



FCC RF TEST REPORT

Report No.:	R201907001
Model No.:	CB64
Grant No.:	JOY
FCC ID:	JOYCB64
Date of Receipt:	Jun 17,2019
Date of Test:	Jun 17,2019~ Jul 01,2019
Date of Issue:	Jul 02,2019
Test Result:	PASS
Applicant:	Kyocera Corporation
Manufacturer:	Kyocera Corporation
Factory:	Kyocera Corporation
Product Name	GSM/WCDMA/LTE Mobile Telephone
Trade Mark	KYOCERA
Address:	2-1-1 Kagahara, Tsuzuki-ku, Yokohama-shi, Kanagawa, Japan, 224-8502
ISSUED BY:	BYD Precise Manufacture Co., Ltd.
LAB LOCATION:	No. 3001, Baohe Road, Baolong Longgang, Shenzhen, 518116, People's Republic of China

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1 REPORT ISSUED HISTORY

Version	Description	Issued Data
Rev. 01	Original issue	Jul 2, 2019



2 CERTIFICATION

PRODUCT:	GSM/WCDMA/LTE Mobile Telephone
MODEL:	CB64
BRAND:	Kyocera Corporation
APPLICANT:	Kyocera Corporation
TEST SAMPLE:	ENGINEERING SAMPLE
IMEI:	356283100010018
HW Version:	CB64
SW Version:	Msm8937_64-userdebug 9
TESTED:	Jun 17,2019~ Jul 02,2019
STANDARDS:	FCC 47 CFR Part15 Subpart C §15.247

The above equipment has been tested by **BYD Precise Manufacture Co., Ltd**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

PREPARED BY : 陈彦 , **DATE:** 2019-07-02
(Yan Chen / Engineer)

TECHNICAL ACCEPTANCE : 冯卓辉 , **DATE:** 2019-07-02
Responsible for EMS (Zhaohui Feng / Manager)

APPROVED BY : 颜杰 , **DATE:** 2019-07-02
(Jie Yan / Director)



3 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART15 Subpart C § 15.247			
STANDARD SECTION	TEST ITEMS	RESULT	REMARK
§15.247(a)(1)	Number of Channel	PASS	≥15Chs
§15.247(a)(1)	Hopping Channel Separation	PASS	≥2/3 of 20dB BW
§15.247(a)(1)	Dwell Time	PASS	≤0.4sec in 31.6sec period
§15.247(a)(1)	20dB Bandwidth	PASS	
-	99% Bandwidth	PASS	
§15.247(b)(1)	Peak Output Power	PASS	≤125mW
§15.247(d)	Band edges	PASS	≤20dBc
§15.247(d)	Conducted Spurious	PASS	≤20dBc

3.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2 Ed 1.0.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

This lab's measurement uncertainty U_{Lab} , is low than U_{Cispr} , Table 1 – Values of U_{Cispr} of CISPR 16-4-2 Ed. 1.0, therefore compliance is deemed to occur if no measured disturbance exceeds the disturbance limit.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5%
RF output power, Conducted	±0.59dB
Power Spectral Density, conducted	±0.59dB
Unwanted Emissions, conducted	±0.9dB
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±0.4%



Duty Cycle

±1%

4 GENERAL INFORMATION

4.1 Test Equipments List

Description & Manufacturer	MODEL NO.	SERIAL NO.	Next Calibration date
CBT BLUETOOTH TESTER ROHDE & SCHWARZ	CBT	100430	2020/4/1
SIGNAL ANALYZER ROHDE & SCHWARZ	FSQ26	200393	2020/4/1
DC Power Supply Agilent	E3632A	MY40023141	2019/10/18
LC Filters	-	L2000-9C1AS	-
RF cable		-	-
Power Divider	-	C279810-01	-
PC	-	30007653	-

NOTE: Calibration cycle 12 months.



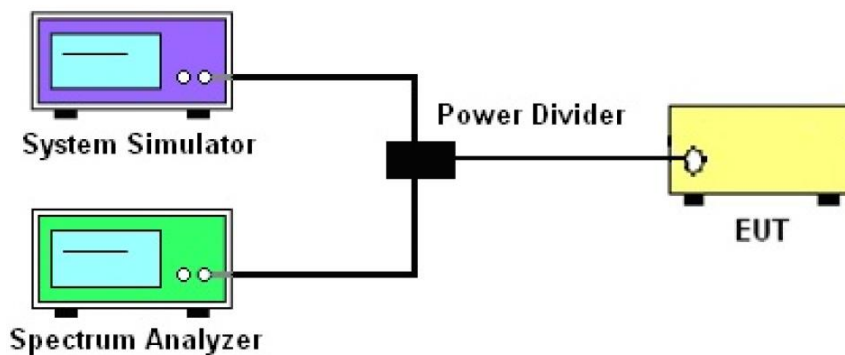
4.2 Description of Test Modes

Test Items	Data Rate	Operating Mode	Channel
Number of Channel	-	Hopping	00~78
Hopping Channel Separation	1/2/3Mbps	Hopping	00/78
Dwell Time	1/2/3Mbps	Hopping	00~78
20dB Bandwidth	1/2/3Mbps	Fixed	00/39/78
99% Bandwidth	1/2/3Mbps	Fixed	00/39/78
Peak Output Power	1/2/3Mbps	Fixed	00/39/78
Band edges	1/2/3Mbps	Fixed	00/78
Conducted Spurious	1/2/3Mbps	Fixed	00/39/78

4.3 Test Environment and List of Software and Parts

Test Items	Software	Parts	Environment
Number of Channel	QRCT Version3.0	USB Cable、Fake battery、Power Divider	Temp.:25°C±3 Humi:30%~60% Volt.:3.85V
Hopping Channel Separation	QRCT Version3.0	USB Cable、Fake battery、Power Divider	Temp.:25°C±3 Humi:30%~60% Volt.:3.85V
Dwell Time	QRCT Version3.0	USB Cable、Fake battery、Power Divider	Temp.:25°C±3 Humi:30%~60% Volt.:3.85V
20dB Bandwidth	QRCT Version3.0	USB Cable、Fake battery、Power Divider	Temp.:25°C±3 Humi:30%~60% Volt.:3.85V
99% Bandwidth	QRCT Version3.0	USB Cable、Fake battery、Power Divider	Temp.:25°C±3 Humi:30%~60% Volt.:3.85V
Peak Output Power	QRCT Version3.0	USB Cable、Fake battery、Power Divider	Temp.:25°C±3 Humi:30%~60% Volt.:3.85V
Band edges	QRCT Version3.0	USB Cable、Fake battery、Power Divider	Temp.:25°C±3 Humi:30%~60% Volt.:3.85V
Conducted Spurious	QRCT Version3.0	USB Cable、Fake battery、Power Divider	Temp.:25°C±3 Humi:30%~60% Volt.:3.85V

4.4 Configuration of System Under Test



4.5 Testing Location

Test Site	BYD Precise Manufacture Co., Ltd.
Test Site Location	No. 3001, Baohe Road, Baolong Longgang, Shenzhen, 518116, People's Republic of China
Post Code	518116
Telephone	+86-755 8489 8888 55501
Fax	+86-755 8964 3771

4.6 Test Facility

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

- **A2LA (Certificate No. 4886.01)**

BYD Precise Manufacture Co., Ltd., Baolong Shenzhen Laboratory is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4886.01.

- **FCC –Designation Number: CN1232**

BYD Precise Manufacture Co., Ltd., Baolong Shenzhen Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1232.



4.7 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part15 Subpart C §15.247

FCC Public Notice DA 00-705

ANSI C63.4-2003

All test items have been performed and recorded as per the above standards.



5 TEST TYPES AND RESULTS

5.1 Number of Channel

5.1.1 Description

Frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.

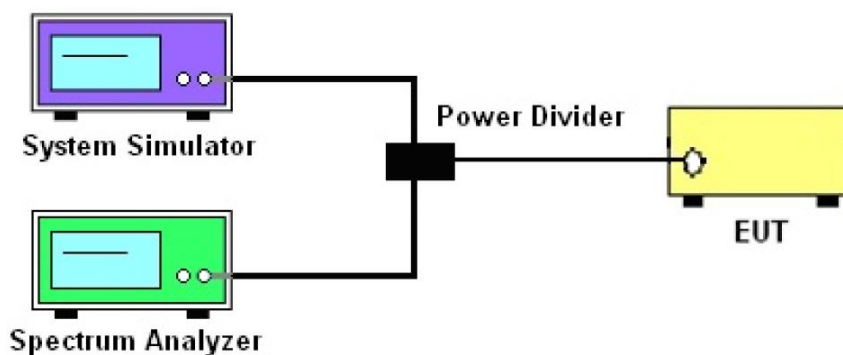
5.1.2 Test Instruments

The measuring equipment is listed in the section 4.1 of this test report.

5.1.3 Test Procedure

- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss compensated to the results for each measurement.
- Set to the maximum power setting and enable the EUT transmit continuously.
- Enable the EUT hopping function.
- Use the following spectrum analyzer setting: Span=the frequency band of operation; $RBW \geq 1\%$ of the span; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold.
- The number of hopping frequency used is defined as the number of total channel.
- Record the measurement data derived from spectrum analyzer.

5.1.4 Test Setup



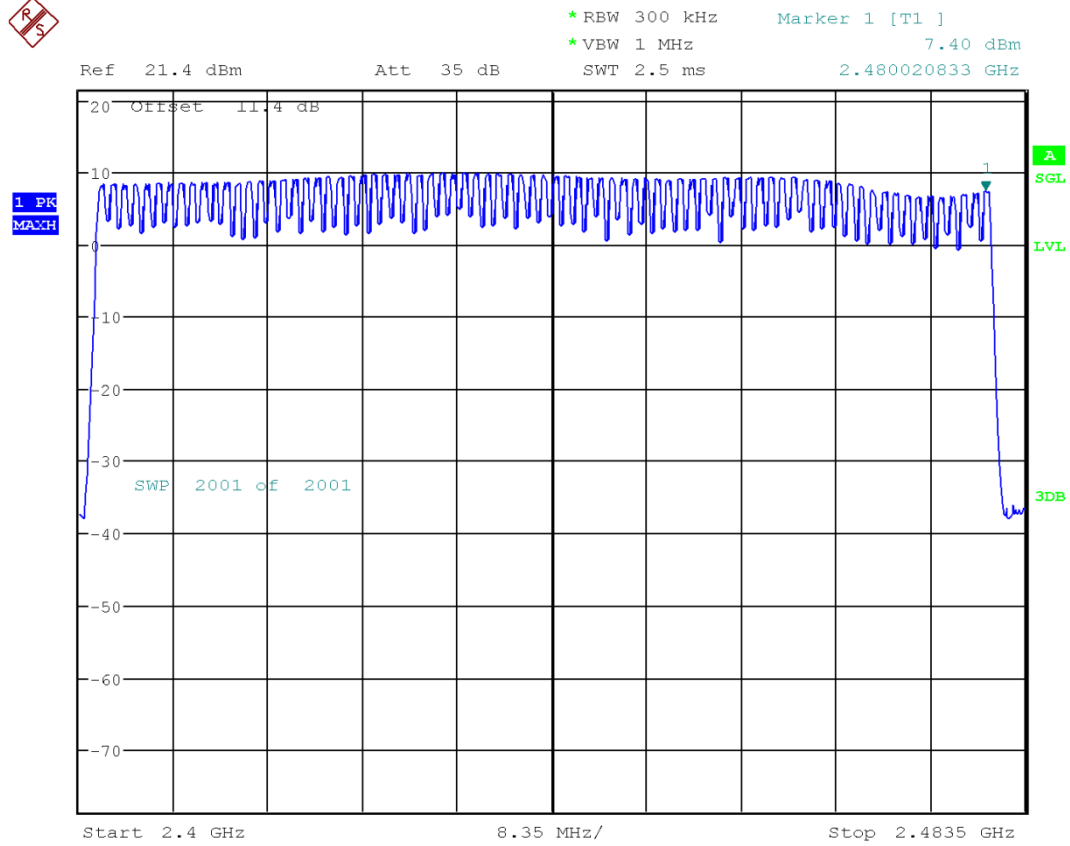
5.1.5 Test Results

Number of Hopping Frequency(Channel)	Adaptive Hopping Frequency(Channel)	Limit(Channel)	P/F
78	20	15	PASS



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BT2.0 Number of Channel

5.2 Hopping Channel Separation

5.2.1 Description

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth off the hopping channel, whichever is greater.

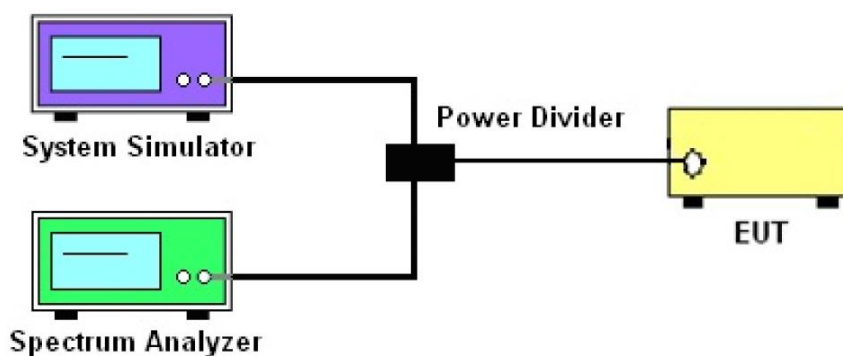
5.2.2 Test Instruments

The measuring equipment is listed in the section 4.1 of this test report.

5.2.3 Test Procedure

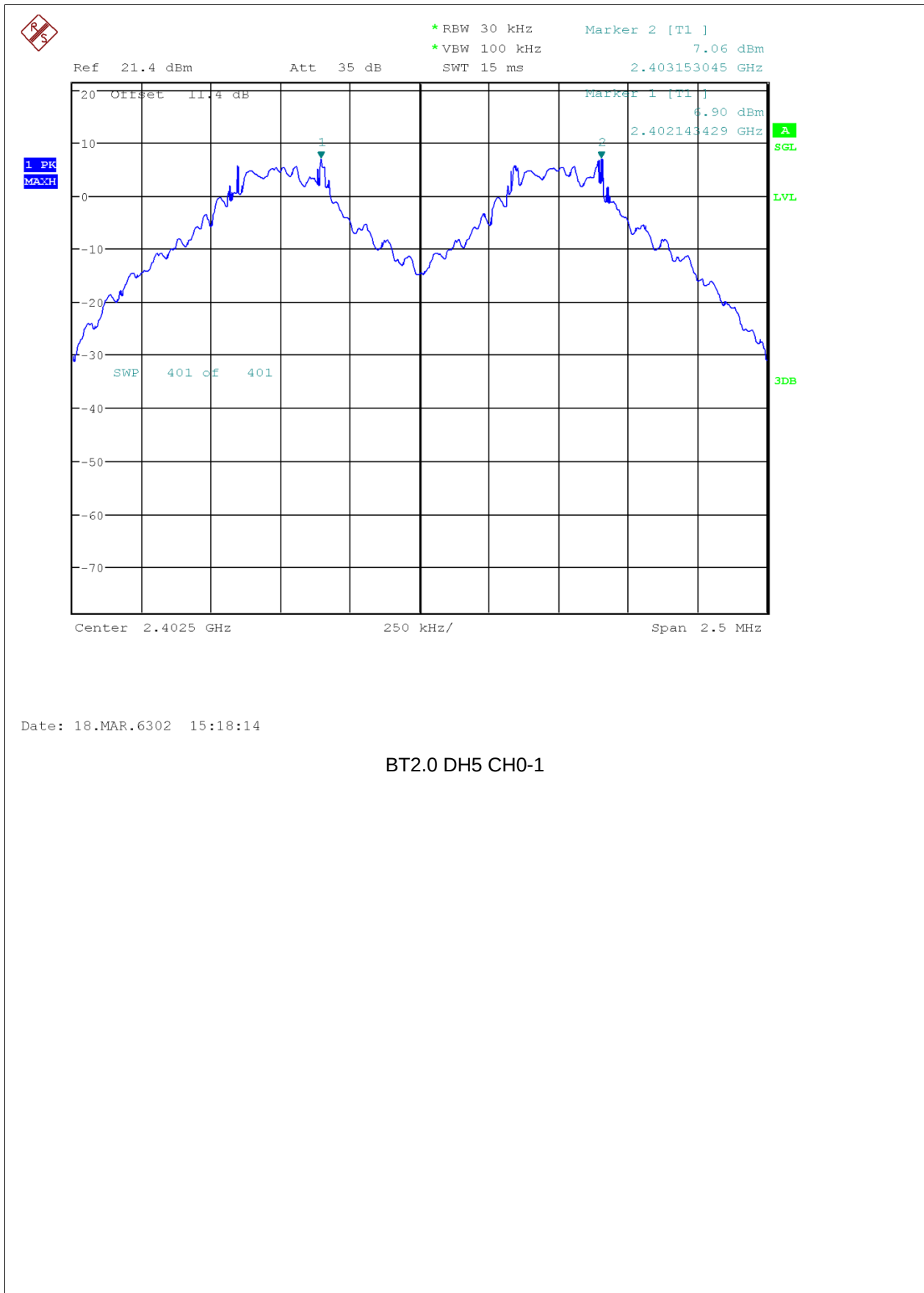
- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss compensated to the results for each measurement.
- Set to the maximum power setting and enable the EUT transmit continuously.
- Enable the EUT hopping function.
- Use the following spectrum analyzer setting: Span=wide enough to capture the peaks of two adjacent channels; RBW $\geq$ 1% of the span; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
- Record the measurement the results in the test report.

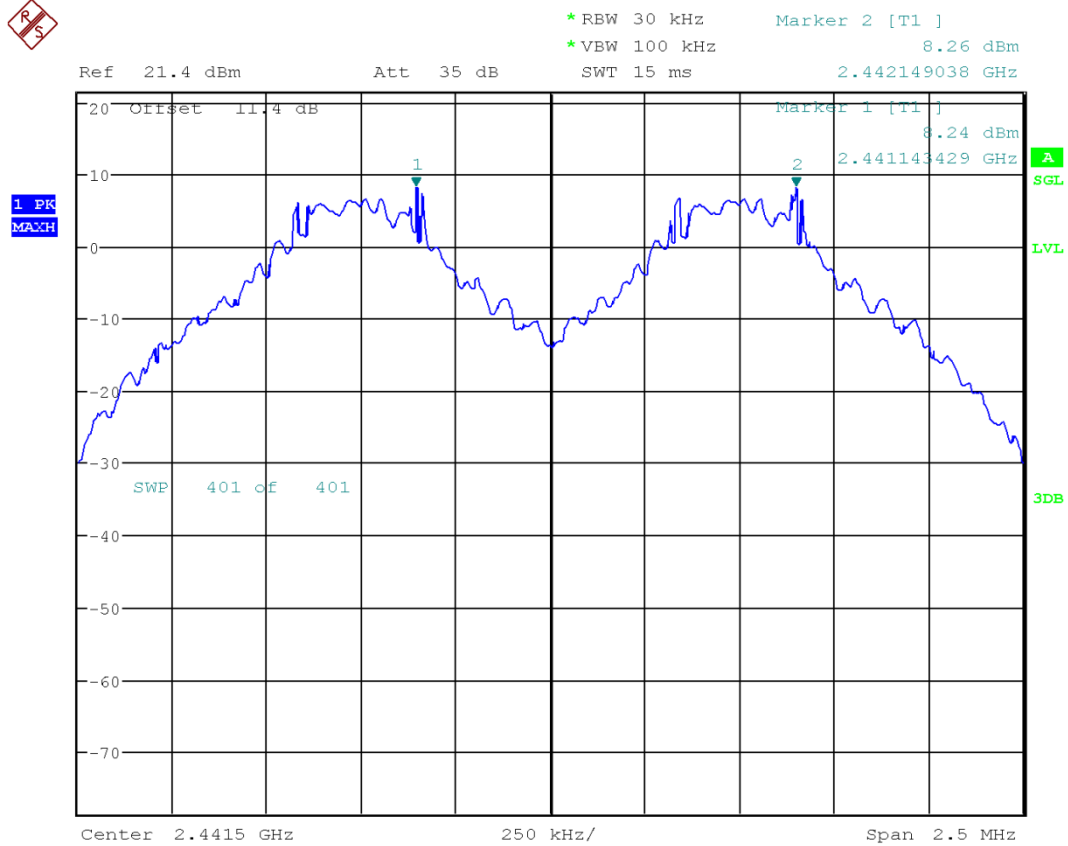
5.2.4 Test Setup



**5.2.5 Test Result**

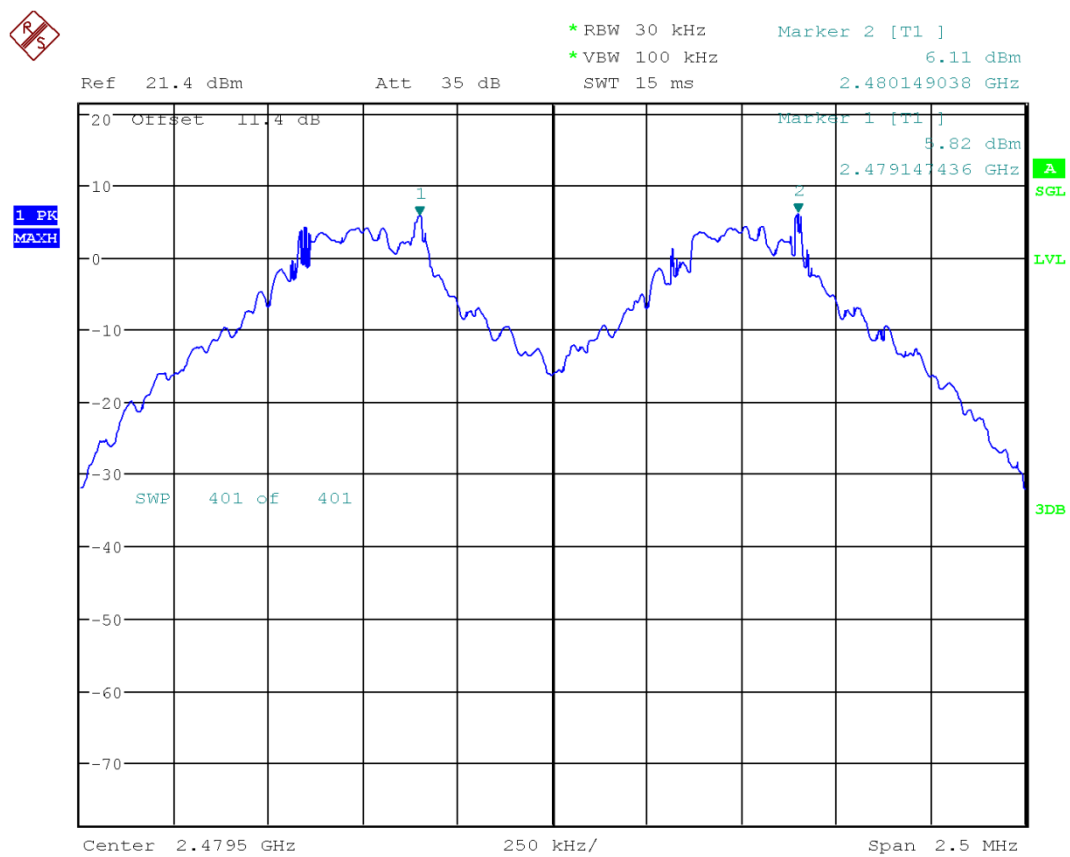
DH5				
Channel	Frequency(M Hz)	Hopping Channel Separation(kHz)	Limit(kHz)(25kHz or 2/3 20dB BW whichever is greater)	P/F
0-1	2402-2403	1009.62	615.38	PASS
39-40	2441-2442	1005.61	598.29	PASS
77-78	2479-2480	1001.6	583.33	PASS
2DH5				
Channel	Frequency(M Hz)	Hopping Channel Separation(MHz)	Limit(MHz)(25kHz or 2/3 20dB BW whichever is greater)	P/F
0-1	2402-2403	1165.87	858.97	PASS
39-40	2441-2442	1169.87	868.59	PASS
77-78	2479-2480	1169.87	865.38	PASS
3DH5				
Channel	Frequency(M Hz)	Hopping Channel Separation(MHz)	Limit(MHz)(25kHz or 2/3 20dB BW whichever is greater)	P/F
0-1	2402-2403	1013.62	871.79	PASS
39-40	2441-2442	1001.6	855.77	PASS
77-78	2479-2480	997.6	862.18	PASS





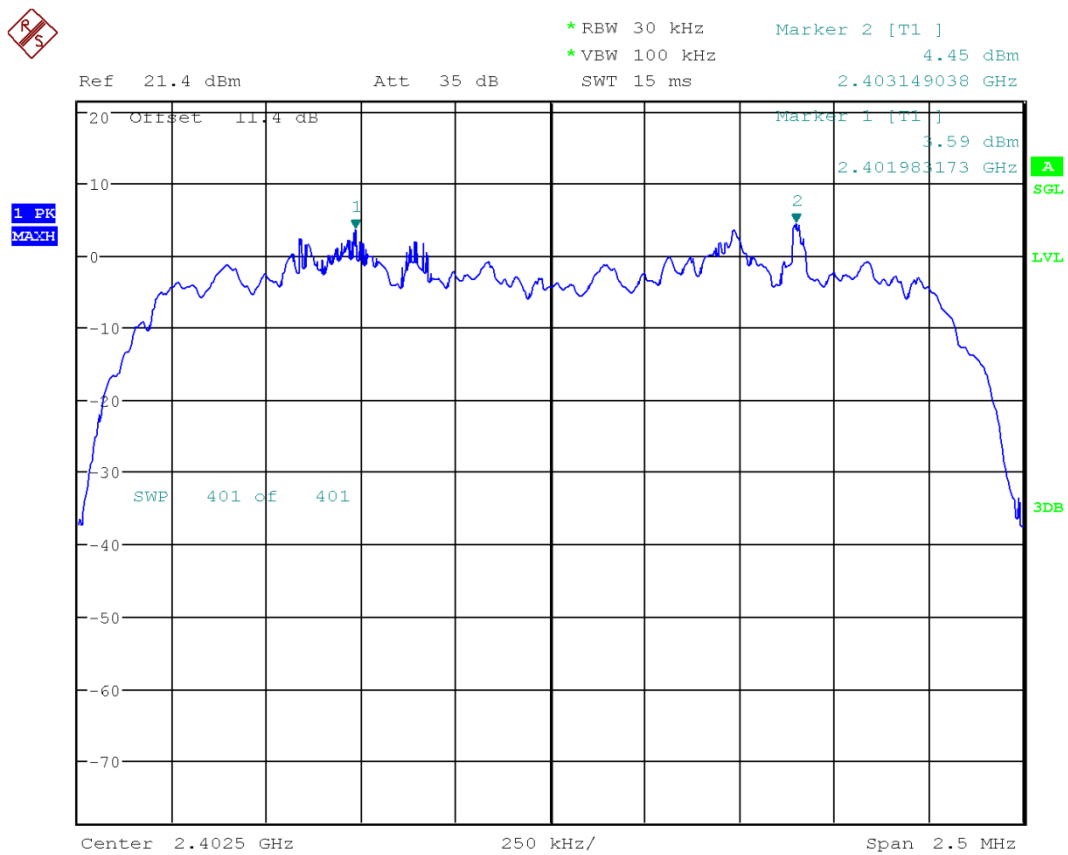
Date: 18.MAR.6302 15:28:20

BT2.0 DH5 CH39-40



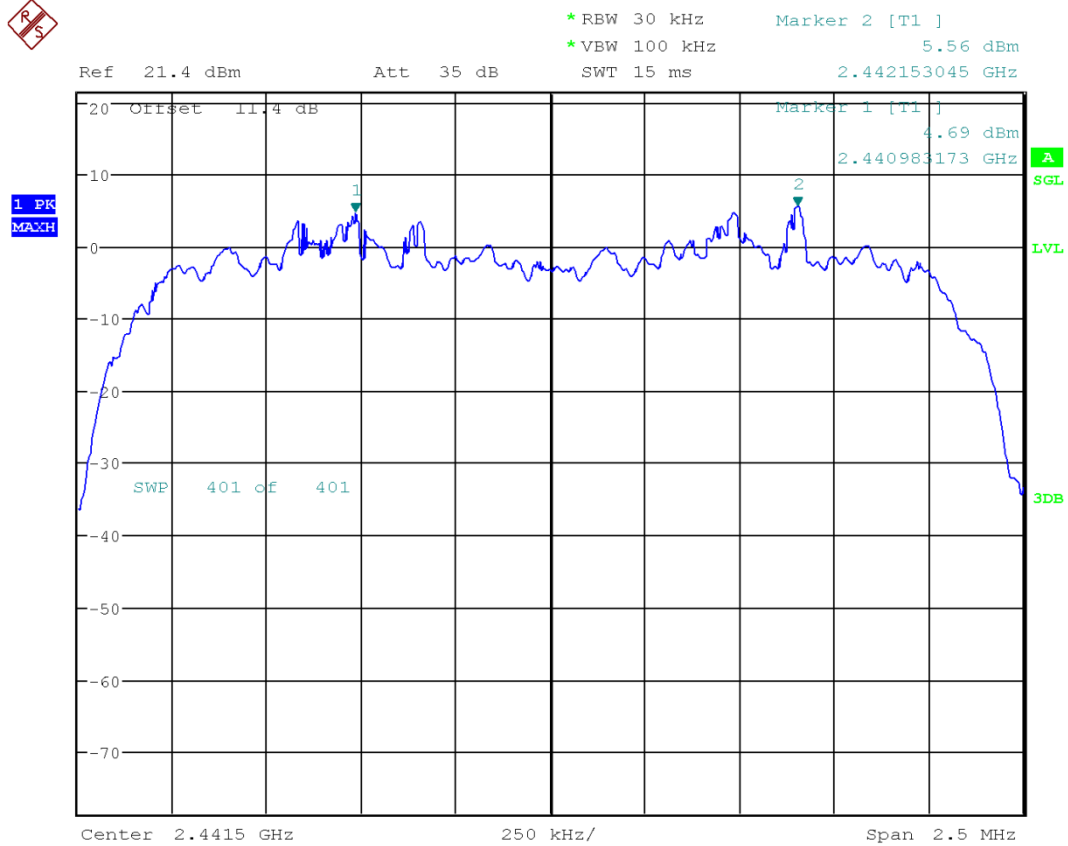
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BT2.0 DH5 CH77-78



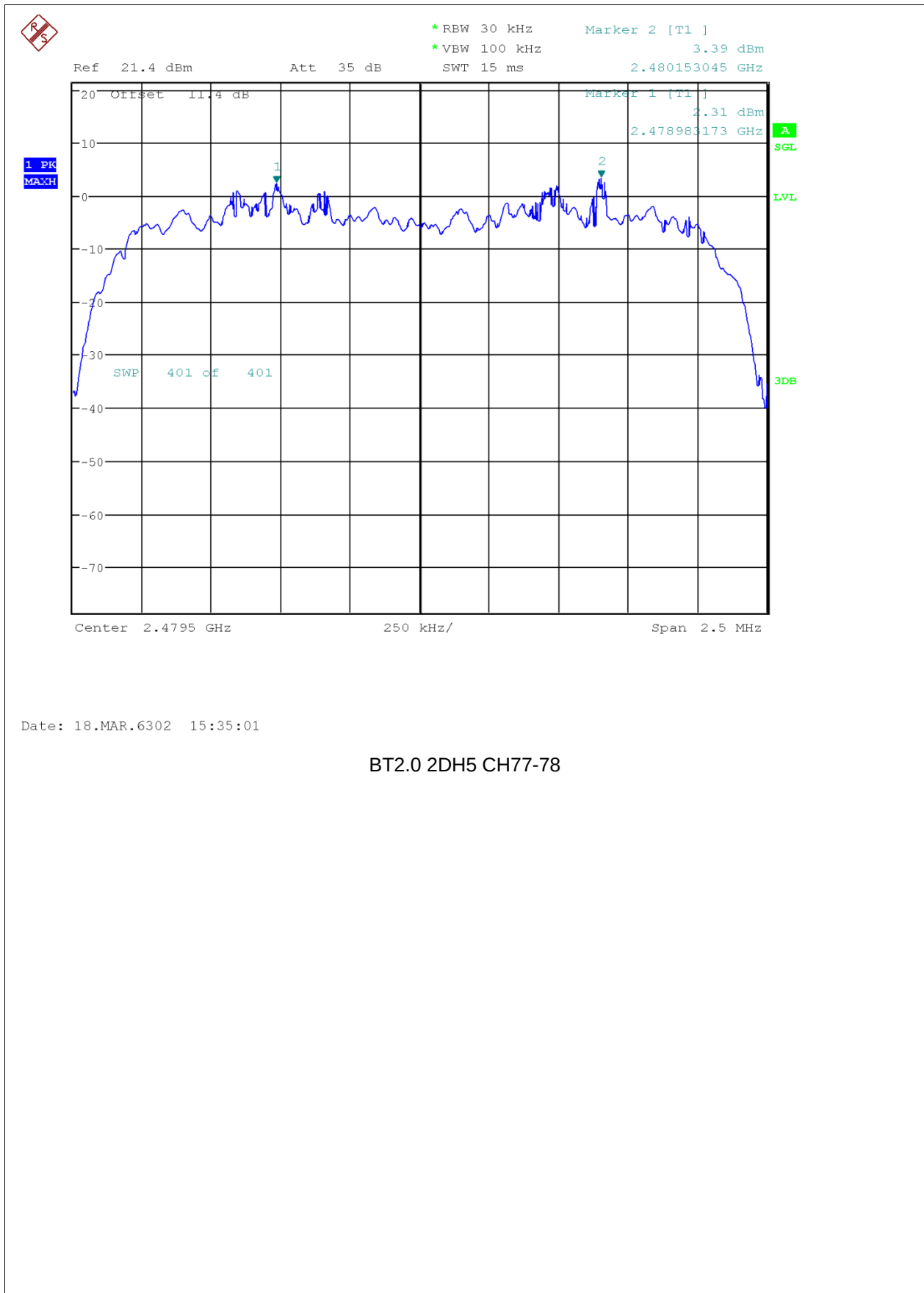
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BT2.0 2DH5 CH0-1



Date: 18.MAR.6302 15:28:42

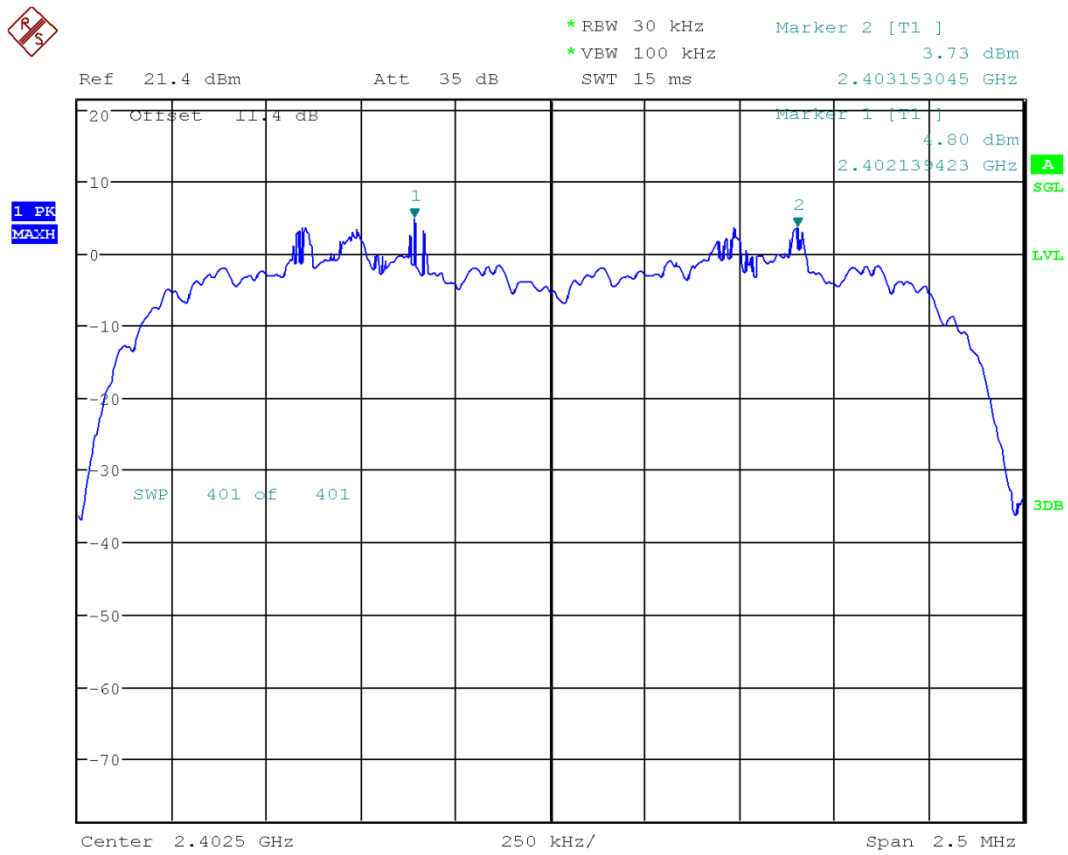
BT2.0 2DH5 CH39-40





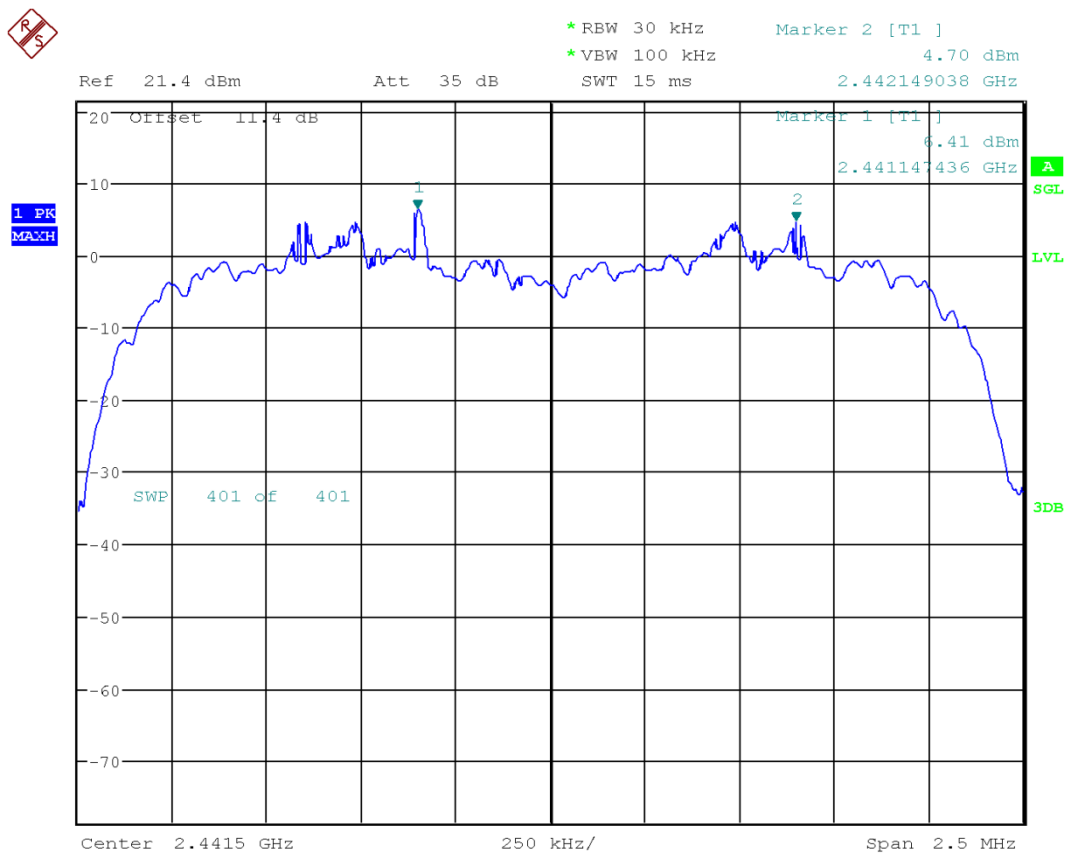
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BT2.0 3DH5 CH0-1



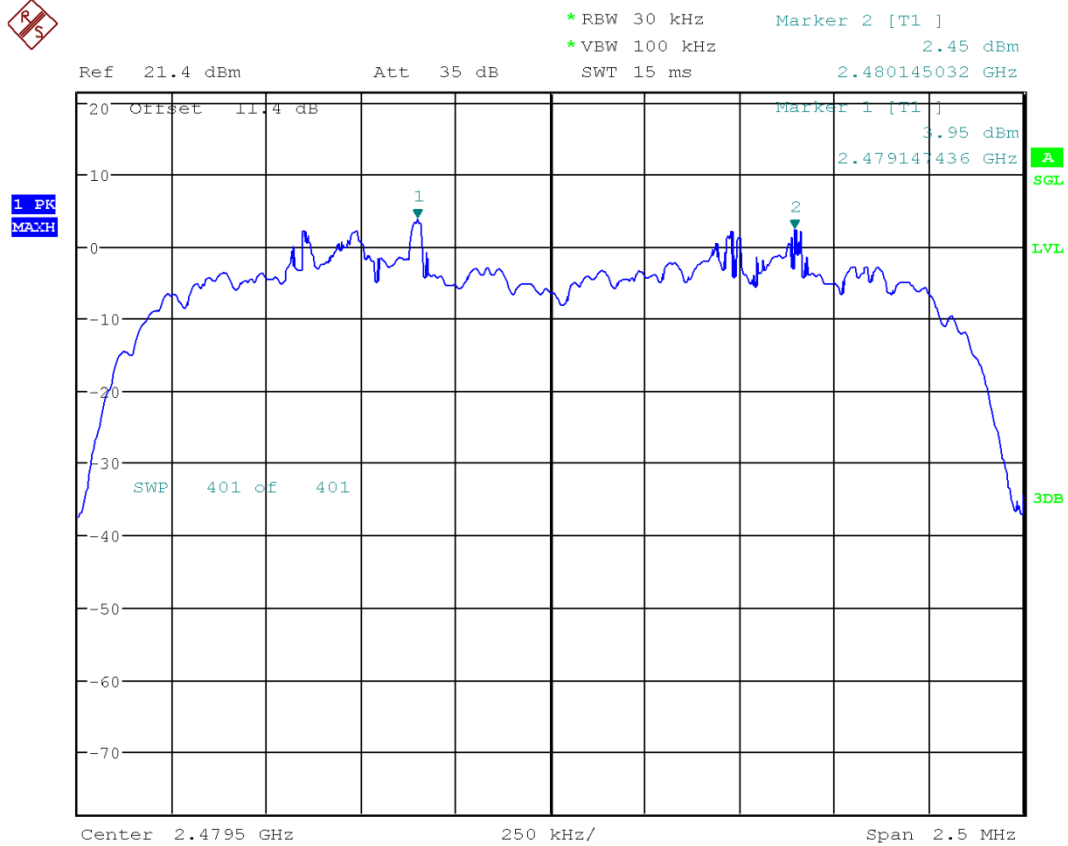
Date: 18.MAR.6302 15:29:04

BT2.0 3DH5 CH39-40



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BT2.0 3DH5 CH77-78

5.3 Dwell Time

5.3.1 Description

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

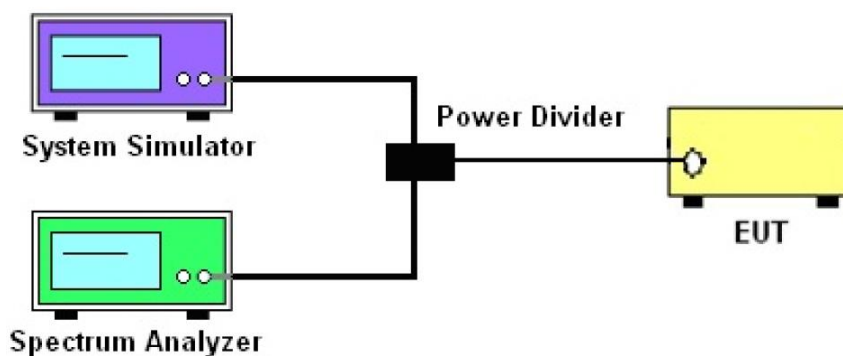
5.3.2 Test Instruments

The measuring equipment is listed in the section 4.1 of this test report.

5.3.3 Test Procedure

- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss compensated to the results for each measurement.
- Set to the maximum power setting and enable the EUT transmit continuously.
- Enable the EUT hopping function.
- Use the following spectrum analyzer setting: Span=zero span, center on a hopping channel; RBW=1MHz; VBW $\geq$ RBW; Sweep =as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
- Record the measurement the results in the test report.

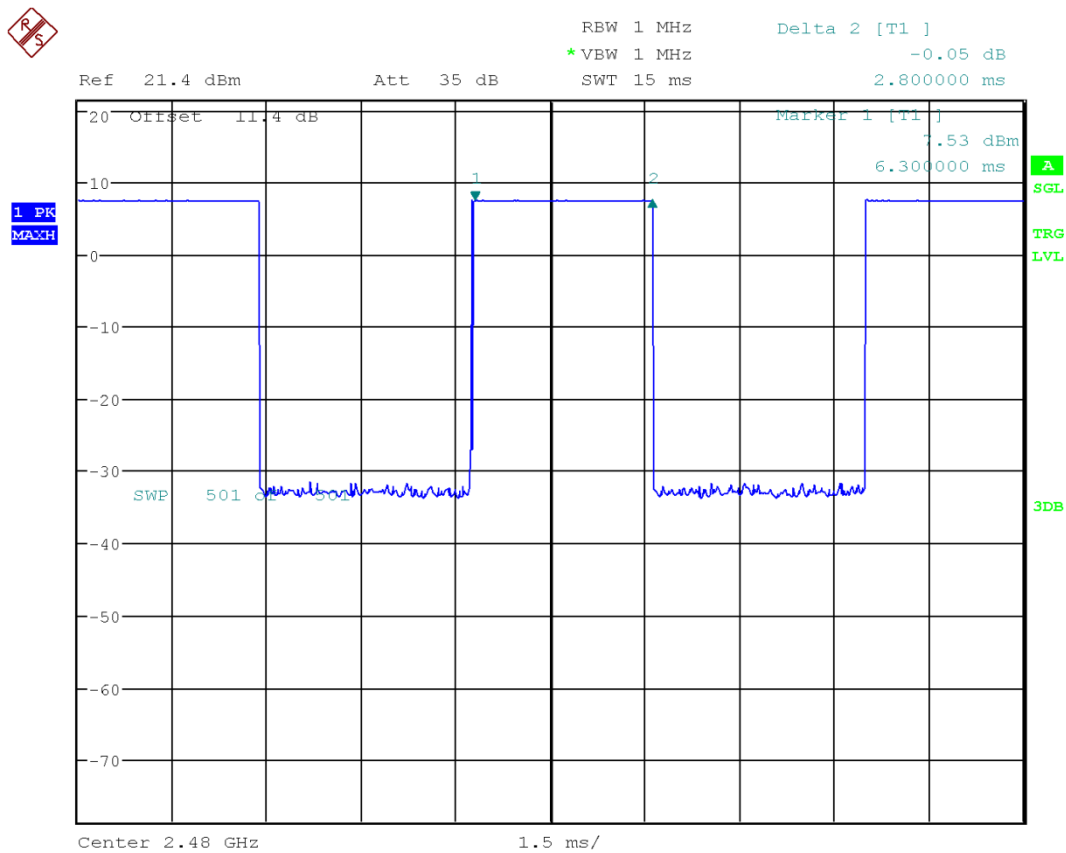
5.3.4 Test Setup





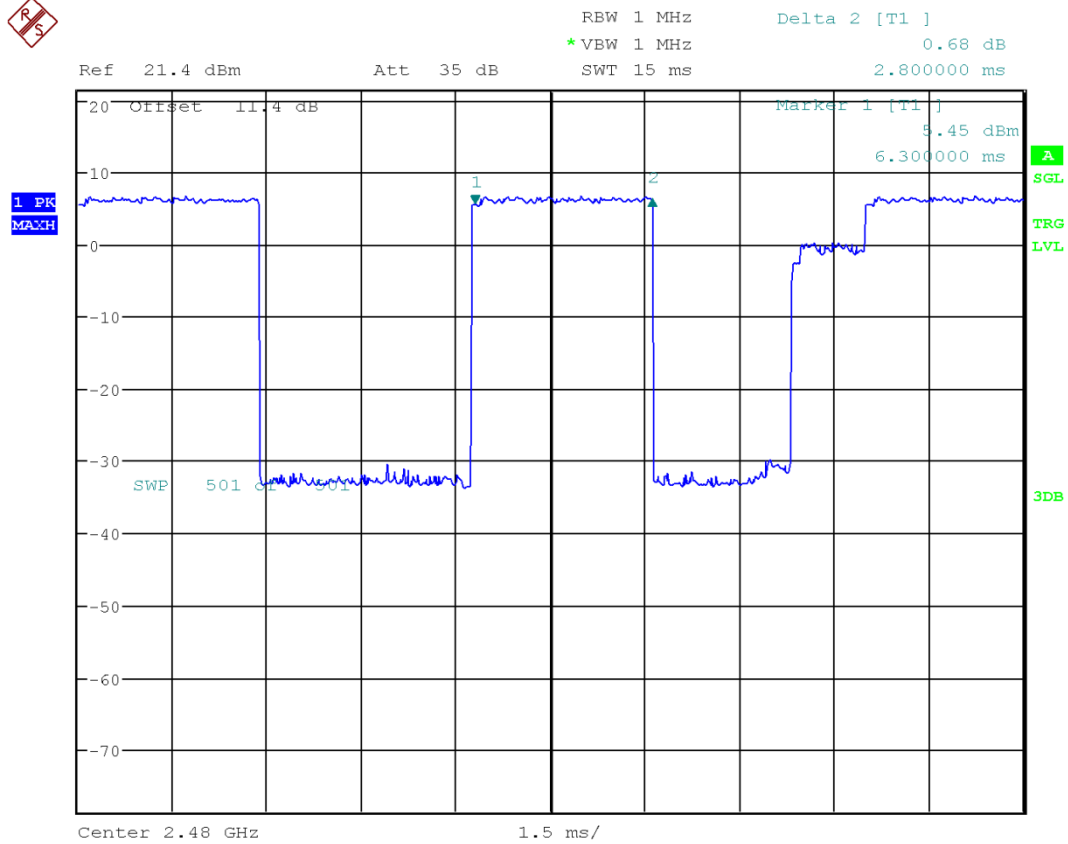
5.3.5 Test Result

MODE	Number of Hopping Channel	Hops Over Occupany Time(hops)	Package Transfer Time(ms)	Dwell Time(ms)	Limit(ms)	P/F
DH5/NOR	78	106.67	2.80	298.68	400	PASS
2DH5/NOR	78	106.67	2.80	298.68	400	PASS
3DH5/NOR	78	106.67	3.00	320.01	400	PASS



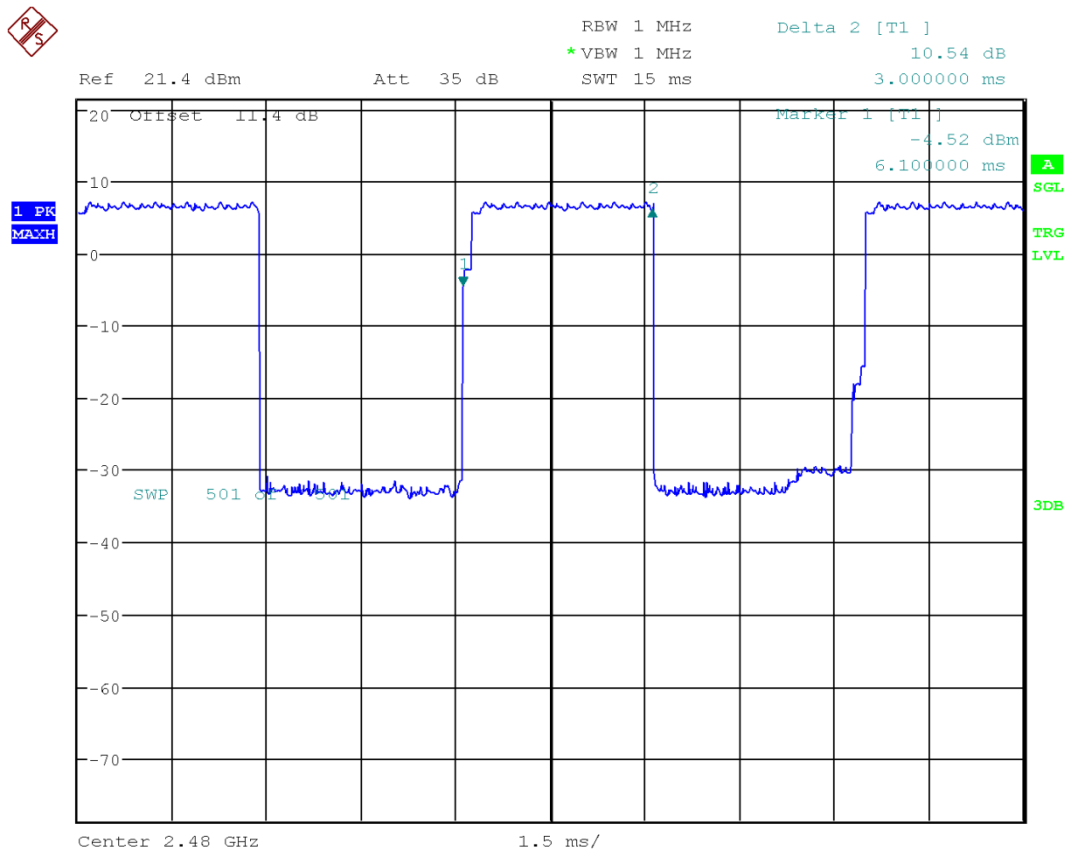
Date: 18.MAR.6302 15:19:31

BT2.0 DH5 Dwell Time



Date: 18.MAR.6302 15:55:42

BT2.0 2DH5 Dwell Time



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BT2.0 3DH5 Dwell Time

5.4 20dB and 99% Bandwidth

5.4.1 Description

Reporting only.

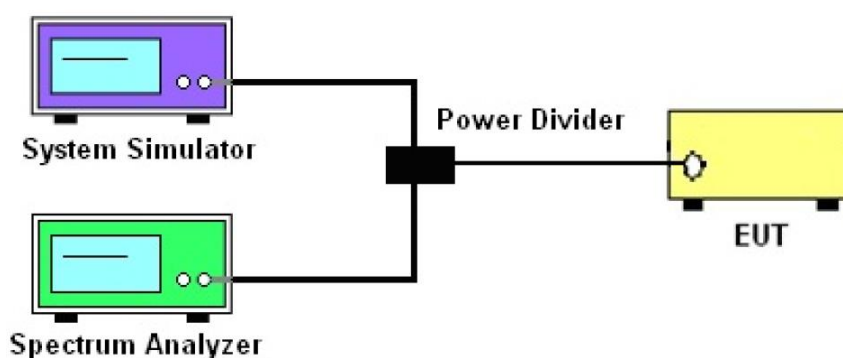
5.4.2 Test Instruments

The measuring equipment is listed in the section 4.1 of this test report.

5.4.3 Test Procedure

- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss compensated to the results for each measurement.
- Set to the maximum power setting and enable the EUT transmit continuously.
- Use the following spectrum analyzer setting for 20 dB Bandwidth: Span=approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW $\geq$ 1 % of the 20 dB bandwidth; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
- Use the following spectrum analyzer setting for 99 % Bandwidth: RBW=30kHz; VBW=100kHz; Sweep = auto; Detector function = sample; Trace = max hold.
- Record the measurement the results in the test report.

5.4.4 Test Setup





5.4.5 Test Result

DH5		
Channel	Frequency(MHz)	20dB Bandwidth(kHz)
0	2402	923.08
39	2441	897.44
78	2480	875
2DH5		
Channel	Frequency(MHz)	20dB Bandwidth(kHz)
0	2402	1288.46
39	2441	1302.88
78	2480	1298.08
3DH5		
Channel	Frequency(MHz)	20dB Bandwidth(kHz)
0	2402	1307.69
39	2441	1283.65
78	2480	1293.27

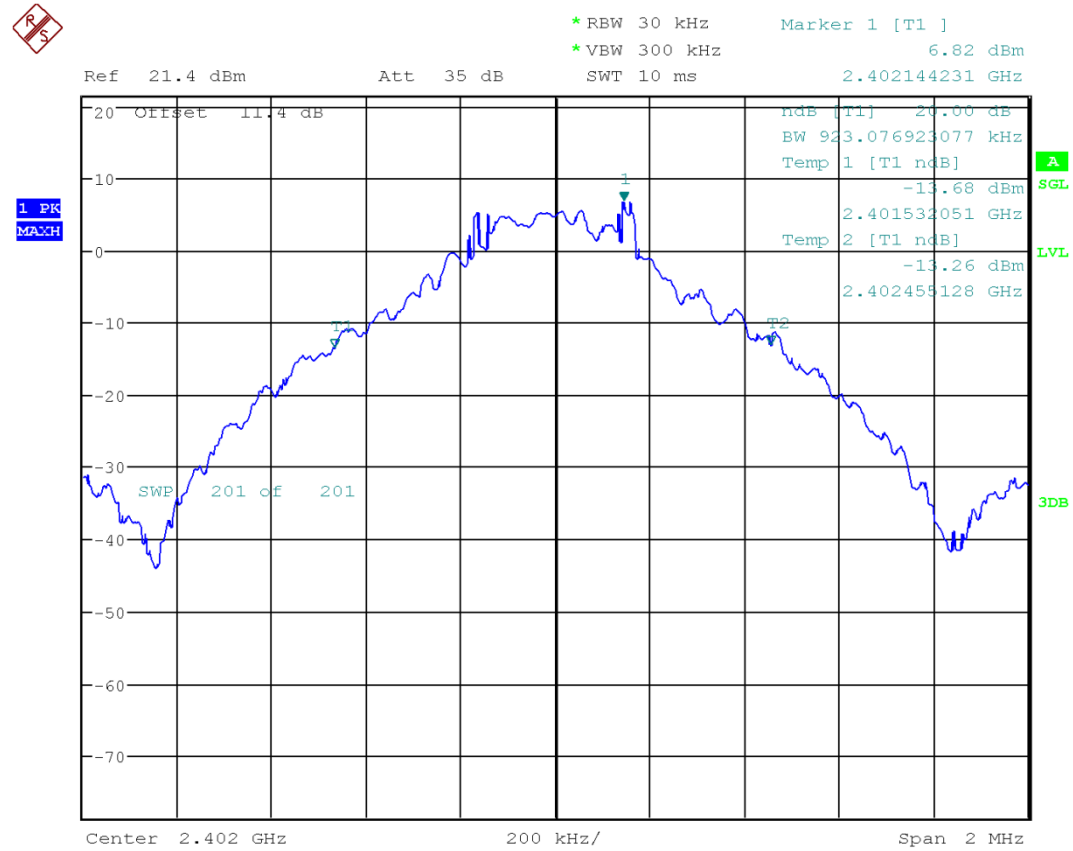
DH5		
Channel	Frequency(MHz)	OBW(kHz)
0	2402	910.26
39	2441	897.44
78	2480	897.44

2DH5		
Channel	Frequency(MHz)	OBW(kHz)
0	2402	1182.69
39	2441	1176.28
78	2480	1179.49

3DH5		
Channel	Frequency(MHz)	OBW(kHz)
0	2402	1185.9
39	2441	1185.9
78	2480	1182.69

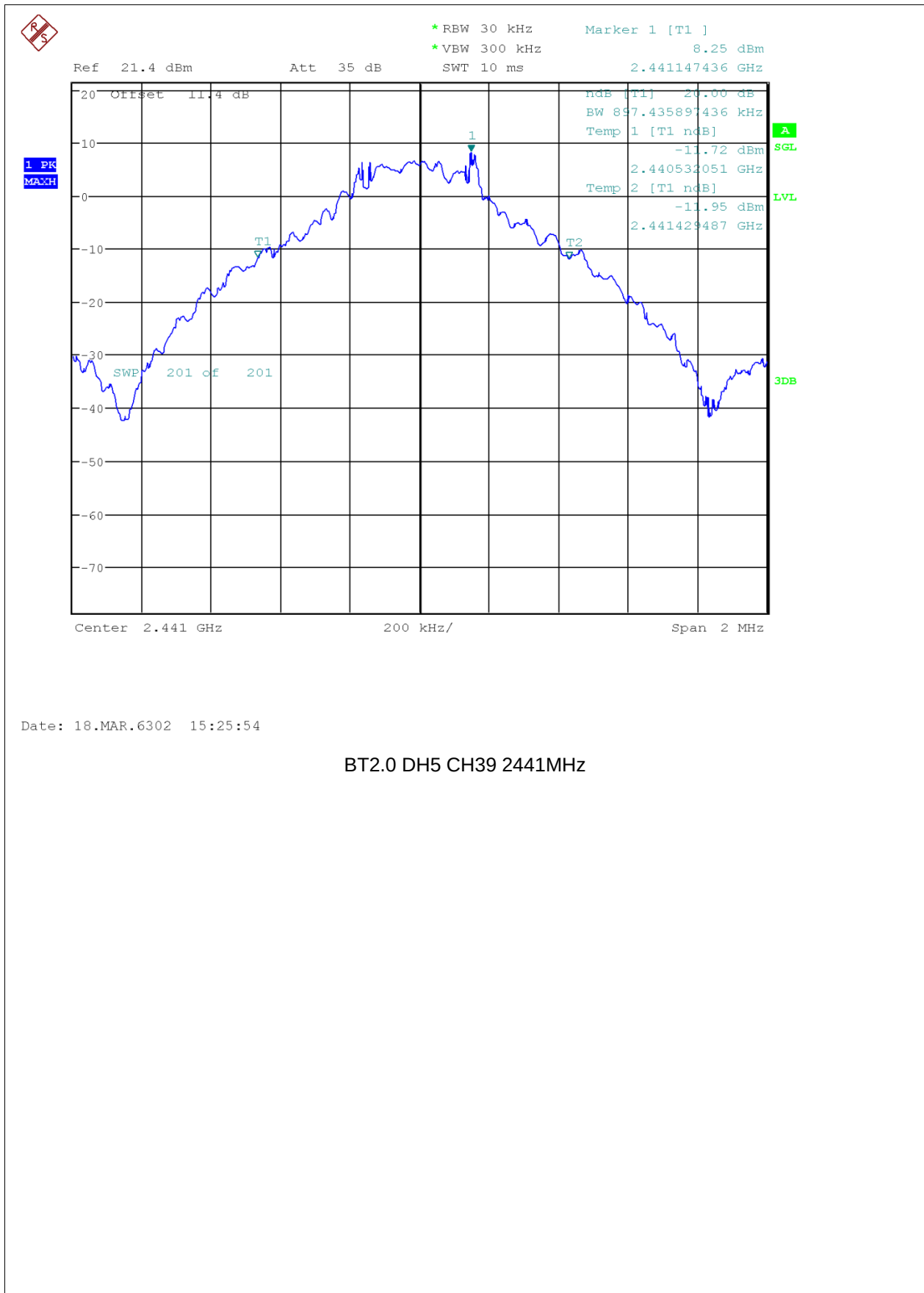


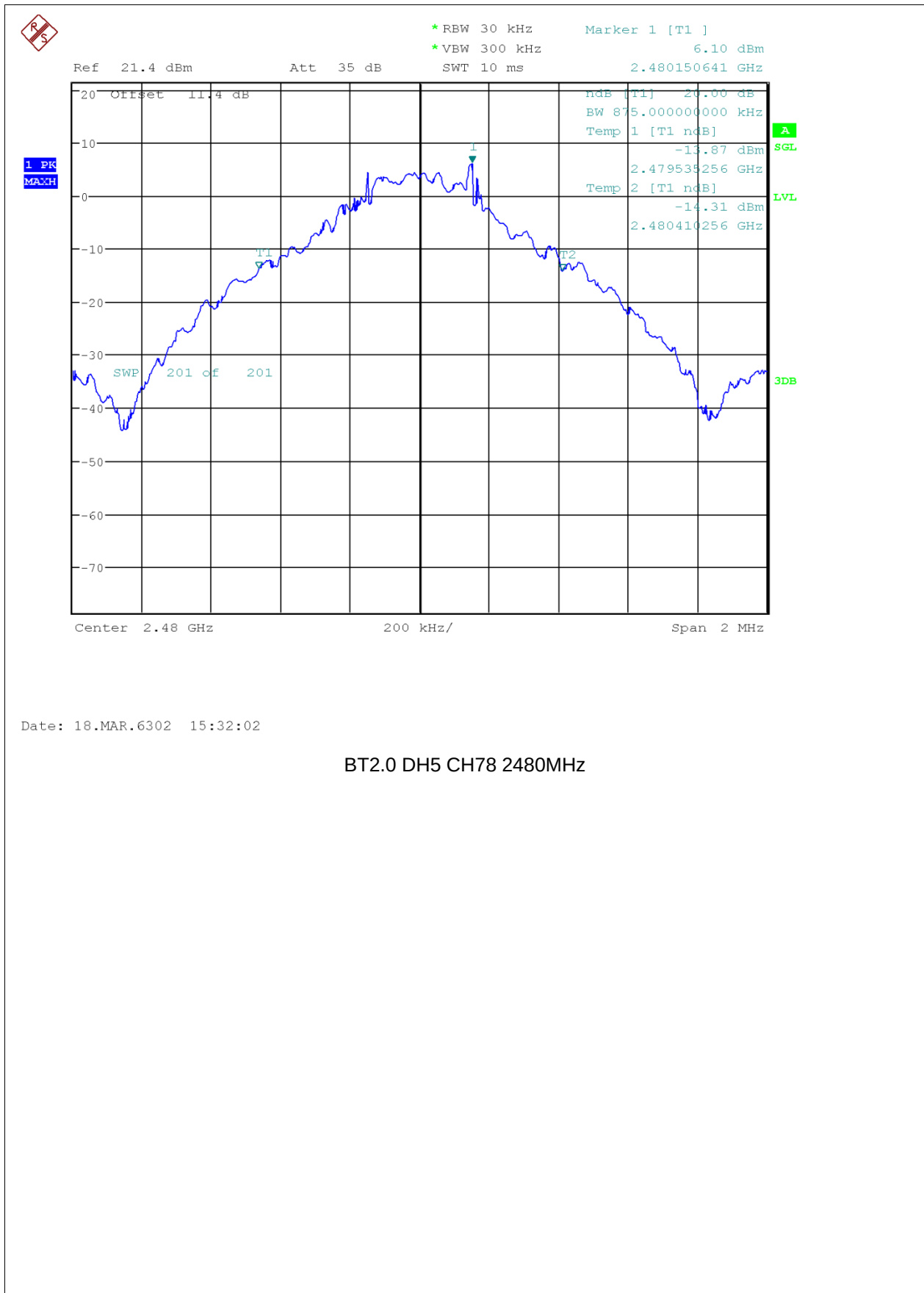
20dB Bandwidth:



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BT2.0 DH5 CH0 2402MHz







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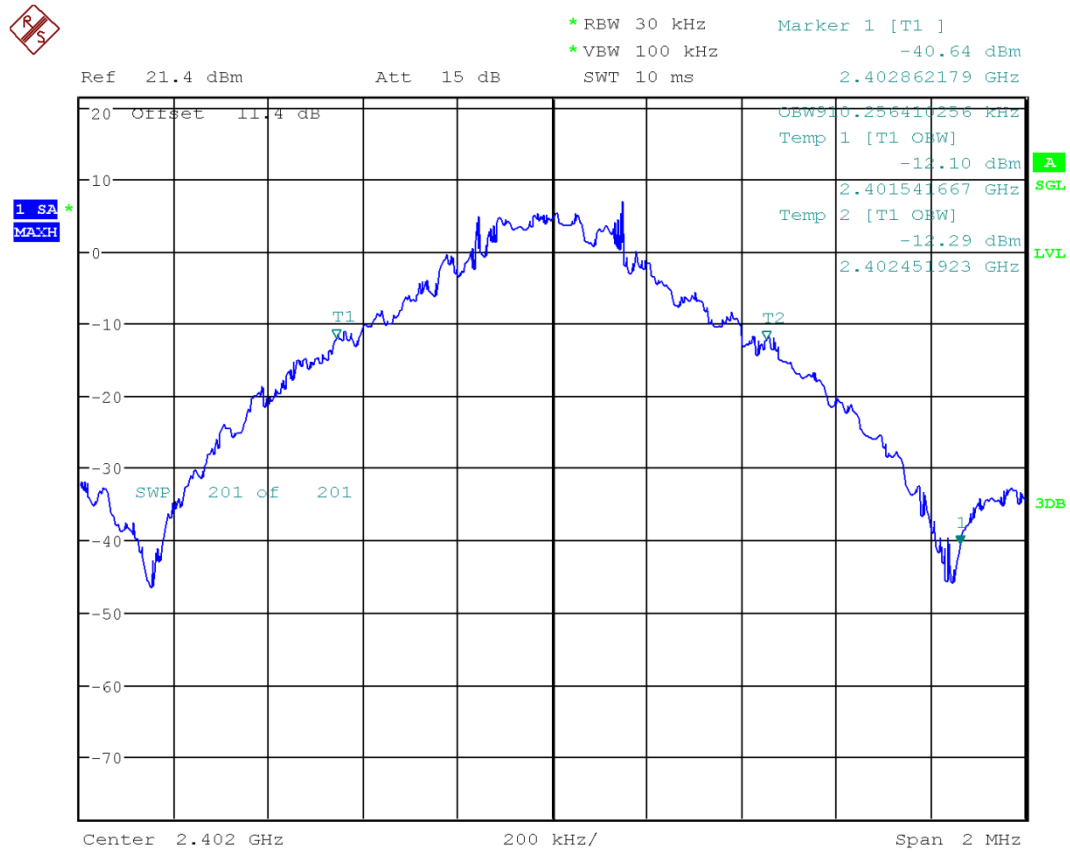






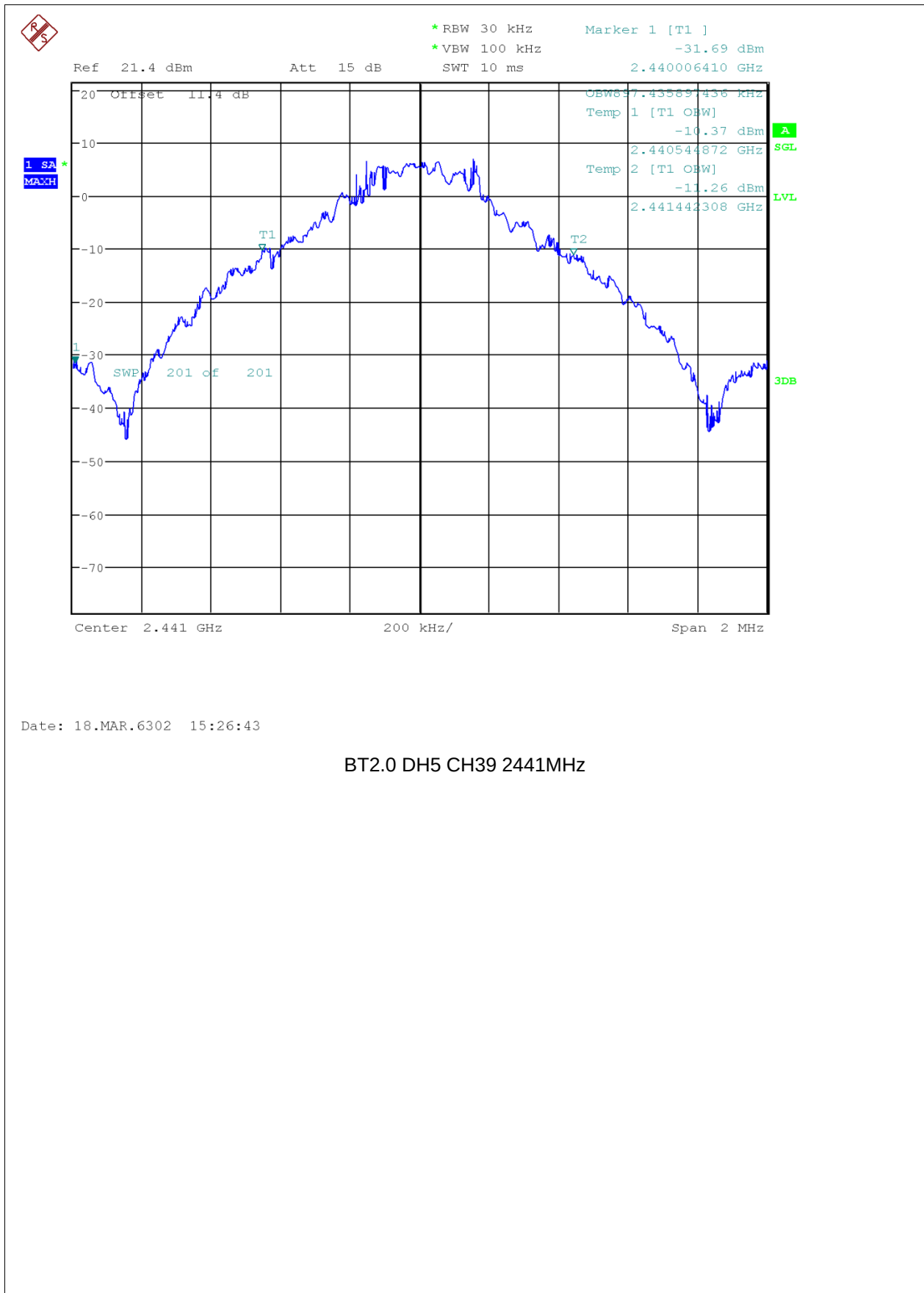


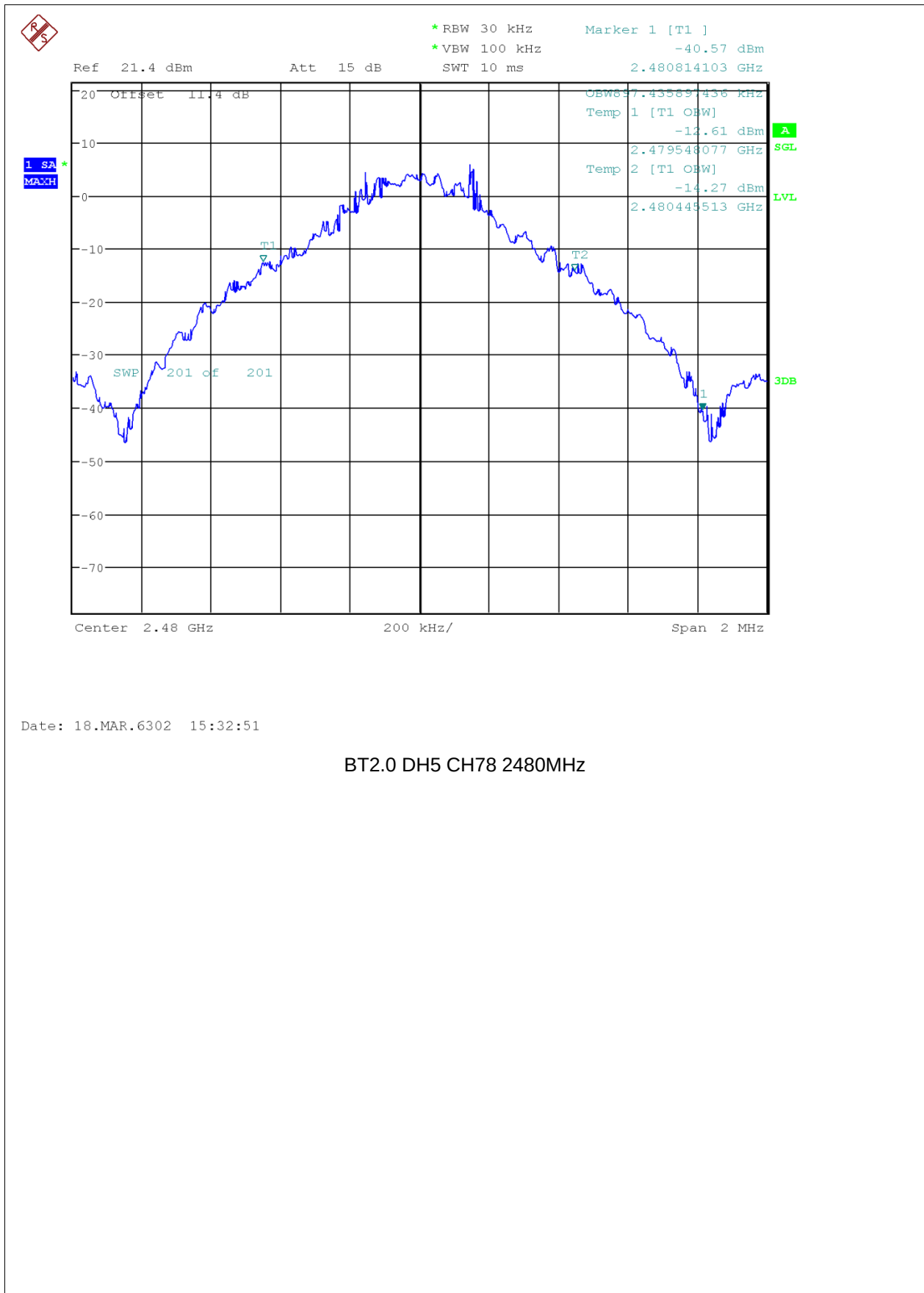
99 % Bandwidth:

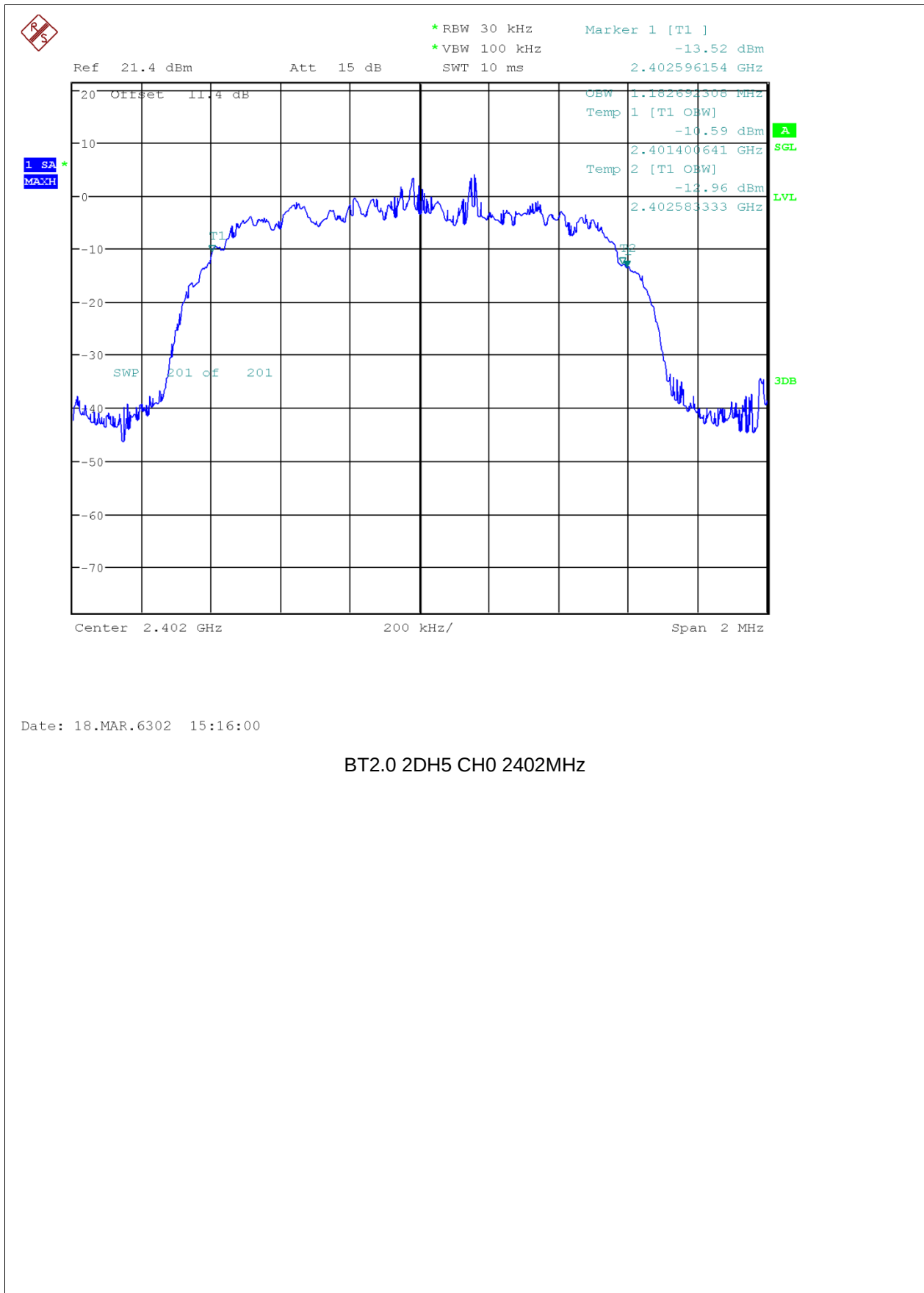


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BT2.0 DH5 CH0 2402MHz



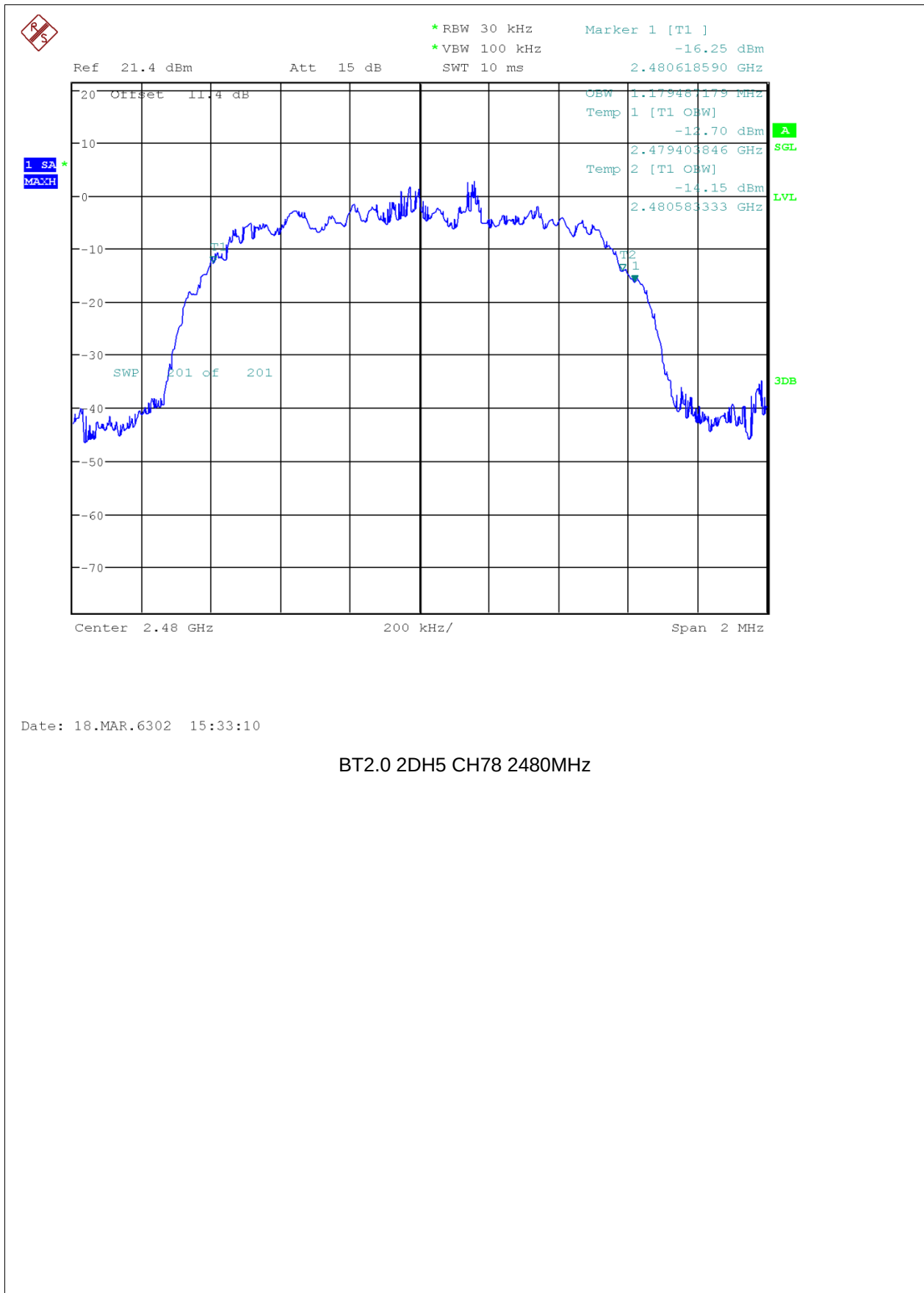




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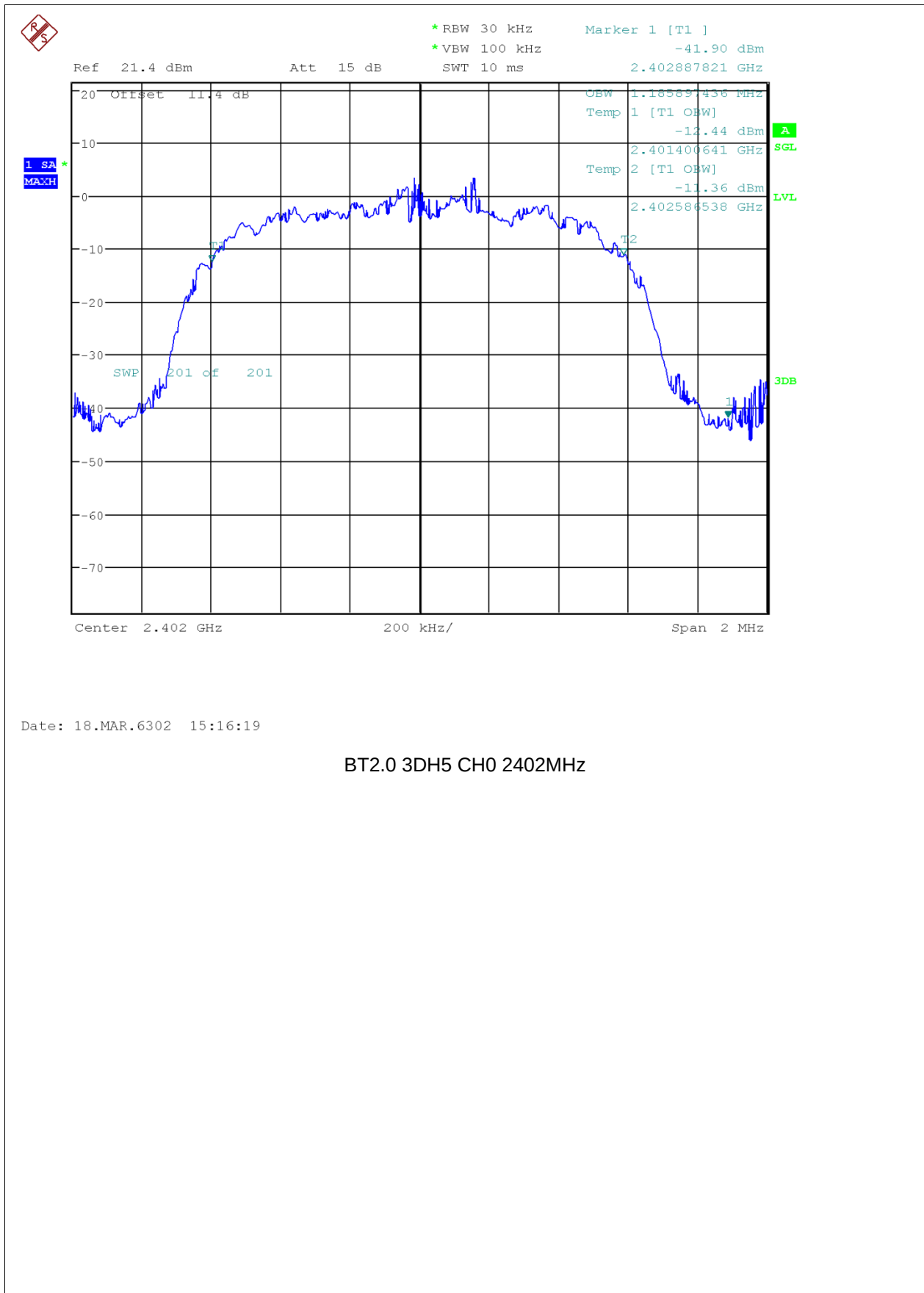
BT2.0 2DH5 CH0 2402MHz





Date: 18.MAR.6302 15:33:10

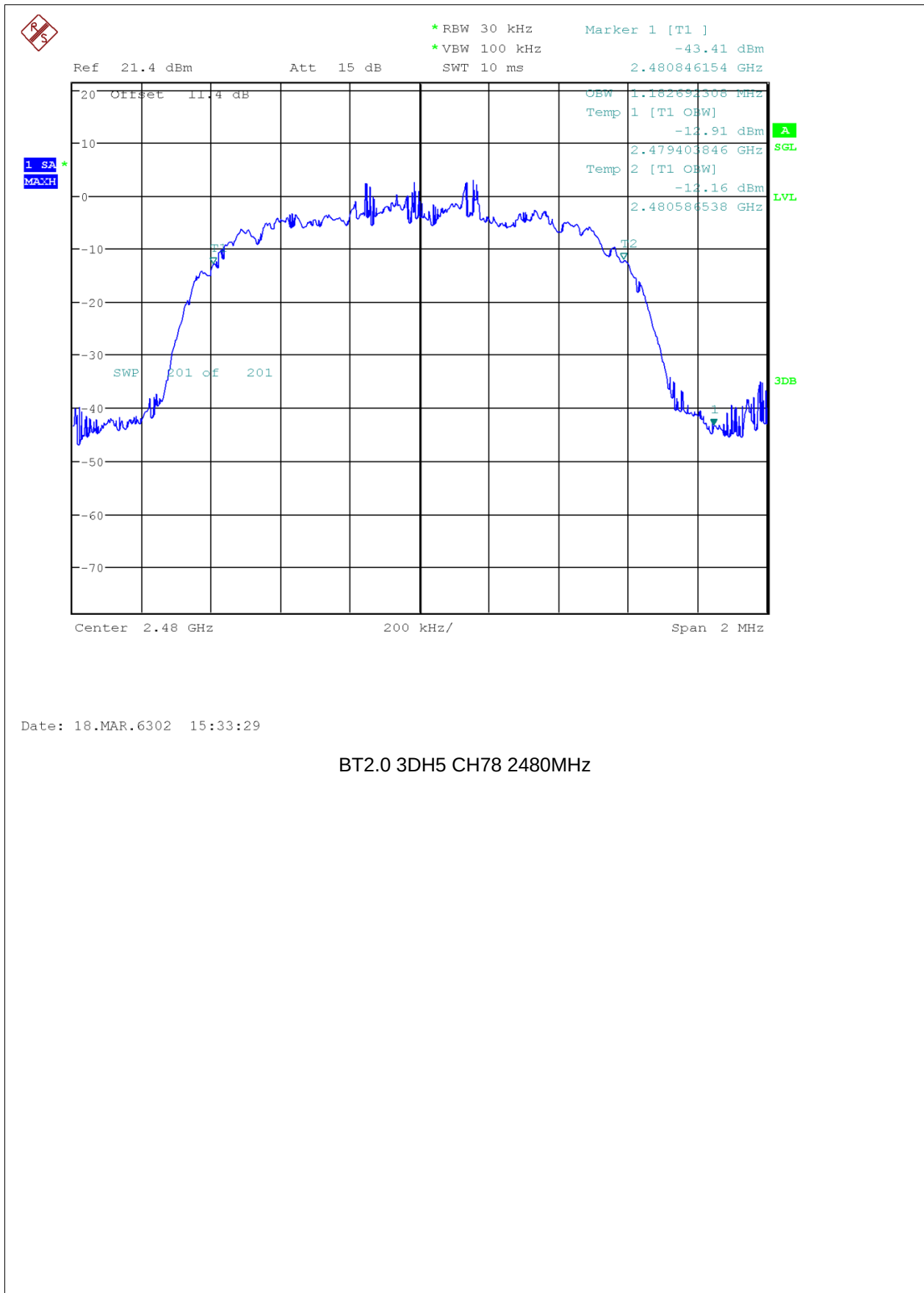
BT2.0 2DH5 CH78 2480MHz



Date: 18.MAR.6302 15:16:19

BT2.0 3DH5 CH0 2402MHz





5.5 Peak Output Power

5.5.1 Description

Section 15.247(b) The maximum peak conducted output power of the intentional radiator shall not exceed the following: (1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850MHz band:1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts.

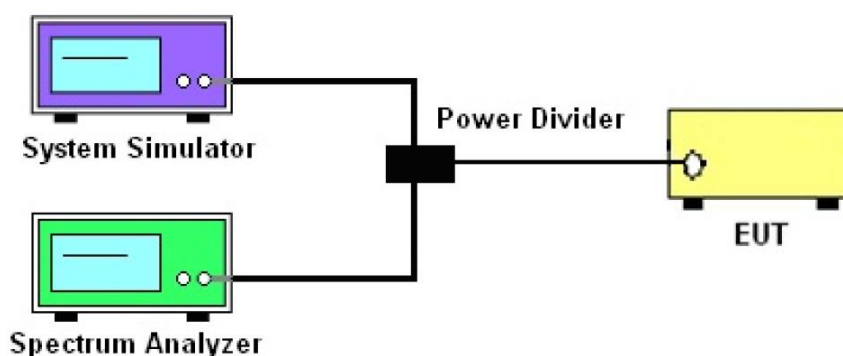
5.5.2 Test Instruments

The measuring equipment is listed in the section 4.1 of this test report.

5.5.3 Test Procedure

- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss compensated to the results for each measurement.
- Set to the maximum power setting and enable the EUT transmit continuously.
- Measure the conducted output power with cable loss and record the results in the test report.
- Record the measurement the results in the test report.

5.5.4 Test Setup





5.5.5 Test Result

DH5				
Channel	Frequency(MHz)	Power(dBm)	Limit(dBm)	P/F
0	2402	8.68	21	PASS
39	2441	9.8	21	PASS
78	2480	7.51	21	PASS

2DH5				
Channel	Frequency(MHz)	Power(dBm)	Limit(dBm)	P/F
0	2402	8.56	21	PASS
39	2441	9.64	21	PASS
78	2480	7.36	21	PASS

3DH5				
Channel	Frequency(MHz)	Power(dBm)	Limit(dBm)	P/F
0	2402	8.99	21	PASS
39	2441	10.05	21	PASS
78	2480	7.76	21	PASS