



RADIO TEST REPORT

FCC ID : 2AG87-RM3625

Equipment : Smart Radio - CBRS

Model Name : RM-3625

Applicant : Doodle Labs (SG) Pte Ltd
150 Kampong Ampat, KA Center, Suite 05-03,
Singapore 368324,
Singapore

Manufacturer : Doodle Labs (SG) Pte Ltd
150 Kampong Ampat, KA Center, Suite 05-03,
Singapore 368324,
Singapore

Standard : FCC Part 96.47

The product was received on Sep. 09, 2021, and testing was started from May 17, 2022 and completed on Jun. 02, 2022. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in FCC Part 96.47, and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.



Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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Photographs of EUT v01		



TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A18_3 Ver1.2



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3	96.47	End User Device additional requirement	PASS	-

Declaration of Conformity:

1. The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Measurement Uncertainty".

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Wendy Pan



1 General Description

1.1 Product Feature of Equipment Under Test

EUT Type	EUD
Power Type	From Internal Power Supply
Professional Installation	☐ ☒ No
EUT supports Radios application	Band 48 CBRS

1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Cable Loss		True Gain (dBi)	Remark
						Short	Long		
1	MARS	MA-WO36-10N	Dipole	N Type	9.5	0.63	2.08	6.79	CBSD-A
2	Laird	SJS330065-17-001	Dipole	N Type	18	0.63	2.08	15.29	CBSD-B
3	Doodle	ANT-3625-3-O-RP	Dipole	RP-SMA	3	0.63	-	2.37	EUD

Note: The above information was declared by manufacturer.

The EUT support 2TX, 2RX function.

1.3 Support Equipment

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	WLAN AP	Netgear	R7500	PY314300288
B	Switch	Panasonic	Switch-S9GPWR	N/A
C	Notebook	Lenovo	X1 Carbon	N/A
D	Notebook	DELL	E4300	N/A
E	CBSD	N/A	RM-3625	2AG87RM-3625
F	Notebook	DELL	E4300	N/A



1.4 Applicable Standards

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

- FCC Part 96.47
- FCC KDB 940660 D01 Part 96 CBRS Eqpt v02

The following reference test guidance is not within the scope of accreditation of TAF.

- WINNF-18-IN-00178_CBRS End User Device as UUT Test Guidelines V1.0

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

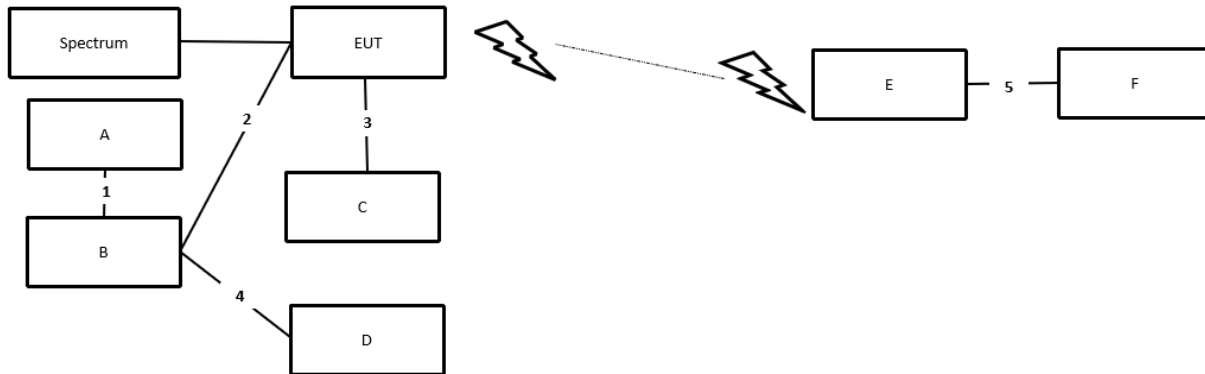
1.5 Testing Location

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085
	Test site Designation No. TW3787 with FCC.
	Conformity Assessment Body Identifier (CABID) TW3787 with ISED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH01-CB	Jeff Wu	20.6~21.8 / 66~68	May 17, 2022~ Jun. 02, 2022

2 Test Configuration of Equipment Under Test

2.1 Connection Diagram of Test System



Item	Connection	Shielded	Length
1	RJ-45 cable	No	1.5m
2	RJ-45 cable	No	1.5m
3	RJ-45 cable	No	1.5m
4	RJ-45 cable	No	1.5m
5	RJ-45 cable	No	1.5m



3 End User Device additional requirement

3.1 Test Requirement

FCC Part 96.47

(a) End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation.

(1) An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.

3.2 Test Procedure

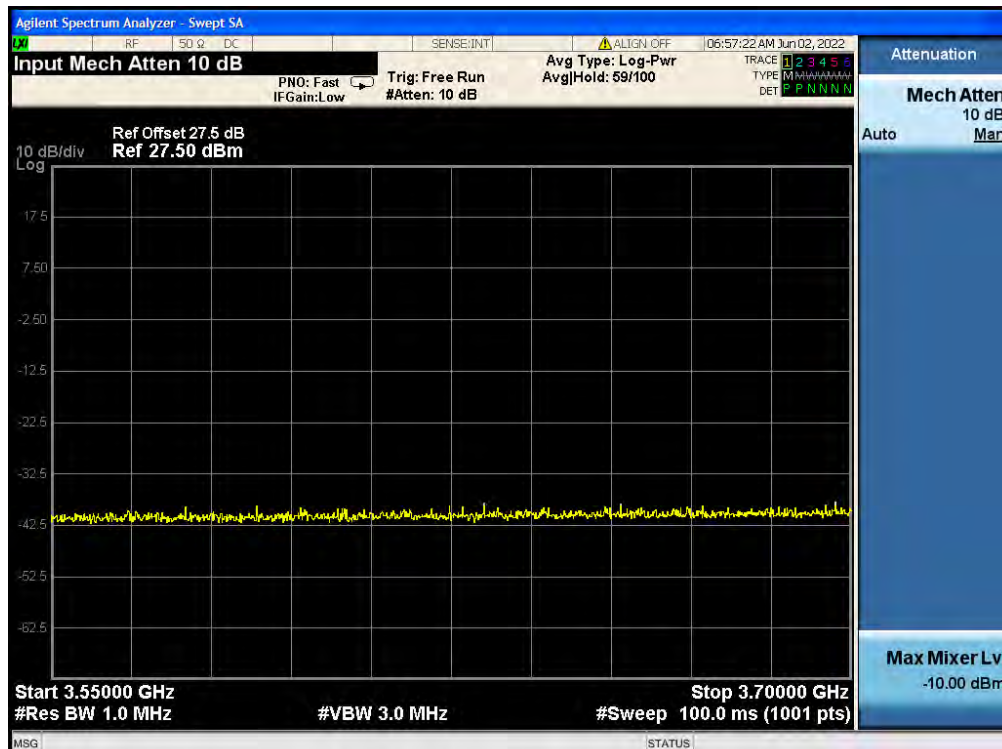
Following procedure can be done by applying WINNF-18-IN-00178_CBRS End User Device as UUT Test Guidelines V1.0, use the certified CBSD as companion device to show compliance with Part 96.47 requirement for End User Device (EUD):

1. Initial Power ON EUT for 300 seconds and check EUT does not transmit in CBRS band.
2. Reboot EUT for 300 seconds.
3. Set CBSD operation in 3550-3560MHz and power level 15dBm/MHz.
4. Check EUT initial RF transmit time in CBRS band
5. Check EUT Tx frequency.
6. Check EUT Tx power level.
7. Disable CBSD service and check EUT stops transmission within 10 seconds.
8. Set CBSD operation in 3600-3610MHz and power level 12dBm/MHz.
9. Check EUT Tx frequency.
10. Check EUT Tx power level.



3.3 Test Result

[Step 1] Intial Power ON EUT for 300 seconds and check EUT does not transmit in CBRS band.

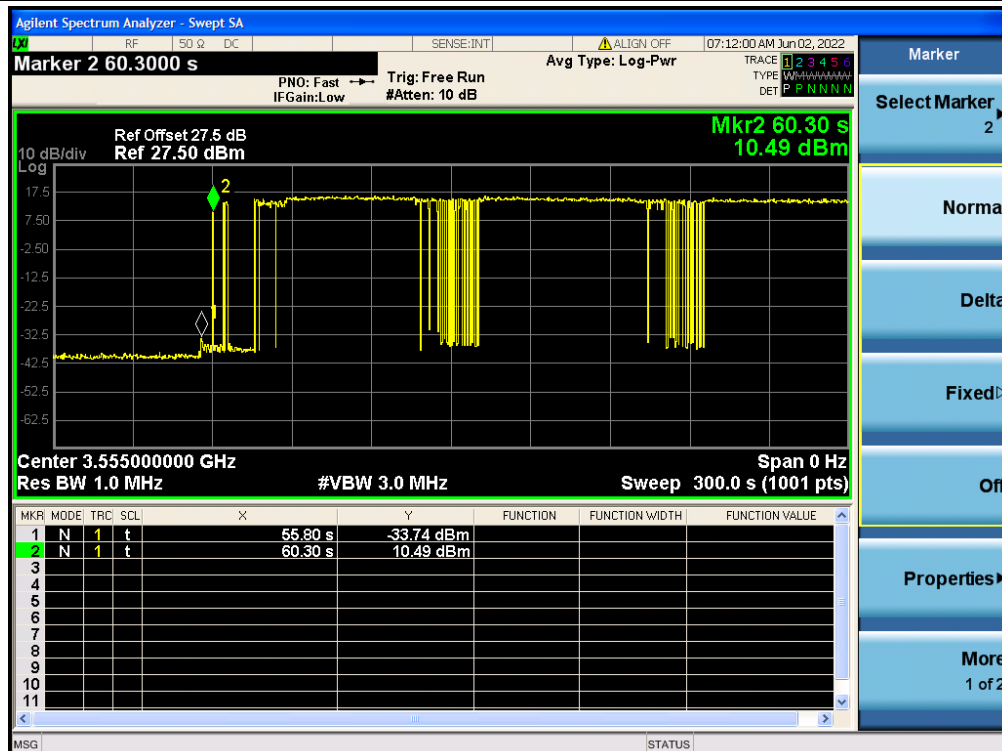




[Step 2] Reboot EUT for 300 seconds.

[Step 3] Set CBSD operation in 3550-3560MHz and power level 15dBm/MHz.

[Step 4] Check EUT initial RF transmit time in CBRS band.



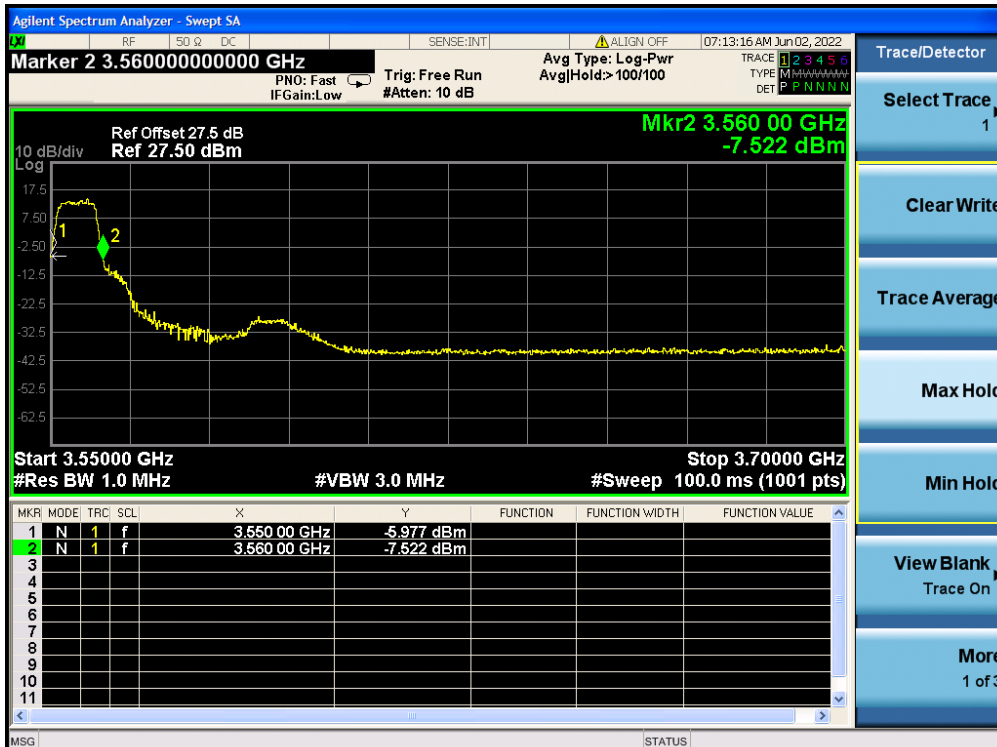
Note:

Marker 1: CBSD starts RF operation in CBRS band.

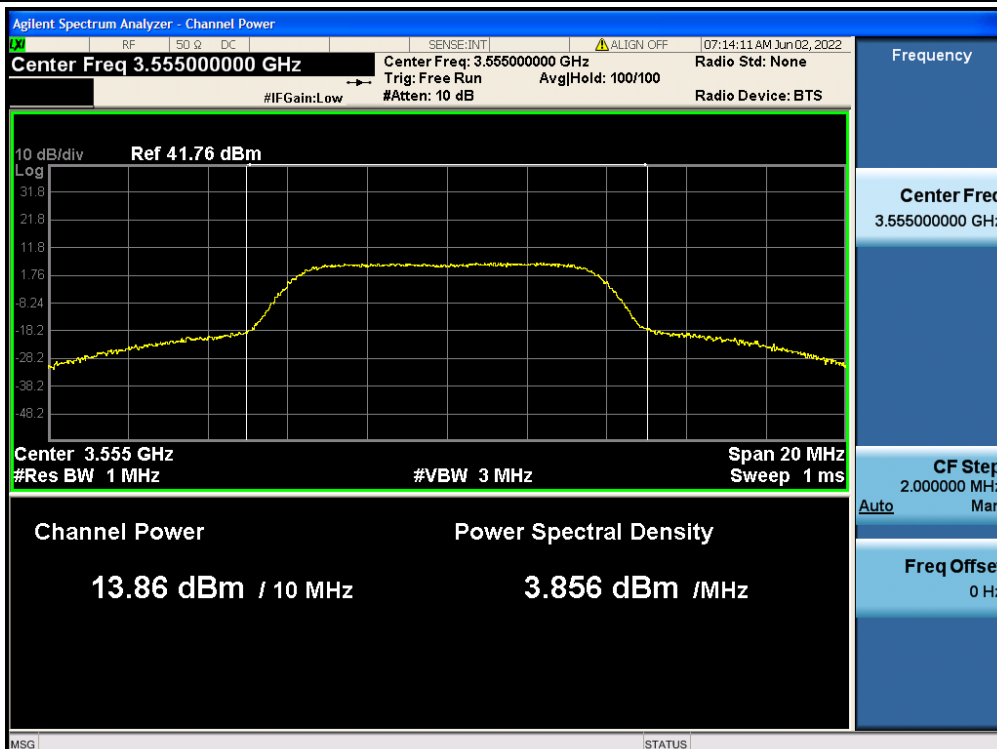
Marker 2: EUT starts RF operation in CBRS band.



[Step 5] Check EUT Tx frequency.

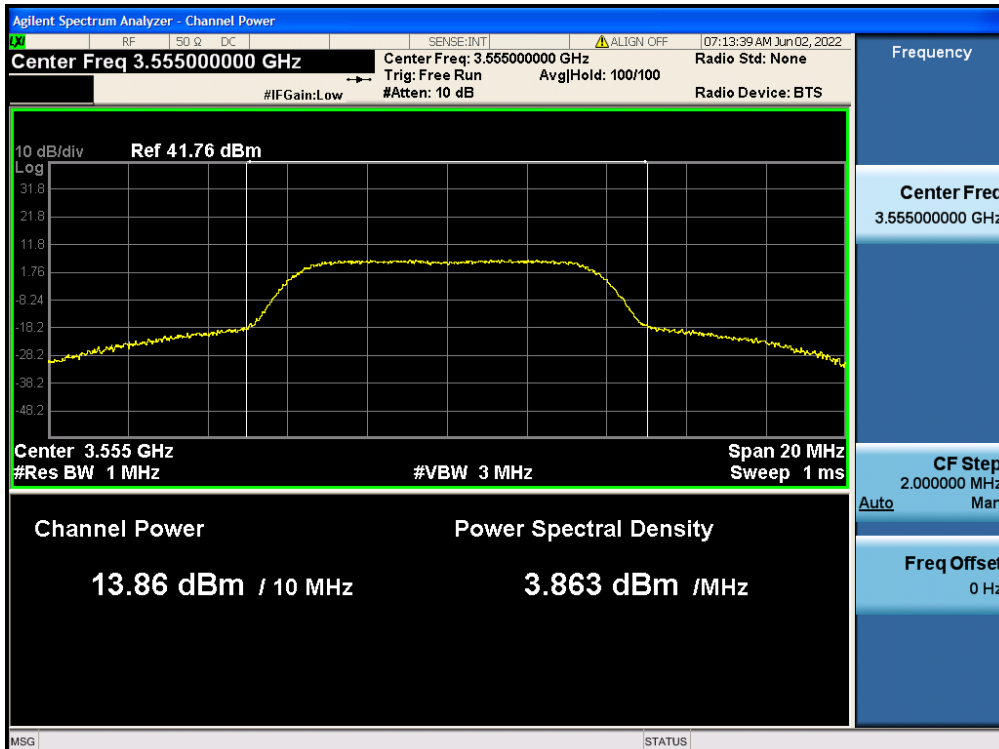


[Step 6] Check EUT Tx power level for PORT ANT 0





[Step 6] Check EUT Tx power level for PORT ANT 1

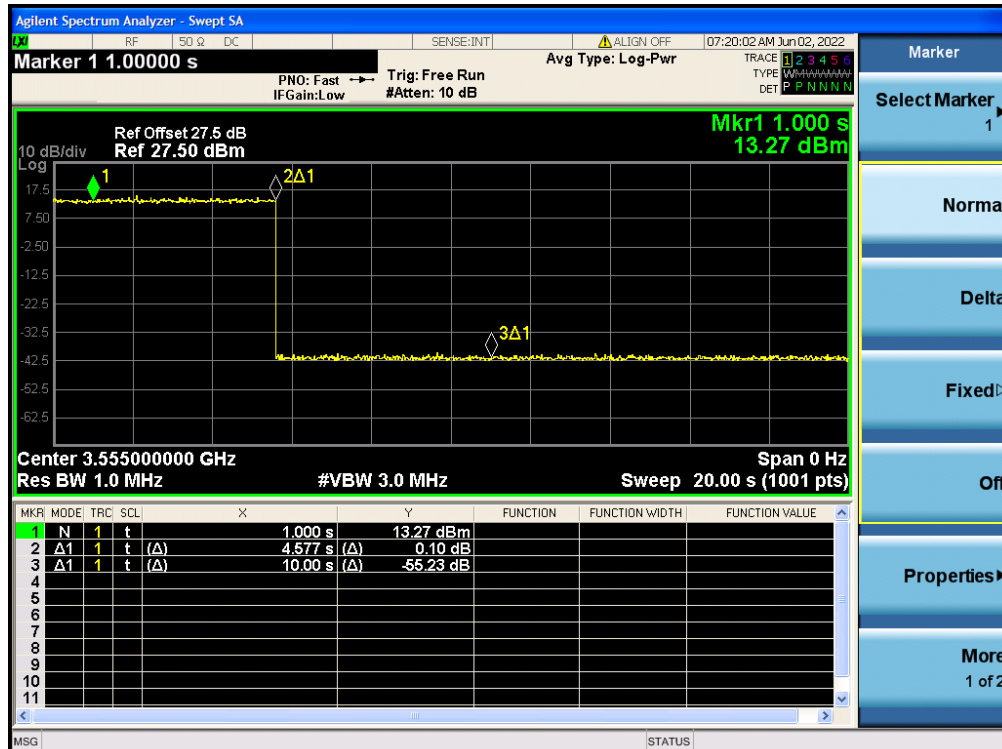




Step	Freq. (MHz)	Bandwidth (MHz)	Antenna Gain (dBi)	PORT ANT 0 (dBm/MHz)	PORT ANT 1 (dBm/MHz)	maxEirp (dBm/MHz)	Result
6	3555	10	3	3.856	3.863	9.87	PASS



[Step 7] Disable CBSD service and check EUT stops transmission within 10 seconds.



Note:

Marker 1: Trigger CBSD disable RF service.

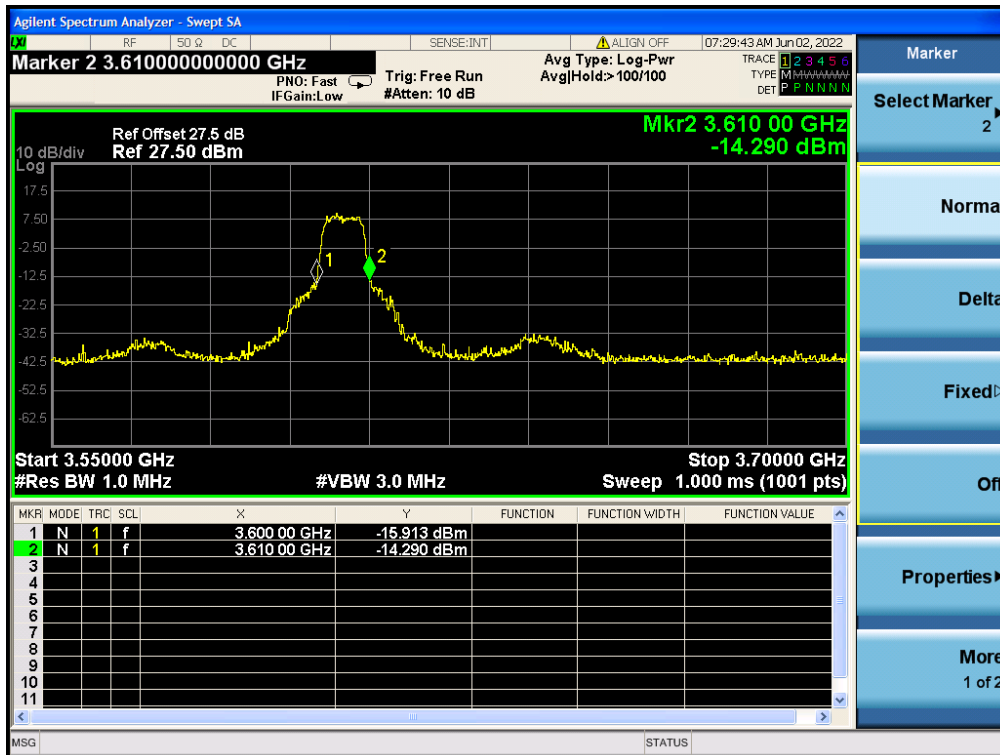
Marker 2: EUT stops RF operation in CBRS band.

Marker 3: 10 seconds time limit for EUD to disable operation in this channel.

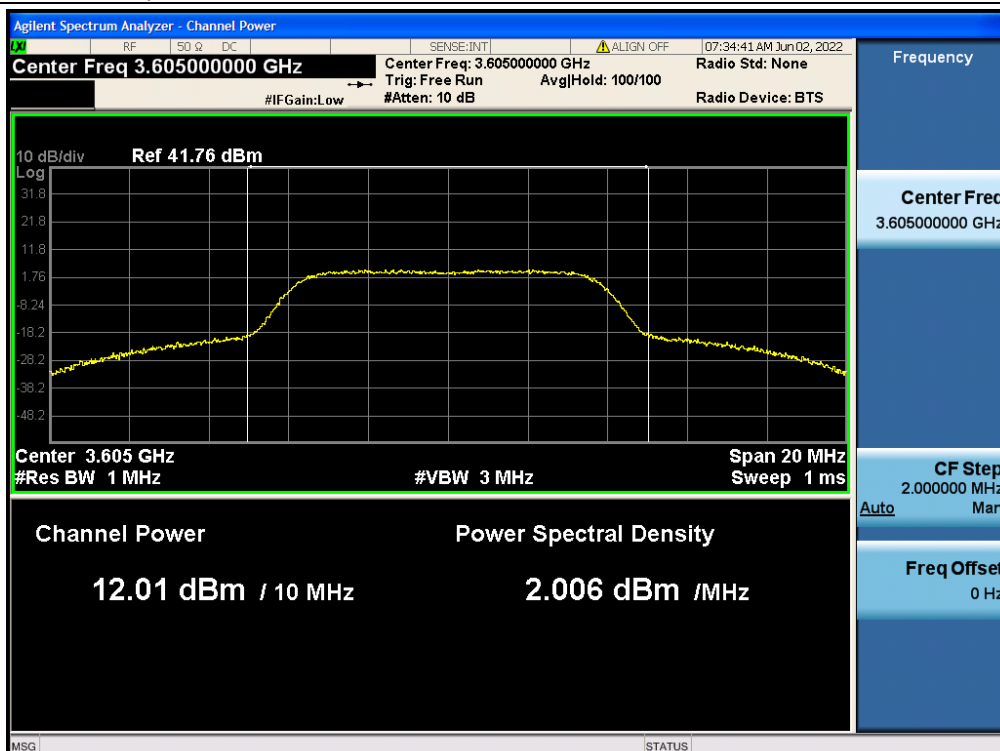


[Step 8] Set CBSD operation in 3600-3610MHz and power level 12dBm/MHz.

[Step 9] Check EUT Tx frequency.

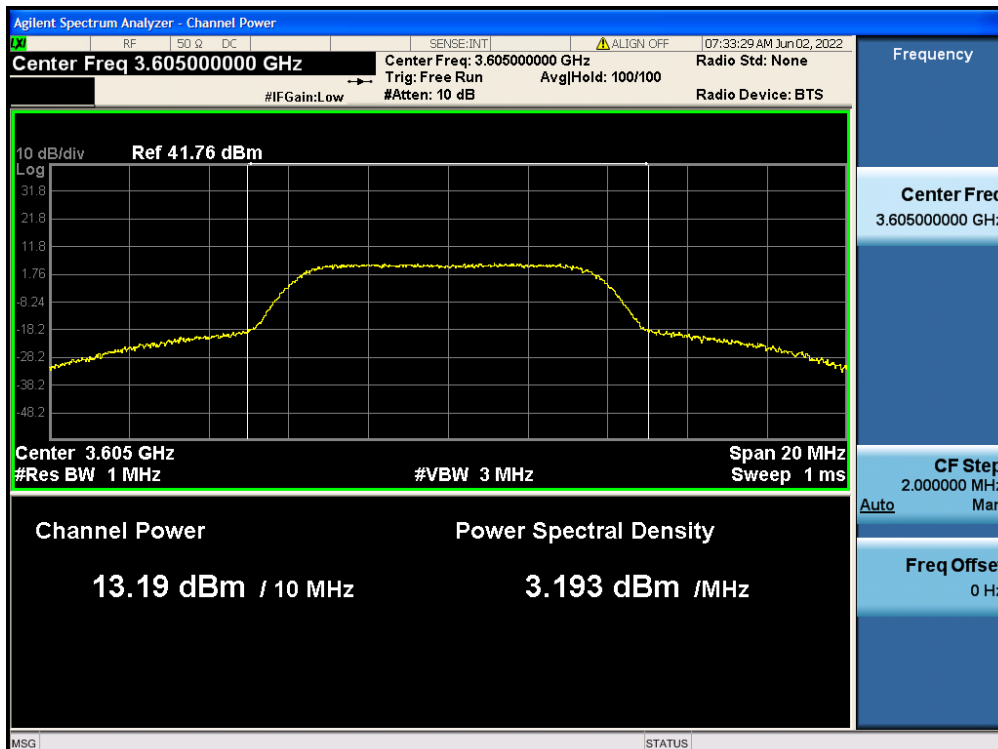


[Step 10] Check EUT Tx power level for PORT ANT 0





[Step 10] Check EUT Tx power level for PORT ANT 1





Step	Freq. (MHz)	Bandwidth (MHz)	Antenna Gain (dBi)	PORT ANT 0 (dBm/MHz)	PORT ANT 1 (dBm/MHz)	maxEirp (dBm/MHz)	Result
10	3605MHz	10	3	2.006	3.193	8.65	PASS



4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Signal analyzer	Agilent	N9010A	MY52220519	10kHz~44GHz	Mar. 18, 2022	Mar. 17, 2023	Conducted (TH01-CB)
Signal analyzer	Keysight	N9020A	MY55400138	10 Hz up to 26.5 GHz	Jan. 25, 2022	Jan. 24, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-30	1 GHz –26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
Cable	Woken	RG402	low Cable-30	9 kHz –1 GHz	Mar. 04, 2022	Mar. 03, 2023	Conducted (TH01-CB)
RF Power Divider	Woken	4 Way	TH01-DV-01	1GHz ~ 6GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Power Divider	STI	2 Way	DV-2way-01	1GHz ~ 8GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

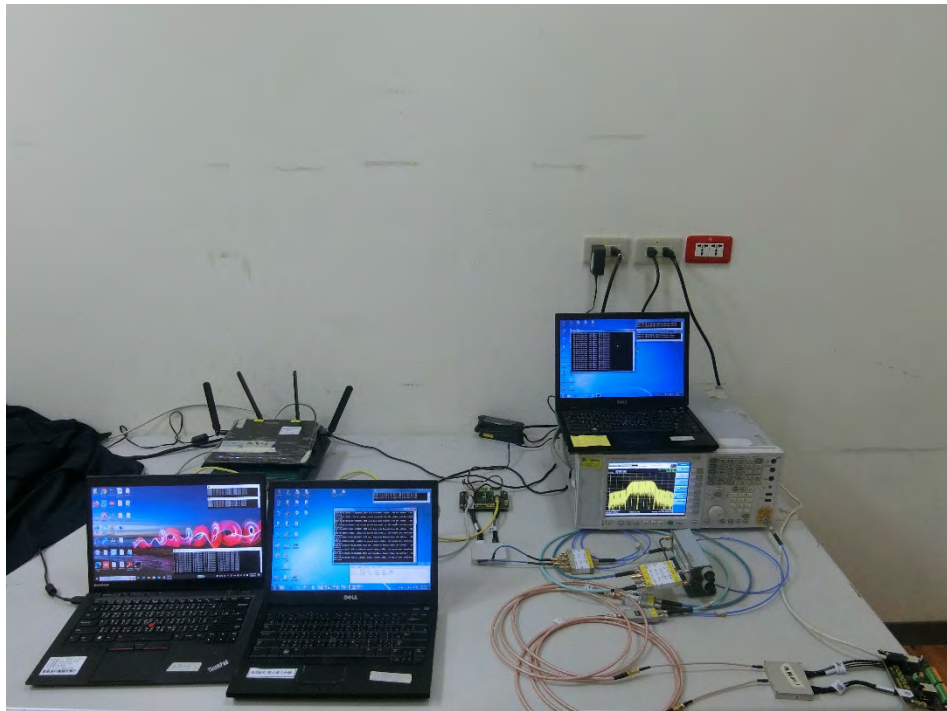
NCR means Non-Calibration required.



5 Measurement Uncertainty

Test Items	Uncertainty	Remark
Conducted Emission	3.2 dB	Confidence levels of 95%

1. Photographs of Test Configuration



————THE END————