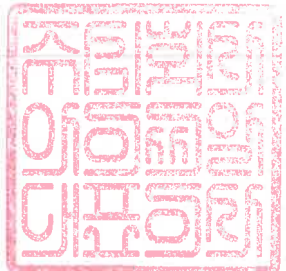




시험 성적서 TEST REPORT

페이지(page) : (1) / (총(Total) 66)

성적서 번호 Report No.		ICRT-TR-E211788-0A	
신청자 Client	기관명 Name	AJAX SYSTEMS CYPRUS HOLDINGS LTD	
	주소 Address	Ifigeneias, 17, Strovolos, 2007, Nicosia, Cyprus	
시험대상품목 Sample description		Security Control Panel	
모델명 Type designation		Ajax Hub 2 (9NA)	
정격 Ratings		AC 110 V ~ 240 V	
시험장소 Place of test		<input checked="" type="checkbox"/> 고정시험(Inside test) <input type="checkbox"/> 현장시험(Field test) 주소지(Address): 112, 113 Hwanggeum 3-ro 7beon-gil, Hagun-ri, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea	
시험기간 Date of test		28. July. 2021 ~ 30. July. 2021	
시험방법/항목 Test Method/Item		FCC Part 15 Subpart C §15.247 / IC RSS-247	
시험결과 Test Results		Refer to 3. Test Summary	
확인 Affirmation	작성자 Tested by	기술책임자 Technical Manager	
	성명 Name	(서명) Yeong-Hwan, Hong (Signature)	성명 Name Min-Gi, Son (Signature)
<input type="checkbox"/> 위 성적서는 고객이 제공한 시료에 대한 시험결과입니다. This is certified that the above mentioned products have been tested for the sample			
<input type="checkbox"/> 위 성적서는 KS Q ISO/IEC 17025 및 한국인정기구(KOLAS)인정과 관련이 없습니다. The above test report is not related to accreditation by KS Q ISO/IEC 17025 and Korea Laboratory Accreditation scheme.			
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2021. 08. 03 주식회사 아이씨알 대표이사 The head of INTERNATIONAL CERTIFICATION REGISTRAR			
			

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The authenticity of the test report can be checked on the G4B or ICR website.

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12.3 Test setup 62

12.4 Test data 63

Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
ICRT-TR-E211788-0A	03-Aug-2021	Initial Issue	All



1. Applicant & Manufacturer & Test Laboratory Information

1.1 Applicant information

Applicant	AJAX SYSTEMS CYPRUS HOLDINGS LTD
Address	Ifigeneias, 17, Strovolos, 2007, Nicosia, Cyprus
Contact Person	Iryna Khimych
Telephone No.	+380502279000
Fax No.	+380502279000
E-mail	ajax.systems.fcc@gmail.com

1.2 Manufacturer Information

Manufacturer 1	Ajax Systems Manufacturing Limited Liability Company
Address	Sklyarenka, 5, Kyiv, 04073 Ukraine

1.3 Test Laboratory Information

Conducted tests were performed at	
Laboratory	ICR Co., Ltd.
Address	112, Hwanggeum 3-ro 7beon-gil, Hagun-ri, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea
Telephone No.	+82-2-6351-9002
Fax No.	+82-2-6351-9007
RRA No.	KR0165
KOLAS No.	KT652
Test Firm Registration Number	490614



2. Equipment under Test(EUT) Information

2.1 General Information

Product Name	Security Control Panel
Model Name	Ajax Hub 2 (9NA)
Additional Model Name	-
FCC ID / IC ID	2AX5VHUB2-NA / 26860-HUB2NA1
Power Supply	AC 110 V ~ 240 V

2.2 Additional Information

Equipment Class	DSS-Spread Spectrum Transmitter	
Device Type	Stand-alone	
Operating Frequency	905 MHz ~ 926.5 MHz	
RF Output Power	Module1	9.30 dBm
	Module2	12.50 dBm
Number of Channel	103	
Modulation Type	FHSS Modulation	
Antenna Type	Inverted-L / Inverted-F	
Antenna Gain	Inverted-L PCB Antenna	-5 dBi
	Inverted-F PCB Antenna	-6 dBi
Antenna Operating Mode	Single Equipment with only two antenna	

2.3 Mode of operation during the test

- The EUT is continuous transmission mode during the test with set at Low Channel, Middle Channel, and High Channel. To get a maximum radiated emission levels from the EUT, the EUT was moved throughout the XY, YZ, XZ planes.

2.4 Modifications of EUT

- None



3. Test Summary

3.1 Test standards and results

FCC Part 15 Subpart C				
Clause		Test items	Applied	Results
§15.247 (a) (1)	RSS-247 5.1 (a) RSS-Gen 6.7	20 dB Bandwidth & 99 % Bandwidth	☒	PASS
§15.247 (b) (2)	RSS-247 5.4 (b)	Peak Output Power	☒	PASS
§15.247 (e)	RSS-247 5.1 (d)	Number of Hopping Frequency	☒	PASS
§15.247 (a) (1)	RSS-247 5.1 (b)	Hopping Channel Separation	☒	PASS
§15.247 (i)	RSS-247 5.1 (d)	Average Time of Occpuancy	☒	PASS
§15.247 (d)	RSS-247 5.5	Conducted Spurious Emission	☒	PASS
§15.247 (d) & §15.209 & §15.205	RSS-247 5.5 RSS-GEN 8.9 RSS-GEN 8.10	Radiated Spurious Emission	☒	PASS
§15.207	RSS-GEN 8.8	Power Line Conducted Emission	☒	PASS
§15.203	-	Antenna Requirement	☒	PASS

3.2 Purpose of the test

- To determine whether the equipment under test fulfills the requirements of the standards stated in FCC Part 15 Subpart C Section 15.247.

3.3 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.

3.4 Configuration of Test System

3.4.1 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 m 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.

3.4.2 AC powerline conducted emission test

The EUT was connected to LISN. All supporting equipments 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.



3.5 Antenna requirement

According to §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.

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section.

The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi.

Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.5.1 Result: Pass

The transmitter has a ***Inverted-L PCB Antenna***. The directional gain of the antenna is ***-5 dBi***.

The transmitter has a ***Inverted-F PCB Antenna***. The directional gain of the antenna is ***-6 dBi***.



4. Used equipment on test

	Description	Model Name	Serial Number	Manufacturer	Next Cal. (cycle)
<input checked="" type="checkbox"/>	Spectrum analyzer	FSV40	101455	Rohde & Schwarz	2022. 06. 16 (1Y)
<input checked="" type="checkbox"/>	Signal Generator	SMB100A	180607	Rohde & Schwarz	2022. 03. 03 (1Y)
<input checked="" type="checkbox"/>	DC Power Supply	XDL 35-5P	J00385373	Sorensen	2022. 03. 03 (1Y)
<input checked="" type="checkbox"/>	Loop Antenna	HFH2-Z2	100506	Rohde & Schwarz	2023. 07. 05 (2Y)
<input checked="" type="checkbox"/>	TRILOG BROADBAND ANTENNA	VULB9162	120	SCHWARZBECK	2022. 12. 15 (2Y)
<input checked="" type="checkbox"/>	RF Pre Amplifier	SCU08	100747	Rohde & Schwarz	2022. 04. 14 (1Y)
<input checked="" type="checkbox"/>	DOUBLE-RIDGE WAVEGUIDE HORN ANTENNA	HF907	102556	Rohde & Schwarz	2022. 08. 21 (1Y)
<input checked="" type="checkbox"/>	RF Pre Amplifier	SCU18	102342	Rohde & Schwarz	2022. 04. 14 (1Y)
<input checked="" type="checkbox"/>	Horn Antenna	LB-42-10-C-KF	J202024625	AINFO Inc.	2022. 03. 04 (1Y)
<input checked="" type="checkbox"/>	RF Pre Amplifier	AMF-4F-18265-35-8P-1	771846	MITEQ	2022 .03. 04 (1Y)
<input checked="" type="checkbox"/>	Horn Antenna	LB-28-10-C-KF	J202024627	AINFO Inc.	2022. 03. 04 (1Y)
<input checked="" type="checkbox"/>	RF Pre Amplifier	AMF-4D-260400-45-6P	779919	MITEQ	2022 .03. 04 (1Y)
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR26	101461	Rohde & Schwarz	2022. 04. 14 (1Y)
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR26	101462	Rohde & Schwarz	2022. 04. 14 (1Y)
<input checked="" type="checkbox"/>	LISN	ENV216	102194	Rohde & Schwarz	2022. 04. 15 (1Y)
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR3	102119	Rohde & Schwarz	2022. 04. 14 (1Y)
<input checked="" type="checkbox"/>	ATTENUATOR	WA76-20-1313	1633	WEINSCHEL	2022. 03. 14 (1Y)
<input checked="" type="checkbox"/>	Spectrum analyzer	N9020A	MY51110087	Agilent	2022. 07. 12 (1Y)

※ All test equipment used is calibration on a regular basis.



5. 20 dB Bandwidth & 99 % Bandwidth

5.1 Operating environment

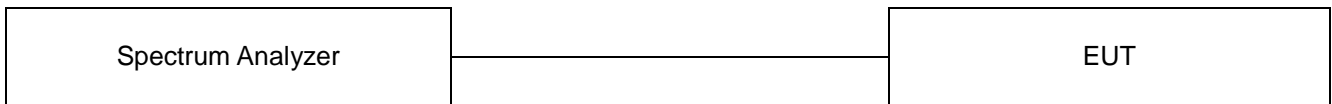
Temperature : 25 °C
Relative humidity : 46 %

5.2 Measurement method

Standard : §15.247 (a) (1) / RSS-247 (5.1 a) & RSS-Gen(6.7)

5.3 Test setup

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 10 kHz, and peak detection was used. The 20 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 20 dB.





5.4 Test data

Test date : 30. July. 2021
 Operating mode : Transmit mode
 Test Result : Pass

5.4.1 Measured Results_Module 1

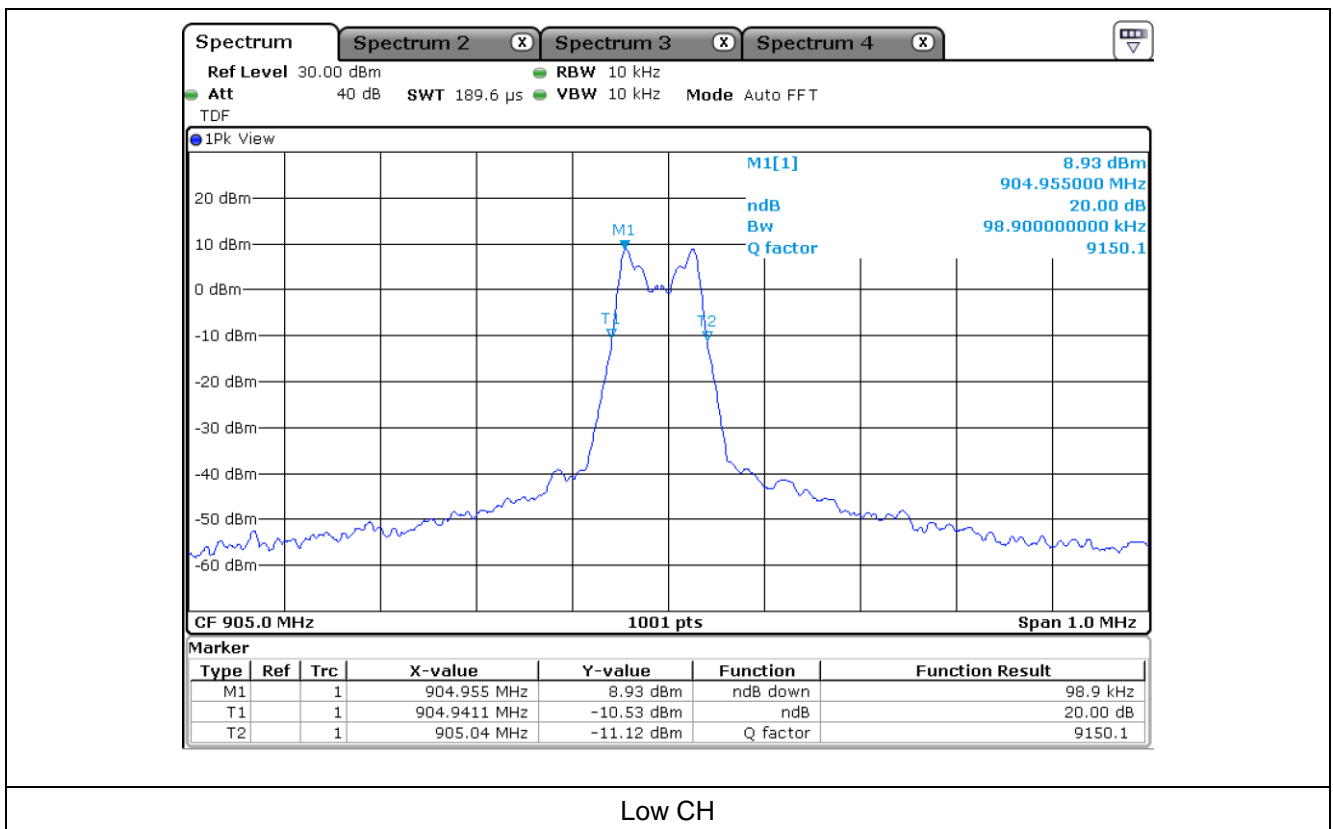
5.4.1.1 20 dB Bandwidth Measured Results

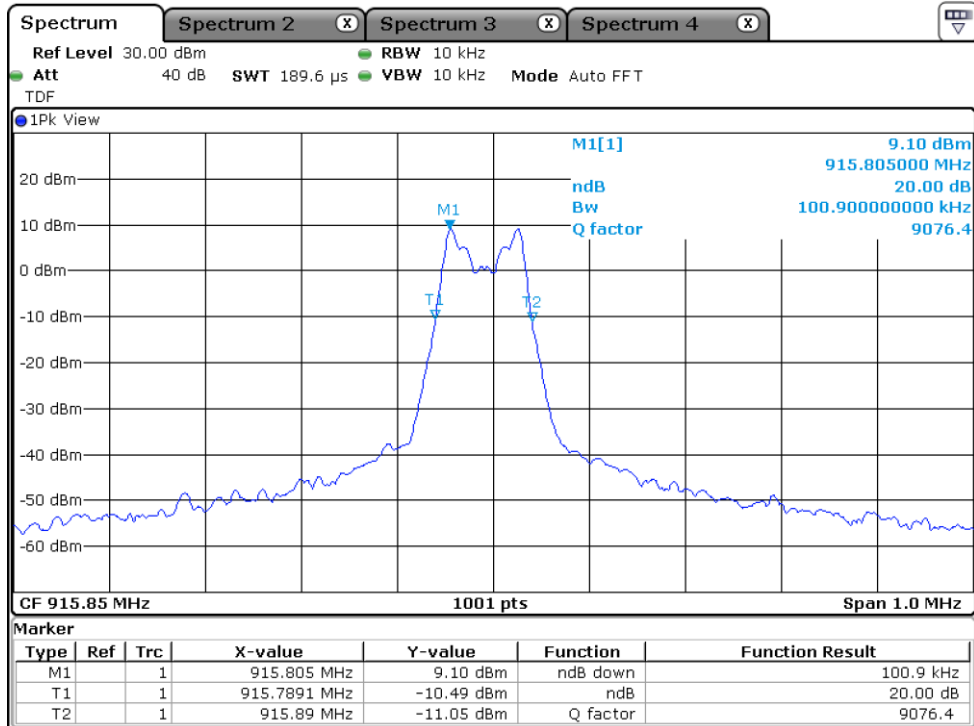
Modulation Type	Channel (Frequency)	Measured Value (MHz)	Limit (kHz)
GFSK	1 (905 MHz)	98.9	250
	52 (915.85 MHz)	100.9	
	103 (926.5 MHz)	100.9	

5.4.1.2 99 % Bandwidth Measured Results

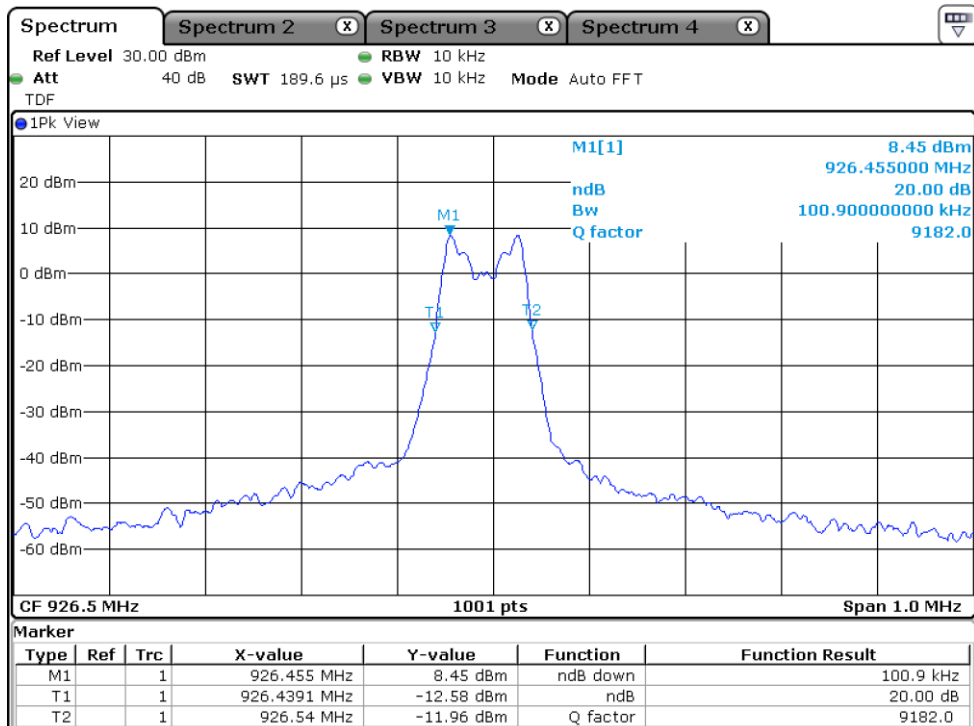
GFSK	1 (905 MHz)	91.9	250
	52 (915.85 MHz)	91.9	
	103 (926.5 MHz)	89.9	

5.4.1.3 Measured Graph for 20 dB Bandwidth





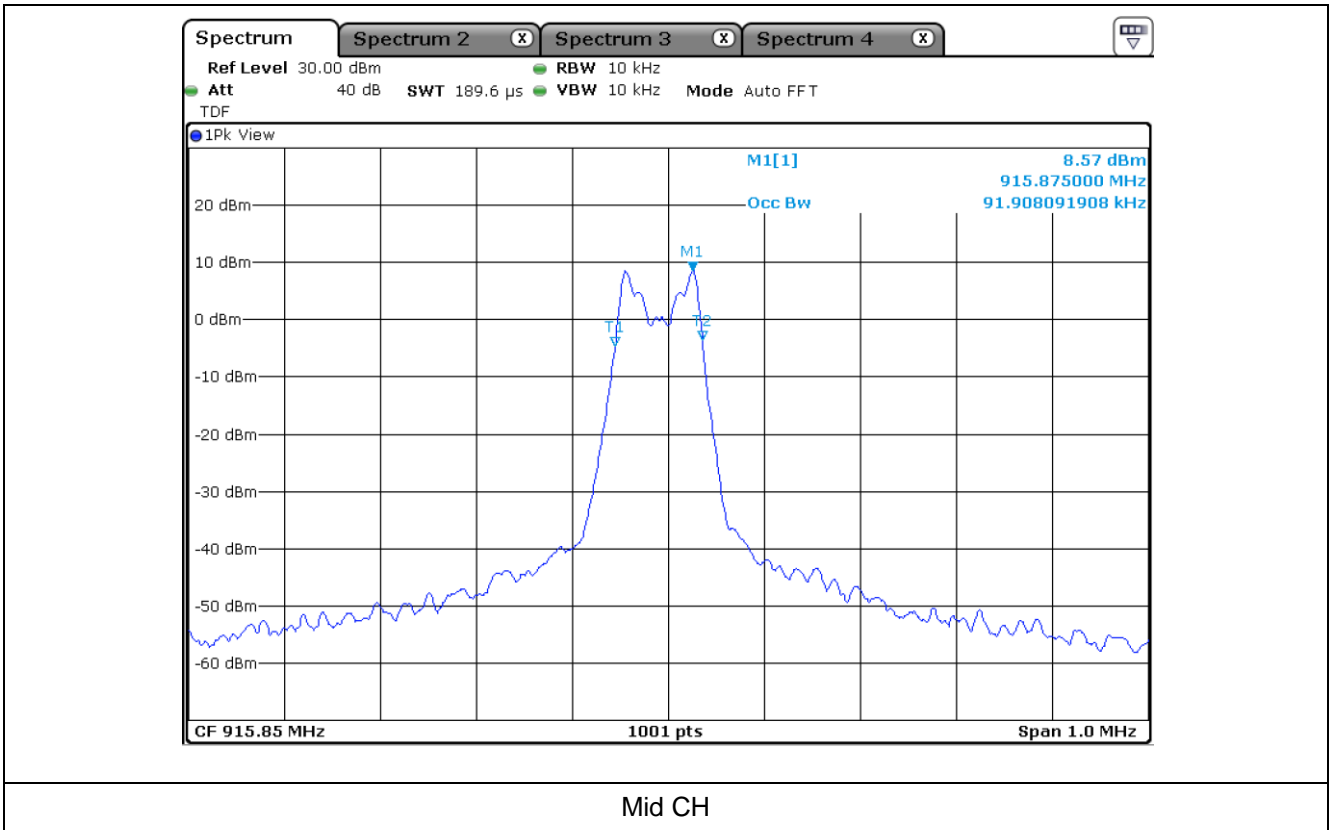
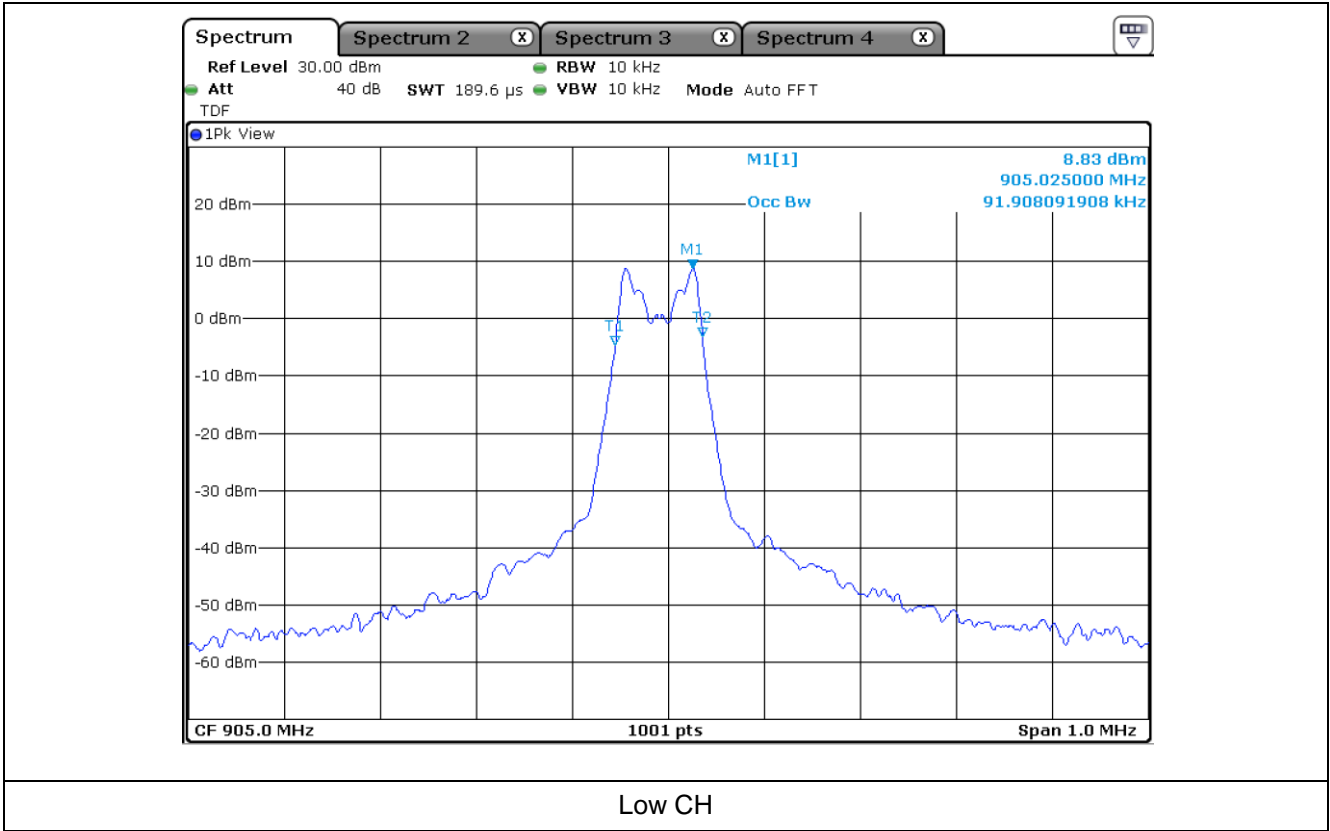
Mid CH

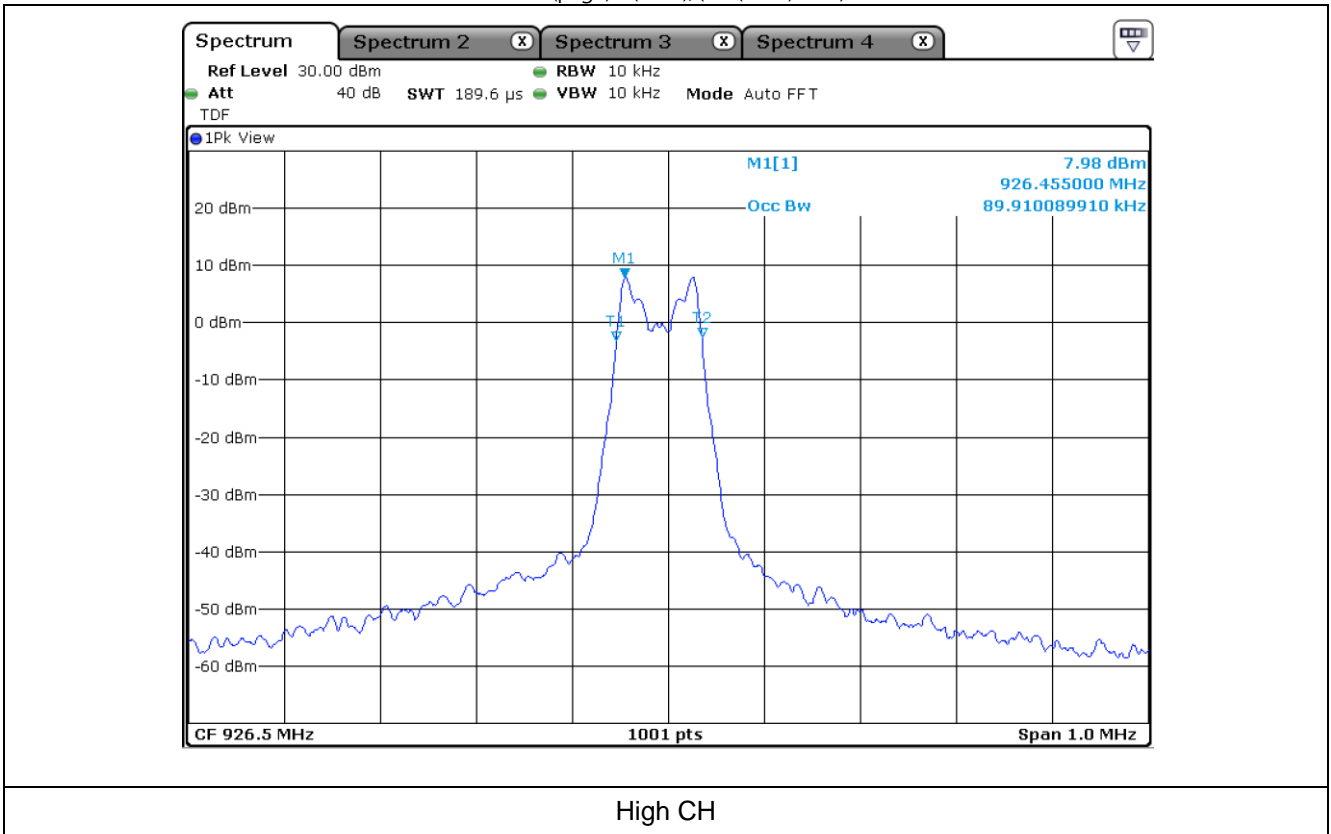


High CH



5.4.1.4 Measured Graph for 99 % Bandwidth







5.4.2 Measured Results_Module 2

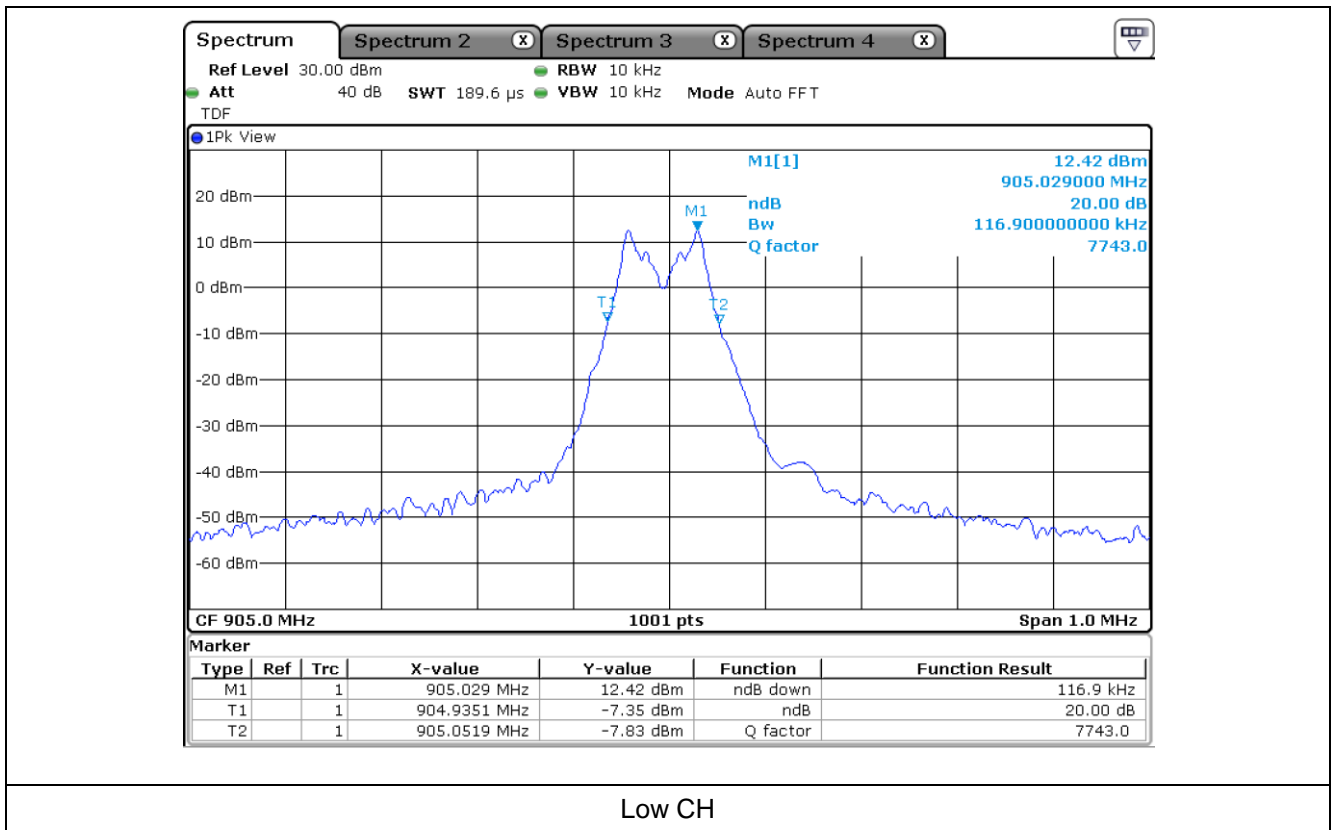
5.4.2.1 20 dB Bandwidth Measured Results

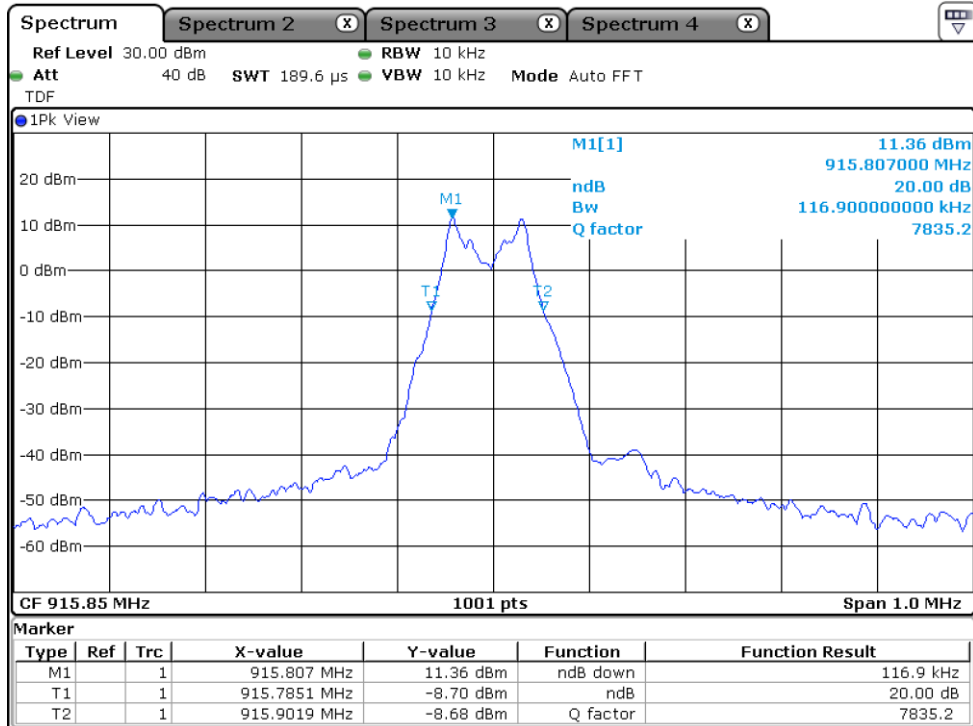
Modulation Type	Channel (Frequency)	Measured Value (MHz)	Limit (kHz)
GFSK	1 (905 MHz)	116.9	250
	52 (915.85 MHz)	116.9	
	103 (926.5 MHz)	116.9	

5.4.2.2 99 % Bandwidth Measured Results

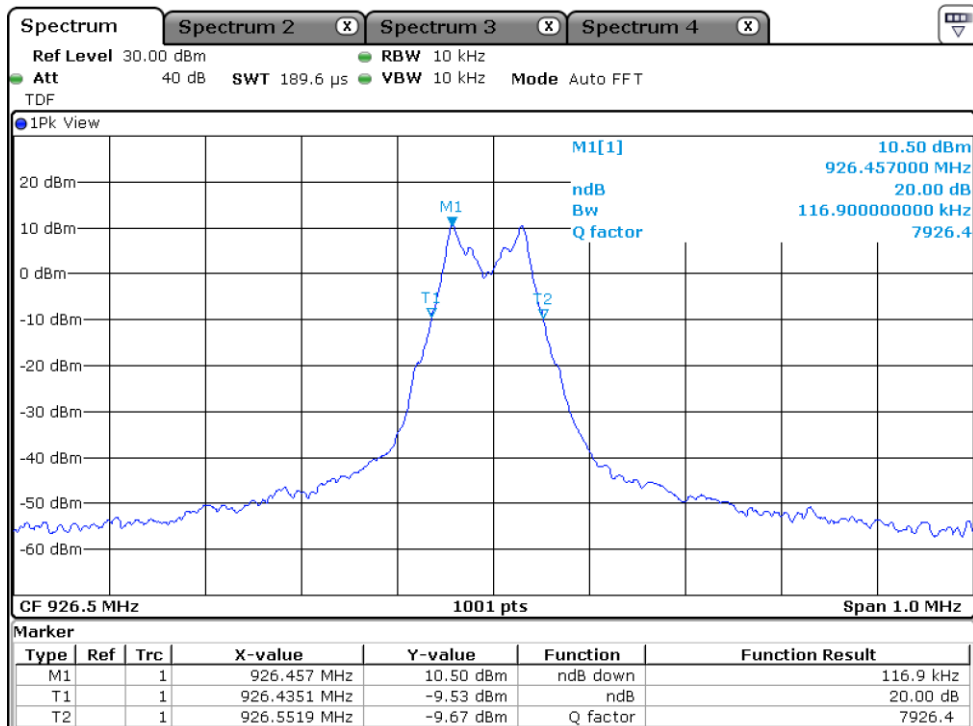
GFSK	1 (905 MHz)	104.9	250
	52 (915.85 MHz)	102.9	
	103 (926.5 MHz)	103.9	

5.4.2.3 Measured Graph for 20 dB Bandwidth





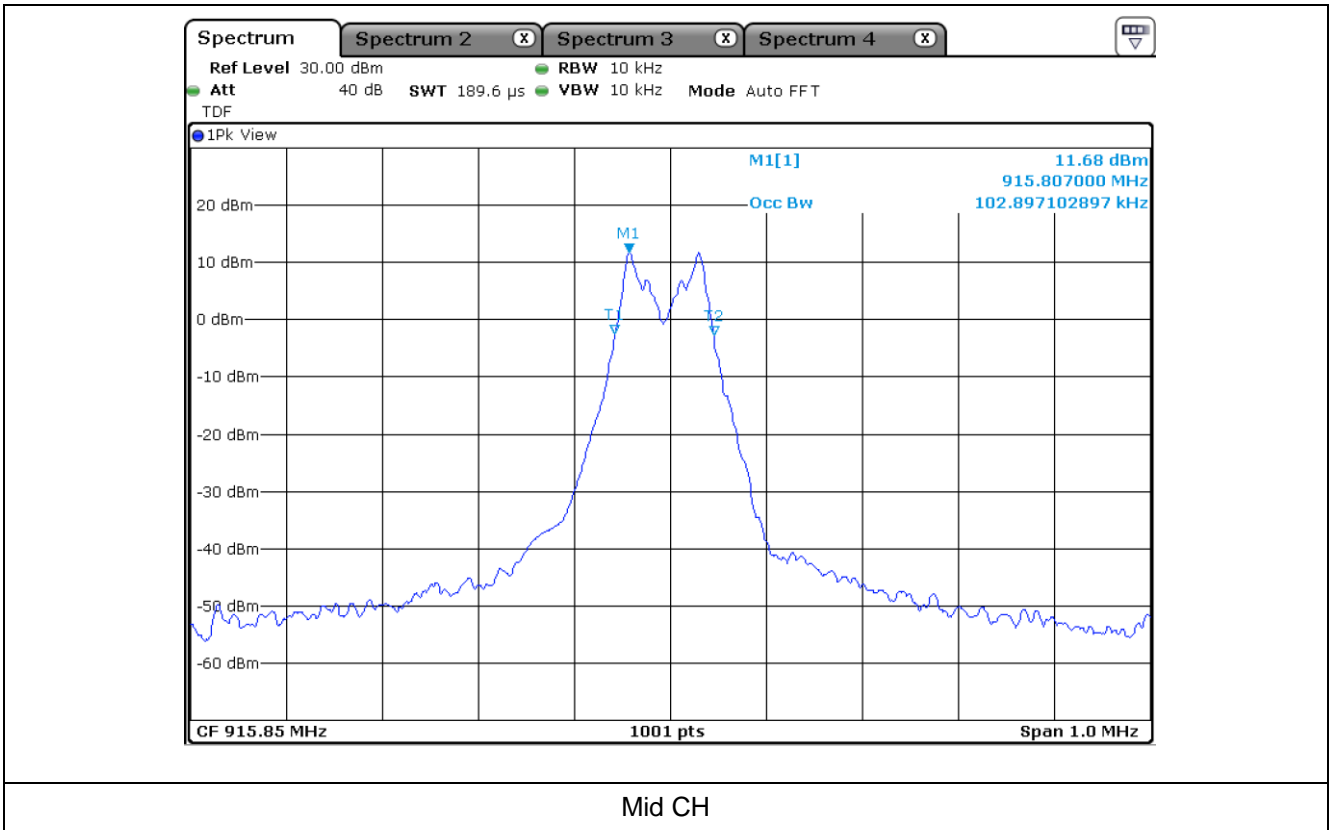
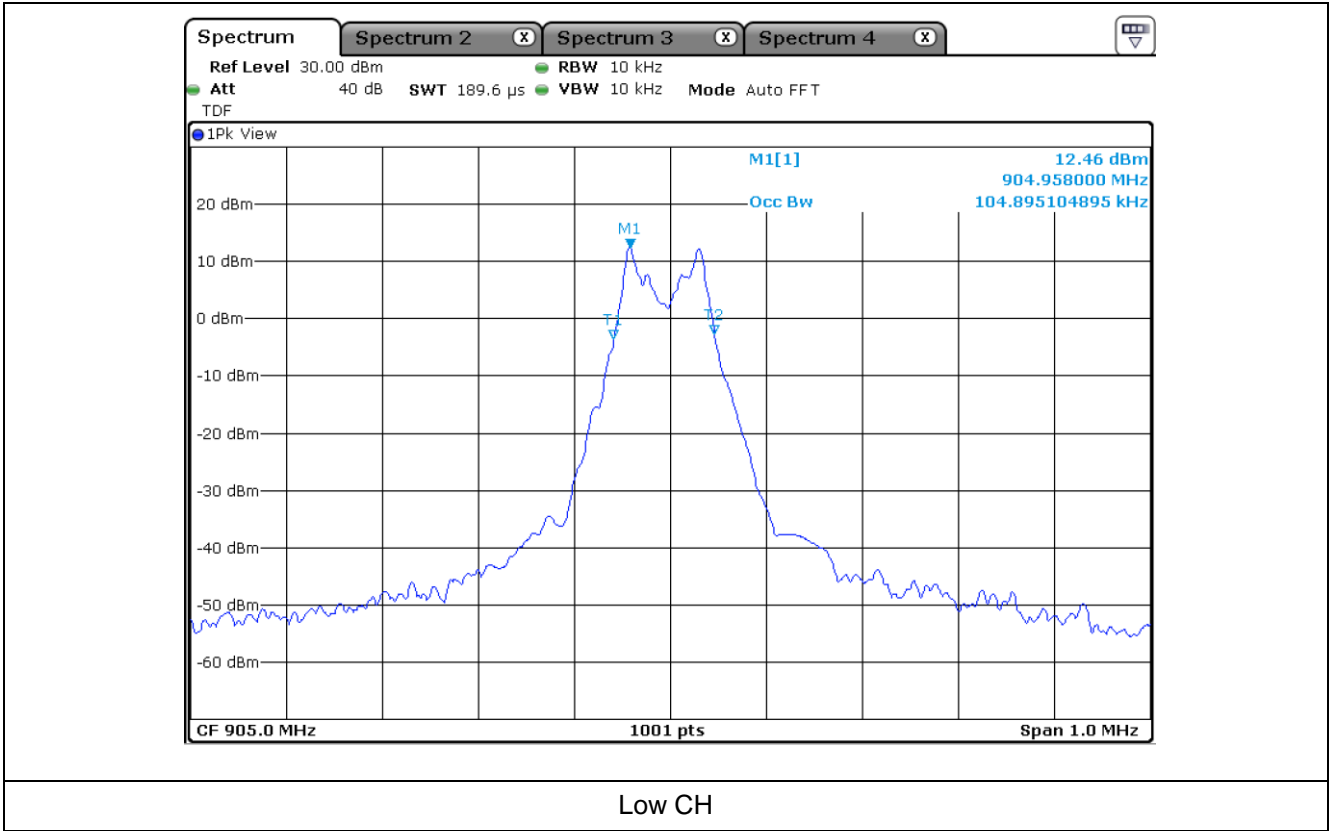
Mid CH

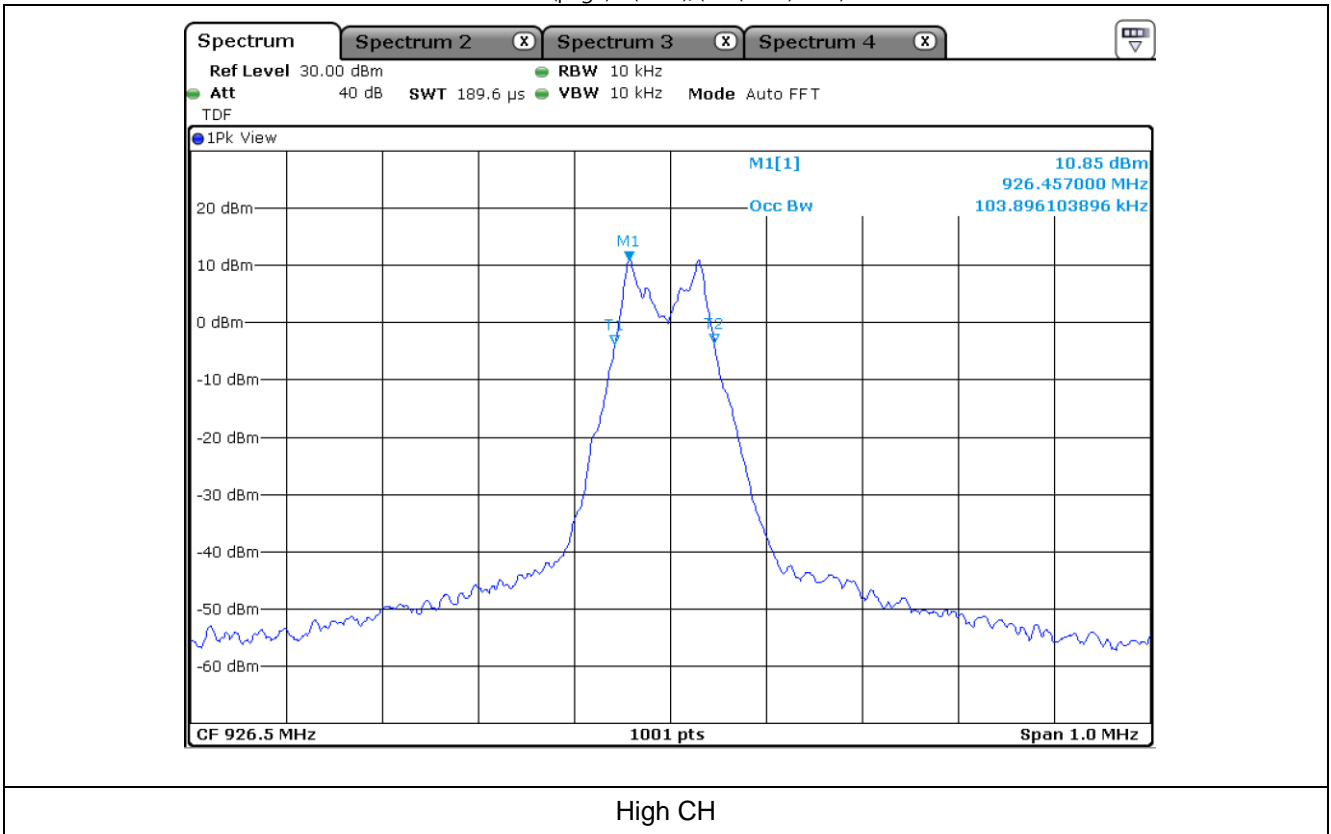


High CH



5.4.2.4 Measured Graph for 99 % Bandwidth







6. Maximum Conducted Peak Output Power

6.1 Operating environment

Temperature : 25 °C

Relative humidity : 46 %

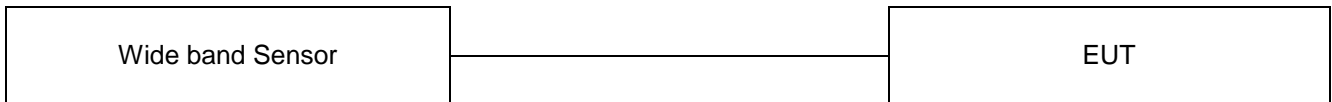
6.2 Measurement method

Standard : §15.247 (b) (2) / RSS-247 (5.4 b)

6.3 Test setup

The maximum peak output power was measured with the wide band sensor connected to the antenna output power of the EUT. The Wide Band Sensor is measured when the EUT is transmitting at the appropriate center frequency its maximum power control level as described in Section 8.3(558074 D01 15.247 Meas Guidance v05r02).

Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.





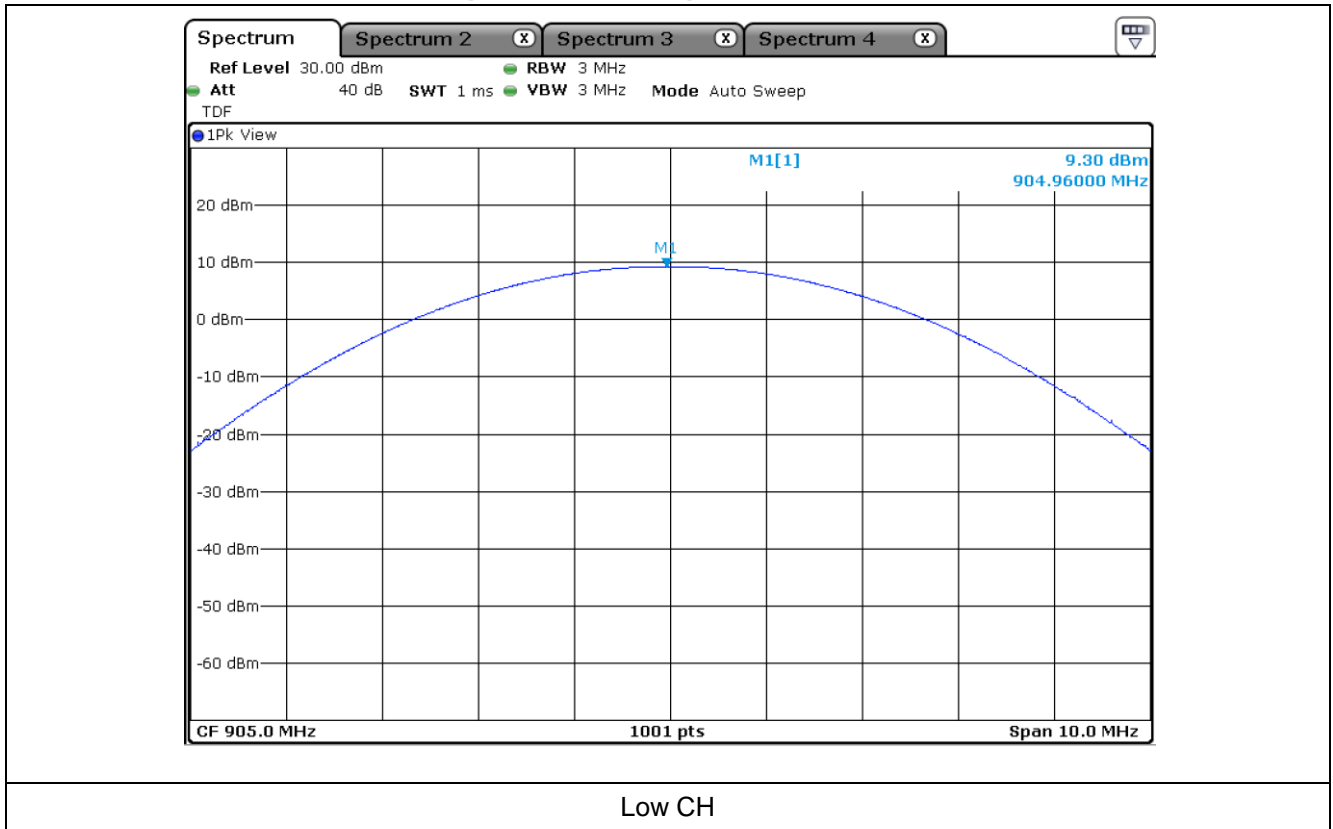
6.4 Test data

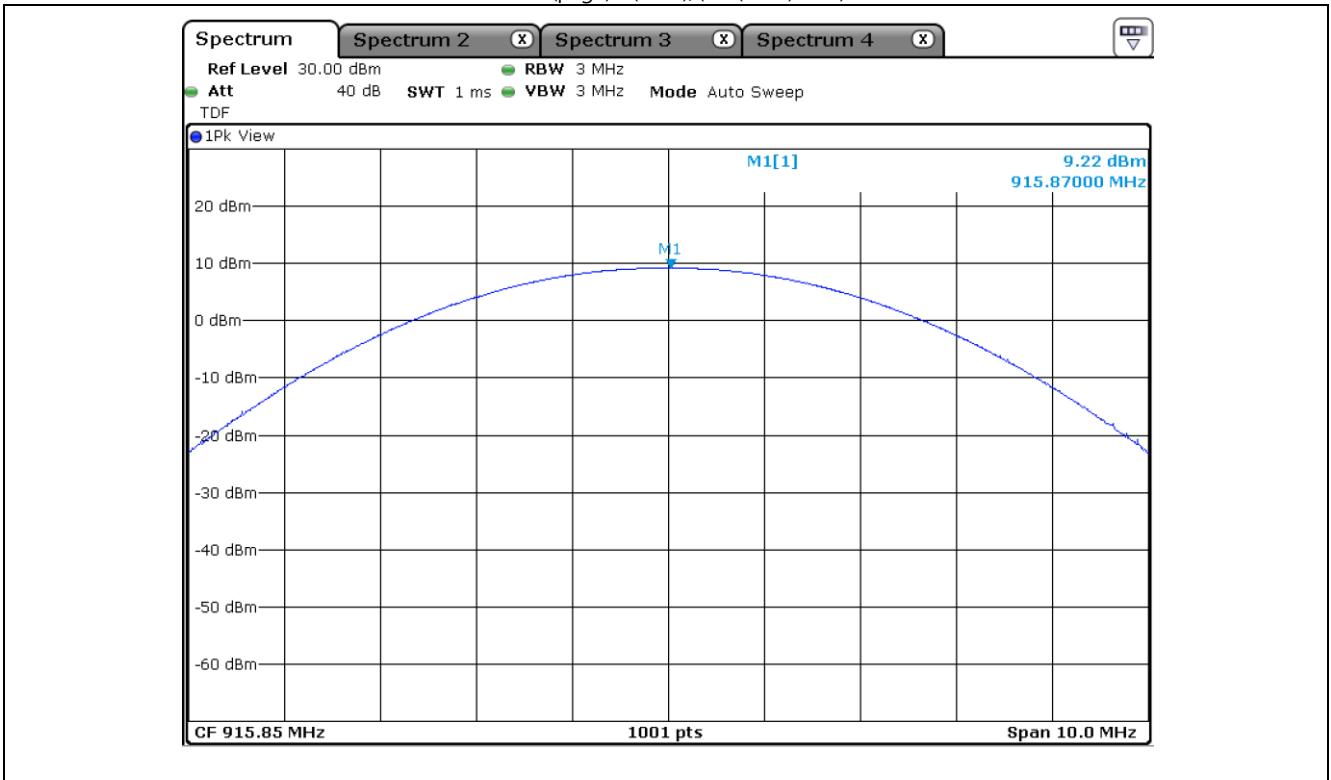
Test date : 30. July. 2021
 Operating mode : Transmit mode
 Test Result : Pass

6.4.1 Measured Results_Module 1

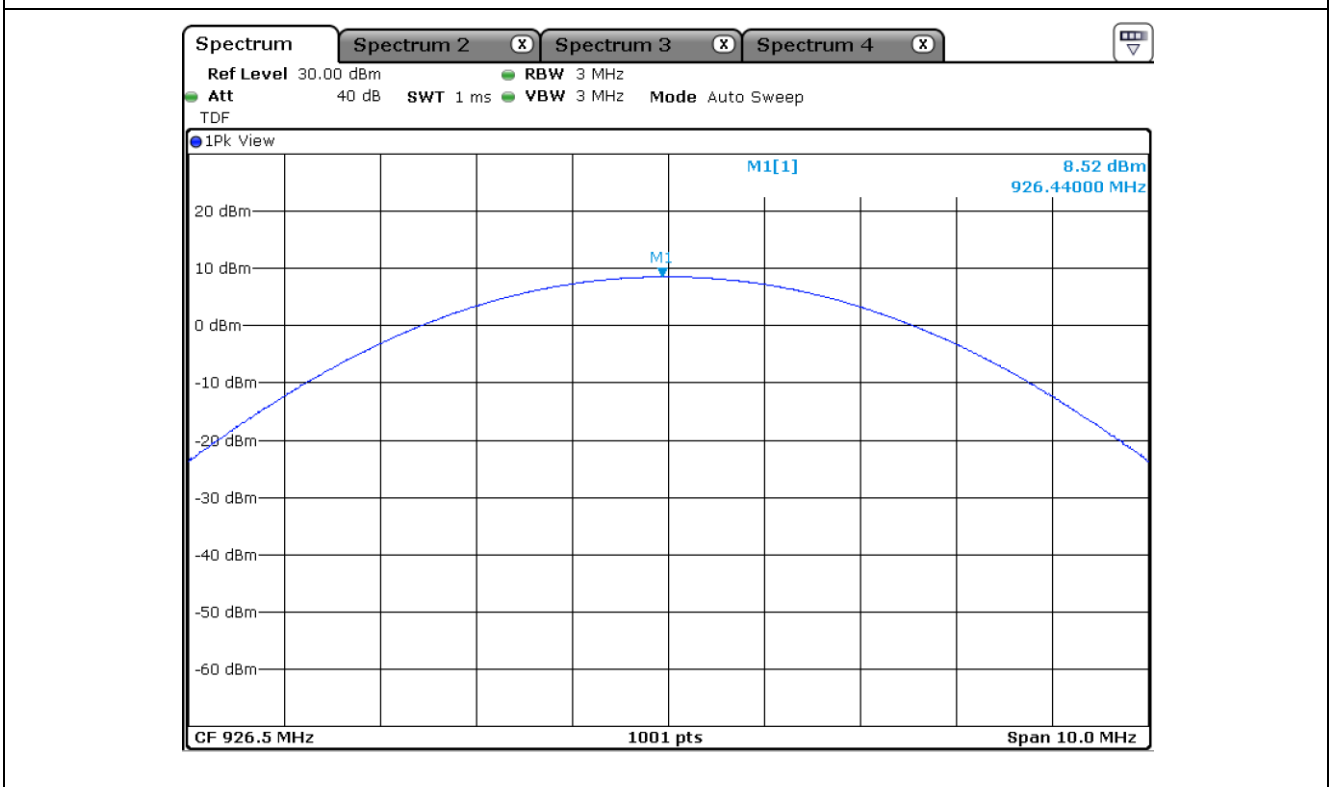
Modulation Type	Channel (Frequency)	Measured Value (dBm)	Limit (dBm)
GFSK	1 (905 MHz)	9.30	30
	52 (915.85 MHz)	9.22	
	103 (926.5 MHz)	8.52	

6.4.1.1 Measured Graph for Peak Output Power





Mid CH



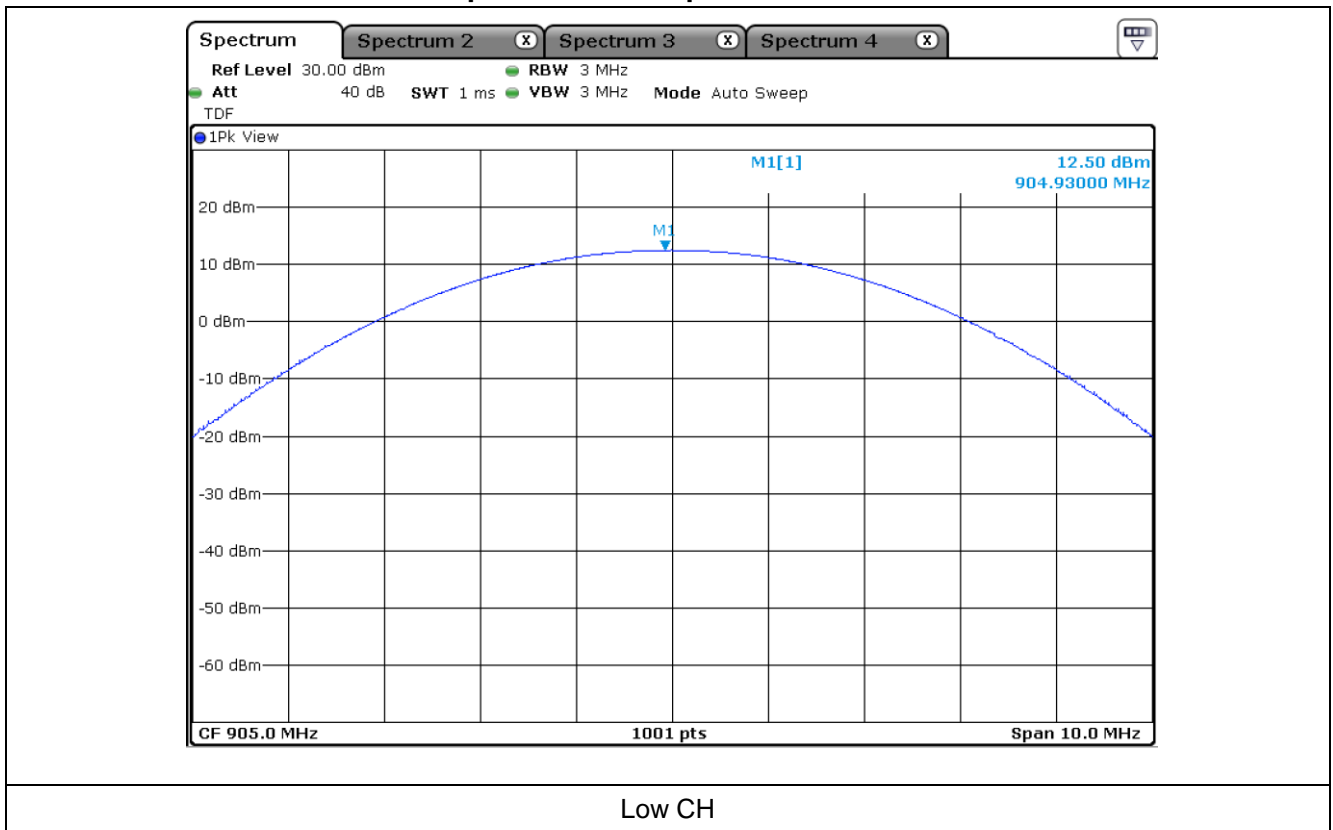
High CH

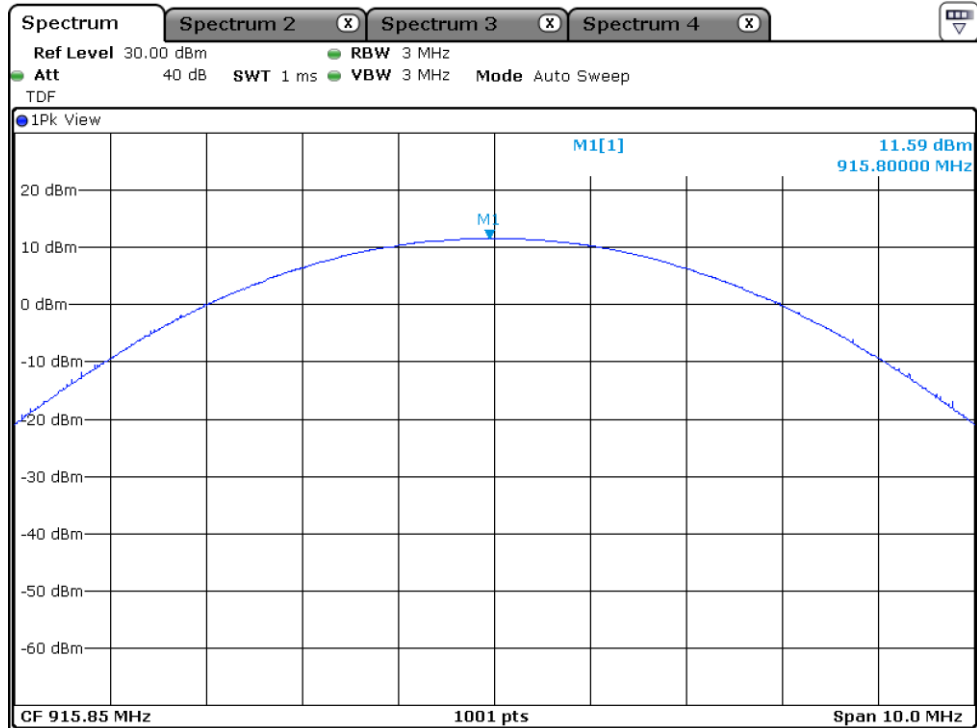


6.4.2 Measured Results_Module 2

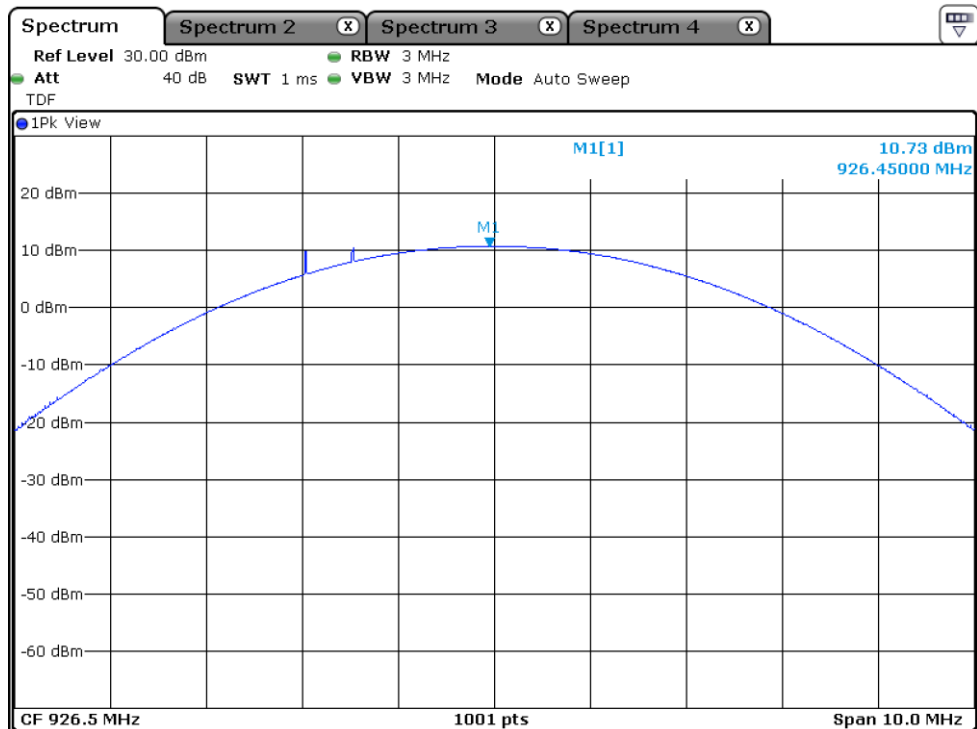
Modulation Type	Channel (Frequency)	Measured Value (dBm)	Limit (dBm)
GFSK	1 (905 MHz)	12.50	30
	52 (915.85 MHz)	11.59	
	103 (926.5 MHz)	10.73	

6.4.2.1 Measured Graph for Peak Output Power





Mid CH



High CH



7. Hopping Channel Separation

7.1 Operating environment

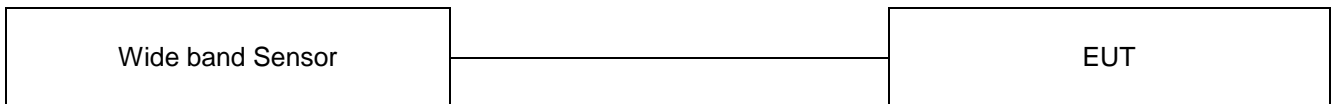
Temperature : 25 °C
Relative humidity : 46 %

7.2 Measurement method

Standard : §15.247 (a) (1) / RSS-247 (5.1 b)

7.3 Test setup

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



7.4 Test data

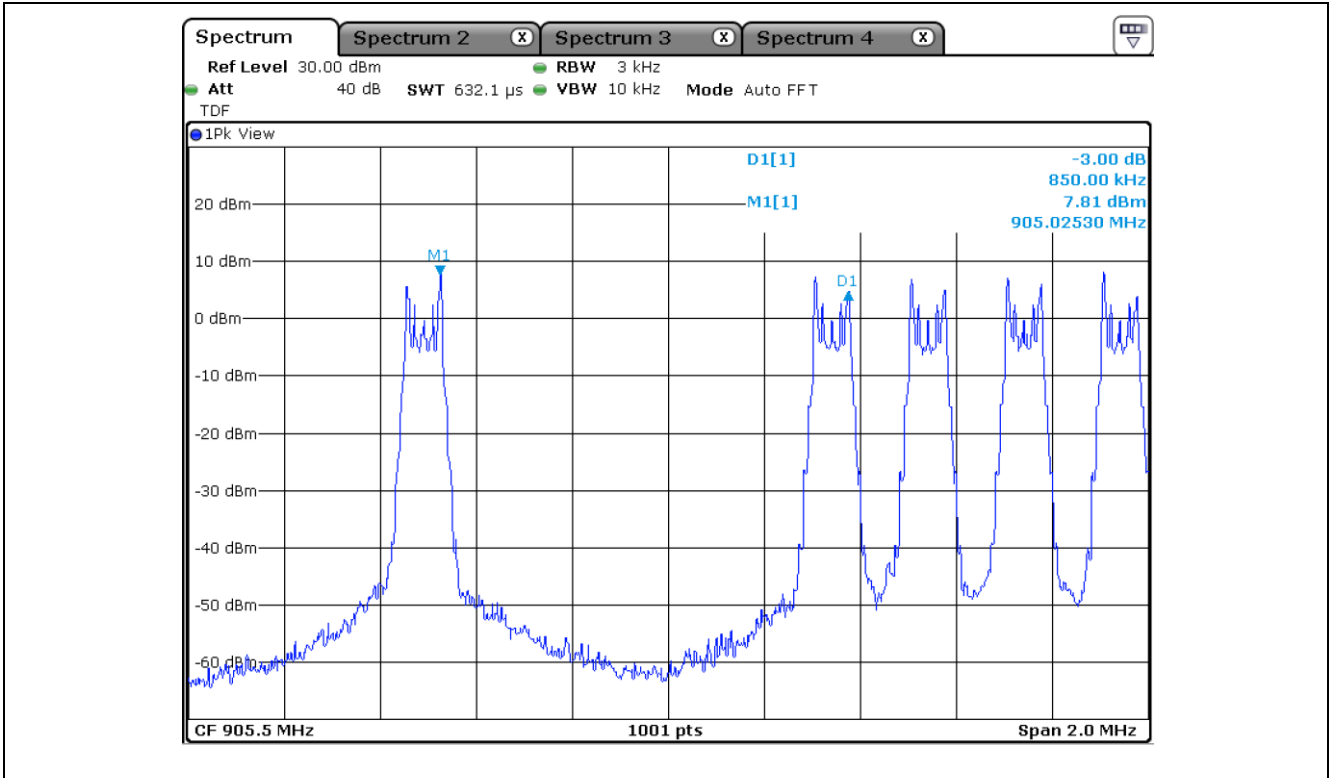
Test date : 30. July. 2021
Operating mode : Transmit mode
Test Result : Pass

7.4.1 Measured Results_Moduel 1

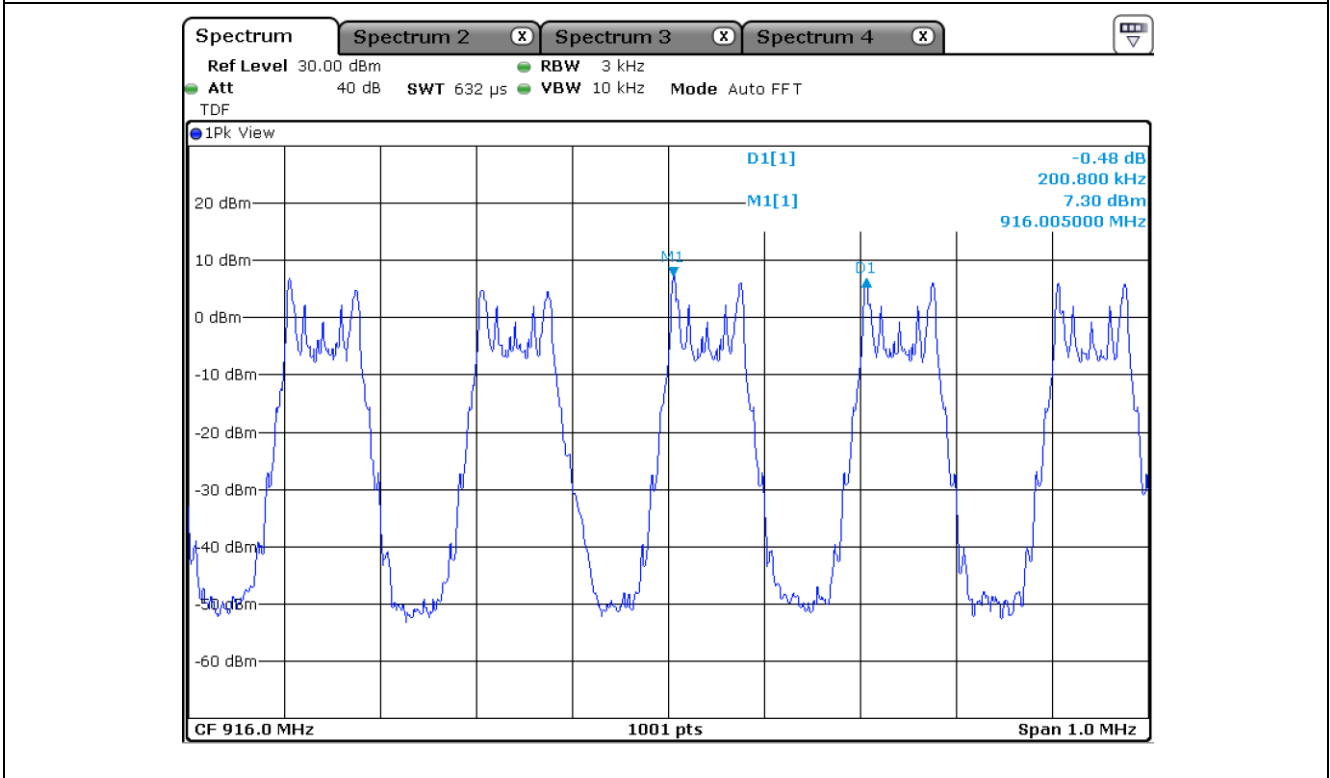
Modulation Type	Channel (Frequency)	Measured Value (kHz)	Limit (kHz)
GFSK	1 (905 MHz)	850.0	> 98.9
	52 (915.85 MHz)	200.8	> 100.9
	103 (926.5 MHz)	651.3	> 100.9



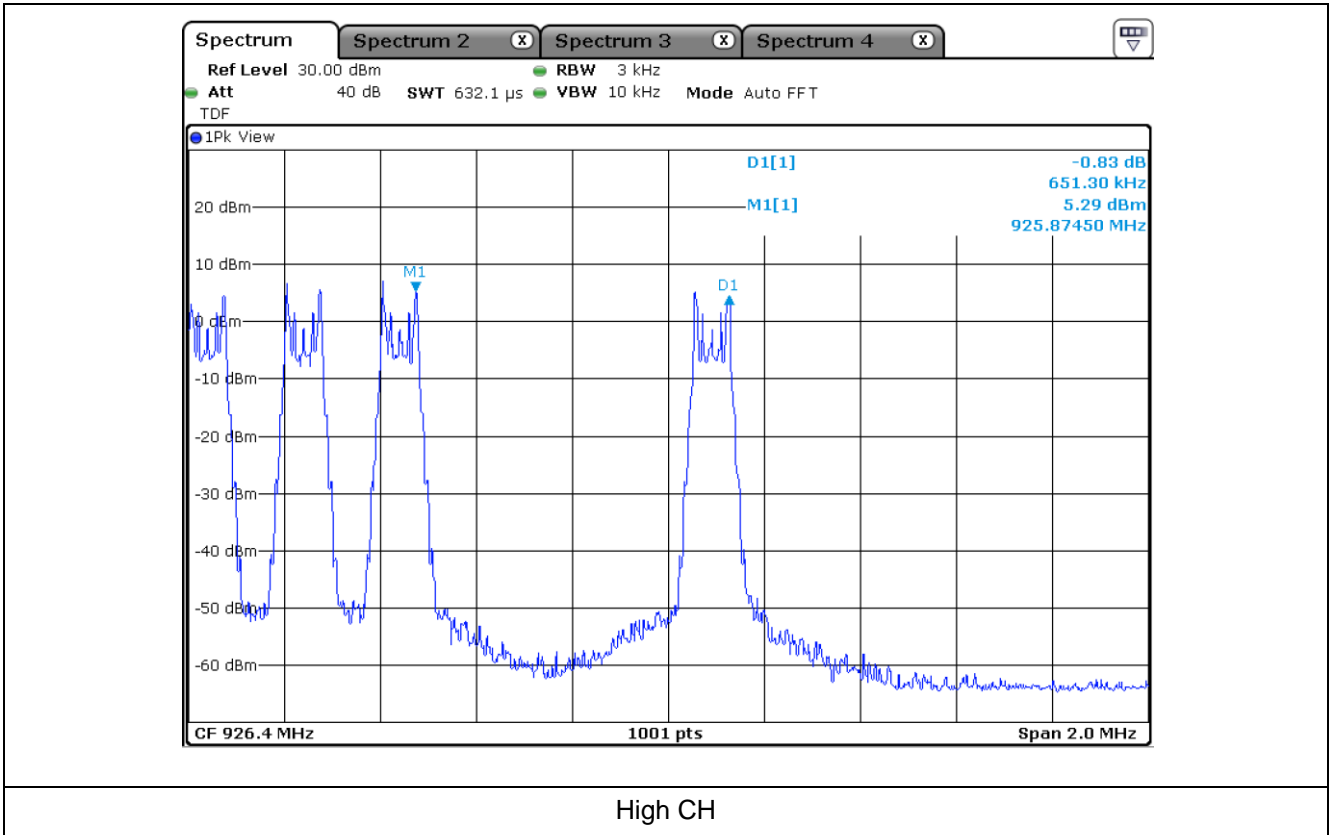
7.4.1.1 Measured Graph for Peak Output Power



Low CH



Mid CH

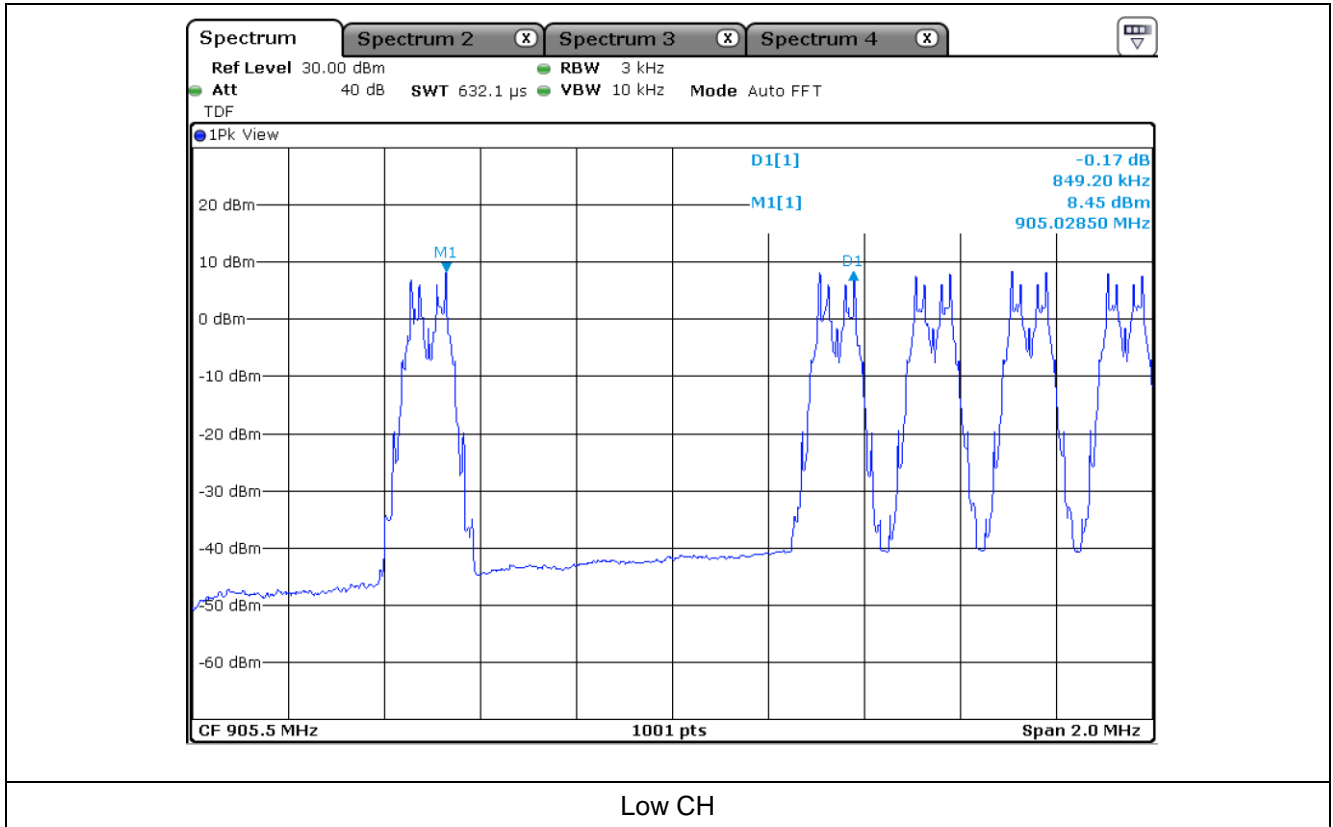


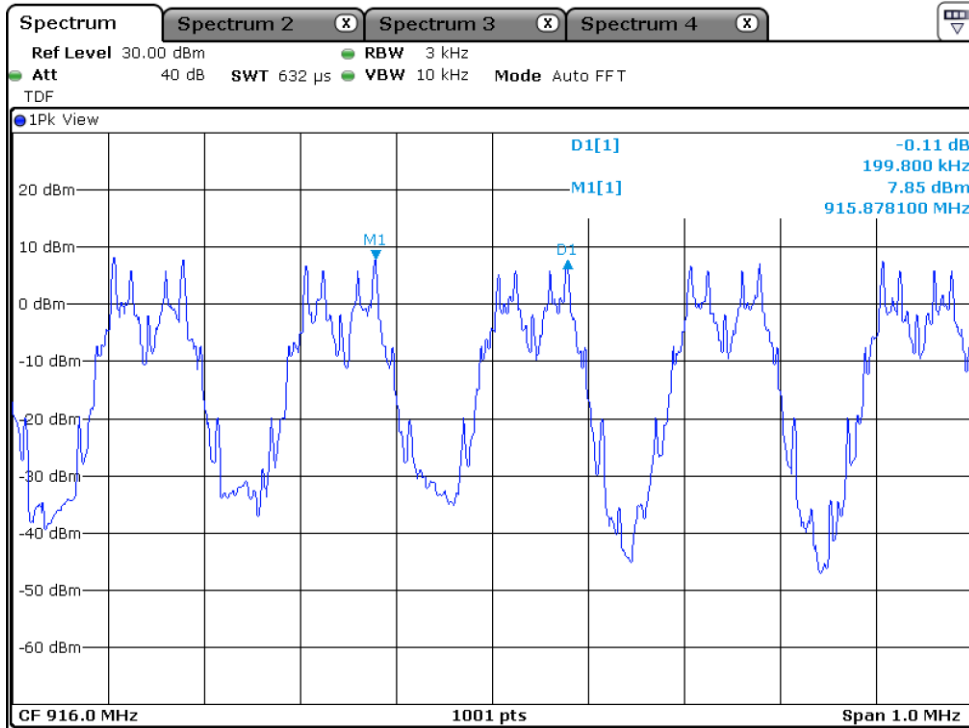


7.4.2 Measured Results_Module 2

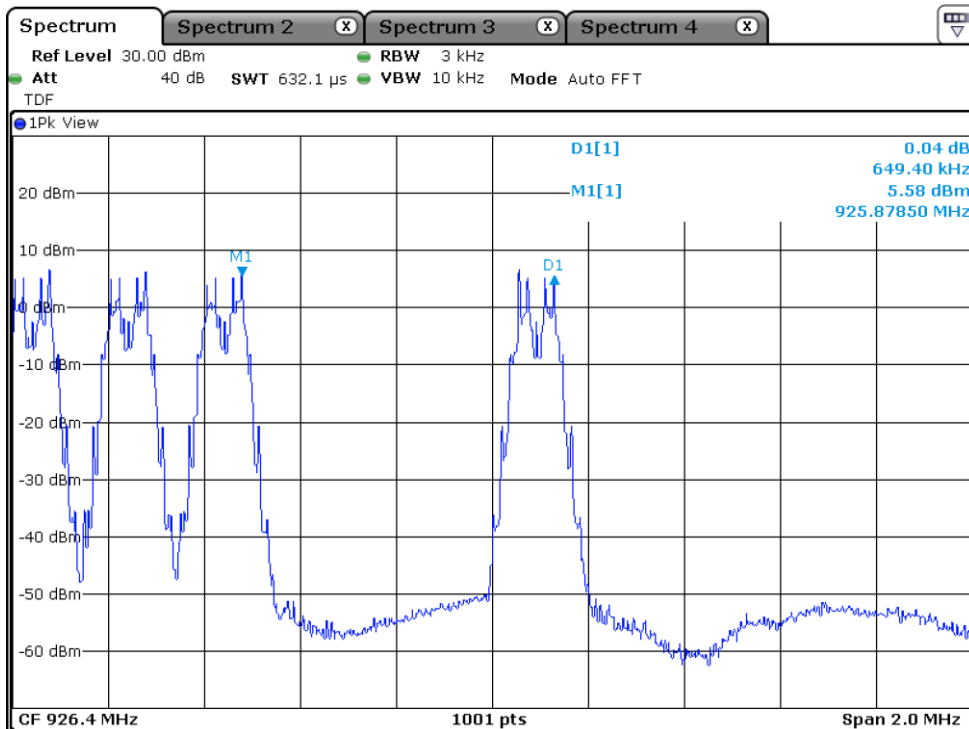
Modulation Type	Channel (Frequency)	Measured Value (kHz)	Limit (kHz)
GFSK	1 (905 MHz)	849.2	> 116.9
	52 (915.85 MHz)	199.8	> 116.9
	103 (926.5 MHz)	649.4	> 116.9

7.4.2.1 Measured Graph for Peak Output Power





Mid CH



High CH



8. Number of Hopping Frequency

8.1 Operating environment

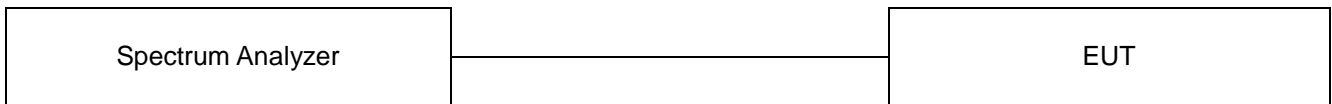
Temperature : 25 °C
Relative humidity : 46 %

8.2 Measurement method

Standard : §15.247 (i) / RSS-247 (5.1 d)

8.3 Test setup

The antenna output of the EUT was connected to the spectrum analyzer. The resolution and video bandwidth is set to 100 kHz



8.4 Test data

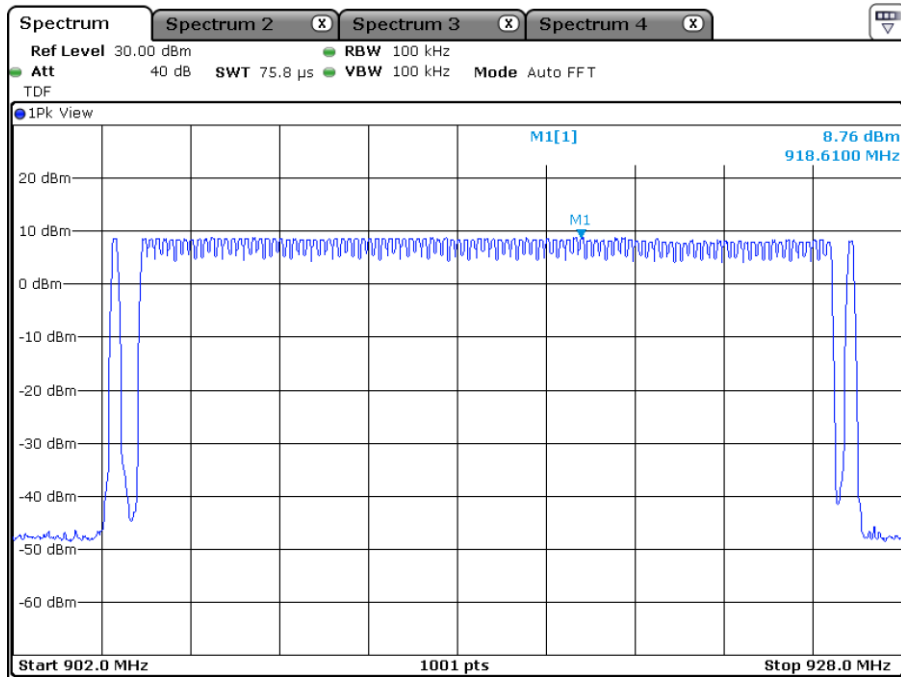
Test date : 30. July. 2021
Operating mode : Transmit mode
Test Result : Pass

8.4.1 Measured Results_ Module 1

Modulation Type	Number of Hopping (Channel)
GFSK	103



8.4.1.1 Measured Graph for Number of Hopping Frequency

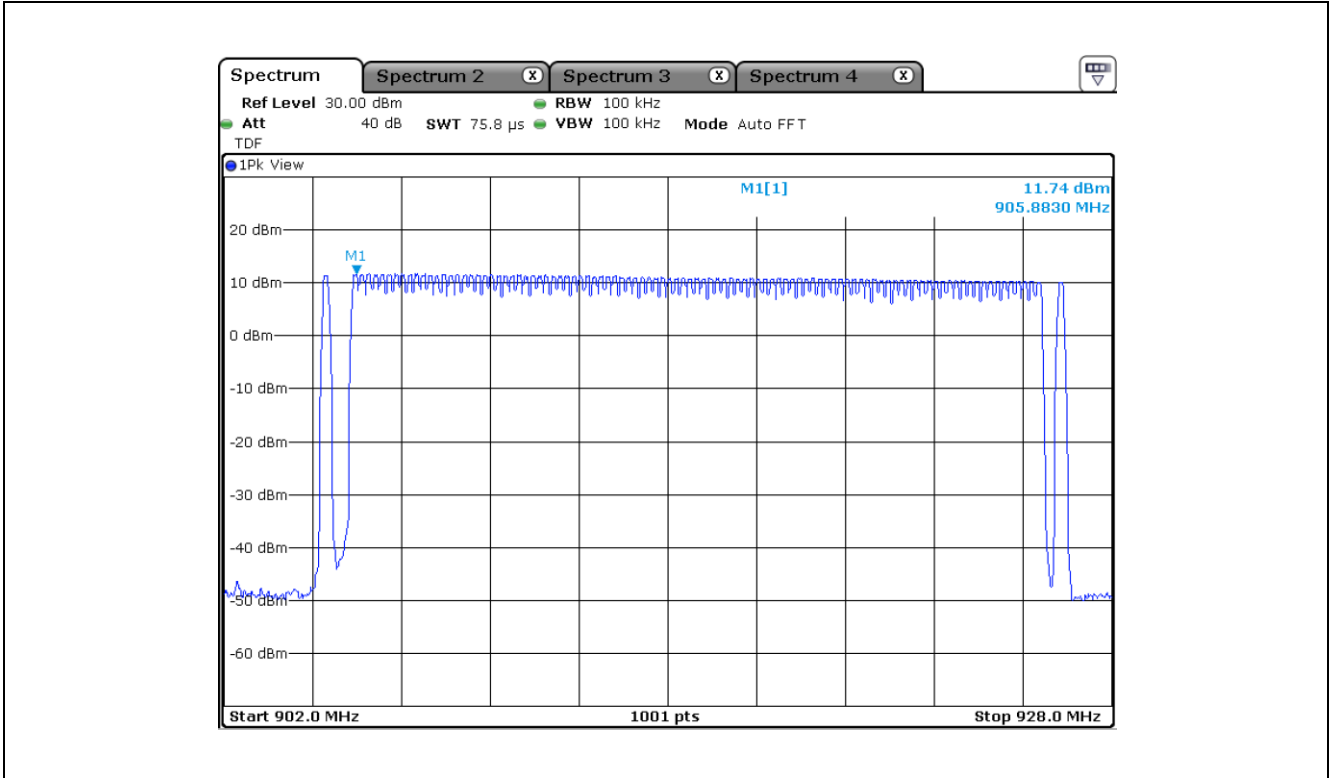




8.4.2 Measured Results_Module 2

Modulation Type	Number of Hopping (Channel)
GFSK	103

8.4.2.1 Measured Graph for Number of Hopping Frequency





9. Average Time of Occpuancy (Dwell Time)

9.1 Operating environment

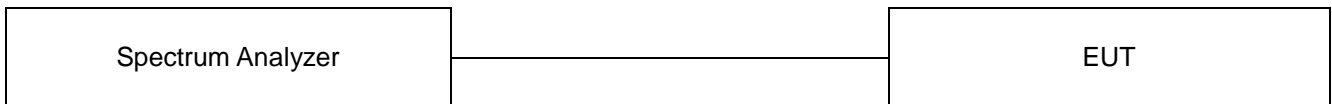
Temperature : 25 °C
Relative humidity : 46 %

9.2 Measurement method

Standard : §15.247 (a)(i) / RSS-247 (5.1 d)

9.3 Test setup

The antenna output of the EUT was connected to the spectrum analyzer. The resolution and Video bandwidth is set to 1 MHz, and peak detection was used.



9.4 Test data

Test date : 30. July. 2021
Operating mode : Transmit mode
Test Result : Pass

9.4.1 Measured Results_Module 1

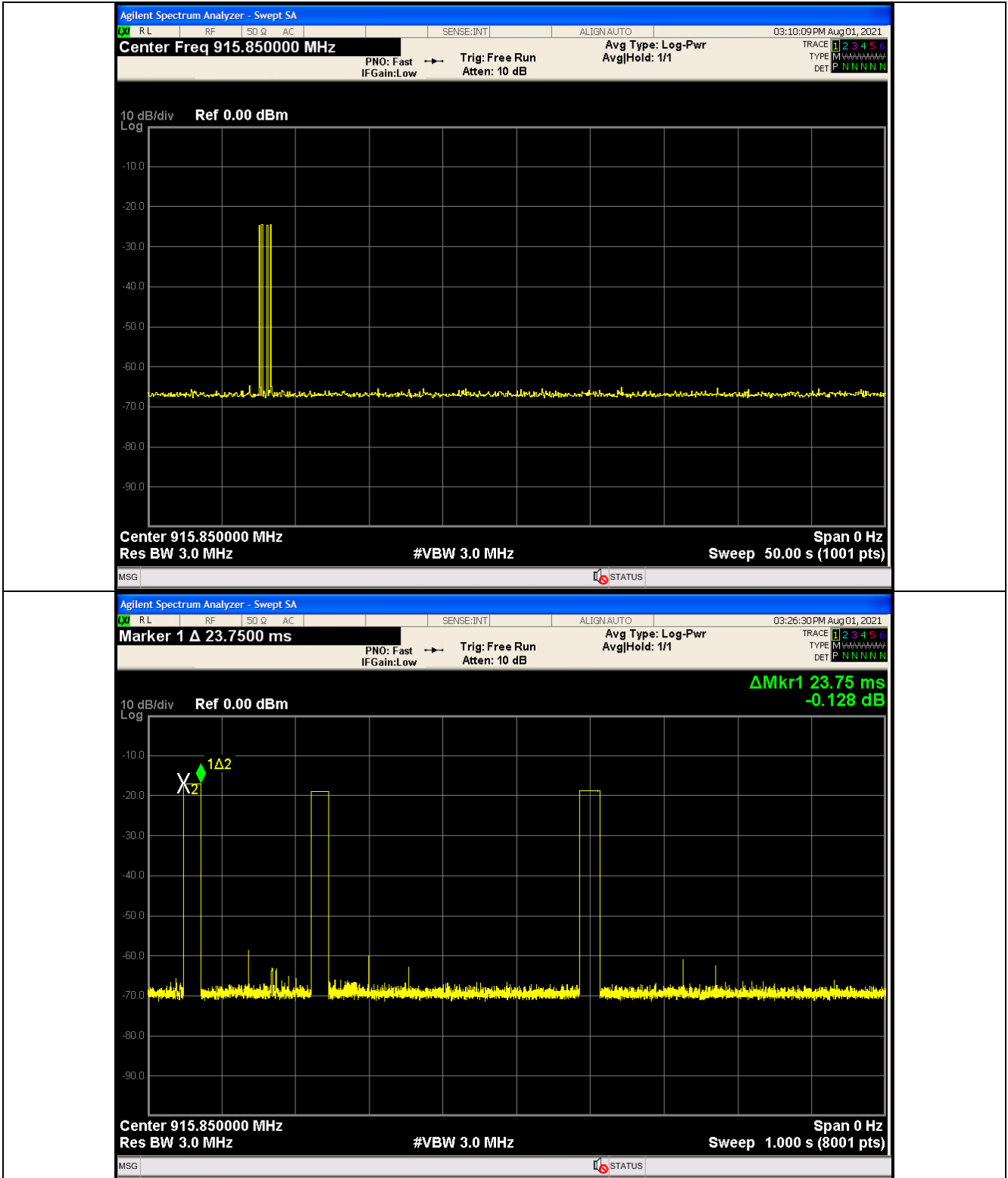
Modulation type	Channel (Frequency)	Transmit Time per Hop (ms)	The Number of Hop Within a limited time (N)	Dwell Time (s)	Limit (s)
GFSK	52 (915.85 MHz)	75.12	1	0.075	0.4

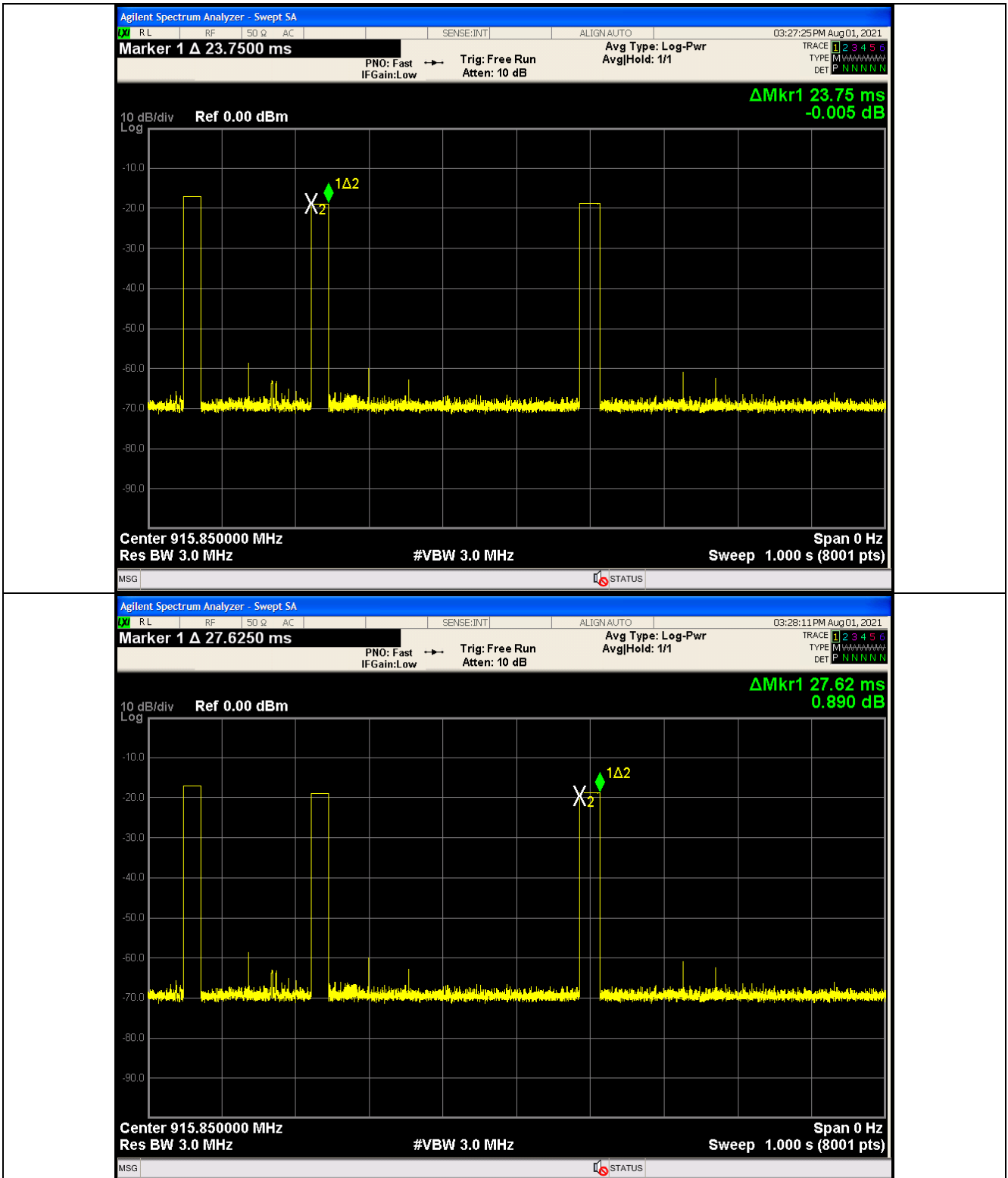
※ $T_{on} = 23.75 \text{ ms} + 23.75 \text{ ms} + A_{137} + 27.62 \text{ ms} = 75.12 \text{ ms}$

※ $Dwell \ Time(s) = Transmit \ Time \ per \ Hop \times N$



9.4.1.1 Measured Graph for Dwell Time







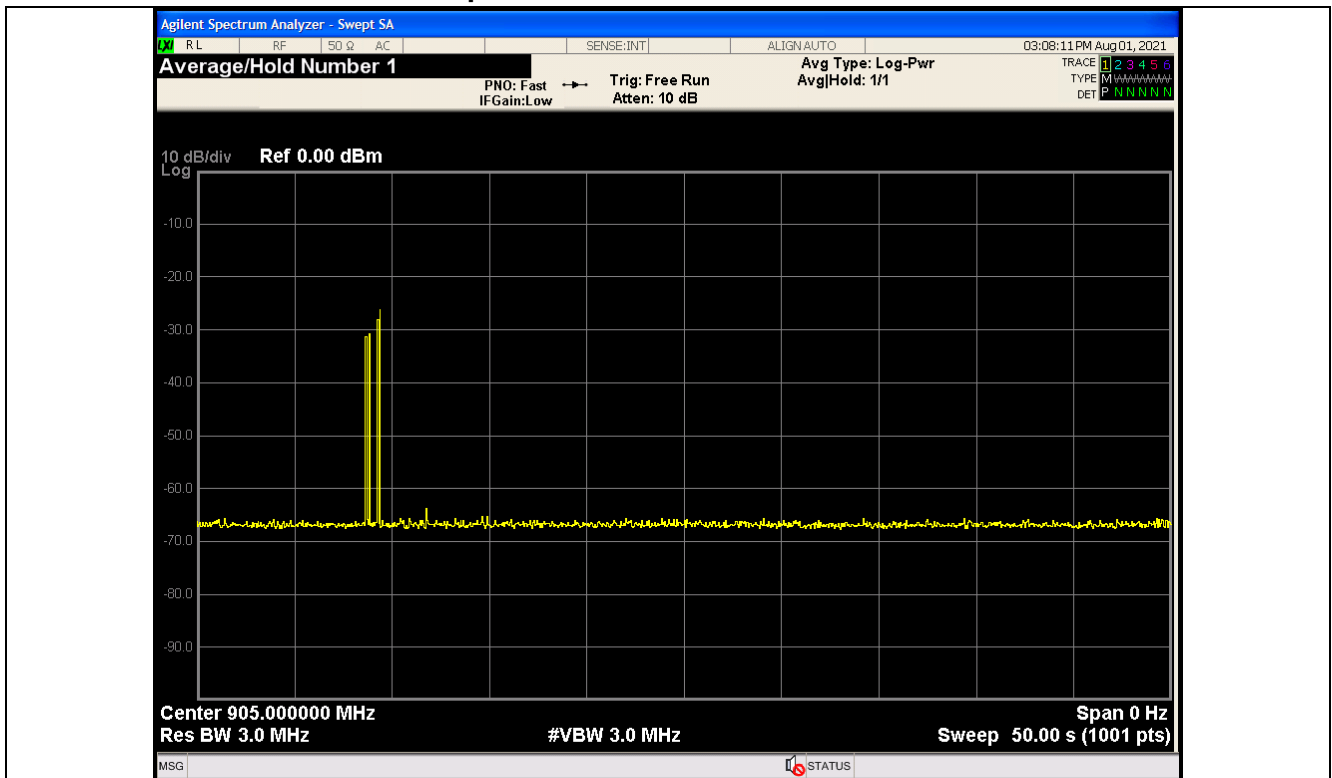
9.4.2 Measured Results_Module 2

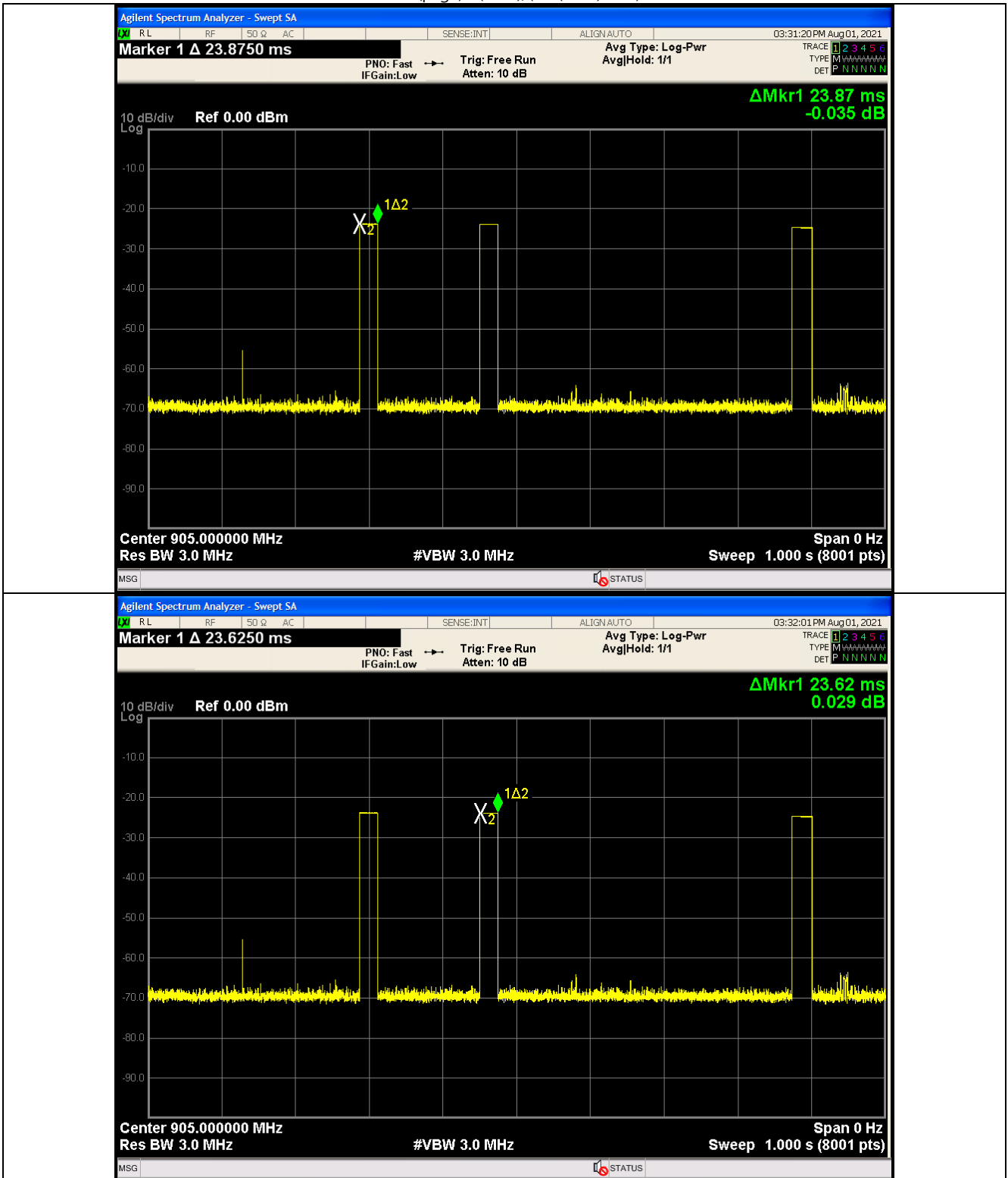
Modulation type	Channel (Frequency)	Transmit Time per Hop (ms)	The Number of Hop Within a limited time (N)	Dwell Time (s)	Limit (s)
GFSK	1 (905 MHz)	74.86	1	0.075	0.4

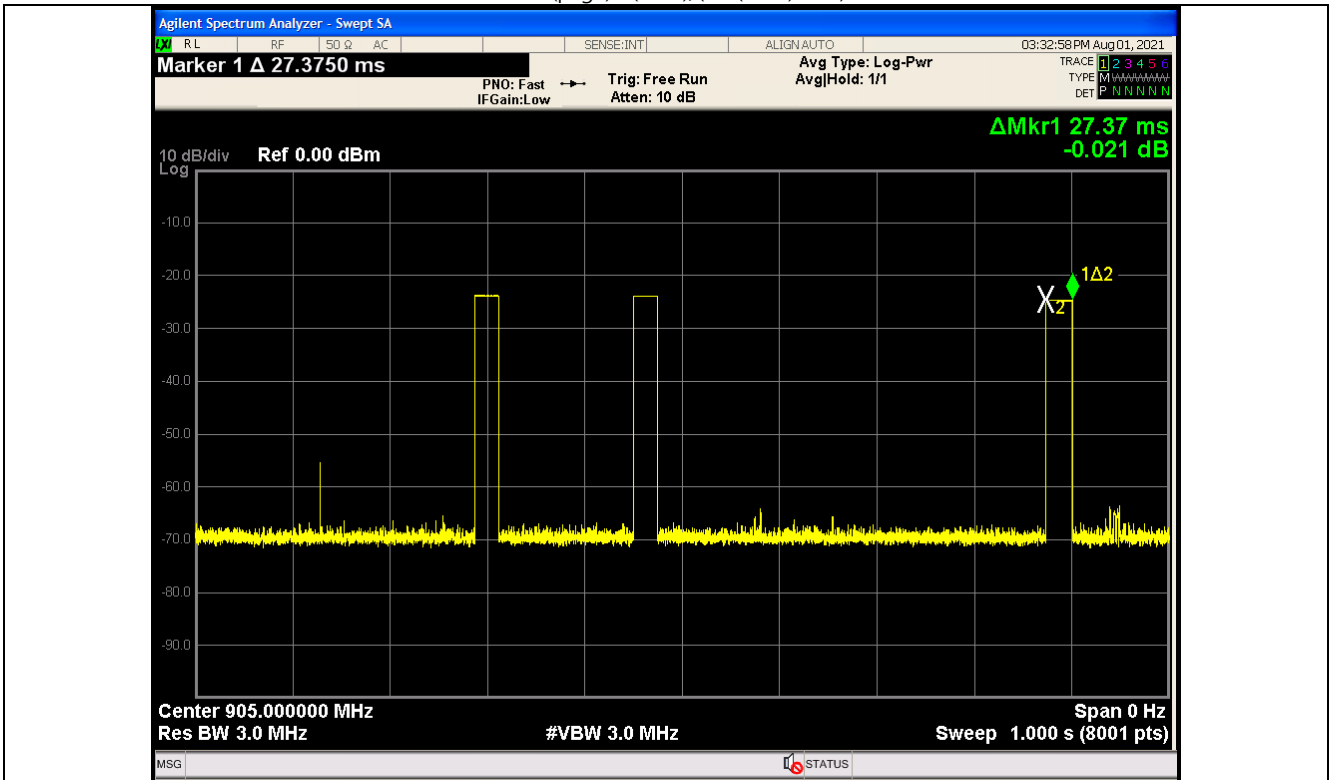
※ $T_{on} = 23.87 \text{ ms} + 23.62 \text{ ms} + 27.37 \text{ ms} = 74.86 \text{ ms}$

※ $Dwell \text{ Time}(s) = \text{Transmit Time per Hop} \times N$

9.4.2.1 Measured Graph for Dwell Time









10. Conducted Spurious Emission

10.1 Operating environment

Temperature : 25 °C

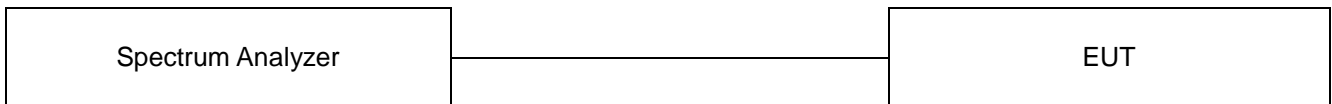
Relative humidity : 46 %

10.2 Measurement method

Standard : §15.247 (d) / RSS-247 (5.5)

10.3 Test setup

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



10.4 Test data

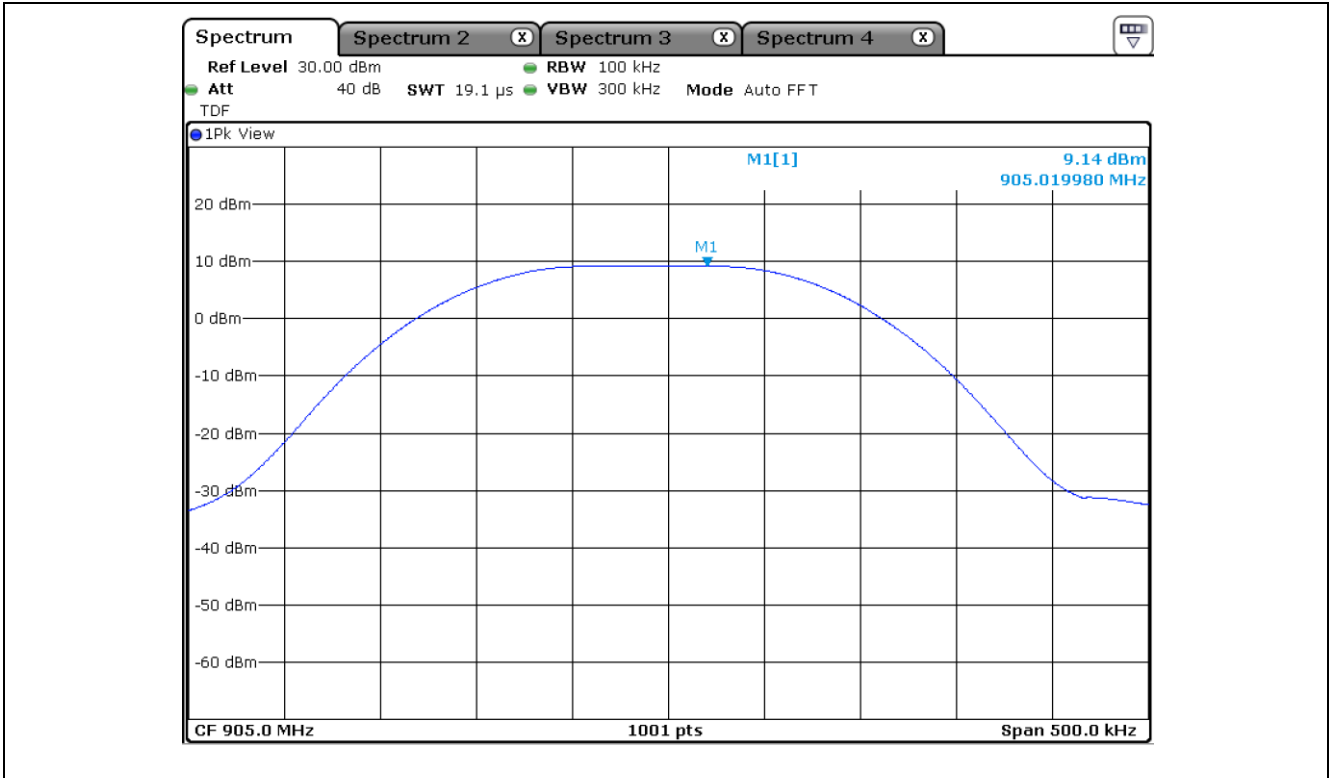
Test date : 30. July. 2021

Operating mode : Transmit mode

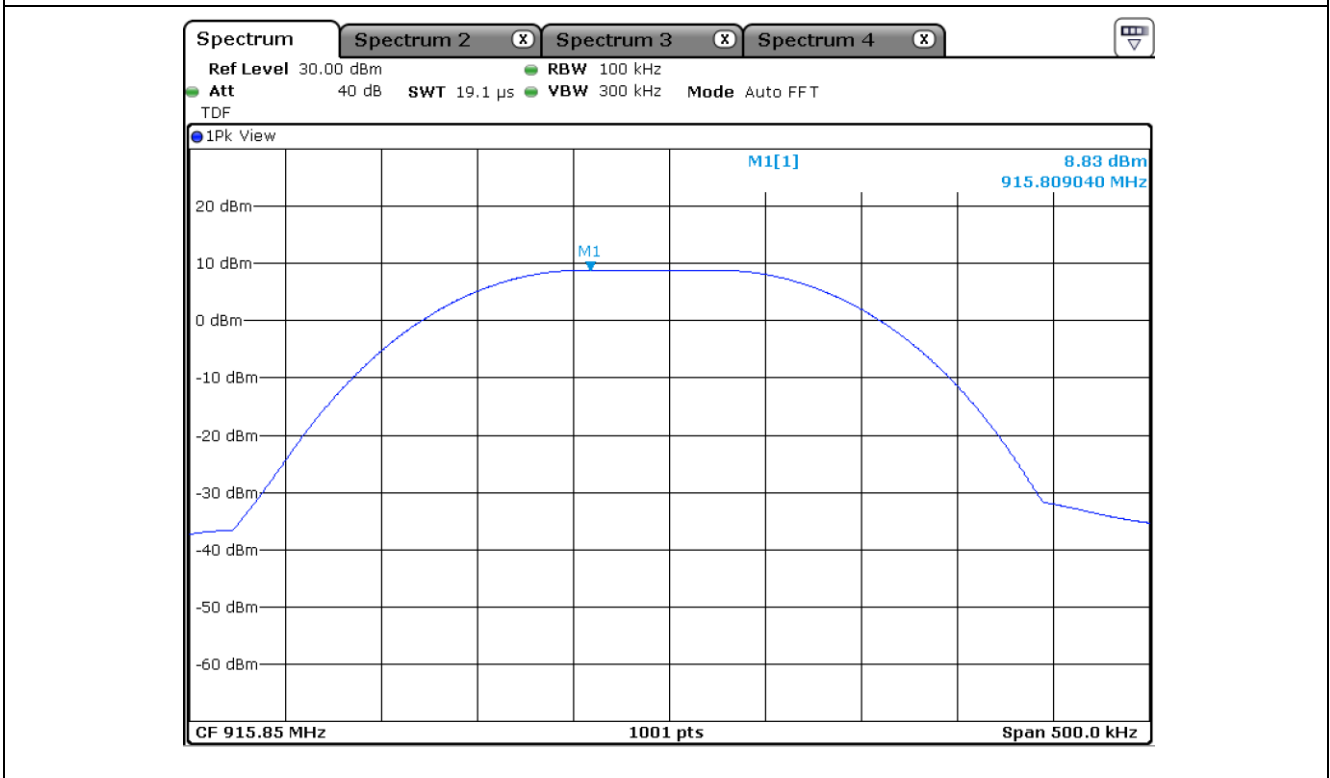
Test Result : Pass



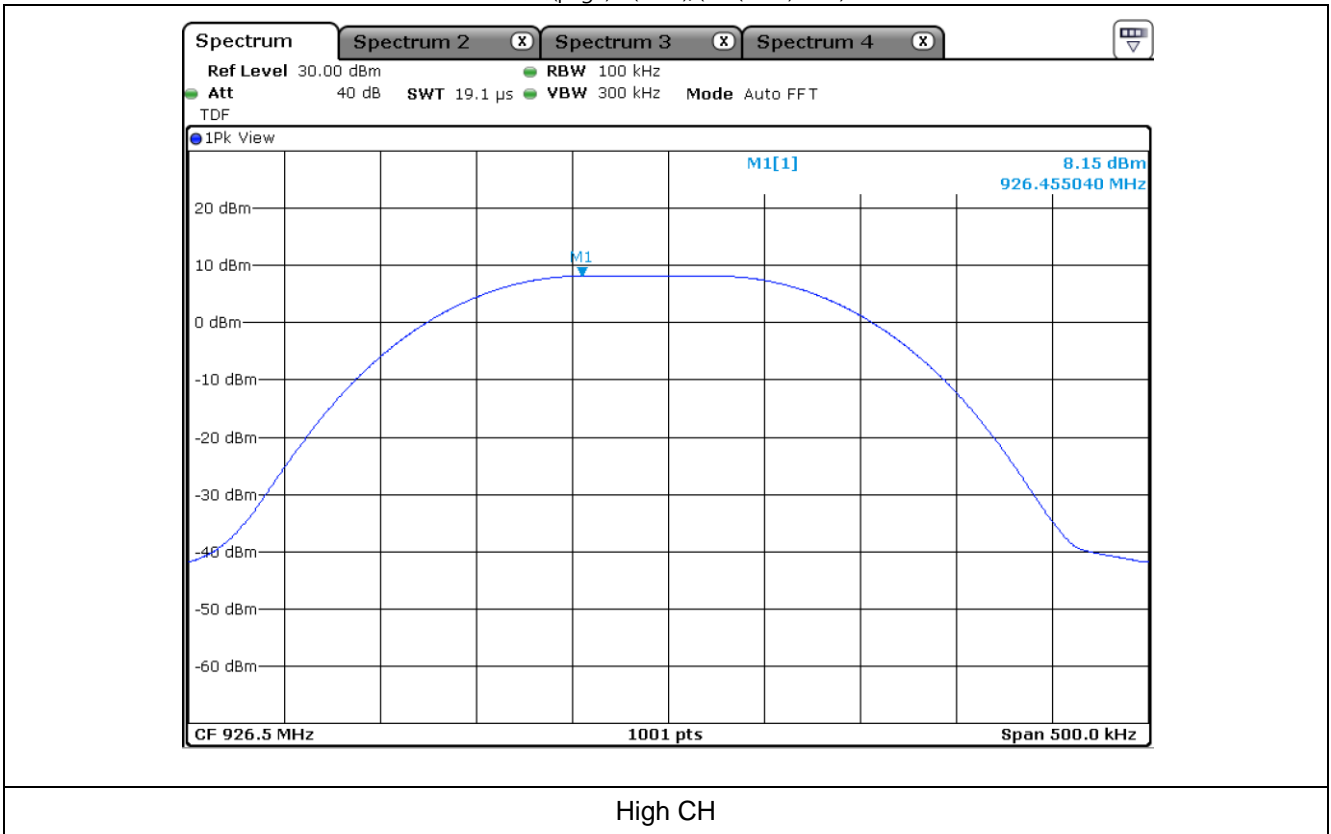
10.4.1 Signal level (dB m)_Module 1



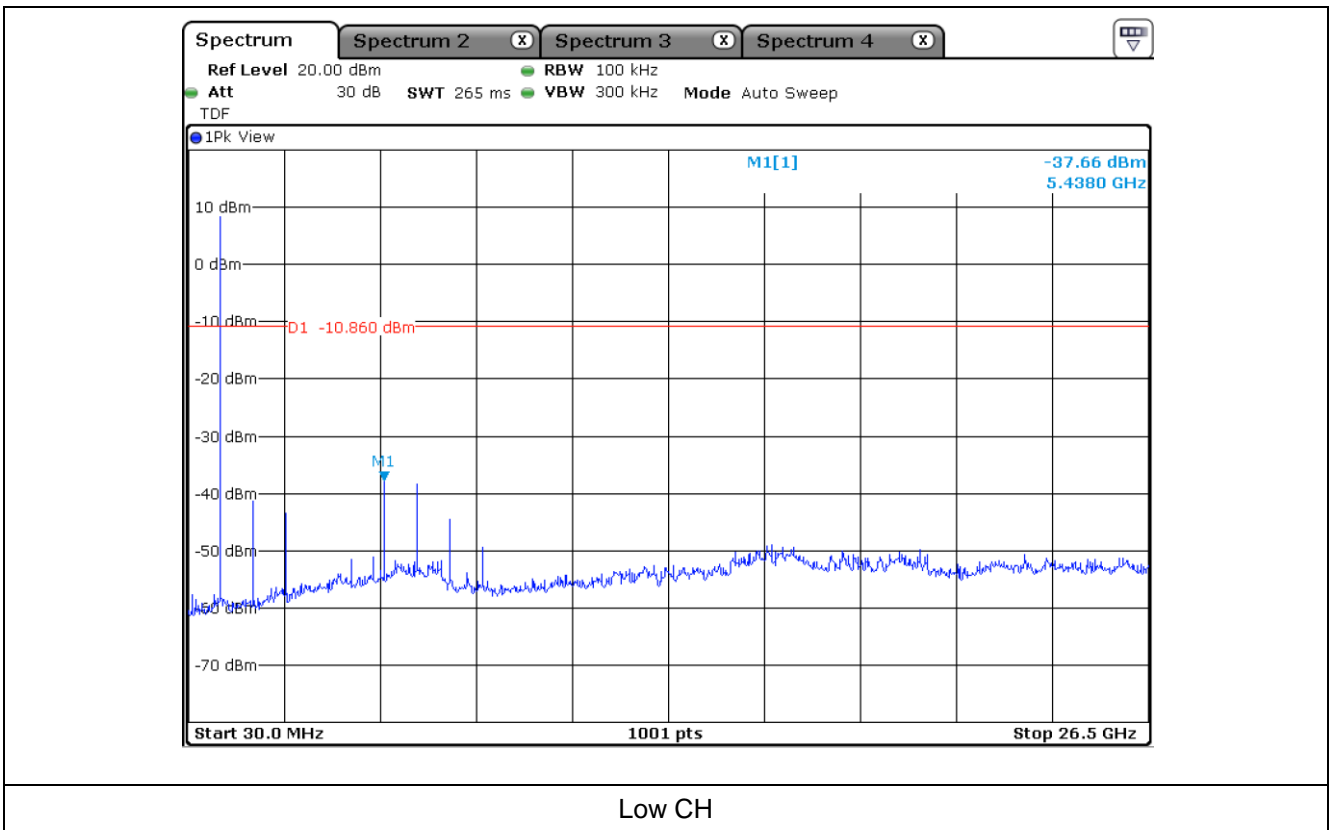
Low CH

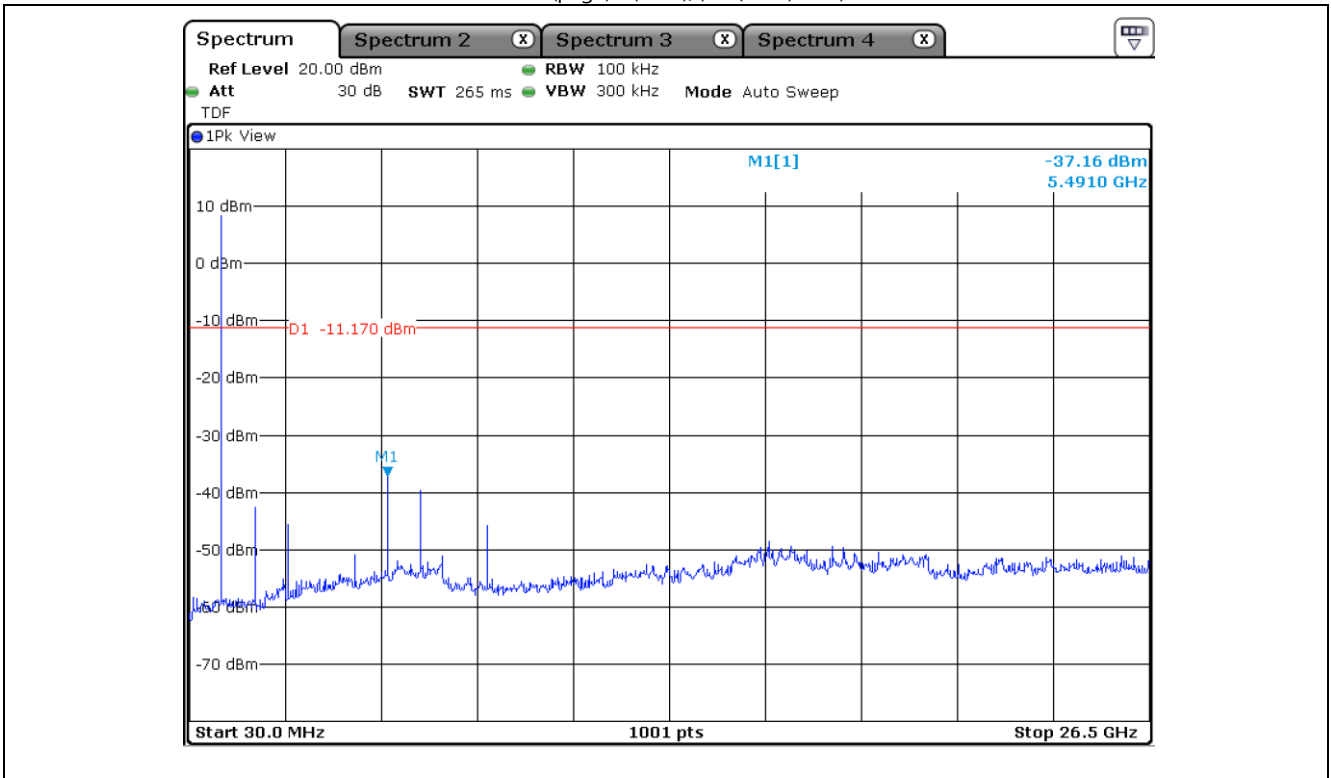


Mid CH

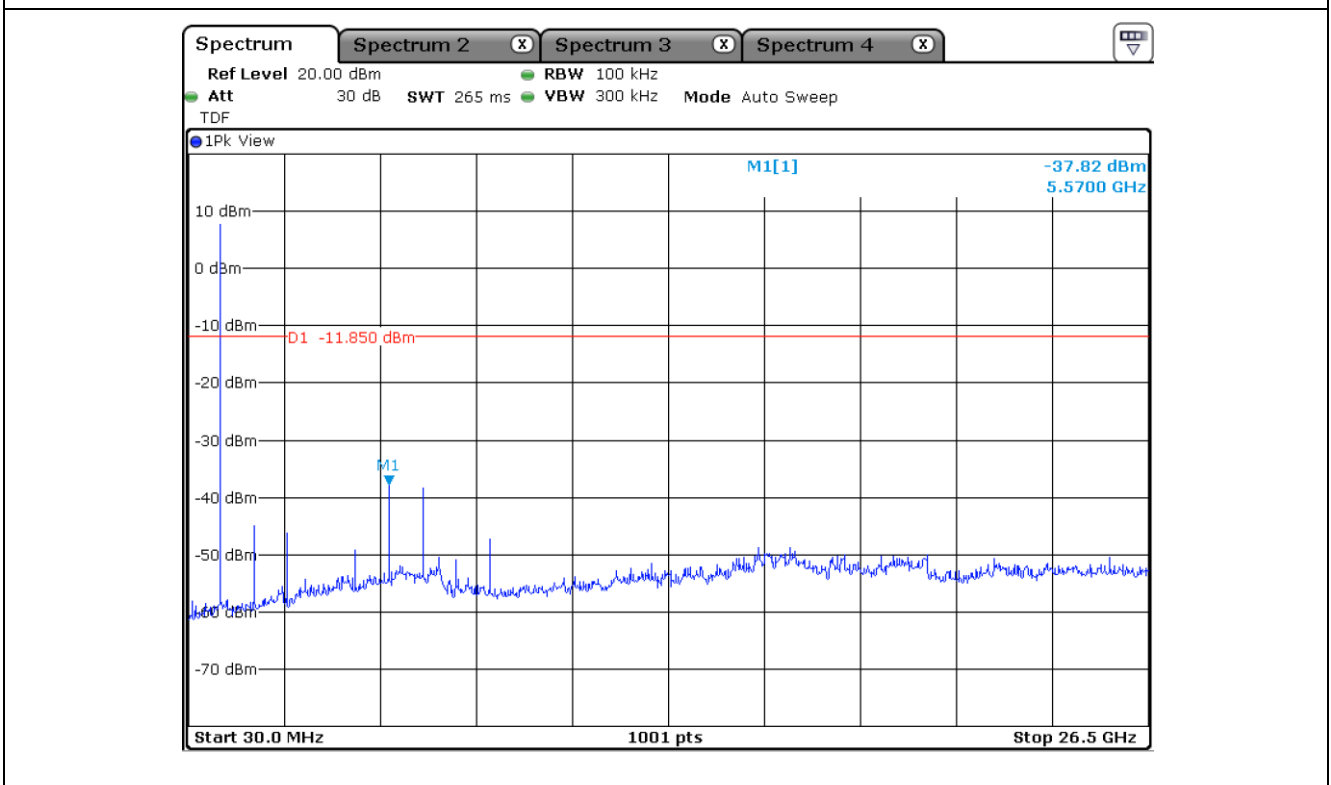


10.4.2 Spurious Emissions (dB m)_Module 1





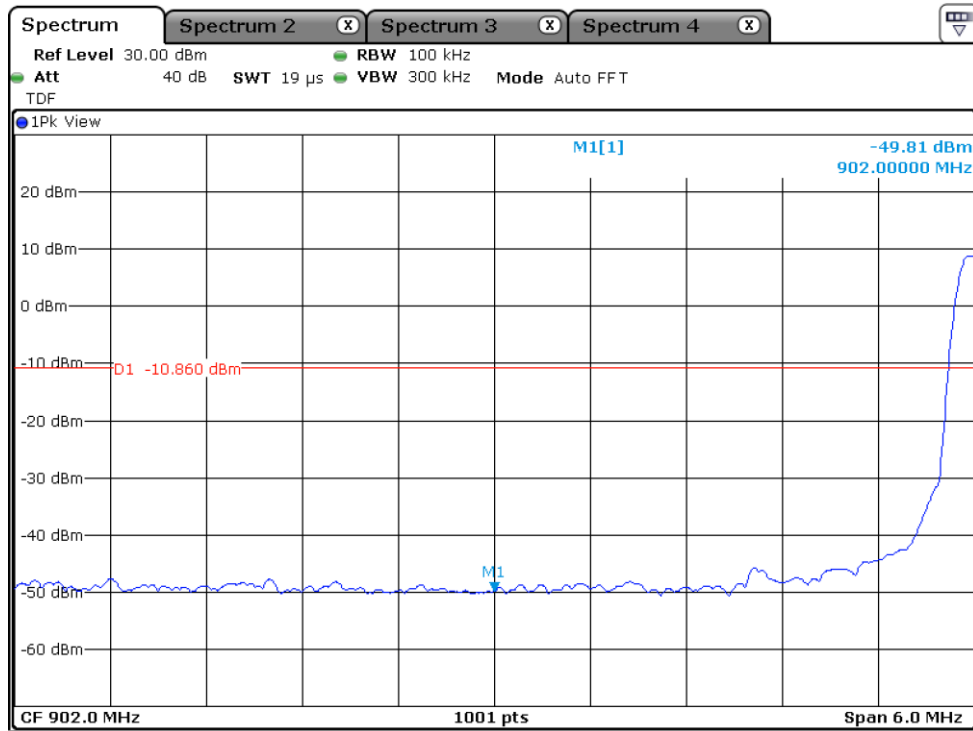
Mid CH



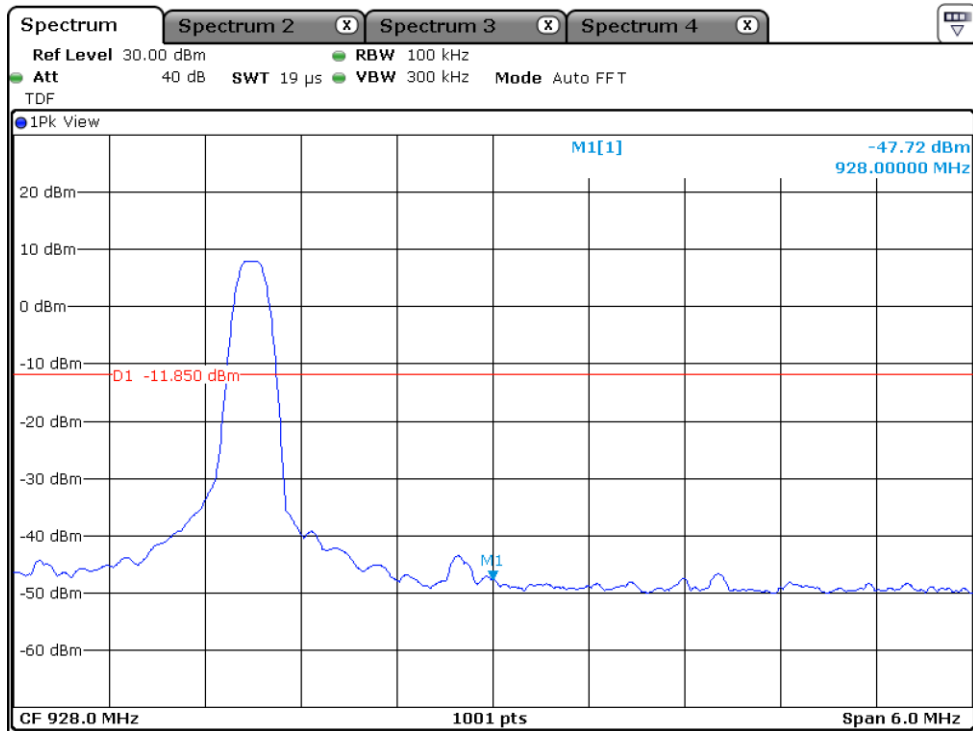
High CH



10.4.3 Band Edge_Module 1



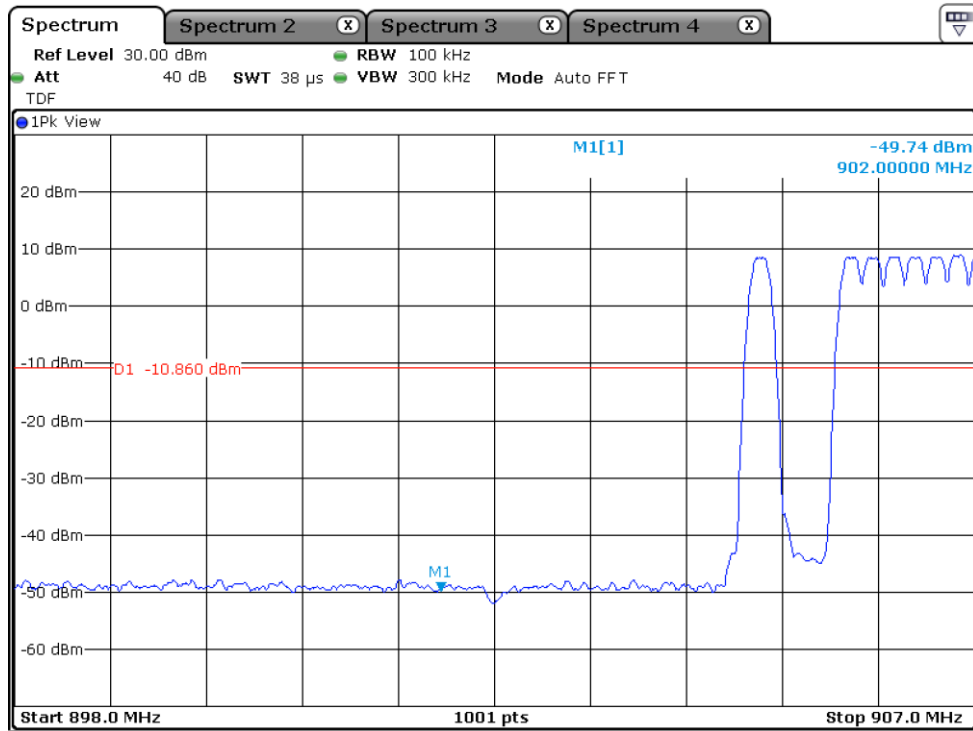
Low CH



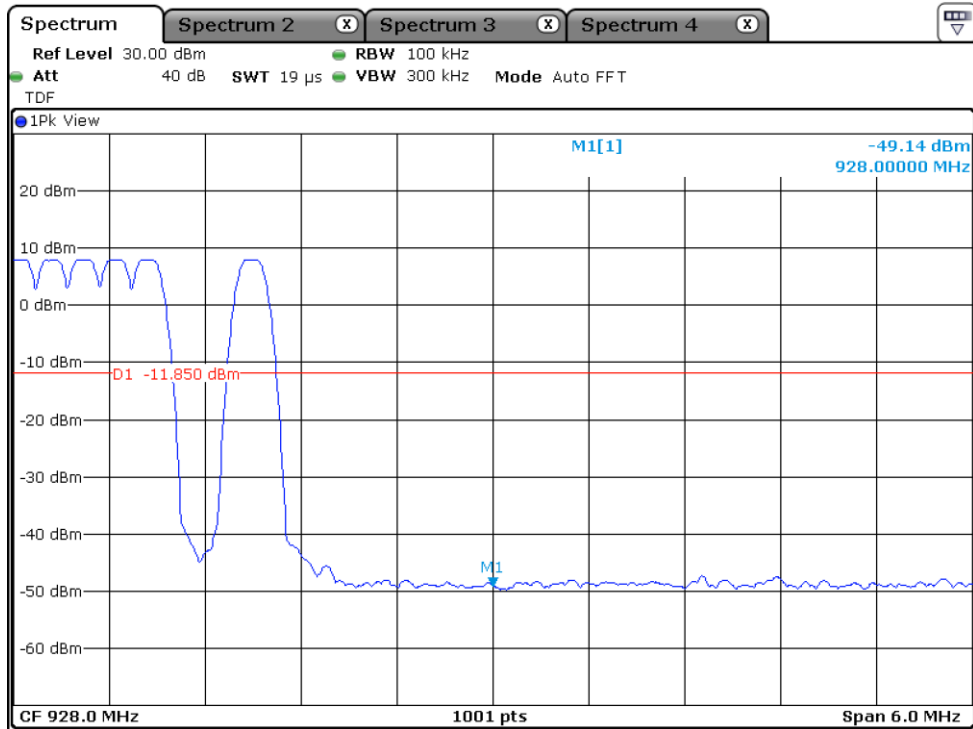
High CH



10.4.4 Band Edge_Hopping Mode_Module 1



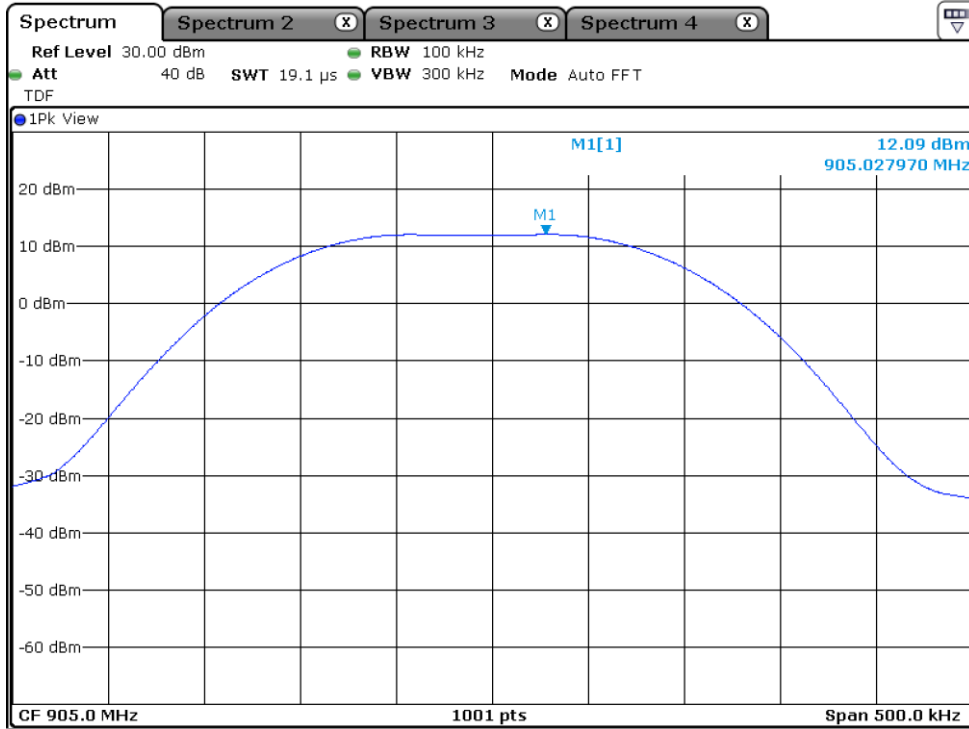
Low CH



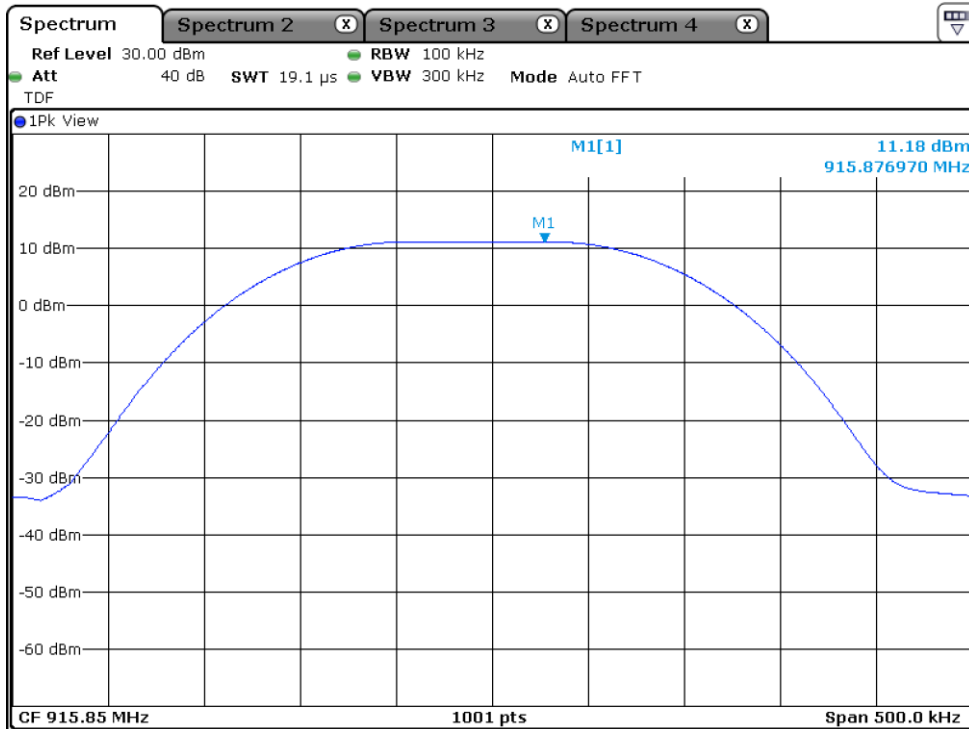
High CH



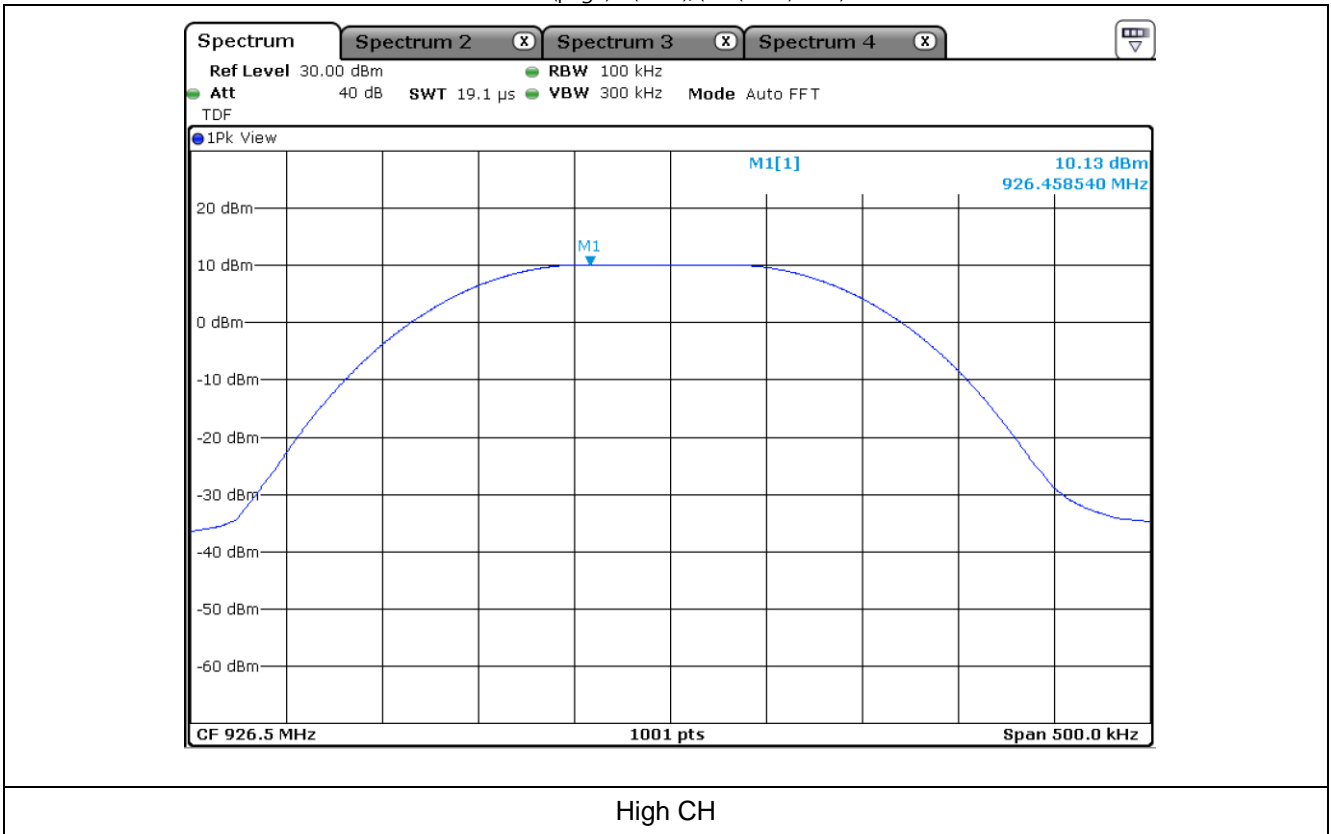
10.4.5 Signal level (dB m)_Module 2



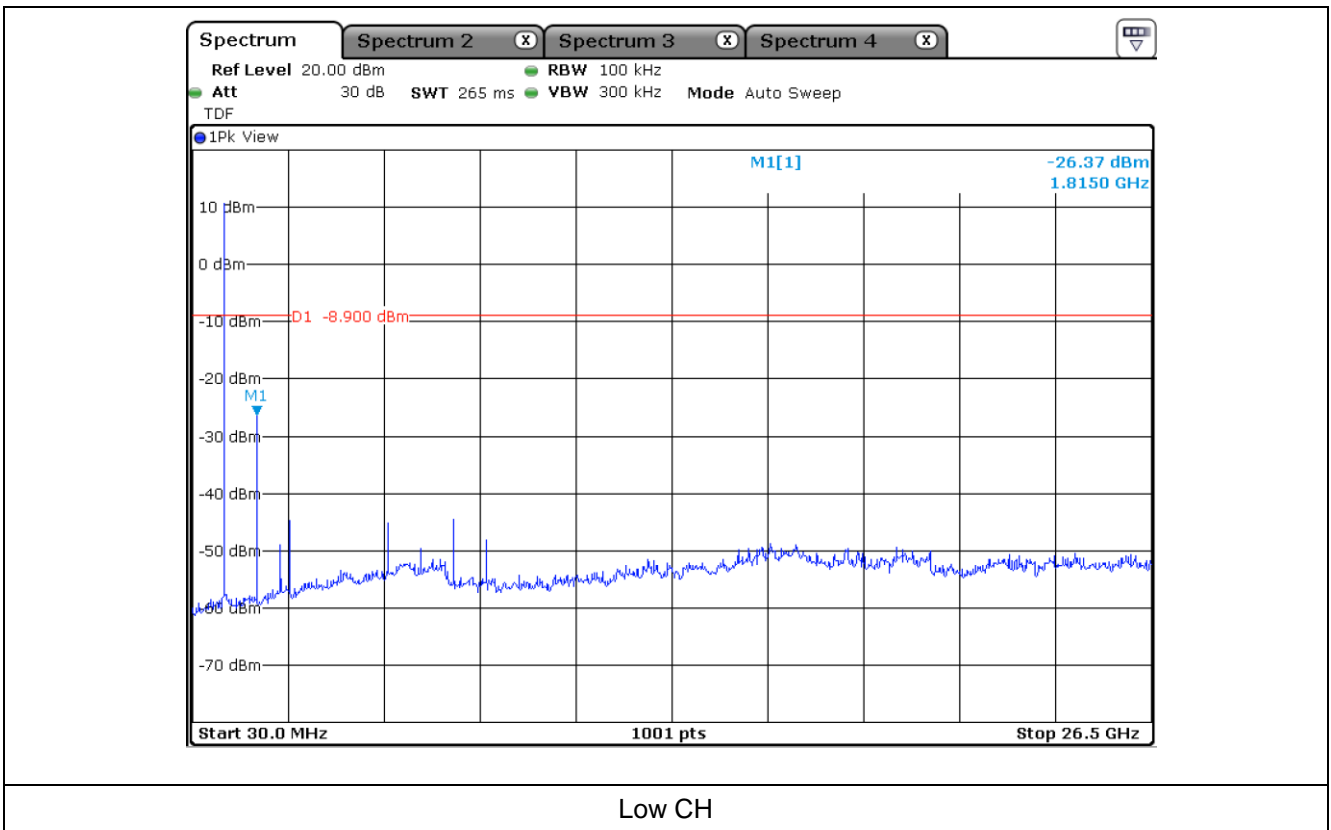
Low CH

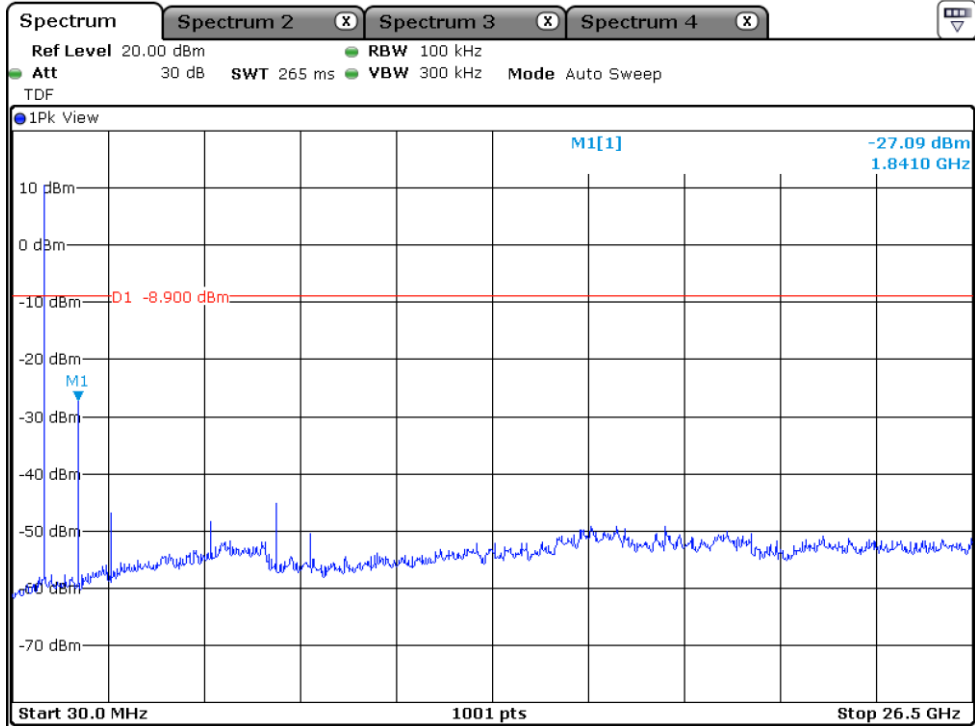


Mid CH

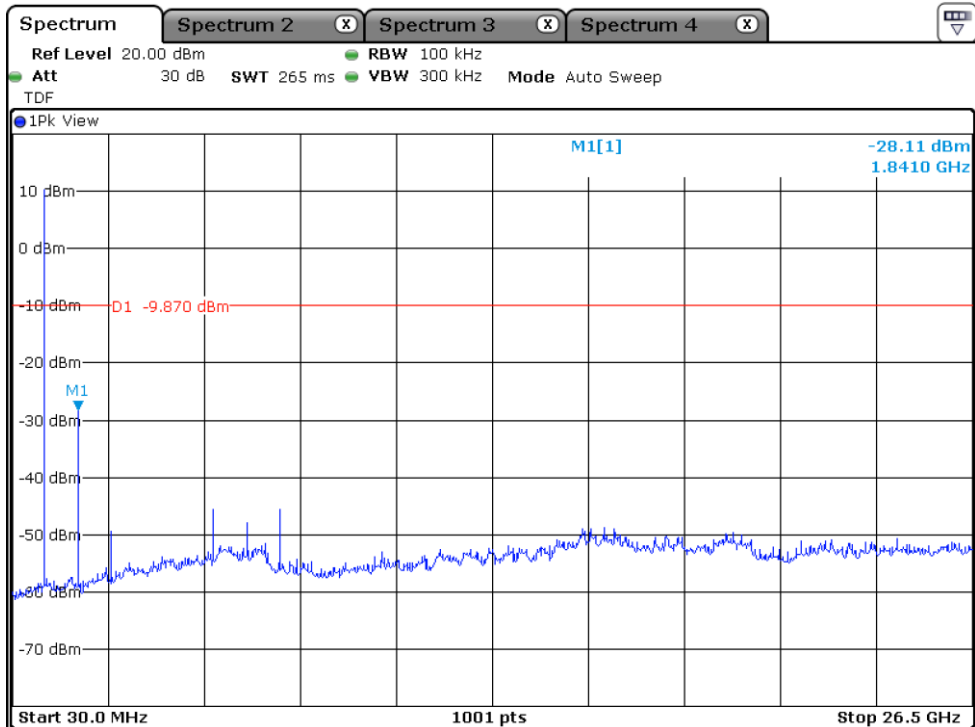


10.4.6 Spurious Emissions (dB m)_Module 2





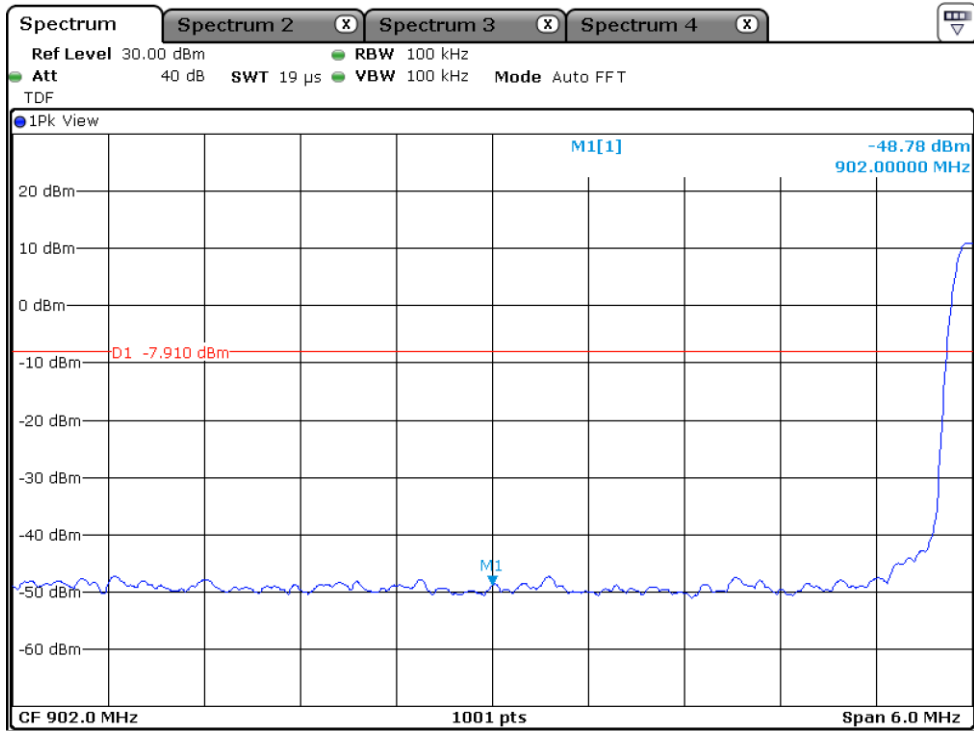
Mid CH



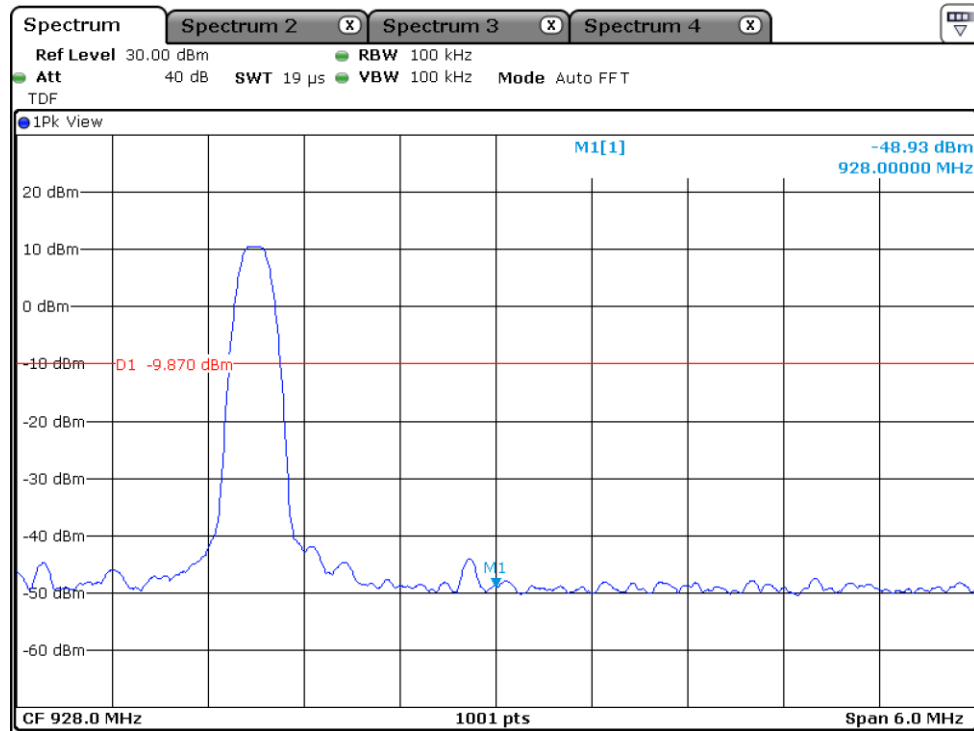
High CH



10.4.7 Band Edge_Module 2



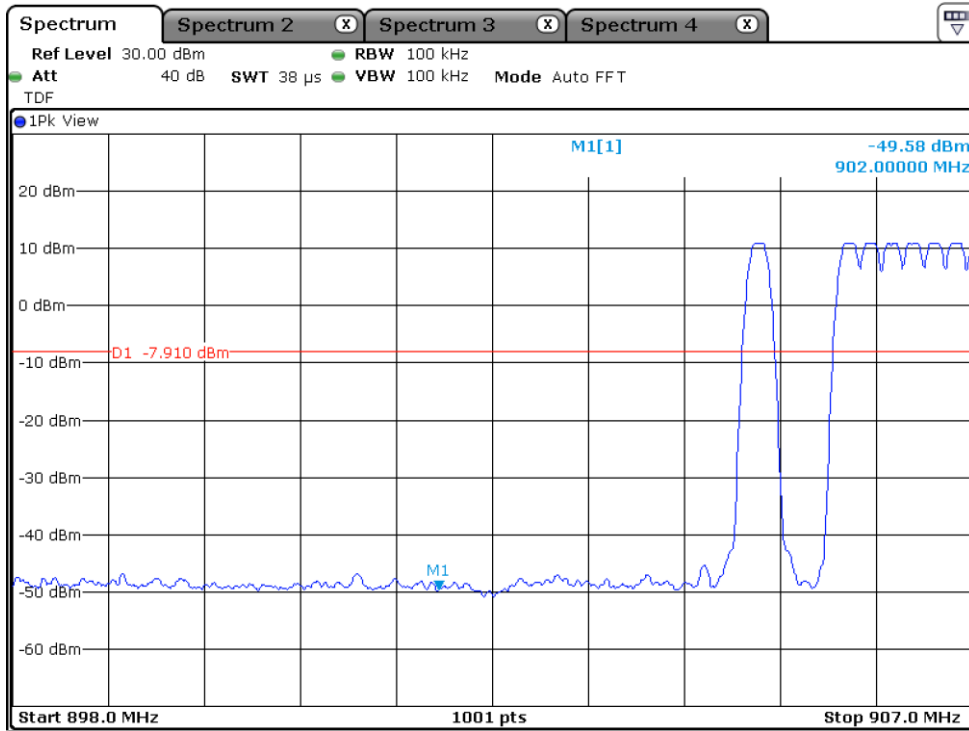
Low CH



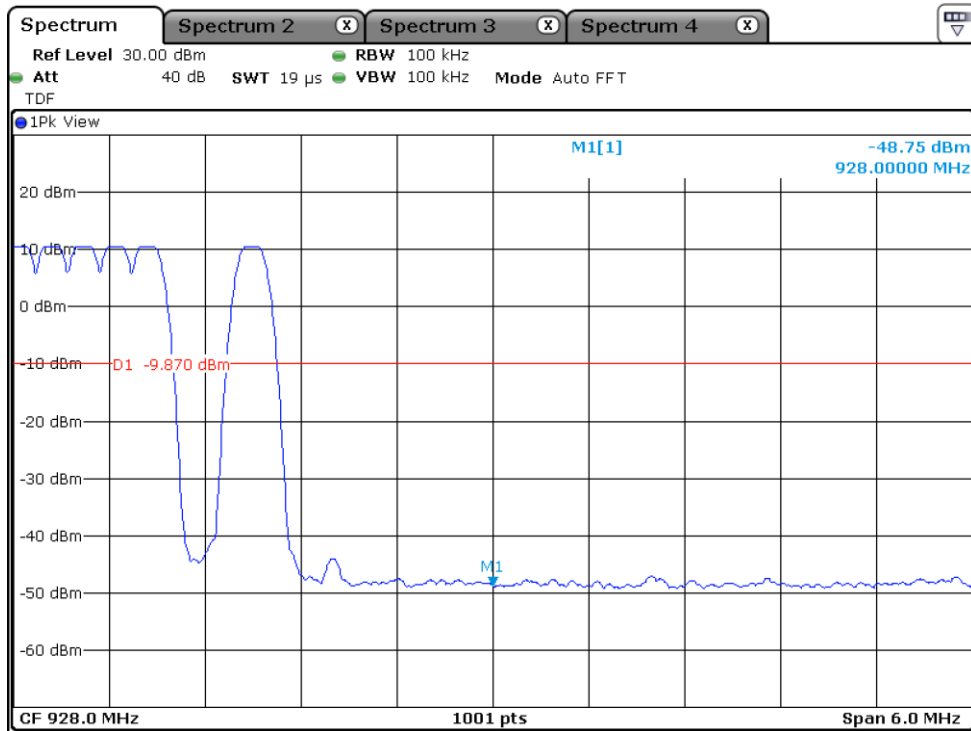
High CH



10.4.8 Band Edge_Hopping Mode Module 2



Low CH



High CH

11. Radiated Spurious Emission

11.1 Operating environment

Temperature : 24 °C
Relative humidity : 45 %

11.2 Measurement method

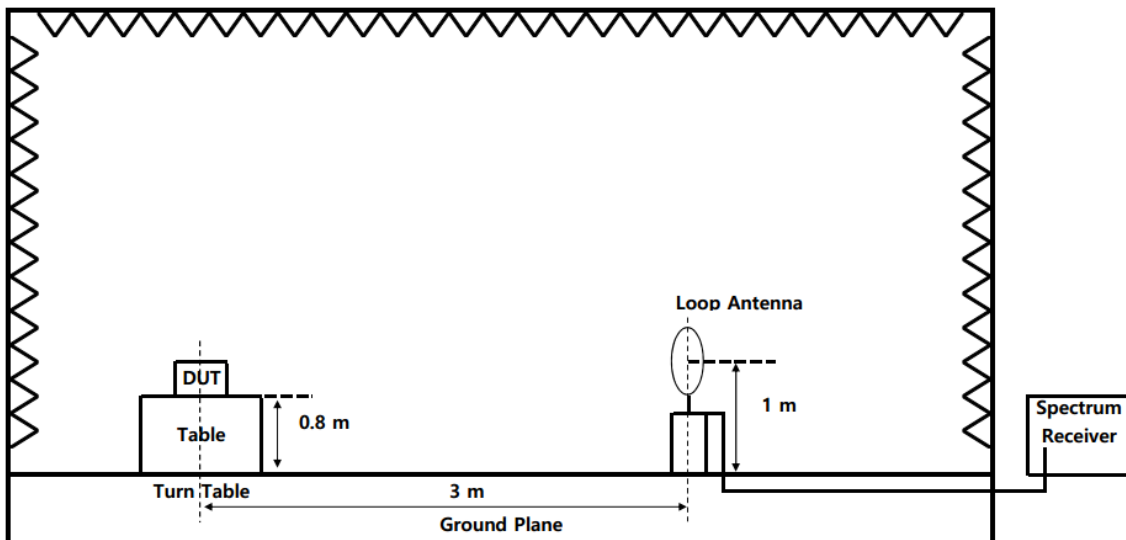
Standard : §15.247 (d), §15.209, §15.205 .
RSS-247 (5.5) & RSS-Gen (8.9 & 8.10)

11.3 Test setup

The radiated emissions measurements were performed on the 3 m, Semi-Anechoic Chamber. The EUT was placed on a non-conductive turntable above the ground plane.

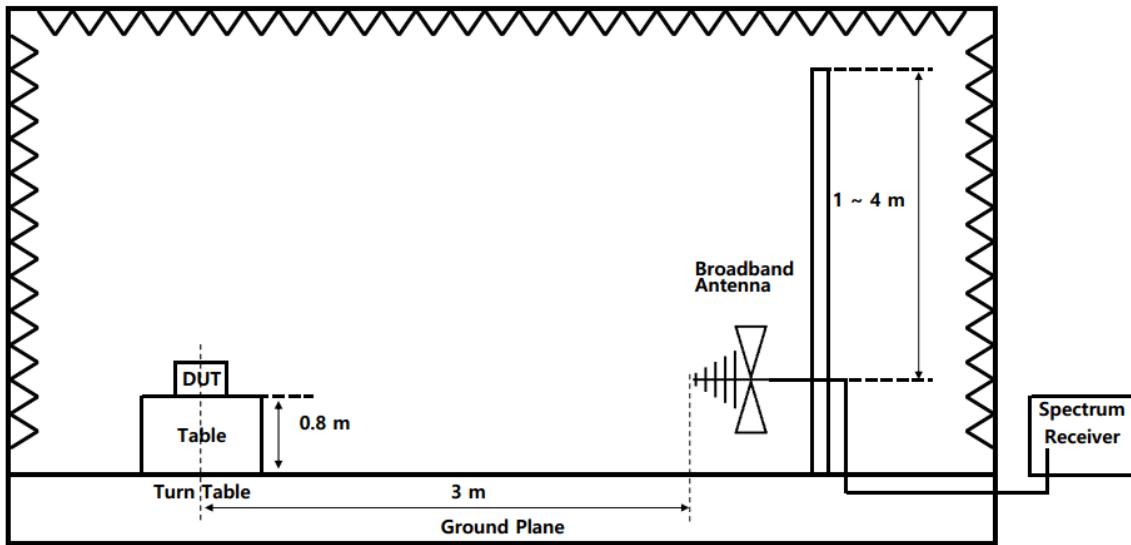
The frequency spectrum from 9 kHz to 26.5 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

11.3.1 Below 30 MHz

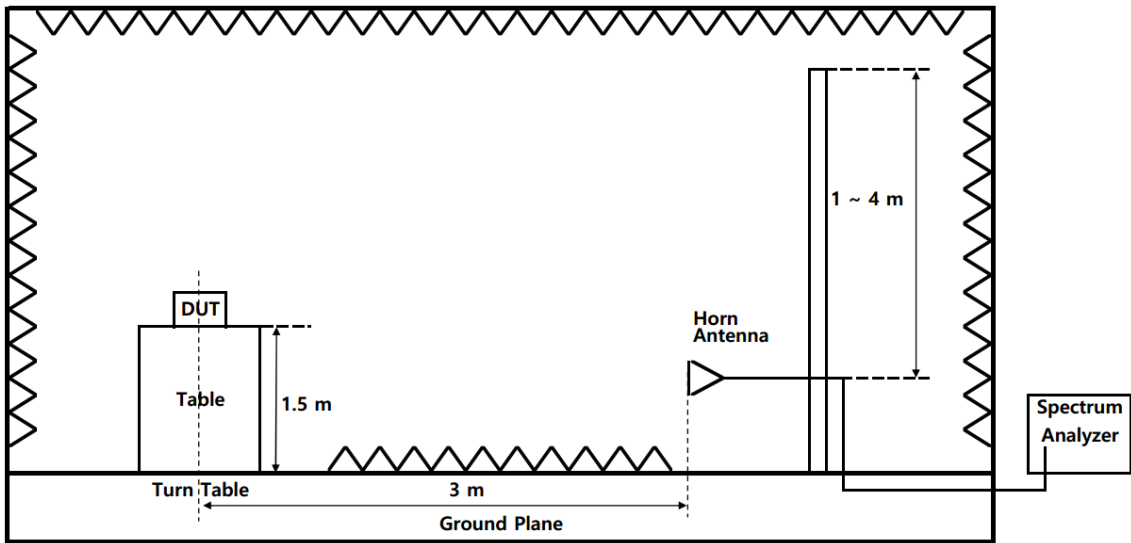




11.3.2 30 MHz to 1 GHz



11.3.3 Above 1 GHz





11.4 Test data

Test date : 29. July. 2021
 Operating mode : Transmit mode
 Test Result : Pass

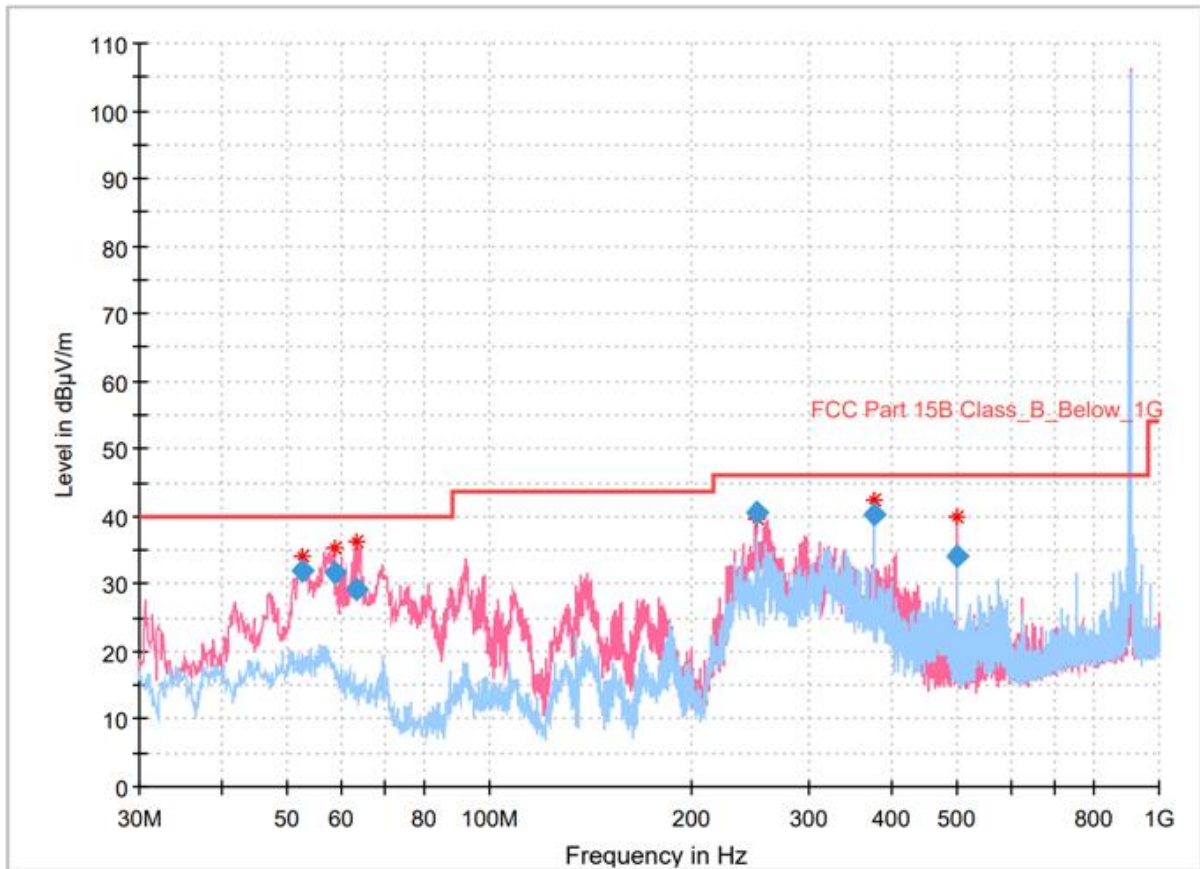
11.4.1 Test data for Spurious & Harmonic_Module 1

11.4.1.1 Measurement Results for below 30 MHz

Frequency (MHz)	Reading (dB μ V)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							



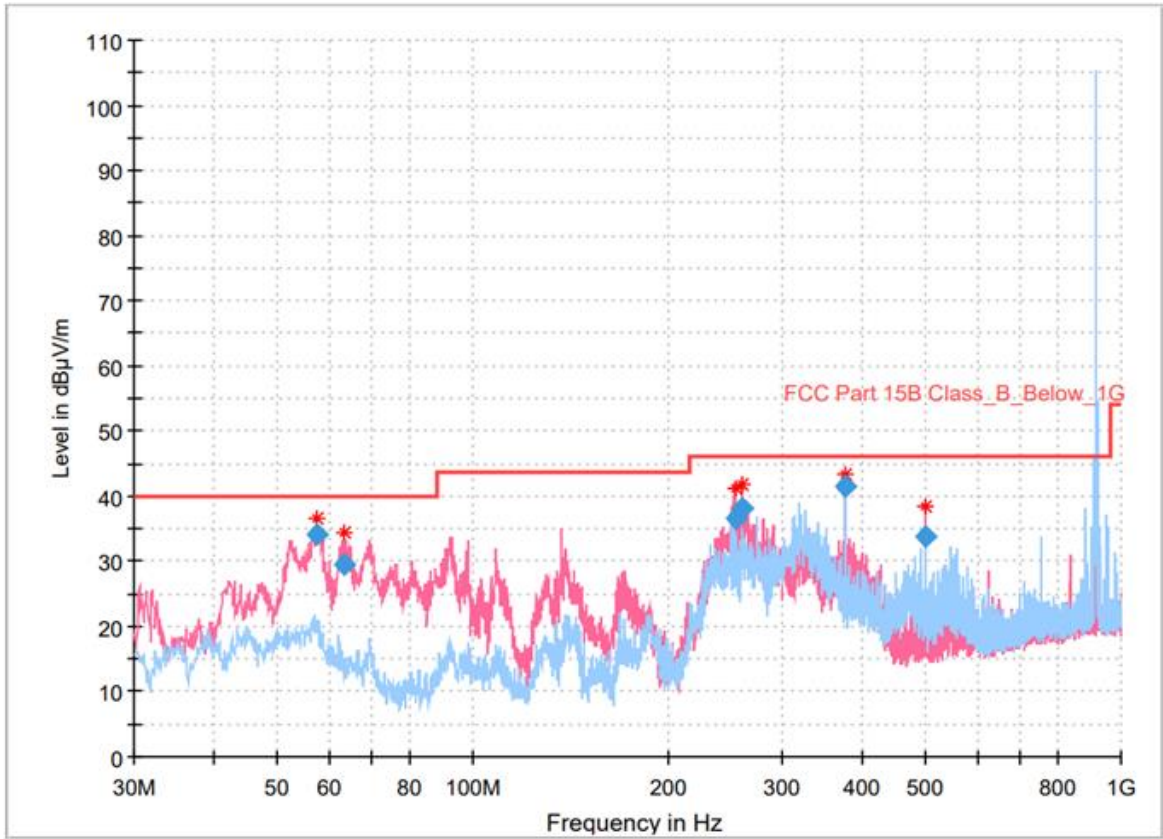
11.4.1.2 Measurement Results for below 1 GHz



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.601000	32.09	40.00	7.91	1000.0	120.000	99.8	V	27.0	-19.1
58.809000	31.67	40.00	8.33	1000.0	120.000	99.8	V	125.0	-20.2
63.271000	29.29	40.00	10.71	1000.0	120.000	99.8	V	54.0	-21.0
249.996000	40.68	46.00	5.32	1000.0	120.000	99.8	V	277.0	-19.1
375.029000	40.11	46.00	5.89	1000.0	120.000	99.8	V	210.0	-16.0
500.062000	34.24	46.00	11.76	1000.0	120.000	99.8	V	237.0	-13.7

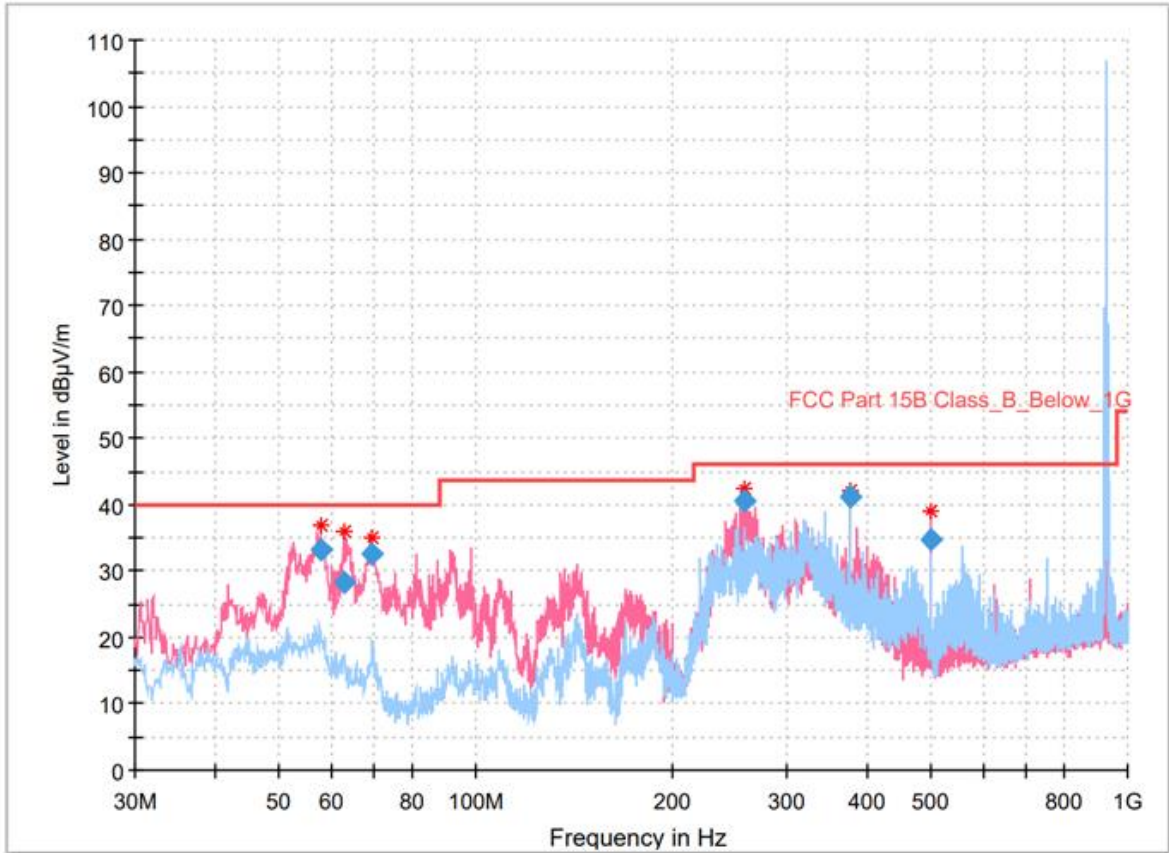
Low CH



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
57.548000	34.12	40.00	5.88	1000.0	120.000	100.0	V	320.0	-19.7
63.368000	29.37	40.00	10.63	1000.0	120.000	200.0	V	162.0	-21.0
253.682000	36.57	46.00	9.43	1000.0	120.000	100.0	V	9.0	-18.8
260.666000	38.23	46.00	7.77	1000.0	120.000	100.0	V	21.0	-18.5
375.029000	41.53	46.00	4.47	1000.0	120.000	100.0	H	270.0	-16.0
500.062000	33.95	46.00	12.05	1000.0	120.000	100.0	V	0.0	-13.7

Mid CH



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
57.839000	33.29	40.00	6.71	1000.0	120.000	100.0	V	75.0	-19.8
62.689000	28.35	40.00	11.65	1000.0	120.000	200.0	V	8.0	-20.9
69.091000	32.64	40.00	7.36	1000.0	120.000	200.0	V	75.0	-23.0
259.114000	40.55	46.00	5.45	1000.0	120.000	100.0	V	48.0	-18.5
375.029000	41.19	46.00	4.81	1000.0	120.000	100.0	V	116.0	-16.0
500.062000	34.72	46.00	11.28	1000.0	120.000	100.0	V	242.0	-13.7

High CH



11.4.1.3 Measurement Results for Above 1 GHz

Frequency (MHz)	Reading (dB μ V)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Low CH							
1 808.241	17.98	Peak	H	-15.30	33.28	73.98	40.70
	3.81	Average	H		19.11	53.98	34.87
2 717.408	22.38	Peak	V	-11.50	33.88	73.98	40.10
	9.45	Average	V		20.95	53.98	33.03
3 617.002	29.76	Peak	H	-7.40	37.16	73.98	36.82
	17.04	Average	H		24.44	53.98	29.54
4 524.891	42.63	Peak	V	-5.50	48.13	73.98	25.85
	27.10	Average	V		32.60	53.98	21.38
5 427.467	37.03	Peak	V	-3.00	40.03	73.98	33.95
	23.03	Average	V		26.03	53.98	27.95
6 332.287	36.83	Peak	V	-2.50	39.33	73.98	34.65
	23.97	Average	V		26.47	53.98	27.51
7 239.840	48.07	Peak	H	-1.40	49.47	73.98	24.51
	33.08	Average	H		34.48	53.98	19.50
8 144.145	54.76	Peak	V	0.70	54.06	73.98	19.92
	36.59	Average	V		35.89	53.98	18.09
9 050.347	52.99	Peak	H	1.20	51.79	73.98	22.19
	36.66	Average	H		35.46	53.98	18.52



Mid CH							
1 832.652	27.00	Peak	H	-15.20	42.20	73.98	31.78
	8.16	Average	H		23.36	53.98	30.62
2 748.928	24.42	Peak	V	-11.50	35.92	73.98	38.06
	8.81	Average	V		20.31	53.98	33.67
3 663.488	41.00	Peak	V	-7.30	48.30	73.98	25.68
	24.53	Average	V		31.83	53.98	22.15
4 574.546	32.21	Peak	V	-5.50	37.71	73.98	36.27
	19.30	Average	V		24.80	53.98	29.18
5 495.183	51.61	Peak	V	-2.80	54.41	73.98	19.57
	34.79	Average	V		37.59	53.98	16.39
6 415.382	37.04	Peak	V	-2.50	39.54	73.98	34.44
	24.29	Average	V		26.79	53.98	27.19
7 323.079	42.40	Peak	H	-1.30	43.70	73.98	30.28
	29.63	Average	H		30.93	53.98	23.05
High CH							
1 851.407	16.56	Peak	H	-15.10	31.66	73.98	42.32
	3.82	Average	H		18.92	53.98	35.06
2 783.324	22.80	Peak	V	-11.40	34.20	73.98	39.78
	10.00	Average	V		21.40	53.98	32.58
3 710.555	30.69	Peak	V	-7.00	37.69	73.98	36.29
	17.70	Average	V		24.70	53.98	29.28
4 630.628	32.49	Peak	V	-5.40	37.89	73.98	36.09
	19.69	Average	V		25.09	53.98	28.89
5 560.918	36.30	Peak	V	-2.80	39.10	73.98	34.88
	23.41	Average	V		26.21	53.98	27.77
6 483.080	36.35	Peak	V	-2.50	38.85	73.98	35.13
	23.79	Average	V		26.29	53.98	27.69
7 409.142	43.24	Peak	V	-1.20	44.44	73.98	29.54
	30.19	Average	V		31.39	53.98	22.59
8 337.187	46.32	Peak	V	0.60	45.72	73.98	28.26
	33.12	Average	V		32.52	53.98	21.46



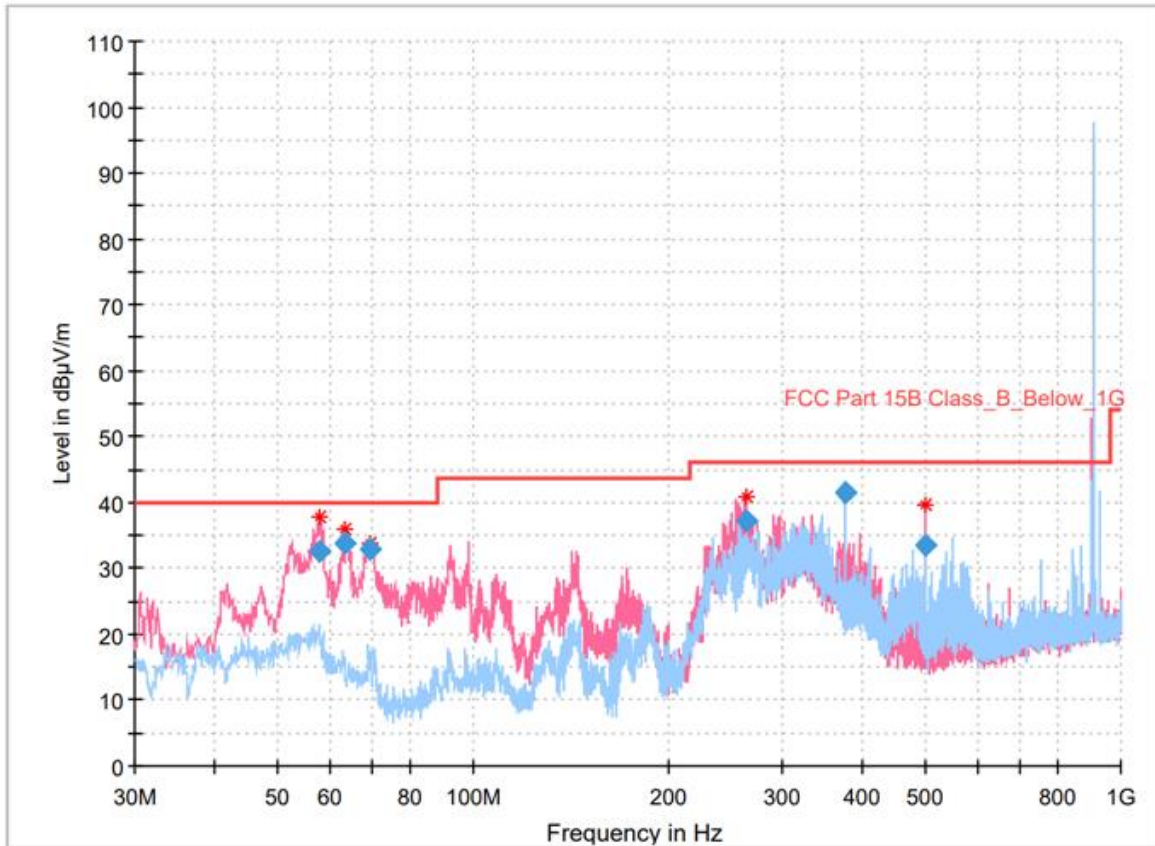
11.4.2 Test data for Spurious & Harmonic_Module 2

11.4.2.1 Measurement Results for below 30 MHz

Frequency (MHz)	Reading (dB μ V)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							



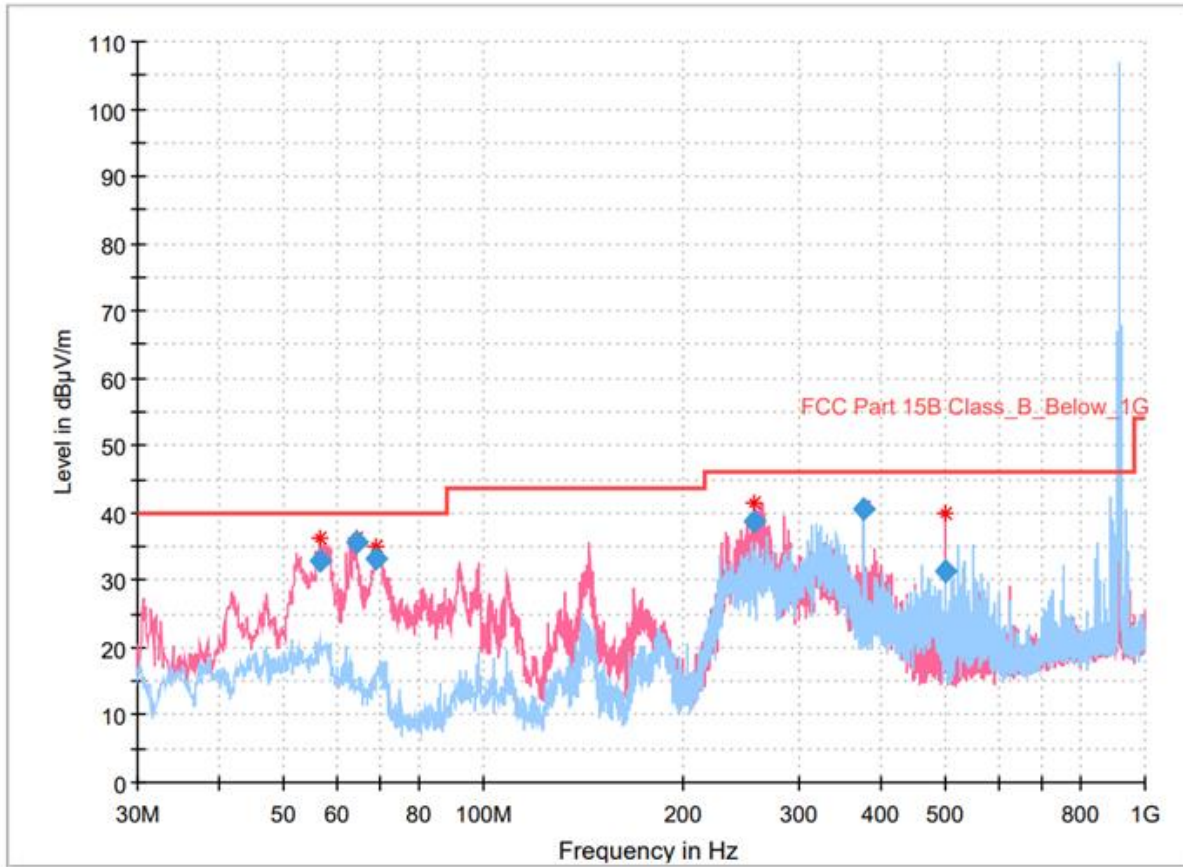
11.4.2.2 Measurement Results for below 1 GHz



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
58.130000	32.56	40.00	7.44	1000.0	120.000	99.8	V	133.0	-19.9
63.562000	33.81	40.00	6.19	1000.0	120.000	99.8	V	188.0	-21.0
69.091000	32.74	40.00	7.26	1000.0	120.000	199.9	V	273.0	-23.0
264.061000	37.15	46.00	8.85	1000.0	120.000	99.8	V	43.0	-18.6
375.029000	41.44	46.00	4.56	1000.0	120.000	99.8	V	161.0	-16.0
500.062000	33.47	46.00	12.53	1000.0	120.000	99.8	V	244.0	-13.7

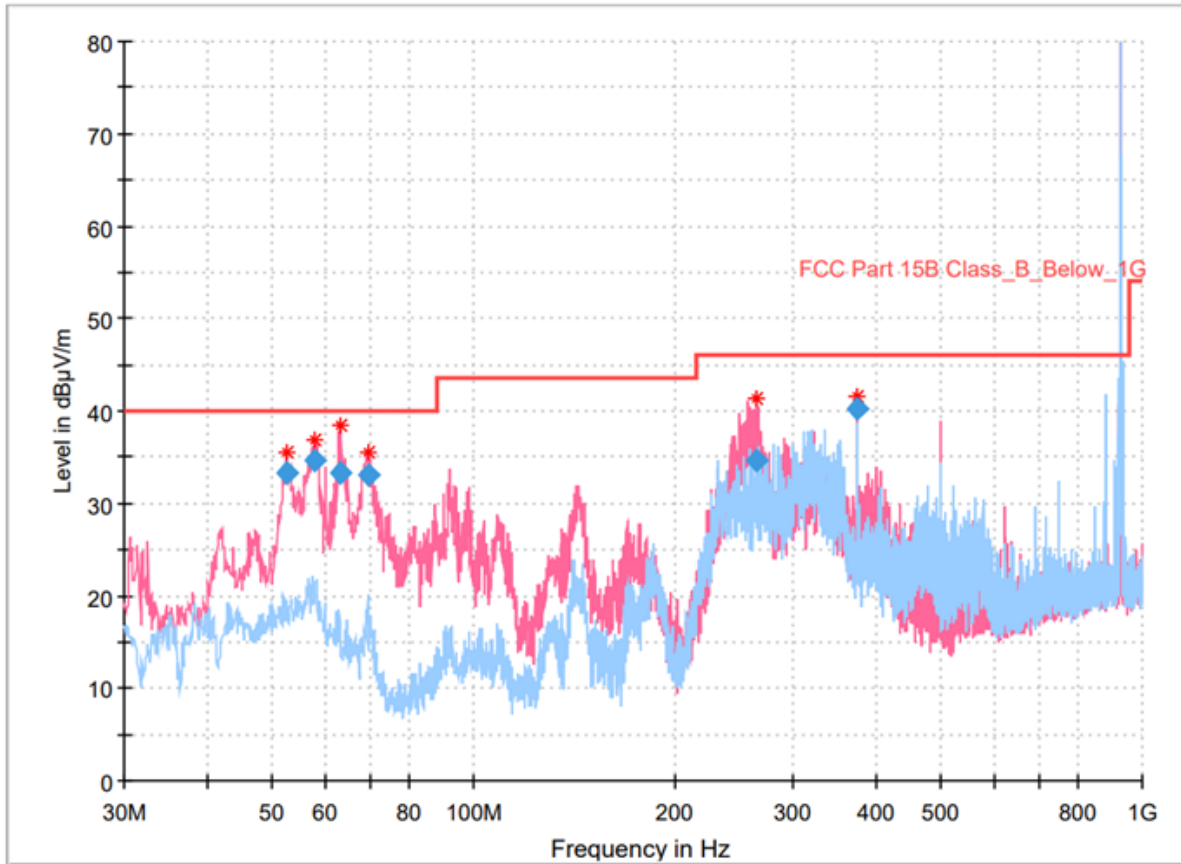
Low CH



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
56.578000	32.83	40.00	7.17	1000.0	120.000	99.9	V	311.0	-19.4
64.144000	35.55	40.00	4.45	1000.0	120.000	99.9	V	93.0	-21.2
68.994000	33.12	40.00	6.88	1000.0	120.000	200.0	V	87.0	-23.0
256.786000	38.59	46.00	7.41	1000.0	120.000	99.9	V	23.0	-18.6
375.029000	40.61	46.00	5.39	1000.0	120.000	99.9	V	202.0	-16.0
500.062000	31.46	46.00	14.54	1000.0	120.000	99.9	V	175.0	-13.7

Mid CH



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.504000	33.22	40.00	6.78	1000.0	120.000	99.8	V	359.0	-19.0
57.839000	34.69	40.00	5.31	1000.0	120.000	99.8	V	246.0	-19.8
63.368000	33.31	40.00	6.69	1000.0	120.000	99.8	V	33.0	-21.0
69.382000	33.01	40.00	6.99	1000.0	120.000	200.0	V	172.0	-23.1
264.934000	34.57	46.00	11.43	1000.0	120.000	99.8	V	52.0	-18.6
375.029000	40.26	46.00	5.74	1000.0	120.000	99.8	V	163.0	-16.0

High CH



11.4.2.3 Measurement Results for Above 1 GHz

Frequency (MHz)	Reading (dB μ V)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Low CH							
1 810.181	40.70	Peak	H	-15.30	56.00	73.98	17.98
	18.11	Average	H		33.41	53.98	20.57
2 711.808	25.44	Peak	H	-11.50	36.94	73.98	37.04
	9.58	Average	H		21.08	53.98	32.90
3 622.307	30.39	Peak	V	-7.40	37.79	73.98	36.19
	17.22	Average	V		24.62	53.98	29.36
4 525.089	39.52	Peak	H	-5.50	45.02	73.98	28.96
	26.40	Average	H		31.90	53.98	22.08
5 433.805	36.02	Peak	H	-2.90	38.92	73.98	35.06
	23.23	Average	H		26.13	53.98	27.85
6 338.641	36.54	Peak	V	-2.50	39.04	73.98	34.94
	23.91	Average	V		26.41	53.98	27.57
7 244.218	42.43	Peak	H	-1.40	43.83	73.98	30.15
	29.30	Average	H		30.70	53.98	23.28
8 150.239	46.84	Peak	H	0.70	46.14	73.98	27.84
	33.78	Average	H		33.08	53.98	20.90



Mid CH							
1 830.927	16.48	Peak	V	-15.20	31.68	73.98	42.30
	3.68	Average	V		18.88	53.98	35.10
2 751.659	34.44	Peak	H	-11.50	45.94	73.98	28.04
	8.77	Average	H		20.27	53.98	33.71
3 663.651	29.52	Peak	V	-7.30	36.82	73.98	37.16
	16.82	Average	V		24.12	53.98	29.86
4 579.153	44.33	Peak	H	-5.50	49.83	73.98	24.15
	25.15	Average	H		30.65	53.98	23.33
5 494.582	50.42	Peak	H	-2.80	53.22	73.98	20.76
	28.63	Average	H		31.43	53.98	22.55
6 416.835	37.52	Peak	V	-2.50	40.02	73.98	33.96
	24.30	Average	V		26.80	53.98	27.18
7 323.246	42.31	Peak	H	-1.30	43.61	73.98	30.37
	29.64	Average	H		30.94	53.98	23.04
8 239.653	47.35	Peak	V	0.80	46.55	73.98	27.43
	33.76	Average	V		32.96	53.98	21.02
High CH							
1 855.353	18.34	Peak	V	-15.00	33.34	73.98	40.64
	3.97	Average	V		18.97	53.98	35.01
2 778.10	22.81	Peak	H	-11.40	34.21	73.98	39.77
	9.89	Average	H		21.29	53.98	32.69
3 710.147	30.51	Peak	V	-7.00	37.51	73.98	36.47
	17.67	Average	V		24.67	53.98	29.31
4 626.896	36.12	Peak	H	-5.40	41.52	73.98	32.46
	19.64	Average	H		25.04	53.98	28.94
5 563.797	36.06	Peak	V	-2.80	38.86	73.98	35.12
	23.40	Average	V		26.20	53.98	27.78
6 485.242	48.45	Peak	V	-2.50	50.95	73.98	23.03
	28.86	Average	V		31.36	53.98	22.62
7 416.676	43.43	Peak	V	-1.10	44.53	73.98	29.45
	30.35	Average	V		31.45	53.98	22.53
8 338.697	46.64	Peak	H	0.60	46.04	73.98	27.94
	33.09	Average	H		32.49	53.98	21.49



12. Power Line Conducted Emission

12.1 Operating environment

Temperature : 22 °C
Relative humidity : 44 %

12.2 Measurement method

Standard : §15.207 / RSS-GEN 8.8

12.3 Test setup

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 μ H + 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.

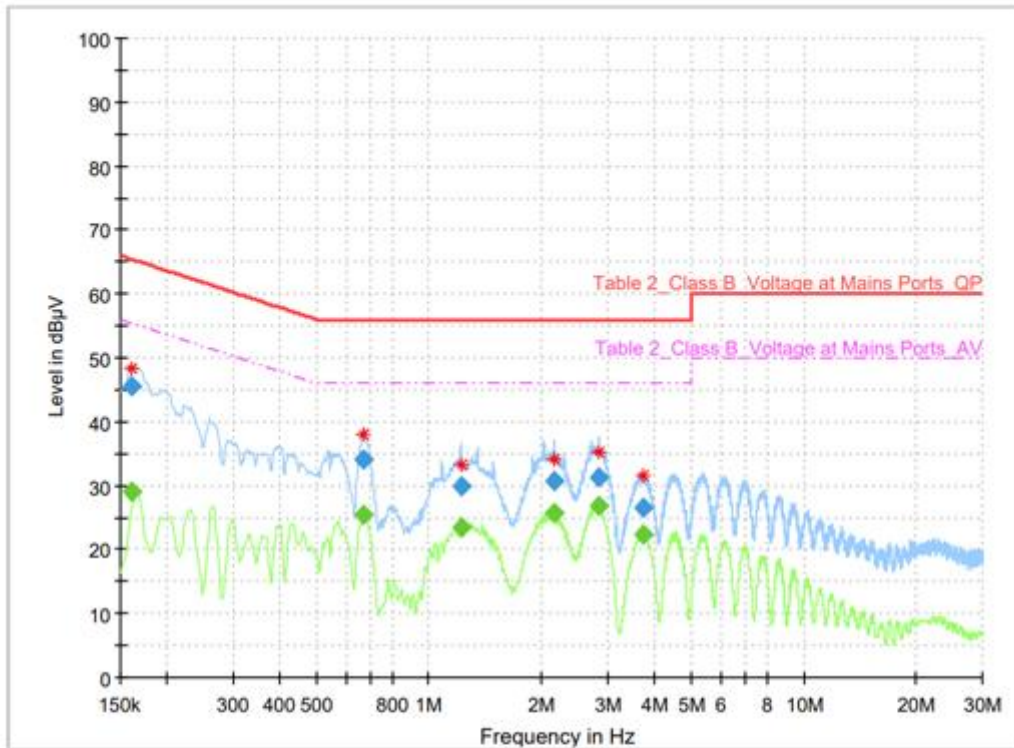




12.4 Test data

Test date : 28. July. 2021
 Operating mode : Transmit mode
 Test Result : Pass

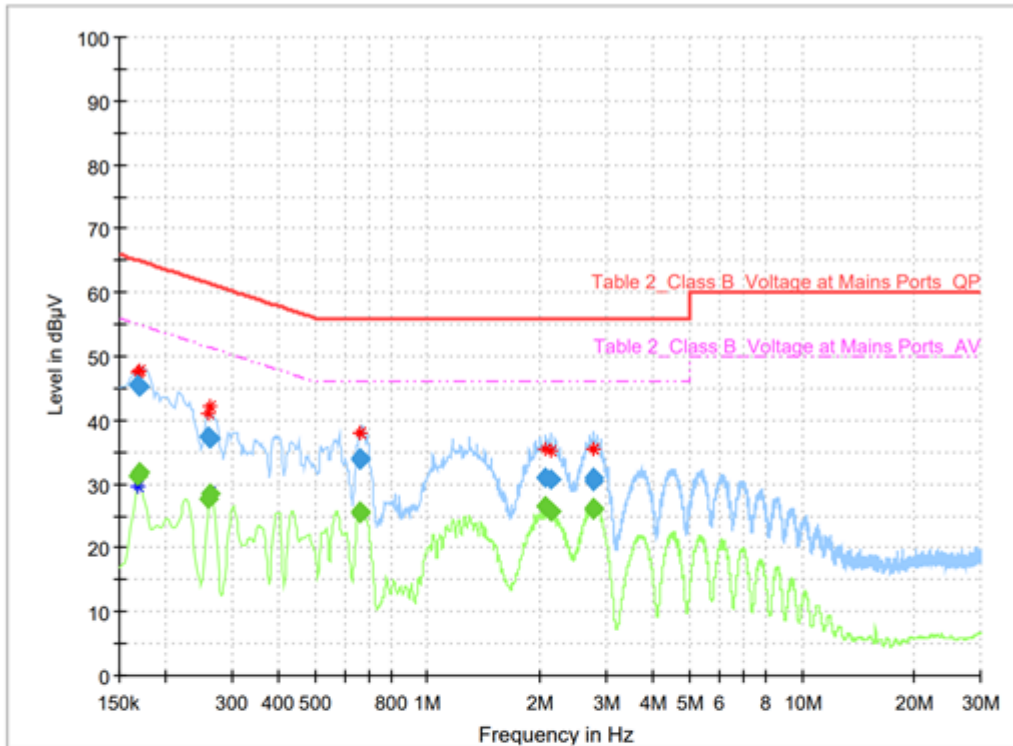
12.4.1 Measured Results & Graph_Module 1



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.161250	---	29.09	55.40	26.31	5000.0	9.000	L1	ON	9.9
0.161250	45.61	---	65.40	19.78	5000.0	9.000	L1	ON	9.9
0.667500	---	25.29	46.00	20.71	5000.0	9.000	L1	ON	9.9
0.667500	34.11	---	56.00	21.89	5000.0	9.000	L1	ON	9.9
1.214250	---	23.42	46.00	22.58	5000.0	9.000	L1	ON	9.7
1.214250	29.96	---	56.00	26.04	5000.0	9.000	L1	ON	9.7
2.161500	---	25.79	46.00	20.21	5000.0	9.000	L1	ON	9.7
2.161500	30.64	---	56.00	25.36	5000.0	9.000	L1	ON	9.7
2.834250	---	26.76	46.00	19.24	5000.0	9.000	L1	ON	9.7
2.834250	31.32	---	56.00	24.68	5000.0	9.000	L1	ON	9.7
3.732000	---	22.28	46.00	23.72	5000.0	9.000	L1	ON	9.7
3.732000	26.48	---	56.00	29.52	5000.0	9.000	L1	ON	9.7

Live line



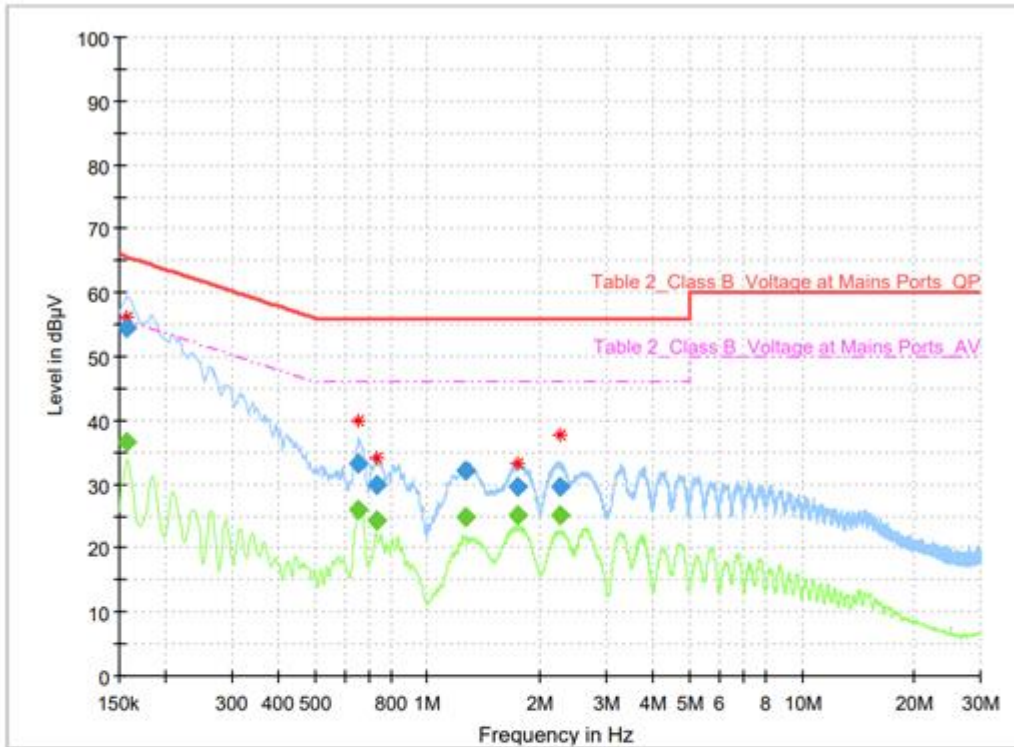
Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.168000	---	31.39	55.06	23.67	5000.0	9.000	N	ON	10.0
0.168000	45.54	---	65.06	19.51	5000.0	9.000	N	ON	10.0
0.170250	---	31.92	54.95	23.03	5000.0	9.000	N	ON	10.0
0.170250	45.39	---	64.95	19.56	5000.0	9.000	N	ON	10.0
0.260250	---	27.68	51.42	23.74	5000.0	9.000	N	ON	9.7
0.260250	37.36	---	61.42	24.06	5000.0	9.000	N	ON	9.7
0.262500	---	28.62	51.35	22.74	5000.0	9.000	N	ON	9.7
0.262500	37.12	---	61.35	24.23	5000.0	9.000	N	ON	9.7
0.658500	---	25.55	46.00	20.45	5000.0	9.000	N	ON	9.9
0.658500	33.76	---	56.00	22.24	5000.0	9.000	N	ON	9.9
0.660750	---	25.66	46.00	20.34	5000.0	9.000	N	ON	9.9
0.660750	34.03	---	56.00	21.97	5000.0	9.000	N	ON	9.9
2.064750	---	26.47	46.00	19.53	5000.0	9.000	N	ON	9.7
2.064750	31.12	---	56.00	24.88	5000.0	9.000	N	ON	9.7
2.130000	---	25.64	46.00	20.36	5000.0	9.000	N	ON	9.7
2.130000	30.86	---	56.00	25.14	5000.0	9.000	N	ON	9.7
2.762250	---	25.89	46.00	20.11	5000.0	9.000	N	ON	9.7
2.762250	30.57	---	56.00	25.43	5000.0	9.000	N	ON	9.7
2.766750	---	26.31	46.00	19.69	5000.0	9.000	N	ON	9.7
2.766750	30.91	---	56.00	25.09	5000.0	9.000	N	ON	9.7

Neutral line



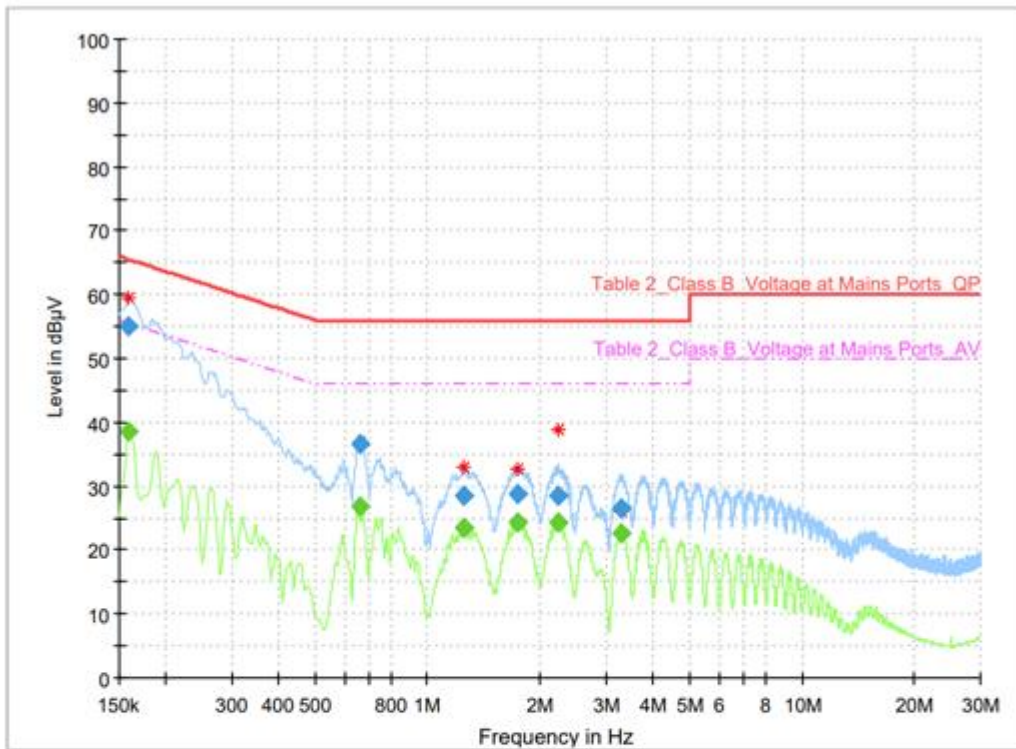
12.4.2 Measured Results & Graph_Module 2



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.156750	---	36.69	55.63	18.95	5000.0	9.000	L1	ON	9.8
0.156750	54.50	---	65.63	11.14	5000.0	9.000	L1	ON	9.8
0.654000	---	25.86	46.00	20.14	5000.0	9.000	L1	ON	9.9
0.654000	33.25	---	56.00	22.75	5000.0	9.000	L1	ON	9.9
0.735000	---	24.36	46.00	21.64	5000.0	9.000	L1	ON	9.8
0.735000	29.89	---	56.00	26.11	5000.0	9.000	L1	ON	9.8
1.257000	---	24.99	46.00	21.01	5000.0	9.000	L1	ON	9.7
1.257000	32.06	---	56.00	23.94	5000.0	9.000	L1	ON	9.7
1.734000	---	25.08	46.00	20.92	5000.0	9.000	L1	ON	9.7
1.734000	29.65	---	56.00	26.35	5000.0	9.000	L1	ON	9.7
2.249250	---	25.24	46.00	20.76	5000.0	9.000	L1	ON	9.7
2.249250	29.61	---	56.00	26.39	5000.0	9.000	L1	ON	9.7

Live line



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.159000	---	38.56	55.52	16.96	5000.0	9.000	N	ON	9.9
0.159000	55.04	---	65.52	10.47	5000.0	9.000	N	ON	9.9
0.660750	---	26.77	46.00	19.23	5000.0	9.000	N	ON	9.9
0.660750	36.58	---	56.00	19.42	5000.0	9.000	N	ON	9.9
1.254750	---	23.48	46.00	22.52	5000.0	9.000	N	ON	9.7
1.254750	28.59	---	56.00	27.41	5000.0	9.000	N	ON	9.7
1.729500	---	24.20	46.00	21.80	5000.0	9.000	N	ON	9.7
1.729500	28.89	---	56.00	27.11	5000.0	9.000	N	ON	9.7
2.226750	---	24.23	46.00	21.77	5000.0	9.000	N	ON	9.7
2.226750	28.57	---	56.00	27.43	5000.0	9.000	N	ON	9.7
3.284250	---	22.57	46.00	23.43	5000.0	9.000	N	ON	9.7
3.284250	26.67	---	56.00	29.33	5000.0	9.000	N	ON	9.7

Neutral line

- END OF REPORT.