



TEST REPORT

page : (1) / Total (65)

성적서 번호 Report No.		ICRT-TR-E232861-0A	
신청자 Client	기관명 Name	Westcom Wireless Inc.	
	주소 Address	2773 Leechburg Road, Lower Burrell, PA 15068 United States	
시험대상품목 Product name		ProCom	
모델명 Model name		Atlas Pro-B	
정격 Ratings		DC 3.7 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		06. Nov. 2023 ~ 07. Nov. 2023	
시험방법/항목 Test Method/Item		FCC Part 15 Subpart C	
시험결과 Test Results		Refer to 3. Test Summary	
확인 Affirmation	작성자 Tested by	기술책임자 Technical Manager	
	성명 Name	Seong-Hun, Jeong	성명 Name
<input type="checkbox"/> 위 성적서는 고객이 제공한 시료에 대한 시험결과입니다. <input type="checkbox"/> The above test report 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. <input type="checkbox"/> The above test report is not related to accreditation by KS Q ISO/IEC 17025 and Korea Laboratory Accreditation scheme. <input type="checkbox"/> 위 성적서는 주식회사 아이씨알의 승인 없이는 일부 복제에 대해 금지됩니다. <input type="checkbox"/> The test report is prohibited for some reproduction without the approval of the ICR.			
2023. 11. 10 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.

경기도 김포시 양촌읍 황금3로7번길 112 / Tel: 02-6351-9001 ~ 6

112, Hwanggeum3-ro 7beon-gil, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea / Tel: 02-6351-9001 ~ 6

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Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
ICRT-TR-E232861-0A	2023. 11. 10	Initial Issue	All

1. Applicant & Manufacturer & Test Laboratory Information

1.1 Applicant information

Applicant	Westcom Wireless Inc.
Address	2773 Leechburg Road, Lower Burrell, PA 15068 United States

1.2 Manufacturer Information

Applicant	Westcom Wireless Inc.
Address	2773 Leechburg Road, Lower Burrell, PA 15068 United States

1.3 Test Laboratory Information

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
KOLAS No.	KT652
KC & FCC	KR0165

1.4 Measurement Uncertainty

Parameter	Uncertainty	Limit
Occupied Channel Bandwidth	2.75%	±5 %
RF output power, conducted	1.39 dB	±1.5 dB
Power Spectral Density, conducted	1.65 dB	±3 dB
Unwanted Emissions, conducted	1.82 dB	±3 dB
Supply voltages	0.06%	±3 %
Time	1.17%	±5 %
All emissions, radiated (Under the 1 GHz)	3.22 dB	±6 dB
All emissions, radiated (Above the 1 GHz)	3.67 dB	±6 dB

2. Equipment under Test(EUT) Information

2.1 General Information

Product Name	ProCom
Model Name	Atlas Pro-B
Additional Model Name	Atlas Pro SD-B, Atlas Pro H-B, Atlas Pro SS-B
FCC ID	2AO37-ATLASPRO-B
Power Supply	DC 3.7 V

2.2 Additional Information

Equipment Class	DSS - Direct Sequence Spread spectrum	
Device Type	Stand-alone	
Temperature Range	-10 °C ~ 50 °C	
Operating Frequency	FHSS_Normal	902.5 MHz ~ 927.5 MHz
	FHSS_Long	902.4 MHz ~ 927.6 MHz
	FHSS_Repeat	902.5 MHz ~ 927.5 MHz
RF Output Power	FHSS_Normal	22.92 dBm
	FHSS_Long	28.88 dBm
	FHSS_Repeat	28.87 dBm
Number of Channel	FHSS_Normal	51
	FHSS_Long	64
	FHSS_Repeat	51
Modulation Type	GFSK	
Antenna Type	Helical Antenna	
Antenna Gain	-0.65 dBi	

2.3 Pre-certified Transmitter Module Information

Module Name	BCM-SQ700-AS	
FCC ID	2APDI-BCM-SQ700-AS	
Classification 1	Equipment Class	DSS
	Test Method / Item	FCC Part 15 Subpart C
	Mode	Bluetooth BDR / EDR
Classification 2	Equipment Class	DTS
	Test Method / Item	FCC Part 15 Subpart C
	Mode	Bluetooth LE 1 Mbps / 2 Mbps

2.4 Reason of Additional Model Name

NO	Family Model Name	Difference
1	Atlas Pro SD-B	Appearance accessories change
2	Atlas Pro H-B	Appearance accessories change
3	Atlas Pro SS-B	Parts on the sub board have been deleted due to deletion of some functions. There are no changes to the transmitter circuit. *KDB 178919 D01 Permissive Change Policy v06_III.F

* Since these additional models do not affect the radio specification, in this test was performed with only the basic model.

2.5 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) & §15.247 (a)(1)(i)	20 dB Bandwidth	■	PASS
§15.247 (a)(1)	Carrier Frequency Separation	■	PASS
§15.247 (a)(1) (i)	Number of Hopping Frequencies	■	PASS
§15.247 (a)(1) (i)	Time of Occupancy (dwell Time)	■	PASS
§15.247 (b)(2)	Maximum Conducted Output Power	■	PASS
§15.247 (d)	Conducted Spurious Emission & Band edge	■	PASS
§15.247 (d) & §15.209 & §15.205	Radiated Spurious Emission & Band edge	■	PASS
§15.207	Power Line Conducted Emission	■	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

- 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.

3.4.1 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.

3.5 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.

Result: Pass

The transmitter has a **Helical Antenna**. The directional gain of the antenna is **-0.65 dBi**.

4. Test Result

4.1. 20 dB Bandwidth

4.1.1 Test procedure

ANSI C63.10-2013 Clause 6.9.2

4.1.2 Limit

§15.247 (a)(1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

§15.247 (a)(1)(i)

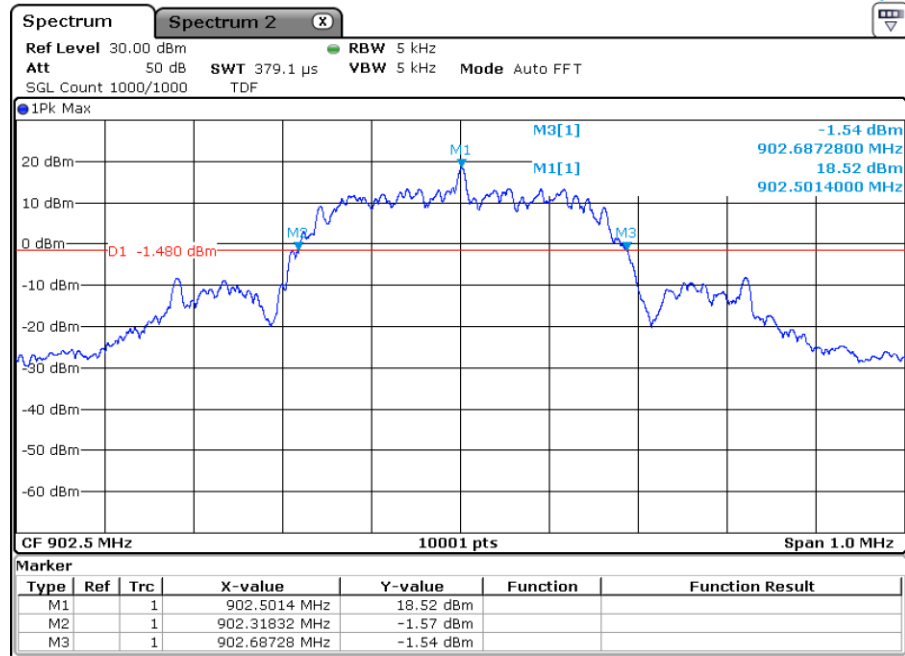
For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

4.1.3 Test data

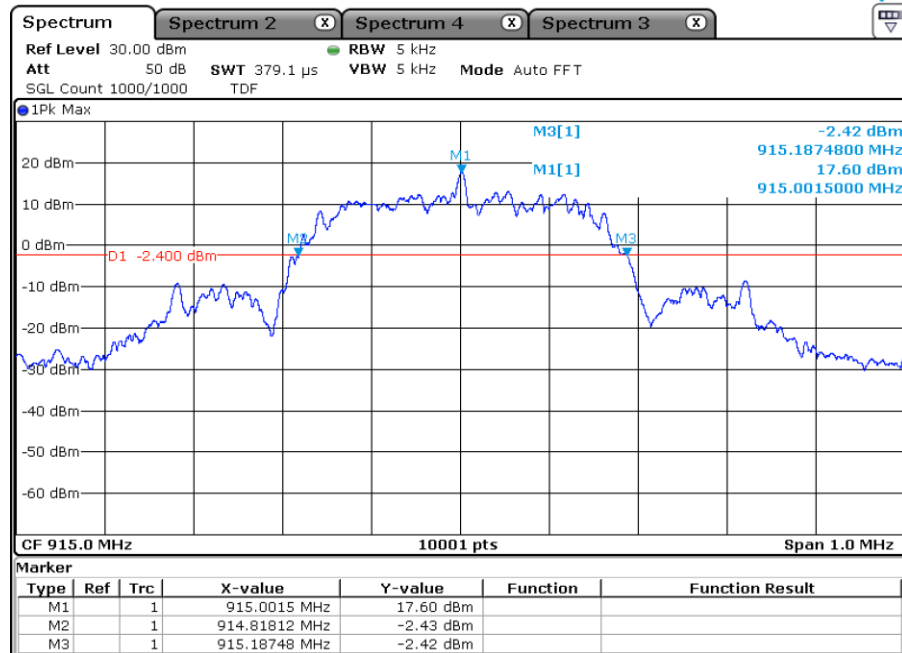
Result : Pass

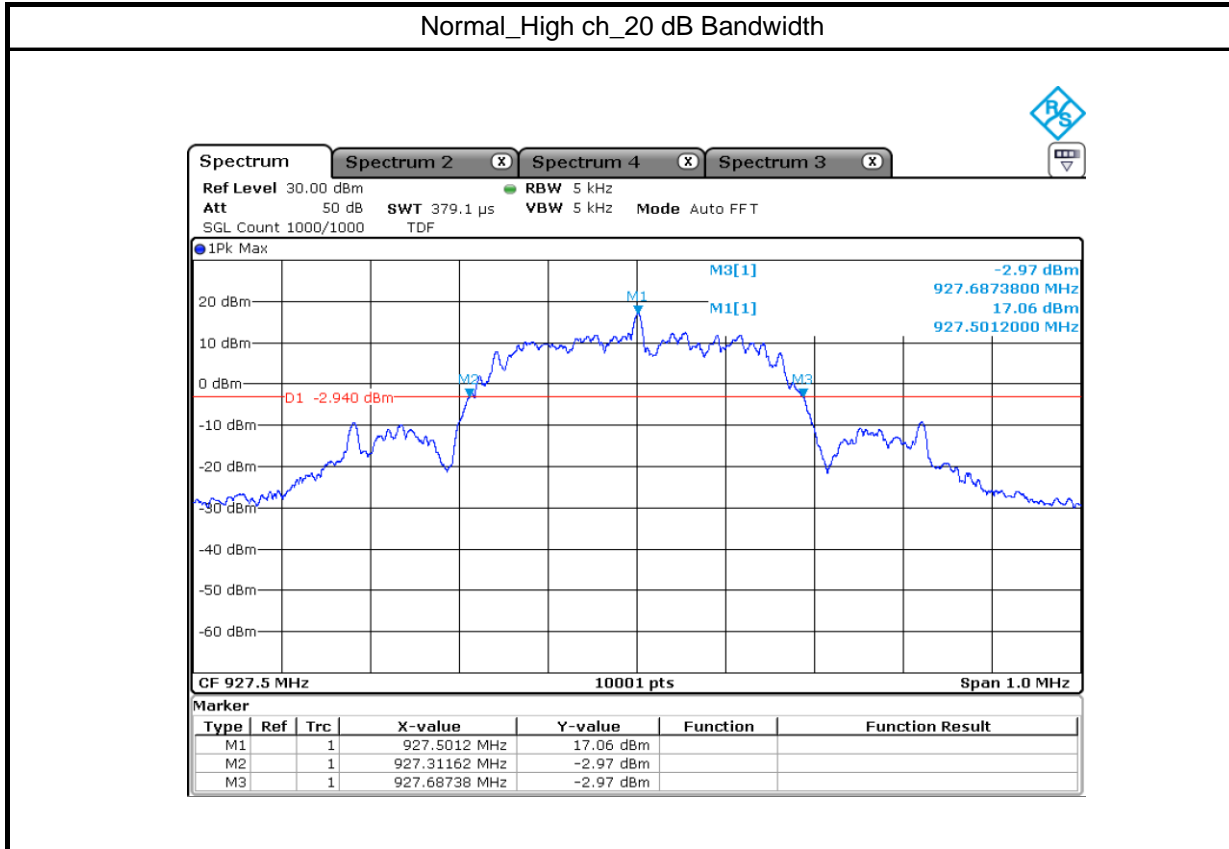
Mode	Frequency (MHz)	Measured Value (kHz)	Limit (kHz)
Normal	902.5	368.96	500
	915.0	369.36	
	927.5	375.76	
Long	902.4	224.87	
	914.8	225.18	
	927.6	224.98	
Repeat	902.5	478.36	
	915.0	478.36	
	927.5	479.16	

Normal_Low ch_20 dB Bandwidth

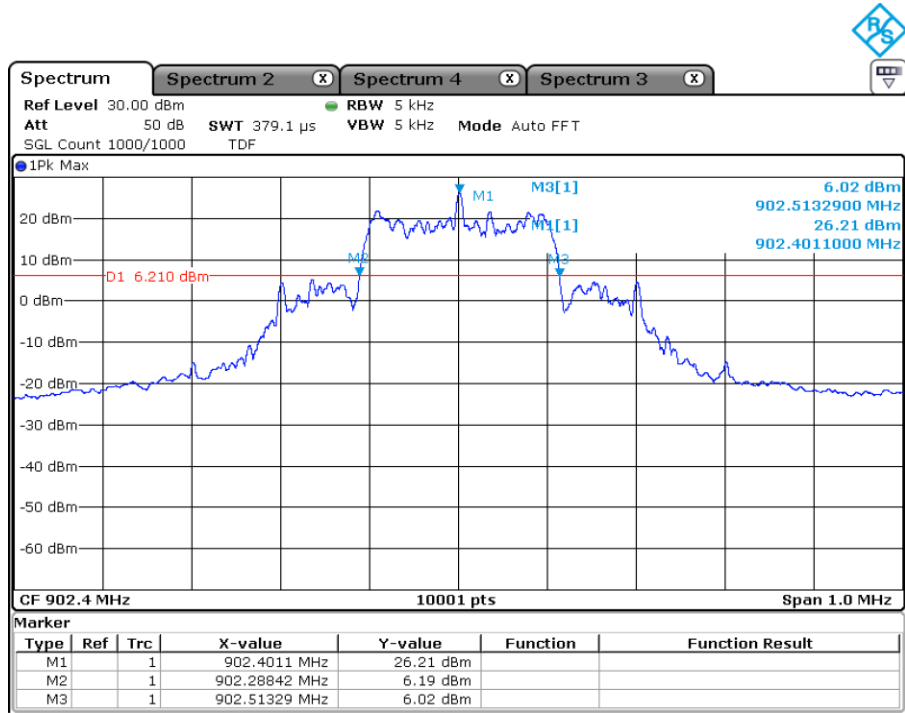


Normal_Mid ch_20 dB Bandwidth

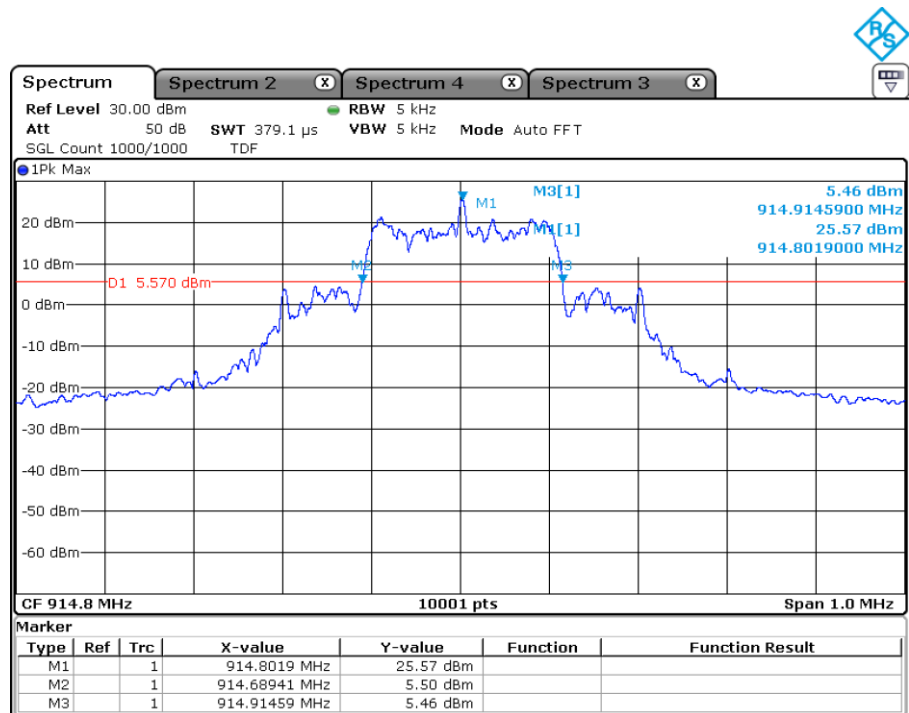


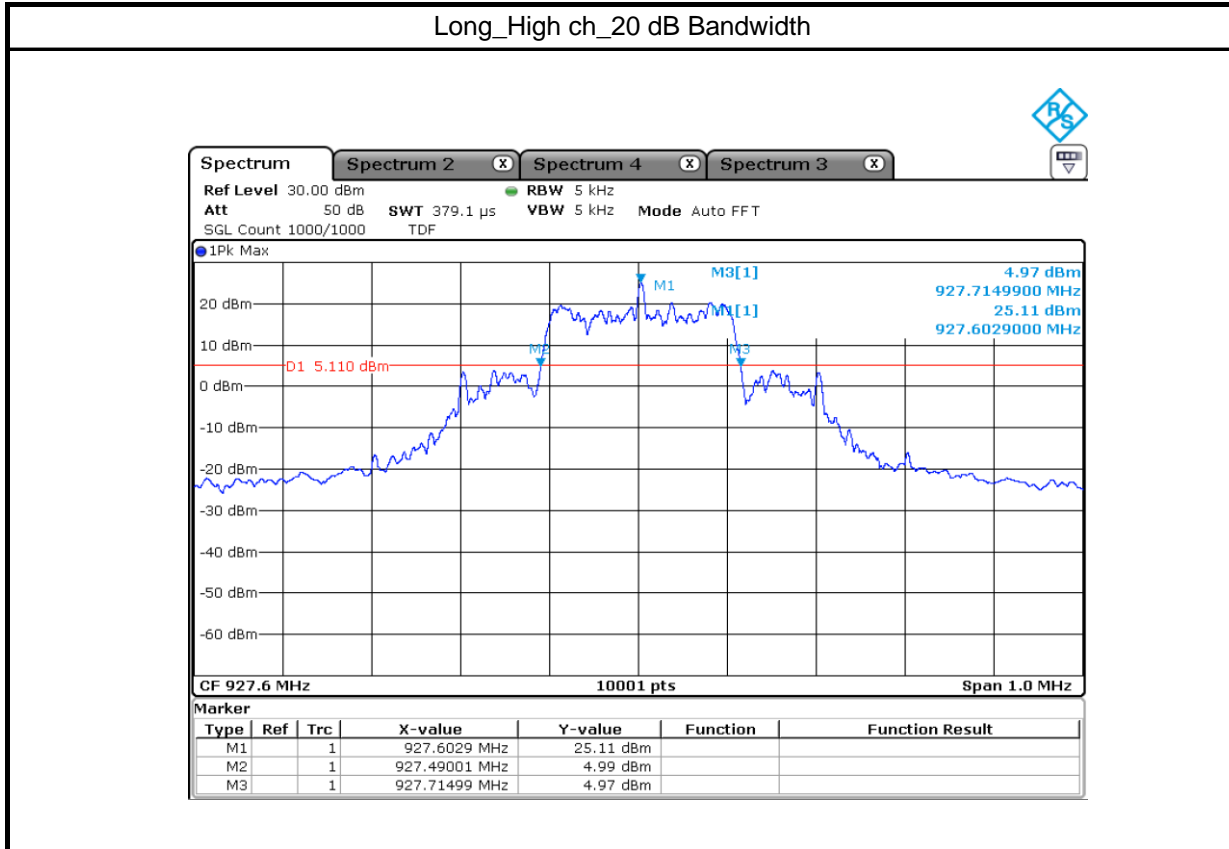


Long_Low ch_20 dB Bandwidth

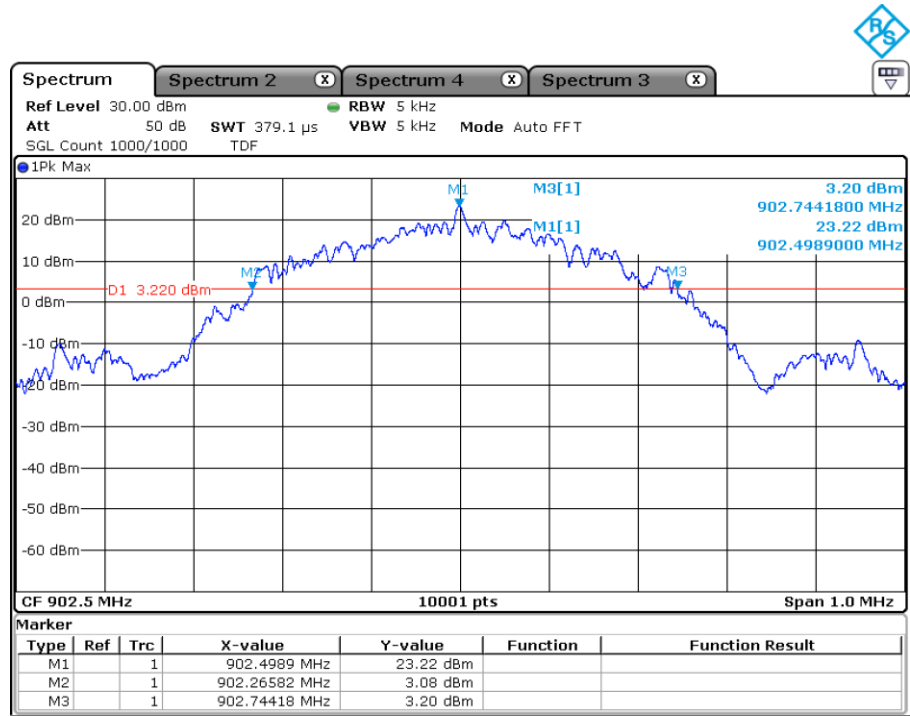


Long_Mid ch_20 dB Bandwidth

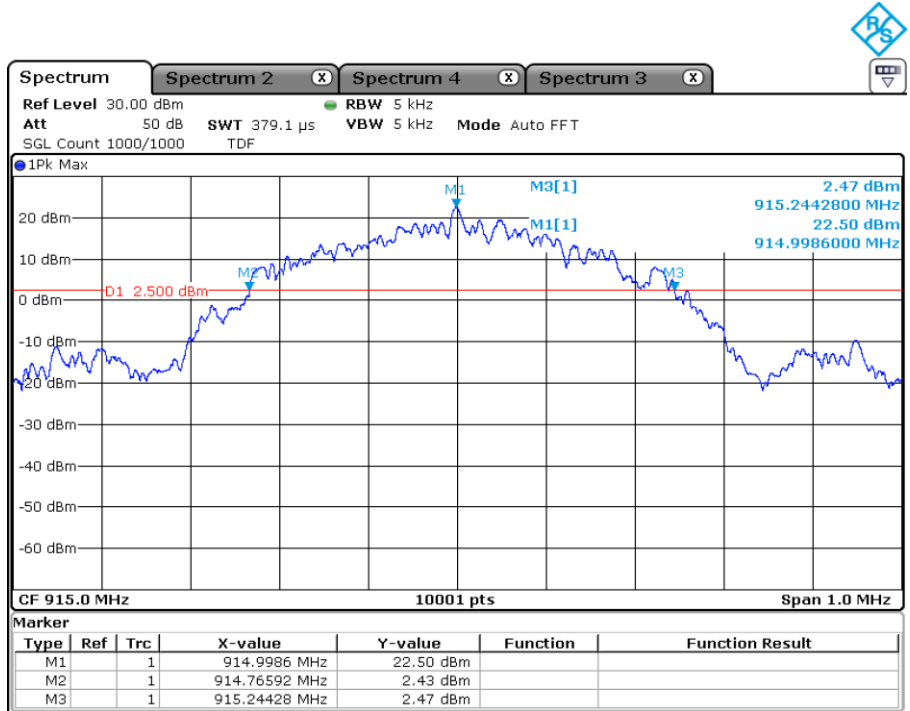


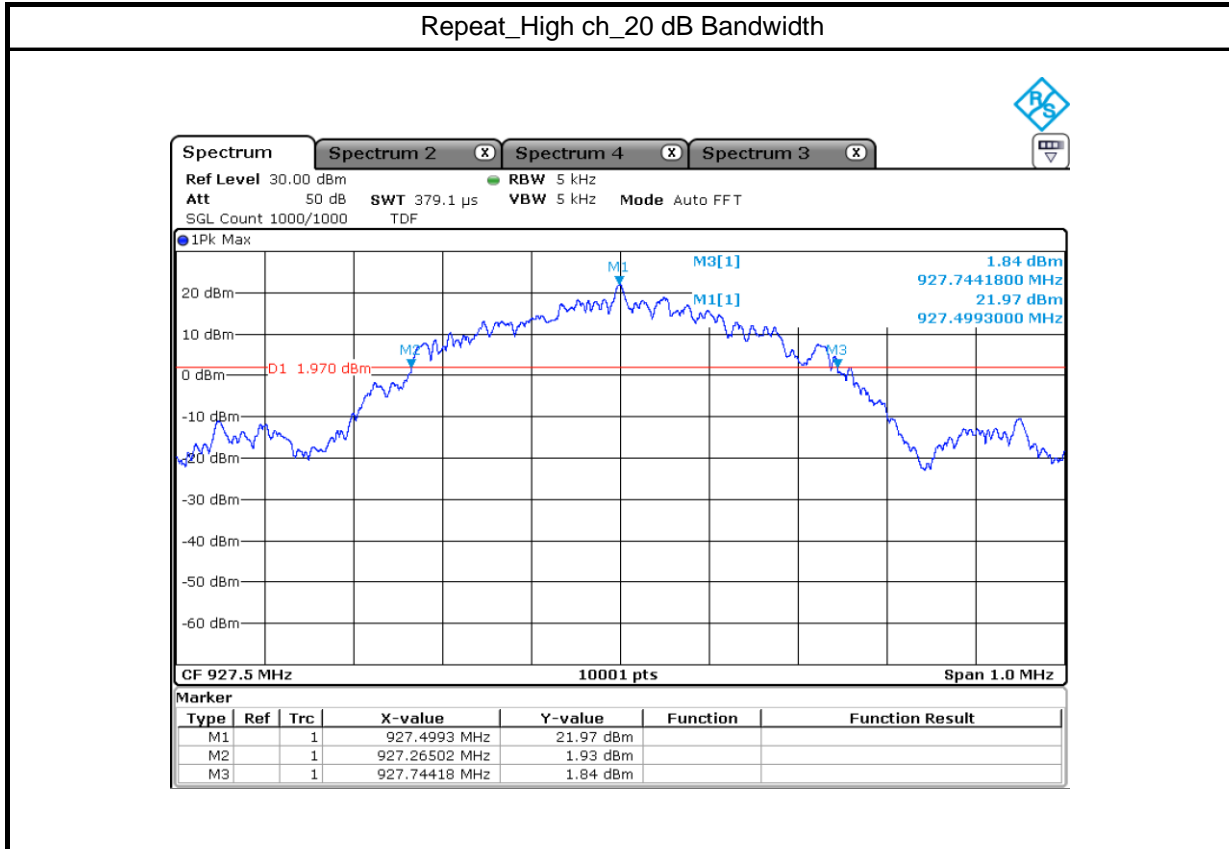


Repeat_Low ch_20 dB Bandwidth



Repeat_Mid ch_20 dB Bandwidth





4.2 Carrier Frequency Separation

4.2.1 Test procedure

ANSI C63.10-2013 Clause 7.8.2

4.2.2 Limit

§15.247 (a)(1)

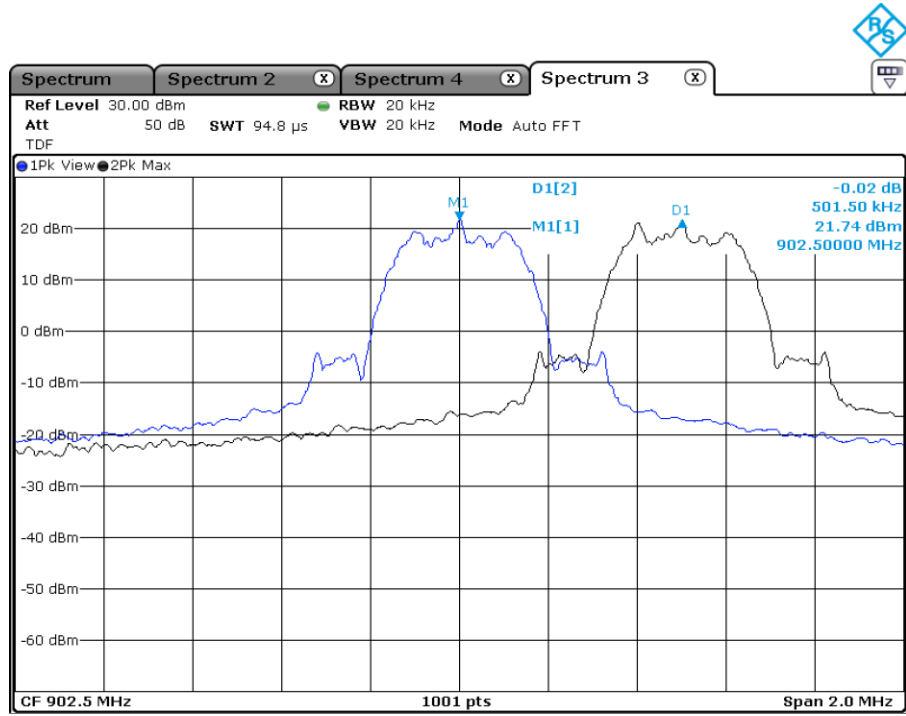
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

4.2.3 Test data

Result : Pass

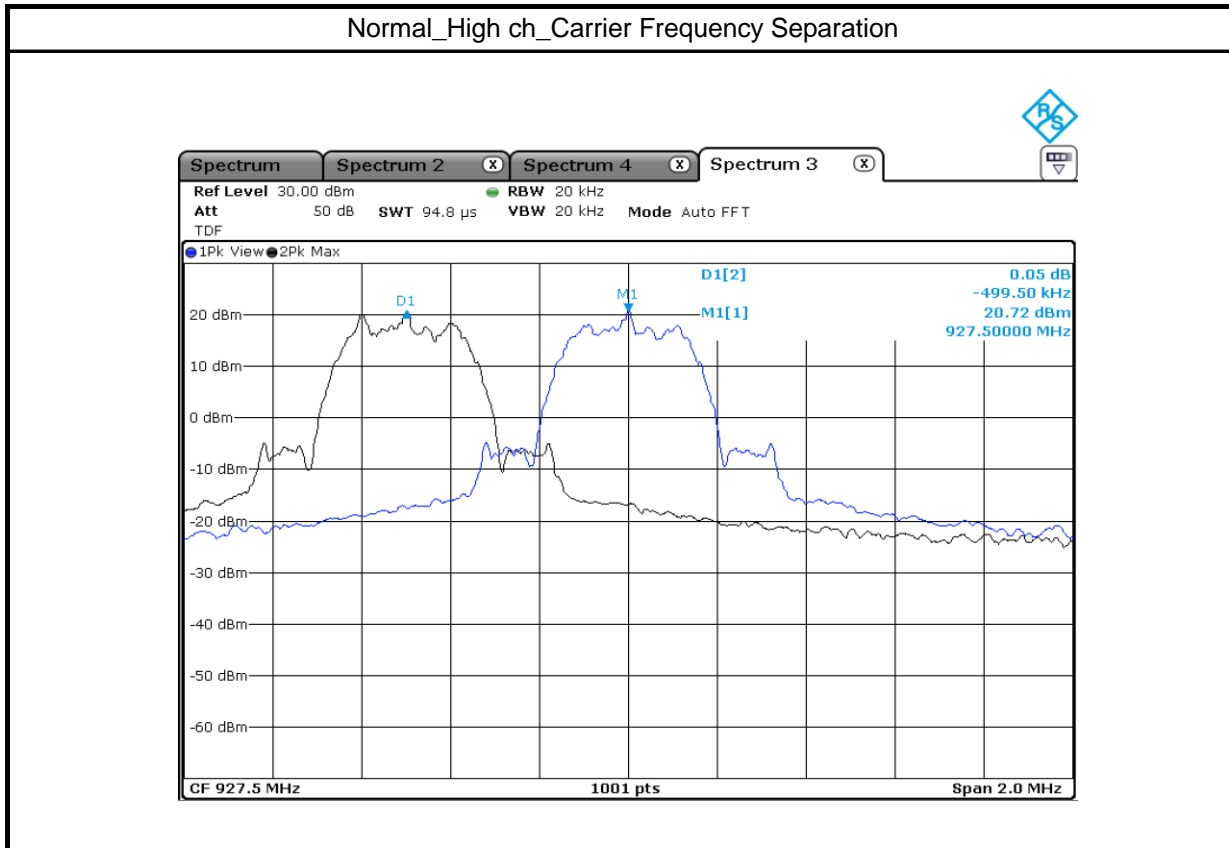
Mode	Frequency (MHz)	Measured Value (kHz)	20 dB bandwidth of the hopping channel (kHz)	Limit
Normal	902.5	501.50	368.96	25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater
	915.0	501.50	369.36	
	927.5	499.50	375.76	
Long	902.4	401.60	224.87	
	914.8	401.60	225.18	
	927.6	399.60	224.98	
Repeat	902.5	501.50	478.36	
	915.0	501.50	478.36	
	927.5	501.50	479.16	

Normal_Low ch_Carrier Frequency Separation

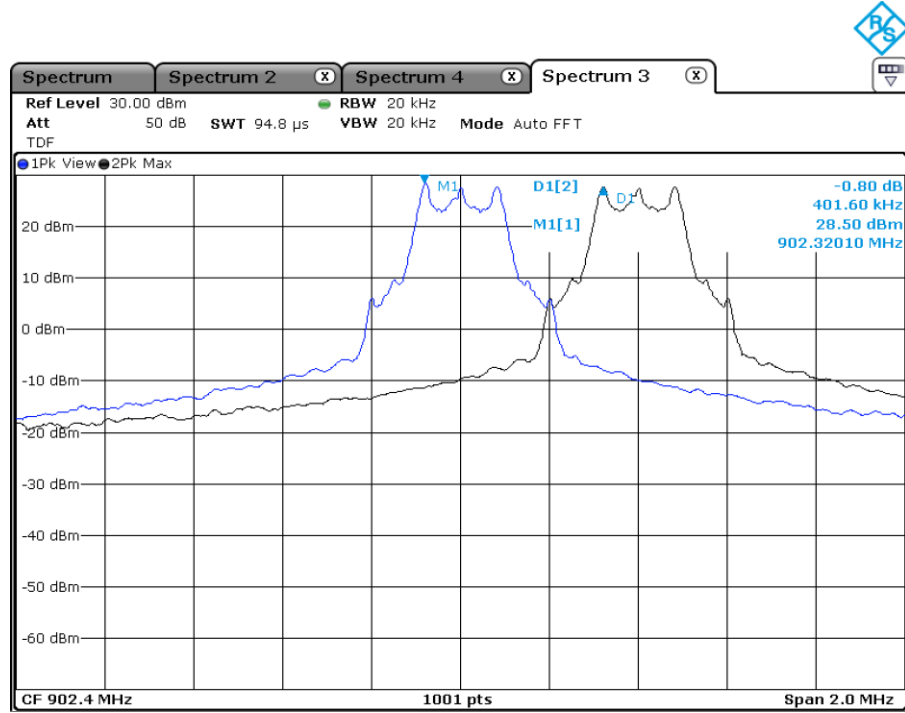


Normal_Mid ch_Carrier Frequency Separation

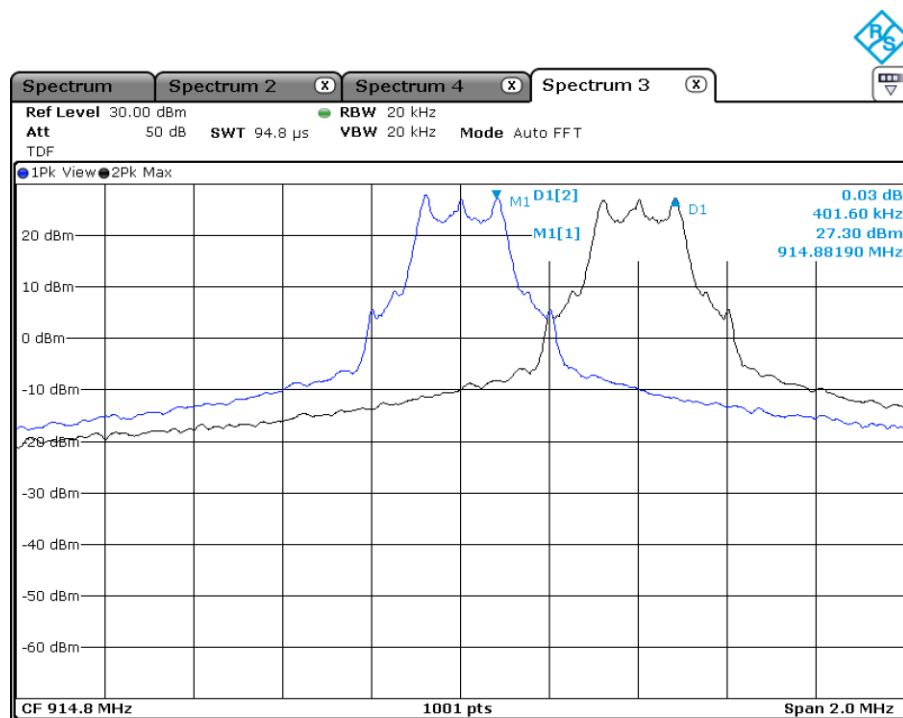


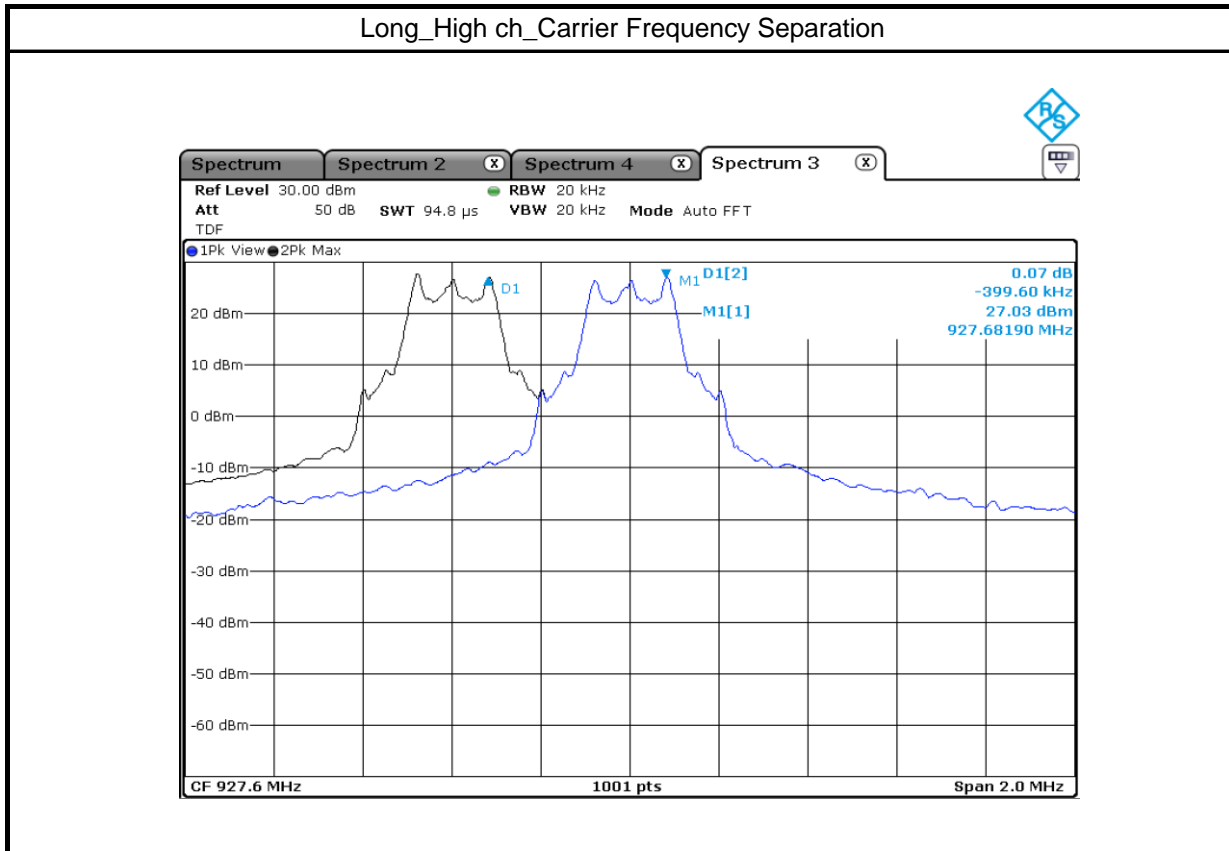


Long_Low ch_Carrier Frequency Separation



Long_Mid ch_Carrier Frequency Separation

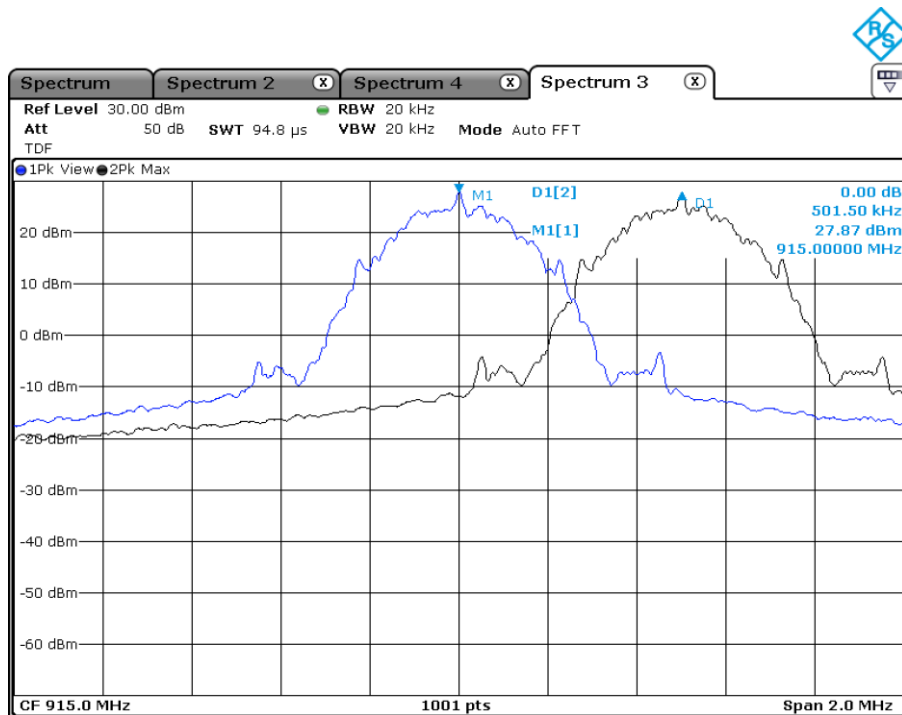


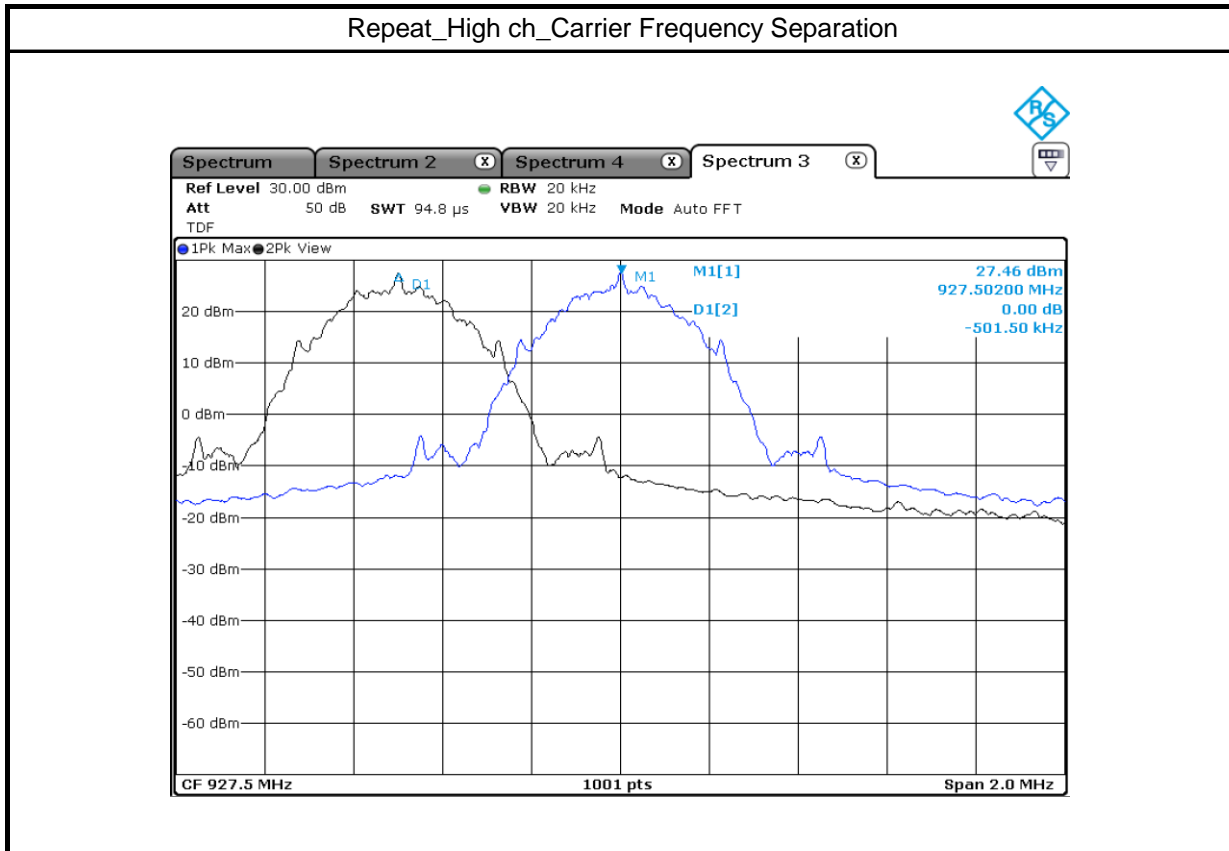


Repeat_Low ch_Carrier Frequency Separation



Repeat_Mid ch_Carrier Frequency Separation





4.3 Number of Hopping Frequency

4.3.1 Test procedure

ANSI C63.10-2013 Clause 7.8.3

4.3.2 Limit

§15.247 (a)(1)(i)

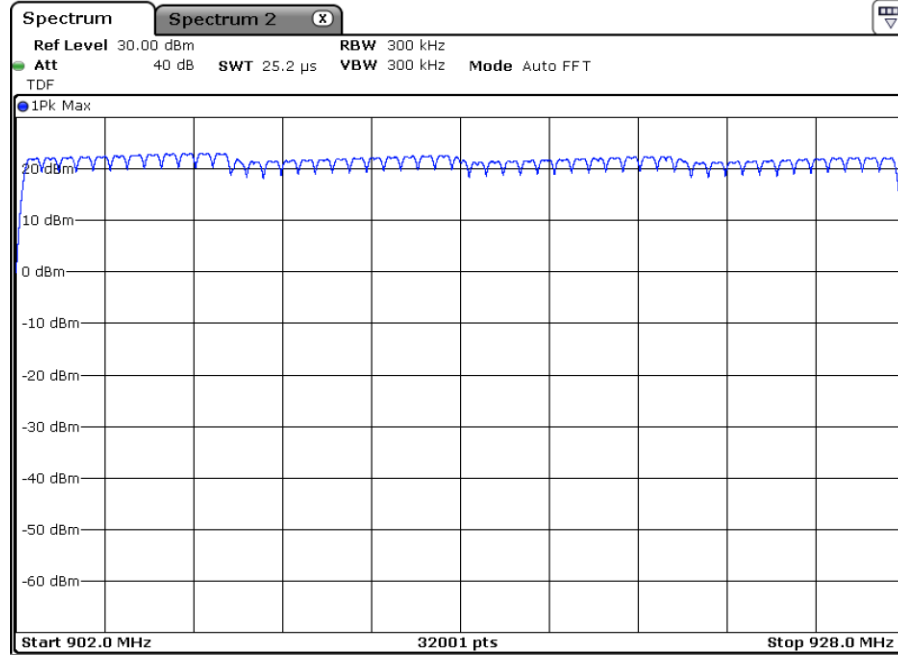
For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

4.3.3 Test data

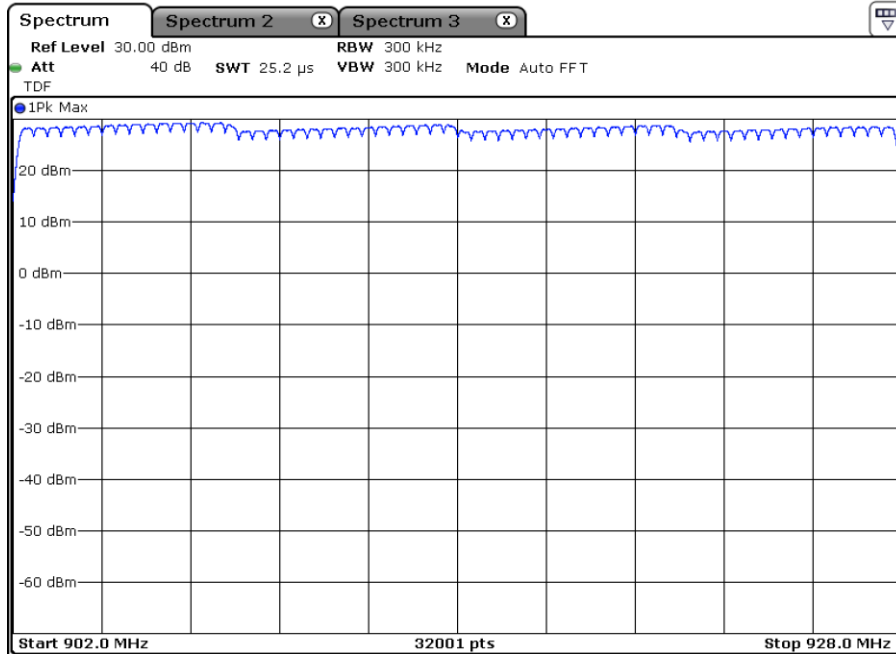
Result : Pass

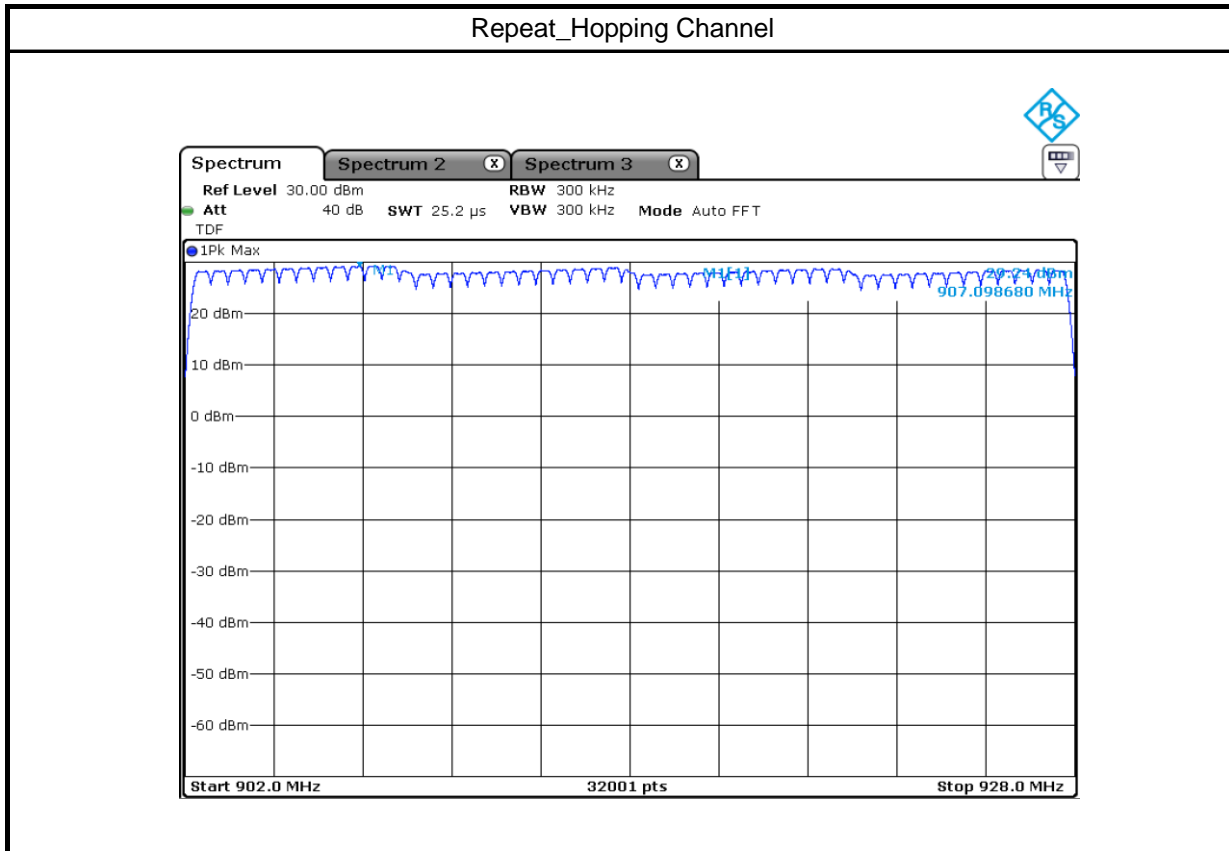
Mode	Hopping Channel	Limit
Normal	51	>25
Long	64	>50
Repeat	51	>25

Normal_Hopping Channel



Long_Hopping Channel





4.4 Time of Occupancy (dwell Time)

4.4.1 Test procedure

ANSI C63.10-2013 Clause 7.8.4

4.4.2 Limit

§15.247 (a)(1)(i)

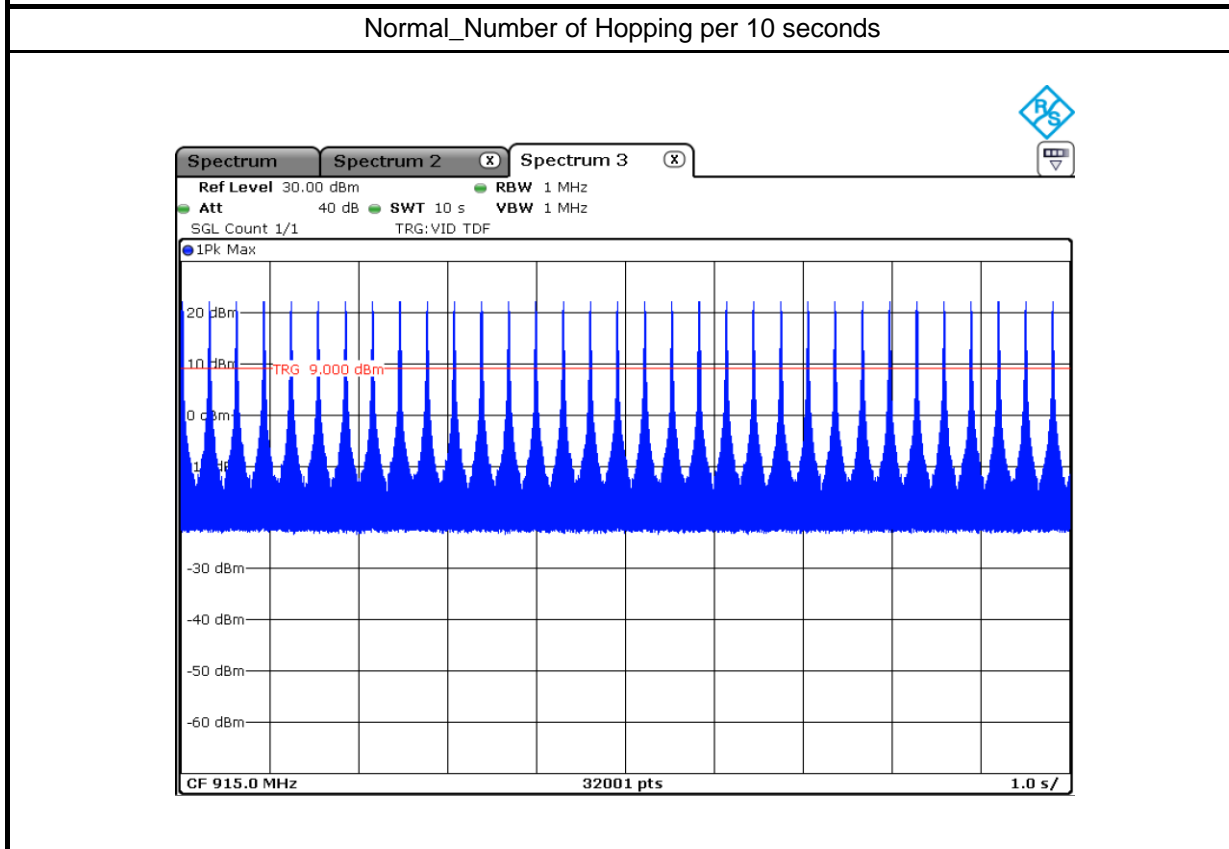
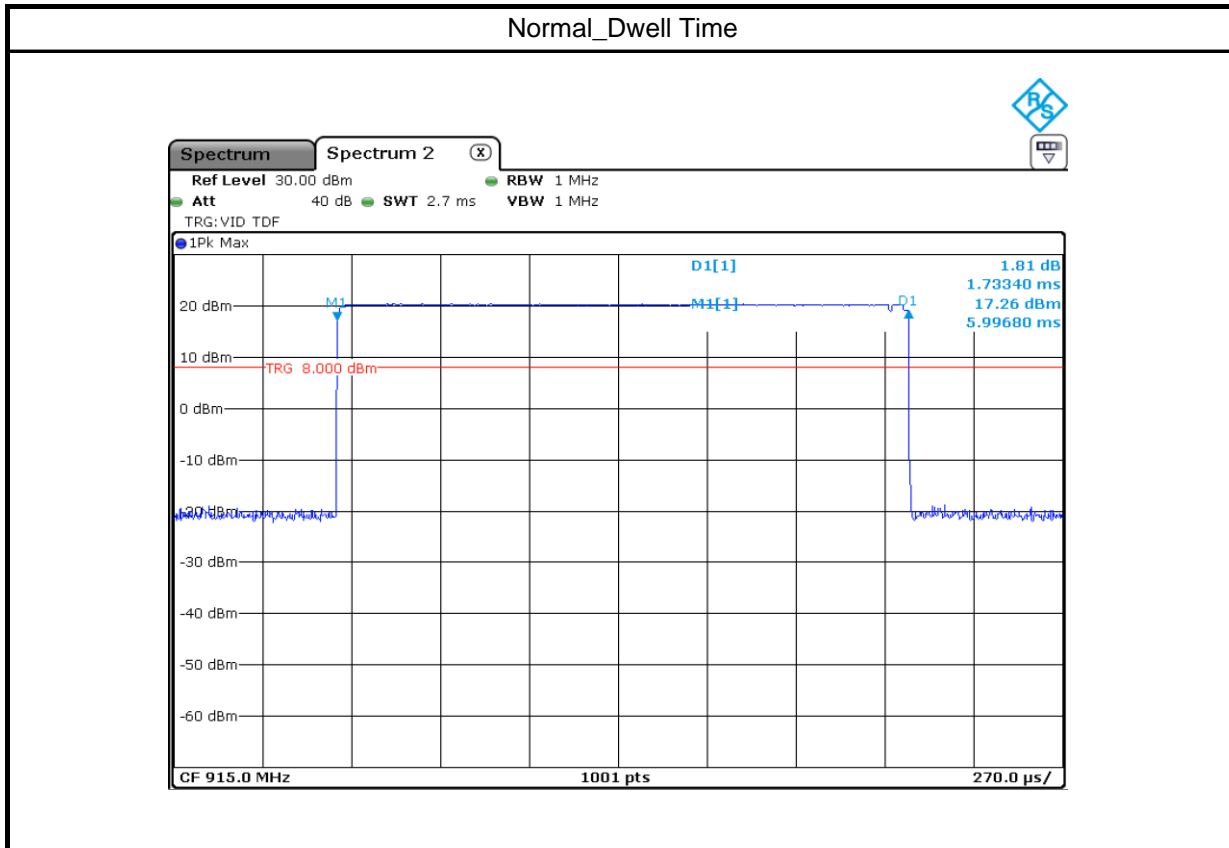
For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

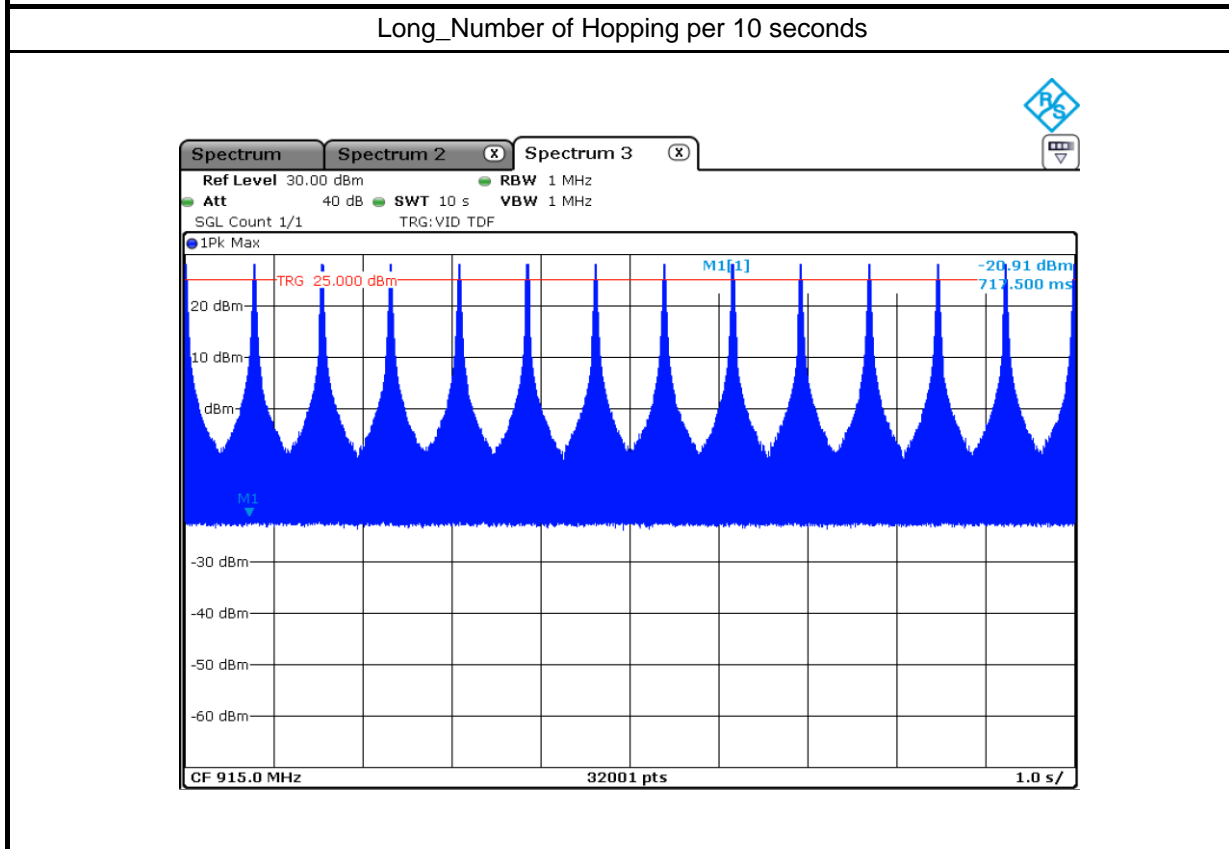
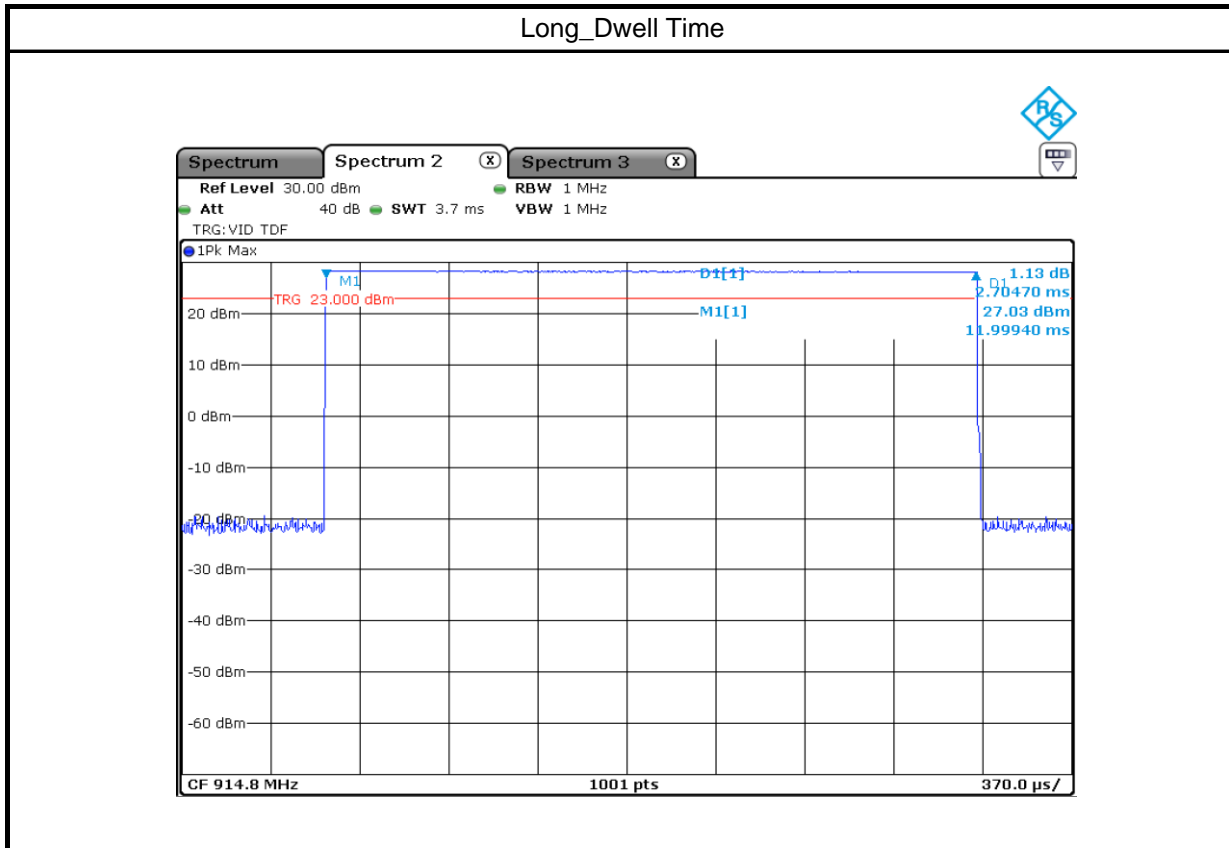
4.4.3 Test data

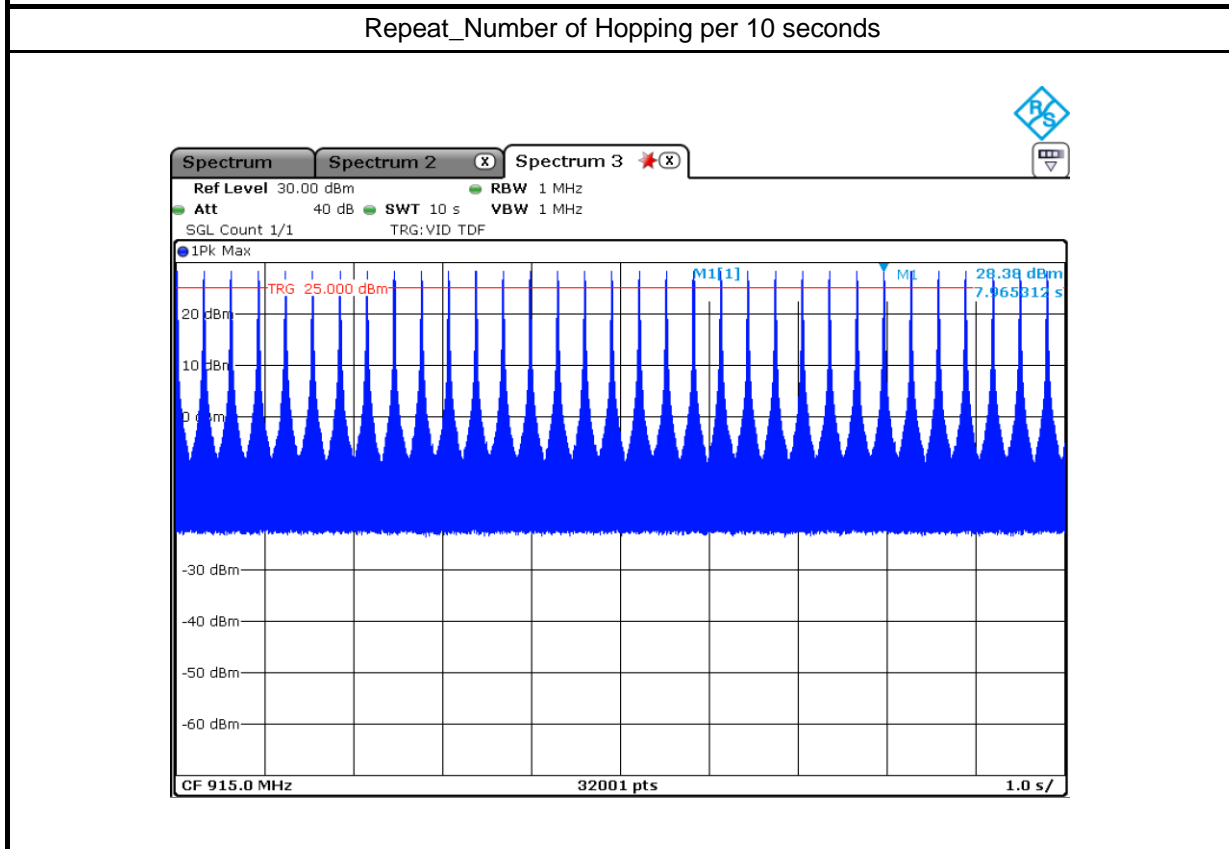
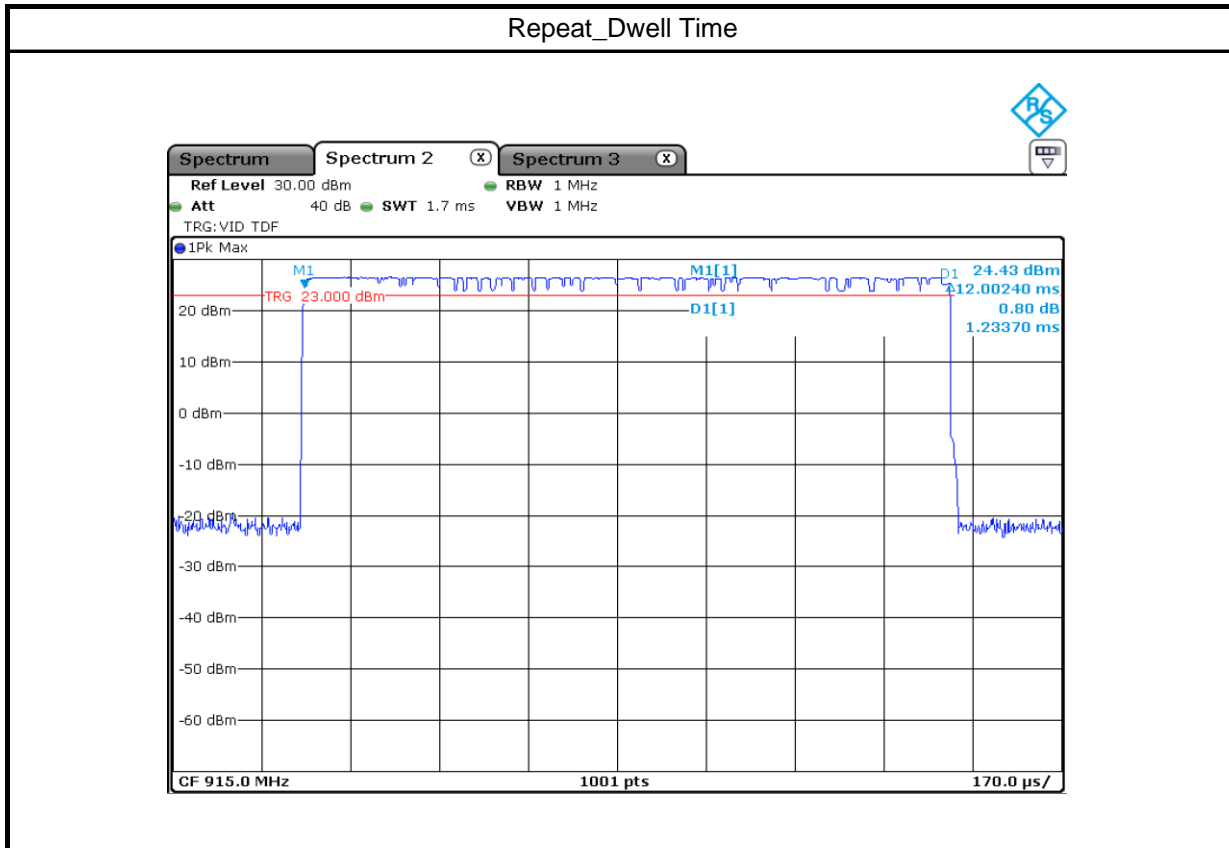
Result : Pass

Mode	number of hops on spectrum analyzer	period specified in the requirements (s)	analyzer sweep time (s)	transmit time per hop (s)	Time of Occupancy (s)	Limit (s)
Normal	33	10	10	0.0017	0.057	0.4
Long	14	20	10	0.0027	0.076	0.4
Repeat	33	10	10	0.0012	0.041	0.4

※ Time of Occupancy = (number of hops on spectrum analyzer) × (period specified in the requirements / analyzer sweep time) × (transmit time per hop)







4.5 Maximum Conducted Output Power

4.5.1 Test procedure

ANSI C63.10-2013 Clause 7.8.5

4.5.2 Limit

§15.247 (b)(2)

For frequency hopping systems operating in the 902-928 MHz band:

1 watt for systems employing at least 50 hopping channels; and,

0.25 watts for systems employing less than 50 hopping channels,

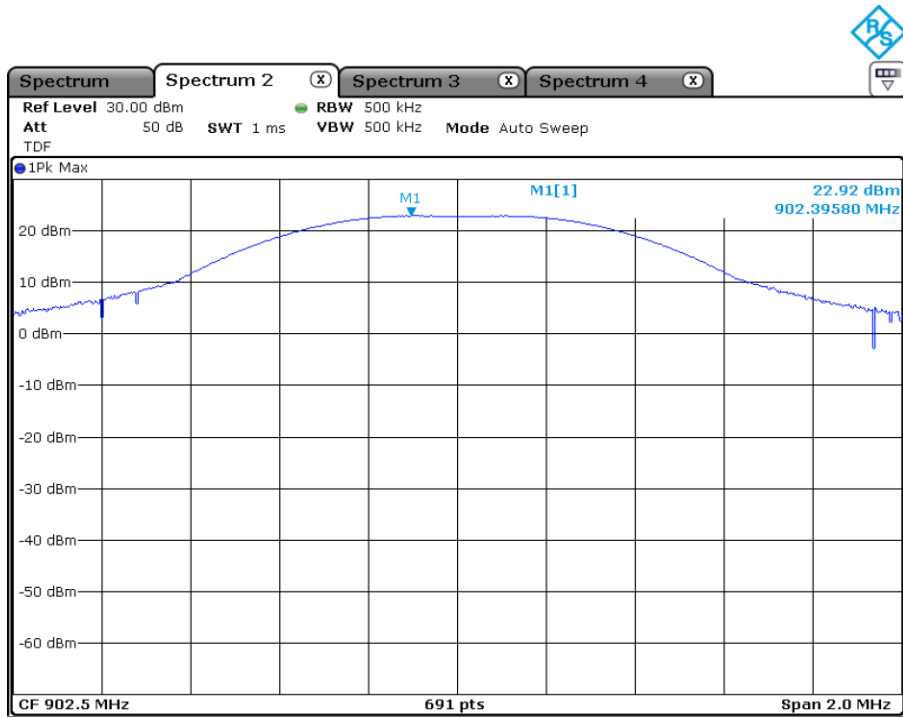
but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

4.5.3 Test data

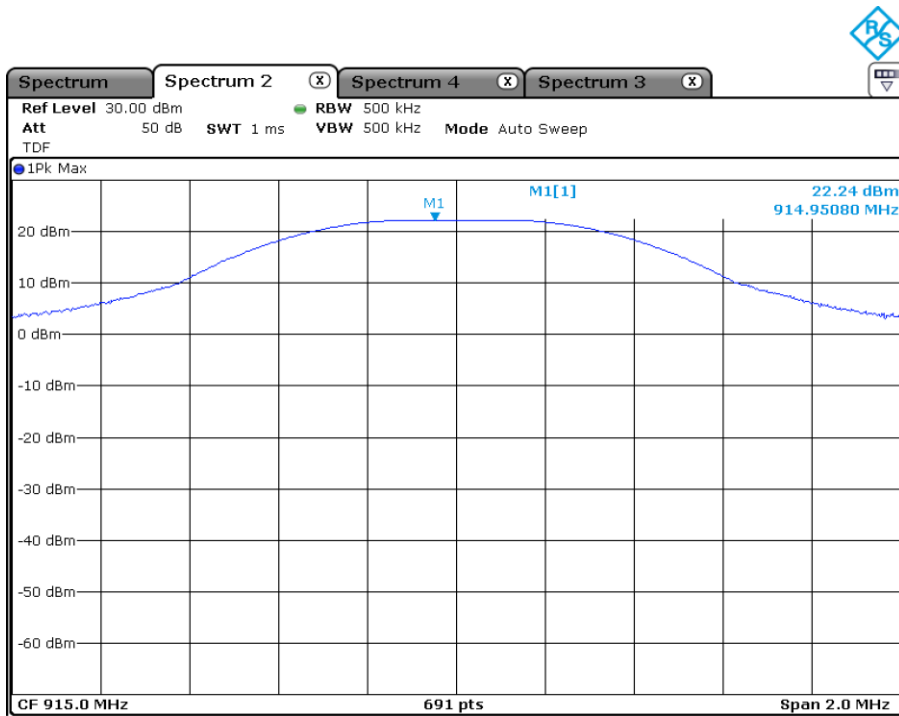
Result : Pass

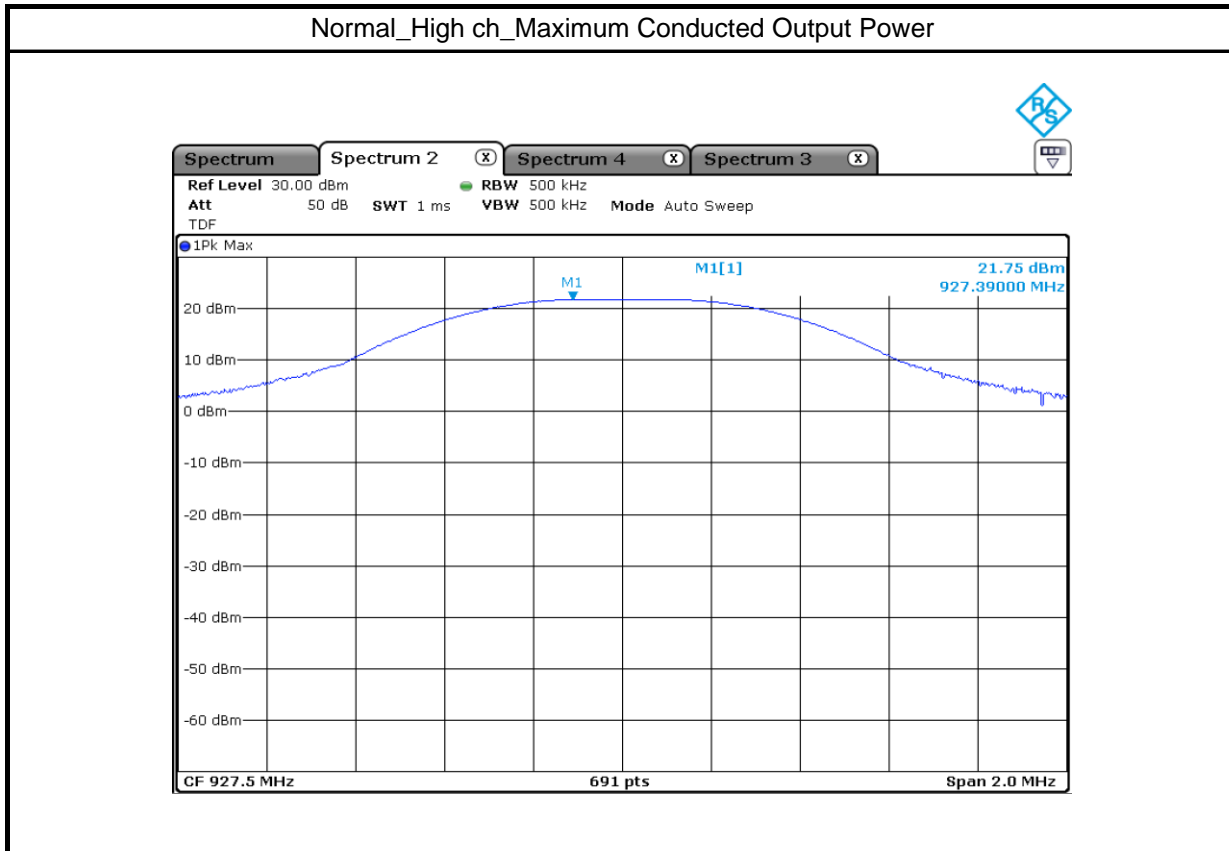
Mode	Frequency (MHz)	Measured Value (dBm)	Limit (dBm)
Normal	902.5	22.92	30 (1 Watt)
	915.0	22.24	
	927.5	21.75	
Long	902.4	28.88	
	914.8	28.41	
	927.6	27.91	
Repeat	902.5	28.87	
	915.0	28.41	
	927.5	27.95	

Normal_Low ch_Maximum Conducted Output Power

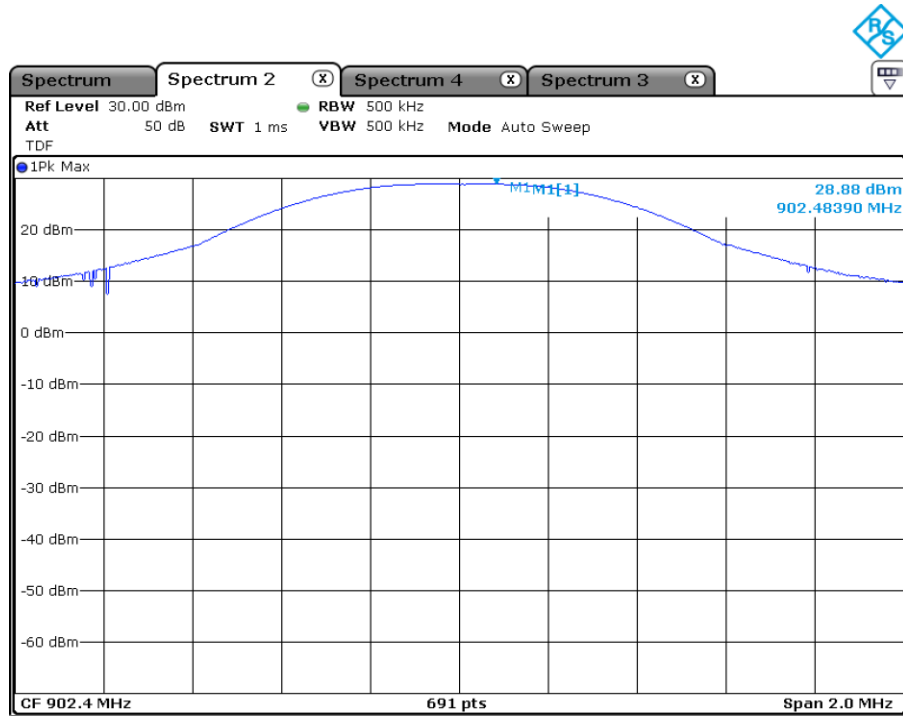


Normal_Mid ch_Maximum Conducted Output Power

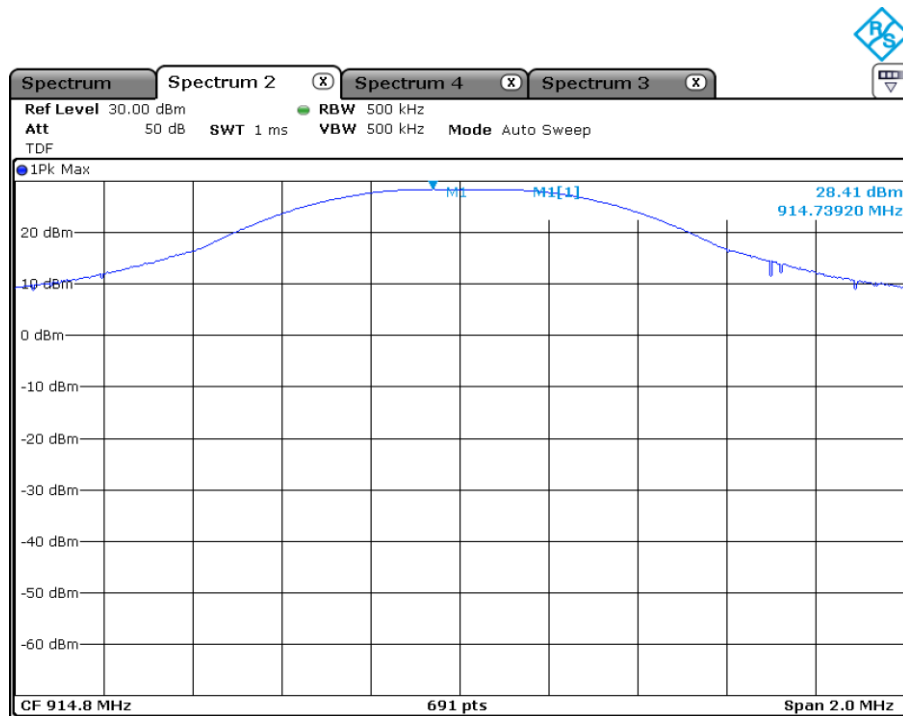


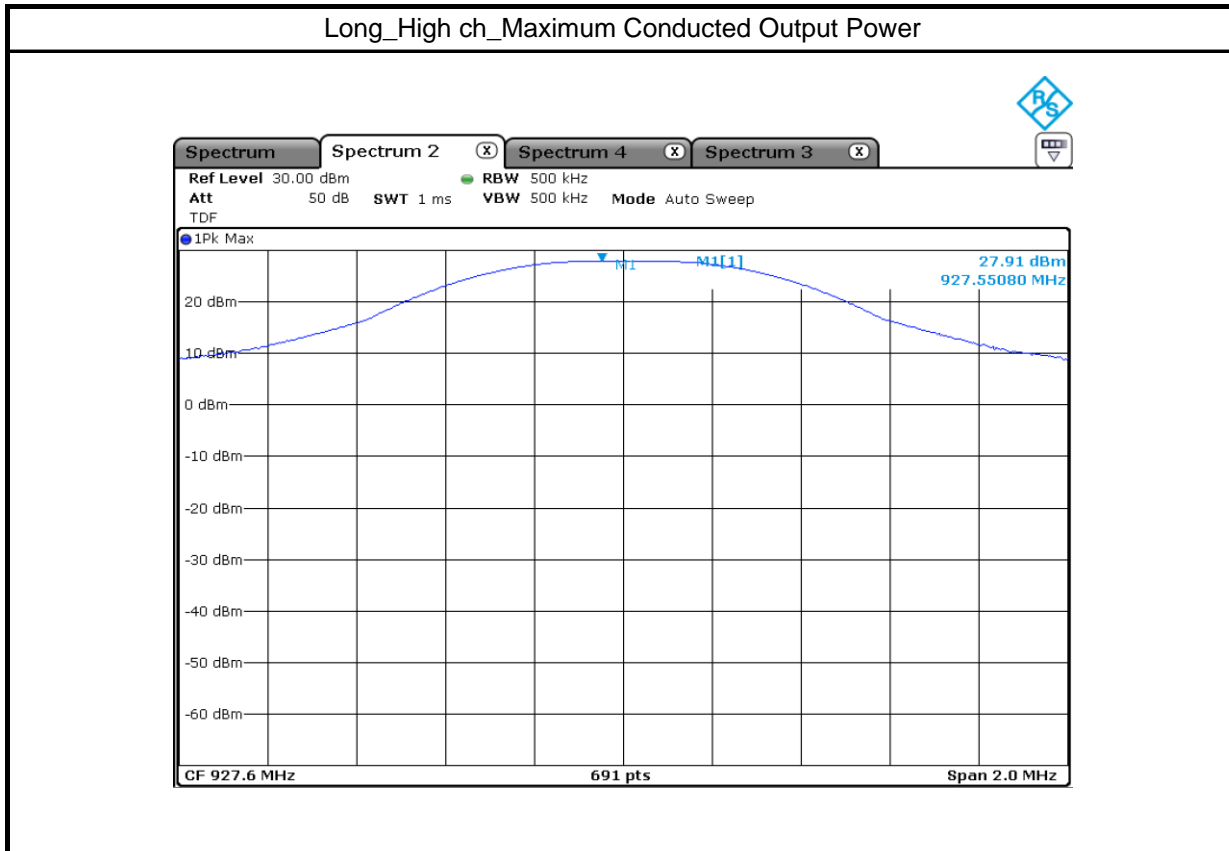


Long_Low ch_Maximum Conducted Output Power

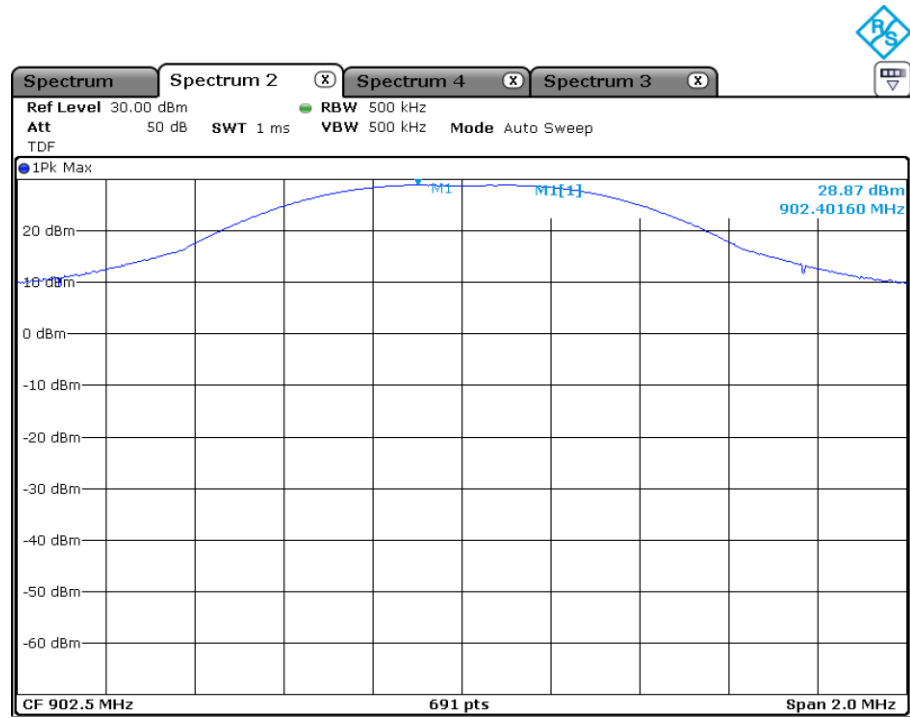


Long_Mid ch_Maximum Conducted Output Power

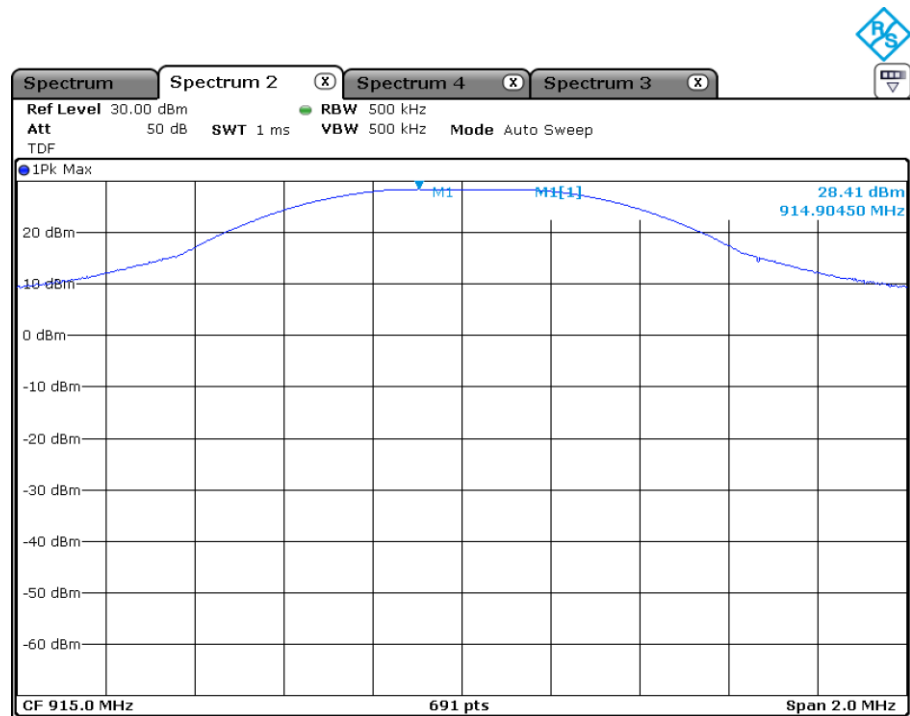


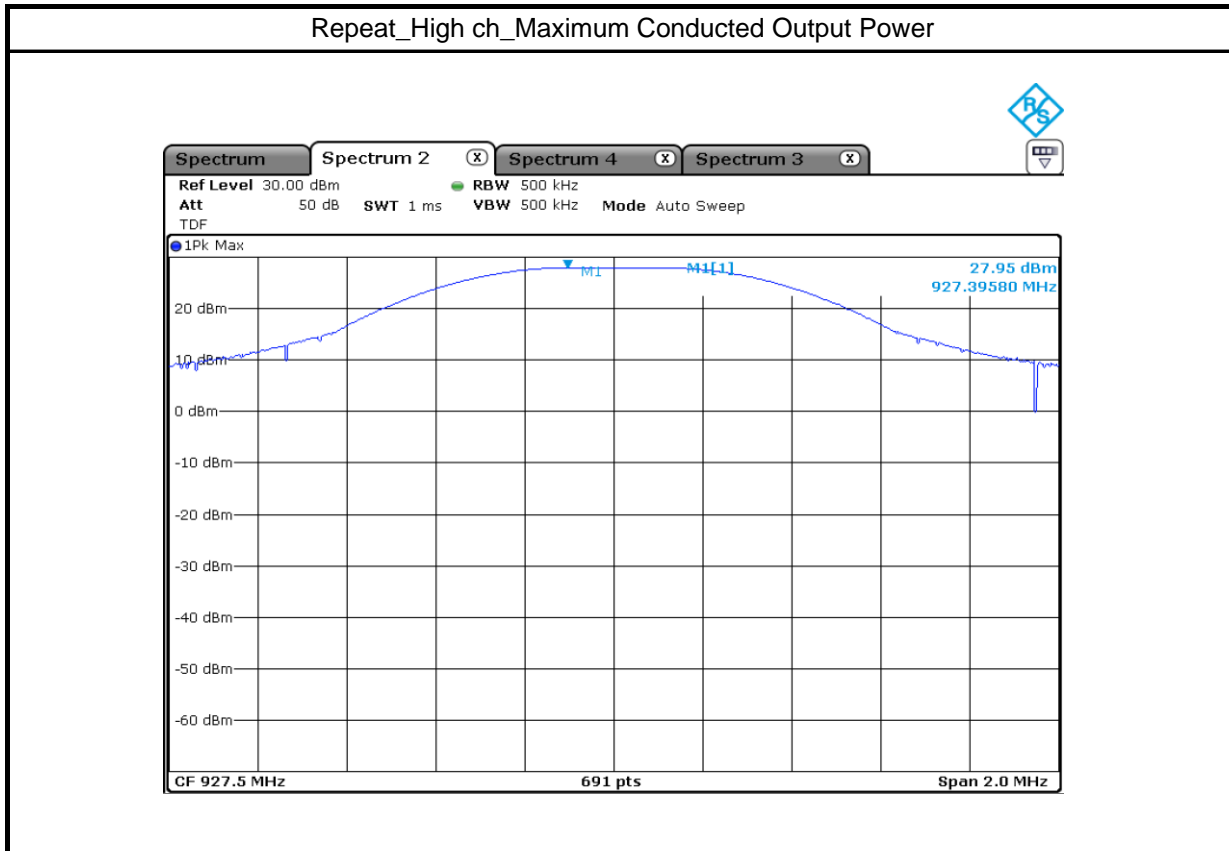


Repeat_Low ch_Maximum Conducted Output Power



Repeat_Mid ch_Maximum Conducted Output Power





4.6 Conducted Spurious Emission

4.6.1 Test procedure

ANSI C63.10-2013 Clause 7.8.8, 6.10.4

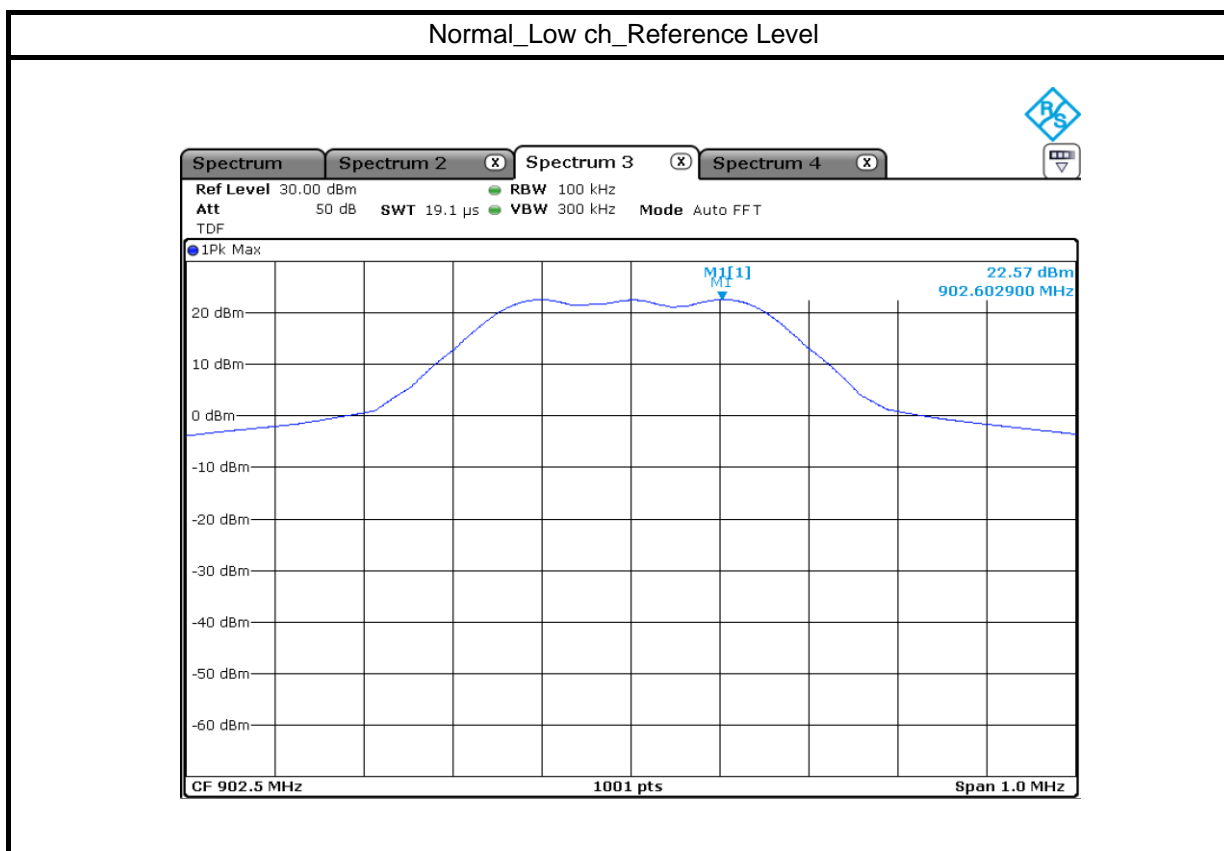
4.6.2 Limit

§15.247 (d)

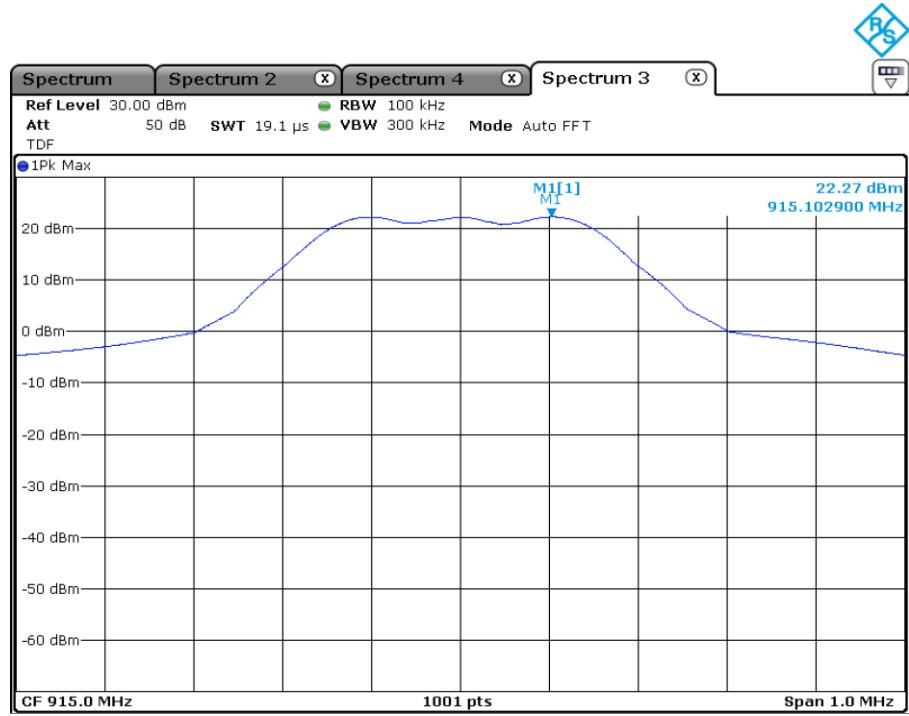
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

4.6.3 Test data

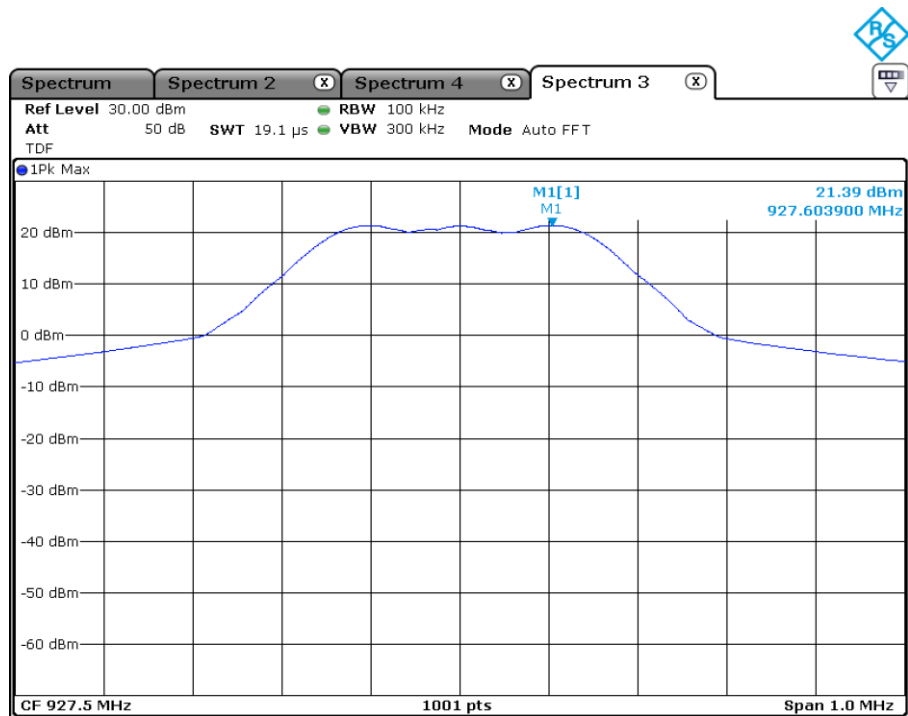
Result : Pass



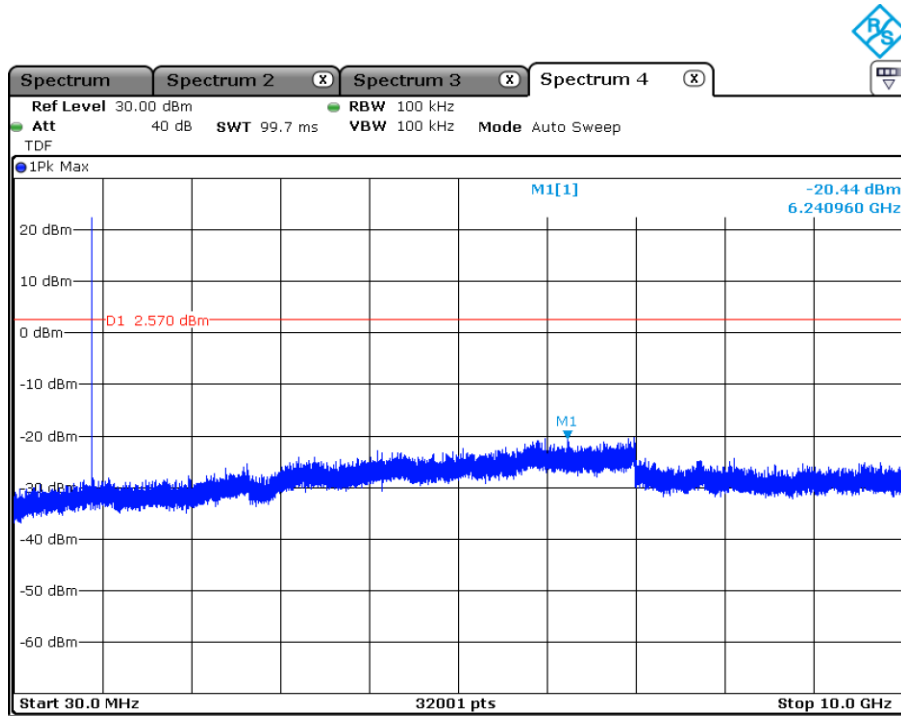
Normal_Mid ch_Reference Level



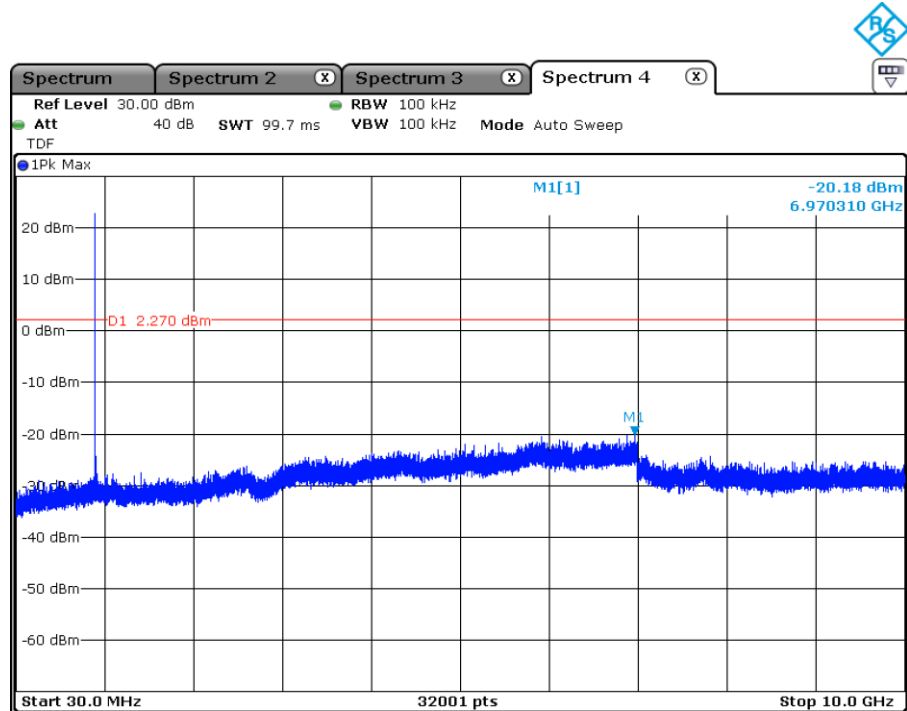
Normal_High ch_Reference Level

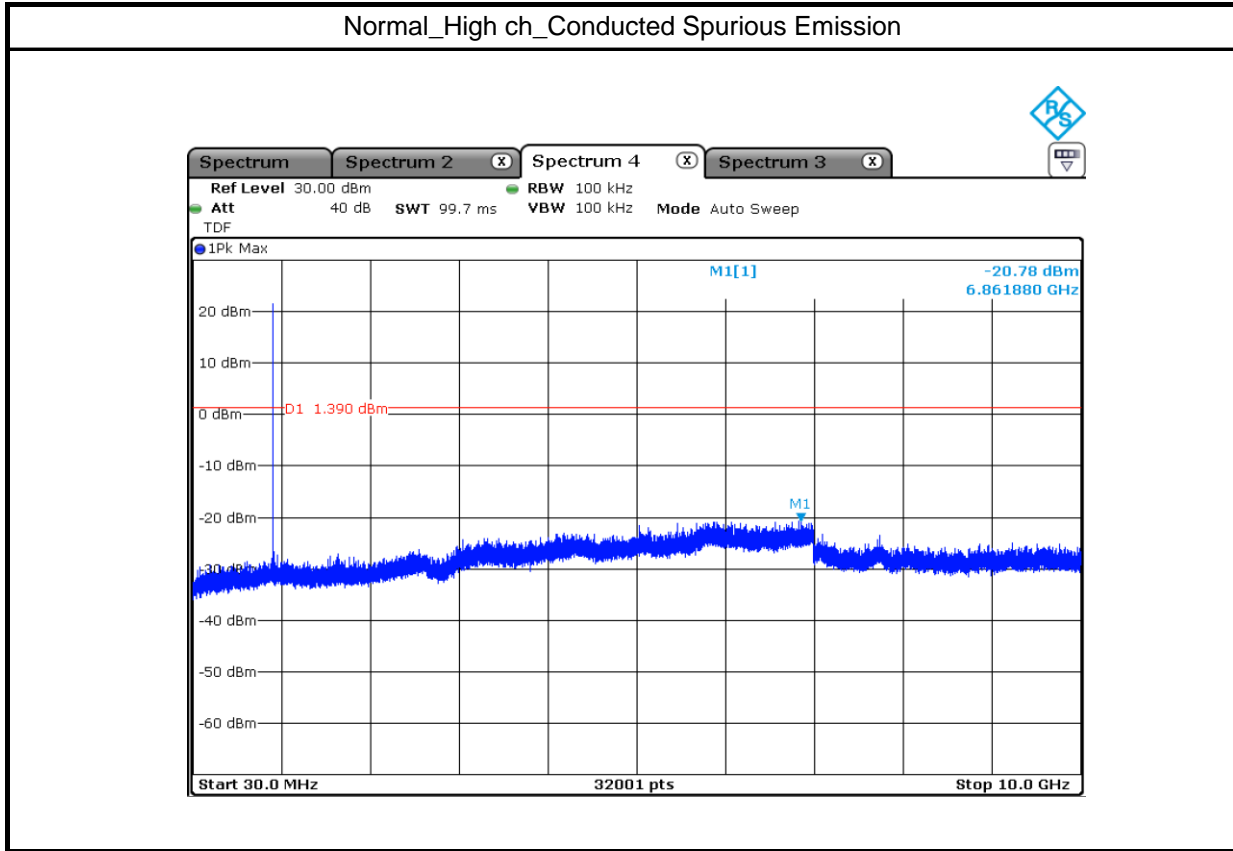


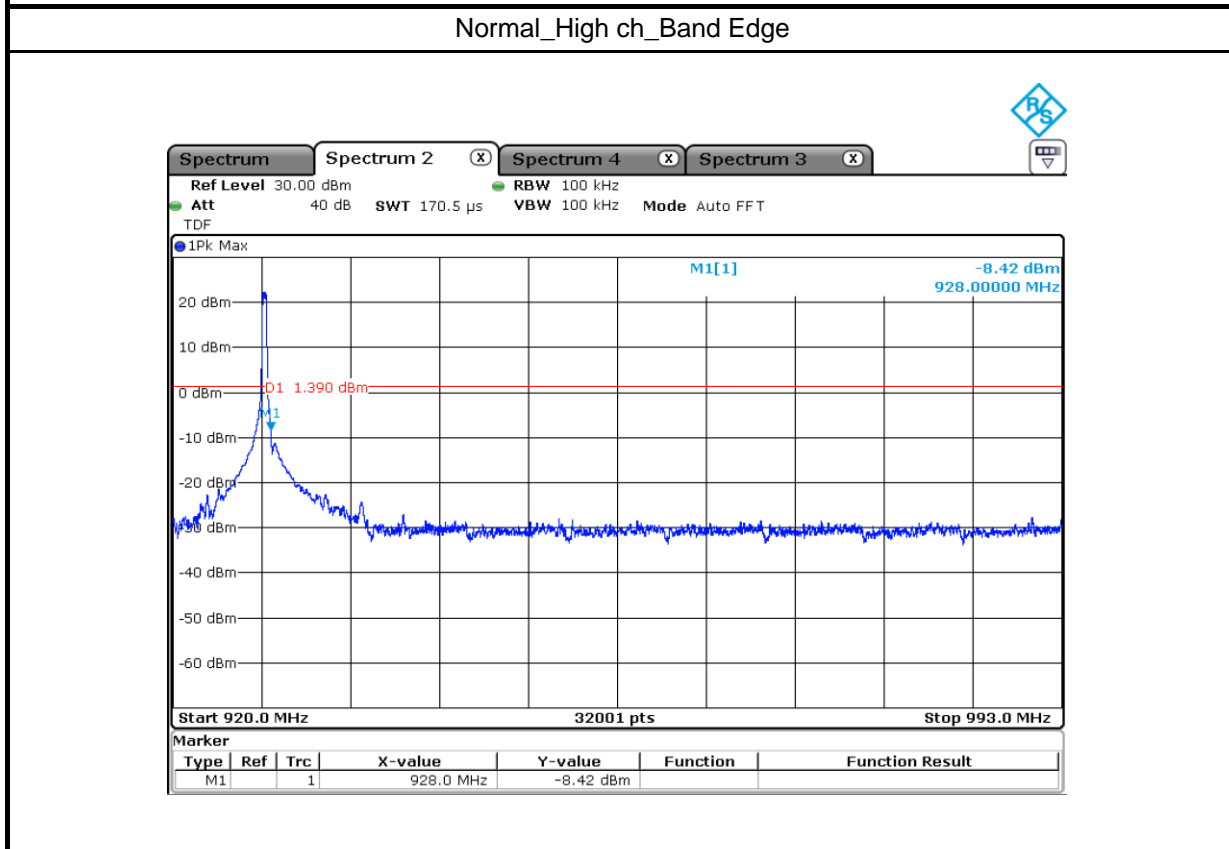
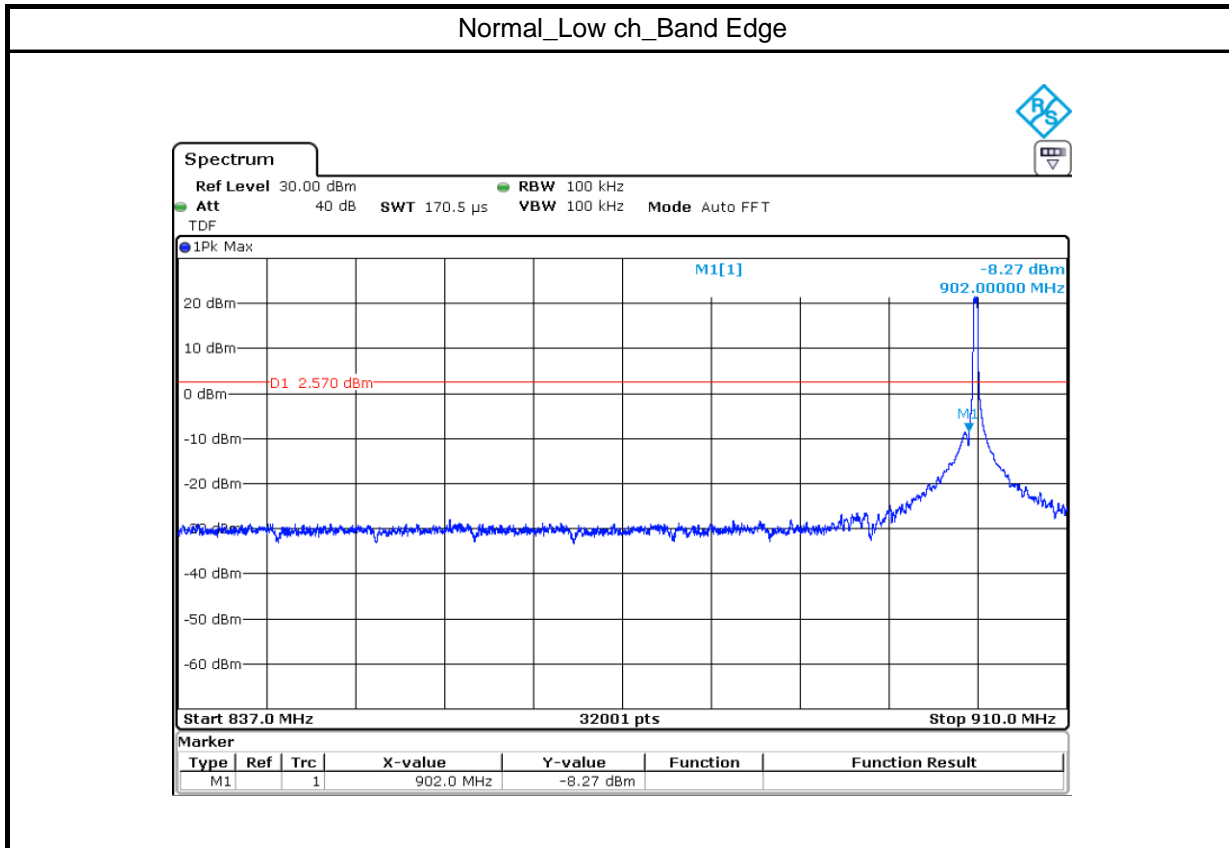
Normal_Low ch_Conducted Spurious Emission



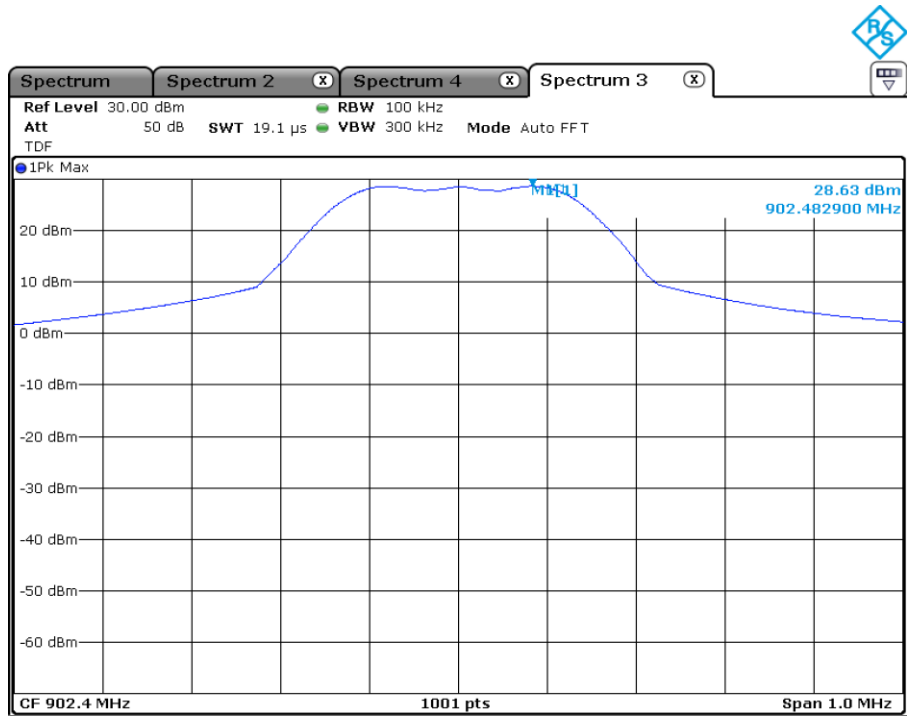
Normal_Mid ch_Conducted Spurious Emission



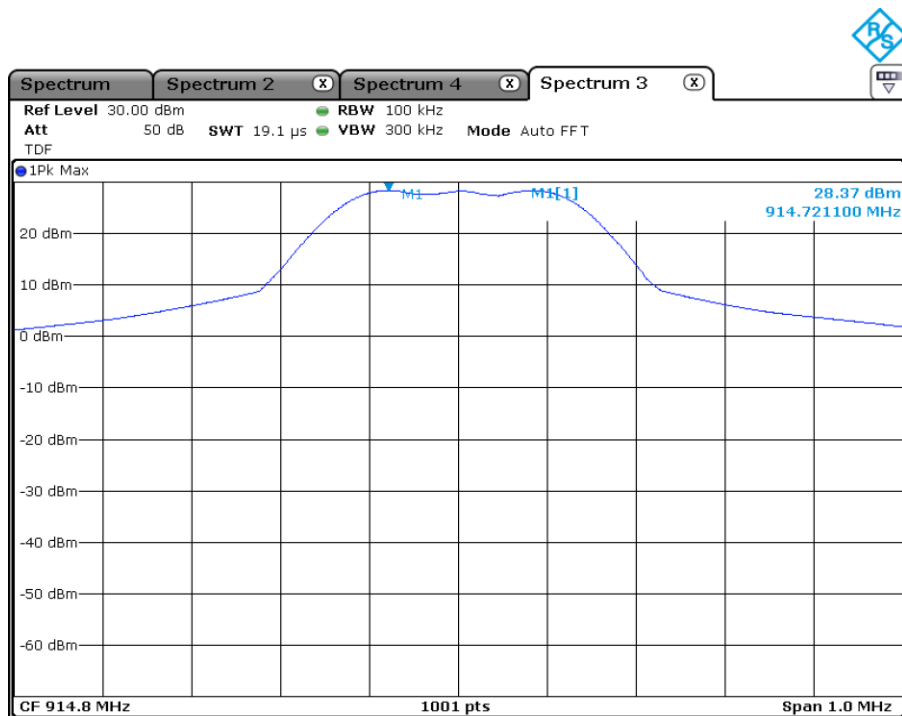


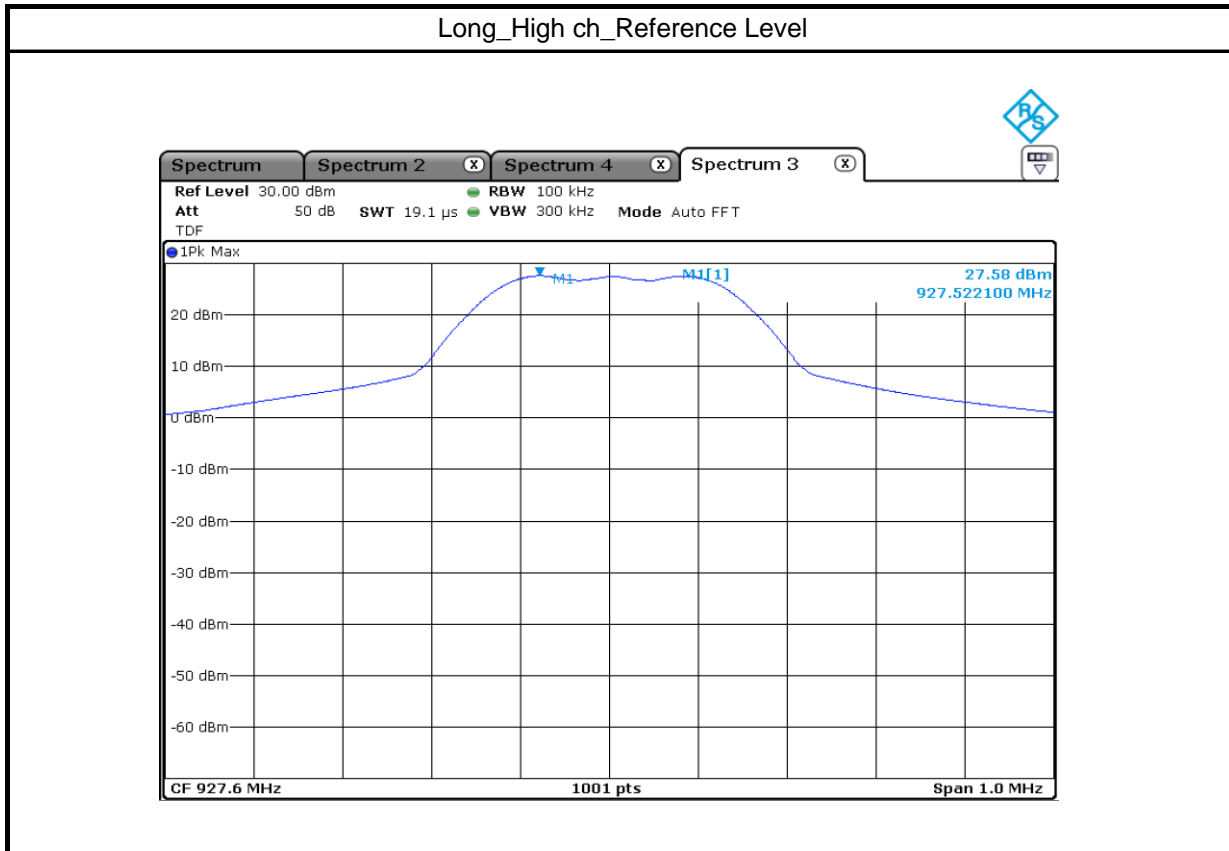


Long_Low ch_Reference Level

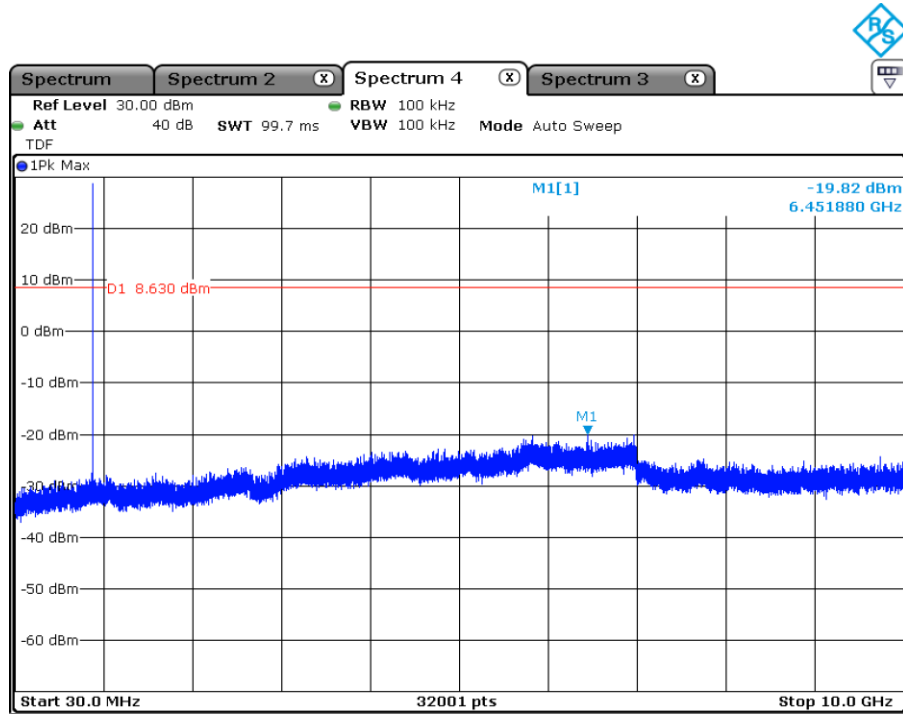


Long_Mid ch_Reference Level

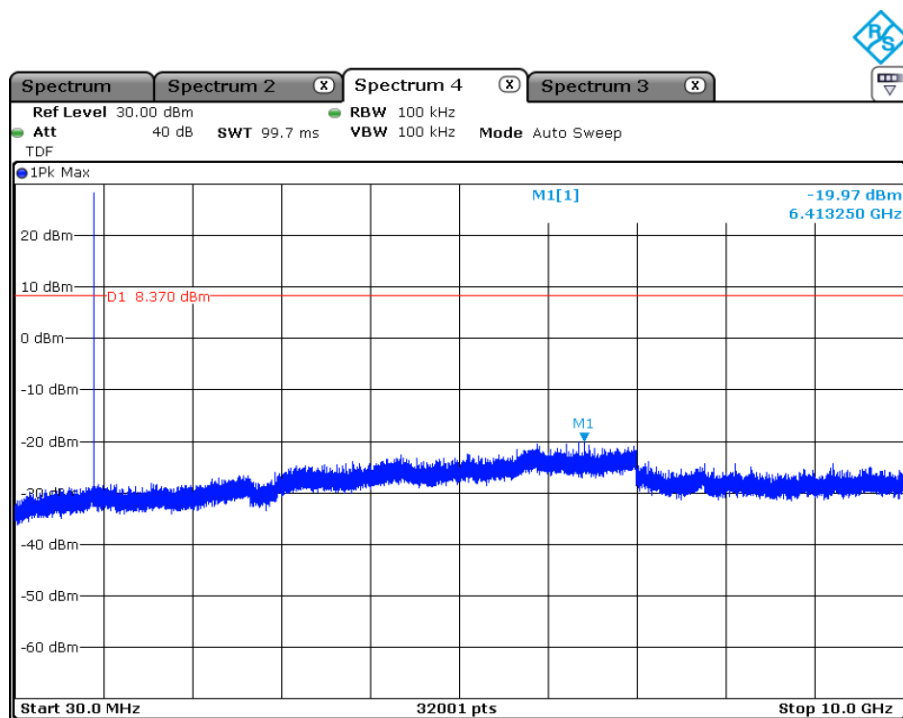


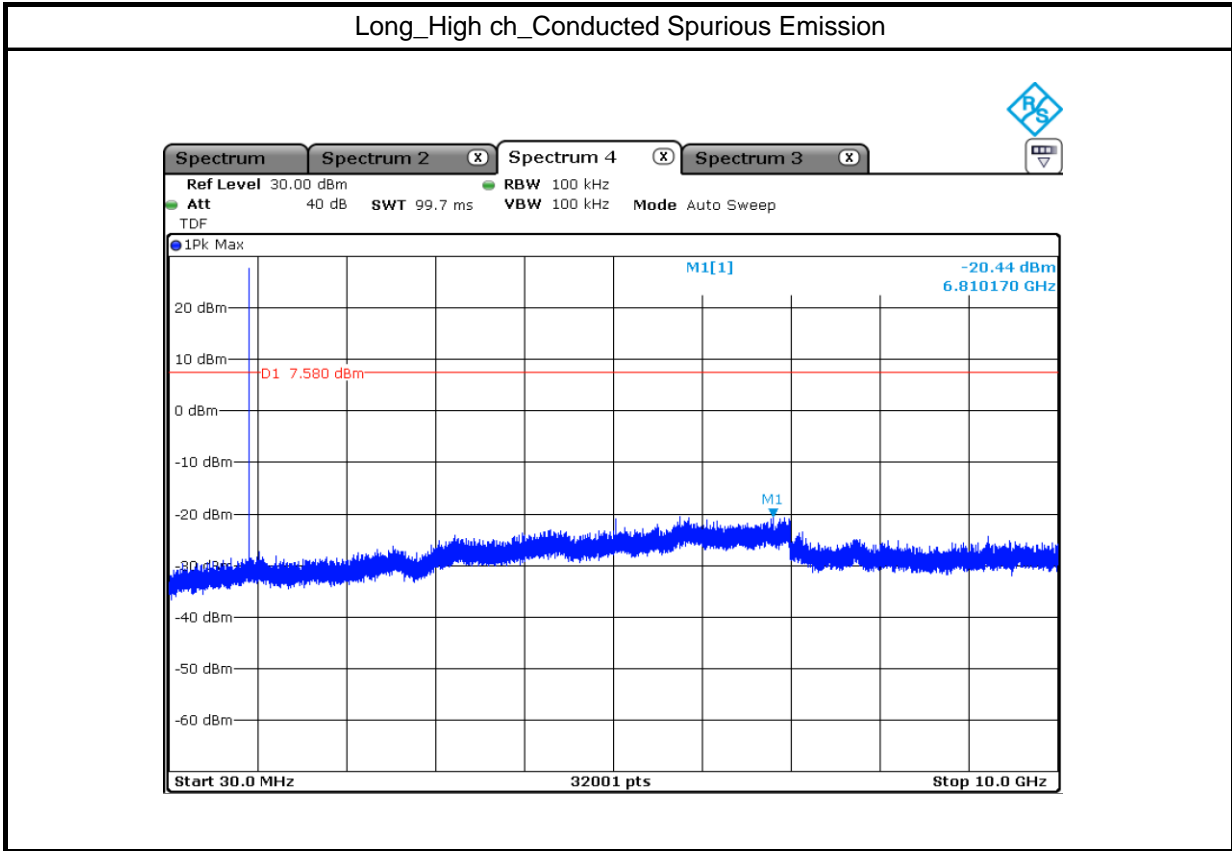


Long_Low ch_Conducted Spurious Emission

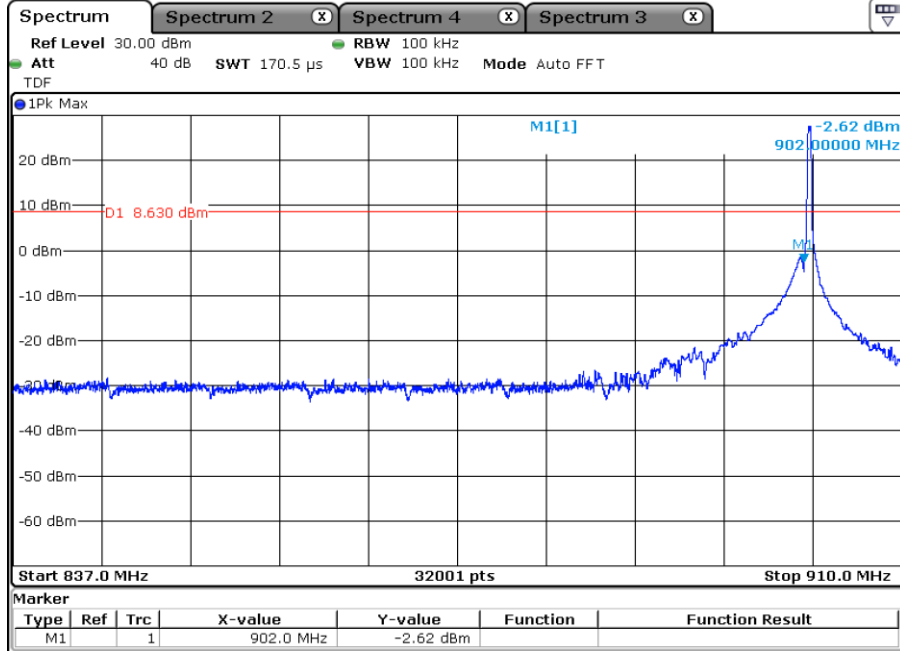


Long_Mid ch_Conducted Spurious Emission

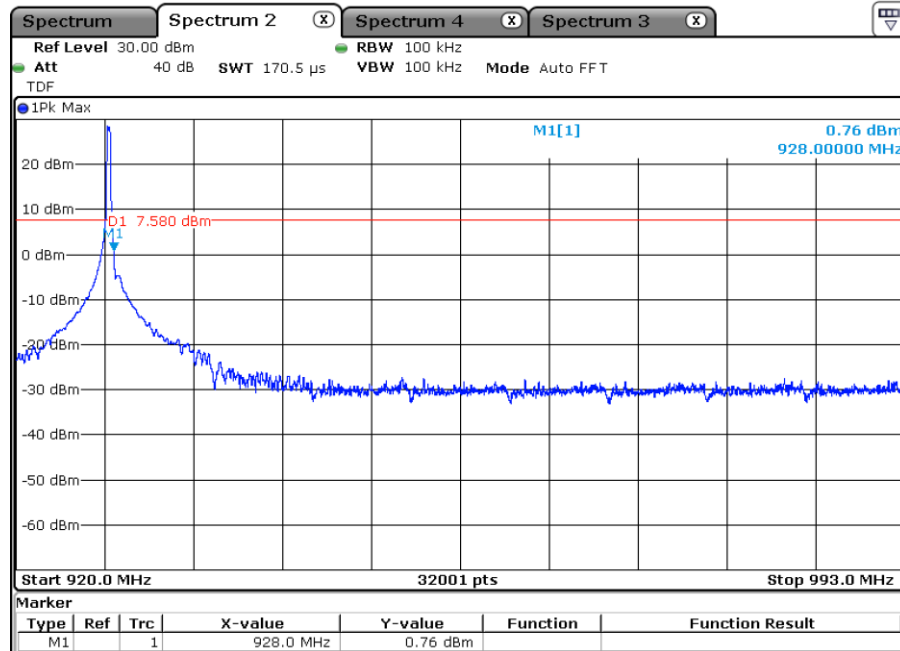




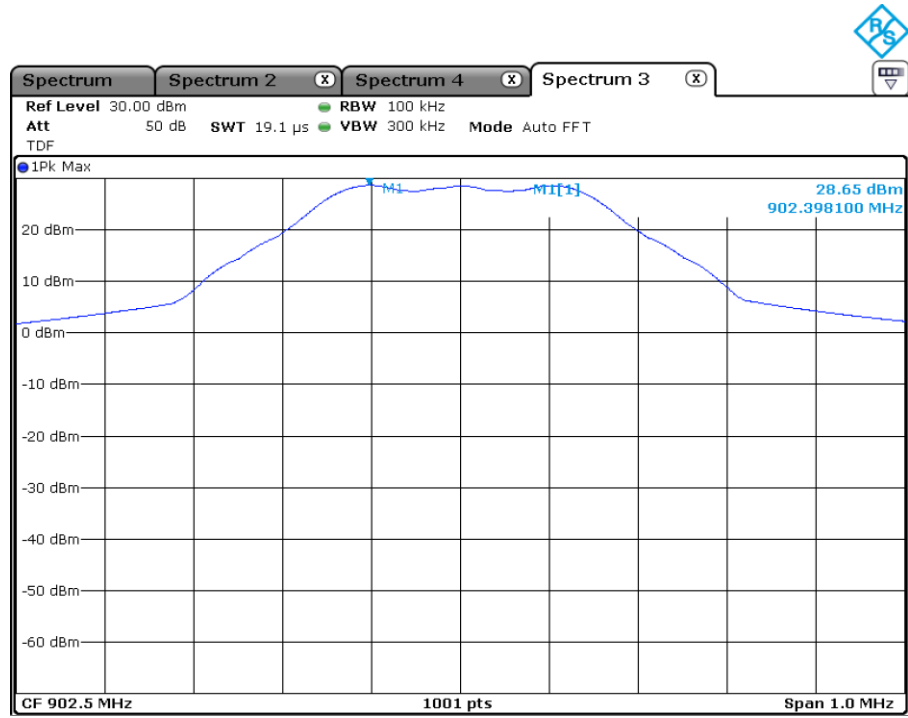
Long_Low ch_Band Edge



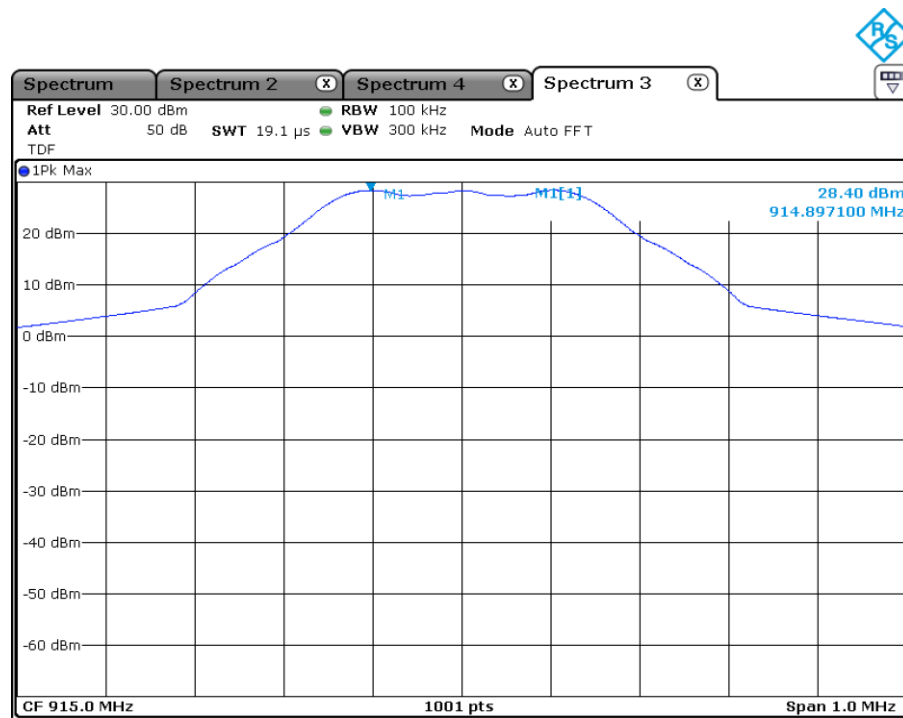
Long_High ch_Band Edge

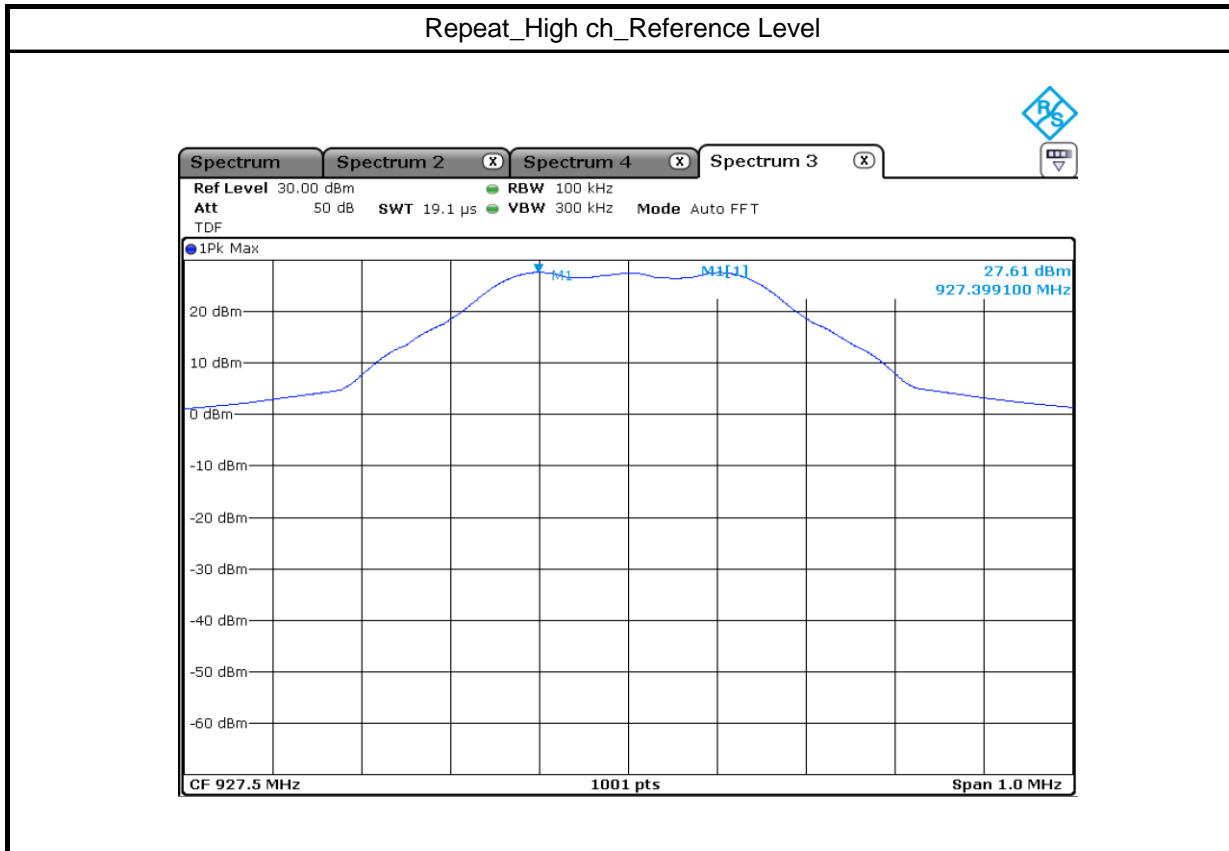


Repeat_Low ch_Reference Level

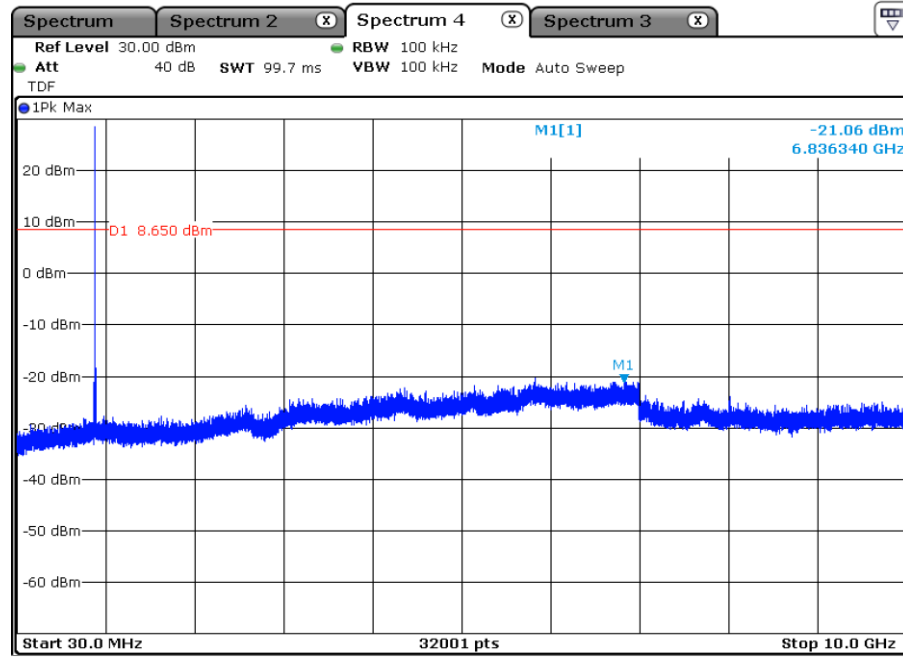


Repeat_Mid ch_Reference Level

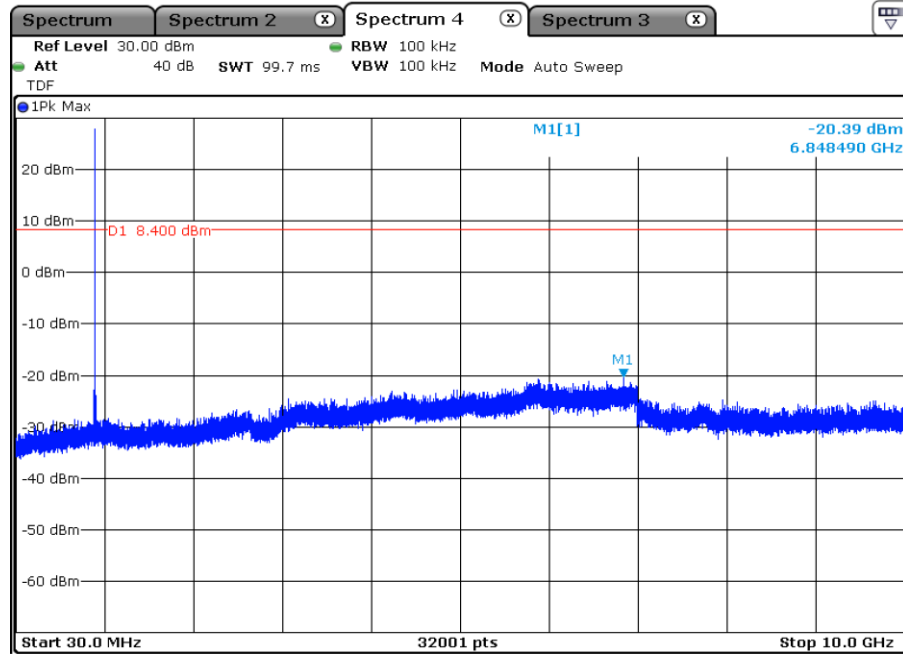


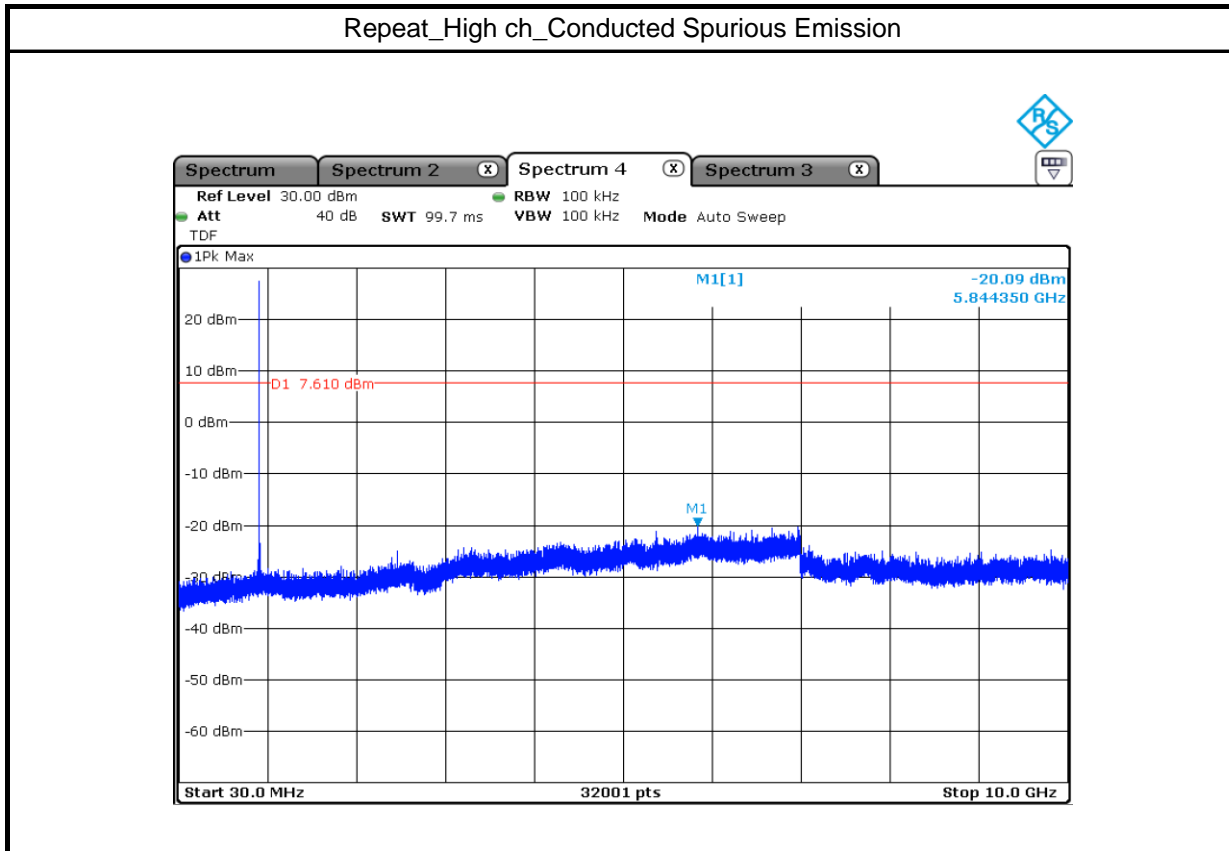


Repeat_Low ch_Conducted Spurious Emission

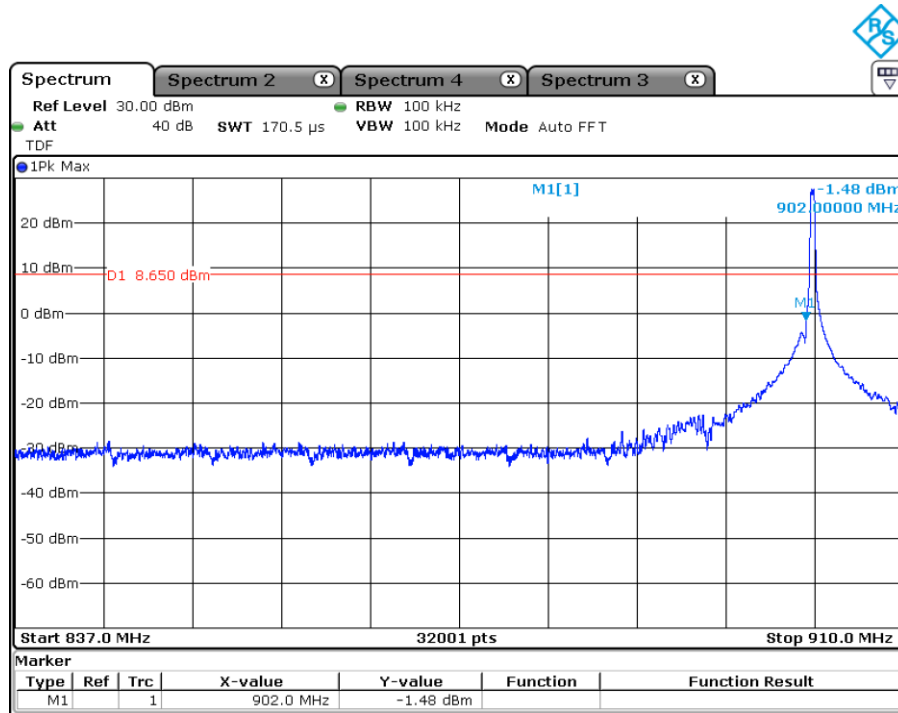


Repeat_Mid ch_Conducted Spurious Emission

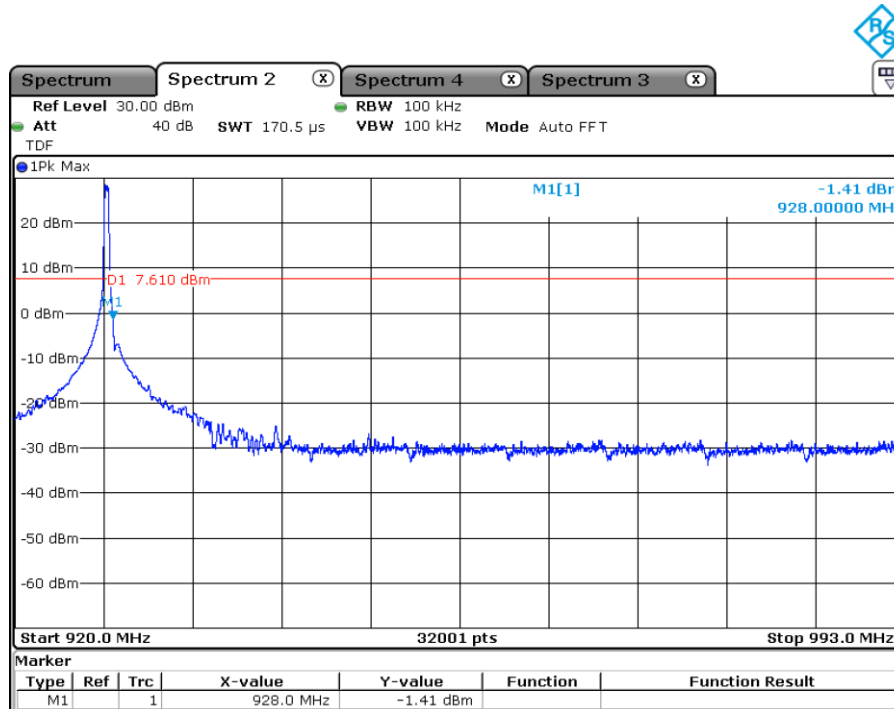




Repeat_Low ch_Band Edge



Repeat_High ch_Band Edge



4.7 Radiated Spurious Emission

4.7.1 Test procedure

ANSI C63.10-2013 Clause 6.4, 6.5, 6.6

4.7.2 Limit

§15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

§15.209 Radiated emission limits; general requirements.(a)

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100 **	3
88–216	150 **	3
216–960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.

§15.205 Restricted bands of operation.(a),(b)

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
¹ 0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	(²)
13.36–13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.

² Above 38.6

Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements.

4.7.3 Test data

Result : Pass

- Normal Mode

- Normal_Below 30 MHz_Low ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
It was not found any emissions peaks found from the EUT.								

- Normal_Below 30 MHz_Mid ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
It was not found any emissions peaks found from the EUT.								

- Normal_Below 30 MHz_High ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
It was not found any emissions peaks found from the EUT.								

- Normal_30 MHz ~ 1 GHz_Low ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
30.776	55.40	QP	V	-26.80	28.60	40.00	11.40	
51.340	54.27	QP	V	-22.90	31.37	40.00	8.63	
58.615	51.26	QP	V	-23.90	27.36	40.00	12.64	
356.405	46.53	QP	H	-20.20	26.33	46.00	19.67	

- Normal_30 MHz ~ 1 GHz_Mid ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
35.335	54.25	QP	V	-26.00	28.25	40.00	11.75	
51.437	53.00	QP	V	-23.00	30.00	40.00	10.00	
59.100	50.93	QP	V	-24.00	26.93	40.00	13.07	
863.715	45.66	QP	H	-10.40	35.26	46.00	10.74	

- Normal_30 MHz ~ 1 GHz_High ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
191.990	50.68	QP	H	-25.30	25.38	43.50	18.12	
240.005	46.86	QP	H	-23.10	23.76	46.00	22.24	Restricted band
356.308	46.22	QP	H	-20.20	26.02	46.00	19.98	
430.804	43.04	QP	V	-18.00	25.04	46.00	20.96	

- Normal_1 GHz Above_Low ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
1022.50	49.83	PK	V	-16.90	32.93	74.00	41.07	Restricted band
	35.31	AVG	V		18.41	54.00	35.59	
1805.00	68.92	PK	H	-13.20	55.72	74.00	18.28	2nd Harmonic
	57.07	AVG	H		43.87	54.00	10.13	
2707.00	55.02	PK	H	-8.00	47.02	74.00	26.98	3rd Harmonic
	39.55	AVG	H		31.55	54.00	22.45	
3609.50	47.47	PK	V	-4.90	42.57	74.00	31.43	4th Harmonic
	32.10	AVG	V		27.20	54.00	26.80	
9762.40	38.16	PK	V	6.40	44.56	74.00	29.44	
	24.72	AVG	V		31.12	54.00	22.88	

- Normal_1 GHz Above_Mid ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
1830.00	45.93	PK	H	-13.00	32.93	74.00	41.07	2nd Harmonic
	31.41	AVG	H		18.41	54.00	35.59	
1996.00	67.12	PK	V	-11.40	55.72	74.00	18.28	
	55.27	AVG	V		43.87	54.00	10.13	
2745.50	55.02	PK	H	-8.00	47.02	74.00	26.98	3rd Harmonic
	39.55	AVG	H		31.55	54.00	22.45	
3660.00	47.27	PK	V	-4.70	42.57	74.00	31.43	4th Harmonic
	31.90	AVG	V		27.20	54.00	26.80	
9736.40	38.36	PK	V	6.20	44.56	74.00	29.44	
	24.92	AVG	V		31.12	54.00	22.88	

- Normal_1 GHz Above_High ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
1006.50	59.06	PK	H	-17.00	42.06	74.00	31.94	Restricted band
	34.95	AVG	H		17.95	54.00	36.05	
1854.50	61.09	PK	H	-12.90	48.19	74.00	25.81	2nd Harmonic
	43.32	AVG	H		30.42	54.00	23.58	
2126.50	46.75	PK	H	-11.10	35.65	74.00	38.35	
	31.65	AVG	H		20.55	54.00	33.45	
2782.50	50.98	PK	V	-8.40	42.58	74.00	31.42	3rd Harmonic
	36.87	AVG	V		28.47	54.00	25.53	
3709.50	45.73	PK	V	-4.60	41.13	74.00	32.87	Restricted band
	31.56	AVG	V		26.96	54.00	27.04	

- Long Mode

- Long_Below 30 MHz_Low ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
It was not found any emissions peaks found from the EUT.								

- Long_Below 30 MHz_Mid ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
It was not found any emissions peaks found from the EUT.								

- Long_Below 30 MHz_High ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
It was not found any emissions peaks found from the EUT.								

- Long_30 MHz ~ 1 GHz_Low ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
36.111	50.93	QP	V	-25.70	25.23	40.00	14.77	
51.922	56.47	QP	V	-23.10	33.37	40.00	6.63	
58.906	50.24	QP	V	-24.00	26.24	40.00	13.76	
461.262	48.23	QP	H	-17.60	30.63	46.00	15.37	

- Long_30 MHz ~ 1 GHz_Mid ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
31.455	56.58	QP	V	-27.00	29.58	40.00	10.42	
51.534	53.51	QP	V	-23.00	30.51	40.00	9.49	
59.003	50.85	QP	V	-24.00	26.85	40.00	13.15	
442.153	47.92	QP	H	-17.90	30.02	46.00	15.98	

- Long_30 MHz ~ 1 GHz_High ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
31.358	56.85	QP	V	-27.00	29.85	40.00	10.15	
51.146	53.45	QP	V	-22.90	30.55	40.00	9.45	
57.742	51.86	QP	V	-23.80	28.06	40.00	11.94	
457.382	47.15	QP	V	-17.70	29.45	46.00	16.55	

- Long_1 GHz Above_Low ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
1013.50	54.85	PK	H	-16.90	37.95	74.00	36.05	Restricted band
	36.61	AVG	H		19.71	54.00	34.29	
1804.50	65.90	PK	H	-13.20	52.70	74.00	21.30	2nd Harmonic
	45.73	AVG	H		32.53	54.00	21.47	
2707.00	67.17	PK	H	-8.00	59.17	74.00	14.83	3rd Harmonic
	52.39	AVG	H		44.39	54.00	9.61	
3610.00	51.07	PK	V	-4.80	46.27	74.00	27.73	4th Harmonic
	35.09	AVG	V		30.29	54.00	23.71	
4512.00	54.19	PK	V	-3.00	51.19	74.00	22.81	5th Harmonic
	38.96	AVG	V		35.96	54.00	18.04	

- Long_1 GHz Above_Mid ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
1829.50	75.32	PK	H	-13.00	62.32	74.00	11.68	2nd Harmonic
	55.38	AVG	H		42.38	54.00	11.62	
2744.50	62.28	PK	H	-8.00	54.28	74.00	19.72	3rd Harmonic
	44.16	AVG	H		36.16	54.00	17.84	
3659.00	48.89	PK	V	-4.70	44.19	74.00	29.81	4th Harmonic
	34.04	AVG	V		29.34	54.00	24.66	
4574.00	49.41	PK	V	-2.60	46.81	74.00	27.19	5th Harmonic
	32.40	AVG	V		29.80	54.00	24.20	
7280.40	39.22	PK	V	2.90	42.12	74.00	31.88	Restricted band
	26.08	AVG	V		28.98	54.00	25.02	

- Long_1 GHz Above_High ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
1044.50	49.96	PK	H	-16.60	33.36	74.00	40.64	Restricted band
	35.15	AVG	H		18.55	54.00	35.45	
1855.00	76.74	PK	V	-12.90	63.84	74.00	10.16	2nd Harmonic
	58.64	AVG	V		45.74	54.00	8.26	
2783.00	66.22	PK	V	-8.40	57.82	74.00	16.18	3rd Harmonic
	50.66	AVG	V		42.26	54.00	11.74	
3711.00	50.38	PK	H	-4.60	45.78	74.00	28.22	4th Harmonic
	33.98	AVG	H		29.38	54.00	24.62	
9735.60	38.42	PK	H	6.20	44.62	74.00	29.38	
	25.37	AVG	H		31.57	54.00	22.43	

- Repeat Mode

- Repeat_Below 30 MHz_Low ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
It was not found any emissions peaks found from the EUT.								

- Repeat_Below 30 MHz_Mid ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
It was not found any emissions peaks found from the EUT.								

- Repeat_Below 30 MHz_High ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
It was not found any emissions peaks found from the EUT.								

- Repeat_30 MHz ~ 1 GHz_Low ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
35.723	53.85	QP	V	-25.90	27.95	40.00	12.05	
52.213	53.51	QP	V	-23.10	30.41	40.00	9.59	
57.160	49.46	QP	V	-23.70	25.76	40.00	14.24	
452.241	46.93	QP	V	-17.90	29.03	46.00	16.97	

- Repeat_30 MHz ~ 1 GHz_Mid ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
51.728	54.69	QP	V	-23.10	31.59	40.00	8.41	
191.990	50.26	QP	H	-25.30	24.96	43.50	18.54	
433.811	48.73	QP	H	-17.90	30.83	46.00	15.17	
466.015	46.53	QP	H	-17.50	29.03	46.00	16.97	

- Repeat_30 MHz ~ 1 GHz_High ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
51.922	56.14	QP	V	-23.10	33.04	40.00	6.96	
57.645	51.20	QP	V	-23.70	27.50	40.00	12.50	
425.372	46.86	QP	H	-18.00	28.86	46.00	17.14	
452.144	47.63	QP	H	-17.90	29.73	46.00	16.27	

- Repeat_1 GHz Above_Low ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
1805.00	69.47	PK	H	-13.20	56.27	74.00	17.73	2nd Harmonic
	48.33	AVG	H		35.13	54.00	18.87	
2148.00	45.64	PK	V	-11.00	34.64	74.00	39.36	
	32.14	AVG	V		21.14	54.00	32.86	
2707.50	64.03	PK	H	-8.00	56.03	74.00	17.97	3rd Harmonic
	48.98	AVG	H		40.98	54.00	13.02	
3610.00	51.28	PK	H	-4.80	46.48	74.00	27.52	4th Harmonic
	36.09	AVG	H		31.29	54.00	22.71	
4513.50	49.04	PK	V	-3.00	46.04	74.00	27.96	5th Harmonic
	31.51	AVG	V		28.51	54.00	25.49	

- Repeat_1 GHz Above_Mid ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
1013.00	53.21	PK	H	-16.90	36.31	74.00	37.69	Restricted band
	36.01	AVG	H		19.11	54.00	34.89	
1829.50	73.75	PK	V	-13.00	60.75	74.00	13.25	2nd Harmonic
	50.45	AVG	V		37.45	54.00	16.55	
2745.00	65.30	PK	H	-8.00	57.30	74.00	16.70	3rd Harmonic
	48.92	AVG	H		40.92	54.00	13.08	
3660.00	51.58	PK	H	-4.70	46.88	74.00	27.12	4th Harmonic
	36.28	AVG	H		31.58	54.00	22.42	
4574.50	48.55	PK	V	-2.60	45.95	74.00	28.05	5th Harmonic
	32.09	AVG	V		29.49	54.00	24.51	

- Repeat_1 GHz Above_High ch

Frequency (MHz)	Reading (dBuV/m)	Detector	Pol.	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Note
1018.50	51.28	PK	H	-16.90	34.38	74.00	39.62	Restricted band
	35.27	AVG	H		18.37	54.00	35.63	
1855.00	74.95	PK	V	-12.90	62.05	74.00	11.95	2nd Harmonic
	55.18	AVG	V		42.28	54.00	11.72	
2782.00	59.29	PK	V	-8.40	50.89	74.00	23.11	3rd Harmonic
	41.79	AVG	V		33.39	54.00	20.61	
3710.00	49.29	PK	V	-4.60	44.69	74.00	29.31	4th Harmonic
	34.28	AVG	V		29.68	54.00	24.32	
9758.40	38.93	PK	H	6.40	45.33	74.00	28.67	
	24.83	AVG	H		31.23	54.00	22.77	

4.8 Power Line Conducted Emission

4.8.1 Test procedure

ANSI C63.10-2013 Clause 6.2

4.8.2 Limit

§15.207 (a)

Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

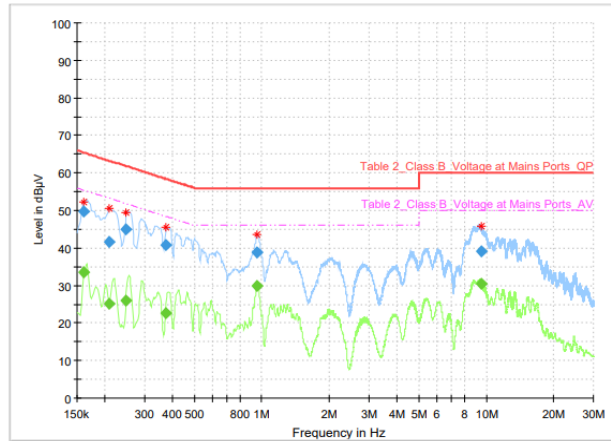
Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases with the logarithm of the frequency.

4.8.3 Test data

Result : Pass

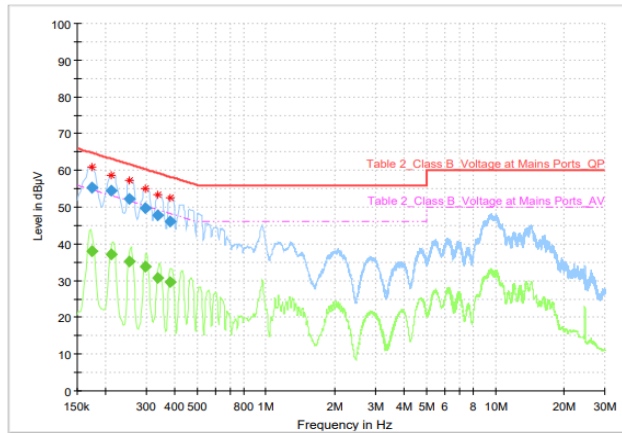
L-Line Conducted Emission



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.161250	49.73	---	65.40	15.67	5000.0	9.000	N	9.9
0.161250	---	33.66	55.40	21.84	5000.0	9.000	N	9.9
0.208500	41.64	---	63.27	21.62	5000.0	9.000	L1	9.8
0.208500	---	25.17	53.27	28.09	5000.0	9.000	L1	9.8
0.249000	---	25.88	51.79	25.91	5000.0	9.000	N	9.6
0.249000	44.91	---	61.79	16.88	5000.0	9.000	N	9.6
0.375000	---	22.64	48.39	25.75	5000.0	9.000	N	9.8
0.375000	40.72	---	58.39	17.67	5000.0	9.000	N	9.8
0.953250	38.73	---	56.00	17.27	5000.0	9.000	L1	9.8
0.953250	---	29.92	46.00	16.08	5000.0	9.000	L1	9.8
9.449250	39.24	---	60.00	20.76	5000.0	9.000	L1	9.9
9.449250	---	30.44	50.00	19.56	5000.0	9.000	L1	9.9

N-Line Conducted Emission



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.174750	---	37.90	54.73	16.83	5000.0	9.000	N	10.0
0.174750	55.23	---	64.73	9.50	5000.0	9.000	N	10.0
0.210750	---	37.24	53.18	15.94	5000.0	9.000	N	9.8
0.210750	54.40	---	63.18	8.78	5000.0	9.000	N	9.8
0.253500	---	35.20	51.64	16.44	5000.0	9.000	N	9.6
0.253500	52.34	---	61.64	9.30	5000.0	9.000	N	9.6
0.296250	---	33.93	50.35	16.41	5000.0	9.000	N	9.7
0.296250	49.85	---	60.35	10.50	5000.0	9.000	N	9.7
0.338750	---	30.73	49.28	18.55	5000.0	9.000	N	9.8
0.338750	47.66	---	59.28	11.62	5000.0	9.000	N	9.8
0.381750	---	29.63	48.24	18.61	5000.0	9.000	N	9.8
0.381750	46.22	---	58.24	12.02	5000.0	9.000	N	9.8

5. Used equipment

	Description	Model Name	Manufacturer	Serial Number	Next Cal
1	SIGNAL ANALYZER	FSV40	ROHDE & SCHWARZ	101455	2024-03-03
2	20 dB ATTENUATOR	WA76-20-1313	WEINSCHEL	1633	2024-03-07
3	DC BLOCK	PDCB-00012650 -SMSF-4	PSATEK INC.	-	2024-05-02
4	BI-Log ANTENNA	VULB 9162	SCHWARZBECK	120	2024-12-26
5	SIGNAL CONDITIONING UNIT	SCU 08	ROHDE & SCHWARZ	100746	2024-04-03
6	LOOP ANTENNA	HFH2-Z2	ROHDE & SCHWARZ	100271	2024-04-03
7	EMI TEST RECEIVER	ESR26	ROHDE & SCHWARZ	101462	2024-04-04
8	DOUBLE RIDGED HORN ANTENNA	HF907	ROHDE & SCHWARZ	102556	2024-08-04
9	SIGNAL CONDITIONING UNIT	SCU 18	ROHDE & SCHWARZ	102342	2024-04-03
10	EMI TEST RECEIVER	ESR26	ROHDE & SCHWARZ	101461	2024-04-04
11	DC POWER SUPPLY	E3632A	AGILANT	MY51250107	2024-03-03
12	BAND REJECTION FILTER	CTF-912M-S1	RF ONE ELECTRONICS	BRF1805C001	2024-03-02
13	LISN	ENV216	ROHDE & SCHWARZ	102193	2024-04-03

- END OF REPORT.