Cellphone-Mate, Inc.

ENGINEERING COMPARISON REPORT FOR

Fusion2go 3.0
and
Drive 4G-X

Tested to Customer Specification

Report No.: 100819-3

Date of issue: February 6, 2018

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Cellphone-Mate, Inc.
48346 Milmont Drive
Fremont, CA 94538

REPORT PREPARED BY:

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Customer Reference Number: CKC01092018

Project Number: 100819

DATE OF EQUIPMENT RECEIPT: January 8, 2018
DATE(S) OF TESTING: January 8, 2018

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
1120 Fulton Place
Fremont, CA 94539

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.11
EMITest Immunity	5.03.10

Site Registration & Accreditation Information

Location	NIST CB #	TAIWAN	CANADA	FCC	JAPAN
Fremont, CA	US0082	SL2-IN-E-1148R	3082B-1	US1023	A-0149

SUMMARY TABLES for Fusion2Go 3.0 and DRIVE 4G-X

Test Setup			
Test Location:	Fremont	Test Engineer:	Hieu Song Nguyenpham
Test Method:	Customer Specification	Test Date(s):	1/8/2018

Test Equipment:

Asset #	Description	Manufacture	Model	Calibration Date	Cal Due Date
03362	Cable	Astrolab	32022-2-29094-48TC	1/10/2017	1/10/2019
P06239	Attenuator	Weinschel	54A-10	8/8/2016	8/8/2018
P07192	Cable	Astro	32022-29094K-29094K-48TC	10/9/2017	10/9/2019
02660	Spectrum Analyzer	Agilent	E4446A	10/10/2016	10/10/2018
03418	Signal Generator	Agilent	E4438C	6/19/2017	6/19/2019
C00130	Signal Generator	Anritsu	MS2691A	NCR	NCR

NCR – No Calibration Required

Output Power Uplink

4.1MHz AWGN	Fusion2Go 3.0			DRIVE 4G-X	
	Frequency (MHz)	Output Power (dBm)		Frequency (MHz)	Output Power (dBm)
	UL1710-1755	21.72		UL1710-1755	20.05
	UL824-894	27.03		UL824-894	23.26
	UL776-787	25.68		UL776-787	22.37
	UL 698-716	25.71		UL 698-716	21.77

Downlink EVM

W-CDMA	Fusion2Go 3.0					DRIVE 4G-X		
Frequency (MHz)	EVM rms (%)	EVM peak (%)	Power(dBm)		Frequency (MHz)	EVM rms (%)	EVM peak (%)	Power(dBm)
730.5	11.16	33.13	-7.34		730.5	18.31	53.89	-1.77
742.5	2.29	5.93	-5.32		742.5	12.49	46.83	-5.19
752.0	11.68	38.01	-7.63		752.0	15.93	63.19	-3.28
1932.5	6.47	18.72	-6.02		1932.5	22.94	70.41	-7.17
1935.0	4.17	12.77	-4.73		1935.0	13.62	42.32	-9.98

Uplink EVM

W-CDMA	Fusion2Go 3.0						DRIVE 4G-X			
Frequency (MHz)	EVM rms (%)	EVM peak (%)	Peak CDE (dB)	Power (dBm)		Frequency (MHz)	EVM rms (%)	EVM peak (%)	Peak CDE (dB)	Power (dBm)
703.5	6.77	64.20	-43.04	22.06		703.5	9.47	67.73	-40.58	19.39
781.5	11.09	76.81	-39.29	22.56		781.5	6.06	71.01	-44.79	17.01
838.1	5.87	63.66	-43.30	23.62		838.1	4.76	51.76	-46.70	20.64

Uplink EVM -Input Signal

W-CDMA	Fusion2Go 3.0				DRIVE 4G-X	
Frequency (MHz)	EVM (%)	Input signal (dBm)		Frequency (MHz)	EVM (%)	Input signal (dBm)
703.5	13.32	-84.50		703.5	13.77	-80.30
781.5	13.49	-81.50		781.5	13.33	-82.30
838.1	13.35	-84.00		838.1	13.34	-83.50
1735.5	13.55	-83.50		1735.5	13.27	-82.0

Uplink-Adjacent Channel Power

W-CDMA	Fusion2Go 3.0					DRIVE 4G-X		
Frequency (MHz)	Band	dBc	Power (dBm)		Frequency (MHz)	Band	dBc	Power (dBm)
UL824-894	L1	-35.39	23.22		UL824-894	L1	-41.64	20.37
UL824-894	U1	-35.84	23.22		UL824-894	U1	-36.89	20.37
UL776-787	L1	-37.12	22.15		UL776-787	L1	-37.74	16.77
UL776-787	U1	-37.90	22.15		UL776-787	U1	-35.26	16.77
UL 698-716	L1	-35.67	21.77		UL 698-716	L1	-37.93	19.45
UL 698-716	U1	-35.99	21.77		UL 698-716	U1	-37.52	19.45

Uplink-Mask Emission

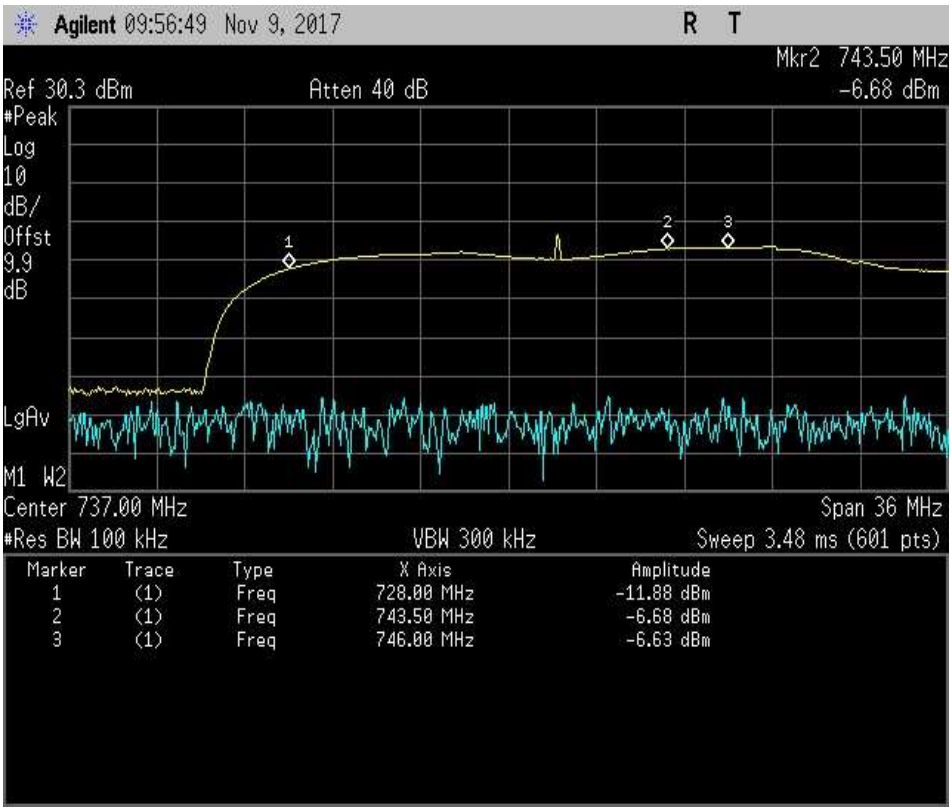
W-CDMA	Fusion2Go 3.0				DRIVE 4G-X	
Frequency (MHz)	Ref Power(dBm)	Result		Frequency (MHz)	Ref Power(dBm)	Result
UL824-894	22.30	PASS		UL824-894	20.58	PASS
UL776-787	21.51	PASS		UL776-787	17.10	PASS
UL 698-716	21.33	PASS		UL 698-716	19.46	PASS

Inter Modulation

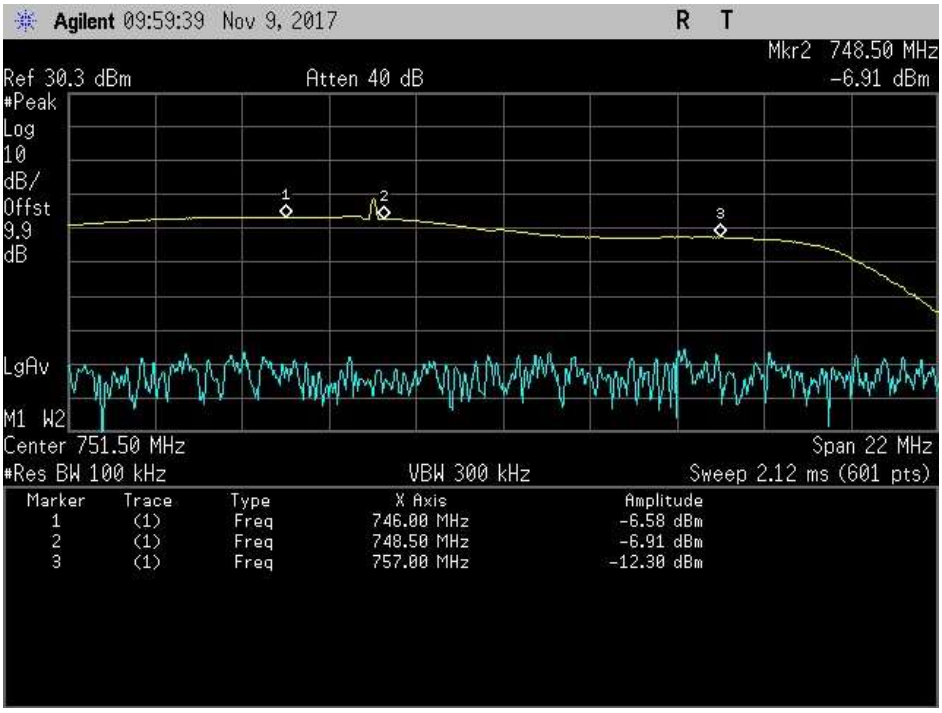
	Fusion2Go 3.0						DRIVE 4G-X			
Frequency (MHz)	IMD (dBm)	IMD (dBm)	Output (dBm)	Output (dBm)		Frequency (MHz)	IMD (dBm)	IMD (dBm)	Output (dBm)	Output (dBm)
UL824-894	-20.12	-20.34	19.67	19.44		UL824-894	-24.97	-20.34	15.26	15.42
UL776-787	-23.07	-21.80	18.77	18.07		UL776-787	-21.68	-19.95	14.05	14.31
UL698-716	-20.74	-21.47	18.30	18.28		UL 698-716	-23.52	-24.82	13.03	12.61

Verify Band Downlink Plots

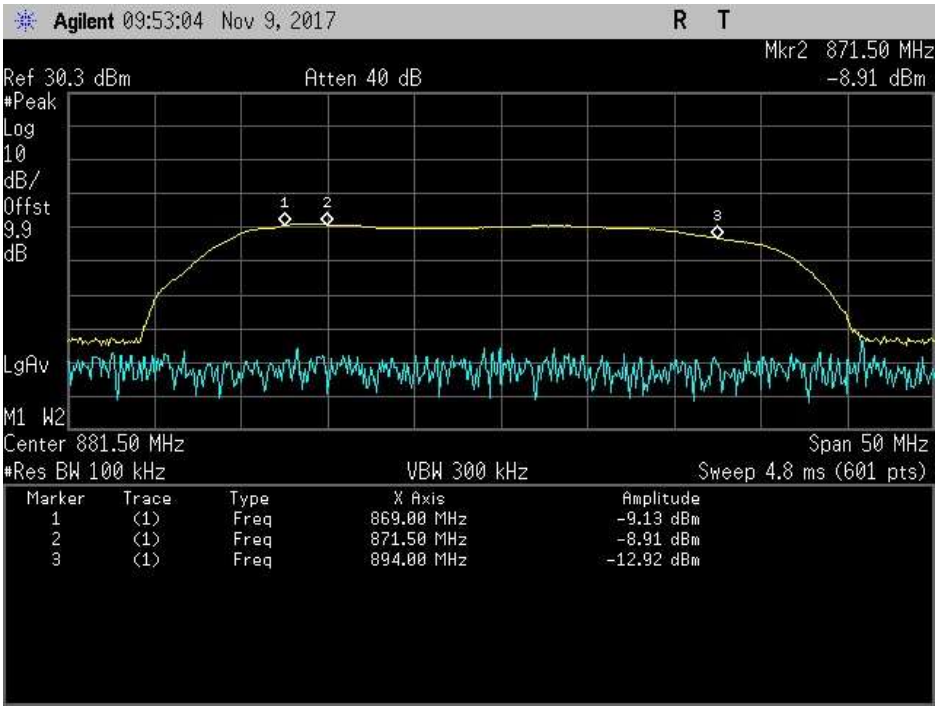
Device: Fusion2Go 3.0



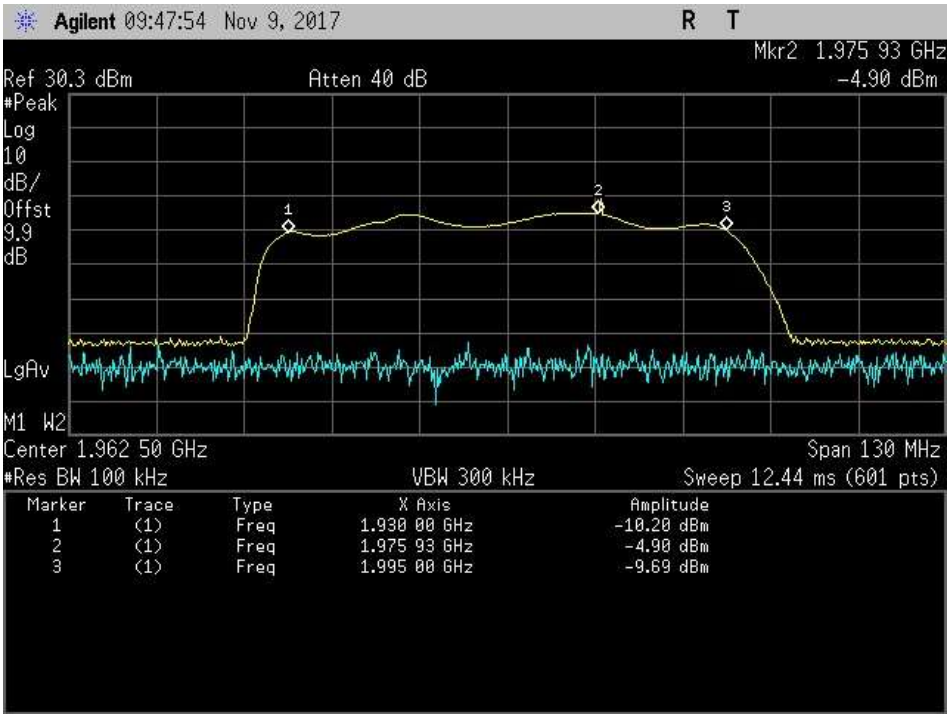
7.1_Band Verify_DL_728-746MHz



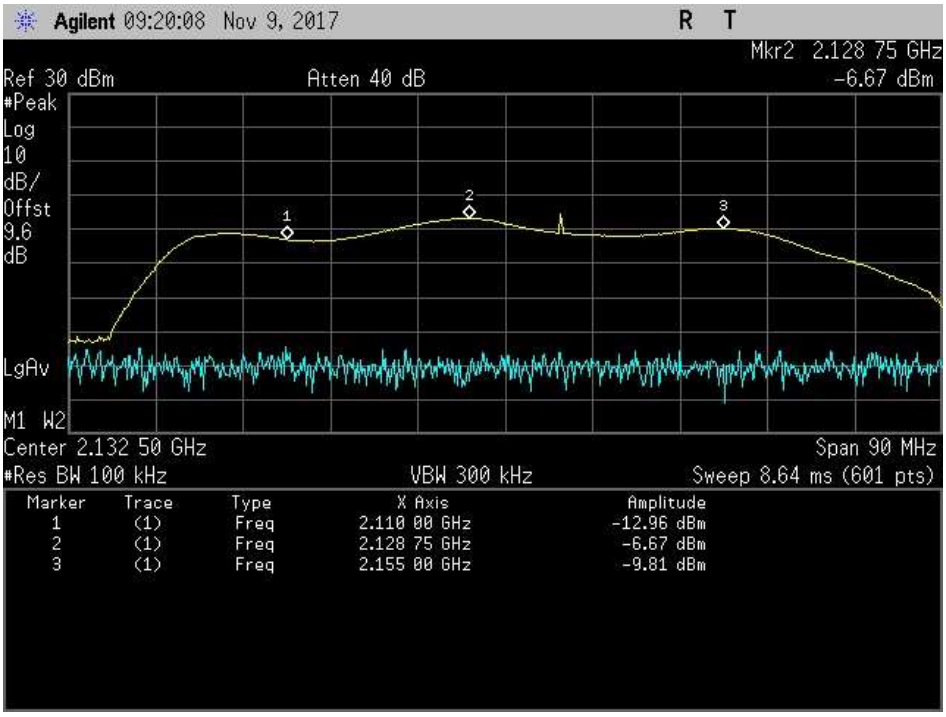
7.1_Band Verify_DL_746-757MHz



7.1_Band Verify_DL_869-894MHz

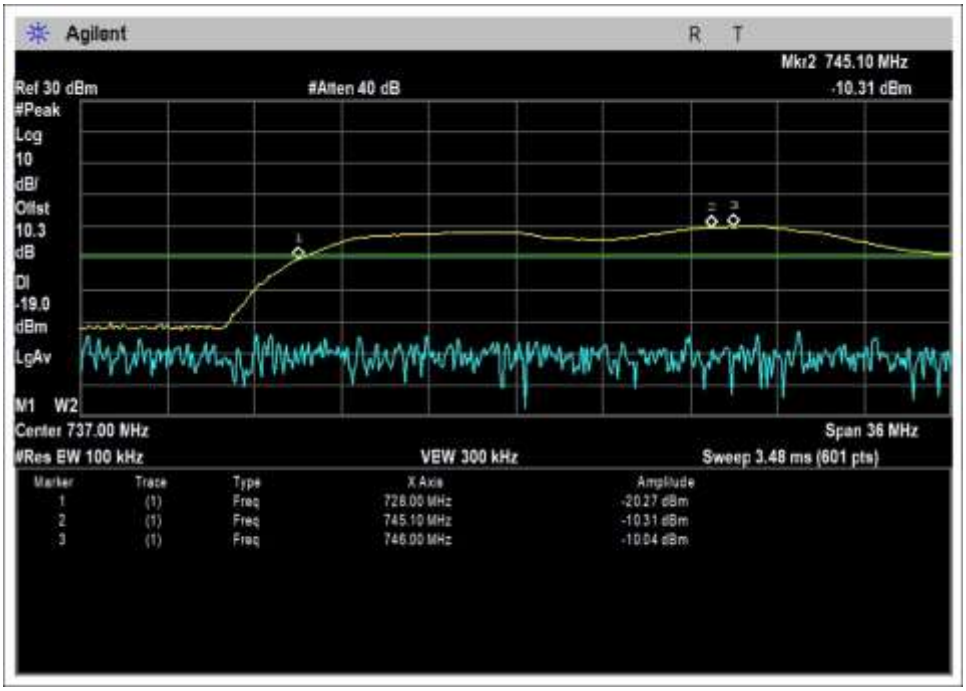


7.1_Band Verify_DL_1930-1995MHz

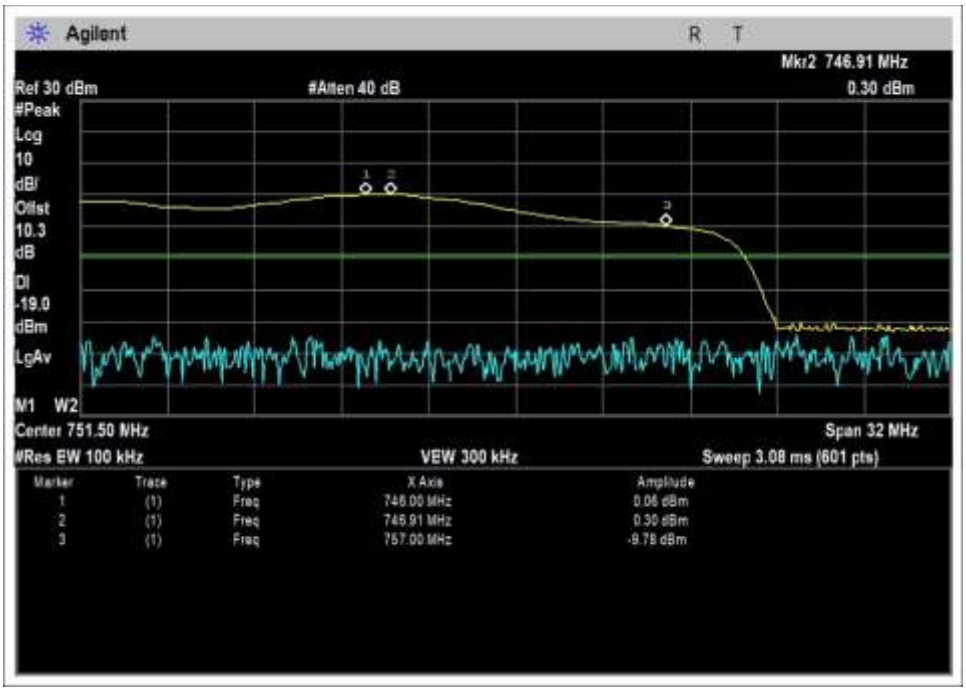


7.1_Band Verify_DL_2110-2155MHz

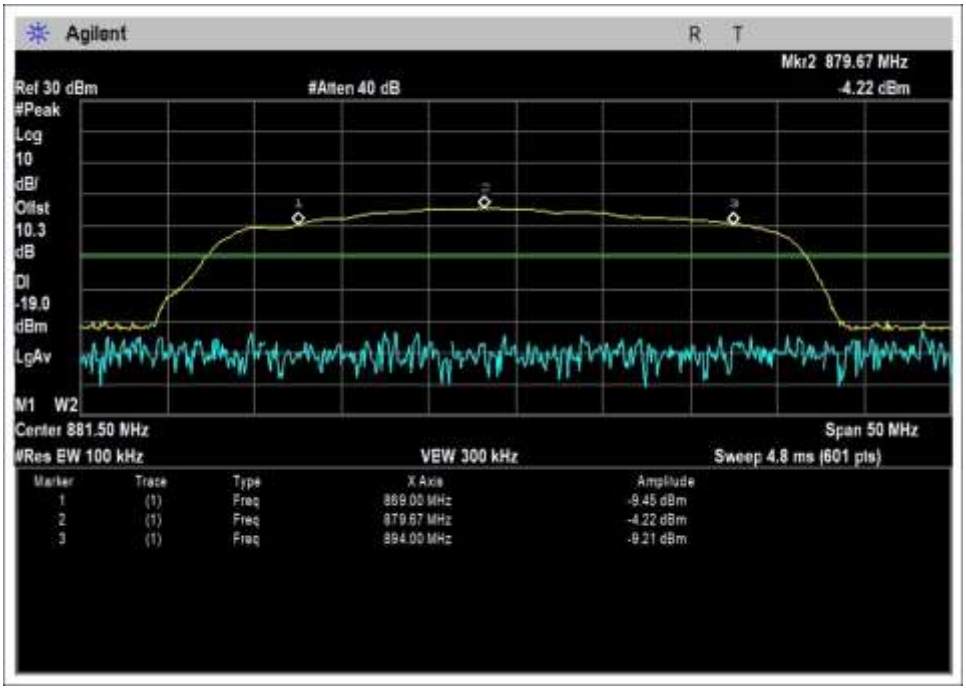
Device: Drive 4G-X



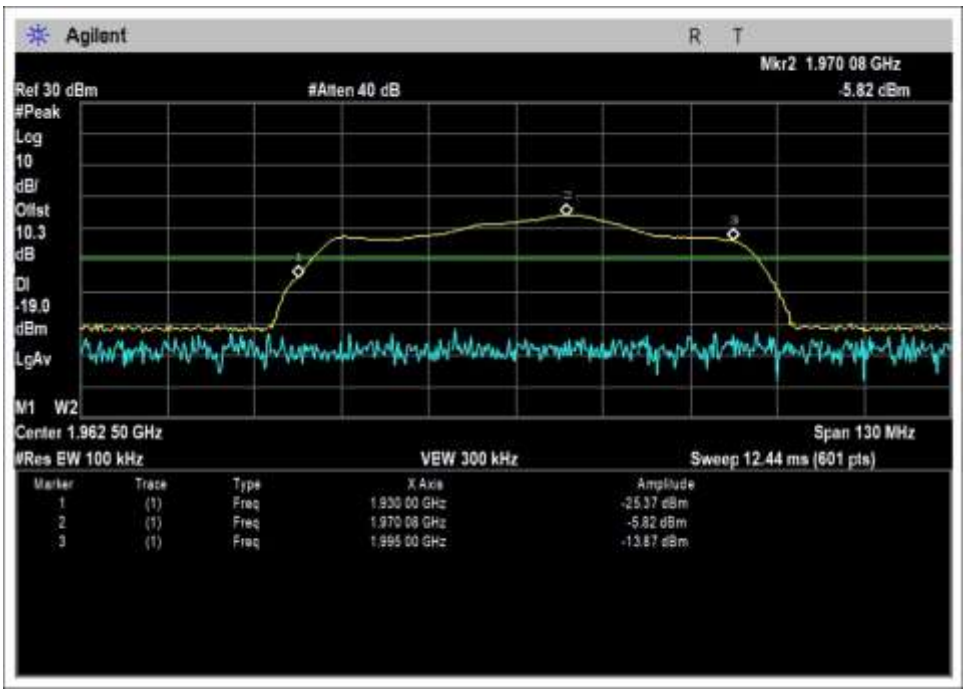
7.1_Band Verify_DL_728-746MHz



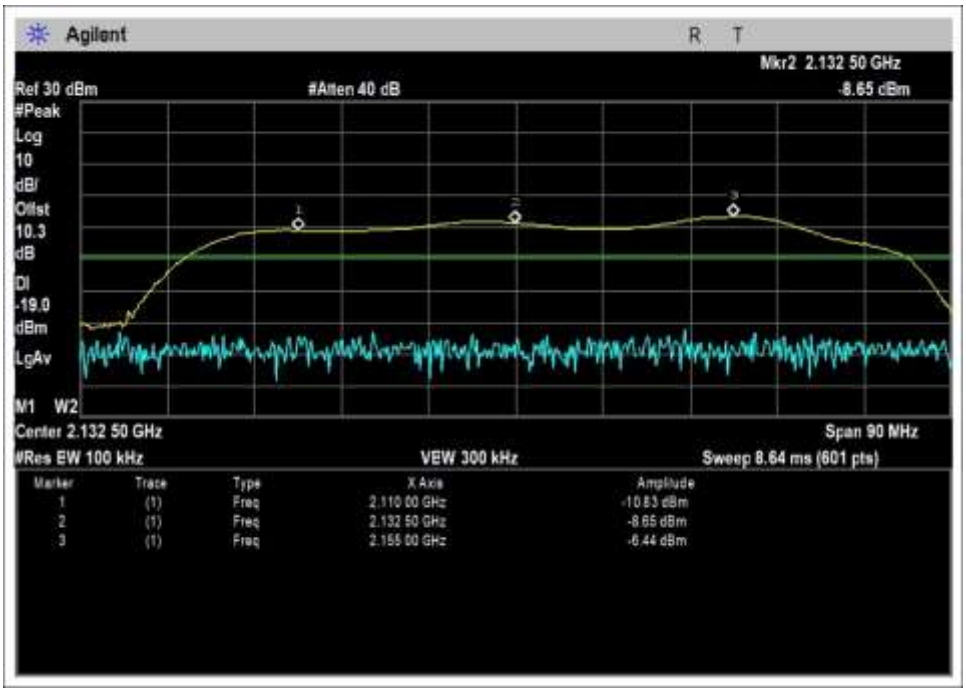
7.1_Band Verify_DL_746-757MHz



7.1_Band Verify_DL_869-894MHz



7.1_Band Verify_DL_1930-1995MHz

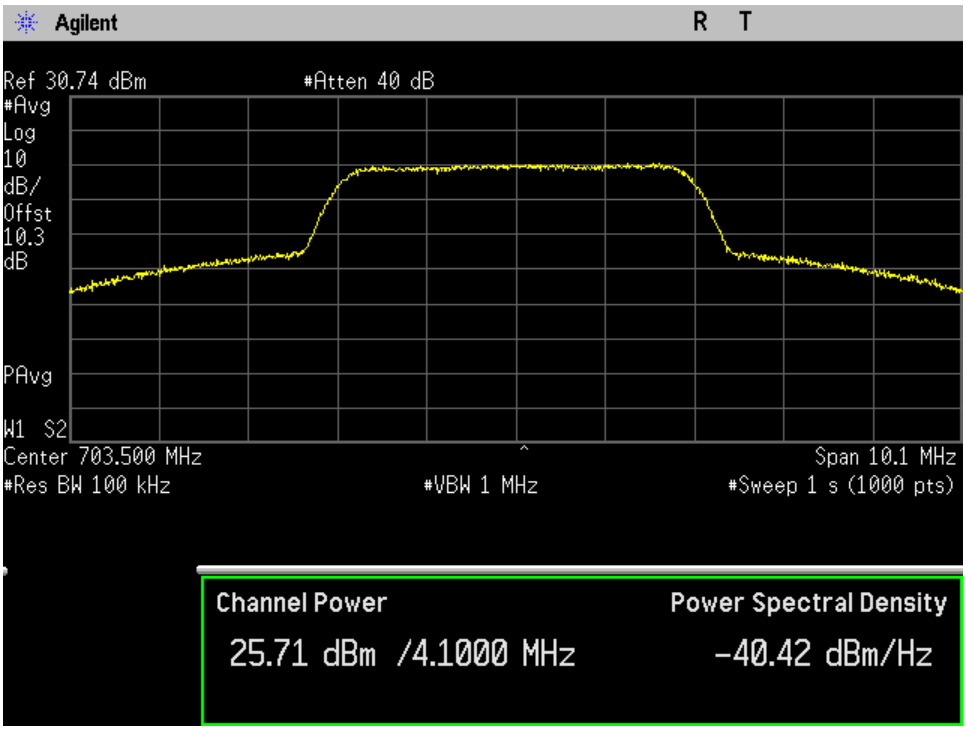


7.1_Band Verify_DL_2110-2155MHz

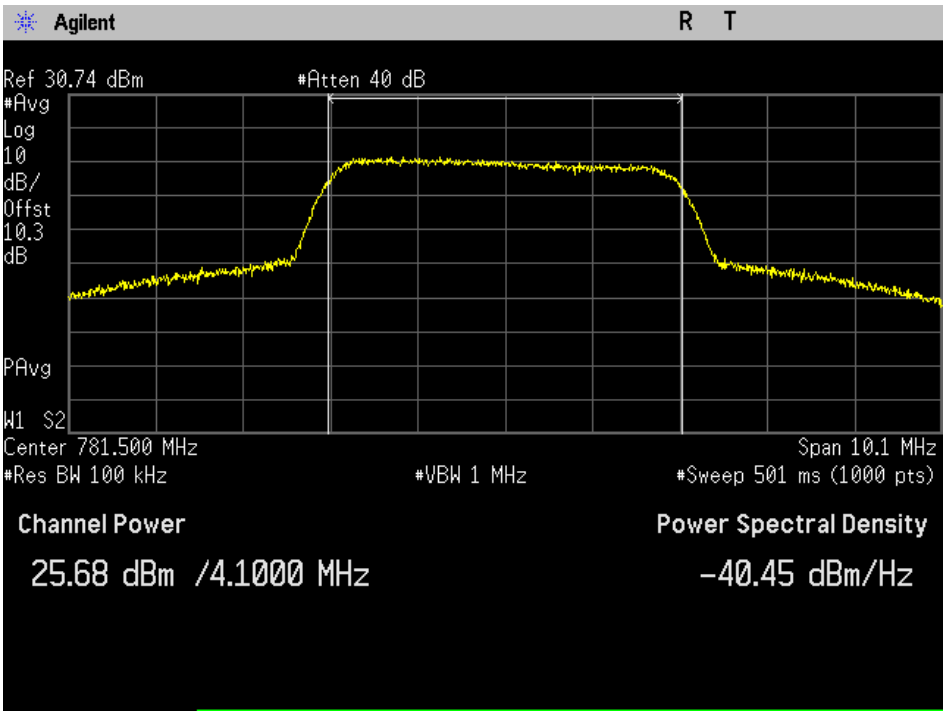
Output Power Uplink

4.1MHz AWGN	Fusion2Go 3.0			DRIVE 4G-X	
	Frequency (MHz)	Output Power (dBm)		Frequency (MHz)	Output Power (dBm)
	UL1710-1755	21.72		UL1710-1755	20.05
	UL824-894	27.03		UL824-894	23.26
	UL776-787	25.68		UL776-787	22.37
	UL 698-716	25.71		UL 698-716	21.77

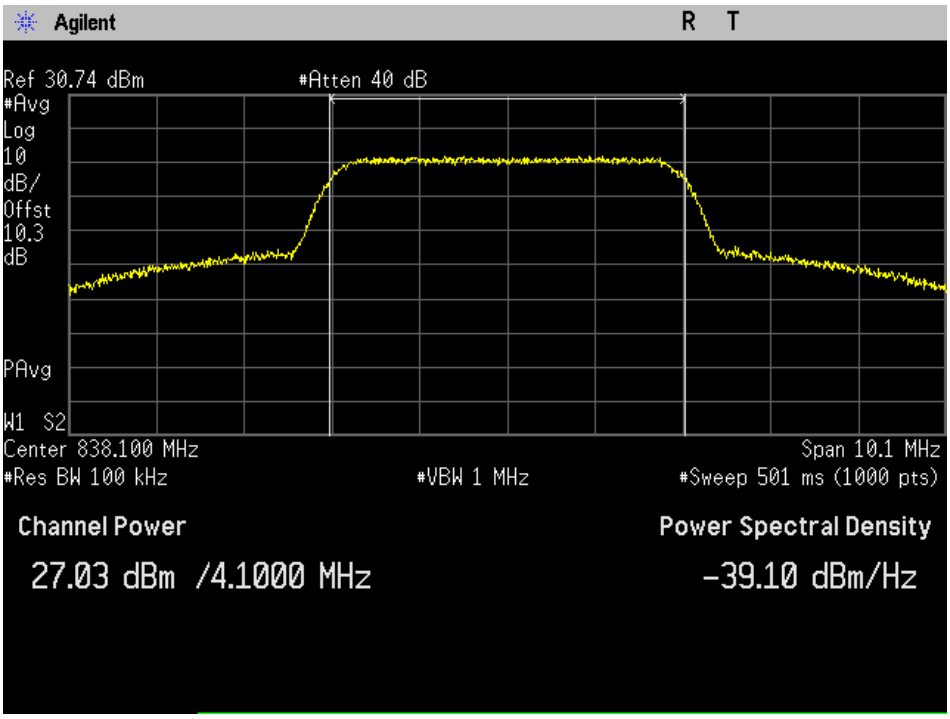
Fusion2Go 3.0 Plots



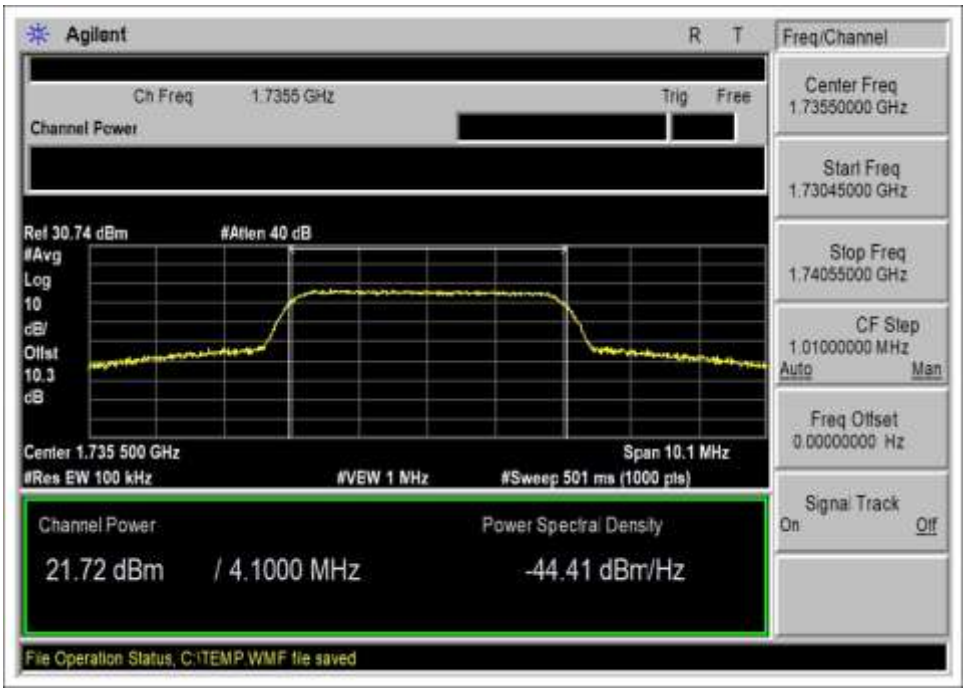
7.2_Power_UL_698-716MHz_AWGN



7.2_Power_UL_776-787MHz_AWGN

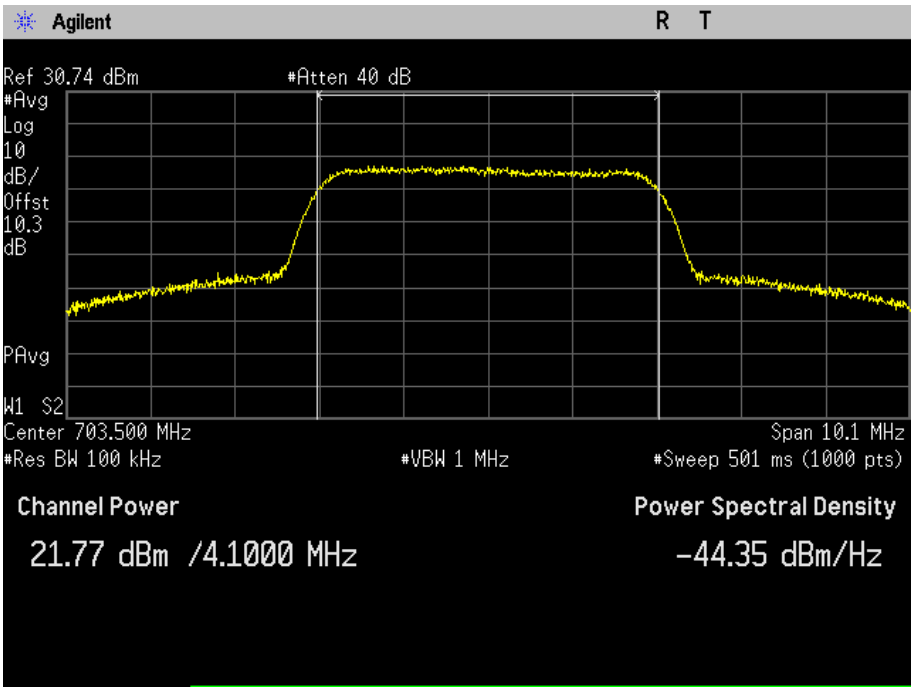


7.2_Power_UL_824-849MHz_AWGN

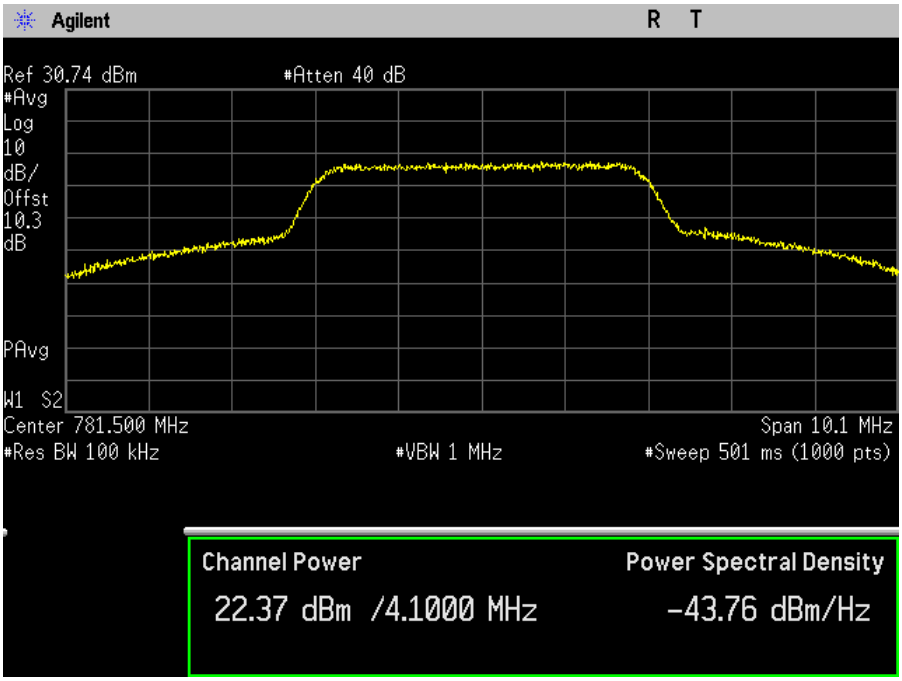


7.2_Power_UL_1710-1755MHz_AWGN

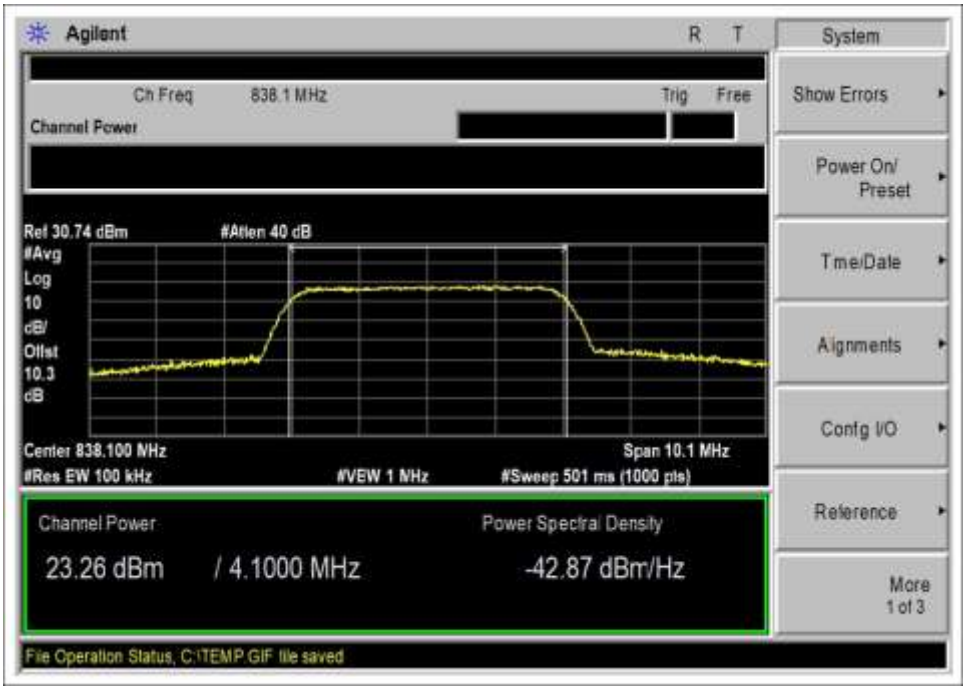
DRIVE 4G-X Plots



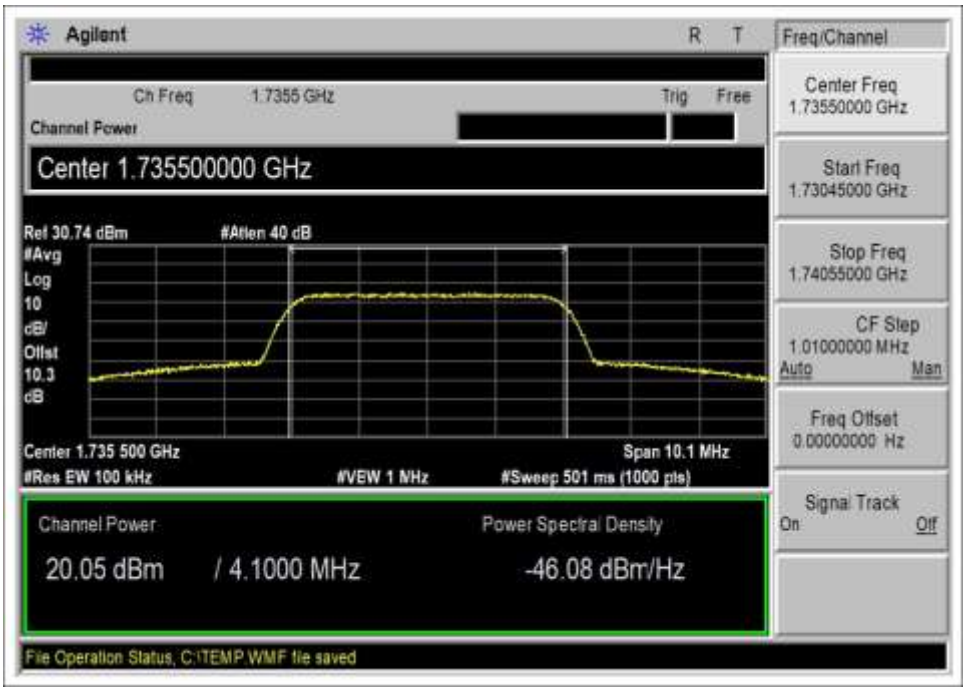
7.2_Power_UL_698-716MHz_AWGN



7.2_Power_UL_776-787MHz_AWGN



7.2_Power_UL_824-849MHz_AWGN



7.2_Power_UL_1710-1755MHz_AWGN

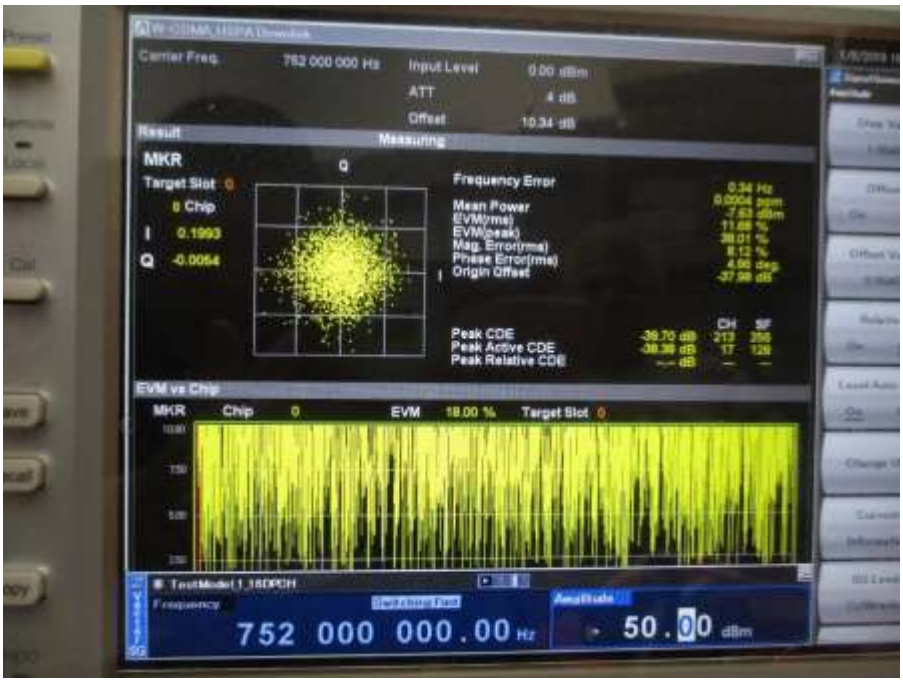
Downlink EVM

W-CDMA	Fusion2Go 3.0					DRIVE 4G-X		
Frequency (MHz)	EVM rms (%)	EVM peak (%)	Power(dBm)		Frequency (MHz)	EVM rms (%)	EVM peak (%)	Power(dBm)
730.5	11.16	33.13	-7.34		730.5	18.31	53.89	-1.77
742.5	2.29	5.93	-5.32		742.5	12.49	46.83	-5.19
752.0	11.68	38.01	-7.63		752.0	15.93	63.19	-3.28
1932.5	6.47	18.72	-6.02		1932.5	22.94	70.41	-7.17
1935.0	4.17	12.77	-4.73		1935.0	13.62	42.32	-9.98

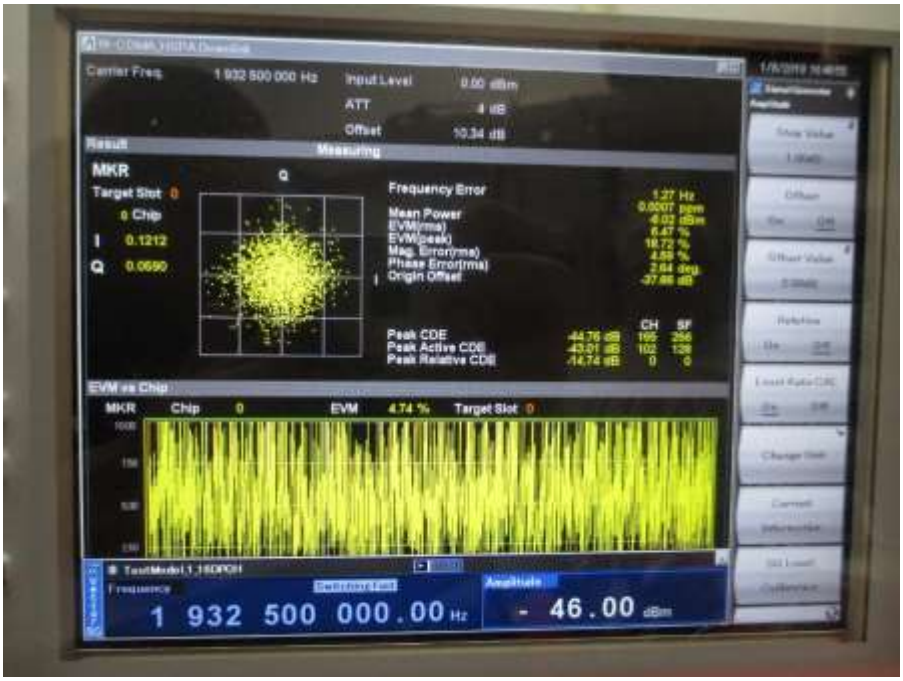
Fusion2Go 3.0 Plots

EVM_DL_728-746MHz-730MHz

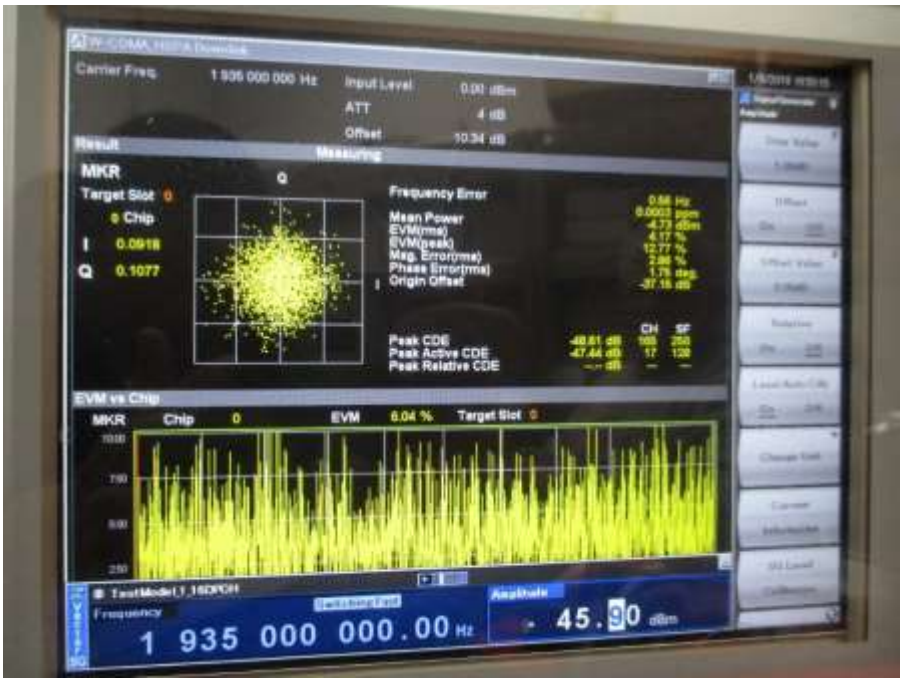
EVM_DL_728-746MHz-742.5MHz



EVM_DL_746-757MHz

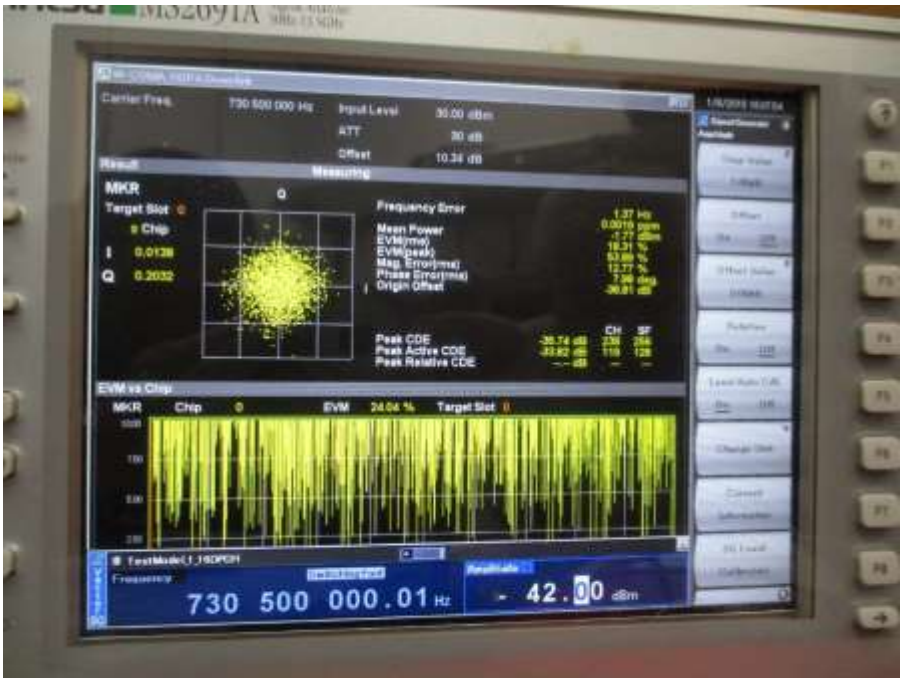


EVM_DL_1930-1995MHz-1932.5MHz

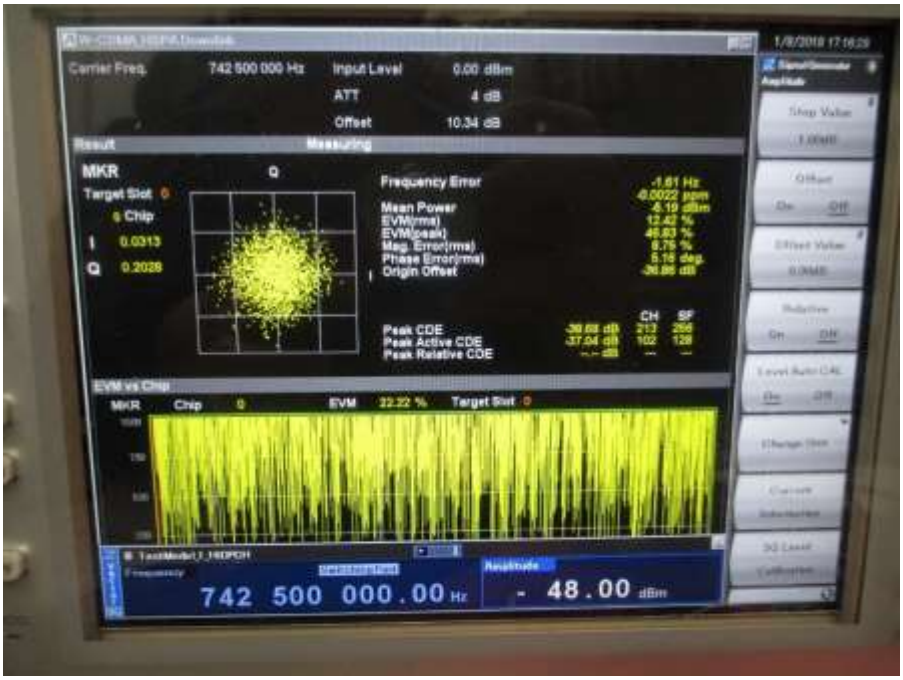


EVM_DL_1930-1995MHz-1935.0MHz

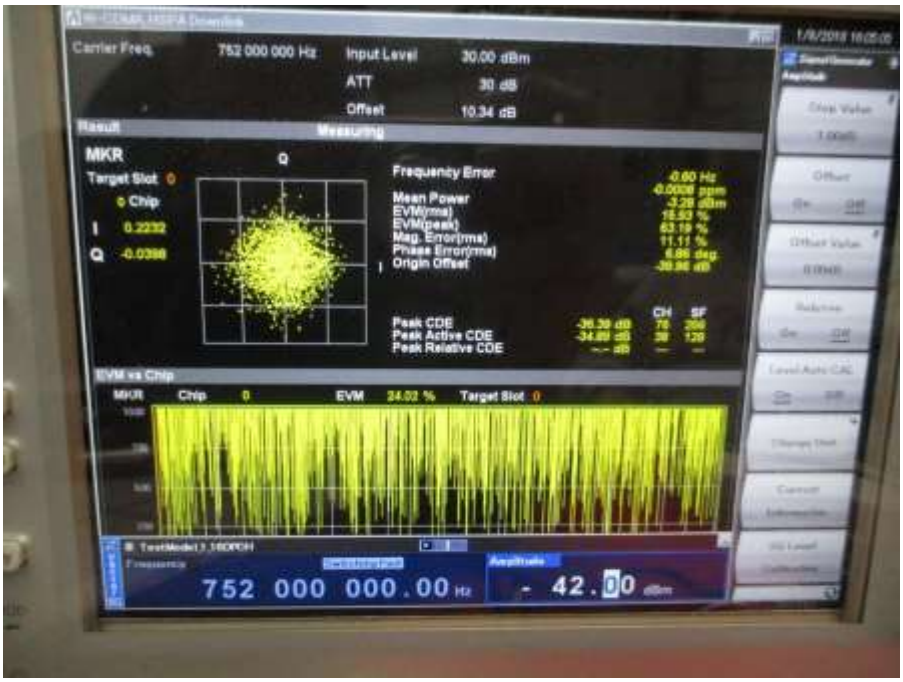
DRIVE 4G-X Plots



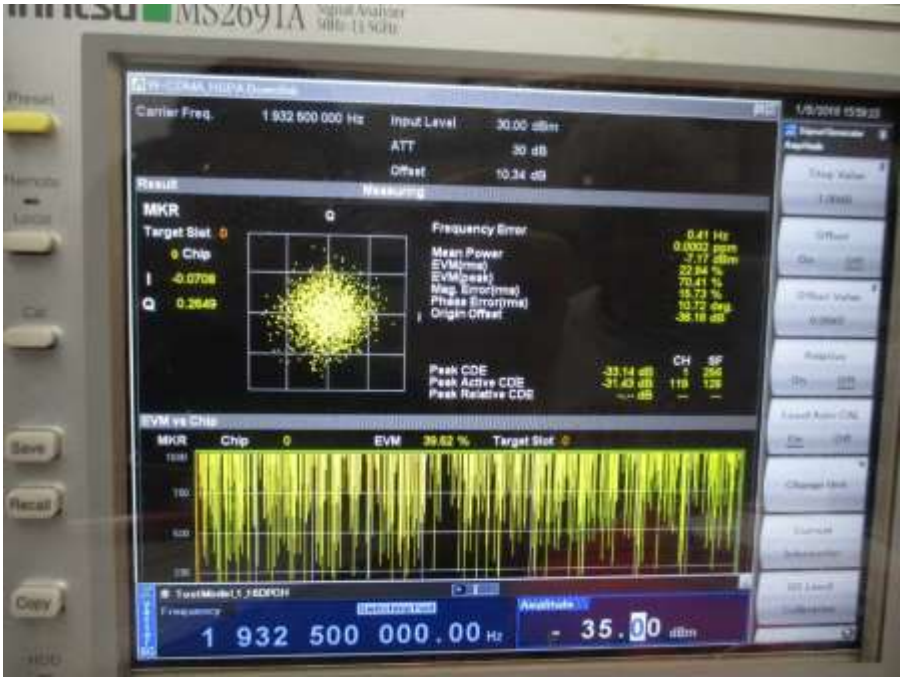
EVM_DL_728-746MHz-730MHz



EVM_DL_728-746MHz-742.5MHz



EVM_DL_746-757MHz



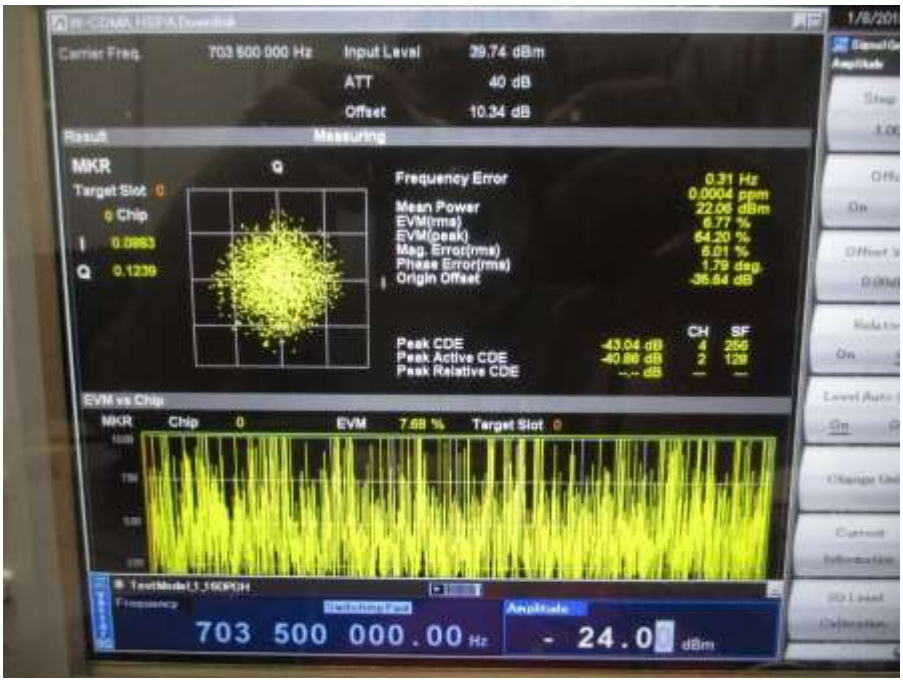
EVM_DL_1930-1995MHz-1932.5MHz

EVM_DL_1930-1995MHz-1935.0MHz

Uplink EVM

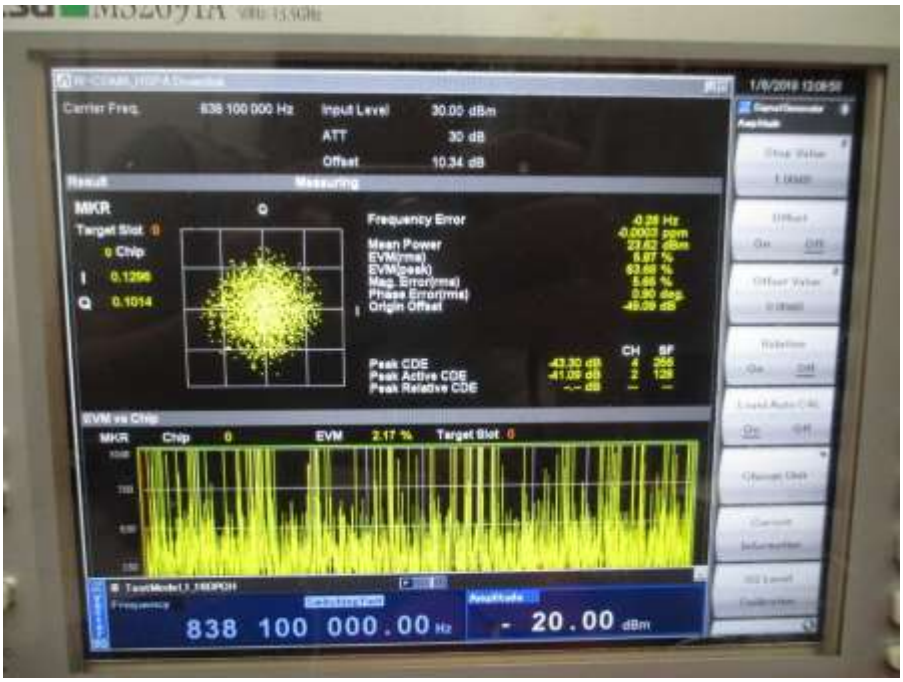
W-CDMA	Fusion2Go 3.0						DRIVE 4G-X			
Frequency (MHz)	EVM rms (%)	EVM peak (%)	Peak CDE (dB)	Power (dBm)		Frequency (MHz)	EVM rms (%)	EVM peak (%)	Peak CDE (dB)	Power (dBm)
703.5	6.77	64.20	-43.04	22.06		703.5	9.47	67.73	-40.58	19.39
781.5	11.09	76.81	-39.29	22.56		781.5	6.06	71.01	-44.79	17.01
838.1	5.87	63.66	-43.30	23.62		838.1	4.76	51.76	-46.70	20.64

Fusion2Go 3.0 Plots



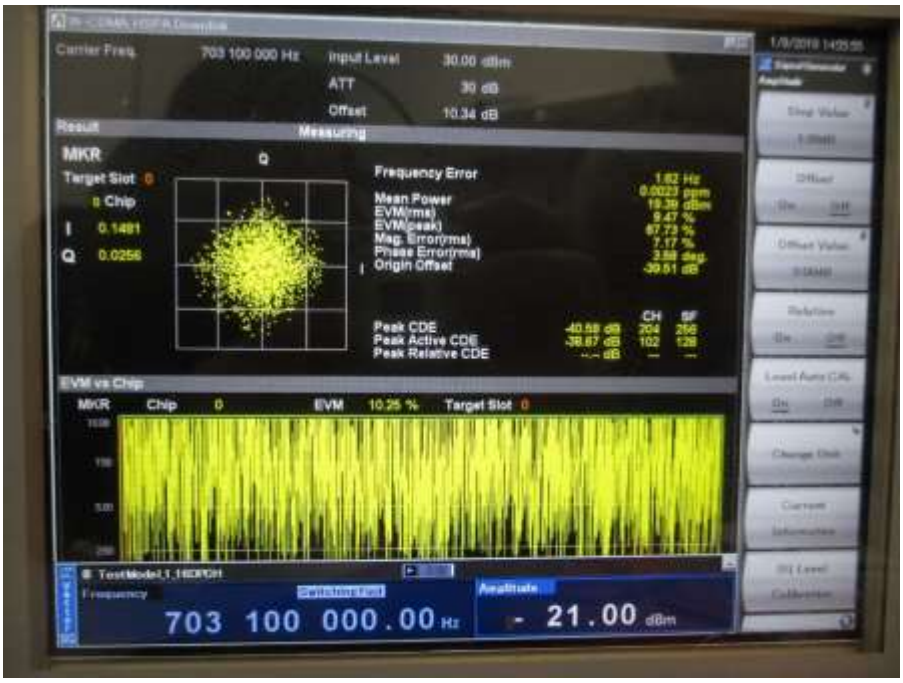
EVM_UL_698-716MHz

EVM_UL_776-787MHz

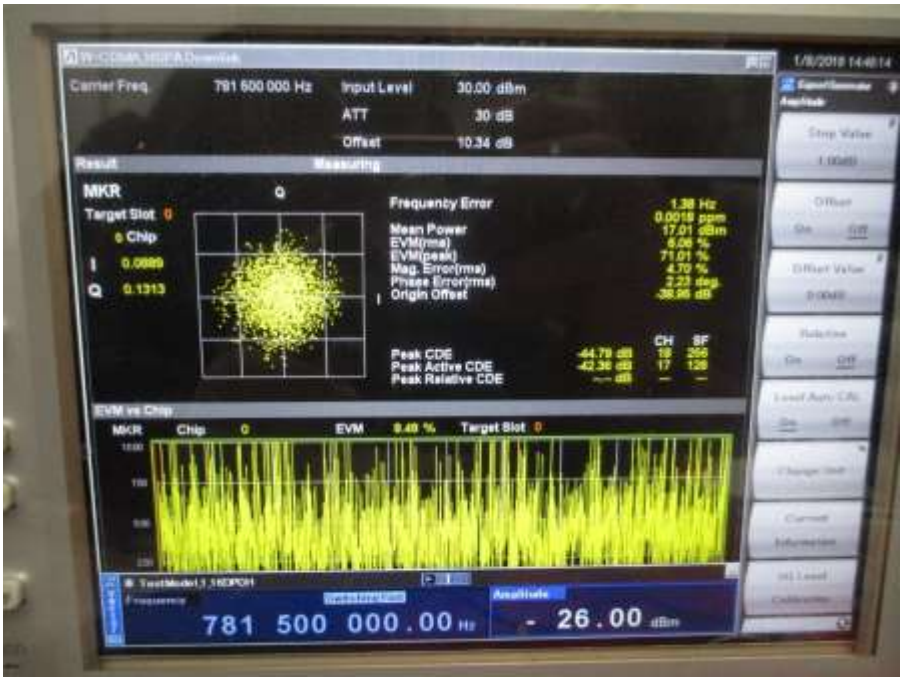


EVM_UL_824-849MHz

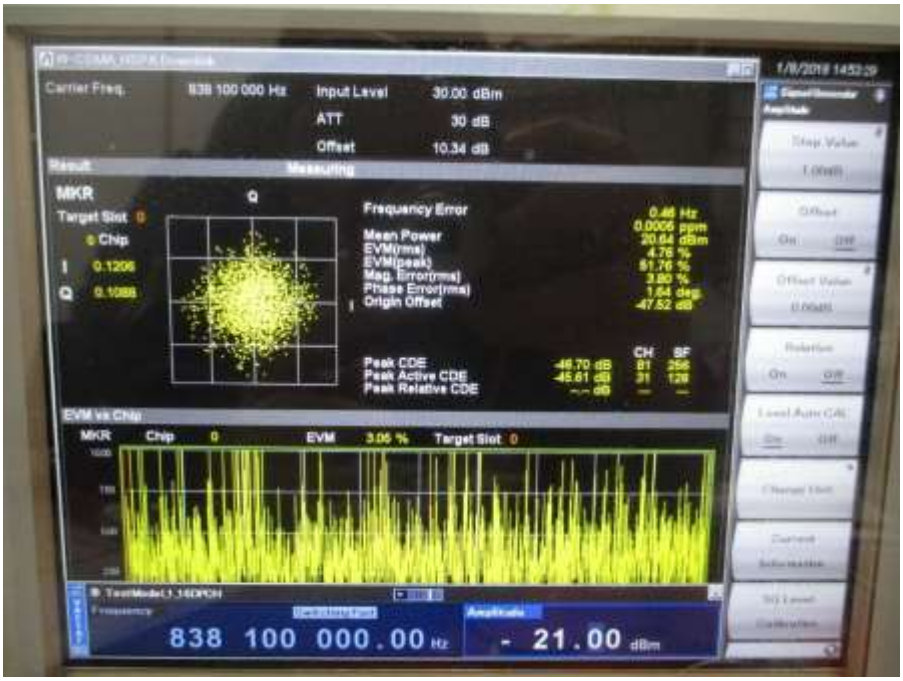
DRIVE 4G-X Plots



EVM_UL_698-716MHz



EVM_UL_776-787MHz

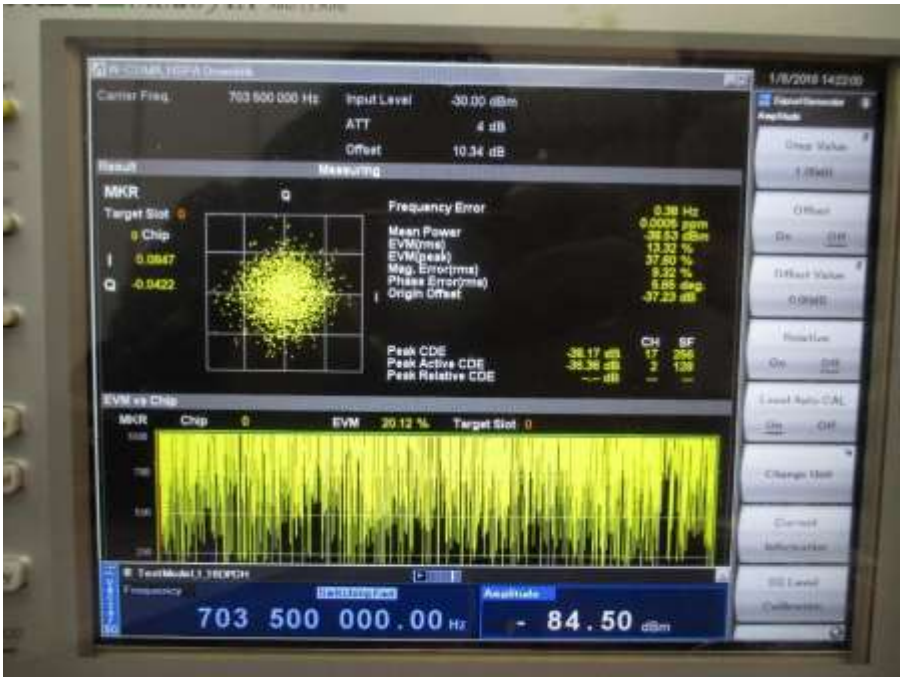


EVM_UL_824-849MHz

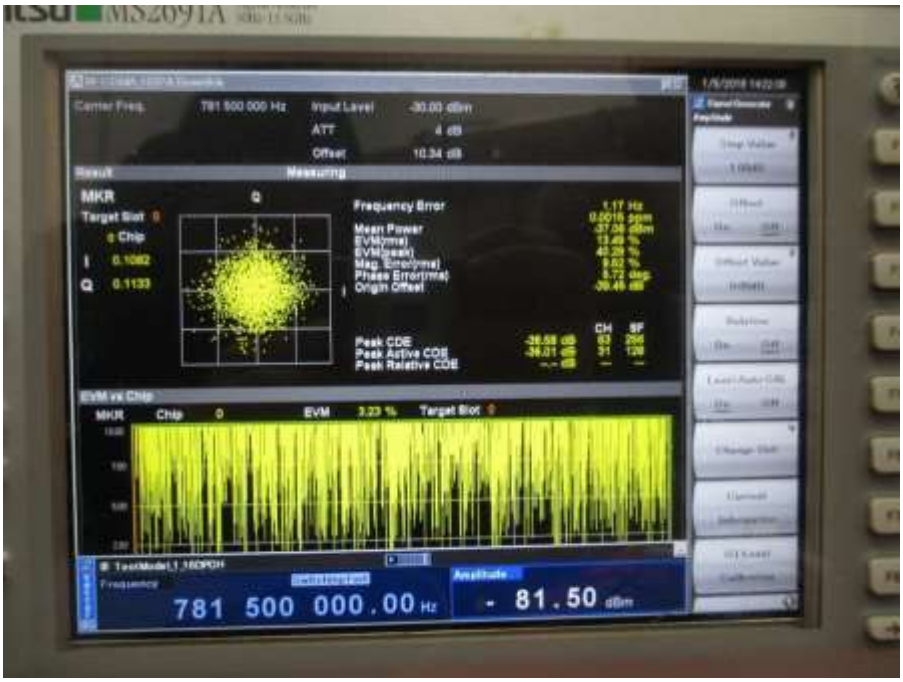
Uplink EVM -Input Signal

W-CDMA	Fusion2Go 3.0				DRIVE 4G-X	
Frequency (MHz)	EVM (%)	Input signal (dBm)		Frequency (MHz)	EVM (%)	Input signal (dBm)
703.5	13.32	-84.50		703.5	13.77	-80.30
781.5	13.49	-81.50		781.5	13.33	-82.30
838.1	13.35	-84.00		838.1	13.34	-83.50
1735.5	13.55	-83.50		1735.5	13.27	-82.0

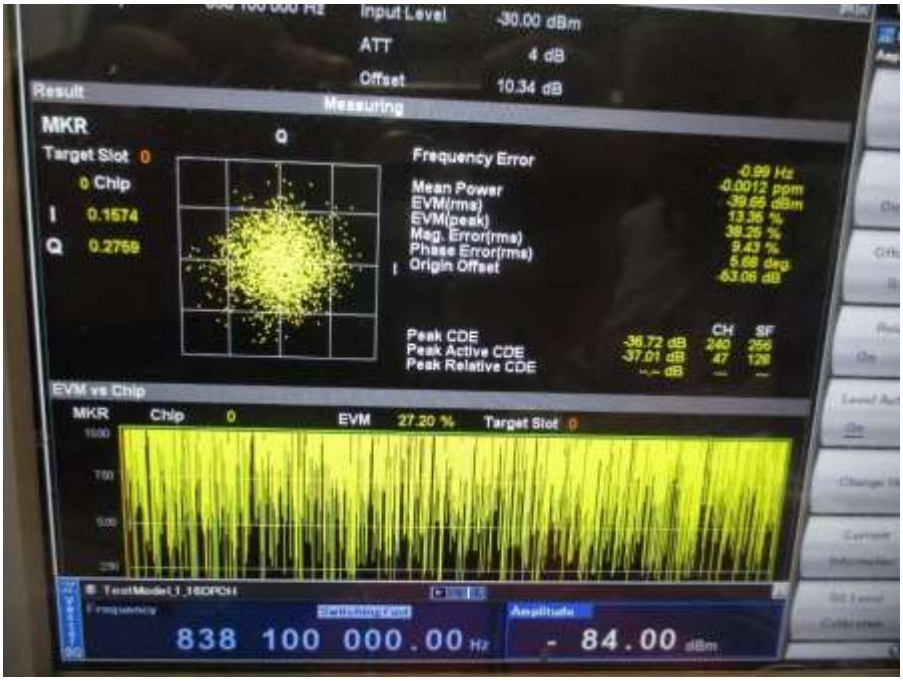
Fusion2Go 3.0 Plots



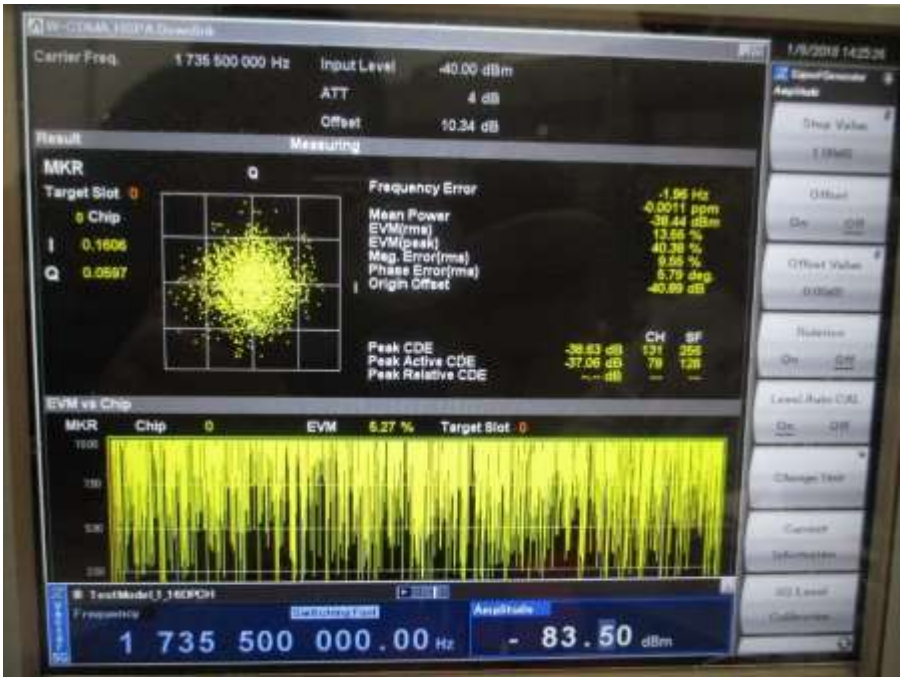
EVM_UL_698-716MHz



EVM_UL_776-787MHz

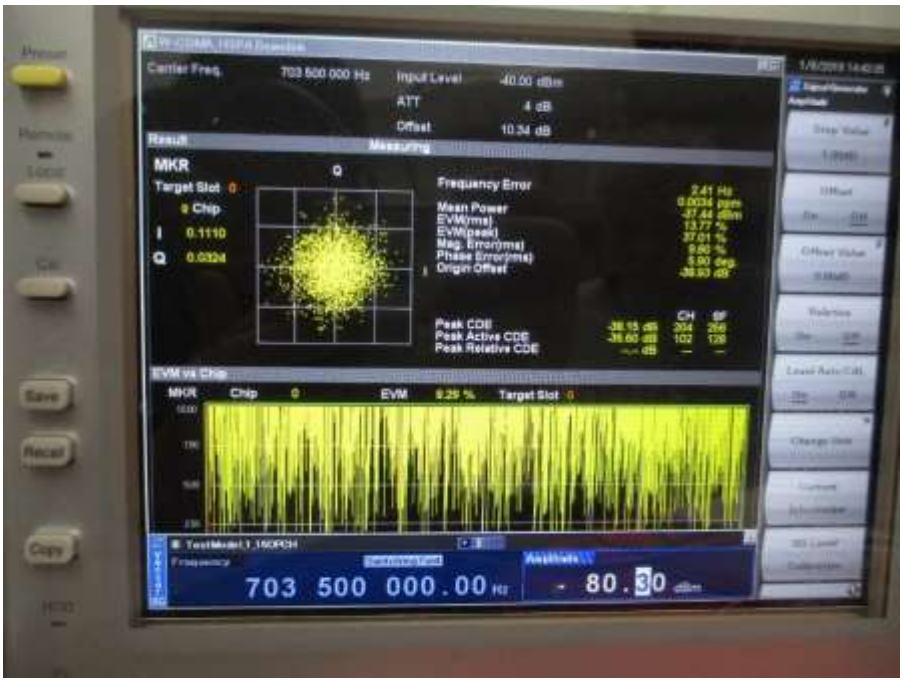


EVM_UL_824-849MHz



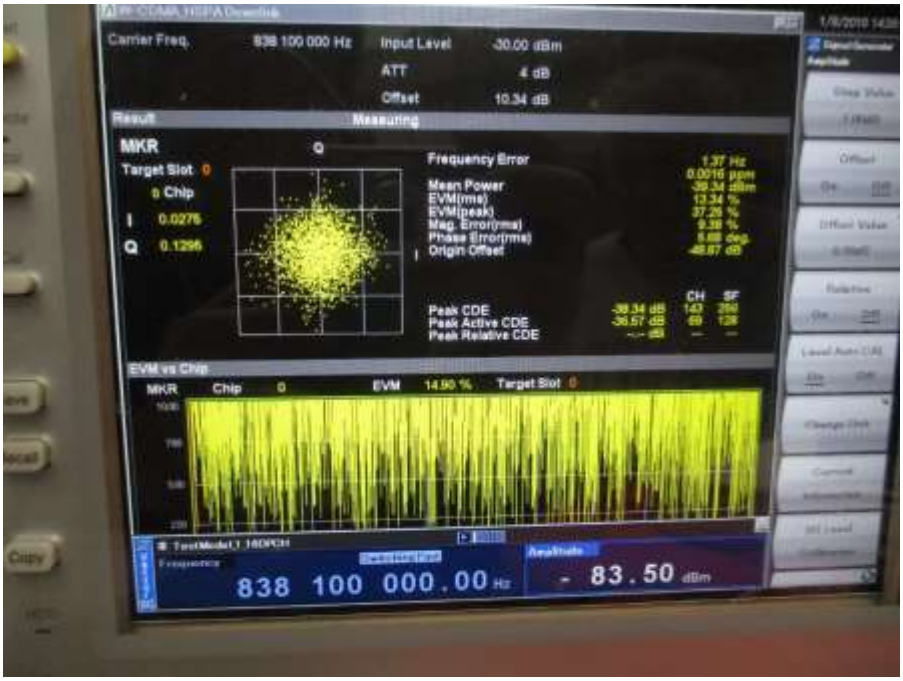
EVM_UL_1710-1755MHz

DRIVE 4G-X Plots

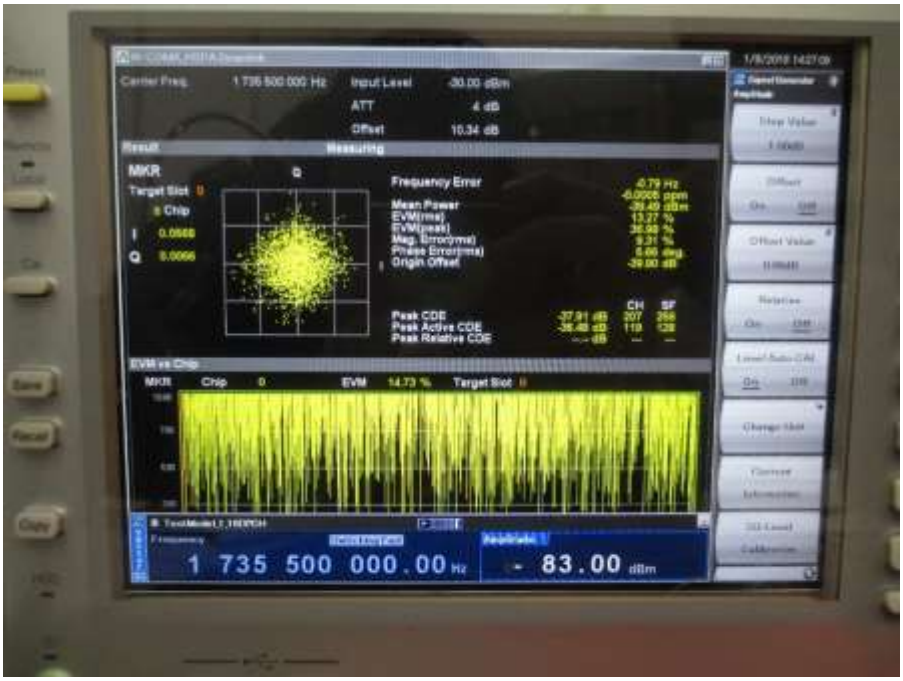


EVM_UL_698-716MHz

EVM_UL_776-787MHz



EVM_UL_824-849MHz

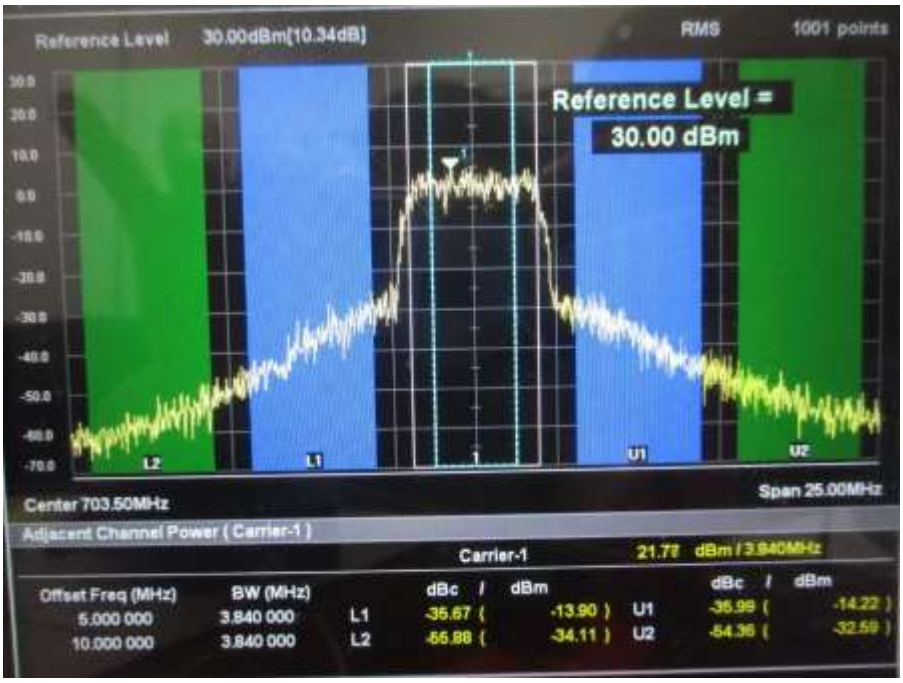


EVM_UL_1710-1755MHz

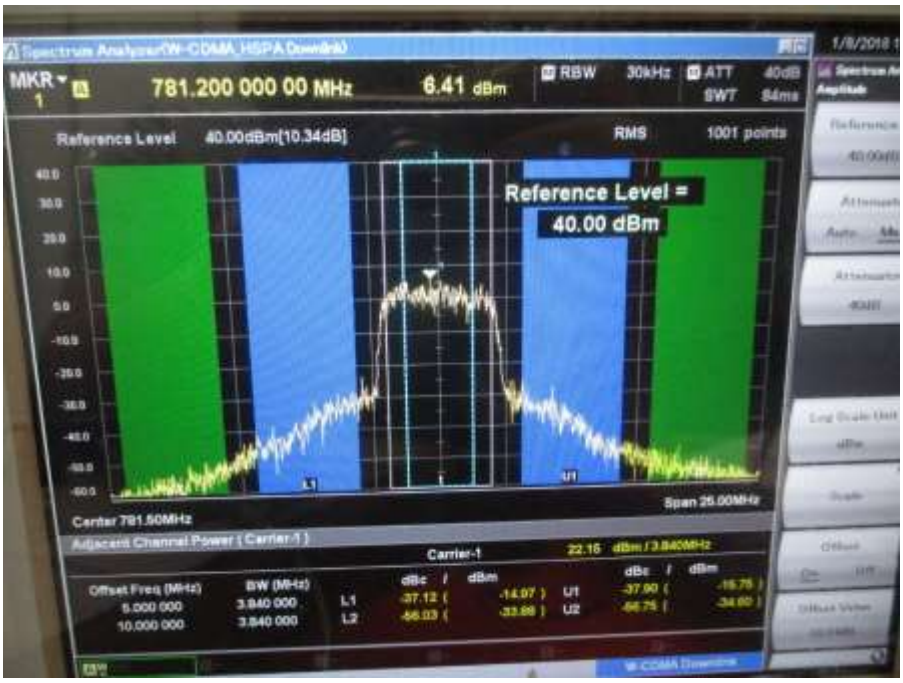
Uplink-Adjacent Channel Power

W-CDMA	Fusion2Go 3.0					DRIVE 4G-X		
Frequency (MHz)	Band	dBc	Power (dBm)		Frequency (MHz)	Band	dBc	Power (dBm)
UL824-894	L1	-35.39	23.22		UL824-894	L1	-41.64	20.37
UL824-894	U1	-35.84	23.22		UL824-894	U1	-36.89	20.37
UL776-787	L1	-37.12	22.15		UL776-787	L1	-37.74	16.77
UL776-787	U1	-37.90	22.15		UL776-787	U1	-35.26	16.77
UL 698-716	L1	-35.67	21.77		UL 698-716	L1	-37.93	19.45
UL 698-716	U1	-35.99	21.77		UL 698-716	U1	-37.52	19.45

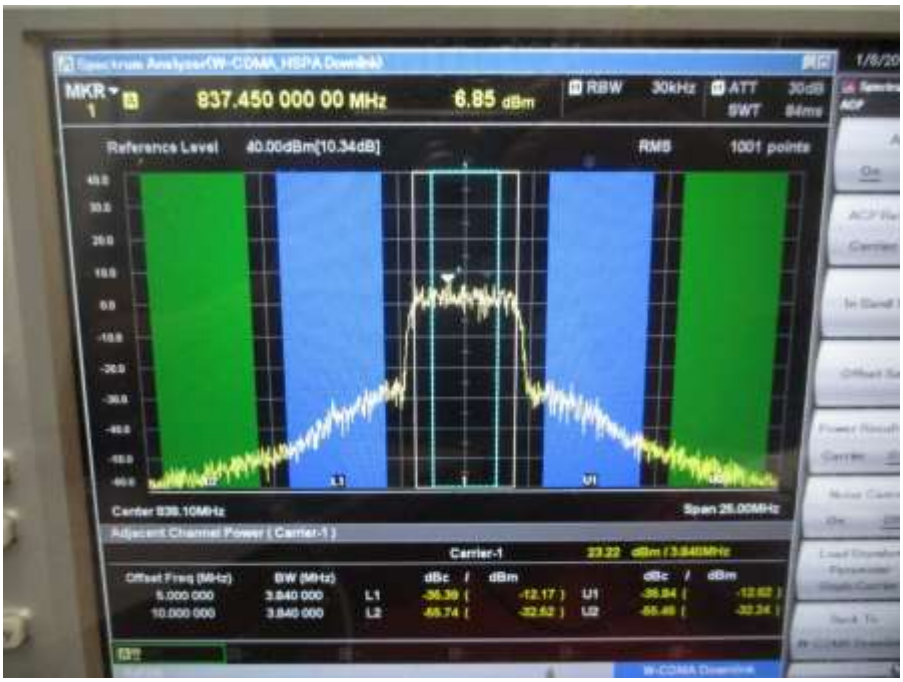
Fusion2Go 3.0 Plots



ACP_UL_698-716MHz

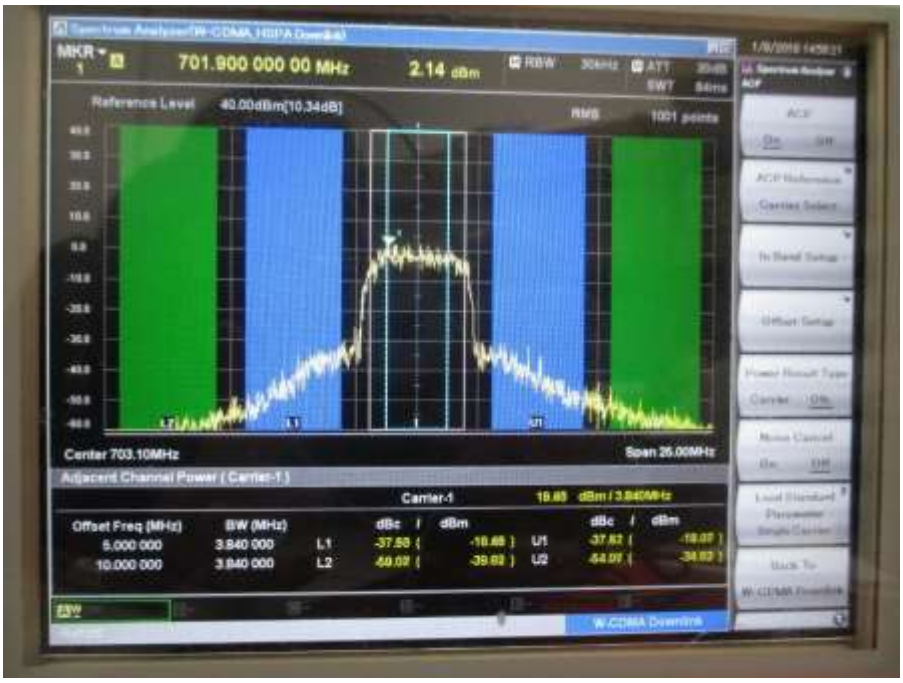


ACP_UL_776-787MHz

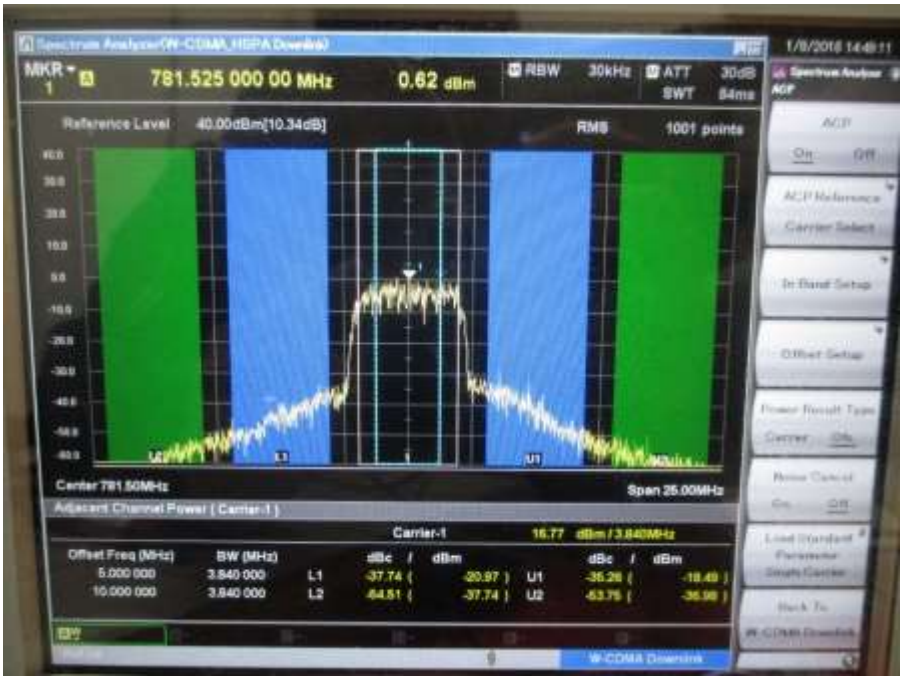


ACP_UL_824-849MHz

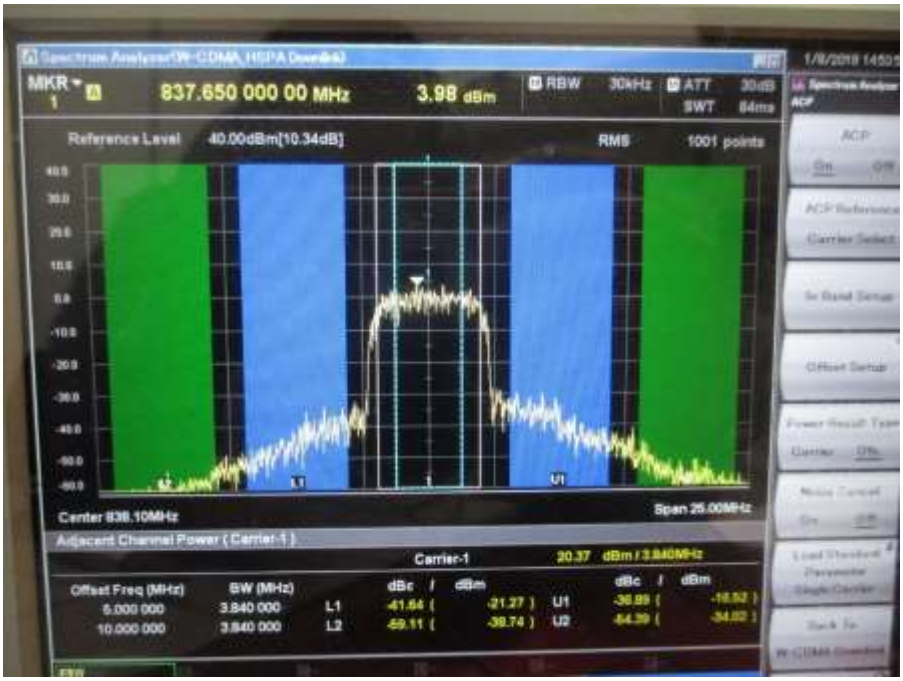
DRIVE 4G-X Plots



ACP_UL_698-716MHz



ACP_UL_776-787MHz



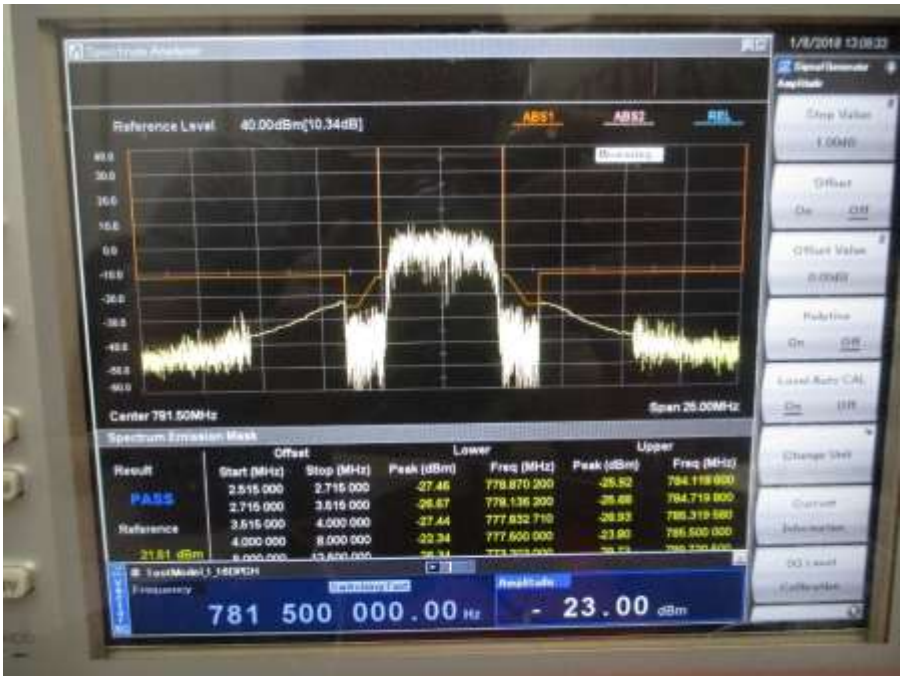
ACP_UL_824-849MHz

Uplink-Mask Emission

W-CDMA	Fusion2Go 3.0				DRIVE 4G-X	
Frequency (MHz)	Ref Power(dBm)	Result		Frequency (MHz)	Ref Power(dBm)	Result
UL824-894	22.30	PASS		UL824-894	20.58	PASS
UL776-787	21.51	PASS		UL776-787	17.10	PASS
UL 698-716	21.33	PASS		UL 698-716	19.46	PASS

Fusion2Go 3.0 Plots

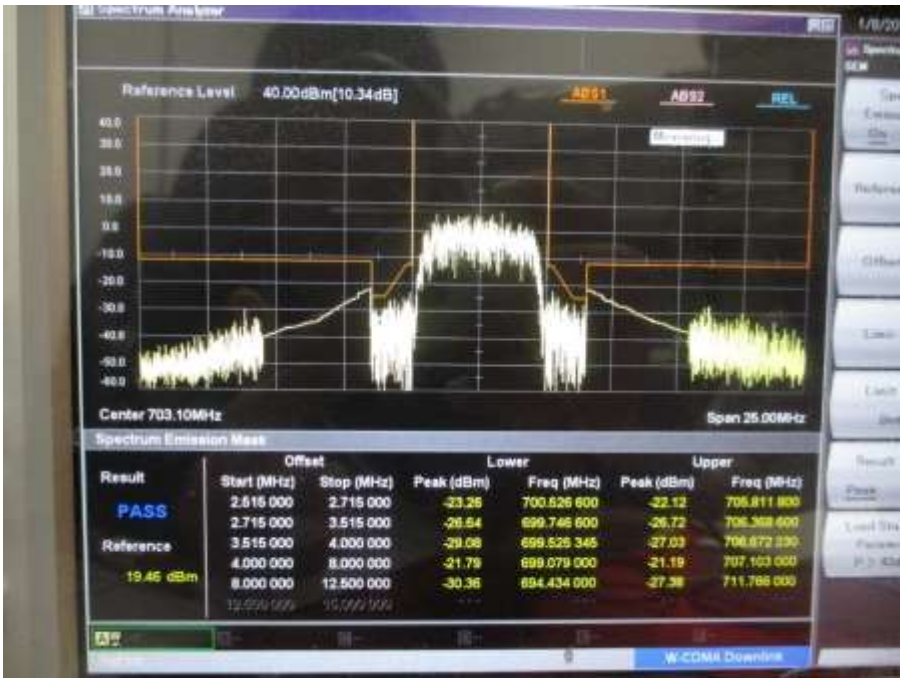
Mask Emission_UL_698-716MHz



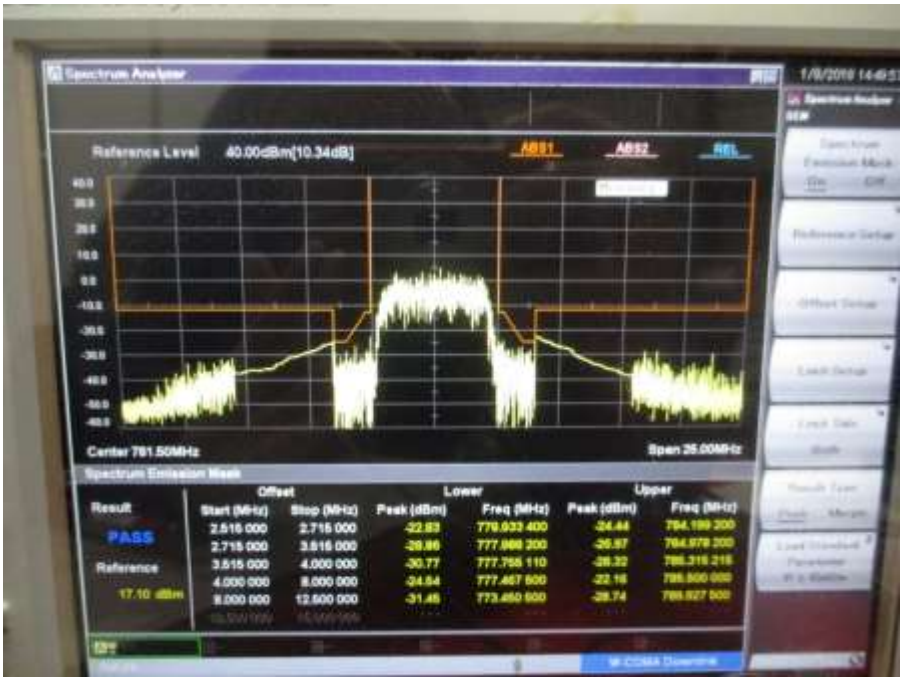
Mask Emission_UL_776-787MHz

Mask Emission_UL_824-849MHz

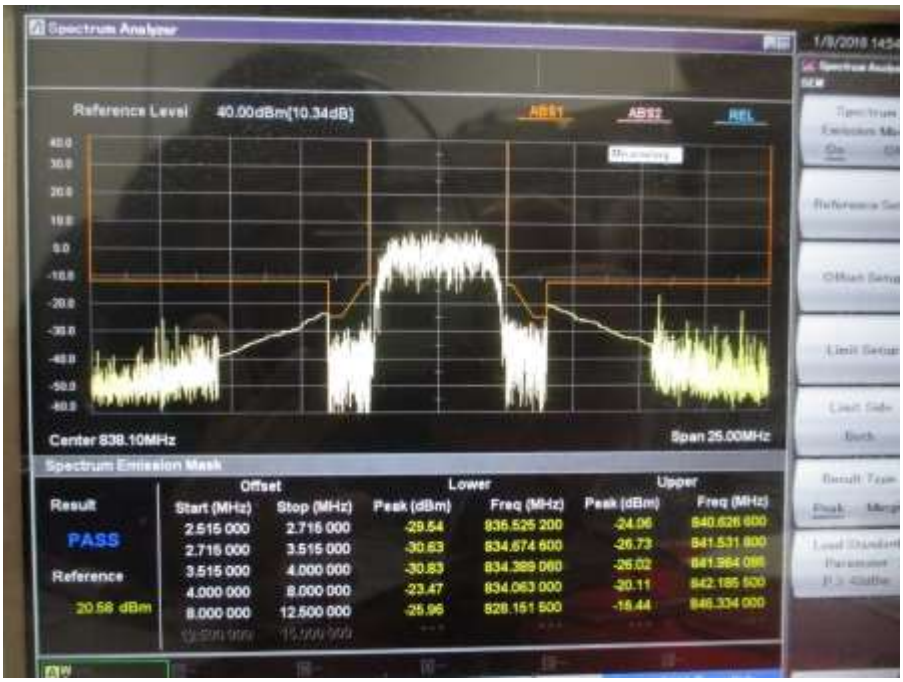
DRIVE 4G-X Plots



Mask Emission_UL_698-716MHz



Mask Emission_UL_776-787MHz

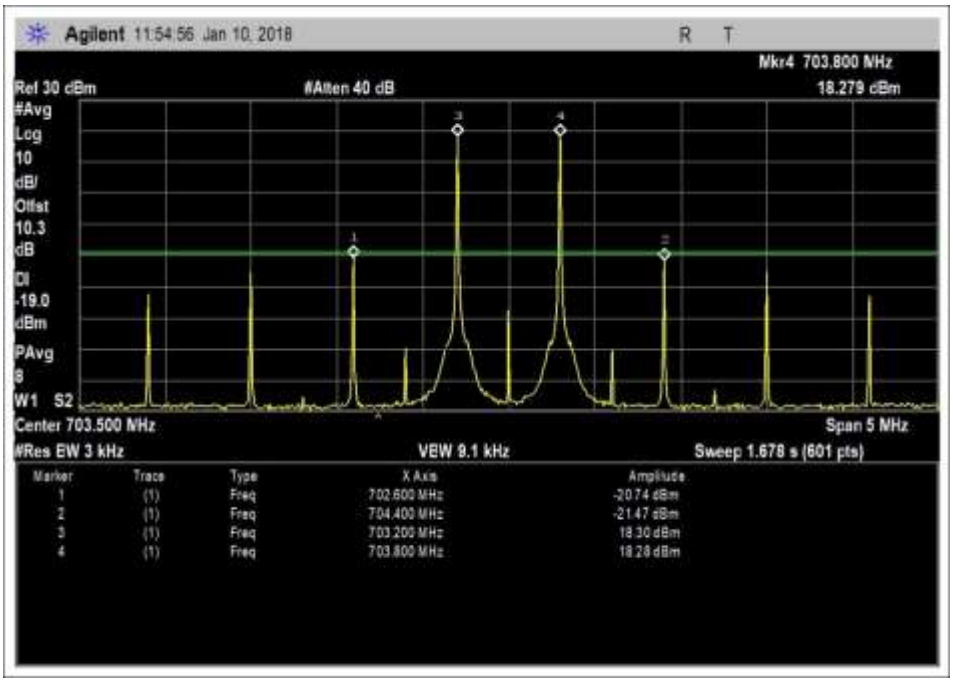


Mask Emission_UL_824-849MHz

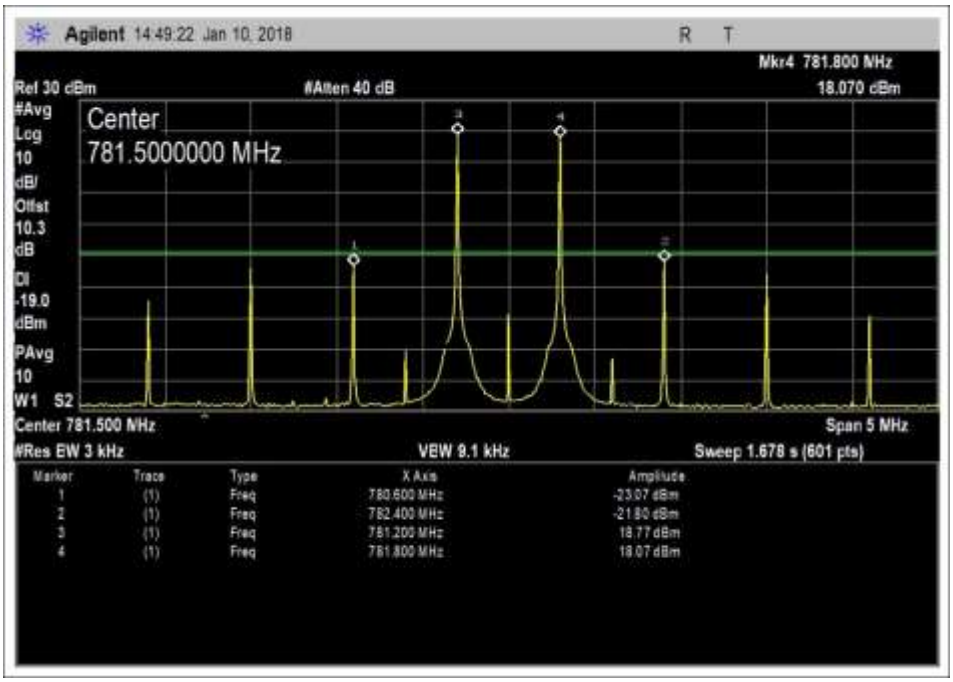
Inter Modulation

	Fusion2Go 3.0						DRIVE 4G-X			
Frequency (MHz)	IMD (dBm)	IMD (dBm)	Output (dBm)	Output (dBm)		Frequency (MHz)	IMD (dBm)	IMD (dBm)	Output (dBm)	Output (dBm)
UL824-894	-20.12	-20.34	19.67	19.44		UL824-894	-24.97	-20.34	15.26	15.42
UL776-787	-23.07	-21.80	18.77	18.07		UL776-787	-21.68	-19.95	14.05	14.31
UL698-716	-20.74	-21.47	18.30	18.28		UL 698-716	-23.52	-24.82	13.03	12.61

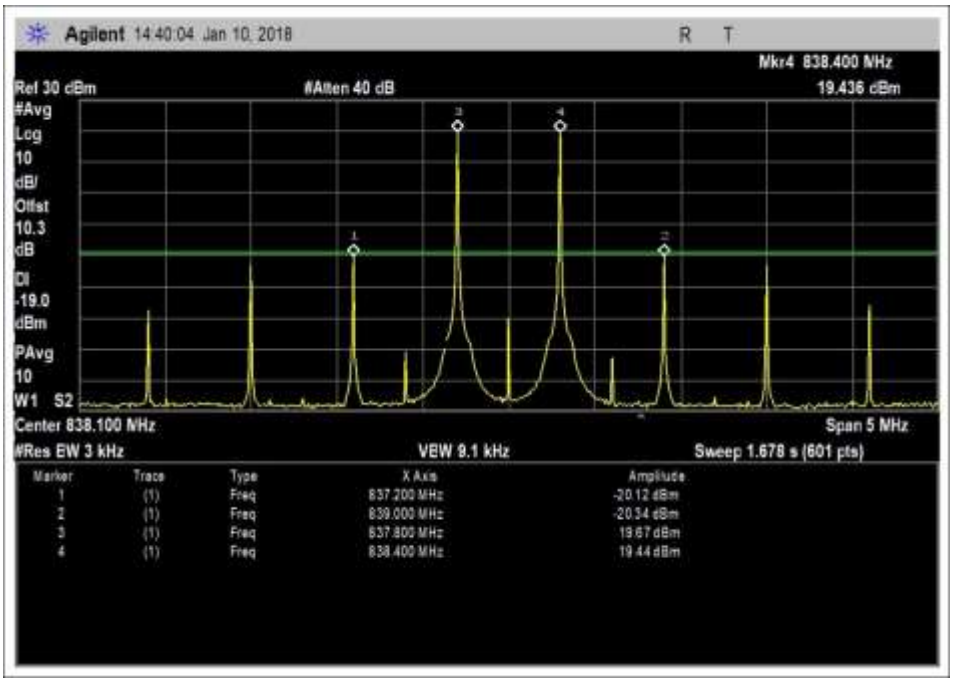
Fusion2Go 3.0 Plots



7.4_Intermod_UL_698-716MHz-703.5MHz-Fusion2Go 3.0

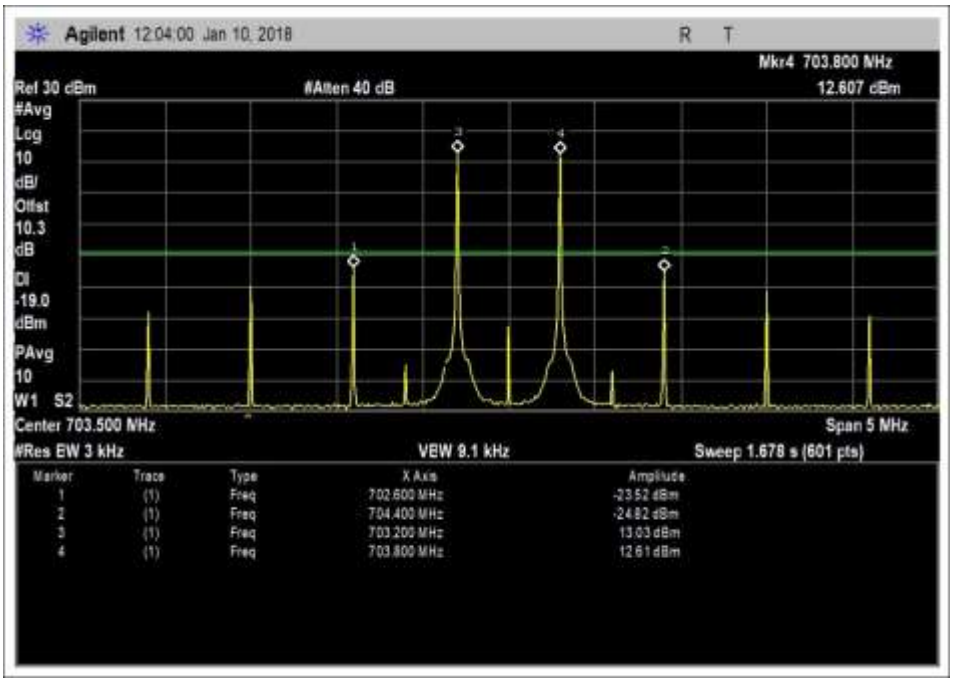


7.4_Intermod_UL_776-787MHz-781.5MHz-Fusion2Go 3.0

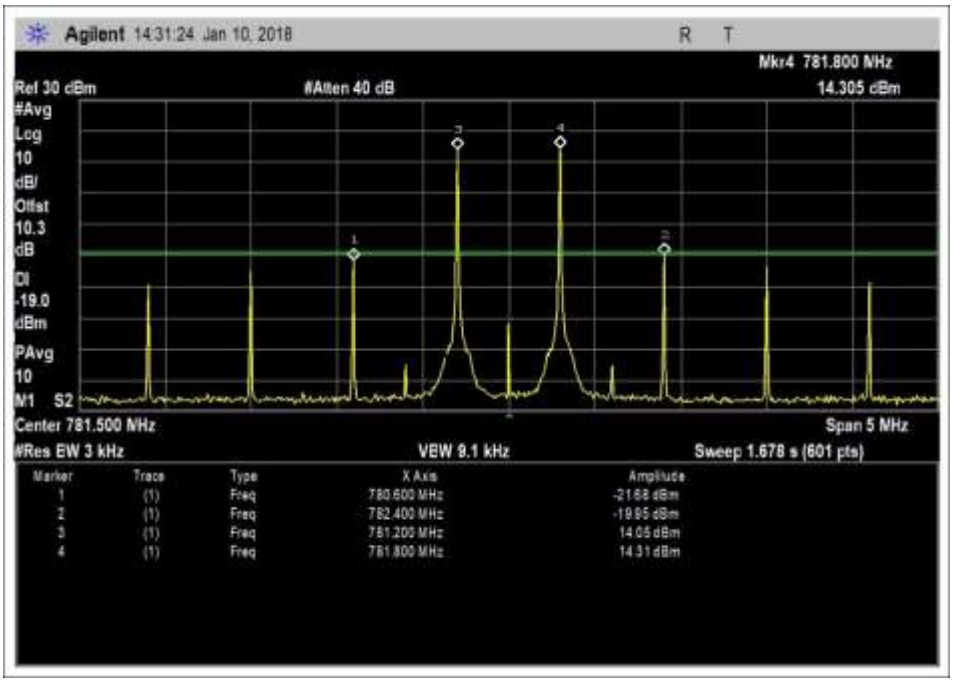


7.4_Intermod_UL_824-849MHz-838.1MHz-Fusion2Go 3.0

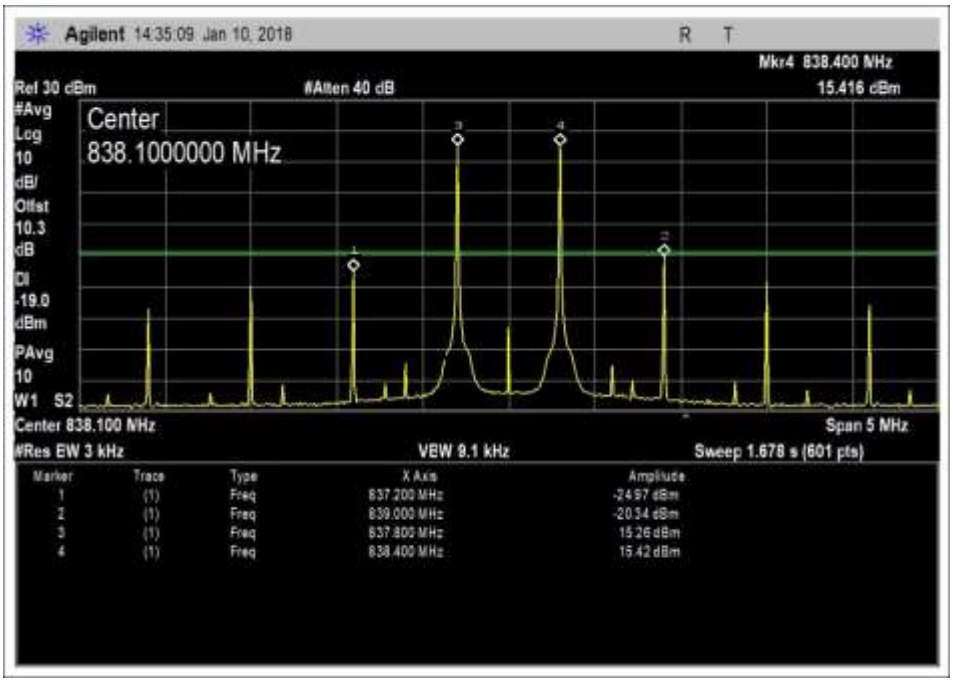
Drive 4G-X Plots



7.4_Intermod_UL_698-716MHz-703.5MHz-Fusion2Go 3.0



7.4_Intermod_UL_776-787MHz-781.5MHz-Drive 4G-X



7.4_Intermod_UL_824-849MHz-838.1MHz-Drive 4G-X

Test-Set up Photos

Test Set up-FUSION 2.0

Test Set up-DRIVE 4G-X