



SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/0 Aug01,2022

Report No.: SZCR230700229401

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TEST REPORT

Application No.: SZCR2307002294AT(KSCR2305000809AT)
FCC ID: OJFE62-M3-35
Applicant: Corning Optical Communications LLC
Address of Applicant: 6 Concord Road, Shrewsbury, MA 01545 United States
Manufacturer: Corning Optical Communications LLC
Address of Manufacturer: 6 Concord Road, Shrewsbury, MA 01545 United States
Equipment Under Test (EUT):
EUT Name: Remote Unit
Model No.: E62-M3
Trade Mark: **CORNING**
Standard(s): FCC Part 96.47
FCC KDB 940660 D01 Part 96 CBRS Eqpt v03
WINNF-TS-0122-V1.0.2 CBRS CBSD Test Specification
WINNF-18-IN-00178 CBRS End User Device as UUT Test Guidelines
Date of Receipt: 2023-05-09
Date of Test: 2023-05-09 to 2023-05-31
Date of Issue: 2023-06-02

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu

Keny Xu
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2023-06-02		Original

Authorized for issue by:			
			
		Bill Chen /Project Engineer	
			
		Eric Fu/Reviewer	



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2 Test Summary

Item	Standard	Test Case ID	Result
End User Device additional requirement	96.47	/	Pass

The UUT is an End User Device. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:

FCC Part 96.47

FCC KDB 940660 D01 Part 96 CBRS Eqpt v03

WINNF-TS-0122-V1.0.2 CBRS CBSD Test Specification

WINNF-18-IN-00178 CBRS End User Device as UUT Test Guidelines



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 48V \pm 20% or AC 100-240V~50/60Hz
Sample Type:	End User device
Transmitter Frequency Range:	3550~3700MHz
Type of Modulation	5G NR: CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM LTE: QPSK, 16QAM, 64QAM, 256QAM
Antenna Type:	External Antenna
Hardware Version:	SWR78202249B
Software Version:	V0.1
Antenna Gain:	6 dBi for 3550MHz to 3700MHz (Provided by manufacturer)

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 7.25 \times 10^{-8}$
2	RF conducted power	$\pm 0.75\text{dB}$
3	Temperature test	$\pm 1^{\circ}\text{C}$
4	Humidity test	$\pm 3\%$
5	Supply voltages	$\pm 1.5\%$
6	Time	$\pm 3\%$



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4.3 Description of Support Units

For LTE test:

Description	Manufacturer	Model No.	Serial No.
EPC	Lanner Electronics Inc.	LICA-1513A	LR202002004052
Router	TP-LINK	TL-R860+	1175379002425
Base station	Baicells	pBS31010 (FCC ID: 2AG32PBS31010)	12020002912122B0001
Wireless Router	Smawave	CP80I	

For 5G NR Test:

Description	Manufacturer	Model No.	Serial No.
5GC	astir	astir_5GC	A372768X0507398
Router	TP-LINK	TL-R860+	1175379002425
Base Band Unit	BTI	sCELL- G52091NAX	L603JESE1I
Remote Radio Unit	BTI	RU4370 (FCC ID: WBK-RU4370)	C0214921000004S
Wireless Router	Smawave	CP80I	/



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4.4 Test Location

All tests were performed at:

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Address 1: No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China. 518057.

No tests were sub-contracted.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).

4.5 Test Facility

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

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.6 Abnormalities from Standard Conditions

None

4.7 Deviation from Standards

None



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5 Equipment List

RF test system						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	Shielding Room	SAEMC	MSR433	SEM001-11	2022-06-13	2025-06-12
2	EXA Signal Analyzer (10Hz-26.5GHz)	KEYSIGHT	N9010A	SEM004-09	2023-04-07	2024-04-06
3	Signal Generator(9kHz-3GHz)	KEYSIGHT	N5171B	SEM006-13	2023-03-22	2024-03-21
4	MXG Vector Signal Generator	KEYSIGHT	N5182A	SEM006-14	2023-03-22	2024-03-21
5	ESG Vector Signal Generator	KEYSIGHT	E4438C	SEM006-15	2022/09/23	2023/09/22
6	DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2023-03-22	2024-03-21
7	Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2023-04-07	2024-04-06
8	Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2023-04-07	2024-04-06
9	Power Sensor	TST PASS	TSPS2023R	SEM009-22	2022-09-23	2023-09-22
10	Power Sensor	TST PASS	TSPS2023R	SEM009-23	2022-09-23	2023-09-22
11	Power Sensor	TST PASS	TSPS2023R	SEM009-24	2022-09-23	2023-09-22
12	Power Sensor	TST PASS	TSPS2023R	SEM009-25	2022-09-23	2023-09-22
13	Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2023-03-22	2024-03-21
14	Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2023-03-22	2024-03-21
15	Measurement Software	TST	TST PASS V1.1.0	N/A	N/A	N/A
16	Coaxial Cable	SGS	N/A	SEM028-01	2022-07-09	2023-07-08



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RE in Chamber(Radiated Spurious Emissions, 1166)						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	Fully-Anechoic Chamber 1	SAEMC	MFAC	SEM001-04	2021-04-11	2024-04-10
2	Spectrum Analyzer (20Hz-43GHz)	Rohde & Schwarz	FSU43	SEM004-08	2023-03-22	2024-03-21
3	BiConiLog Antenna (30MHz-3GHz)	Schwarzbeck	VULB9163	SEM003-05	2021/9/17	2023-09-16
4	Horn Antenna (800MHz-18GHz)	Rohde & Schwarz	HF907	SEM003-06	2021-04-17	2024-04-16
5	Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2020-11-14	2023-11-13
6	Pre-amplifier (100MHz-18GHz)	Black Diamond Series	BDLNA-0118-352810	SEM005-06	2022-09-22	2023-09-21
7	Signal Conditioning Unit(1GHz-18GHz)	Rohde & Schwarz	SCU-18	SEM005-18	2023-03-22	2024-03-21
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2022-09-22	2023-09-21
9	Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2023-03-22	2024-03-21
10	Radio Communication Analyzer	Anritsu	MT8820C	SEM010-04	2023-03-22	2024-03-21
11	Universal Radio Communication Tester	Rohde & Schwarz	CMU200	SEM010-01	2023-03-22	2024-03-21
12	Measurement Software	Rohde & Schwarz	EMC32 V9.21.00	N/A	N/A	N/A
13	Coaxial Cable	SGS	N/A	SEM027-01	2022-07-09	2023-07-08



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6 Test Method and Environment

6.1 End User Device Conformance and Performance

Test Requirement: FCC Part 96.47

Test Method: WINNF-18-IN-00178 CBRS End User Device as UUT Test Guidelines

6.2 Test Environment

Environmental Conditions: 25°C, 65%RH

6.3 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.
- b). 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.

6.4 Test Procedure

Following procedure can be done by applying WINNF-TS-0122-V1.0.2 CBRS CBSD Test Specification, use the certified LTE Base station CBSD (FCC ID: 2AG32PBS31010) and 5GNR Base station CBSD (FCC ID: WBK-RU4370) as companion device to show compliance with Part 96.47 requirement for End User Device (EUD):

For LTE:

1. Setup with frequency 3550-3570MHz and power level 20dBm/MHz;
2. Enable CBSD service ;
3. Check EUD Tx Frequency and power;
4. Disable AP service ;
5. Check EUD stops transmission within 10seconds;
6. Setup with 3610-3630MHz & power level 10dBm/MHz;
7. Enable CBSD service;
8. Check EUD Tx Frequency and power;
9. Disable CBSD service;
10. Check EUD stops transmission within 10seconds.



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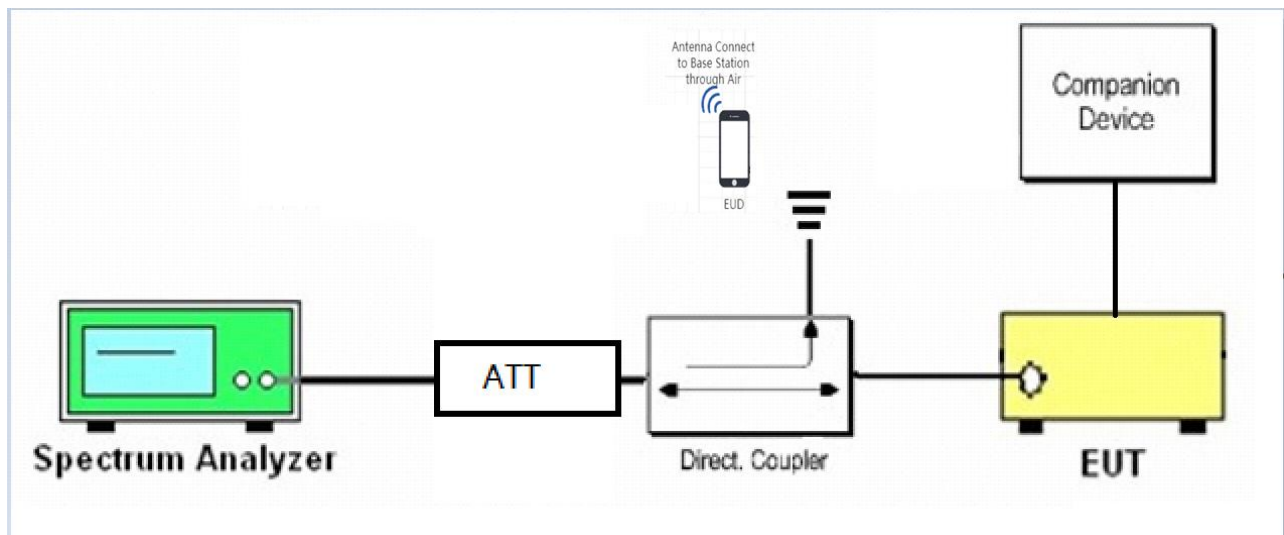
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For 5G NR:

1. Setup with frequency 3550-3650MHz and power level 20dBm/MHz;
2. Enable CBSD service ;
3. Check EUD Tx Frequency and power;
4. Disable AP service ;
5. Check EUD stops transmission within 10seconds;
6. Setup with 3600-3700MHz & power level 10dBm/MHz;
7. Enable CBSD service;
8. Check EUD Tx Frequency and power;
9. Disable CBSD service;
10. Check EUD stops transmission within 10seconds.

6.5 Test Setup



For LTE:

End User Device as UUT, the companion device is certified CBRS (FCC ID: 2AG32PBS31010)

For 5G NR:

End User Device as UUT, the companion device is certified CBRS (FCC ID: WBK-RU4370)



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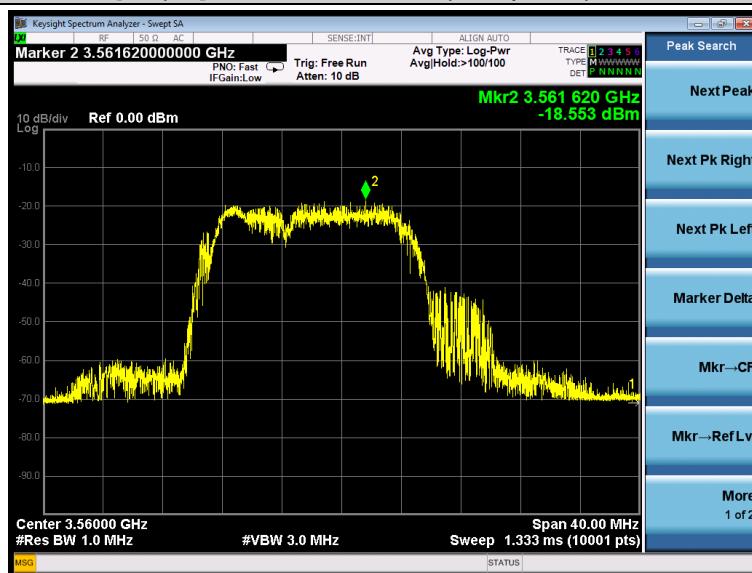
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6.6 Test Result

For LTE

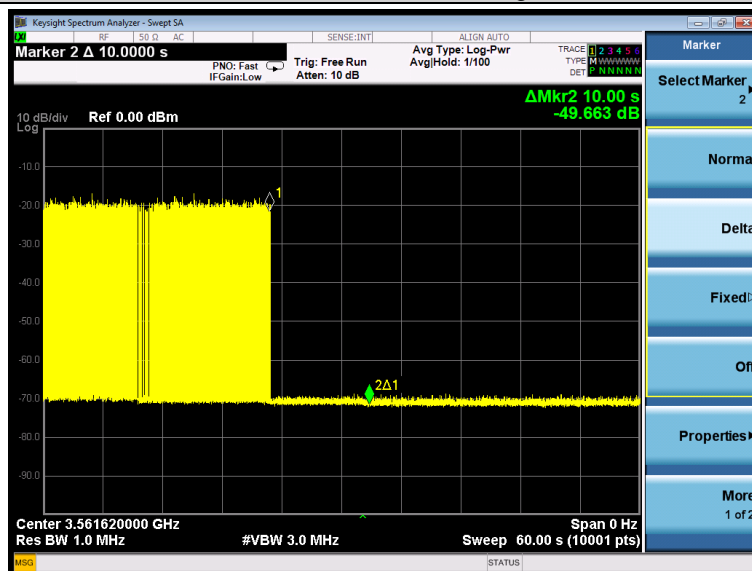
[Step 1] Setup with frequency 3550-3570MHz and power level 20dBm/MHz

[Step 3] Check EUD Tx Frequency and power



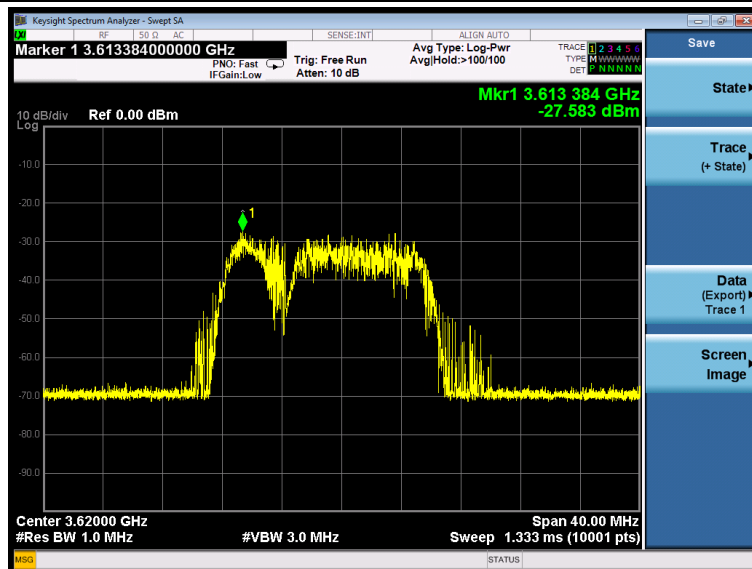
EIRP PSD=-18.553+6+20=7.447dBm/MHz, Antenna gain is 6 dBi,the path loss is 20dB

[Step 5] EUD stops transmission within 10 seconds of receiving instructions from its associated CBSD.



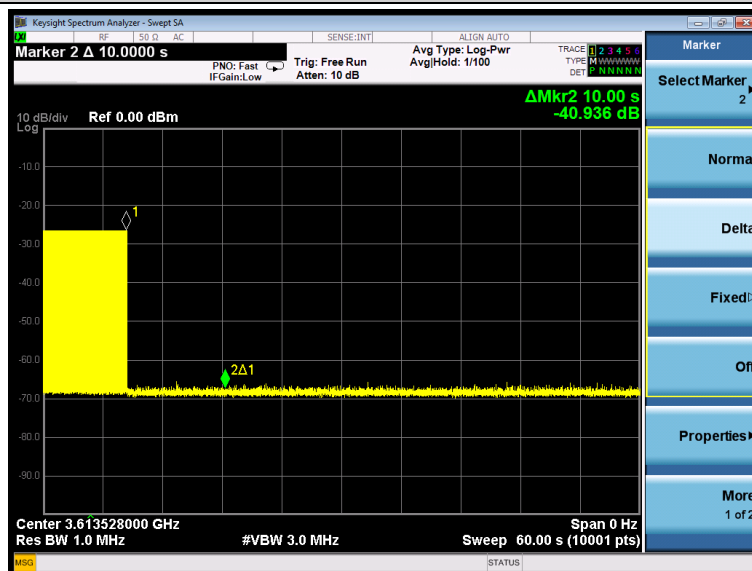
[Step 6] Setup with frequency 3610-3630MHz and power level 10dBm/MHz

[Step 8] Check EUD Tx Frequency and power



EIRP PSD=-27.583+6+20=-1.583dBm/MHz, Antenna gain is 6 dBi,the path loss is 20dB

[Step 10] EUD stops transmission within 10 seconds of receiving instructions from its associated CBSD.





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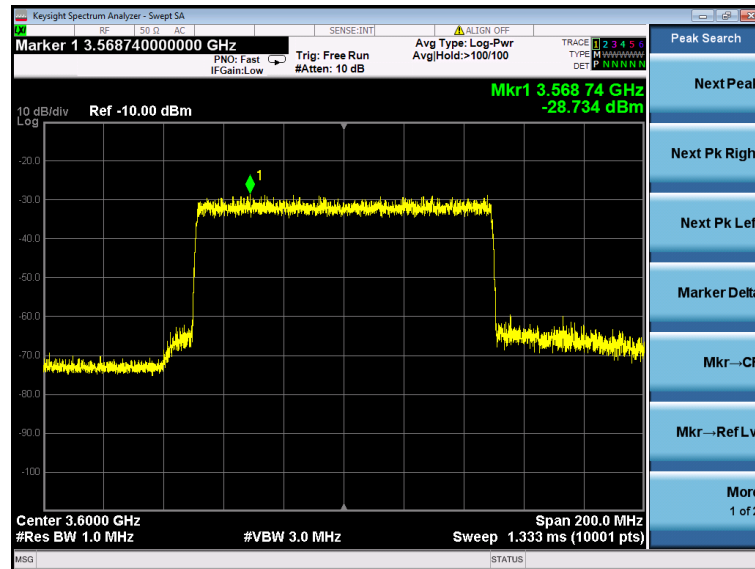
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For 5GNR

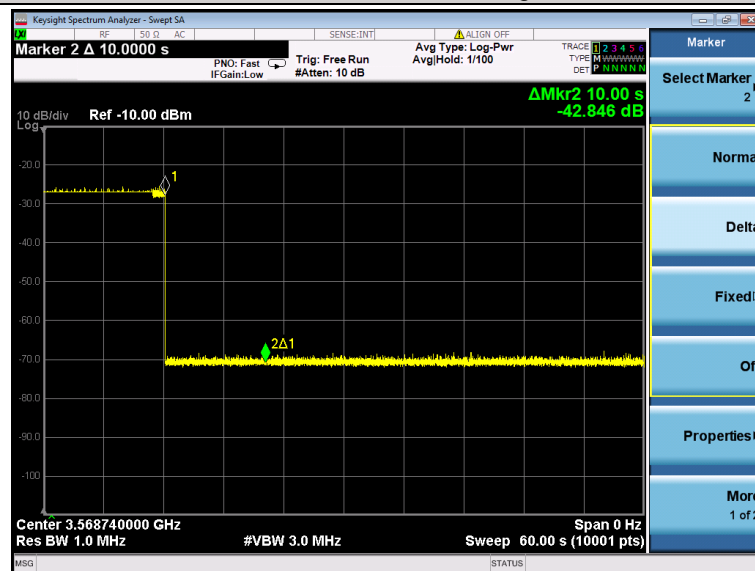
[Step 1] Setup with frequency 3550-3650MHz and power level 20dBm/MHz

[Step 3] Check EUD Tx Frequency and power



EIRP PSD=-28.734+6+20=-2.734dBm/MHz, Antenna gain is 6 dBi,the path loss is 20dB

[Step 5] EUD stops transmission within 10 seconds of receiving instructions from its associated CBSD.



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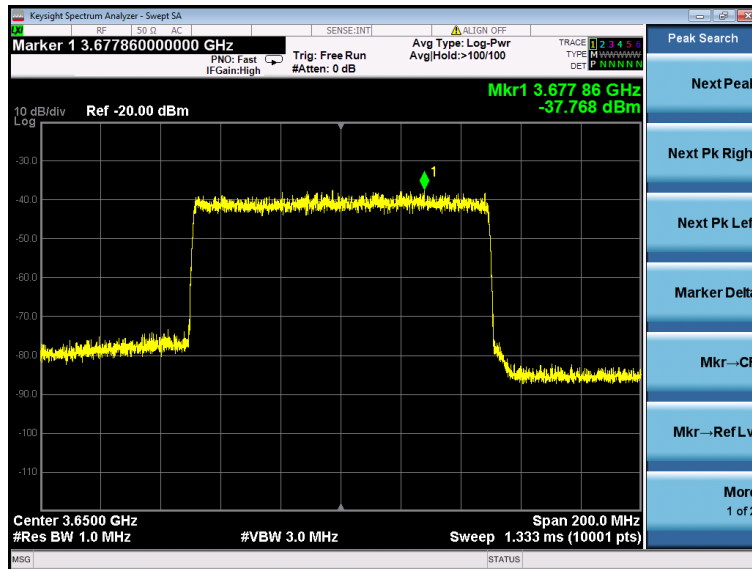
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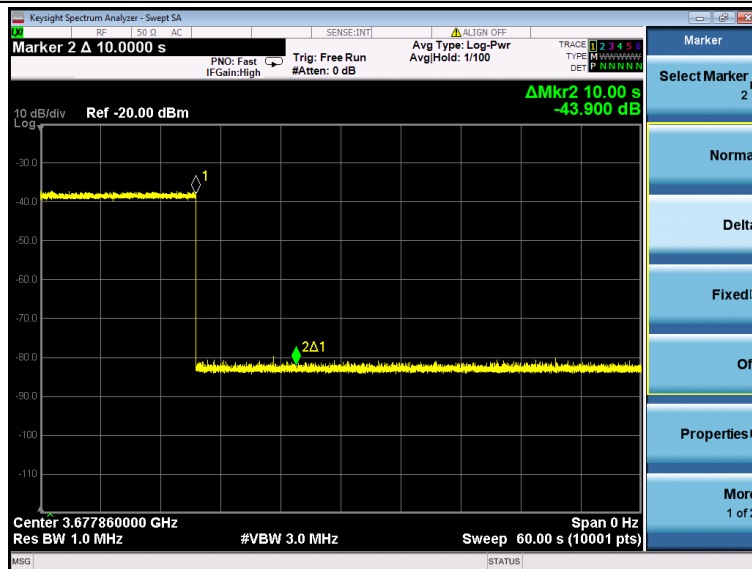
[Step 6] Setup with frequency 3600-3700MHz and power level 10dBm/MHz

[Step 8] Check EUD Tx Frequency and power



EIRP PSD=-37.768+6+20=-11.768dBm/MHz, Antenna gain is 6 dBi,the path loss is 20dB

[Step 10] EUD stops transmission within 10 seconds of receiving instructions from its associated CBSD.





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7 Test Setup Photographs

Refer to the < Test Setup photos>.

- End of the Report -



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