

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

	OF
Applicant:	Murata Manufacturing Co., Ltd. 10-1, Higashikotari 1-chome, Nagaokakyo-shi, Kyoto 617-8555 Japan
Product Name:	Communication Module
Brand Name:	muRata
Model No.:	LBEE6ZZ1PY
Model Difference:	N/A
Report Number:	T190313W02-RP5
FCC ID:	VPYLB1PY
IC:	772C-LB1PY
FCC Rule Part:	§15.407, Cat: NII
IC Rule Part:	RSS-247 issue 2 Feb. 2017
Issue Date:	Apr. 22, 2019
Date of Test:	Mar. 14, 2019 ~ Apr. 01, 2019
Date of EUT Received:	Mar. 14, 2019
Issued by	Compliance Certification Services Inc.Wugu Lab. No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.) service@ccsrf.com

Note: The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in AN-SI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory).

Tested By:

Wena / Engineer

Approved By:

Kevin Tsai / Deputy Manager



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Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
T190313W02-RP5	Rev.00	Initial creation of docu- ment	All	Apr. 22, 2019	Violetta Tang

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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

Communication Module
muRata
LBEE6ZZ1PY
N/A
client equipment without radar detection
1.0 / 1.0
1.0 / 1.0
N/A
N/A
3.3Vdc

FCC WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. Power (dBm)	Modulation Technology	
	5150~5250	4	10.93		
110.20	5250~5350	4	10.90	OFDM	
11a_20	5470~5725	12	11.03	OFDIM	
	5725~5850	5	10.93		
	5150~5250	4	HT: 11.08		
11n_HT /	5250~5350	4	HT: 11.06		
ac_VHT 20M	5470~5725	12	HT: 11.13	OFDM	
	5725~5850	5	HT: 11.06		
	5150~5250	2	HT: 8.09		
11n_HT / ac_VHT	5250~5350	2	HT: 8.39	OFDM	
40M	5470~5725	6	HT: 8.27		
	5725~5850	2	HT: 8.00		
	5150~5250	1	8.55		
11ac VHT80M	5250~5350	1	8.74	OFDM	
	5470~5725	3	8.77		
	5725~5850	1	8.37		
Antenna De	Antenna Designation: Monopole Antenna, Antenna Gain: 5.2dBi			n: 5.2dBi	

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IC WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. or EIRP	Rated Power(dBm)	Modulation Technology
	5180~5240	4	EIRP	16.13	
	5260~5320	4	Avg.	10.90	
11a	5500~5580	5	Avg.	11.03	OFDM
	5660~5720	4	Avg.	10.77	
	5745~5825	5	Avg.	10.93	
	5180~5240	4	EIRP	HT: 16.28	
11n HT/	5260~5320	4	Avg.	HT: 11.06	
ac_VHT	5500~5580	5	Avg.	HT: 11.13	OFDM
20M	5660~5720	4	Avg.	HT: 10.88	
	5745~5825	5	Avg.	HT: 11.06	
	5190~5230	2	EIRP	HT: 13.29	
11n HT/	5270~5310	2	Avg.	HT: 8.39	
ac_VHT	5510~5550	2	Avg.	HT: 8.27	OFDM
40M	5670~5710	2	Avg.	HT: 7.83	
	5755~5795	2	Avg.	HT: 8.00	
	5210~5210	1	EIRP	13.75	
11	5290~5290	1	Avg.	8.74	
11ac VHT80M	5530~5530	1	Avg.	8.77	OFDM
VIIIGOIN	5690~5690	1	Avg.	8.59	
	5775~5775				
Modula	Modulation type 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only			FDM	
Transit	Transition Rate: 802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 72.2Mbps 802.11 n_40MHz: 13.5 - 150.0Mbps 802.11 ac_20MHz: 6.5 – 86.7Mbps 802.11 ac_40MHz: 13.5 - 200.0Mbps 802.11 ac_80MHz: 29.3 – 433.3Mbps				

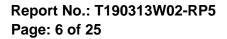
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1.2 Test Methodology of Applied Standards

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

Compliance Certification Services Inc. Wugu Lab. No.11, Wugong 6th Rd.,

Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.) (TAF code 1309)

FCC Designation number: TW1309 Canada Company number: 2324G

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 1 §6.3	TPC and DFS Measurement	Compliant

MEASUREMENT UNCERTAINTY 3

Test Items	Uncertainty
TPC and DFS Measurement	+/- 123.36 Hz

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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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:

(a) Devices shall employ a DFS radar detection mechanism to detect the presence of radar 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.

Operational requirements: the requirement for channel availability check time applies in (b) 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

Dequirement	Operational Mode			
Requirement	Client(without radar detection)	Client(with radar detection)		
Non-occupancy Period	Yes	Yes		
DFS Detection Threshold	Not required	Yes		
Channel Availability Check Time	Not required	Not required		
U-NII Detection Band- width	Not required	Yes		

Table 2: Applicability of DFS requirements during normal operation

Deminent	Operational Mode
Requirement	Client Without Radar Detection
DFS Detection Threshold	Not required
Cannel Closing Transmis- sion time	Yes
Channel Move time	Yes
U-NII Detection Bandwidth	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	I Lest liging widest RW I lest liging the wid			
All other tests	Any single BW mode	Not required		
Note: Frequencies selected for statistical performance check (Section 7.8.4) should in-				
clude 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 fre-				
quencies 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	(19·10 ⁶)										
		PRI values in	PRI										
		Table 5a	((µsec /)										
		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	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	g time tests.											

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	Minimum Number of Trials
5	50-100	5-20	1000- 2000	1-3	8-20	Detection 80%	30

Frequency Hopping Radar

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

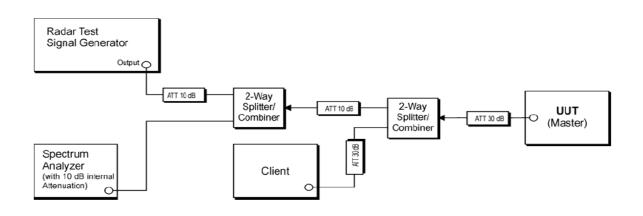
The applicant of this given application confirms that information regarding the parameters of the detected Radar Waveforms is not available to the end user.

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Report No.: T190313W02-RP5 Page: 15 of 25

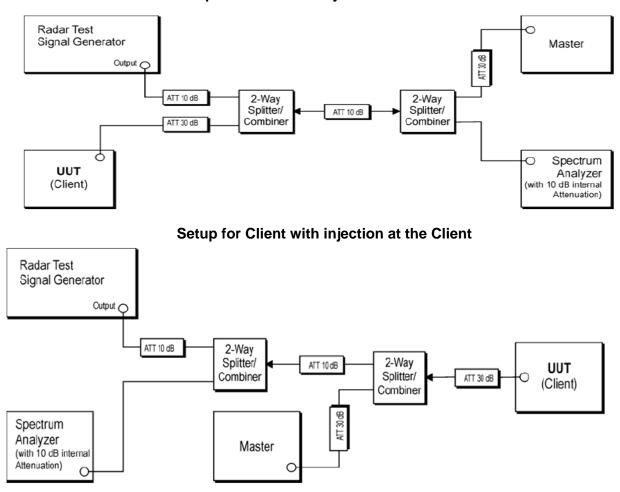


4.2.2 Test Setup



Setup for Client with injection at the Master

Setup for Master with injection at the Master



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	Condu	cted Emission	Test Site		
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Signal Generator	Agilent	N5182B	MY56200007	08/13/2018	08/12/2019
EXA Spectrum Ana- lyzer	KEYSIGHT	N9010A	MY57120290	02/13/2019	02/12/2020
Splitter	RF-LAMBAD	RFLT4W1G18G	SPCD10-004	02/26/2019	02/25/2020
Splitter	RF-LAMBAD	RFLT2W1G18G	11-JSPF412-02 0	02/26/2019	02/25/2020
Splitter	RF-LAMBAD	RFLT2W1G18G	11-JSPF412-01 7	02/26/2019	02/25/2020
Attenuator	Agilent	8494B	MY42152151	02/26/2019	02/25/2020
Attenuator	Agilent	8496B	MY42147434	02/26/2019	02/25/2020
Splitter	RF-LAMBAD	RFLT2W1G18G	11-JSPD022-01 3	02/26/2019	02/25/2020
DC Block	Mini-Circuits	BLK-18-S+	31129(1)	02/26/2019	02/25/2020
Accece Ponit	LINKSYS	WRT3200ACM	1981060B6149 86 FCC ID:Q87-WRT32 00ACM IC:3839A-WRT 3200ACM	N/A	N/A
Software		e3 V6.	11-20180413		•

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.

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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 LINKSYS router.

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:

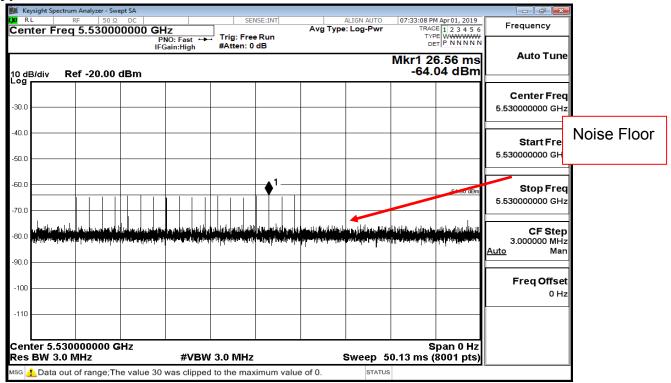
For the required channel loading, the full motion, 30 frames per second MPEG video file from http://ntiacsd.ntia.doc.gov/dfs/ was streamed from a network on a test bench (server of the storage to download the mandatory format of Video file), via the DFS Master device, to the UE (mobile phone).

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4.2.5 **Test results**

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



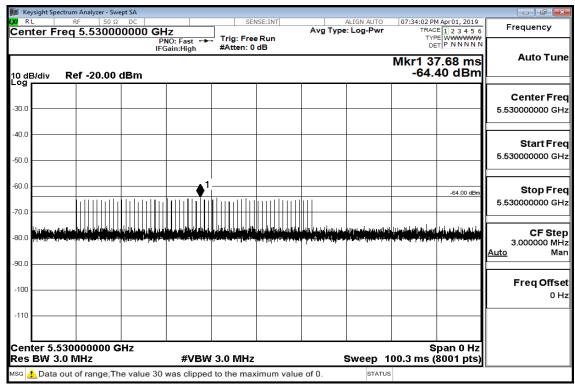
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



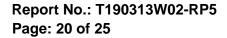
Radar type 1 A

			nalyzer - Sw										
L XI R		RF	50 S				SE	NSE:INT		ALIGN AUTO		M Apr 01, 2019	Frequency
Cer	nter Fi	req 5	.5300	00000) <u>GH</u>	Z IO: Fast 🔸	Trig: Fre	e Run	Avg Typ	e: Log-Pwr		E 1 2 3 4 5 6	ricqueriey
						ain:High	#Atten: 0				Di	T P NNNNN	
											Mkr1 4	5.86 ms	Auto Tune
10 d	B/div	Ref	-20.00	dBm							-64.	15 dBm	
Log													
													Center Freq
-30.0				_									5.530000000 GHz
-40.0												I	
													Start Freq
-50.0													5.530000000 GHz
-60.0							_ 1_						01 E
						Lulluu lluu		alla condi	1.1.			-64.00 dBm	Stop Freq
-70.0													5.530000000 GHz
10.0	· .												
-80.0	الدرقية اردا	di tantaki	, na stati		U 404.	ייקארין אין אין אין אין א					بتقامعا المريقا العربية		CF Step
-00.0			و را به المارية و		l a dia in the line.	لحميدتها بماغل مراجع	1	alla bizin i sul a sulta	يە ھراسا ئەسلىمىر بىر.	a de la construction de la de		a da angangan na sa	3.000000 MHz
-90.0													<u>Auto</u> Man
-90.0													
													Freq Offset
-100													0 Hz
-110													
Cer	ter 5 f	53000	0000	GHz			1		1	1	S	pan 0 Hz	
	BW 3					#VBW	3.0 MHz			Sweep	- 100.3 ms (
MSG	Data	out of	range·T	he valu	e 30 v	was clinner	to the may	kimum valu		STATU		. ,	
4	· Duta	Sacol	ange, i		5 55 (ing a cubber	5	ann valu	0.010.	0.1410			

Radar type 1 B

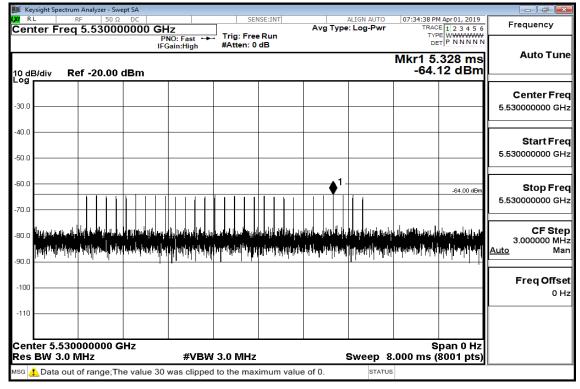


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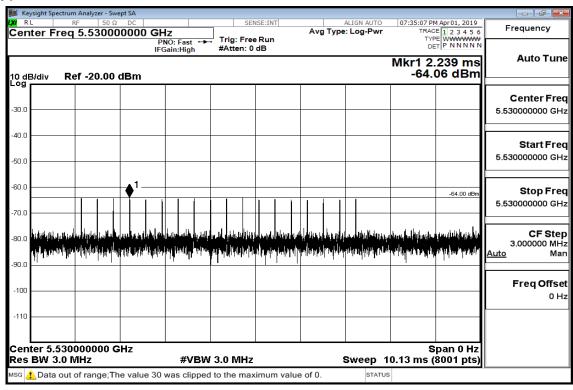




Radar type 2



Radar type 3



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Radar type 4

	ysight Spe		nalyzer -	Swep																					
Cen	∟ Iter Fr	RF Teg 5		0 ΩΩ		0 GI	17			1		SEN	ISE:IN	Т		Av	g Typ		g-Pwr	07:		M Apr 01		F	requency
10 dE		•	-20.0			P IF	NO:	Fast :High	• •		rig: Atter		dB								™ □ r1 2	.239	ms		Auto Tur
-30.0			-20.0																						Center Fre 30000000 G⊦
-40.0 -50.0																								5.53	Start Fre 30000000 G⊦
-60.0 -70.0					1	1			1								1					-64	.00 dBm	5.53	Stop Fre 30000000 GH
-80.0	levene and a state of the second state of the	Larayaya Januaryaya	, te to,			a daha Mangan			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	۱Цю ۱۲۱۲		1044 1447 1447 14	l portes A Digital	li _n in Angli			u hataa ki piharaa	⊾, II, µ. Imr• (*1	an finn an finn	, 105, () 	lilladia. Najiriya		ala ba katalah Ahhi Maraphan	Auto	CF Ste 3.000000 M⊦ Ma
-100															_			-							Freq Offs 0 ⊦
	ter 5.5 BW 3) Gł	Ηz			-40.4	BW													Span			
	BW 3			;The	e valu	ie 30							imur	n va	lue	of 0.		5W(еер 1		ms ((8001	pts)		

Radar type 5

	ight Spec	trum /	Analyzer - Sw	vept SA											- 5
Cent	er Fr	_{RF} eq :		DC 00000			7	NSE:INT		Avg		LIGN AUTO	TRA	CE 1 2 3 4 5 6	Frequency
					PNO: Fas IFGain:Hig		#Atten: 0						0	11.77 s	Auto Tune
10 dBa	/div	Ref	f -20.00	dBm						-				0.62 dB	
-30.0 -											_				Center Freq
-40.0 -											_				5.530000000 GHz
-50.0 - -60.0 -			"											2∆3 -64.00 dem	
-70.0			3								_			-04.00 dbm	Start Freq 5.53000000 GHz
-80.0			*****	i di ana ana ana ana ana ana ana ana ana an	HT-1-Linker										
-90.0 -															Stop Freq
-110 -															5.530000000 GHz
Cent	er 5.5	300	00000	GHz									<u> </u>	Span 0 Hz	CF Step
Res E					#	VBW	/ 3.0 MHz					<u> </u>		(8001 pts)	3.000000 MHz Auto Man
1 1	ODE TRO	t		Х	2.378 s		-64.03 dl	3m	FUNC	TION	FUN	CTION WIDTH	FUNCT	ION VALUE	
	13 1 F 1	t	<u>(Δ)</u>		<u>11.77 s</u> 1.631 s		0.62 -64.90 di								Freq Offset
4 5 6		-				-								=	0 Hz
7		-				-									
9 10															
11		-					III								
мѕа 🦺	Data o	out of	f range;Tl	he value :	30 was cl	lippec	d to the max	kimum	value	e of 0.		STATUS	6		

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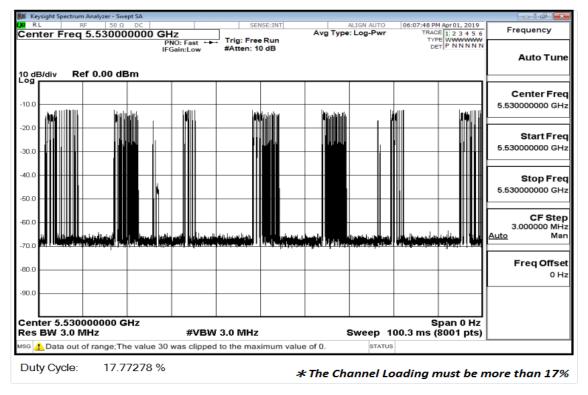
Radar type 6

	/sight Spectru	m Analy	zer - Sw	ept S/	A.											
Cen	ter Fred	ռ⊧ գ 5.5	50 Ω 3000],	sei		Av	ALIGN AUTO : Log-Pwr	TR	PM Apr 01, 2019 ACE 1 2 3 4 5 6 YPE WWWWW	Frequency
10 dE	3/div R	ef -2	0.00	dB			O: Fas ain:Hig			Atten: 0				Mkr1 :	3.150 ms .02 dBm	Auto Tune
-30.0																Center Freq 5.530000000 GHz
-40.0 -50.0																Start Freq 5.530000000 GHz
-60.0 -70.0									1_ 						-64.00 dBm	Stop Freq 5.530000000 GHz
-80.0	la i forditanova ji Pilitika i pilitika													un de la seconde de	n da mana da da anglan bah mangan da ang mangan bah	CF Step 3.000000 MHz <u>Auto</u> Man
-100																Freq Offset 0 Hz
	ter 5.530 BW 3.0		000 (GHz			#	VBW	/ 3.0	0 MHz			 Sweep		Span 0 Hz (8001 pts)	
мѕс 🧕	Data out	of rar	nge;T	he v	alue:	30 v	vas c	lippeo	d to	the max	timum val	ue of 0	STAT	us		<u> </u>

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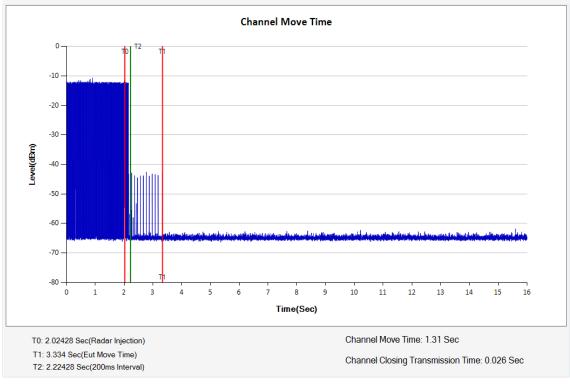
WLAN traffic



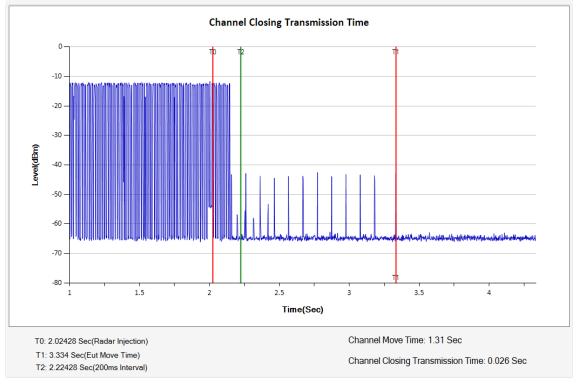
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Radar Type 1 Channel Move and Closing Transmission Time



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)

	Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω DC SENSE:1NT ALIGN AUTO 06:48:33 PM Apr 01, 2019																		
		Fre		5.53	50 Ω 000	DC 0000] <u></u> _			Avg		LIGN AUTO	TR	PM Apr 01	3456	Frequency
10 d	B/div	,	Re	f 0.0	0 dE			NO: Fast Gain:Lov		#Atten: 1						۵Mkr1	DET P N) ks	Auto Tune
-10.0 -20.0																			Center Freq 5.530000000 GHz
-40.0 -50.0		×2	2						ر مەنبەلىدە ت							Langer and a star		1Δ2	Start Freq 5.530000000 GHz
-70.0 -80.0 -90.0	-																		Stop Freq 5.53000000 GHz
Res	BW	3.	0 M)0 G			#\	/BW	3.0 MHz	:				Sweep 2	2.000 ks	<u>`</u>	pts)	CF Step 3.000000 MHz <u>Auto</u> Man
MKR 2 3 4 5 6 7 8 9 10 11						X	1.8	300 ks 00.3 s		Y -22.65 -40.83 di	dB Bm	FUNC	TION	FUN		FUNC			Freq Offset 0 Hz
MSG															STATUS	\$			

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

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