

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

# INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E AND INDUSTRY CANADA RSS 247 REQUIREMENT DFS TEST REPORT

	OF		
FCC Applicant:	Honeywell International Inc.		
	9680 Old Bailes Road, Fort Mill, SC 29707, USA		
IC Applicant:	Honeywell International Inc.		
	9680 Old Bailes Road, Fort Mill, SC 29707, USA		
Product Name:	Vehicle Mount Computer		
Brand Name:	Honeywell		
Model No.:	VM1A-L0N		
Model Difference:	N/A		
FCC ID:	HD5-VM1AL0N		
IC	1693B-VM1AL0N		
Report No.:	ER/2018/90027		
FCC Rule Part:	§15.407, Cat: NII		
IC Rule Part:	RSS-247 issue 2 Feb. 2017		
Issue Date:	Oct. 05, 2018		
Date of Test:	Sep. 12, 2018 ~ Sep. 28, 2018		
Date of EUT Re- ceived:	Sep. 04, 2018		

#### We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits. The test results of this report relate only to the tested sample identified in this report.

Tested By:

Chen

Approved By:

Louis Chen / Sr. Engineer

CHUN-CHIEH CHEN / Asst. Supervisor





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# **Revision History**

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
ER/2018/90027	Rev.00	Initial creation of docu- ment	All	Oct. 05, 2018	Elle Chang

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#### **GENERAL INFORMATION** 1

# **1.1 Product Description**

General:

Product Name:	Vehicle M	Iount Computer	
Brand Name:	Honeywe	=	
Model No.:	VM1A-L0	N	
Model Difference:	N/A		
Product HW/SW version:	VM1AL0N / 85.00.00-0322		
Radio HW/SW version:	V1.0 / V5.1.1.28U		
	10.8Vdc from Rechargeable Li-ion Battery or 15Vdc from AC/DC Adapter.		
Power Supply:	Battery:	Model No.: 163176-0001 Rev C / OVT310L1R00 C, Supplier: TOTEX	
	Adapter:	Model No.: GT-46600-6015-T3, Supplier: GlobTek, Inc.	

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	Dipole Antenna, Supplier: LAIRD
	Model No.: WTS2450
	5150~5250MHz Peak Gain: 2.6dBi
	5250~5350MHz Peak Gain: 2.6dBi
	5470~5725MHz Peak Gain: 2.6dBi
	5725~5850MHz Peak Gain: 3.4dBi
	Dipole Antenna, Supplier: LARSEN
	Model No.: R380500314
	5150~5250MHz Peak Gain: 5dBi
	5250~5350MHz Peak Gain: 5dBi
	5470~5725MHz Peak Gain: 5dBi
Antenna Designation	5725~5850MHz Peak Gain: 5dBi
	Printed Antenna, Supplier: N/A
	Model No.: N/A
	Chain0:
	5150~5250MHz Peak Gain: 4.7dBi
	5250~5350MHz Peak Gain: 4.6dBi
	5470~5725MHz Peak Gain: 4.8dBi
	5725~5850MHz Peak Gain: 4.7dBi
	Chain 1:
	5150~5250MHz Peak Gain: 4.4dBi
	5250~5350MHz Peak Gain: 4.7dBi

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	5470~5725MHz Peak Gain: 4.9dBi 5725~5850MHz Peak Gain: 3.4dBi
Modulation type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only
Transition Rate:	802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 144.4Mbps 802.11 n_40MHz: 13.5 - 300.0Mbps 802.11 ac_20MHz: 6.5 –144.4Mbps 802.11 ac_40MHz: 13.5 -300.0Mbps 802.11 ac_80MHz: 29.3 – 650Mbps



# FCC WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. Power (dBm)	Modulation Technology	
	5150~5250	4	13.95		
11a	5250~5350	4	20.93	OFDM	
IIa	5470~5725	12	20.77		
	5725-5850	5	20.97		
	5150~5250	4	HT: 13.81		
11n_HT /	5250~5350	4	HT: 20.92	OFDM	
ac_VHT 20M	5470~5725	12	HT: 20.77	OFDM	
20101	5725-5850	5	HT: 21.15		
	5150~5250	2	HT: 13.70		
11n_HT / ac_VHT	5250~5350	2	HT: 21.16		
40M	5470~5725	6	HT:21.07	OFDM	
	5725-5850	2	HT: 21.27		
	5150~5250	1	13.21		
11ac VHT80M	5250~5350	1	9.25		
	5470~5725	2	20.56	OFDM	
	5725-5850	1	20.05		

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### IC WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. or EIRP	Rated Power(dBm) (Worst Case)	Modulation Technology
	5150~5250	4	EIRP	21.96	
11a	5250~5350	4	Avg.	20.93	OFDM
11a	5470~5725	12	Avg.	20.77	
	5725-5850	5	Avg.	20.97	
	5150~5250	4	EIRP	HT: 21.82	
11n_HT /	5250~5350	4	Avg.	HT: 20.92	OFDM
ac_VHT 20M	5470~5725	12	Avg.	HT: 20.77	
	5725-5850	5	Avg.	HT: 21.15	
	5150~5250	2	EIRP	HT: 21.71	
11n_HT /	5250~5350	2	Avg.	HT: 21.16	OFDM
ac_VHT 40M	5470~5725	6	Avg.	HT: 21.07	
	5725-5850	2	Avg.	HT: 21.27	
11ac VHT80M	5150~5250	1	EIRP	21.22	
	5250~5350	1	Avg.	9.25	OFDM
	5470~5725	2	Avg.	20.56	
	5725-5850	1	Avg.	20.05	



# 1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

FCC KDB 905462 D03 UNII Clients Without Radar Detection New Rules v01r02

RSS-247 issue 2 Feb. 2017

All test items have been performed and record as per the above standards.

# 1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803 (TAF code 0513)

FCC Registration Numbers and Designation number are: 509634 / TW0001

Canada Registration Number: 4620A-4

# **1.4 Special Accessories**

There are no special accessories used while test was conducted.

### **1.5 Equipment Modifications**

There was no modification incorporated into the EUT.

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#### SUMMARY OF TEST RESULT 2

FCC / IC Rules	Description Of Test	Result
§15.407(h) IC RSS-247 issue 2 §6.3	TPC and DFS Measurement	Compliant

#### **MEASUREMENT UNCERTAINTY** 3

Test Items	Uncertainty
TPC and DFS Measurement	+/- 123.36 Hz
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC=+/- 0.2%

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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# 4 TPC AND DFS MEASUREMENT

# 4.1 TPC: Standard Applicable

According to §15.407(h)(1), Transmit power control (TPC). U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

# 4.1.1 Result: N/A, The output power is less than 500mW.

# 4.2 DFS: Standard Applicable

According to §15.407(h)(2) and FCC KDB 905462 D02, Radar Detection Function of Dynamic Frequency Selection (DFS).

Radar Detection Function of Dynamic Frequency Selection (DFS). U-NII devices operating with any part of its 26 dB emission bandwidth in the 5.25-5.35 GHz and 5.47-5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems. Operators shall only use equipment with a DFS mechanism that is turned on when operating in these bands. The device must sense for radar signals at 100 percent of its emission bandwidth. The minimum DFS detection threshold for devices with a maximum e.i.r.p. of 200 mW to 1 W is –64 dBm. For devices that operate with less than 200 mW e.i.r.p. and a power spectral density of less than 10 dBm in a 1 MHz band, the minimum detection threshold is –62 dBm. The detection threshold is the received power averaged over 1 microsecond referenced to a 0 dBi antenna. For the initial channel setting, the manufacturers shall be permitted to provide for either random channel selection or manual channel selection.

- (i) Operational Modes. The DFS requirement applies to the following operational modes:
- (A) The requirement for channel availability check time applies in the master operational mode.
- (B) The requirement for channel move time applies in both the master and slave operational modes.

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(ii) Channel Availability Check Time. A U-NII device shall check if there is a radar system already operating on the channel before it can initiate a transmission on a channel and when it has to move to a new channel. The U-NII device may start using the channel if no radar signal with a power level greater than the interference threshold values listed in paragraph (h)(2) of this section, is detected within 60 seconds.

(iii) Channel Move Time. After a radar's presence is detected, all transmissions shall cease on the operating channel within 10 seconds. Transmissions during this period shall consist of normal traffic for a maximum of 200 ms after detection of the radar signal. In addition, intermittent management and control signals can be sent during the remaining time to facilitate vacating the operating channel.

(iv) Non-occupancy Period. A channel that has been flagged as containing a radar system, either by a channel availability check or in-service monitoring, is subject to a non-occupancy period of at least 30 minutes. The non-occupancy period starts at the time when the radar system is detected.

According to RSS 247 §6.3), Note: For the band 5600-5650 MHz, no operation is permitted. Until further notice, devices subject to this annex shall not be capable of transmitting in the band 5600-5650 MHz. This restriction is for the protection of Environment Canada weather radars operating in this band. Devices operating in the bands 5250-5350 MHz, 5470-5600 MHz and 5650-5725 MHz band shall comply with the following:

Devices shall employ a DFS radar detection mechanism to detect the presence of radar (a) systems and to avoid co-channel operation with radar systems (see Note below). The minimum DFS radar signal detection threshold is -62 dBm for devices with a maximum e.i.r.p. less than 200 mW, and -64 dBm for devices with a maximum e.i.r.p. of 200 mW to 1 W. The detection threshold power is the received power, averaged over a 1-microsecond reference to a 0 dBi antenna. The DFS process shall provide a uniform spreading of the loading over all the available channels.

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Note: Test procedures for demonstrating compliance with the DFS radar detection requirements set out in this section are being evaluated by Industry Canada. As an interim measure, the Department will, until further notice, accept utilization of the DFS test procedures published by the U.S. Federal Communications Commission (FCC)3 to demonstrate compliance with the requirements of this section.

(b) Operational requirements: the requirement for channel availability check time applies in the master operational mode. The requirement for channel move time applies in both the master and slave operational modes.

(i) In-service monitoring: an LE-LAN device should be able to monitor the operating channel to check that a co-channel radar has not moved or started operation within range of the LE-LAN device.During in-service monitoring, the LE-LAN radar detection function continuously searches for radar signals between normal LE-LAN transmissions.

(ii) Channel availability check time: the device shall check if there is a radar system already operating on the channel before it initiates a transmission on a channel and when it moves to a channel. The device may start using the channel if no radar signal with a power level greater than the interference threshold value specified in A9.3 (a) above is detected within 60 seconds.

(iii) Channel move time: after a radar's signal is detected, the device shall cease all transmissions on the operating channel within 10 seconds. Transmission during this period shall consist of normal traffic for a maximum of 200 ms after detection of the radar signal. Intermittent management and control signals may also be sent during the remaining time to facilitate vacating the operating channel.

(iv)Channel closing time: the maximum channel closing time is 260 ms. (v) Non-occupancy period: a channel that has been flagged as containing a radar signal, either by a channel availability check or in-service monitoring, is subject to a 30-minute non-occupancy period where the channel cannot be used by the LE-LAN device. The non-occupancy period starts from the time that the radar signal is detected.

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#### 4.2.1 Limit

# Table 1: Applicability of DFS requirements prior to use of a channel

	Operational Mode			
Requirement	Master	Client(without radar detection)	Client(with radar detection)	
Non-occupancy Period	Yes	Not required	Yes	
DFS Detection Thresh- old	Yes	Not required	Yes	
Channel Availability Check Time	Yes	Not required	Not required	
U-NII Detection Bandwidth	Yes	Not required	Yes	

# Table 2: Applicability of DFS requirements during normal operation

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

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Additional requirements for devices with multiple bandwidth mode	Master Device or Client with Radar Detection	Client Without Radar Detection										
U-NII Detection Band- width and Statistical Performance Check	All BW modes must be tested	Not required										
Channel Move Time and Channel Closing Trans- mission 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										
<b>Note:</b> 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.												

#### Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value
	(See Notes 1, 2, and 3)
$EIRP \ge 200 \text{ milliwatt}$	-64 dBm
EIRP < 200 milliwatt and	-62 dBm
power spectral density < 10 dBm/MHz	
EIRP < 200 milliwatt that do not meet the power spectral	-64 dBm
density requirement	
Note 1: This is the level at the input of the receiver assuming a 0 dB	i receive antenna.
Note 2: Throughout these test procedures an additional 1 dB has bee transmission waveforms to account for variations in measurement eq	
test signal is at or above the detection threshold level to trigger a DF	-
Note3: EIRP is based on the highest antenna gain. For MIMO devic	
D01.	

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# Table 4: DFS Response requirement values

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

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

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

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# Table 5: Radar Test Waveforms

# Short Pulse Radar

Radar	Pulse	PRI	Number of Pulses	Minimum	Minimum
Type	Width	(µsec)		Percentage of	Number
	(µsec)			Successful	of
				Detection	Trials
0	1	1428	18	See Note 1	See Note
					1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values	$\operatorname{Roundup}\left\{ \begin{pmatrix} \frac{1}{360} \end{pmatrix} \cdot \\ \begin{pmatrix} \frac{19 \cdot 10^6}{\text{PRI}_{\mu \text{sec}}} \end{pmatrix} \right\}$	60%	30
		selected in Test A	22.22	600 (	
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
	Radar Types			80%	120
	ort Pulse Rada nannel closing		sed for the detection ba	ndwidth test, ch	annel move

# Long Pulse Radar

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

# **Frequency Hopping Radar**

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

# The applicant of this given application confirms that information regarding the parameters of the detected Radar Waveforms is not available to the end user.

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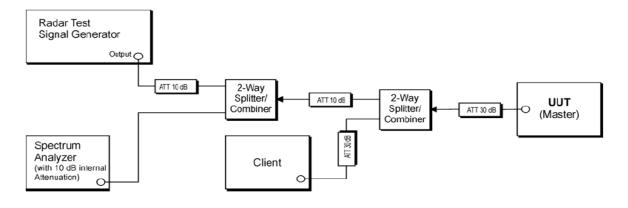
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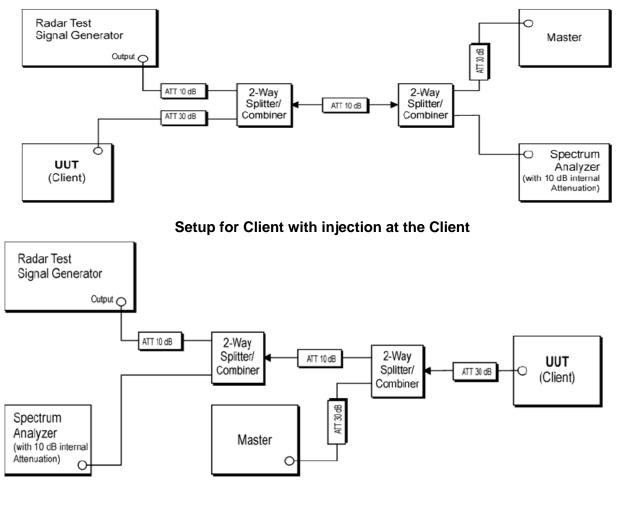


# 4.2.2 Test Setup

Setup for Master with injection at the Master



Setup for Client with injection at the Master



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	Con	ducted Emissic	on Test Site		
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PXA Spectrum An- alyzer	Agilent	N9030A	MY53120760	2018/04/09	2019/04/08
Signal Generator	Agilent	N5172B	MY53050661	2018/04/05	2019/04/04
Power Splitter	Mini-Circuits	ZN2PD-9G-S+	N/A	2018/01/02	2019/01/01
Power Splitter	Mini-Circuits	ZN2PD-9G-S+	N/A	2018/01/02	2019/01/01
Attenuator	Agilent	8495B	3308A22470	2018/01/02	2019/01/01
Attenuator	HP	8494B	2812A170605	2018/01/02	2019/01/01
Notebook	Lenovo	T440P	P0000564	N/A	N/A
Accece Ponit	Cisco	AIR-LAP1262N -A-K9	FTX1605E1G1 FCC ID:LDK102073	N/A	N/A

# 4.2.3 Test Equipment Used:

# 4.2.4 Description of EUT:

EUT operates over the 5250-5350MHz and 5470-5725MHz ranges and EUT is a slave device (client equipment) w/o radar detection and DFS capability.

EUT has no TPC mechanism implemented with no adjustment of lowest, and highest power, but the level of power emission stays at fixed level.

WLAN traffic is generated by streaming the mpeg file from the master to slave in full monitor video mode using the media player.

The rated output power of the master unit is >23dBm(EIRP).therefore the required interference threshold level is -64dBm.after correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is -64dBm, and the master device as employed for the applicable DFS test is CISCO router whose FCC ID= LDK102061

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While calibrate the path on antenna port of DFS test equipment (master), measurements equipments (spectrum) is ensured to be 50 Ohms, and therefore verification on antenna gain measurement can be ignored.

Conducted test was performed with appropriate adjustment, and calibration to ensure power from DFS simulator injects to antenna port of DFS test equipment (DFS) is -64dBm

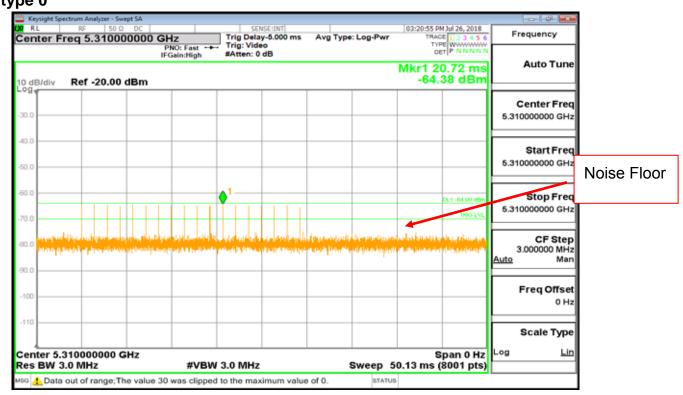
# Message or files that is used for communication between Master and Client:

IP based system:

For the required channel loading, the full motion, 30 frames per second MPEG video file from http://ntiacsd.ntia.doc.gov/dfs/ was streamed from a network on a test bench (server of the storage to download the mandatory format of Video file), via the DFS Master device, to the UE (mobile phone).

# 4.2.5 Test results

# Calibration plots for each of the required radar waveforms 5310 Radar type 0



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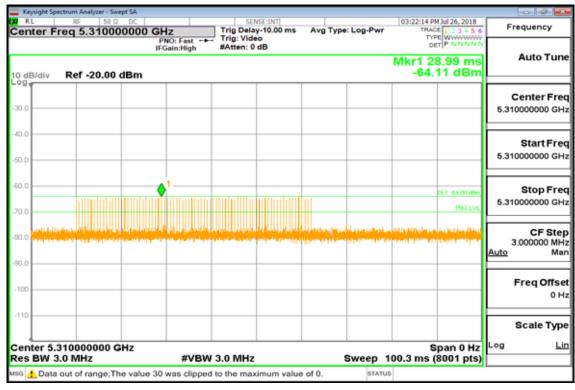
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# Radar type 1 A

Keysight Spectrum	Analyzer - Swept SA			ec.uat			02-21-01-01	11.126.2010		0
	50 Ω DC 5.310000000	GHz	Trig Dela	y-10.00 ms	Avg Type	: Log-Pwr	TRAC	4 Jul 26, 2018	Frequ	ency
		PNO: Fast +++ IFGain:High	#Atten: 0					5.01 ms		to Tun
10 dB/div Re	f -20.00 dBm						-64.	26 dBm		
-30.0									Cent 5.310000	ter Fre
-40.0									Sta 5.310000	art Fre
-60.0								0L1 -64.00 dBm 1990 LVL	St 5.310000	<b>op Fre</b> 1000 G⊦
						n da silana ya Mana daga fa		and and a sure		CF Ste 000 Mł Ma
-100									Fre	q Offs 0 I
-110									Sca	ile Typ
Center 5.3100 Res BW 3.0 M		#VBW	3.0 MHz			Sweep 1	S 100.3 ms (	panonz	Log	L
isg 🚹 Data out o	of range;The value	e 30 was clipped	to the max	imum value	e of 0.	STATU	5			

### Radar type 1 B

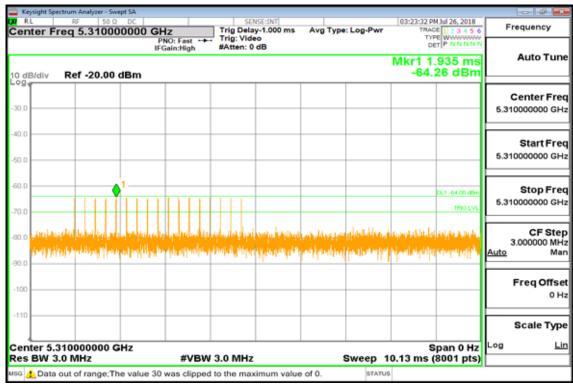


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									t Spectrum Ana	
Frequency	03:22:45 PM Jul 26, 2018 TRACE 1 2 3 4 5 6 TYPE WWWWWW	: Log-Pwr	Avg Type	y-800.0 µs		Z	D000 GH	50 Ω 31000	Freq 5.3	Cente
Auto Tune	Mkr1 3.530 ms -64.09 dBm				#Atten: 0	iain:High	IFC	20.00 (	v Ref∹	10 dB/e
Center Free 5.310000000 GH										-30.0
Start Fre 5.310000000 GH										-40.0 -
Stop Fre 5.310000000 GH	DL1 -64.00 dBm 1990 LVL				• <sup>1</sup>					-60.0
CF Ster 3.000000 MH Auto Ma	endersspelatelinerender proteinergebereichtersete			er al da. Alte sedera	alatal an Antonio po	an Konaday Aridi asalasi	lan da Geografia	an an		-80.0
Freq Offse 0 H										-100 -
Scale Typ										-110
Log <u>Lir</u>	Span 0 Hz 2.000 ms (8001 pts)	Sweep 1			3.0 MHz	#VBW	Hz		5.310000 / 3.0 MHz	
	5	STATU	e of 0.	imum valu	to the max	was clipped	value 30	nge;Th	ata out of ra	ısg 🔔 l

### Radar type 3

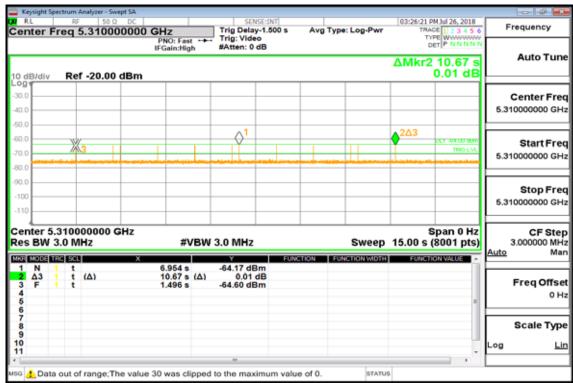


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												sight Spectru	_
	03:24:18 PM Jul 26, 2018 TRACE 1 2 3 4 5 6 TYPE WWWWWWW	: Log-Pwr	Avg Typ	y-1.000 ms	Trig Dela		Ηz	00 GH		50 ( 3100	₽₽ <b>1 5.</b> 3	ter Frec	Cen
Auto Turo	Mkr1 1.704 ms -64.12 dBm				#Atten: 0		'NO: F Gain:P	IÈ	dB	20.00	ef -	3/div R	10 di
Center Free 5.310000000 GH													-30.0
Start Fre 5.310000000 GH													-40.0 -50.0
Stop Fre 5.310000000 GH	DL1 -64.00 dBm 1190 LVL												-60.0
	shekkinin na Antoninia. Najimpi maninki pikabaniji							n ein ei Arinifi	ų,	arita Afite	40 40	ndynadiylar Andreska (od	-80.0
Freq Offso 0 ⊦													-100
Scale Typ									+				-110
	Span 0 Hz 0.13 ms (8001 pts)	Sweep 1			3.0 MHz	#VBW		:	GH2			ter 5.310 BW 3.0 I	
		STATU	e of 0.	imum valu	to the max	clipped	was	alue 30	'ne v	inge;T	ofra	Data out	usg 🤞

# Radar type 5



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								A	vept S	yzer - Sv	m Anal	sight Spectrur	
Frequency	03:27:16 PM Jul 26, 2018 TRACE 1 2 3 4 5 6 TYPE WWWWWW	: Log-Pwr	Avg Type	y-800.0 µs		ist +++	Hz	00 GI		50 c 3100	№ <b>1 5.</b> 3	ter Freq	Cent
Auto Tun	Mkr1 799.0 μs -64.13 dBm				#Atten: 0		Gain:H	IÈ	dB	20.00	ef -2	3/div R	10 dB
Center Fre 5.310000000 GH													-30.0
Start Fre 5.310000000 GH													-40.0
Stop Fre 5.310000000 GH	DL1 -64.00 dBm TRIO LVL										• <sup>1</sup> -	(	-60.0
CF Ste 3.000000 MH Auto Ma	n an an Anna a Tha an Anna an A							ndaad Barnda	i I des	i Maria	l Ing I Nigi		80.0 90.0
Freq Offs 0 F													-100
Scale Typ							-		+				-110
Log <u>Li</u>	Span 0 Hz .000 ms (8001 pts)	Sweep 8			3.0 MHz	¢VBW	#	:	GHz			ter 5.310 BW 3.0 I	
r		STATU	e of 0.	imum valu	o the max	clipped	was	alue 30	he v	nge;T	of ra	Data out	ısg 🤰

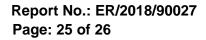
No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.



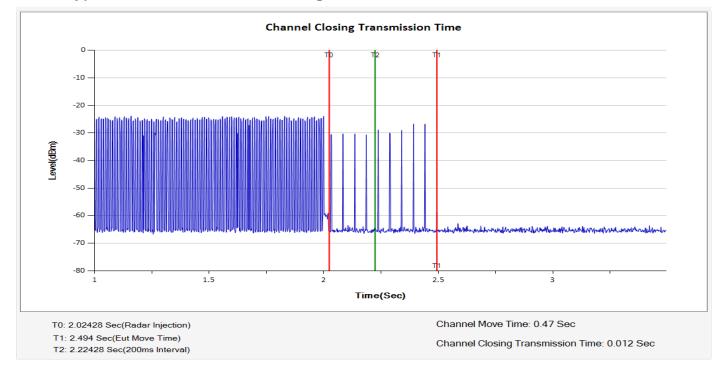
#### WLAN traffic



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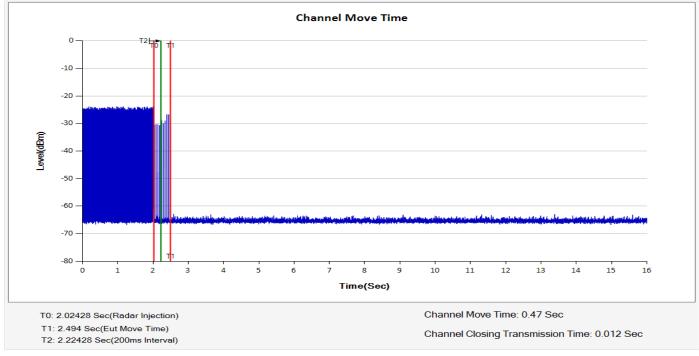






# Radar Type 1 Channel Move and Closing Transmission Time - 1



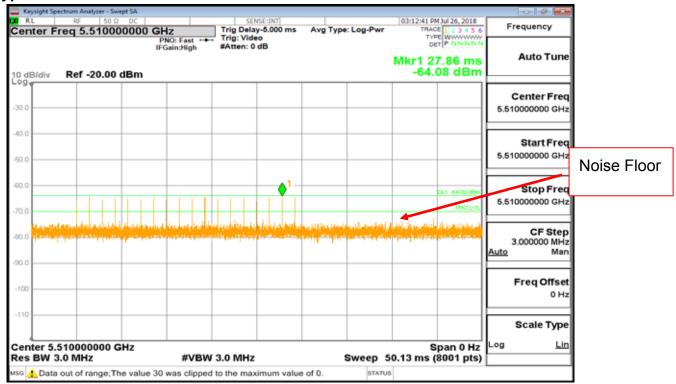


**Verdict:** Note: narrowing the sweep time as the good engineering process for the verification of transmission closing in 200ms

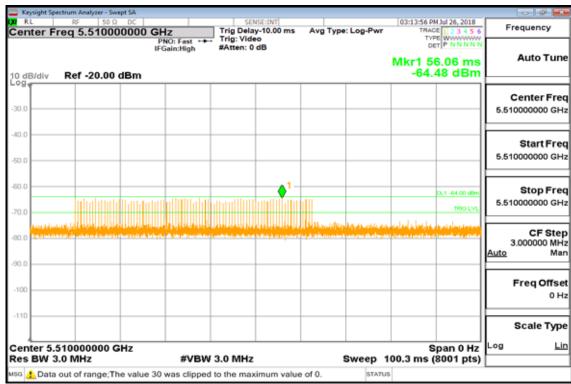
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# Radar type 1 A



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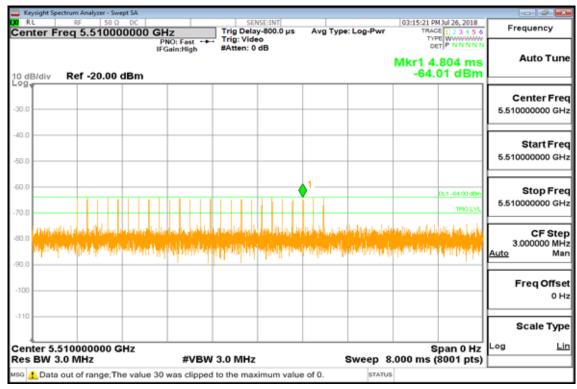
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# Radar type 1 B

		trum Analy												
Cent		eq 5.5	50 Ω 10000	DC 0000 G				y-10.00 ms	Avg Ty	pe: Log-Pwr	TYPE	1 2 3 4 5 6	F	requency
10 dE	3/div	Ref -2	0.00 d		PNO: Fast FGain:High		#Atten: 0				oet Mkr1 59	PNNNNN		Auto Tun
-30.0						_								Center Fre
-40.0													5.51	Start Fre
-60.0 -70.0									1			L1 -64.00 dBm 1990 L.VL	5.51	Stop Fre
-80.0	in Afrikadar Antonio anto			al na gina mina a	an states to		inter en al de la composition de la co Composition de la composition de la comp	a di Canana Selanan A di Canana Selanan	(Heliologian dise na based and set		n la politici foi cardi na recontricto por con	aldershipting	Auto	CF Ste 3.000000 MH Ma
-100			_			_								Freq Offs 0 F
-110						+								Scale Typ
	ter 5.5 BW 3.0	100000 0 MHz	000 GI	Hz	#V	BW :	3.0 MHz			Sweep	Sp 100.3 ms (8	an 0 Hz 001 pts)	Log	Li
MSG 🥖	Data o	ut of rar	ige;The	value 3	0 was clip	pped t	to the max	imum valu	e of 0.	STAT		. ,		

# Radar type 2



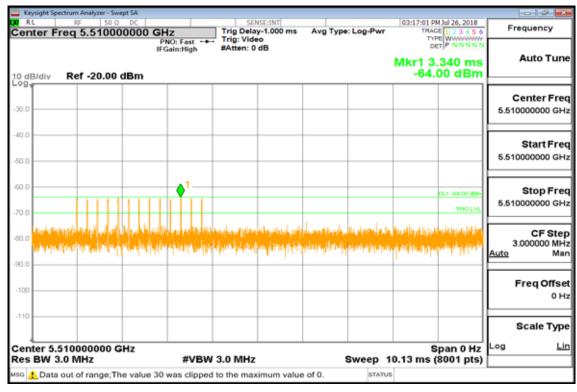
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										sight Spectrum	_
Frequency	PEWMMM	TRAC	: Log-Pwr	Avg Type	y-1.000 ms	Trig Dela	Hz NO: Fast ↔	0000 G		ter Freq	Cen
Auto Tun	.105 ms 30 dBm	Mkr1 3			dB	#Atten: 0	Gain:High	IF	f -20.00 (	3/div <b>Re</b>	10 dE
Center Fre 5.510000000 GH											-30.0
Start Fre 5.510000000 GH											-40.0 -50.0
Stop Fre 5.510000000 GH	0L1 -64.00 dBm 1990 LVL										-60.0 -70.0
CF Ste 3.000000 Mł <u>Auto</u> Ma	alan salar Maryadal						alaila lainn Martin Aire	n Ing-cologi Glashia dag	alarlar lar Afrikka fil	alteritikeler. Jaardeler	-80.0
Freq Offs 01											-100
Scale Typ											-110
	pan 0 Hz (8001 pts)		Sweep 1			3.0 MHz	#VBW	Hz		ter 5.5100 BW 3.0 M	
		5	STATUS	e of 0.	dimum valu	to the max	was clipped	e value 30	f range;Th	Data out o	MSG 👌

### Radar type 4



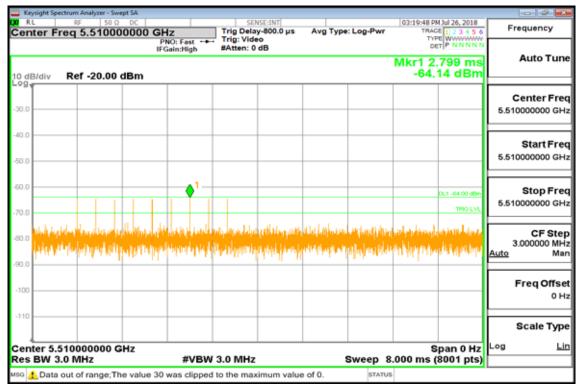
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	ght Spect		Analyzer - 1														- 0 Ø 🛃
Cente	er Fre	ad (		Ω DC	0 GH	z		_	SENSE:		Av	g Туре	: Log-Pwr	TR	PM Jul 26, 2018		Frequency
						O: Fast ain:Higl		#Atter	10eo 1:0 dB						2 10.67 s		Auto Tun
10 dB/	div	Ref	-20.0	0 dBm	<u>ا</u>										-0.89 dB		
-30.0																5.6	Center Fre
-50.0		X	3		, and the second		ومسا	Ŷ	1		-			2∆3	DLT -84.00 dBM TRIO LVL	5.5	Start Fre
-80.0 - -90.0 - -100 -									-							F	Stop Fre
			00000	GHz									<b>.</b>		Span 0 Hz		CF Ste
Res B				×		#V	BW	3.0 M	HZ	FUN	CTION	EUN	Sweep		(8001 pts)	Auto	3.000000 MH Ma
1 Ν 2 Δ 3 F 4 5 6	3 1	t t	(Δ)	~	6.1 10	953 s ).67 s 496 s	(Δ)	-0.	dBm 89 dB dBm						1		Freq Offse 0 H
7 8 9 10																Log	Scale Typ
11																	<u> </u>
isg 🔔 I	Data o	ut of	range;	The val	ue 30 w	vas clij	pped	to the r	naximu	ım valu	e of 0		STATU	5			

# Radar type 6



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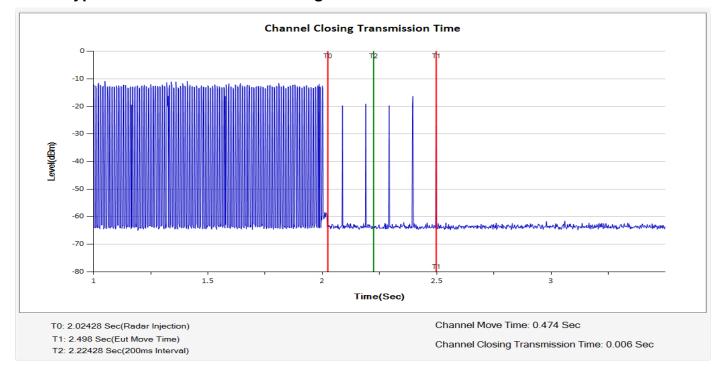


### WLAN traffic



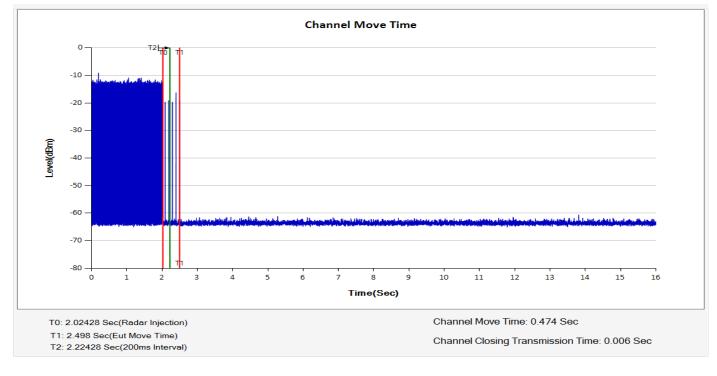
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# Radar Type 1 Channel Move and Closing Transmission Time - 1

# Radar Type 1 Channel Move and Closing Transmission Time - 2



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SGS Taiwan Ltd. No.134, WuKungRoad, NewTaipeiIndustrialPark, WukuDistrict, NewTaipeiCity, Taiwan24803/新北市五股區新北產業園區五工路 134 號

Member of SGS Group



**Verdict:** Note: narrowing the sweep time as the good engineering process for the verification of transmission closing in 200ms



Non-occupancy Period (without radar detection)

**Verdict:** To verify whether channel is unavailable to be operated in 30 minutes. 1.8ks = 1800s = 1800 s/min /60 = 30minute

~ End of Report ~

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