

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

Applicant:	GOOGLE LLC 1600 Amphitheatre Parkway Mountain View, CA 94043
Product Name:	Wireless Streaming Device
Brand Name:	Google
Model No.:	G3AL9
Model Difference:	N/A
Report Number:	ER/2020/80016
FCC ID:	A4RG3AL9
FCC Rule Part:	§15.407, Cat: NII
Issue Date:	Oct. 20, 2020
Date of Test:	Aug. 06, 2020 ~ Aug. 28, 2020
Date of EUT Received	: Aug. 06, 2020

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab 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.

Approved By:

Blue

Blue Yang / Asst. Manager



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Revision History				
Report NumberRevisionDescriptionIssue DateRemark				
ER/2020/80016	Rev.00	Original.	Oct. 20, 2020	Revised By: Tiffany Kao

Note:

1 · Disclaimer

Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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Table of Contents

1	GENERAL INFORMATION	.4
2	SUMMARY OF TEST RESULT	.7
3	MEASUREMENT UNCERTAINTY	.7
4	TPC and DFS MEASUREMENT	. 8

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GENERAL INFORMATION 1

1.1 Product Description

Product Name:	Wireless Streaming Device
Brand Name:	Google
Model No.:	G3AL9
Model Difference:	N/A
Hardware Version:	N/A
Software Version:	N/A
Power Supply:	3.65Vdc from Rechargeable Li-polymer Battery or 5V from AC/DC Adapter
Modulation type	64QAM, 16QAM, QPSK, BPSK for OFDM
Transition Rate:	802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 72.2Mbps

1.2 Antenna Designation

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Anten- na Gain (dBi)	Worst An- tenna Gain
			5150~5250	5.9	-
PIFA	PIFA N/A	N/A	5250~5350	5.9	-
	IN/A		5470~5725	6.5	-
			5725~5850	6.6	

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1.3 FCC worst power

Wi-Fi 802.11	Frequency Range	Channels	Rated Power (Avg.) (dBm) (Worst case)	Modulation Technology
	5150~5250	4	15.48	
	5250~5350	4	15.47	OFDM
а	5470~5725	12	15.44	OFDM
	5725-5850	5	15.38	
	5150~5250	4	HT: 15.46	
n_HT	5250~5350	4	HT: 15.49	
20M	5470~5725	12	HT: 15.47	OFDM
	5725-5850	5	HT: 15.49	

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1.4 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

1.5 Test Facility

SGS Taiwan Ltd. Central RF Lab (TAF code 3702)

No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803

FCC Designation number: TW0027

1.6 Special Accessories

There are no special accessories used while test was conducted.

1.7 Equipment Modifications

There was no modification incorporated into the EUT.

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SUMMARY OF TEST RESULT

FCC / IC Rules	Description Of Test	Result
§15.407(h)	TPC and DFS Measure- ment	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.

The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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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. 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.
- (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.

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(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.

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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		
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.				

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 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				
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	$\left(\begin{pmatrix} 1 \end{pmatrix} \right)$	60%	30								
		PRI values	360										
		randomly selected	Roundun										
		from the list of 23	$\left(\frac{19 \cdot 10^6}{19 \cdot 10^6} \right)$										
		PRI values in	PRI										
		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											
		selected in Test A											
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								
	Aggregate (Radar Types 1-4) 80% 120												
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move													
time, and cl	hannel closing	time tests.											

Long Pulse Radar

Rađar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per <i>Burst</i>	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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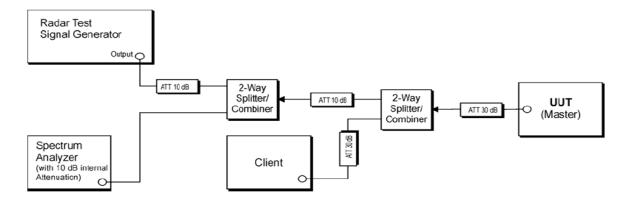
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Report No.: ER/2020/80016 Page: 14 of 31

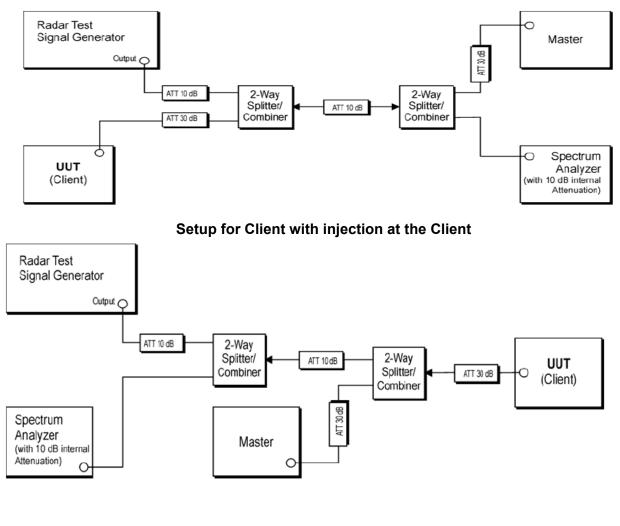


4.2.2 Test Setup

Setup for Master with injection at the Master



Setup for Client with injection at the Master



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Test Equipment Used: 4.2.3

	Condu	cted Emission	Test Site		
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Signal Generator	Keysight	N5172B	MY53050661	04/01/2020	03/31/2021
EXM Spectrum Ana- lyzer	KEYSIGHT	N9010B	MY59071541	06/26/2020	06/25/2021
Splitter	RF-LAMBAD	RFLT2W1G18G	11-JSPF412-01 8	01/02/2020	01/01/2021
Power Splitter	Mini-Circuits	ZN2PD-9G-S+	N/A	01/02/2020	01/01/2021
Power Splitter	Mini-Circuits	ZN2PD-9G-S+	N/A	01/02/2020	01/01/2021
Attenuator	Agilent	8495B	3308A22470	01/02/2020	01/01/2021
Attenuator	HP	8494B	2812A170605	01/02/2020	01/01/2021
Accece Ponit	ASUS	RT-AX88U	FCC ID :MSQ-RTAX HP00 IC : 3568A-RTAXH P00 CAN IC- ES-3(B)/NMB-3 (B)	N/A	N/A

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.

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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

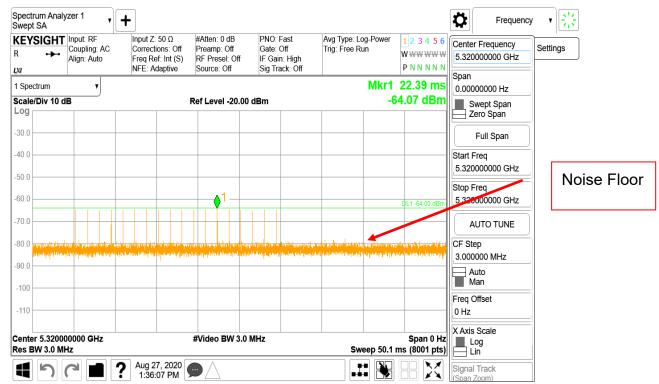
Message or files that is used for communication between Master and Client:

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).

Test results 4.2.5

Calibration plots for each of the required radar waveforms 802.11n HT20 5320MHz Radar type 0



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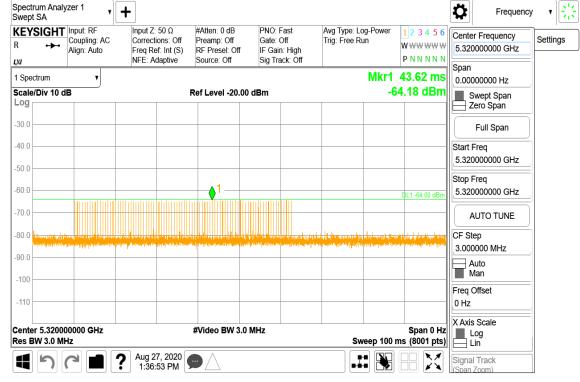
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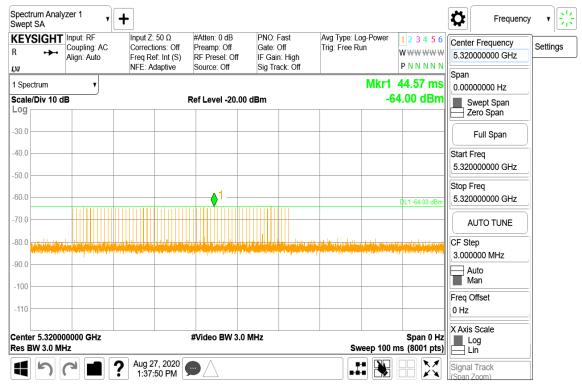
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Radar type 1 A



Radar type 1 B



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Spectrum Analy Swept SA	/zer 1	+					C Fre	equency 🔻 🕂
KEYSIGHT R ++-	Input: RF Coupling: AC Align: Auto	Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	#Atten: 0 dB Preamp: Off RF Presel: Off Source: Off	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	Avg Type: Log-Power Trig: Free Run	123456 WWWWW PNNNNN	Center Frequer	Jellings
1 Spectrum	۲				Mkr1	2.308 ms	Span 0.00000000 Hz	z
Scale/Div 10 d	В	R	ef Level -20.00 d	lBm	-6	4.23 dBm	Swept Spa	
-30.0							Full Spar	
-40.0							Start Freq 5.320000000 (GHz
-50.0		1				DL1 -64.00 dBm	Stop Freq 5.320000000 0	GHz
-70.0								NE
	and the second secon	i never (populari v revin pla je never ka program A nali – se se sali i se	ne na trajan en na grand	n in the second seco	n je na svojski prepari ki na previ i kon I han diti sa kolin jeni je na kolin previ kao	etrevelendert groch Lizztene od zeter	CF Step 3.000000 MHz	z
-90.0		an di an	li ka na ka	and the state of the second	מקוריים איזייים אין יינוי אין איזי יינוזין איז ער איזייים איזייים אין איזיין איזיין איזיין איזיין איזיין איזיין א	an a thail definition of the	Auto Man	
-110							Freq Offset 0 Hz	
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Res BW 3.0 Mi		Aug 27, 2020 1:39:35 PM			Sweep 8.00	ms (8001 pts)	Lin Signal Track (Span Zoom)	

Radar type 3

Spectru Swept	um Analy SA	rzer 1	+							\	Frequency	۲ ۲,*
R R LNI	SIGHT	Input: RF Coupling: AC Align: Auto		ions: Off ef: Int (S)	#Atten: 0 dB Preamp: Off RF Presel: C Source: Off		Avg Type: Lo Trig: Free Ru		1 2 3 4 5 6 W WW WW P N N N N N		equency 0000 GHz	Settings
1 Spect	trum	T							1.802 ms	Span 0.000000	000 Hz	
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-70.0										AUT	O TUNE	
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-100										Man		
-110 -										Freq Offs 0 Hz	et	
	5.32000 N 3.0 MH	00000 GHz Iz			#Video BW	3.0 MHz	Swe	ep 10.1 i	Span 0 Hz ns (8001 pts)	X Axis Sc Log	ale	
	5		? Aug 2 1:40:	7, 2020 44 PM						Signal Tra (Span Zoo		

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Spectrum Analy Swept SA	/zer 1 🔻	+										\mathbf{Q}	Frequency	•	
	Input: RF Coupling: AC Align: Auto	(Freq Re	: 50 Ω ions: Off ef: Int (S) daptive)	#Atten: 0 dB Preamp: Off RF Presel: Of Source: Off	Gate f IF G): Fast e: Off ain: High Track: Off	Avg Type: Lo Trig: Free R		1 2 3 4 5 6 W W W W P N N N N N	5.32	er Frequency 0000000 GHz	Settin	ngs
1 Spectrum	T									Mkr1	2.074 ms	Span 0.00	000000 Hz		
Scale/Div 10 d	B				R	ef Level -20	.00 dBm			-6	64.42 dBm	· ·	Swept Span Zero Span		
-30.0													Full Span		
-40.0												Start 5.32	Freq 0000000 GHz		
-50.0		1 -									DL1 -64.00 dBm	Stop 5.32	Freq 0000000 GHz		
-70.0													AUTO TUNE		
	aya aray wila matang Ant Japan Alamatang										eren eta senata ferrentia Jerditura al erentia erentia	CF S 3.00	tep 0000 MHz		
-100			34 P							1			Auto Man		
-110												Freq 0 Hz	Offset		
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1		?	Aug 2 1:41:	7, 2020 33 PM									al Track Zoom)		

Radar type 5

Spectrum Ar Swept SA	nalyzer 1	•	+								Ø	Frequency	•
	Coupling	j: AC		ions: Off ef: Int (S)	#Atten: 0 dB Preamp: Off RF Presel: Off Source: Off			Avg Type: Lo Trig: Free R		1 2 3 4 5 6	,	Frequency 000000 GHz	Settings
1 Spectrum		•				5			ΔMkr	2 10.59 s	Span 0.0000	00000 Hz	
Scale/Div 1	0 dB				Ref Level -20.0	00 dBm				-0.22 dB		/ept Span ro Span	
-30.0 -40.0 -50.0												Full Span	
-60.0 -70.0		3							<mark>∕</mark> 2∆	3 L1-64.00 dBm	Start F 5.3200	req 000000 GHz	
-80.0 -90.0 -100	ilinger in sindere		n l'imp son di Gener America America a	hindra an ta' balla Anna a' an	i al larer cranta i la arait	nd yn a ryfer y ddar effer	ting tirrenten State State State	hing it many strengt			Stop Fi 5.3200	eq 100000 GHz	
-110	000000 G	Hz			#Video BW 3.	0 MHz				Span 0 Hz		JTO TUNE	
Res BW 3.0 5 Marker Tab	MHz	•						S	weep 15.	0 s (8001 pts)	CF Ste	p 100 MHz	
Mode		Scale)	-	Y	Functi	on Fu	Inction Width	Fund	tion Value	AL Ma		
1 Ν 2 Δ3 3 F	1	t t	(Δ)	10.90 s 10.59 s 1.973 s	-64.28 dBn (Δ) -0.2161 dE -64.54 dBn	3					Freq O 0 Hz	ffset	
3 F 4 5 6		ι 		1.070 8	-04.04 UDI						X Axis		
15	C .		Aug 2	7, 2020 34 PM							Signal	Track	

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Spectrum Analy Swept SA	/zer 1 🔻	+					Frequency	- 1 栄
KEYSIGHT R ↔	Input: RF Coupling: AC Align: Auto	Corrections: Off Freq Ref: Int (S)	Preamp: Off C RF Presel: Off I	PNO: Fast Gate: Off F Gain: High Sig Track: Off	Avg Type: Log-Power Trig: Free Run	1 2 3 4 5 6 W WW WW W P N N N N N	Center Frequency 5.320000000 GHz Span	Settings
1 Spectrum	•	_				1 2.945 ms	0.00000000 Hz	
Scale/Div 10 d	В	R	ef Level -20.00 dB	m	•	64.01 dBm	Swept Span Zero Span	
-30.0							Full Span	
-40.0							Start Freq 5.32000000 GHz	
-50.0						DL1 -64.00 dBm	Stop Freq 5.32000000 GHz	
-70.0							AUTO TUNE	
		a gan ing pang ng paling pang ng na ing pang ng pang ng pang ng paling pang ng paling pang ng pang ng pang ng p 1) did badhang pang pang pang pang ng p					CF Step 3.000000 MHz	
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-110							Freq Offset 0 Hz	
Center 5.32000 Res BW 3.0 Mł			≭Video BW 3.0 MH	Z	Sweep 8.0	Span 0 Hz 0 ms (8001 pts)	X Axis Scale	
		? Aug 27, 2020 1:46:35 PM					Signal Track (Span Zoom)	

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WLAN traffic

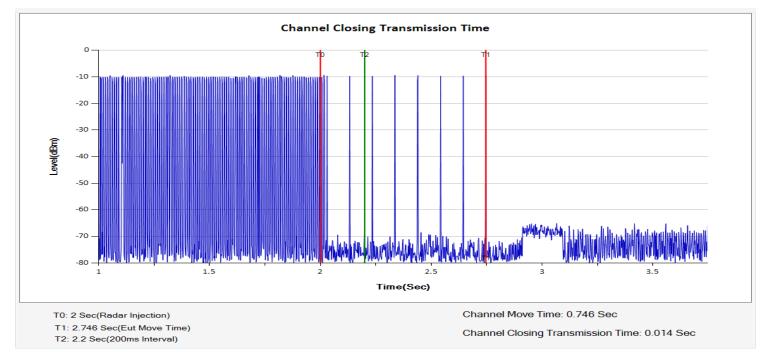


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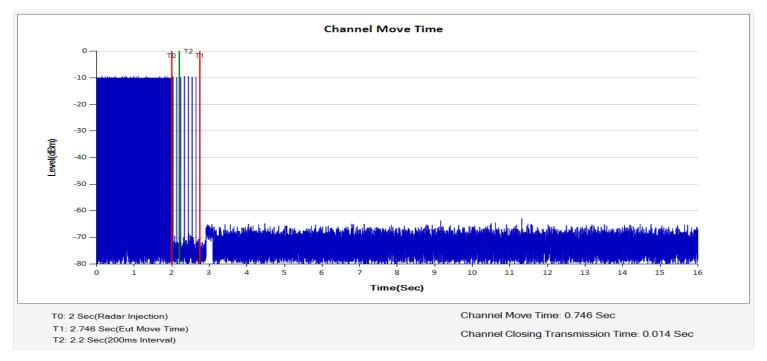
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Radar Type 0 Channel Move and Closing Transmission Time - 1

Radar Type 0 Channel Move and Closing Transmission Time - 2



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

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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 = 30 minute

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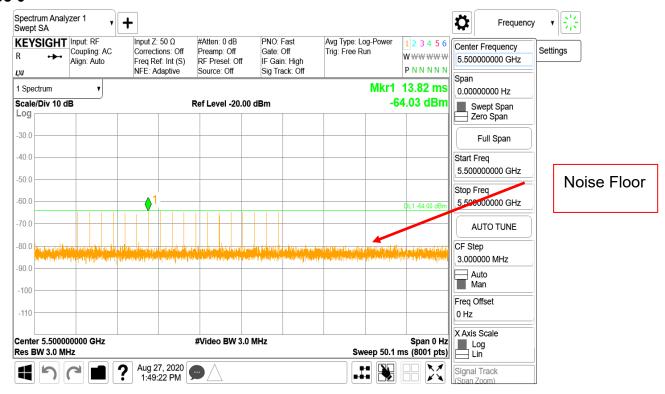
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Report No.: ER/2020/80016 Page: 24 of 31

802.11n HT20 5500MHz Radar type 0



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Radar type 1 A



Radar type 1 B



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Spectrum Analy Swept SA	/zer 1	+					Frequence	y ,
KEYSIGHT R +→-• ₩	Input: RF Coupling: AC Align: Auto	Corrections: Off	#Atten: 0 dB Preamp: Off RF Presel: Off Source: Off	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	Avg Type: Log-Power Trig: Free Run	123456 WWWWW PNNNNN	5.50000000 GHZ	Settings
1 Spectrum	T		·		Mkr1	2.308 ms	Span 0.00000000 Hz	
Scale/Div 10 d Log	B	R	ef Level -20.00 d	Bm	-6	64.13 dBm	Swept Span Zero Span	
-30.0							Full Span	
-40.0							Start Freq 5.50000000 GHz	
-50.0		1				DL1 -64.00 dBm	Stop Freq 5.50000000 GHz	
-70.0							AUTO TUNE	
	r (politik) (kaj kaj kaj kaj kaj kaj kaj kaj kaj kaj	pertpipporen printer typiperay (minariation and a statement	the providing of the second	Alaran and a state of the state	lang pelondorilli dipetent Topod 1. and . na 1014 (attant	ny filoly po (surply y drag na hai a chailaideach carai	CF Step 3.000000 MHz	
-90.0		······································		••••••••••••••••••••••••••••••••••••••		1	Auto Man	
-110							Freq Offset 0 Hz	
Center 5.50000 Res BW 3.0 Mi			¢Video BW 3.0 Μ	Hz	Sweep 8.00	Span 0 Hz ms (8001 pts)	X Axis Scale	
1		Aug 27, 2020 1:51:26 PM					Signal Track (Span Zoom)	

Radar type 3

Spectr Swept	rum Analy : SA	rzer 1	+					Frequency	۲ ۲
KEY: R	SIGHT .≁·	Input: RF Coupling: AC Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	#Atten: 0 dB Preamp: Off RF Presel: Off Source: Off	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	Avg Type: Log-Power Trig: Free Run	1 2 3 4 5 6 W WW WW W P N N N N N	Center Frequency 5.50000000 GHz	Settings
1 Spec	ctrum	v					4.474 ms	Span 0.00000000 Hz	
Scale Log	/Div 10 d	В		Ref Level -20.00 dE	Bm	-6	4.14 dBm	Swept Span Zero Span	
-30.0 -								Full Span	
-40.0								Start Freq 5.500000000 GHz	
-50.0 -				1			DL1 -64.00 dBm	Stop Freq 5.50000000 GHz	
-70.0								AUTO TUNE	
	ng (norm) program alata da da da da	The president of the per- capital solution at the solution of the solution	a dega Aliya pilata da binin minye A ni alamata da baran bina da mata da bi	an dan panan yang ang ang ang ang ang ang ang ang ang	gerigen berlin hyppeneilini naiare bereitet eine kenier	i ngeographi bagyang engelang ing atalah dilamitang ang katang ditan	A hard period in the sale of a	CF Step 3.000000 MHz	
-90.0	to the second se				·····			Auto Man	
-110 -								Freq Offset 0 Hz	
	r 5.50000 W 3.0 MH)0000 GHz Iz	<u> </u>	#Video BW 3.0 MH	Hz	Sweep 10.1	Span 0 Hz ms (8001 pts)		
	5		? Aug 27, 2020 1:51:55 PM	\square				Signal Track (Span Zoom)	

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Spectrum Analy Swept SA	vzer 1 🔻	+					Frequency	· •
KEYSIGHT R +→- ₩	Input: RF Coupling: AC Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S) NFE: Adaptive	Preamp: Off RF Presel: Off	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	Avg Type: Log-Power Trig: Free Run	1 2 3 4 5 6 W WW WW W P N N N N N	Center Frequency 5.50000000 GHz	Settings
1 Spectrum	T				Mkr1	3.672 ms	Span 0.00000000 Hz	
Scale/Div 10 d	В		Ref Level -20.00 dB	Sm	-6	4.09 dBm	Swept Span Zero Span	
-30.0							Full Span	
-40.0							Start Freq 5.50000000 GHz	
-60.0		.	1			DL1 -64.00 dBm	Stop Freq 5.50000000 GHz	
-70.0							AUTO TUNE	
-80.0	n an the state of the	ni daga ing pangang pangang pangang Kitang pangang pangang pangang pangang pangang pangang pangang pangang pang	a oʻru mili pixanu va qaadili a A da ba amadan da di dan da bi	le of a state state of the state of the state	Nasili palana adalah kupatén ku	r in felorie og stelen som Litter forskalter og som	CF Step 3.000000 MHz	
-90.0							Auto Man	
-110							Freq Offset 0 Hz	
Center 5.50000 Res BW 3.0 MH			#Video BW 3.0 MH	lz	Sweep 10.1	Span 0 Hz ms (8001 pts)	X Axis Scale Log	
1 5		? Aug 27, 2020 1:52:31 PM					Signal Track (Span Zoom)	

Radar type 5

Spectr Swept	um Anal SA	yzer 1	•	+													$\mathbf{\dot{\mathbf{v}}}$	Frequency	• • •
KEYS R	SIGHT .≁	Input: F Couplir Align: A	ig: AC	Co Fr	eq Re	50 Ω ons: Off f: Int (S) laptive	F	#Atten: 0 dB Preamp: Off RF Presel: Off Source: Off		PNO: F Gate: (IF Gair Sig Tra	Off		Avg Type: Lo Trig: Free Ri		1 2 3 W \\W	₩₩₩	5.50	er Frequency 0000000 GHz	Settings
1 Spec	trum		v											ΔMk	r2 10.		III	000000 Hz	
Log	'Div 10 c	B					Re	ef Level -20.	00 d	Bm					0.00) dB		Swept Span Zero Span	
-30.0 -																		Full Span	
-50.0 -60.0 -70.0			3											♦ ²	13_ L1-64.()0 dBm	Start 5.500	Freq 0000000 GHz	
-80.0 -90.0		and a state of		N ^{ann} Y	an a	ų, is to parti pro		n nyn in nei nyn in der Inne steret en steret		ar huilte	n per an an angan An an		ni e en plema a	ing a balant		anna i àr	Stop 5.500	Freq 0000000 GHz	
-110	r 5.5000	00000 6	247				#	Video BW 3	0 M	H7					Spar	n 0 Hz			
Res B	W 3.0 M												s	weep 15	.0 s (800		CF St	ep 0000 MHz	
5 Mark	er Table		_															Auto	
	Mode	Trace	Scale		Х		_	Y		Functi	on F	unc	tion Width	Fun	ction Valu	le		/lan	
1	Ν Δ3	1	t t	(Δ)		12.56		-64.24 dBr						_		-	Freq	Offset	
3	F	1	t			1.973		-64.59 dBr								_	0 Hz		
4																	V Aud	s Scale	
5 6																	l	_og	
1	5	2		? A	Aug 27	7, 2020 42 PM								•			Signa	l Track Zoom)	

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Spectrum Analy Swept SA	yzer 1 🔻	+					Frequency	• • ※
KEYSIGHT R ↔→	Input: RF Coupling: AC Align: Auto	Input Z: 50 Ω Corrections: Freq Ref: Int NFE: Adaptiv	Off Preamp: Off (S) RF Presel: Of	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	Avg Type: Log-Power Trig: Free Run	1 2 3 4 5 6 W WW WW W P N N N N N	Center Frequency 5.50000000 GHz Span	Settings
1 Spectrum	T					3.612 ms	0.00000000 Hz	
Scale/Div 10 c	IB		Ref Level -20	.00 dBm	-6	64.04 dBm	Swept Span Zero Span	
-30.0							Full Span	
-40.0							Start Freq 5.50000000 GHz	
-50.0			1			DL1 -64.00 dBm	Stop Freq 5.500000000 GHz	
-70.0							AUTO TUNE	
				lan (perior) of play brown brown brown br			CF Step 3.000000 MHz	
-90.0			·····			ni lital - n n.atr.	Auto Man	
-110							Freq Offset 0 Hz	
Center 5.5000 Res BW 3.0 M			#Video BW 3	3.0 MHz	Sweep 8.00	Span 0 Hz ms (8001 pts)		
1 5		Aug 27, 20 1:56:02 P					Signal Track (Span Zoom)	

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WLAN traffic

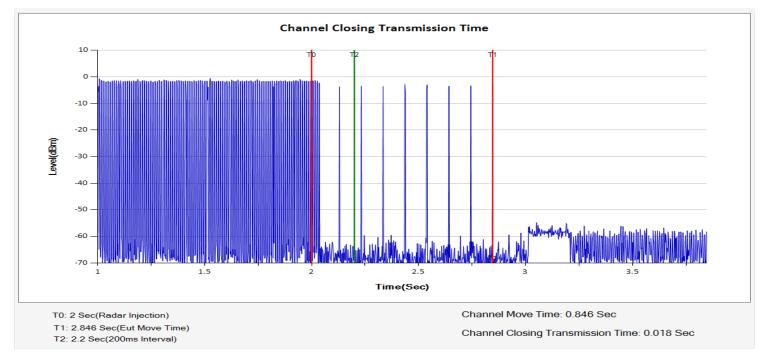


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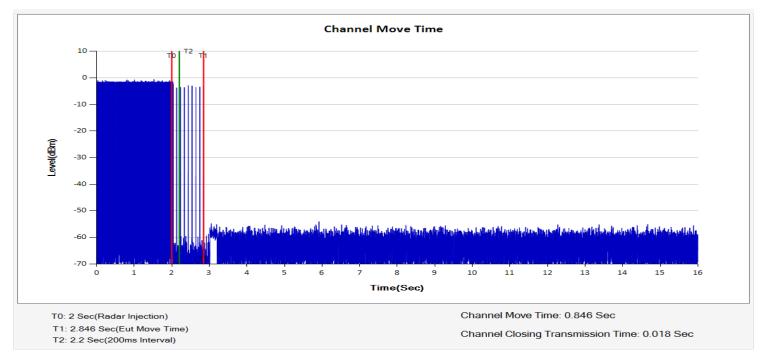
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Radar Type 0 Channel Move and Closing Transmission Time - 1

Radar Type 0 Channel Move and Closing Transmission Time - 2



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

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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 = 30 minute

~ End of Report ~

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