

EMC-TRF-01 Rev 1.1 Report No.: GZCR220600075404

Page: 1 of 32

FCC ID: 2ADAP-GRJWB05J2

TEST REPORT

Application No.: GZCR2206000754HS

Applicant: GREE Electric Appliances, Inc. of Zhuhai

Address of Applicant: West Jinji Rd, Qianshan, Zhuhai, Guangdong, China 519070

Manufacturer: GREE Electric Appliances, Inc. of Zhuhai

Address of Manufacturer: West Jinji Rd, Qianshan, Zhuhai, Guangdong, China 519070

Factory: GREE Electric Appliances, Inc. of Zhuhai

Address of Factory: West Jinji Rd, Qianshan, Zhuhai, Guangdong, China 519070

Equipment Under Test (EUT):

EUT Name: WIFI+BLE module **Model No.:** GRJWB05-J2

Trade Mark: GREE

Standard(s): 47 CFR Part 15, Subpart E 15.407(h)

Date of Receipt: 2022-06-15

Date of Test: 2022-08-01 to 2023-03-14

Date of Issue: 2023-03-30

Test Result: Pass*

2) day Liu Ricky Liu



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^{*} In the configuration tested, the EUT complied with the standards specified above.



EMC-TRF-01 Rev 1.1

Report No.: GZCR220600075404

Page: 2 of 32

	Revision Record				
Version	Report No.	Date	Remark		
01	GZCR220600075404	2023-03-30	Original		

Authorized for issue by:			
	Cof Vhu		
	Curry Wu/Project Engineer	_	
	vius cui		
	Vico Cui/Reviewer	_	



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EMC-TRF-01 Rev 1.1 Report No.: GZCR220600075404

Page: 3 of 32

2 Test Summary

Radio Spectrum Matter Part						
Item	Standard	Method	Requirement	Result		
Non-occupancy period		KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass		
Channel Move Time	47 CFR Part 15, Subpart E 15.407	KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass		
Channel Closing Transmission Time		KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass		

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.



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EMC-TRF-01 Rev 1.1

Report No.: GZCR220600075404

Page: 4 of 32

3 Contents

		Page
1	1 Cover Page	
2	2 Test Summary	3
_		
3	3 Contents	4
4	4 General Information	5
	4.1 Details of E.U.T.	F
	4.2 Description of Support Units	-
	4.3 Test Location	
	4.4 Test Facility	
	4.5 Deviation from Standards	
	4.6 Abnormalities from Standard Conditions	
_		
5	5 Equipment List	
6	6 Radio Spectrum Matter Test Results	8
	6.1 Non-occupancy period	8
	6.1.1 E.U.T. Operation	
	6.1.2 Test Mode Description	
	6.1.3 Test Setup Diagram	
	6.1.4 Measurement Procedure and Data	
	6.2 Channel Move Time	11
	6.2.1 E.U.T. Operation	
	6.2.2 Test Mode Description	11
	6.2.3 Test Setup Diagram	12
	6.2.4 Measurement Procedure and Data	13
	6.3 Channel Closing Transmission Time	14
	6.3.1 E.U.T. Operation	14
	6.3.2 Test Mode Description	14
	6.3.3 Test Setup Diagram	
	6.3.4 Measurement Procedure and Data	16
7	7 EUT Constructional Details (EUT Photos)	17
_		
8	8 Appendix	18



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EMC-TRF-01 Rev 1.1 Report No.: GZCR220600075404

Page: 5 of 32

4 General Information

4.1 Details of E.U.T.

Power supply: DC 3.3V Supply by PCB board

Operation Frequency U-NII-1: 5180-5240MHz; U-NII-2A: 5260-5320MHz; U-NII-2C: 5500-

(20MHz): 5700MHz; U-NII-3: 5745-5825MHz

Operation Frequency U-NII-1: 5190-5230MHz; U-NII-2A: 5270-5310MHz; U-NII-2C: 5510-

(40MHz): 5670MHz; U-NII-3: 5755-5795MHz

Modulation Type: 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK); 802.11n: OFDM (BPSK,

QPSK, 16QAM, 64QAM)

Channel Spacing: 802.11a/n(HT20): 20MHz; 802.11n(HT40): 40MHz;

DFS Function: Slave with Radar detection TPC Function: Without TPC function

Antenna Type: PCB Antenna

Antenna Gain: 1.5dBi

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
PCB board	gree	N/A	N/A
AC/DC adaptor	gree	N/A	N/A

4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory, 198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



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EMC-TRF-01 Rev 1.1 Report No.: GZCR220600075404

Page: 6 of 32

4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

ACMA

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

• SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

FCC Recognized Accredited Test Firm(Registration No.: 486818)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

• ISED (Registration No.: 4620B, CAB identifier: CN0052)

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

• CBTL (Lab Code: TL129)

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.5 Deviation from Standards

None

4.6 Abnormalities from Standard Conditions

None



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Page: 7 of 32

5 Equipment List

Non-occupancy period					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
MI CABLE	SGS-EMC	0.8M	EMC2137	2021-11-02	2023-11-01
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2022-09-08	2023-09-07
MXG Vector Signal Generator	Keysight	N5182B	EMC2216	2022-12-16	2023-12-15
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2022-08-24	2023-08-23
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Channel Move Time					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
MI CABLE	SGS-EMC	0.8M	EMC2137	2021-11-02	2023-11-01
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2022-09-08	2023-09-07
MXG Vector Signal Generator	Keysight	N5182B	EMC2216	2022-12-16	2023-12-15
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2022-08-24	2023-08-23
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Channel Closing Transmission Time						
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date	
MI CABLE	SGS-EMC	0.8M	EMC2137	2021-11-02	2023-11-01	
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2022-09-08	2023-09-07	
MXG Vector Signal Generator	Keysight	N5182B	EMC2216	2022-12-16	2023-12-15	
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2022-08-24	2023-08-23	
Test Software	TST	V2.0	GZE100-78	N/A	N/A	

General used equipment						
Equipment Manufacturer Model No Inventory No Cal Date Cal Due Date						
DMM	Fluke	73	EMC0006	2022-06-24	2023-06-23	



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EMC-TRF-01 Rev 1.1

Report No.: GZCR220600075404

8 of 32 Page:

Radio Spectrum Matter Test Results 6

6.1 Non-occupancy period

Test Requirement KDB 905462 D02 Section 5.1 Test Method: KDB 905462 D02 Section 7.8.3

Limit:

		Applic	Applicability		
Test item	Limit	Master Device or client with Radar Detection	Client without Radar Detection		
Non-occupancy period	Minimum 30 minutes	Yes	Not required		
Channel Availability Check Time	60 seconds	Yes	Not required		
Channel Move Time	10 seconds	Yes	Yes		
Chaille wove fille	See Note 1.	162			
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period.	Yes	Yes		
	See Notes 1 and 2.				
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required		

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.

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 26.1 °C Humidity: 47.3 % RH Atmospheric Pressure: 1020 mbar

6.1.2 Test Mode Description

Mode Pre-scan / Description Final test Code

Normal operating Keep the EUT communication with the companion Final test

07 device.



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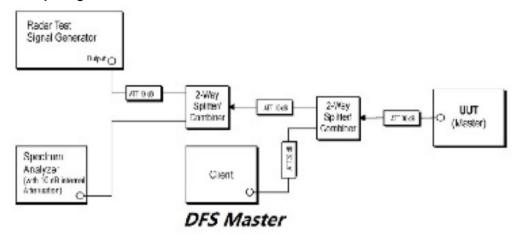


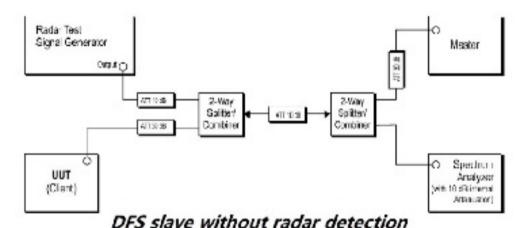
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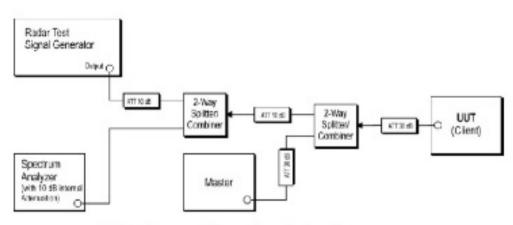
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Page: 9 of 32

6.1.3 Test Setup Diagram







DFS slave with radar detection



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EMC-TRF-01 Rev 1.1 Report No.: GZCR220600075404

Page: 10 of 32

6.1.4 Measurement Procedure and Data

- 1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- 2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.
- 3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- 4) EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.
- 5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- 6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.
- 7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.
- 8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details





EMC-TRF-01 Rev 1.1

Report No.: GZCR220600075404

Page: 11 of 32

6.2 Channel Move Time

Test Requirement KDB 905462 D02 Section 5.1
Test Method: KDB 905462 D02 Section 7.8.3

Limit:

		Applica	bility
Test item	Limit	Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required

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.

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 26.1 °C Humidity: 47.3 % RH Atmospheric Pressure: 1020 mbar

6.2.2 Test Mode Description

Pre-scan / Mode

Final test Code Description

Final test 07 Normal operating_Keep the EUT communication with the companion

device.



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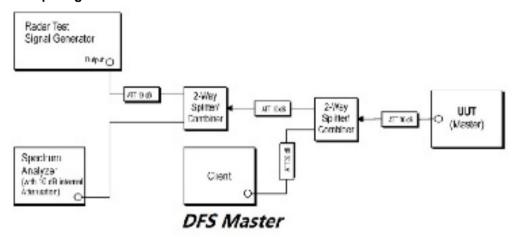


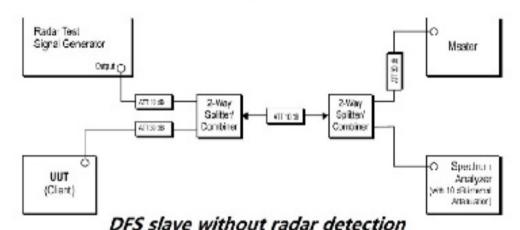
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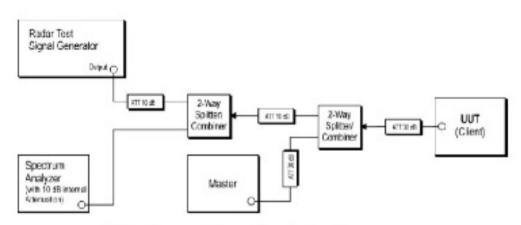
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Page: 12 of 32

6.2.3 Test Setup Diagram







DFS slave with radar detection



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Page: 13 of 32

6.2.4 Measurement Procedure and Data

- 1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- 2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.
- 3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- 4) EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.
- 5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- 6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.
- 7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.
- 8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details





EMC-TRF-01 Rev 1.1

Report No.: GZCR220600075404

Page: 14 of 32

6.3 Channel Closing Transmission Time

Test Requirement KDB 905462 D02 Section 5.1 Test Method: KDB 905462 D02 Section 7.8.3

Limit:

		Applica	bility
Test item	Limit	Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required

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.

6.3.1 E.U.T. Operation

Operating Environment:

26.1 °C Humidity: 47.3 % RH Temperature: Atmospheric Pressure: 1020 mbar

6.3.2 Test Mode Description

Mode Pre-scan /

Description Final test Code

Normal operating_Keep the EUT communication with the companion Final test 07

device.



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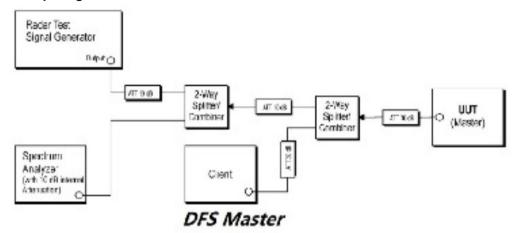


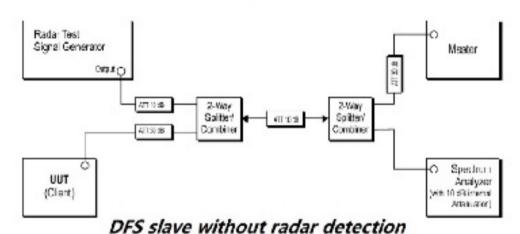
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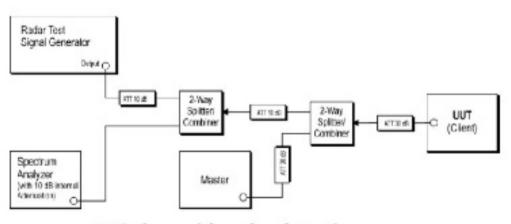
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Page: 15 of 32

6.3.3 Test Setup Diagram







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Page: 16 of 32

6.3.4 Measurement Procedure and Data

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- 2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.
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- 8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details





Report No.: GZCR220600075404 EMC-TRF-01 Rev 1.1

> Page: 17 of 32

EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for GZCR2206000754HS



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Page: 18 of 32

8 Appendix

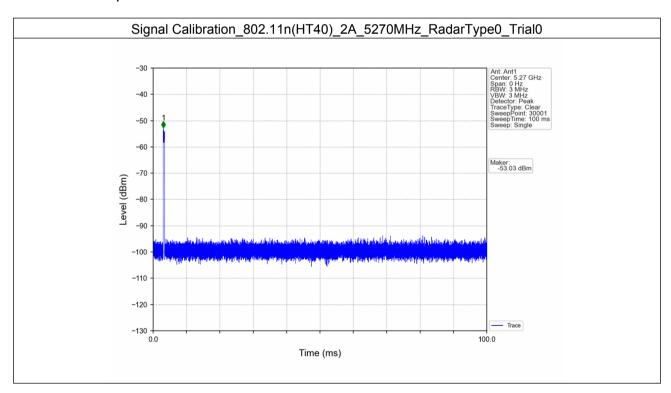
1. Signal Calibration

1.1 SC

1.1.1 Test Result

Band: 2A								
Mada	Bandwidth	Frequency (MHz)	Rada	r Signal	Signal Calibration		\	
Mode	(MHz)		Туре	Trial Id	Result	Limit	Verdict	
		5270	0	0	Refer To Test Graph Pa		Pass	
	40		1	0	Refer To Test Graph		Pass	
			2	0	Refer To Test (Graph	Pass	
802.11n (HT40)			3	0	Refer To Test (Refer To Test Graph		
(11140)			4	0	Refer To Test Graph		Pass	
			5	0	Refer To Test (Graph	Pass	
			6	0	Refer To Test (Graph	Pass	

1.1.2 Test Graph





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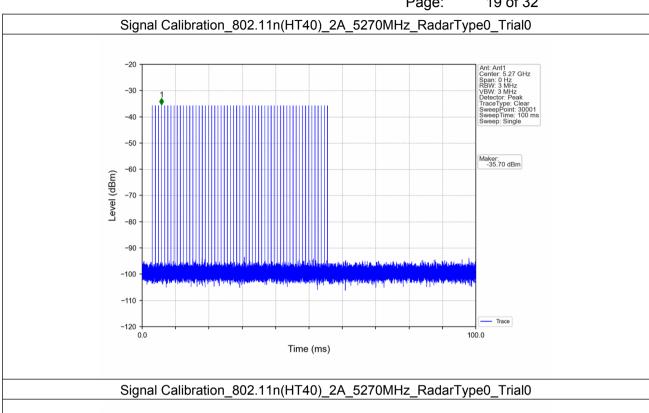
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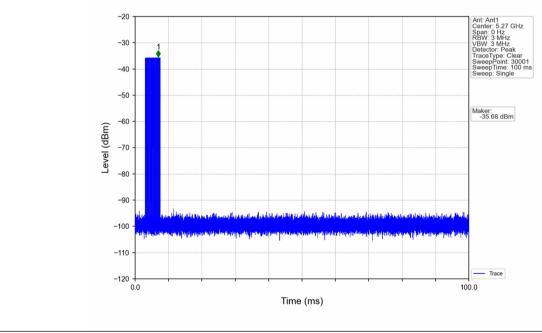
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19 of 32 Page:







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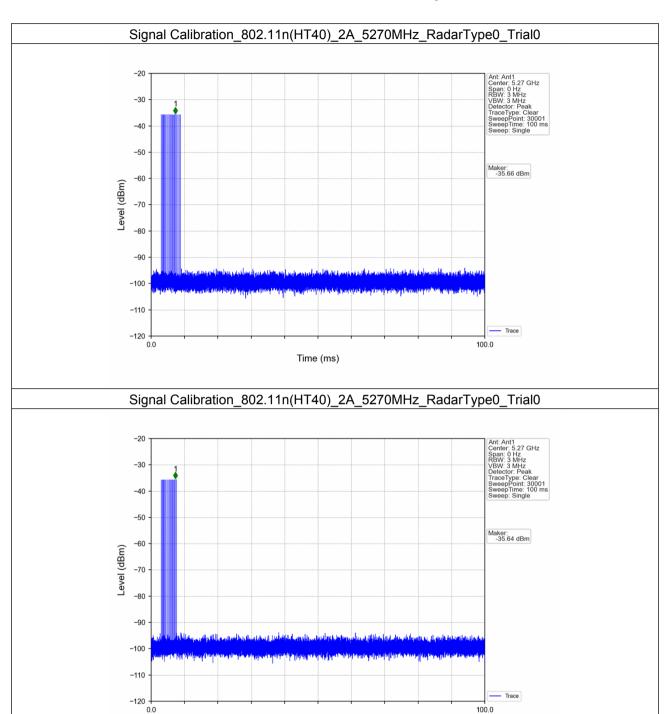
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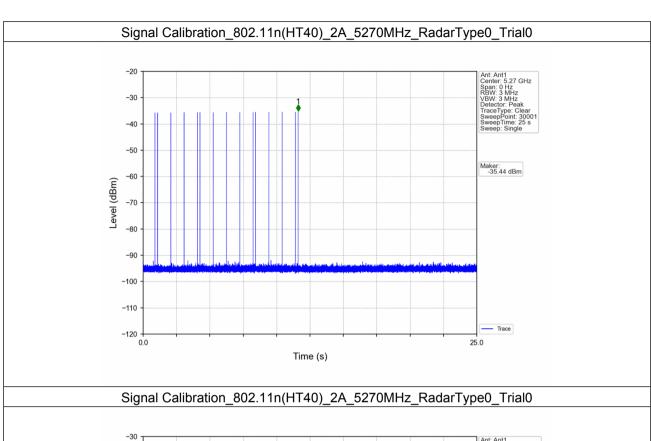
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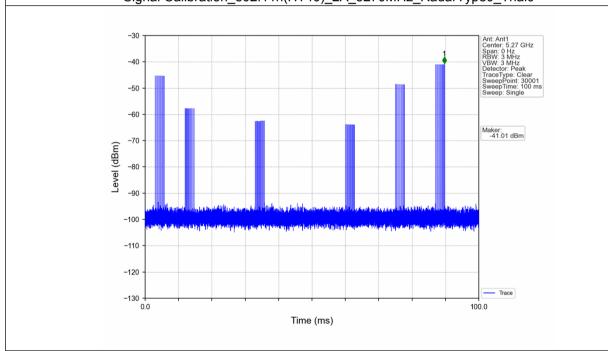


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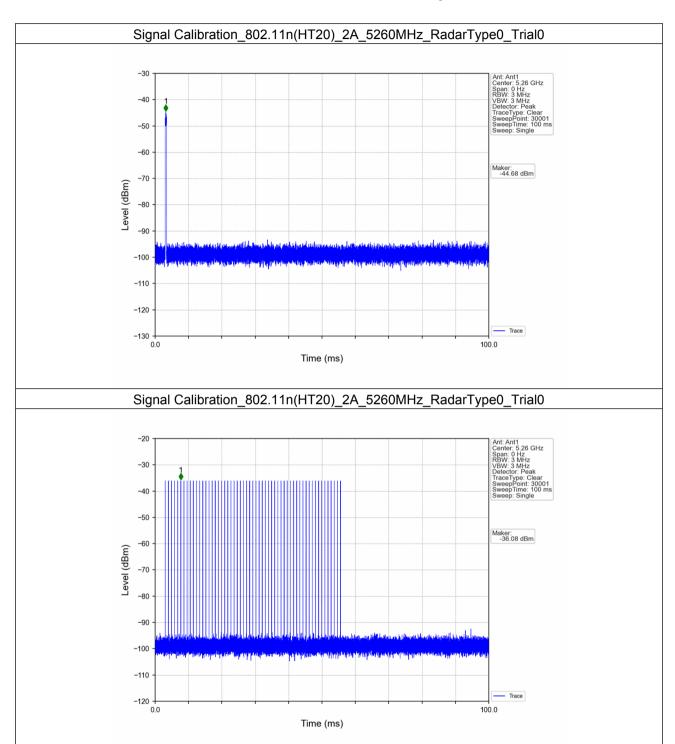
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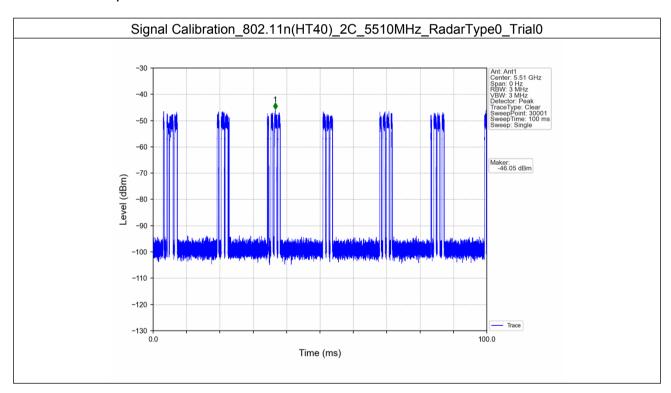
Page: 23 of 32

1.2 SC

1.2.1 Test Result

Band: 2C								
Mada	Bandwidth	Frequency (MHz)	Rada	r Signal	Signal Calibration		\	
Mode	(MHz)		Type	Trial Id	Result	Limit	Verdict	
		5510	0	0	Refer To Test Graph		Pass	
	40		1	0	Refer To Test Graph		Pass	
			2	0	Refer To Test (Refer To Test Graph		
802.11n (HT40)			3	0	Refer To Test (Graph	Pass	
(11170)			4	0	Refer To Test (Refer To Test Graph		
			5	0	Refer To Test (Graph	Pass	
			6	0	Refer To Test Graph		Pass	

1.2.2 Test Graph





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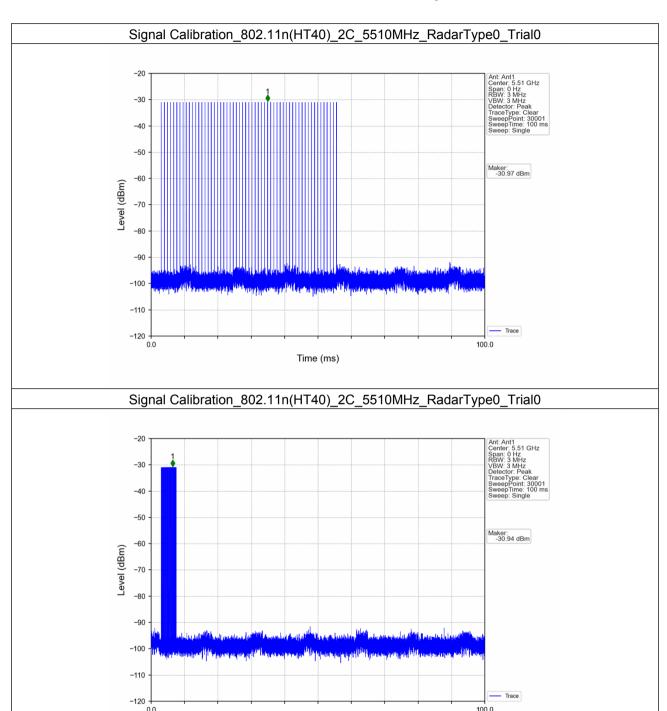
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Page: 24 of 32



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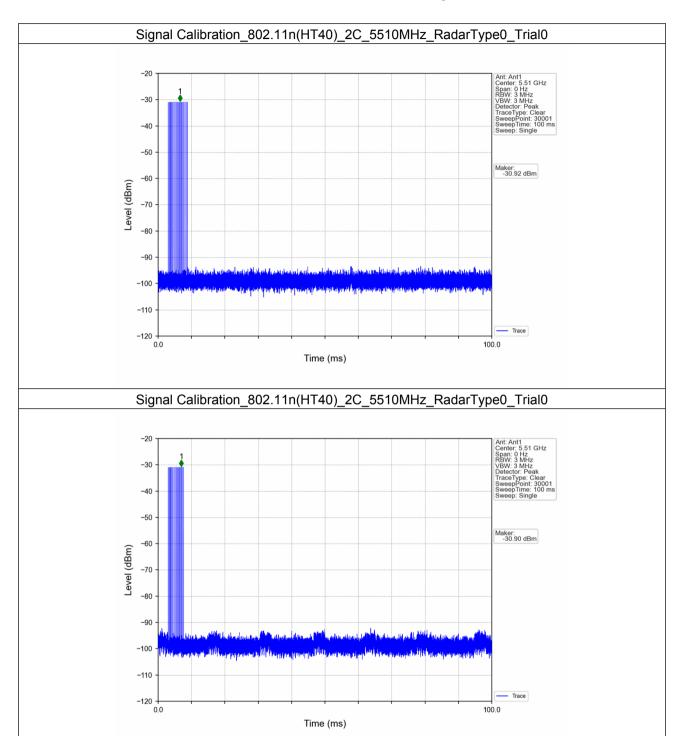
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EMC-TRF-01 Rev 1.1

Report No.: GZCR220600075404

Page: 25 of 32





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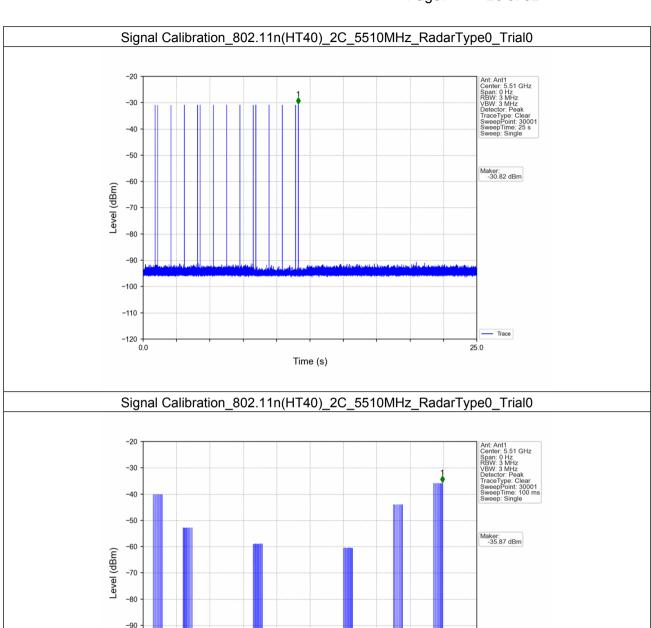
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Report No.: GZCR220600075404

Page: 26 of 32





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EMC-TRF-01 Rev 1.1

Report No.: GZCR220600075404

Page: 27 of 32

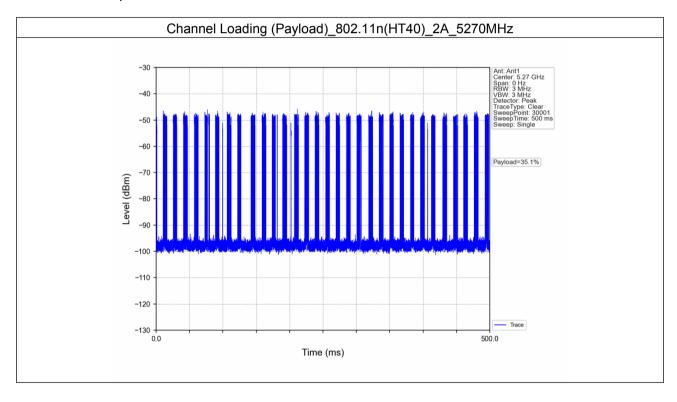
2. Channel Loading (Payload)

2.1 Payload

2.1.1 Test Result

Band: 2A							
Mode	Bandwidth	Frequency	Channel Loadin	g (Payload) (%)	Vordict		
Mode	(MHz)	(MHz)	Result	Limit	Verdict		
802.11n (HT40)	40	5270	35.10	>=17	Pass		

2.1.2 Test Graph





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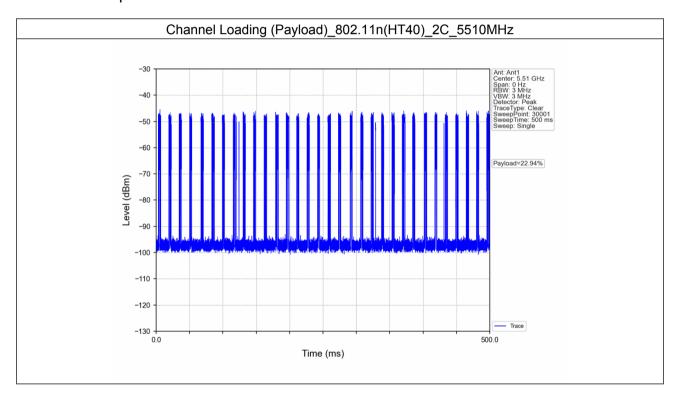
Page: 28 of 32

2.2 Payload

2.2.1 Test Result

Band: 2C							
Mode	Bandwidth	Frequency	Channel Loadin	g (Payload) (%)	Vardiat		
Mode	(MHz)	(MHz)	Result	Limit	Verdict		
802.11n (HT40)	40	5510	22.94	>=17	Pass		

2.2.2 Test Graph





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Report No.: GZCR220600075404

Page: 29 of 32

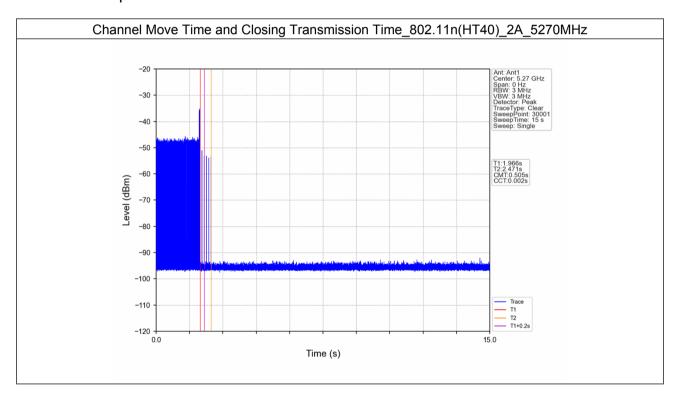
3. Channel Move Time and Closing Transmission Time

3.1 CMT_CTT

3.1.1 Test Result

	Band: 2A							
Mada	Bandwidth	Frequency	Channel Move Time and C	\				
Mode	(MHz) (MHz)		Result	Limit	Verdict			
802.11n	40	F270	CMT: 0.505 s	CMT < 10 s	Door			
(HT40)	40 5270		CCT: 0.002s	CCT < 60ms	Pass			

3.1.2 Test Graph





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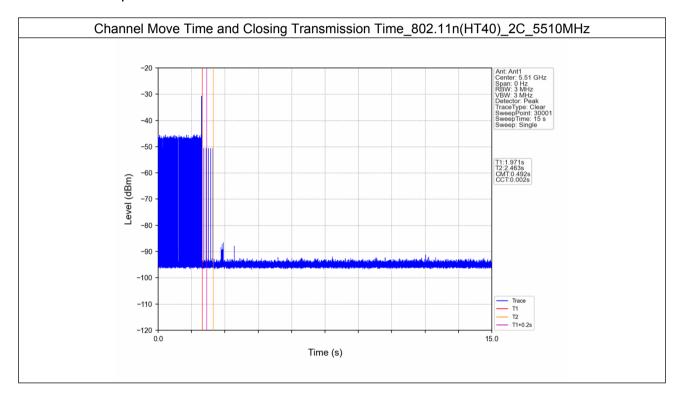
Page: 30 of 32

3.2 CMT CTT

3.2.1 Test Result

	Band: 2C							
Mada	Bandwidth	Frequency	Channel Move Time and C	Vondiat				
Mode	(MHz) (MHz)		Result	Limit	Verdict			
802.11n	40	EE10	CMT: 0.492 s	CMT < 10 s	Door			
(HT40) 40	5510	CCT: 0.002s	CCT < 60ms	Pass				

3.2.2 Test Graph





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Page: 31 of 32

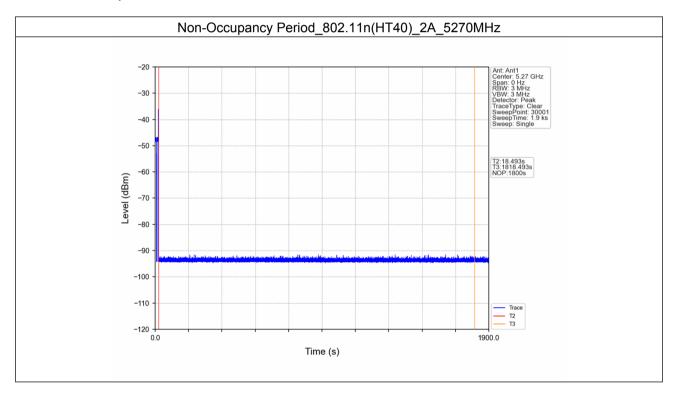
4. Non-Occupancy Period

4.1 Period

4.1.1 Test Result

Band: 2A								
Mada	Bandwidth	Frequency	Non-Occupano	cy Period	Vordint			
Mode	(MHz)	(MHz)	Result	Limit	Verdict			
802.11n (HT40)	40	5270	1800s	<=1800s	Pass			

4.1.2 Test Graph





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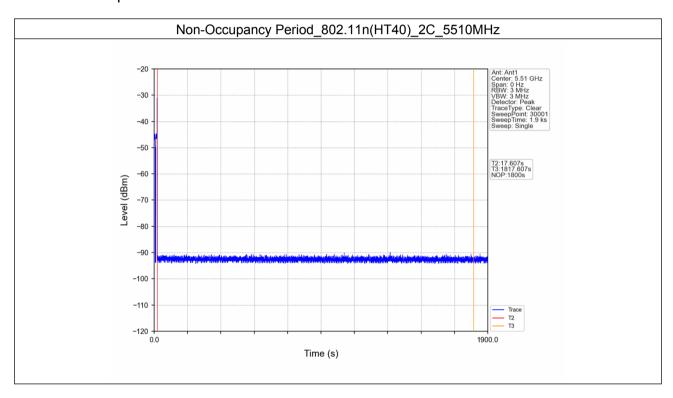
Page: 32 of 32

4.2 Period

4.2.1 Test Result

Band: 2C							
Modo	Bandwidth	Frequency	Non-Occupand	\/ordiot			
Mode	(MHz)	(MHz)	Result	Limit	Verdict		
802.11n (HT40)	40	5510	1800s	<=1800s	Pass		

4.2.2 Test Graph



- End of the Report -



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