

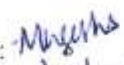
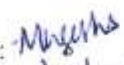
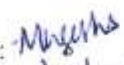
Wireless Display Driver

Model No.: W-DIS-D

Date: 24-Apr-2017

Report Prepared By:
Magesh.S

EMC Test Report

Report Number	EMC0181-1		
EUT Nomenclature	Wireless Display Driver		
Sample Identification	Model No :W-DIS-D		
	SL. No :MEL-122		
	Software Version :5.83		
	Hardware Version :Rev A		
Number of Samples	1		
Date of receipt of Sample	28-Nov-2016		
Condition of Sample on receipt	Good		
Client name	Honeywell International Inc		
Client Address	Honeywell Life Safety, 12,Clintonville Road, Northford, Connecticut, USA -06472		
Testing Laboratory	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	05-Dec-2016 to 22-Apr-2017		
Applicable Standard	FCC Part 15:2010,ANSI C63.10:2013		
Test Results	PASS		
<table border="1" style="width:100%"> <tr> <td style="width:50%"> Prepared By: Test Engineer Name : Magesh.S Signature:  Date : 21/06/2017 </td> <td style="width:50%"> Reviewed & Authorized By: Technical Manager Name : Prasanna Kumar BT Signature:  Date : 21/6/17 </td> </tr> </table>		Prepared By: Test Engineer Name : Magesh.S Signature:  Date : 21/06/2017	Reviewed & Authorized By: Technical Manager Name : Prasanna Kumar BT Signature:  Date : 21/6/17
Prepared By: Test Engineer Name : Magesh.S Signature:  Date : 21/06/2017	Reviewed & Authorized By: Technical Manager Name : Prasanna Kumar BT Signature:  Date : 21/6/17		
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					
Test Performed	Name	Specification	Test Method	Pass	Fail
FHSS					
☐	20dB Bandwidth	FCC Part 15.247	DA 00-705	Note 1	☐
☐	Maximum Peak Output Power	FCC Part 15.247	DA 00-705	Note 1	☐
☒	Carrier Frequency Separation	FCC Part 15.247	DA 00-705	☒	☐
☒	Number of Hopping Frequencies	FCC Part 15.247	DA 00-705	☒	☐
☐	Band Edge compliance	FCC Part 15.247	DA 00-705	Note 1	☐
☐	Time of Occupancy (Dwell Time)	FCC Part 15.247	DA 00-705	Note 1	☐
☐	Spurious RF Conducted Emissions	FCC Part 15.247	DA 00-705	Note 1	☐
☒	Effective Isotropic Radiated Power	FCC Part 15.247 : 2010 and 15.209 : 2010	KDB 412172	☒	☐
☒	Spurious Radiated Emissions	FCC Part 15.247 : 2010 and 15.209 : 2010	DA 00-705 ANSI C63.10 - 2013	☒	☐
DTS					
☐	DTS 6dB Bandwidth	FCC Part 15.247	KDB 558074	Note 1	☐
☐	Maximum Peak Output Power	FCC Part 15.247	KDB 558074	Note 1	☐
☐	Maximum Power Spectral Density	FCC Part 15.247	KDB 558074	Note 1	☐
☐	Band Edge Conducted Emissions	FCC Part 15.247	KDB 558074	Note 1	☐
☒	Effective Isotropic Radiated Power	FCC Part 15.247 : 2010 and 15.209 : 2010	KDB 412172	☒	☐
☒	Radiated Spurious Emissions	FCC Part 15.247 : 2010 and 15.209 : 2010	KDB 558074 ANSI C63.10 - 2013	☒	☐
Note 1: Testing performed by Honeywell, Melville, USA. Data/results are part of Test Report Number 20292-1					

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	1.08dB
2	Maximum Peak Output Power Level & Band Edge Conducted Emission	1.37dB
3	Power Spectral Density	1.36dB
4	Spurious RF Conducted Emission	1.4dB
5	Radiated Spurious Emission < 1GHz	4.9dB
6	Radiated Spurious Emission > 1GHz	6.05dB

1 PRODUCT DETAILS

PRODUCT OPERATION AND INTENDED USE

The W-DIS-D is a part of the wireless network and has a specific SLC module address. The WDIS-D and ANN-80 display the wireless specific events that cannot be displayed on the FACP. These wireless events are related to the trouble and supervisory conditions that are specific to the Wireless Gateway and devices.

W-DIS-D is powered by external 24Vdc interface from Fire Panel. It uses proprietary wireless protocol to communicate with wireless fire devices.

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	Inverter F Patch Antenna		
No. of Antenna	4		
Antenna Gain	ANT1	:	6.88dBi
	ANT2	:	5.88dBi
	ANT3	:	3.78dBi
	ANT4	:	4.55dBi
Supply Voltage and Current	24V, 30mA		
Dimensions (Diameter x Height)	193mm x 46mm		
Environmental Conditions	Operating Temperature	:	0 to 49°C
	Storage Temperature	:	-10 to 60°C
	Humidity	:	10 to 93%RH

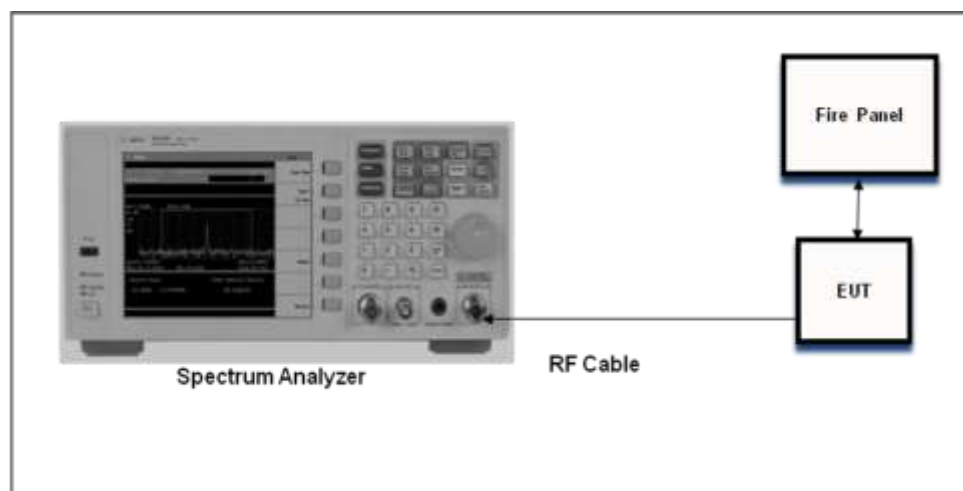
TEST CONFIGURATION	
Config #	Description
Conducted Test	EUT is Powered by 24Vdc line from Fire Panel. EUT Debug port (UART) is connected to Laptop through USB to UART converter cable. EUT is configured to the respective operating mode through HyperTerminal. Antenna 1 is selected for the test as this is the high gain antenna. Post configuration, the USB to UART converter cable is removed for all Radiated Measurements
Radiated Test	EUT is Powered by SLC interface line from Fire Panel. EUT Debug port (UART) is connected to Laptop through USB to UART converter cable. EUT is configured to the respective operating mode through HyperTerminal. Test is performed at all 4 Antennas. Post configuration, the USB to UART converter cable is removed for all Radiated Measurements

OPERATING MODES	
Mode #	Description
DTS	Following DTS channels have been used for Conducted (Continuous Transmission) and Radiated (Pulsed Transmission) Tests Channel 1 : 902.875MHz Channel 3 : 914.325MHz Channel 6 : 927.125MHz
FHSS	Following FHSS channels have been used for Conducted (Continuous Transmission) and Radiated (Continuous Transmission) Tests Channel 1 : 903.55MHz Channel 28 : 916.00MHz Channel 55 : 926.45MHz

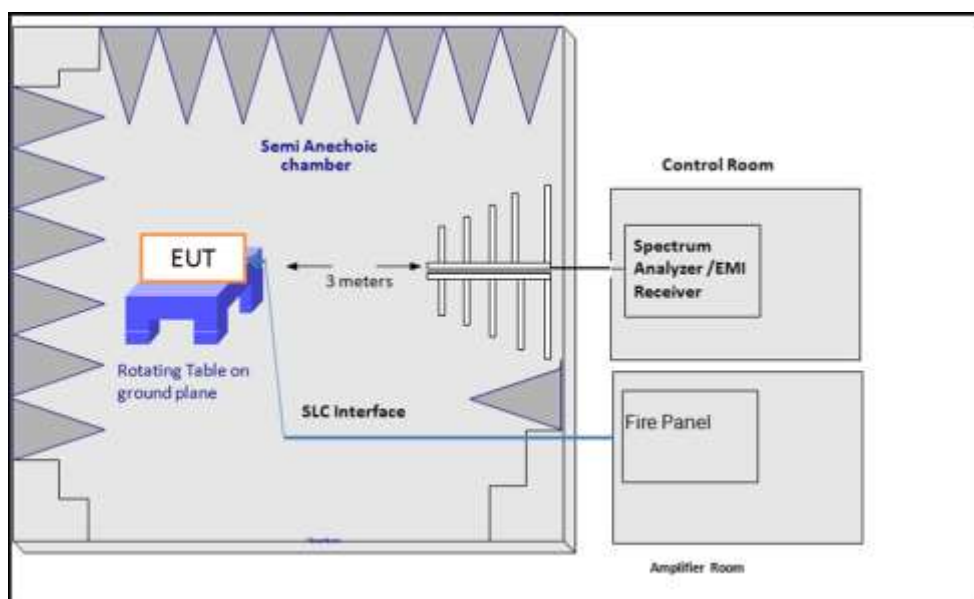
INPUT AND OUTPUT CABLES					
Port #	Name	Port Type	Cable Length	Cable type Shielded/ Unshielded	Comments
1	External 24V Power Interface Cable	Input	5m	Unshielded	
*Note : AC = AC Power Port DC = DC Power Port TP = Telecommunication Ports (E.g. Ethernet) DI / DO = Digital Input / Output N / E = Non Electrical AI / AO = Analog Input / Output					

SUPPORT EQUIPMENTS AND ACCESSORIES USED					
#	Item Description	Make	Model	Part No. / Sl. No	Cal Due Date
1	Laptop	Dell	CORPMDTW10X64IMAGEV2	339YSC2	NA
2	USB to UART Cable	FTDI	NA	TTL-232R-3V3	NA
3	Fire Panel	Notifier	NFS-3030	NA	NA

CONNECTION DIAGRAM AND SETUP DIAGRAM



Conducted RF Test Setup



Radiated Emission Test Setup

2 FHSS CHANNELS

2.1 CARRIER FREQUENCY SEPERATION

EUT Nomenclature	Wireless Display Driver	Test Report No.	EMC0181-1
Model No.	W-DIS-D	Serial No.	MEL-122
Test Start Date	25-Apr-2017	Temperature (°C)	23.9
Test End Date	25-Apr-2017	Humidity RH (%)	57.5
Tested By	Sasikala	Pressure (mbar)	NR
Input Voltage / Freq	24Vdc		
Operating Mode	Refer Page 5 Operating Mode #2		
Test configuration	Refer Page 5 Test Configuration #1		
Deviation from Std	NA		
Applicable standard	FCC Part 15.247:2010		
Test Method	DA 00-705		
Comment	NA		
TEST DETAILS			
Method	☒ Conducted ☐ Radiated		
TEST PARAMETERS			
Antenna Height	NA	Turntable Rotation	NA
Equipment Class	NA	Measurement Distance	NA

TEST EQUIPMENT

Y/N	Equipment	Make	Model	Sl. No.	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	22-Feb-2018
Y	RF Cable	Huber- Suhner	SF104/2X11PC3542/500	NA	NA

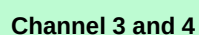
TEST GRAPHS

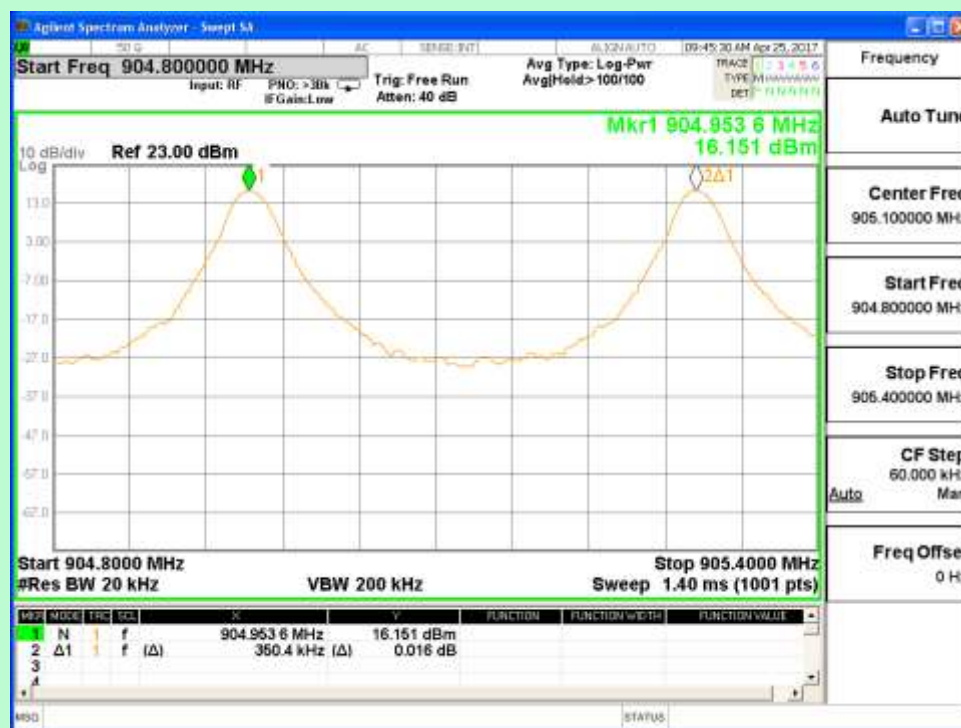


Channel 1 and 2

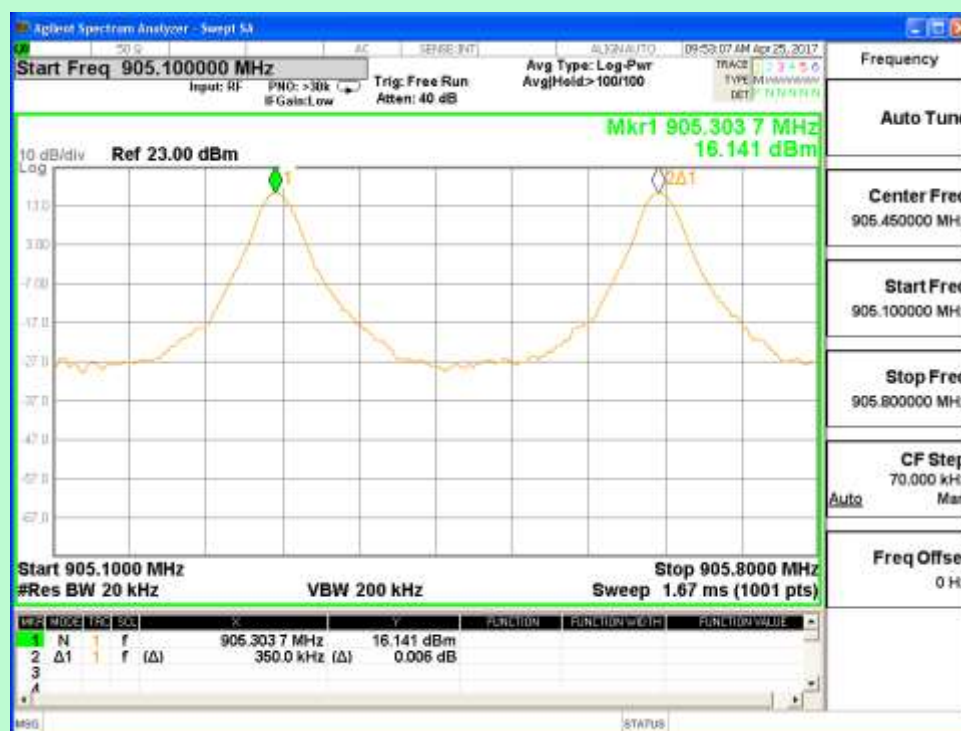


Channel 2 and 3





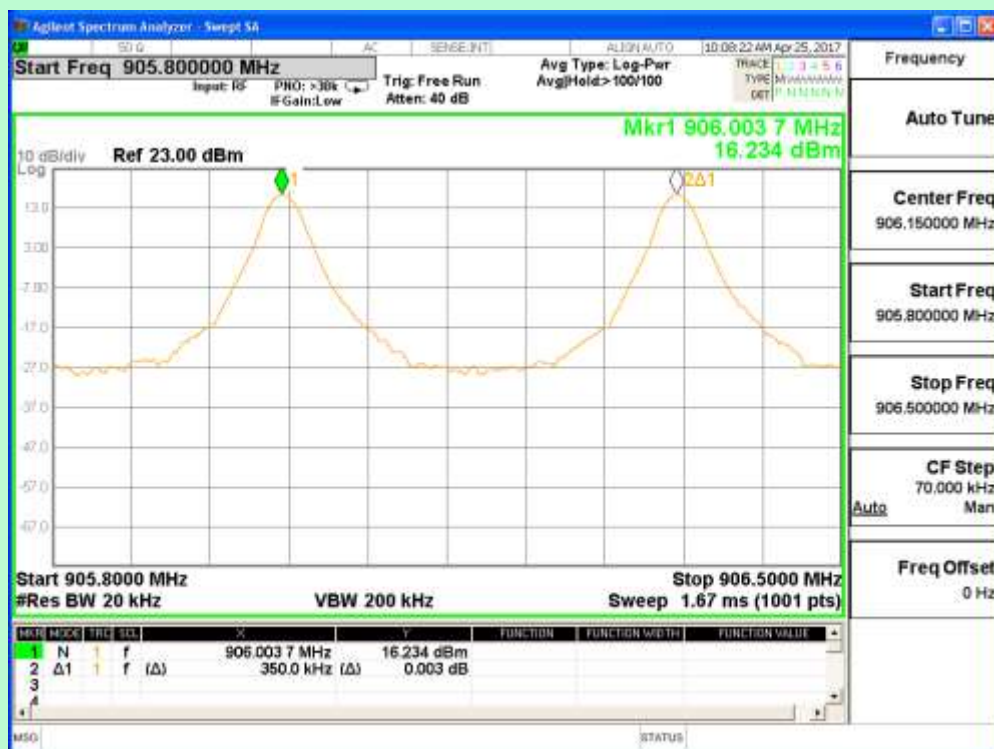
Channel 5 and 6



Channel 6 and 7



Channel 7 and 8



Channel 8 and 9



Channel 9 and 10



Channel 10 and 11



Channel 11 and 12



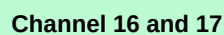
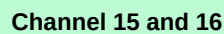
Channel 12 and 13



Channel 13 and 14



Channel 14 and 42

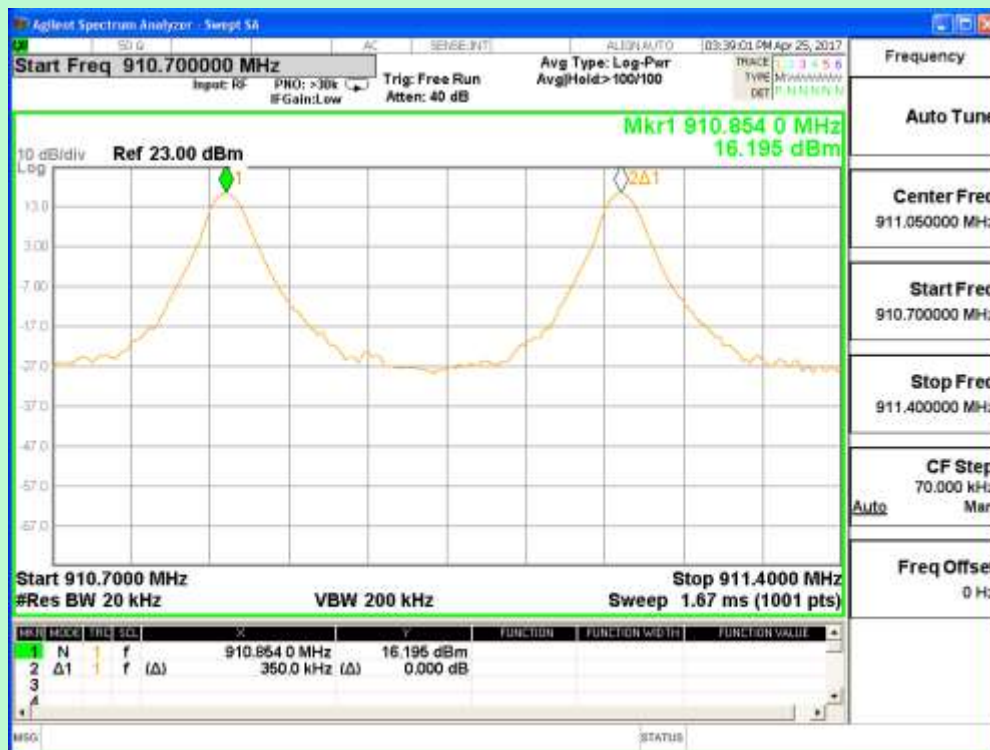




Channel 17 and 18



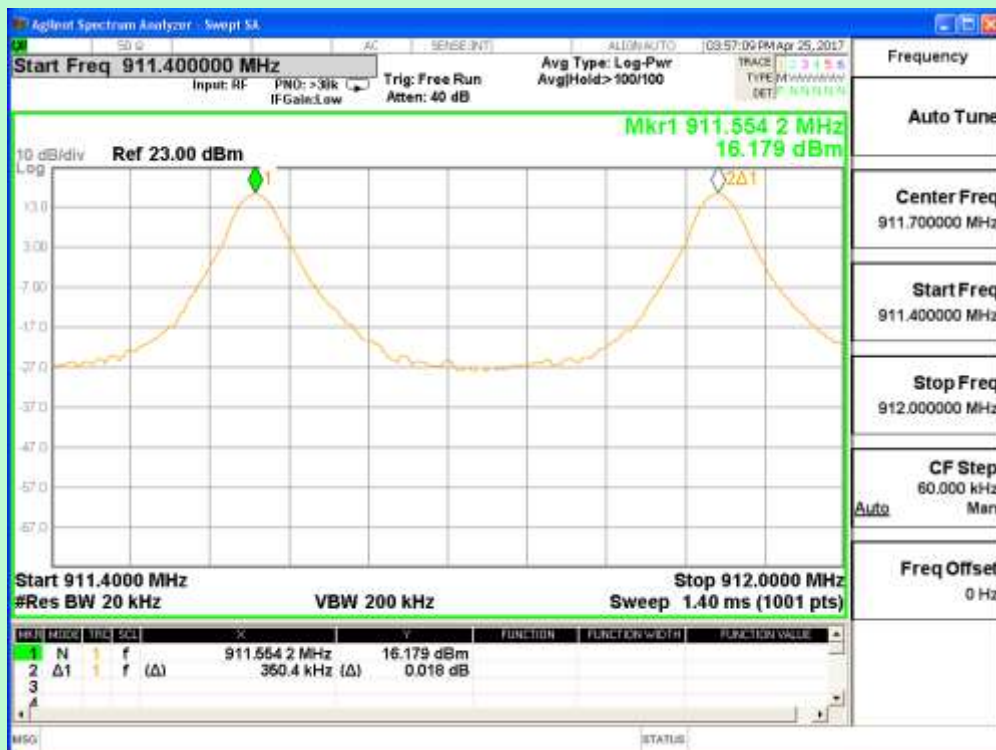
Channel 18 and 19



Channel 19 and 20



Channel 20 and 21



Channel 21 and 22



Channel 22 and 23



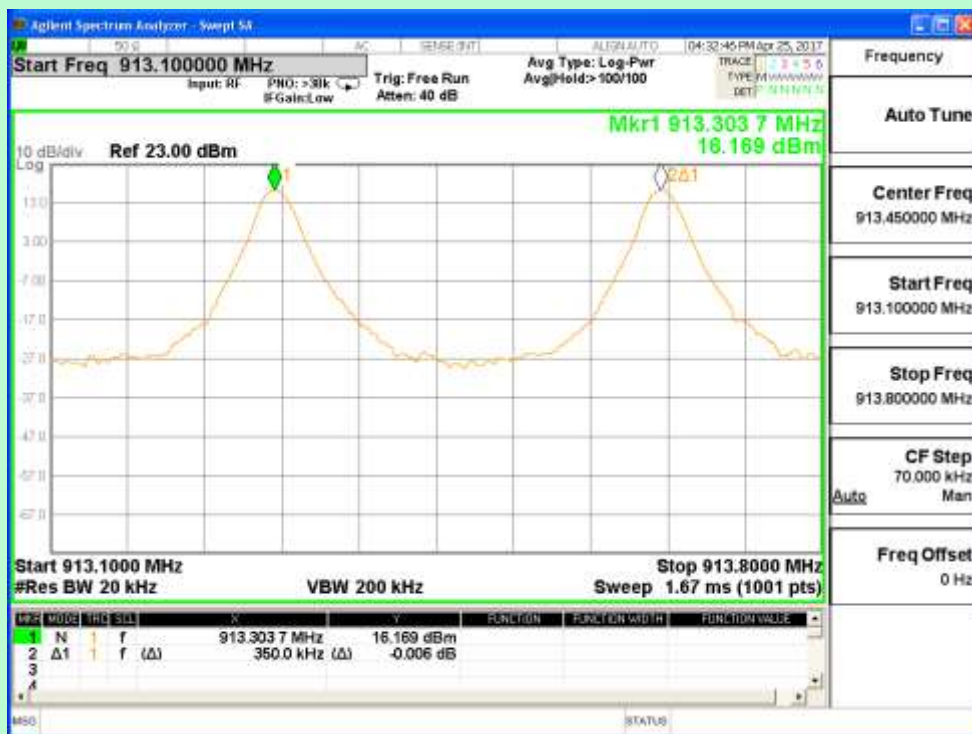
Channel 23 and 24



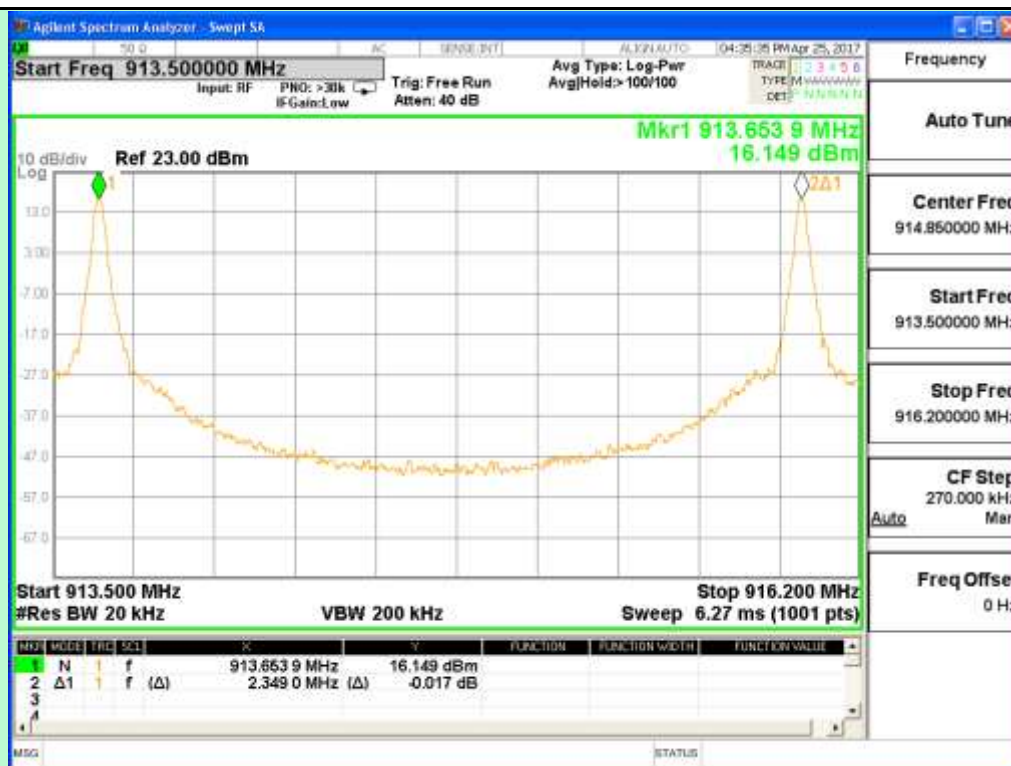
Channel 24 and 25



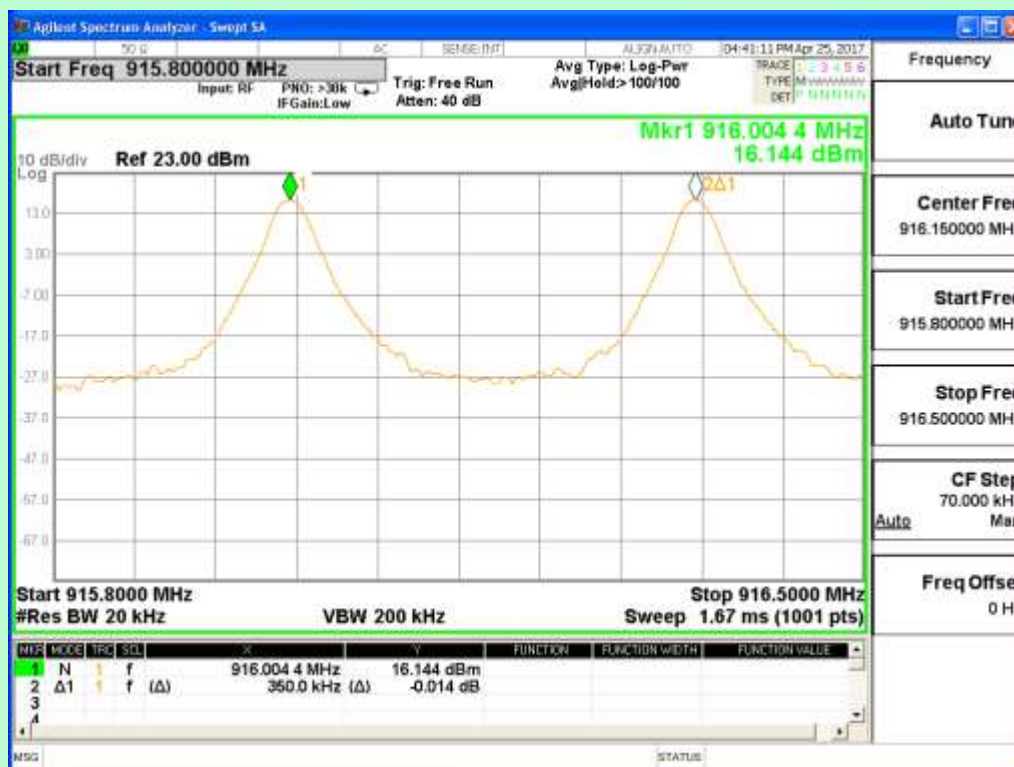
Channel 25 and 26



Channel 26 and 27



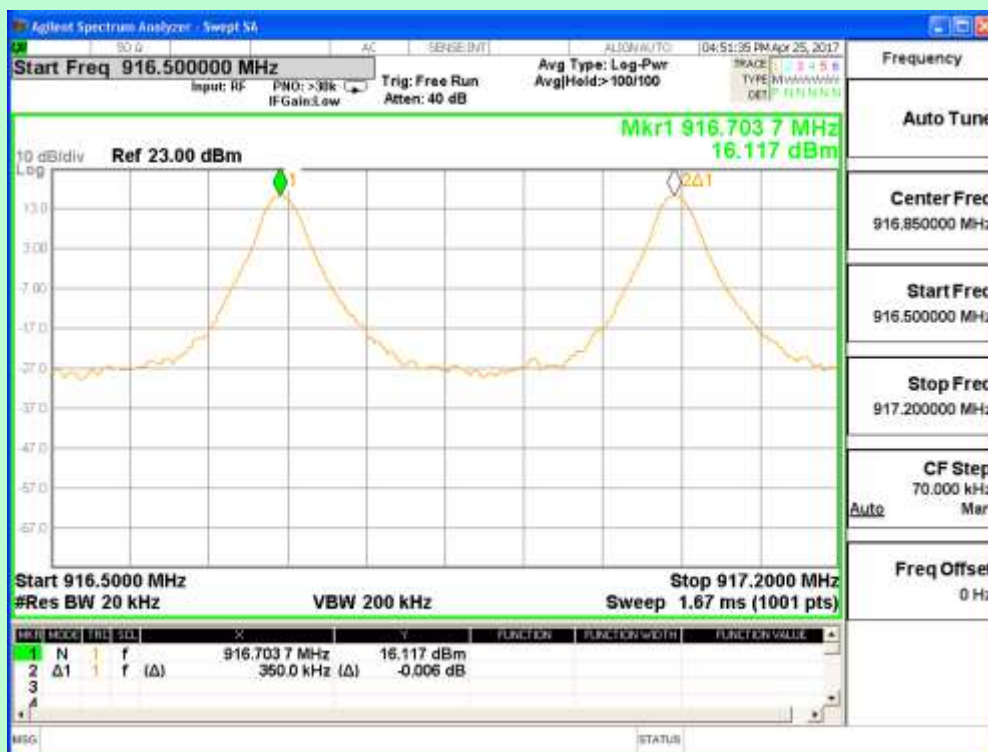
Channel 27 and 28



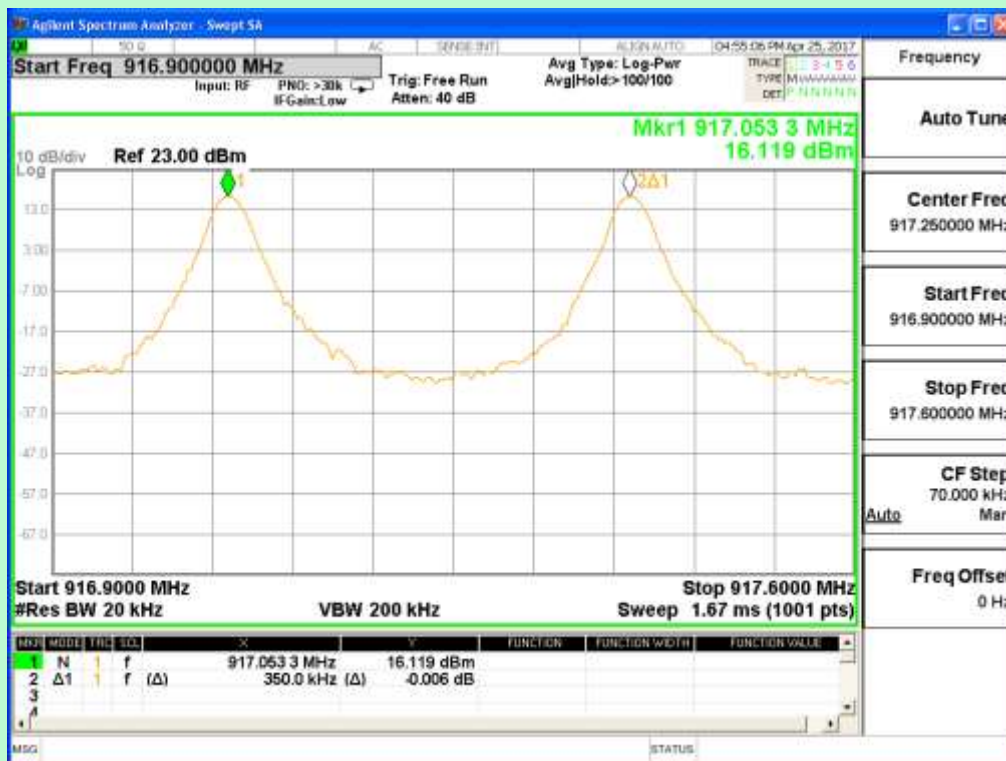
Channel 28 and 29



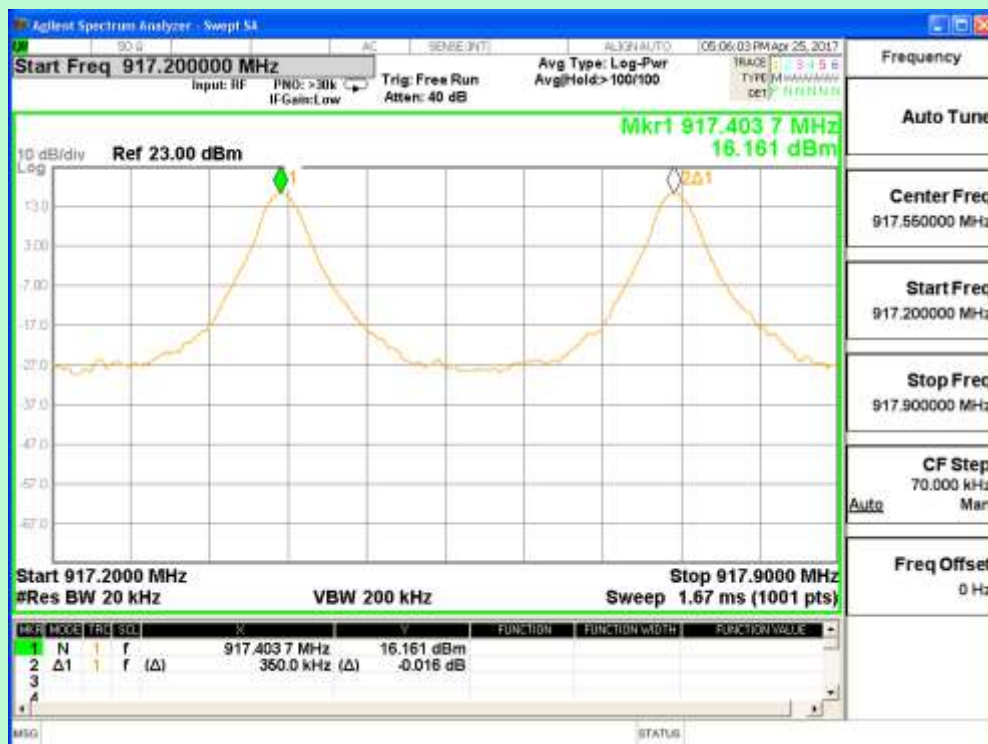
Channel 29 and 30



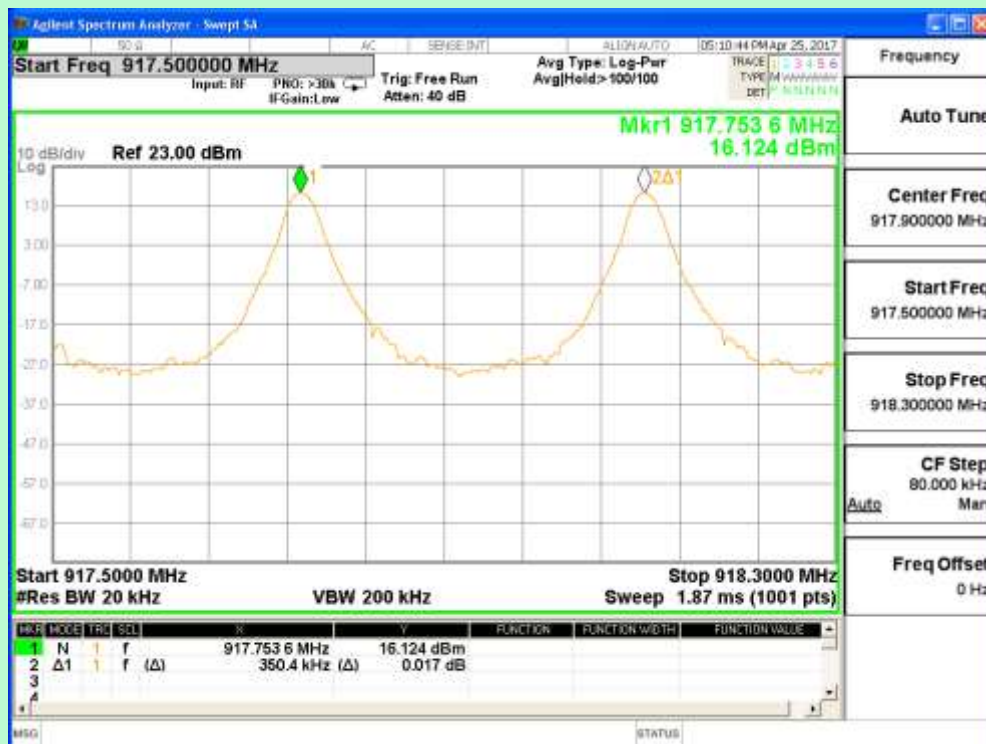
Channel 30 and 31



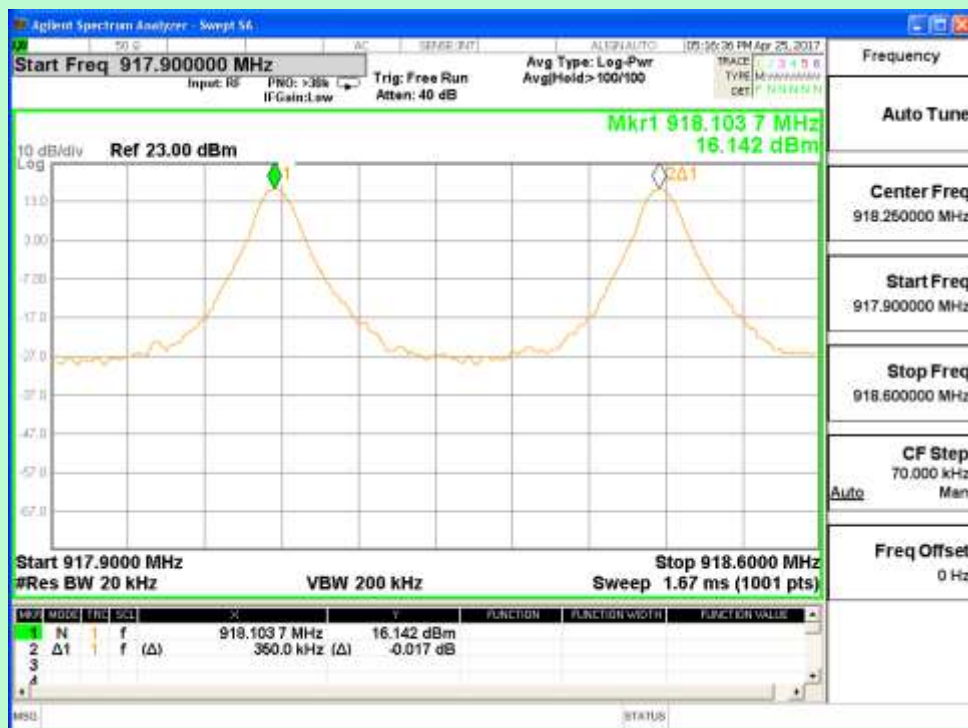
Channel 31 and 32



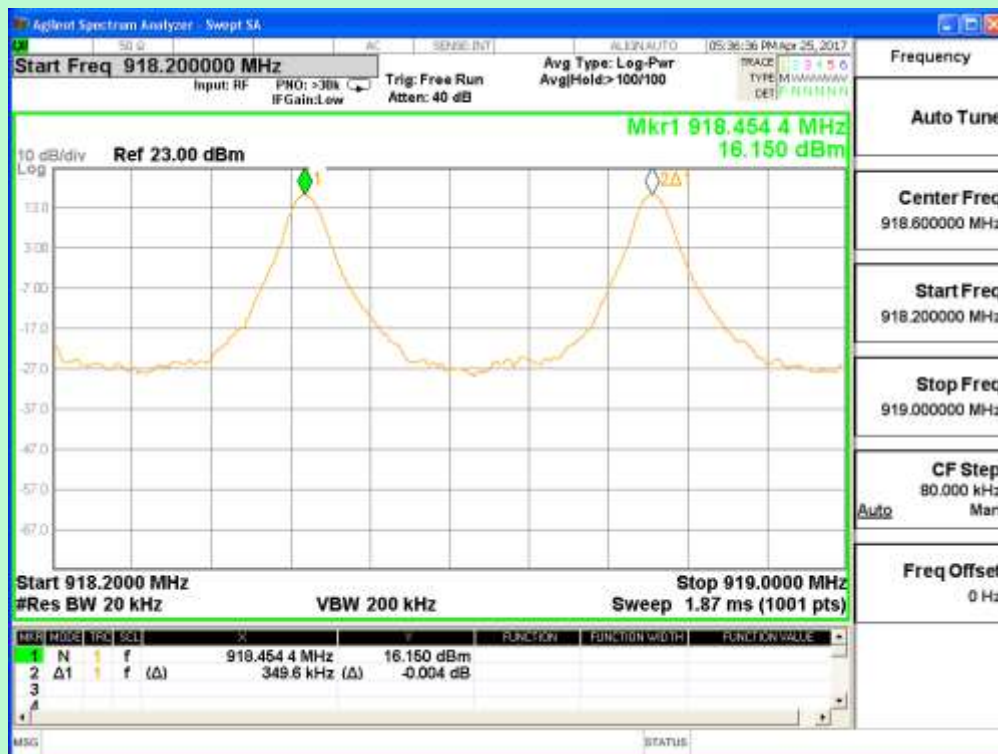
Channel 32 and 33



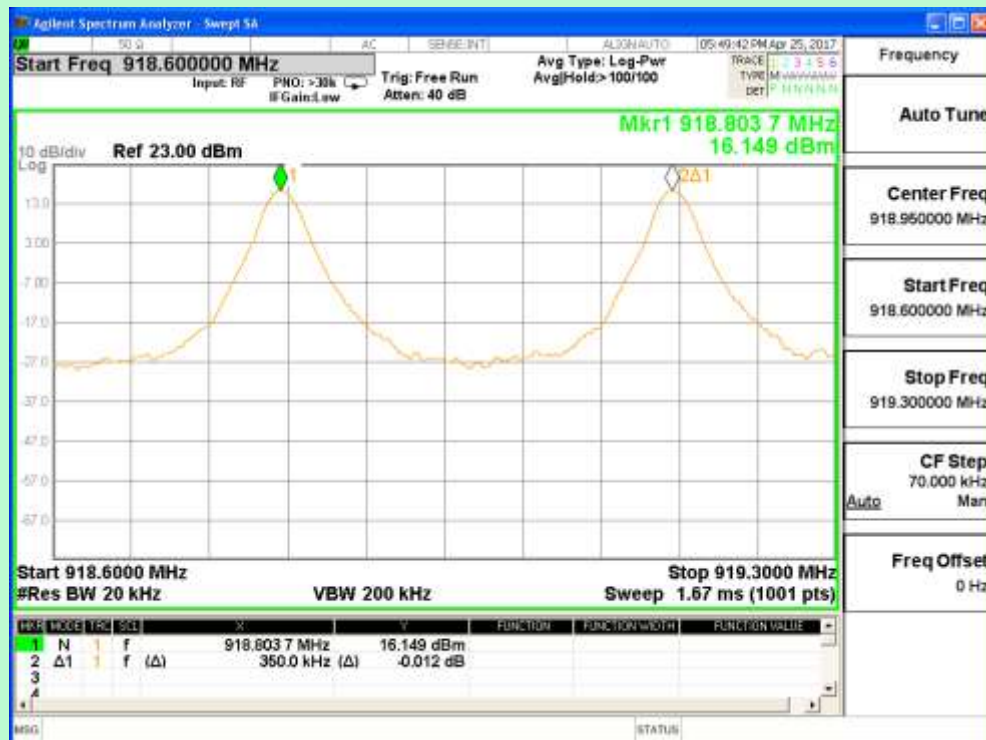
Channel 33 and 34



Channel 34 and 35



Channel 35 and 36



Channel 36 and 37



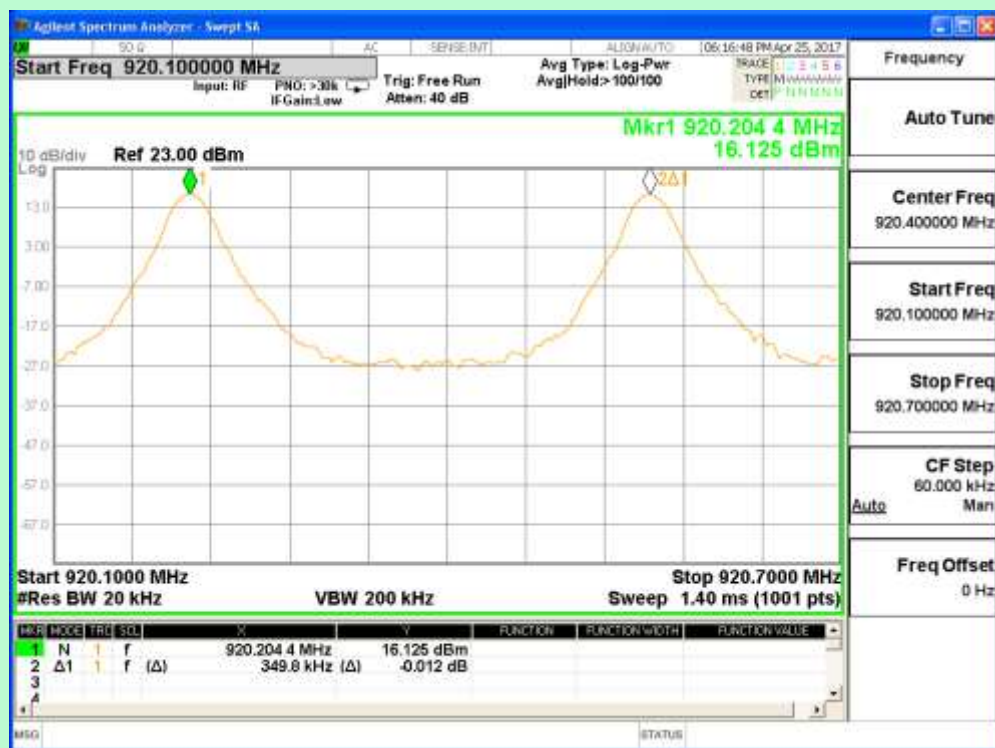
Channel 37 and 38



Channel 38 and 39



Channel 39 and 40



Channel 40 and 41



Channel 42 and 43



Channel 43 and 44



Channel 44 and 45



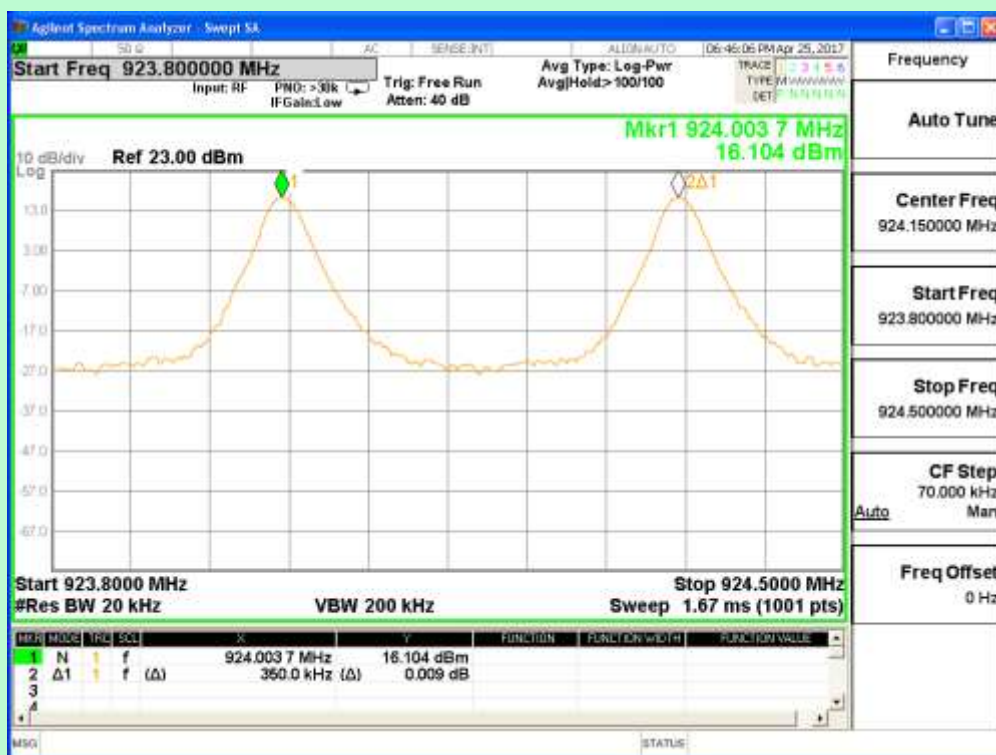
Channel 45 and 46



Channel 46 and 47



Channel 47 and 48



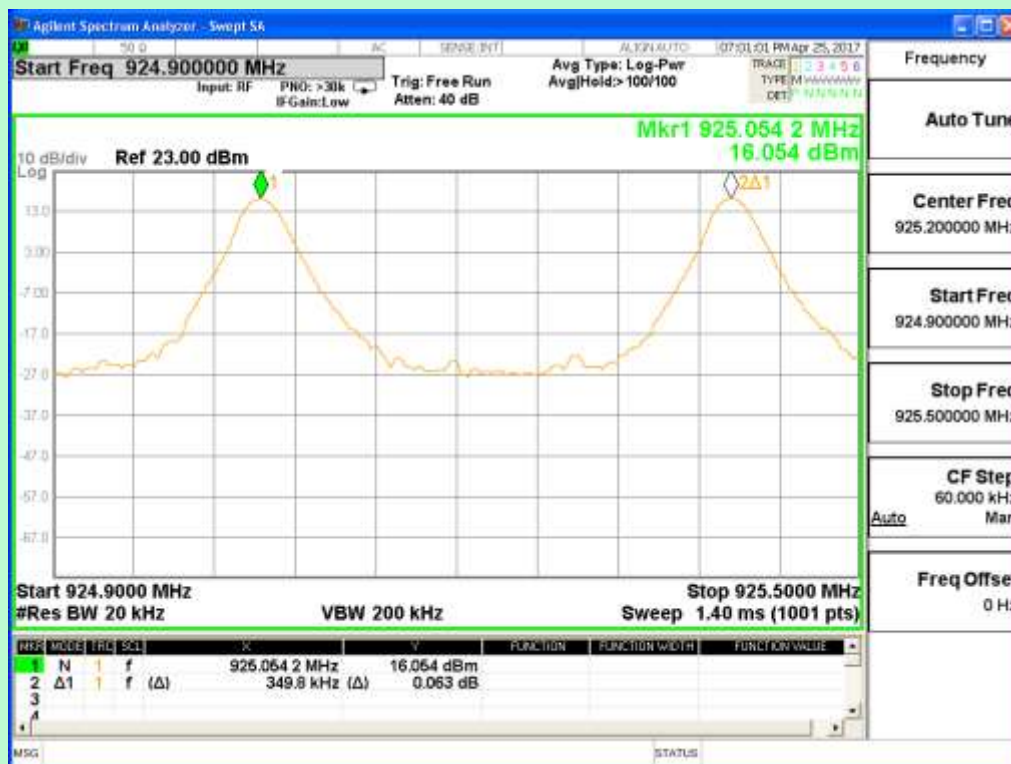
Channel 48 and 49



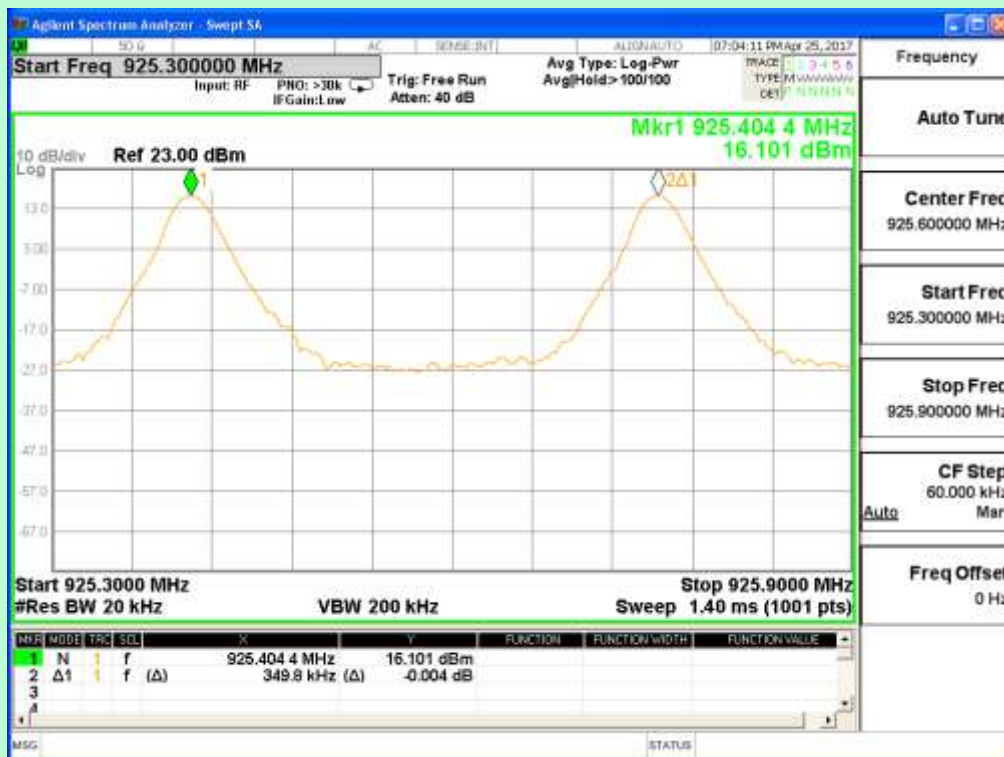
Channel 49 and 50



Channel 50 and 51



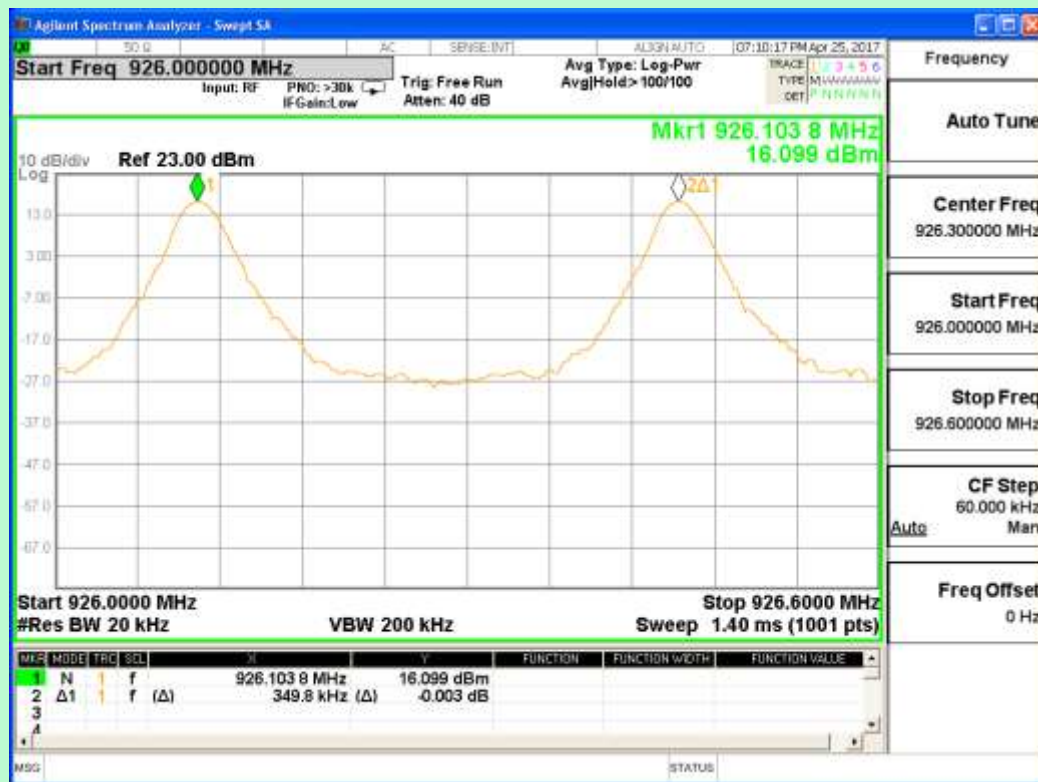
Channel 51 and 52



Channel 52 and 53



Channel 53 and 54



Channel 54 and 55

TEST SETUP PHOTOGRAPHS

Refer Annexure -1

TEST RESULTS			
Channel No	Measured Value	Limit	Test Results
#	KHz		
1 and 2	350.7	>20dB BW(320KHz)	PASS
2 and 3	350	>20dB BW(320KHz)	PASS
3 and 4	350	>20dB BW(320KHz)	PASS
4 and 5	350	>20dB BW(320KHz)	PASS
5 and 6	350.4	>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	>20dB BW(320KHz)	PASS
10 and 11	350	>20dB BW(320KHz)	PASS
11 and 12	350	>20dB BW(320KHz)	PASS
12 and 13	35.35	>20dB BW(320KHz)	PASS
13 and 14	1.35	>20dB BW(320KHz)	PASS
14 and 42	11.799	>20dB BW(320KHz)	PASS
15 and 16	350	>20dB BW(320KHz)	PASS
16 and 17	350	>20dB BW(320KHz)	PASS
17 and 18	350	>20dB BW(320KHz)	PASS
18 and 19	349.8	>20dB BW(320KHz)	PASS
19 and 20	350	>20dB BW(320KHz)	PASS
20 and 21	350	>20dB BW(320KHz)	PASS
21 and 22	350.4	>20dB BW(320KHz)	PASS
22 and 23	349.8	>20dB BW(320KHz)	PASS
23 and 24	349.8	>20dB BW(320KHz)	PASS
24 and 25	350.35	>20dB BW(320KHz)	PASS
25 and 26	349.8	>20dB BW(320KHz)	PASS
26 and 27	350	>20dB BW(320KHz)	PASS
27 and 28	2.349	>20dB BW(320KHz)	PASS
28 and 29	350	>20dB BW(320KHz)	PASS
29 and 30	349.8	>20dB BW(320KHz)	PASS
30 and 31	350	>20dB BW(320KHz)	PASS
31 and 32	350	>20dB BW(320KHz)	PASS
32 and 33	350	>20dB BW(320KHz)	PASS
33 and 34	350.4	>20dB BW(320KHz)	PASS
34 and 35	350	>20dB BW(320KHz)	PASS
35 and 36	349.6	>20dB BW(320KHz)	PASS
36 and 37	350	>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	1.349	>20dB BW(320KHz)	PASS
43 and 44	349.8	>20dB BW(320KHz)	PASS
44 and 45	350	>20dB BW(320KHz)	PASS
45 and 46	350.4	>20dB BW(320KHz)	PASS
46 and 47	350.7	>20dB BW(320KHz)	PASS
47 and 48	349.8	>20dB BW(320KHz)	PASS
48 and 49	350	>20dB BW(320KHz)	PASS
49 and 50	349.8	>20dB BW(320KHz)	PASS
50 and 51	349.8	>20dB BW(320KHz)	PASS
51 and 52	349.8	>20dB BW(320KHz)	PASS
52 and 53	349.8	>20dB BW(320KHz)	PASS
53 and 54	349.8	>20dB BW(320KHz)	PASS
54 and 55	349.8	>20dB BW(320KHz)	PASS

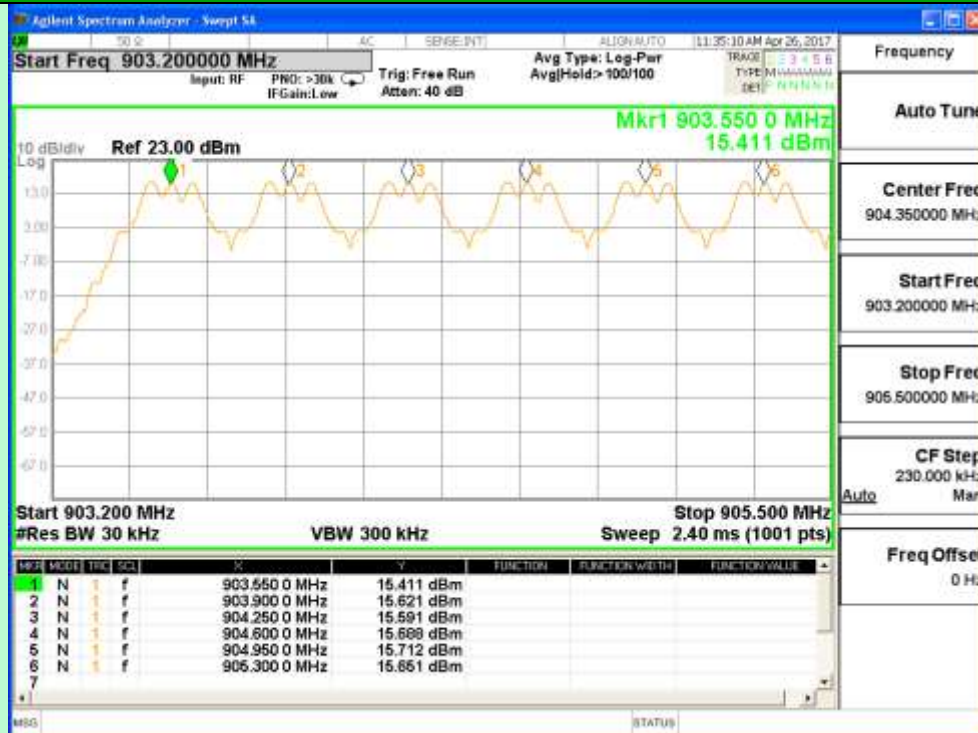
2.2 NUMBER OF HOPPING FREQUENCIES

EUT Nomenclature	Wireless Display Driver	Test Report No.	EMC0181-1
Model No.	W-DIS-D	Serial No.	MEL-122
Test Start Date	26-Apr-2017	Temperature (°C)	24.2
Test End Date	26-Apr-2017	Humidity RH (%)	56.9
Tested By	Sasikala	Pressure (mbar)	NR
Input Voltage / Freq	24Vdc		
Operating Mode	Refer Page 5 Operating Mode #2		
Test configuration	Refer Page 5 Test Configuration Mode #1		
Deviation from Std	NA		
Applicable standard	FCC Part 15.247:2010		
Test Method	DA 00-705		
Comment	NA		
TEST DETAILS			
Method	☒ Conducted ☐ Radiated		
TEST PARAMETERS			
Antenna Height	NA	Turntable Rotation	NA
Equipment Class	NA	Measurement Distance	NA

TEST EQUIPMENT

Y/N	Equipment	Make	Model	Sl. No.	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	28-Feb-2018
Y	RF Cable	Huber- Suhner	SF104/2X11PC3542/500	NA	NA

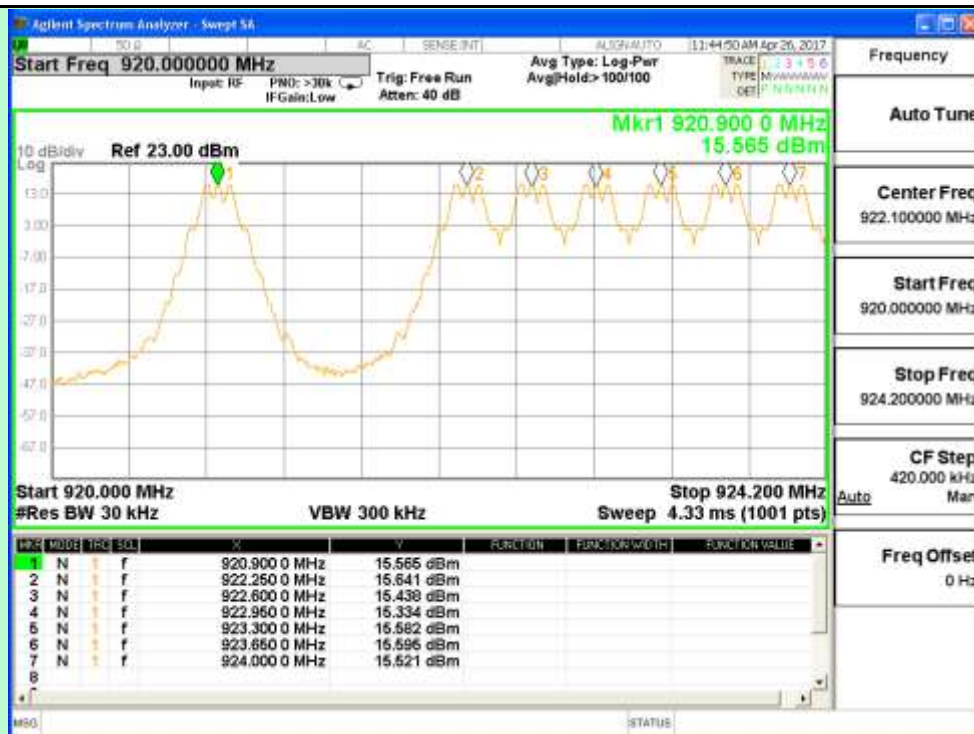
TEST GRAPHS



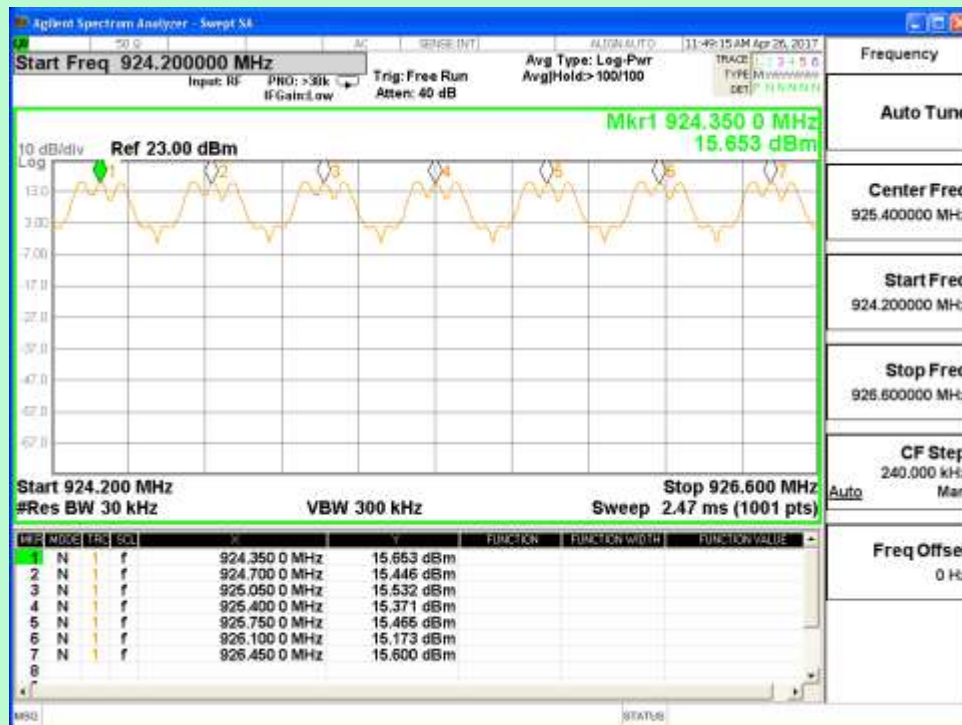
Channel 1 – 6 (Walkie-Talkie Mode)



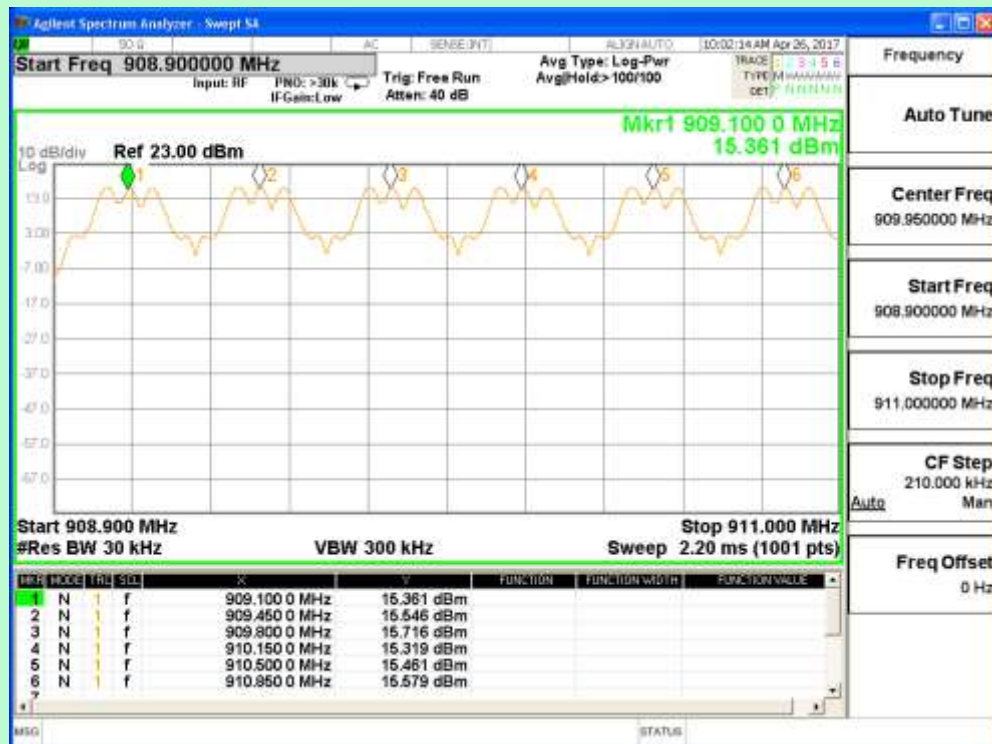
Channel 7 – 13 (Walkie-Talkie Mode)



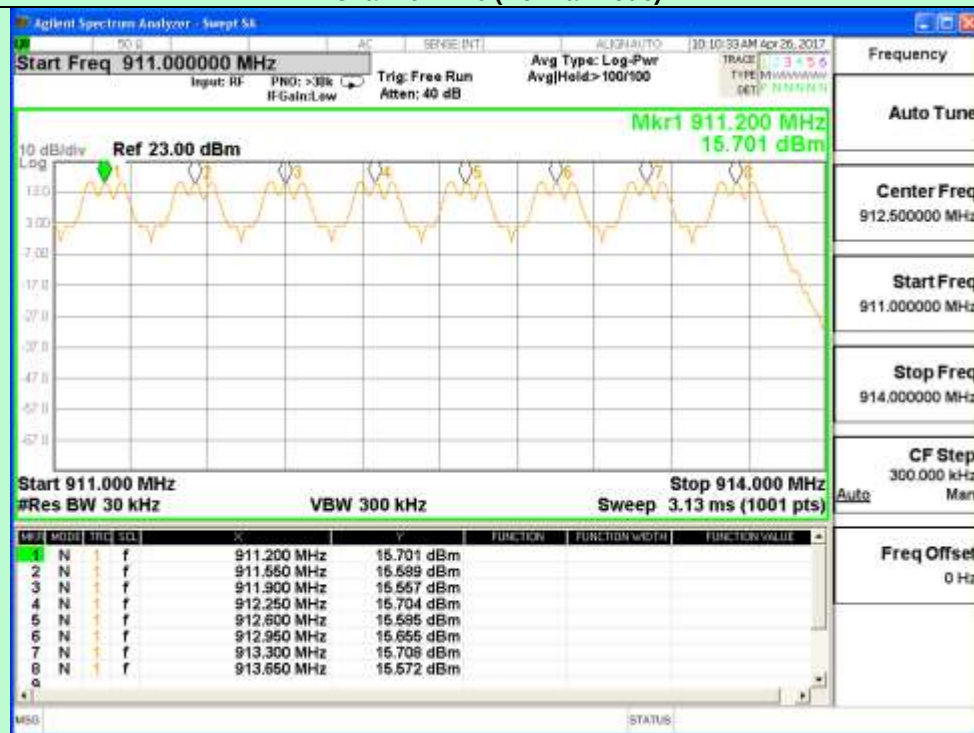
Channel 14 – 20 (Walkie-Talkie Mode)



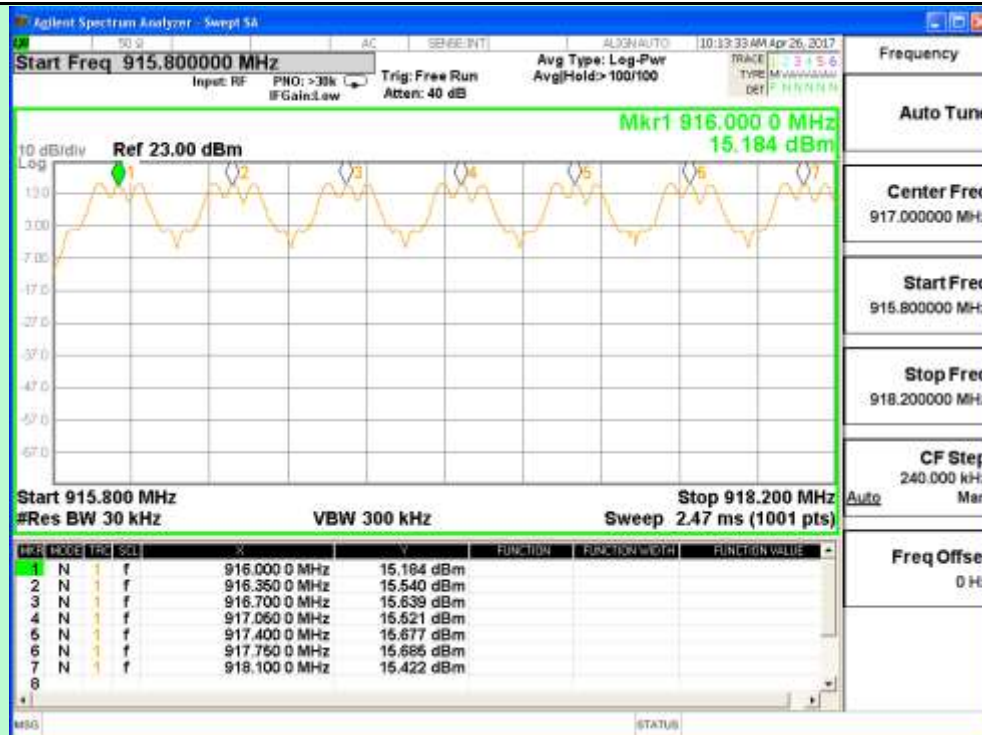
Channel 21 – 27 (Walkie-Talkie Mode)



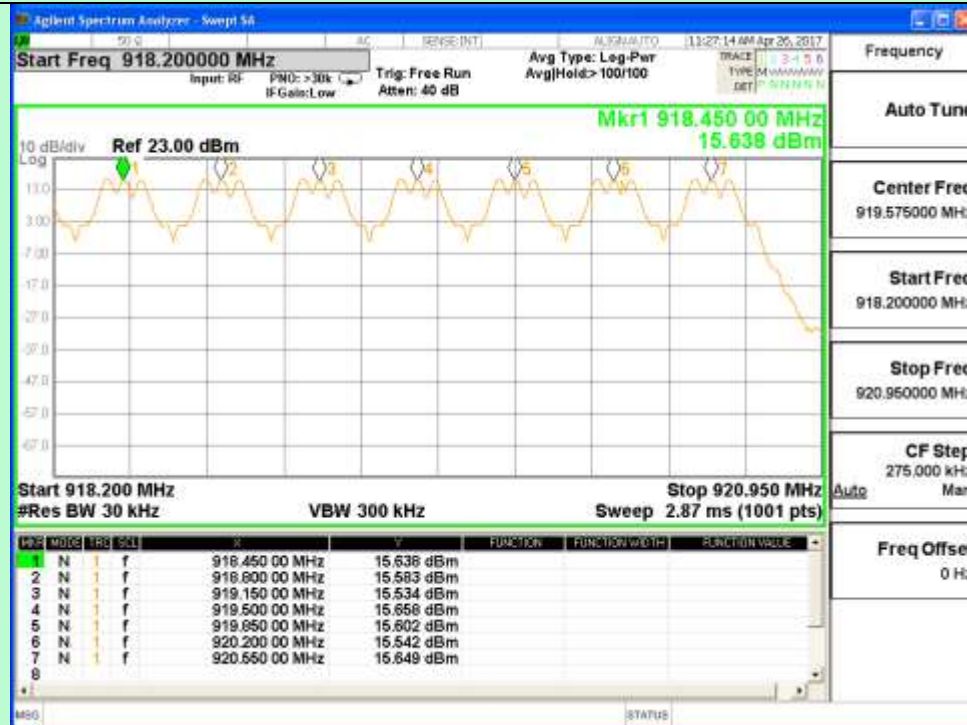
Channel 1 – 6 (Normal Mode)



Channel 7 – 14 (Normal Mode)



Channel 15 – 21 (Normal Mode)



Channel 22 – 28 (Normal Mode)