Cellphone-Mate, Inc.

TEST REPORT FOR

Mobile Wideband Consumer Booster
Model: Fusion2Go

Tested To The Following Standards:

FCC Part 22H

Report No.: 96696-10

Date of issue: March 12, 2015

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

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.

Testing the Future
CKC LABORATORIES, INC.

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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Fremont, CA 94538

Representative: Hongtao Zhan
Customer Reference Number: CKC20150204

REPORT PREPARED BY:

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Project Number: 96696

DATE OF EQUIPMENT RECEIPT: February 4, 2015
DATE(S) OF TESTING: February 4-25, 2015
March 3-5, 2015

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	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Fremont	US0082	SL2-IN-E-1148R	3082B-1	958979	A-0149

SUMMARY OF RESULTS

Standard / Specification: FCC Part(s) 2 / 22H

Test Procedure	Description	Modifications*	Results
2.1046	RF Power Output	NA	NA[1]
2.1047	Modulation Characteristics	NA	NA[2]
2.1049	Occupied Bandwidth	NA	Pass
2.1051 / 22.917	Spurious Emissions at Antenna Terminals	NA	Pass
2.1053 / 22.917(a)	Field Strength of Spurious Radiation	NA	Pass
2.1055	Frequency Stability	NA	NA[3]

NA = Not applicable
NA[1] = A different standard applies; see applicable test report.
NA[2] = The device does not contain modulated signal generating circuit.
NA[3] = The device does not contain circuit controlling frequency of the output signal.

Modifications* During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions
No modifications were made during testing.

***Modifications listed above must be incorporated into all production units.**

Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

The following model was tested by CKC Laboratories:
Mobile Wideband Consumer Booster - Model: Fusion 5S Mobile

Since the time of testing the manufacturer has chosen to use the following model name in its place. Any difference between the names does not affect their EMC characteristics and therefore meets the level of testing equivalent to the tested model name shown on the data. Model: Fusion2Go

EQUIPMENT UNDER TEST

Mobile Wideband Consumer Booster
Manuf: Cellphone-Mate, Inc.
Model: Fusion2Go
Serial: NA

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Switching Power Adapter
Manuf: SureCall
Model: GFP451DA-1238-1
Serial: NA

Signal Generator
Manuf: Agilent
Model: E4438C
Serial: MY42082260

Signal Generator
Manuf: Agilent
Model: E4433B
Serial: US40052164

FCC PART(S) 2 / 22H

2.1049 Occupied Bandwidth

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **Cellphone-Mate, Inc.**
Specification: **7.10 Occupied Band width.**
Work Order #: **96696** Date: 2/16/2015
Test Type: **Conducted Emissions** Time: 16:41:22
Equipment: **Mobile Wideband Consumer Booster** Sequence#: 1
Manufacturer: Cellphone-Mate, Inc. Tested By: Daniel Bertran
Model: Fusion 5S Mobile 120V 60Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	AN03470	Spectrum Analyzer	E4440A	12/2/2013	12/2/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Mobile Wideband Consumer Booster*	Cellphone-Mate, Inc.	Fusion 5S Mobile	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switching Power Adapter	SureCall	GFP451DA-1238-1	NA
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260

Test Conditions / Notes:

The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.

UL: 824-849MHz, 1850-1915 MHz, 1710-1755MHz, 698-716MHz, 776-787MHz
DL: 869-894MHz, 1930-1995 MHz, 2110-2155MHz, 728-746MHz, 746-757MHz

All adjustable settings on the test sample are set at max.

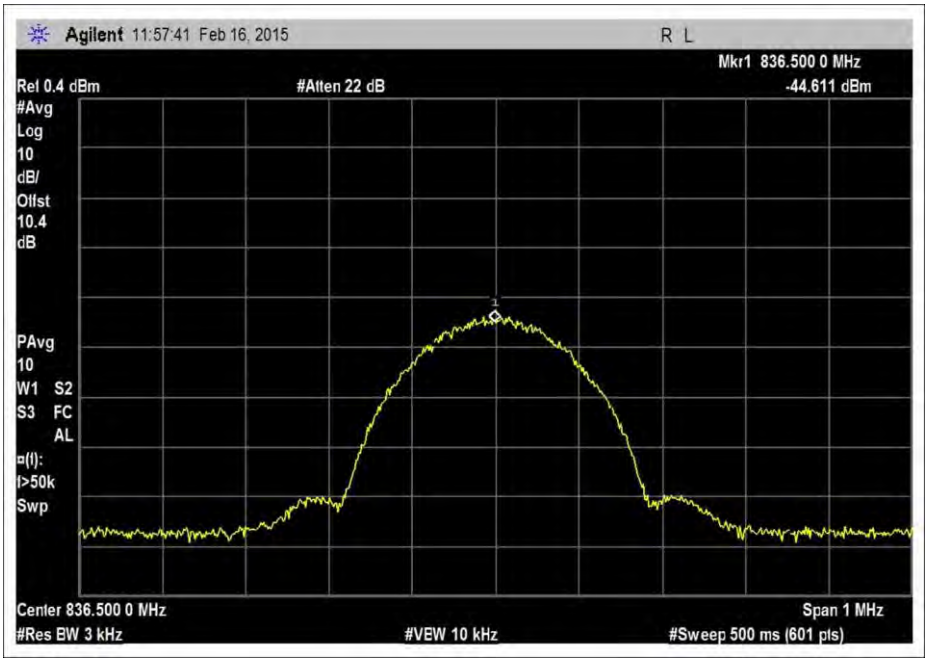
Test environment conditions: 25°C, 40% Relative Humidity, 101.5kPa

Test procedure:
The test was performed in accordance with section 7.10 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v02r01 Dated July 24, 2014.

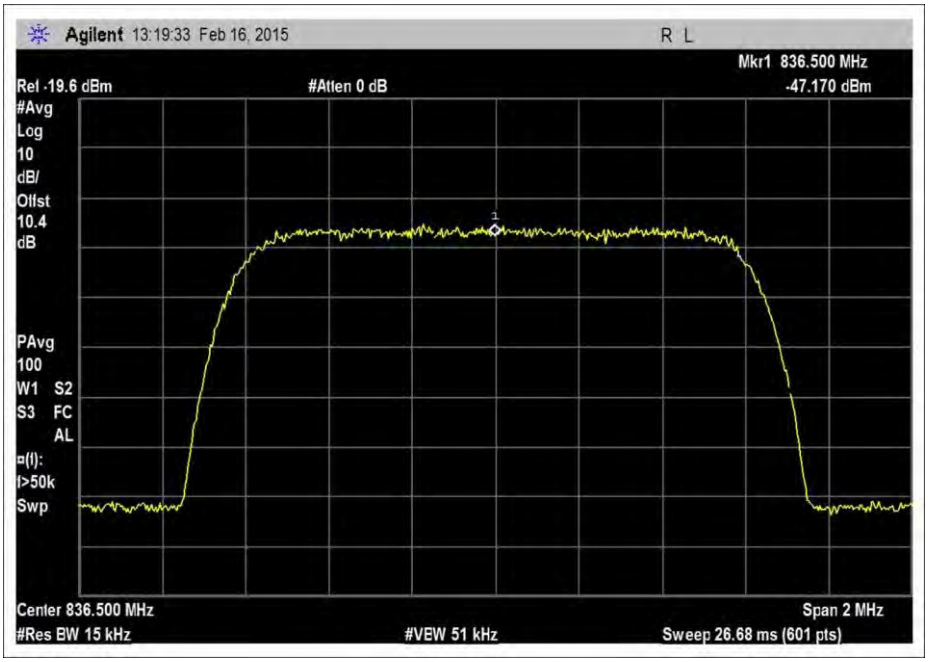
Firmware: V1.0

Test Data

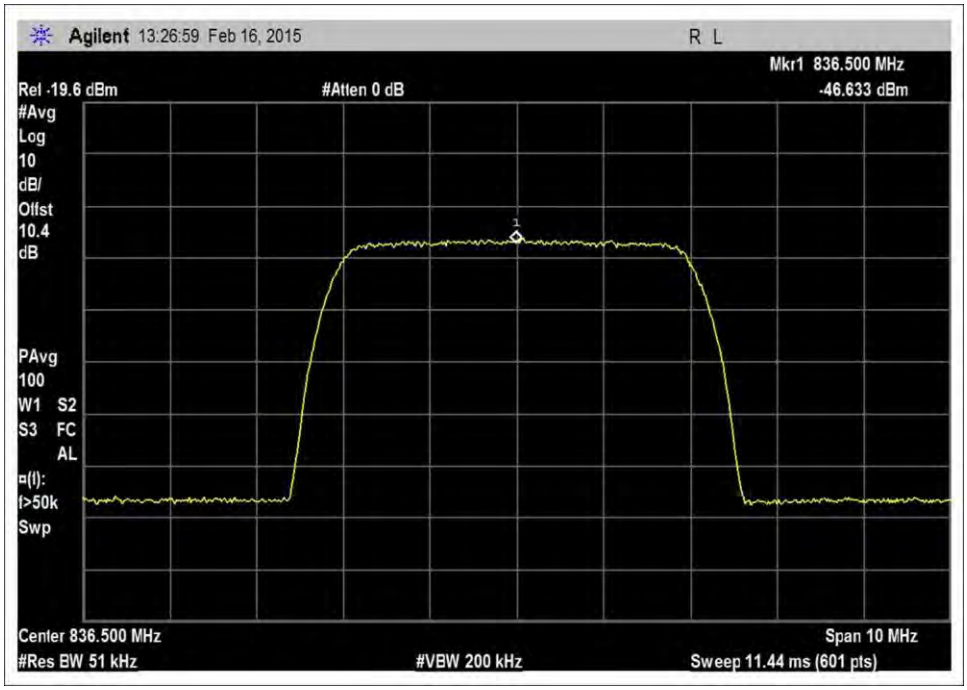
OBW INPUT, UL



7.10_OBW_UL_824-849MHz_GSM__Input

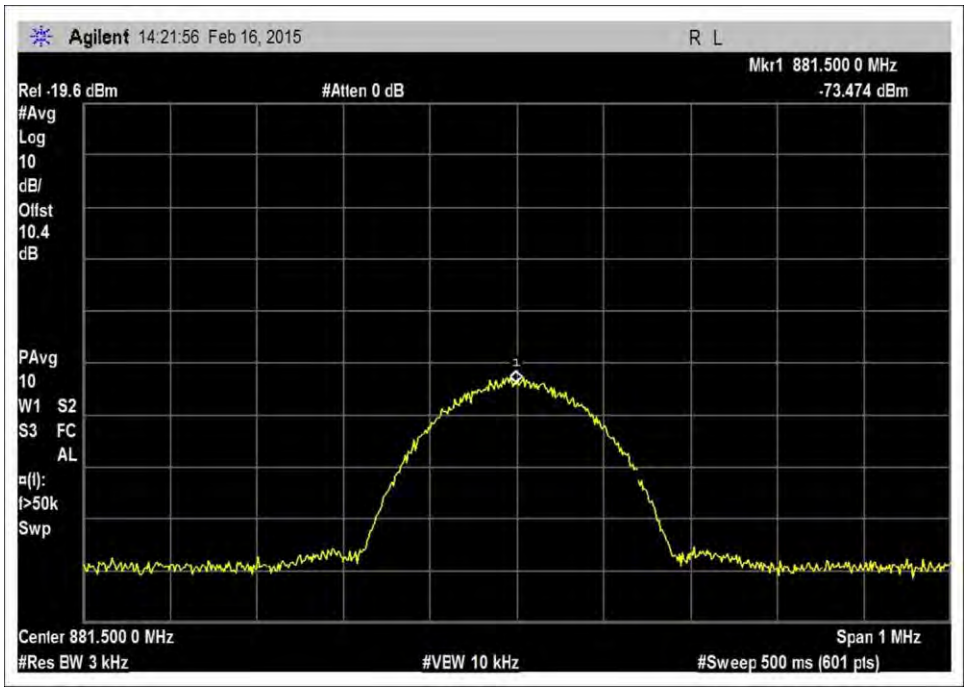


7.10_OBW_UL_824-849MHz_CDMA_Input

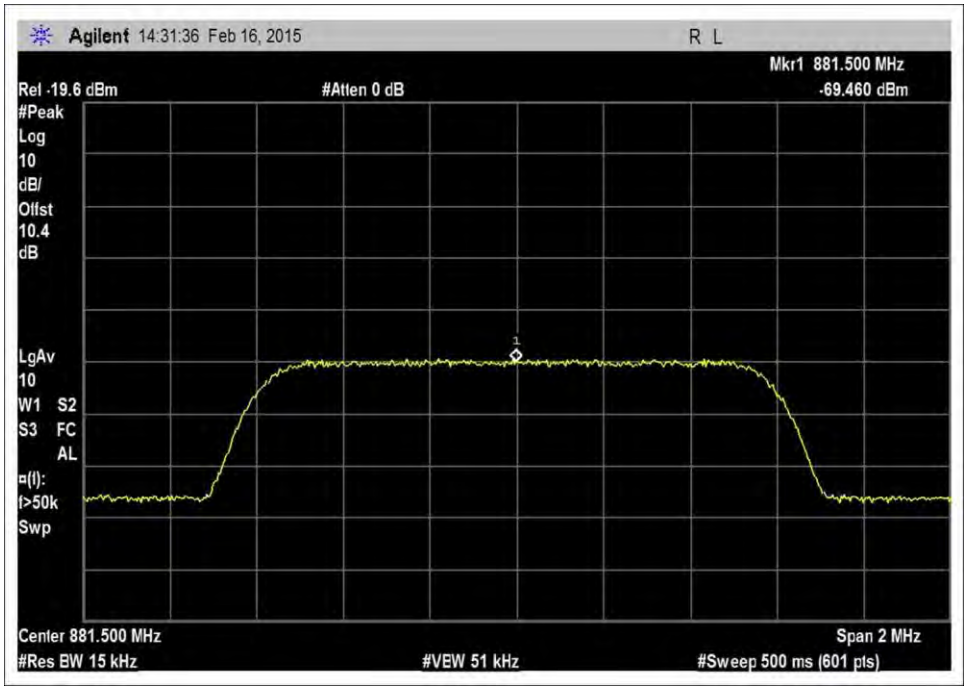


7.10_OBW_UL_824-849MHz_WCDMA_Input

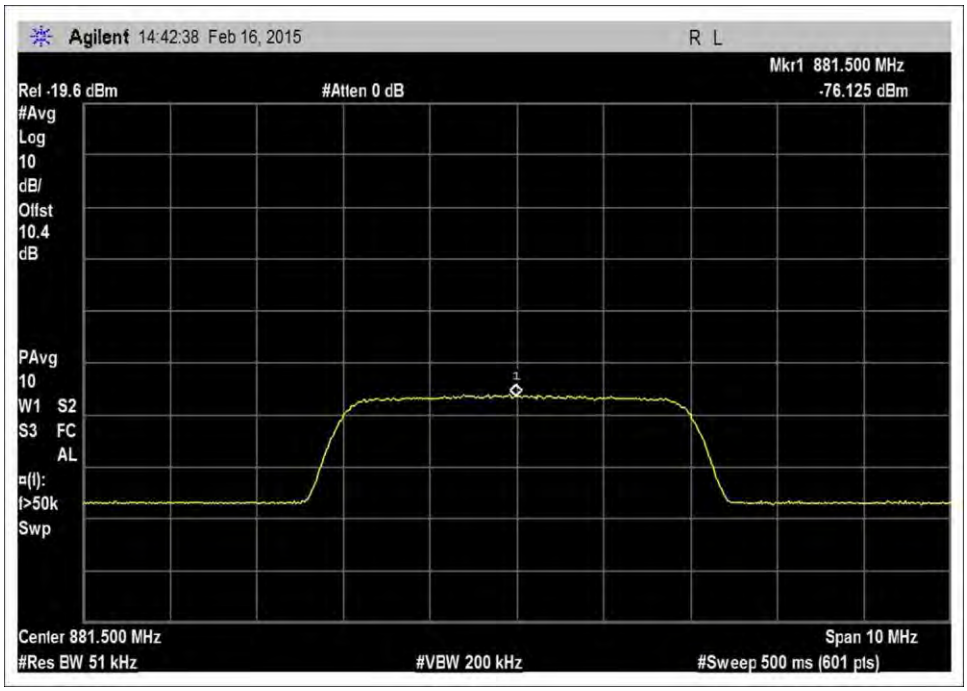
OBW INPUT, DL



7.10_OBW_DL_869-894MHz_GSM__Input

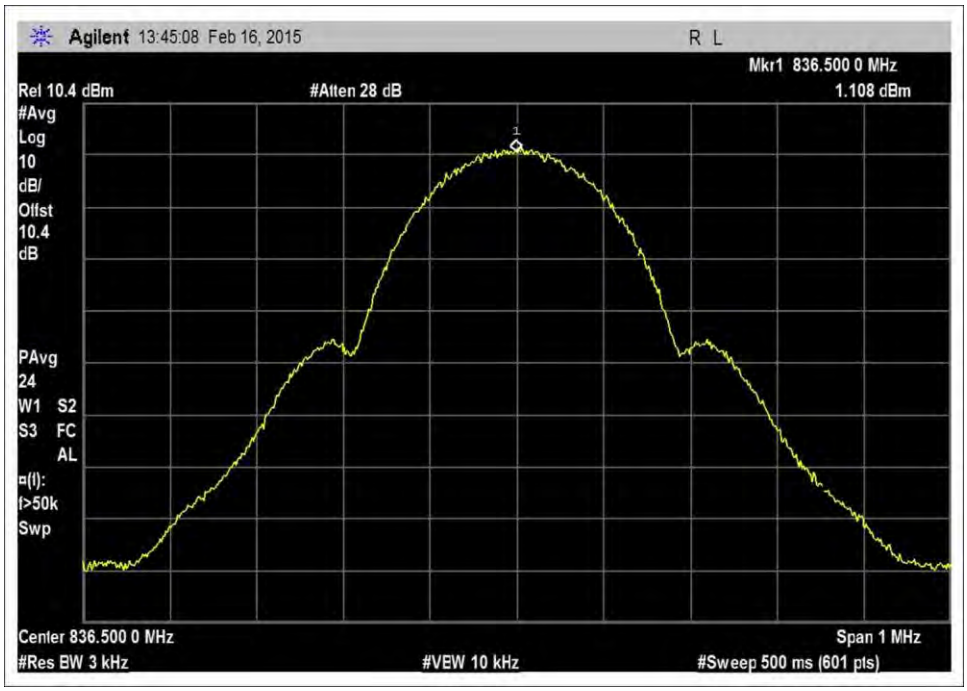


7.10_OBW_DL_869-894MHz_CDMA_Input

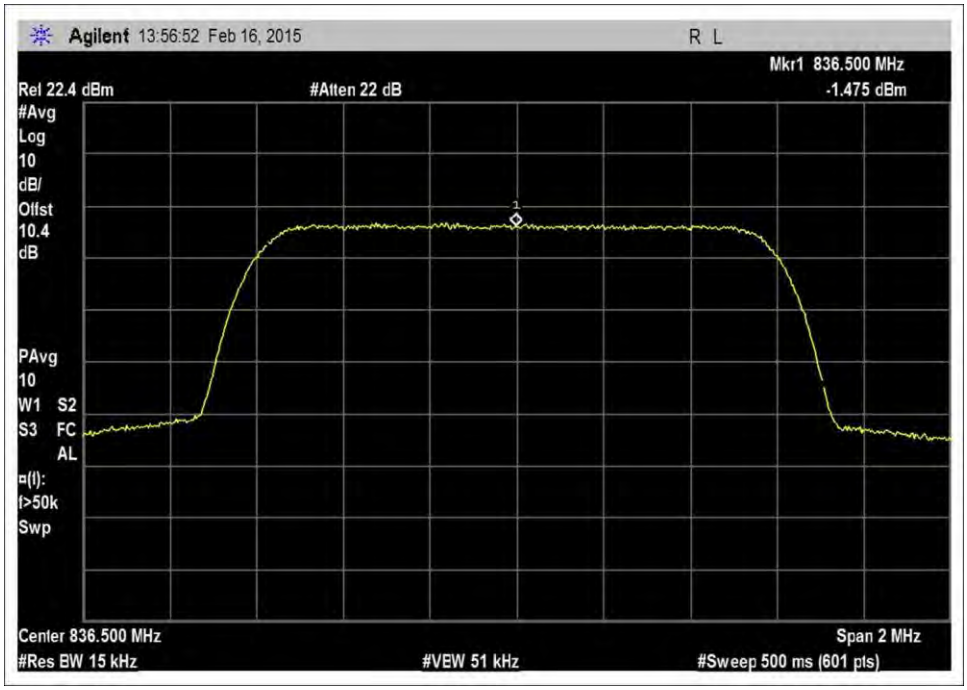


7.10_OBW_DL_869-894MHz_WCDMA_Input

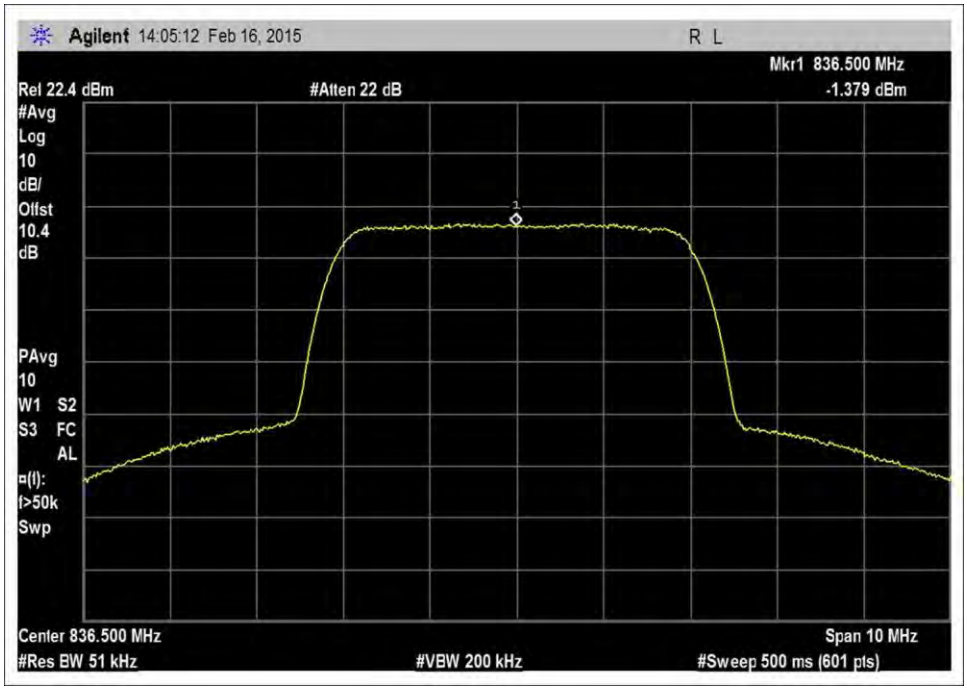
OBW OUPUT, UL



7.10_OBW_UL_824-849MHz_GSM_Output

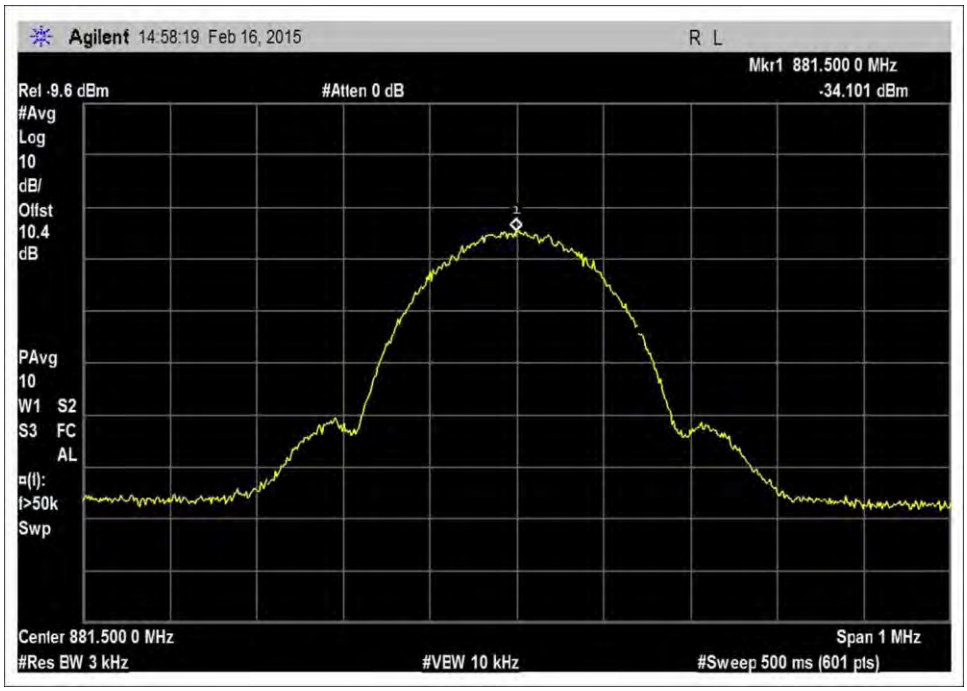


7.10_OBW_UL_824-849MHz_CDMA_Output

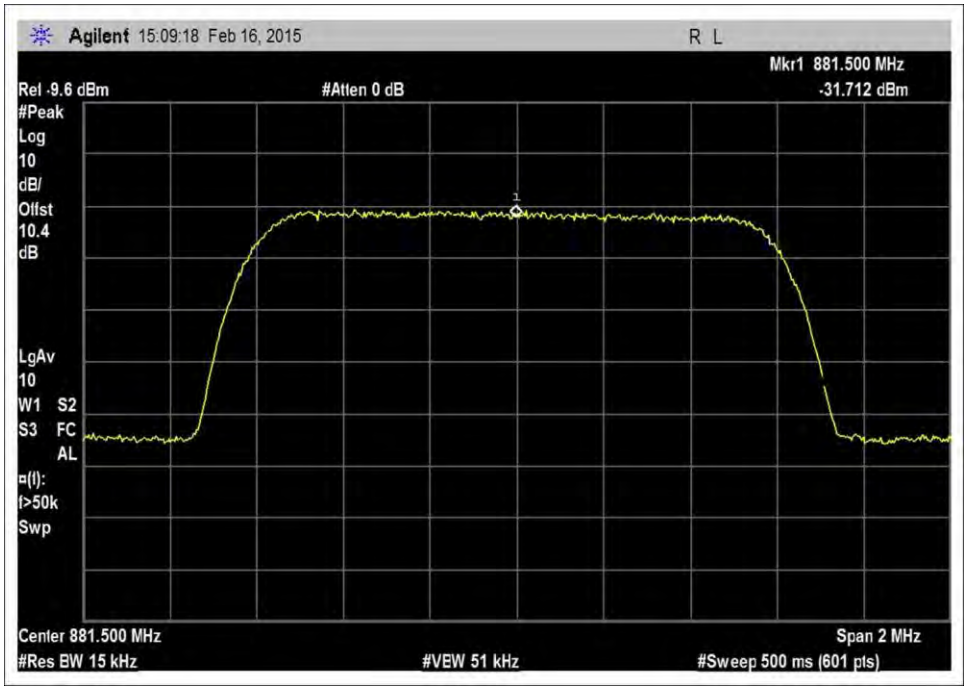


7.10_OBW_UL_824-849MHz_WCDMA_Output

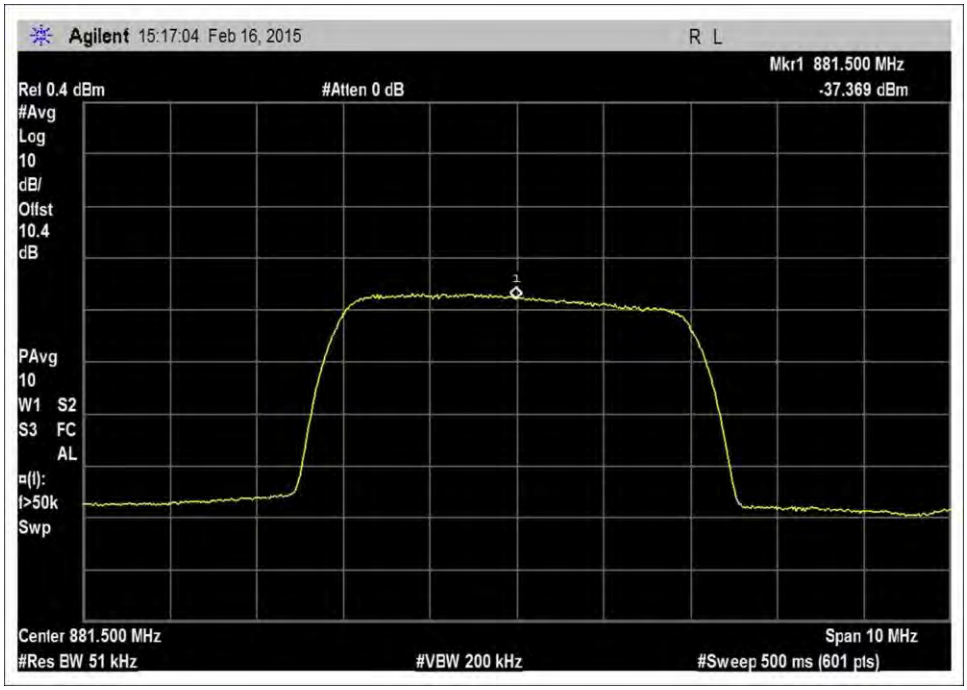
OBW OUPUT, DL



7.10_OBW_DL_869-894MHz_GSM_Output

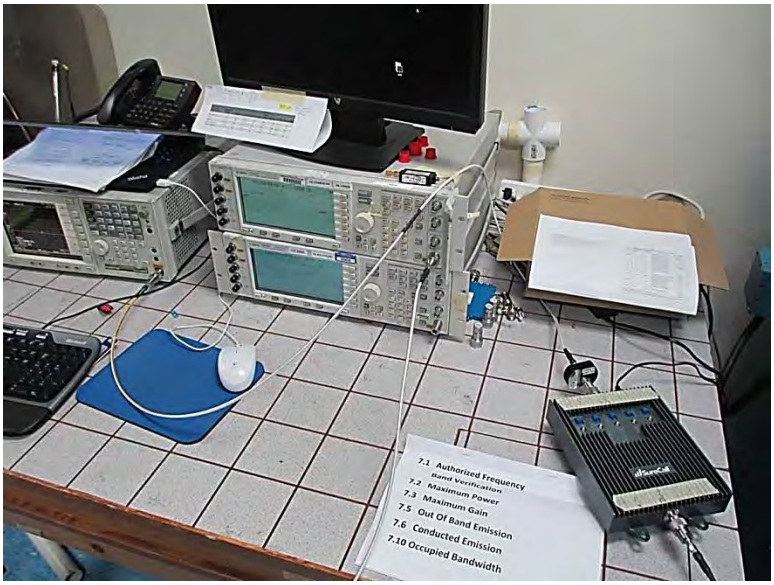


7.10_OBW_DL_869-894MHz_CDMA_Output



7.10_OBW_DL_869-894MHz_WCDMA_Output

Test Setup Photo(s)



2.1051 Spurious Emissions at Antenna Terminals

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer:	**Cellphone-Mate, Inc.**		
Specification:	**47 CFR Â§22.917 Spurious Emissions**		
Work Order #:	**96696**	Date:	2/16/2015
Test Type:	**Conducted Emissions**	Time:	16:41:22
Equipment:	**Mobile Wideband Consumer Booster**	Sequence#:	1
Manufacturer:	Cellphone-Mate, Inc.	Tested By:	Daniel Bertran
Model:	Fusion 5S Mobile		120V 60Hz
S/N:	NA		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T2	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	AN03470	Spectrum Analyzer	E4440A	12/2/2013	12/2/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Mobile Wideband Consumer Booster*	Cellphone-Mate, Inc.	Fusion 5S Mobile	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switching Power Adapter	SureCall	GFP451DA-1238-1	NA
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260

Test Conditions / Notes:

The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.

UL: 824-849MHz
DL: 869-894MHz

All adjustable settings on the test sample are set at max.

Test environment conditions: Temperature: 25°C, 40% Relative Humidity,101.5kPa

Frequency range of measurement = 9 kHz- 10GHz.

9 kHz - 150 kHz ->	RBW=200 Hz	VBW=200 Hz
150 kHz - 30 MHz ->	RBW=9 kHz	VBW=9 kHz
30 MHz - 1000MHz ->	RBW=120 kHz	VBW=120 kHz
1000MHz-10000MHz ->	RBW=1 MHz	VBW=1 MHz

Test procedure:
The test was performed in accordance with section 7.6 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v02r01 Dated July 24, 2014

Firmware: V1.0

Test Data

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Ant Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1673.000M	56.3	+10.0	+0.9			+0.0	67.2	94.0 UL Part22	-26.8	Ant P
2	2509.617M	50.3	+9.6	+1.1			+0.0	61.0	94.0 UL Part22	-33.0	Ant P
3	1762.892M	35.2	+10.1	+0.9			+0.0	46.2	94.0 DL Part22	-47.8	Ant P
4	1803.450M	23.8	+10.0	+0.9			+0.0	34.7	94.0 UL Part22	-59.3	Ant P

LIMIT LINE FOR SPURIOUS CONDUCTED EMISSION

REQUIRED ATTENUATION = 43+10 LOG P DB

Limit line (dBuV) = V_{dBuv} - Attenuation

$$V_{dBuV} = 20 \text{ Log } \frac{V}{1 \text{ x } 10^{-6}}$$

$$= 20\left(\text{Log } V - \text{Log } 1 \text{ x } 10^{-6}\right)$$

$$= 20 \text{ Log } V - 20 \text{ Log} 1 \text{ x } 10^{-6}$$

$$= 20 \text{ Log } V - 20(-6)$$

$$= 20 \text{ Log } V + 120$$

$$\text{Attenuation} = 43 + 10 \text{ Log } P$$

$$= 43 + 10 \text{ Log } \frac{V^2}{R}$$

$$= 43 + 10\left(\text{Log } V^2 - \text{Log } R\right)$$

$$= 43 + 10\left(2 \text{ Log } V - \text{Log } R\right)$$

$$= 43 + 20 \text{ Log } V - 10 \text{ Log } R$$

Limit line = V_{dBuv} - Attenuation

= 20 Log V + 120 – (43 + 20 Log V – 10Log R)

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

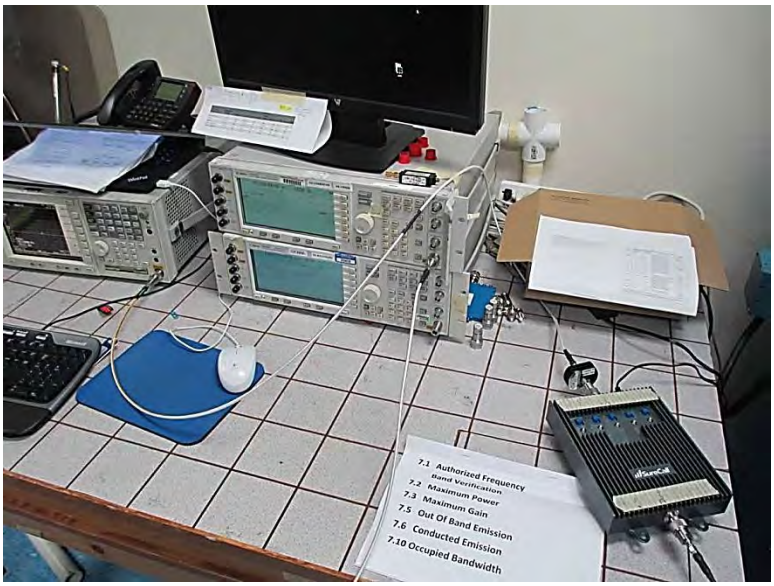
= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 120 – 43 + 10 Log 50 Note : R = 50 Ω

= 120 –43 + 16.897

= 94 dBuV at any power level

Test Setup Photo(s)



2.1053 Field Strength of Spurious Radiation

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **Cellphone-Mate, Inc.**
Specification: **47 CFR §22.917(a) Spurious Emissions**
Work Order #: **96696** Date: 2/23/2015
Test Type: **Maximized Emissions** Time: 14:10:23
Equipment: **Mobile Wideband Consumer Booster** Sequence#: 1
Manufacturer: Cellphone-Mate, Inc. Tested By: Daniel Bertran
Model: Fusion 5S Mobile
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00852	Biconilog Antenna	CBL 6111C	11/24/2014	11/24/2016
T2	ANP00880	Cable	RG214U	6/13/2014	6/13/2016
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
T4	AN00686	Preamp	8447D Opt 010	5/27/2014	5/27/2016
T5	ANP01183	Cable	CNT-195	9/3/2013	9/3/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015
	AN02113	Horn Antenna	3115	2/3/2015	2/3/2017
	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
	ANP01210	Cable	FSJ1P-50A-4A	1/15/2015	1/15/2017
	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
	ANP00928	Cable	various	1/23/2014	1/23/2016
	AN01413	Horn Antenna	84125-80008	11/25/2014	11/25/2016
	AN02810	Preamp	83051A	2/19/2014	2/19/2016
	ANP00929	Cable	various	1/23/2014	1/23/2016
	ANP06125	Cable	32022-29094K-29094K-72TC	6/4/2014	6/4/2016
	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Mobile Wideband Consumer Booster*	Cellphone-Mate, Inc.	Fusion 5S Mobile	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switching Power Adapter	SureCall	GFP451DA-1238-1	NA
Signal Generator	Agilent	E4433B	US40052164
50 ohm Load	Weinschel	1424-4	21874

Test Conditions / Notes:

The equipment under test (EUT) is placed on the Styrofoam table top. EUT set at maximum gain.
A remotely located signal generator is connected to input of EUT.

Evaluation of DL path was performed with signal fed into the Outside (Donor) antenna port while Inside (Server) antenna port terminated with 50 Ohm load.
Evaluation of UL path was performed with signal fed into the Inside (Server) antenna port while Outside (Donor) antenna port terminated with 50 Ohm load.

UL: 824-849MHz
DL: 869-894MHz

TXFreq = > Center frequency of above listed bands.
Modulation=> CW

Frequency range of measurement = 9 kHz- 22GHz.

9 kHz - 150 kHz ->	RBW=200 Hz	VBW=200 Hz
150 kHz - 30 MHz ->	RBW=9 kHz	VBW=9 kHz
30 MHz - 1000MHz ->	RBW=120 kHz	VBW=120 kHz
1000MHz-22000MHz ->	RBW=1 MHz	VBW=1 MHz

Test environment conditions: Temperature: 22°C, Relative Humidity: 45%, Pressure: 101.5kPa
FC3

Test procedure:
The test was performed in accordance with section 7.12 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v02r01 Dated July 24, 2014.

Firmware: V1.0

No emission above 1GHz was found.

Test Data

Operating Frequency(ies):	UL 824-849MHz, DL 869-894MHz	
Operational Mode(s):	Continuous TX	
Highest Measured Power:	18.5	dBm
Measurement Distance:	3	meters

Limit Definition:

Frequency Range	Limit (dBc)	Limit Calculation
9kHz - 22GHz	31.5	43+10*LOG(P)

Frequency (MHz)	Reference Level (dBm)	Measured (dBc)	Margin	Antenna Polarity
UL				
40.647	-61.0	79.5	-48.0	Vertical
88.668	-57.7	76.2	-44.7	Vertical
113.645	-56.8	75.3	-43.8	Vertical
121.027	-60.0	78.5	-47.0	Vertical
148.228	-58.6	77.1	-45.6	Vertical
153.284	-61.9	80.4	-48.9	Horizontal
262.134	-56.1	74.6	-43.1	Horizontal
340.128	-56.3	74.8	-43.3	Horizontal
407.675	-63.3	81.8	-50.3	Horizontal
900.167	-63.3	81.8	-50.3	Horizontal
DL				
85.331	-56.4	74.9	-43.4	Vertical
89.578	-57.3	75.8	-44.3	Vertical
108.387	-56.5	75.0	-43.5	Vertical
117.993	-55.4	73.9	-42.4	Vertical
156.217	-58.5	77.0	-45.5	Vertical
89.679	-61.4	79.9	-48.4	Horizontal
112.735	-60.7	79.2	-47.7	Horizontal
250.714	-60.0	78.5	-47.0	Horizontal
268.208	-60.6	79.1	-47.6	Horizontal
343.287	-60.9	79.4	-47.9	Horizontal

Test Setup Photo(s)

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or carrot ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.