RADIO PERFORMANCE TEST REPORT

Test Report No.	**: OT-226-RWD-010**
Reception No.	**: 2204001402**
Applicant	**: EOFLOW Co.,Ltd**
Address	**: Healthcare Innovation Park #2202 Dolma-ro 172 Bundang-gu Seongnam-si Gyeonggi-do 13605, Korea**
Manufacturer	**: EOFLOW Co.,Ltd**
Address	**: Healthcare Innovation Park #2202 Dolma-ro 172 Bundang-gu Seongnam-si Gyeonggi-do 13605, Korea**
Type of Equipment	**: Insulin infusion pump**
FCC ID.	**: 2AUGS-IDU200**
Model Name	**: IDU200K**
Multiple Model Name	**: N/A**
Serial number	**: N/A**
Total page of Report	**: 48 pages (including this page)**
Date of Incoming	**: May 02, 2022**
Date of issue	**: June 07, 2022**

SUMMARY

The equipment complies with the regulation; ***FCC PART 15 SUBPART C Section 15.247***

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

This report is not correlated with the "KS Q ISO/IEC 17025 and KOLAS accreditation" of Korean Laboratory Accreditation Scheme.

Tested by	Reviewed by	Approved by
/ Soon-Ki, Choi / Engineer	/ Tae-Ho, Kim / General Manager	/ Ki-Hong, Nam / General Manager
ONETECH Corp.	ONETECH Corp.	ONETECH Corp.

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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-226-RWD-010	June 07, 2022	Initial Release	All

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1. VERIFICATION OF COMPLIANCE

Applicant : EOFLOW Co.,Ltd
Address : Healthcare Innovation Park #2202 Dolma-ro 172 Bundang-gu Seongnam-si Gyeonggi-do 13605, Korea
Contact Person : Junghoon Park / Manager
Telephone No. : +82-31-724-0338
FCC ID : 2AUGS-IDU200
Model Name : IDU200K
Brand Name : N/A
Serial Number : N/A
Date : June 07, 2022

EQUIPMENT CLASS	DTS – DIGITAL TRNSMISSION SYSTEM
E.U.T. DESCRIPTION	Insulin infusion pump
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2013
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.247 KDB 558074 D01 15.247 Meas Guidance v05r02
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	3 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.247 (a) (2)	Minimum 6 dB Bandwidth	Met the Limit / PASS
15.247 (b) (3)	Maximum Peak Conducted Output Power	Met the Limit / PASS
15.247 (d)	100 kHz Bandwidth Outside the Frequency Band	Met the Limit / PASS
15.247 (d)	Radiated Emission which fall in the Restricted Band	Met the Limit / PASS
15.247 (e)	Peak Power Spectral Density	Met the Limit / PASS
15.209	Radiated Emission Limits	Met the Limit / PASS
15.207	Conducted Limits	Met the Limit / PASS
15.203	Antenna Requirement	Met requirement / PASS

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC PART 15 SUBPART C Section 15.247.

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2013. Radiated testing was performed at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-20122/ C-14617/ G-10666/ T-11842

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

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3. GENERAL INFORMATION

3.1 Product Description

The EOFLOW Co.,Ltd, Model IDU200K (referred to as the EUT in this report) is a Insulin infusion pump. The product specification described herein was obtained from product data sheet or user's manual.

Device Type	Insulin infusion pump		
Operating Frequency	2 402 MHz ~ 2 480 MHz		
RF Output Power	Bluetooth LE	1 Mbps	0.54 dBm
		2 Mbps	0.57 dBm
Number of Channel	40 Channels		
Modulation Type	GFSK		
Antenna Type	PCB Antenna (Patch)		
Antenna Gain	2.53 dBi		
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	32 MHz		
Rated Supply Voltage	DC 3.0 V		

3.2 Alternative type(s)/model(s); also covered by this test report.

-. None

4. EUT MODIFICATIONS

-. None

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5. SYSTEM TEST CONFIGURATION

5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	EOFLOW Co.,Ltd	N/A	N/A
Battery	EOFLOW Co.,Ltd	N/A	N/A

5.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	Description	Connected to
IDU200K	EOFLOW Co.,Ltd	Insulin infusion pump (EUT)	
HP Probook	HP	Notebook PC	EUT
PPP009L-E	LIE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	AC Adapter	Notebook PC

5.3 Mode of operation during the test

For the testing, software used to control the EUT for staying in continuous transmitting is programmed.

For final testing, the EUT was set at 2 402 MHz, 2 440 MHz, and 2 480 MHz to get a maximum emission levels from the EUT. The EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis, but the worst data was recorded in this report.

-. Frequency / Channel Operations

Channel	Frequency
0	2 402
19	2 440
39	2 480

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-. Duty Cycle

Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
Bluetooth LE 1 Mbps	0.3910	0.2346	62.50	2.04
Bluetooth LE 2 Mbps	0.2074	0.4182	33.15	4.79

Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) * 100

Correction Factor : 10 * Log(1 / (Duty Cycle / 100))

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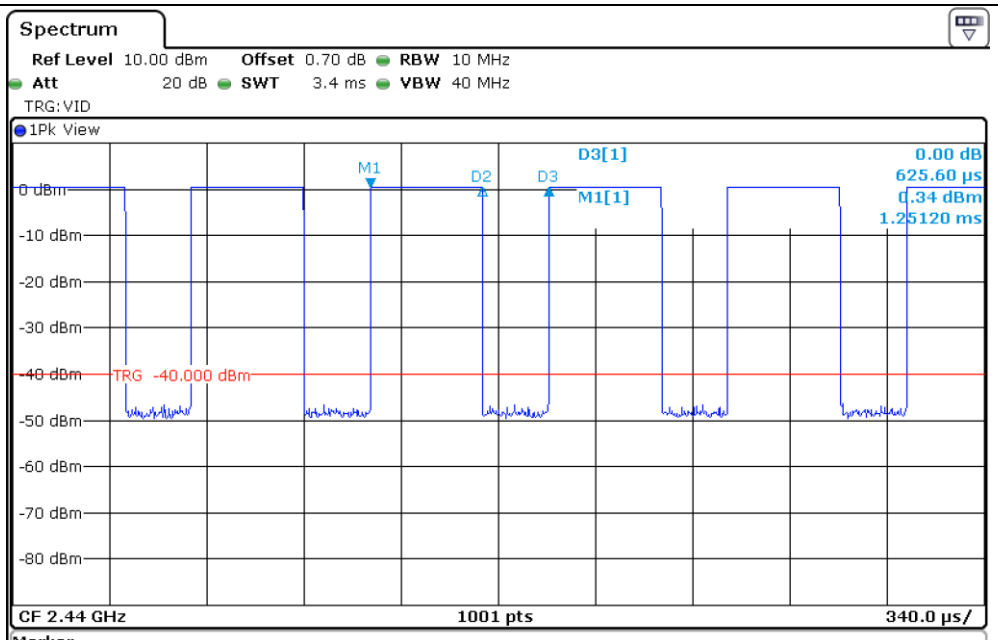
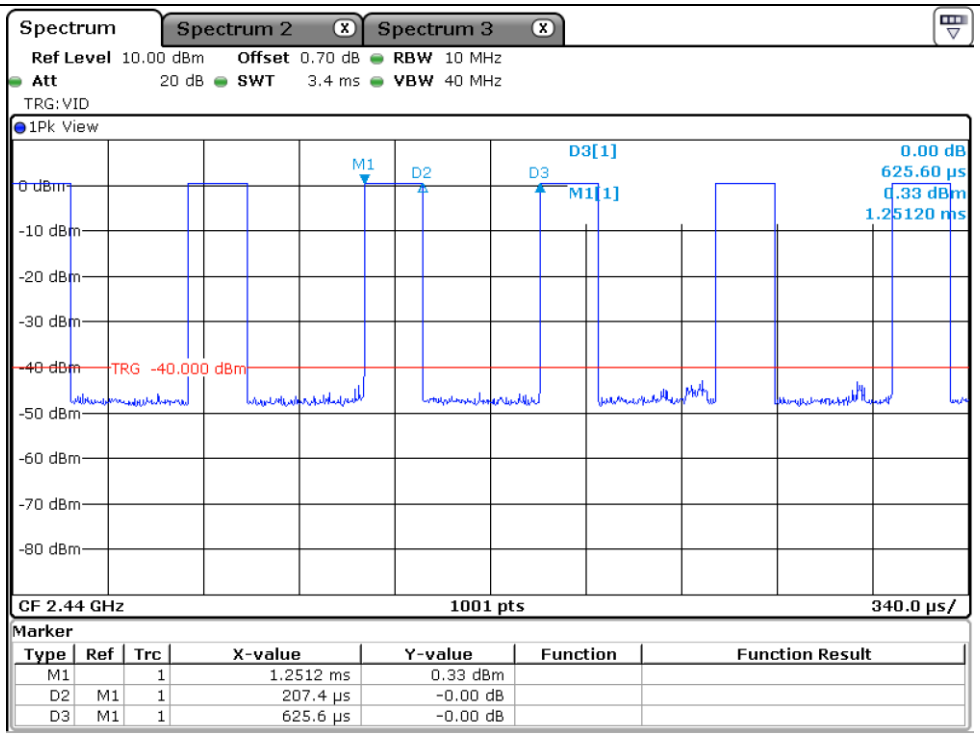
-. Test Plot



Bluetooth LE 1 Mbps



Bluetooth LE 2 Mbps

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5.4 Configuration of Test System

Line Conducted Test: The EUT was tested in the Transmitting mode. All supporting equipment were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter Semi Anechoic Chamber.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

5.5 Antenna Requirement

For intentional device, according to section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Construction:

The antenna of the EUT is a PCB Antenna on the main board in the EUT, so no consideration of replacement by the user.

6. PRELIMINARY TEST

6.1 AC Power line Conducted Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

6.2 General Radiated Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

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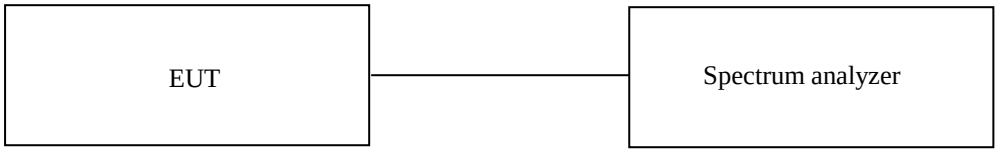
7. MINIMUM 6 dB BANDWIDTH

7.1 Operating environment

Temperature	:	22 °C
Relative humidity	:	46 % R.H.

7.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, and peak detection was used. The 6 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 6 dB.



7.3 Test Date

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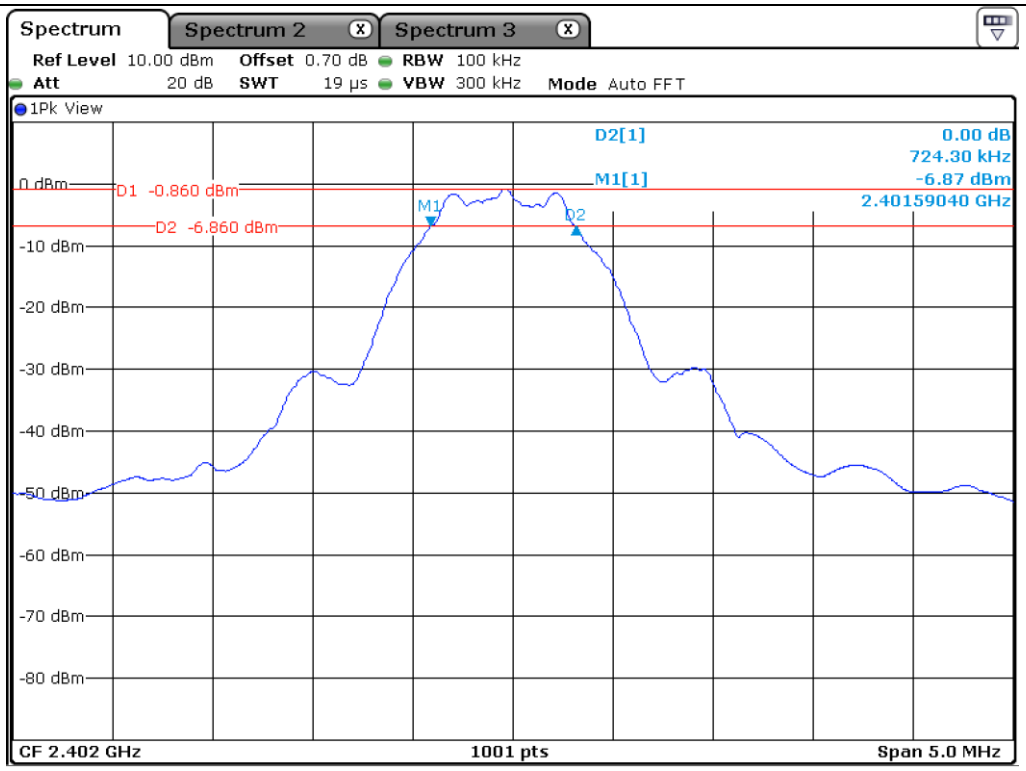
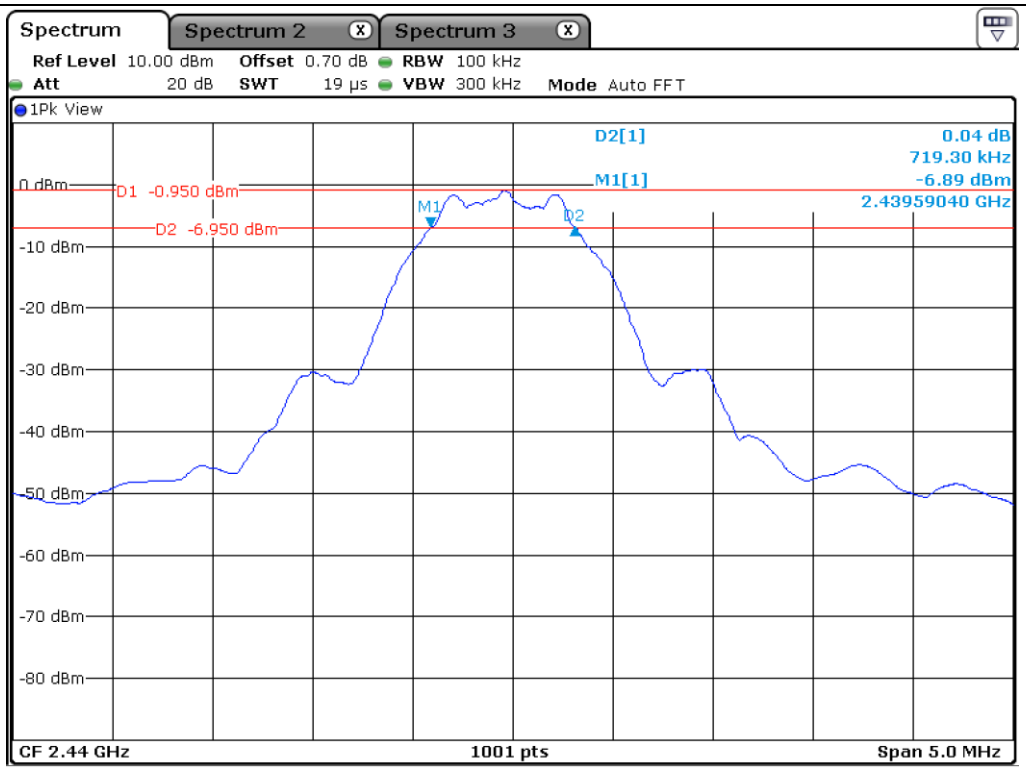
7.4 Test data for Bluetooth LE 1 Mbps

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (kHz)	LIMIT (kHz)	MARGIN (kHz)
Low	2 402.00	724.30	500.00	224.30
Middle	2 440.00	719.30	500.00	219.30
High	2 480.00	729.30	500.00	229.30

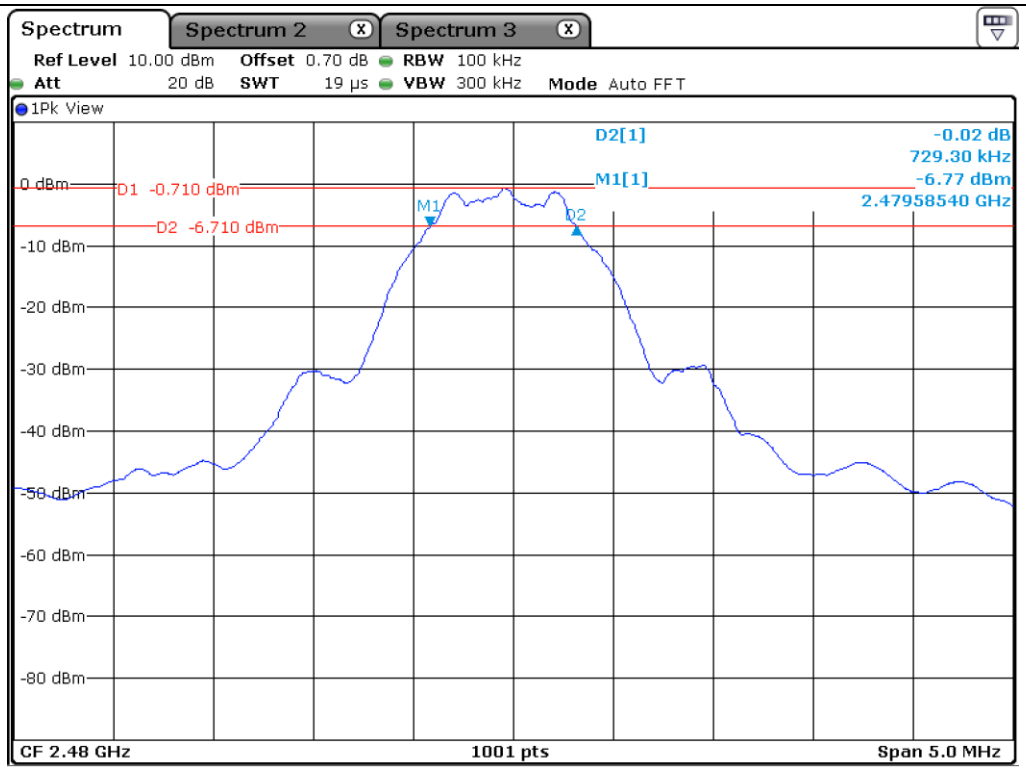
Remark. Margin = Measured Value - Limit



Low Channel



Middle Channel



High Channel

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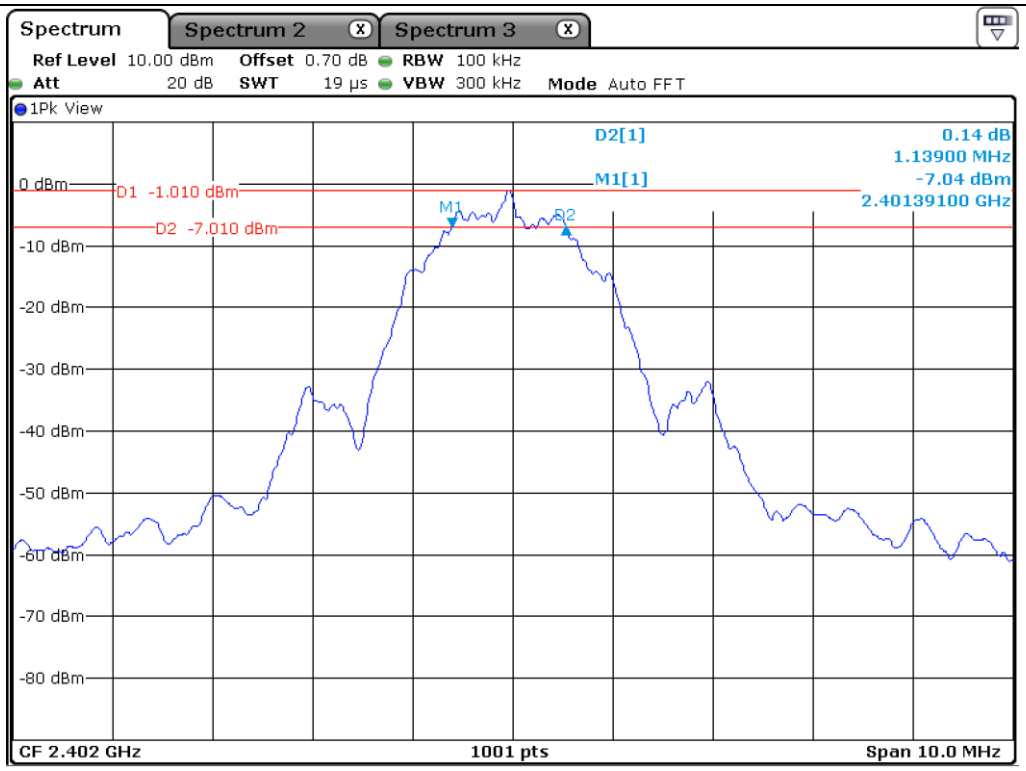
7.5 Test data for Bluetooth LE 2 Mbps

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (kHz)	LIMIT (kHz)	MARGIN (kHz)
Low	2 402.00	1 139.00	500.00	639.00
Middle	2 440.00	1 139.00	500.00	639.00
High	2 480.00	1 139.00	500.00	639.00

Remark. Margin = Measured Value - Limit



Low Channel

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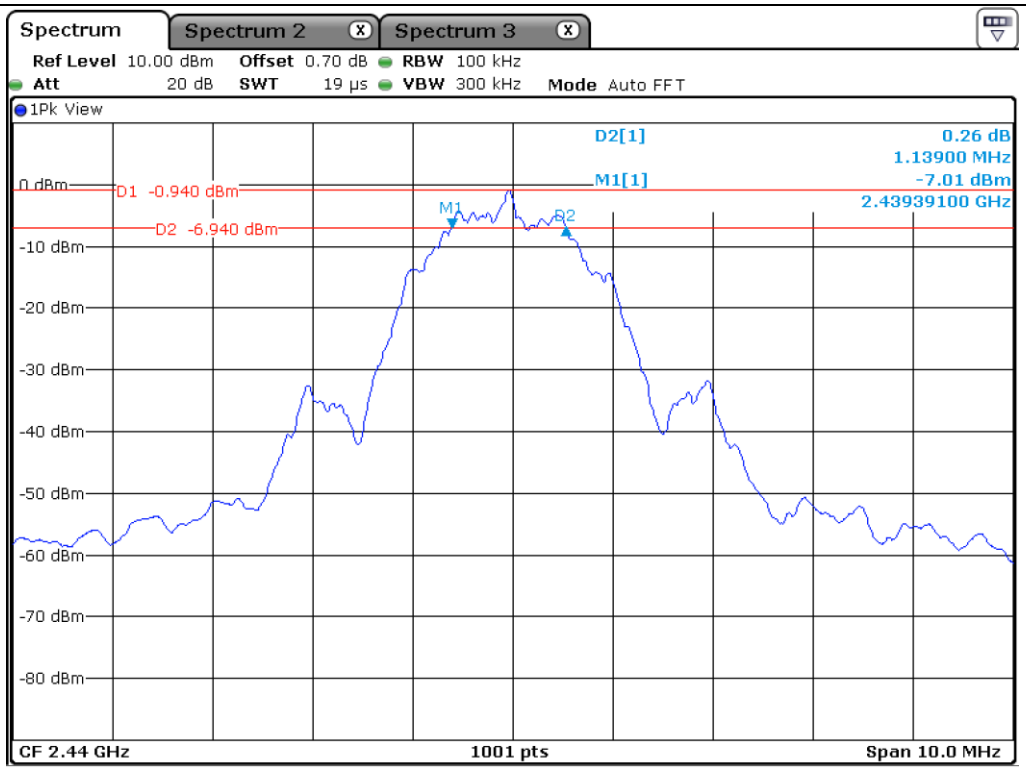
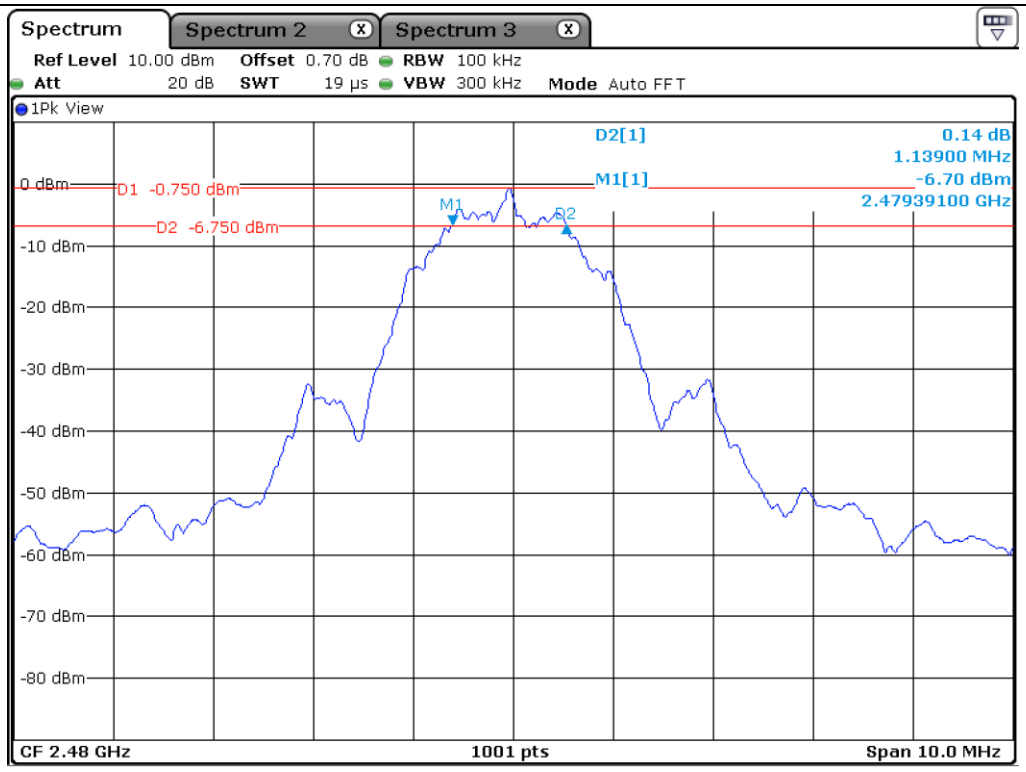


Middle Channel



High Channel

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8. MAXIMUM PEAK OUTPUT POWER

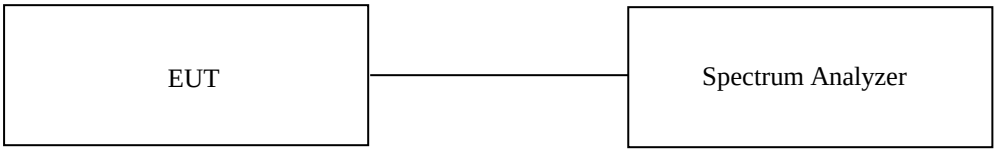
8.1 Operating environment

Temperature	:	22 °C
Relative humidity	:	46 % R.H.

8.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to ≥ DTS Bandwidth, the video bandwidth is set to 3 times the resolution bandwidth.



8.3 Test Date

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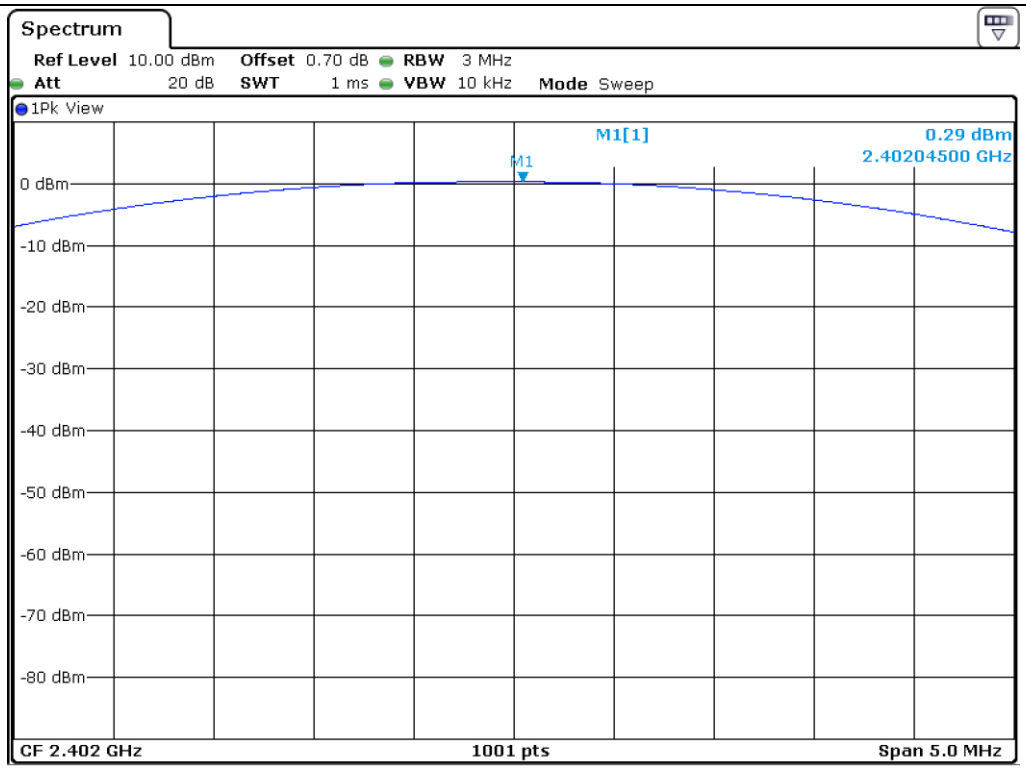
8.4 Test data for Bluetooth LE 1 Mbps

-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 402.00	0.29	30.00	29.71
MIDDLE	2 440.00	0.38	30.00	29.62
HIGH	2 480.00	0.54	30.00	29.46

Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)



Low Channel

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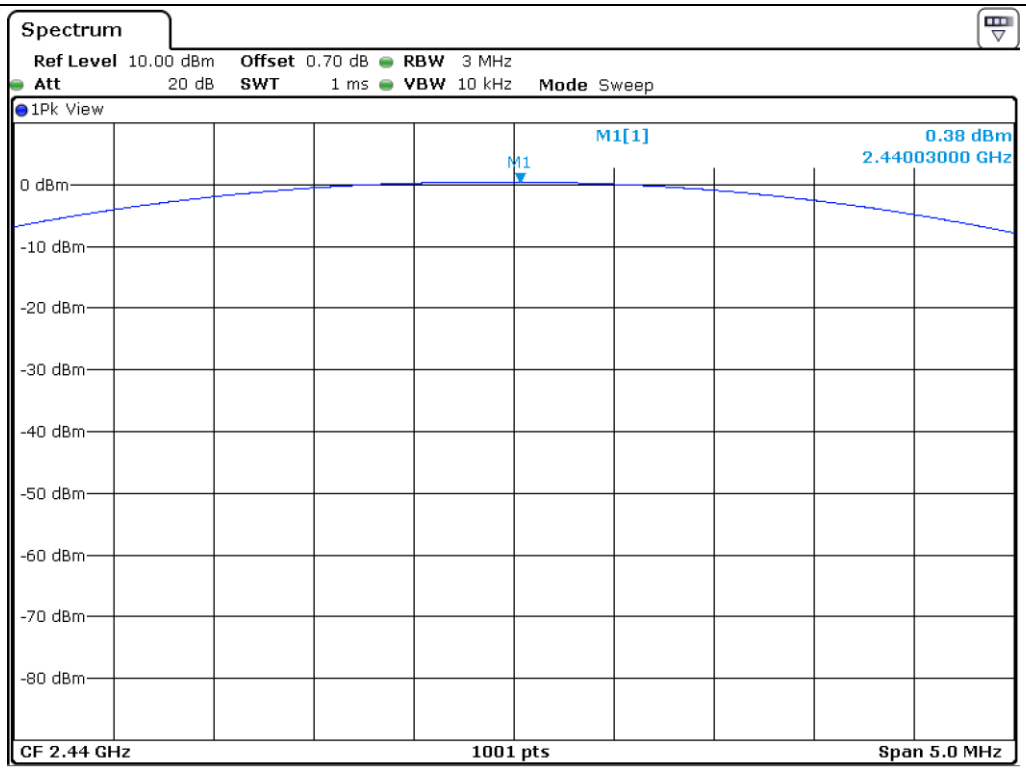
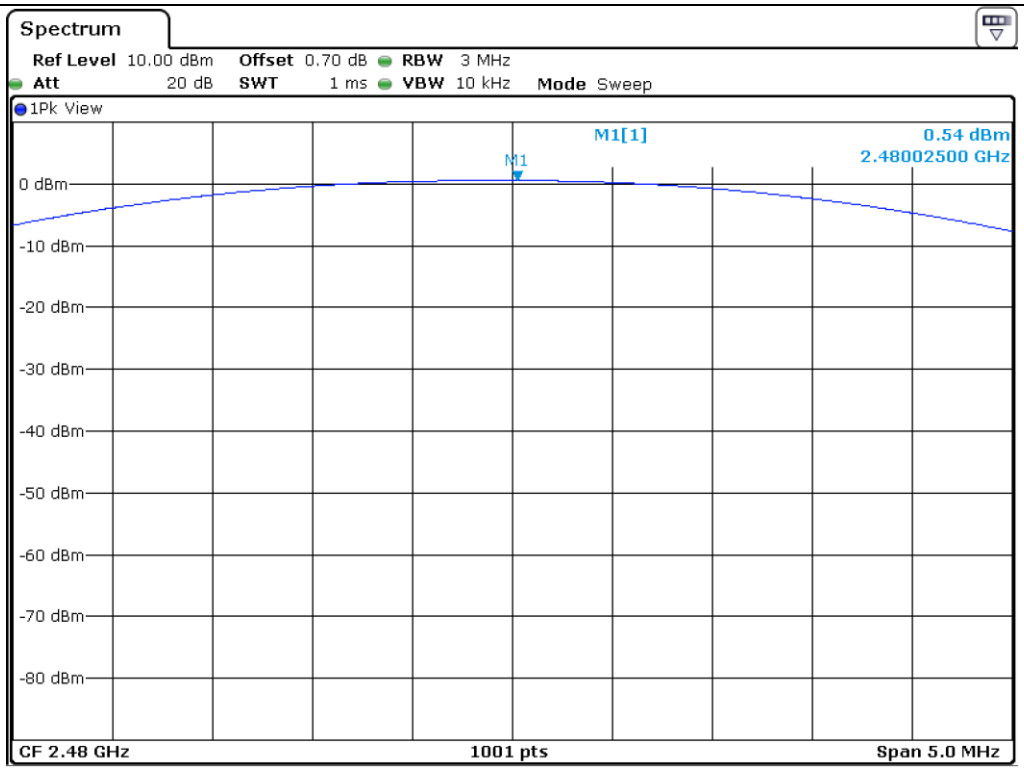


Middle Channel



High Channel

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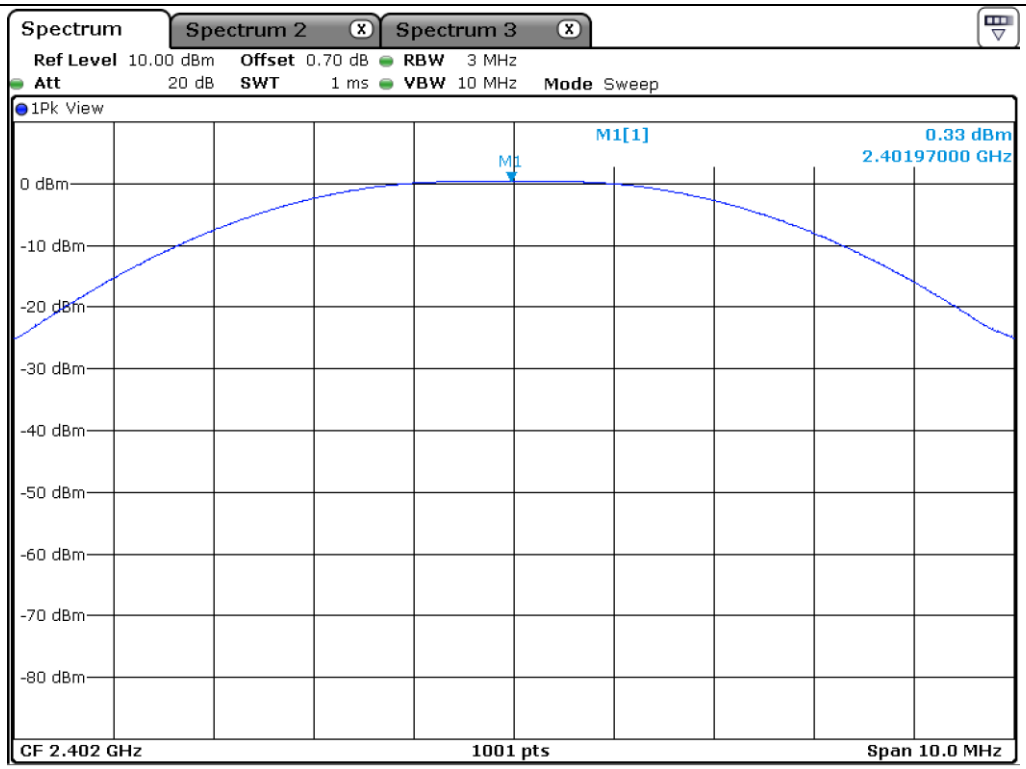
8.5 Test data for Bluetooth LE 2 Mbps

-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 402.00	0.33	30.00	29.67
MIDDLE	2 440.00	0.41	30.00	29.59
HIGH	2 480.00	0.57	30.00	29.43

Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)



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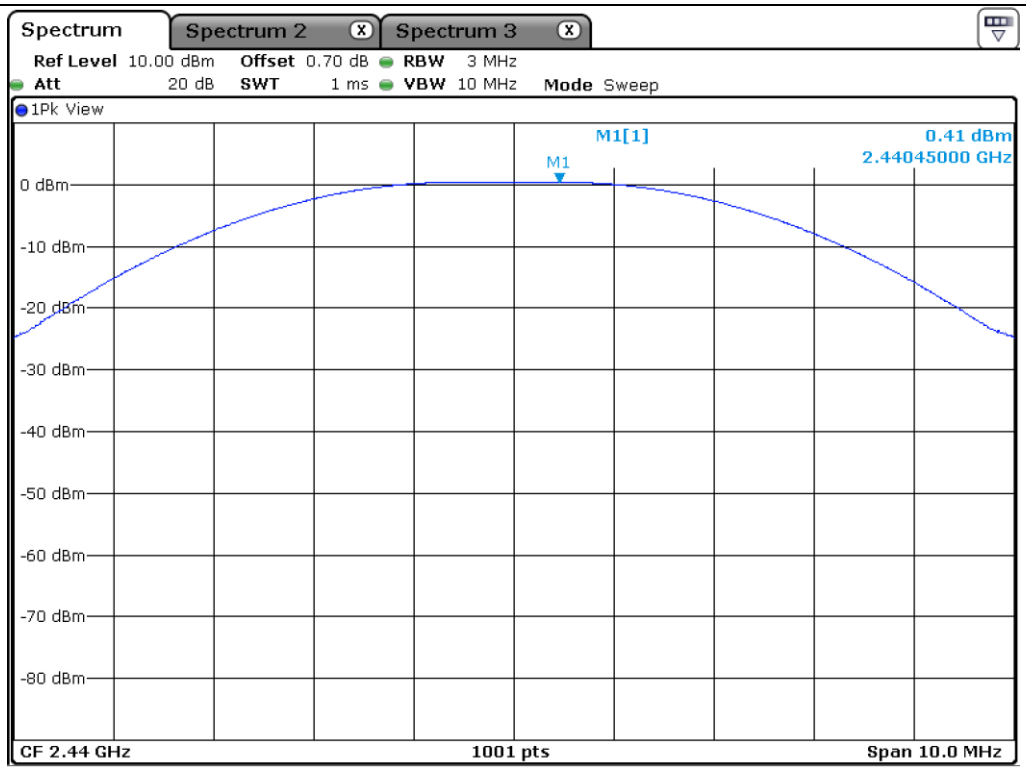
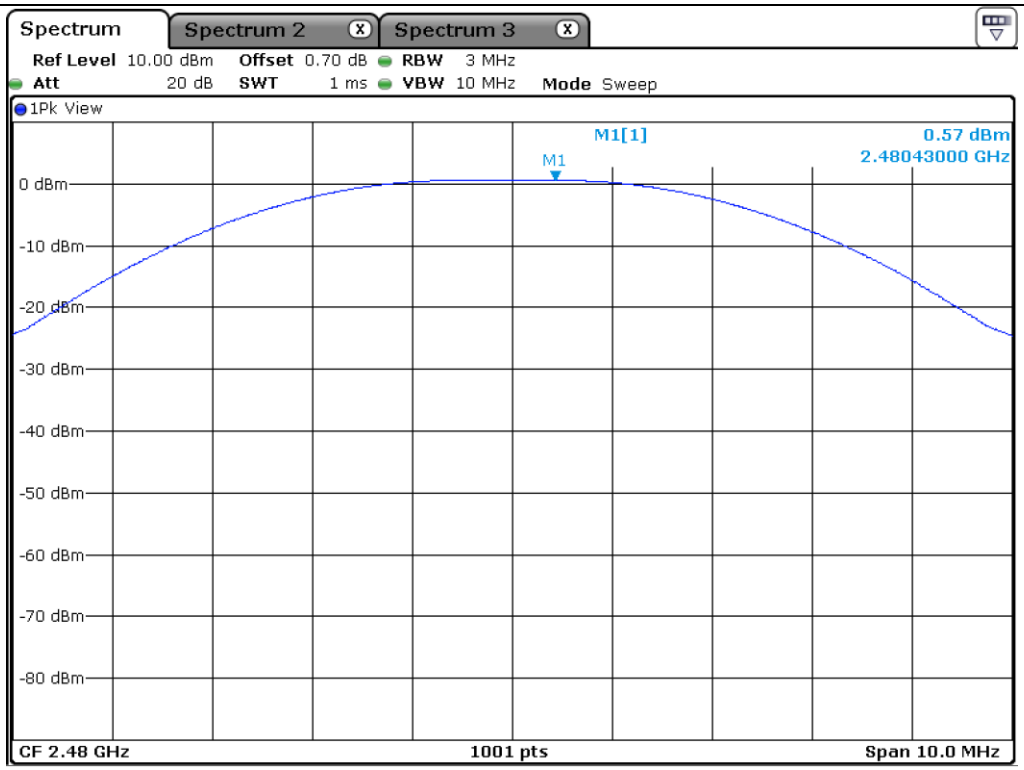


Middle Channel



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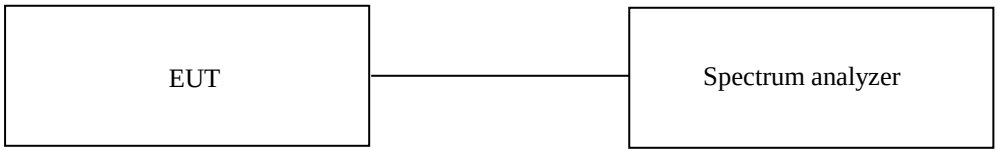
9. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

9.1 Operating environment

Temperature	:	22 °C
Relative humidity	:	46 % R.H.

9.2 Test set-up for conducted measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, the video bandwidth is set to 3 times the resolution bandwidth and peak detection was used.



9.3 Test set-up for radiated measurement

The radiated emissions measurements were performed on the 3 m semi anechoic chamber. The EUT was placed on turntable approximately 1.5 m above the ground plane.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

9.4 Test Date

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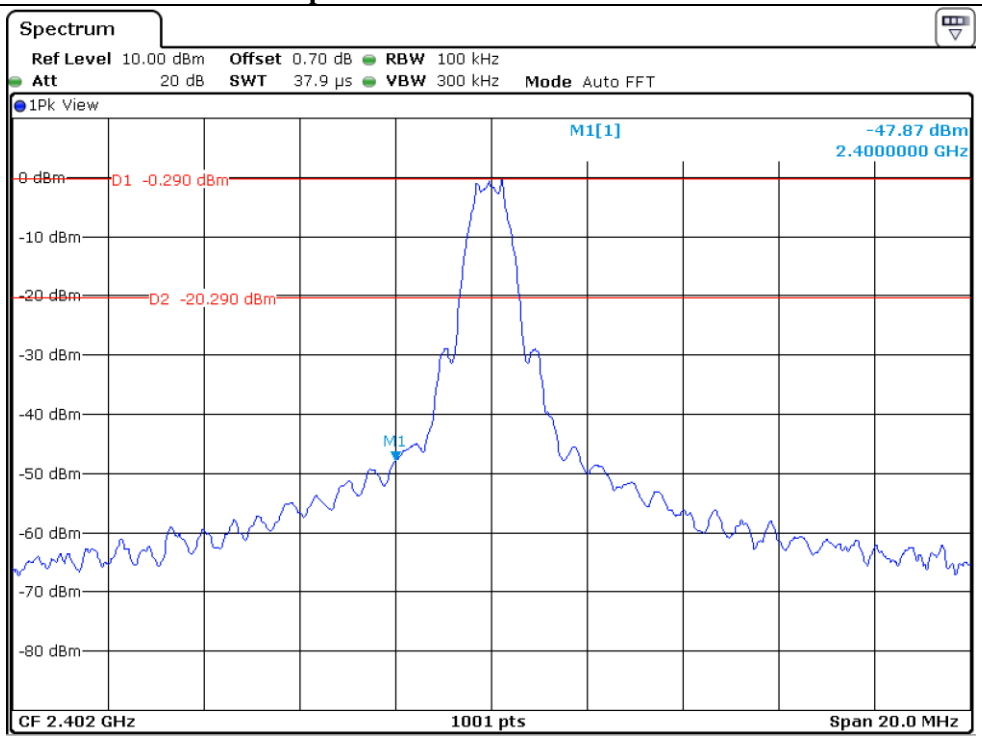
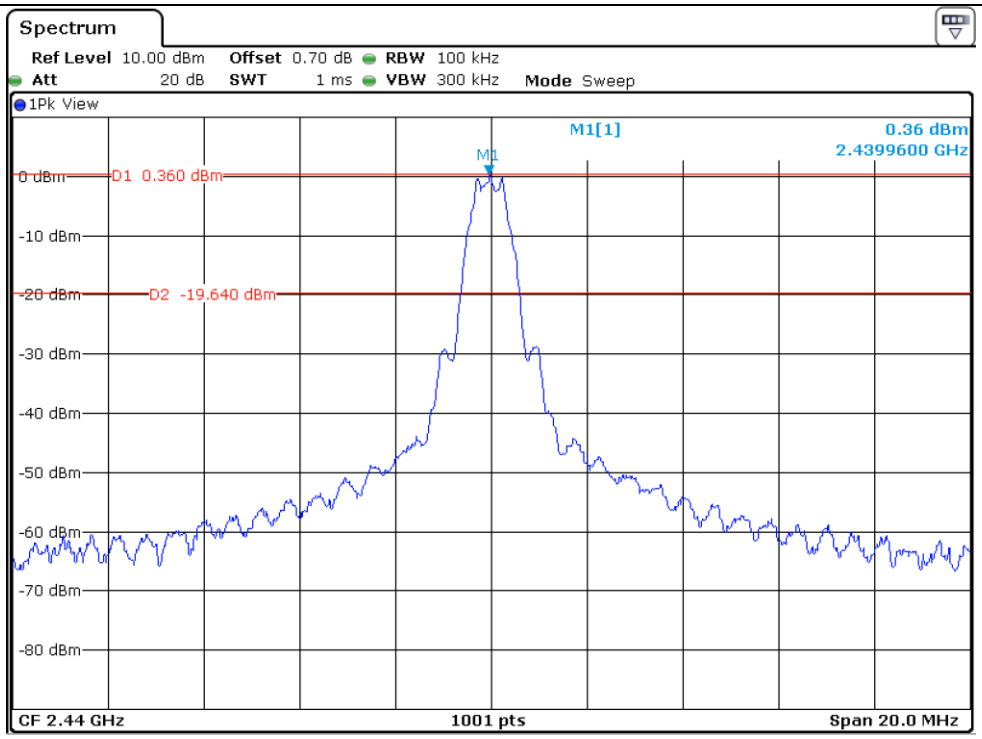
9.5 Test data for conducted emission

9.5.1 Test data for Bluetooth LE 1 Mbps



Low Channel



Middle Channel

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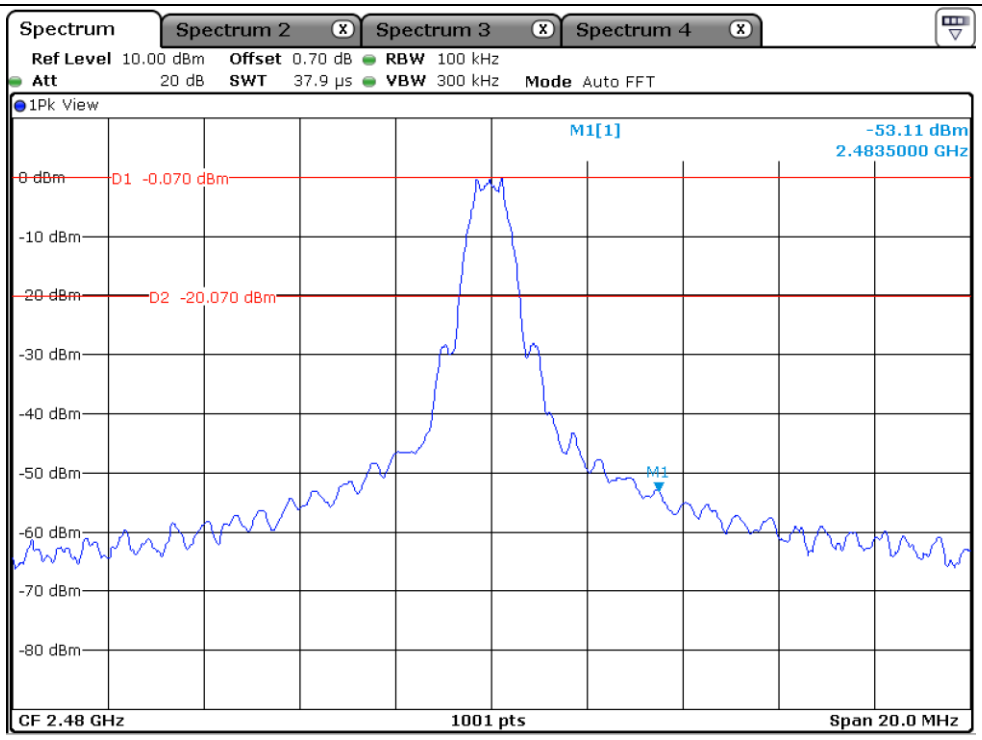
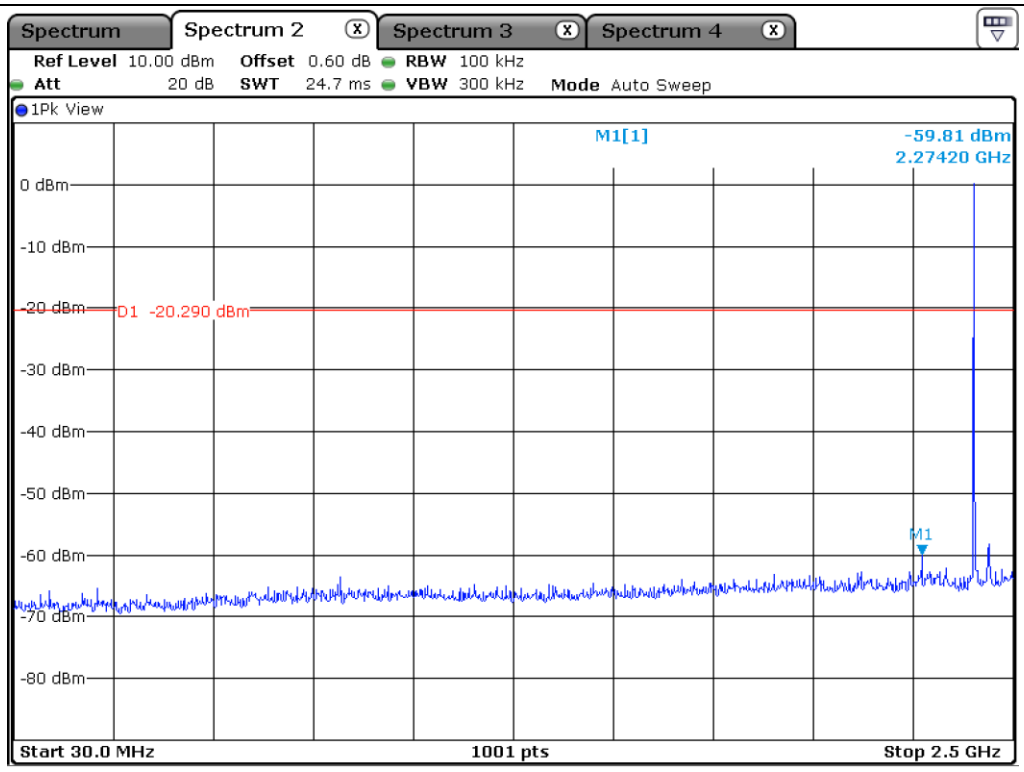
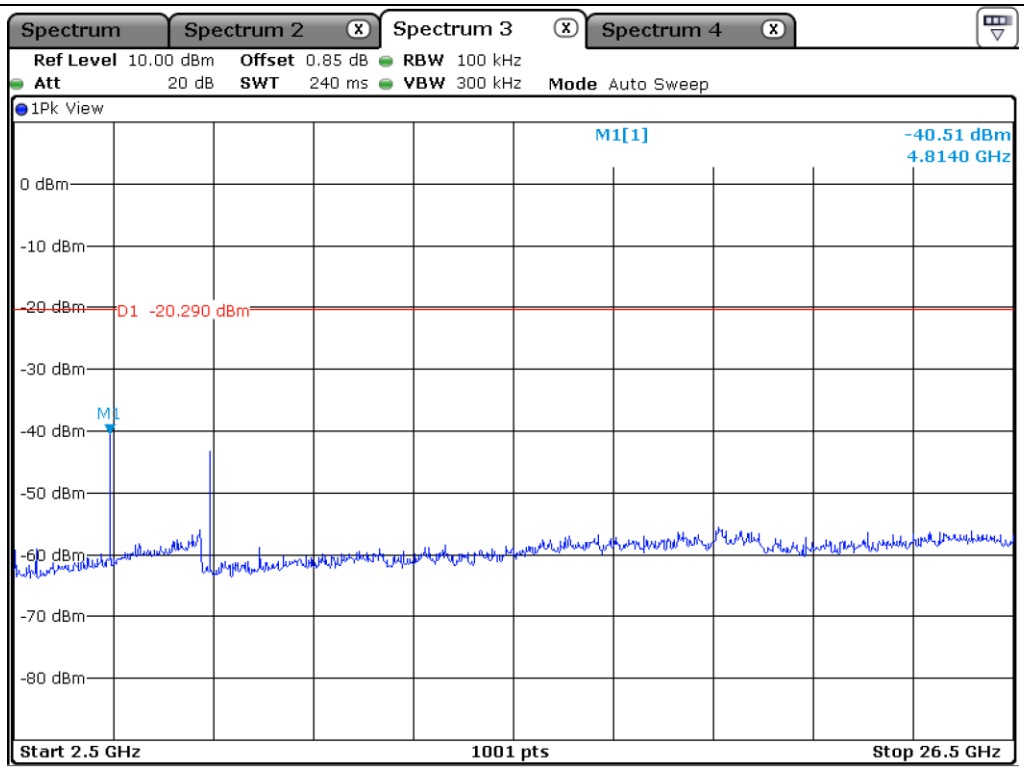


High Channel

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Low Channel



Low Channel

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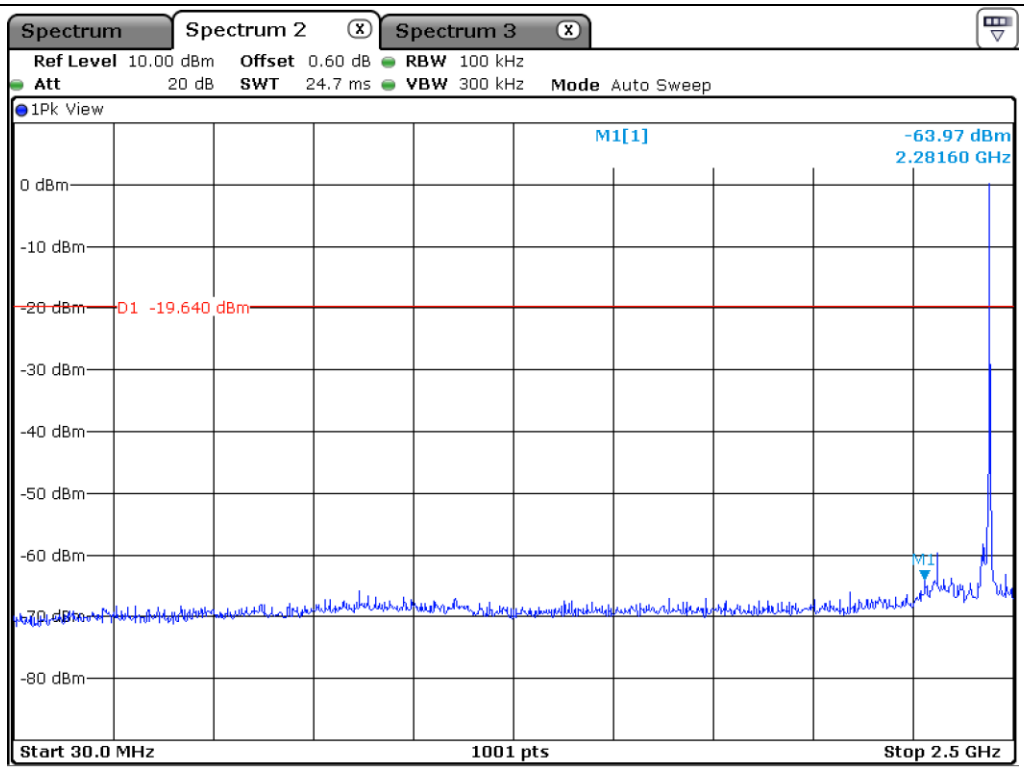
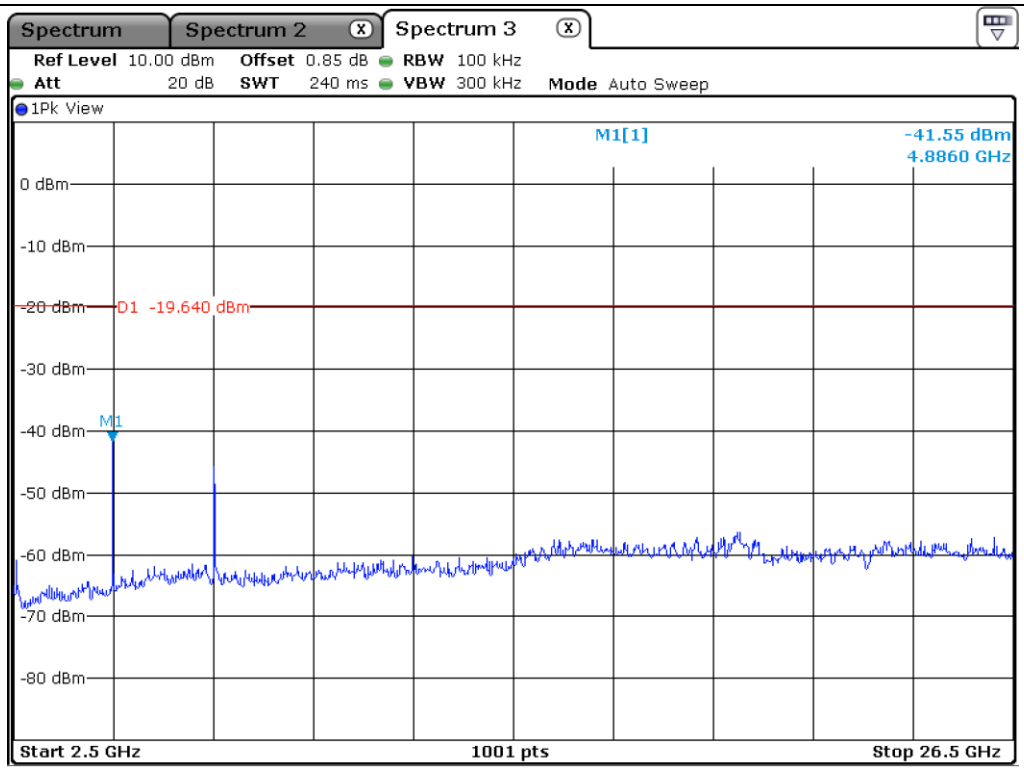


Middle Channel



Middle Channel

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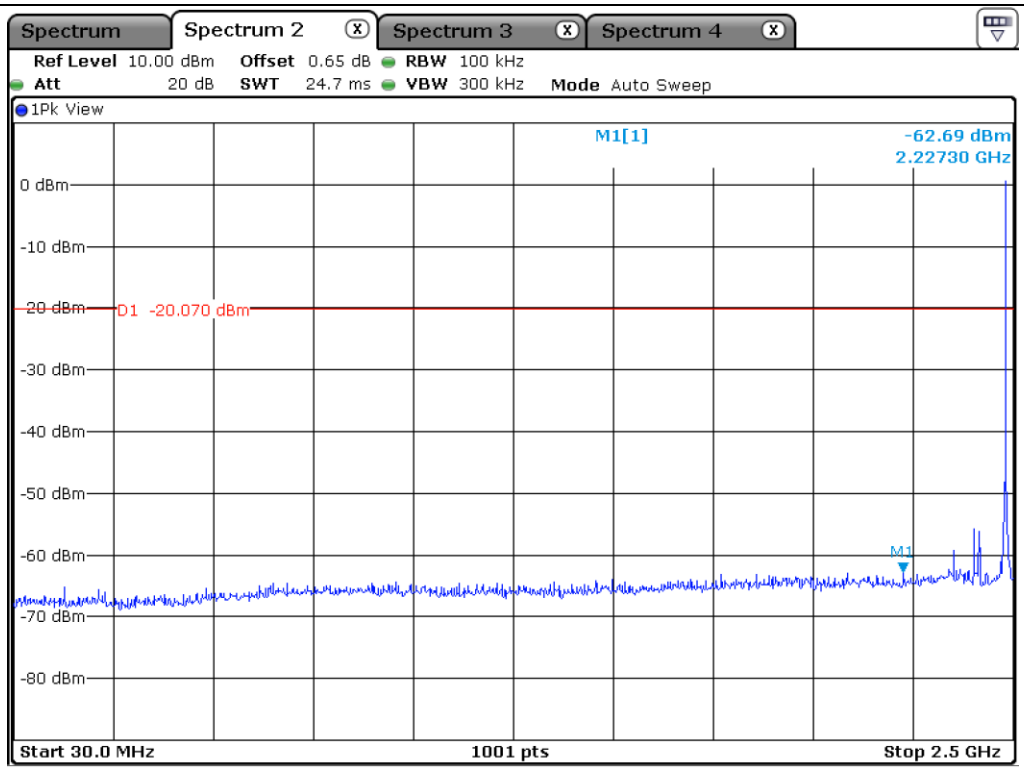
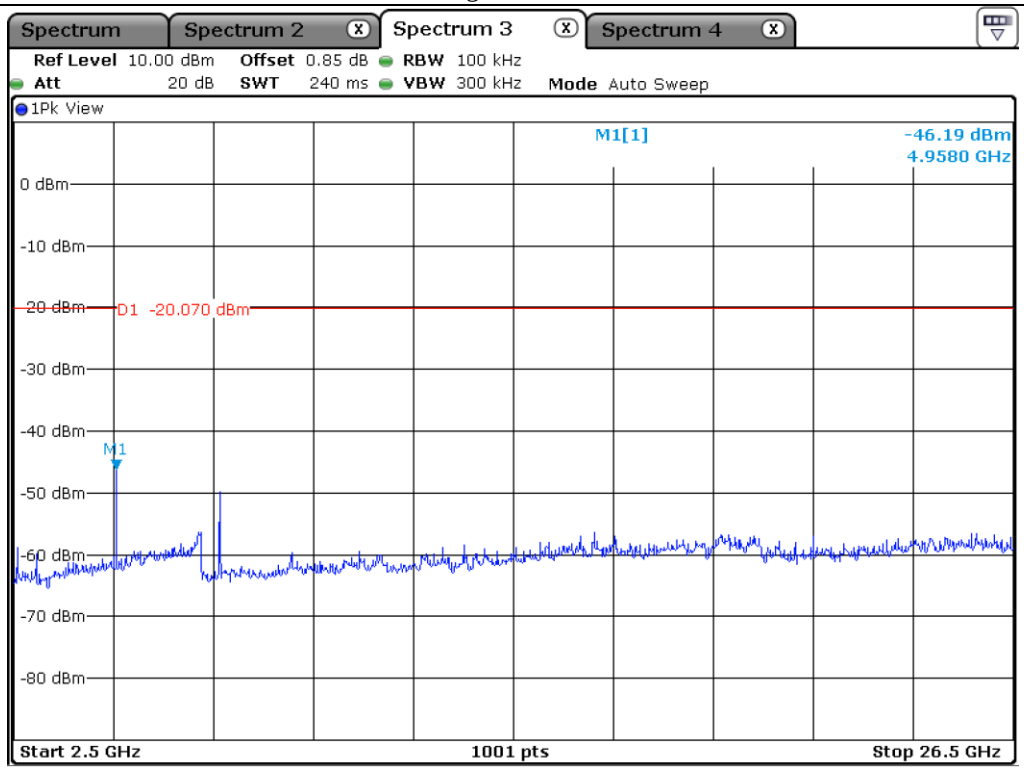


High Channel



High Channel

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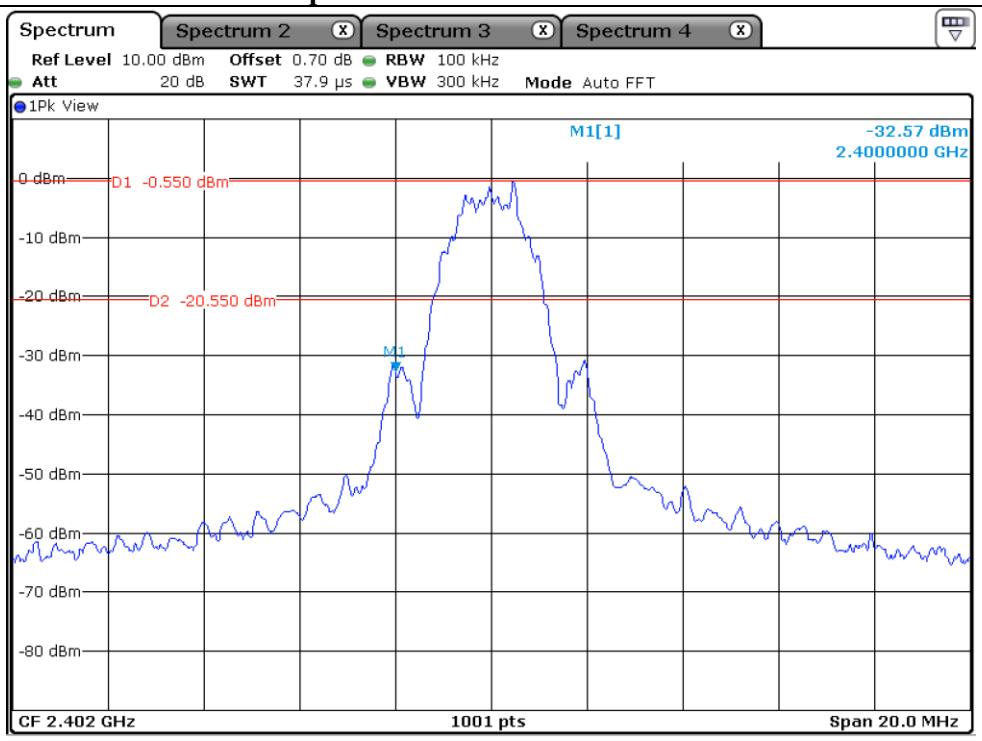
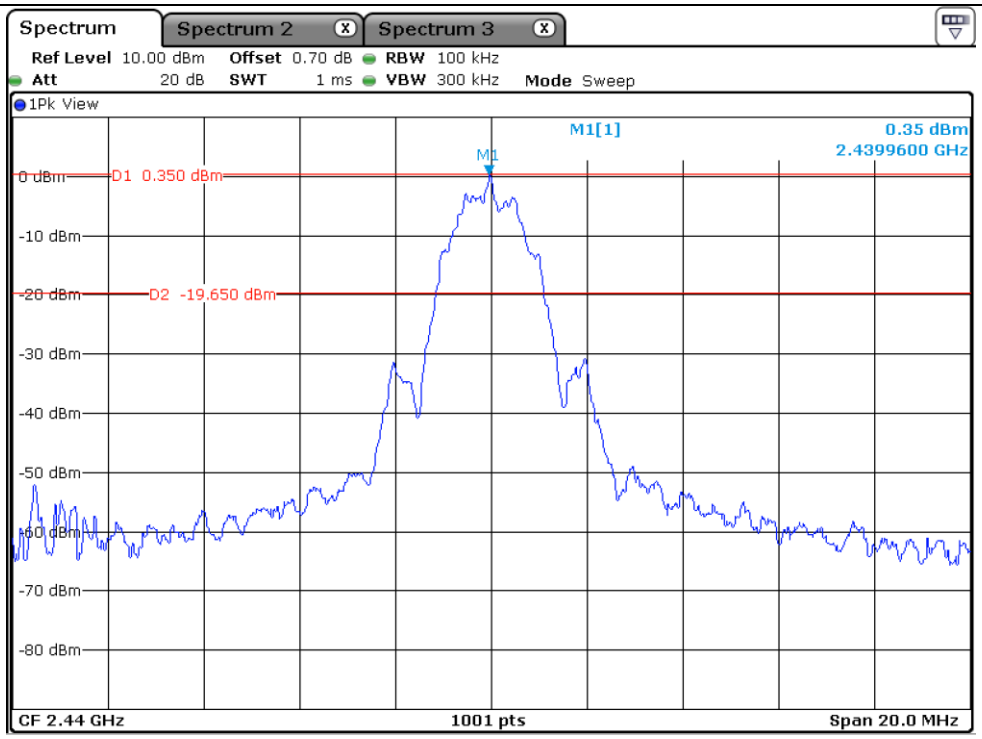
9.5.2 Test data for Bluetooth LE 2 Mbps



Low Channel



Middle Channel

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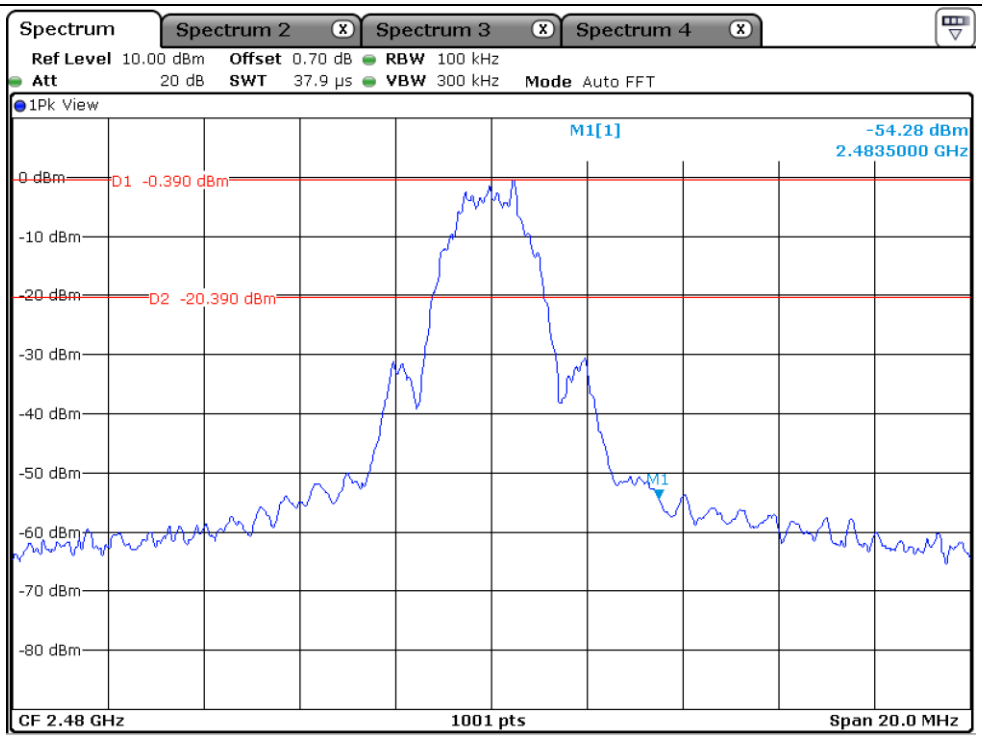

High Channel

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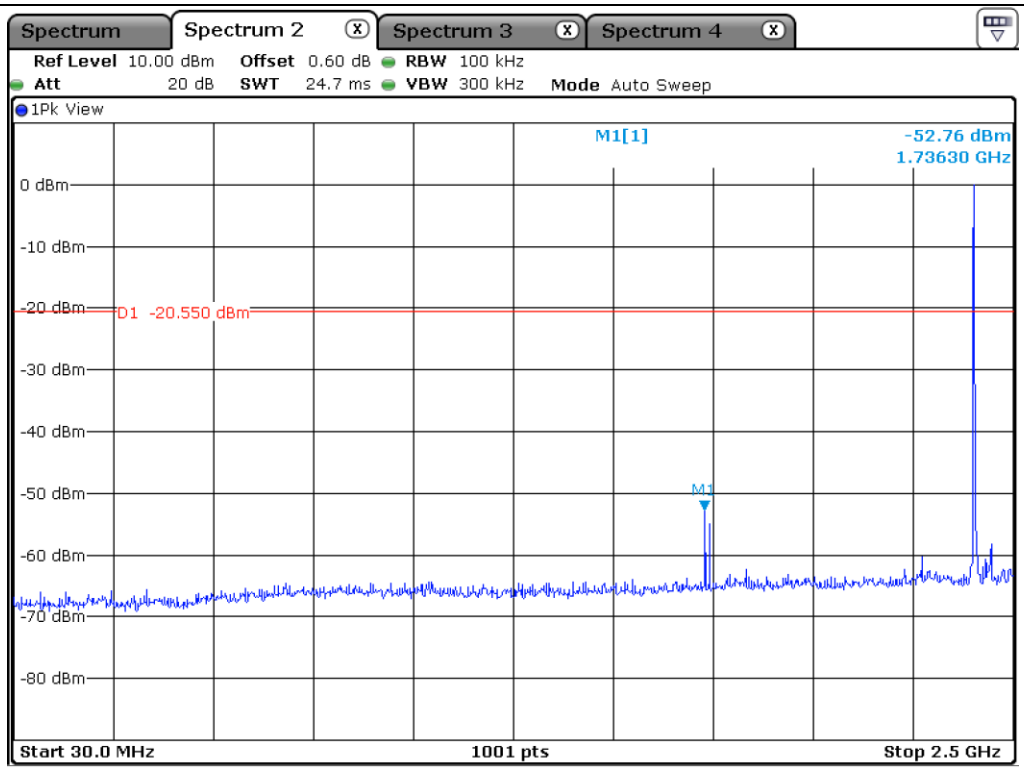
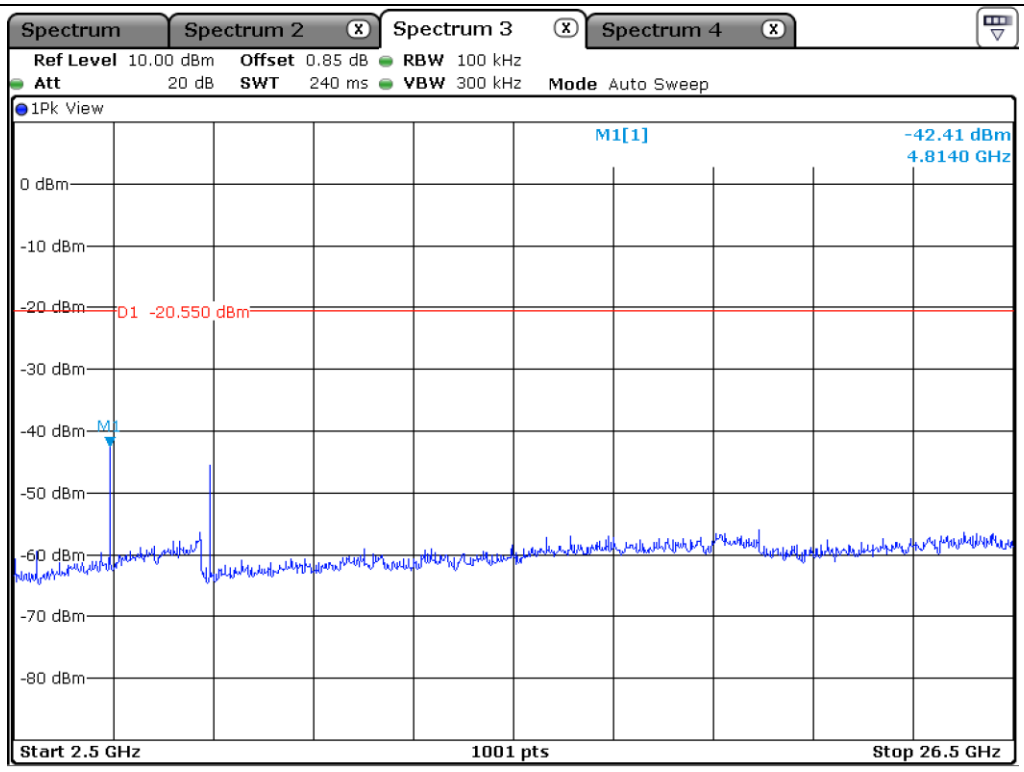


Low Channel



Low Channel

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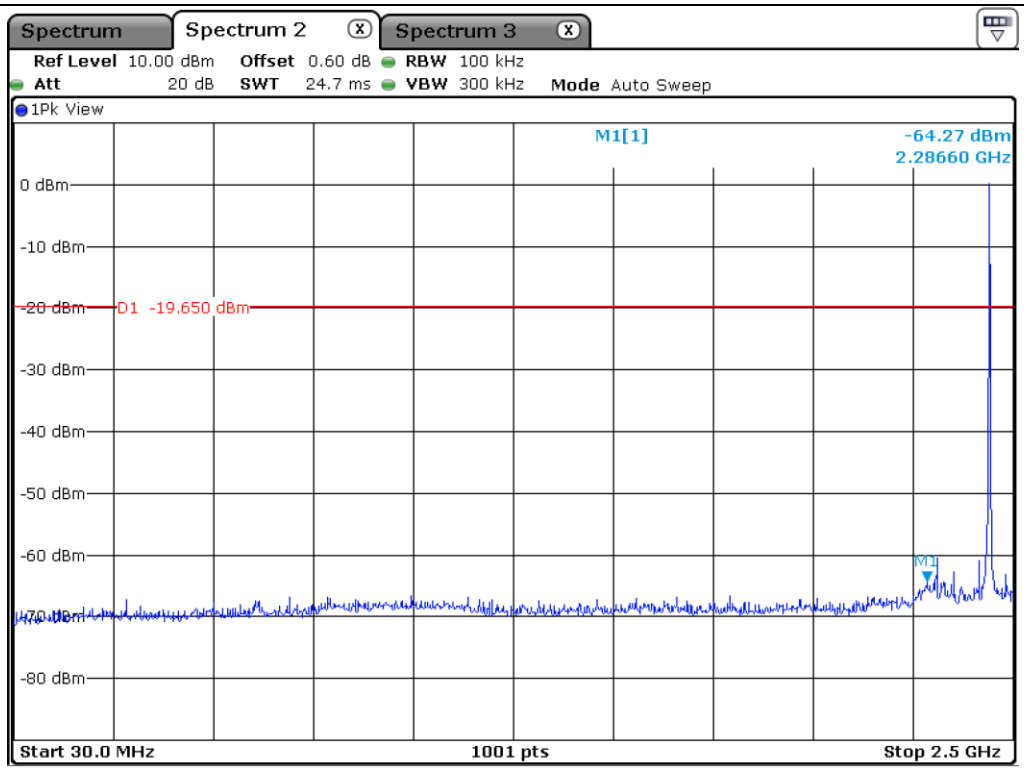
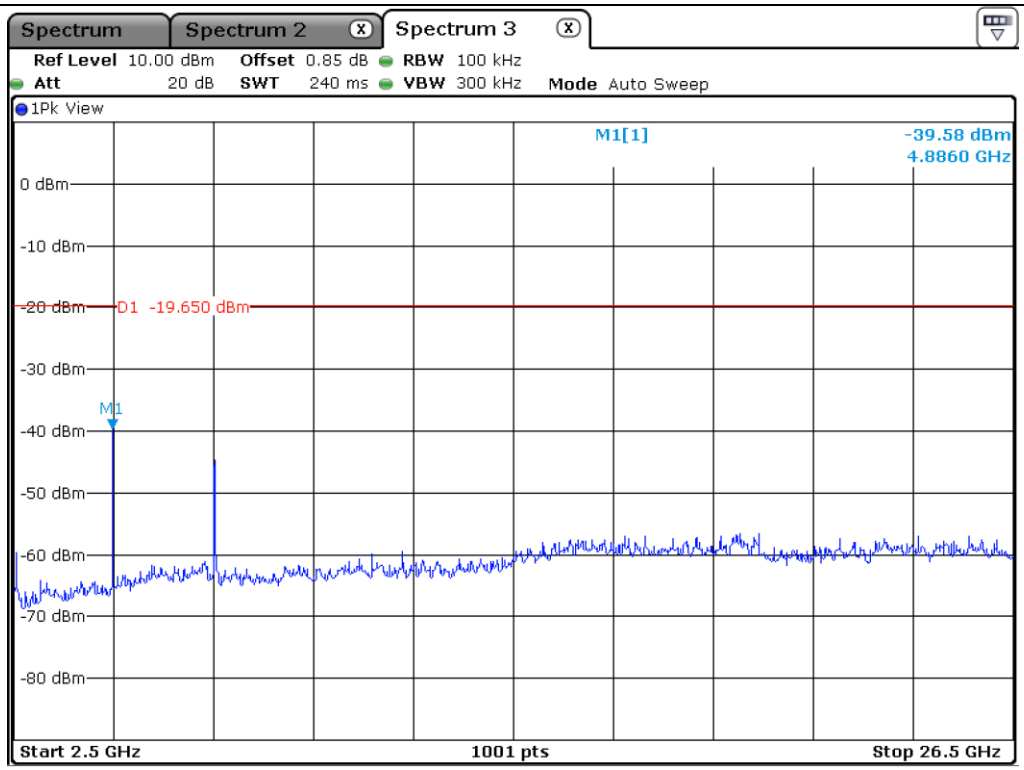


Middle Channel



Middle Channel

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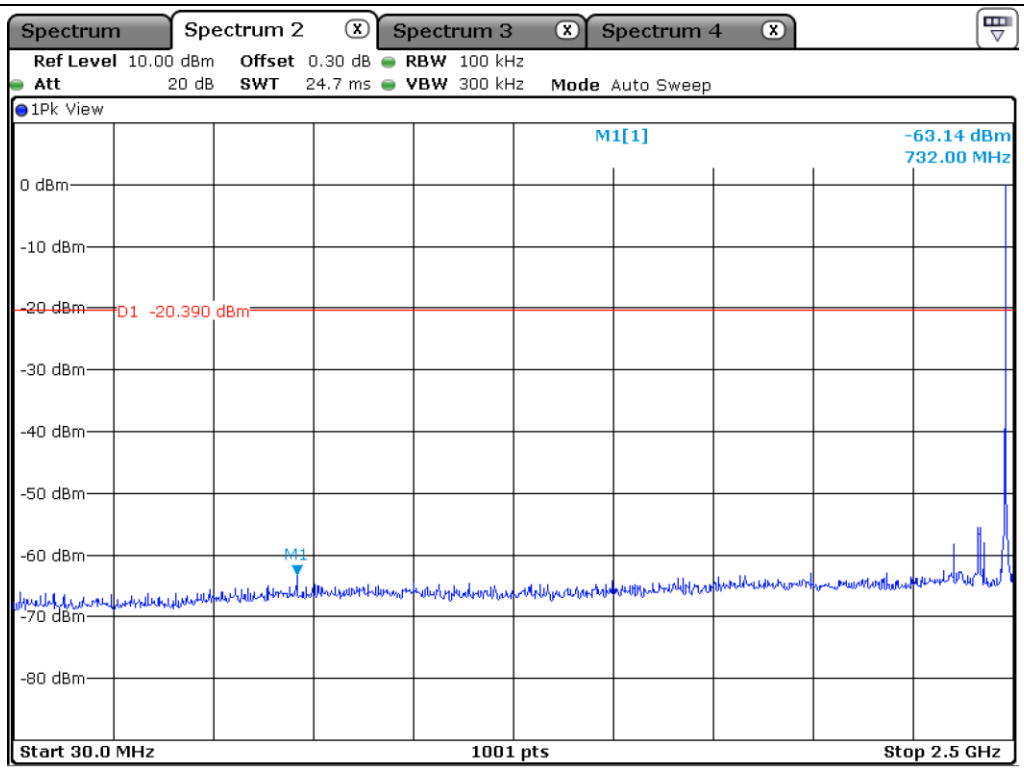
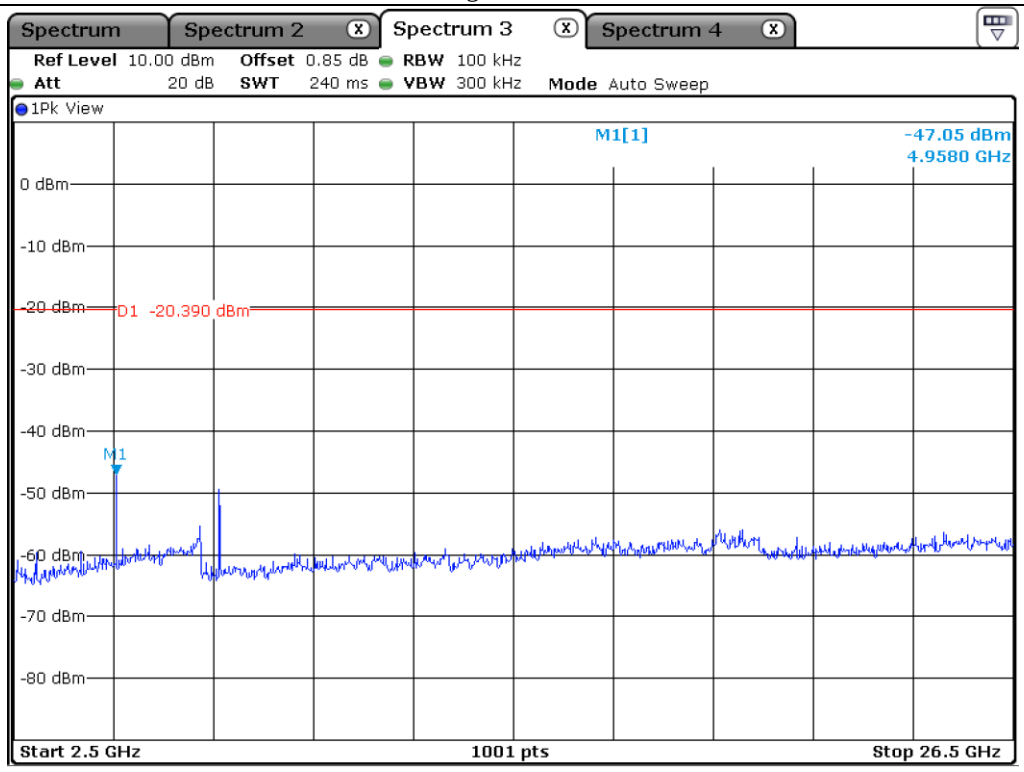


High Channel



High Channel

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9.6 Test data for radiated emission

9.6.1 Radiated Emission which fall in the Restricted Band

9.6.1.1 Test data for Bluetooth LE 1 Mbps

-. Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Measurement distance : 3 m

-. Duty Cycle : 62.50 %

-. Result : PASSED

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 341.24	57.66	Peak	H	28.50	6.80	45.14	-	47.82	74.00	26.18
2 319.76	43.07	Average	H	28.50	6.80	45.14	2.04	35.27	54.00	18.73
2 389.35	56.57	Peak	V	28.50	6.80	45.14	-	46.73	74.00	27.27
2 330.63	42.17	Average	V	28.50	6.80	45.14	2.04	34.37	54.00	19.63
Test Data for High Channel										
2 483.51	70.49	Peak	H	28.80	7.00	45.79	-	60.50	74.00	13.50
2 483.53	47.62	Average	H	28.80	7.00	45.79	2.04	39.67	54.00	14.33
2 483.55	67.19	Peak	V	28.80	7.00	45.79	-	57.20	74.00	16.80
2 484.23	44.70	Average	V	28.80	7.00	45.79	2.04	36.75	54.00	17.25

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

Total Level = Reading + Antenna Factor + Cable Loss + Duty Factor – Amp Gain

9.6.1.2 Test data for Bluetooth LE 2 Mbps

-. Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Measurement distance : 3 m

-. Duty Cycle : 33.15 %

-. Result : PASSED

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 389.26	57.59	Peak	H	28.50	6.80	45.14	-	47.75	74.00	26.25
2 389.62	42.49	Average	H	28.50	6.80	45.14	4.79	37.44	54.00	16.56
2 373.70	54.67	Peak	V	28.50	6.80	45.14	-	44.83	74.00	29.17
2 372.26	42.05	Average	V	28.50	6.80	45.14	4.79	37.00	54.00	17.00
Test Data for High Channel										
2 483.55	70.19	Peak	H	28.80	7.00	45.79	-	60.20	74.00	13.80
2 483.61	47.67	Average	H	28.80	7.00	45.79	4.79	42.47	54.00	11.53
2 483.53	67.30	Peak	V	28.80	7.00	45.79	-	57.31	74.00	16.69
2 483.61	46.98	Average	V	28.80	7.00	45.79	4.79	41.78	54.00	12.22

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

Total Level = Reading + Antenna Factor + Cable Loss + Duty Factor – Amp Gain

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9.6.2 Spurious & Harmonic Radiated Emission

9.6.2.1 Test data for Bluetooth LE 1 Mbps

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
1 MHz for Peak Mode for the emissions outside restricted band

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : 62.50 %

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	64.67	Peak	H	31.30	9.00	45.03	-	59.94	74.00	14.06
4 804.00	52.46	Average	H	31.30	9.00	45.03	2.04	49.77	54.00	4.23
4 804.00	61.33	Peak	V	31.30	9.00	45.03	-	56.60	74.00	17.40
4 804.00	47.07	Average	V	31.30	9.00	45.03	2.04	44.38	54.00	9.62
Test Data for Middle Channel										
4 880.00	64.31	Peak	H	31.30	9.20	45.03	-	59.78	74.00	14.22
4 880.00	50.40	Average	H	31.30	9.20	45.03	2.04	47.91	54.00	6.09
4 880.00	60.87	Peak	V	31.30	9.20	45.03	-	56.34	74.00	17.66
4 880.00	44.91	Average	V	31.30	9.20	45.03	2.04	42.42	54.00	11.58
Test Data for High Channel										
4 960.00	63.59	Peak	H	31.50	9.30	45.03	-	59.36	74.00	14.64
4 960.00	49.78	Average	H	31.50	9.30	45.03	2.04	47.59	54.00	6.41
4 960.00	59.82	Peak	V	31.50	9.30	45.03	-	55.59	74.00	18.41
4 960.00	45.20	Average	V	31.50	9.30	45.03	2.04	43.01	54.00	10.99

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss + Duty Factor - Amp Gain

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9.6.2.2 Test data for Bluetooth LE 2 Mbps

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
1 MHz for Peak Mode for the emissions outside restricted band

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : 33.15 %

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	65.52	Peak	H	31.30	9.00	45.03	-	60.79	74.00	13.21
4 804.00	49.47	Average	H	31.30	9.00	45.03	4.79	49.53	54.00	4.47
4 804.00	61.55	Peak	V	31.30	9.00	45.03	-	56.82	74.00	17.18
4 804.00	45.21	Average	V	31.30	9.00	45.03	4.79	45.27	54.00	8.73
Test Data for Middle Channel										
4 880.00	64.84	Peak	H	31.30	9.20	45.03	-	60.31	74.00	13.69
4 880.00	48.85	Average	H	31.30	9.20	45.03	4.79	49.11	54.00	4.89
4 880.00	61.61	Peak	V	31.30	9.20	45.03	-	57.08	74.00	16.92
4 880.00	43.11	Average	V	31.30	9.20	45.03	4.79	43.37	54.00	10.63
Test Data for High Channel										
4 960.00	63.96	Peak	H	31.50	9.30	45.03	-	59.73	74.00	14.27
4 960.00	47.17	Average	H	31.50	9.30	45.03	4.79	47.73	54.00	6.27
4 960.00	60.16	Peak	V	31.50	9.30	45.03	-	55.93	74.00	18.07
4 960.00	43.44	Average	V	31.50	9.30	45.03	4.79	44.00	54.00	10.00

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss + Duty Factor - Amp Gain

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10. PEAK POWER SPECTRAL DENSITY

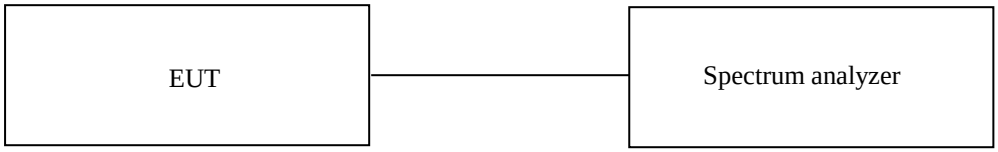
10.1 Operating environment

Temperature	:	22 °C
Relative humidity	:	46 % R.H.

10.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to 3 kHz ≤ RBW ≤100 kHz, the video bandwidth is set to 3 times the resolution bandwidth.



10.3 Test Date

May 02, 2022 ~ May 10, 2022

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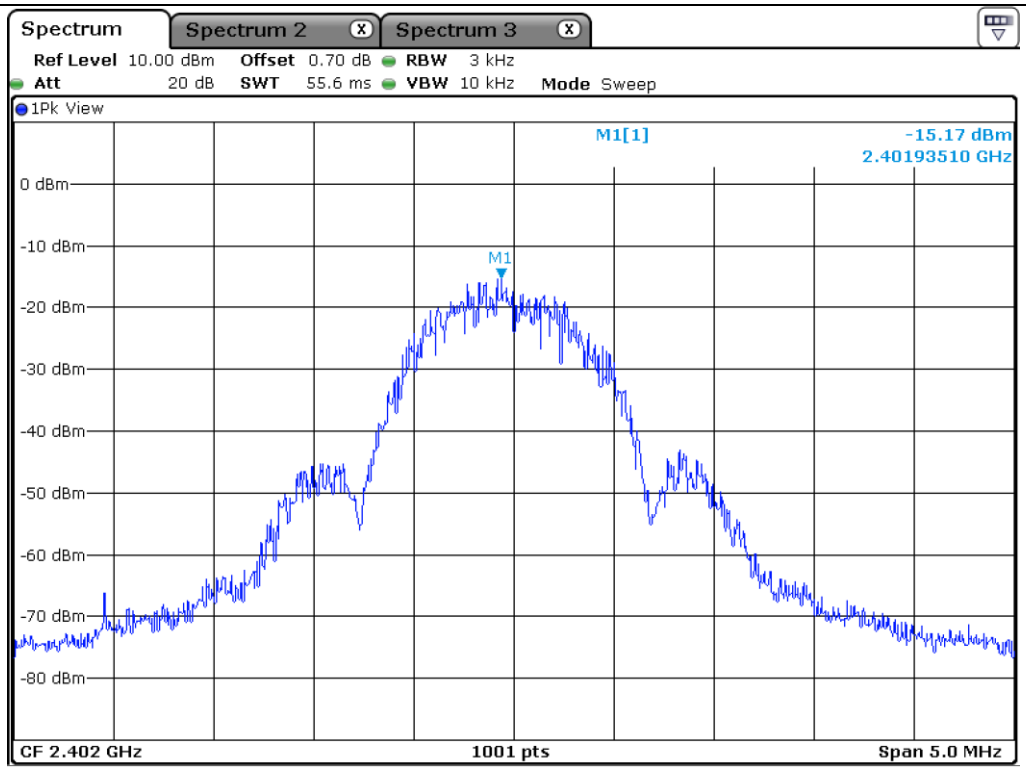
10.4 Test data for Bluetooth LE 1 Mbps

-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 402.00	-15.17	8.00	23.17
Middle	2 440.00	-15.11	8.00	23.11
High	2 480.00	-14.92	8.00	22.92

Remark. Margin = Limit – Measured value



Low Channel

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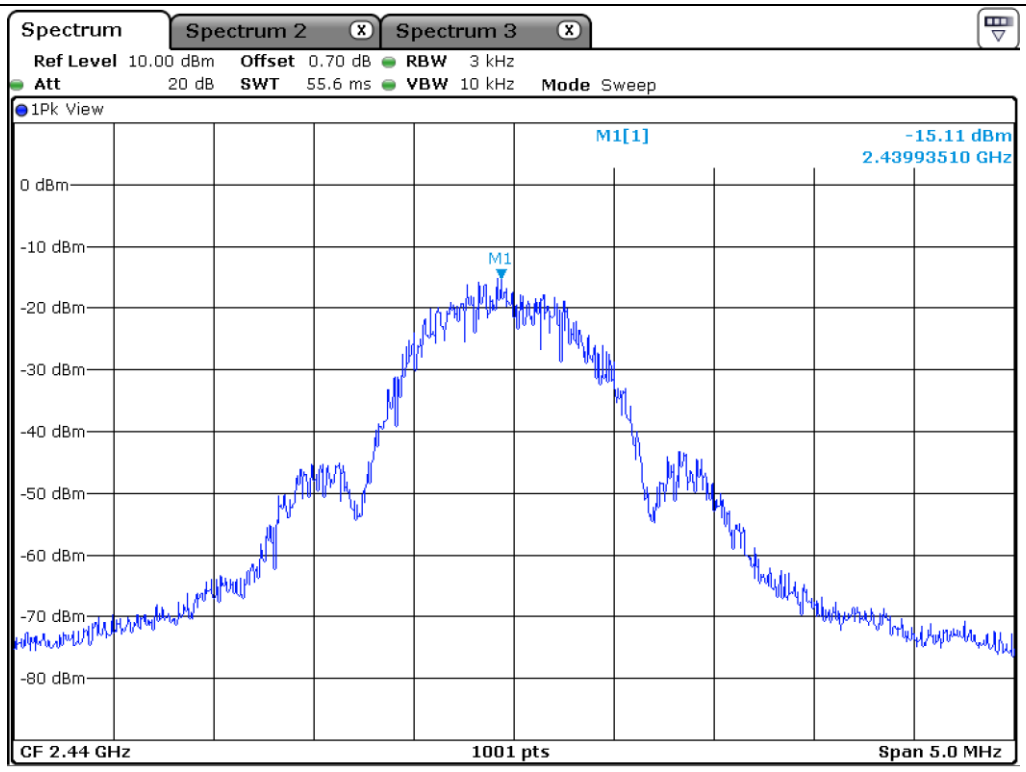
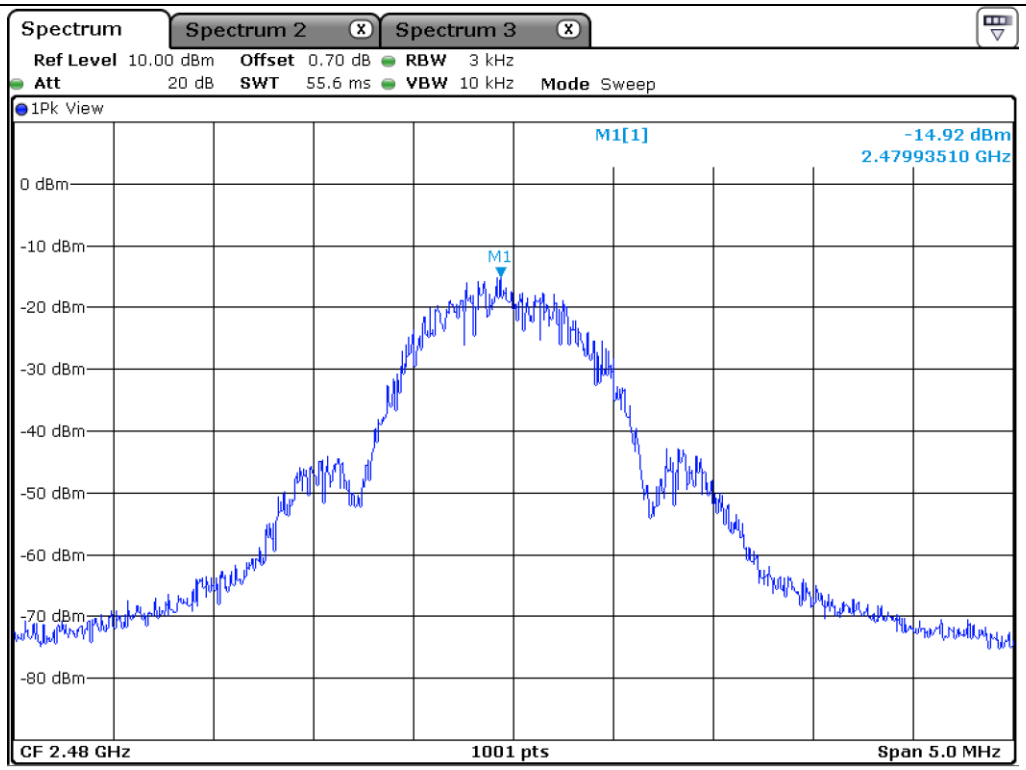


Middle Channel



High Channel

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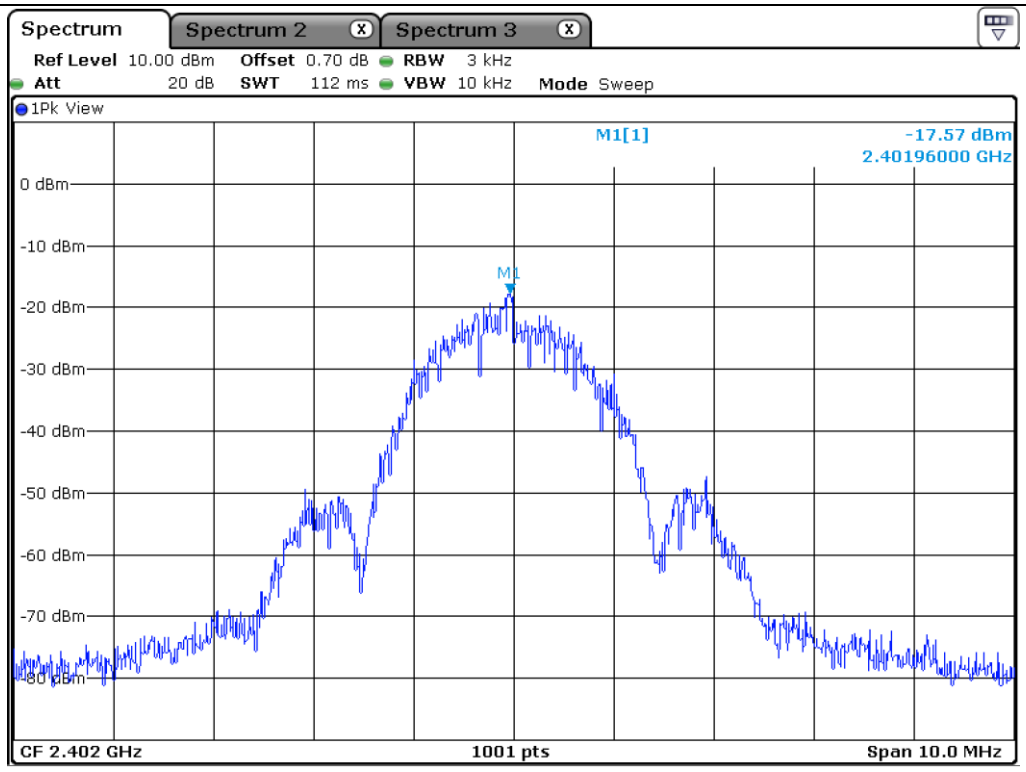
10.5 Test data for Bluetooth LE 2 Mbps

-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 402.00	-17.57	8.00	25.57
Middle	2 440.00	-17.56	8.00	25.56
High	2 480.00	-17.33	8.00	25.33

Remark. Margin = Limit – Measured value



Low Channel

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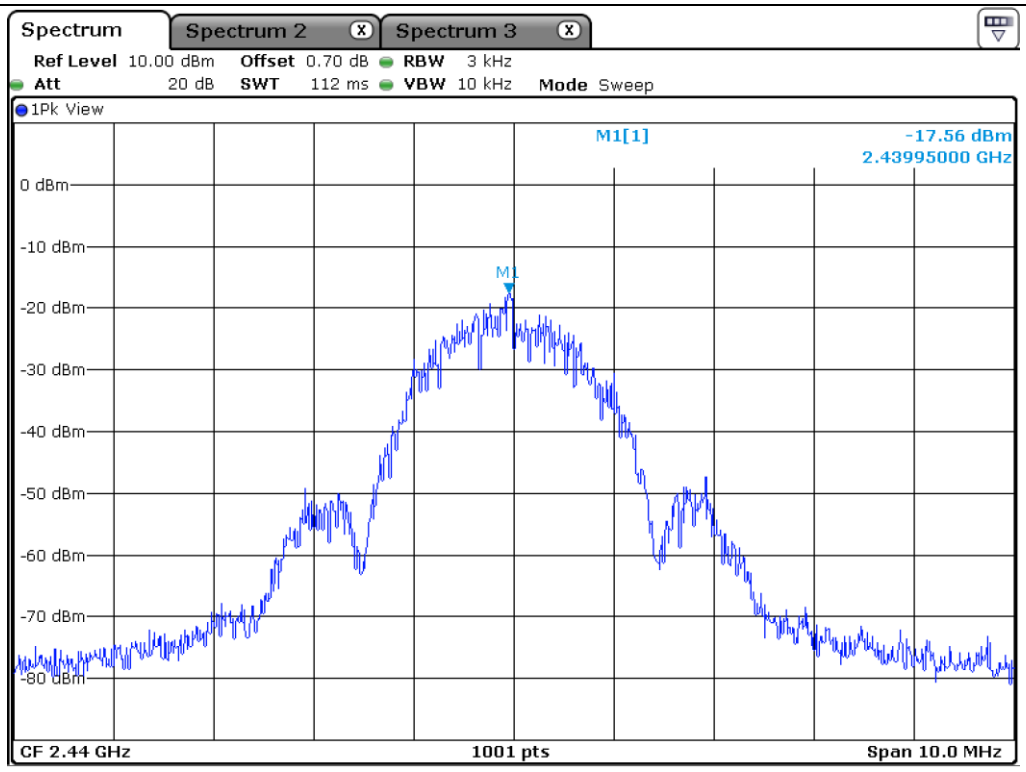
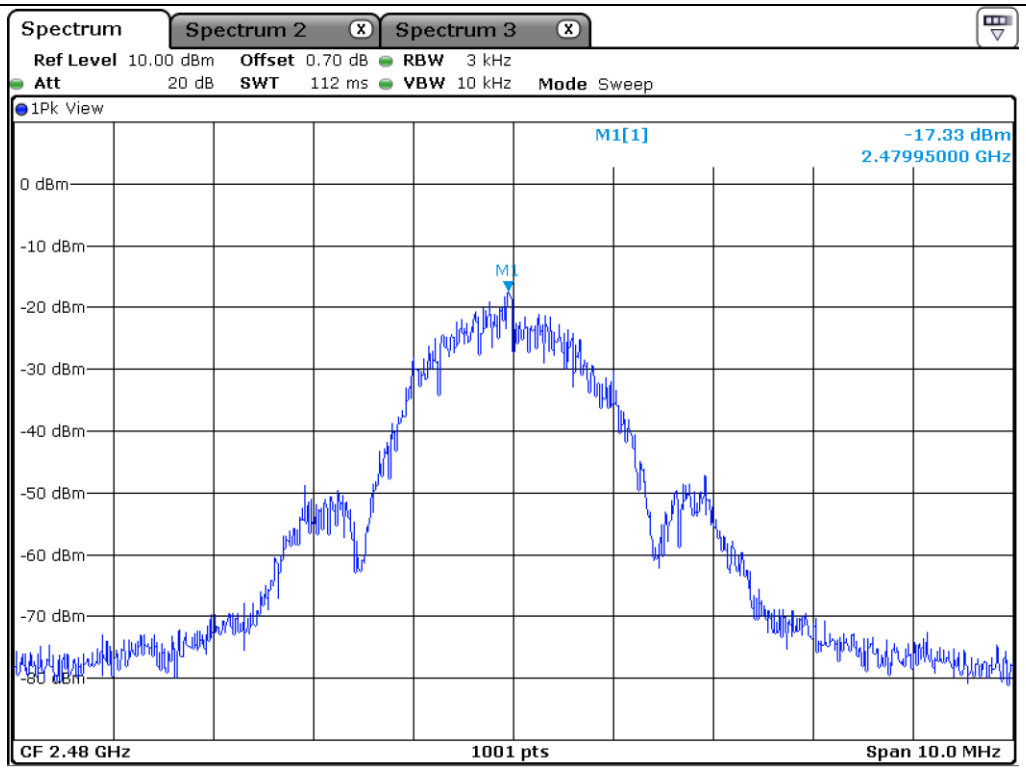


Middle Channel



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11. RADIATED EMISSION TEST

11.1 Operating environment

Temperature	:	22 °C
Relative humidity	:	46 % R.H.

11.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

11.3 Test Date

May 02, 2022 ~ May 10, 2022

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11.4 Test data for 30 MHz ~ 1000 MHz

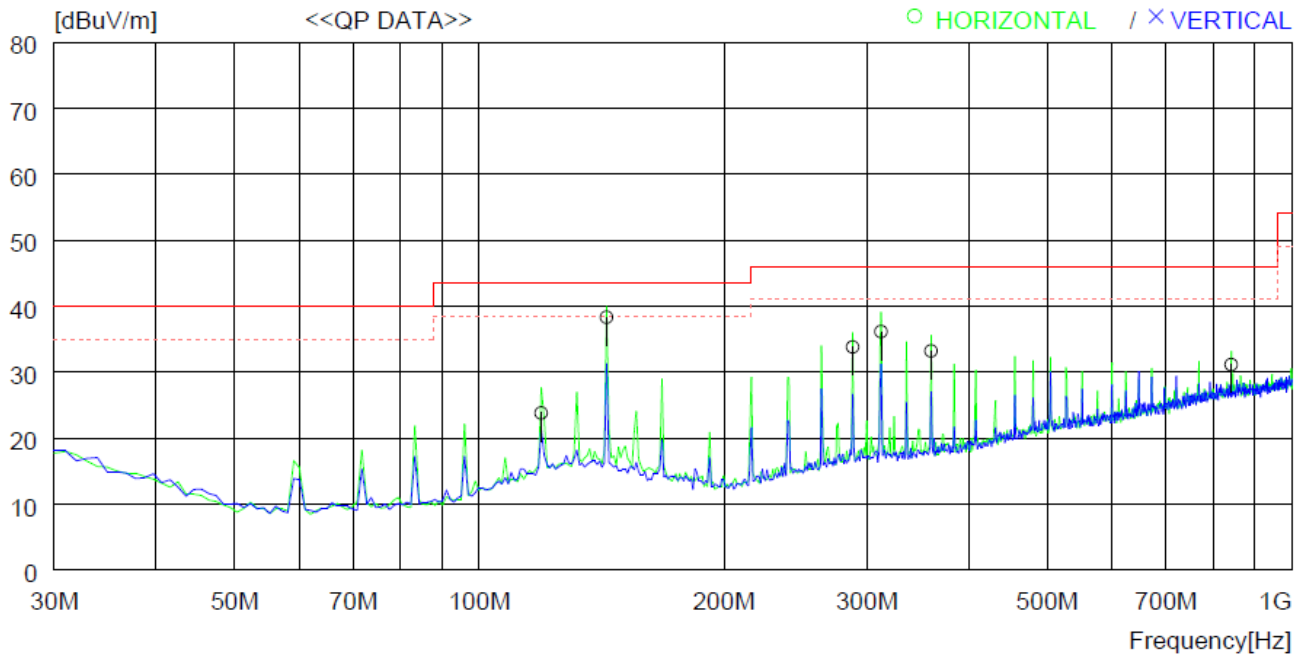
Humidity Level : 46 % R.H. Temperature: 22 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Insulin infusion pump

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	119.240	35.4	18.5	2.0	32.1	23.8	43.5	19.7	300	335
2	143.490	49.4	18.9	2.1	32.1	38.3	43.5	5.2	200	359
3	288.020	44.2	18.8	3.0	32.2	33.8	46.0	12.2	100	0
4	312.270	45.8	19.4	3.1	32.2	36.1	46.0	9.9	100	0
5	359.800	42.1	20.0	3.3	32.2	33.2	46.0	12.8	100	129
6	841.881	31.0	27.2	5.1	32.2	31.1	46.0	14.9	100	178

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11.5 Test data for Below 30 MHz

-. Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)

-. Frequency range : 9 kHz ~ 30 MHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
Emission from the EUT more than 20 dB below the limit in each frequency range.									

11.6 Test data for above 1 GHz

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
Emission from the EUT more than 20 dB below the limit in each frequency range.									

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12. CONDUCTED EMISSION TEST

12.1 Operating environment

Temperature	:	22 °C
Relative humidity	:	46 % R.H.

12.2 Test set-up

The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a 50 Ω / 50 μH + 5 Ω Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

12.3 Test Date

May 02, 2022 ~ May 10, 2022

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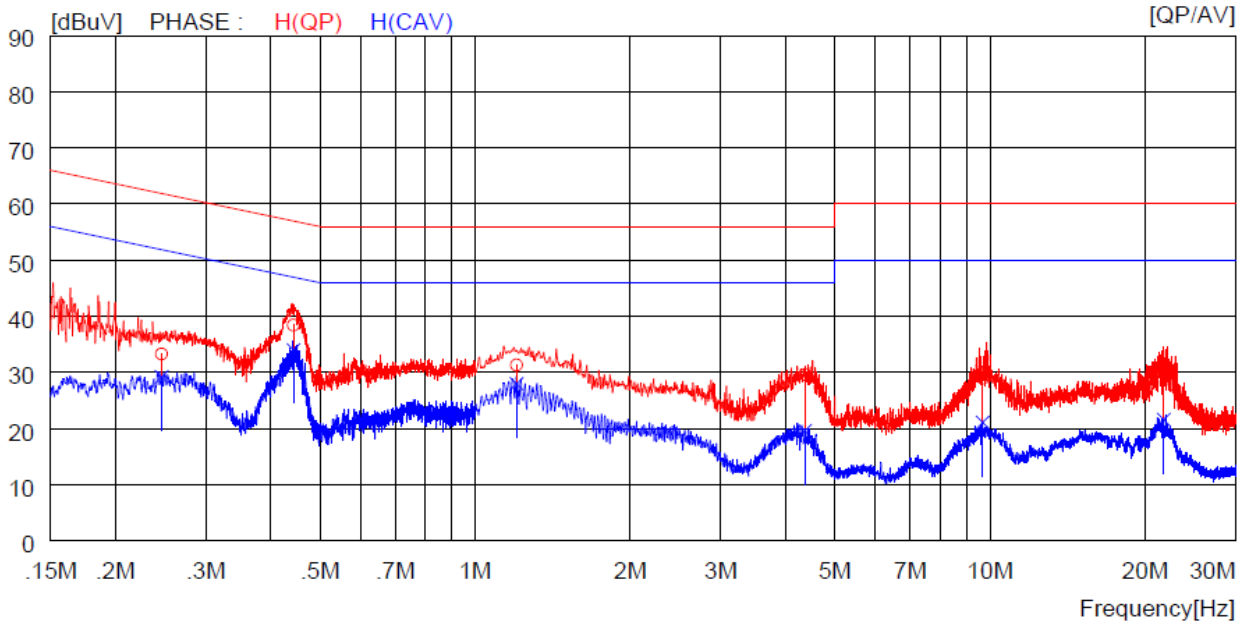
12.4 Test data

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE

LIMIT : EN.KN.FCC.VCCI_CISPR Pub.32 Class B, Quasi-Peak Limits (Mains Ports)
EN.KN.FCC.VCCI_CISPR Pub.32 Class B, Average Limits (Mains Ports)



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.24600	23.4	----	9.9	33.3	----	61.9	----	28.6	----	H(QP)
2	0.44400	28.5	----	9.9	38.4	----	57.0	----	18.6	----	H(QP)
3	1.20400	21.3	----	10.0	31.3	----	56.0	----	24.7	----	H(QP)
4	4.37600	19.5	----	10.1	29.6	----	56.0	----	26.4	----	H(QP)
5	9.68000	18.7	----	10.3	29.0	----	60.0	----	31.0	----	H(QP)
6	21.75000	19.6	----	10.6	30.2	----	60.0	----	29.8	----	H(QP)
7	0.24600	----	19.3	9.9	----	29.2	----	51.9	----	22.7	H(CAV)
8	0.44400	----	24.1	9.9	----	34.0	----	47.0	----	13.0	H(CAV)
9	1.20400	----	18.0	10.0	----	28.0	----	46.0	----	18.0	H(CAV)
10	4.37600	----	9.5	10.1	----	19.6	----	46.0	----	26.4	H(CAV)
11	9.68000	----	10.8	10.3	----	21.1	----	50.0	----	28.9	H(CAV)
12	21.75000	----	11.0	10.6	----	21.6	----	50.0	----	28.4	H(CAV)

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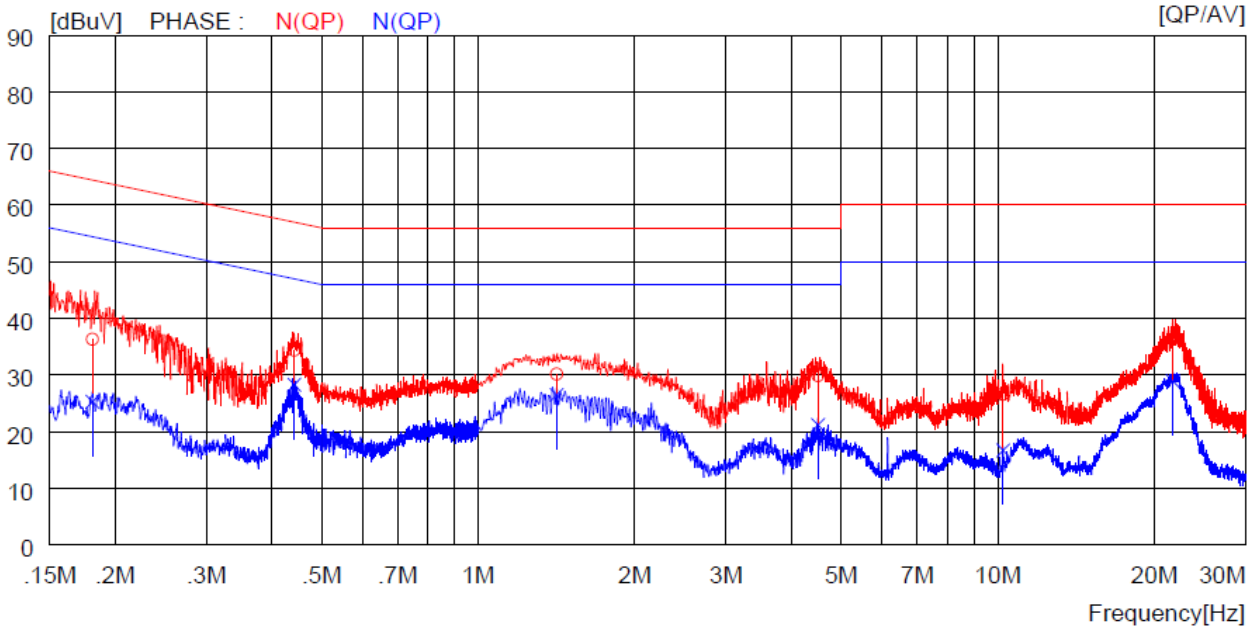
-. Tested Line : NEUTRAL LINE

LIMIT : EN.KN.FCC.VCCI_CISPR Pub.32 Class B, Quasi-Peak Limits (Mains Ports)
EN.KN.FCC.VCCI_CISPR Pub.32 Class B, Average Limits (Mains Ports)



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.18100	26.4	----	9.9	36.3	----	64.4	----	28.1	----	N(QP)
2	0.44300	24.5	----	9.9	34.4	----	57.0	----	22.6	----	N(QP)
3	1.41600	20.1	----	10.1	30.2	----	56.0	----	25.8	----	N(QP)
4	4.51200	19.8	----	10.1	29.9	----	56.0	----	26.1	----	N(QP)
5	10.24000	16.3	----	10.3	26.6	----	60.0	----	33.4	----	N(QP)
6	21.77000	25.7	----	10.6	36.3	----	60.0	----	23.7	----	N(QP)
7	0.18100	----	15.4	9.9	----	25.3	----	54.4	----	29.1	N(CAV)
8	0.44300	----	18.4	9.9	----	28.3	----	47.0	----	18.7	N(CAV)
9	1.41600	----	16.4	10.1	----	26.5	----	46.0	----	19.5	N(CAV)
10	4.51200	----	11.1	10.1	----	21.2	----	46.0	----	24.8	N(CAV)
11	10.24000	----	6.4	10.3	----	16.7	----	50.0	----	33.3	N(CAV)
12	21.77000	----	18.3	10.6	----	28.9	----	50.0	----	21.1	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

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13. LIST OF TEST EQUIPMENT

Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
FSV30	Rohde & Schwarz	Signal Analyzer	101372	Jul. 14, 2021 (1Y)
ESR7	Rohde & Schwarz	EMI Test Receiver	102190	Oct. 12, 2021 (1Y)
ESH3-Z2	Rohde & Schwarz	PULSE LIMITER	100655	Mar. 14, 2022 (1Y)
NSLK8126	Schwarzbeck	AMN	8128216	Mar. 14, 2022 (1Y)
310N	Sonoma Instrument	AMPLIFIER	312544	Mar. 15, 2022 (1Y)
SCU18	Rohde & Schwarz	Signal Conditioning unit	102266	Jul. 14, 2021 (1Y)
SCU40A	Rohde & Schwarz	Signal Conditioning unit	100436	Jan. 18, 2022 (1Y)
DT2000-2t	Innco Systems GmbH	Turn Table	N/A	N/A
CO3000	Innco Systems GmbH	Controller	1026/40960617/P	N/A
MA-4640-XPET	Innco Systems GmbH	Antenna Master	MA4640/652/43100318/P	N/A
HLP-2008	TDK RF Solutions	Hybrid Antenna	131316	Mar. 07, 2022 (2Y)
BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Jan. 06, 2022(1Y)
AH-118	Com-Power	Horn Antenna	10050061	Oct. 15, 2021 (1Y)
FMZB 1513	Schwarzbeck	Loop Antenna	1513-235	Mar. 24, 2022(2Y)
HPF 3GHz	Rohde & Schwarz	High Pass Filter	N/A	Jan. 18, 2022 (1Y)
GP-4303D	LG Precision Co.,Ltd	DC POWER SUPPLY	5071069	Jan. 03, 2022 (1Y)

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