

Company: Itron

Test of: RIVA Modular LE

To: FCC CFR 47 Part 15 Subpart C 15.247
ISED IC RSS-247

Report No.: ITRO09-U2_Conducted Rev A

CONDUCTED TEST REPORT



CONDUCTED TEST REPORT



Test of: Itron RIVA Modular LE

To: FCC CFR 47 Part 15 Subpart C 15.247
ISED IC RSS-247

Test Report Serial No.: ITRO09-U2_Conducted Rev A

This report supersedes: NONE

Applicant: Itron
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Liberty Lake, Washington 99019
USA

Issue Date: 8th March 2019

Master Document Number
ITRO09-U2_Master Rev A

Addendum Reports
ITRO09-U2_Conducted Rev A
ITRO09-U2_Radiated Rev A

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1. TEST RESULTS

1.1. 20 dB & 99% Bandwidth

Conducted Test Conditions for 20 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.247 ISSED RSS 247	Ambient Temp. (°C):	24.0 - 27.5
Test Heading:	20 dB and 99 % Bandwidth	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.247 (a)(1)(i)/(ii) RSS-247 5.1 (a)(c)	Pressure (mBars):	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for 20 dB and 99% Bandwidth Measurement

The bandwidth at 20 dB and 99 % was measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

Testing was performed under ambient conditions at nominal voltage. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported.

Test configuration and setup used for the measurement was per the Conducted Test Set-up specified in this document.

Limits for 20 dB and 99% Bandwidth

(a) Operation under the provisions of this Section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

(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.

(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.

(ii) Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.



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Equipment Configuration for 20 dB 99% Bandwidth

Variant:	Mode 1	Duty Cycle (%):	99
Data Rate:	10kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 20 dB Bandwidth (MHz)				20 dB Bandwidth (MHz)		Limit	Lowest Margin
	Port(s)				Highest	Lowest		
MHz	a	b	c	d			MHz	MHz
902.2	0.021				0.021	0.021	0.5	-0.48
915.2	0.021				0.021	0.021	0.5	-0.48
927.8	0.021				0.021	0.021	0.5	-0.48

Test Frequency	Measured 99% Bandwidth (MHz)				Maximum 99% Bandwidth (MHz)		
	Port(s)						
MHz	a	b	c	d			
902.2	0.020				0.020		
915.2	0.020				0.020		
927.8	0.020				0.020		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for 20 dB 99% Bandwidth

Variant:	Mode 2	Duty Cycle (%):	99
Data Rate:	50kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 20 dB Bandwidth (MHz)				20 dB Bandwidth (MHz)		Limit	Lowest Margin
	Port(s)				Highest	Lowest		
MHz	a	b	c	d			MHz	MHz
902.2	0.259				0.259	0.259	0.5	-0.24
915.2	0.266				0.266	0.266	0.5	-0.23
927.6	0.266				0.266	0.266	0.5	-0.23

Test Frequency	Measured 99% Bandwidth (MHz)				Maximum 99% Bandwidth (MHz)		
	Port(s)						
MHz	a	b	c	d			
902.2	0.242				0.242		
915.2	0.240				0.240		
927.6	0.242				0.242		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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Equipment Configuration for 20 dB 99% Bandwidth

Variant:	Mode 3	Duty Cycle (%):	99
Data Rate:	16384bps	Antenna Gain (dBi):	Not Applicable
Modulation:	OOK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 20 dB Bandwidth (MHz)				20 dB Bandwidth (MHz)		Limit	Lowest Margin
	Port(s)				Highest	Lowest		
MHz	a	b	c	d			MHz	MHz
903.0	0.125				0.125	0.125	0.5	-0.38
915.0	0.125				0.125	0.125	0.5	-0.38
926.8	0.144				0.144	0.144	0.5	-0.36

Test Frequency	Measured 99% Bandwidth (MHz)				Maximum 99% Bandwidth (MHz)		
	Port(s)						
MHz	a	b	c	d			
903.0	0.281				0.281		
915.0	0.281				0.281		
926.8	0.283				0.283		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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Equipment Configuration for 20 dB 99% Bandwidth

Variant:	Mode 4	Duty Cycle (%):	99
Data Rate:	100kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 20 dB Bandwidth (MHz)				20 dB Bandwidth (MHz)		Limit	Lowest Margin
	Port(s)				Highest	Lowest	MHz	MHz
MHz	a	b	c	d				
902.3	0.402				0.402	0.402	0.5	-0.10
914.9	0.402				0.402	0.402	0.5	-0.10
926.9	0.402				0.402	0.402	0.5	-0.10

Test Frequency	Measured 99% Bandwidth (MHz)				Maximum 99% Bandwidth (MHz)		
	Port(s)						
MHz	a	b	c	d			
902.3	0.247				0.247		
914.9	0.247				0.247		
926.9	0.248				0.248		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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Equipment Configuration for 20 dB 99% Bandwidth

Variant:	Mode 5	Duty Cycle (%):	99
Data Rate:	150kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 20 dB Bandwidth (MHz)				20 dB Bandwidth (MHz)		Limit	Lowest Margin
	Port(s)				Highest	Lowest		
MHz	a	b	c	d			MHz	MHz
902.4	0.188				0.188	0.188	0.5	-0.31
915.2	0.188				0.188	0.188	0.5	-0.31
927.6	0.188				0.188	0.188	0.5	-0.31

Test Frequency	Measured 99% Bandwidth (MHz)				Maximum 99% Bandwidth (MHz)		
	Port(s)						
MHz	a	b	c	d			
902.4	0.183				0.183		
915.2	0.183				0.183		
927.6	0.183				0.183		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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1.2. Frequency Hopping Tests

Conducted Test Conditions for Frequency Hopping Measurements			
Standard:	FCC CFR 47:15.247 ISED RSS 247	Ambient Temp. (°C):	24.0 - 27.5
Test Heading:	Frequency Hopping Tests	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.247 (a)(1)(i)/(ii) RSS-247 5.1 (a)(c)	Pressure (mBars):	999 - 1001
Reference Document(s):	See Normative References, FCC Public Notice DA 00-705		

Test Procedure for Frequency Hopping Measurements

These tests cover the following measurements:

- i) channel separation
- ii) channel occupancy
- iii) dwell time
- iv) number of hopping frequencies

Frequency hopping testing was measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency or hopping mode.

Testing was performed under ambient conditions at nominal voltage. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported.

Test configuration and setup used for the measurement was per the Conducted Test Set-up specified in this document.

Limits for Frequency Hopping Measurements

(a) Operation under the provisions of this Section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

(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.

(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.

(ii) Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

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1.2.1. Number of Hopping Channels

Equipment Configuration for Number of Hopping Channels			
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Variant:	Mode 1	Antenna:	Not Applicable
Data Rate:	10kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Frequency Range (MHz)	Number of Hopping Channels	Limit	Pass / Fail
902.0-910.0	170	---	---
910.0-920.0	172	---	---
920.0-928.0	170	---	---
Total number of Hops	512	50	Pass

Traceability to Industry Recognized Test Methodologies	
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Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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Equipment Configuration for Number of Hopping Channels

Variant:	Mode 2	Antenna:	Not Applicable
Data Rate:	50kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Frequency Range (MHz)	Number of Hopping Channels	Limit	Pass / Fail
902.0-910.0	42	---	---
910.0-920.0	43	---	---
920.0-928.0	43	---	---
Total number of Hops	128	50	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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Equipment Configuration for Number of Hopping Channels

Variant:	Mode 3	Antenna:	Not Applicable
Data Rate:	16384bps	Antenna Gain (dBi):	Not Applicable
Modulation:	OOK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Frequency Range (MHz)	Number of Hopping Channels	Limit	Pass / Fail
902.0-910.0	40	---	---
910.0-920.0	40	---	---
920.0-928.0	40	---	---
Total number of Hops	120	50	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

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Equipment Configuration for Number of Hopping Channels

Variant:	Mode 4	Antenna:	Not Applicable
Data Rate:	100kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Frequency Range (MHz)	Number of Hopping Channels	Limit	Pass / Fail
Total number of Hops	90	>50	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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Equipment Configuration for Number of Hopping Channels
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Variant:	Mode 5	Antenna:	Not Applicable
Data Rate:	150kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Frequency Range (MHz)	Number of Hopping Channels	Limit	Pass / Fail
902.0-910.0	20	---	---
910.0-920.0	24	---	---
920.0-928.0	20	---	---
Total number of Hops	64	50	Pass

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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1.2.2. Channel Separation

Equipment Configuration for Channel Separation			
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Variant:	Mode 1	Antenna:	Not Applicable
Data Rate:	10kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Center Frequency (MHz)	Chan Separation (MHz)	Limit (MHz)	Pass / Fail
915.2	0.050	0.025	Pass

Traceability to Industry Recognized Test Methodologies	
--	--

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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Equipment Configuration for Channel Separation

Variant:	Mode 2	Antenna:	Not Applicable
Data Rate:	50kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Center Frequency (MHz)	Chan Separation (MHz)	Limit (MHz)	Pass / Fail
915.2	0.200	0.025	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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Equipment Configuration for Channel Separation

Variant:	Mode 3	Antenna:	Not Applicable
Data Rate:	16384bps	Antenna Gain (dBi):	Not Applicable
Modulation:	OOK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Center Frequency (MHz)	Chan Separation (MHz)	Limit (MHz)	Pass / Fail
915.0	0.200	0.025	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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Equipment Configuration for Channel Separation

Variant:	Mode 4	Antenna:	Not Applicable
Data Rate:	100kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Center Frequency (MHz)	Chan Separation (MHz)	Limit (MHz)	Pass / Fail
914.9	0.309	0.402	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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Equipment Configuration for Channel Separation

Variant:	Mode 5	Antenna:	Not Applicable
Data Rate:	150kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Center Frequency (MHz)	Chan Separation (MHz)	Limit (MHz)	Pass / Fail
915.2	0.400	0.188	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

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1.2.3. Dwell Time & Channel Occupancy

Equipment Configuration for Channel Occupancy

Variant:	Mode 1	Antenna:	Not Applicable
Data Rate:	10kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):		Tested By:	
Engineering Test Notes:			

Test Measurement Results

Channel Frequency(MHz)	Dwell Time (Single Burst) (S)	Channel Occupancy (mS)	Observation Period (S)	Channel Occupancy Limit (mS)	Pass / Fail
915.20	0.399	398.900	20	400.000	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Dwell Time & Channel Occupancy

Variant:	Mode 2	Antenna:	Not Applicable
Data Rate:	50kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	
Engineering Test Notes:			

Test Measurement Results

Channel Frequency(MHz)	Dwell Time (Single Burst) (S)	Channel Occupancy (mS)	Observation Period (S)	Channel Occupancy Limit (mS)	Pass / Fail
915.2	0.396	396.000	20	400.000	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	± 2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Dwell Time & Channel Occupancy

Variant:	Mode 3	Antenna:	Not Applicable
Data Rate:	16384bps	Antenna Gain (dBi):	Not Applicable
Modulation:	OOK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):	99.0	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency(MHz)	Dwell Time (Single Burst) (S)	Channel Occupancy (mS)	Observation Period (S)	Channel Occupancy Limit (mS)	Pass / Fail
915.00	0.398	398.000	20.00	400.000	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	
Measurement Uncertainty:	

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Channel Occupancy

Variant:	Mode 4	Antenna:	Not Applicable
Data Rate:	100kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):		Tested By:	
Engineering Test Notes:			

Test Measurement Results

Channel Frequency(MHz)	Dwell Time (Single Burst) (S)	Channel Occupancy (mS)	Observation Period (S)	Channel Occupancy Limit (mS)	Pass / Fail
915.2	0.396	398.200	20	400.000	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Channel Occupancy

Variant:	Mode 5	Antenna:	Not Applicable
Data Rate:	150kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
Duty Cycle (%):		Tested By:	
Engineering Test Notes:			

Test Measurement Results

Channel Frequency(MHz)	Dwell Time (Single Burst) (S)	Channel Occupancy (mS)	Observation Period (S)	Channel Occupancy Limit (mS)	Pass / Fail
915.2	0.398	398.200	20	400.000	Pass

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

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1.3. Output Power

Conducted Test Conditions for Fundamental Emission Output Power			
Standard:	FCC CFR 47:15.247 ISED RSS 247	Ambient Temp. (°C):	24.0 - 27.5
Test Heading:	Output Power	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.247 (a)(1), (b)(1)/(2)/(3) RSS-247 5.1 (a)(c) RSS-247 5.4 (a)	Pressure (mBars):	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Fundamental Emission Output Power Measurement

In the case of average power measurements an average power sensor was utilized.

For peak power measurements the spectrum analyzer built-in power function was used to integrate peak power over the 20 dB bandwidth.

Testing was performed under ambient conditions, nominal voltage. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured, summed (Σ) and reported.

Test configuration and setup used for the measurement was per the Conducted Test Set-up specified in this document.

Supporting Information
Calculated Power = A + G + Y+ 10 log (1/x) dBm

A = Total Power [10*Log10 (10^{a/10} + 10^{b/10} + 10^{c/10} + 10^{d/10})]
G = Antenna Gain
Y = Beamforming Gain
x = Duty Cycle (average power measurements only)

Limits for Fundamental Emission Output Power

(a) Operation under the provisions of this Section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

(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.

(b) The maximum peak conducted output power of the intentional radiator shall not exceed the following for frequency hopping systems:

(1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

(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.

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum

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conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

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Equipment Configuration for Output Power Peak

Variant:	Mode 1	Duty Cycle (%):	99.0
Data Rate:	10kbps	Antenna Gain (dBi):	2.00
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
	Port(s)							
MHz	a	b	c	d	dBm	dBm	dB	
902.2	29.53				29.53	30.00	-0.47	
915.2	29.05				29.05	30.00	-0.95	
927.8	29.45				29.45	30.00	-0.55	

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	± 1.33 dB

Note Power settings listed are values used to power the transmitter up.

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Equipment Configuration for Output Power Peak

Variant:	Mode 2	Duty Cycle (%):	99.0
Data Rate:	50kbps	Antenna Gain (dBi):	2.00
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
	Port(s)							
MHz	a	b	c	d	dBm	dBm	dB	
902.2	29.20				29.20	30.00	-0.80	340.00
915.2	29.29				29.29	30.00	-0.71	340.00
927.6	29.44				29.44	30.00	-0.56	340.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	± 1.33 dB

Note Power settings listed are values used to power the transmitter up.

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Equipment Configuration for Output Power Peak

Variant:	Mode 3	Duty Cycle (%):	99.0
Data Rate:	16384bps	Antenna Gain (dBi):	2.00
Modulation:	OOK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
	Port(s)							
MHz	a	b	c	d	dBm	dBm	dB	
903.0	29.41				29.41	30	-0.59	340.00
915.0	29.26				29.26	30	-0.74	340.00
926.8	29.39				29.39	30	-0.61	340.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	± 1.33 dB

Note Power settings listed are values used to power the transmitter up.

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Equipment Configuration for Output Power Peak

Variant:	Mode 4	Duty Cycle (%):	99.0
Data Rate:	100kbps	Antenna Gain (dBi):	2.00
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
	Port(s)							
MHz	a	b	c	d	dBm	dBm	dB	
902.3	29.01				29.01	30.00	-0.99	340.00
914.9	29.22				29.22	30.00	-0.78	340.00
926.9	29.17				29.17	30.00	-0.83	340.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	± 1.33 dB

Note Power settings listed are values used to power the transmitter up.

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Equipment Configuration for Output Power Peak

Variant:	Mode 5	Duty Cycle (%):	99.0
Data Rate:	150kbps	Antenna Gain (dBi):	2.00
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm)				Calculated Total Power Σ Port(s)	Limit	Margin	EUT Power Setting
	Port(s)							
MHz	a	b	c	d	dBm	dBm	dB	
902.4	29.14				29.14	30	-0.86	340.00
915.2	29.27				29.27	30	-0.73	340.00
927.6	29.21				29.21	30	-0.79	340.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	± 1.33 dB

Note Power settings listed are values used to power the transmitter up.

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1.4. Emissions

1.4.1. Conducted Emissions

Conducted Test Conditions for Transmitter Conducted Spurious and Band-Edge Emissions			
Standard:	FCC CFR 47:15.247 ISED RSS 247	Ambient Temp. (°C):	24.0 - 27.5
Test Heading:	Transmitter Conducted Spurious and Band-Edge Emissions	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.247 (d) RSS-247 5.5	Pressure (mBars):	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Transmitter Conducted Spurious and Band-Edge Emissions Measurement

Transmitter Conducted Spurious and Band-Edge emissions were measured at a limit of 30 dBc (average detector) or 20 dBc (peak detector) below the highest in-band spectral density measured with a spectrum analyzer connected to the antenna terminal. Measurements were made while EUT was operating in transmit mode of operation at the appropriate centre frequency closest to the band-edge. Emissions were maximized during the measurement and limits derived from the peak spectral power and drawn on each plot.

Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured separately. Testing was performed under ambient conditions at nominal voltage only.

Test configuration and setup used for the measurement was per the Conducted Test Set-up specified in this document.

Limits Transmitter Conducted Spurious and Band-Edge Emissions

(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)).

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1.4.1.1. Conducted Unwanted Spurious Emissions

Equipment Configuration for Unwanted Emissions Peak

Variant:	Mode 1	Duty Cycle (%):	99
Data Rate:	10kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Unwanted Emissions Peak (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
902.2	30.0 - 10000.0	-34.547	7.92						
915.2	30.0 - 10000.0	-35.566	8.00						
927.8	30.0 - 10000.0	-35.664	7.75						

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Unwanted Emissions Peak

Variant:	Mode 2	Duty Cycle (%):	99
Data Rate:	50kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Unwanted Emissions Peak (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
902.2	30.0 - 10000.0	-46.592	-3.90						
915.2	300.0 - 10000.0	-48.229	-4.16						
927.6	30.0 - 10000.0	-10.072	-4.24						

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Unwanted Emissions Peak

Variant:	Mode 3	Duty Cycle (%):	99
Data Rate:	16384bps	Antenna Gain (dBi):	Not Applicable
Modulation:	OOK	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Unwanted Emissions Peak (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
903.0	30.0 - 10000.0	-40.167	1.94						
915.0	30.0 - 10000.0	-41.243	2.23						
926.8	30.0 - 10000.0	-40.746	2.07						

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Unwanted Emissions Peak

Variant:	Mode 4	Duty Cycle (%):	99
Data Rate:	100kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Unwanted Emissions Peak (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
902.3	30.0 - 10000.0	-47.527	-4.40						
914.9	30.0 - 10000.0	-48.217	-4.40						
926.9	30.0 - 10000.0	-48.262	-4.84						

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Unwanted Emissions Peak

Variant:	Mode 5	Duty Cycle (%):	99
Data Rate:	150kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Unwanted Emissions Peak (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
902.4	30.0 - 10000.0	27.771	7.77						
915.2	30.0 - 10000.0	27.661	7.66						
927.6	30.0 - 10000.0	-18.311	-4.52						

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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1.4.1.2. Conducted Band-Edge Emissions

Equipment Configuration for Conducted Low Band-Edge Emissions (Hopping) Peak

Variant:	Mode 1	Duty Cycle (%):	99.0
Data Rate:	10kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	902.2 MHz					
Band-Edge Frequency:	902.0 MHz					
Test Frequency Range:	875.0 - 905.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-9.24	-3.51	902.00			0.000

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Low Band-Edge Emissions (Hopping) Peak

Variant:	Mode 2	Duty Cycle (%):	99.0
Data Rate:	50kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	902.2 MHz					
Band-Edge Frequency:	902.0 MHz					
Test Frequency Range:	875.0 - 905.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	1.35	2.99	901.90			-0.100

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Low Band-Edge Emissions (Hopping) Peak

Variant:	Mode 3	Duty Cycle (%):	99.0
Data Rate:	16384bps	Antenna Gain (dBi):	Not Applicable
Modulation:	OOK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	903.0 MHz					
Band-Edge Frequency:	902.0 MHz					
Test Frequency Range:	875.0 - 905.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-4.08	8.89	902.70			-0.700

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Low Band-Edge Emissions (Hopping) Peak

Variant:	Mode 4	Duty Cycle (%):	99.0
Data Rate:	100kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	902.2 MHz					
Band-Edge Frequency:	902.0 MHz					
Test Frequency Range:	875.0 - 905.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-8.51	-3.39	902.10			-0.100

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Low Band-Edge Emissions (Hopping) Peak

Variant:	Mode 5	Duty Cycle (%):	99.0
Data Rate:	150kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	902.4 MHz					
Band-Edge Frequency:	902.0 MHz					
Test Frequency Range:	875.0 - 905.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-27.35	-2.95	902.20			-0.200

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Low Band-Edge Emissions (Static) Peak

Variant:	Mode 1	Duty Cycle (%):	99.0
Data Rate:	10kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	902.2 MHz					
Band-Edge Frequency:	902.0 MHz					
Test Frequency Range:	875.0 - 905.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	1.41	8.43	902.00			0.000

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Low Band-Edge Emissions (Static) Peak

Variant:	Mode 2	Duty Cycle (%):	99.0
Data Rate:	50kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	902.2 MHz					
Band-Edge Frequency:	902.0 MHz					
Test Frequency Range:	875.0 - 905.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-3.94	-3.51	901.90			-0.100

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Low Band-Edge Emissions (Static) Peak

Variant:	Mode 3	Duty Cycle (%):	99.0
Data Rate:	16384bps	Antenna Gain (dBi):	Not Applicable
Modulation:	OOK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	903.0 MHz					
Band-Edge Frequency:	902.0 MHz					
Test Frequency Range:	875.0 - 905.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-10.03	2.77	902.70			-0.700

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Low Band-Edge Emissions (Static) Peak

Variant:	Mode 4	Duty Cycle (%):	99.0
Data Rate:	100kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	902.3 MHz					
Band-Edge Frequency:	902.0 MHz					
Test Frequency Range:	875.0 - 905.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-7.82	-3.77	902.00			-0.000

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Low Band-Edge Emissions (Static) Peak

Variant:	Mode 5	Duty Cycle (%):	99.0
Data Rate:	150kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	902.4 MHz					
Band-Edge Frequency:	902.0 MHz					
Test Frequency Range:	875.0 - 905.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M1 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-17.02	8.14	902.20			-0.200

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Upper Band-Edge Emissions (Hopping) Peak

Variant:	Mode 1	Duty Cycle (%):	99.0
Data Rate:	10kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	927.8 MHz					
Band-Edge Frequency:	928.0 MHz					
Test Frequency Range:	925.0 - 945.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-14.27	-3.70	927.90			-0.100

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Upper Band-Edge Emissions (Hopping) Peak

Variant:	Mode 2	Duty Cycle (%):	99.0
Data Rate:	50kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	927.6 MHz					
Band-Edge Frequency:	928.0 MHz					
Test Frequency Range:	925.0 - 950.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-9.19	2.64	927.80			-0.200

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Upper Band-Edge Emissions (Hopping) Peak

Variant:	Mode 3	Duty Cycle (%):	99.0
Data Rate:	16.384bps	Antenna Gain (dBi):	Not Applicable
Modulation:	OOK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	926.8 MHz					
Band-Edge Frequency:	928.0 MHz					
Test Frequency Range:	925.0 - 950.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-6.12	8.92	927.10			-0.900

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Upper Band-Edge Emissions (Hopping) Peak

Variant:	Mode 4	Duty Cycle (%):	99.0
Data Rate:	100kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	927.6 MHz					
Band-Edge Frequency:	928.0 MHz					
Test Frequency Range:	925.0 - 950.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-41.03	-3.56	927.50			-0.500

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Upper Band-Edge Emissions (Hopping) Peak

Variant:	Mode 5	Duty Cycle (%):	99.0
Data Rate:	150kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	927.6 MHz					
Band-Edge Frequency:	928.0 MHz					
Test Frequency Range:	925.0 - 945.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-31.49	-4.20	927.80			-0.200

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Upper Band-Edge Emissions (Static) Peak

Variant:	Mode 1	Duty Cycle (%):	99.0
Data Rate:	10kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	927.8 MHz					
Band-Edge Frequency:	928.0 MHz					
Test Frequency Range:	925.0 - 950.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-5.72	7.82	927.90			-0.100

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Upper Band-Edge Emissions (Static) Peak

Variant:	Mode 2	Duty Cycle (%):	99.0
Data Rate:	50kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	927.6 MHz					
Band-Edge Frequency:	928.0 MHz					
Test Frequency Range:	925.0 - 950.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-17.72	-4.24	927.80			-0.200

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Upper Band-Edge Emissions (Static) Peak

Variant:	Mode 3	Duty Cycle (%):	99.0
Data Rate:	16.384bps	Antenna Gain (dBi):	Not Applicable
Modulation:	OOK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	926.8 MHz					
Band-Edge Frequency:	928.0 MHz					
Test Frequency Range:	925.0 - 950.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-12.37	2.48	927.10			-0.900

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Upper Band-Edge Emissions (Static) Peak

Variant:	Mode 4	Duty Cycle (%):	99.0
Data Rate:	100kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	FSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	926.9 MHz					
Band-Edge Frequency:	928.0 MHz					
Test Frequency Range:	925.0 - 950.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-47.03	-4.47	927.20			-0.800

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for Conducted Upper Band-Edge Emissions (Static) Peak

Variant:	Mode 5	Duty Cycle (%):	99.0
Data Rate:	150kbps	Antenna Gain (dBi):	Not Applicable
Modulation:	GFSK	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Channel Frequency:	927.6 MHz					
Band-Edge Frequency:	928.0 MHz					
Test Frequency Range:	925.0 - 950.0 MHz					
Port(s)	Band-Edge Markers and Limit			Revised Limit		Margin
	M3 Amplitude (dBm)	Plot Limit (dBm)	M2 Frequency (MHz)	Amplitude (dBm)	M2A Frequency (MHz)	(MHz)
a	-29.68	-4.53	927.80			-0.200

Traceability to Industry Recognized Test Methodologies

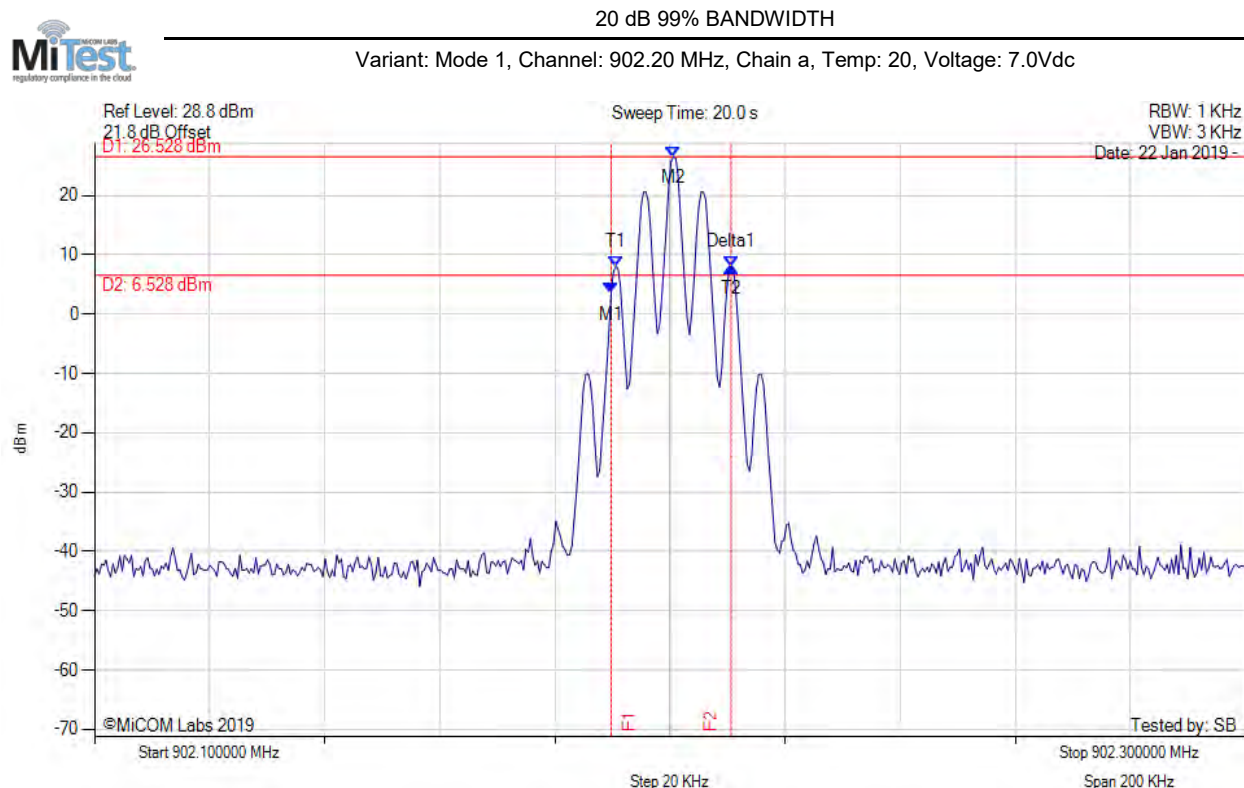
Work Instruction:	WI-05 MEASUREMENT OF SPURIOUS EMISSIONS
Measurement Uncertainty:	<=40 GHz ± 2.37 dB, > 40 GHz ± 4.6 dB

Note: click the links in the above matrix to view the graphical image (plot).

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A. APPENDIX - GRAPHICAL IMAGES

A.1. 20 dB & 99% Bandwidth



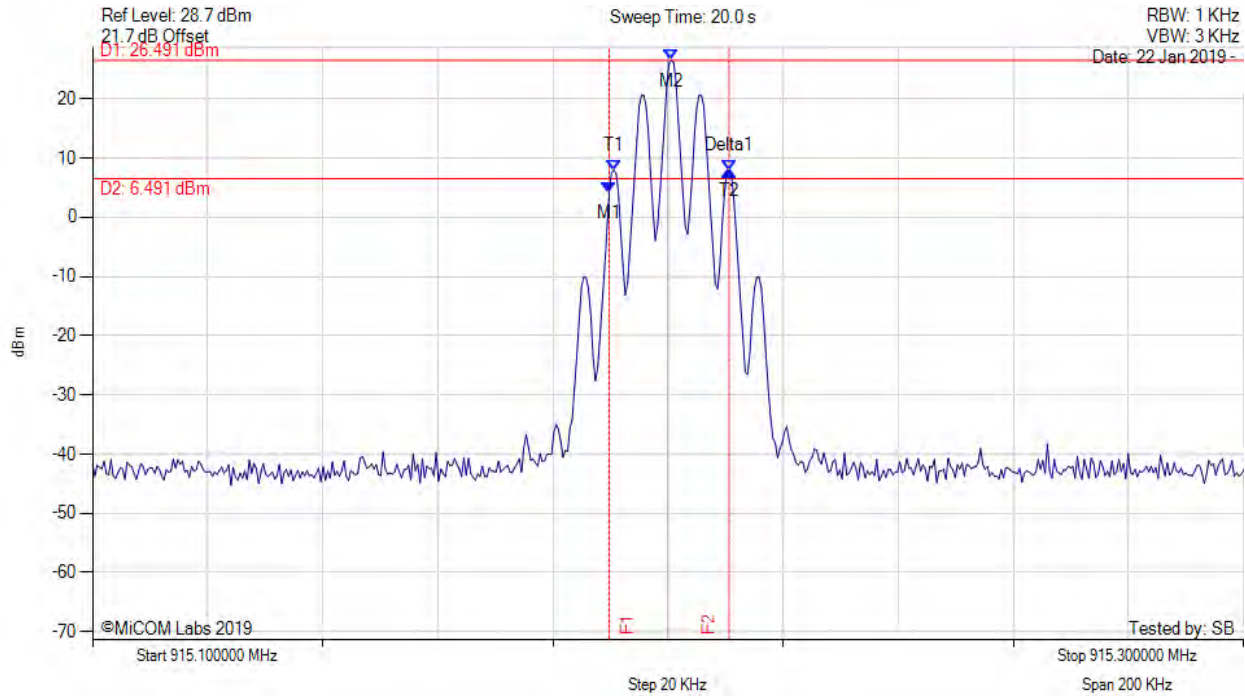
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 902.190 MHz : 3.551 dBm M2 : 902.201 MHz : 26.528 dBm Delta1 : 21 KHz : 4.401 dB T1 : 902.191 MHz : 7.958 dBm T2 : 902.211 MHz : 7.952 dBm OBW : 20 KHz	Measured 20 dB Bandwidth: 0.021 MHz Limit: 0.5 kHz Margin: 0.48 MHz

[back to matrix](#)

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20 dB 99% BANDWIDTH

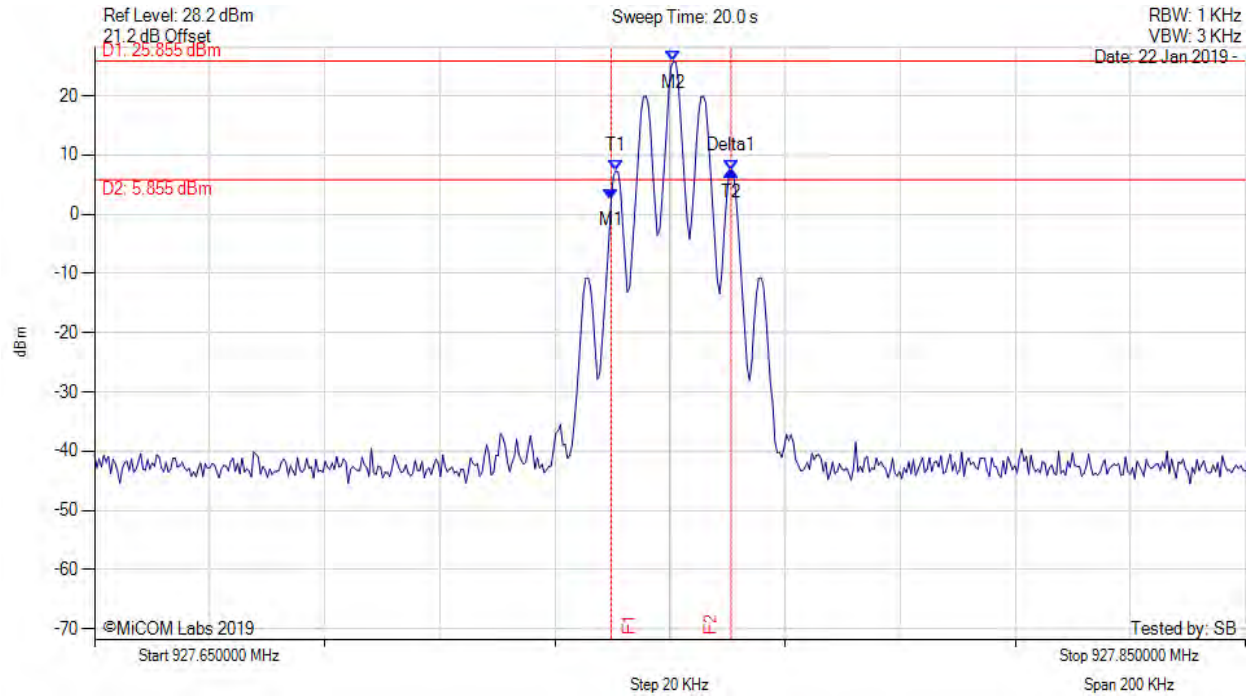
Variant: Mode 1, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 915.190 MHz : 4.199 dBm M2 : 915.201 MHz : 26.491 dBm Delta1 : 21 KHz : 3.728 dB T1 : 915.191 MHz : 7.944 dBm T2 : 915.211 MHz : 7.927 dBm OBW : 20 KHz	Measured 20 dB Bandwidth: 0.021 MHz Limit: 0.5 kHz Margin: 0.48 MHz

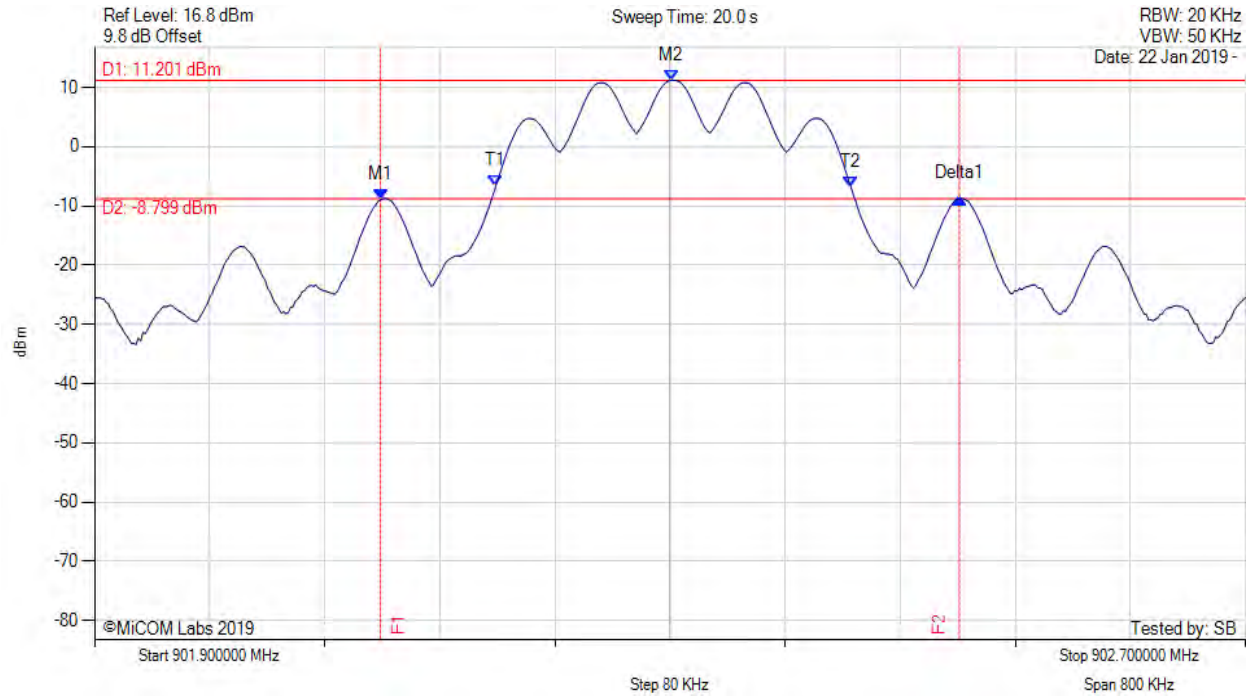
[back to matrix](#)

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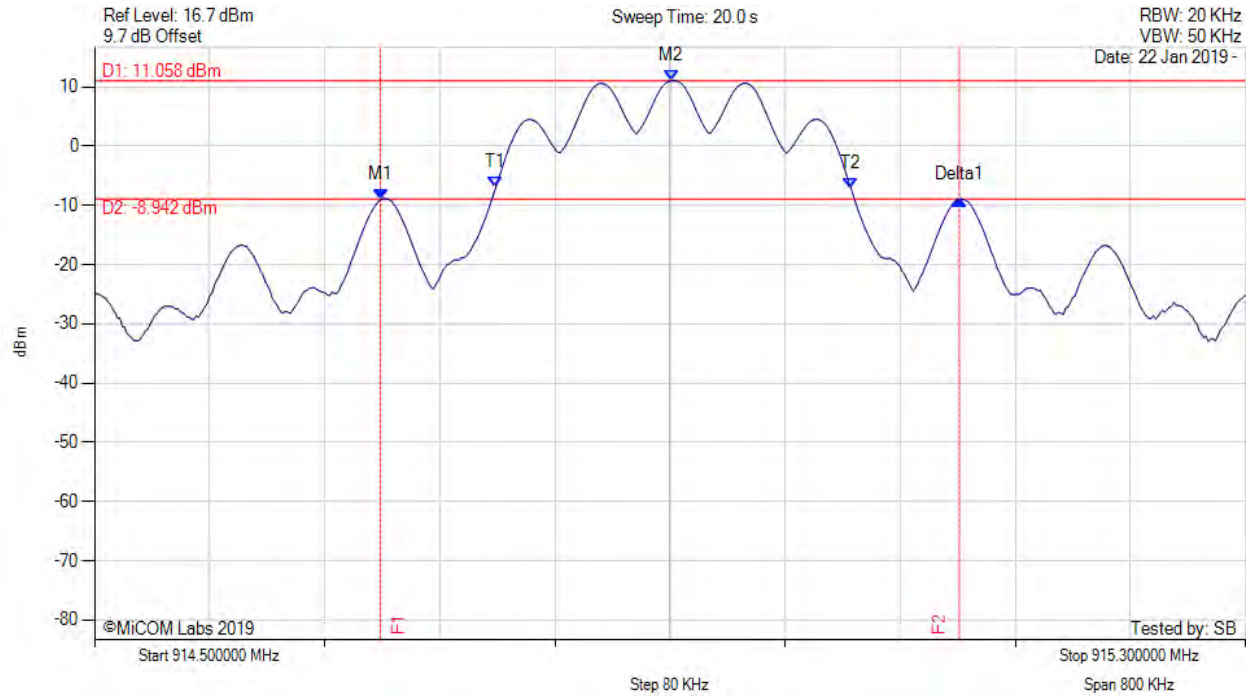
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 927.740 MHz : 2.587 dBm M2 : 927.751 MHz : 25.855 dBm Delta1 : 21 KHz : 4.728 dB T1 : 927.741 MHz : 7.328 dBm T2 : 927.761 MHz : 7.315 dBm OBW : 20 KHz	Measured 20 dB Bandwidth: 0.021 MHz Limit: 0.5 kHz Margin: 0.48 MHz

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Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 902.099 MHz : -8.953 dBm M2 : 902.301 MHz : 11.201 dBm Delta1 : 402 KHz : 0.195 dB T1 : 902.179 MHz : -6.684 dBm T2 : 902.426 MHz : -6.861 dBm OBW : 247 KHz	Measured 20 dB Bandwidth: 0.402 MHz Limit: 0.5 kHz Margin: 0.10 MHz

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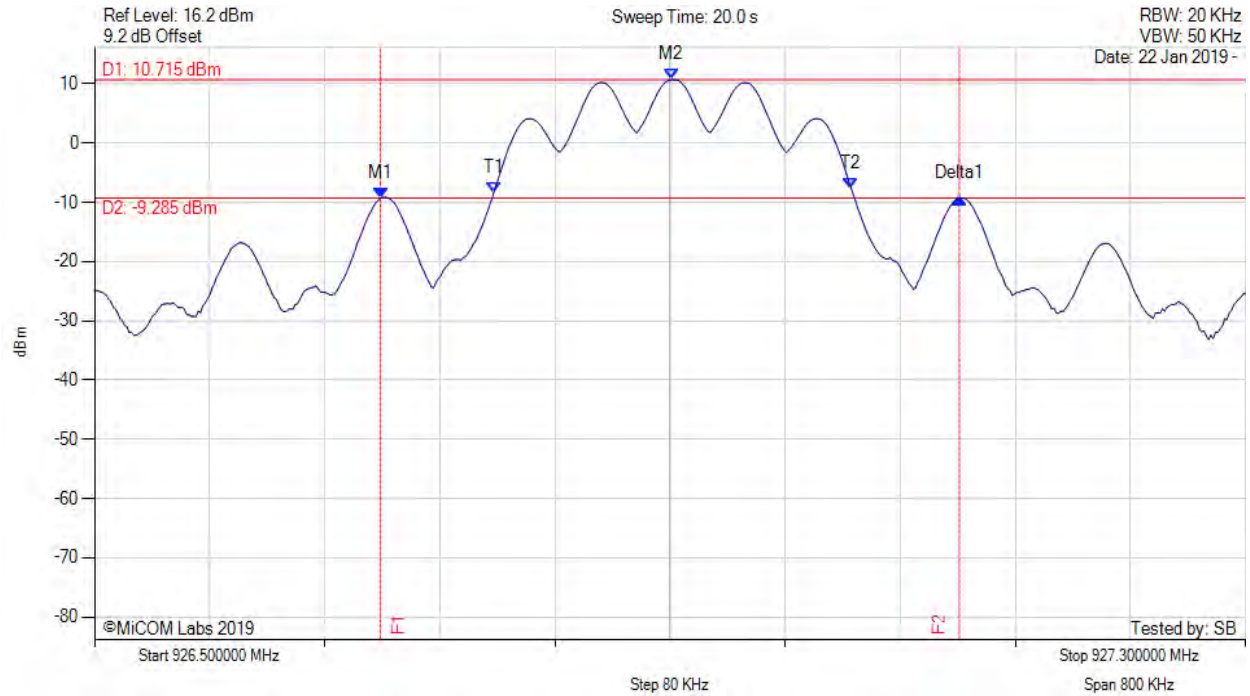
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 914.699 MHz : -9.072 dBm M2 : 914.901 MHz : 11.058 dBm Delta1 : 402 KHz : 0.108 dB T1 : 914.779 MHz : -6.965 dBm T2 : 915.026 MHz : -7.186 dBm OBW : 247 KHz	Measured 20 dB Bandwidth: 0.402 MHz Limit: 0.5 kHz Margin: 0.10 MHz

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20 dB 99% BANDWIDTH

Variant: Mode 4, Channel: 926.90 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 926.699 MHz : -9.297 dBm M2 : 926.901 MHz : 10.715 dBm Delta1 : 402 KHz : -0.002 dB T1 : 926.777 MHz : -8.465 dBm T2 : 927.026 MHz : -7.572 dBm OBW : 248 KHz	Measured 20 dB Bandwidth: 0.402 MHz Limit: 0.5 kHz Margin: 0.10 MHz

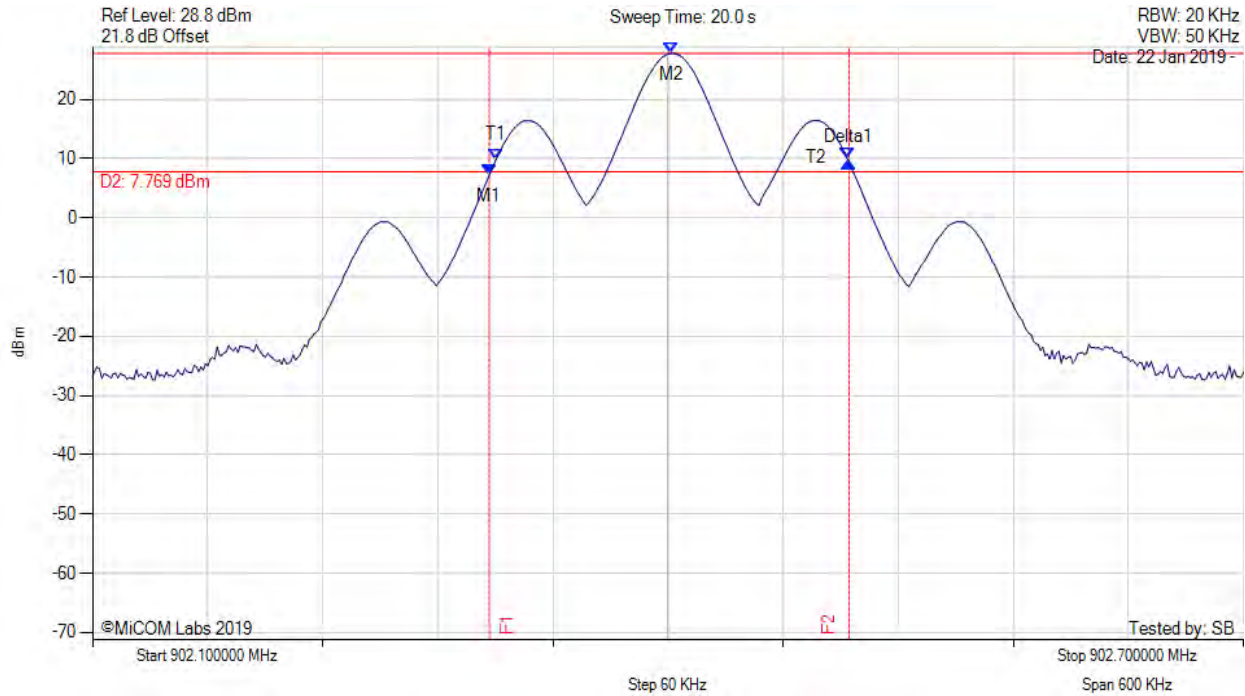
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20 dB 99% BANDWIDTH

Variant: Mode 5, Channel: 902.40 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 902.307 MHz : 7.220 dBm M2 : 902.402 MHz : 27.769 dBm Delta1 : 188 KHz : 2.203 dB T1 : 902.310 MHz : 9.907 dBm T2 : 902.493 MHz : 10.185 dBm OBW : 183 KHz	Measured 20 dB Bandwidth: 0.188 MHz Limit: 0.5 kHz Margin: 0.31 MHz

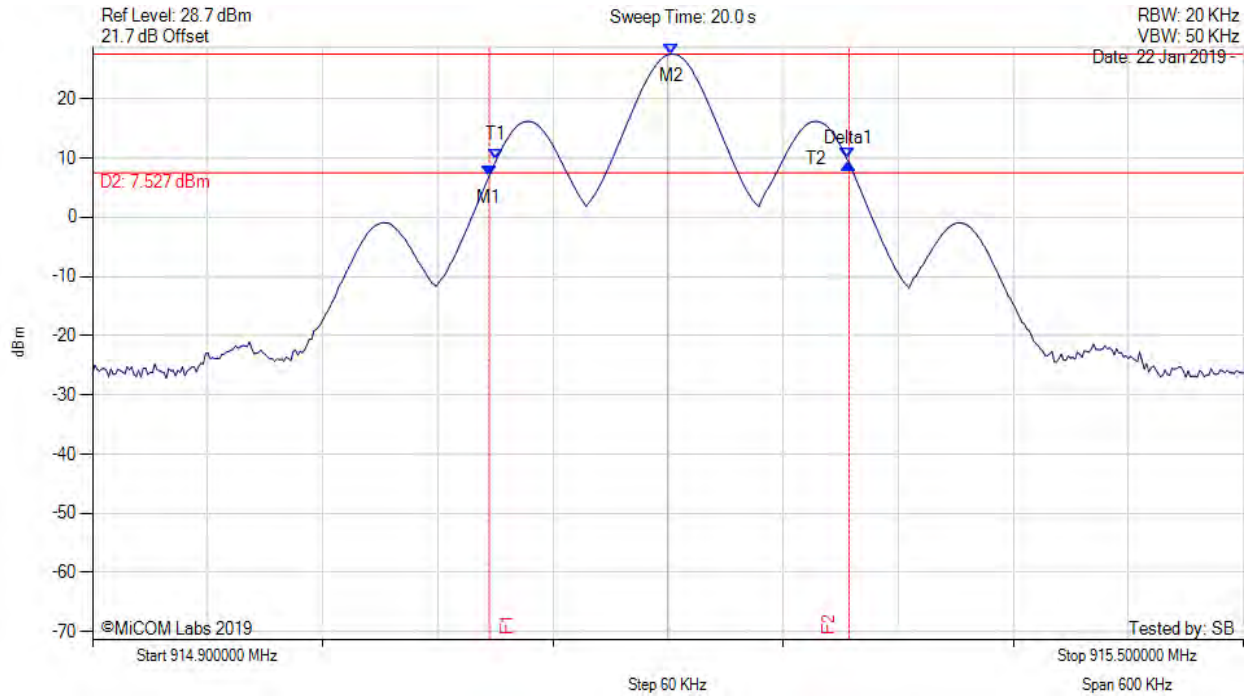
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20 dB 99% BANDWIDTH

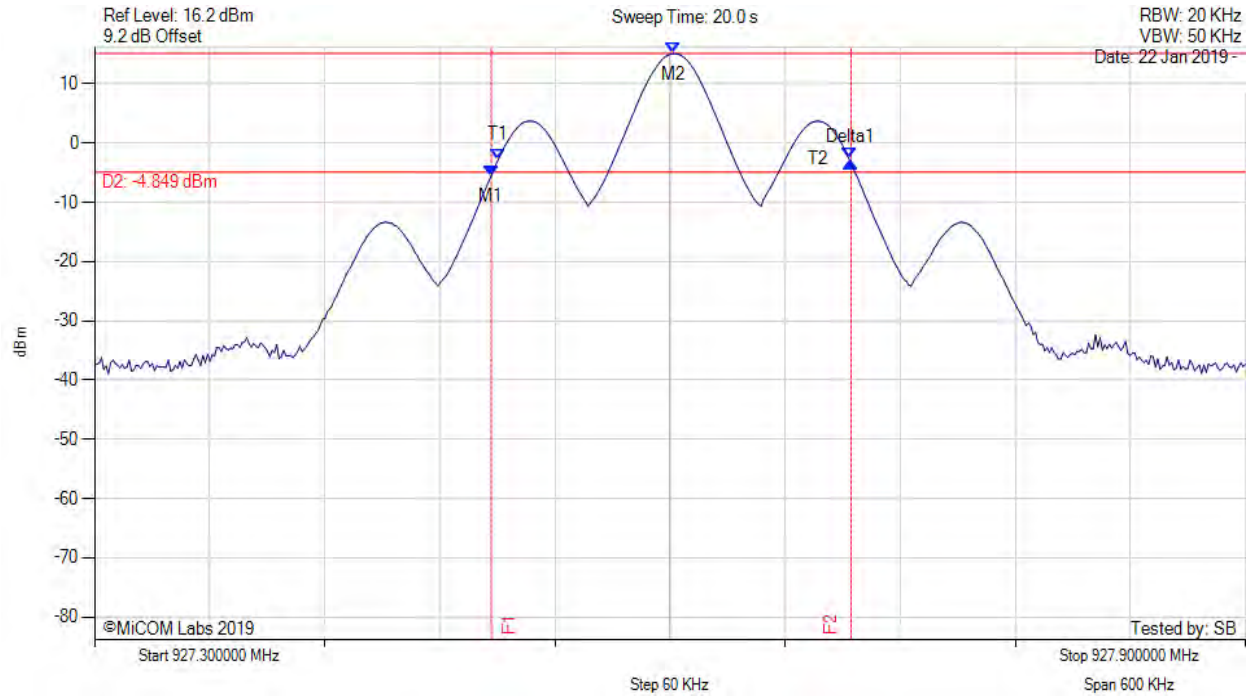
Variant: Mode 5, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 915.107 MHz : 6.963 dBm M2 : 915.202 MHz : 27.527 dBm Delta1 : 188 KHz : 2.170 dB T1 : 915.110 MHz : 9.648 dBm T2 : 915.293 MHz : 9.904 dBm OBW : 183 KHz	Measured 20 dB Bandwidth: 0.188 MHz Limit: 0.5 kHz Margin: 0.31 MHz

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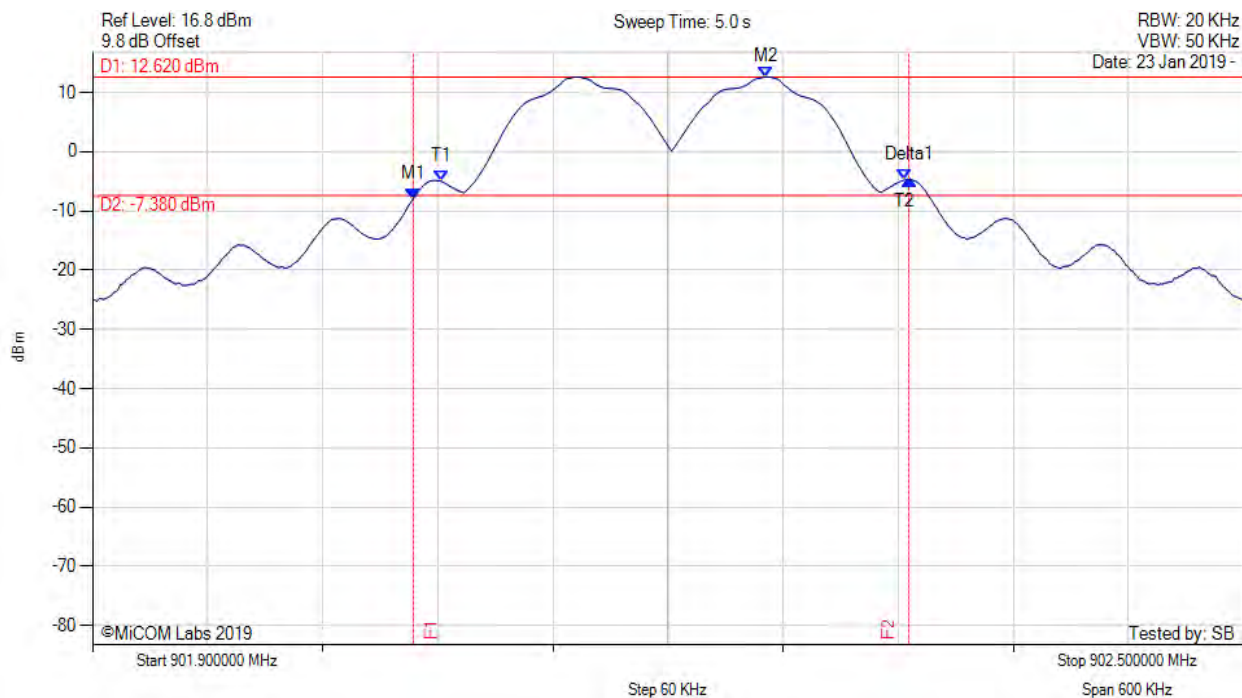
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 927.507 MHz : -5.463 dBm M2 : 927.602 MHz : 15.151 dBm Delta1 : 188 KHz : 2.158 dB T1 : 927.510 MHz : -2.781 dBm T2 : 927.693 MHz : -2.553 dBm OBW : 183 KHz	Measured 20 dB Bandwidth: 0.188 MHz Limit: 0.5 kHz Margin: 0.31 MHz

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20 dB 99% BANDWIDTH

Variant: Mode 2, Channel: 902.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 902.067 MHz : -7.908 dBm M2 : 902.251 MHz : 12.625 dBm Delta1 : 259 KHz : 3.242 dB T1 : 902.082 MHz : -4.977 dBm T2 : 902.323 MHz : -4.764 dBm OBW : 242 KHz	Measured 20 dB Bandwidth: 0.259 MHz Limit: 0.5 kHz Margin: 0.24 MHz

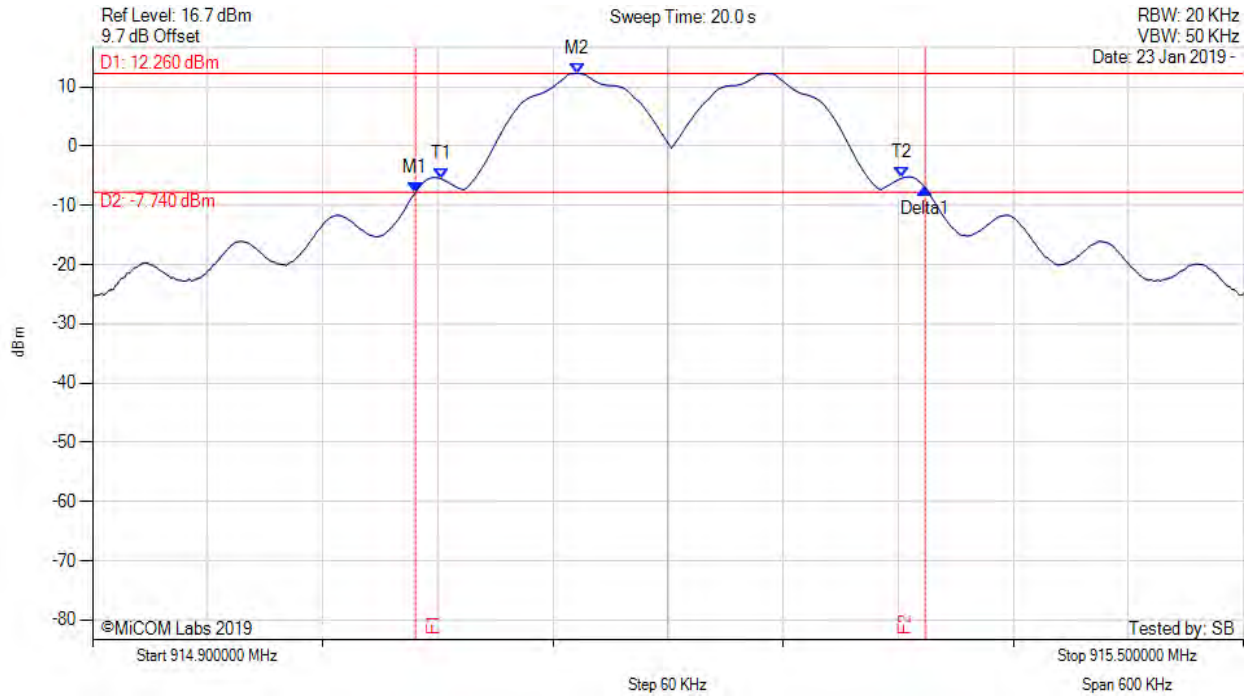
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20 dB 99% BANDWIDTH

Variant: Mode 2, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 915.068 MHz : -7.811 dBm M2 : 915.153 MHz : 12.260 dBm Delta1 : 266 KHz : 0.718 dB T1 : 915.082 MHz : -5.474 dBm T2 : 915.322 MHz : -5.372 dBm OBW : 240 KHz	Measured 20 dB Bandwidth: 0.266 MHz Limit: 0.5 kHz Margin: 0.23 MHz

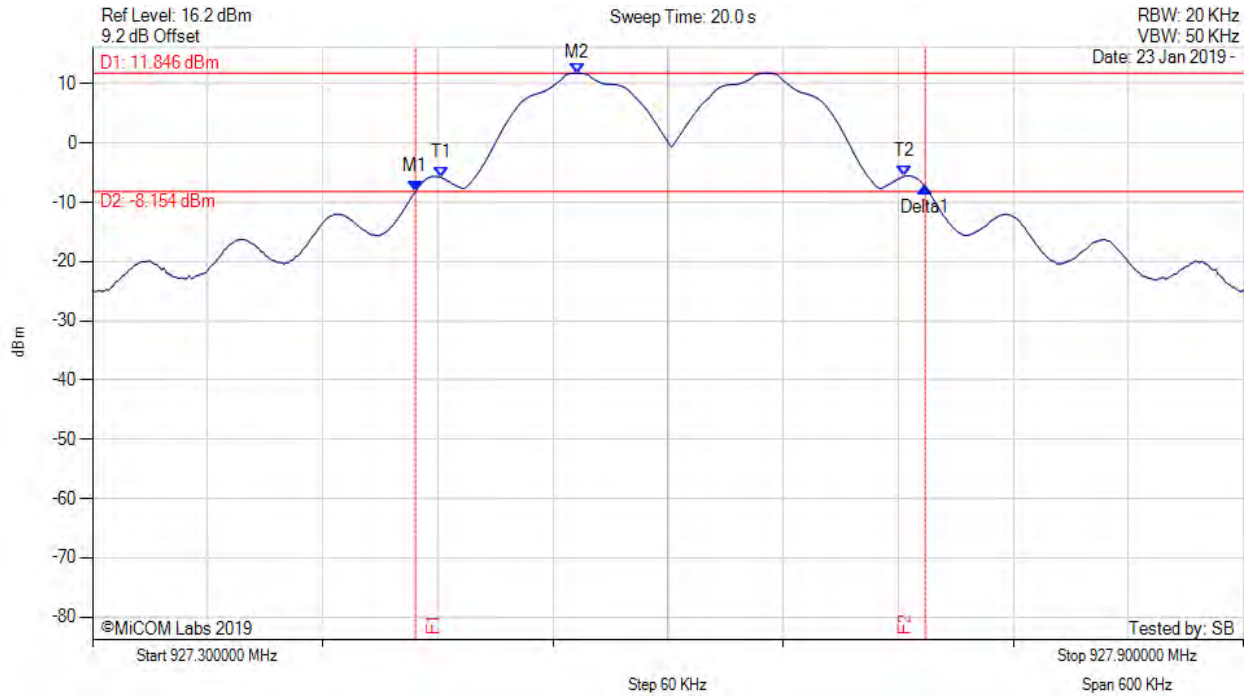
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20 dB 99% BANDWIDTH

Variant: Mode 2, Channel: 927.60 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 927.468 MHz : -8.227 dBm M2 : 927.553 MHz : 11.846 dBm Delta1 : 266 KHz : 0.838 dB T1 : 927.482 MHz : -5.764 dBm T2 : 927.723 MHz : -5.596 dBm OBW : 242 KHz	Measured 20 dB Bandwidth: 0.266 MHz Limit: 0.5 kHz Margin: 0.23 MHz

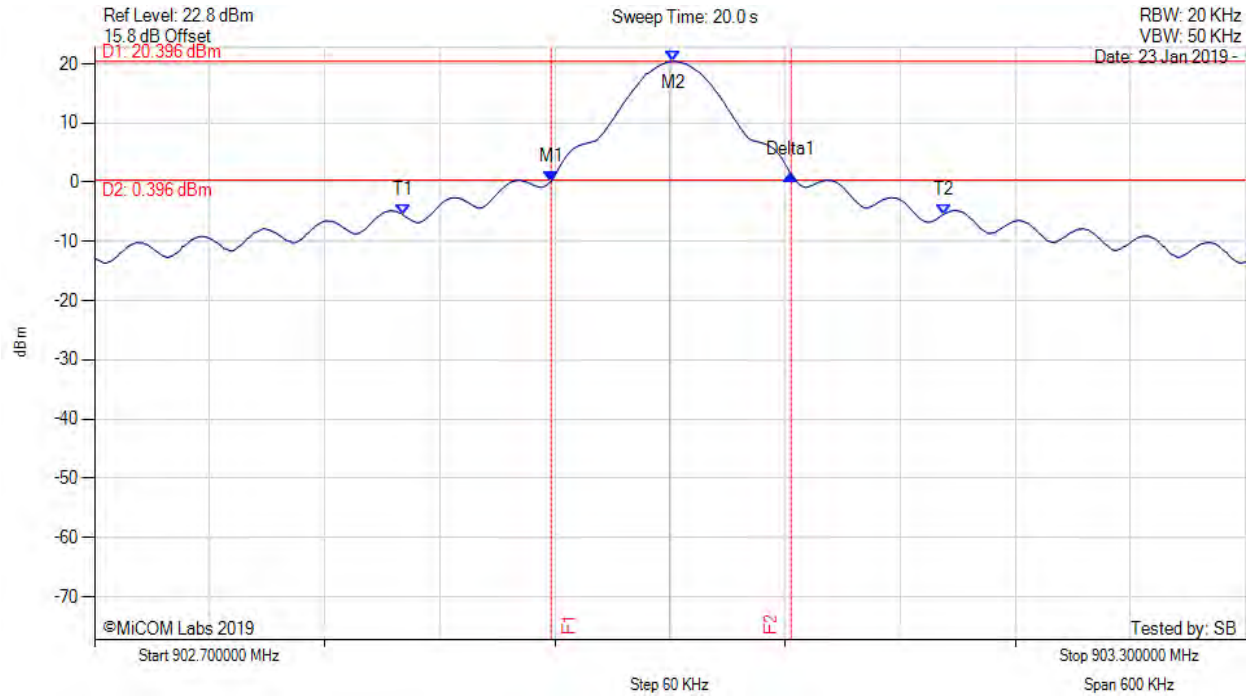
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20 dB 99% BANDWIDTH

Variant: Mode 3, Channel: 903.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 902.938 MHz : 0.179 dBm M2 : 903.002 MHz : 20.396 dBm Delta1 : 125 KHz : 1.001 dB T1 : 902.861 MHz : -5.569 dBm T2 : 903.142 MHz : -5.434 dBm OBW : 281 KHz	Measured 20 dB Bandwidth: 0.125 MHz Limit: 0.5 kHz Margin: 0.38 MHz

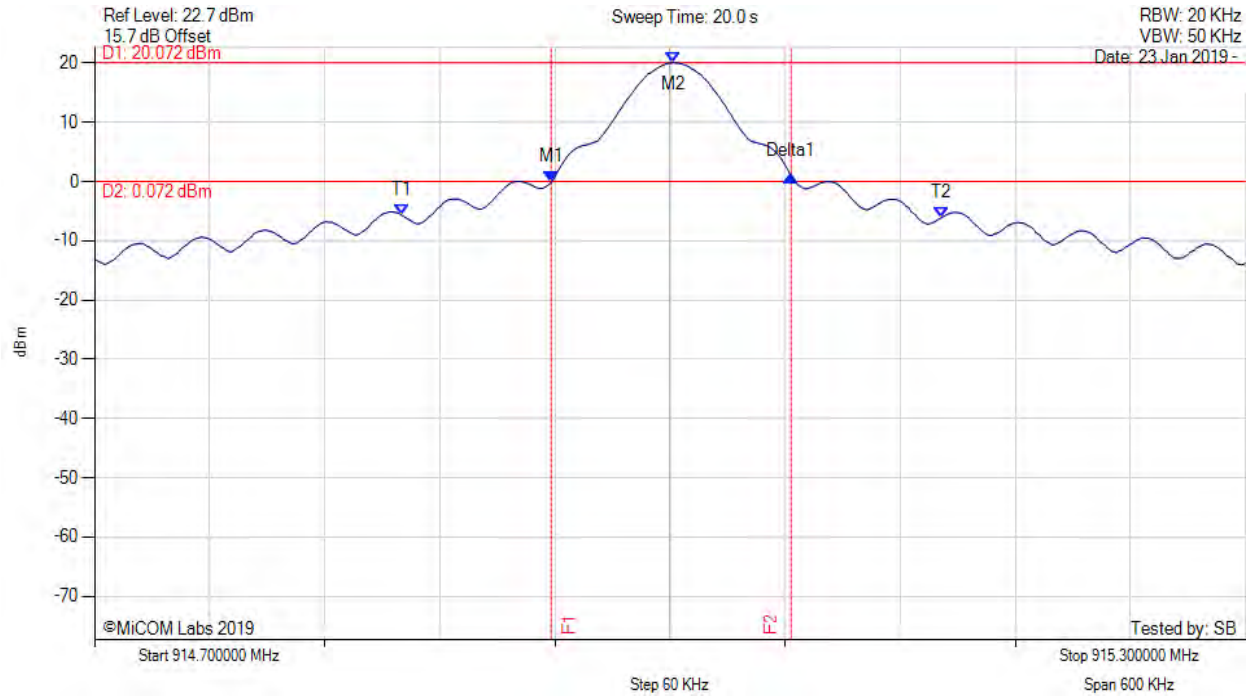
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20 dB 99% BANDWIDTH

Variant: Mode 3, Channel: 915.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 914.938 MHz : -0.100 dBm M2 : 915.002 MHz : 20.072 dBm Delta1 : 125 KHz : 0.954 dB T1 : 914.860 MHz : -5.610 dBm T2 : 915.141 MHz : -6.128 dBm OBW : 281 KHz	Measured 20 dB Bandwidth: 0.125 MHz Limit: 0.5 kHz Margin: 0.38 MHz

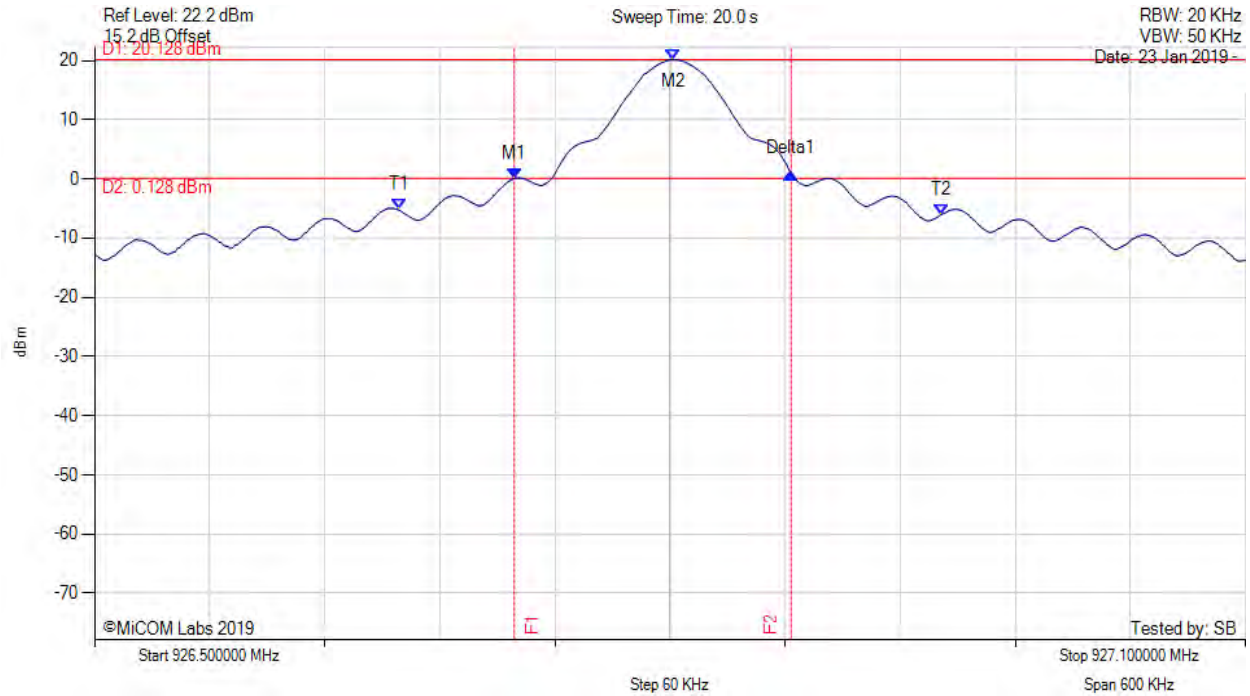
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20 dB 99% BANDWIDTH

Variant: Mode 3, Channel: 926.80 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 926.719 MHz : 0.085 dBm M2 : 926.802 MHz : 20.128 dBm Delta1 : 144 KHz : 0.854 dB T1 : 926.659 MHz : -5.225 dBm T2 : 926.941 MHz : -6.041 dBm OBW : 283 KHz	Measured 20 dB Bandwidth: 0.144 MHz Limit: 0.5 kHz Margin: 0.36 MHz

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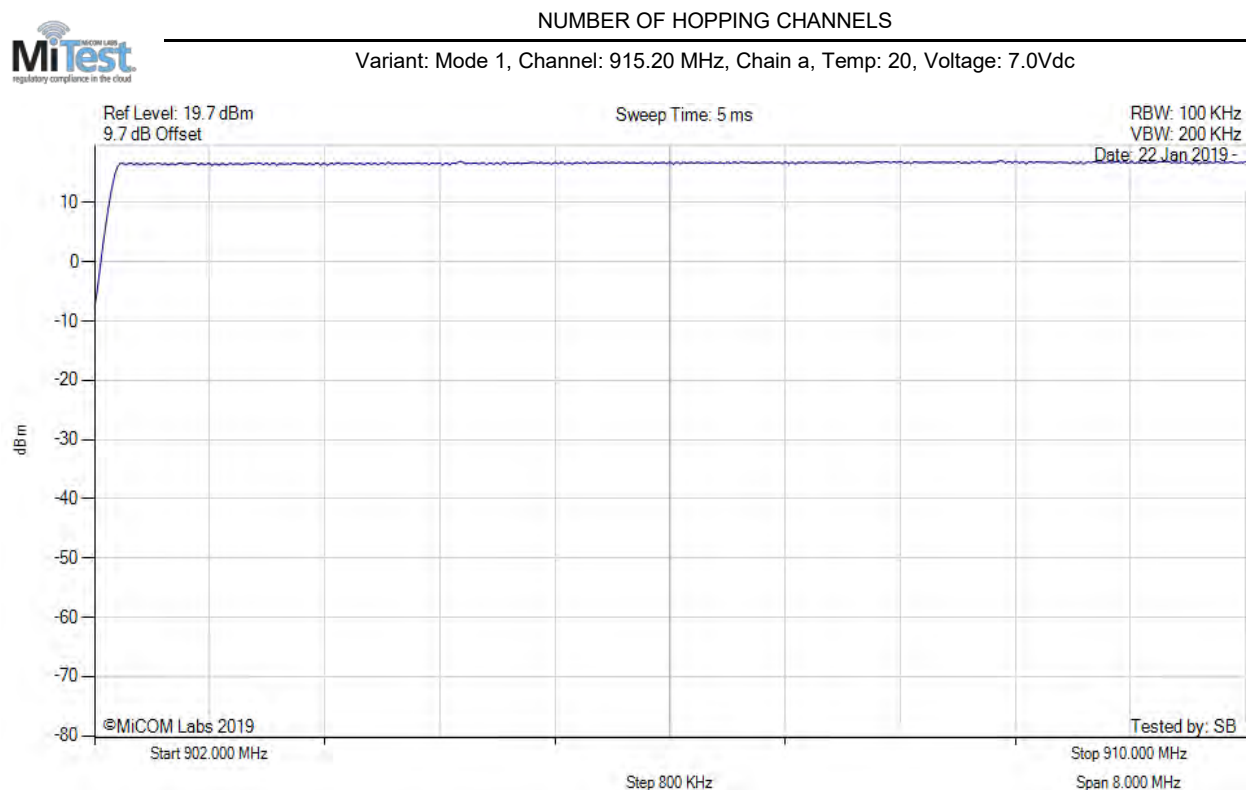
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To: FCC 15.247 & ISSED RSS-247
Serial #: ITRO09-U2 Rev A
Issue Date: 8th March 2019
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A.2. Frequency Hopping Tests

A.2.1. Number of Hopping Channels



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.20 MHz

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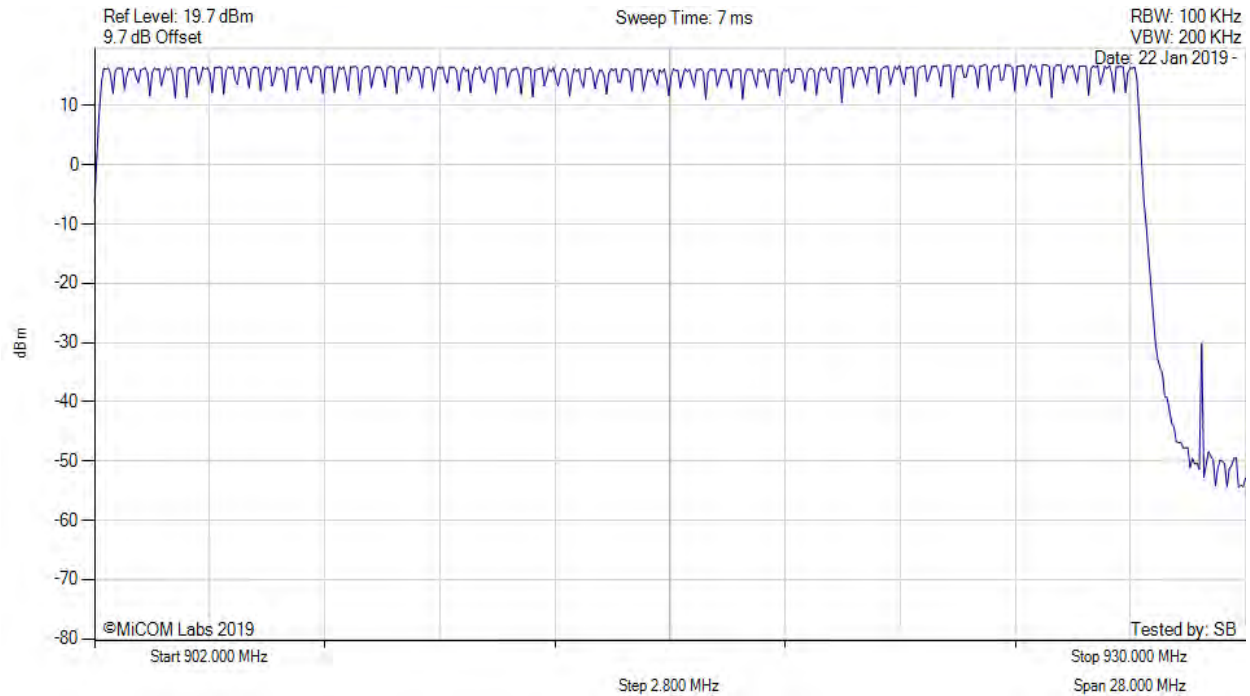


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NUMBER OF HOPPING CHANNELS

Variant: Mode 4, Channel: 914.9 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 914.90 MHz

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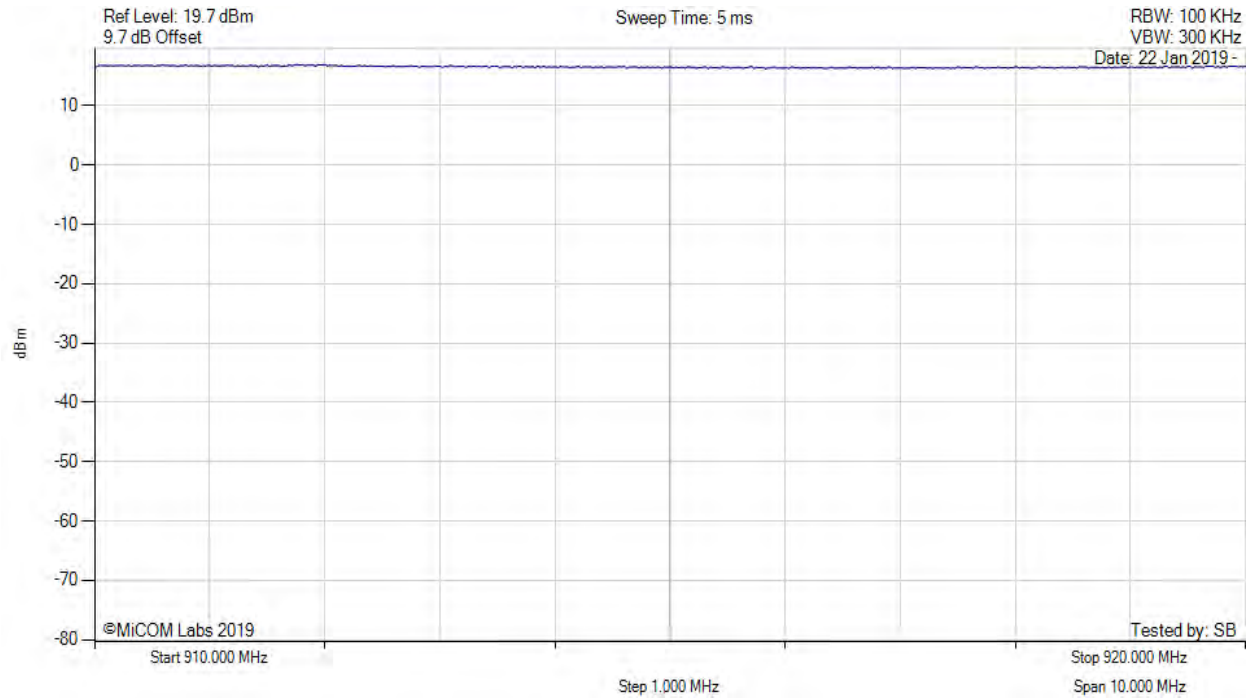


Title: Itron RIVA Modular LE
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NUMBER OF HOPPING CHANNELS

Variant: Mode 1, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.20 MHz

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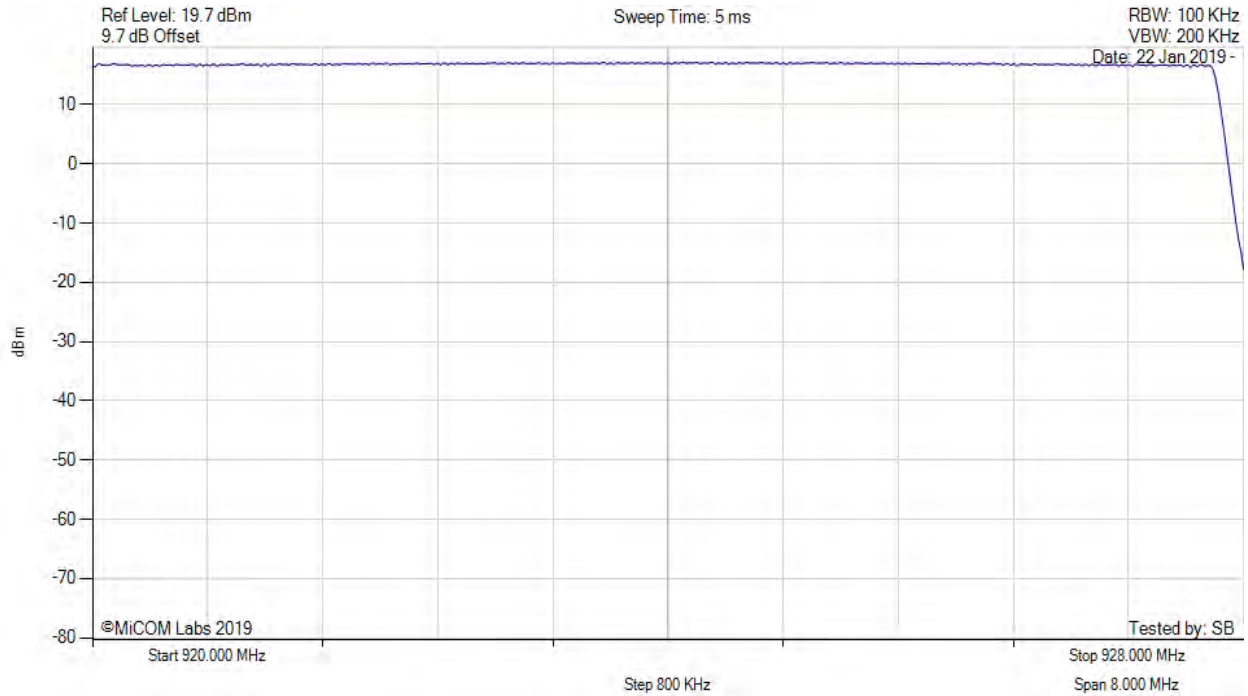


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NUMBER OF HOPPING CHANNELS

Variant: Mode 1, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker: Frequency: Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.20 MHz

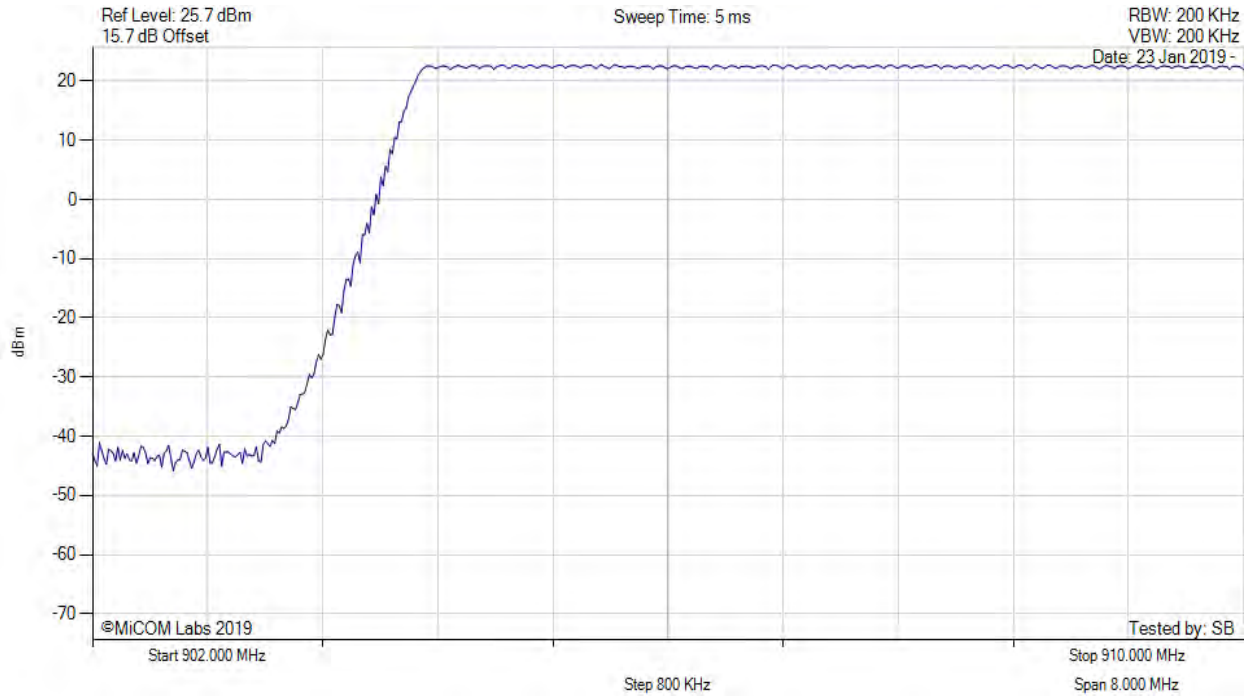
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NUMBER OF HOPPING CHANNELS

Variant: Mode 2, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.20 MHz

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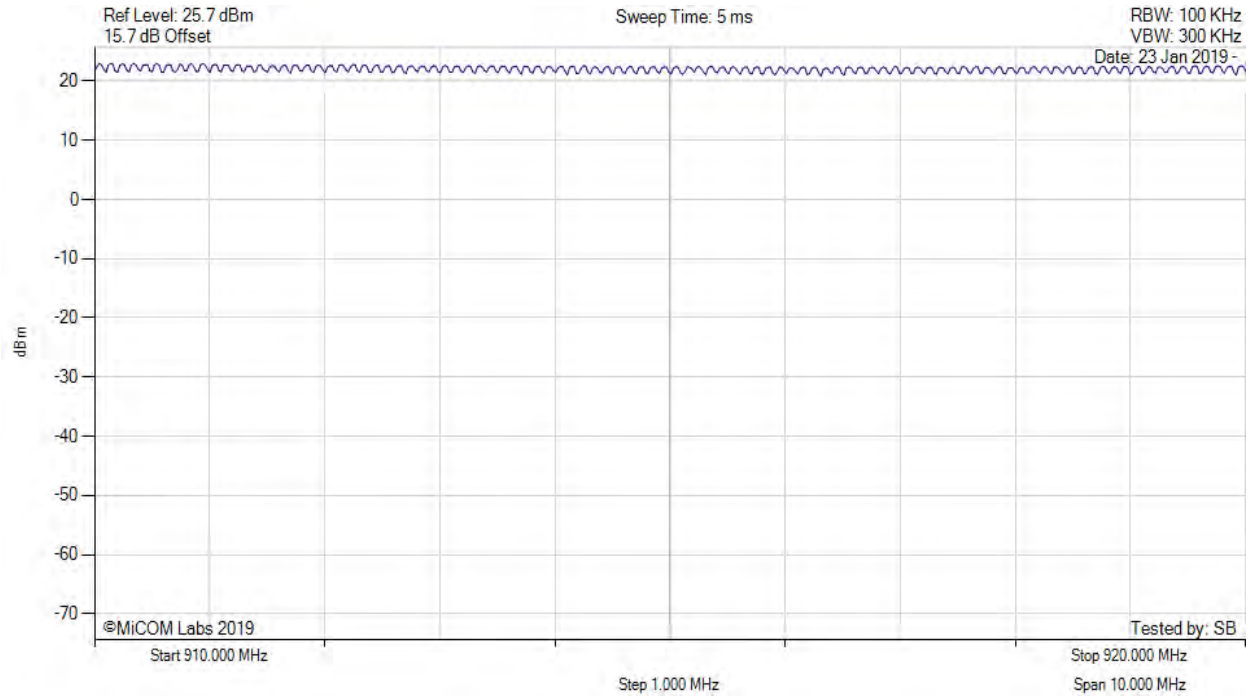


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NUMBER OF HOPPING CHANNELS

Variant: Mode 2, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.20 MHz

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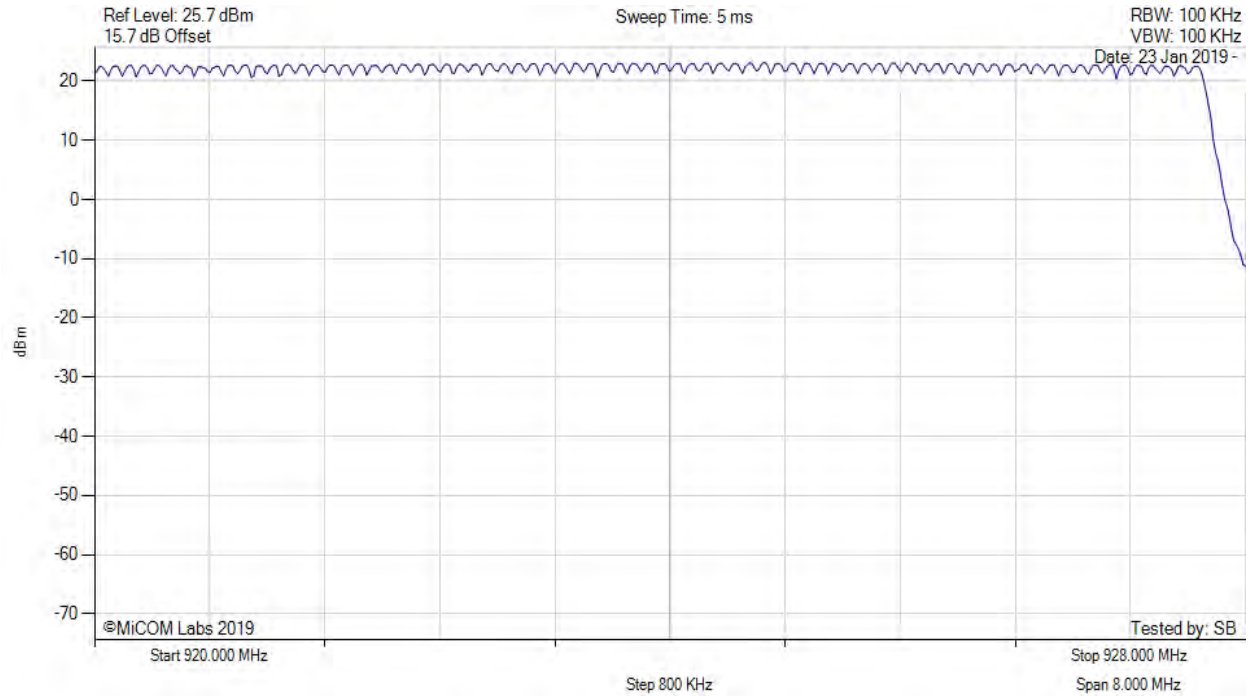


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NUMBER OF HOPPING CHANNELS

Variant: Mode 2, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.20 MHz

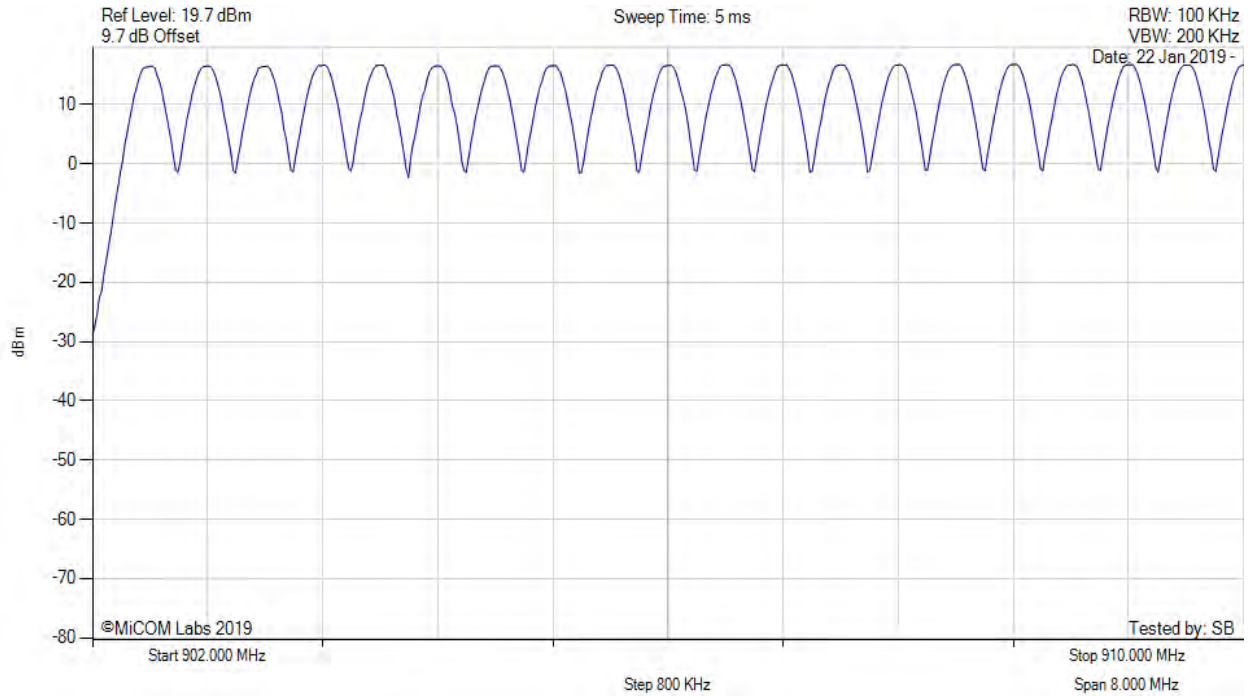
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NUMBER OF HOPPING CHANNELS

Variant: Mode 5, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.20 MHz

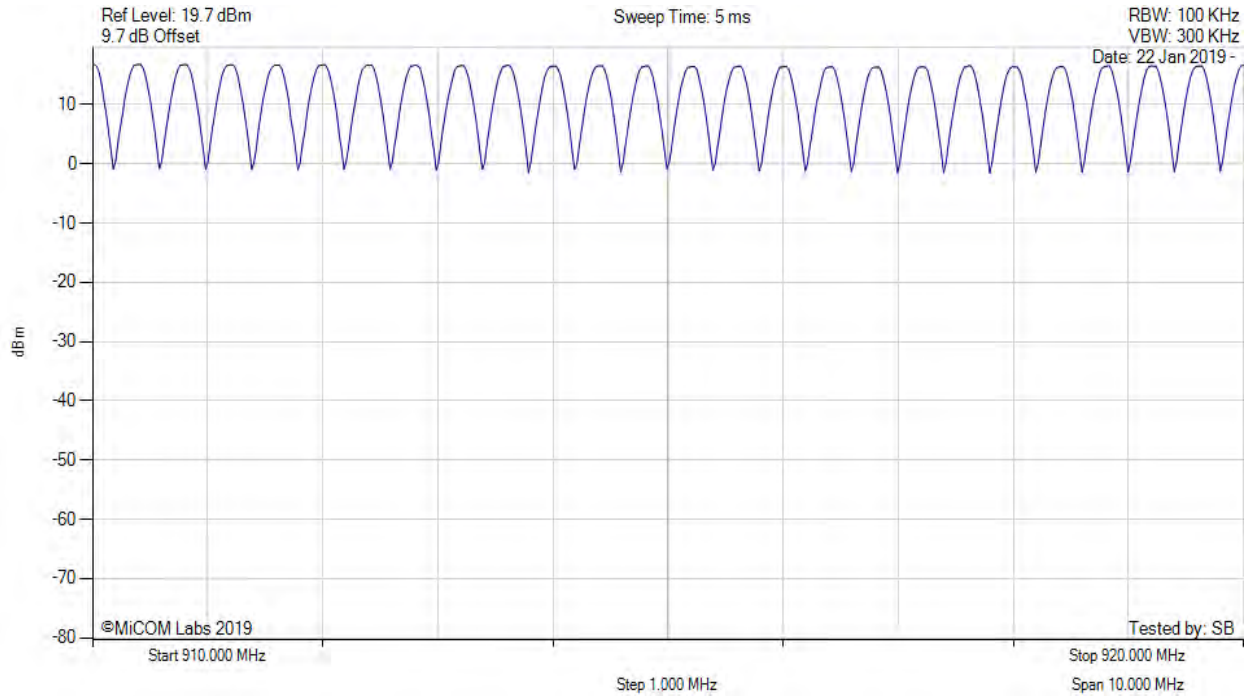
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NUMBER OF HOPPING CHANNELS

Variant: Mode 5, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker: Frequency: Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.20 MHz

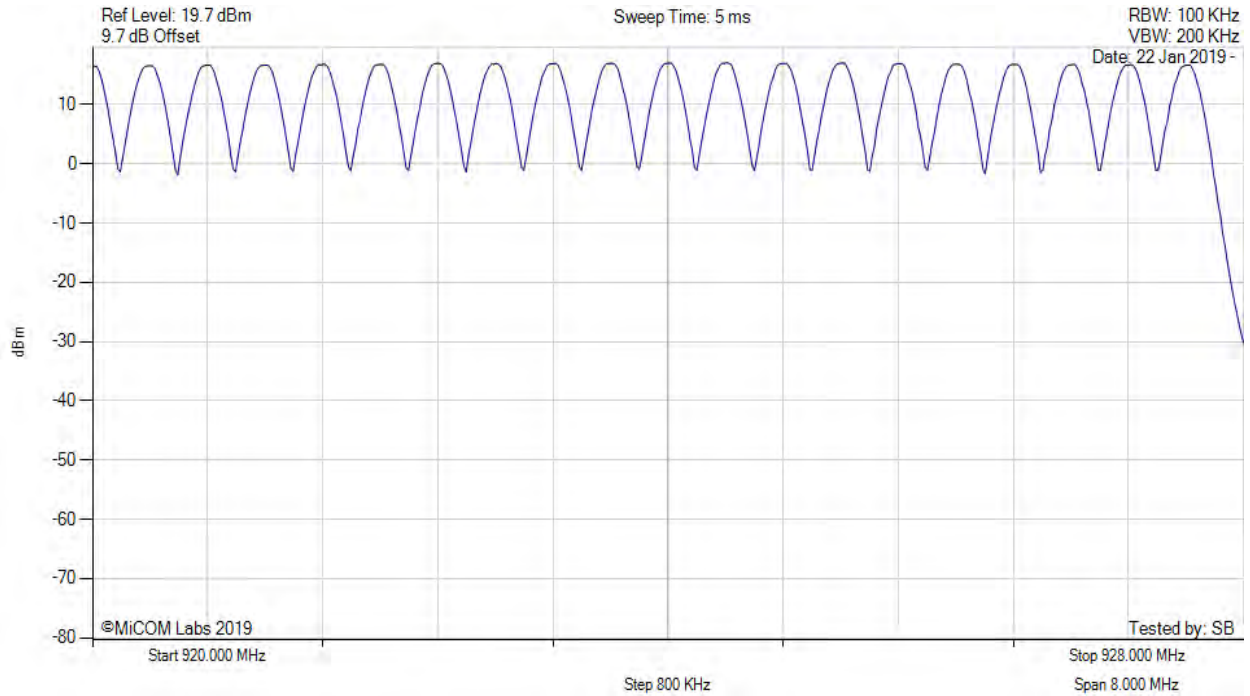
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NUMBER OF HOPPING CHANNELS

Variant: Mode 5, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.20 MHz

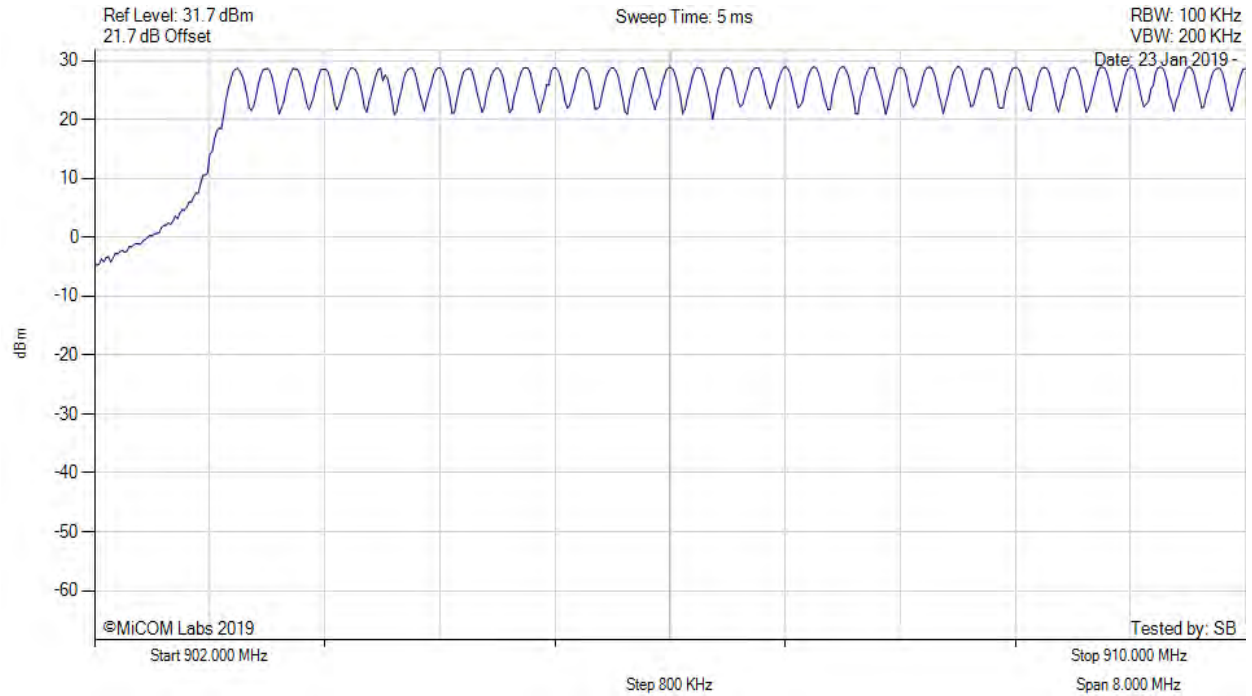
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NUMBER OF HOPPING CHANNELS

Variant: Mode 3, Channel: 915.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.00 MHz

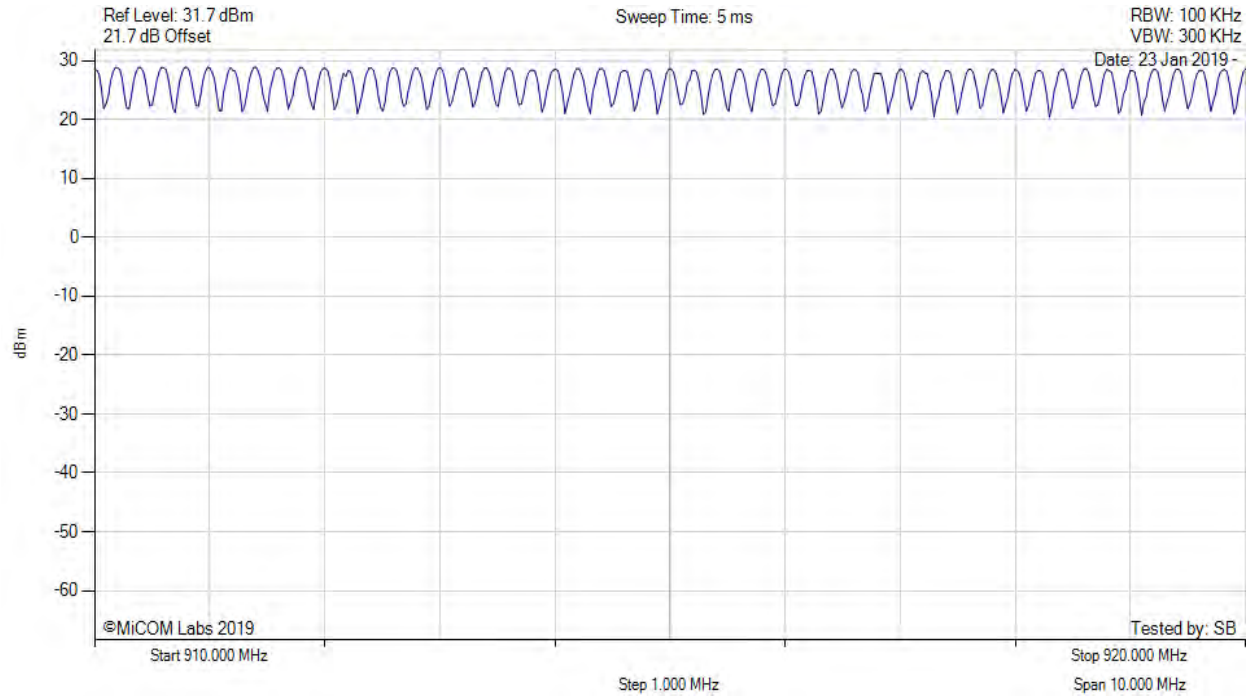
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NUMBER OF HOPPING CHANNELS

Variant: Mode 2, Channel: 915.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.00 MHz

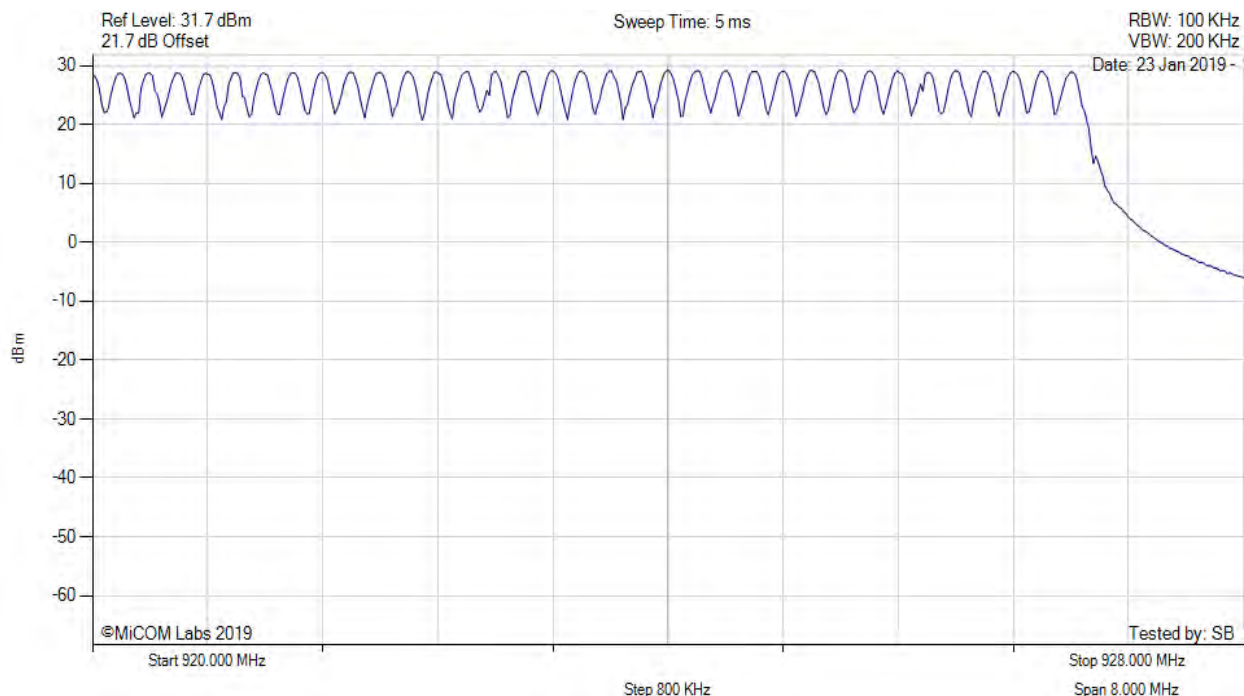
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NUMBER OF HOPPING CHANNELS

Variant: Mode 2, Channel: 915.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW		Channel Frequency: 915.00 MHz

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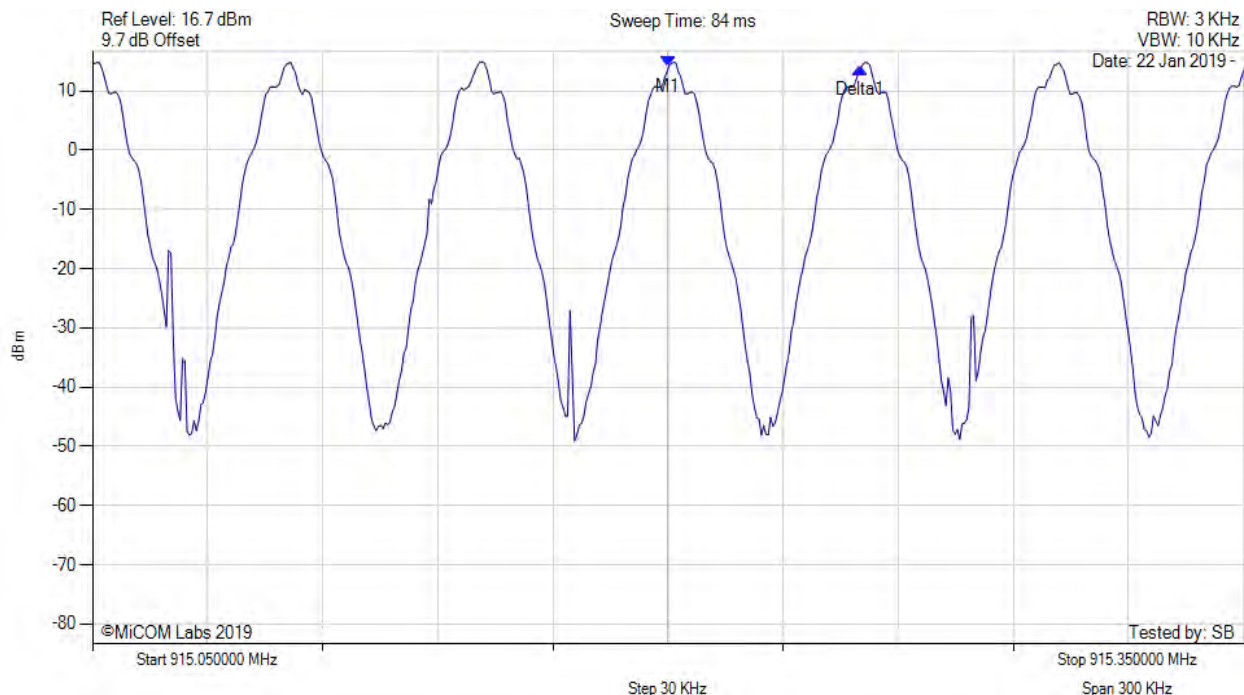
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A.2.2. Channel Separation



CHANNEL SEPARATION

Variant: Mode 1, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 915.200 MHz : 14.188 dBm Delta1 : 50 KHz : -0.409 dB	Channel Frequency: 915.20 MHz

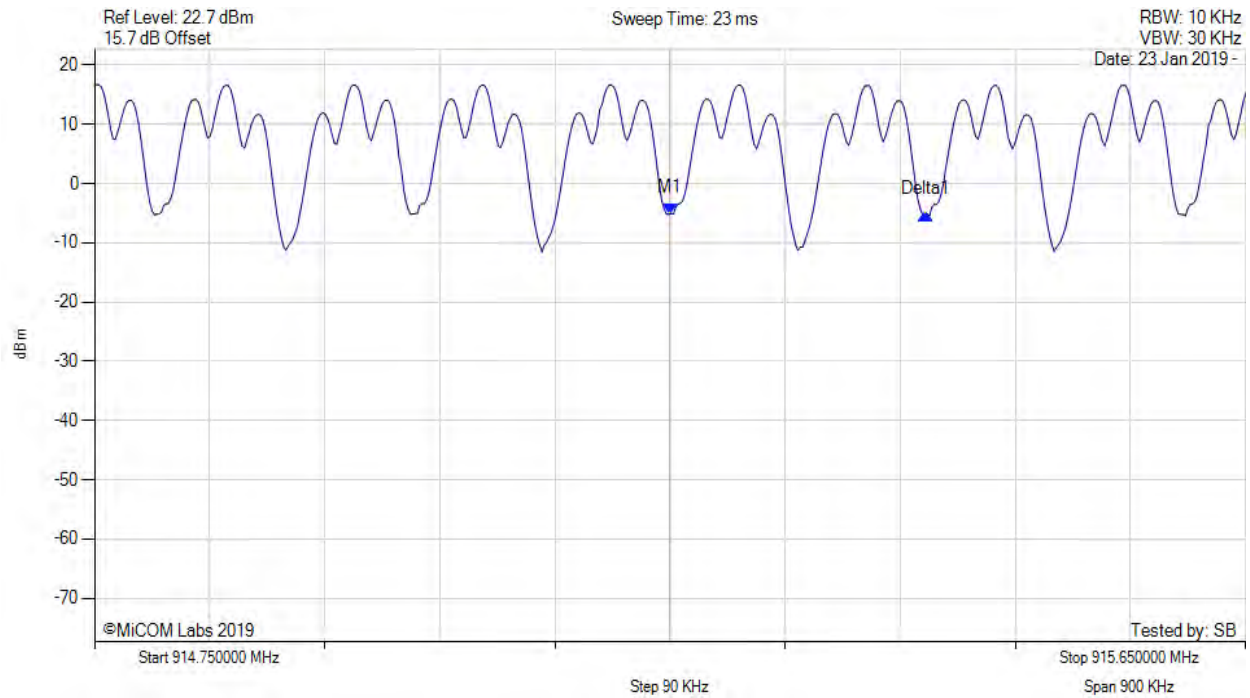
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CHANNEL SEPARATION

Variant: Mode 2, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 915.200 MHz : -5.014 dBm Delta1 : 200 KHz : -0.128 dB	Channel Frequency: 915.20 MHz

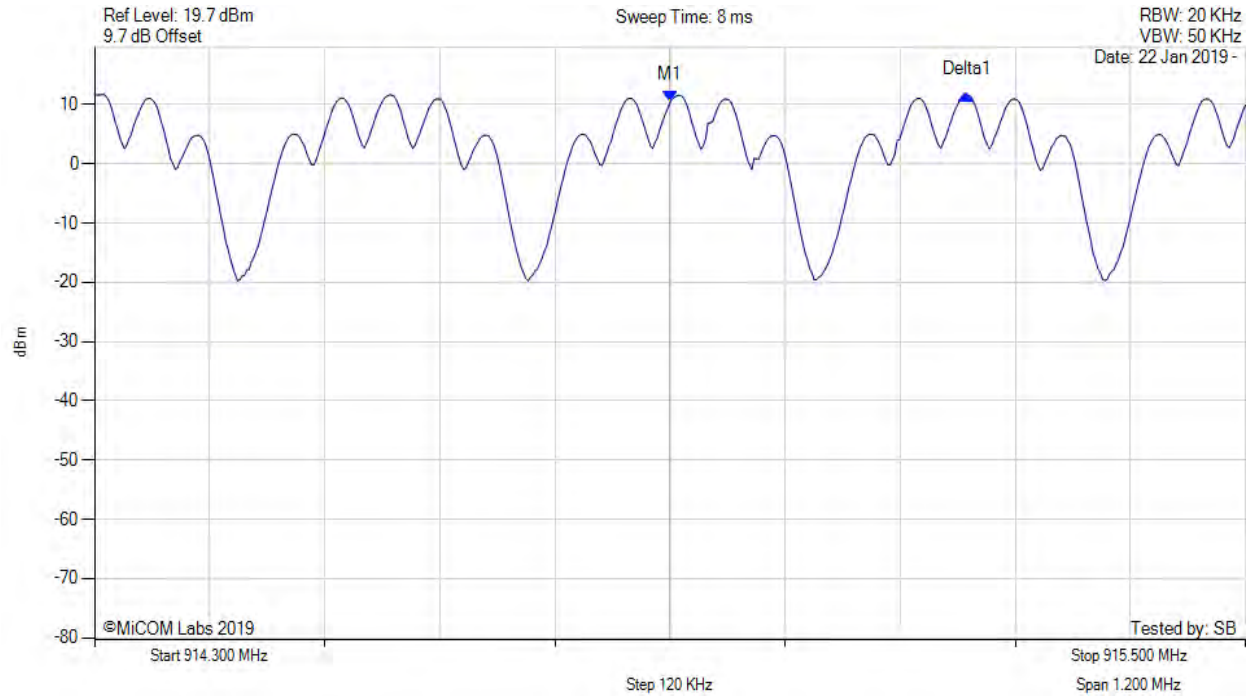
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CHANNEL SEPARATION

Variant: Mode 4, Channel: 914.90 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 914.900 MHz : 10.684 dBm Delta1 : 309 KHz : 0.946 dB	Channel Frequency: 914.90 MHz

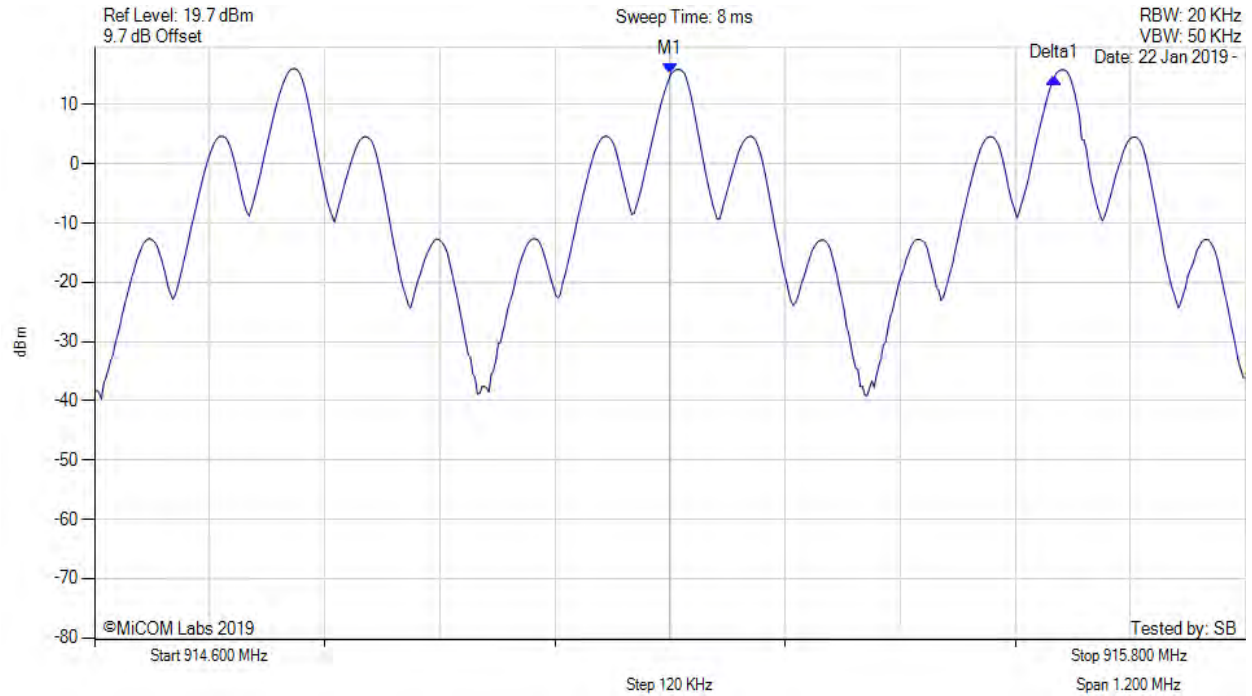
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CHANNEL SEPARATION

Variant: Mode 5, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 915.200 MHz : 15.252 dBm Delta1 : 400 KHz : -0.791 dB	Channel Frequency: 915.20 MHz

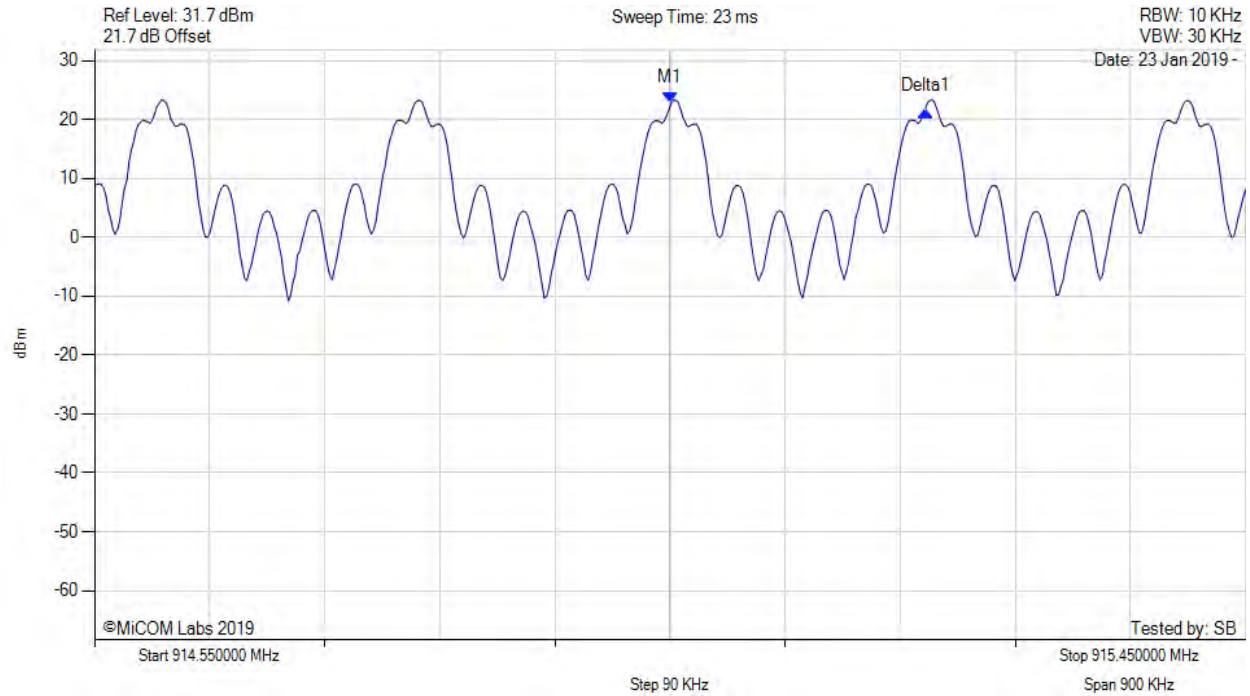
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CHANNEL SEPARATION

Variant: Mode 3, Channel: 915.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc

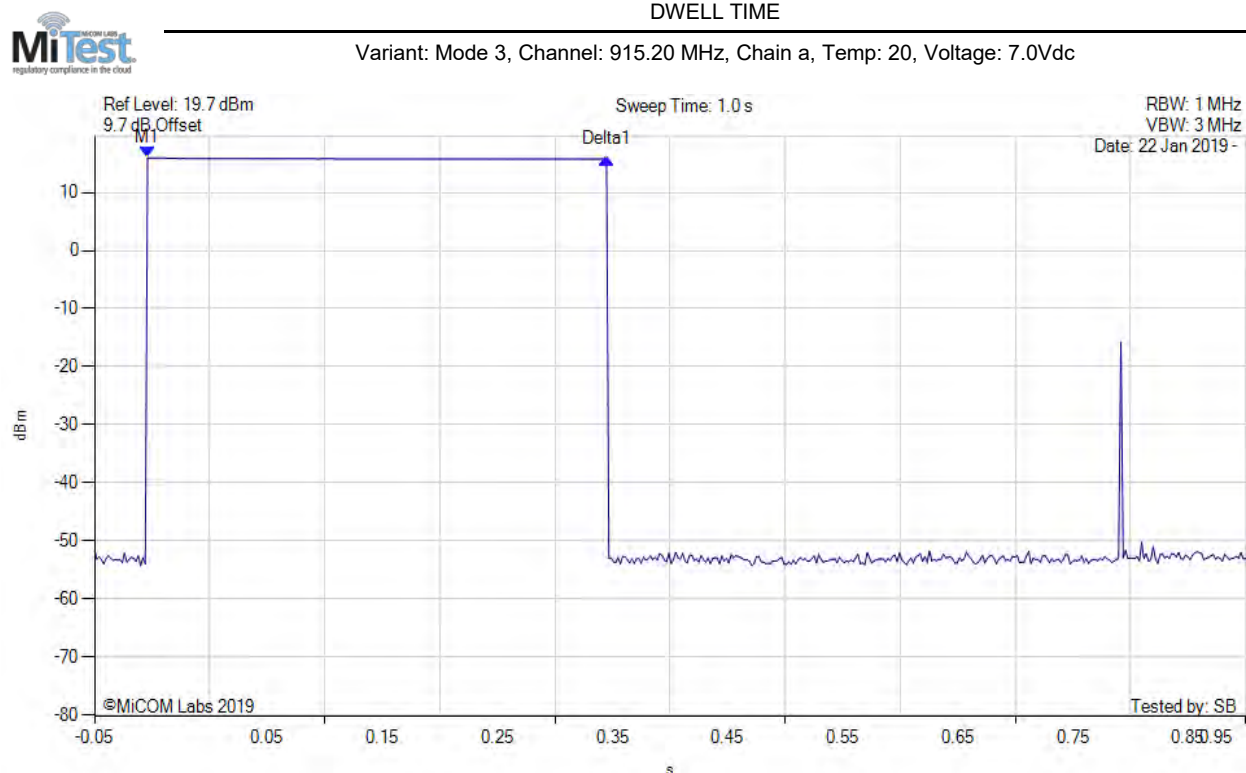


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 915.000 MHz : 22.808 dBm Delta1 : 200 KHz : -1.279 dB	Channel Frequency: 915.00 MHz

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A.2.3. Dwell Time



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1(915.20 MHz) : -0.004 s : 15.988 dBm Delta1(915.20 MHz) : 0.399 s : -0.220 dB	Channel Frequency: 915.20 MHz

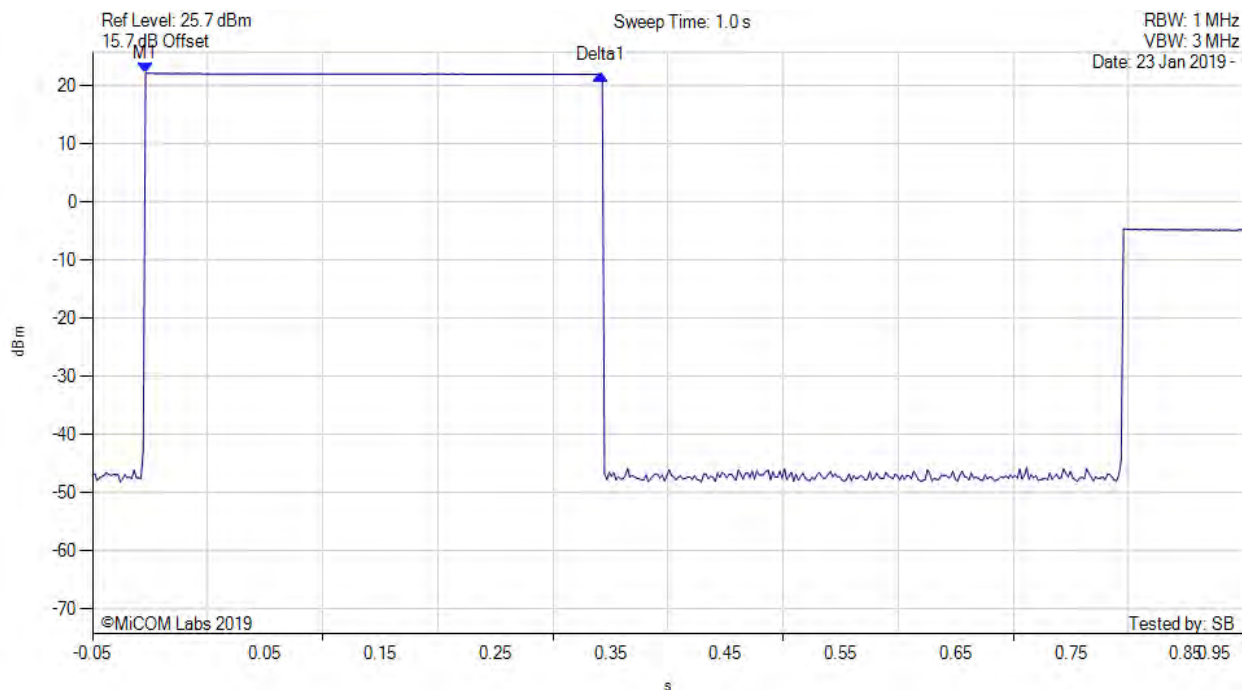
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DWELL TIME

Variant: Mode 2, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



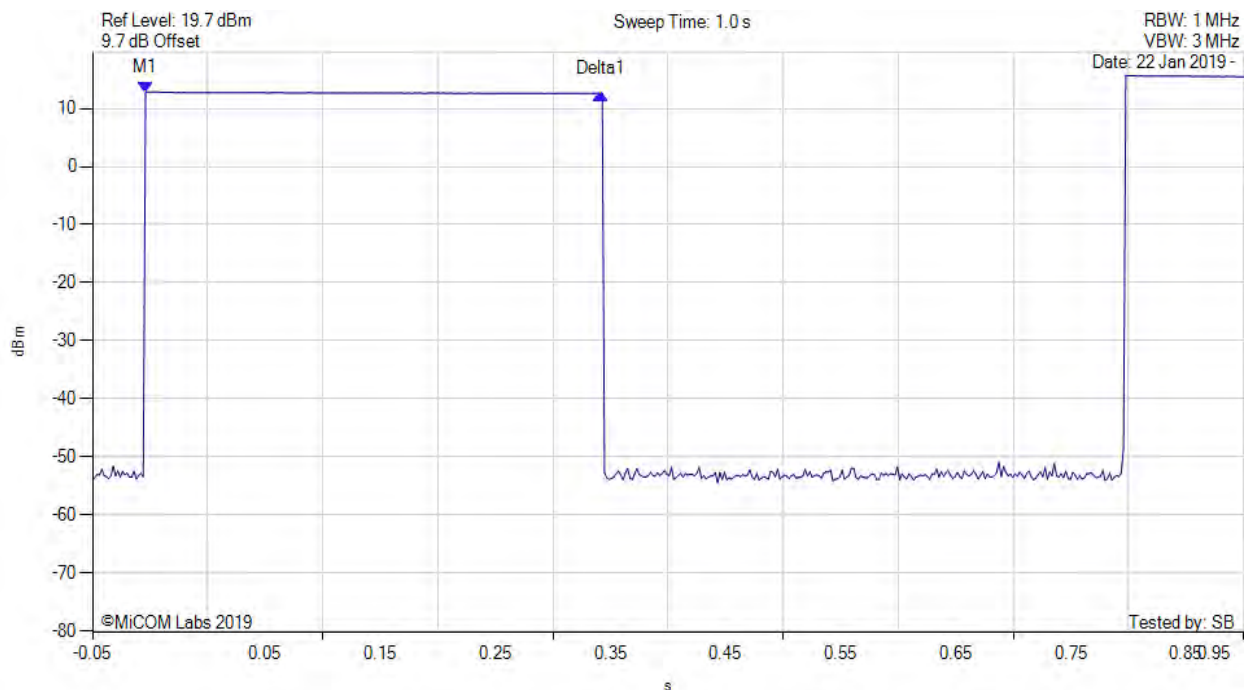
Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1(915.20 MHz) : -0.004 s : 22.110 dBm Delta1(915.20 MHz) : 0.396 s : -0.214 dB	Channel Frequency: 915.20 MHz

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DWELL TIME

Variant: Mode 4, Channel: 914.90 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



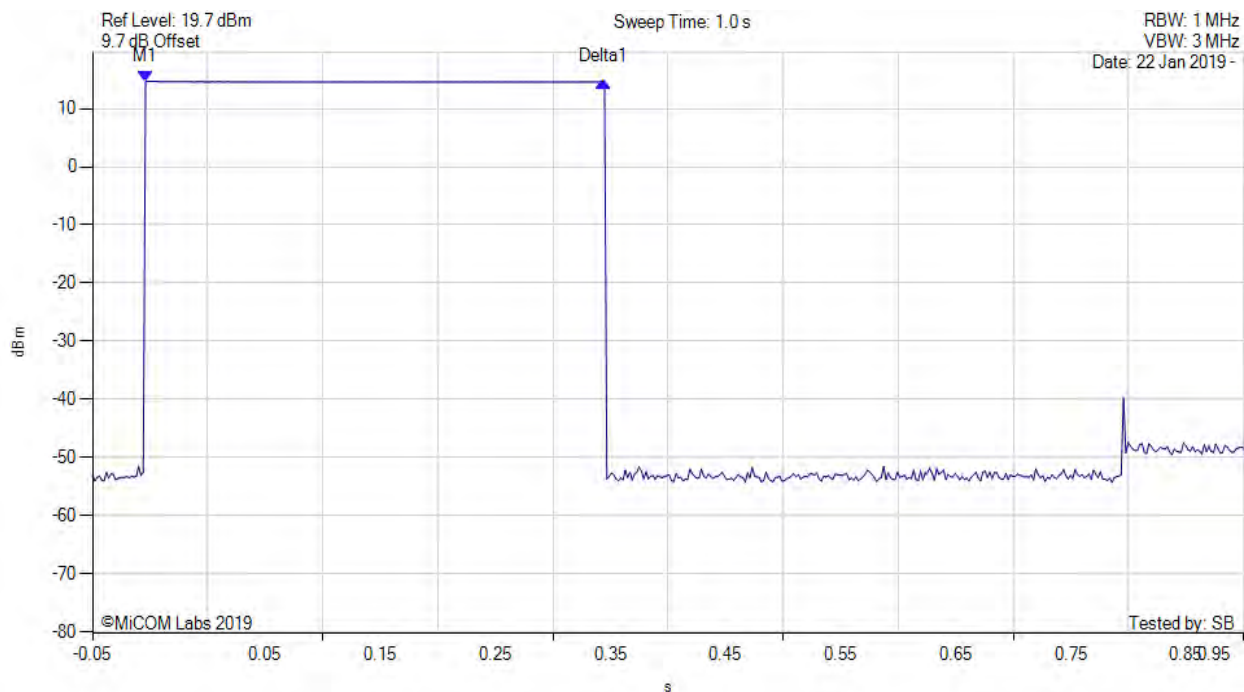
Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = CLR/WRITE	M1(914.90 MHz) : -0.004 s : 12.838 dBm Delta1(914.90 MHz) : 0.396 s : -0.254 dB	Channel Frequency: 914.90 MHz

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DWELL TIME

Variant: Mode 5, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1(915.20 MHz) : -0.004 s : 14.701 dBm Delta1(915.20 MHz) : 0.398 s : -0.092 dB	Channel Frequency: 915.20 MHz

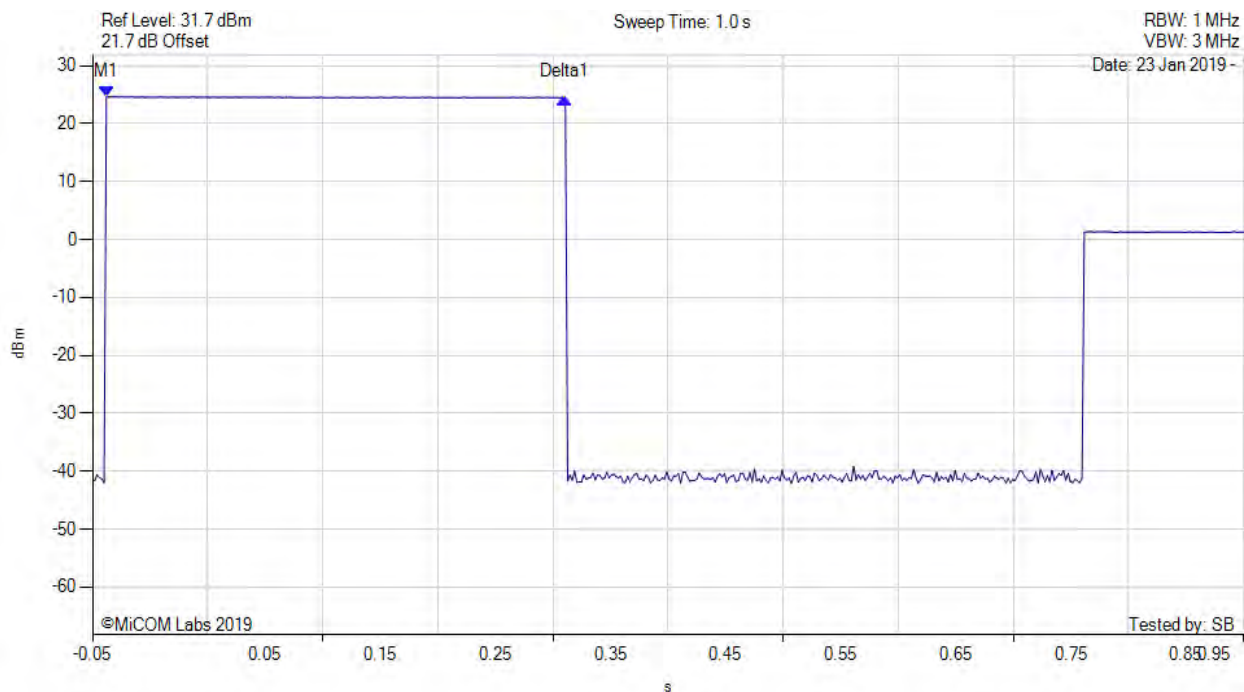
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DWELL TIME

Variant: Mode 2, Channel: 915.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1(915.00 MHz) : -0.038 s : 24.582 dBm Delta1(915.00 MHz) : 0.398 s : -0.073 dB	Channel Frequency: 915.00 MHz

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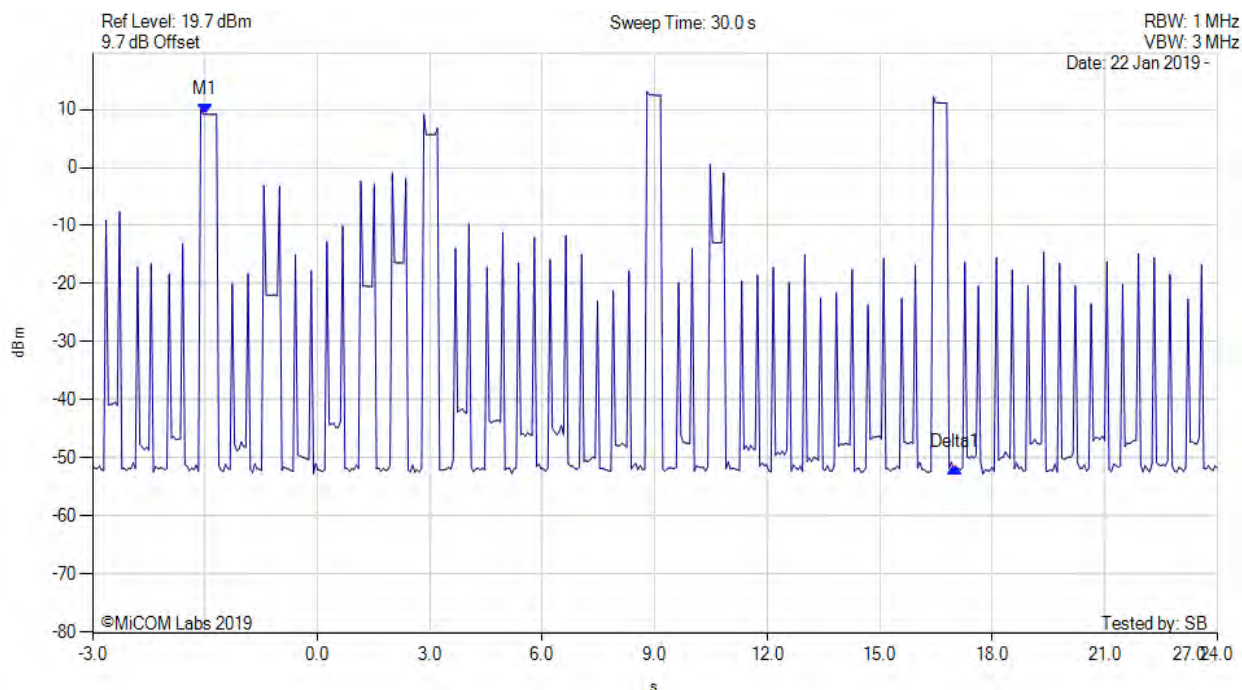
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A.2.4. Channel Occupancy



CHANNEL OCCUPANCY

Variant: Mode 3, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1(915.20 MHz) : 0.000 s : 9.184 dBm Delta1(915.20 MHz) : 20.000 s : -60.864 dB	Channel Frequency: 915.20 MHz

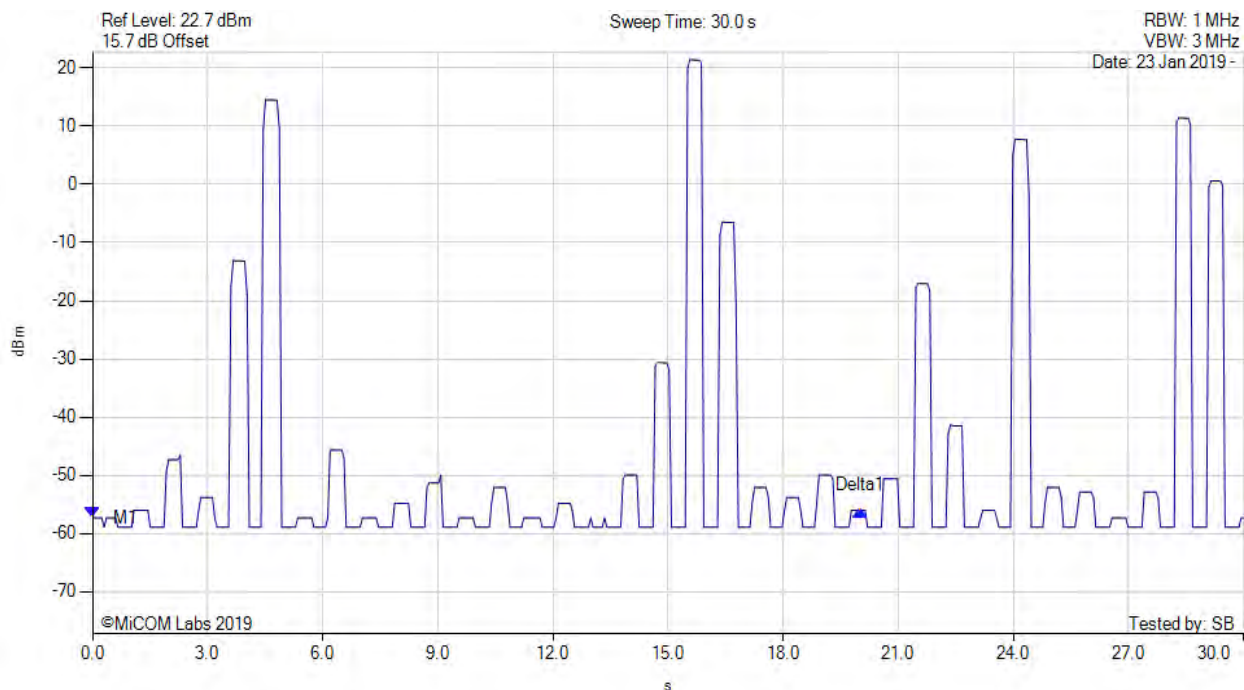
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CHANNEL OCCUPANCY

Variant: Mode 2, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = RMS Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1(915.20 MHz) : 0.000 s : -57.302 dBm Delta1(915.20 MHz) : 20.000 s : 1.339 dB	Channel Frequency: 915.20 MHz

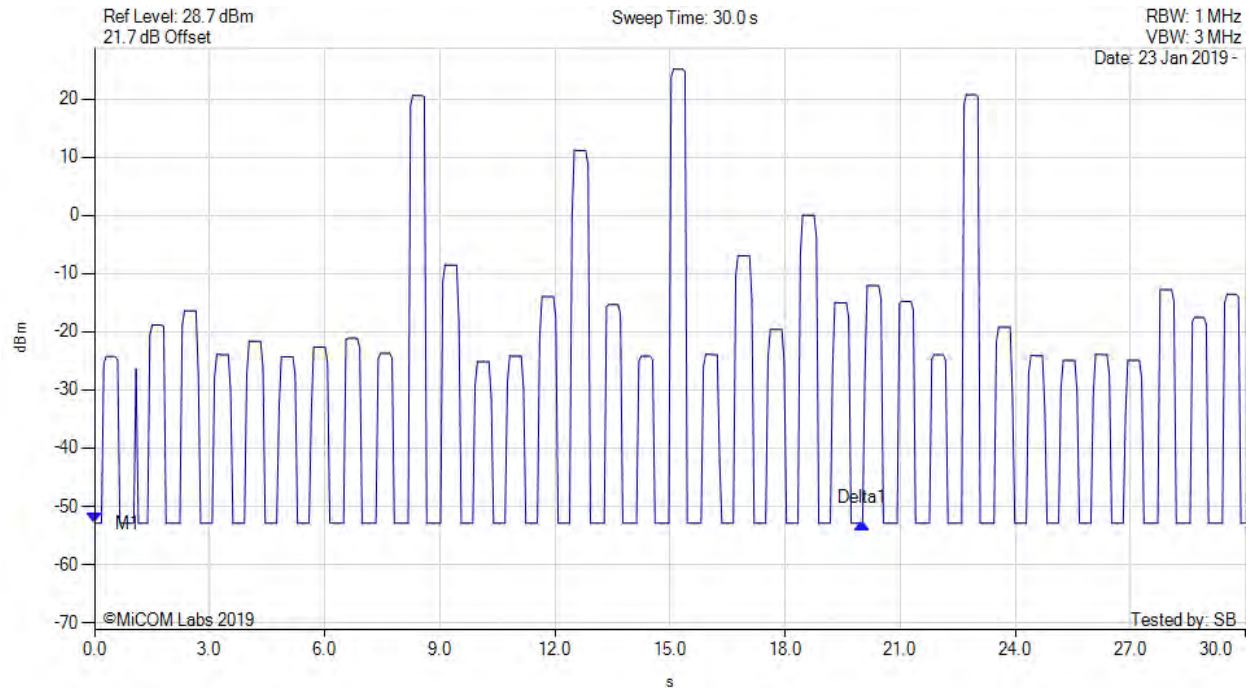
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CHANNEL OCCUPANCY



Variant: Mode 2, Channel: 915.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = RMS Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1(915.00 MHz) : 0.000 s : -52.886 dBm Delta1(915.00 MHz) : 20.000 s : 0.000 dB	Channel Frequency: 915.00 MHz

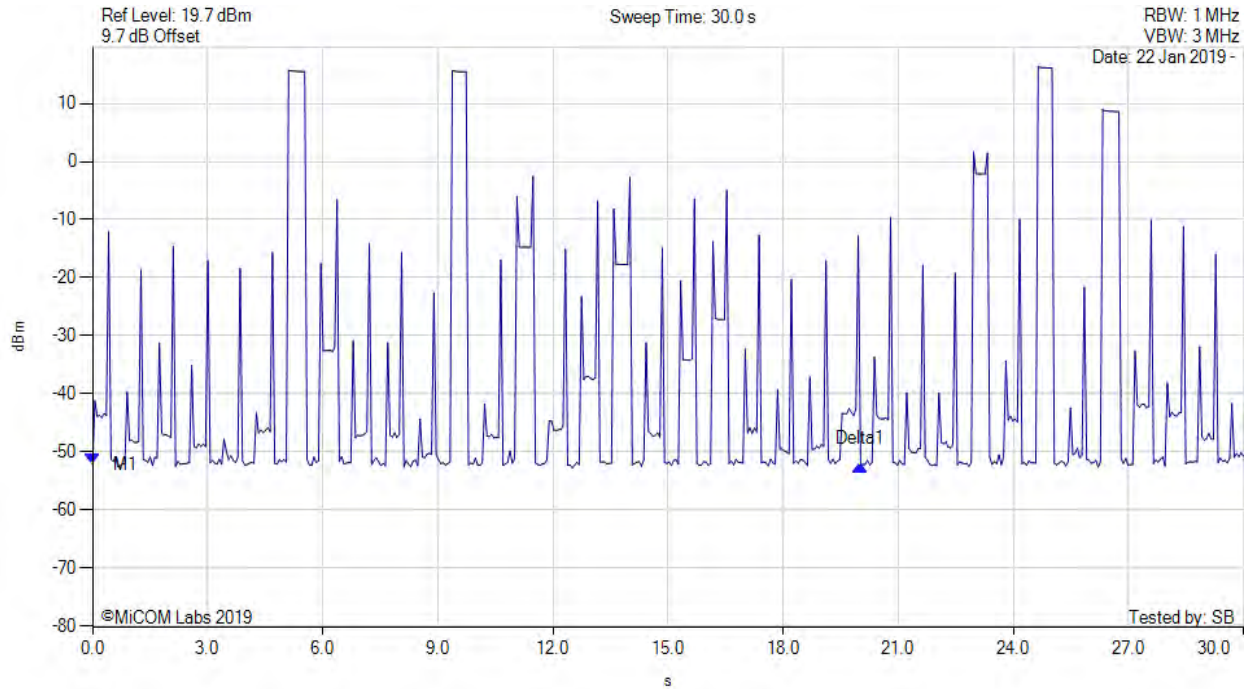
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CHANNEL OCCUPANCY

Variant: Mode 4, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = CLR/WRITE	M1(914.90 MHz) : 0.000 s : -52.225 dBm Delta1(914.90 MHz) : 20.000 s : -0.022 dB	Channel Frequency: 914.90 MHz

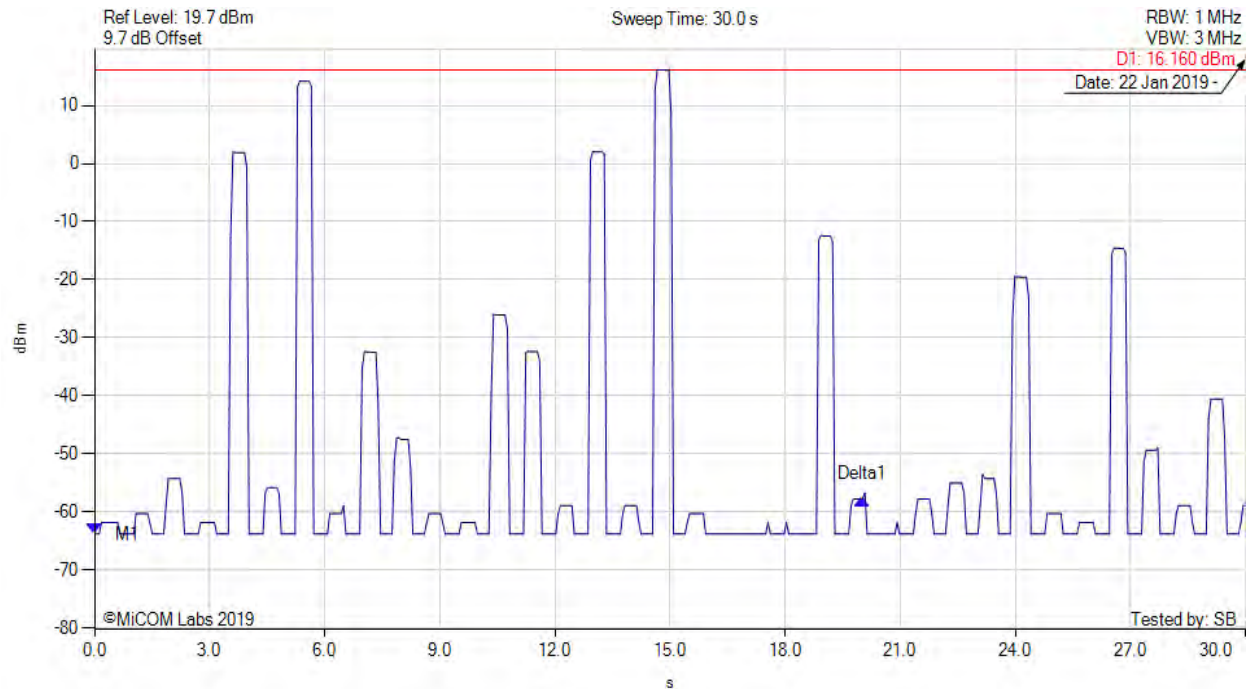
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CHANNEL OCCUPANCY

Variant: Mode 5, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = RMS Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1(915.20 MHz) : 0.000 s : -63.824 dBm Delta1(915.20 MHz) : 20.000 s : 6.021 dB	Channel Frequency: 915.20 MHz

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Title: Itron RIVA Modular LE
To: FCC 15.247 & ISED RSS-247
Serial #: ITRO09-U2 Rev A
Issue Date: 8th March 2019
Page: 103 of 140

A.3. Output Power

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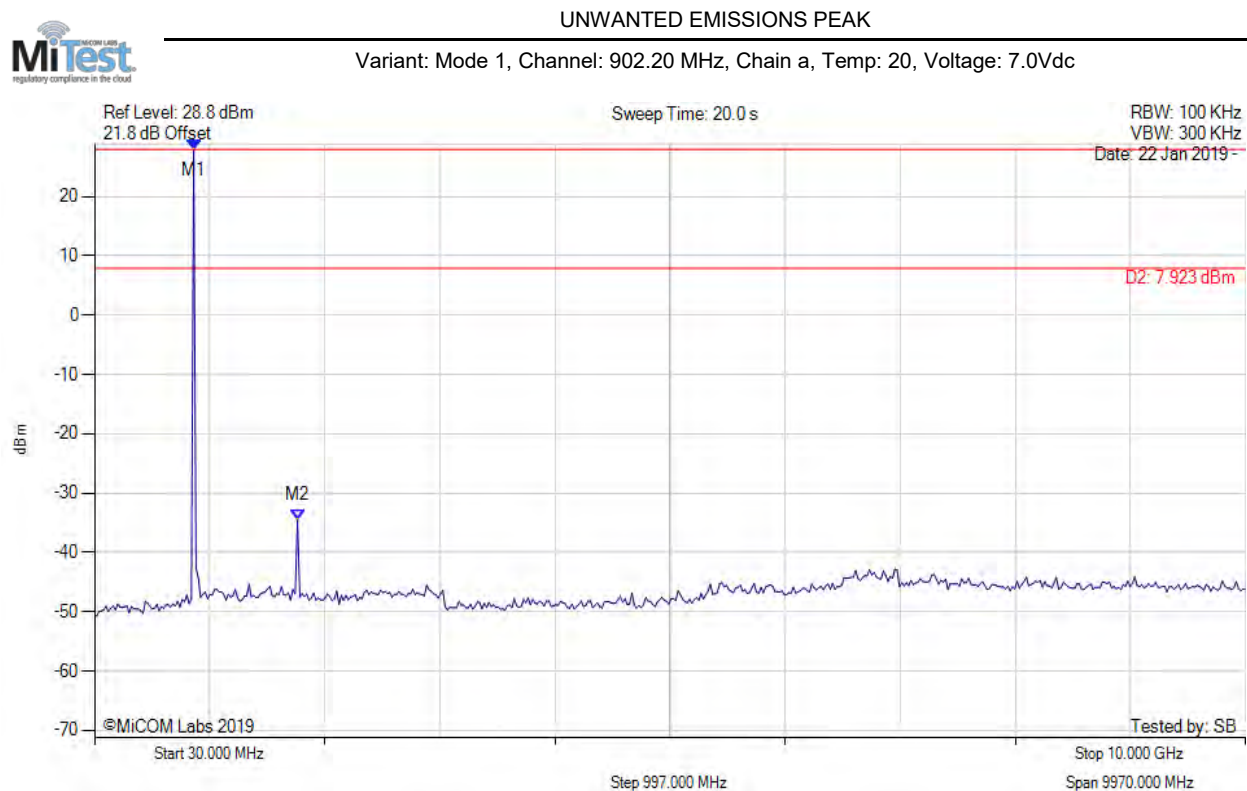
Title: Itron RIVA Modular LE
To: FCC 15.247 & ISED RSS-247
Serial #: ITRO09-U2 Rev A
Issue Date: 8th March 2019
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A.4. Emissions

A.4.1. Conducted Emissions

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A.4.1.1. Conducted Unwanted Spurious Emissions



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 889.138 MHz : 27.923 dBm M2 : 1788.236 MHz : -34.547 dBm	Limit: 7.92 dBm Margin: -42.47 dB

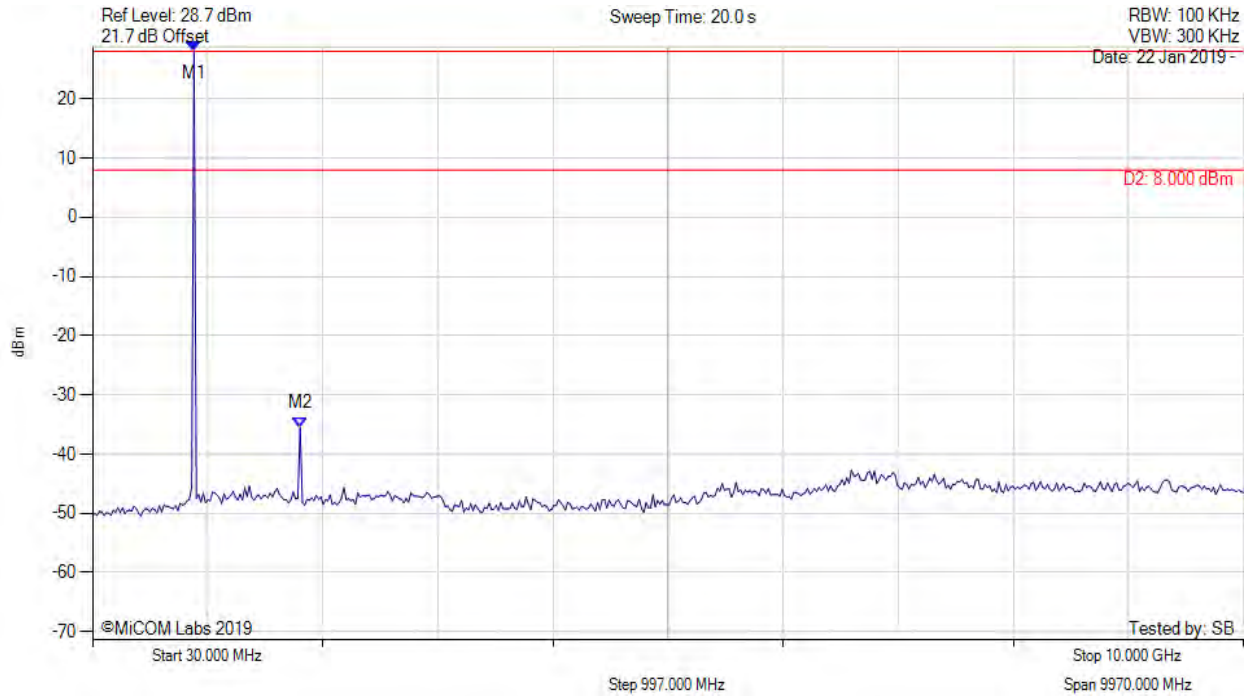
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UNWANTED EMISSIONS PEAK

Variant: Mode 1, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 909.118 MHz : 28.000 dBm M2 : 1828.196 MHz : -35.566 dBm	Limit: 8.00 dBm Margin: -43.57 dB

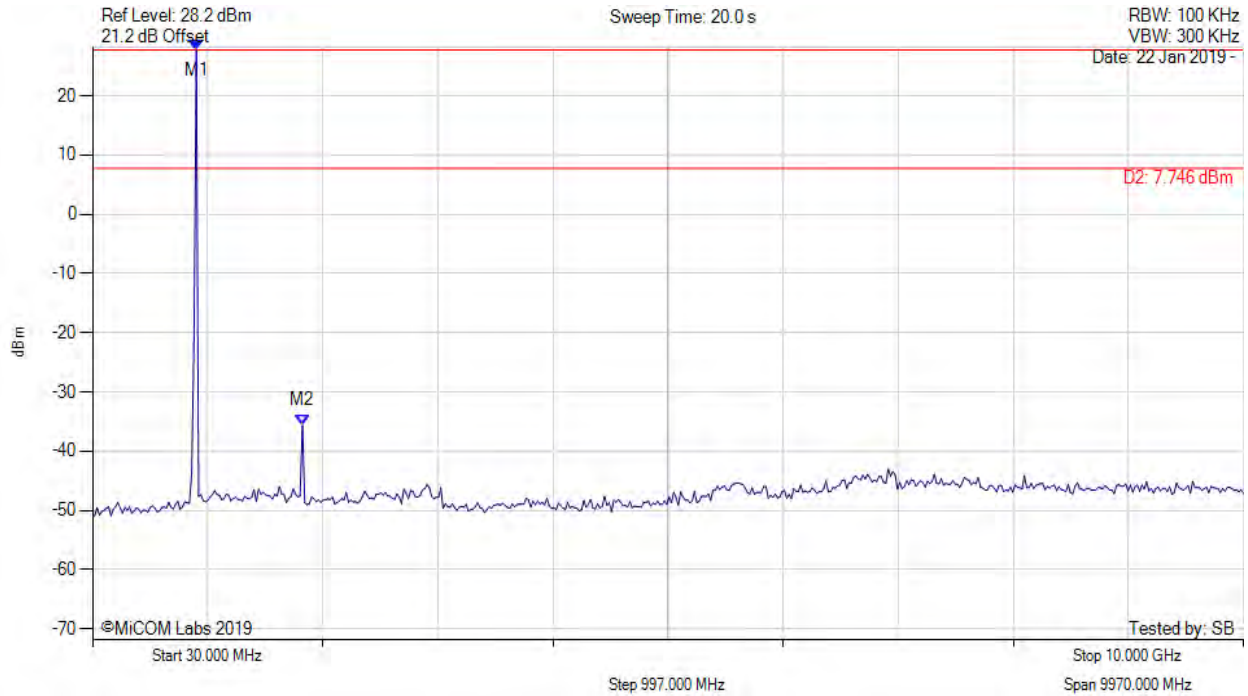
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UNWANTED EMISSIONS PEAK

Variant: Mode 1, Channel: 927.75 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 929.098 MHz : 27.746 dBm M2 : 1848.176 MHz : -35.664 dBm	Limit: 7.75 dBm Margin: -43.41 dB

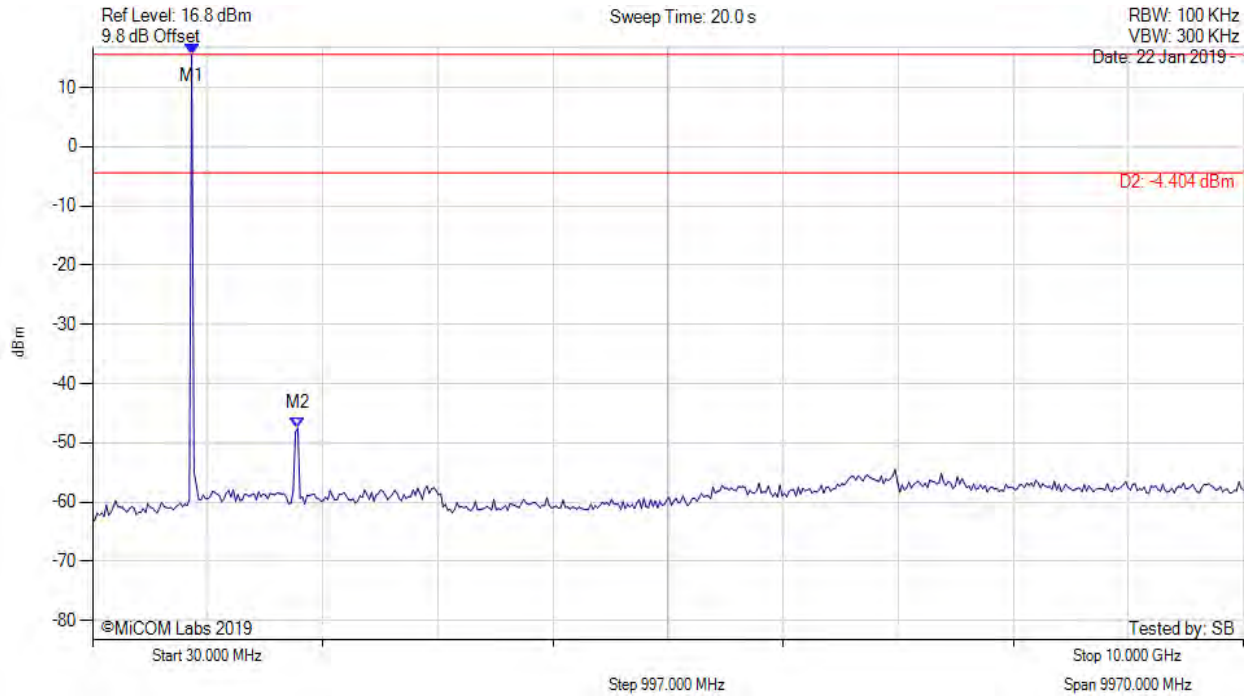
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UNWANTED EMISSIONS PEAK

Variant: Mode 4, Channel: 902.30 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 889.138 MHz : 15.596 dBm M2 : 1808.216 MHz : -47.527 dBm	Limit: -4.40 dBm Margin: -43.13 dB

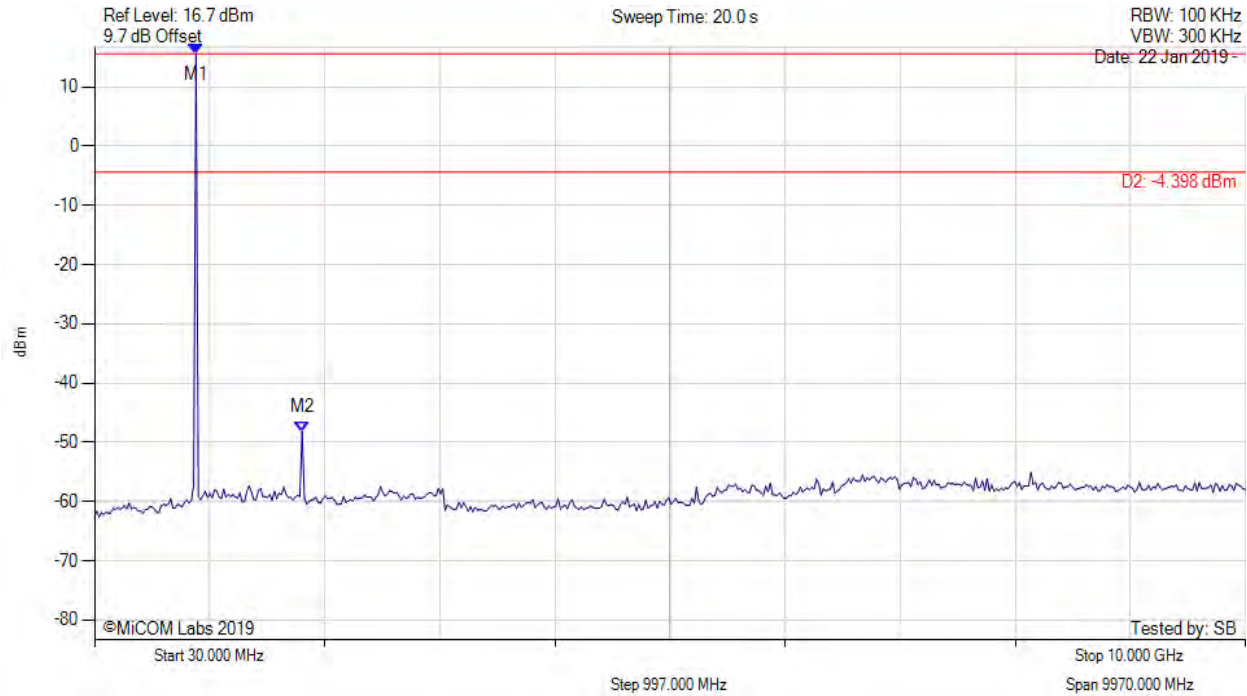
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UNWANTED EMISSIONS PEAK

Variant: Mode 4, Channel: 914.90 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 909.118 MHz : 15.602 dBm M2 : 1828.196 MHz : -48.217 dBm	Limit: -4.40 dBm Margin: -43.82 dB

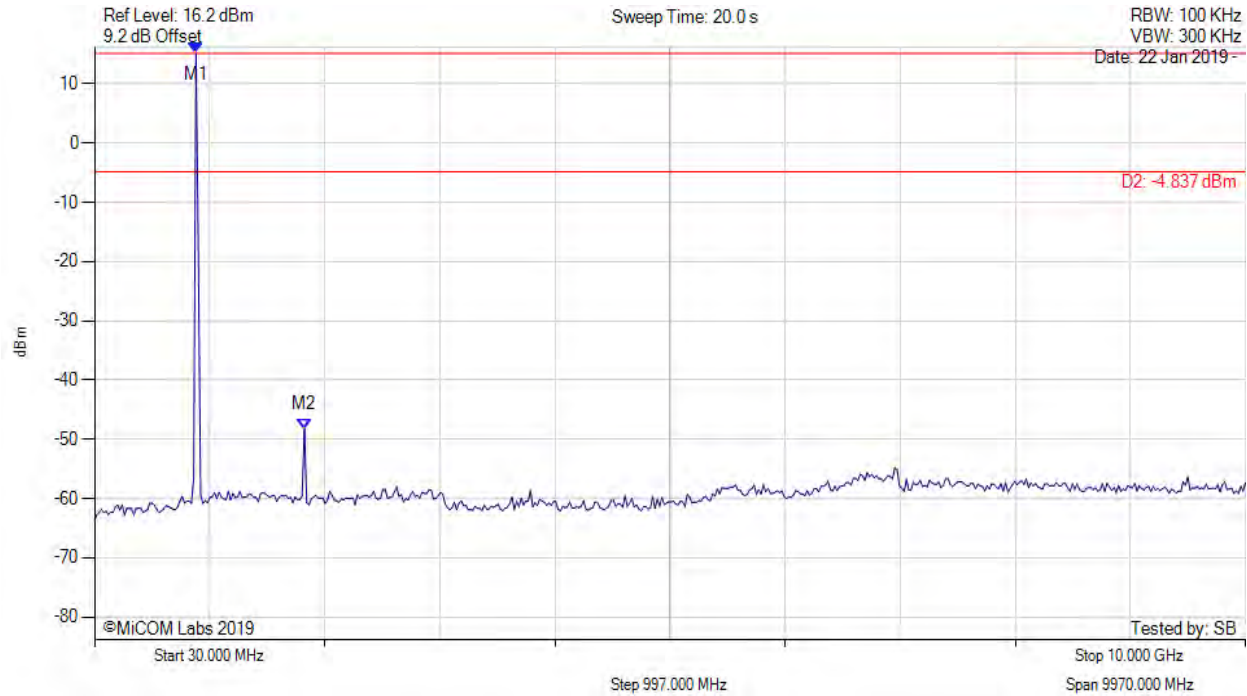
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UNWANTED EMISSIONS PEAK

Variant: Mode 4, Channel: 926.90 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 909.118 MHz : 15.163 dBm M2 : 1848.176 MHz : -48.262 dBm	Limit: -4.84 dBm Margin: -43.42 dB

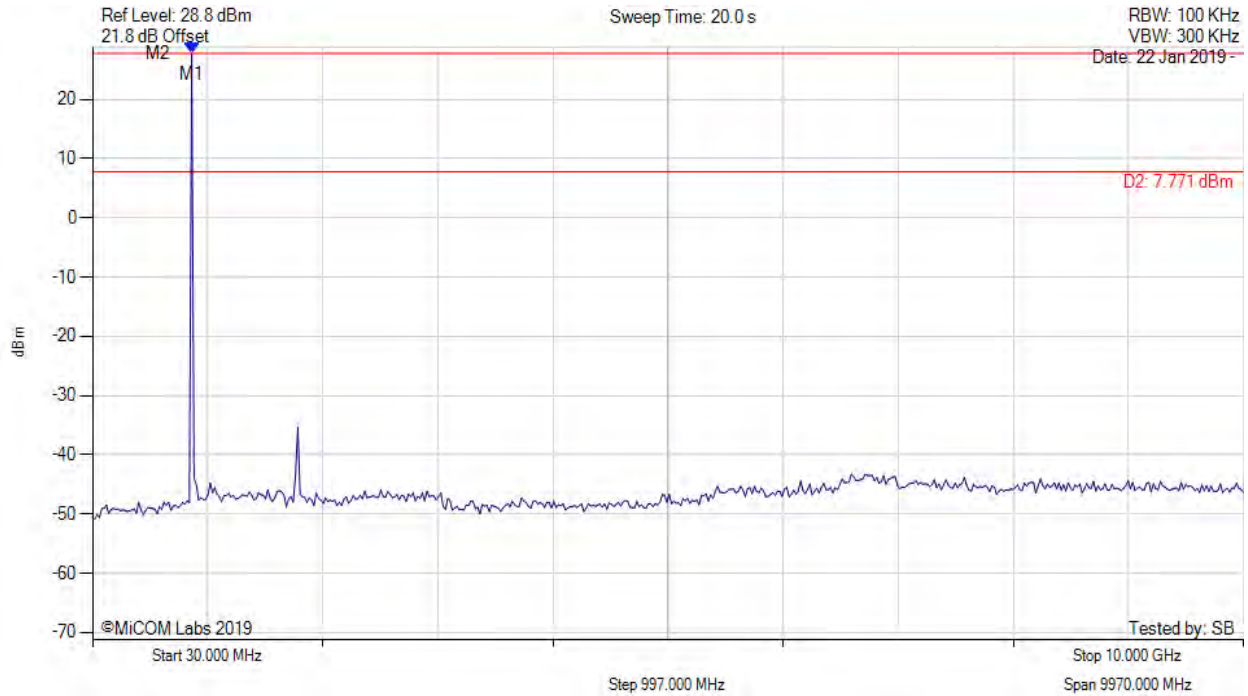
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UNWANTED EMISSIONS PEAK

Variant: Mode 5, Channel: 902.40 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 889.138 MHz : 27.771 dBm M2 : 889.138 MHz : 27.771 dBm	Limit: 7.77 dBm Margin: 20.00 dB

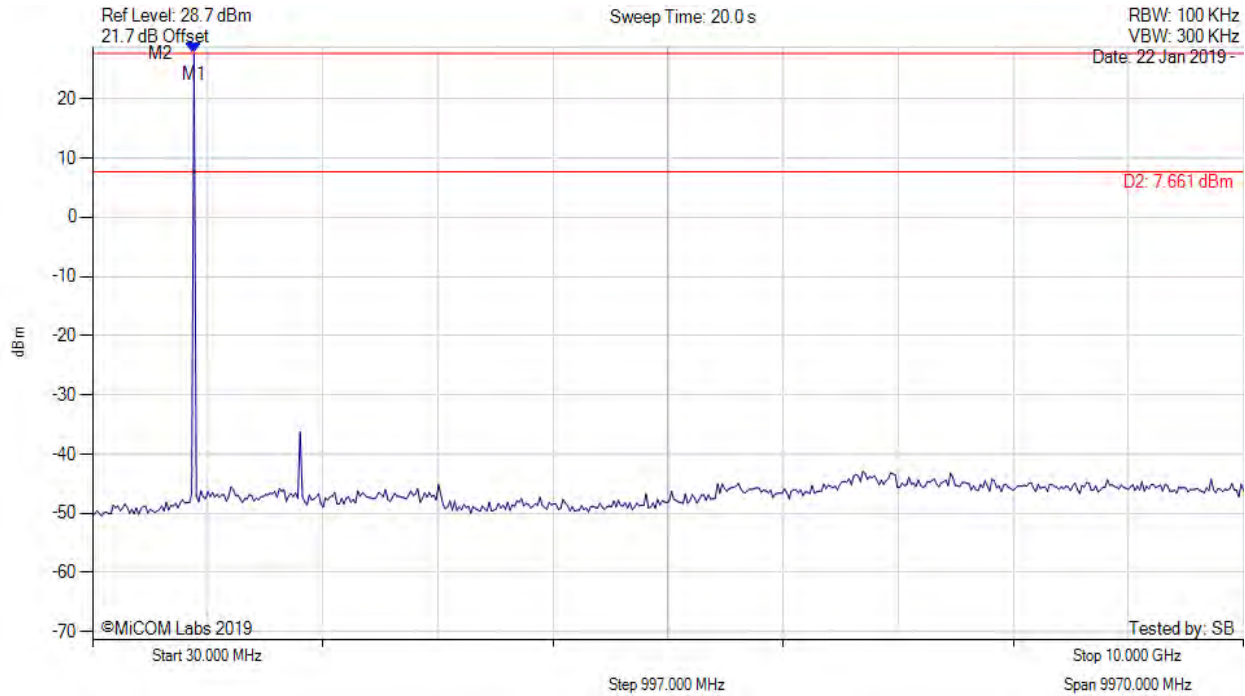
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UNWANTED EMISSIONS PEAK

Variant: Mode 5, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 909.118 MHz : 27.661 dBm M2 : 909.118 MHz : 27.661 dBm	Limit: 7.66 dBm Margin: 20.00 dB

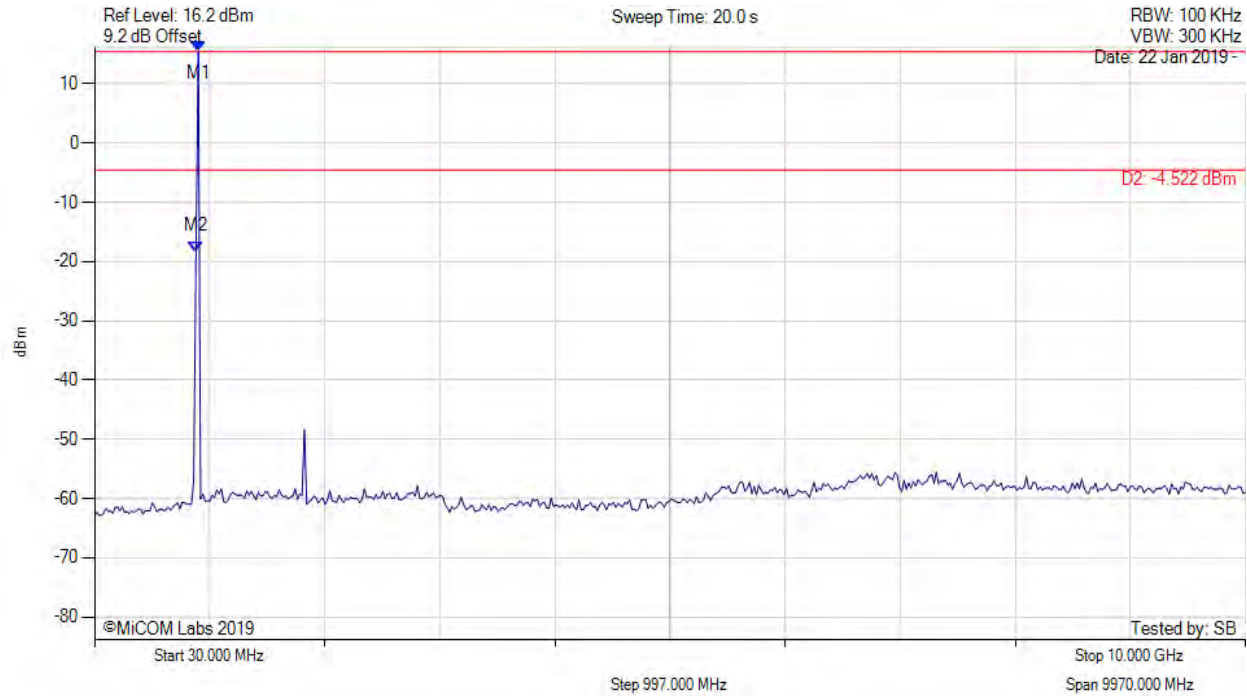
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UNWANTED EMISSIONS PEAK

Variant: Mode 5, Channel: 927.60 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 929.098 MHz : 15.478 dBm M2 : 909.118 MHz : -18.311 dBm	Limit: -4.52 dBm Margin: -13.79 dB

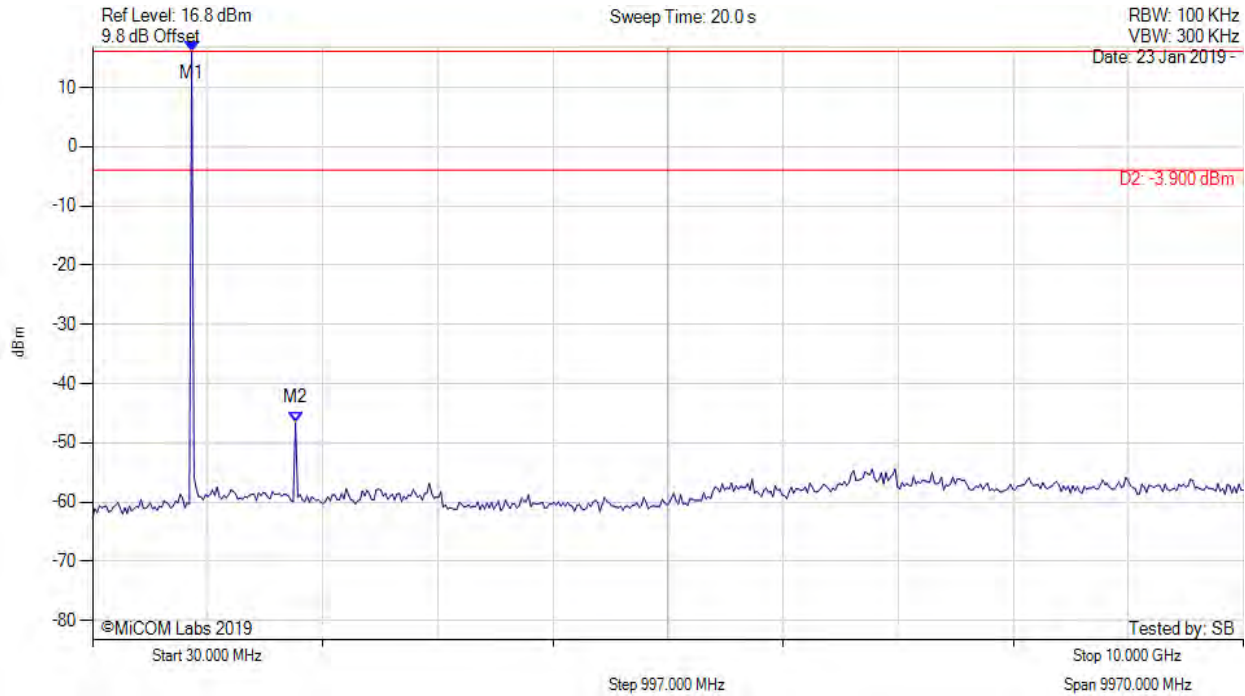
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UNWANTED EMISSIONS PEAK

Variant: Mode 2, Channel: 902.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 889.138 MHz : 16.100 dBm M2 : 1788.236 MHz : -46.592 dBm	Limit: -3.90 dBm Margin: -42.69 dB

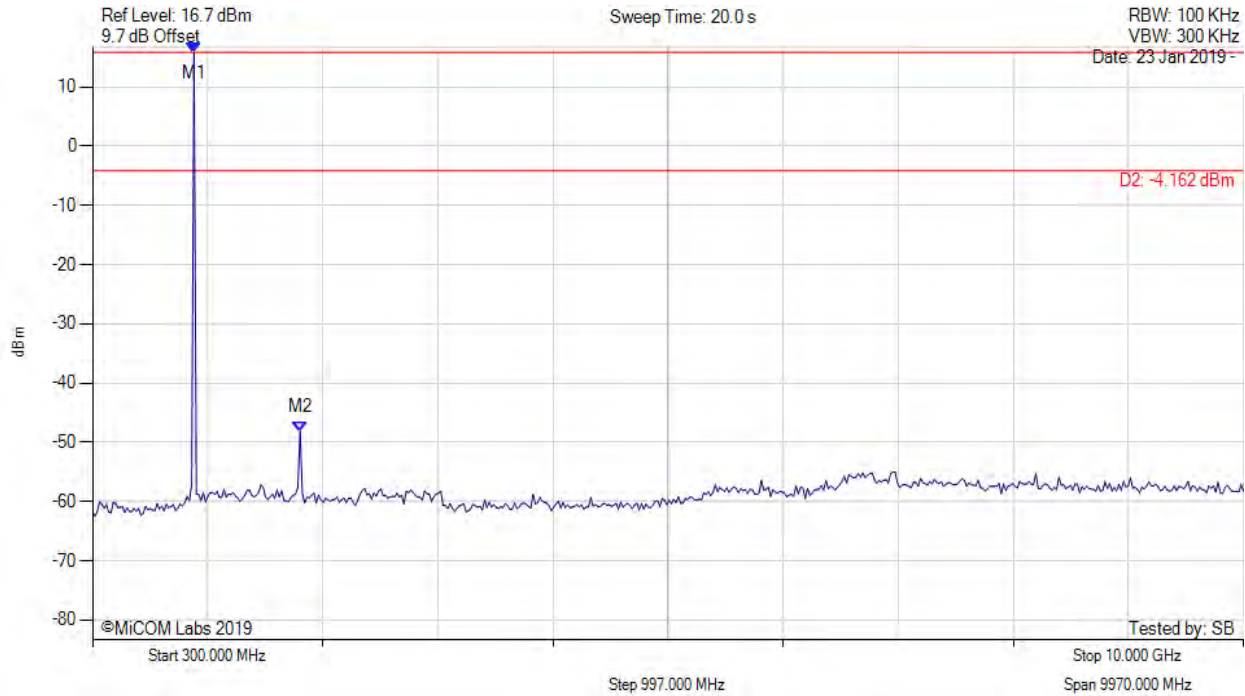
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UNWANTED EMISSIONS PEAK

Variant: Mode 2, Channel: 915.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 909.118 MHz : 15.838 dBm M2 : 1828.196 MHz : -48.229 dBm	Limit: -4.16 dBm Margin: -44.07 dB

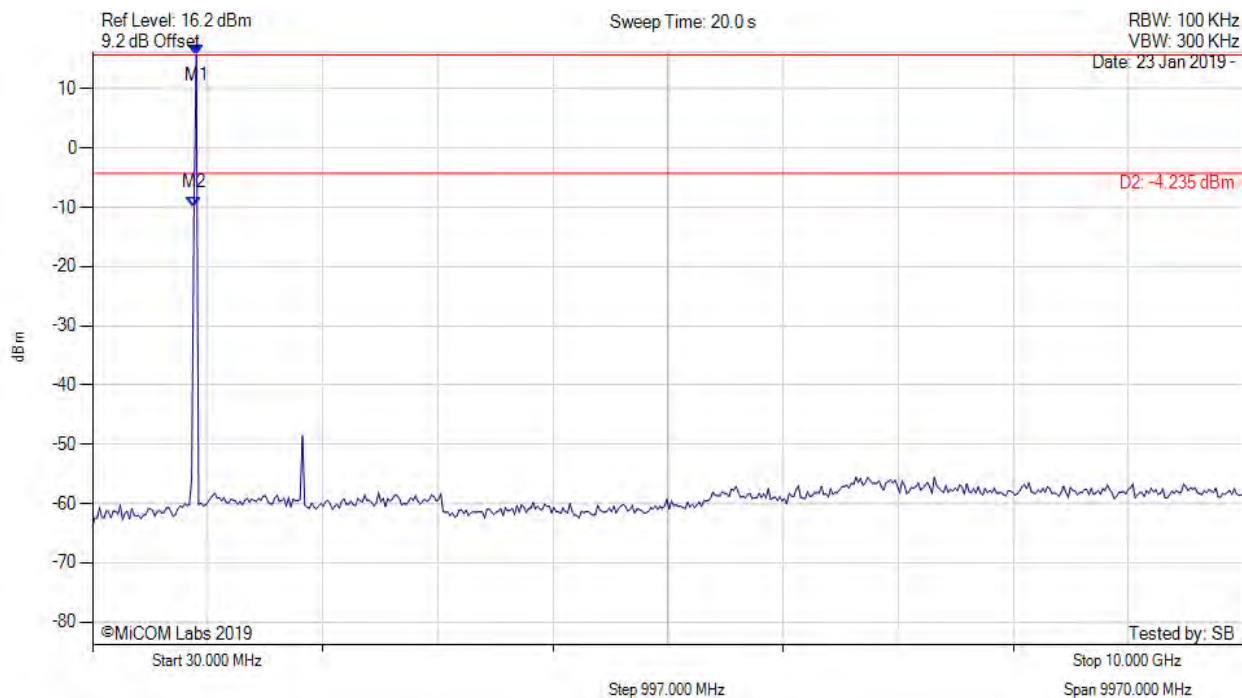
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UNWANTED EMISSIONS PEAK

Variant: Mode 2, Channel: 927.60 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 929.098 MHz : 15.765 dBm M2 : 909.118 MHz : -10.072 dBm	Limit: -4.24 dBm Margin: -5.83 dB

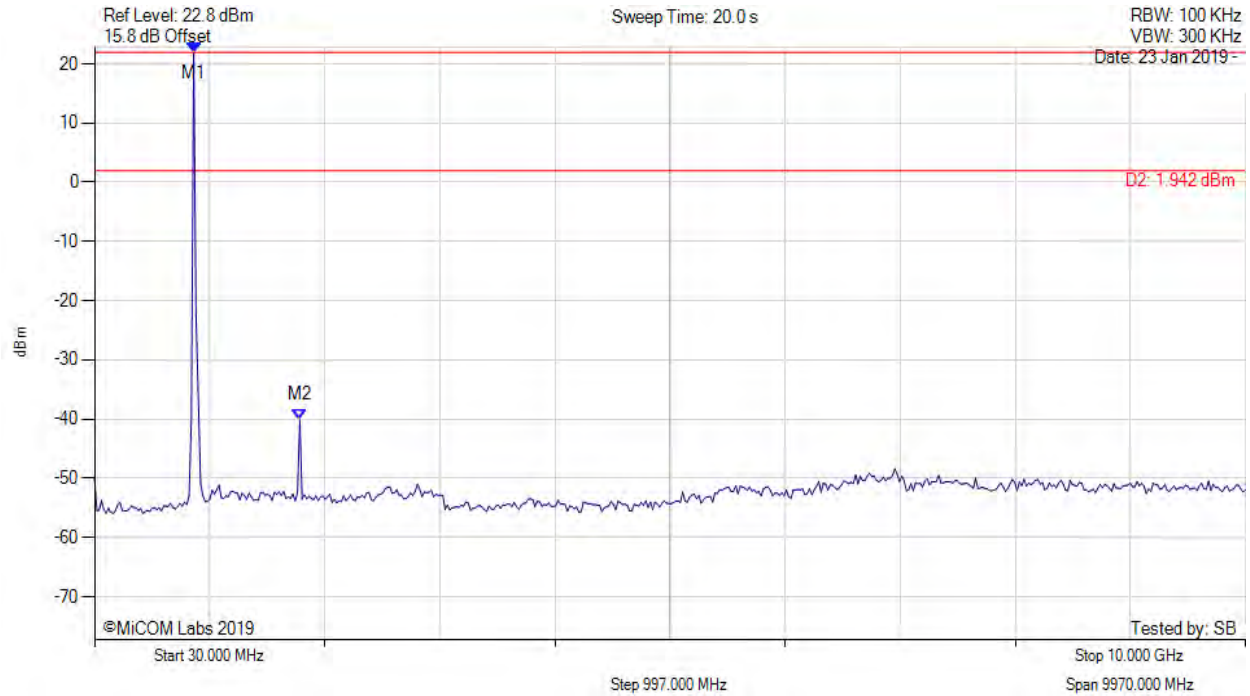
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UNWANTED EMISSIONS PEAK

Variant: Mode 3, Channel: 903.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 889.138 MHz : 21.942 dBm M2 : 1808.216 MHz : -40.167 dBm	Limit: 1.94 dBm Margin: -42.11 dB

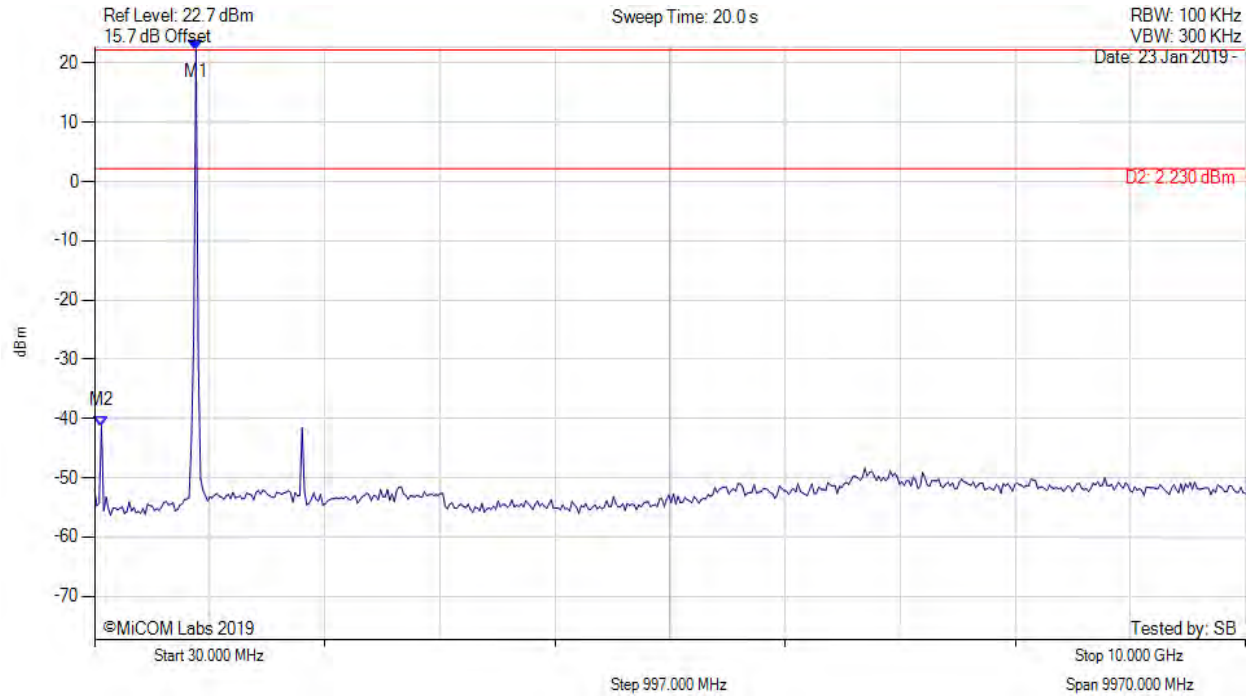
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UNWANTED EMISSIONS PEAK

Variant: Mode 3, Channel: 915.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 909.118 MHz : 22.230 dBm M2 : 89.940 MHz : -41.243 dBm	Limit: 2.23 dBm Margin: -43.47 dB

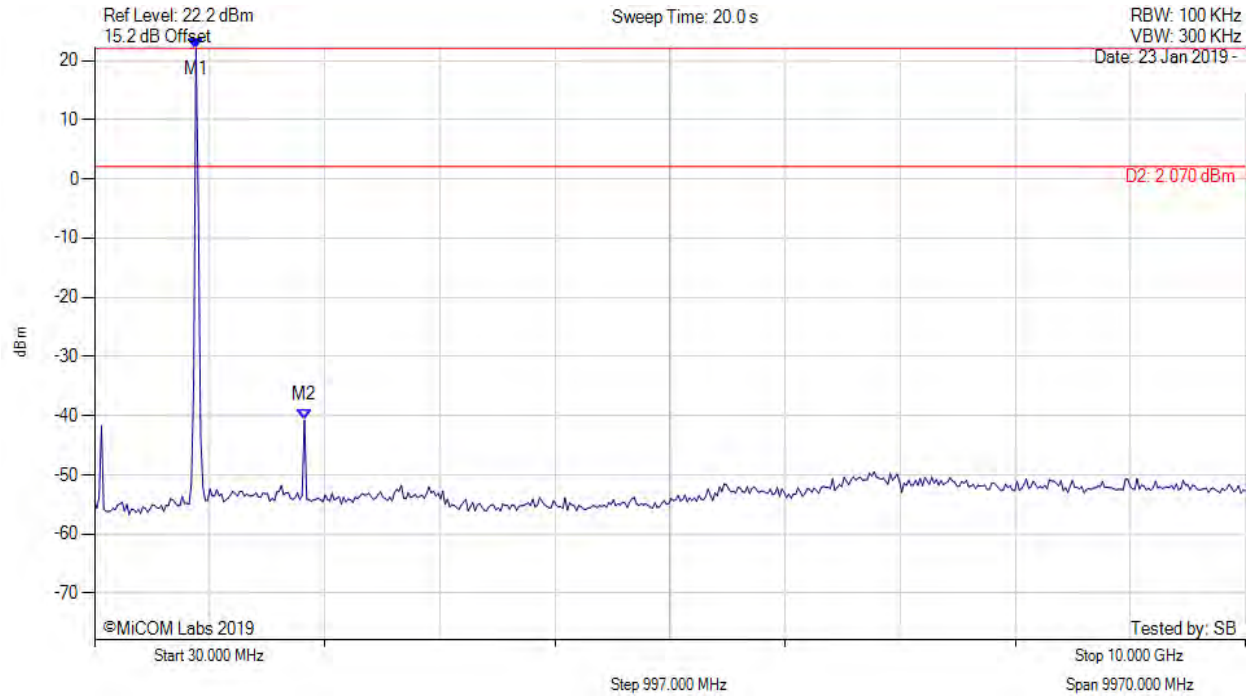
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UNWANTED EMISSIONS PEAK

Variant: Mode 3, Channel: 926.80 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 909.118 MHz : 22.070 dBm M2 : 1848.176 MHz : -40.746 dBm	Limit: 2.07 dBm Margin: -42.82 dB

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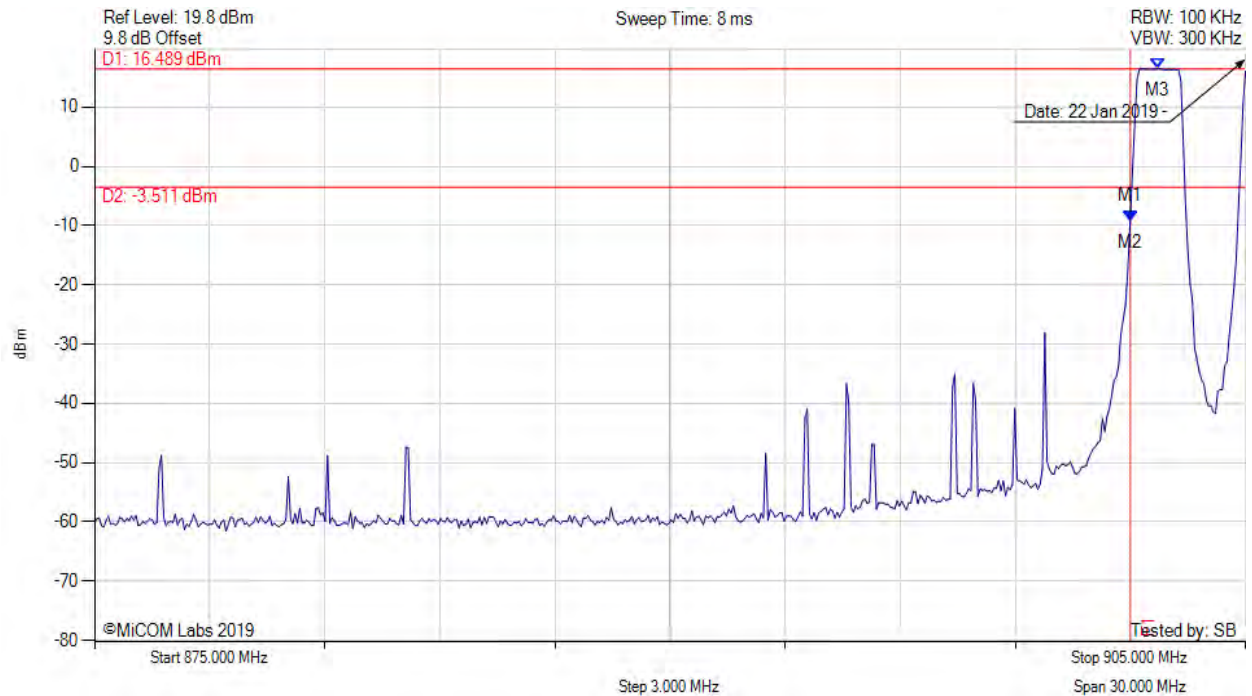
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A.4.1.2. Conducted Band-Edge Emissions



CONDUCTED LOW BAND-EDGE EMISSIONS (HOPPING) PEAK

Variant: Mode 1, Channel: 902.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 902.000 MHz : -9.236 dBm M2 : 901.994 MHz : -9.236 dBm M3 : 902.715 MHz : 16.489 dBm	Channel Frequency: 902.20 MHz

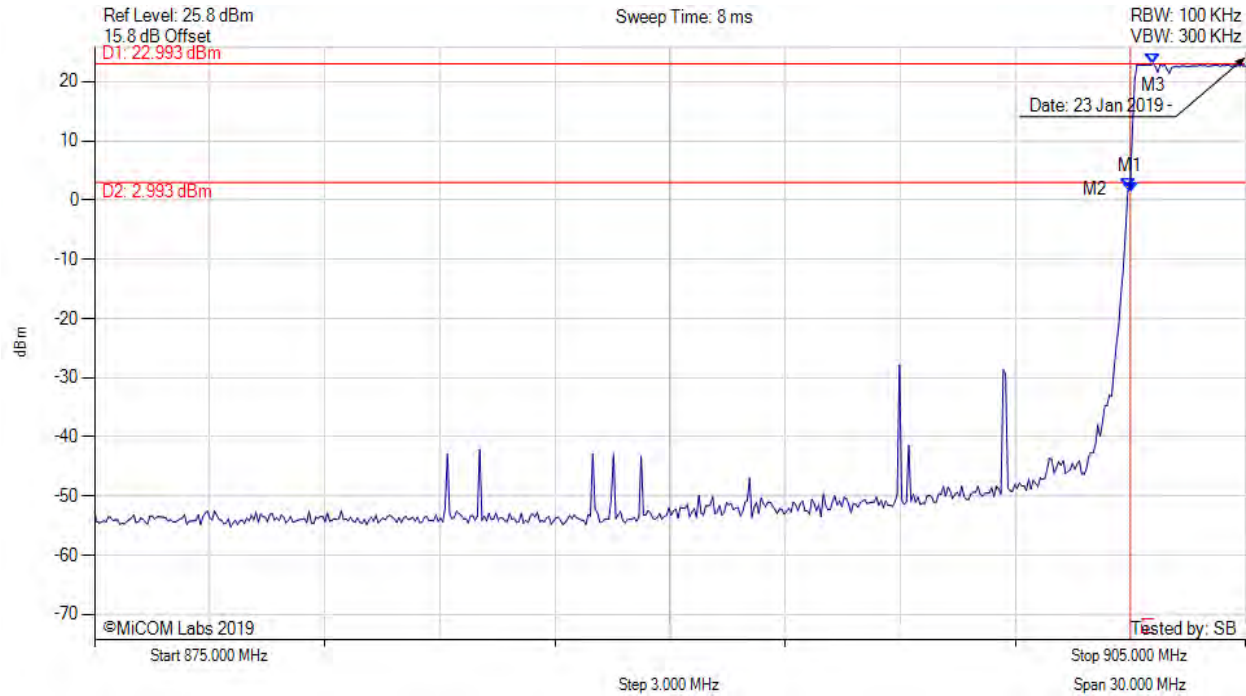
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CONDUCTED LOW BAND-EDGE EMISSIONS (HOPPING) PEAK

Variant: Mode 2, Channel: 902.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 902.000 MHz : 1.350 dBm M2 : 901.934 MHz : 1.901 dBm M3 : 902.595 MHz : 22.993 dBm	Channel Frequency: 902.20 MHz

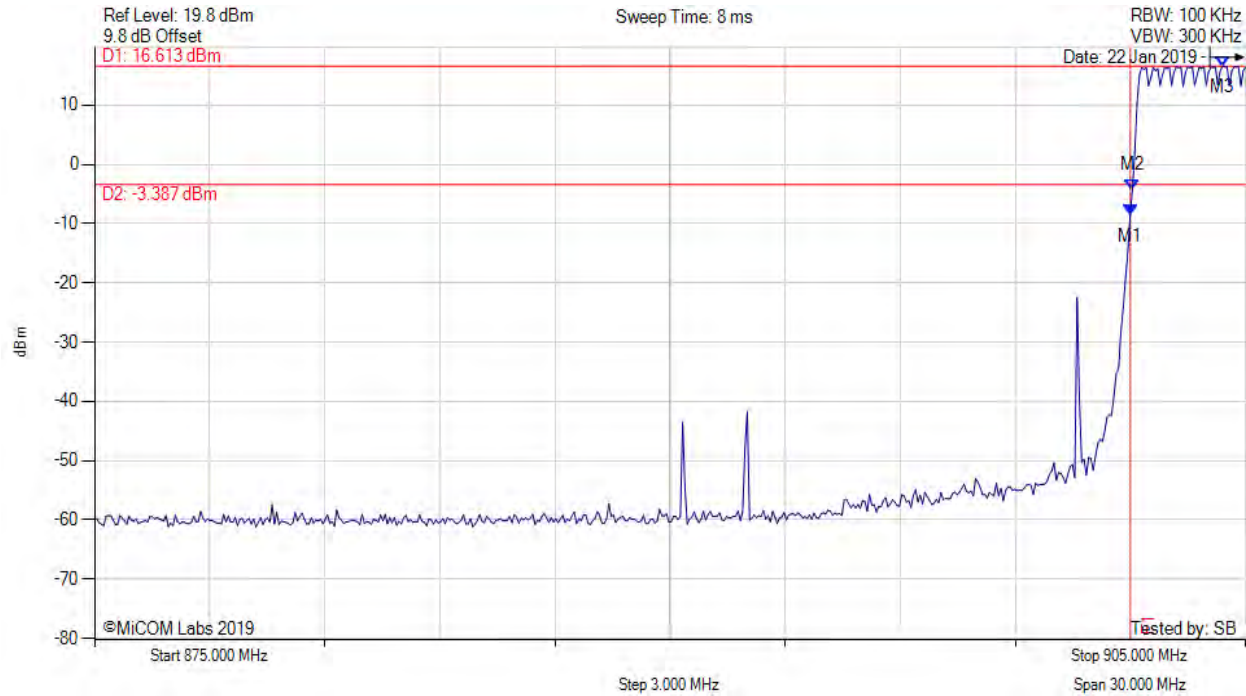
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CONDUCTED LOW BAND-EDGE EMISSIONS (HOPPING) PEAK

Variant: Mode 4, Channel: 902.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 902.000 MHz : -8.508 dBm M2 : 902.054 MHz : -4.239 dBm M3 : 904.399 MHz : 16.613 dBm	Channel Frequency: 902.20 MHz

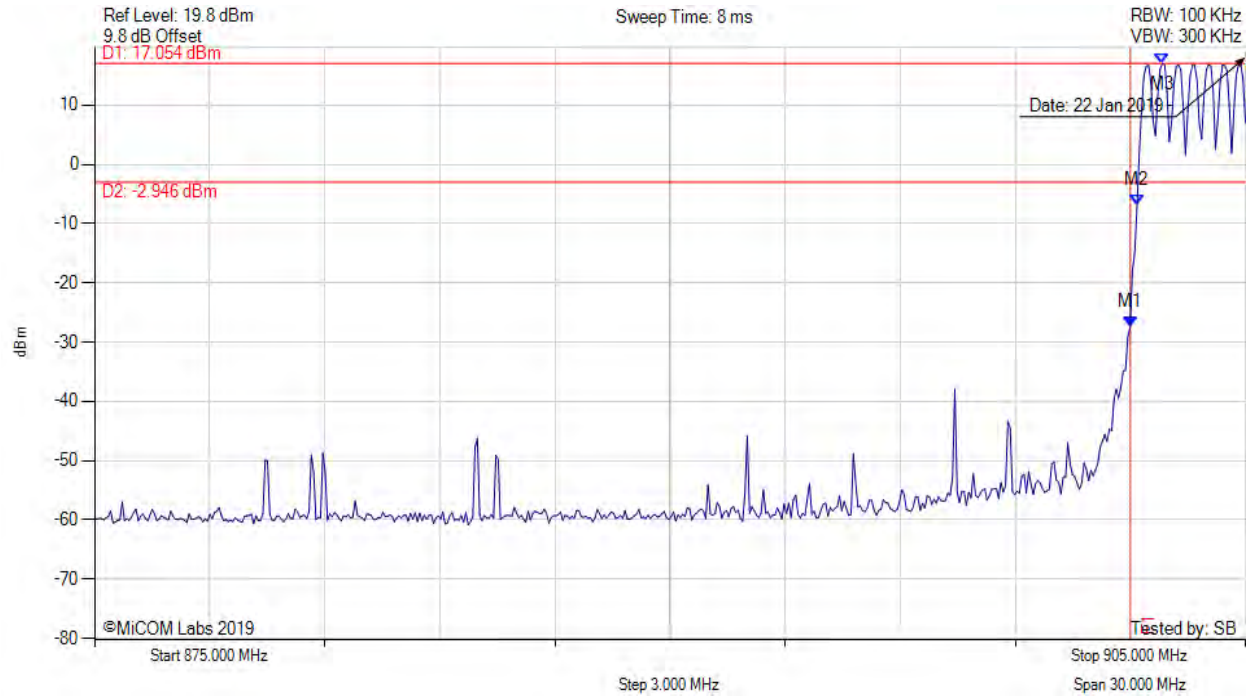
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CONDUCTED LOW BAND-EDGE EMISSIONS (HOPPING) PEAK

Variant: Mode 5, Channel: 902.40 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 902.000 MHz : -27.350 dBm M2 : 902.174 MHz : -6.972 dBm M3 : 902.836 MHz : 17.054 dBm	Channel Frequency: 902.40 MHz

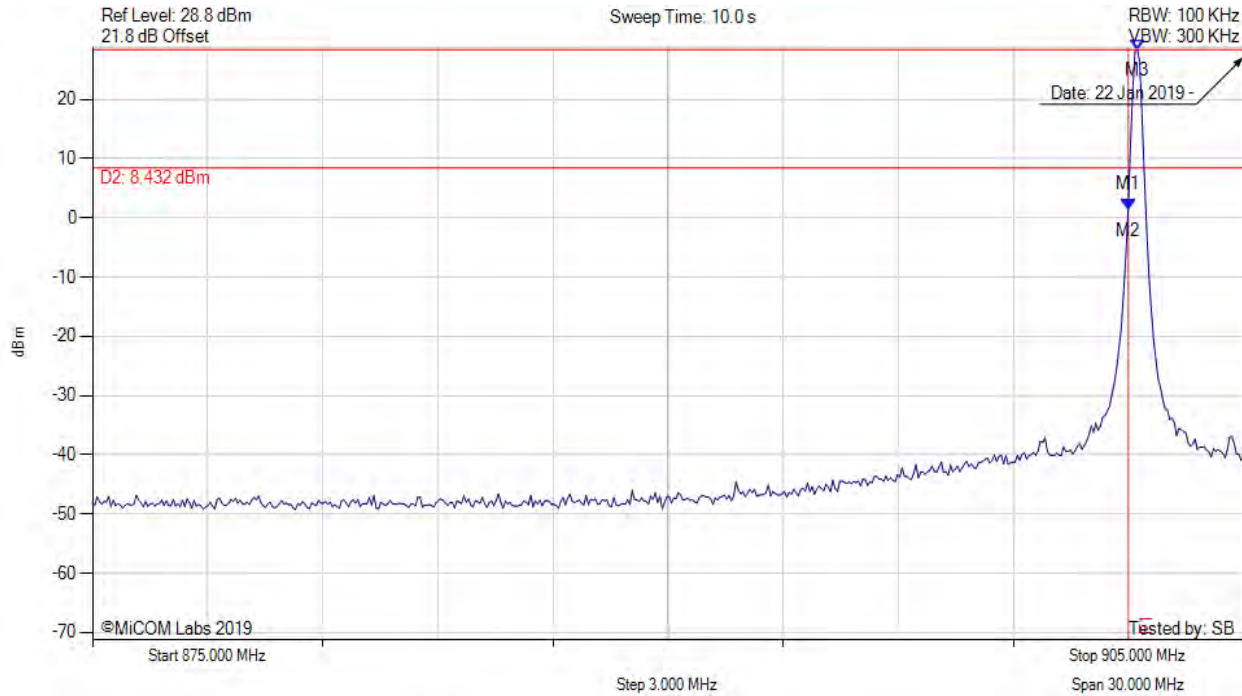
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CONDUCTED LOW BAND-EDGE EMISSIONS (STATIC) PEAK

Variant: Mode 1, Channel: 902.20 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 902.000 MHz : 1.410 dBm M2 : 901.994 MHz : 1.410 dBm M3 : 902.234 MHz : 28.432 dBm	Channel Frequency: 902.20 MHz

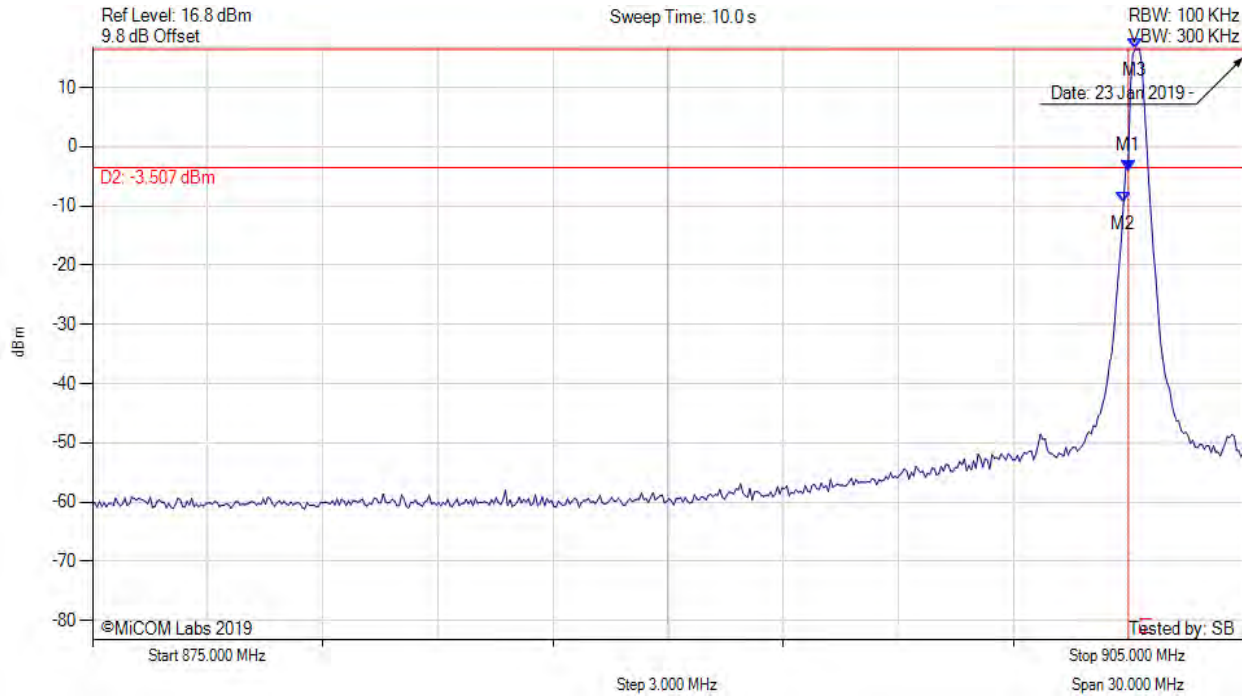
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CONDUCTED LOW BAND-EDGE EMISSIONS (STATIC) PEAK

Variant: Mode 2, Channel: 902.20 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 902.000 MHz : -3.942 dBm M2 : 901.874 MHz : -9.496 dBm M3 : 902.174 MHz : 16.493 dBm	Channel Frequency: 902.20 MHz

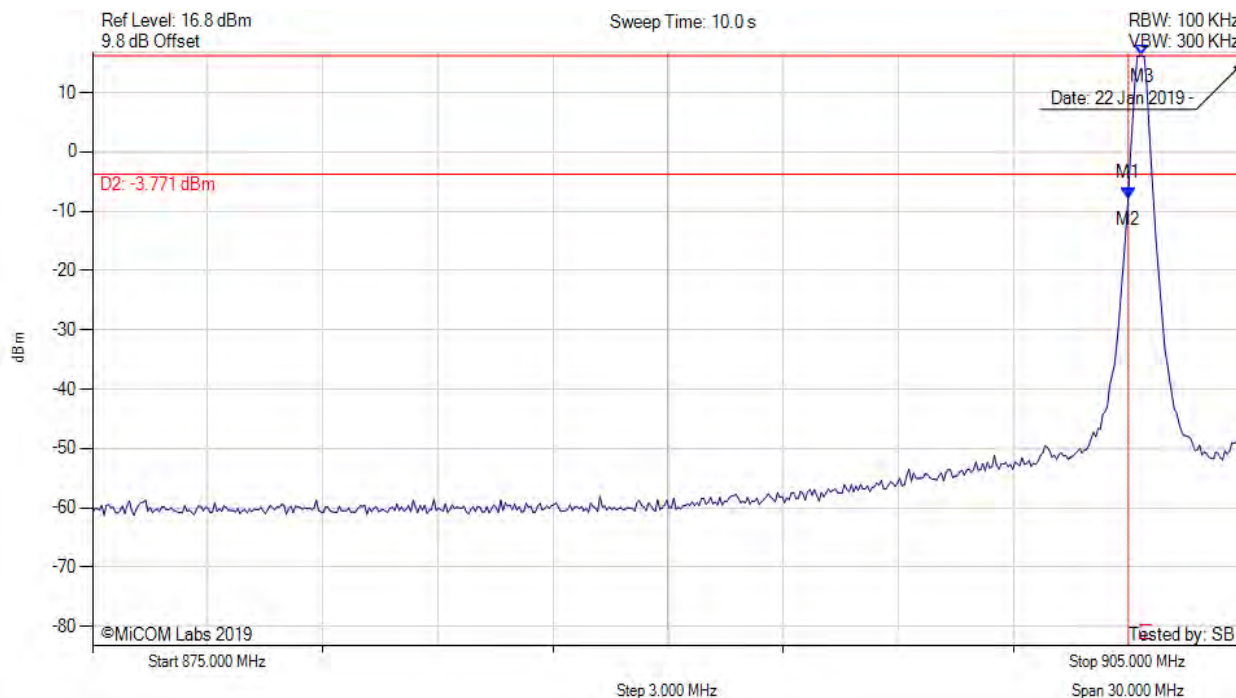
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CONDUCTED LOW BAND-EDGE EMISSIONS (STATIC) PEAK

Variant: Mode 4, Channel: 902.30 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 902.000 MHz : -7.816 dBm M2 : 901.994 MHz : -7.816 dBm M3 : 902.355 MHz : 16.229 dBm	Channel Frequency: 902.30 MHz

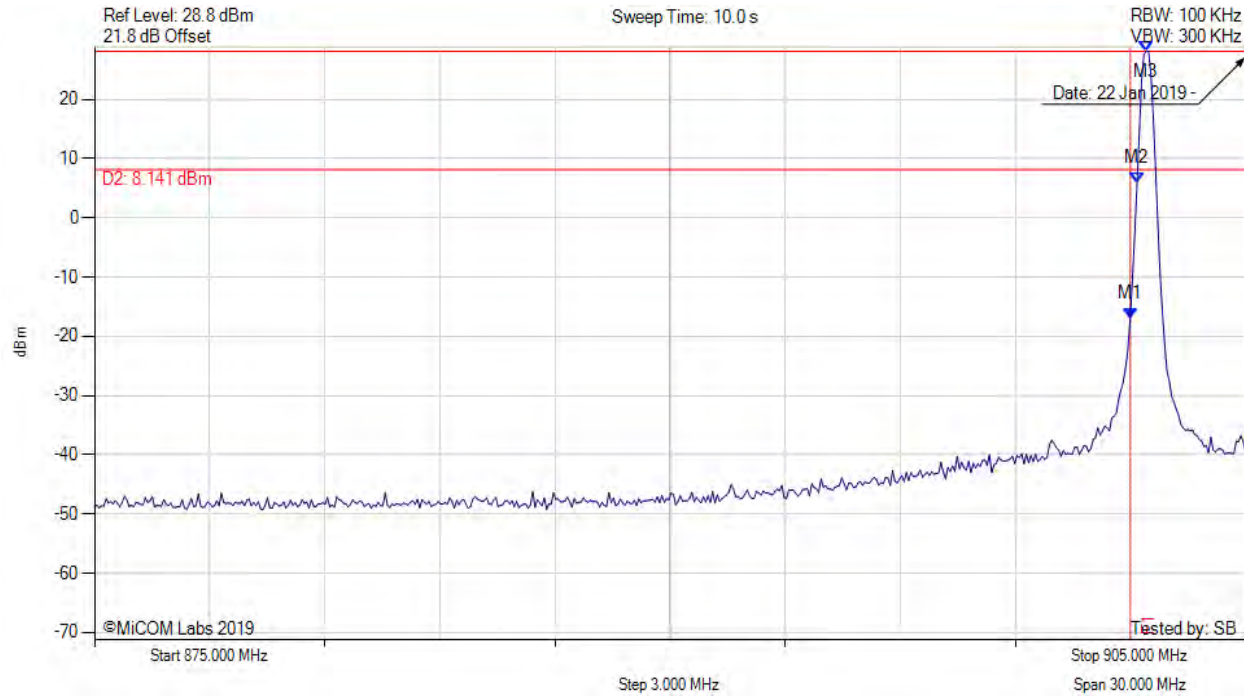
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CONDUCTED LOW BAND-EDGE EMISSIONS (STATIC) PEAK

Variant: Mode 5, Channel: 902.40 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 902.000 MHz : -17.022 dBm M2 : 902.174 MHz : 5.800 dBm M3 : 902.415 MHz : 28.141 dBm	Channel Frequency: 902.40 MHz

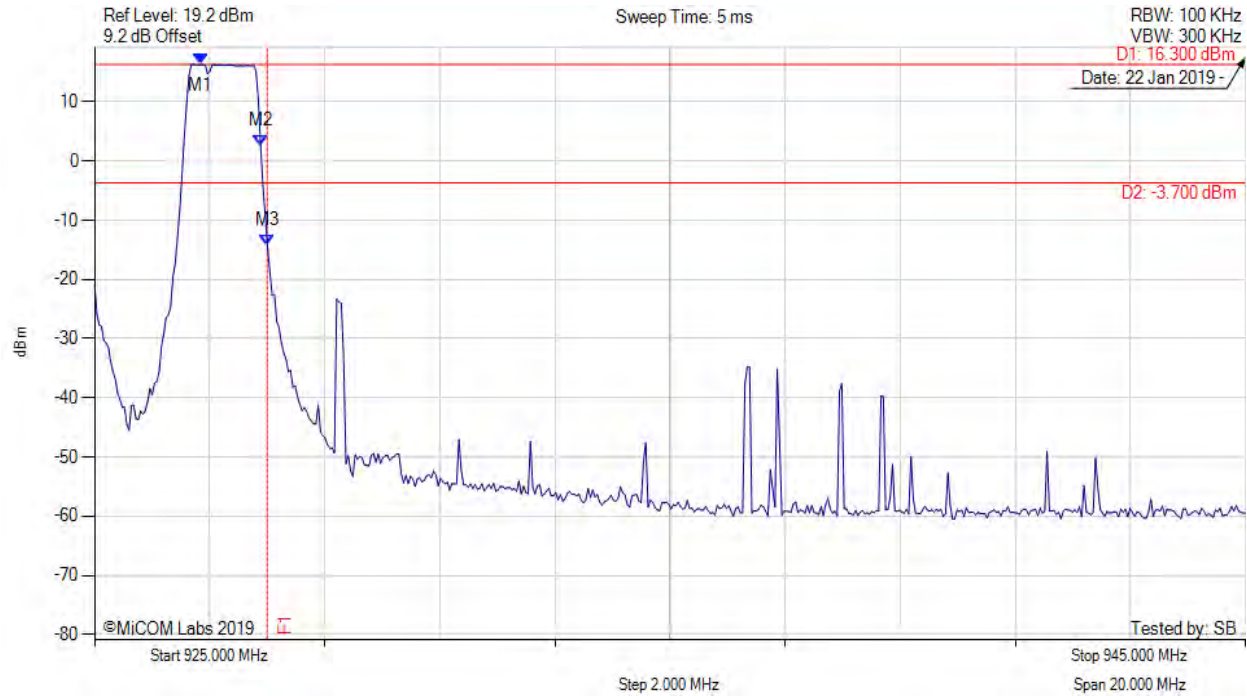
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CONDUCTED UPPER BAND-EDGE EMISSIONS (HOPPING) PEAK

Variant: Mode 1, Channel: 927.75 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 926.844 MHz : 16.300 dBm M2 : 927.886 MHz : 2.658 dBm M3 : 928.000 MHz : -14.265 dBm	Channel Frequency: 927.75 MHz

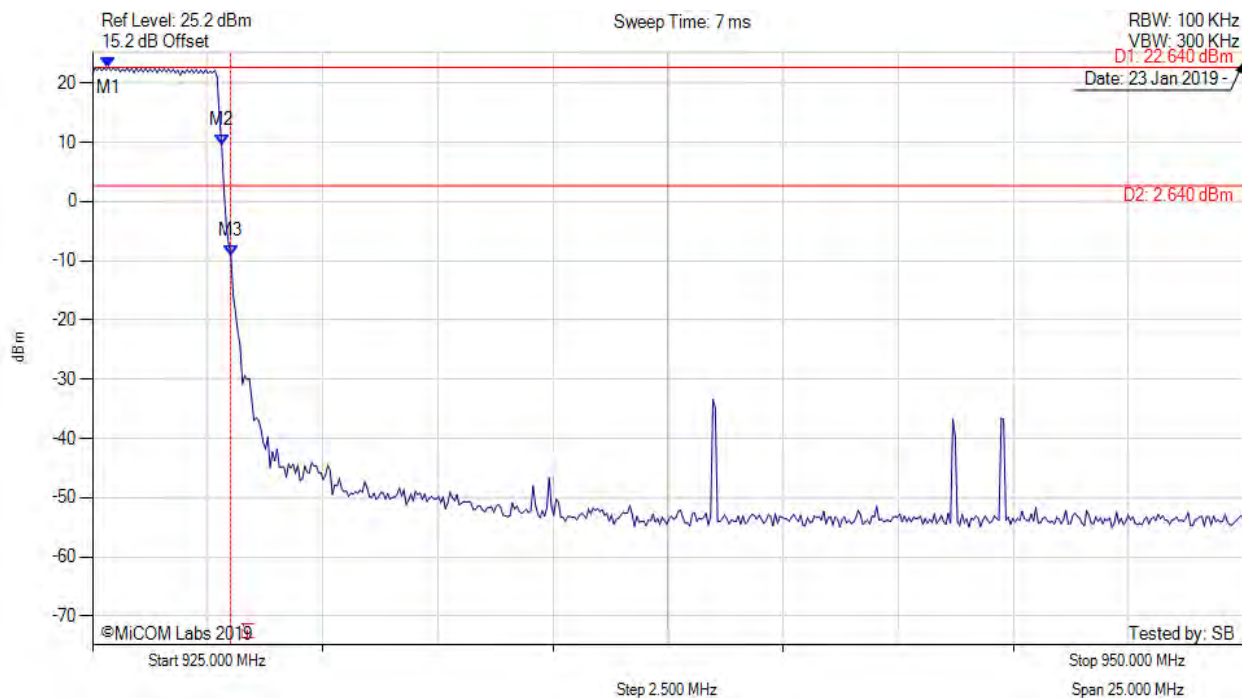
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CONDUCTED UPPER BAND-EDGE EMISSIONS (HOPPING) PEAK

Variant: Mode 2, Channel: 927.60 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 925.351 MHz : 22.640 dBm M2 : 927.806 MHz : 9.528 dBm M3 : 928.000 MHz : -9.191 dBm	Channel Frequency: 927.60 MHz

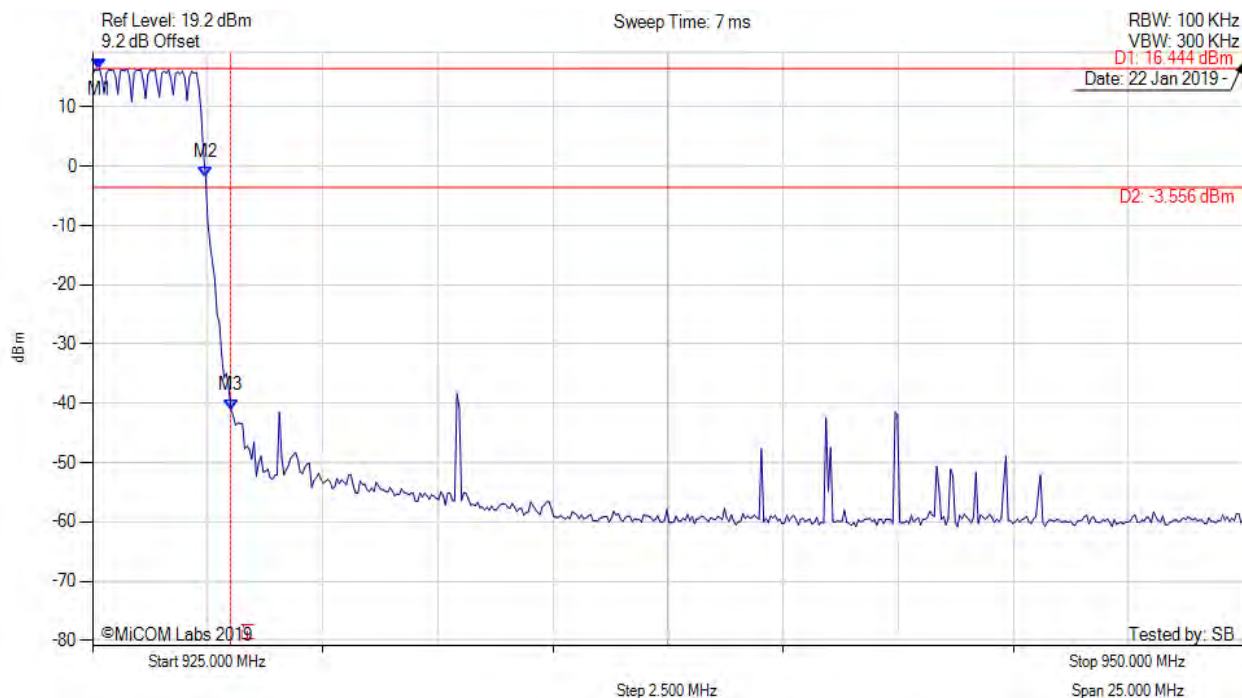
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CONDUCTED UPPER BAND-EDGE EMISSIONS (HOPPING) PEAK

Variant: Mode 4, Channel: 927.60 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 925.150 MHz : 16.444 dBm M2 : 927.455 MHz : -1.892 dBm M3 : 928.000 MHz : -41.033 dBm	Channel Frequency: 927.60 MHz

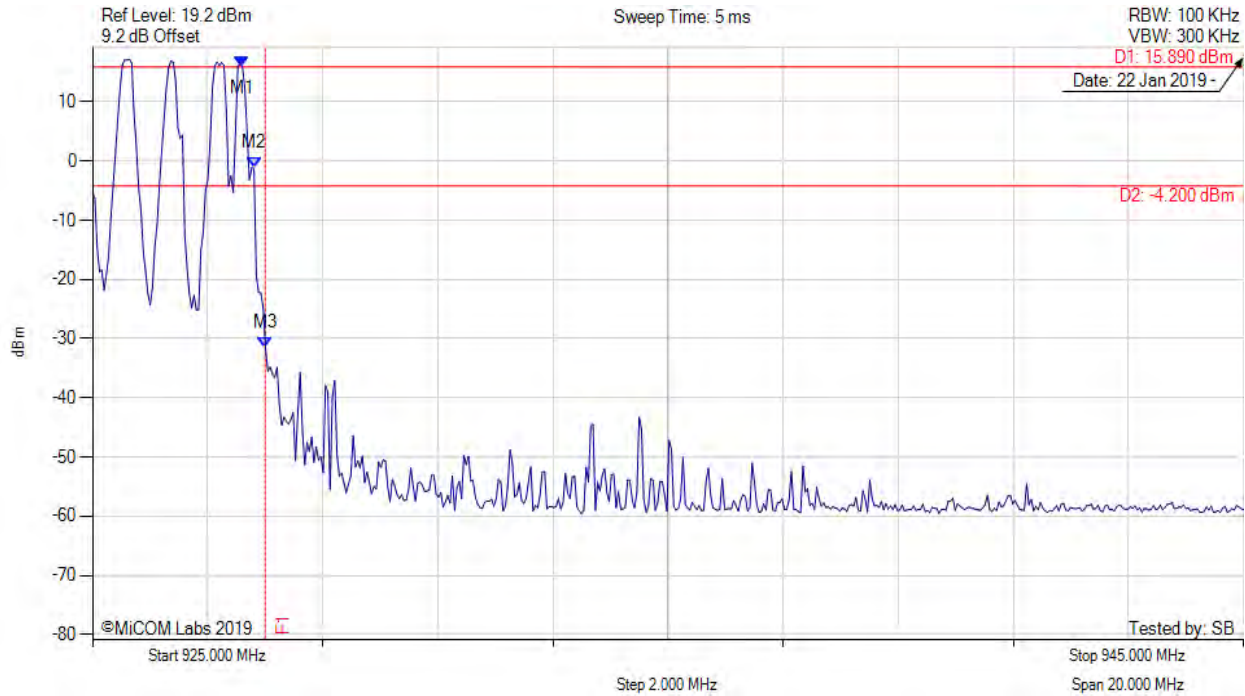
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CONDUCTED UPPER BAND-EDGE EMISSIONS (HOPPING) PEAK

Variant: Mode 5, Channel: 927.60 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 927.600 MHz : 15.891 dBm M2 : 927.806 MHz : -1.225 dBm M3 : 928.000 MHz : -31.487 dBm	Channel Frequency: 927.60 MHz

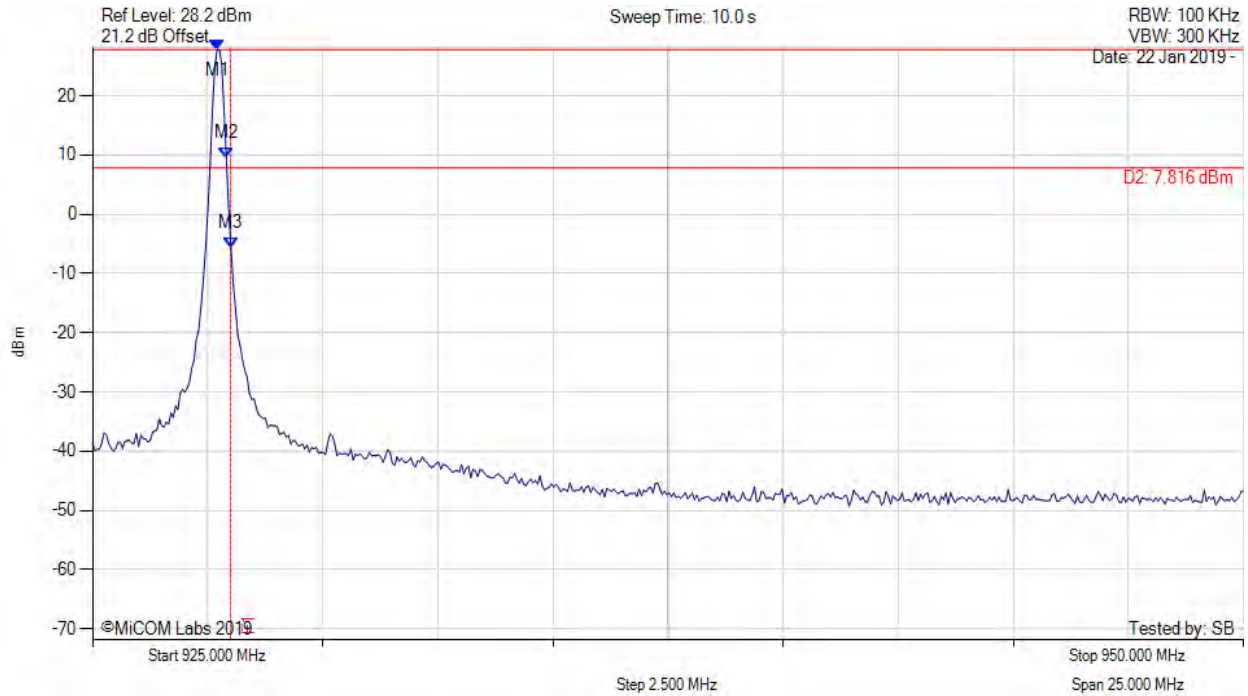
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CONDUCTED UPPER BAND-EDGE EMISSIONS (STATIC) PEAK

Variant: Mode 1, Channel: 927.75 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 927.705 MHz : 27.816 dBm M2 : 927.906 MHz : 9.471 dBm M3 : 928.000 MHz : -5.715 dBm	Channel Frequency: 927.75 MHz

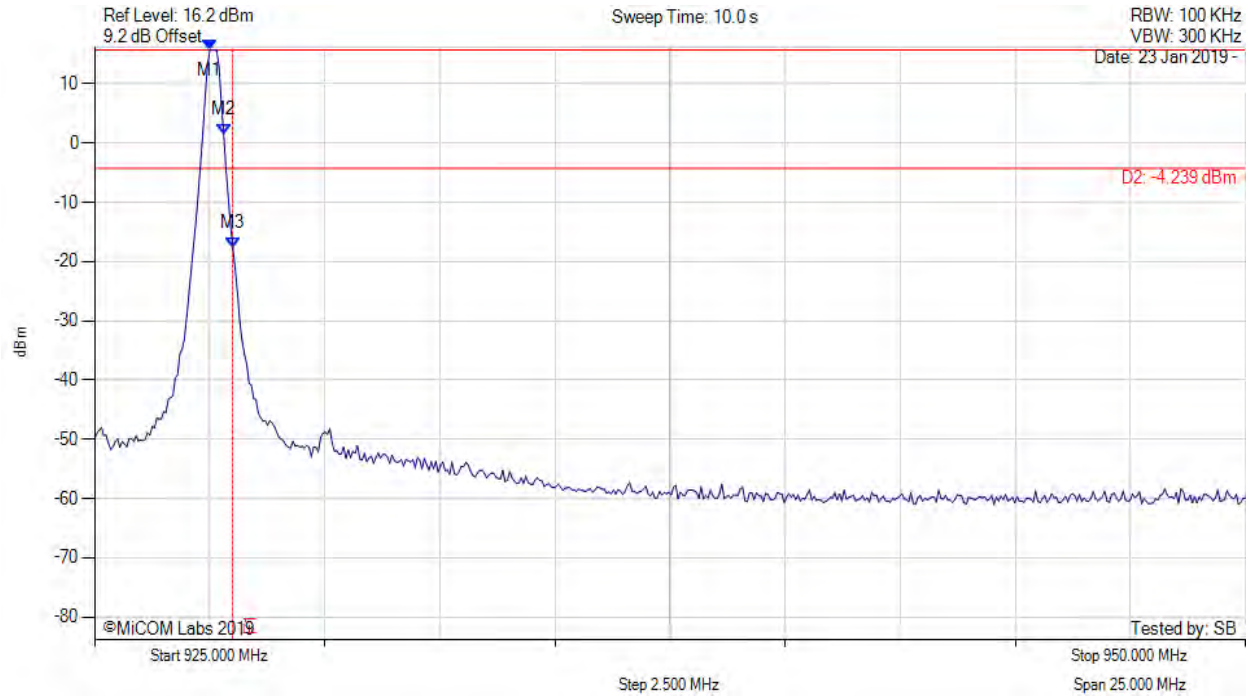
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CONDUCTED UPPER BAND-EDGE EMISSIONS (STATIC) PEAK

Variant: Mode 2, Channel: 927.60 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 927.505 MHz : 15.761 dBm M2 : 927.806 MHz : 1.415 dBm M3 : 928.000 MHz : -17.721 dBm	Channel Frequency: 927.60 MHz

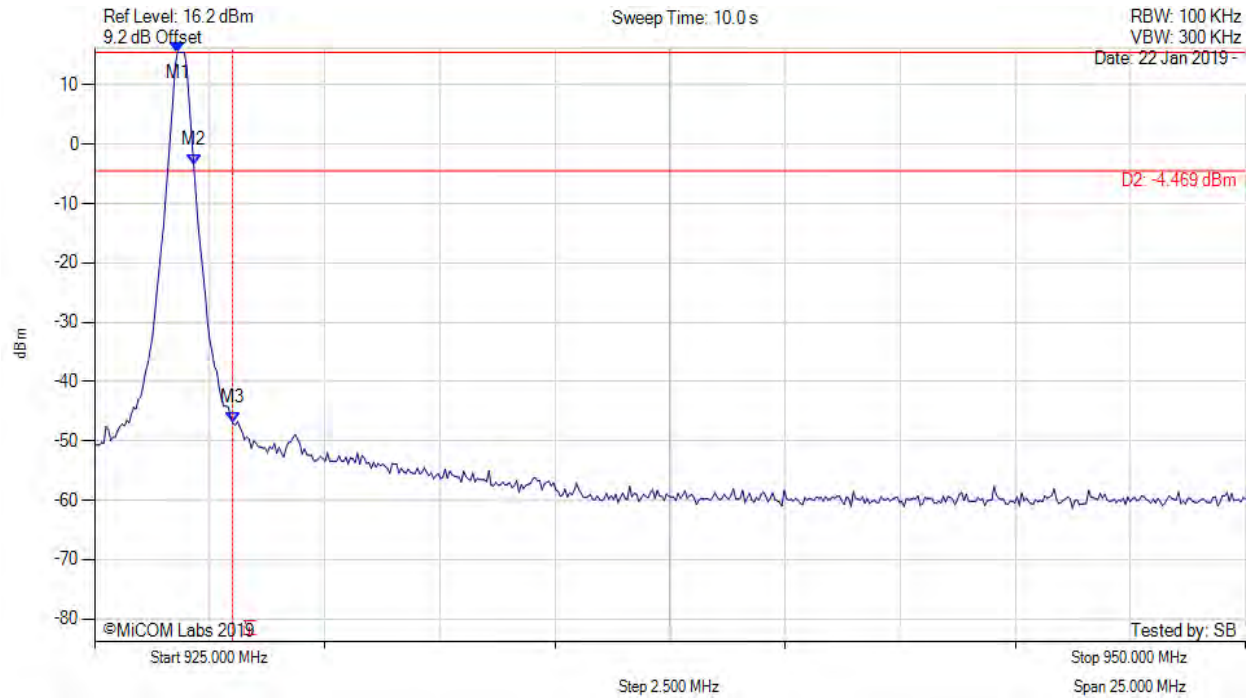
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CONDUCTED UPPER BAND-EDGE EMISSIONS (STATIC) PEAK

Variant: Mode 4, Channel: 926.90 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 926.804 MHz : 15.531 dBm M2 : 927.154 MHz : -3.403 dBm M3 : 928.000 MHz : -47.031 dBm	Channel Frequency: 926.90 MHz

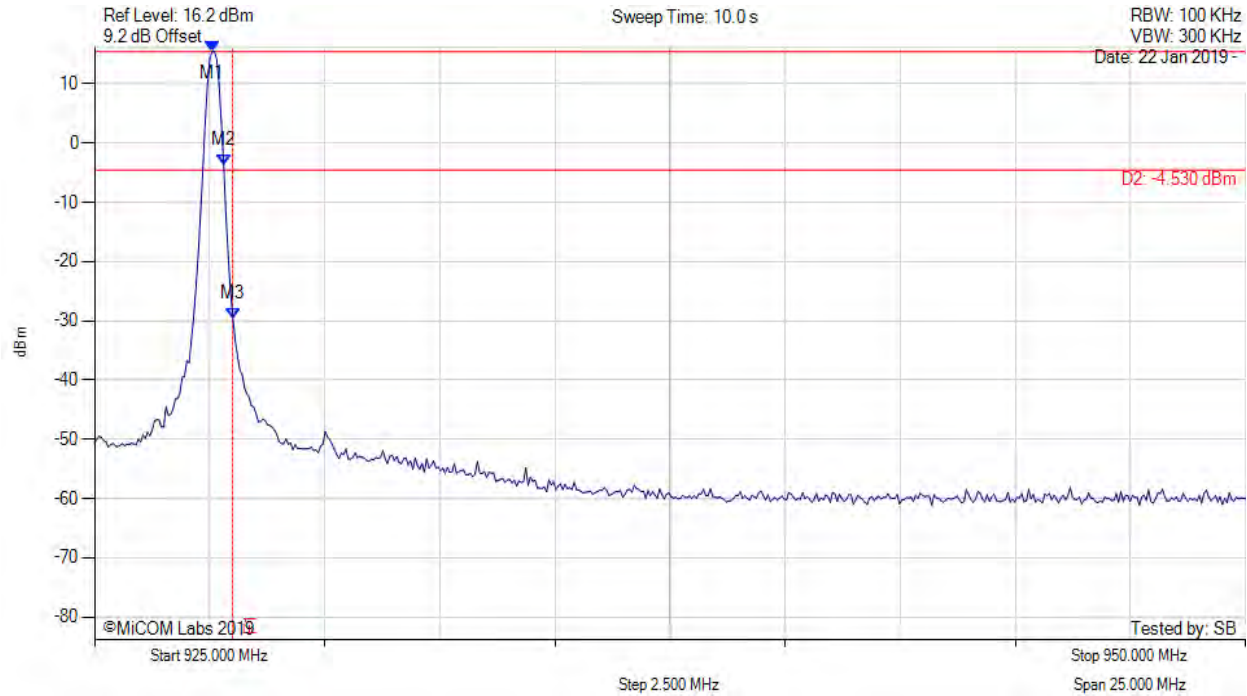
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CONDUCTED UPPER BAND-EDGE EMISSIONS (STATIC) PEAK

Variant: Mode 5, Channel: 927.60 MHz, Chain a, Temp: 20, Voltage: 7.0Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 927.555 MHz : 15.470 dBm M2 : 927.806 MHz : -3.702 dBm M3 : 928.000 MHz : -29.681 dBm	Channel Frequency: 927.60 MHz

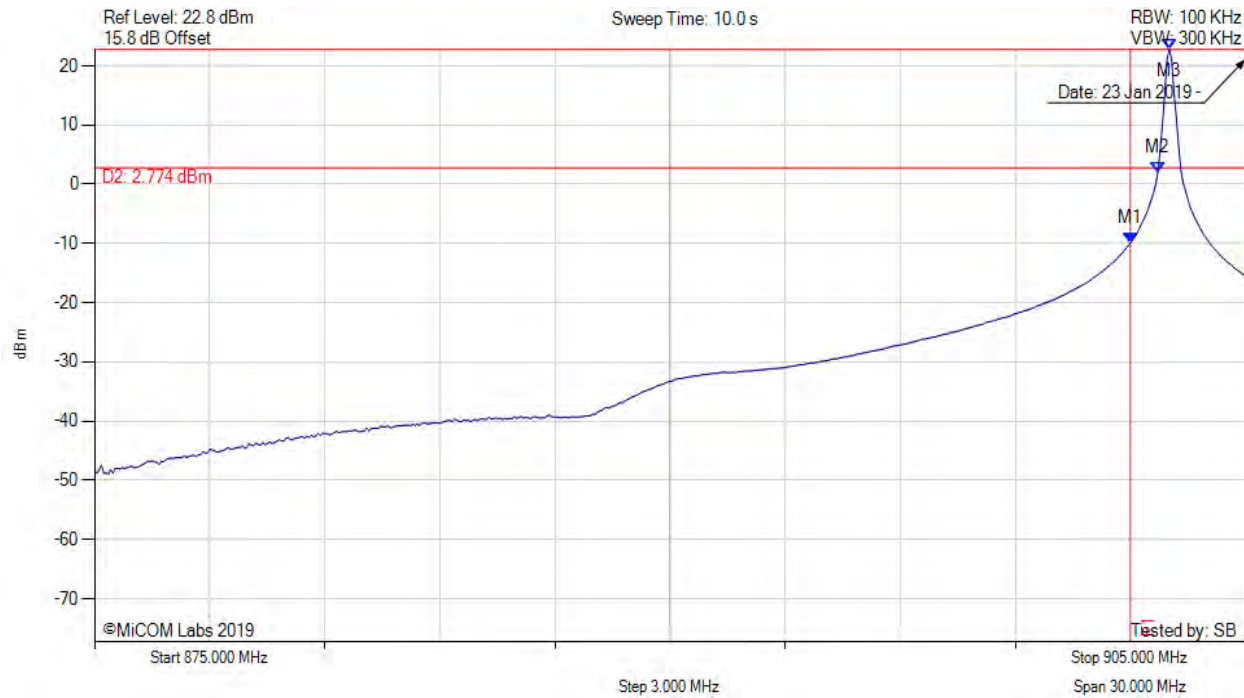
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CONDUCTED LOW BAND-EDGE EMISSIONS (STATIC) PEAK

Variant: Mode 3, Channel: 903.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 902.000 MHz : -10.031 dBm M2 : 902.715 MHz : 2.027 dBm M3 : 903.016 MHz : 22.774 dBm	Channel Frequency: 903.00 MHz

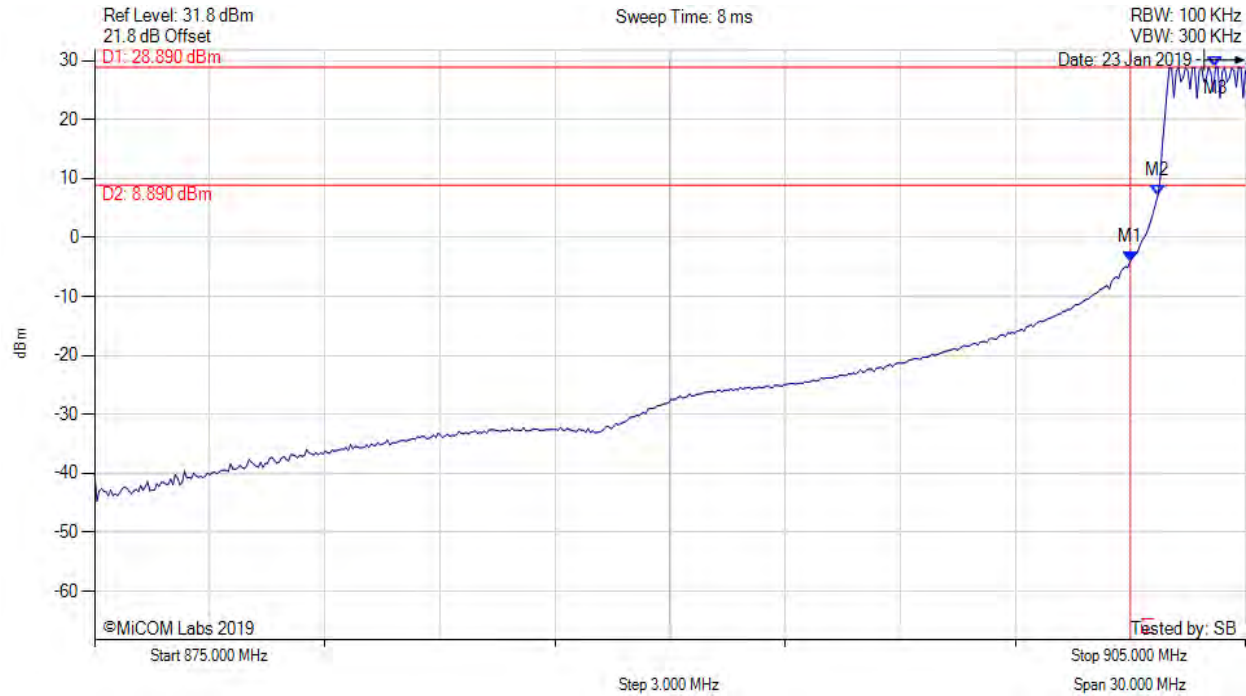
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CONDUCTED LOW BAND-EDGE EMISSIONS (HOPPING) PEAK

Variant: Mode 3, Channel: 903.00 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 902.000 MHz : -4.077 dBm M2 : 902.715 MHz : 7.088 dBm M3 : 904.218 MHz : 28.890 dBm	Channel Frequency: 903.00 MHz

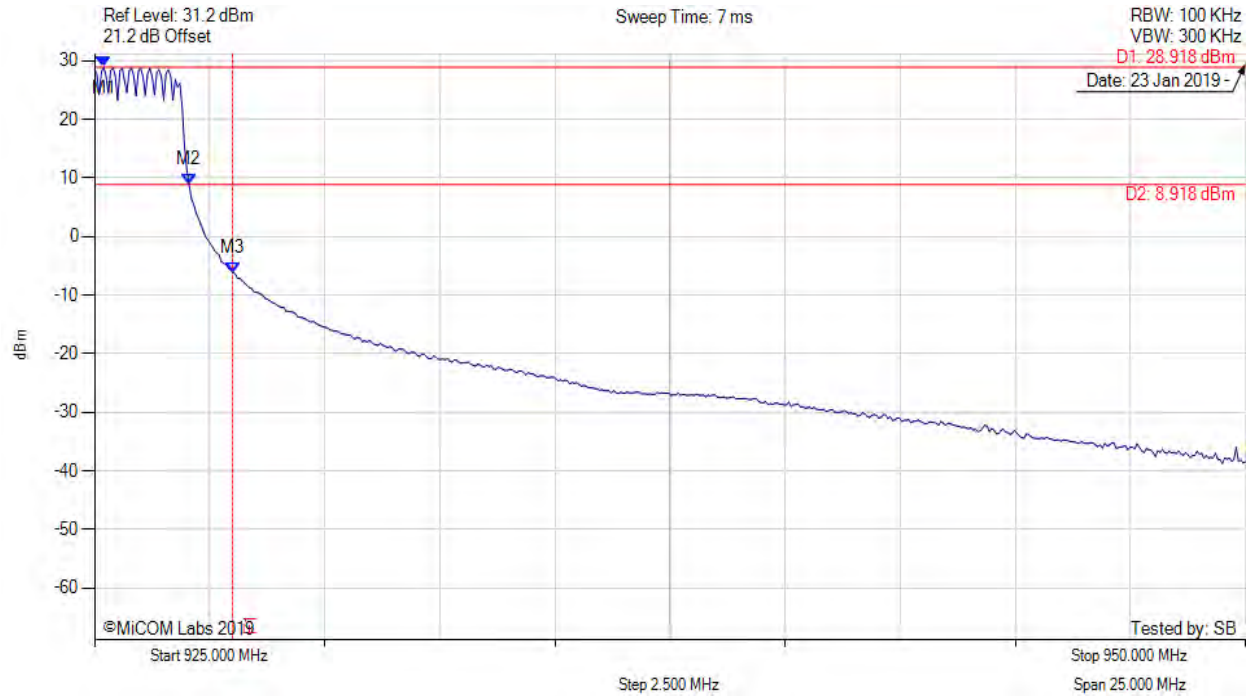
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CONDUCTED UPPER BAND-EDGE EMISSIONS (HOPPING) PEAK

Variant: Mode 3, Channel: 926.80 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 925.200 MHz : 28.918 dBm M2 : 927.054 MHz : 8.922 dBm M3 : 928.000 MHz : -6.115 dBm	Channel Frequency: 926.80 MHz

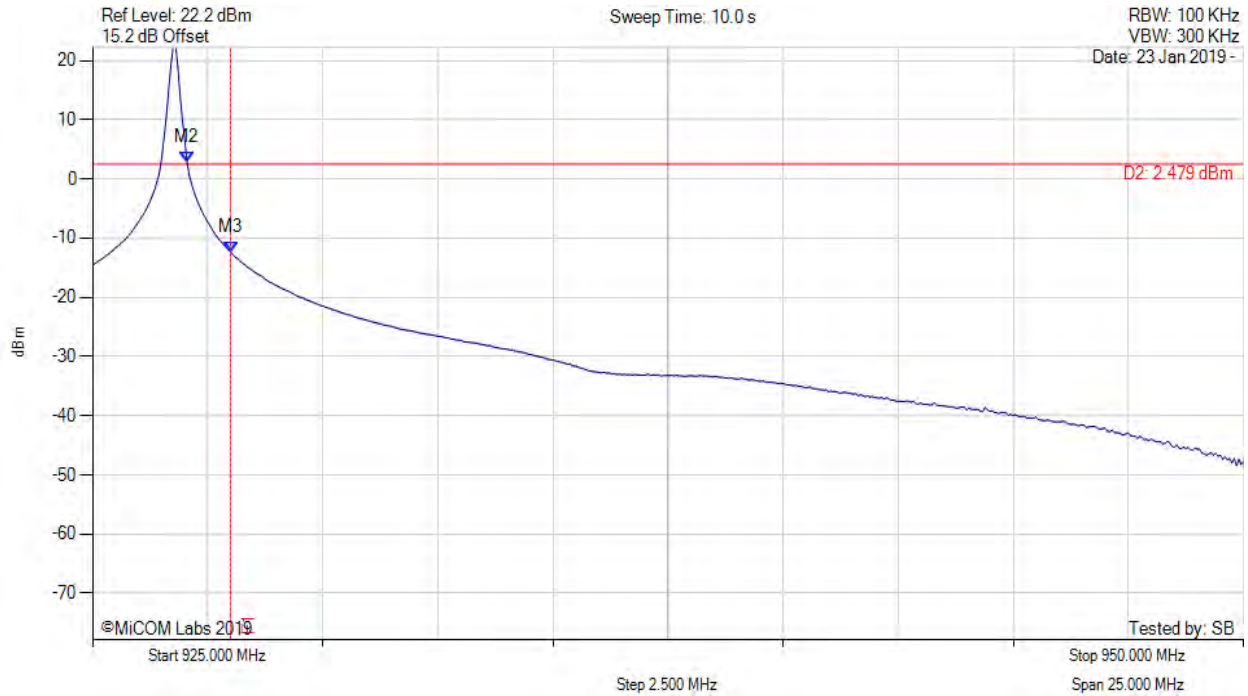
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CONDUCTED UPPER BAND-EDGE EMISSIONS (STATIC) PEAK

Variant: Mode 3, Channel: 926.80 MHz, Chain a, Temp: 20, Voltage: 3.7Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 926.754 MHz : 22.479 dBm M2 : 927.054 MHz : 2.709 dBm M3 : 928.000 MHz : -12.366 dBm	Channel Frequency: 926.80 MHz

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