)
902081	100		11		3		1258		1396		1493
206352	67.1		11		2	2	1492		1179		-
429145	92.5		11		3	3	1410			1150	1042
653709	60.9		11	,			1399			-	-
877441	52		11	11		1		1193		-	-
178469	91.8		11	11		3		1686		1403	1569
402251	73.8		11		2	2	1067		1218		-
625039	69.2		11		2	2	1841		1229		-
847087	87.9		11		3	3	1073		1416		1755
151064	95.2		11		3		1197		1512		1756
374324	76.8		11		2		1437		1879		
596338	90.1		11		3		1352		1925		1666
820999	80.4		11		2		1586			1132	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 107 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

Statistical Performance Check Result											
Radar Tes		5				rail #		6			
Burst of Number	17	Burs Period		058824	Waveform Length(s)		12		Frequency	Center	
Burst Offset (us)	Pulse Wid (us)		rp Width (MHz)	Number of Pulses per Burst		PRI-1 (us)		PRI-2 (us)		PRI-3 (us)	
94587	82.8		16		2		1332		1689	-	
265527	61.5		16		1	1764		-		-	
435227	91.9		16	;	3		1301		1024	1167	
605381	90.8		16	;	3	1277		1091		1354	
73476	94		16		3		1185		1805	1109	
244588	57.6		16		1		1487		-		
414781	67.8		16		2	1026			1554	-	
586578	53.4		16		1		1110		-	1	
52576	71.4		16		2		1583		1653	1	
222476	93.3		16	,	3		1791		1766	1296	
393218	68.4		16		2		1678		1890	-	
562777	98.2		16		3		1510		1605	1418	
31603	82		16		2		1300		1523	-	
201756	98.6		16		3		1020		1070	1990	
372162	73.3		16		2		1999		1709	-	
542921	80.3		16		2		1205		1908	-	
10620	52		16		1		1445		-	-	

Report No. : FZ941813-01

: 01

TEL: 886-3-327-3456 Page Number : 108 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version FCC ID: VW3FAST3890V3

			Statis	tical P	erform	ance C	heck l	Result			
Radar Tes	st Signal (#)			;	5		Т	rail #		7	
Burst of Number	13	_	Burst riod(s)			Wavef Lengt		12		Frequency	Center
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V (MH				PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
236763	93.9		11		3	3	1325			1401	1265
458923	90.3		11		3	3	1962			1647	1876
683506	76.8		11		2	2	1499		1242		-
906848	72.4		11		2	2	•	1595		1013	-
209338	85.5		11		3	3		1048		1368	1438
433316	56		11		•		1646			-	-
654365	85.2		11		3	3	,	1784		1878	1389
880256	54.8		11		•		•	1659	-		-
181618	88.1		11		3	3		1927		1928	1307
405781	57.1		11		,		•	1664		-	-
629680	55.8		11		1			1039	-		-
852332	81.8		11		2		1050		1038		-
154801	60.7		11		1		1557			-	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 109 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

FCC DFS Test Report	Report No. : FZ941813-01

		Statis	tical P	erform	ance Cl	heck l	Result			
Radar Tes	st Signal (#)		5	5		Т	rail #	8		
Burst of Number	20	Burst Period(s)	0	.6	Wavef Lengt		12		Frequency	Center
Burst Offset (us)	Pulse Wid (us)	dth Chirp V (MH		Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
244340	96.4	20		3	3	,	1226	1572		2000
390950	60.1	20		1		1346			-	-
534907	76.3	20		2)	1441			1284	-
82690	56.2	20		1		,	1273		-	-
227993	62.4	20		1		,	1031		-	-
372695	62	20		1		1940		-		-
517788	56	20		1		,	1889		-	-
64471	83.9	20		3	3	,	1106		1311	1930
209097	98.4	20		3	3	,	1260		1022	1606
354143	74.3	20		2	2		1178		1917	-
499561	70	20		2)	,	1069		1249	-
46749	69.5	20		2)	,	1773		1652	-
191589	78.6	20		2	2	,	1347		1603	-
336486	73.9	20		2	2		1177		1608	-
481767	74.1	20		2	2	1153			1089	-
28998	62.7	20		1		,	1944	-		-
173769	70.1	20		2	2	,	1224	1672		-
317895	93.3	20		3	3	,	1217		1015	1957
464152	50.5	20		1		,	1929		-	-
11067	89	20		3	3	,	1945		1615	1847

TEL: 886-3-327-3456 Page Number : 110 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statis	tical F	Perform	ance C	heck F	Result			
Radar Tes	st Signal (#)				5		Т	rail #		9	
Burst of Number	11	_	Surst riod(s)		09091 Wave Lengt			12		Frequency	Center
Burst Offset (us)	Pulse Wid	dth	Chirp V (MH		Pulse	per of es per est	PRI-1 (us)		Р	RI-2 (us)	PRI-3 (us)
283763	85.8		9		;	3	1	1451		1023	1821
548478	51.3		9			1	1960		-		-
809743	86.6		9		;	3	1	1998		1989	1778
1077369	63.2		9		1		1	1270		-	-
251895	57.9		9		,	1	1730		-		-
514624	97.4		9		;	3	1	1488		1953	1309
780737	55.4		9		,	1	1002		-		-
1044449	56.6		9		,	1	1654		-		-
218719	86		9		;	3	1	1683		1425	1787
483655	55.9		9		1		1417		-		-
747738	50.5		9		1		1641			-	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 111 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



	Statistical Performance Check Result Radar Test Signal (#) 5 Trail # 10													
Radar Tes	st Signal (#)		;	5		Т	rail #		10)				
Burst of Number	9	Burst Period(s)	0	.75	Wave Lengt	-	12		Frequency	Center				
Burst Offset (us)	Pulse Wid (us)		Chirp Width (MHz)		per of es per rst	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)				
695151	61.9	15	5	•	1		1713	-		-				
128132	71.6	1	5	2	2	1320			1648	-				
309769	60.6	1:	5	,	1	,	1862		-	-				
489296	97	1:	5	3	3	1244			1669	1873				
672580	58.2	1:	5	,	1		1954		-	-				
105804	71.9	1	5	2	2		1694		1351	-				
286805	75.7	1:	5	2	2	,	1869		1591	-				
467329	86.1	1:	5	3	3		1161		1266	1887				
650589	61.2	1:	5	,	1	1544			-	-				
83455	74.3	1:	5	2	2	,	1934		1415	-				
264701	68.2	15	5	2	2	,	1422		1478	-				
444952	95.5	15	5	3	3	,	1657		1214	1610				
628454	65.9	15	5	,	1	,	1276	-		-				
61315	56.8	15	15		1	1335		5 -		-				
242712	52.9	15	5	,	1		1881		-	-				
424295	56.8	15		,	1	,	1634		-	-				

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 112 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

FCC DFS Test Report No.: FZ941813-01

		Statis	stical F	Perform	ance C	heck l	Result			
Radar Tes	st Signal (#)			5		Т	rail #		11	
Burst of Number	20	Burst Period(s)	(0.6	Wave Lengt	-	12		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth Chirp		Numl Pulse Bu		PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
483494	82.2	20)	2	2		1691		1029	-
31130	61.1	20)	,		1623			-	-
175309	92.1	20)	3	3	1303			1697	1836
320742	68	20)	2	2		1362		1450	-
466659	63.9	20)	,	1		1426		-	-
13250	55.3	20)	,	1		1823		-	-
157701	92.9	20)	3	3		1232	1191		1763
302865	75	20)	2	2	,	1571		1312	-
446764	95	20)	3	3	,	1254		1650	1207
591996	73.6	20)	2	2		1550		1846	-
140621	63	20)	,		1121		-		-
283899	98.4	20)	3	3	1343			1977	1926
430680	65.1	20)	,		,	1725		-	-
575746	56.5	20)	,		,	1761		-	-
122072	99.4	20)	3	3	1241			1118	1973
266724	98	20)	3	3	,	1588	1304		1028
410761	92.5	20	20		3	,	1484	1733		1473
556827	73.8	20)	2	2	,	1574		1310	-
104794	58	20)	,		,	1380		-	-
248823	97.9	20)	3	3	,	1443		1326	1376

TEL: 886-3-327-3456 Page Number : 113 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	Perform	ance C	heck	Result					
Radar Tes	st Signal (#))			5		Т	rail #	12				
Burst of Number	9		Burst riod(s)	1.33	1 3333333		form th(s)		Frequenc		F _L +(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid	dth	Chirp V (MH				PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)		
878323	68		6		2	2	1562		1223		-		
1201036	77		6		2	2		1576		1195	-		
193430	65.9		6	,		1	,	1019		-	-		
515373	90.9		6		3	3	1728			1142	1206		
837168	94.4		6		3	3	1333			1997	1685		
1162414	57.1		6		,	1		1479		1479 -		-	-
153280	89.3		6		3	3		1447		1536	1062		
476708	64.6		6		1		1156			-	-		
798519	67.6		6		2		1975			1319	-		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 114 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

			Statis	tical F	Perform	ance C	heck l	Result			
Radar Tes	t Signal (#)			;	5		Т	rail #		13	
Burst of Number	14		Burst riod(s)		8571429 Wavef Lengt		-	12		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	ith		Chirp Width (MHz)		per of s per rst	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
721573	55.9		13		1		1087			-	-
72983	70.6		13		2	2	1516			1373	-
280517	56.4		13		1		1822		-		-
488047	54.9		13		1		,	1667		-	-
692783	90.5		13		3		•	1636		1670	1736
47463	73.3		13		2		1462			1435	-
253983	95.6		13		3	3	1681		681 1897		1538
460713	94		13		3	3	•	1555		1620	1780
667923	87.9		13		3	3		1140		1812	1329
21923	86.7		13		3	3	•	1095		1456	1097
229477	56.6		13		1		•	1581		-	-
436459	78.8		13		2		1308		308 1289		-
642305	85.7		13		3		1299		1852		1315
852309	51.9		13		1		1250			-	-

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 115 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

			Statist	ical P	erform	ance C	heck l	Result				
Radar Tes	st Signal (#)				5		Т	rail#		14	4	
Burst of Number	12	'	Burst riod(s)		1	Wave Lengt	. •	12		Frequency	F _L +(0.4*Chirp width)	
Burst Offset (us)	Pulse Wid	dth	Chirp Widt (MHz)				PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)	
237287	84.6		10		3	3	1314			1508	1611	
480167	58.8		10		,	1	1472		-		-	
721239	77.4		10		2	2		1092		1904	-	
963224	71		10		2	2	,	1139		1671	-	
208121	54.6		10		,	1		1673		-	-	
449554	74.9		10		2	2	1469			1738	-	
691801	70.3		10		2	2	,	1233		1263	-	
934484	52.9		10		,	1	,	1687	-		-	
177771	92.1		10		;	3		1433 1826		1826	1355	
419126	98.9		10		3		,	1915	15 1407		1428	
662911	55.1		10		1		1125		-		-	
902272	88.9		10		3		1635			1045	1643	

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 116 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01

CC DFS Test Report Report No.: FZ941813-01

			Statist	tical F	erform	ance C	heck l	Result			
Radar Tes	st Signal (#)			;	5		Т	rail #		15	
Burst of Number	17		urst iod(s)	0.70	58824	Wave Lengt	-	12		Frequency	F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid	dth	Chirp W (MH:		Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
104782	55.1		16		•			1331	-		-
274485	95.2		16		3	3	1288			1262	1779
446644	51.1		16		,			1157		-	-
615134	73.6		16		2	2		1965		1963	-
83697	56.7		16		•	1		1637	-		-
254526	66		16		•		,	1563		-	-
424104	78.2		16	2		2		1872		1746	-
596368	57.3		16		•	1		1323		-	-
62396	89.1		16		3	3	1882		1882 1328		1370
233528	53		16		,			1432		-	-
404155	56.6		16		,			1824	-		-
572746	93.4		16		3	3	1699		1269		1507
41534	74.7		16		2	2		1498	1593		=
211866	83.3		16		2	2		1585	1892		=
383319	53.8		16		,		146			-	-
553954	53.9		16		1		1727		-		-
20589	54.5		16		1		1356			-	-

TEL: 886-3-327-3456 Page Number : 117 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



Statistical Performance Check Result Trail # Radar Test Signal (#) **Burst of Burst** Waveform F_L+(0.4*Chirp 0.9230769 Frequency Number Period(s) Length(s) width) **Number of Chirp Width Burst Offset Pulse Width** Pulses per PRI-1 (us) PRI-2 (us) PRI-3 (us) (MHz) (us) (us) **Burst** 87.2 51.3 69.1 _ 82.3 81.4 66.9 _ 86.2 84.6 89.8 97.4 52.9

Report No.: FZ941813-01

			Statis	tical F	erform	ance C	heck	Result			
Radar Te	st Signal (#)				5		Т	rail #		1	7
Burst of Number	9		Burst 1.333		333333 Wavef		12		Frequency		F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Pulse	per of es per rst	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
564844	78.5		7		2	2	1406		1829		-
888379	57.6		7		,	I		1820		-	-
1208797	99.8		7		3			1248		1692	1645
202812	51.5		7		,	1	1298			-	-
525477	68.1		7		2	2	1088			1213	-
848768	50.3		7			1	,	1558	-		-
1169382	92.8		7		;	3		1580		1573	1114
162951	64.2		7		1		1854			-	-
485678	79.9		7		2		1011			1387	-

TEL: 886-3-327-3456 Page Number : 118 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



	Statistical Performance Check Result Radar Test Signal (#) 5 Trail # 18													
Radar Tes	st Signal (#)			;	5		Т	rail #		18				
Burst of Number	16	_	Burst riod(s)	0	.75	Wave Lengt	-	12		Frequency	F _L +(0.4*Chirp width)			
Burst Offset (us)	Pulse Wid	dth	Chirp W (MHz	Wiath Pulse		per of es per rst	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)			
452762	90.6		15		3	3		1885	1390		1371			
636546	50.5		15		,		1103			-	-			
69136	78.3		15		2	2	1485			1175	-			
250688	62.9		15		,	1		1768		-	-			
431876	81.6		15		2	2		1211		1044	-			
613696	52.2		15	,			,	1684		-	-			
46710	84		15		3		,	1704		1338	1209			
227355	96.3		15		3	3		1920		1674	1384			
409287	71.3		15		2	2	1292		1421		-			
590397	71.1		15		2	2	,	1818		1060	-			
24536	66.3		15		,		,	1055		-	-			
205244	98.5		15		3	3	,	1712		1448	1291			
387827	54.9		15		,			1043	-		-			
566988	97.5		15		3		1749		1749 1158		1404			
2150	86.1		15		3		1607		07 1867		1436			
183641	56.5		15		,			1721		-	-			

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 119 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	Perform	ance C	heck	Result			
Radar Tes	st Signal (#)				5		Т	rail #		19	9
Burst of Number	9	_	Burst riod(s)		33333 Wavef Lengt		10		Frequency		F _L +(0.4*Chirp width)
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		Р	RI-2 (us)	PRI-3 (us)
649004	80.2		7		2		1476			1792	-
972632	63.8		7	7		I	,	1837		-	-
1294265	69.1		7		2			1455		1715	-
287125	56.7		7		1		1234			-	-
609502	70.5		7		2	2	1127			1633	-
931751	81.5		7		2	2		1629		1783	-
1253215	88.5		7		3	3		1147		1810	1604
247305	60		7			I		1363		-	-
568977	86.1		7		3	3		1212		1662	1696

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 120 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

			Statist	ical P	erform	ance Cl	neck l	Result				
Radar Tes	st Signal (#)			į	5		Т	rail #		20)	
Burst of Number	20	-	urst iod(s)	C).6	Wavef Lengt	-	12		Frequency	F _L +(0.4*Chirp width)	
Burst Offset (us)	Pulse Wid (us)	dth	Chirp W (MHz		Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)	
400523	74.5		20		2	2	,	1775		1082	-	
544232	99.1		20		3	3		1564		1074	1442	
92772	93.7		20		3	3	,	1995		1235	1293	
238062	73.1		20		2	2	,	1006		1337	-	
383830	65.2		20	,			1068			-	-	
529131	53.4		20		1		1021			-	-	
75357	61.2		20		1			1553		-	-	
219129	90.3		20		3	3	,	1807		1912	1551	
365634	57.2		20		1		•	1565		-	-	
510479	60.8		20		1			1909		-	-	
57360	68.5		20		2	2	,	1626		1163	-	
202693	54		20		1			1340		-	-	
347847	62.1		20		1			1408		-	-	
490344	99.8		20		3	3		1556		1877	1230	
39483	79.7		20		2	<u> </u>		1701		1622	-	
184461	82.9		20		2	<u> </u>		1302		1164	-	
328025	89.9		20		3	3		1520		1638	1769	
475199	63.2		20		1			1336		-	-	
21678	68.6		20		2	<u> </u>		1502		1256	-	
166512	81		20		2	2		1398		1420	-	

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 121 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	erform	ance Cl	heck l	Result			
Radar Tes	st Signal (#)				5		Т	rail #		2	1
Burst of Number	9		Burst eriod(s)		33333	Wavef Lengt	17		Frequency		F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		Р	PRI-2 (us)	PRI-3 (us)
694608	54.5		6		•	1	1034		-		-
1016456	73.6		6		2	2		1590		1115	-
8551	60.1		6			1	•	1933		-	-
331564	63.7		6			1		1505		-	-
653496	95.1		6		(3	1405		1075		1220
975332	88		6		(3		1628		1744	1202
1297079	86.6		6			3		1271		1914	1921
291425	73.6		6			2	1188			1924	-
614597	57.5		6		•	1	,	1916		-	-

Report No. : FZ941813-01

			Statis	tical P	erform	ance C	heck l	Result			
Radar Tes	st Signal (#)			;	5		Т	rail #		22	2
Burst of Number	13		Burst riod(s)	1 0 00000 1 10		Frequency		F _H -(0.4*Chirp width)			
Burst Offset (us)	Pulse Wid	dth	Chirp V		Numk Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
648947	59.4		11		1		1464			-	-
872834	59.1		11	11		1		1077		-	-
174442	62		11		1		1104			-	-
397033	68.2		11		2	2	,	1747		1711	-
619847	76.8		11		2	2	,	1972		1816	-
844713	57		11		1		,	1706		-	-
146857	53.2		11		1		,	1367		-	-
369203	90.4		11		3	3	,	1731		1446	1170
592949	73.2		11		2	2	,	1201		1710	-
817479	56.1		11		1			1377		-	-
119201	67.7		11		2	2		1130		1171	-
342999	55.1		11		1			1007		-	-
566579	58.1		11		1		1090			-	-

TEL: 886-3-327-3456 Page Number : 122 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



	Statistical Performance Check Result Radar Test Signal (#) 5 Trail # 23												
Radar Tes	st Signal (#)			;	5		Т	rail #		23	3		
Burst of Number	17		Burst riod(s)	0.70	U /UP88.7/I		form th(s)		Frequenc		F _H -(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid	dth	Chirp Width (MHz)		Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)		
601322	97.7		16		3	3	1345		1186		1735		
69798	86.6		16		3	3	1578		1884		1521		
240236	67.6		16		2	2	1861		1813		-		
411573	52.4		16		,	1		1913		-	-		
581299	68		16	16		2	,	1719		1414	-		
49079	64		16	16			,	1828		-	-		
218917	89.4		16	i		3	,	1765		1548	1453		
389991	73.8		16		2	2	,	1690	1216		-		
560724	80.6		16		2	2	1327		1280		-		
27969	68.2		16		2	2		1893		1857	-		
198477	69.9		16		2	2	,	1474		1501	-		
368635	79		16		2	2		1619		1964	-		
539754	81.5		16		2	2		1395		1160	-		
7017	50.9		16		,			1366		-	-		
177018	88.9		16		3	3		1080		1978	1740		
347849	80		16		2	2		1339		1850	-		
518155	78.1		16		2	2		1503		1848	-		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 123 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



			Statis	tical F	Perform	ance C	heck	Result			
Radar Tes	st Signal (#)				5		Т	rail#	24		
Burst of Number	9		Burst riod(s)	1.3333333		Waveform Length(s)		12		Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		P	RI-2 (us)	PRI-3 (us)
1303061	77.3		6		2		1858			1937	-
296120	66.9		6		2	2		1452		1703	-
618053	87.6		6	(3	,	1461		1679	1471
941705	82.8		6		2	2	1058			1582	-
1262467	97.9		6		3	3	1561			1786	1369
256754	51.6		6		,	I		1225		-	-
579778	56.4		6		,	1	,	1349		-	-
900681	85.8		6		3	3	,	1708		1025	1781
1223080	85.3		6		3	3		1357		1971	1057

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 124 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

			Statis	tical F	erform	ance C	heck l	Result			
Radar Tes	st Signal (#)			;	5		Т	rail #		25	5
Burst of Number	11		Burst riod(s)	1.0909091		Wave Lengt		1 17		Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V (MH		Pulse	per of es per rst	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)
177128	92.7		9		3		1040		1064		1252
441120	76.5		9			2	,	1567		1231	-
703834	92.6		9		3	3	,	1739		1434	1457
968288	66.7		9			2	,	1774		1737	-
144880	57.1		9		,	1	,	1532		-	-
408948	50.9		9		,	1	,	1907		-	-
672738	75.9		9		2	2	,	1054		1383	-
935219	96.5		9		3	3	,	1802		1341	1046
112148	75.9		9		2	2		1951		1400	-
376130	73.5		9		2	2		1053		1677	-
638910	96.2		9			3	,	1531		1865	1268

Report No.: FZ941813-01

			Statist	tical F	erform	ance C	heck l	Result			
Radar Tes	st Signal (#)			,	5		Т	rail #		26	3
Burst of Number	12		urst riod(s)		1 Wavef Lengt			1.7		Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid (us)	dth	Chirp Width (MHz)		Number of Pulses per Burst		PRI-1 (us)		Р	RI-2 (us)	PRI-3 (us)
826712	92.6		10		3	3		1834		1000	1983
72998	69.9		10	10		2		1849		1518	-
314688	72.5		10		2			1489		1958	-
555527	84.2		10		3	3		1831		1182	1967
797115	83.8		10		3		1843			1348	1459
43224	78.8		10		2	2	1412			1979	-
284734	91		10		3	3		1295		1086	1705
526386	92.2		10		3	3		1003		1723	1148
767431	89.3		10		3	3		1660		1724	1200
13435	95.4	ĺ	10		3	3		1439		1190	1942
255680	56.1		10		,			1358		-	-
497683	64.3		10		1		1759			-	-

TEL: 886-3-327-3456 Page Number : 125 of 132
FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



			Statis	tical F	Perform	ance C	heck l	Result			
Radar Te	st Signal (#))		,	5		Т	rail #		27	
Burst of Number	19		Burst riod(s)	0.63	15789	Wavef Lengt	-	12		Frequency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid	dth	Chirp V (MH:		Numb Pulse Bu	s per	PR	I-1 (us)	P	RI-2 (us)	PRI-3 (us)
466662	60.4		18		1			1883		-	-
616742	95.2		18		3		1991		1243		1334
142355	78.8		18		2		1016		1100		-
295519	50.7		18		1		1051			-	-
446771	67.6		18		2	2		1527		1874	-
599225	75.4		18		2	2	1809			1486	-
123039	99.9		18		3	3		1010		1970	1741
275129	85		18	;		3	,	1330		1318	1943
428981	61.1		18	,		1		1968		-	-
580996	66.7		18		2	2		1644		1065	-
104670	82.7		18		2	2	,	1313		1261	-
257432	71.4		18		2	2	,	1027		1037	-
410696	62.9		18		1			1162		-	-
561441	81.3		18		2	2	,	1939		1630	-
86077	63.9		18		1			1122		-	-
239011	61.1		18		1			1047		-	-
390966	68.9		18		2	2		1204		1402	-
544078	53.1		18		1		•	1950		-	-
66876	85.1		18		3	3		1468		1129	1959

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 126 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



	Statistical Performance Check Result Radar Test Signal (#) 5 Trail # 28												
Radar Tes	st Signal (#))		į	5		Т	rail #		28	3		
Burst of Number	20		surst riod(s)	O	Wavef Lengt		-	12		Frequency	F _H -(0.4*Chirp width)		
Burst Offset (us)	Pulse Wid (us)	dth	Chirp W (MH		Numb Pulse Bu	s per	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)		
208292	75.1		19		2	2	,	1577		1919	-		
354271	65.3		19		1		,	1286		-	-		
495997	83.9		19		3	3	,	1955		1534	1969		
45716	85.5		19		3	3	,	1624		1587	1386		
191235	57.3		19		1			1105		-	-		
334080	94.4		19		3	}		1901		1992	1495		
481017	53.3		19		1		2	2000		-	-		
27921	99		19		3	}		1379		1789	1592		
172578	69.1		19		2	2		1922		1830	-		
318204	60.7		19		1		,	1839		-	-		
463599	64.3		19		1			1423		-	-		
10138	96.6		19		3	}		1680		1440	1702		
154700	90		19		3	}		1798		1009	1196		
298982	86.6		19		3	}		1413		1524	1596		
445818	62.1		19		1			1287		-	-		
589319	82.1		19		2	2	,	1159		1856	-		
137185	71.5		19		2	2		1621		1119	-		
281563	78.3		19		2	2		1888		1860	-		
427881	50.1		19		1			1359		-	-		
572624	58.3		19		1			1825		-	-		

Report No. : FZ941813-01

TEL: 886-3-327-3456 Page Number : 127 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Version

: 01



		Statis	tical F	Perform	ance C	heck l	Result			
Radar Tes	st Signal (#)			5		Т	rail #		29	
Burst of Number	15	Burst Period(s)	0.8		Waveform Length(s)		12	F	requency	F _H -(0.4*Chirp width)
Burst Offset (us)	Pulse Wid	th Chirp V		Numb Pulse Bu	s per	PR	I-1 (us)	PRI	-2 (us)	PRI-3 (us)
159228	71	14	•	2	2	,	1700	1	429	-
352518	76	14		2	2	1895		1181		-
544323	88.6	14	14		3	1364		1961		1903
737838	85	14	;		3	,	1757	1	281	1372
135567	75.8	14		2	2	,	1099	1	174	-
328212	87.2	14		3		,	1285	1	014	1984
522698	51.1	14		1		1994		4 -		-
715290	71.3	14		2	2	1525		5 1528		-
111884	52.4	14		,	l	,	1210		-	-
305327	64.8	14		,		,	1966		-	-
497761	79.9	14		2	2		1938	1	811	-
691696	73.2	14		2	2		1661	1	143	-
87610	86.1	14		3	3		1993	1	282	1665
281813	60.2	14					1041		-	-
474637	81.1	14		2	2	,	1617	1	017	-

Report No. : FZ941813-01

: 01

TEL: 886-3-327-3456 Page Number : 128 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



			Statis	tical P	erform	ance C	heck l	Result				
Radar Tes	t Signal (#)			;	5		Т	rail #		30	30	
Burst of Number	14		Burst riod(s)	1 0 86 /1/20		Wave Lengt	1 17			Frequency	F _H +(0.4*Chir p width)	
Burst Offset (us)	Pulse Wid (us)	dth	Chirp V (MH		Pulse	per of es per rst	PR	I-1 (us)	Р	RI-2 (us)	PRI-3 (us)	
713761	99.1		13		(3	,	1466		1853	1864	
68606	76.6		13	13		2		1948		1018	-	
276396	59.6		13		1		1030			-	-	
482744	71.4		13		2	2	,	1513		1793	-	
691089	56.4		13		,	1	,	1743		-	-	
43150	64.2		13		,	1	,	1752		-	-	
250293	76.4		13		2	2	,	1251		1579	-	
457068	80.8		13		2	2	,	1838		1782	-	
665070	74.2		13		2	2	,	1093		1247	-	
17534	96.8		13		3	3	,	1855		1771	1135	
224742	70.1		13		2	2	,	1658		1283	-	
430908	92.7		13		3	3		1618		1514	1795	
638128	84.8		13		(3		1430		1279	1509	
847663	50.7		13		,	1	,	1519		-	-	

Report No. : FZ941813-01

: 01

TEL: 886-3-327-3456 Page Number : 129 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019



Type 6 Radar Statistical Performance

FCC ID: VW3FAST3890V3

Trial #	Test Freq. (MHz)	Pulses / Hop	Pulse Width (us)	PRI (us)	1=Detection 0=No Detection	
1	5530	9	1	333	1	
2	5530	9	1	333	1	
3	5530	9	1	333	1	
4	5530	9	1	333	1	
5	5530	9	1	333	1	
6	5530	9	1	333	1	
7	5530	9	1	333	1	
8	5530	9	1	333	1	
9	5530	9	1	333	1	
10	5530	9	1	333	1	
11	5530	9	1	333	1	
12	5530	9	1	333	1	
13	5530	9	1	333	1	
14	5530	9	1	333	1	
15	5530	9	1	333	1	
16	5530	9	1	333	1	
17	5530	9	1	333	1	
18	5530	9	1	333	1	
19	5530	9	1	333	1	
20	5530	9	1	333	1	
21	5530	9	1	333	1	
22	5530	9	1	333	1	
23	5530	9	1	333	1	
24	5530	9	1	333	1	
25	5530	9	1	333	1	
26	5530	9	1	333	1	
27	5530	9	1	333	1	
28	5530	9	1	333	1	
29	5530	9	1	333	1	
30	5530	9 etection Percenta	1	333	1	
	100					
_imit	70%					
Test Resi	Complied					

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 130 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

Report Template No.: HE1-D2 Ver2.3 Report Version : 01



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	Keysight	N9010A	MY55150165	9kHz~7GHz	15/ Nov/2018	14/ Nov/2019
Vector Signal Generator	Keysight	N5182B	MY53051912	9kHz ~ 6GHz	18/Dec/2018	17/Dec/2019
RF cable 8m	HUBER+SUHNER	SUCOFLEX 104	CB222	25 MHz ~ 26.5 GHz	21/Mar/2019	20/Mar/2020
RF cable 3m	HUBER+SUHNER	SUCOFLEX 104	302338/4	25 MHz ~ 26.5 GHz	21/Mar/2019	20/Mar/2020
Horn Antenna	COM-POWER	AH-118	10091	1GHz ~ 18GHz	10/Jun/2019	09/Jun/2020
Horn Antenna	COM-POWER	AHA-118	711064	1GHz ~ 18GHz	24/Dec/2018	23/Dec/2019

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 131 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019

5 Measurement Uncertainty

Test Items	Uncertainty	Remark	
Radiated Emission	3.9 dB	Confidence levels of 95%	
Temperature	0.7 ℃	Confidence levels of 95%	
Humidity	4 %	Confidence levels of 95%	

Report No.: FZ941813-01

TEL: 886-3-327-3456 Page Number : 132 of 132 FAX: 886-3-327-0973 Issued Date : Nov. 18, 2019