



FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

**GSM850~1900 + WCDMA 850~1900 + LTE SMART PHONE
with BLUETOOTH + BLE and WLAN 2.4GHz**

**MODEL NUMBER: LGMS659, LG-MS659, MS659, LG-P659,
LGP659, P659**

FCC ID: ZNFMS659

REPORT NUMBER: 13U14990-3

ISSUE DATE: May 16, 2013

Prepared for

**LG ELECTRONICS MOBILECOMM U.S.A., INC.
1000 SYLVAN AVENUE
ENGLEWOOD CLIFFS, NEW JERSEY 07632**

Prepared by

**UL VERIFICATION SERVICES
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888**



NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC.
1000 SYLVAN AVENUE
ENGLEWOOD CLIFFS, NEW JERSEY 07632

EUT DESCRIPTION: GSM850~1900 + WCDMA 850~1900 + LTE SMART PHONE with
BLUETOOTH + BLE and WLAN 2.4GHz

MODEL: LGMS659, LG-MS659, MS659, LG-P659, LGP659, P659

SERIAL NUMBER: 0GGG7

DATE TESTED: May 16, 2013

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Verification Services Inc. By:



PHILIP KIM
WISE PROGRAM MANAGER
UL Verification Services Inc.

Tested By:



ROY ZHENG
WISE LAB TECH III
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an LTE Phone with Bluetooth and WLAN capability that is manufactured by LG Electronics.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	Basic GFSK	11.18	13.12
2402 - 2480	Enhanced 8PSK	11.43	13.90

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an INTEGRATED antenna, with a maximum gain of -0.5 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was MS795_LAP8930JR130304.

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, and Z. It was determined that Y-orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y-orientation with AC adapter and headset.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG	MCS-01WR	RB310020452	DoC
Headset	Cresyn	EAB62410801	NA	NA

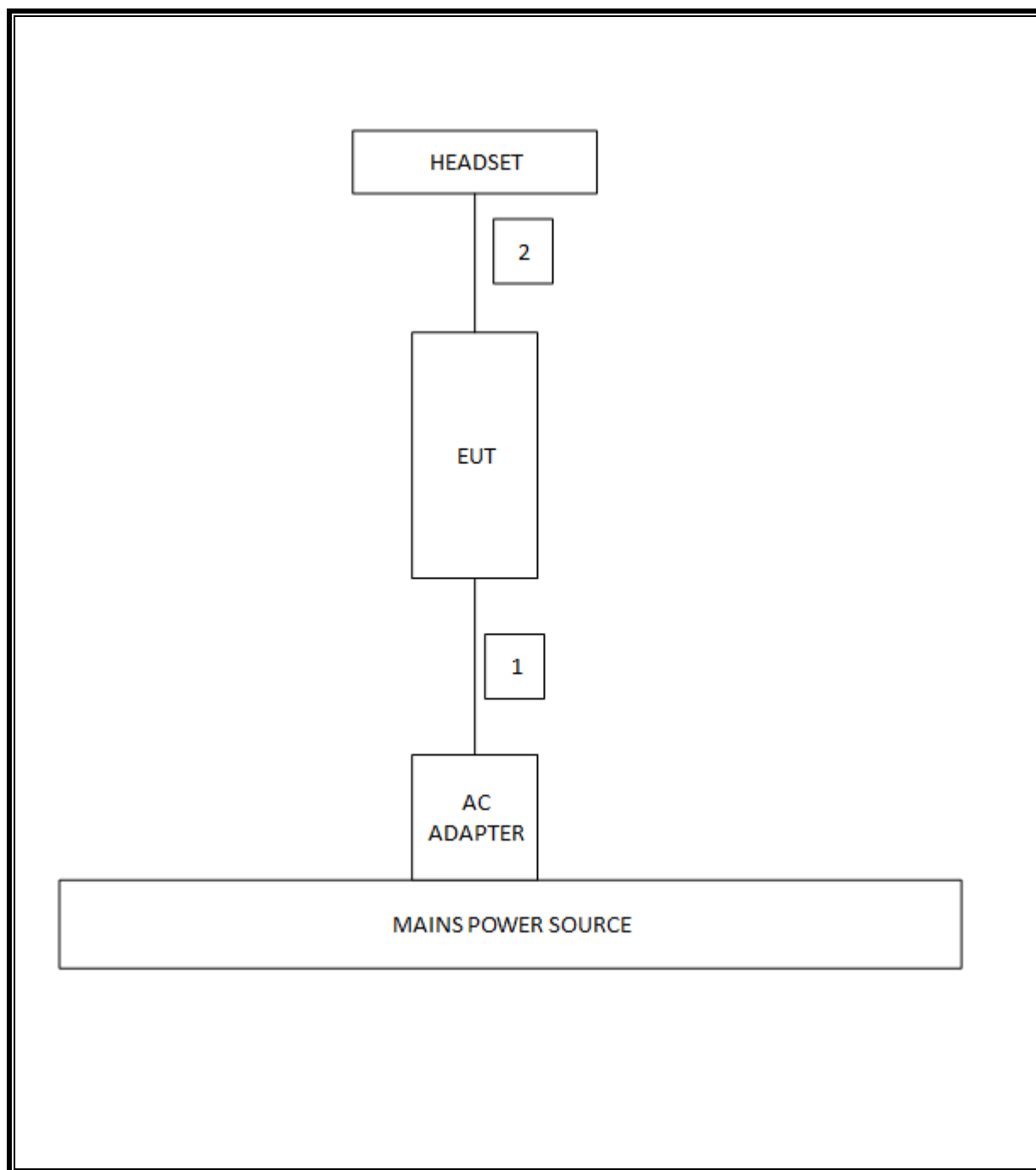
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	Mini-USB	Shielded	1.2m	N/A
2	Headset	1	Mini-Jack	Unshielded	1m	N/A

TEST SETUP

The EUT is continuously communicating to the Bluetooth tester during the tests.
EUT was set in the Hidden menu mode to enable BT communications.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	Asset	Cal Due
Power Meter	Agilent / HP	N1911A	MY45100242	7/27/2013
Peak / Average Power Sensor	Agilent / HP	E9323A	US40411556	7/26/2013
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00996	5/11/2013
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	8/8/2013
LISN, 30 MHz	FCC	50/250-25-2	C00626	1/14/2014
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00996	5/11/2013
Antenna, Horn, 18 GHz	EMCO	3115	C00945	11/12/2013
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	10/22/2013
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01011	4/23/2013
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	1/14/2014
Antenna, Horn, 18 GHz	ETS	3117	C01005	4/23/2013
CBT Bluetooth Tester	R & S	CBT	None	5/15/2013

7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

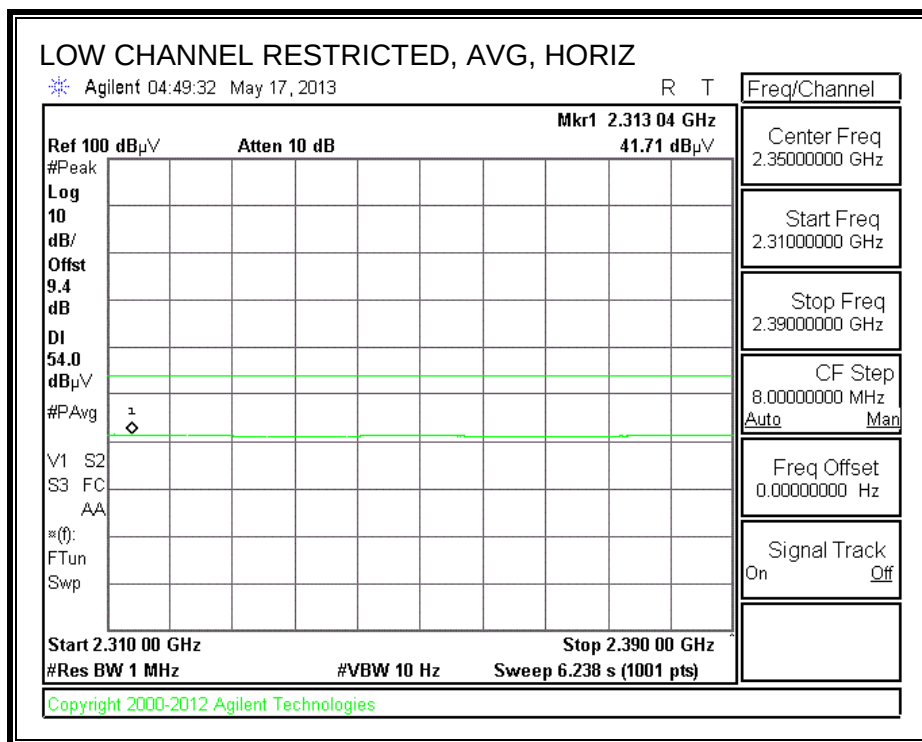
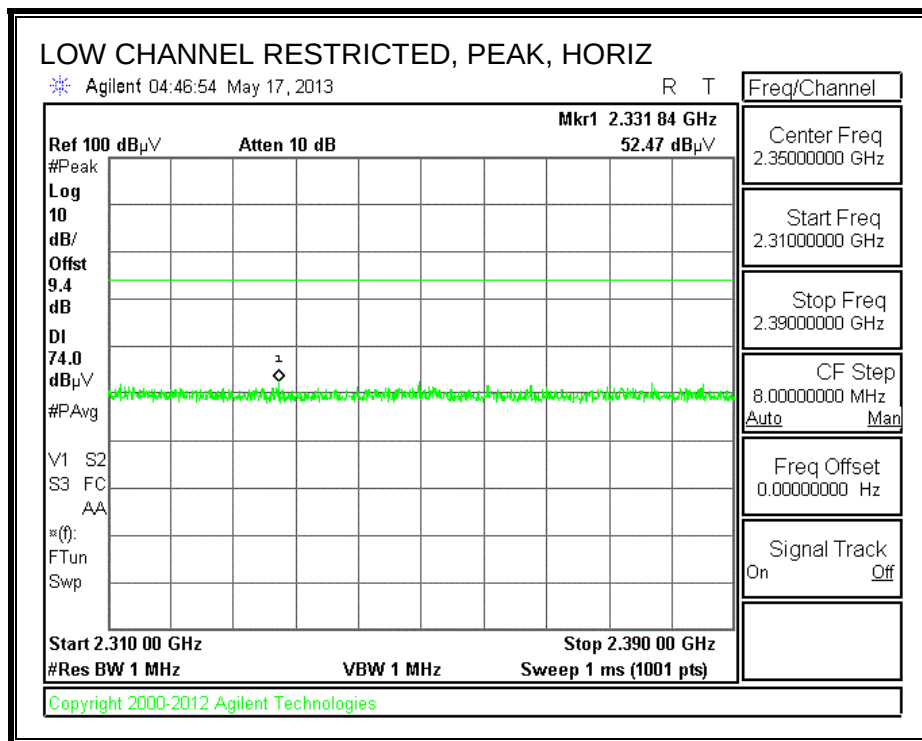
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

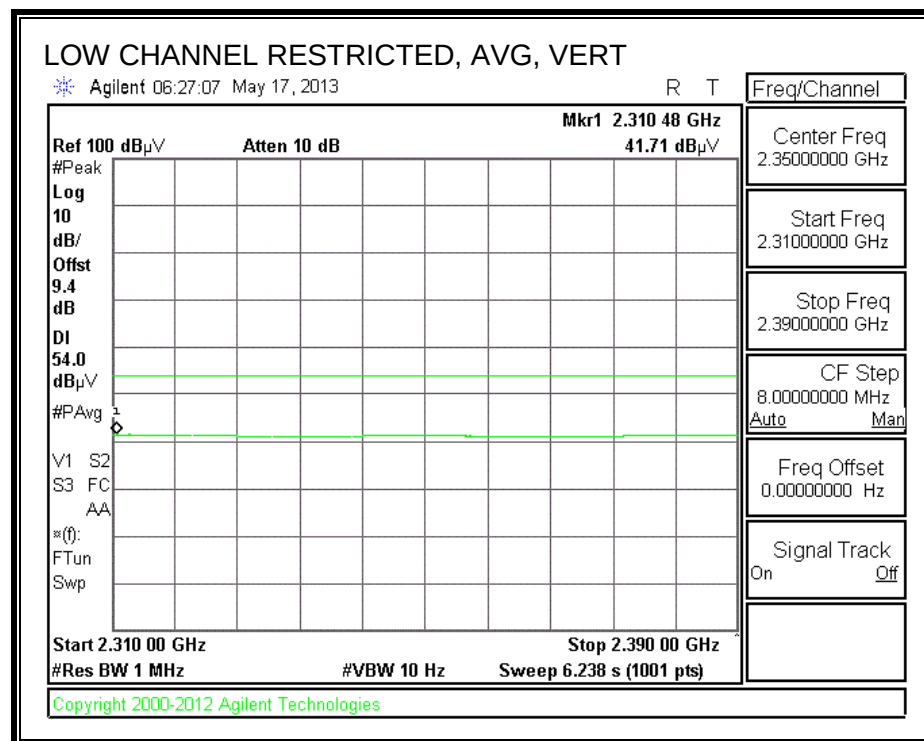
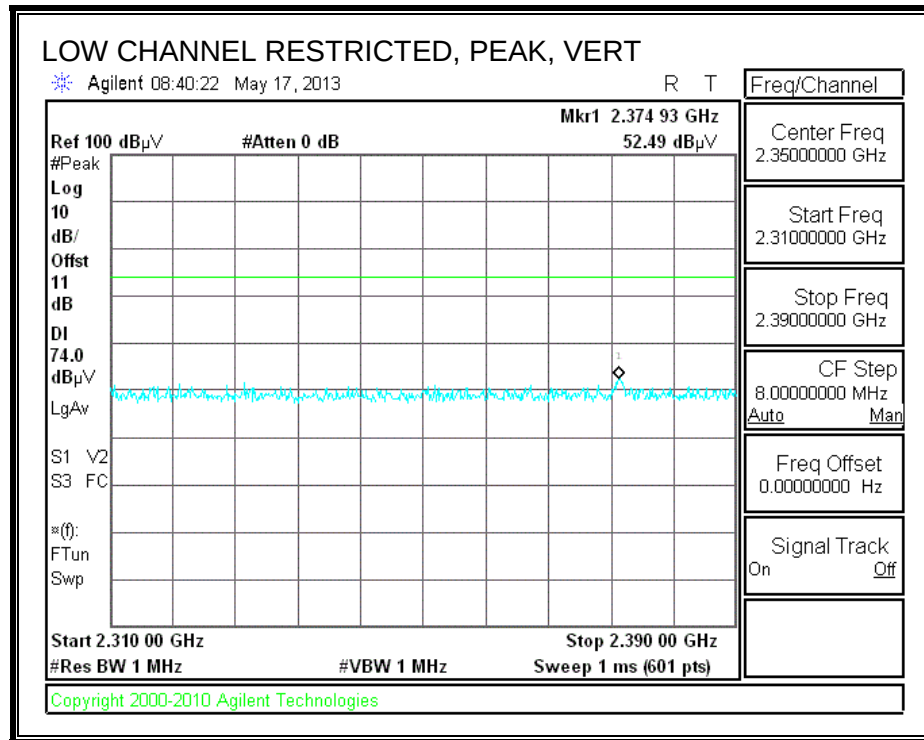
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

7.2. TRANSMITTER ABOVE 1 GHz

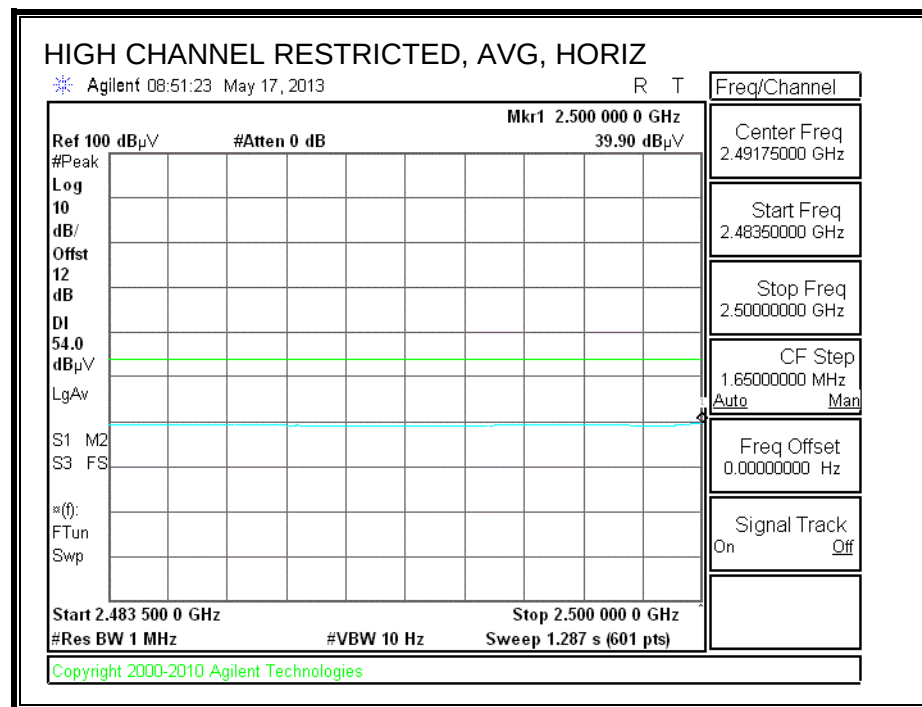
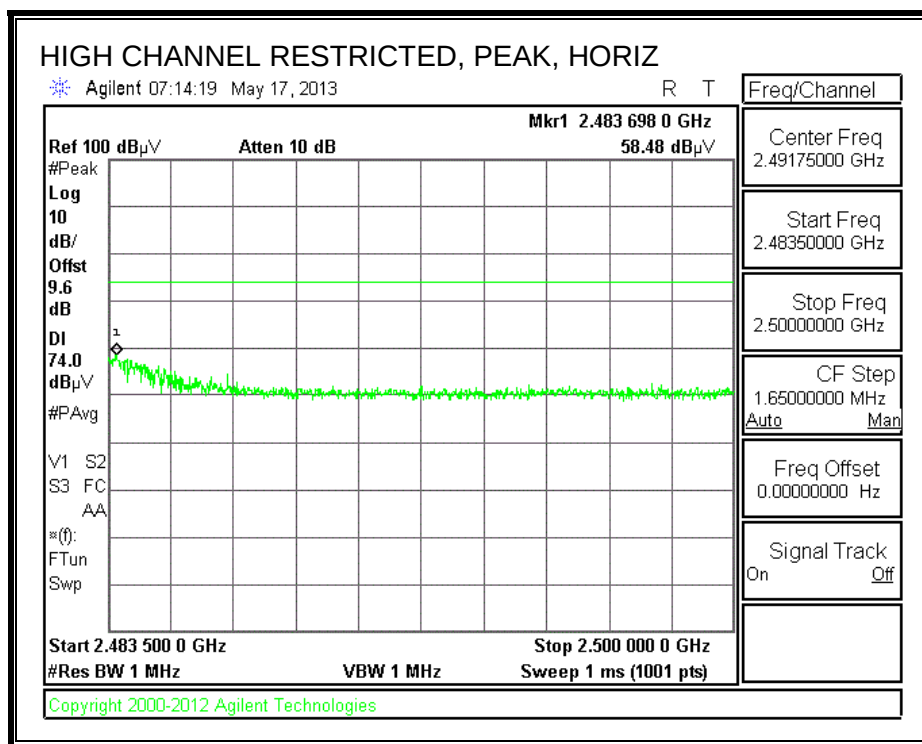
7.2.1. BASIC DATA RATE GFSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

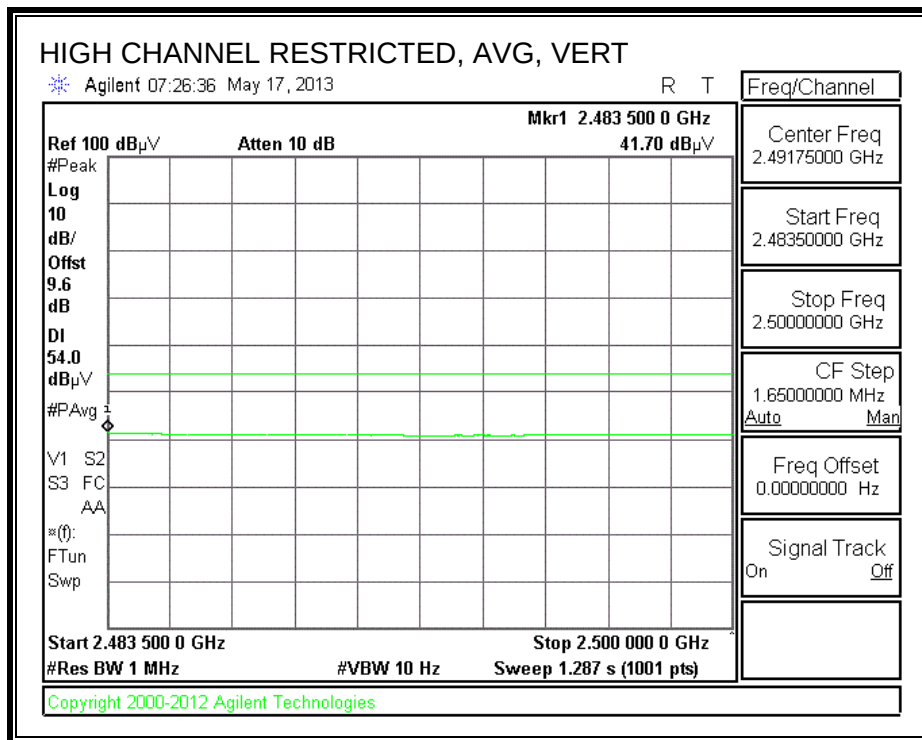
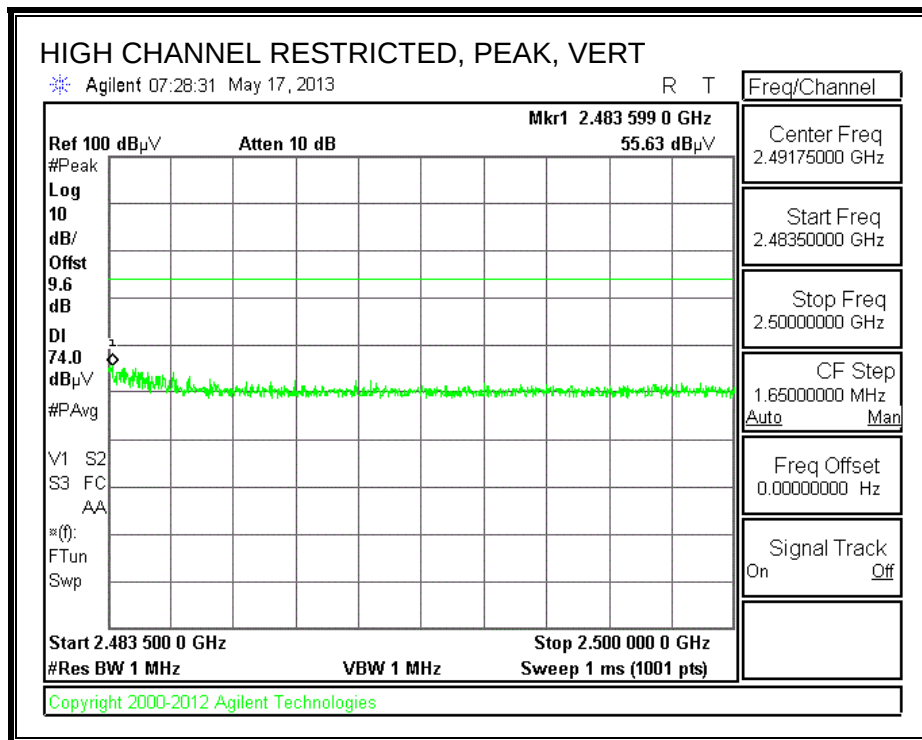


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

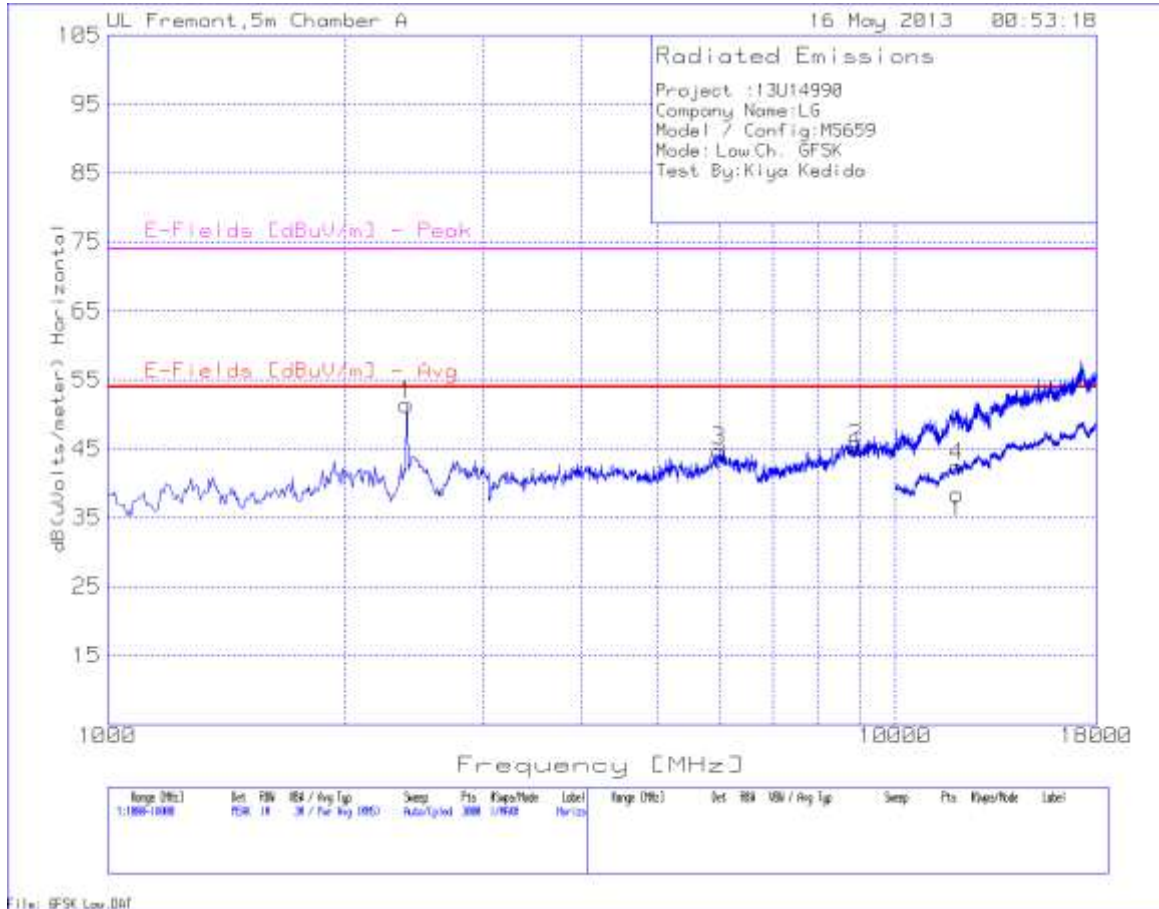


RESTRICTED BANEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

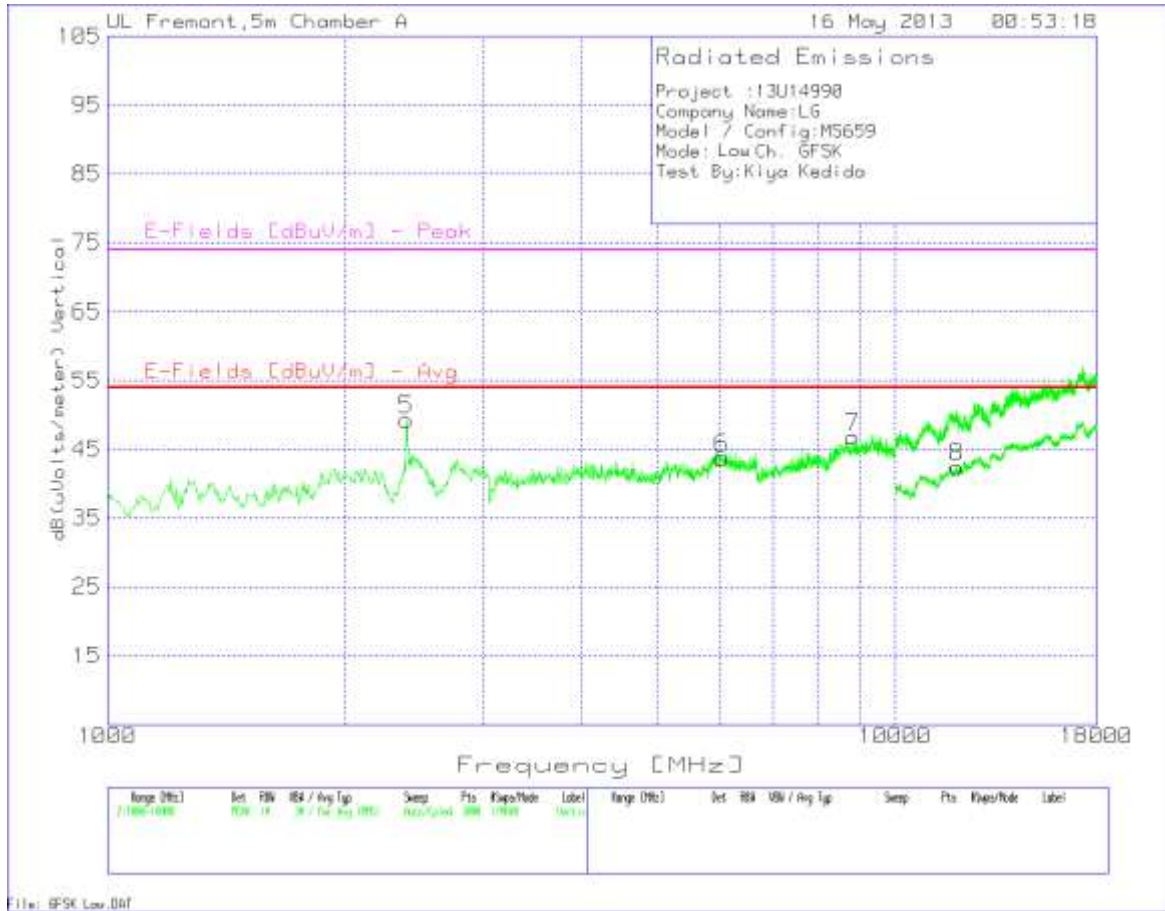
LOW HORIZONTAL



Horizontal 1000 - 18000MHz														
Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolts s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
1	2398.734	50.86	PK	32.1	-36.9	4.4	0.9	51.36	53.97	-2.61	74	-22.64	200	Horz
2	8916.722	35.07	PK	35.8	-36.1	9.8	0.5	45.07	53.97	-8.9	74	-28.93	100	Horz
3	5983.344	37.11	PK	35.2	-35.6	7.7	0.2	44.61	53.97	-9.36	74	-29.39	100	Horz

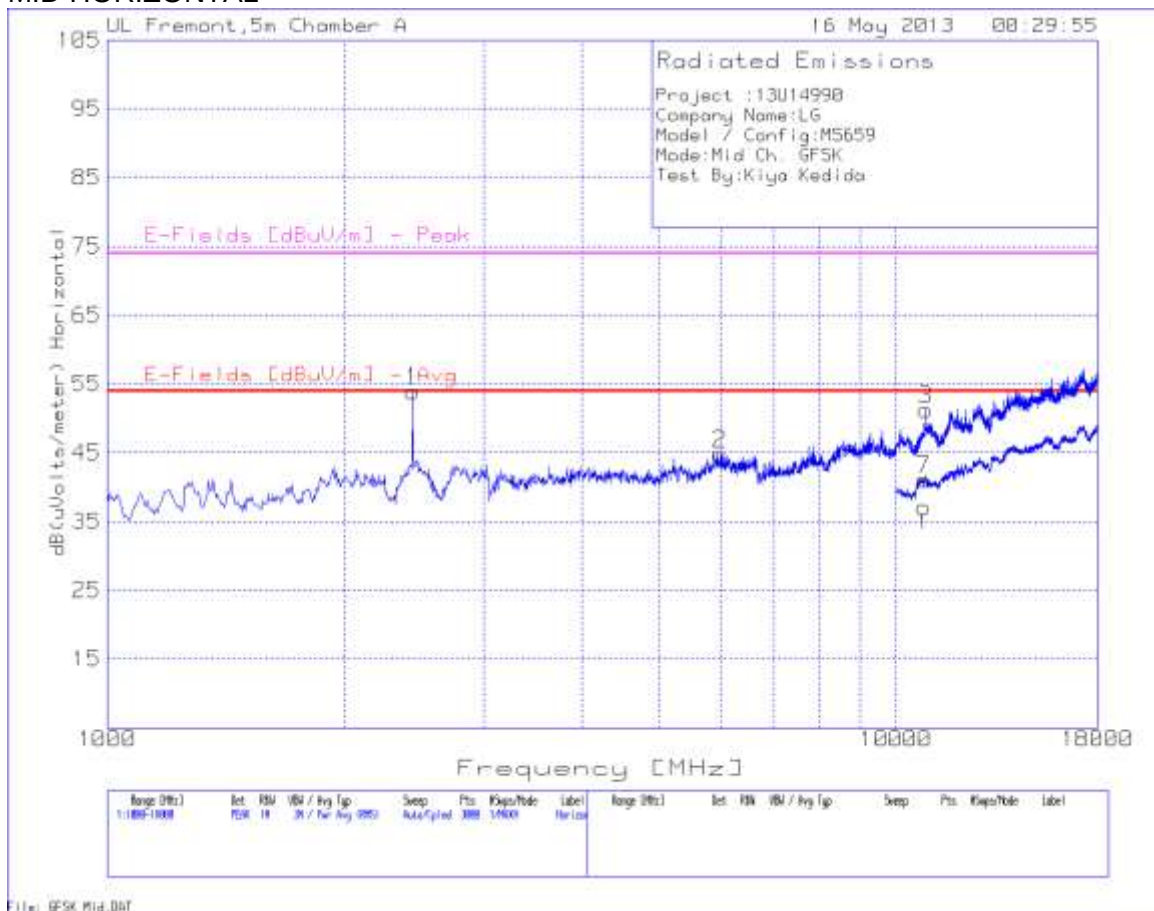
Horizontal 10000 - 18000MHz														
Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolts s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
4	11967.016	27.33	PK	38.8	-35.7	11.4	0.6	42.43	53.97	-11.54	74	-31.57	200	Horz

LOW VERTICAL



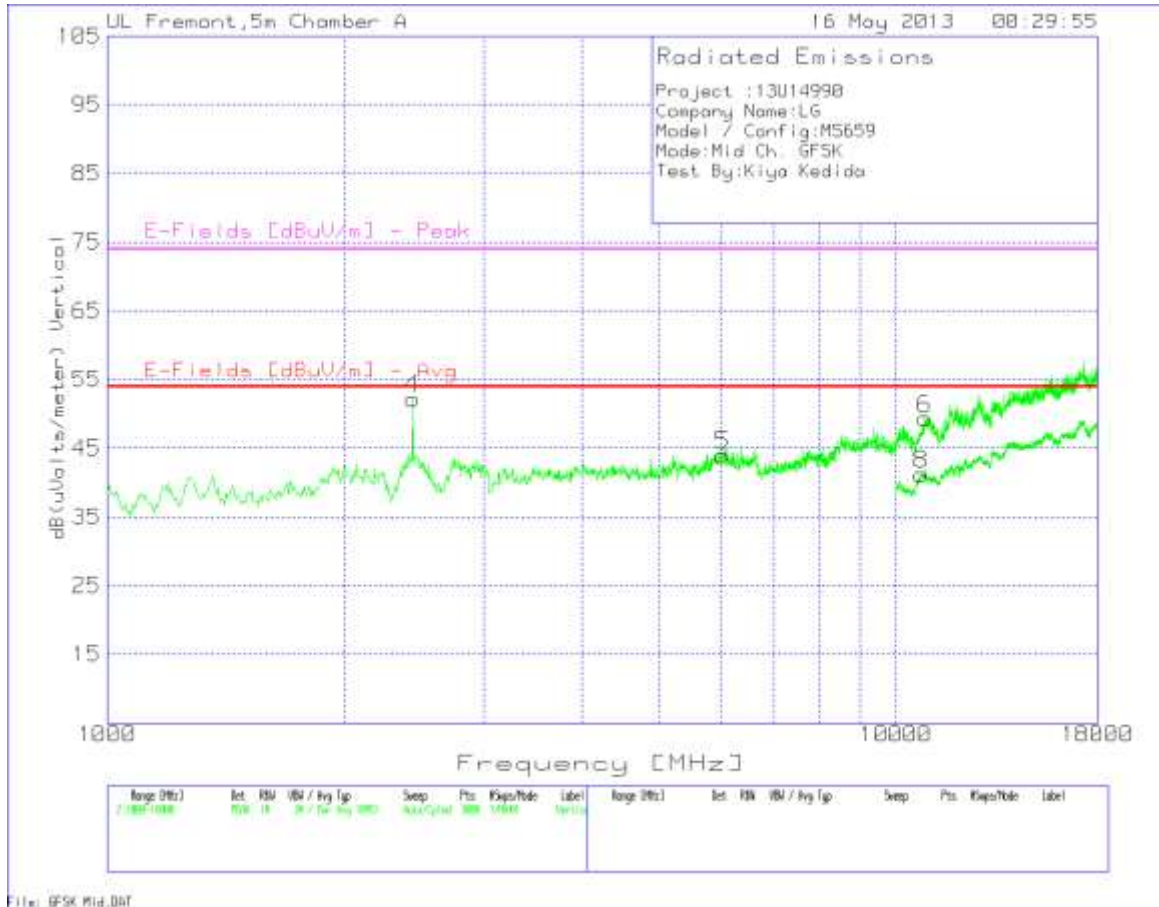
Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolts s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
Vertical 1000 - 18000MHz														
Marker No	Test Freq	Meter Rea	Detector	T136 Ant F	T144 Prea	Cable Fac	T160 BRF	dB(uVolts	E-Fields [d	Margin (d	E-Fields [d	Margin (d	Height [cn	Polarity
5	2398.734	48.81	PK	32.1	-36.9	4.4	0.9	49.31	53.97	-4.66	74	-24.69	200	Vert
6	6028.648	36.25	PK	35.2	-35.6	7.7	0.2	43.75	53.97	-10.22	74	-30.25	100	Vert
7	8831.779	36.93	PK	35.8	-36	9.7	0.4	46.83	53.97	-7.14	74	-27.17	100	Vert
Vertical 10000 - 18000MHz														
Marker No	Test Freq	Meter Rea	Detector	T136 Ant F	T144 Prea	Cable Fac	T160 BRF	dB(uVolts	E-Fields [d	Margin (d	E-Fields [d	Margin (d	Height [cn	Polarity
8	11967.016	27.32	PK	38.8	-35.7	11.4	0.6	42.42	53.97	-11.55	74	-31.58	200	Vert

MID HORIZONTAL



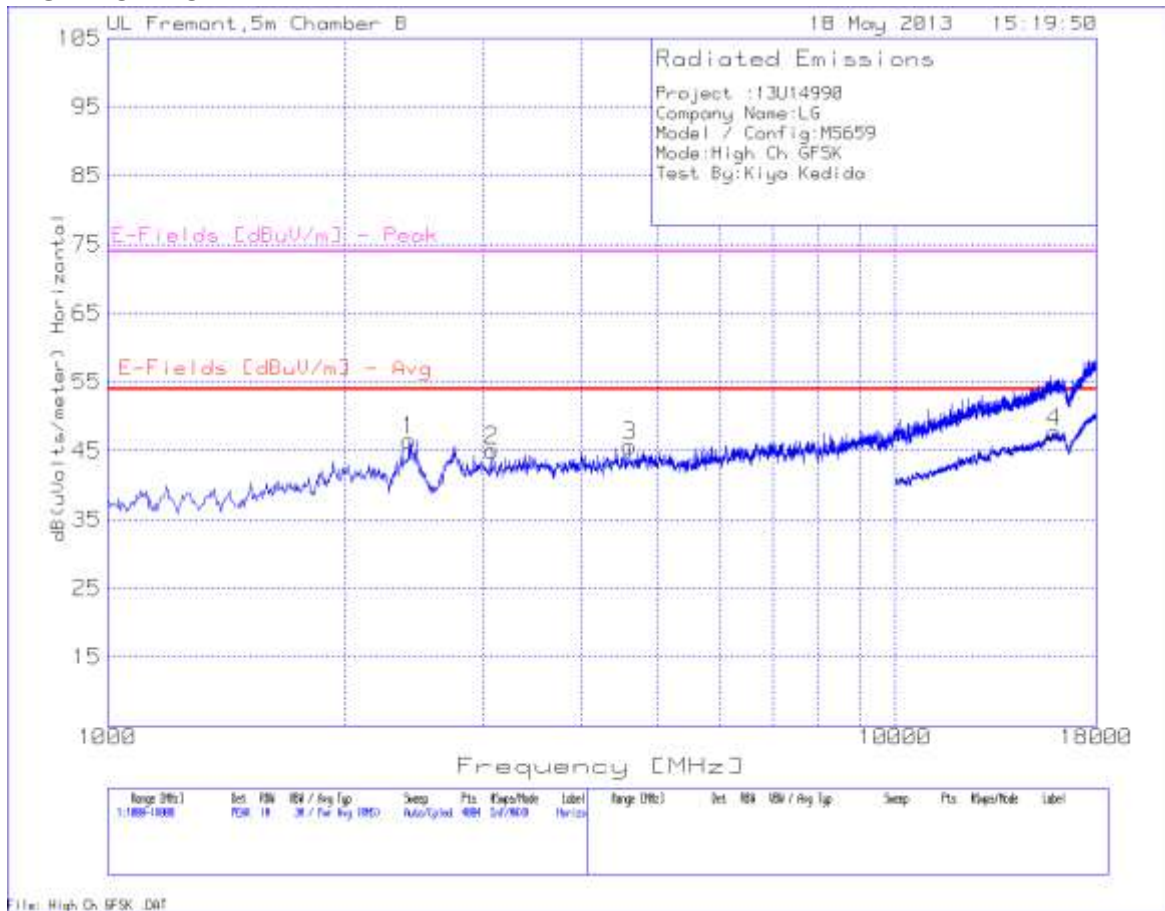
Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/m)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
Horizontal 1000 - 18000MHz														
1	2438.374	53.15	PK	32.3	-36.9	4.5	0.9	53.95	53.97	-0.02	74	-20.05	200	Horz
2	5994.67	37.33	PK	35.2	-35.6	7.7	0.2	44.83	53.97	-9.14	74	-29.17	100	Horz
3	10910.06	37.34	PK	37.9	-35.6	10.9	0.7	51.24	53.97	-2.73	74	-22.76	200	Horz
Horizontal 10000 - 18000MHz														
Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/m)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
7	10851.574	27.34	PK	37.9	-35.7	10.8	0.7	41.04	53.97	-12.93	74	-32.96	200	Horz

MID VERTICAL



Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolts s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
Vertical 1000 - 18000MHz														
Marker No	Test Freq	Meter Rea	Detector	T136 Ant F	T144 Prea	Cable Fac	T160 BRF	dB(uVolts	E-Fields [d	Margin (d	E-Fields [d	Margin (d	Height [cr	Polarity
4	2438.374	51.36	PK	32.3	-36.9	4.5	0.9	52.16	53.97	-1.81	74	-21.84	200	Vert
5	6028.648	36.55	PK	35.2	-35.6	7.7	0.2	44.05	53.97	-9.92	74	-29.95	100	Vert
6	10893.071	35.75	PK	37.9	-35.7	10.8	0.6	49.35	53.97	-4.62	74	-24.65	200	Vert
Vertical 10000 - 18000MHz														
Marker No	Test Freq	Meter Rea	Detector	T136 Ant F	T144 Prea	Cable Fac	T160 BRF	dB(uVolts	E-Fields [d	Margin (d	E-Fields [d	Margin (d	Height [cr	Polarity
8	10763.618	27.61	PK	38	-35.8	10.8	0.6	41.21	53.97	-12.76	74	-32.79	100	Vert

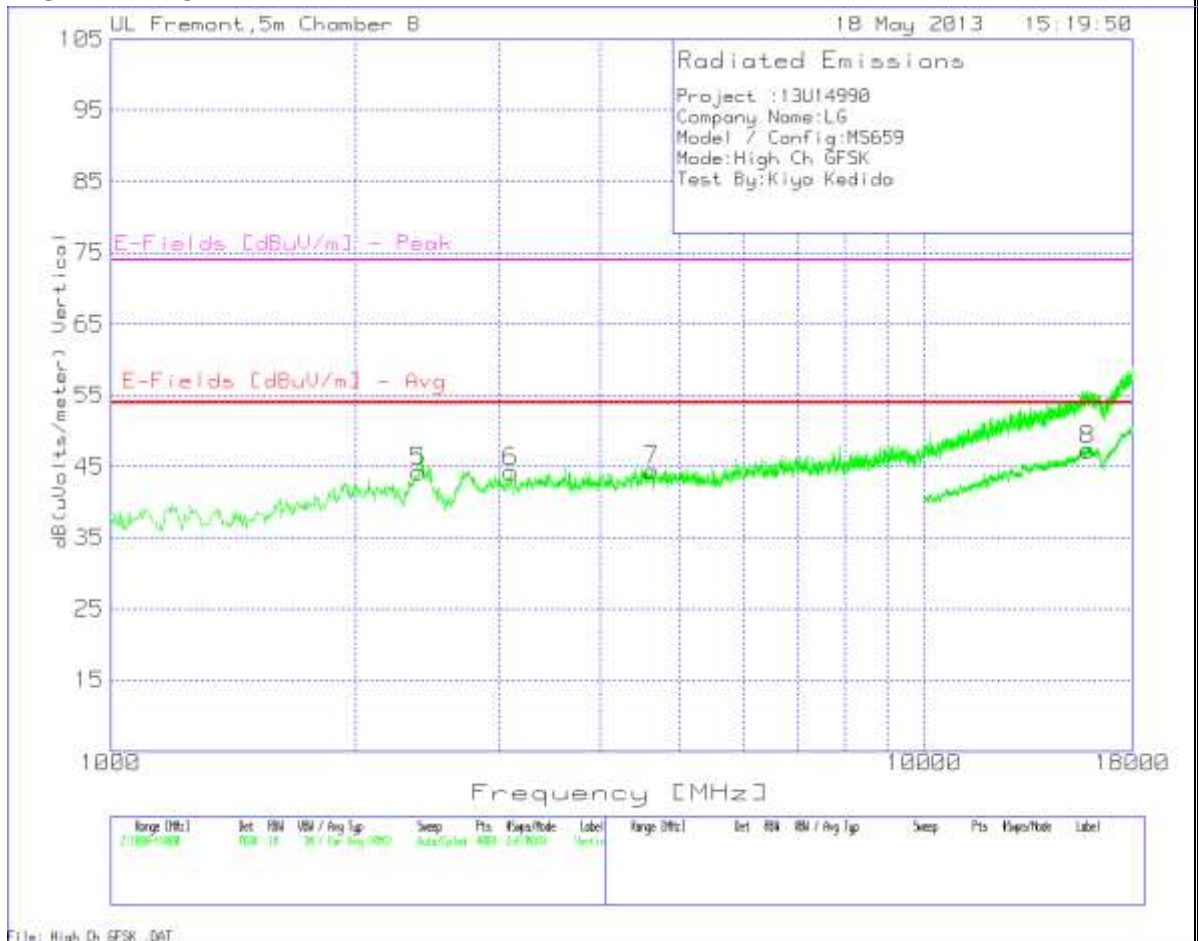
HIGH HORIZONTAL



Horizontal 10000 - 18000MHz															
Marker No.	Test Frequency	Meter Reading	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRP [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity	
1	2414.189	43.58	PK	32.4	-35	4.6	0.9	46.48	53.97	-7.49	74	-27.52	101	Horz	
2	3076.692	41.13	PK	33.2	-35.2	5.3	0.6	45.03	53.97	-8.94	74	-28.97	200	Horz	
3	4605.546	38.94	PK	34.6	-34.9	6.8	0.3	45.74	53.97	-8.23	74	-28.26	101	Horz	
3	4605.546	38.94	PK	34.6	-34.9	6.8	0.3	45.74	53.97	-8.23	74	-28.26	101	Horz	

Horizontal 10000 - 18000MHz															
Marker No.	Test Frequency	Meter Reading	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRP [dB]	dB(uV/s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity	
4	15937.031	25.12	PK	41.5	-32.9	13.7	0.3	47.72	53.97	-6.25	74	-26.28	102	Horz	

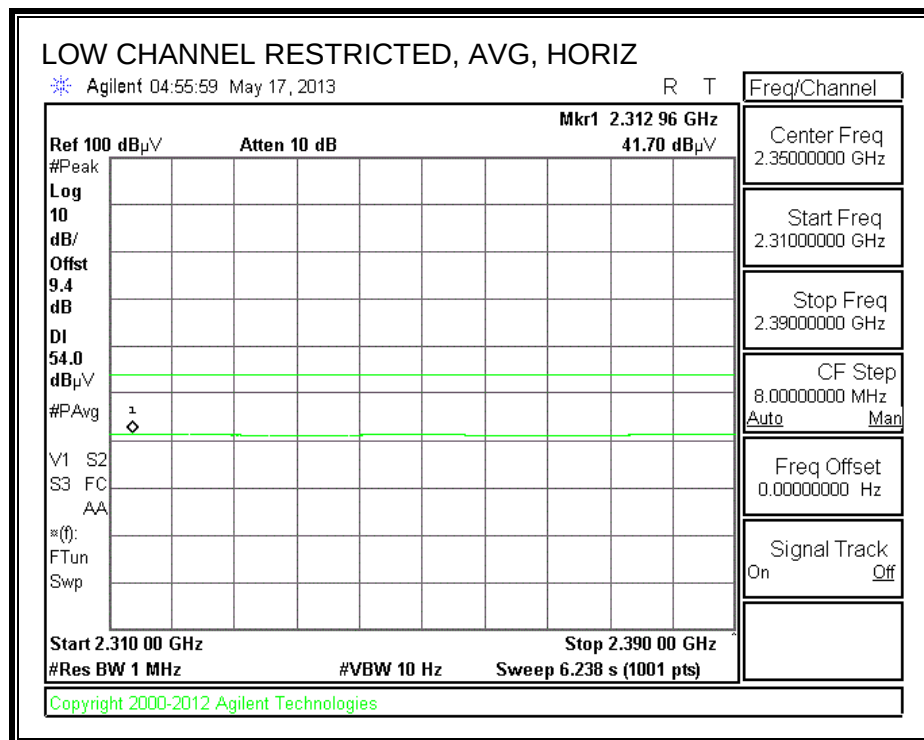
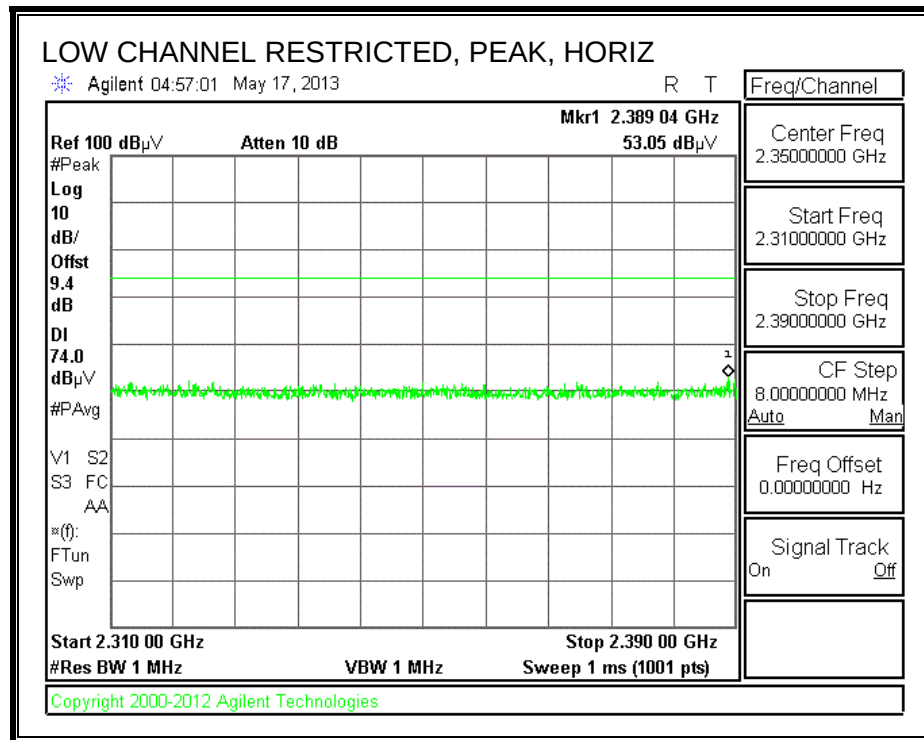
HIGH VERTICAL

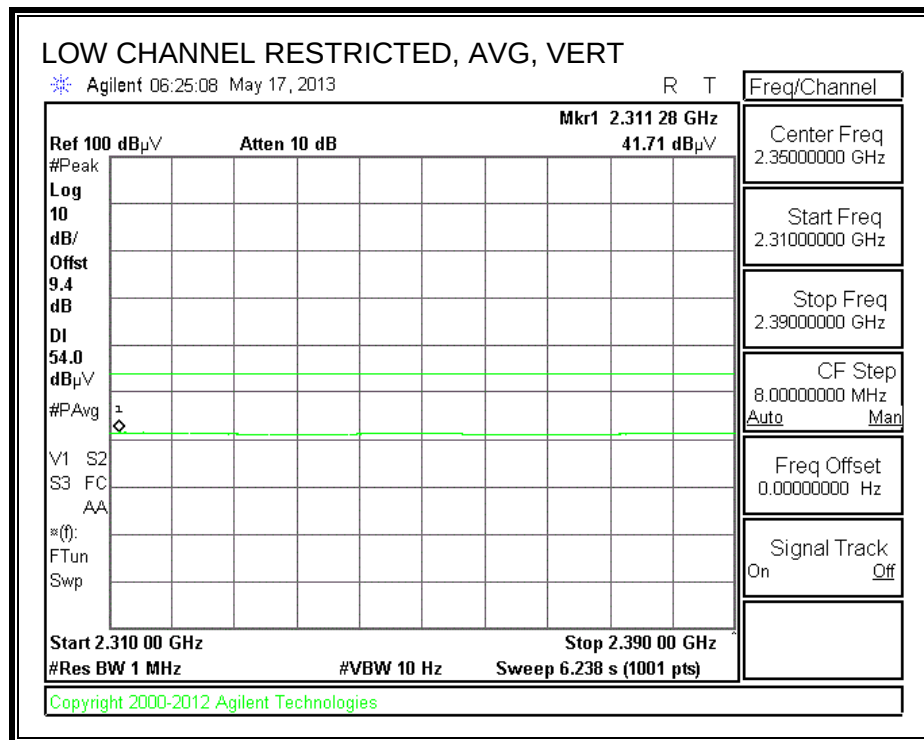
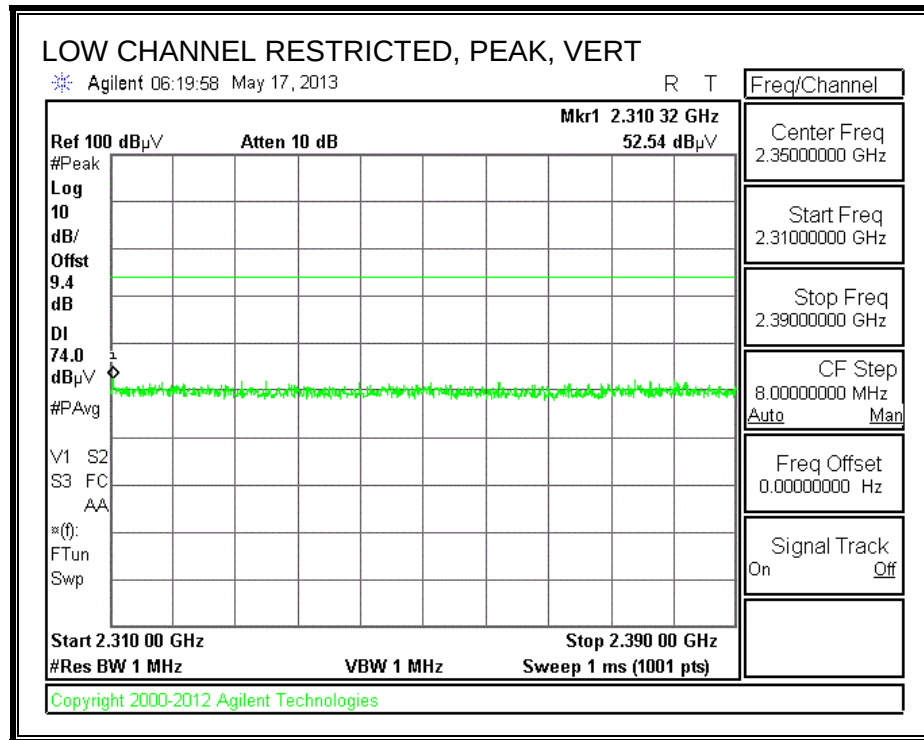


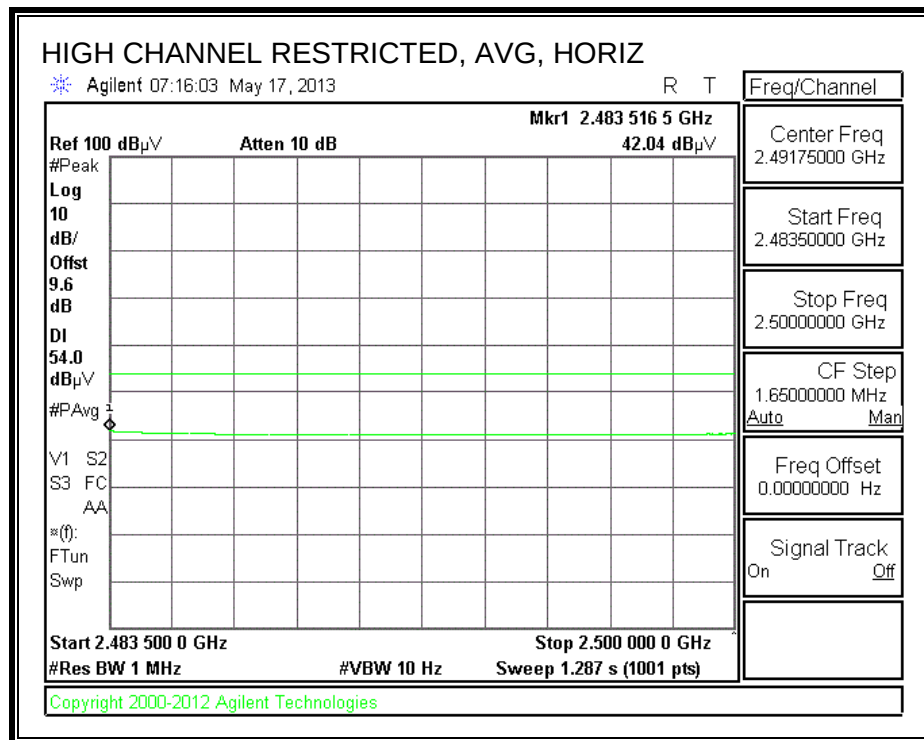
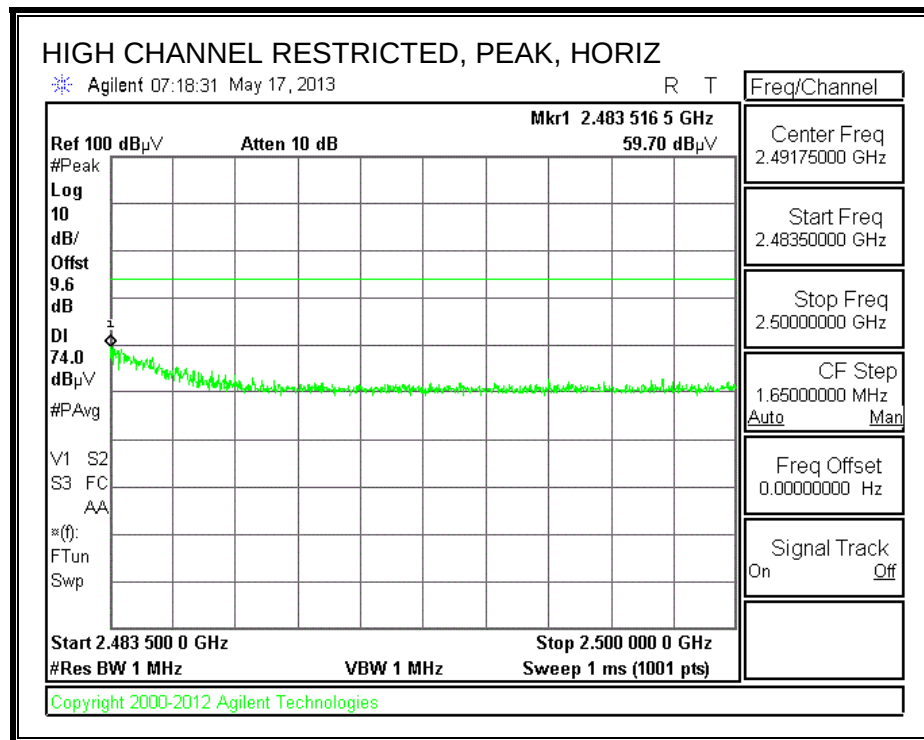
Marker No.	Test Frequency	Meter Reading	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolt s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
5	2392.955	41.45	PK	32.3	-35	4.6	0.9	44.25	53.97	-9.72	74	-29.75	200	Vert
6	3102.173	40.36	PK	33.2	-35.2	5.4	0.5	44.26	53.97	-9.71	74	-29.74	101	Vert
7	4622.533	37.57	PK	34.6	-34.9	6.8	0.3	44.37	53.97	-9.6	74	-29.63	101	Vert
Vertical 10000 - 18000MHz														
Marker No.	Test Frequency	Meter Reading	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolt s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
8	15877.061	24.67	PK	41.5	-32.9	13.7	0.3	47.27	53.97	-6.7	74	-26.73	200	Vert

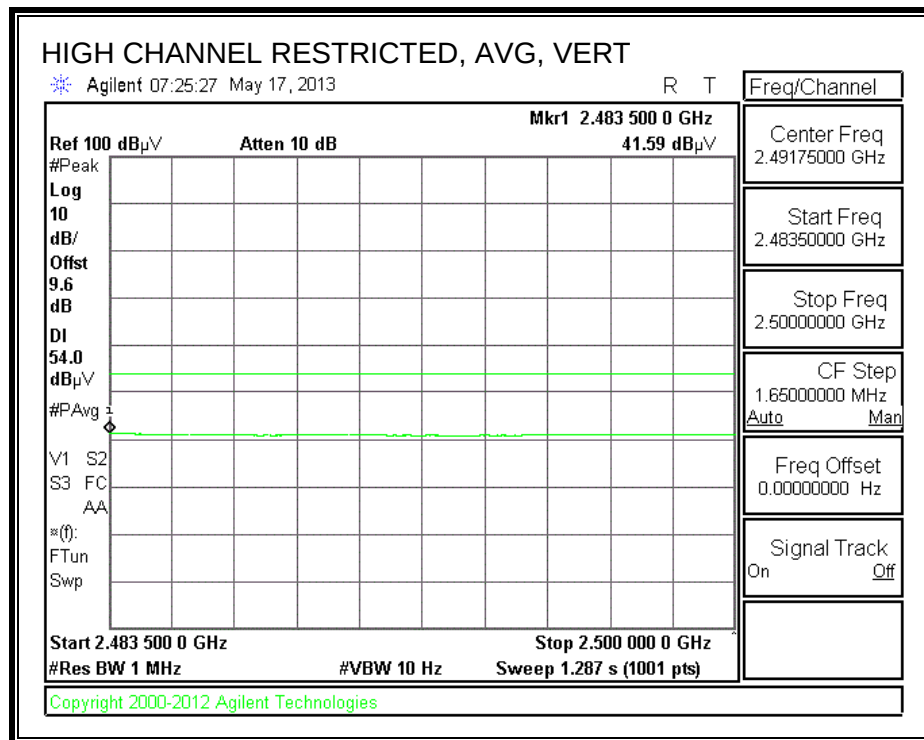
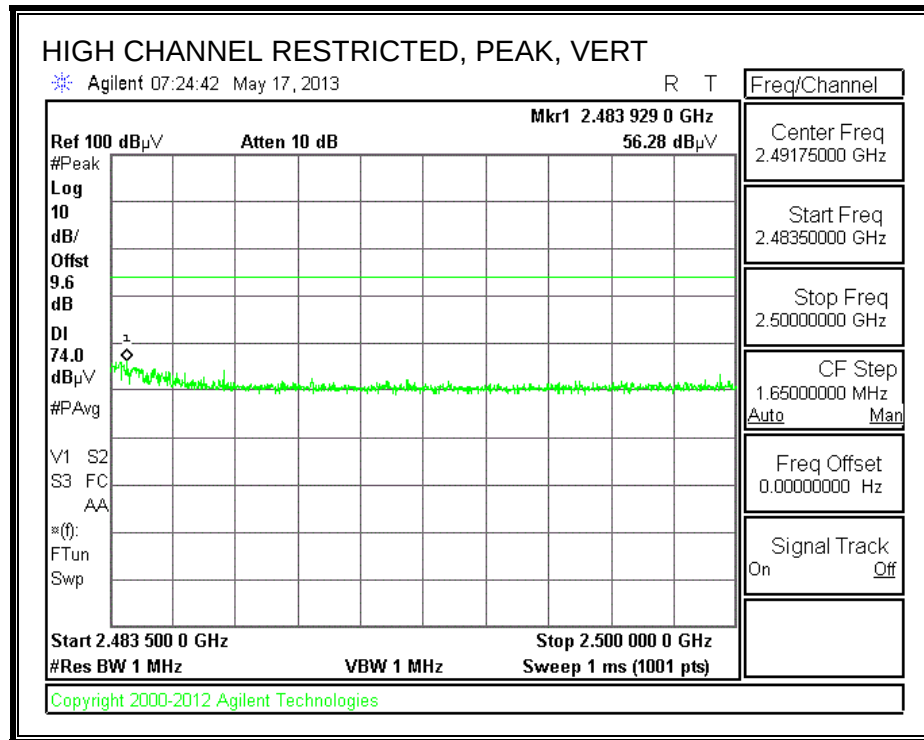
7.3. ENHANCED DATA RATE 8PSK MODULATION

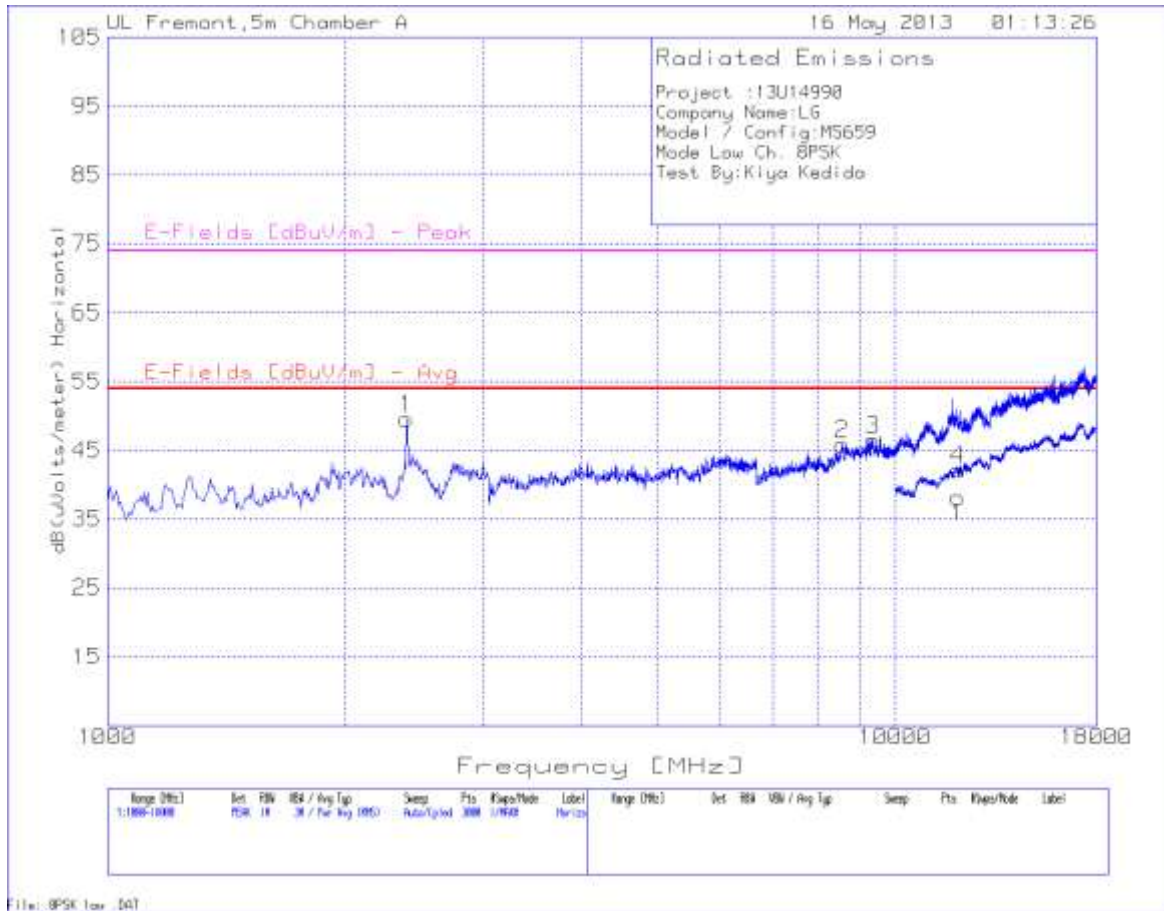
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

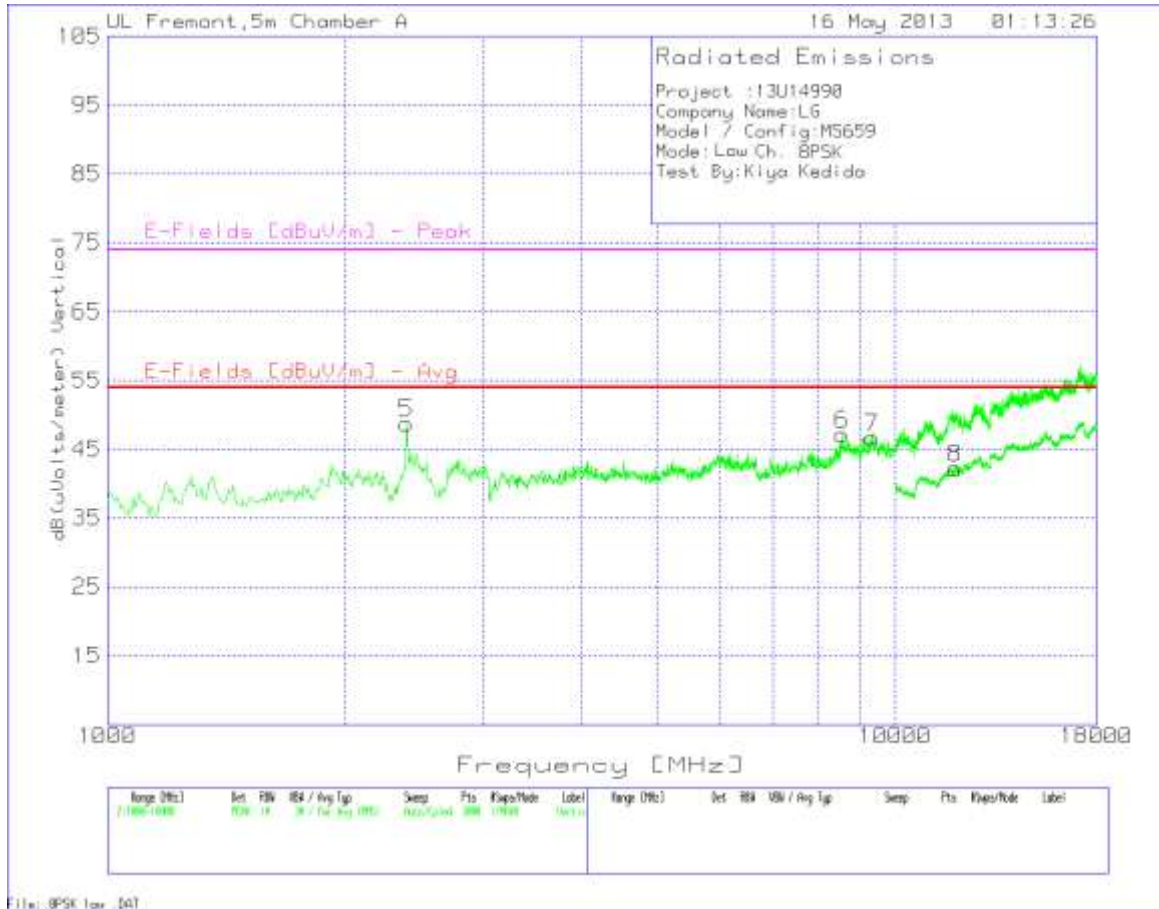
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

HARMONICS AND SPURIOUS EMISSIONS**LOW HORIZONTAL**

Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolts s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
Horizontal 1000 - 18000MHz														
1	2398.734	49.09	PK	32.1	-36.9	4.4	0.9	49.59	53.97	-4.38	74	-24.41	200	Horz
2	8565.623	36.25	PK	35.7	-36	9.5	0.4	45.85	53.97	-8.12	74	-28.15	100	Horz
3	9375.416	35.91	PK	36.4	-36.2	10	0.4	46.51	53.97	-7.46	74	-27.49	200	Horz

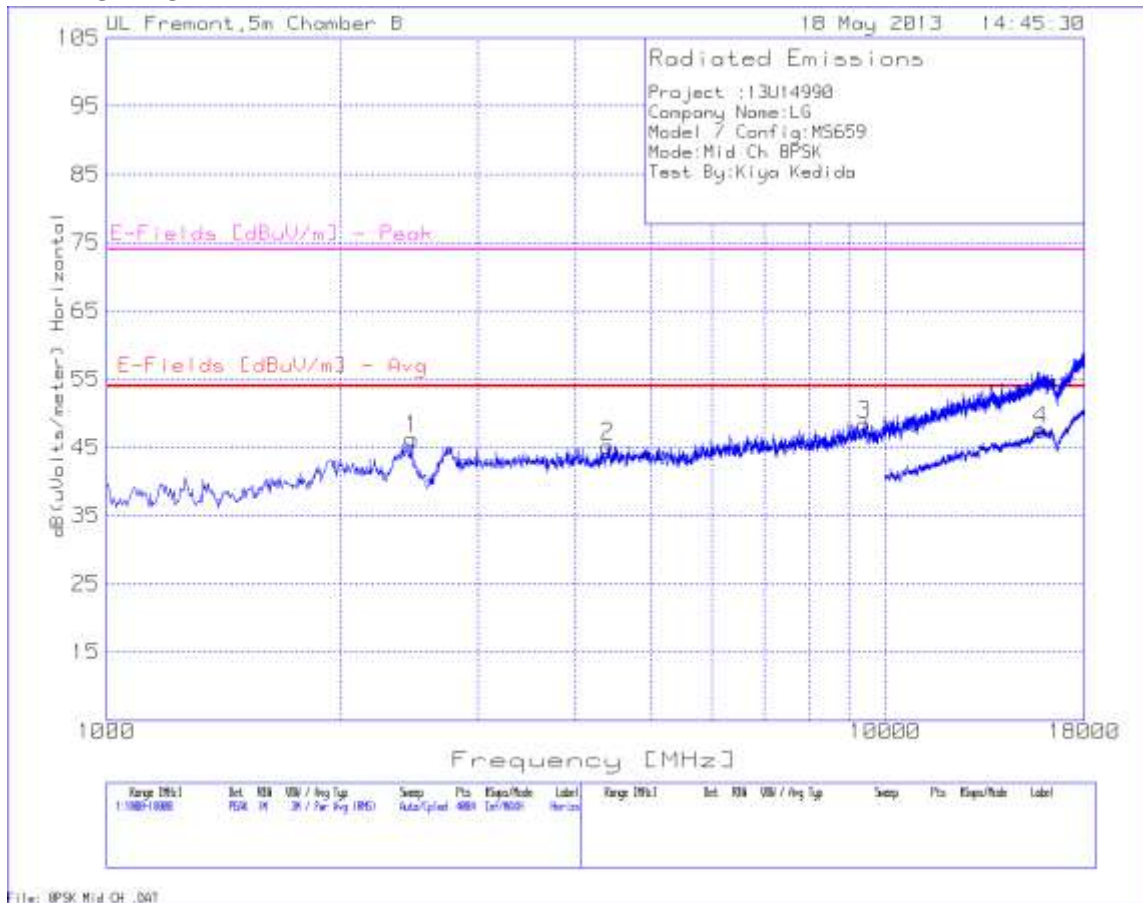
Horizontal 10000 - 18000MHz														
Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolts s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
4	11999.001	26.93	PK	38.8	-35.7	11.4	0.7	42.13	53.97	-11.84	74	-31.87	100	Horz

LOW VERTICAL



Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolts s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
Vertical 1000 - 18000MHz														
Marker No	Test Freq	Meter Rea	Detector	T136 Ant	T144 Prea	Cable Fac	T160 BRF	dB(uVolts	E-Fields [d	Margin (d	E-Fields [d	Margin (d	Height [cm	Polarity
5	2398.734	48.2	PK	32.1	-36.9	4.4	0.9	48.7	53.97	-5.27	74	-25.3	200	Vert
6	8571.286	37.66	PK	35.7	-36	9.5	0.3	47.16	53.97	-6.81	74	-26.84	100	Vert
7	9347.102	36.1	PK	36.3	-36.2	10	0.5	46.7	53.97	-7.27	74	-27.3	100	Vert
Vertical 10000 - 18000MHz														
Marker No	Test Freq	Meter Rea	Detector	T136 Ant	T144 Prea	Cable Fac	T160 BRF	dB(uVolts	E-Fields [d	Margin (d	E-Fields [d	Margin (d	Height [cm	Polarity
8	11899.05	27.21	PK	38.7	-35.7	11.4	0.6	42.21	53.97	-11.76	74	-31.79	100	Vert

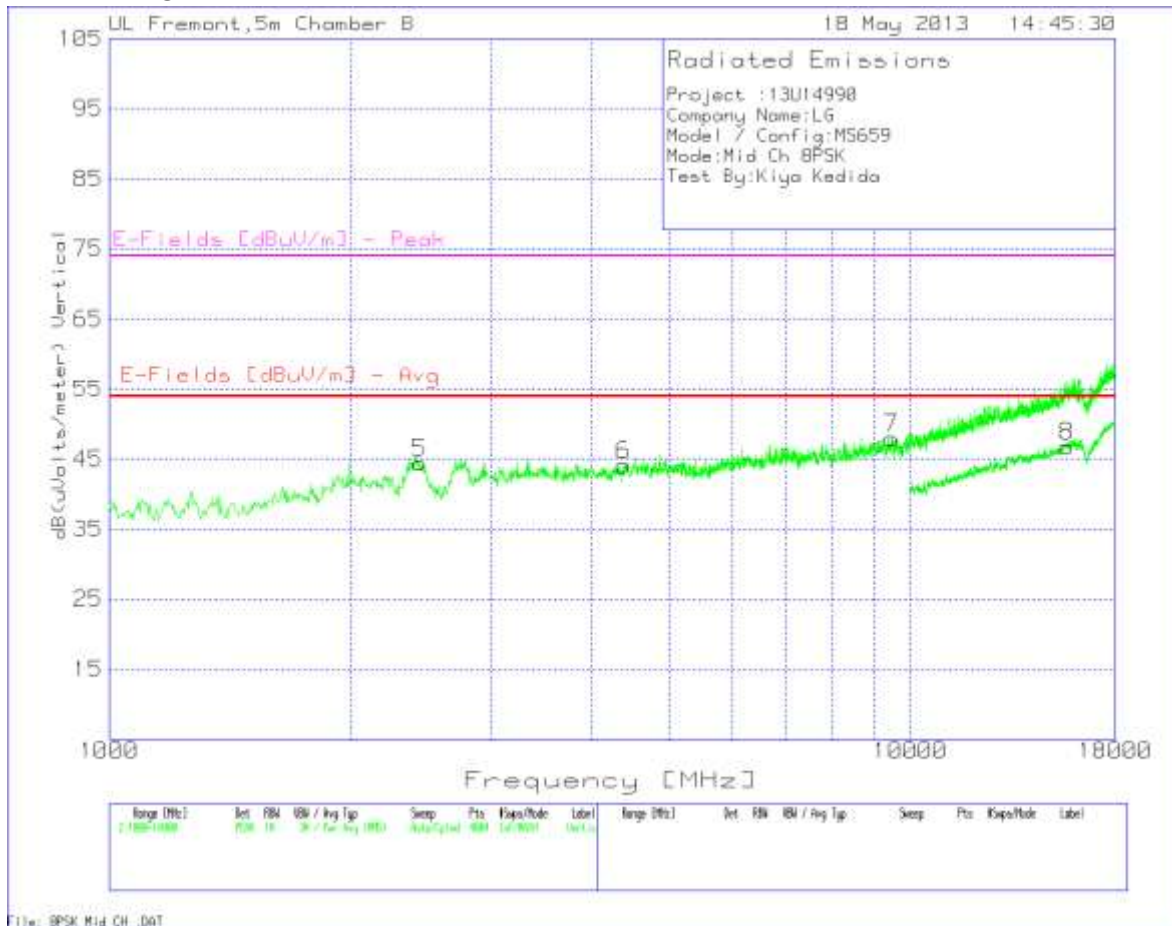
MID HORIZONTAL



Horizontal 1000 - 18000MHz															
Marker No.	Test Frequency	Meter Reading	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/m)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity	
1	2469.398	43.18	PK	32.5	-35	4.7	0.9	46.28	53.97	-7.69	74	-27.72	200	Horz	
2	4405.946	38.87	PK	34.3	-34.9	6.6	0.3	45.17	53.97	-8.8	74	-28.83	200	Horz	
3	9408.693	35.82	PK	37.1	-35.1	10.1	0.5	48.42	53.97	-5.55	74	-25.58	101	Horz	

Horizontal 10000 - 18000MHz															
Marker No.	Test Frequency	Meter Reading	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uV/m)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity	
4	15825.087	25.17	PK	41.4	-32.9	13.6	0.3	47.57	53.97	-6.4	74	-26.43	200	Horz	

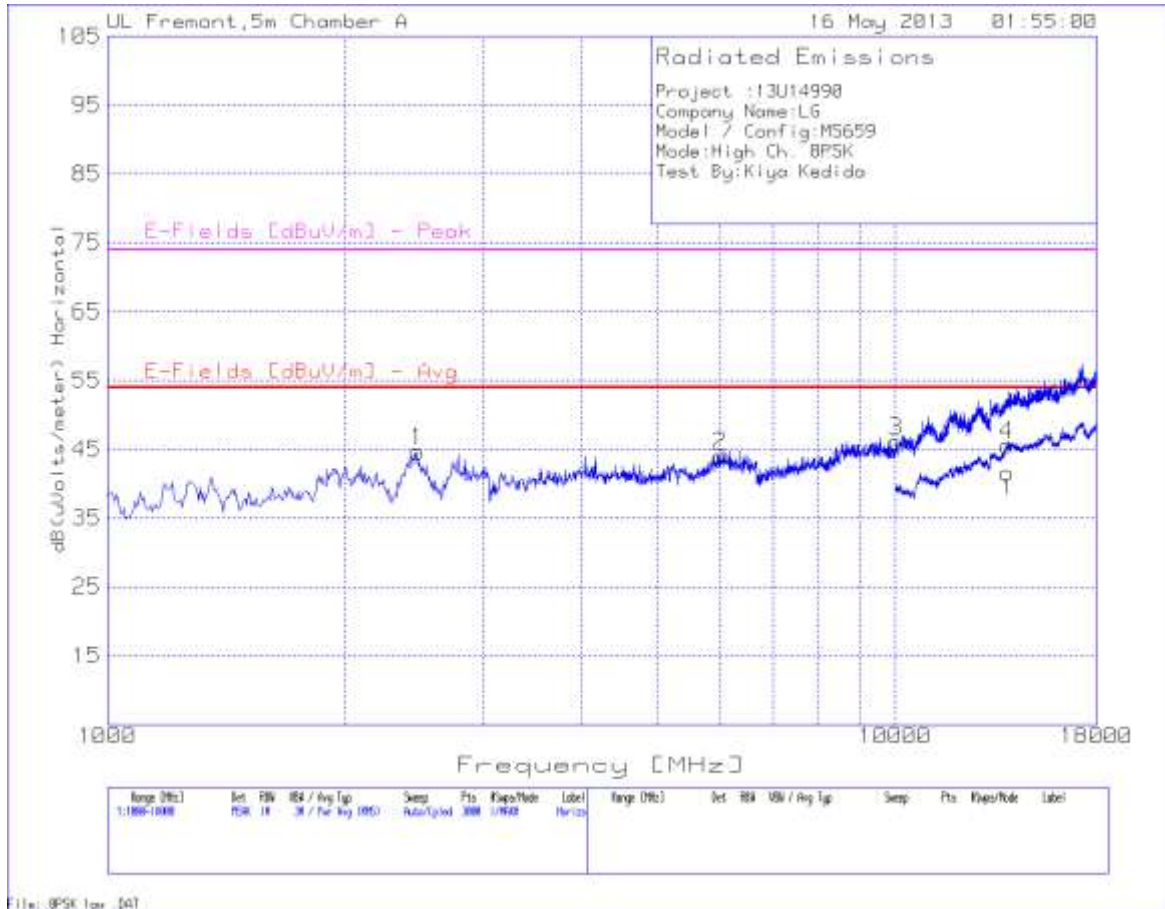
MID VERTICAL



Vertical 1000 - 18000MHz															
Marker No.	Test Frequency	Meter Reading	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolt s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity	
5	2443.917	41.45	PK	32.4	-35	4.7	0.9	44.45	53.97	-9.52	74	-29.55	101	Vert	
6	4388.958	37.96	PK	34.3	-34.9	6.6	0.2	44.16	53.97	-9.81	74	-29.84	101	Vert	
7	9472.396	35.13	PK	37.2	-35.1	10.2	0.5	47.93	53.97	-6.04	74	-26.07	200	Vert	

Vertical 10000 - 18000MHz															
Marker No.	Test Frequency	Meter Reading	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolt s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity	
8	15685.157	24.6	PK	41.2	-32.9	13.6	0.3	46.8	53.97	-7.17	74	-27.2	102	Vert	

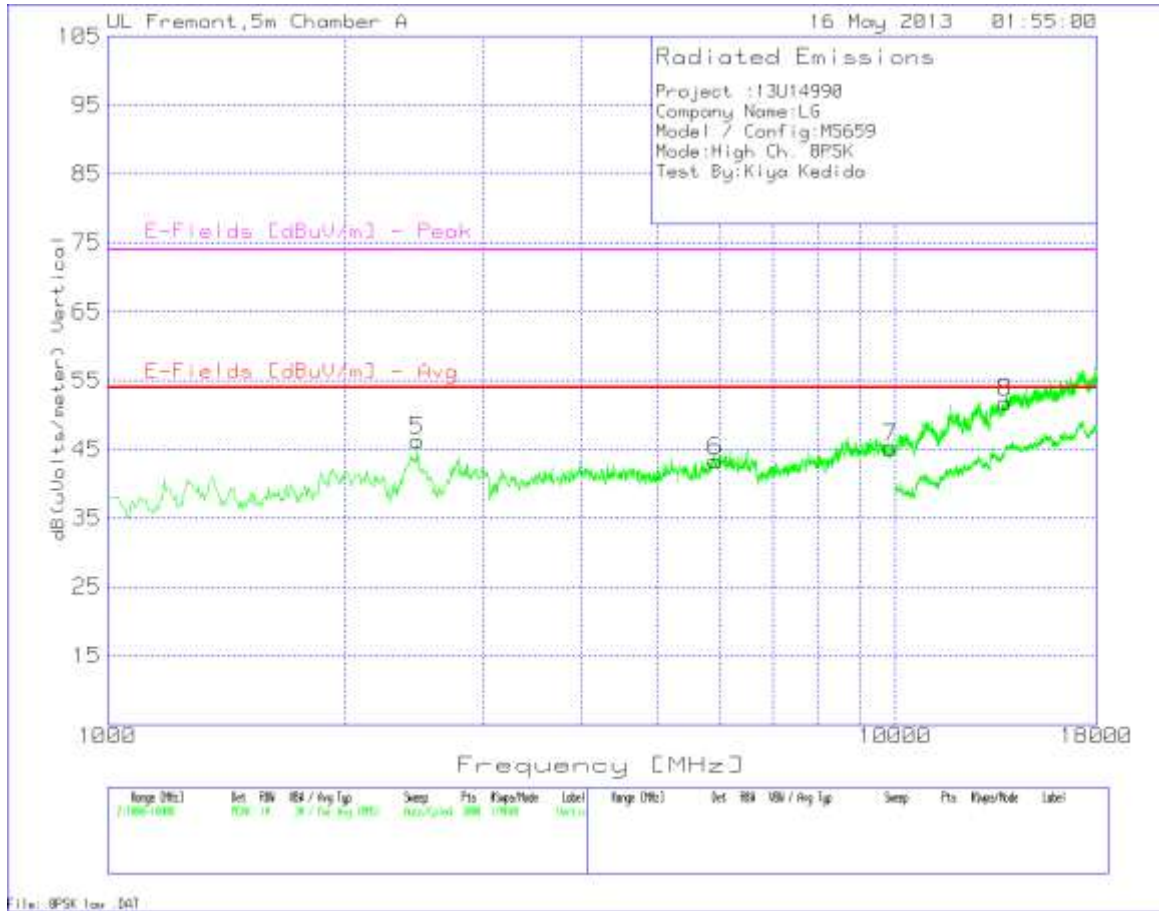
HIGH HORIZONTAL



Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolts s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
Horizontal 1000 - 18000MHz														
1	2478.015	43.55	PK	32.5	-36.8	4.5	0.9	44.65	53.97	-9.32	74	-29.35	200	Horz
2	5994.67	36.49	PK	35.2	-35.6	7.7	0.2	43.99	53.97	-9.98	74	-30.01	200	Horz
3	10032.312	34.29	PK	37.2	-36.3	10.4	0.5	46.09	53.97	-7.88	74	-27.91	200	Horz

Horizontal 10000 - 18000MHz														
Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolts s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
4	13882.059	27.62	PK	39	-33.8	12.4	0.4	45.62	53.97	-8.35	74	-28.38	100	Horz

HIGH VERTICAL

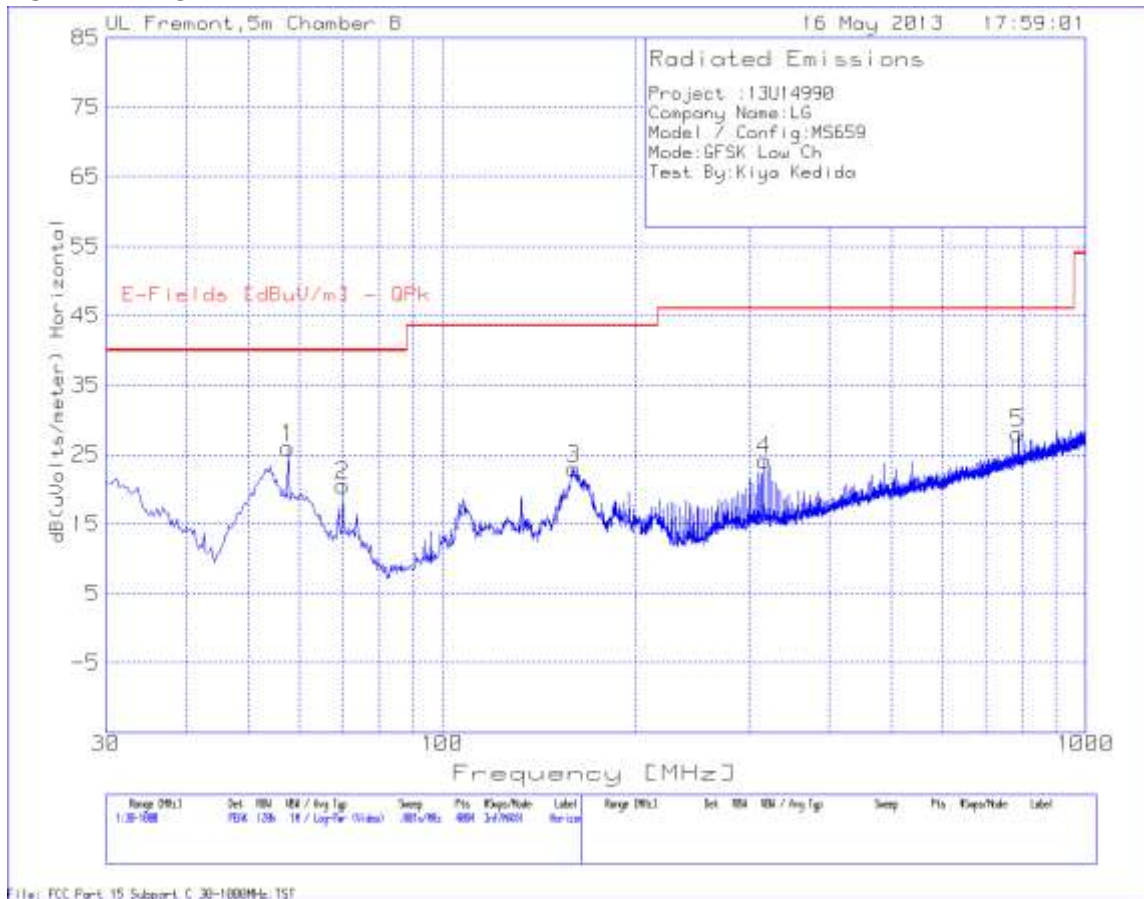


Marker No.	Test Frequency	Meter Reading	Detector	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T160 BRF [dB]	dB(uVolts s/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
Vertical 1000 - 18000MHz														
5	2478.015	45.12	PK	32.5	-36.8	4.5	0.9	46.22	53.97	-7.75	74	-27.78	200	Vert
6	5909.727	35.99	PK	35.1	-35.6	7.6	0.2	43.29	53.97	-10.68	74	-30.71	100	Vert
7	9856.762	33.68	PK	37	-36.3	10.3	0.5	45.18	53.97	-8.79	74	-28.82	200	Vert
8	13775.483	34.12	PK	38.9	-33.9	12.3	0.4	51.82	53.97	-2.15	74	-22.18	100	Vert

7.4. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

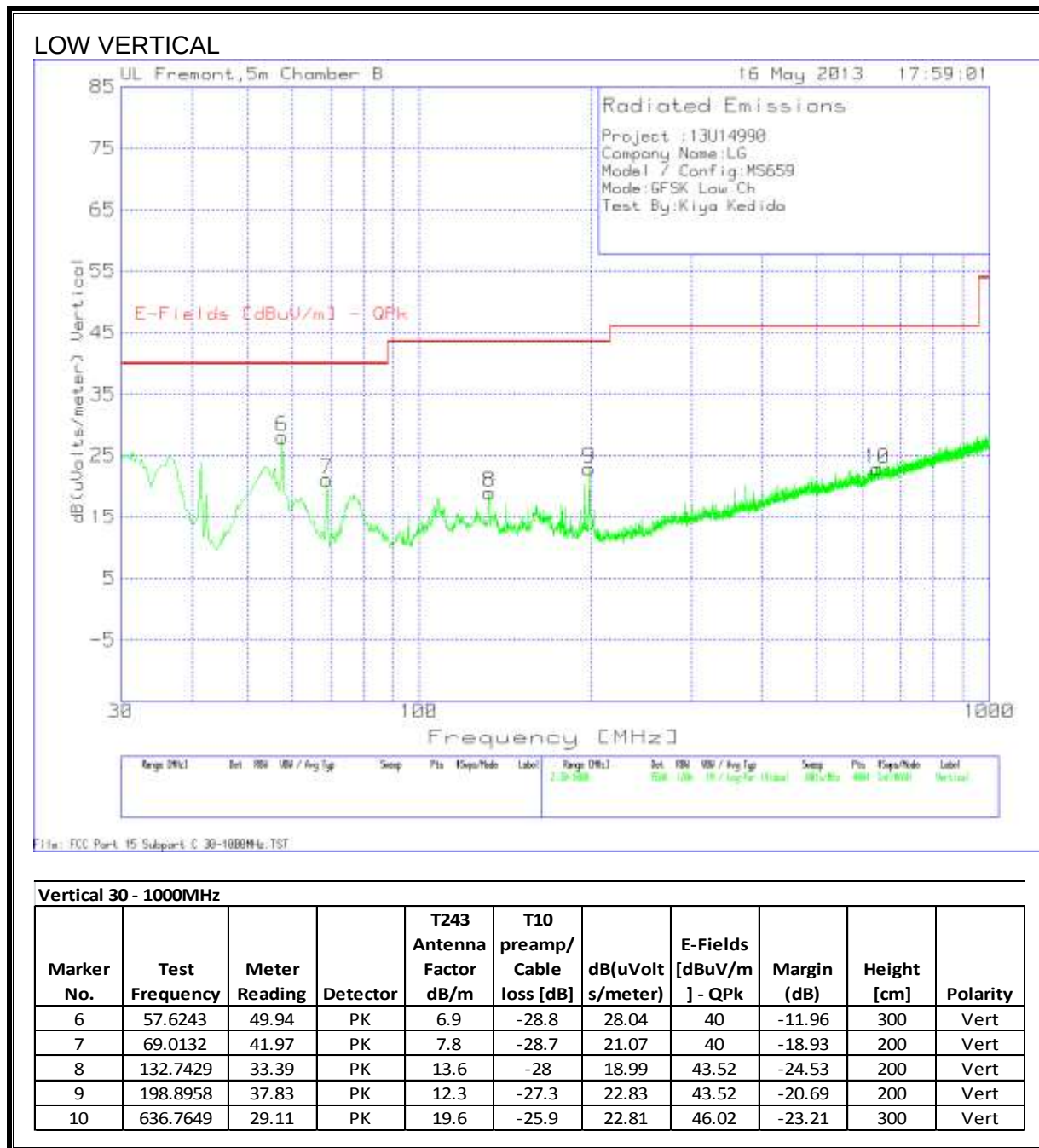
LOW VERTICAL



Horizontal 30 - 1000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T243 Antenna Factor dB/m	T10 preamp/ Cable loss [dB]	dB(uVolts/meter)	E-Fields [dBuV/m] - QPk	Margin (dB)	Height [cm]	Polarity
1	57.6243	47.87	PK	6.9	-28.8	25.97	40	-14.03	300	Horz
2	69.9825	41.31	PK	7.9	-28.7	20.51	40	-19.49	100	Horz
3	160.1249	38.48	PK	12.1	-27.6	22.98	43.52	-20.54	200	Horz
4	316.9048	36.71	PK	13.8	-26.4	24.11	46.02	-21.91	100	Horz
5	787.2446	31.6	PK	21.2	-24.8	28	46.02	-18.02	100	Horz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

Project No:13U14990									
Client Name:LG									
Model/Device:MS659									
Test Volt/Freq:LC GFSK									
Test By:Kiya Kedida									
Line-L1 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.5055	50.36	PK	0.1	0	50.46	56	-5.54	-	-
0.5055	36.77	Av	0.1	0	36.87	-	-	46	-9.13
0.9465	48.51	PK	0.1	0	48.61	56	-7.39	-	-
0.9465	32.18	Av	0.1	0	32.28	-	-	46	-13.72
2.058	50.07	PK	0.1	0.1	50.27	56	-5.73	-	-
2.058	33.89	Av	0.1	0.1	34.09	-	-	46	-11.91
3.237	45.55	PK	0.1	0.1	45.75	56	-10.25	-	-
3.237	30.83	Av	0.1	0.1	31.03	-	-	46	-14.97
Line-L2 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.528	43.8	PK	0.1	0	43.9	56	-12.1	-	-
0.528	31.02	Av	0.1	0	31.12	-	-	46	-14.88
0.9825	39.11	PK	0.1	0.1	39.31	56	-16.69	-	-
0.9825	24.99	Av	0.1	0.1	25.19	-	-	46	-20.81
2.1075	38.43	PK	0.1	0.1	38.63	56	-17.37	-	-
2.1075	24.09	Av	0.1	0.1	24.29	-	-	46	-21.71
2.931	38.24	PK	0.1	0.1	38.44	56	-17.56	-	-
2.931	23.12	Av	0.1	0.1	23.32	-	-	46	-22.68
PK - Peak detector									
QP - Quasi-Peak detector									
Av - Average detector									

LINE 1 RESULTS

