

# **Wireless Relay Module**

**Model No.: FW-RM**

**Date: 02-Mar-2020**

**Report Prepared By:**  
**Shaithanya C**

**EMC Test Report**



Report Number	EMC0419-1
EUT Nomenclature	Wireless Relay Module
Sample Identification	Model No : FW-RM SL. No : 107 Software Version : 5.88 Hardware Version : Rev 3
Number of Samples	1
Date of receipt of Sample	12-Nov-2019
Condition of Sample on receipt	Good
Client name	Honeywell International Inc
Client Address	System Sensor, 3825, Ohio Ave, St. Charles , IL, USA - 60174
Testing Laboratory FCC FRN No.	Honeywell Technology Solutions Lab Pvt Ltd
Address	RMZ ECOWORLD INFRASTRUCTURE PVT Ltd, (Formerly Adarsh Prime Projects Pvt Ltd., SEZ) Survey # 19/2, Devarabisanahalli Village, Varthur Hobli, Bangalore East Taluk, Bangalore - 560103
Test Dates	14-Dec-2019 to 28-Feb-2020
Applicable Standard	FCC Part 15: 2010, ANSI C63.10:2013
Test Results	PASS
Prepared By: Test Engineer Name : Shaithanya C  Signature: Date : 03-Mar-2020 Reviewed By:  Authorised Signatory : Name : Prasanna Kumar BT  Signature: Date of Issue : 05-Mar-2020	
This Report relates to the above-mentioned test sample only. Without the approval of Lab manager, this report shall not be reproduced except in full.	

TEST SUMMARY						
#	Name	Specification	Test Method	Pass	Fail	NA
<b>FHSS</b>						
1	20dB Bandwidth	FCC Part 15.247 :2010	DA 00-705	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Maximum Peak Output Power	FCC Part 15.247 :2010	DA 00-705	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Carrier Frequency Separation	FCC Part 15.247 :2010	DA 00-705	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Number of Hopping Frequencies	FCC Part 15.247 :2010	DA 00-705	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Band Edge compliance	FCC Part 15.247 :2010	DA 00-705	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Time of Occupancy (Dwell Time)	FCC Part 15.247 :2010	DA 00-705	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Spurious RF Conducted Emissions	FCC Part 15.247 :2010	DA 00-705	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Effective Isotropic Radiated Power	FCC Part 15.247: 2010 and 15.209: 2010	KDB 412172	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Spurious Radiated Emissions	FCC Part 15.247: 2010 and 15.209: 2010	DA 00-705 ANSI C63.10 - 2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>DTS</b>						
1	DTS 6dB Bandwidth	FCC Part 15.247: 2010	KDB 558074	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Maximum Peak Output Power	FCC Part 15.247: 2010	KDB 558074	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Maximum Power Spectral Density	FCC Part 15.247: 2010	KDB 558074	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Band Edge Conducted Emissions	FCC Part 15.247: 2010	KDB 558074	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Effective Isotropic Radiated Power	FCC Part 15.247: 2010 and 15.209: 2010	KDB 412172	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Spurious Radiated Emissions	FCC Part 15.247: 2010 and 15.209: 2010	KDB 558074 ANSI C63.10 - 2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**MEASUREMENT UNCERTAINTY**

Where relevant, the following measurement uncertainty levels has been estimated for tests performed on the EUT as specified in CISPR 16-4

The Expanded measurement uncertainty (K=2) is provided below

#	Name	Value
1	20dB & 6dB Occupied Bandwidth	1.4dB
2	Maximum Peak Output Power Level	1.4dB
3	Power Spectral Density	1.4dB
4	Band Edge Conducted Emission	1.4dB
5	Spurious RF Conducted Emission	1.4dB
6	Radiated Spurious Emission < 1GHz	4.3dB
7	Radiated Spurious Emission > 1GHz	5.5dB

**Decision Rule Applied**

<input checked="" type="checkbox"/>	<i>Measurement Uncertainty is not accounted while reporting statement of conformity to specification / standard. (shared risk)</i>
<input type="checkbox"/>	<i>Measurement uncertainty is accounted and results reported as per ILAC-G8 guidelines</i>

## 1 PRODUCT DETAILS

### PRODUCT OPERATION AND INTENDED USE

The wireless relay module is powered by four CR123A batteries. It is intended to use with wireless gateway /Fire Alarm Panel. The module has LED indication, controlled by the panel to indicate the status.

### RATINGS AND SYSTEM DETAILS

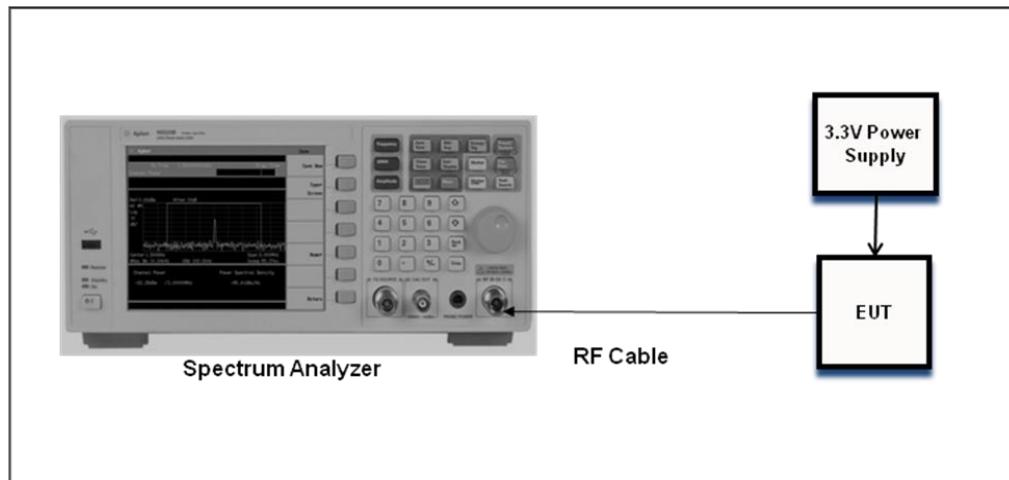
Operating Frequency	902MHz to 928MHz
Number of Channels	DTS :6
	FHSS :55
Channel Bandwidth (20dB)	DTS :1MHz
	FHSS :320KHz
Transmitted Power	DTS :12dBm
	FHSS :17dBm
Modulation Type	FSK
Data Rate	DTS :300Kbps
	FHSS :150Kbps
Antenna Type	Inverted F Patch Antenna
No. of Antenna	3
Antenna Gain	ANT 1 :0.65dBi
	ANT 2 :2.00dBi
	ANT 3 :1.30dBi
Supply Voltage and Current	3.3V, 21.5mA
Dimensions (Diameter x Height)	4.263mm x 4.171mm x 1.465mm
Environmental Conditions	Operating Temperature :0°C to 49°C
	Storage Temperature: -20°C to 60°C
	Humidity :10% to 93% RH

<b>TEST CONFIGURATION</b>	
<b>Config #</b>	<b>Description</b>
Conducted Test	EUT is Powered by 3.3V Batteries. EUT Debug port (UART) is connected to Laptop through USB to UA RT converter cable. EUT is configured to the respective operating mode through Hyper Terminal. Test is performed at Antenna 2 as this is the high gain antenna
Radiated Test	EUT is Powered from Battery. EUT Debug port (UA RT) is connected to Laptop through USB to UA RT converter cable. EUT is configured to the respective operating mode through Hyper Terminal. Test is performed at Antenna 2

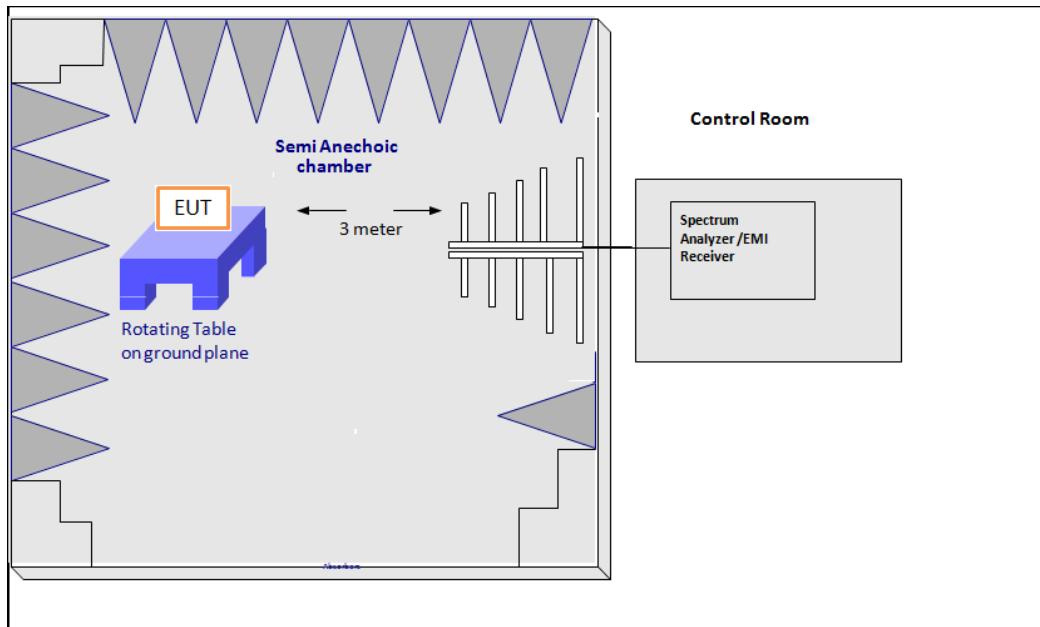
<b>OPERATING MODES</b>	
<b>Mode #</b>	<b>Description</b>
DTS	Following DTS channels have been used for Conducted (Continuous Trans mission) and Radiated (Continuous Trans mission) Tests Channel 1: 902.875MHz Channel 4: 915.325MHz Channel 6: 927.125MHz
FHSS	Following FHSS channels have been used for Conducted (Continuous Trans mission) and Radiated (Continuous Trans mission) Tests Channel 1: 903.55MHz Channel 28: 916.00MHz Channel 55: 926.45MHz

<b>INPUT AND OUTPUT CABLES</b>					
<b>Port #</b>	<b>Name</b>	<b>Port Type</b>	<b>Cable Length</b>	<b>Cable type Shielded/ Unshielded</b>	<b>Comments</b>
	Nil				Nil
*Note : AC = AC Power Port TP = Telecommunication Ports (E.g. Ethernet) N/E = Non Electrical			DC = DC Power Port DI / DO = Digital Input / Output AI / AO = Analog Input / Output		

<b>SUPPORT EQUIPMENTS AND ACCESSORIES USED</b>					
<b>#</b>	<b>Item Description</b>	<b>Make</b>	<b>Model</b>	<b>Part No. / Sl. No</b>	<b>Cal Due Date</b>
1	Laptop	DELL	P72G	4329171074	NA
2	USB to UART Cable	FTDI	TTL-232R-3V3	NA	NA

**CONNECTION DIAGRAM AND SETUP DIAGRAM**

Conducted RF Test Setup



Radiated Emission Test Setup

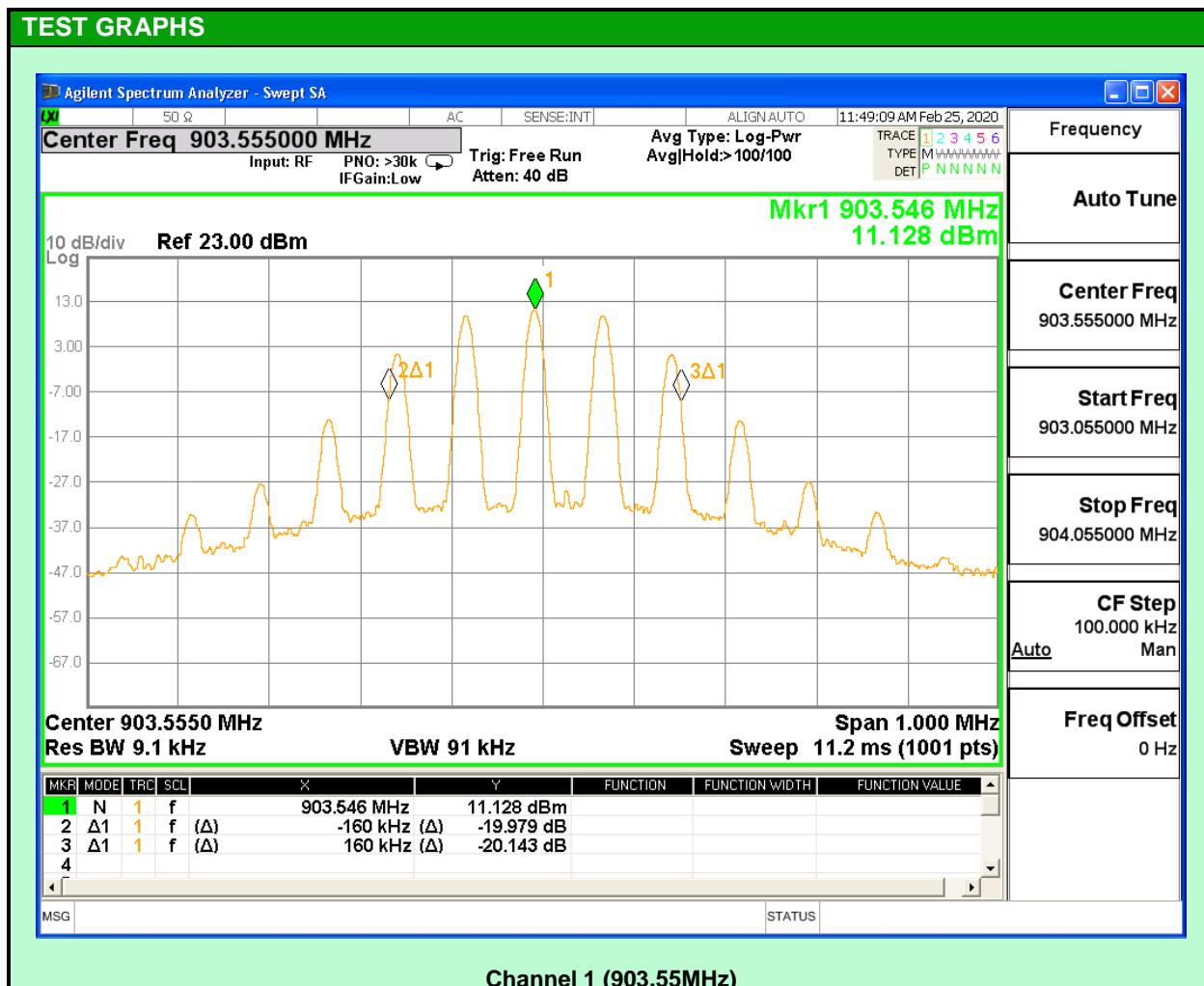
## 2 FHSS CHANNELS

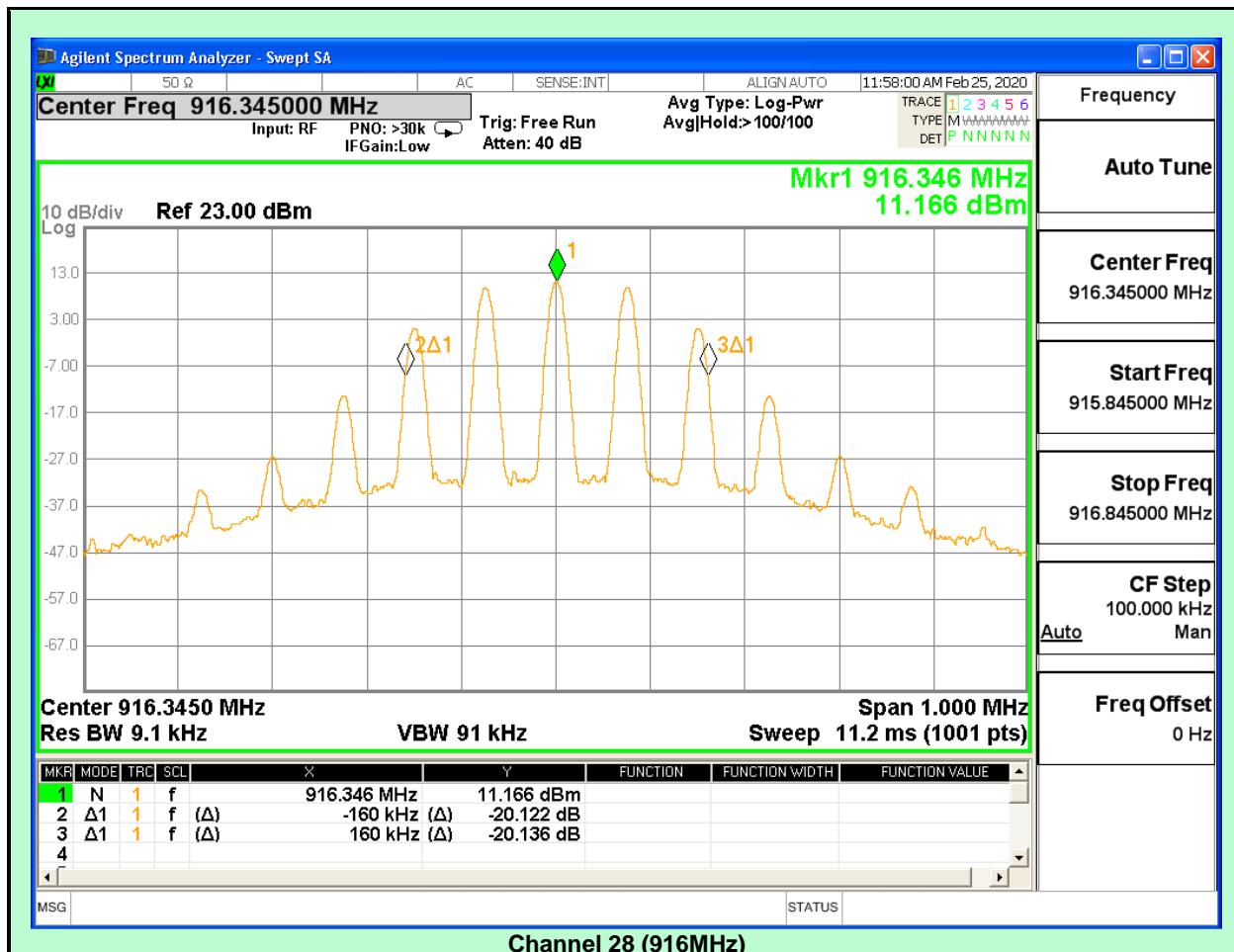
### 2.1 20dB BANDWIDTH

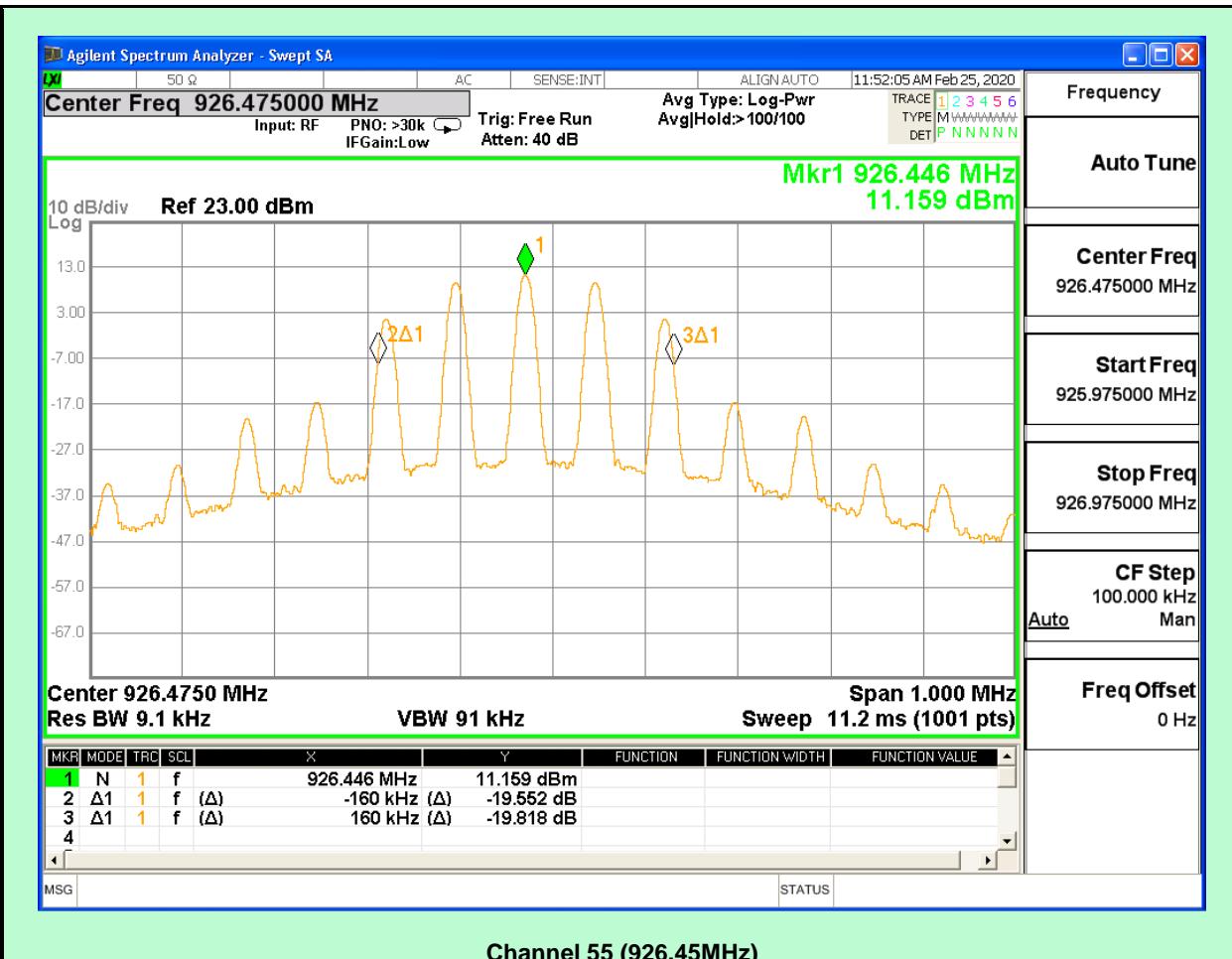
<b>EUT Nomenclature</b>	Wireless Relay Module	<b>Test Request No.</b>	EMC0419-1
<b>Model No.</b>	FW-RM	<b>Serial No.</b>	107
<b>Test Start Date</b>	14-Dec-2019	<b>Temperature (°C)</b>	23.6°C
<b>Test End Date</b>	28-Feb-2020	<b>Humidity RH (%)</b>	51.9%RH
<b>Tested By</b>	Shaithanya C	<b>Pressure (mbar)</b>	NR
<b>Input Voltage /</b>	3.3V, 21.5mA		
<b>Operating Mode</b>	Refer Page 6 for Operating Mode Table		
<b>Test configuration</b>	Refer Page 6 for Test Configuration Table		
<b>Deviation from Std.</b>	NA		
<b>Applicable</b>	FCC Part 15.247:2010		
<b>Test Method</b>	DA 00-705		
<b>Comment</b>	NA		
<b>TEST DETAILS</b>			
<b>Method</b>	Radiated <input type="checkbox"/>	Conducted <input checked="" type="checkbox"/>	
<b>TEST PARAMETERS</b>			
<b>Antenna Height</b>	NA	<b>Turntable Rotation</b>	NA
<b>Equipment Class</b>	NA	<b>Measurement Distance</b>	NA

### TEST EQUIPMENT

Y/N	Equipment	Make	Model	SI. No.	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	27-Feb-2021
Y	RF Cable	Huber- Shunner	SF104/2X11PC3542/500	NA	NA







TEST RESULT					
Channel	Frequency	Measured Bandwidth	Limit	Result	
#	MHz	KHz	KHz		
1	903.55	320	≥250 & ≤500	PASS	
28	916	320	≥250 & ≤500	PASS	
55	926.45	320	≥250 & ≤500	PASS	

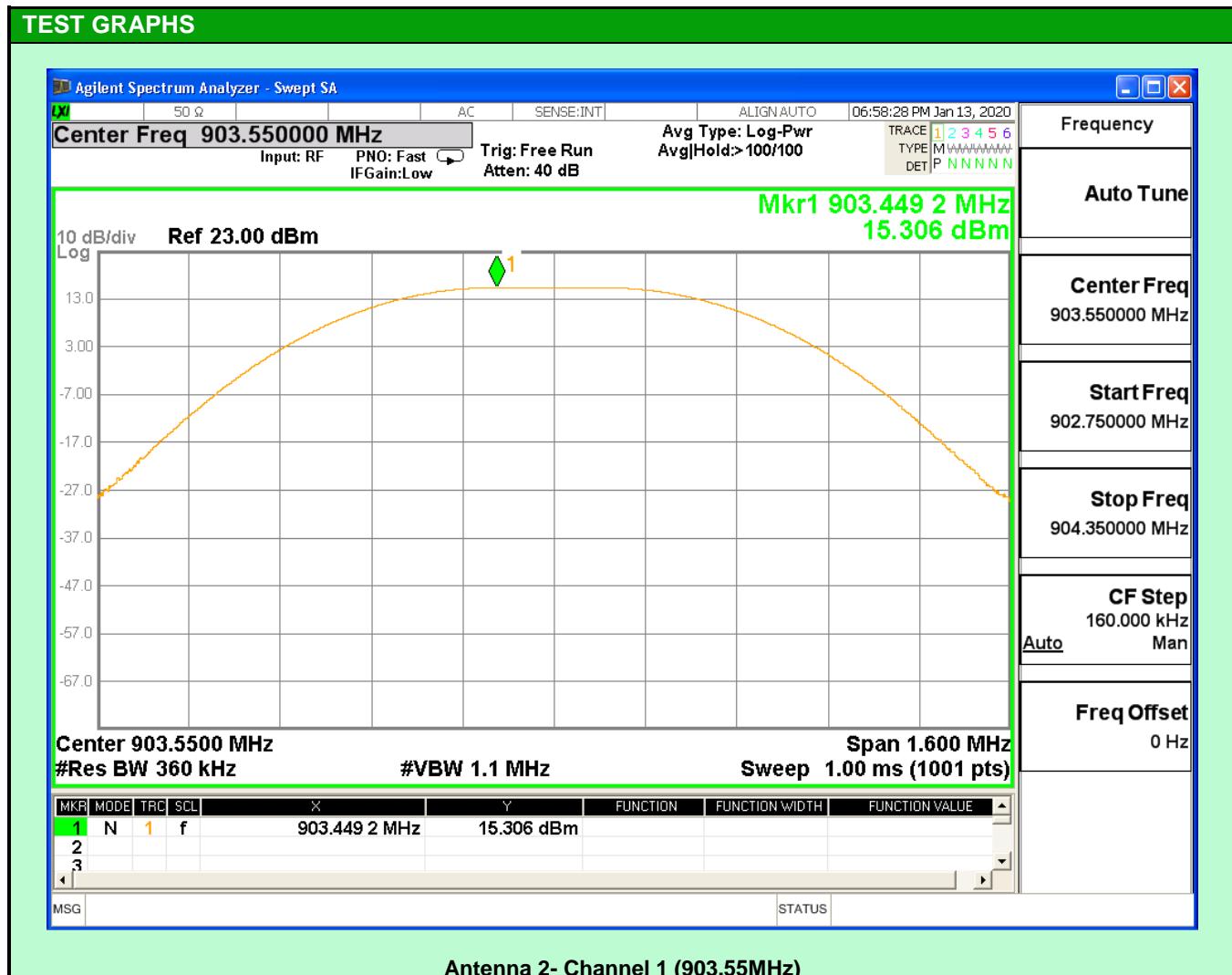
## TEST SETUP PHOTOGRAPH

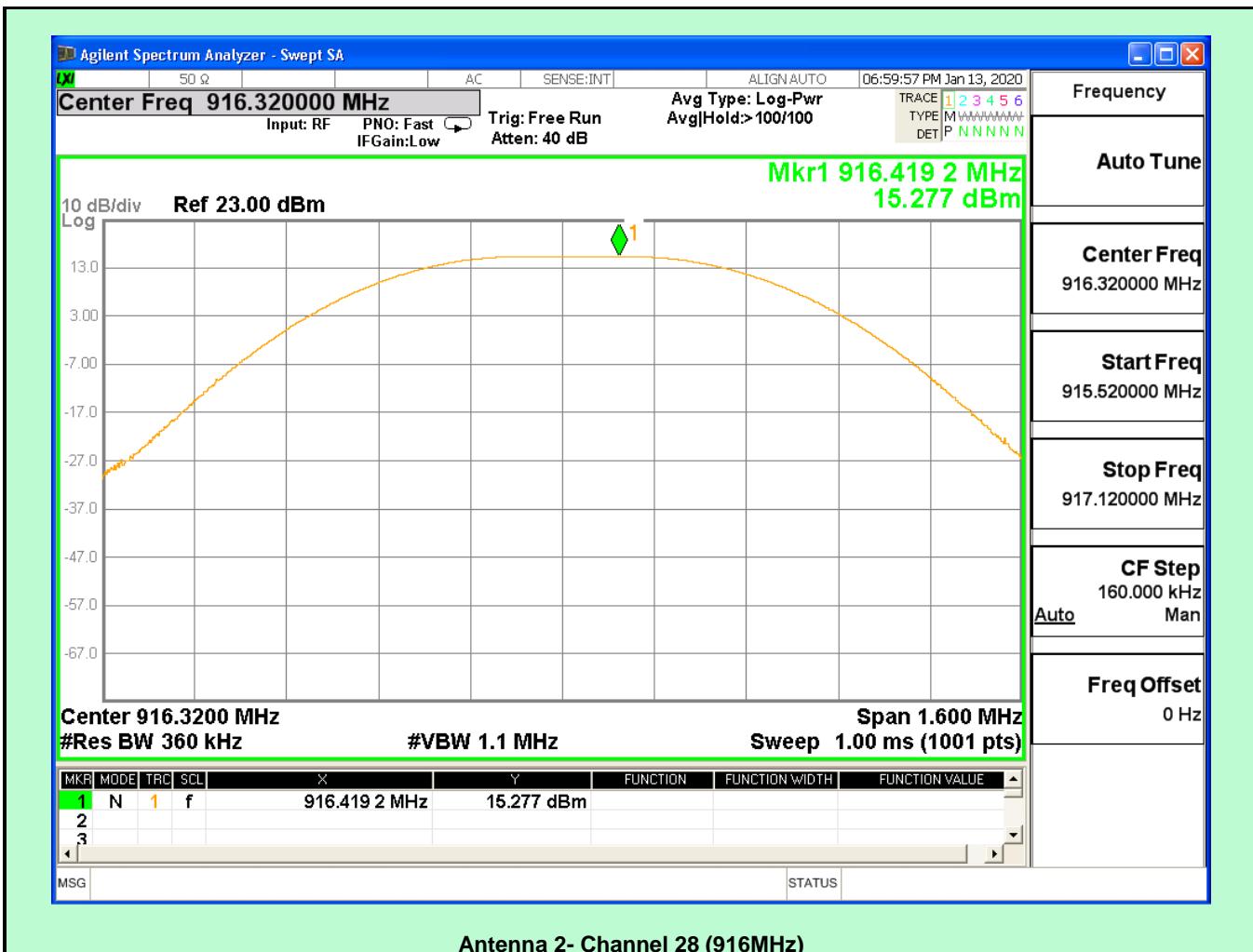
Refer Annexure -1

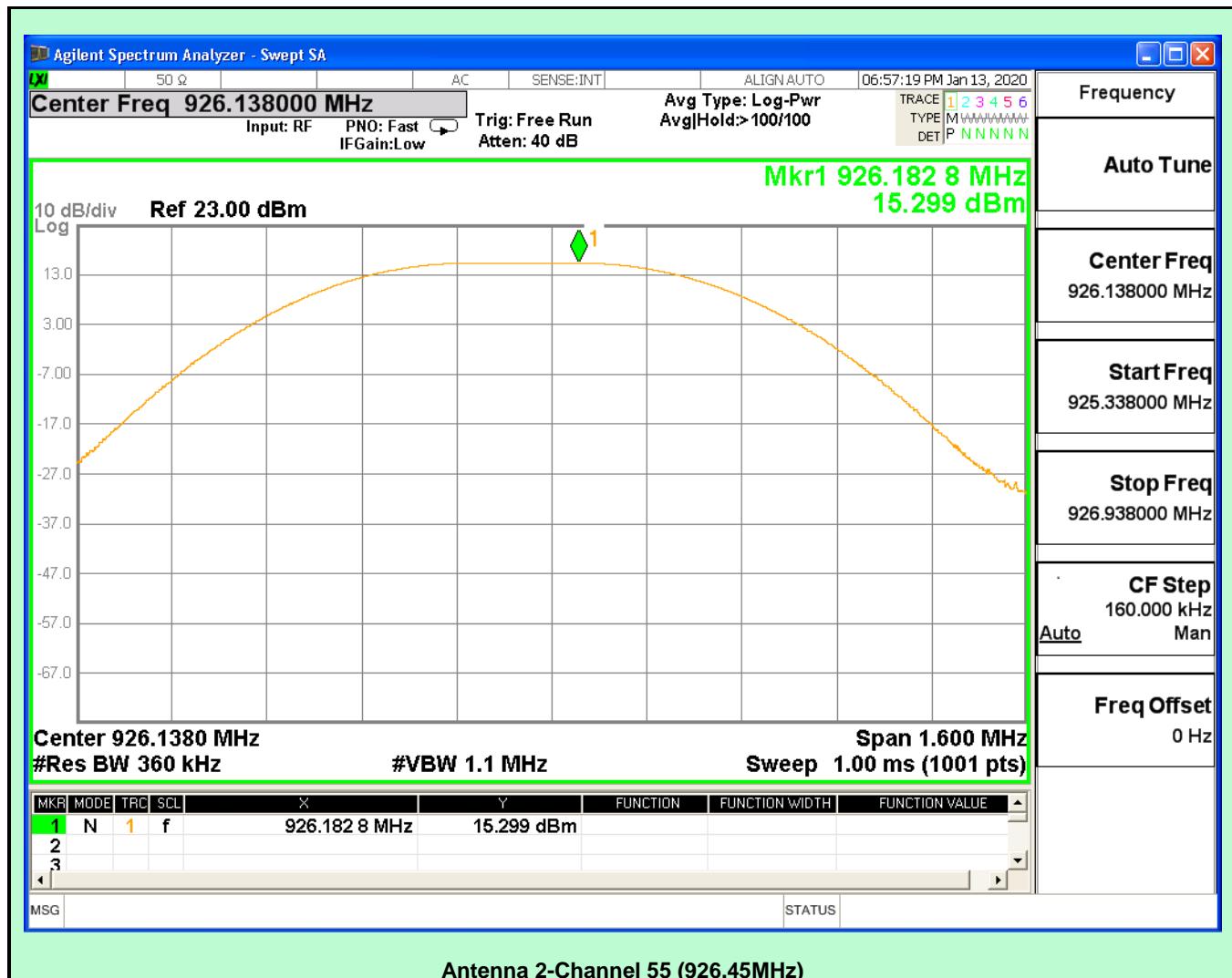
Conducted RF Test setup

<b>2.2 MAXIMUM PEAK OUTPUT POWER LEVEL</b>			
<b>EUT Nomenclature</b>	Wireless Relay Module	<b>Test Request No.</b>	EMC0419-1
<b>Model No.</b>	FW-RM	<b>Serial No.</b>	107
<b>Test Start Date</b>	14-Dec-2019	<b>Temperature (°C)</b>	23.6°C
<b>Test End Date</b>	28-Feb-2020	<b>Humidity RH (%)</b>	51.9%RH
<b>Tested By</b>	Shaithanya C	<b>Pressure (mbar)</b>	NR
<b>Input Voltage /</b>	3.3Vdc		
<b>Operating Mode</b>	Refer Page 6 for Operating Mode Table		
<b>Test configuration</b>	Refer Page 6 for Test Configuration Table		
<b>Deviation from Std.</b>	NA		
<b>Applicable</b>	FCC Part 15.247:2010		
<b>Test Method</b>	DA 00-705		
<b>Comment</b>	NA		
<b>TEST DETAILS</b>			
<b>Method</b>	Radiated <input type="checkbox"/>	Conducted <input checked="" type="checkbox"/>	
<b>TEST PARAMETERS</b>			
<b>Antenna Height</b>	NA	<b>Turntable Rotation</b>	NA
<b>Equipment Class</b>	NA	<b>Measurement</b>	NA

<b>TEST EQUIPMENT</b>					
<b>Y/N</b>	<b>Equipment</b>	<b>Make</b>	<b>Model</b>	<b>Sl. No.</b>	<b>Cal Due Date</b>
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	27-Feb-2021
Y	RF Cable	Huber- Suhner	SF104/2X11PC3542/500	NA	NA







<b>TEST RESULT</b>						
Channel	Frequency	Measured Power Level	Cable Loss	Transmitter Power Level	Limit	Result
#	MHz	dBm	dB	dBm	dBm	
Antenna 2						
1	903.55	15.30	0.8	16.10	<=23.979	PASS
28	916.00	15.27	0.8	16.07	<=23.979	PASS
55	926.45	15.29	0.8	16.09	<=23.979	PASS

Note: Transmitter Output Power = Measured Level (dBm) + Cable Loss (dB)

**TEST SETUP PHOTOGRAPH**

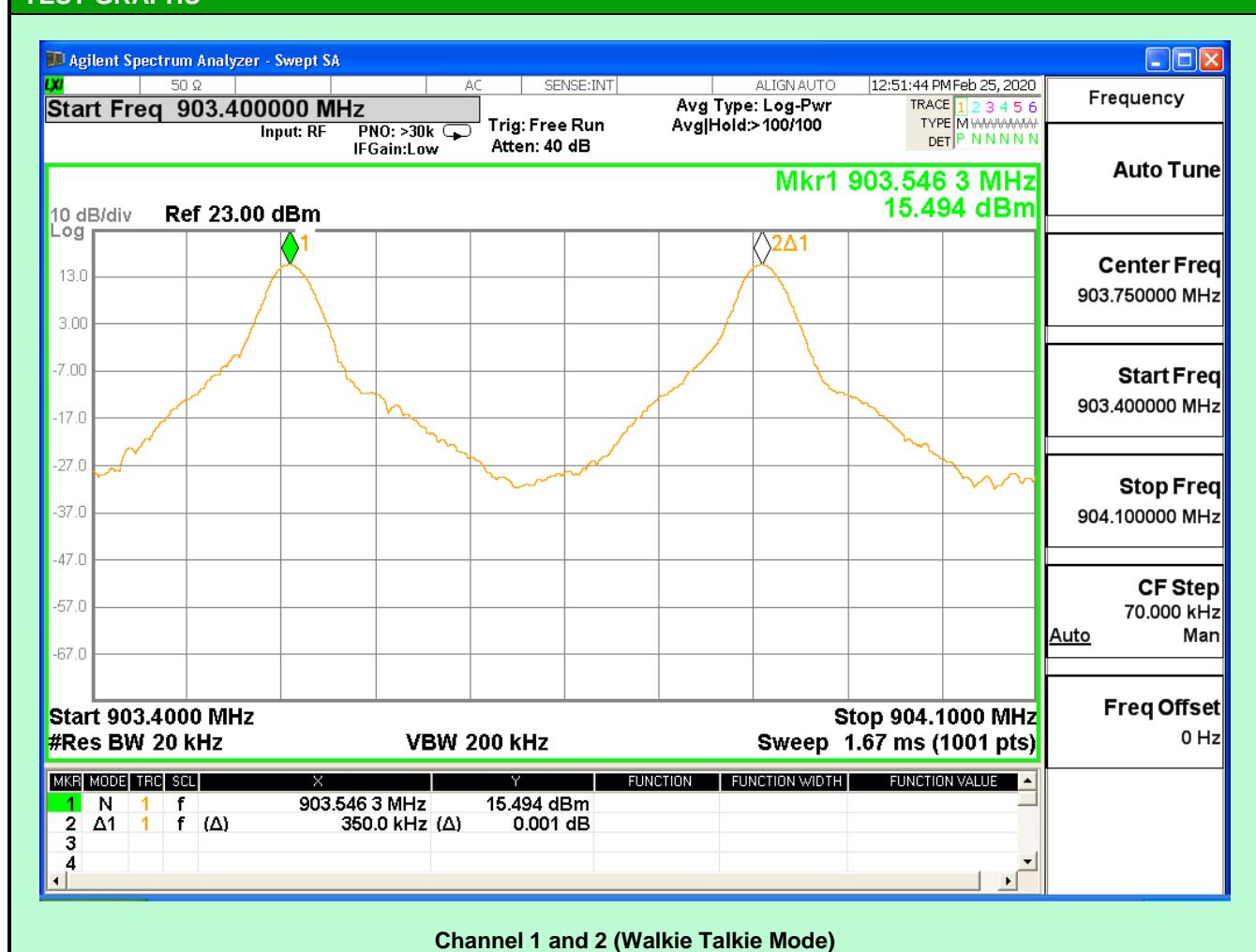
Refer Annexure -1

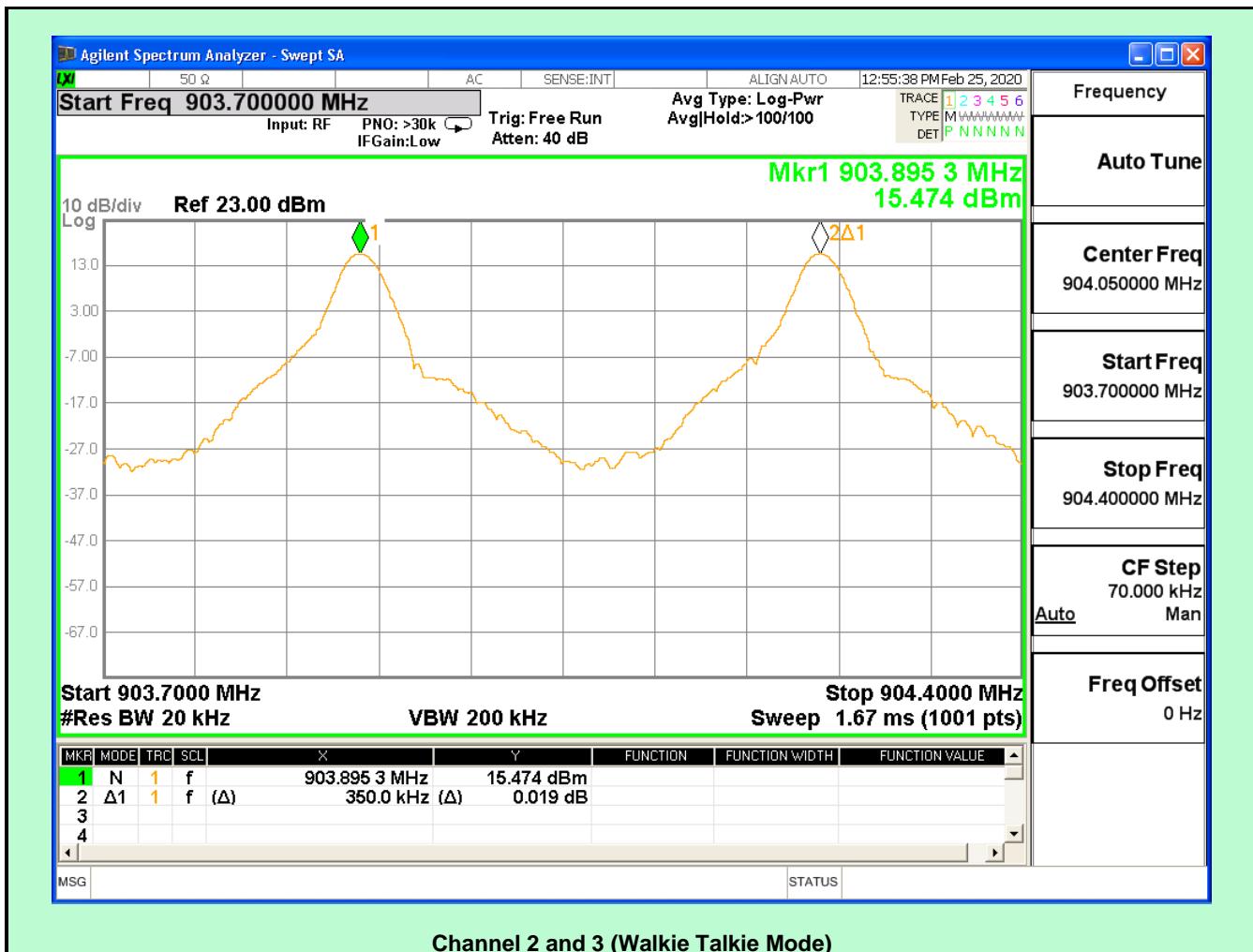
Conducted RF Test setup

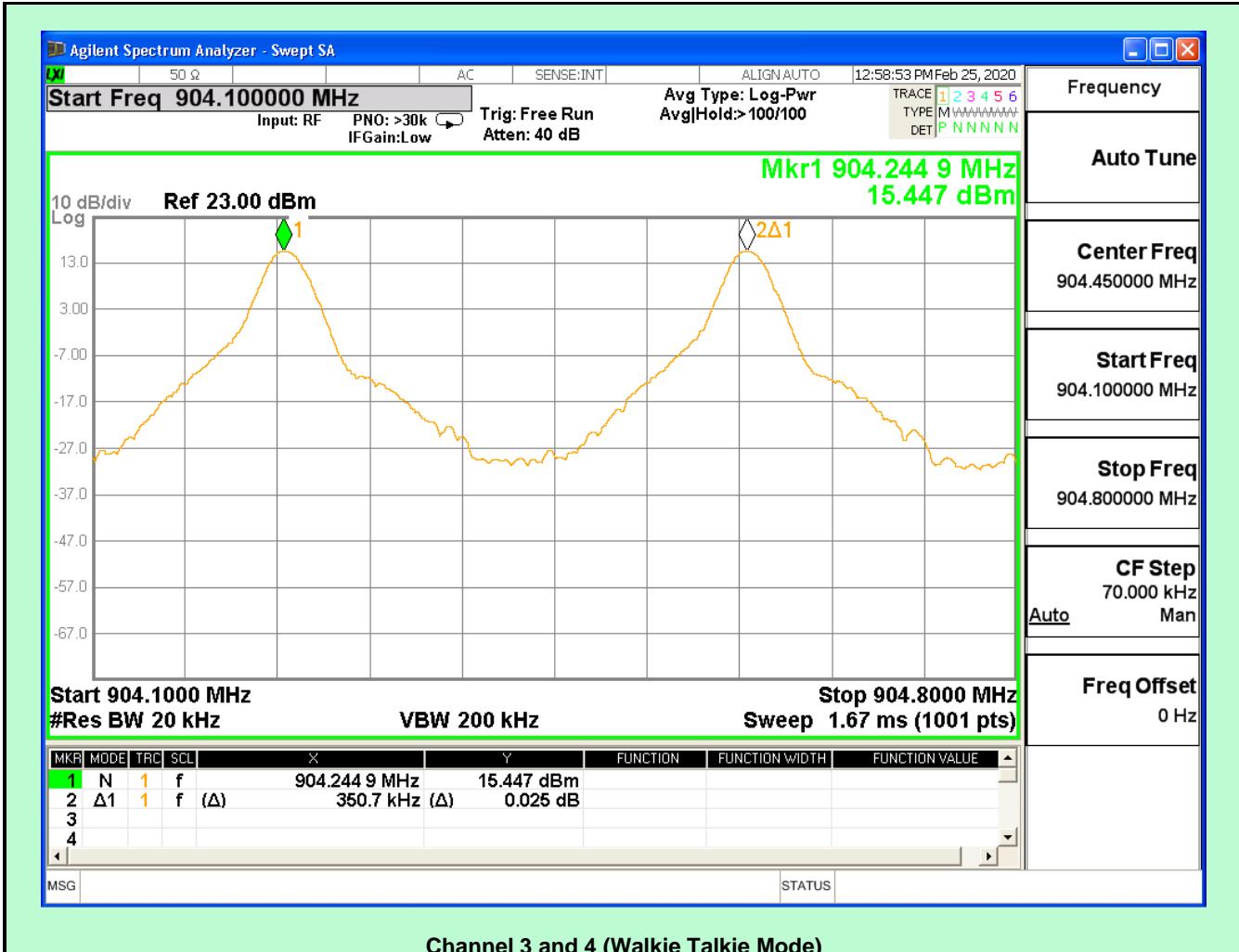
2.3 CARRIER FREQUENCY SEPERATION			
<b>EUT</b>	Wireless Relay Module	<b>Test Request No.</b>	EMC0419-1
<b>Model No.</b>	FW-RM	<b>Serial No.</b>	107
<b>Test Start Date</b>	14-Dec-2019	<b>Temperature (°C)</b>	23.6°C
<b>Test End Date</b>	28-Feb-2020	<b>Humidity RH (%)</b>	51.9%RH
<b>Tested By</b>	Shaithanya C	<b>Pressure (mbar)</b>	NR
<b>Input Voltage /</b>	3.3Vdc		
<b>Operating Mode</b>	Refer Page 6 for Operating Mode Table		
<b>Test configuration</b>	Refer Page 6 for Test Configuration Table		
<b>Deviation from</b>	NA		
<b>Applicable</b>	FCC Part 15.247:2010		
<b>Test Method</b>	DA 00-705		
<b>Comment</b>	NA		
TEST DETAILS			
<b>Method</b>	Radiated <input type="checkbox"/>	Conducted <input checked="" type="checkbox"/>	
TEST PARAMETERS			
<b>Antenna Height</b>	NA	<b>Turntable Rotation</b>	NA
<b>Equipment Class</b>	NA	<b>Measurement Distance</b>	NA

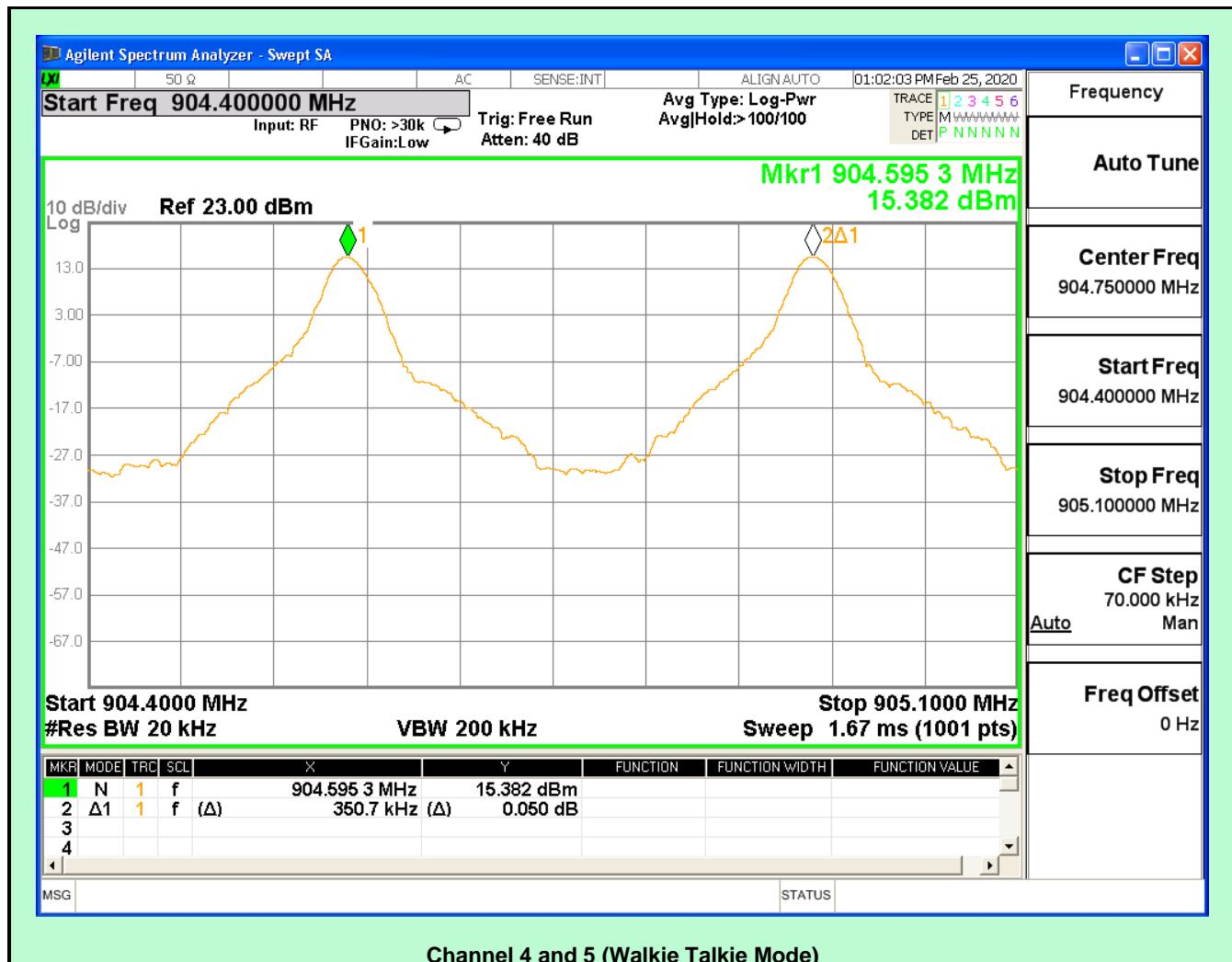
TEST EQUIPMENT					
Y/N	Equipment	Make	Model	Sl. No.	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	27-Feb-2021
Y	RF Cable	Huber- Shunner	SF104/2X11PC3542/500	NA	NA

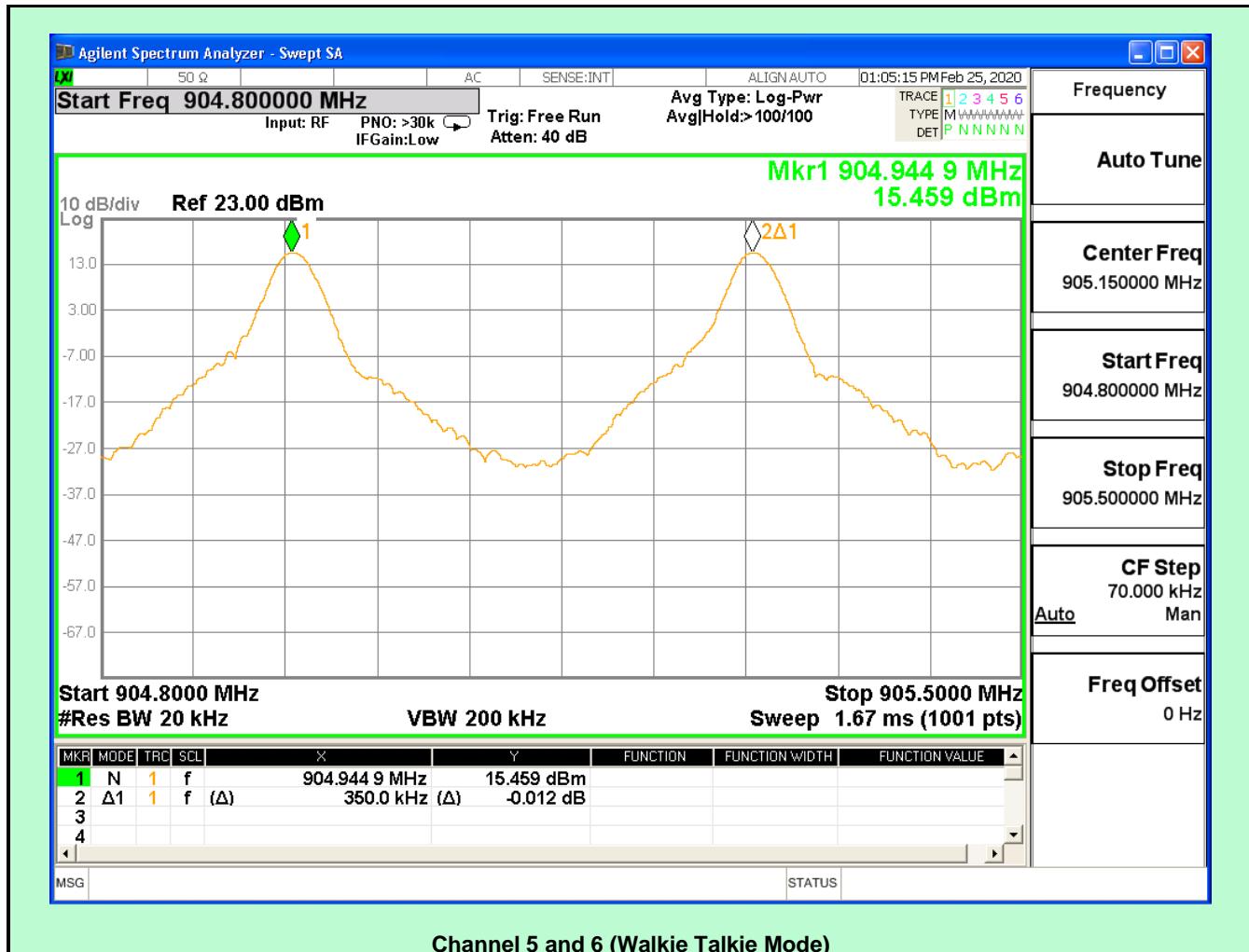
## TEST GRAPHS

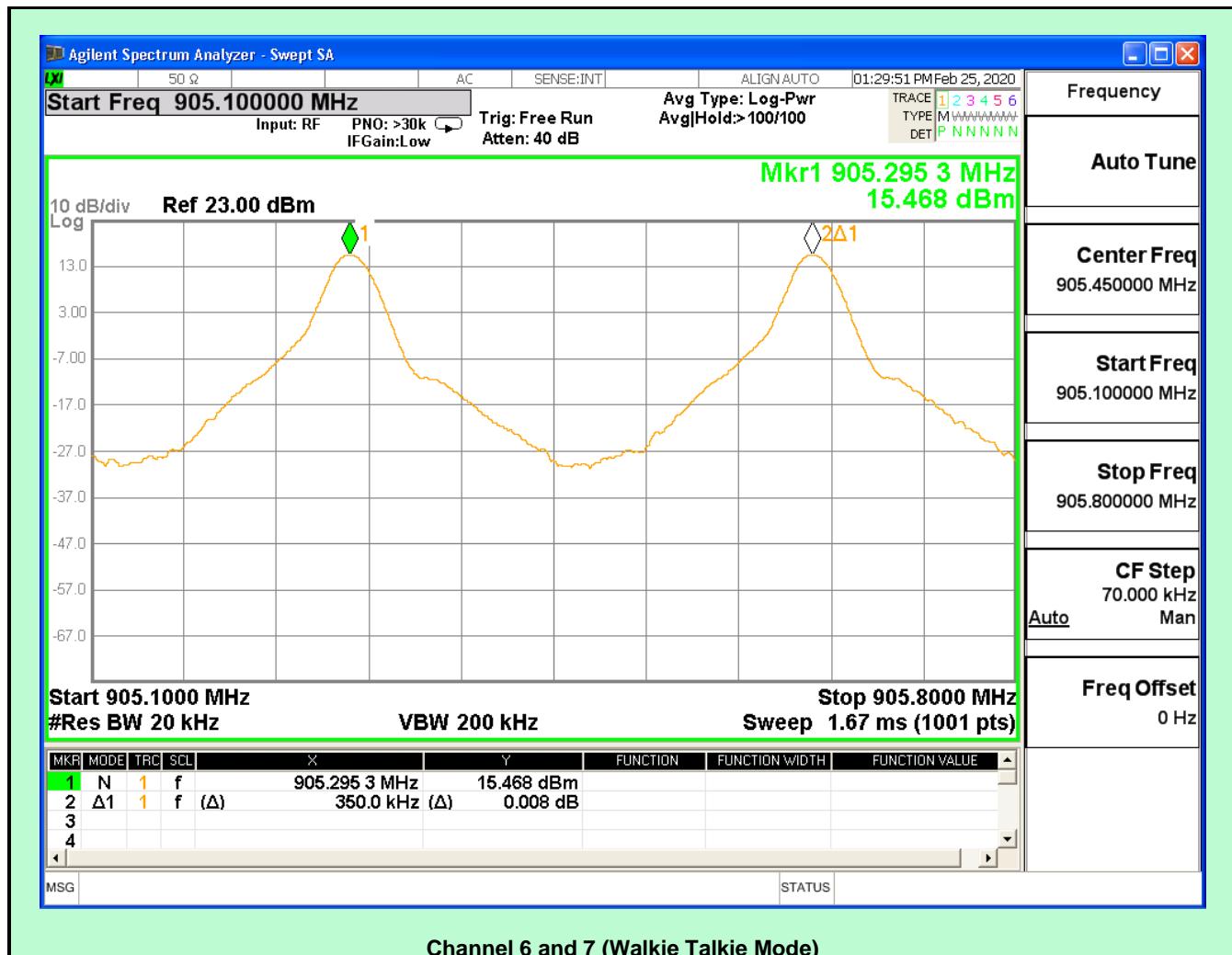


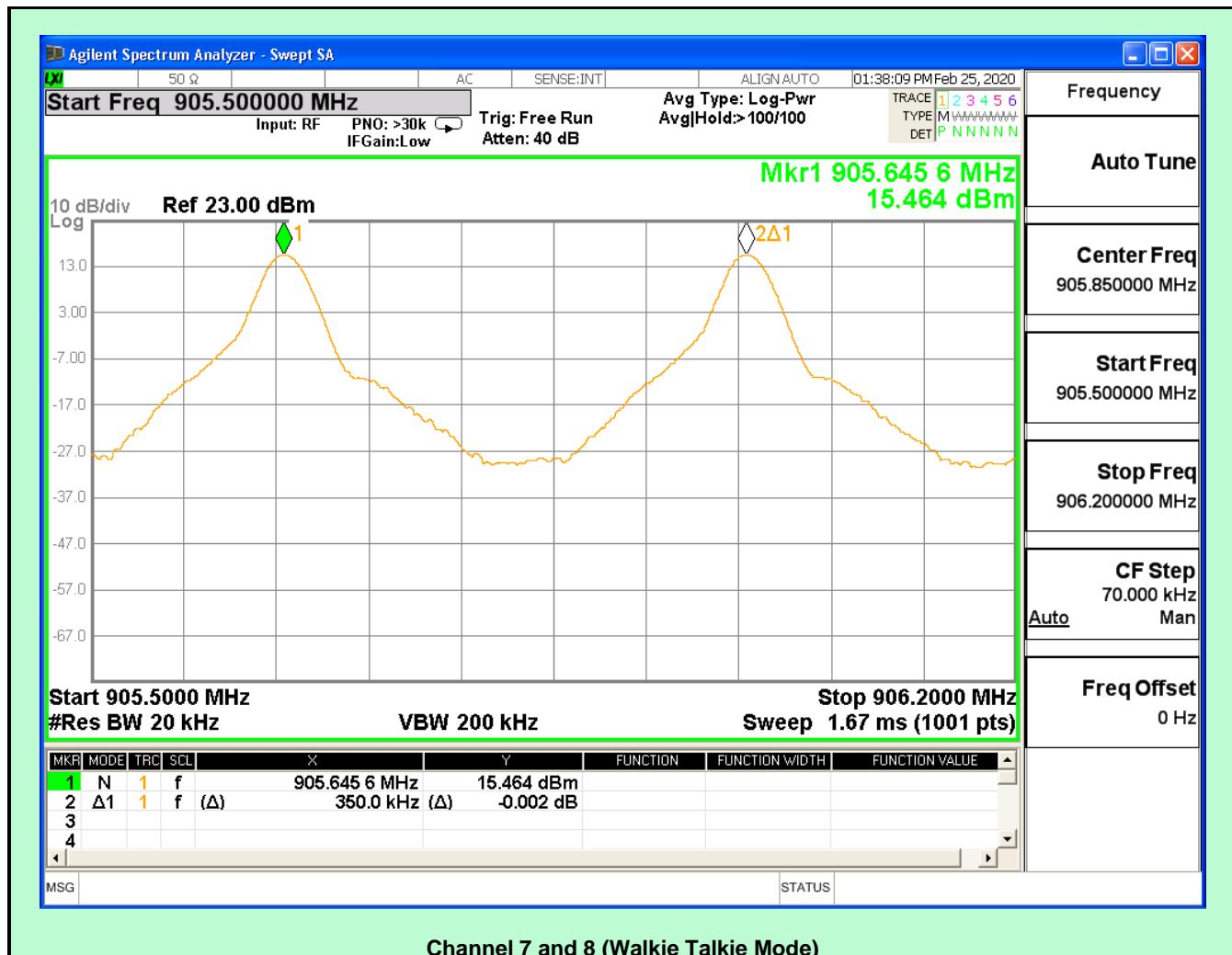


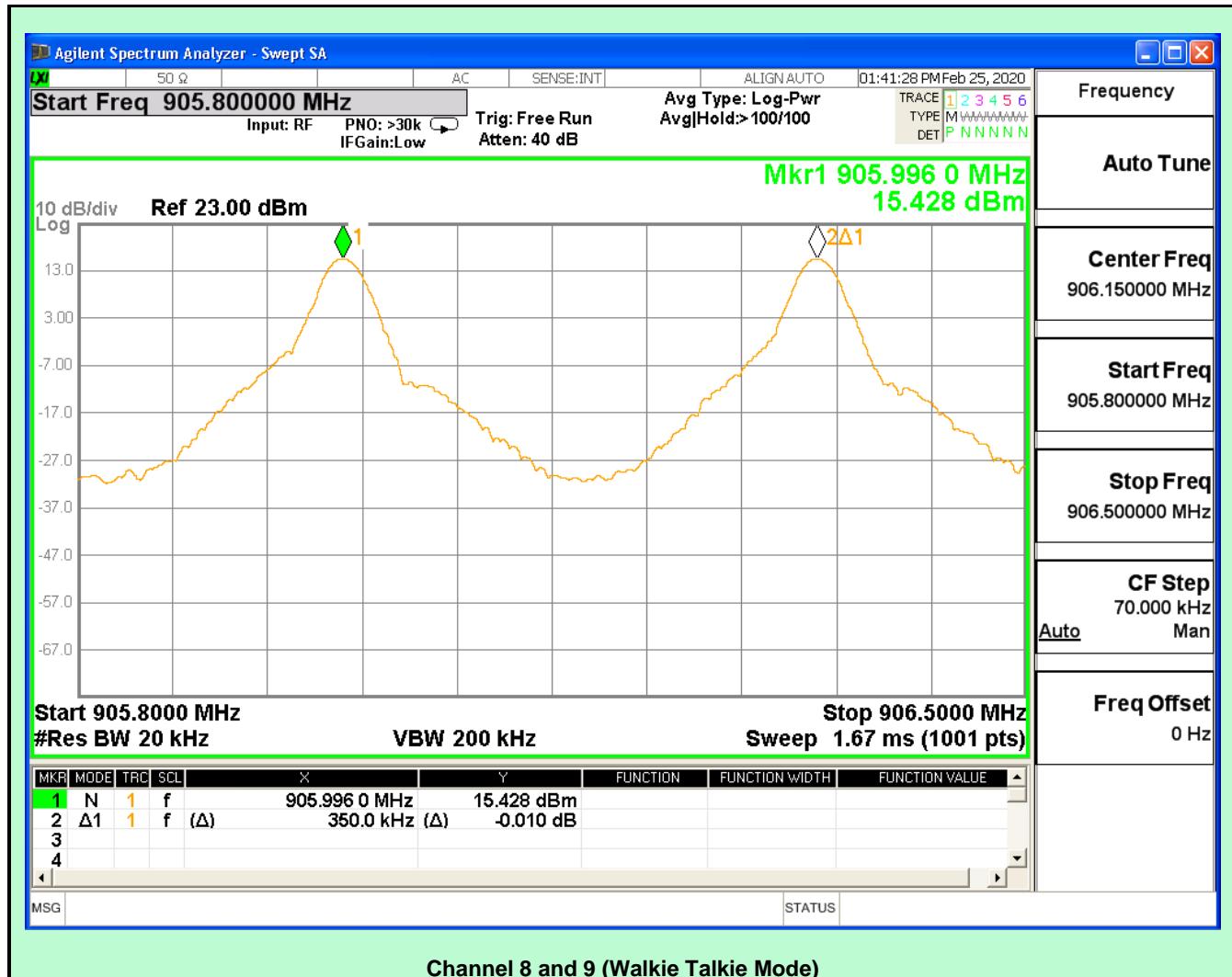


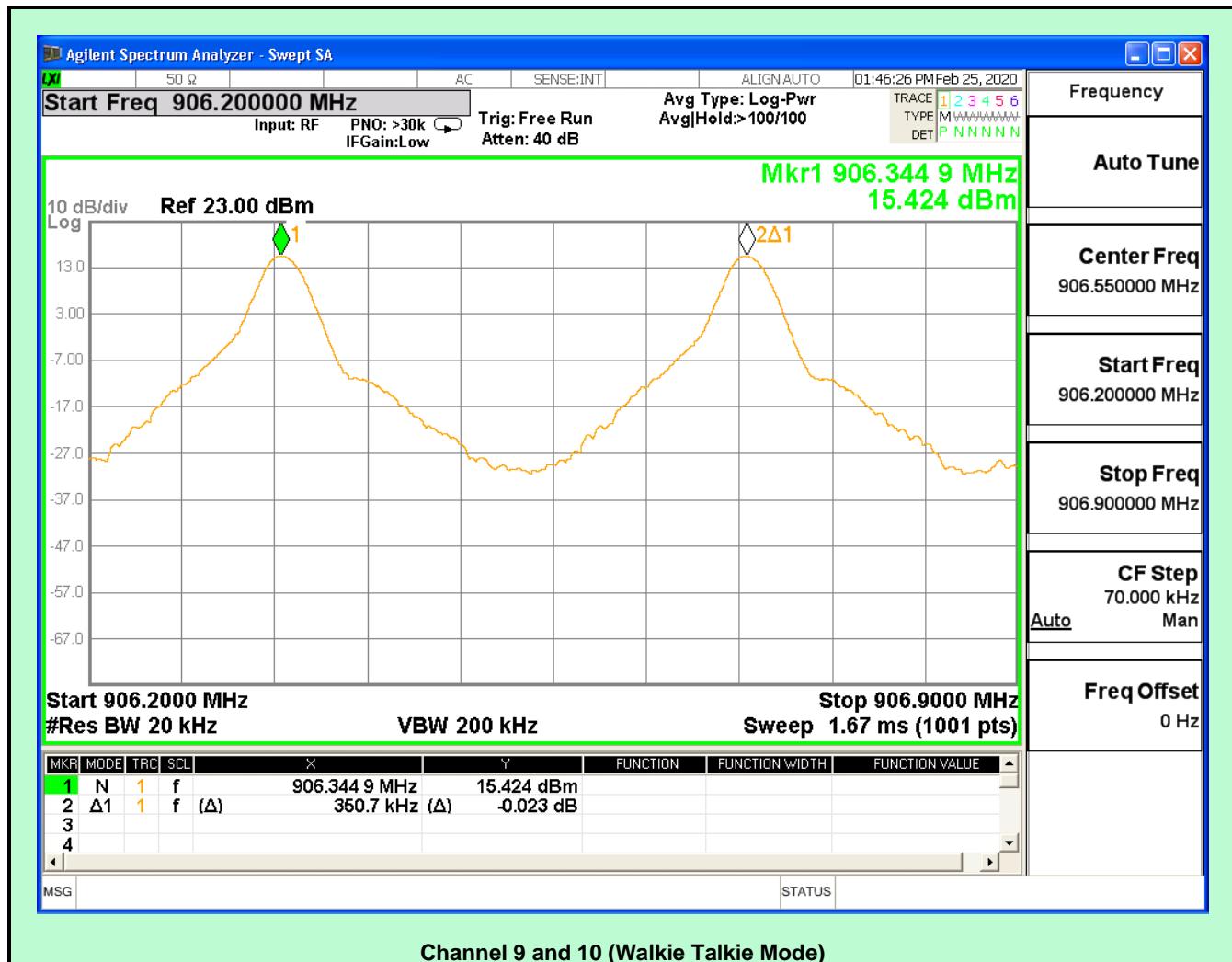


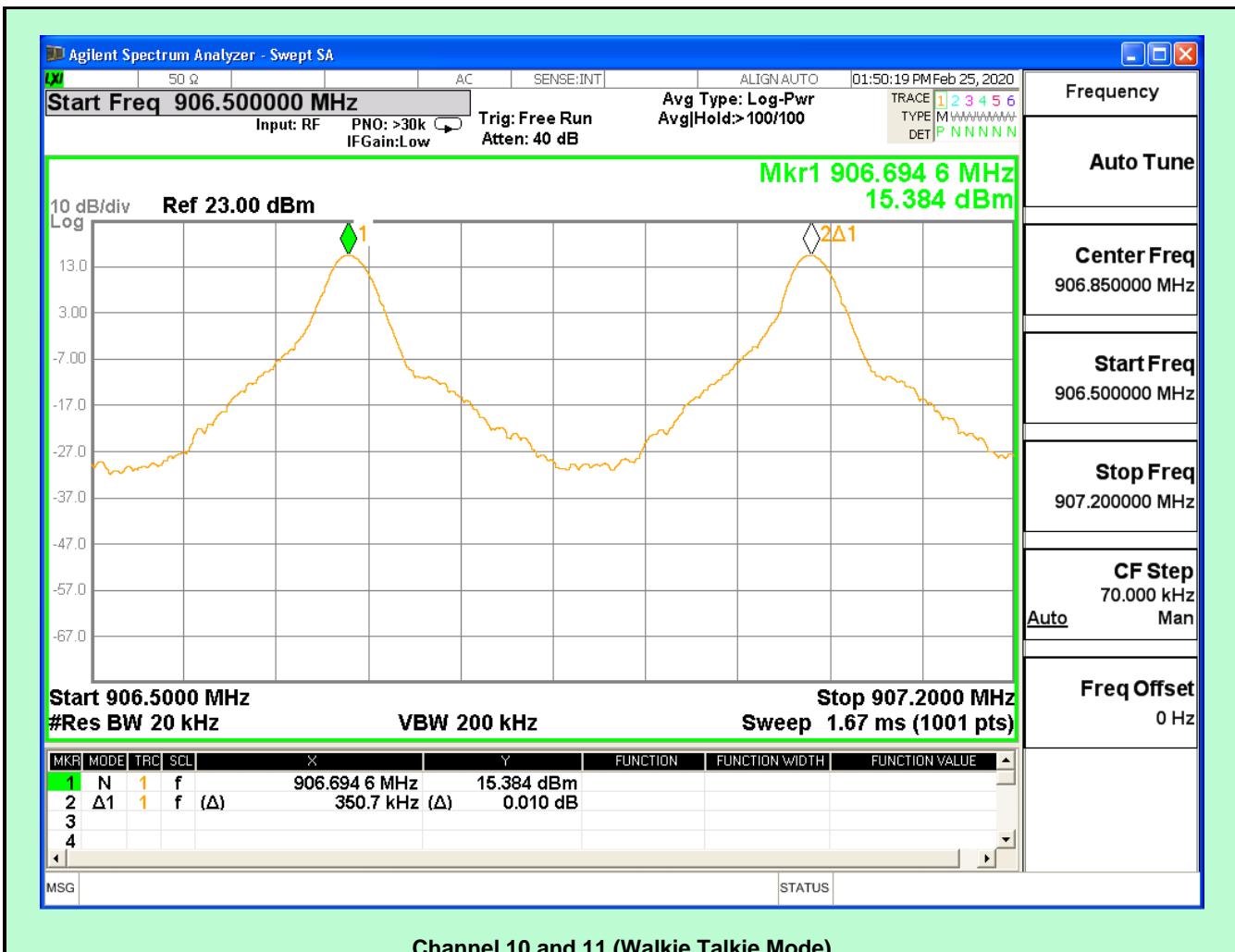


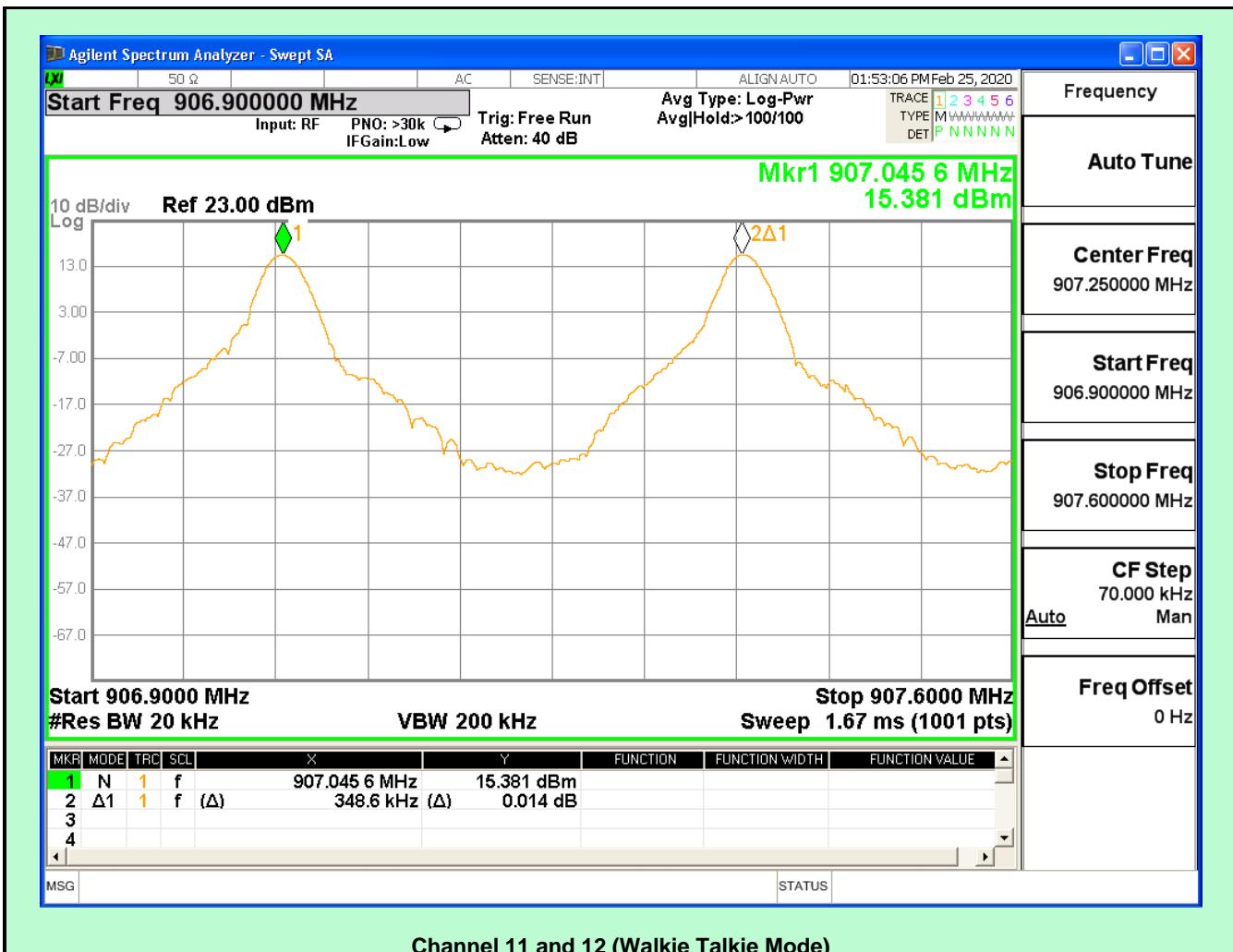




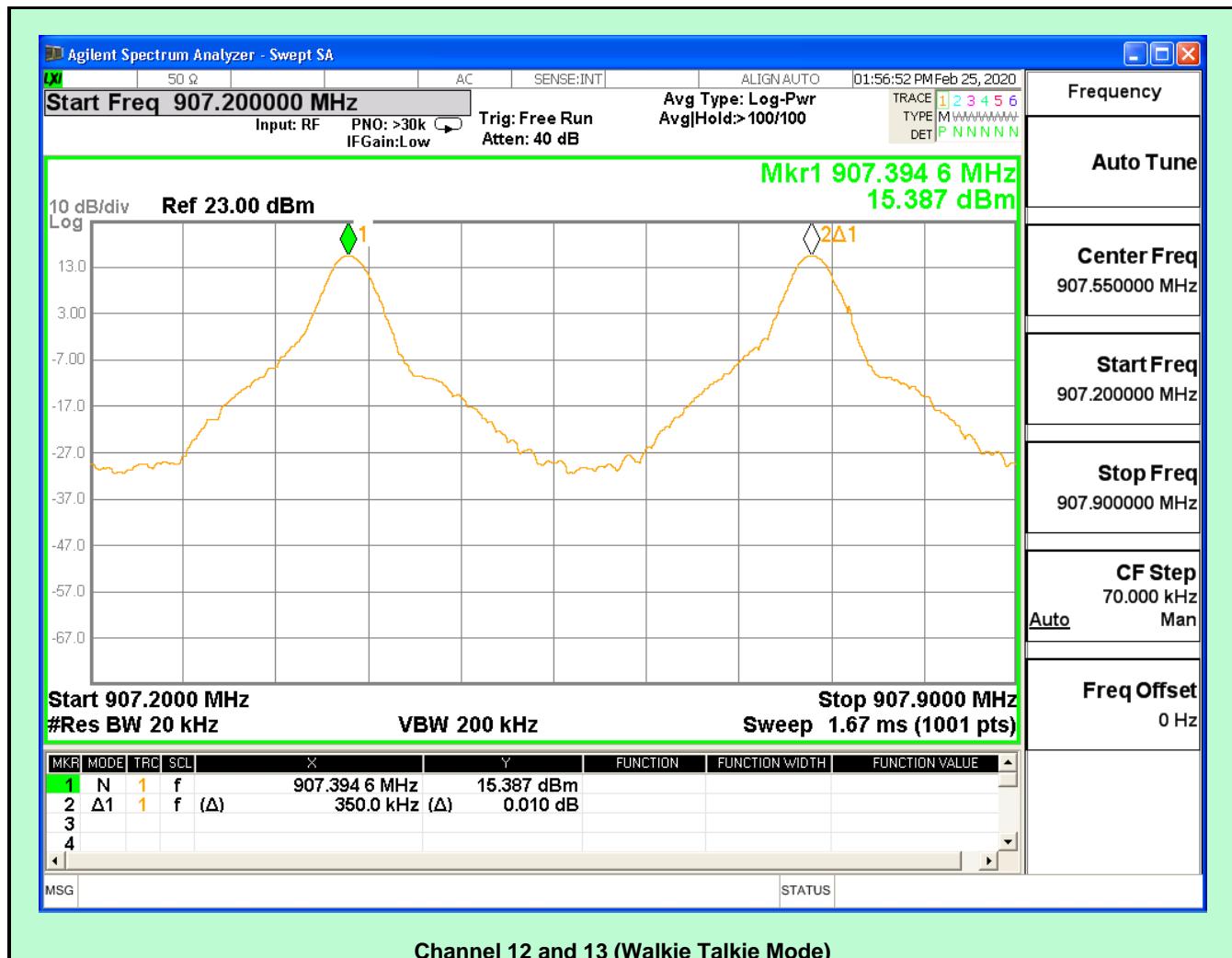


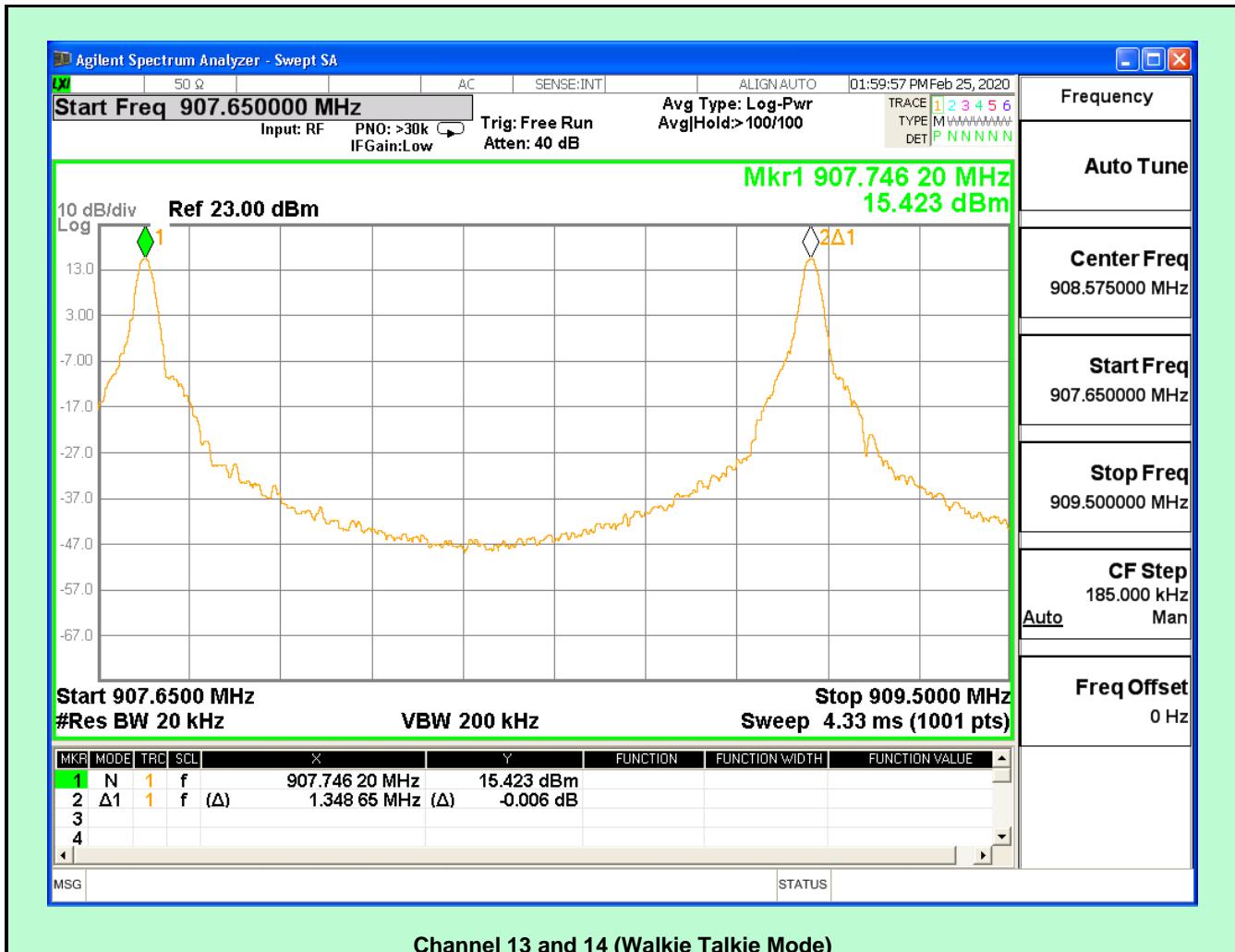


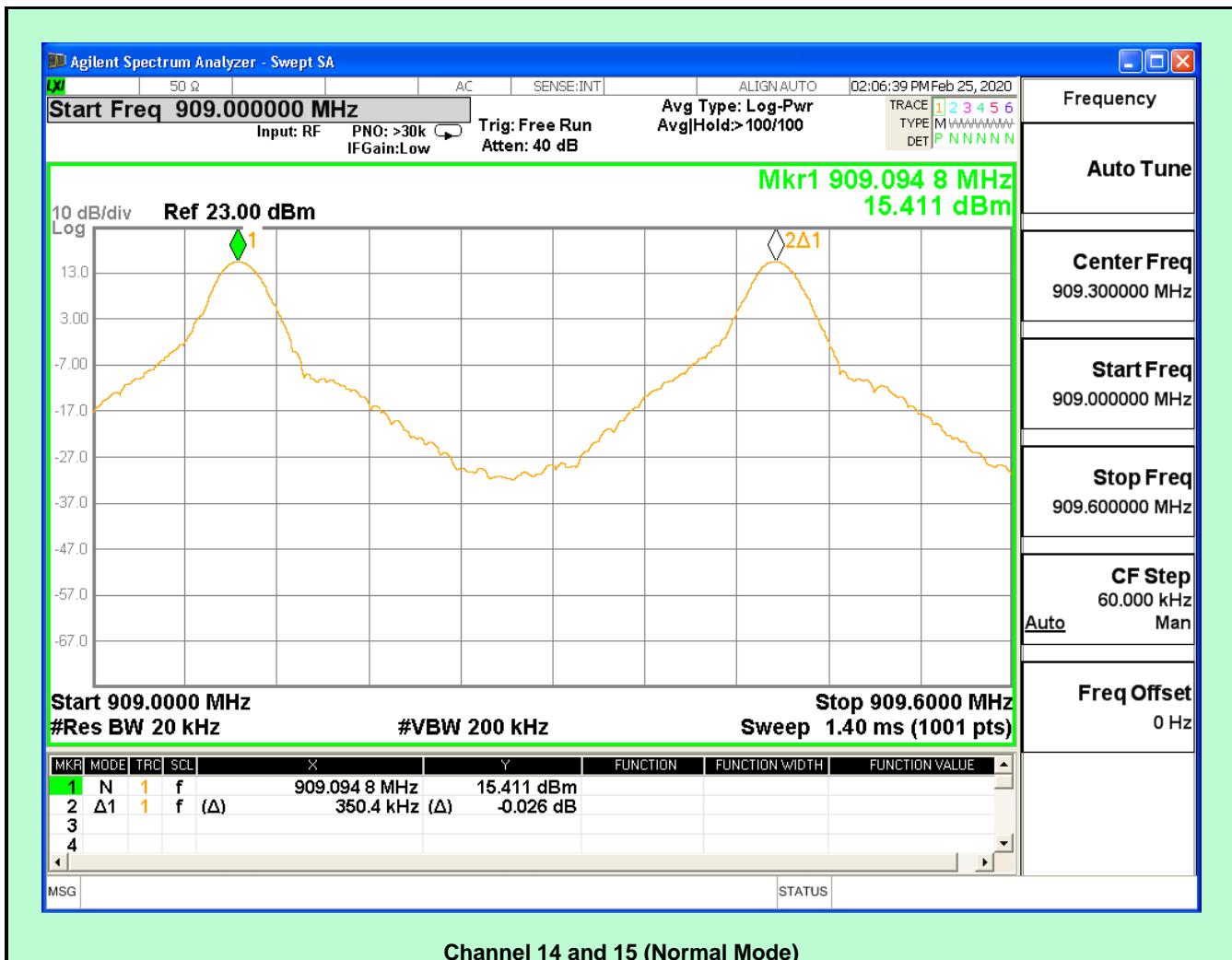




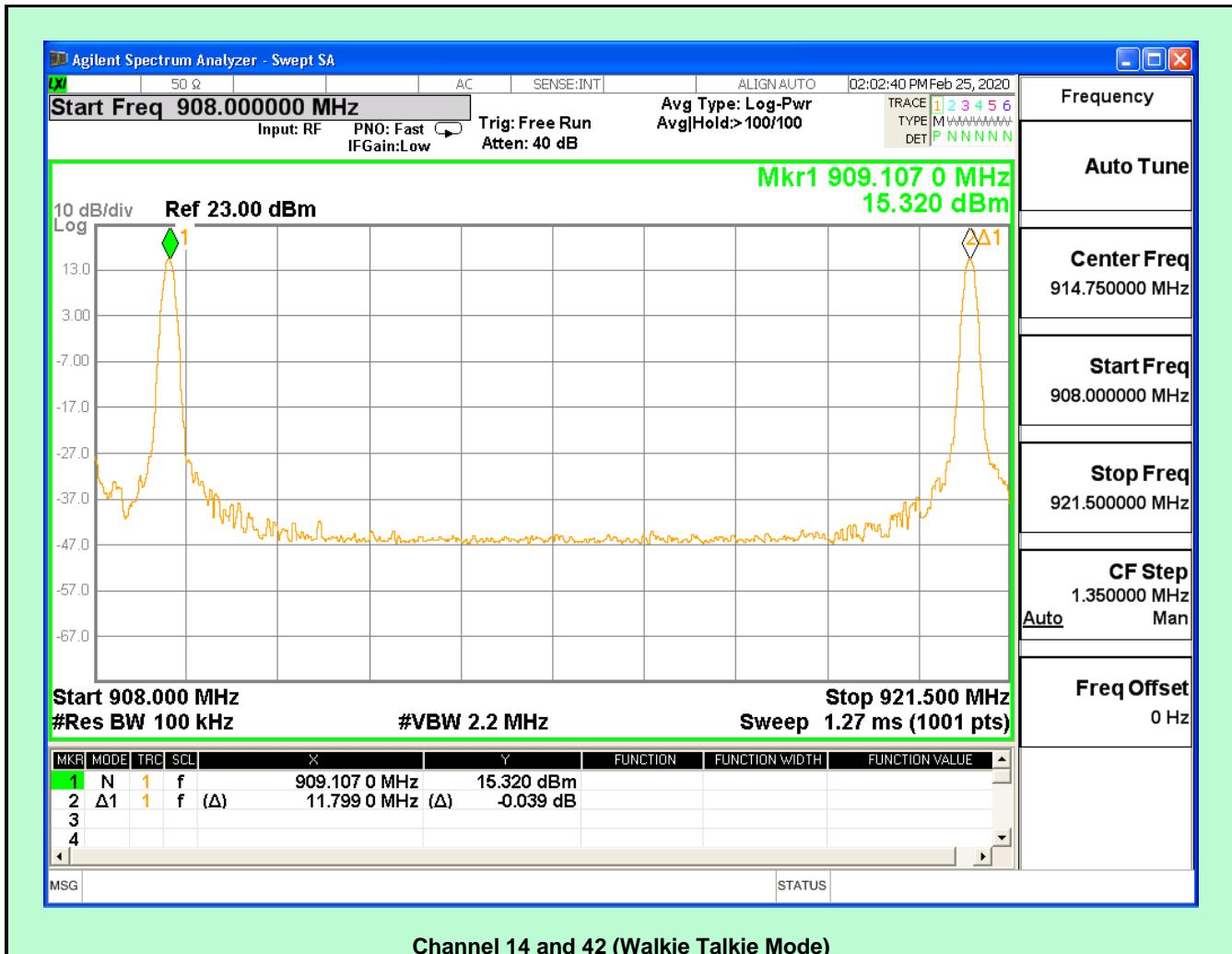
Channel 11 and 12 (Walkie Talkie Mode)

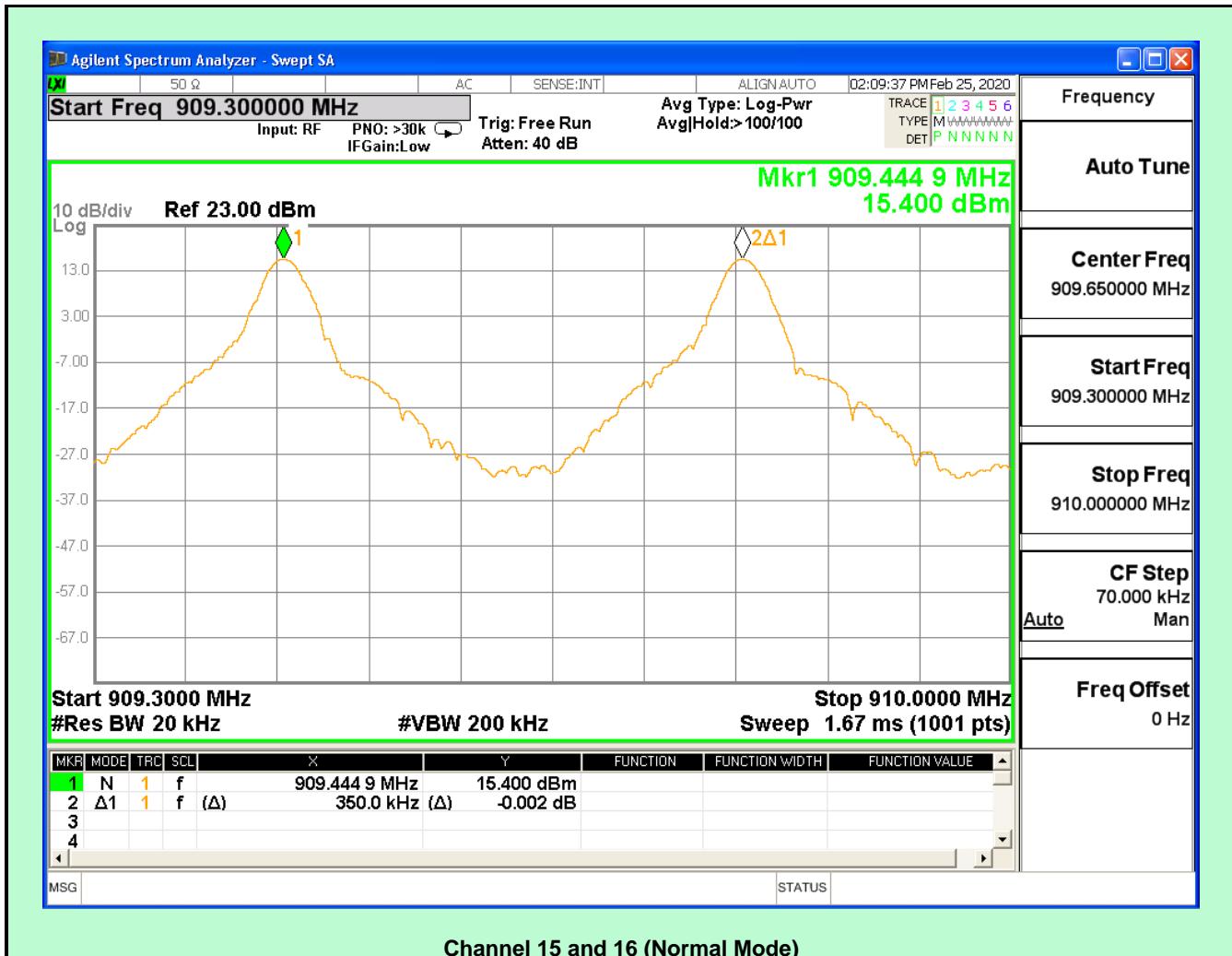


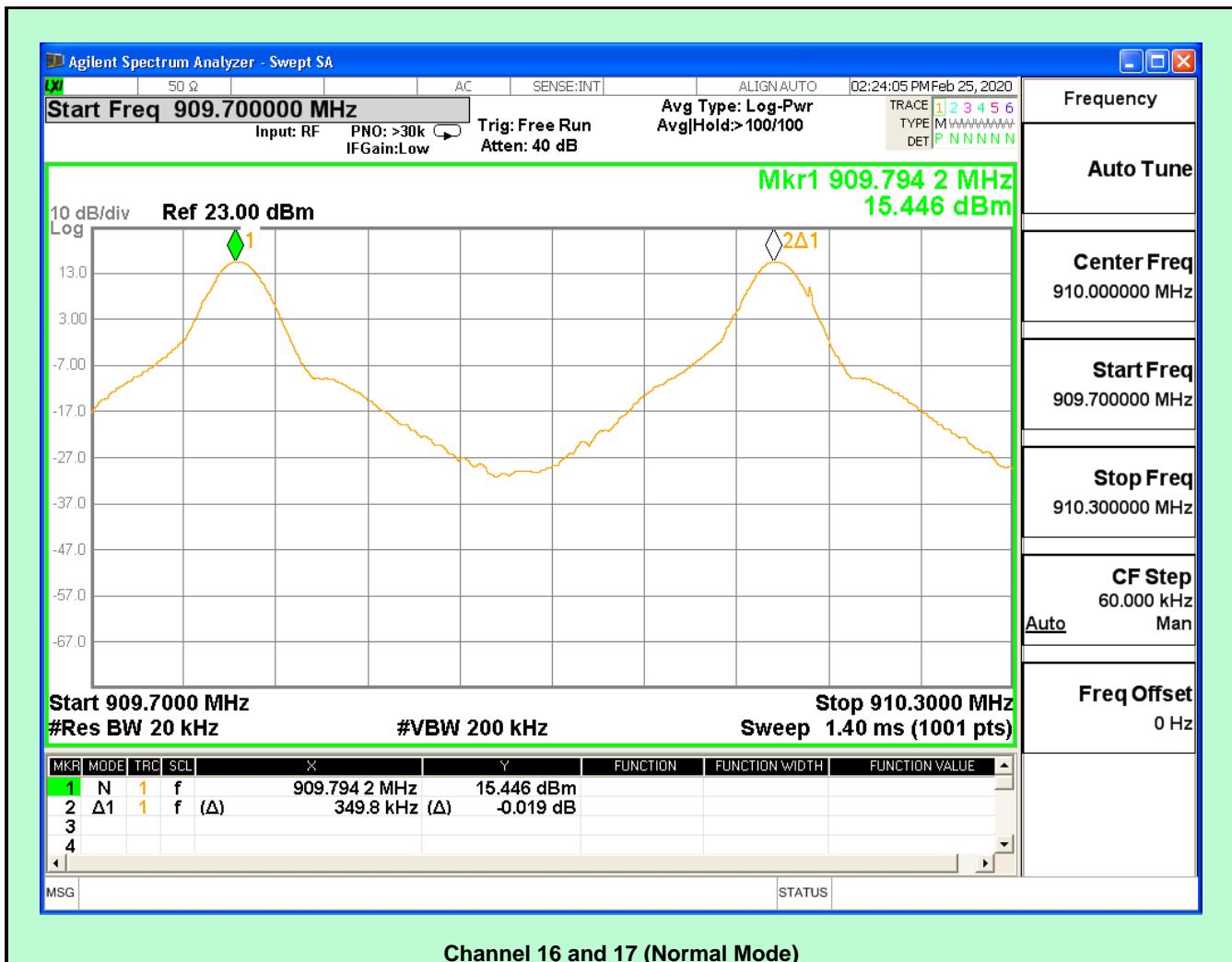




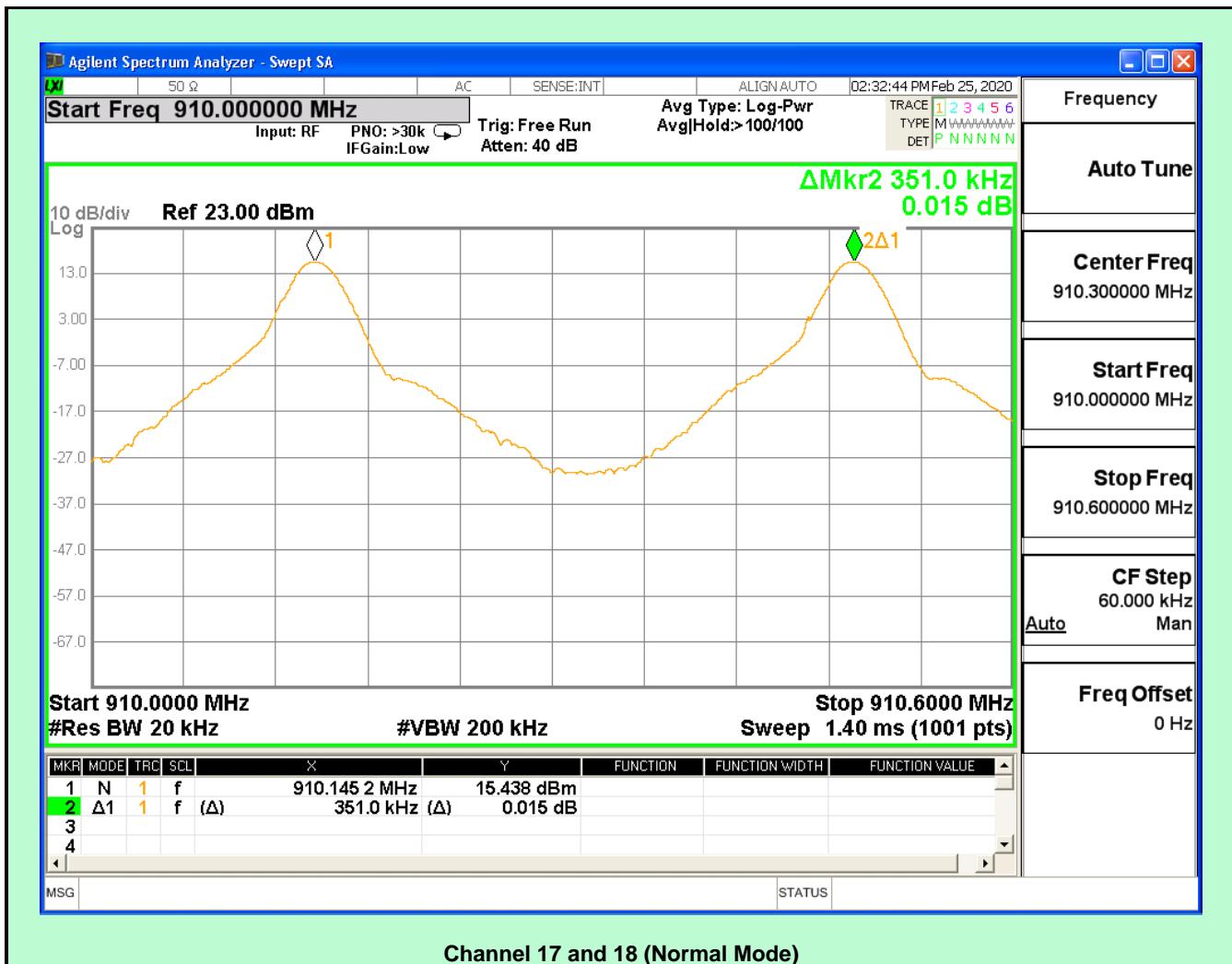
Channel 14 and 15 (Normal Mode)

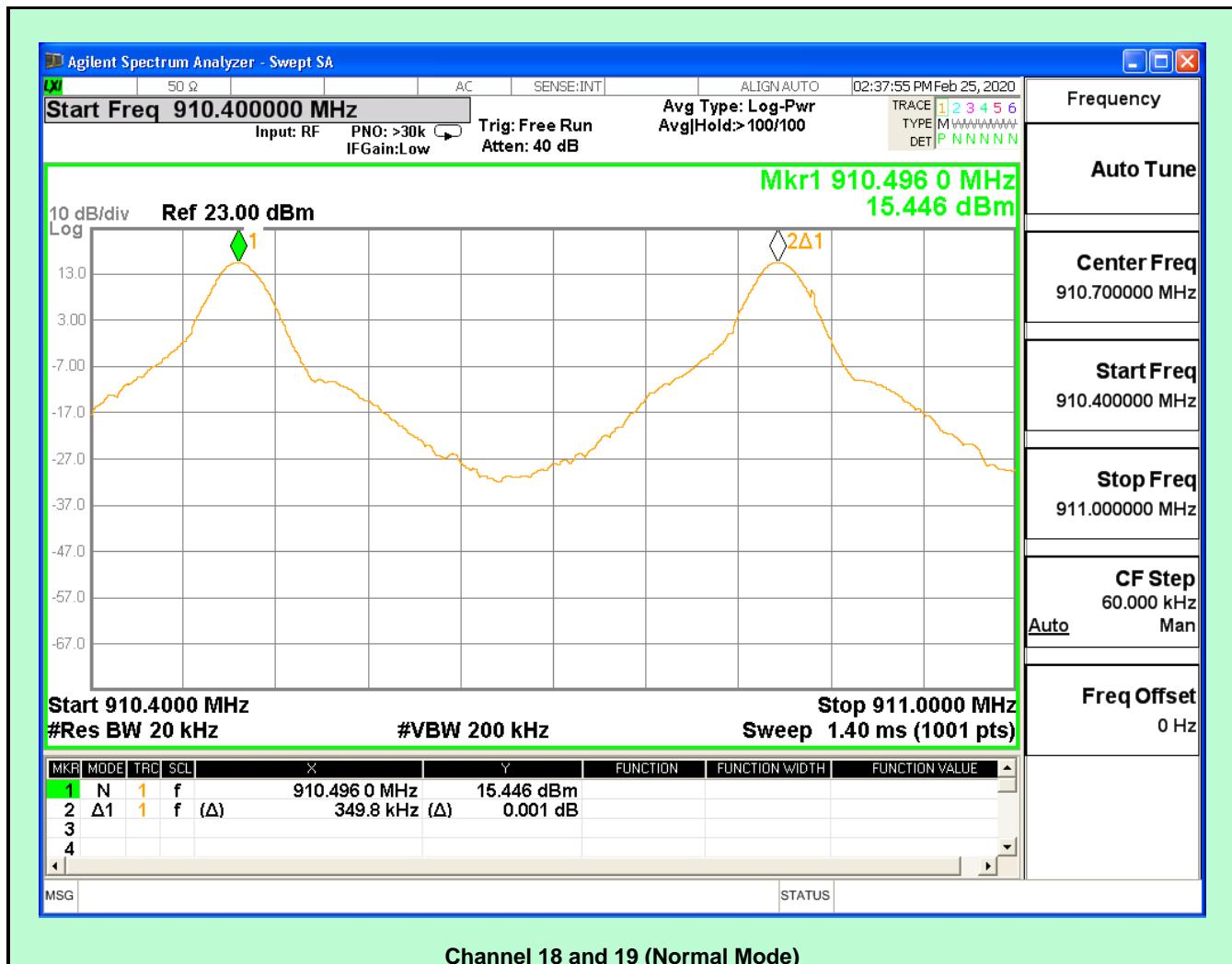


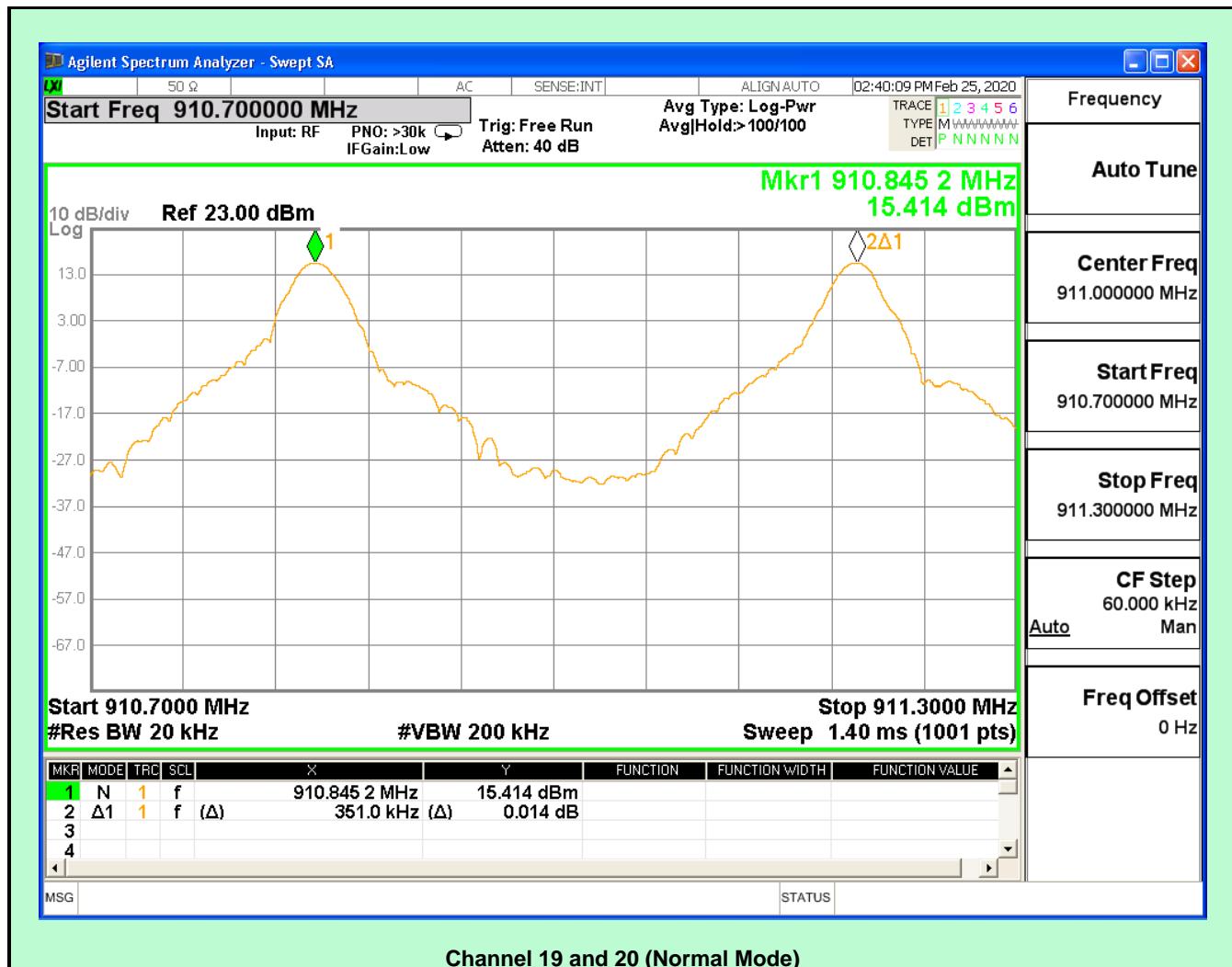


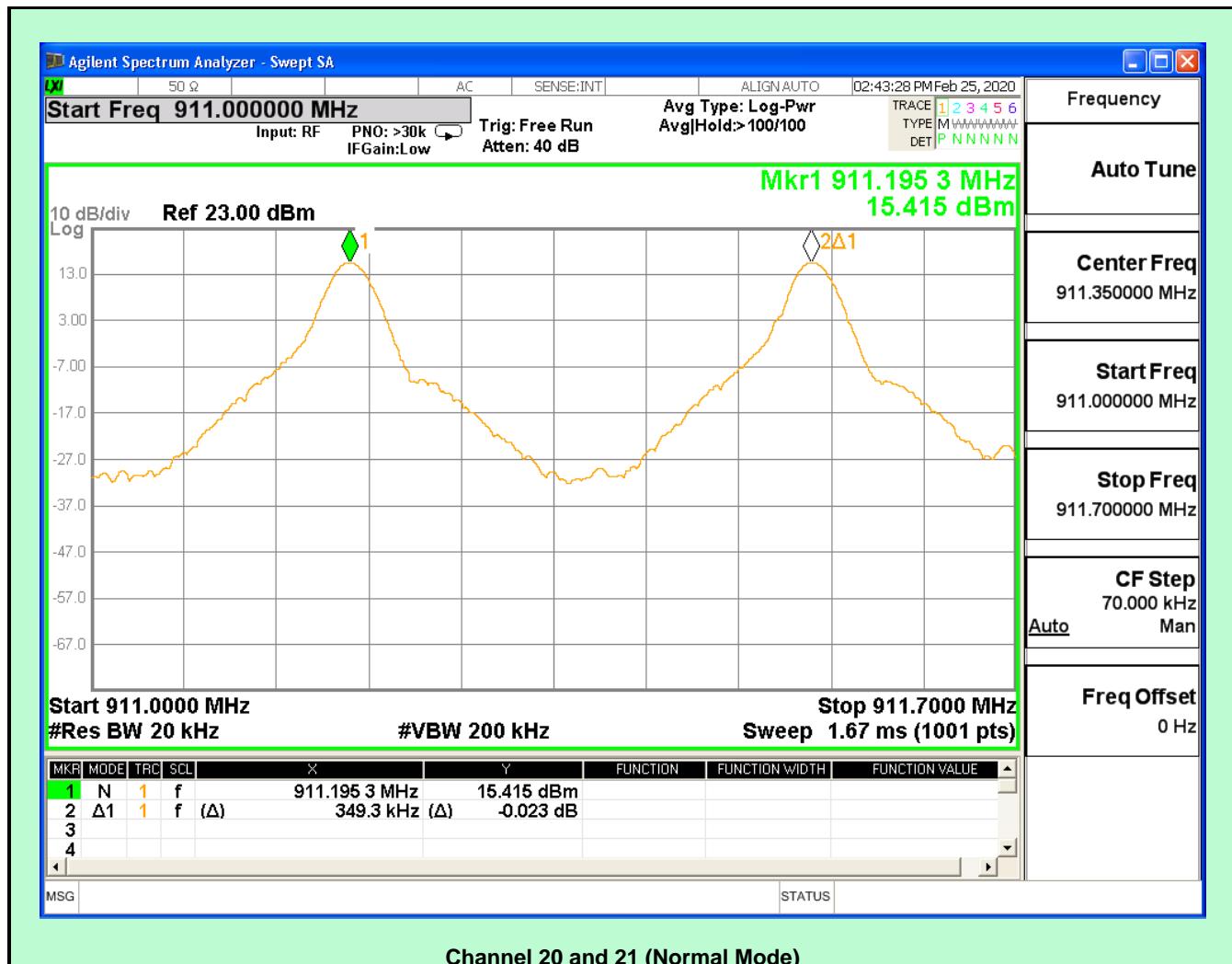


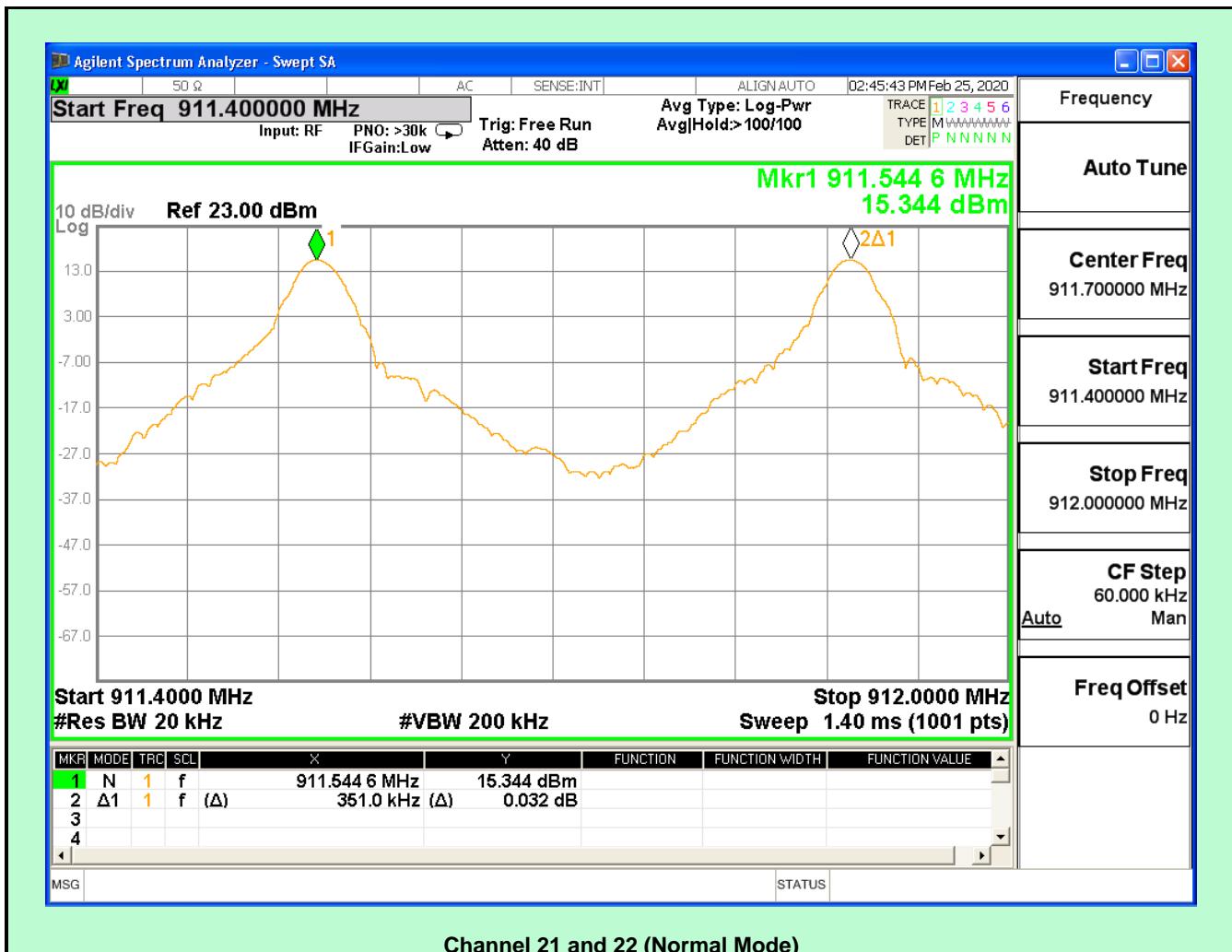
Channel 16 and 17 (Normal Mode)



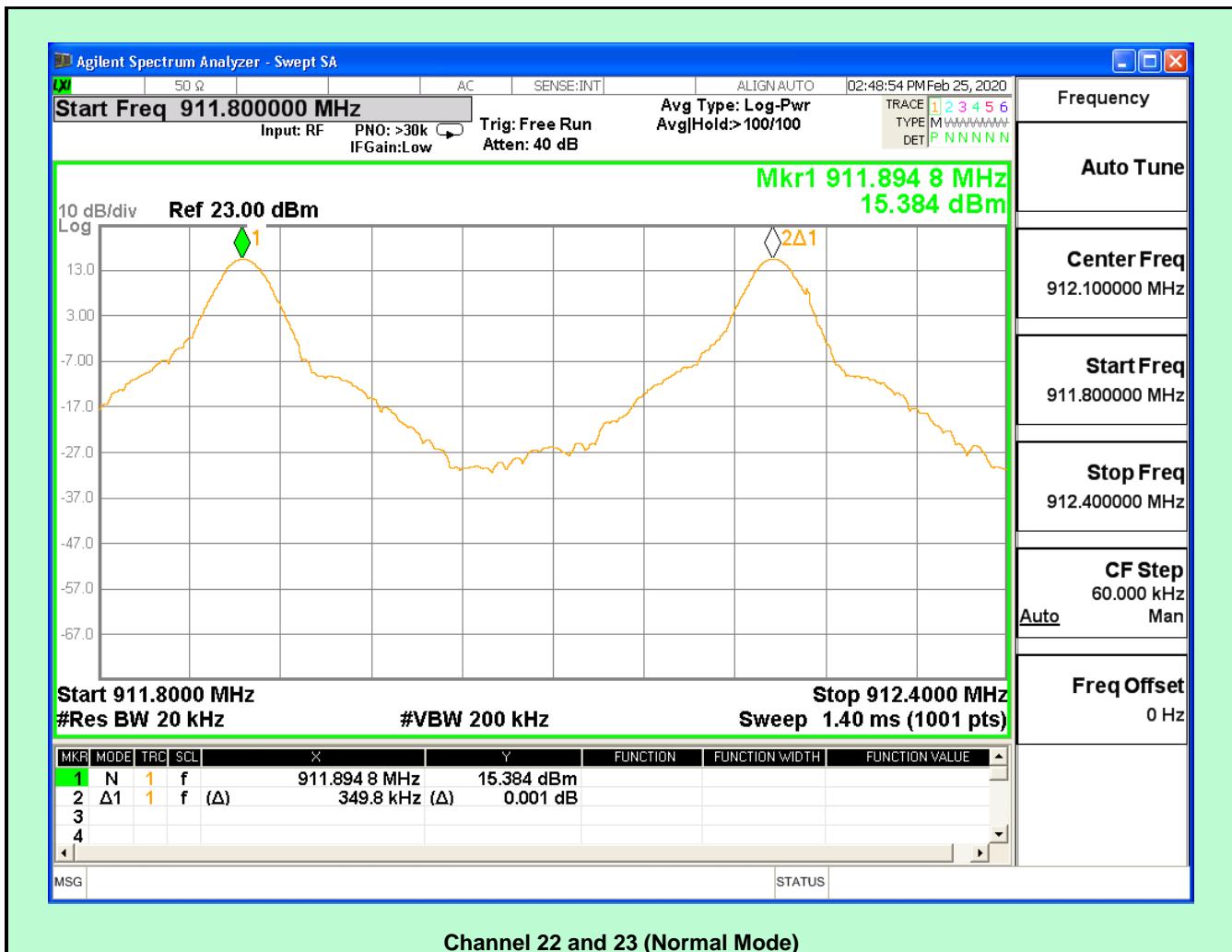


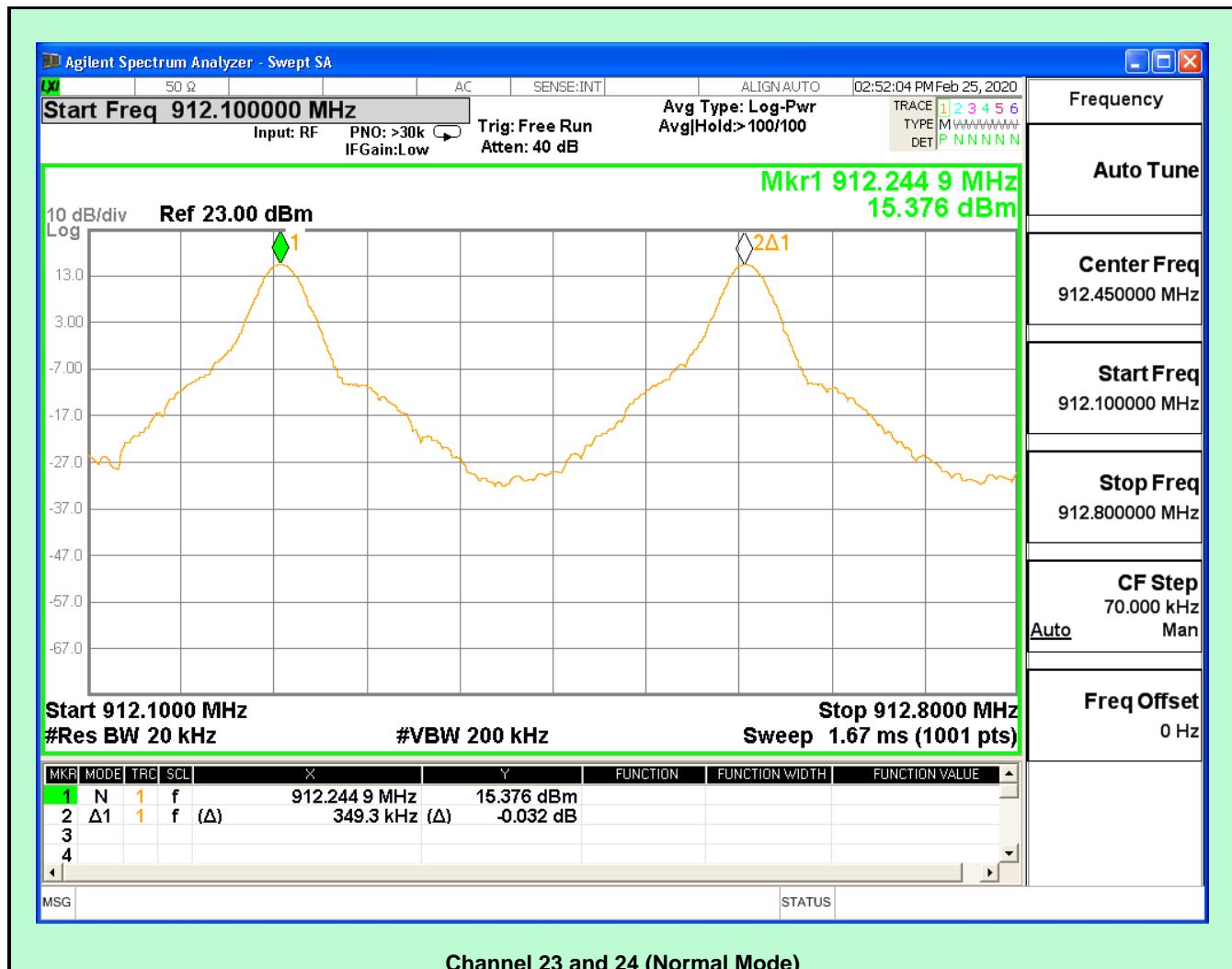


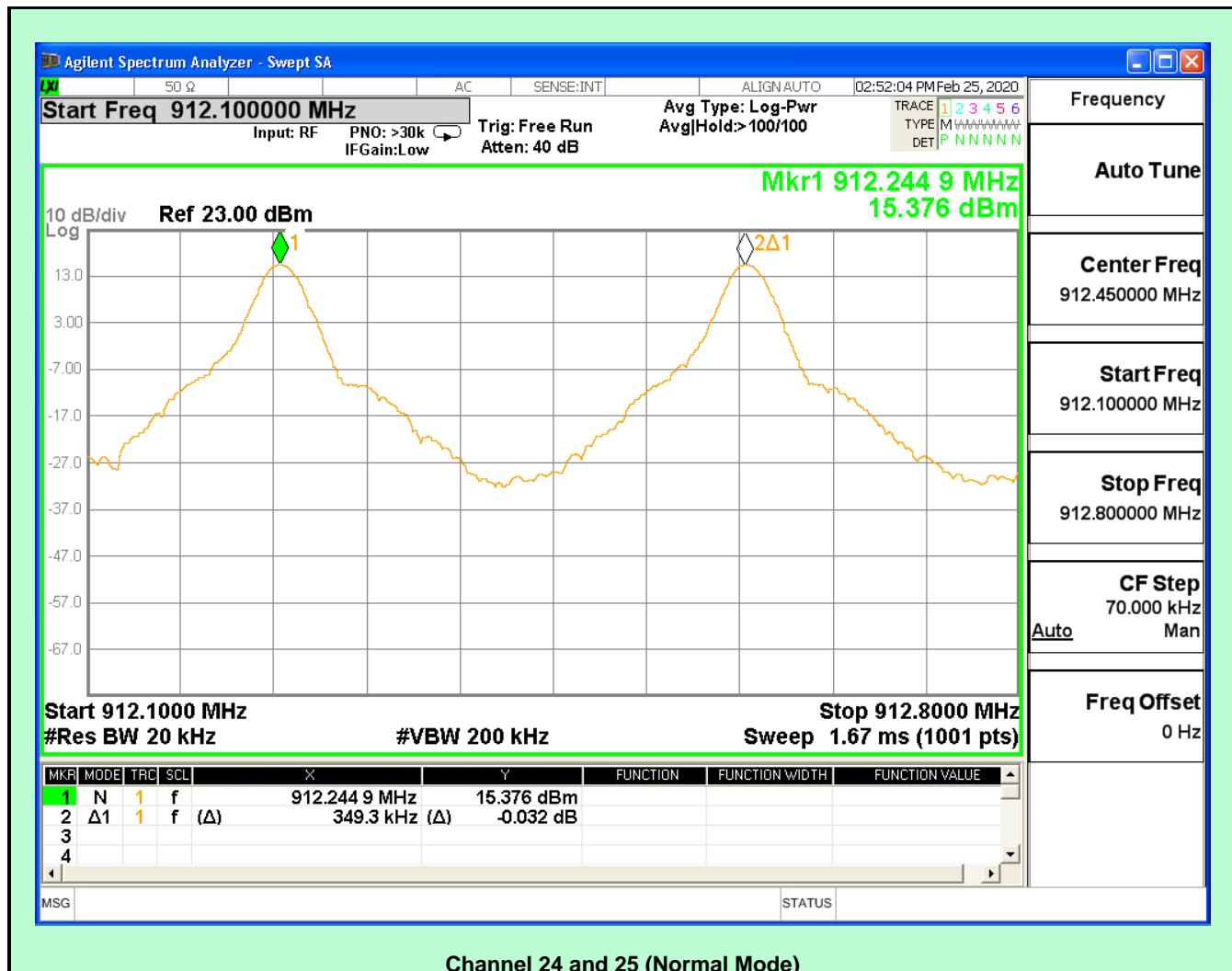


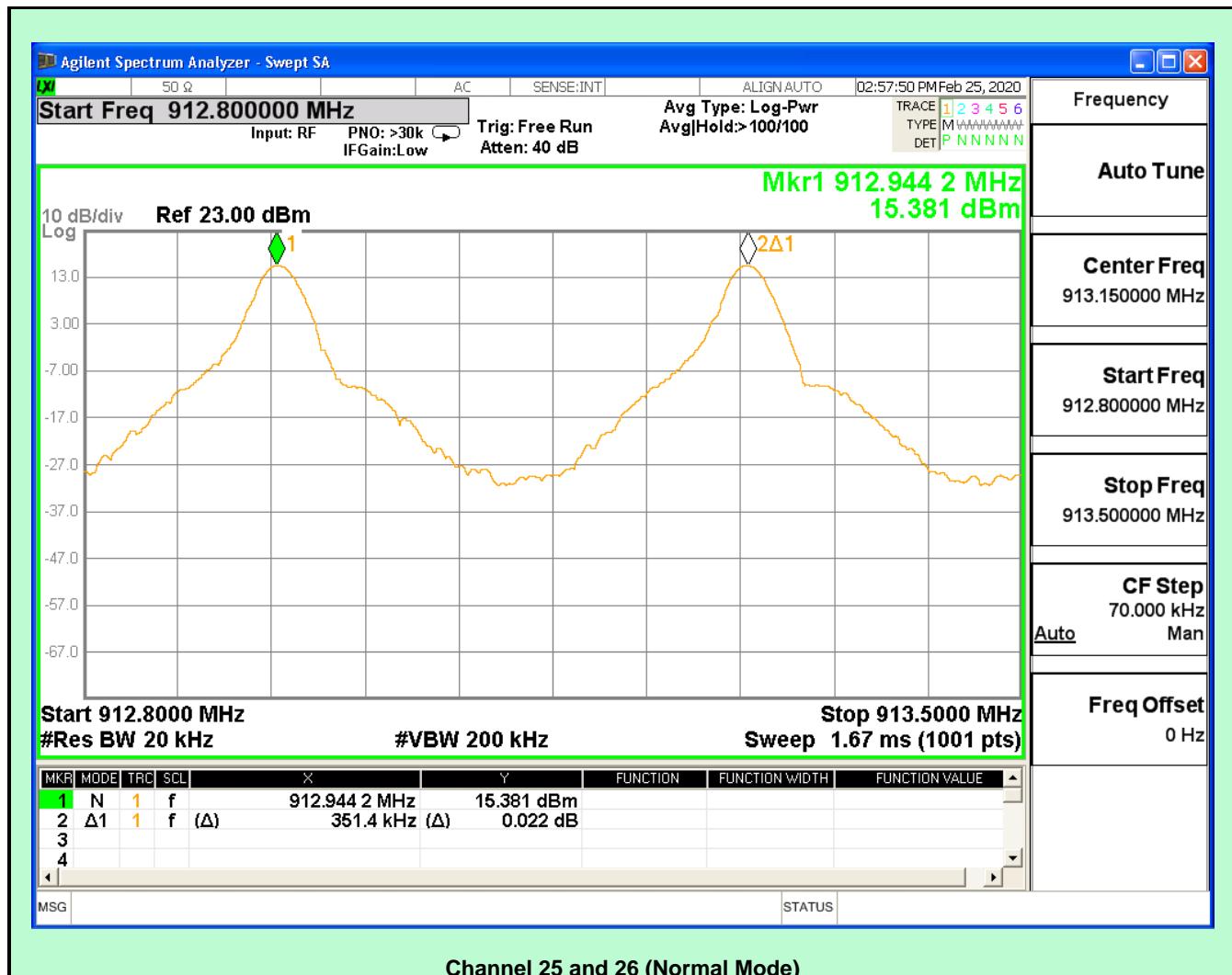


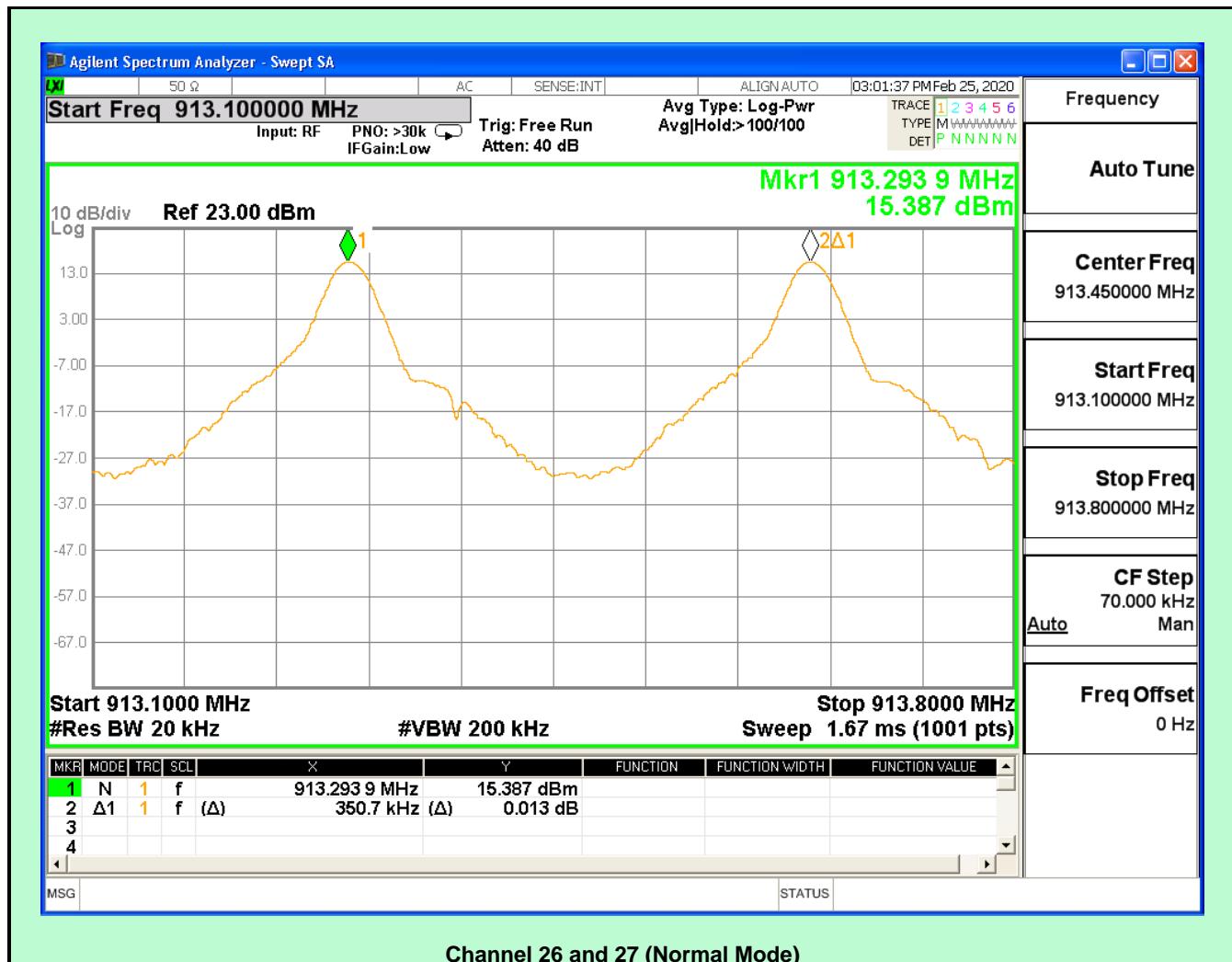
Channel 21 and 22 (Normal Mode)



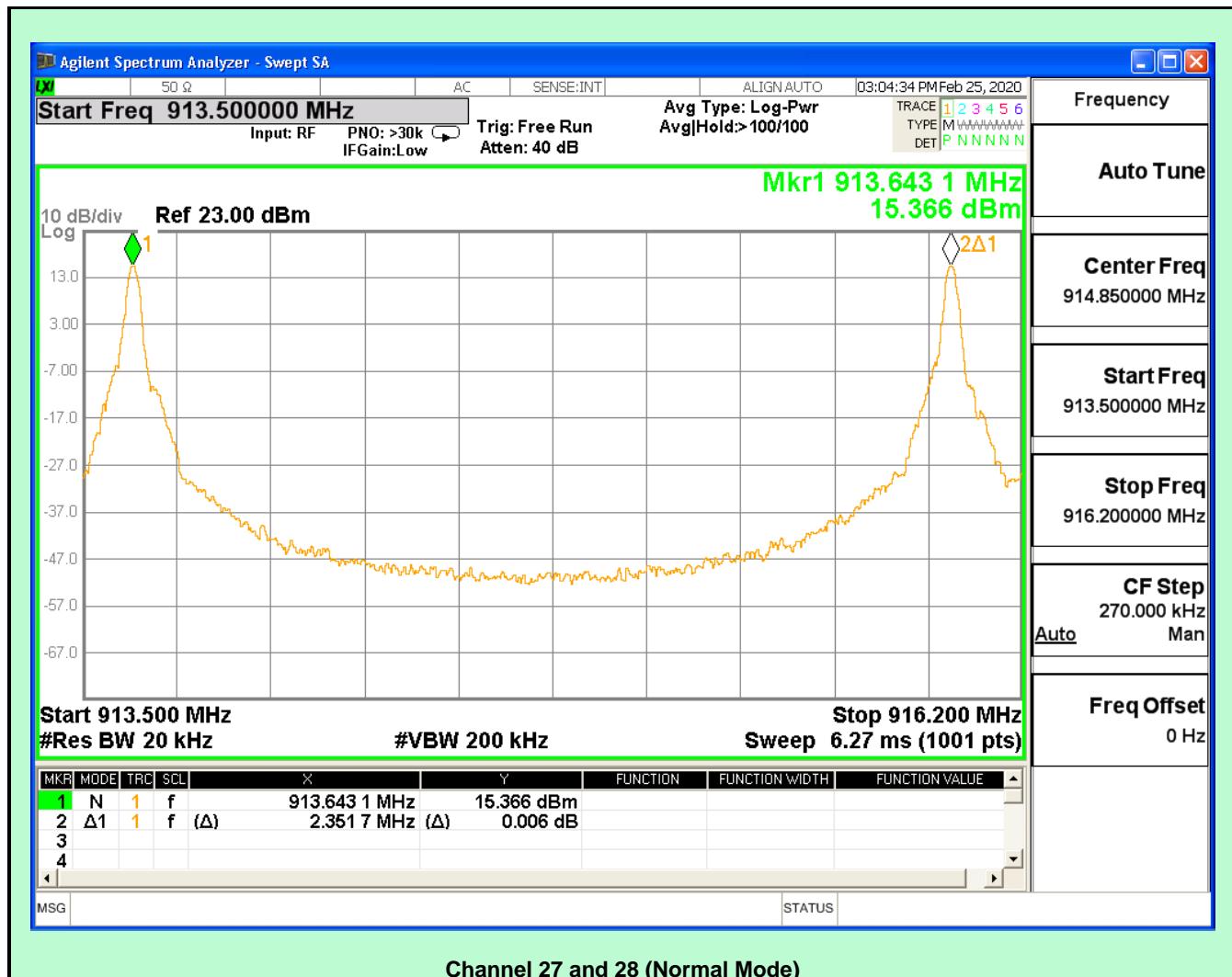


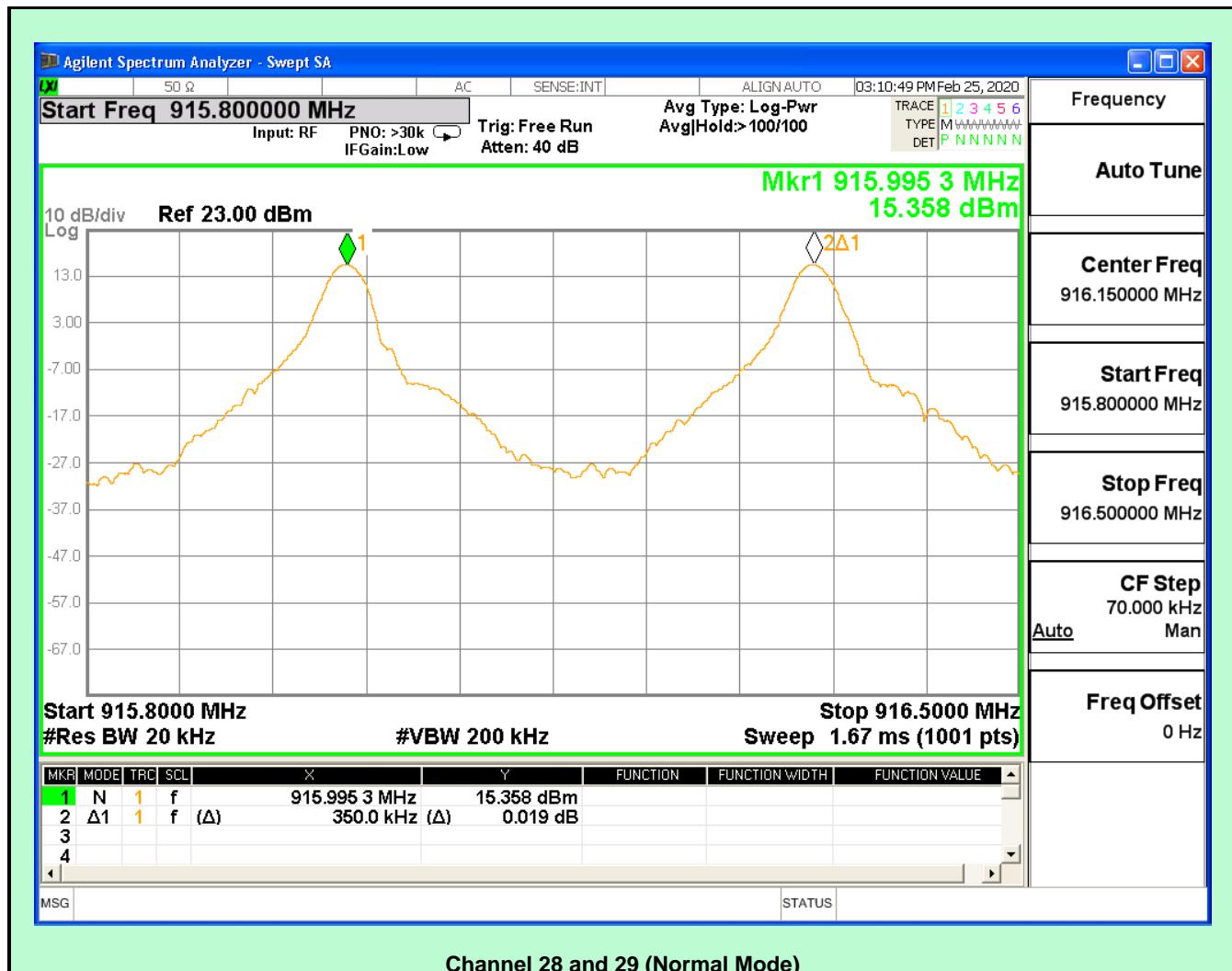


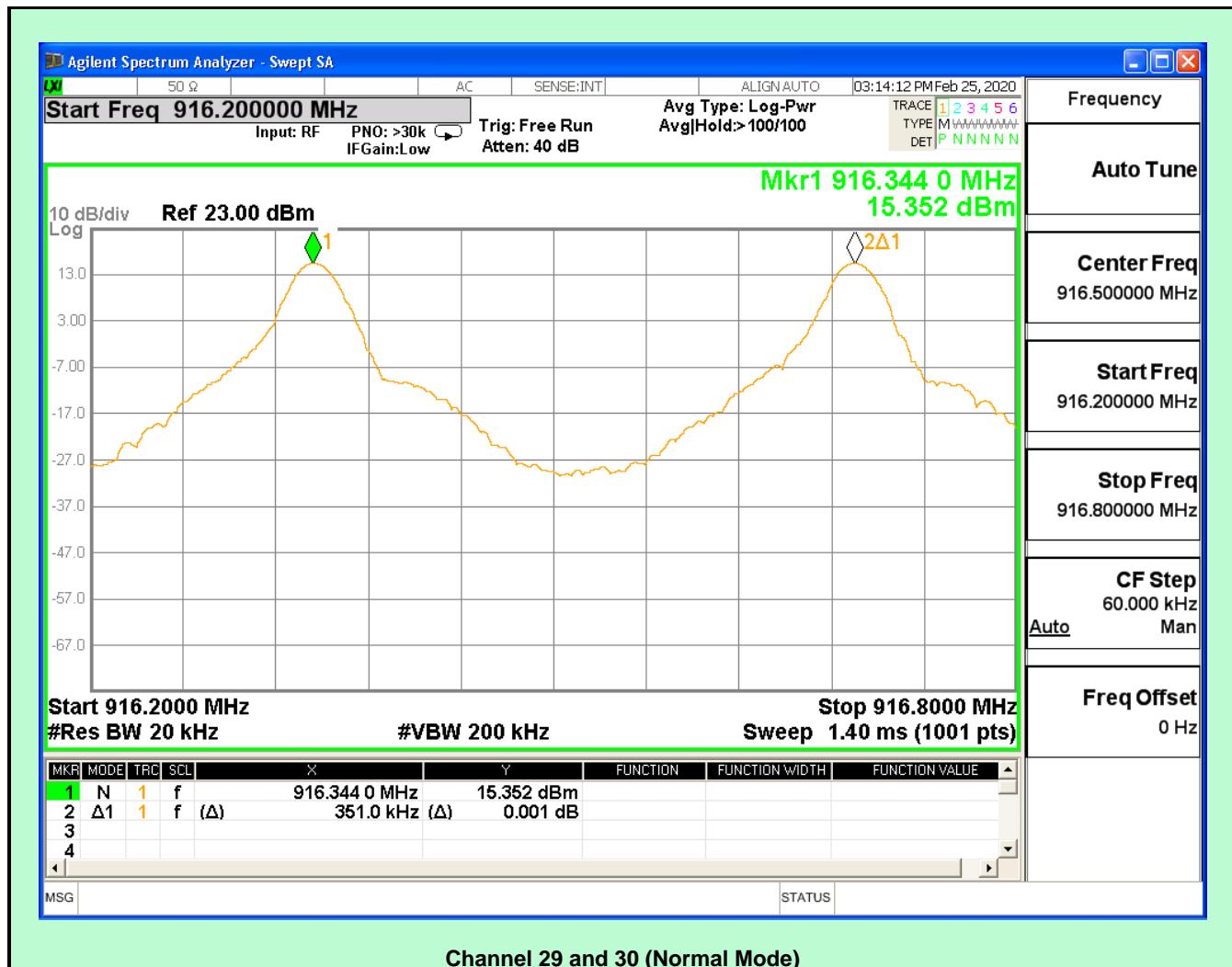


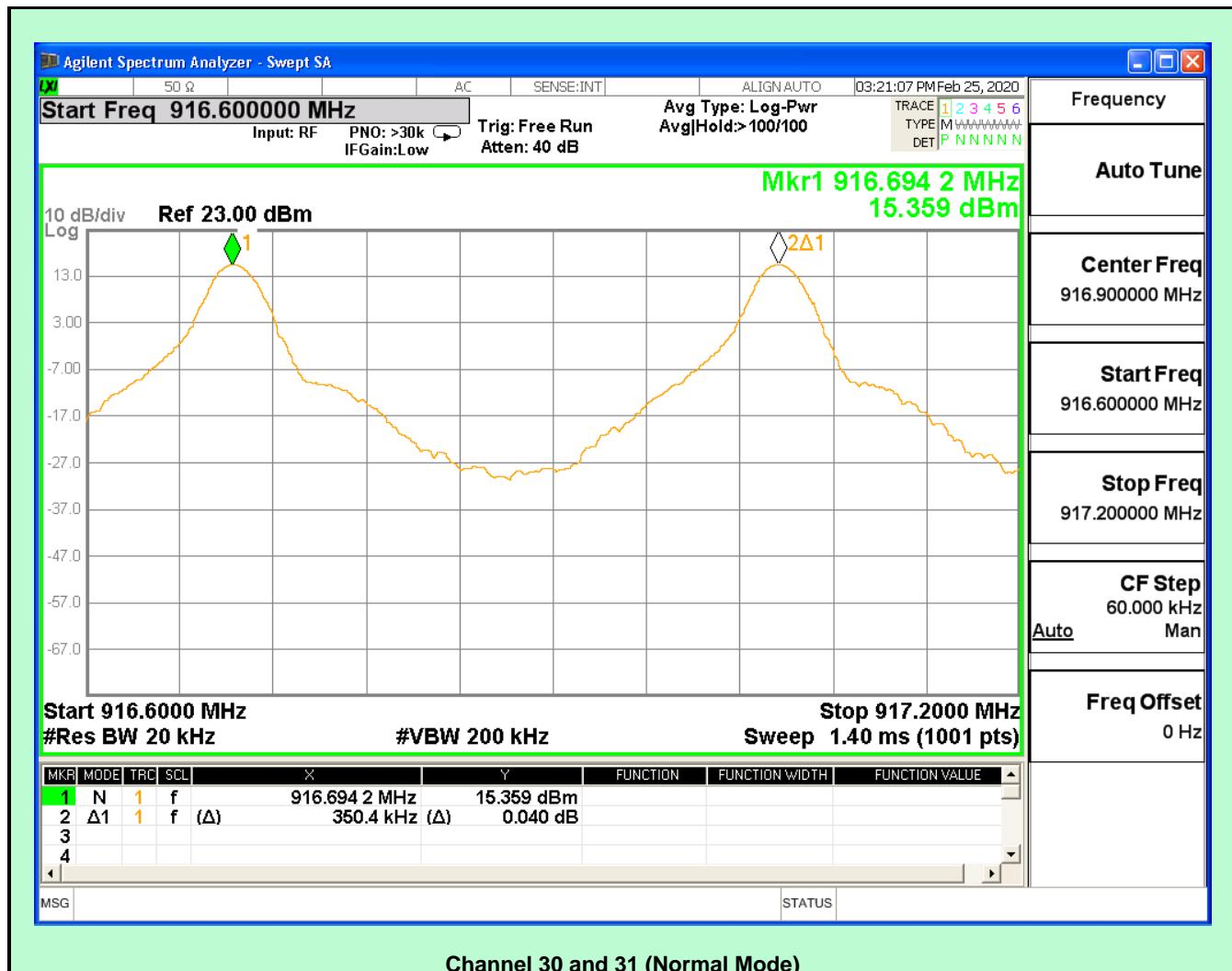


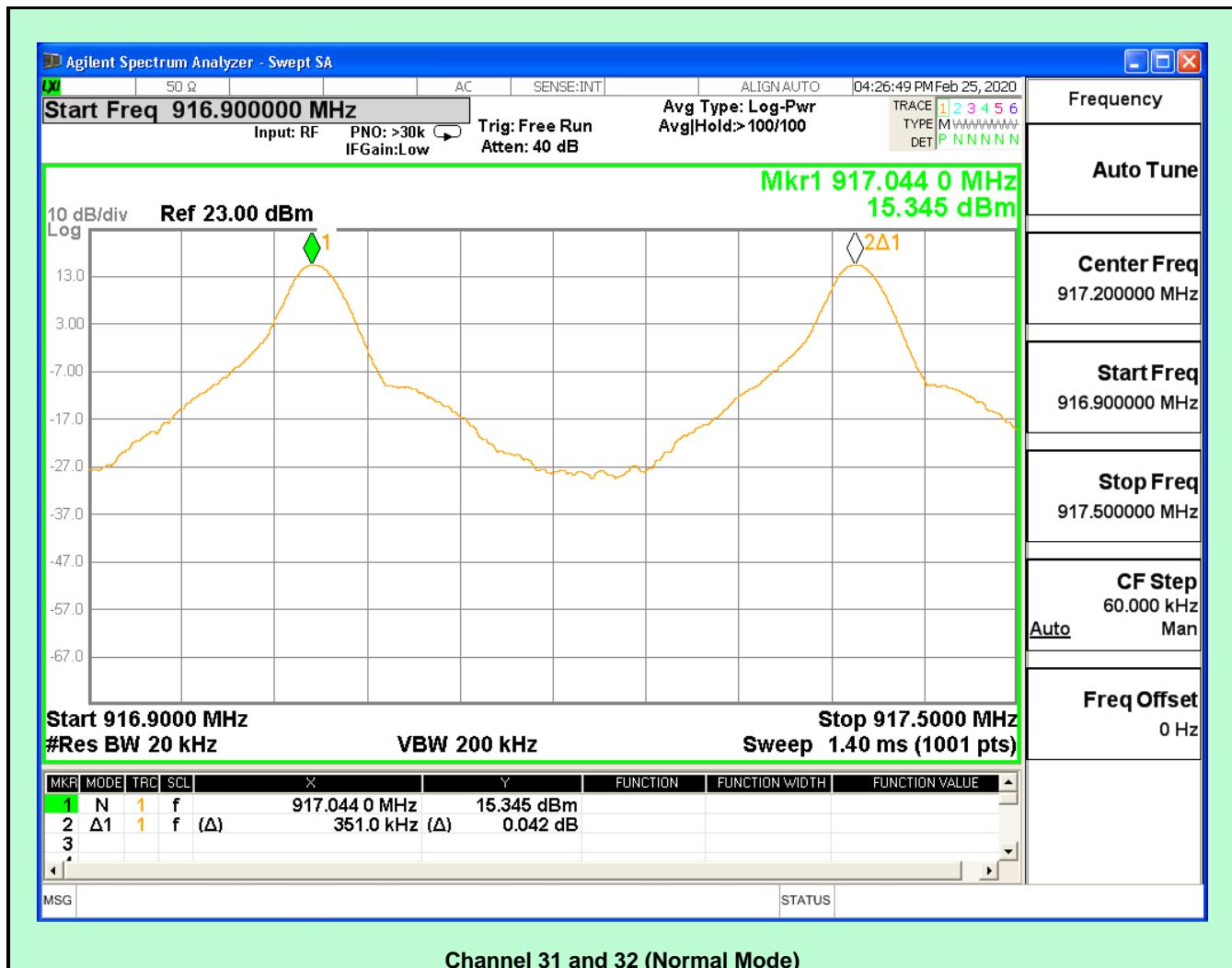
Channel 26 and 27 (Normal Mode)

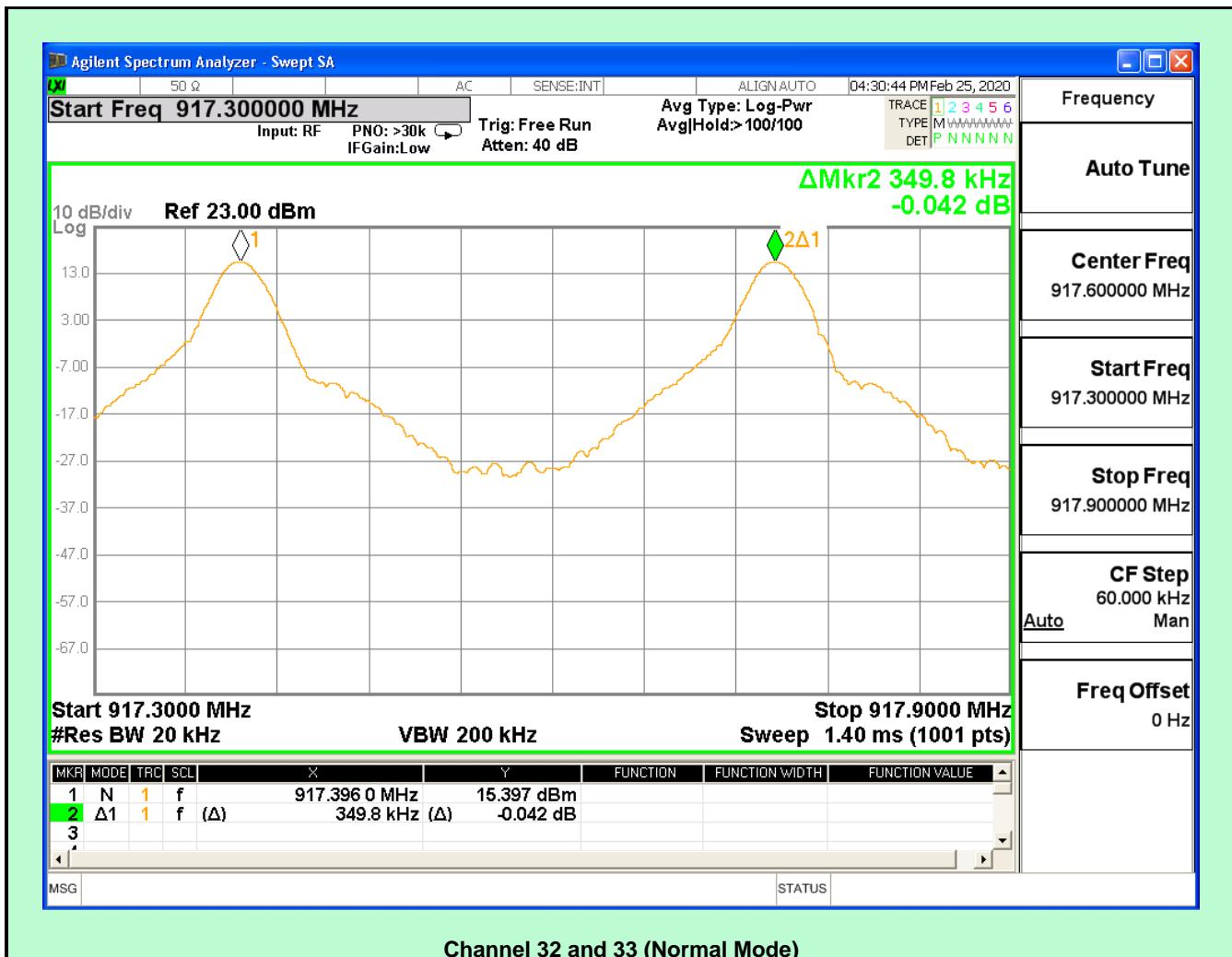




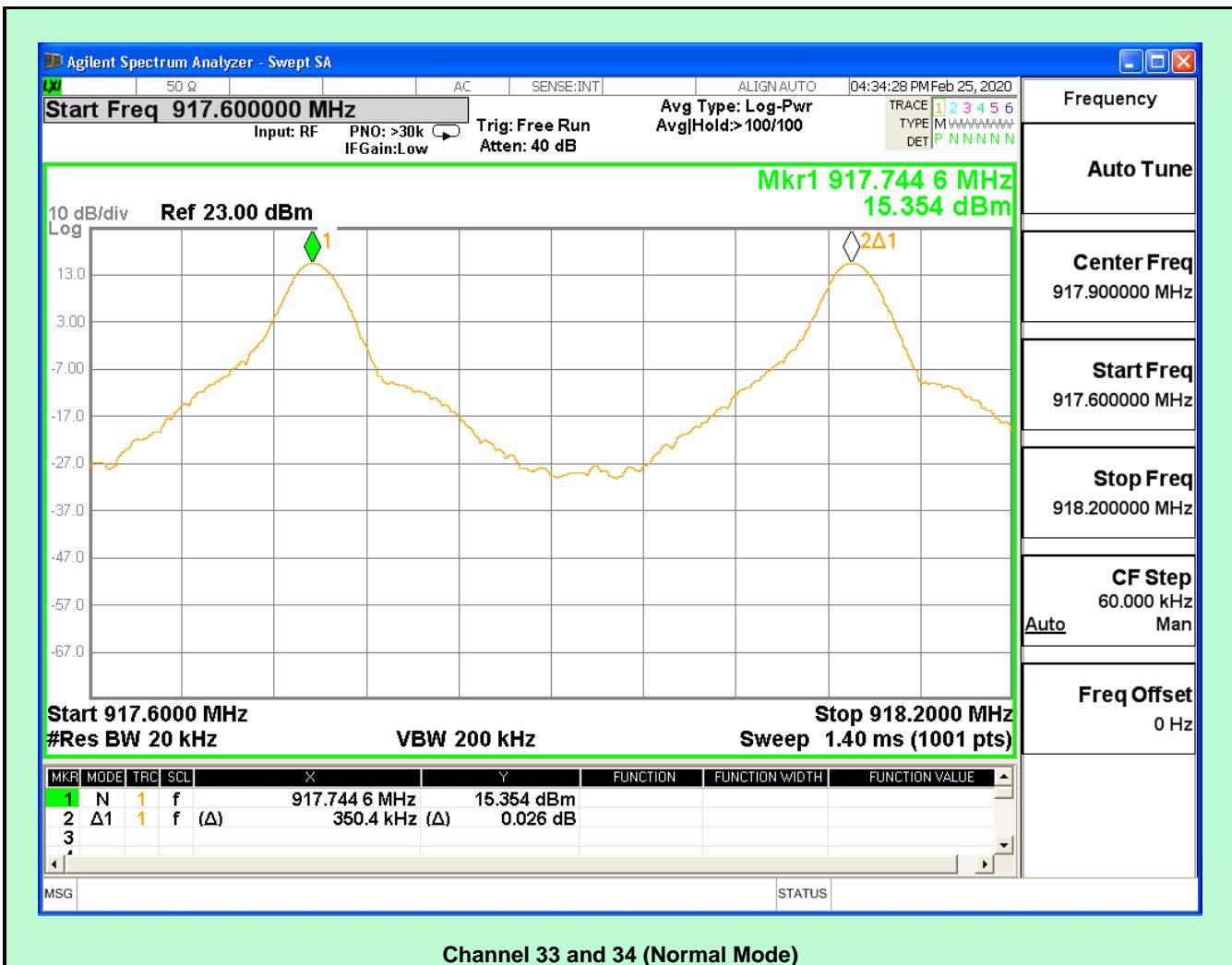




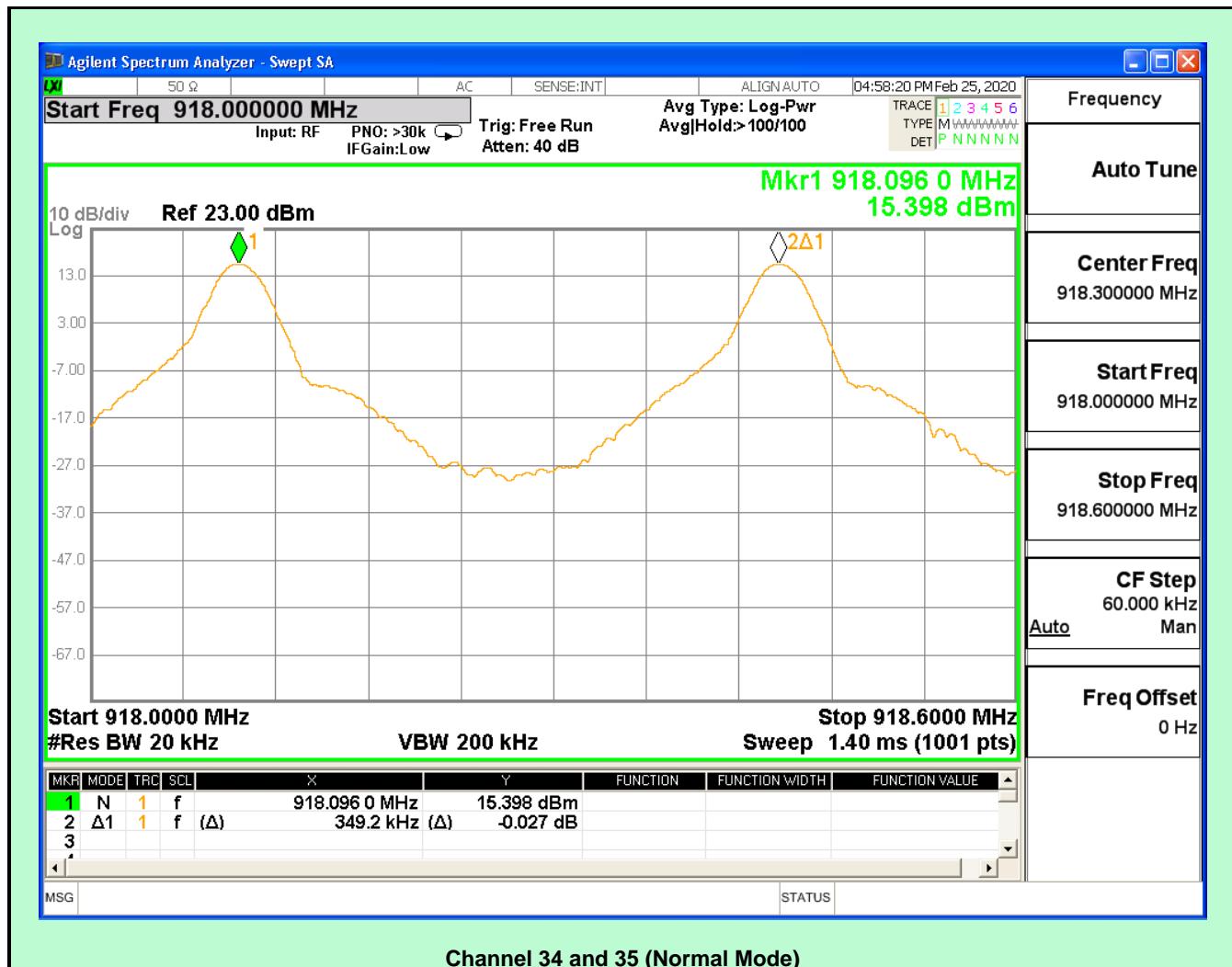


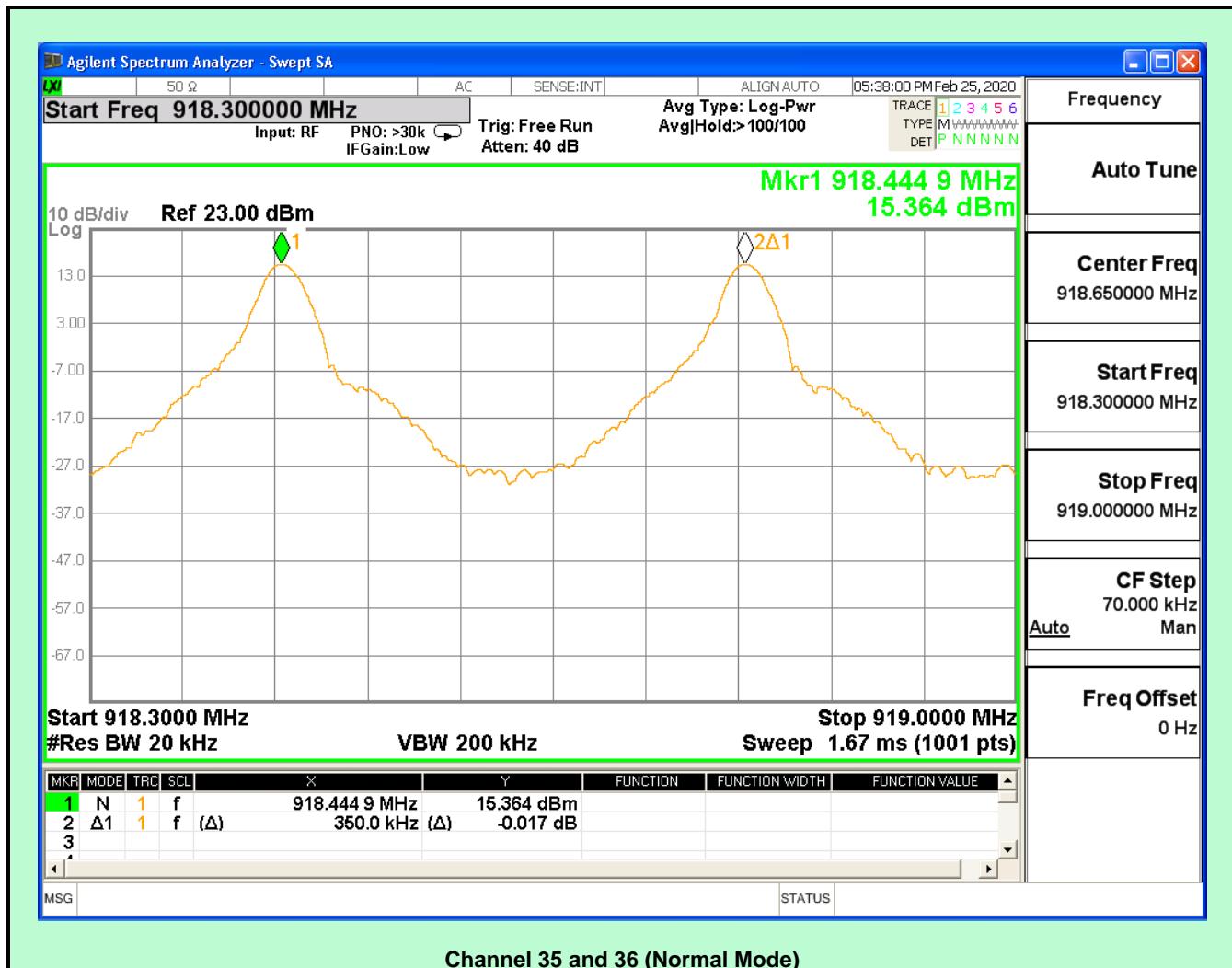


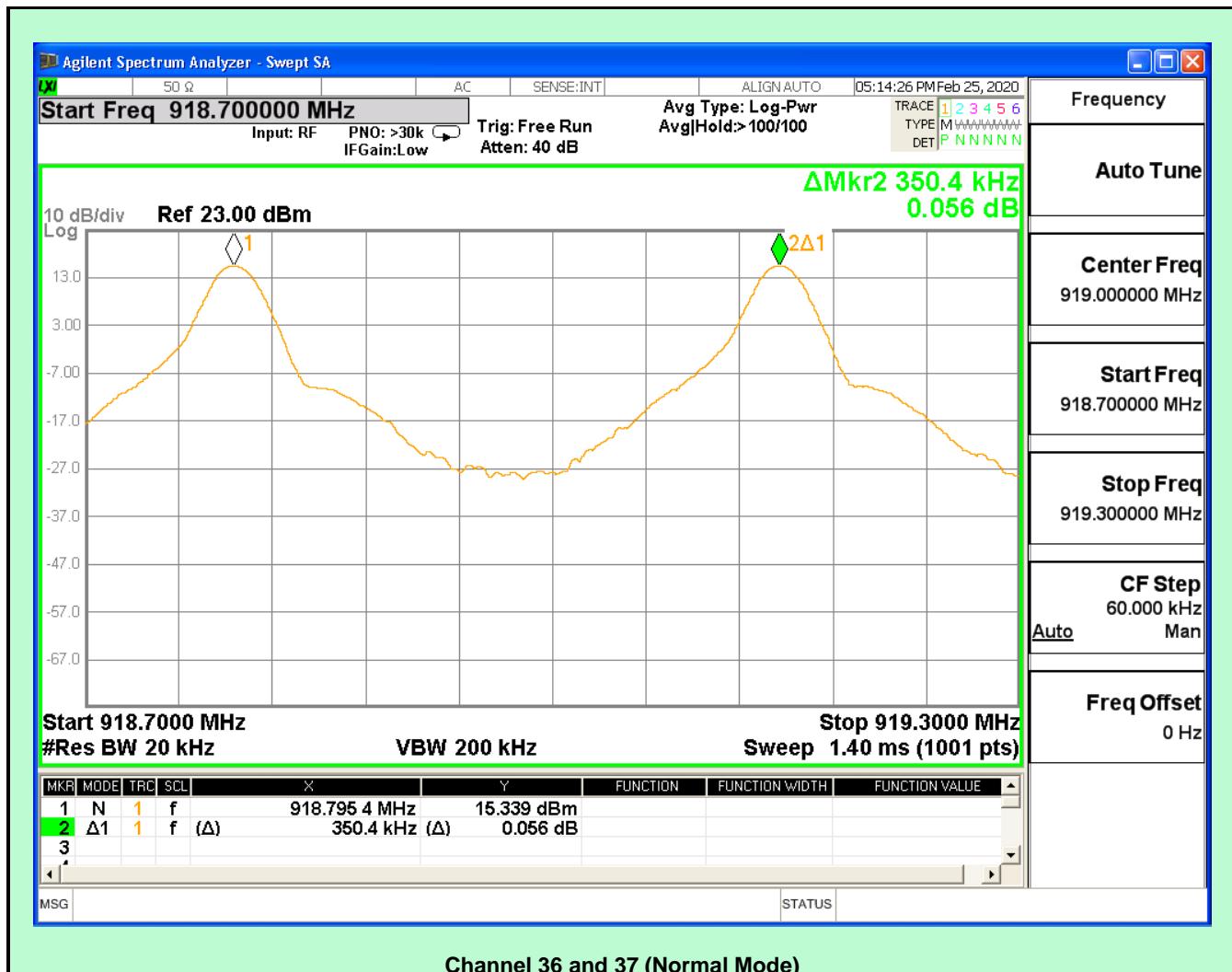
Channel 32 and 33 (Normal Mode)

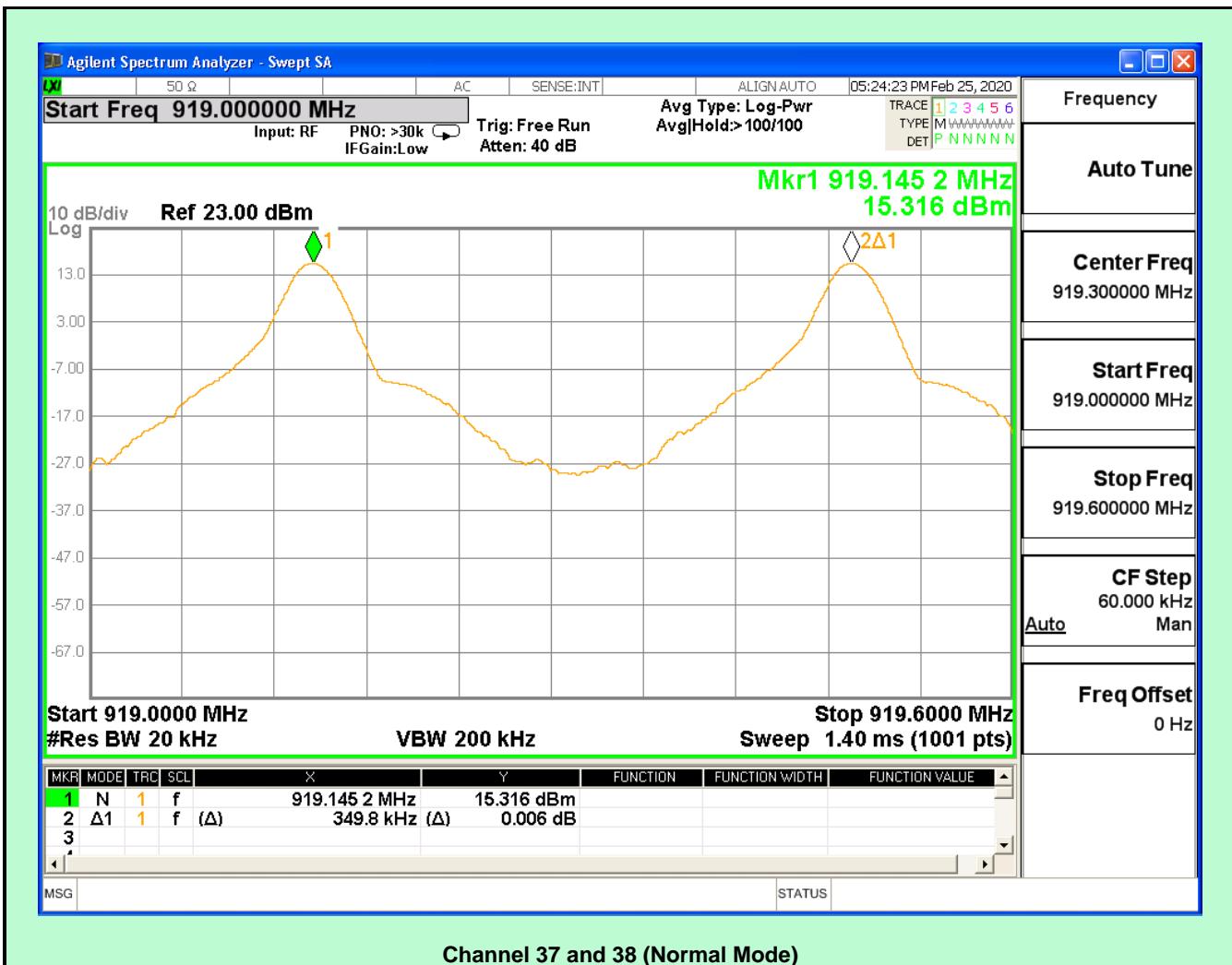


Channel 33 and 34 (Normal Mode)

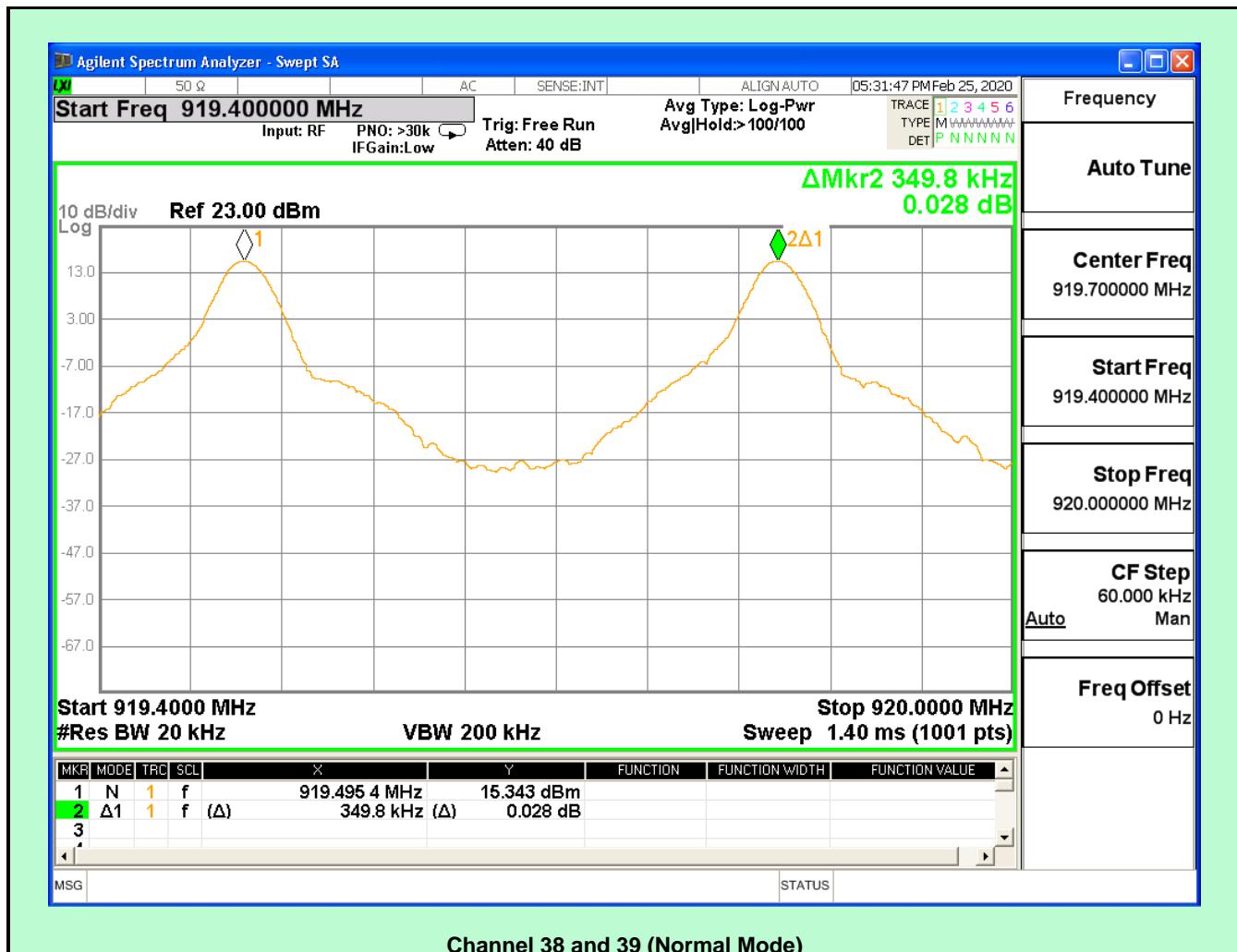


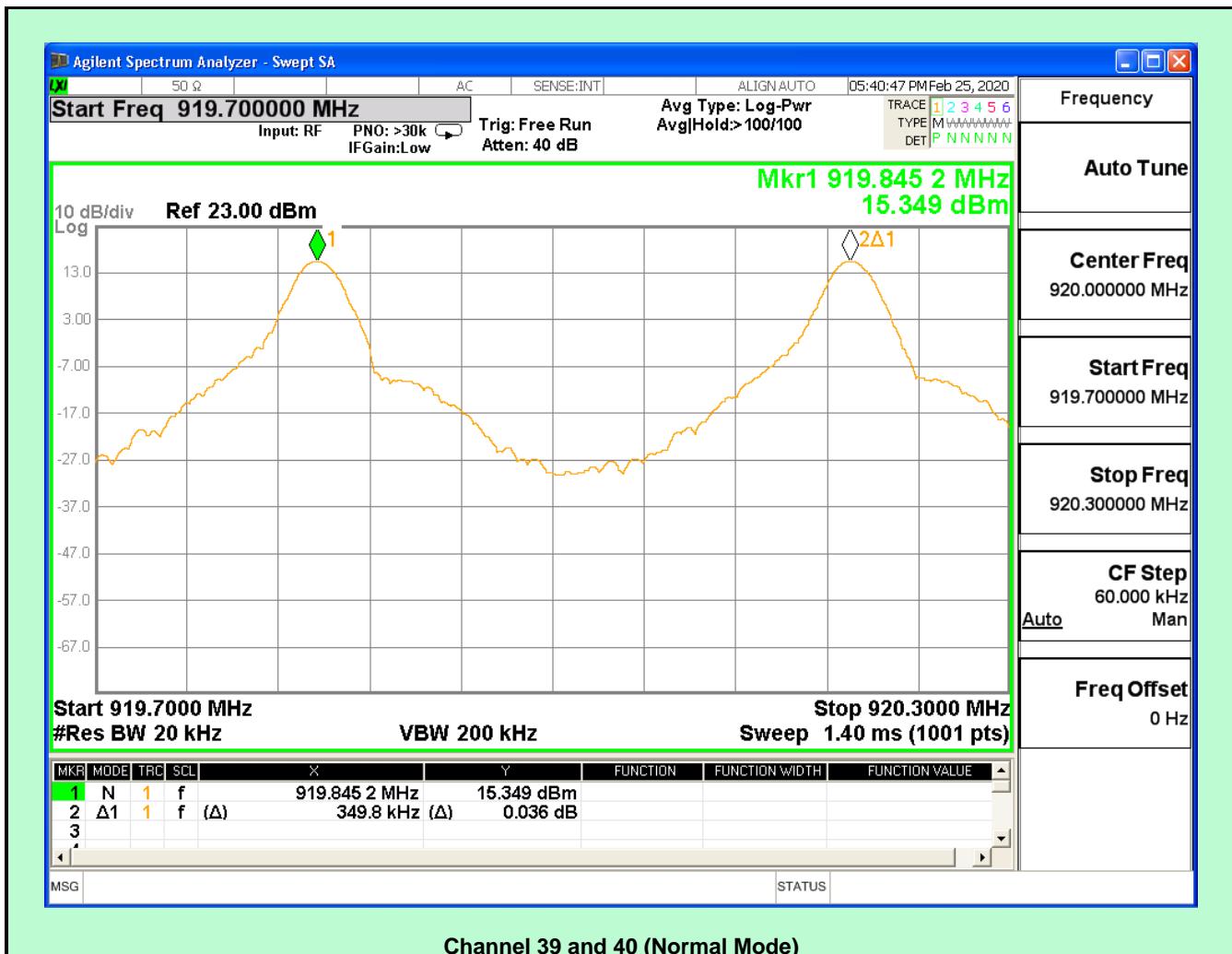


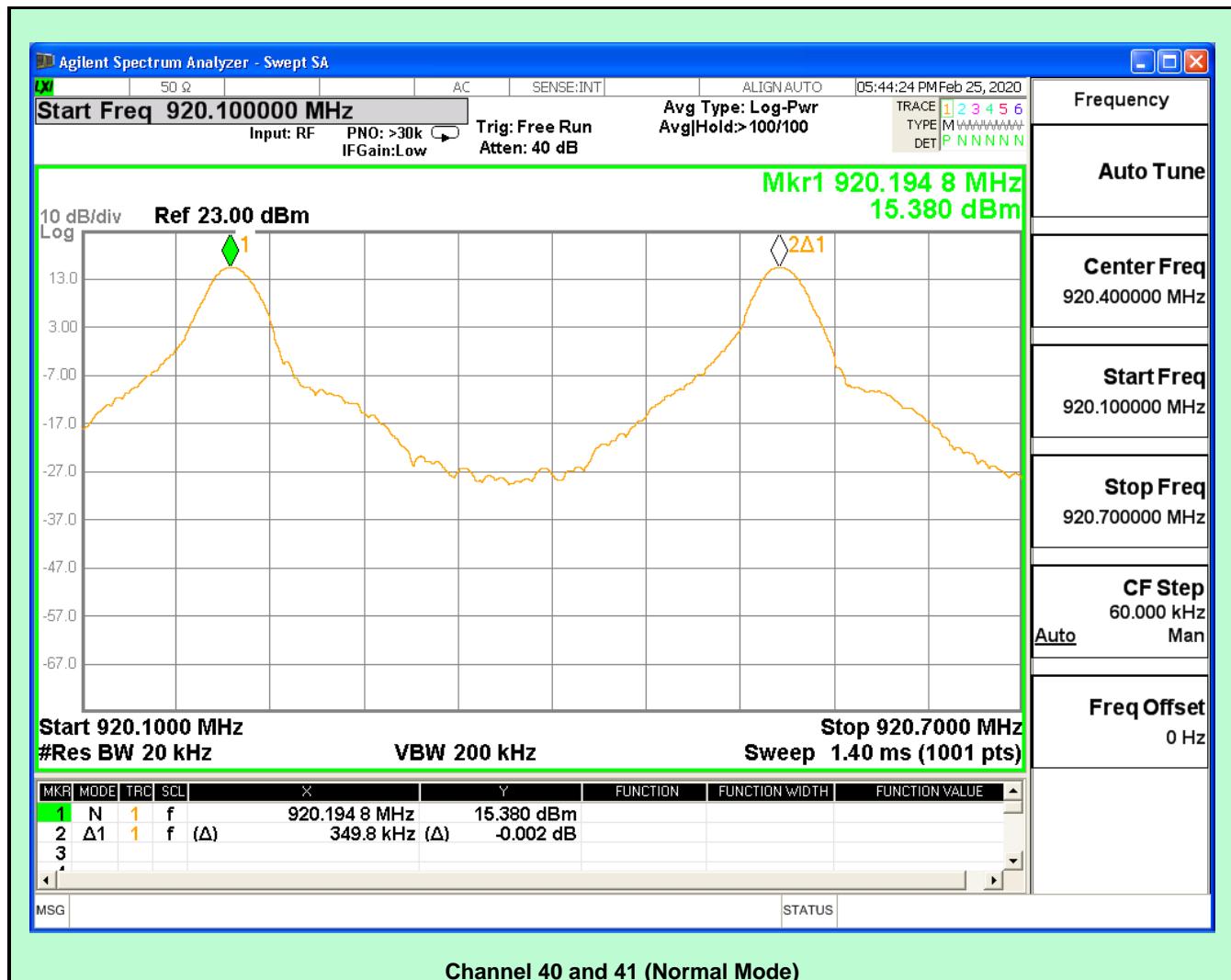


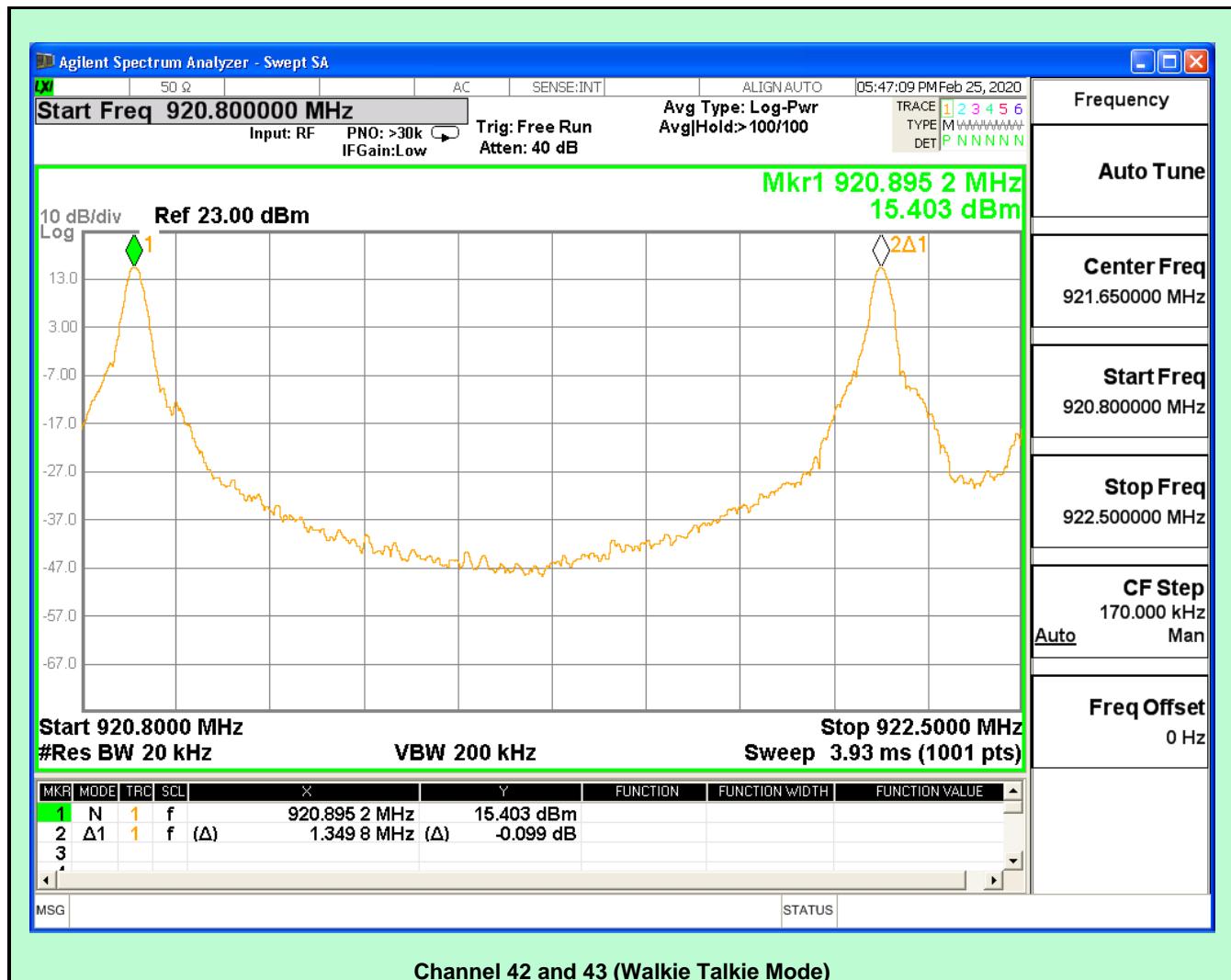


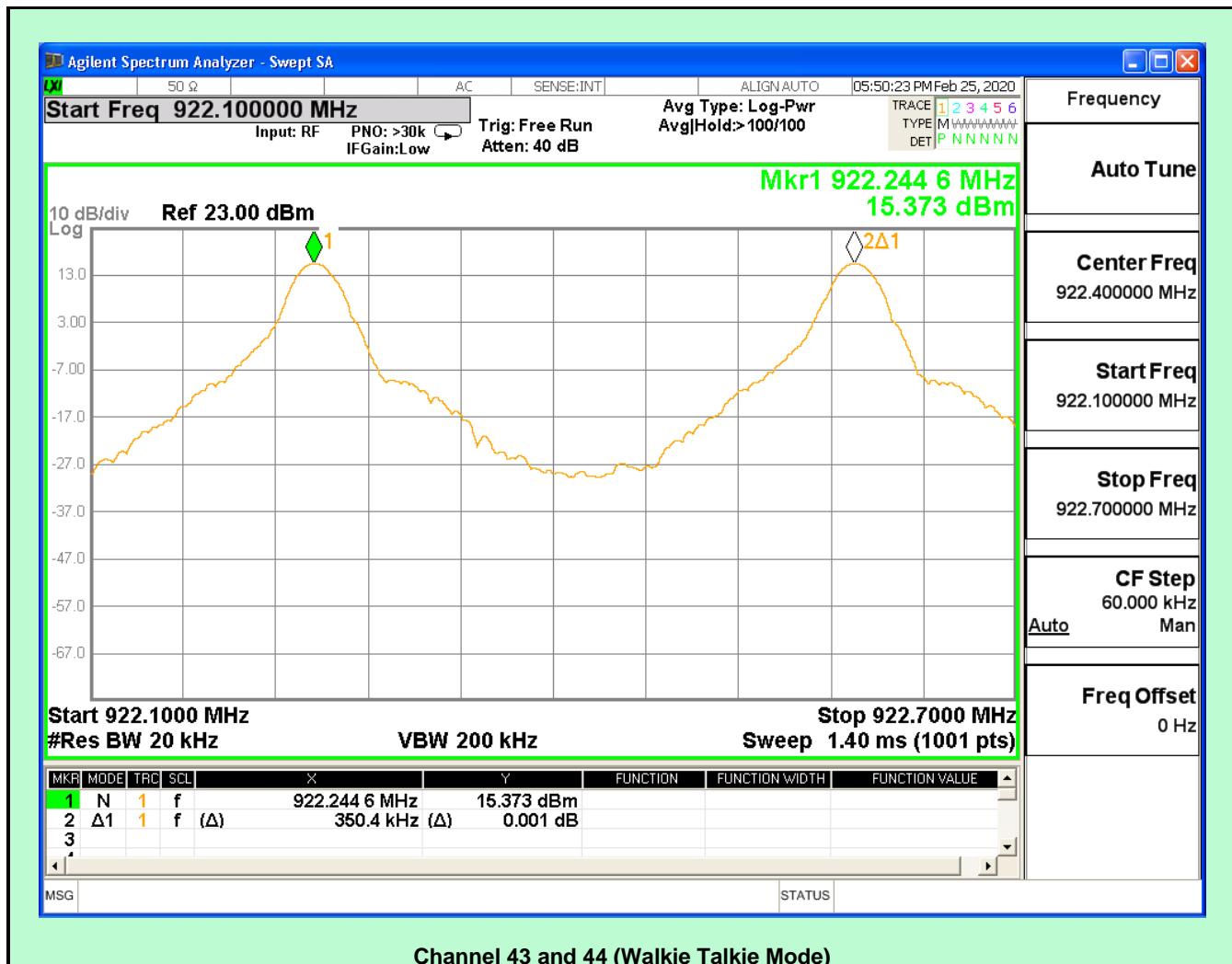
Channel 37 and 38 (Normal Mode)

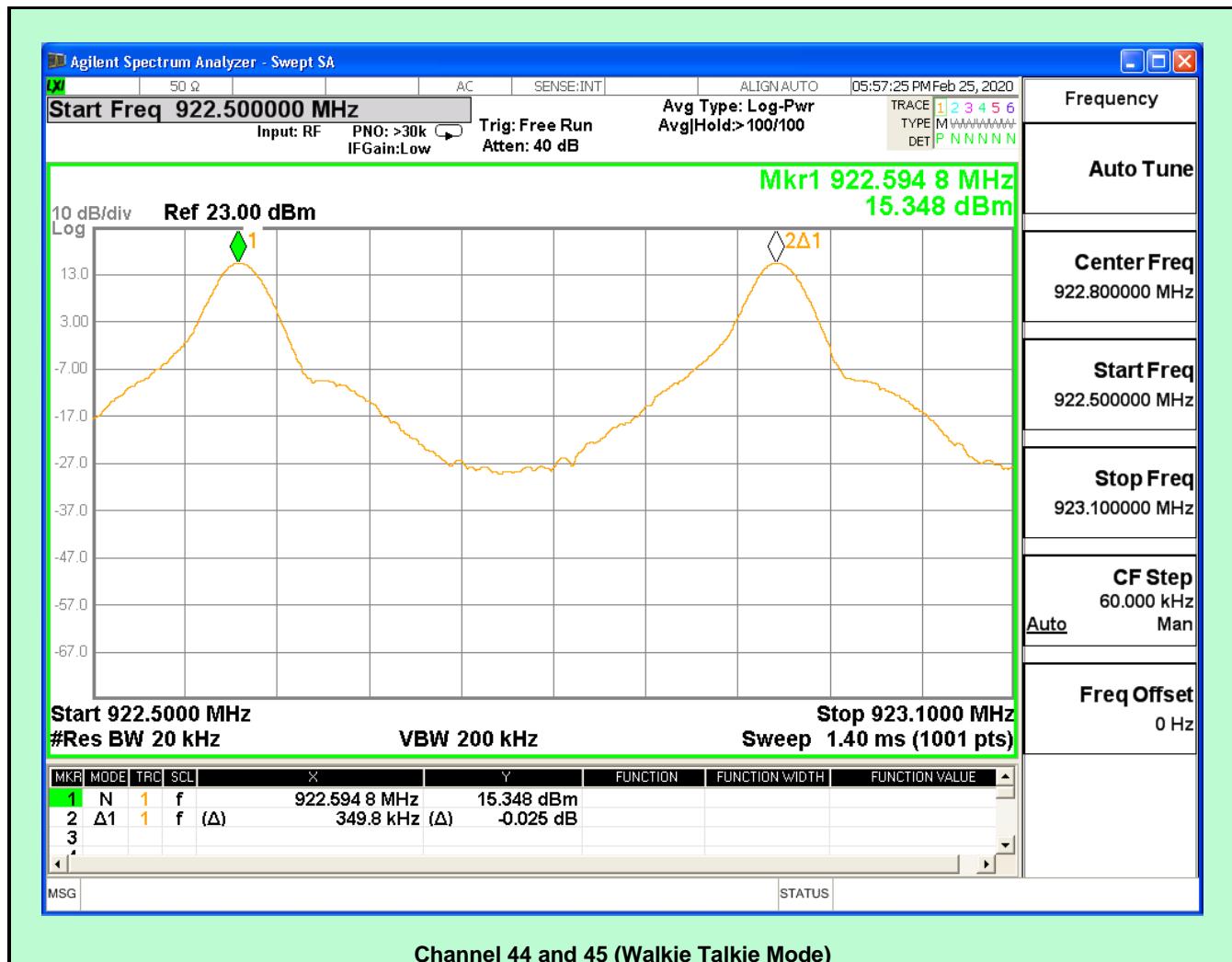


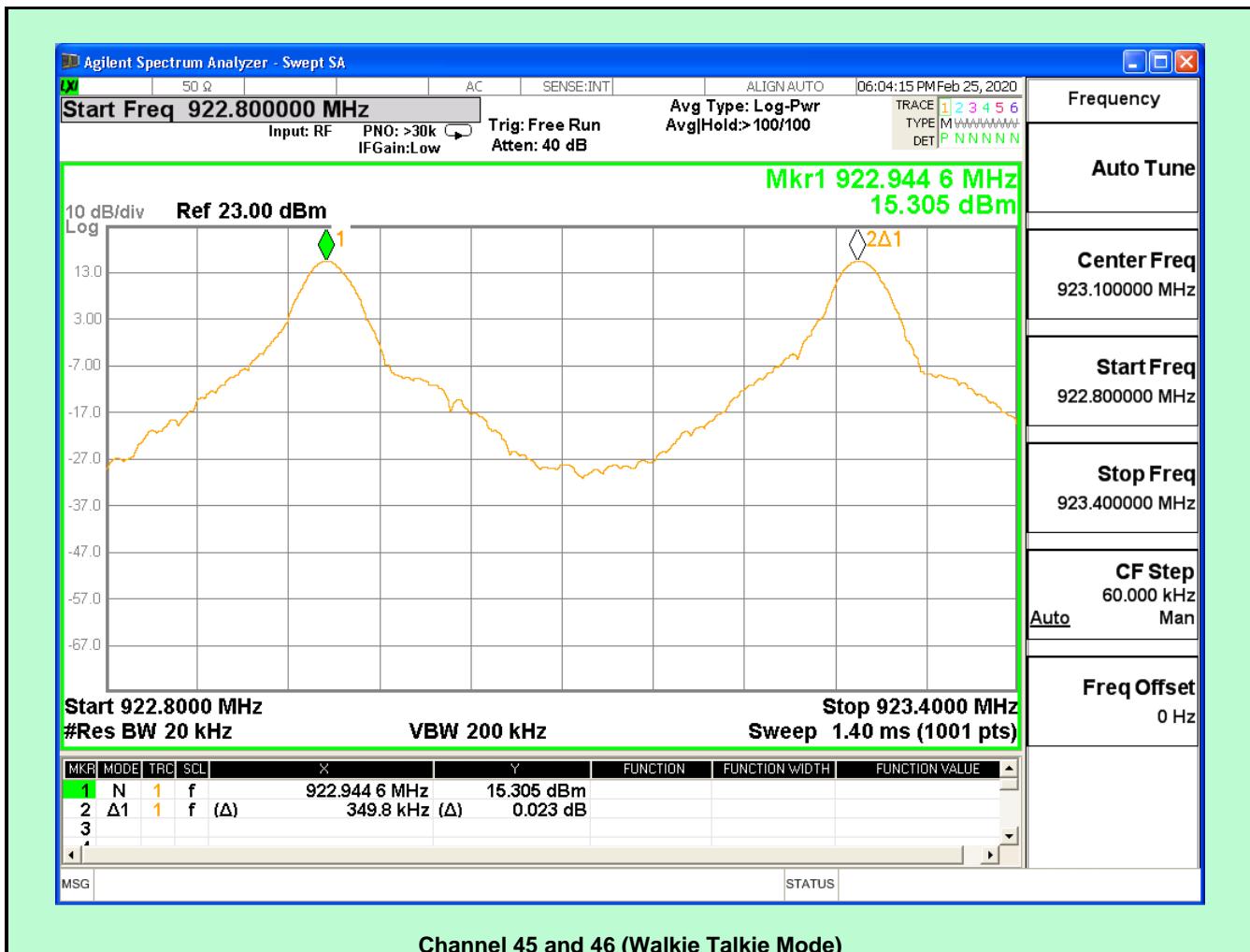


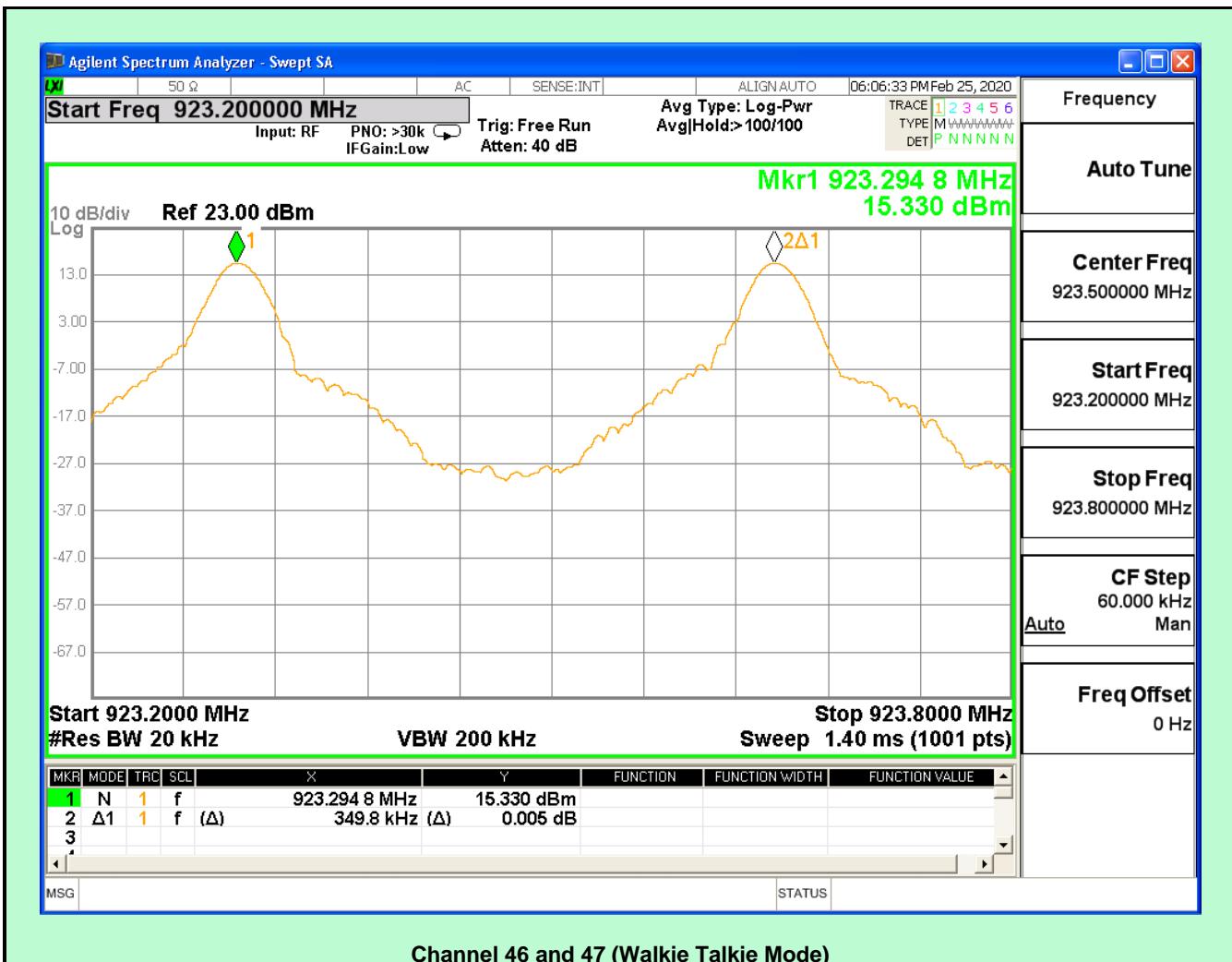


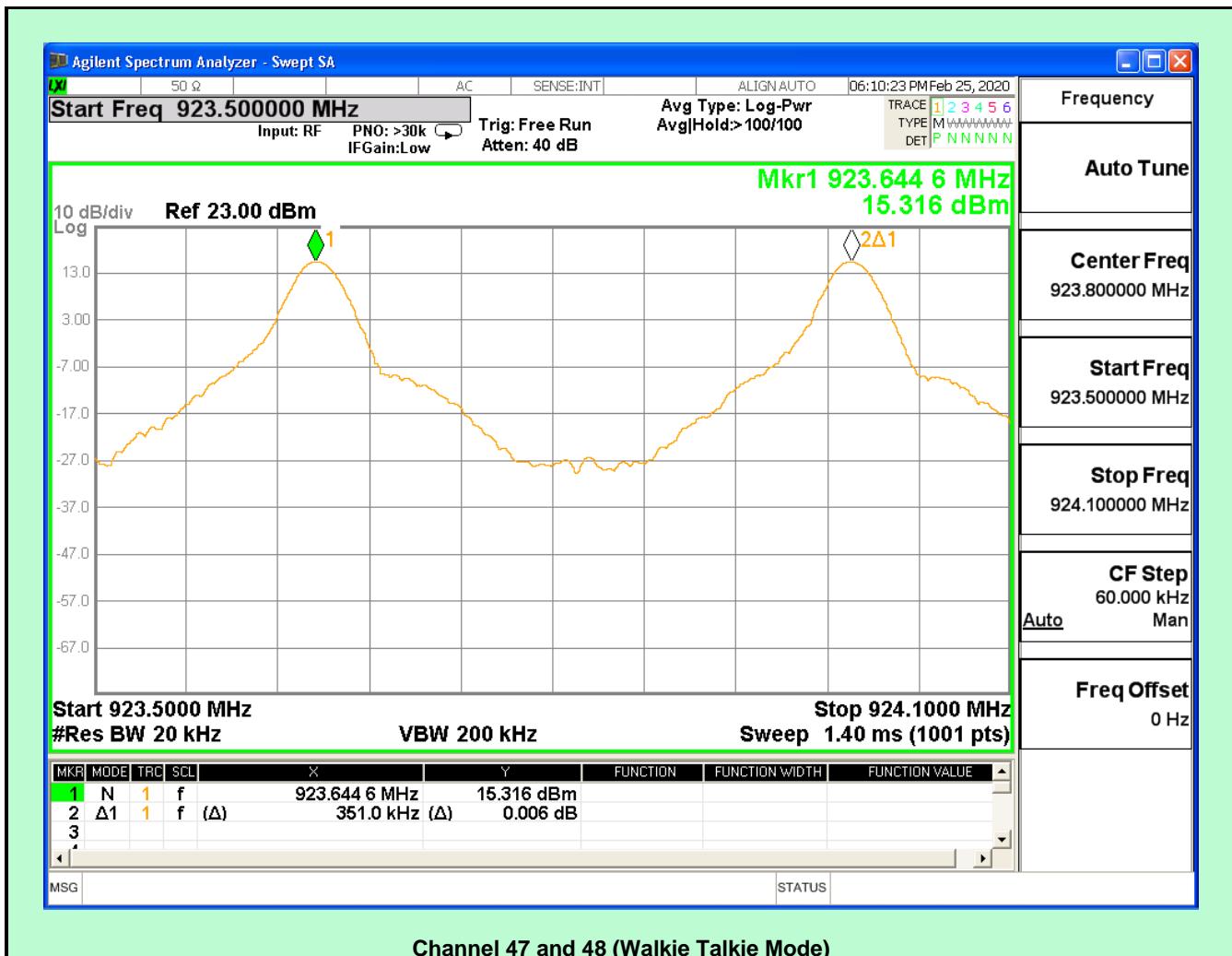




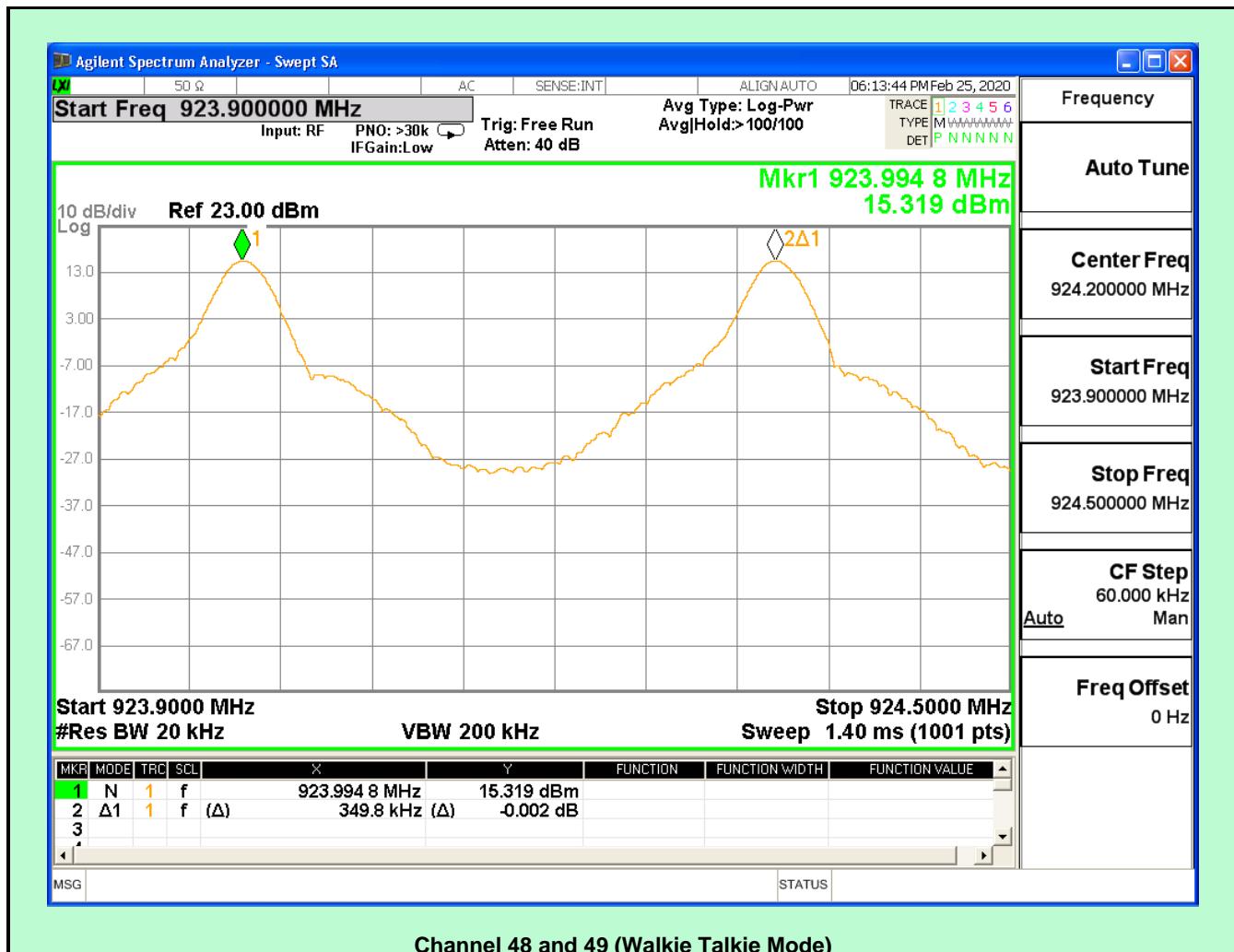




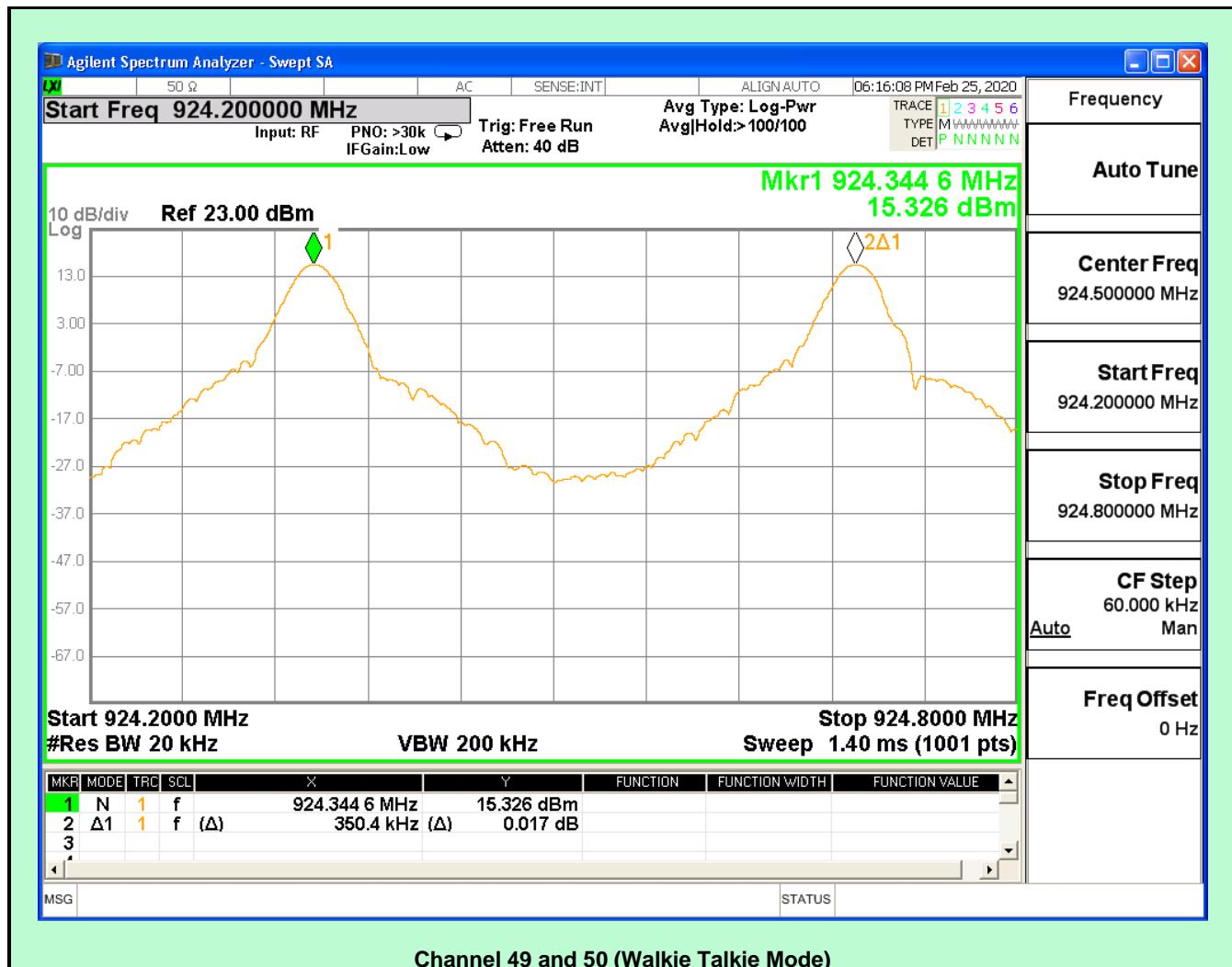


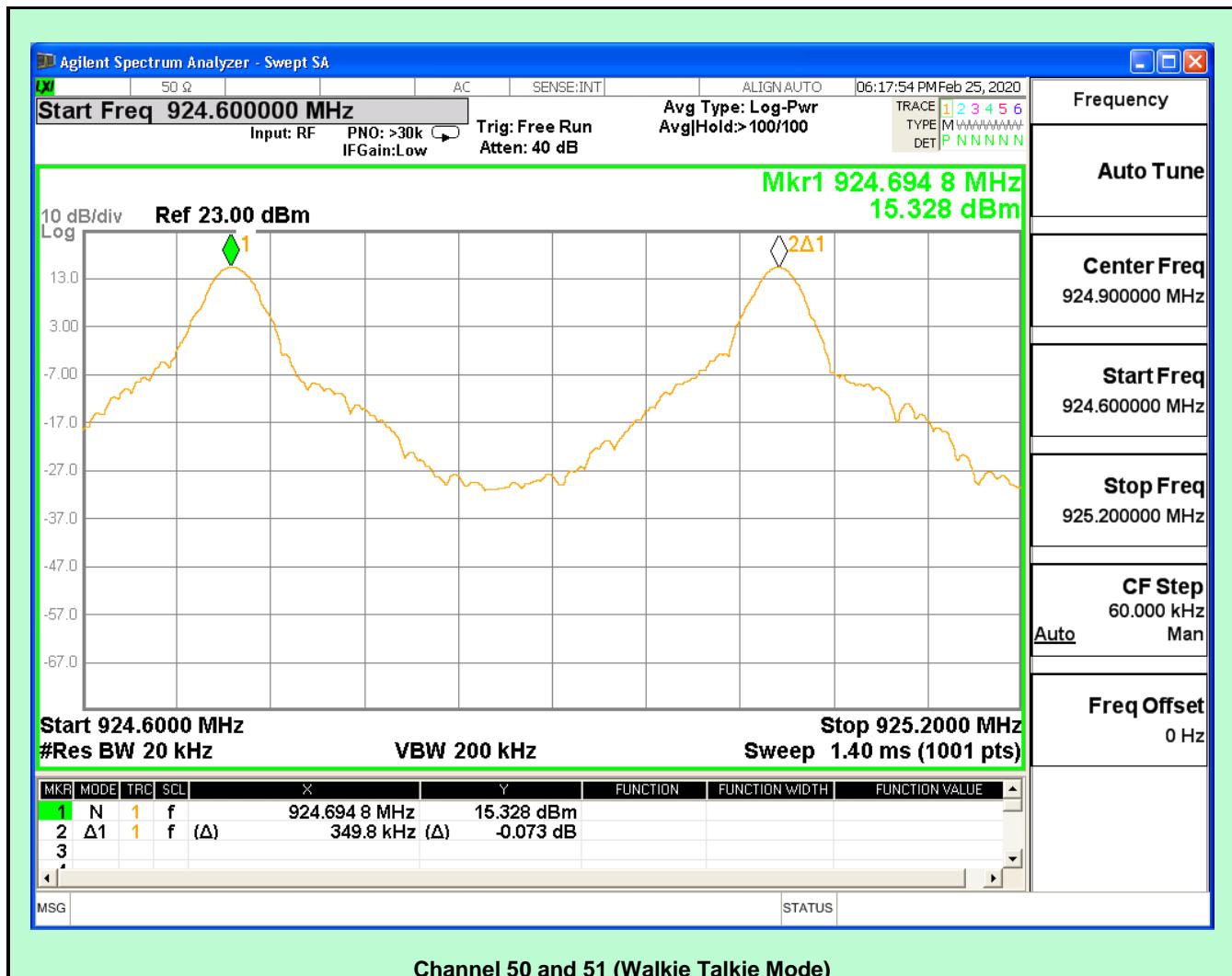


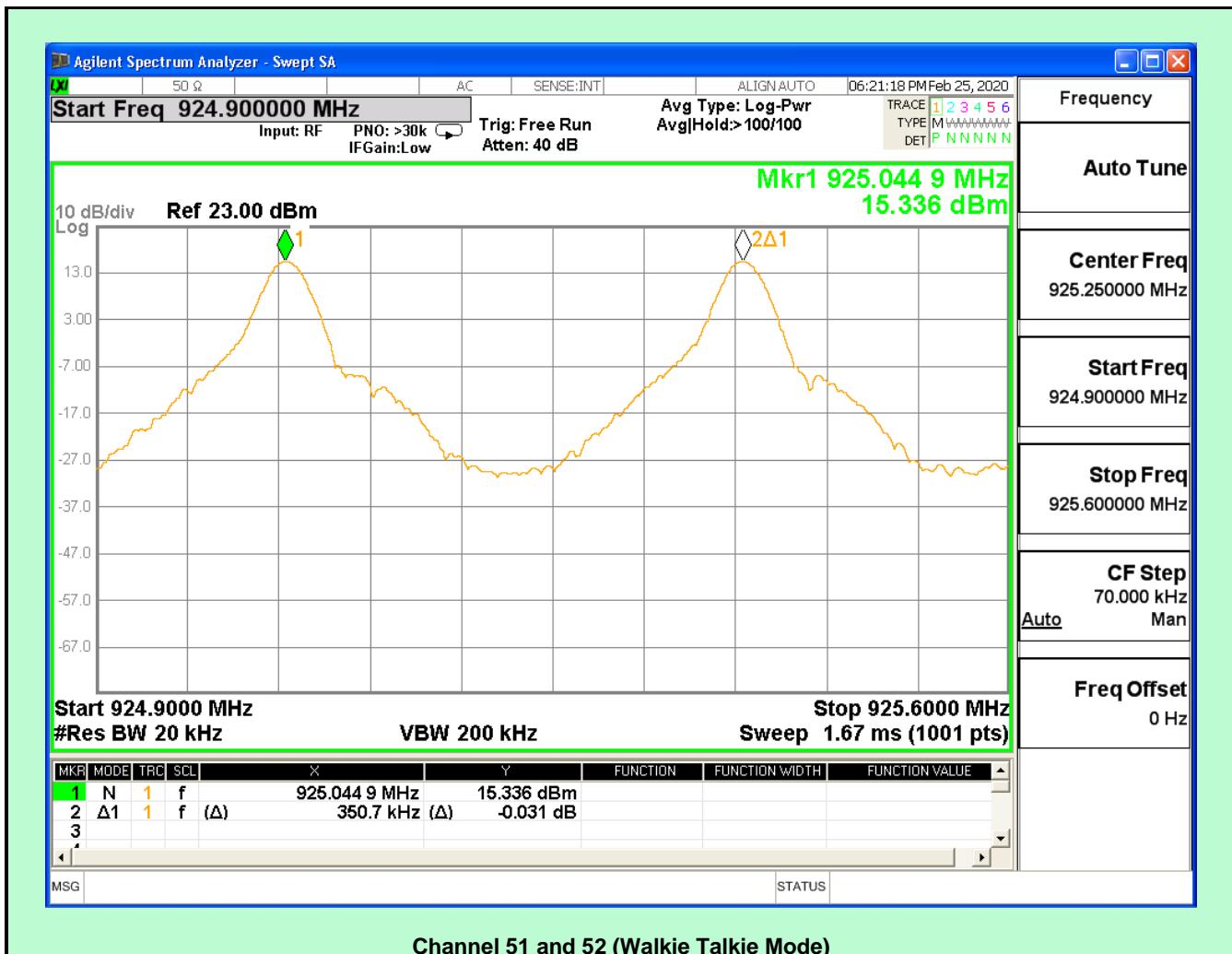
Channel 47 and 48 (Walkie Talkie Mode)

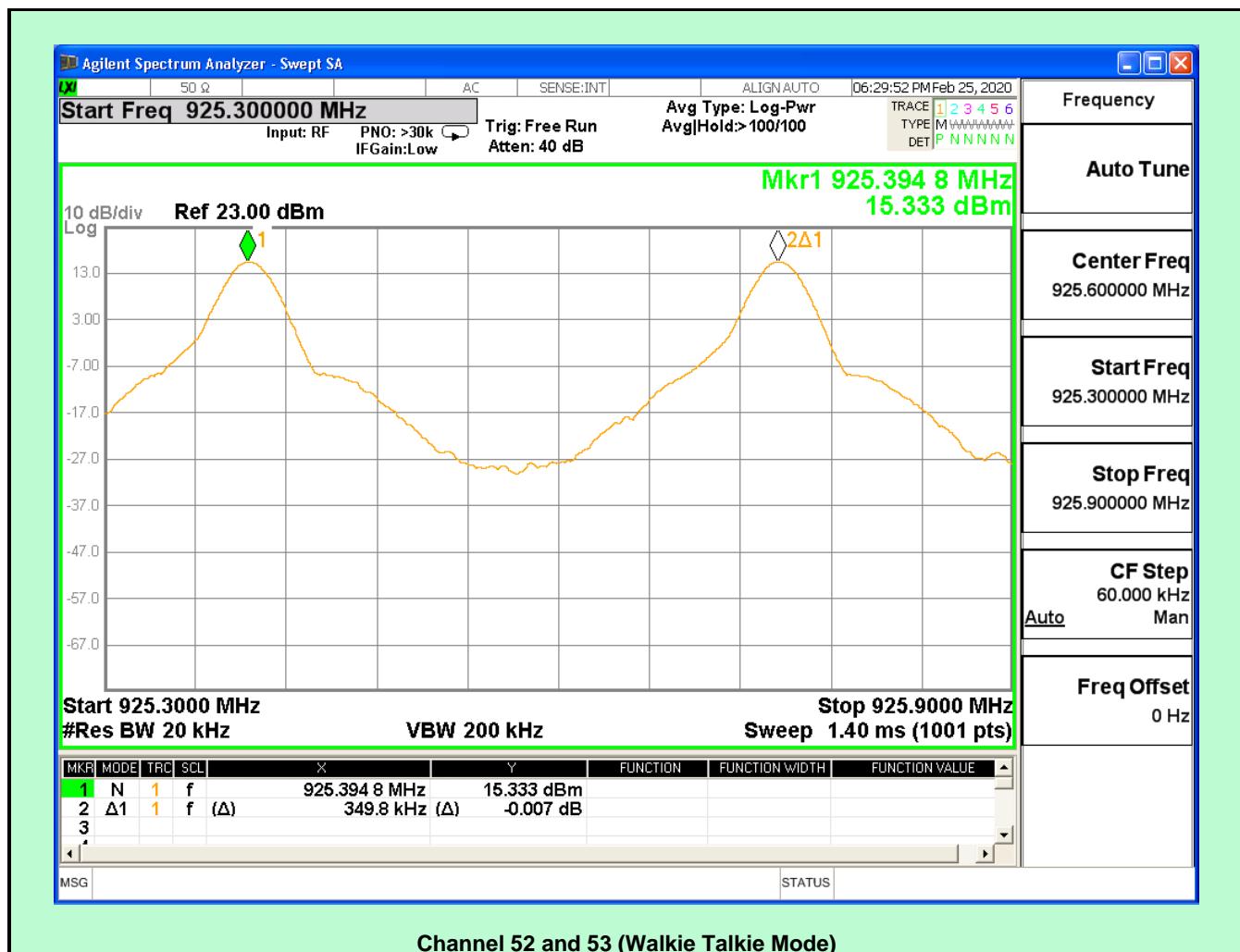


Channel 48 and 49 (Walkie Talkie Mode)

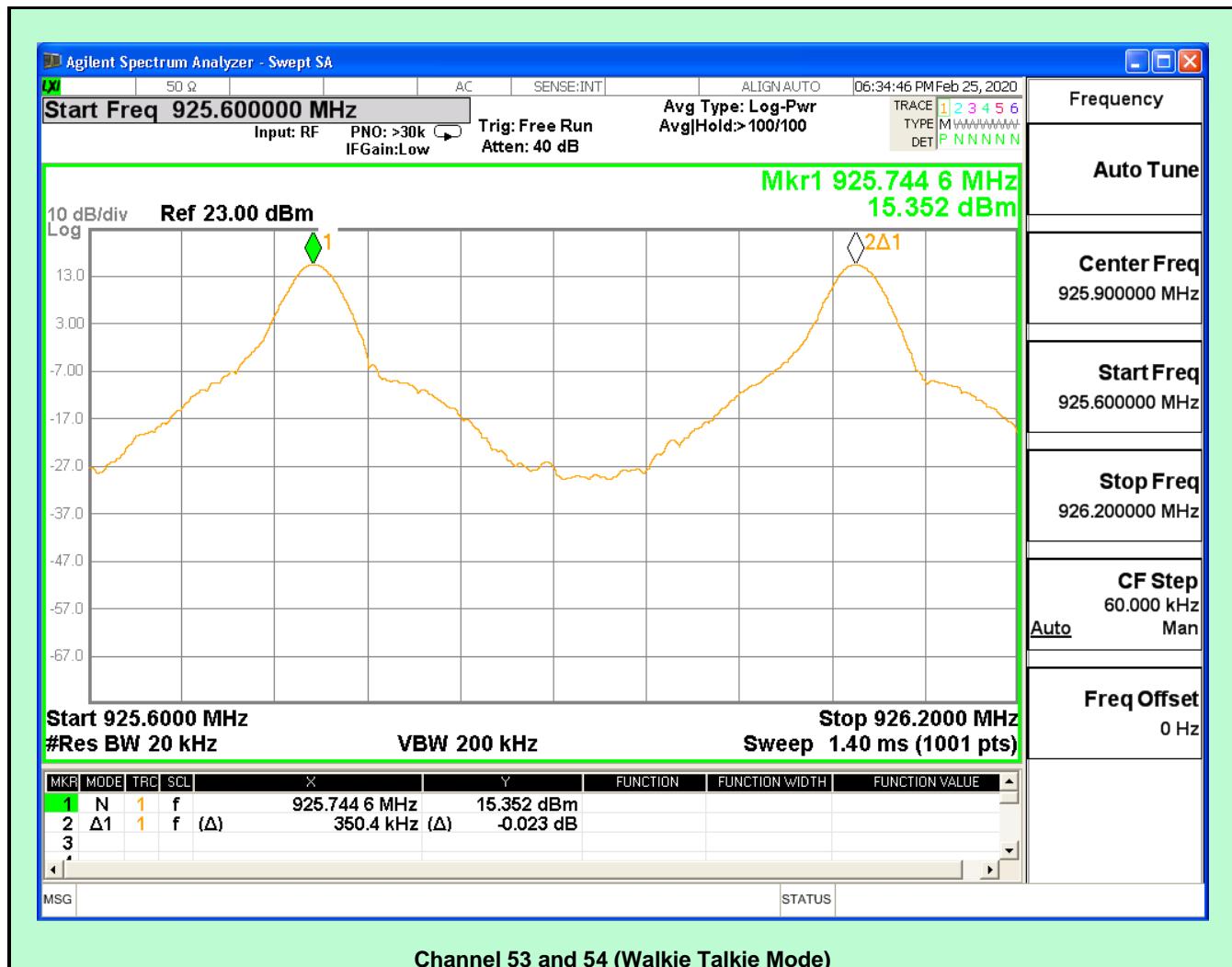


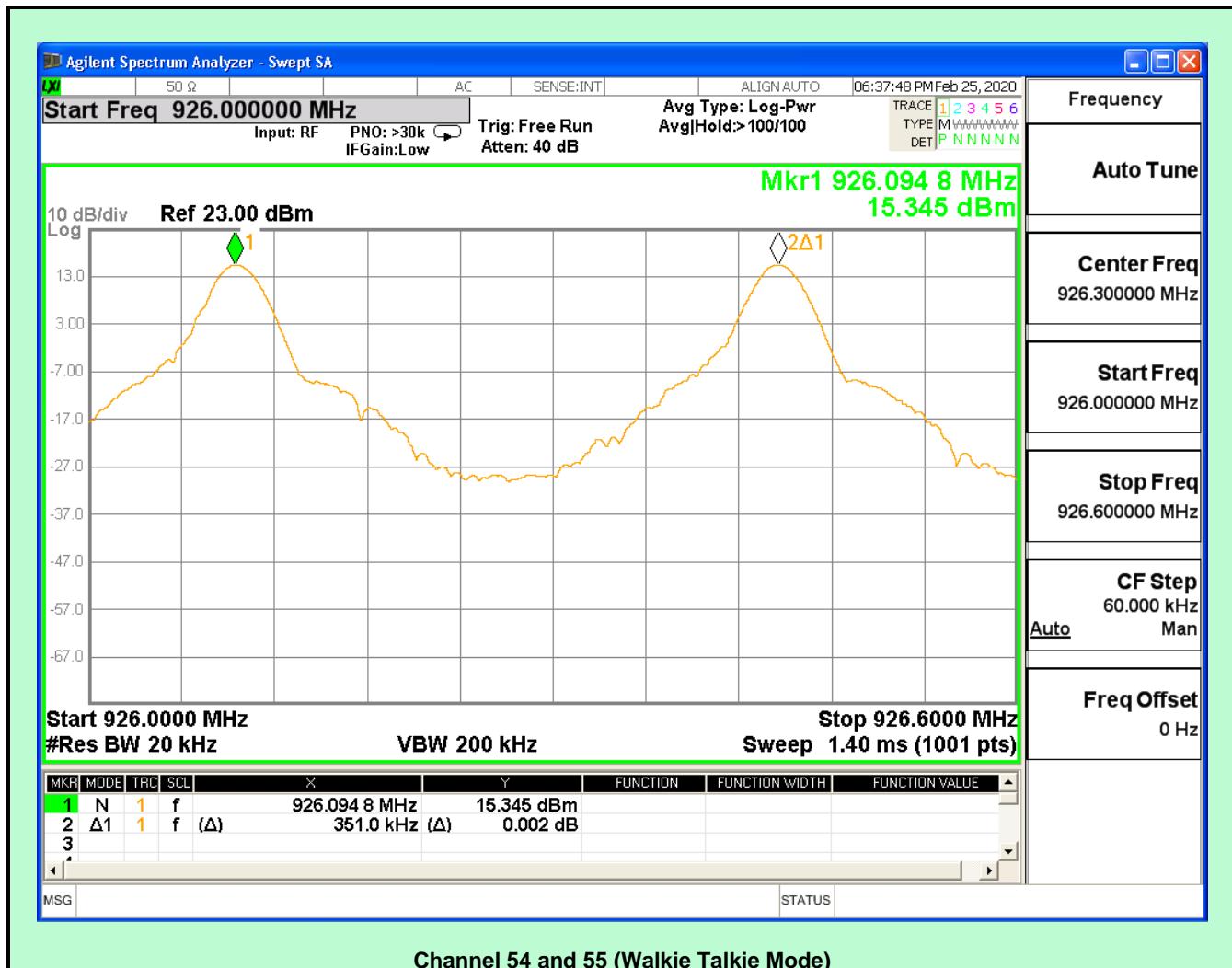






Channel 52 and 53 (Walkie Talkie Mode)





<b>TEST RESULTS</b>			
<b>Channel No</b>	<b>Measured Value</b>	<b>Limit</b>	<b>Test Results</b>
<b>#</b>	<b>KHz</b>		
1 and 2	350	>20dB BW(320KHz)	PASS
2 and 3	350	>20dB BW(320KHz)	PASS
3 and 4	350.7	>20dB BW(320KHz)	PASS
4 and 5	350.7	>20dB BW(320KHz)	PASS
5 and 6	350	>20dB BW(320KHz)	PASS
6 and 7	350	>20dB BW(320KHz)	PASS
7 and 8	350	>20dB BW(320KHz)	PASS
8 and 9	350	>20dB BW(320KHz)	PASS
9 and 10	350.7	>20dB BW(320KHz)	PASS
10 and 11	350.7	>20dB BW(320KHz)	PASS
11 and 12	348.6	>20dB BW(320KHz)	PASS
12 and 13	350	>20dB BW(320KHz)	PASS
13 and 14	1348.65	>20dB BW(320KHz)	PASS
14 and 42	11799	>20dB BW(320KHz)	PASS
15 and 16	350	>20dB BW(320KHz)	PASS
16 and 17	349.8	>20dB BW(320KHz)	PASS
17 and 18	351	>20dB BW(320KHz)	PASS
18 and 19	349.8	>20dB BW(320KHz)	PASS
19 and 20	351	>20dB BW(320KHz)	PASS
20 and 21	349.3	>20dB BW(320KHz)	PASS
21 and 22	351	>20dB BW(320KHz)	PASS
22 and 23	349.8	>20dB BW(320KHz)	PASS
23 and 24	349.3	>20dB BW(320KHz)	PASS
24 and 25	350.4	>20dB BW(320KHz)	PASS
25 and 26	351.4	>20dB BW(320KHz)	PASS
26 and 27	350.7	>20dB BW(320KHz)	PASS
27 and 28	2351.7	>20dB BW(320KHz)	PASS
28 and 29	350	>20dB BW(320KHz)	PASS
29 and 30	351	>20dB BW(320KHz)	PASS
30 and 31	350.4	>20dB BW(320KHz)	PASS
31 and 32	351	>20dB BW(320KHz)	PASS
32 and 33	349.8	>20dB BW(320KHz)	PASS
33 and 34	350.4	>20dB BW(320KHz)	PASS
34 and 35	349.2	>20dB BW(320KHz)	PASS
35 and 36	350	>20dB BW(320KHz)	PASS
36 and 37	350.4	>20dB BW(320KHz)	PASS
37 and 38	349.8	>20dB BW(320KHz)	PASS
38 and 39	349.8	>20dB BW(320KHz)	PASS
39 and 40	349.8	>20dB BW(320KHz)	PASS
40 and 41	349.8	>20dB BW(320KHz)	PASS
42 and 43	1349.8	>20dB BW(320KHz)	PASS
43 and 44	350.4	>20dB BW(320KHz)	PASS
44 and 45	349.8	>20dB BW(320KHz)	PASS
45 and 46	349.8	>20dB BW(320KHz)	PASS
46 and 47	349.8	>20dB BW(320KHz)	PASS

47 and 48	351	>20dB BW(320KHz)	PASS
48 and 49	349.8	>20dB BW(320KHz)	PASS
49 and 50	350.4	>20dB BW(320KHz)	PASS
50 and 51	349.8	>20dB BW(320KHz)	PASS
51 and 52	350.7	>20dB BW(320KHz)	PASS
52 and 53	349.8	>20dB BW(320KHz)	PASS
53 and 54	350.4	>20dB BW(320KHz)	PASS
54 and 55	351	>20dB BW(320KHz)	PASS

**TEST SETUP PHOTOGRAPH**

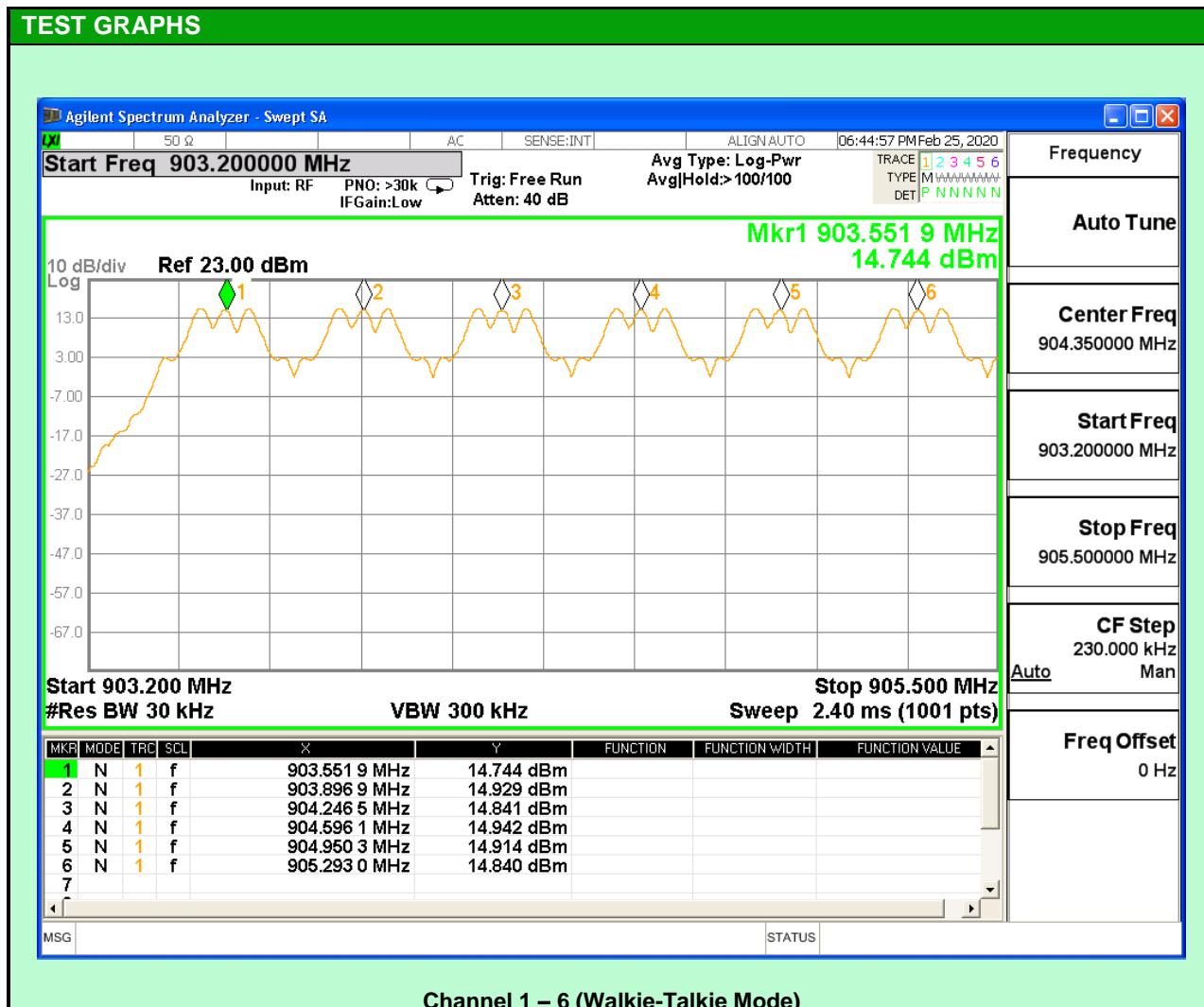
Refer Annexure -1

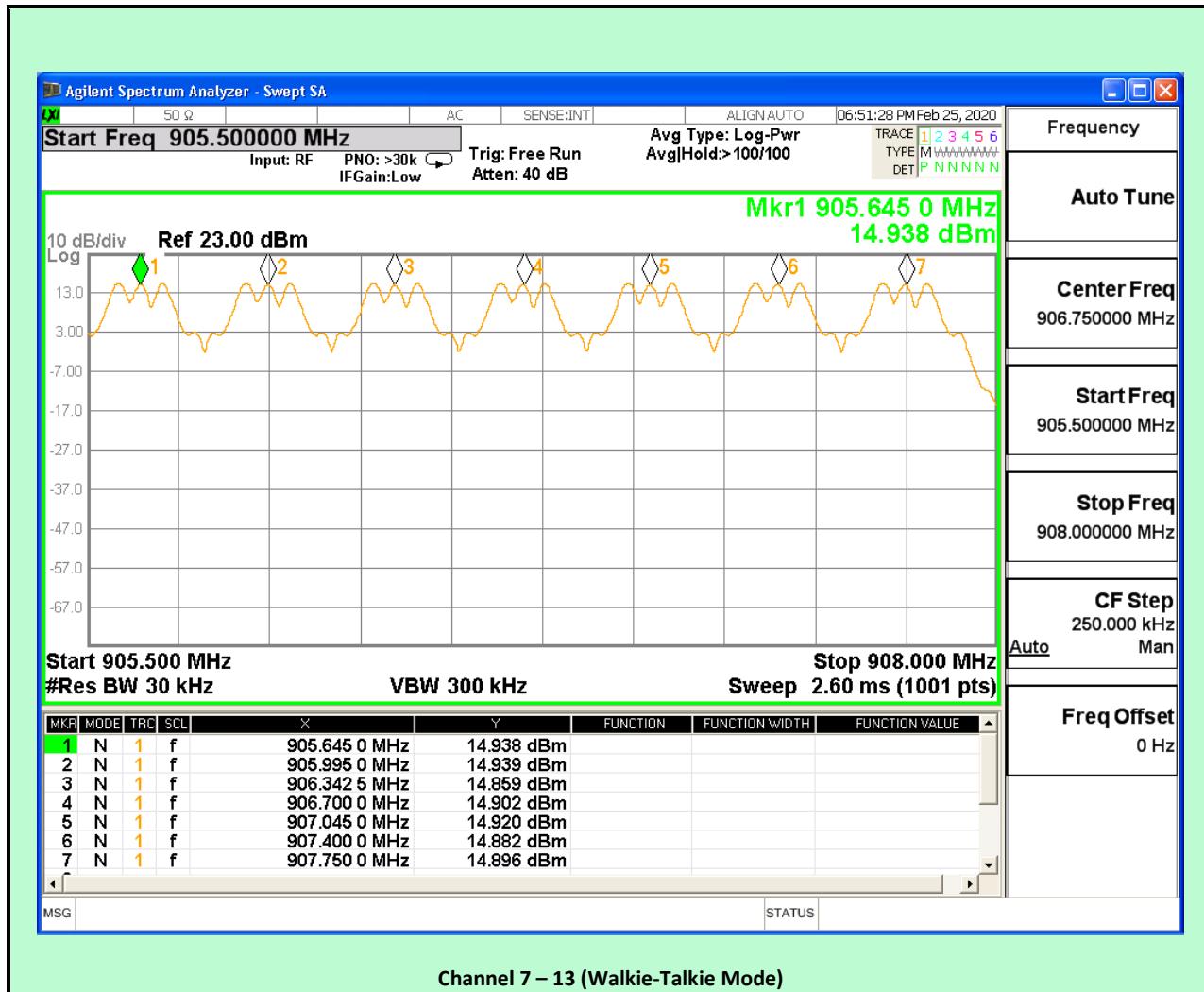
**Conducted RF Test setup**

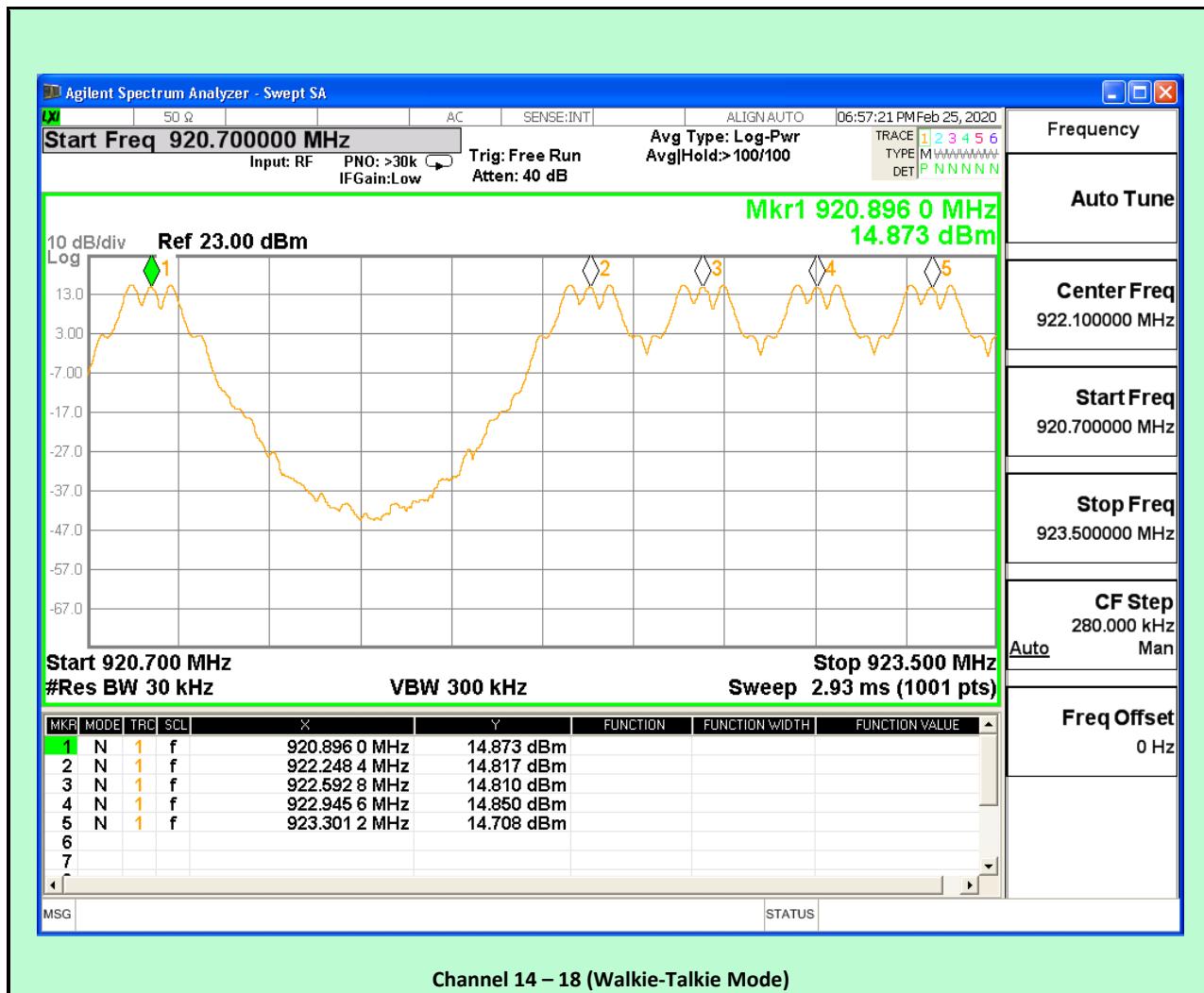
2.4 NUMBER OF HOPPING CHANNELS			
<b>EUT</b>	Wireless Relay Module	<b>Test Request No.</b>	EMC0419-1
<b>Model No.</b>	FW-RM	<b>Serial No.</b>	107
<b>Test Start Date</b>	14-Dec-2019	<b>Temperature (°C)</b>	23.6°C
<b>Test End Date</b>	28-Feb-2020	<b>Humidity RH (%)</b>	51.9%RH
<b>Tested By</b>	Shaithanya C	<b>Pressure (mbar)</b>	NR
<b>Input Voltage /</b>	3.3Vdc		
<b>Operating Mode</b>	Refer Page 6 for Operating Mode Table		
<b>Test configuration</b>	Refer Page 6 for Test Configuration Table		
<b>Deviation from</b>	NA		
<b>Applicable</b>	FCC Part 15.247:2010		
<b>Test Method</b>	DA 00-705		
<b>Comment</b>	NA		
TEST DETAILS			
<b>Method</b>	Radiated <input type="checkbox"/>	Conducted <input checked="" type="checkbox"/>	
TEST PARAMETERS			
<b>Antenna Height</b>	NA	<b>Turntable Rotation</b>	NA
<b>Equipment Class</b>	NA	<b>Measurement Distance</b>	NA

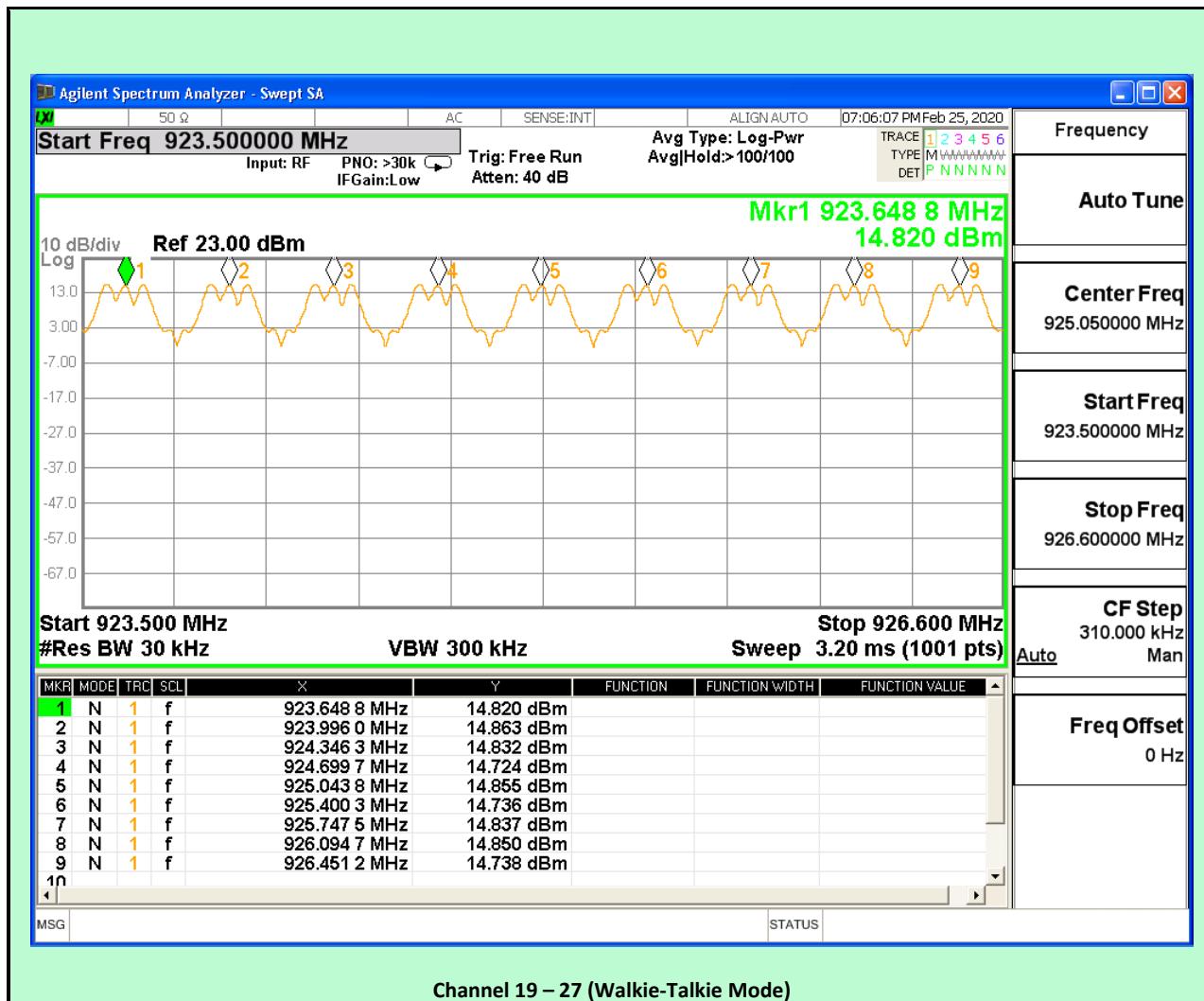
TEST EQUIPMENT					
Y/N	Equipment	Make	Model	Sl. No.	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	27-Feb-2021
Y	RF Cable	Huber- Shunner	SF104/2X11PC3542/500	NA	NA

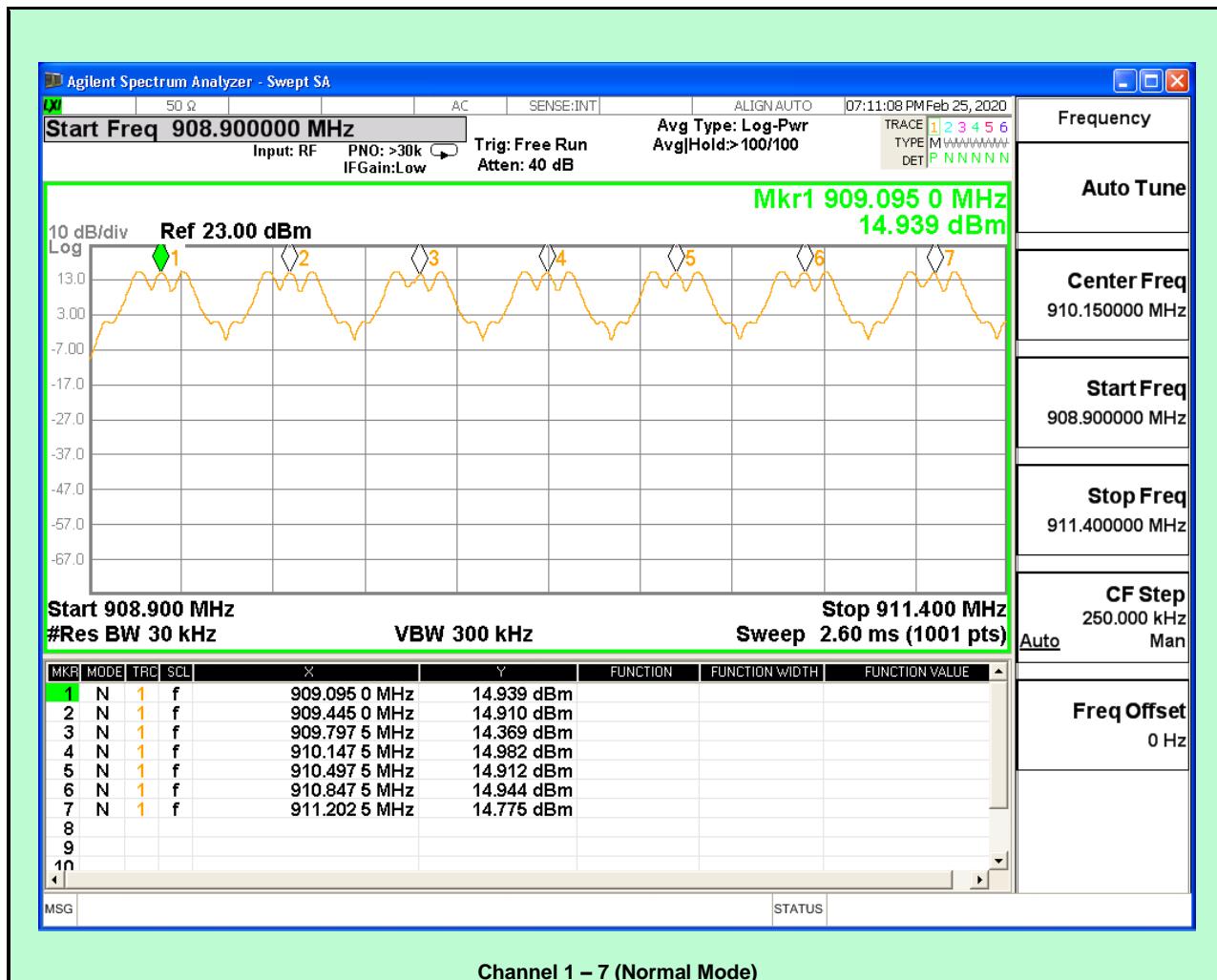
## TEST GRAPHS

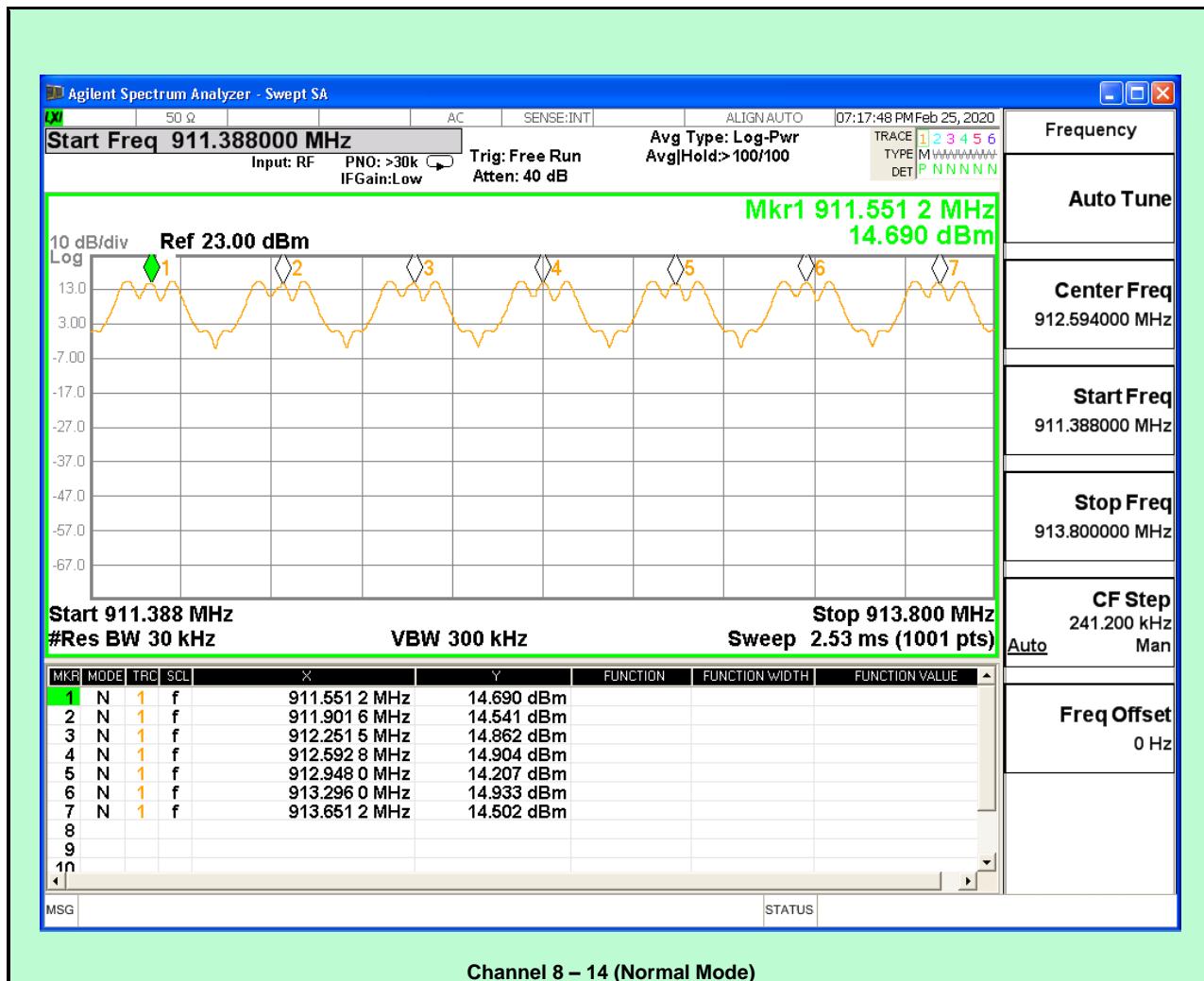


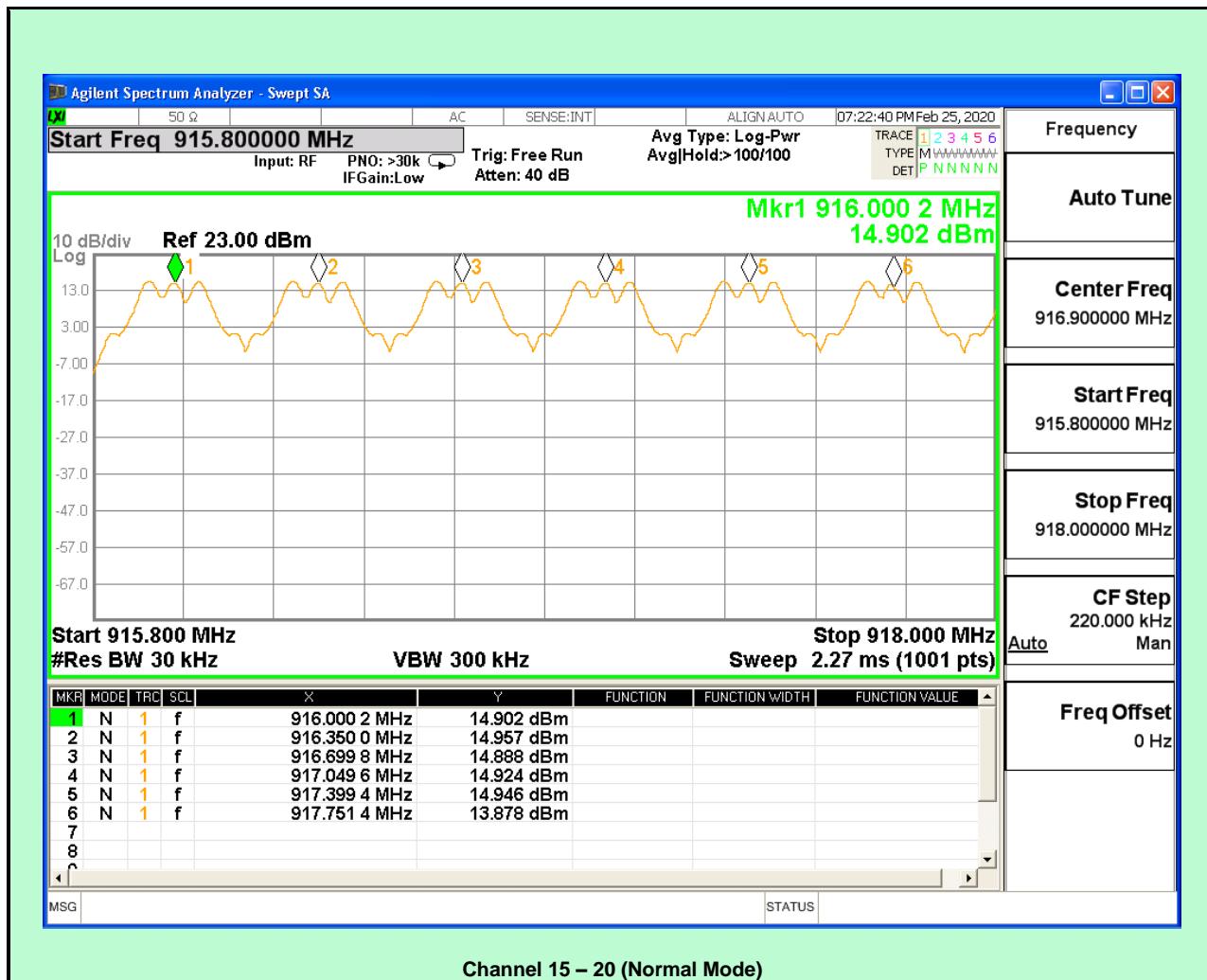


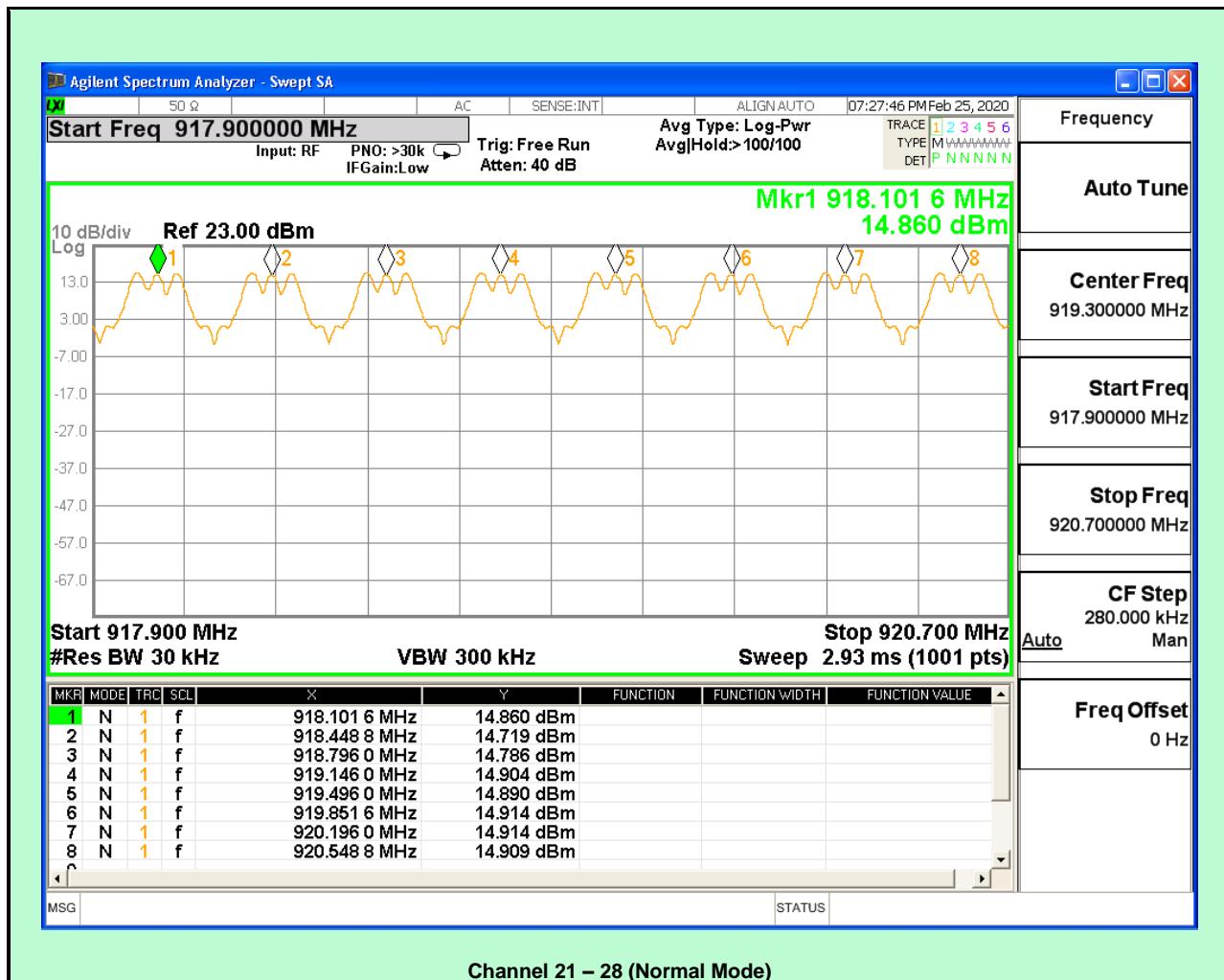












**TEST RESULTS**

Mode of Operation	No. of Channels Measured	Limit (No. of Channels)	Test Results
#	#	#	
Normal Mode	28	≥25	PASS
Walkie-Talkie Mode	27	≥25	PASS

**TEST SETUP PHOTOGRAPH**

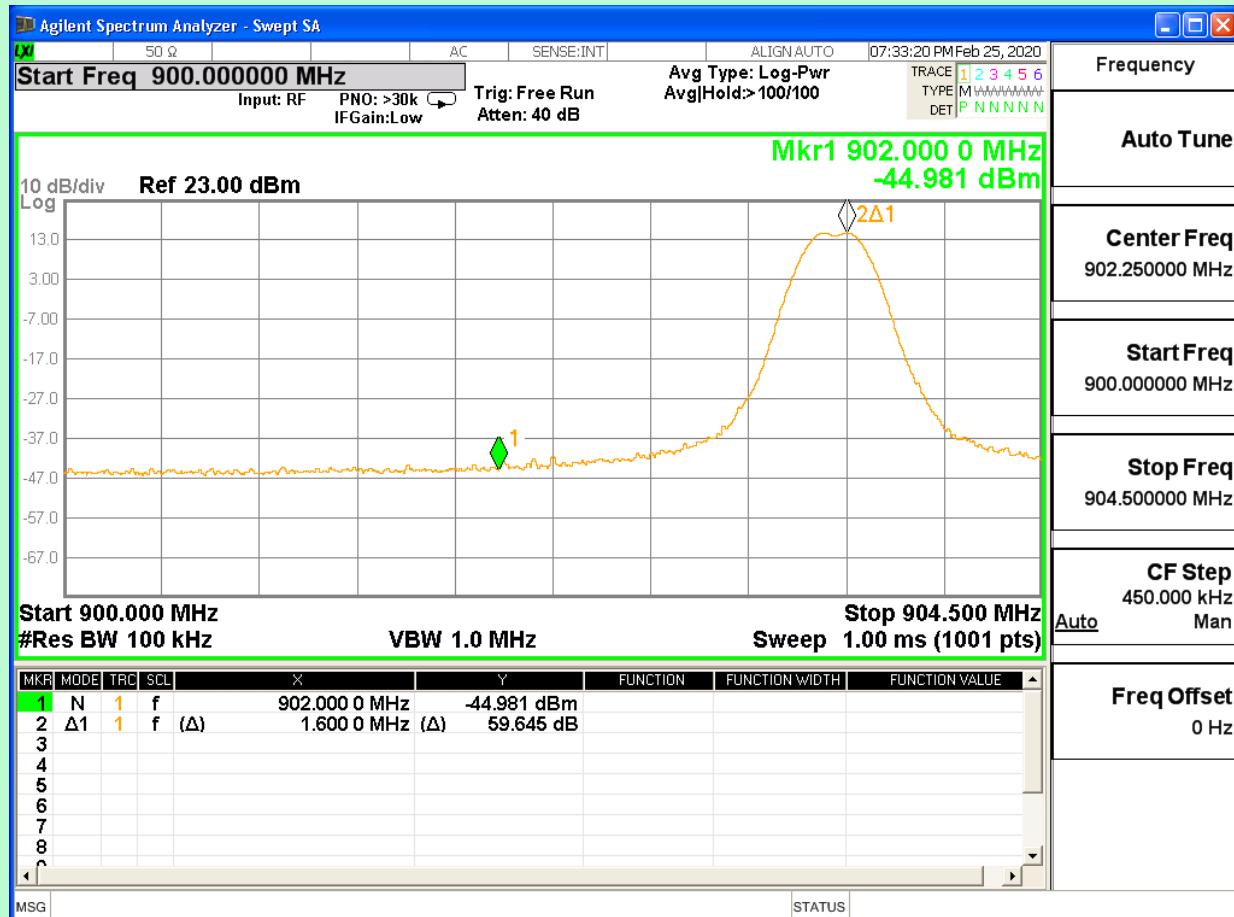
Refer Annexure -1

Conducted RF Test setup

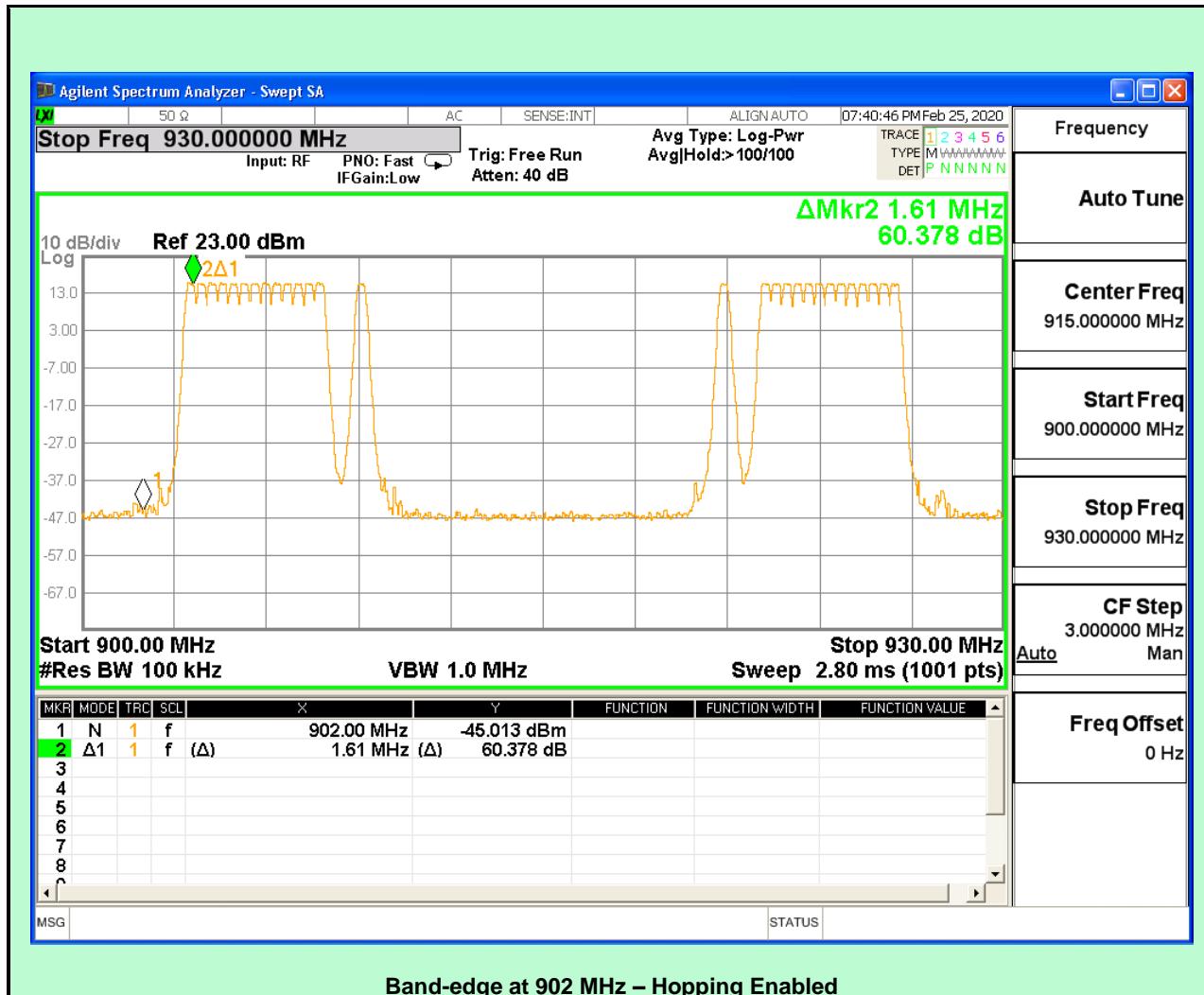
2.5 BAND EDGE COMPLIANCE			
<b>EUT Nomenclature</b>	Wireless Relay Module	<b>Test Request No.</b>	EMC0419-1
<b>Model No.</b>	FW-RM	<b>Serial No.</b>	107
<b>Test Start Date</b>	14-Dec-2019	<b>Temperature (°C)</b>	23.6°C
<b>Test End Date</b>	28-Feb-2020	<b>Humidity RH (%)</b>	51.9%RH
<b>Tested By</b>	Shaithanya C	<b>Pressure (mbar)</b>	NR
<b>Input Voltage /</b>	3.3Vdc		
<b>Operating Mode</b>	Refer Page 6 for Operating Mode Table		
<b>Test configuration</b>	Refer Page 6 for Test Configuration Table		
<b>Deviation from Std.</b>	NA		
<b>Applicable</b>	FCC Part 15.247:2010		
<b>Test Method</b>	DA 00-705		
<b>Comment</b>	NA		
TEST DETAILS			
<b>Method</b>	Radiated <input type="checkbox"/>	Conducted <input checked="" type="checkbox"/>	
TEST PARAMETERS			
<b>Antenna Height</b>	NA	<b>Turntable Rotation</b>	NA
<b>Equipment Class</b>	NA	<b>Measurement</b>	NA

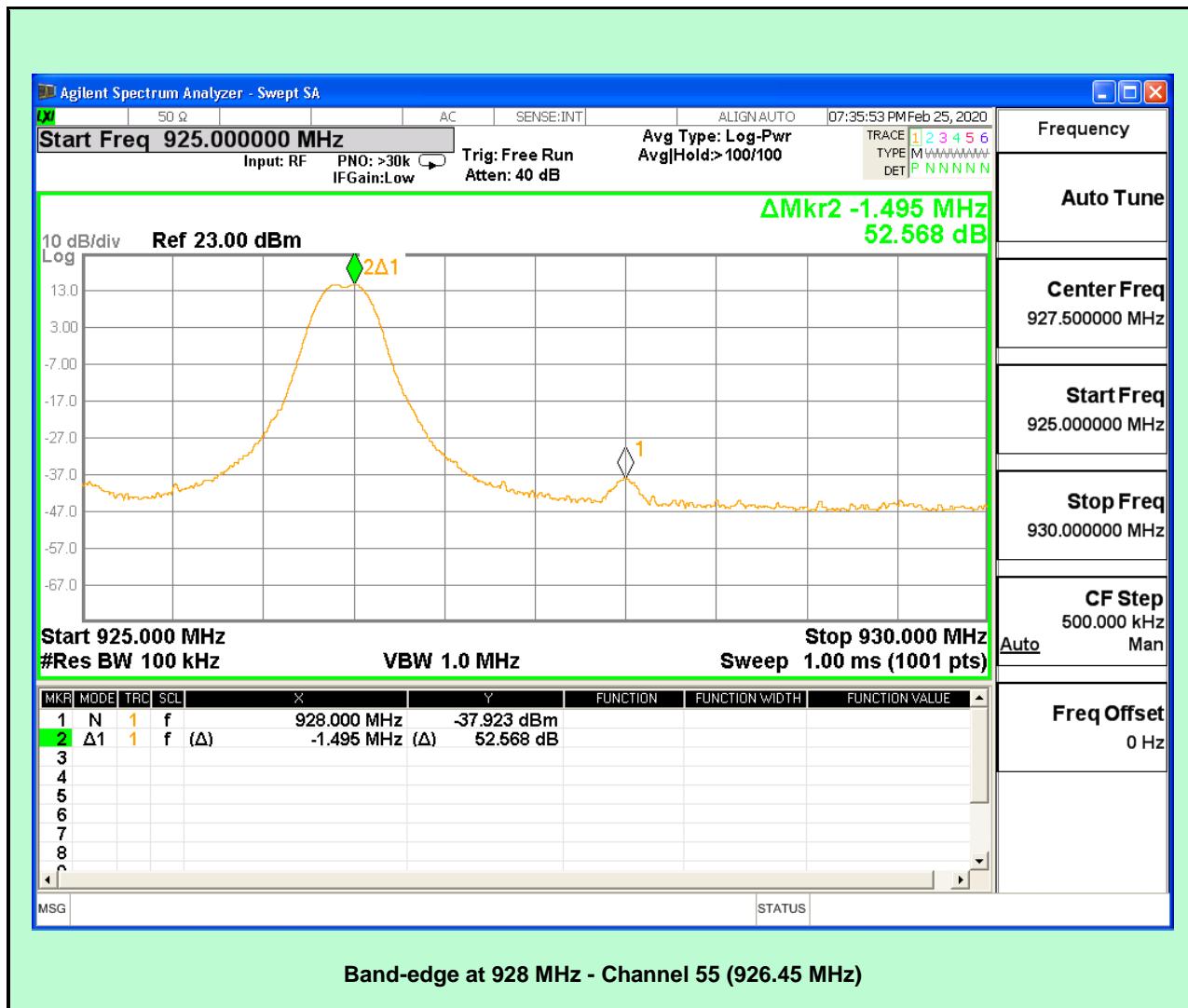
TEST EQUIPMENT					
Y/N	Equipment	Make	Model	SI. No.	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	27-Feb-2021
Y	RF Cable	Huber- Shunner	SF104/2X11PC3542/500	NA	NA

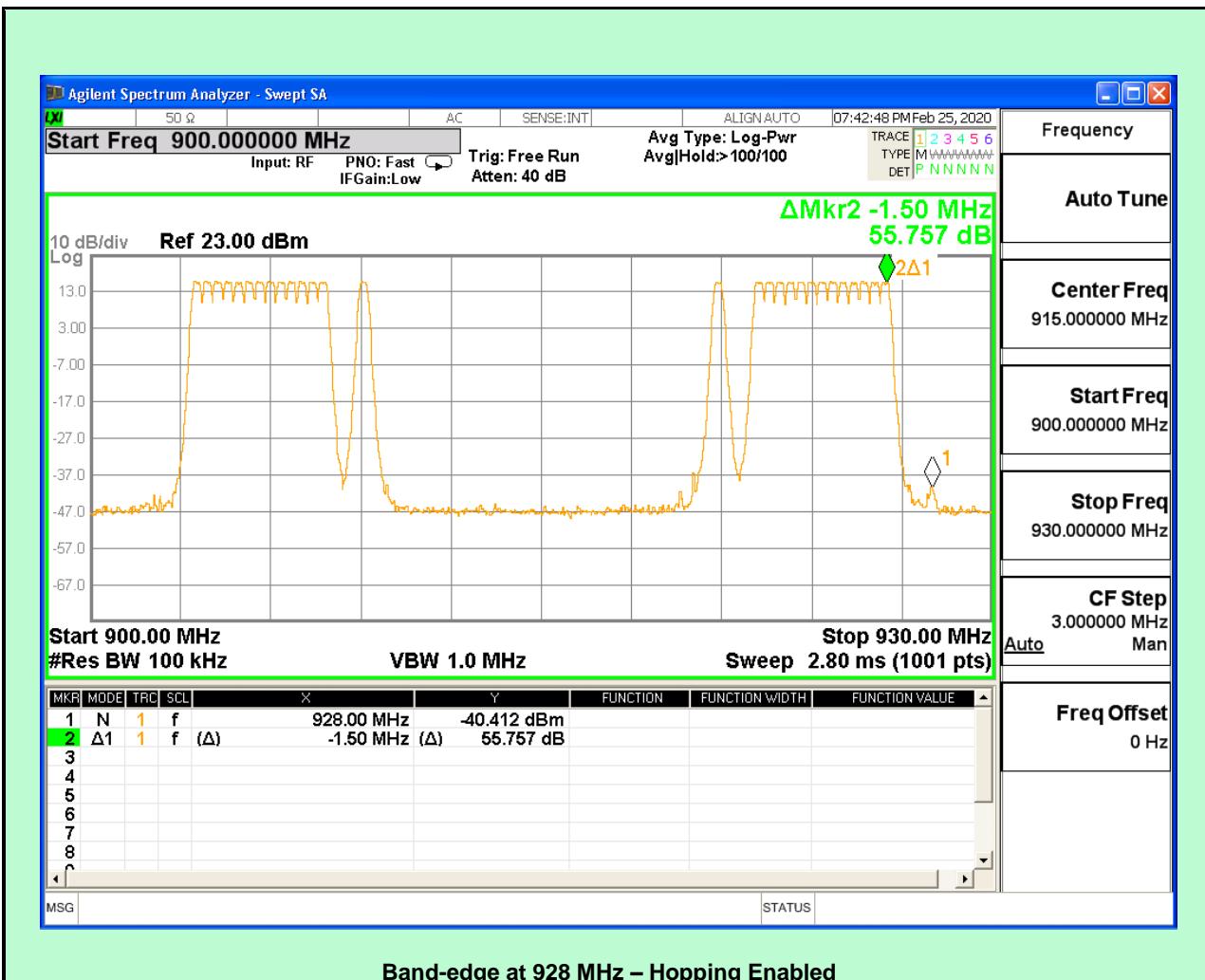
## TEST GRAPHS



Band-edge at 902 MHz - Channel 1 (903.55 MHz)







**TEST RESULTS**

Channel	Frequency	Measured Level- Single Channel	Measured Level – FHSS Enabled	Limit	<b>Test Results</b>
#	MHz	dBc	dBc	dBc	
1	903.55	59.64	60.37	≥20	PASS
55	926.45	52.56	55.75	≥20	PASS

**TEST SETUP PHOTOGRAPH**

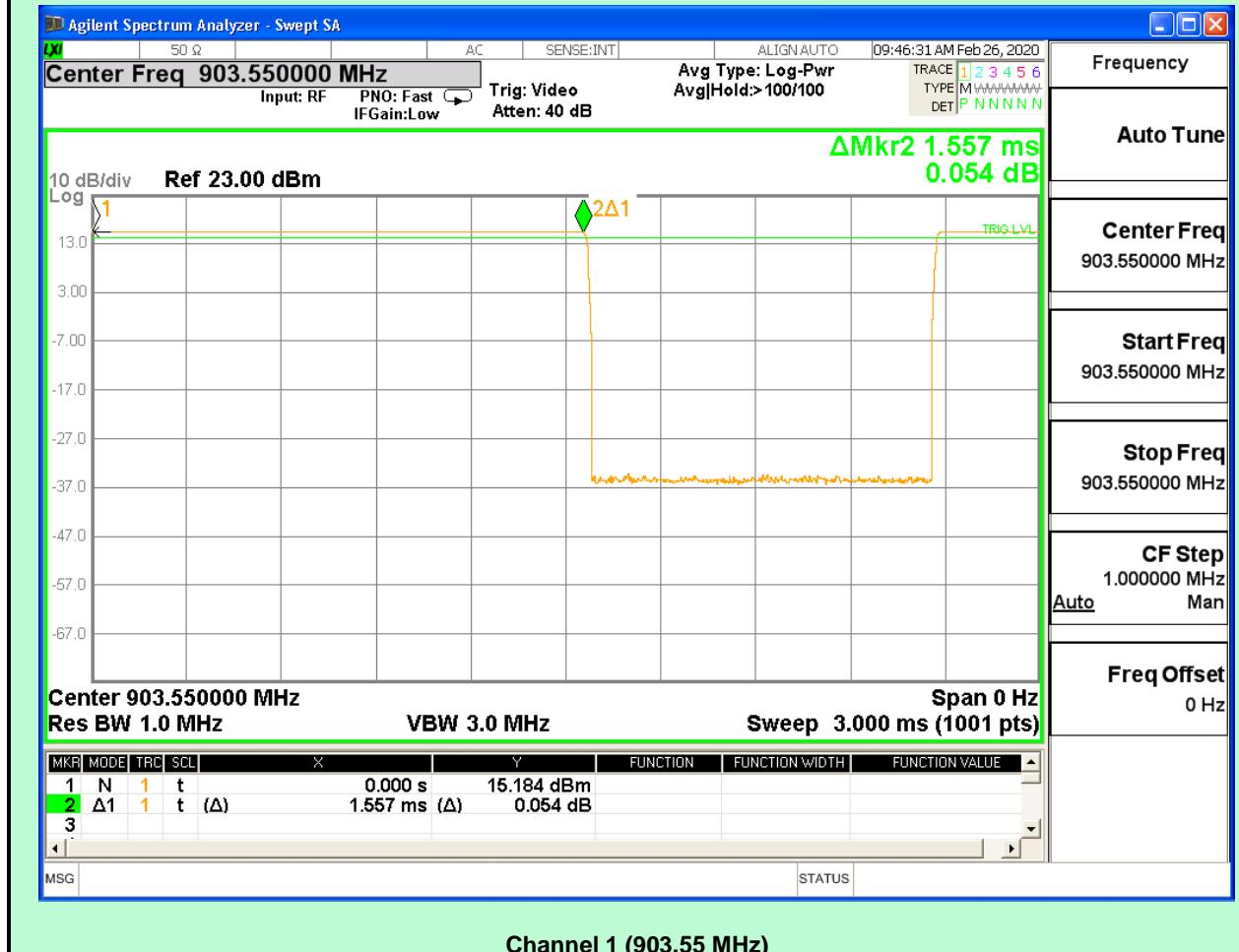
Refer Annexure -1

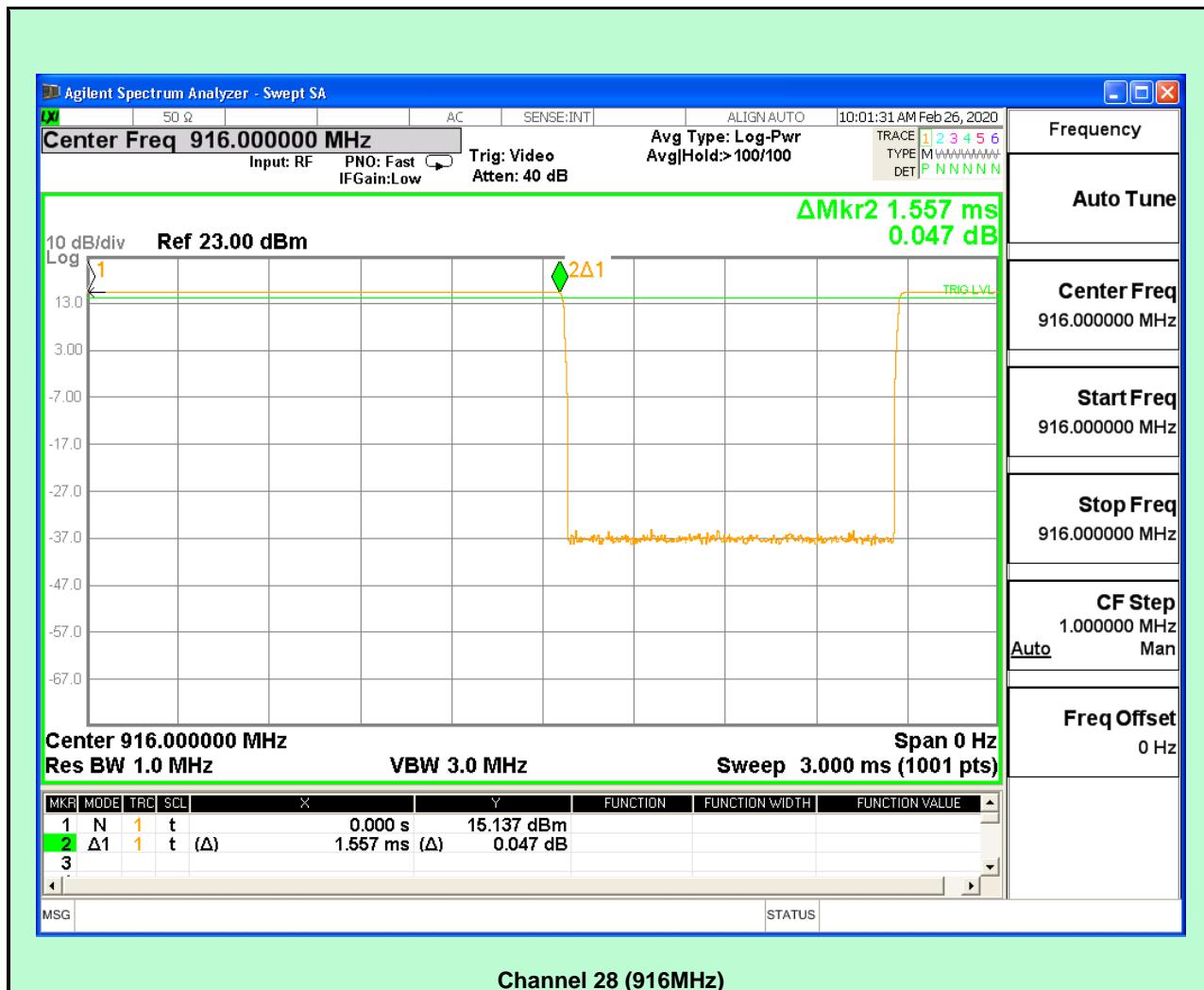
**Conducted RF Test setup**

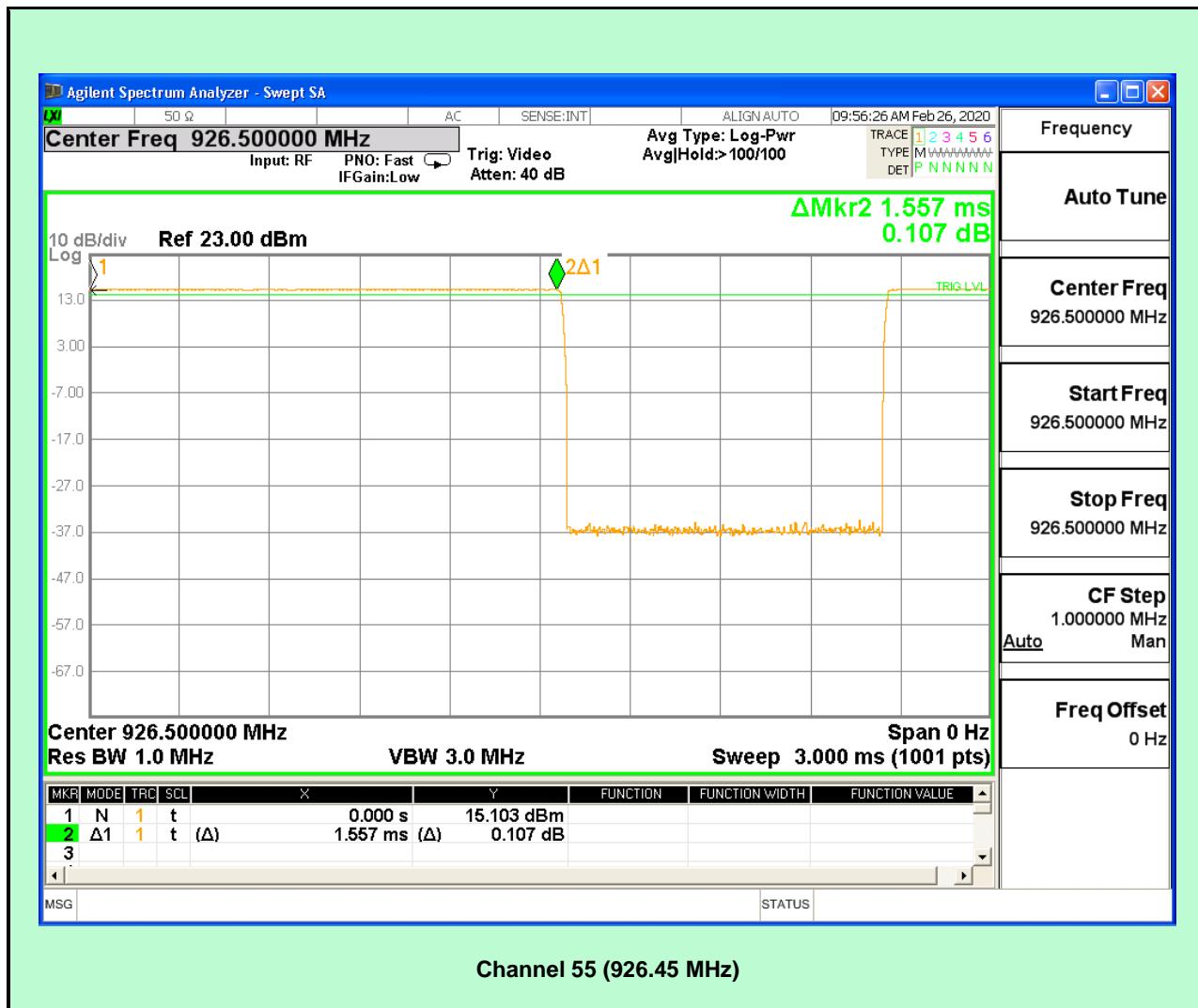
2.6 TIME OF OCCUPANCY (DWELL TIME)			
<b>EUT Nomenclature</b>	Wireless Relay Module	<b>Test Request No.</b>	EMC0419-1
<b>Model No.</b>	FW-RM	<b>Serial No.</b>	107
<b>Test Start Date</b>	14-Dec-2019	<b>Temperature (°C)</b>	23.6°C
<b>Test End Date</b>	28-Feb-2020	<b>Humidity RH (%)</b>	51.9%RH
<b>Tested By</b>	Shaithanya C	<b>Pressure (mbar)</b>	NR
<b>Input Voltage /</b>	3.3Vdc		
<b>Operating Mode</b>	Refer Page 6 for Operating Mode Table		
<b>Test configuration</b>	Refer Page 6 for Test Configuration Table		
<b>Deviation from Std.</b>	NA		
<b>Applicable</b>	FCC Part 15.247:2010		
<b>Test Method</b>	DA 00-705		
<b>Comment</b>	NA		
TEST DETAILS			
<b>Method</b>	Radiated <input type="checkbox"/>	Conducted <input checked="" type="checkbox"/>	
TEST PARAMETERS			
<b>Antenna Height</b>	NA	<b>Turntable Rotation</b>	NA
<b>Equipment Class</b>	NA	<b>Measurement Distance</b>	NA

TEST EQUIPMENT					
Y/N	Equipment	Make	Model	Sl. No.	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	27-Feb-2021
Y	RF Cable	Huber- Suhner	SF104/2X11PC3542/500	NA	NA

## TEST GRAPHS







**TEST RESULTS**

Channel	Frequency	Measured Dwell Time	No. of Bursts	Total Dwell Time in 10Sec	Limit	Test Results
#	MHz	msec	#	msec	msec	
1	903.55	1.557	15	23.35	≤400	PASS
28	916	1.557	15	23.35	≤400	PASS
55	926.45	1.557	15	23.35	≤400	PASS

**TEST SETUP PHOTOGRAPH**

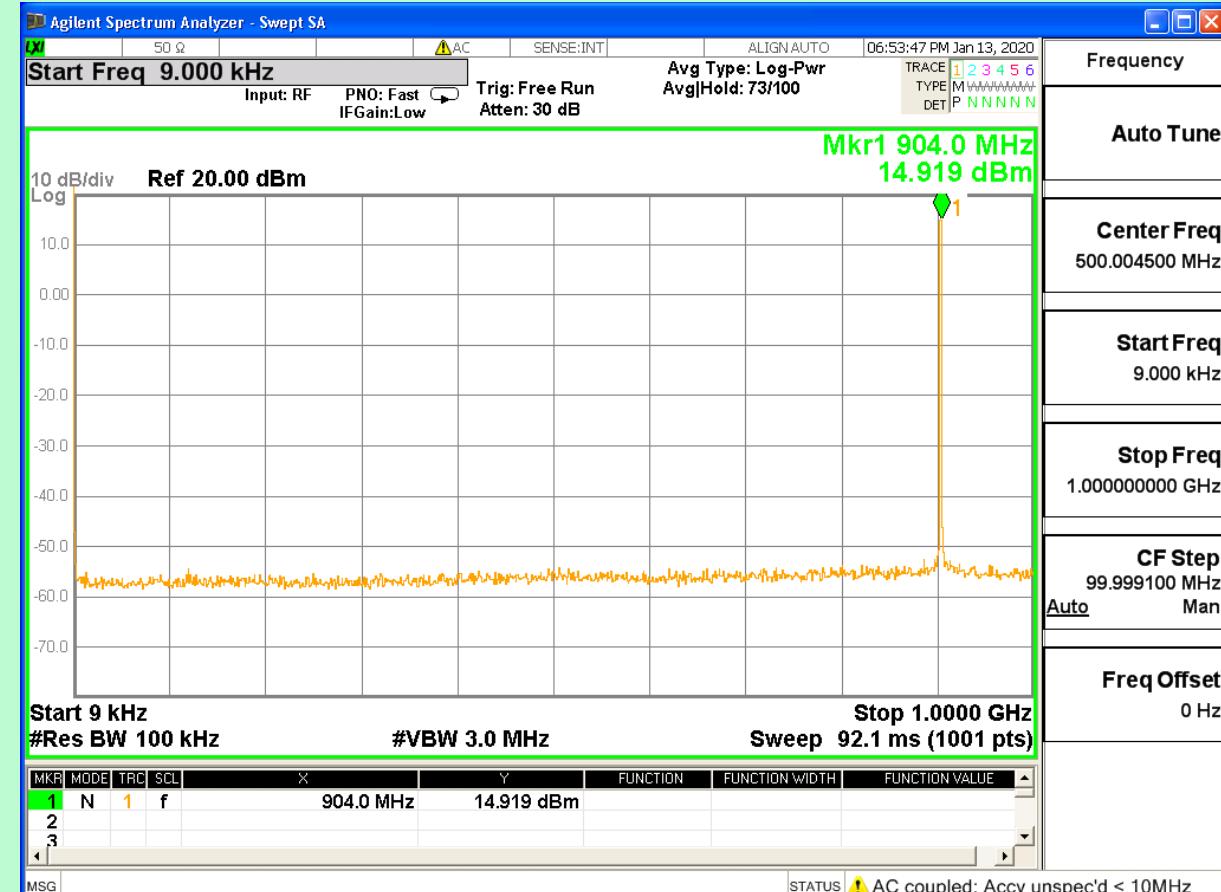
Refer Annexure -1

**Conducted RF Test setup**

<b>2.7 SPURIOUS RF CONDUCTED EMISSIONS</b>			
<b>EUT Nomenclature</b>	Wireless Relay Module	<b>Test Request No.</b>	EMC0419-1
<b>Model No.</b>	FW-RM	<b>Serial No.</b>	107
<b>Test Start Date</b>	14-Dec-2019	<b>Temperature (°C)</b>	23.6°C
<b>Test End Date</b>	28-Feb-2020	<b>Humidity RH (%)</b>	51.9%RH
<b>Tested By</b>	Shaithanya C	<b>Pressure (mbar)</b>	NR
<b>Input Voltage /</b>	3.3Vdc		
<b>Operating Mode</b>	Refer Page 6 for Operating Mode Table		
<b>Test configuration</b>	Refer Page 6 for Test Configuration Table		
<b>Deviation from Std.</b>	NA		
<b>Applicable</b>	FCC Part 15.247:2010		
<b>Test Method</b>	DA 00-705		
<b>Comment</b>	NA		
<b>TEST DETAILS</b>			
<b>Method</b>	Radiated <input type="checkbox"/>	Conducted <input checked="" type="checkbox"/>	
<b>TEST PARAMETERS</b>			
<b>Antenna Height</b>	NA	<b>Turntable Rotation</b>	NA
<b>Equipment Class</b>	NA	<b>Measurement</b>	NA

<b>TEST EQUIPMENT</b>					
Y/N	Equipment	Make	Model	SI. No.	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	27-Feb-2021
Y	RF Cable	Huber- Suhner	SF104/2X11PC3542/500	NA	NA

## TEST GRAPHS



Channel 1 (903.55 MHz) 9KHz to 1GHz

