
FCC Test Report

Report No.: AGC04183150401FE04

FCC ID : 2AEMHM4GLTE
APPLICATION PURPOSE : Original Equipment
PRODUCT DESIGNATION : Mobile Phone
BRAND NAME : OEM
MODEL NAME : M4GLTE
CLIENT : Shenzhen RF Technology Co., Ltd
DATE OF ISSUE : May 14, 2015
STANDARD(S) : FCC Part 15.247
TEST PROCEDURE(S) : KDB 558074 v03r02
REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	May 14, 2015	Valid	Original Report

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1. VERIFICATION OF CONFORMITY

Applicant	Shenzhen RF Technology Co., Ltd
Address	F/3~5, BuildingD, Longhua Baokun Industrial Zone, Baoan District, Shenzhen, China
Manufacturer	Shenzhen RF Technology Co., Ltd
Address	F/3~5, BuildingD, Longhua Baokun Industrial Zone, Baoan District, Shenzhen, China
Product Designation	Mobile Phone
Brand Name	OEM
Test Model	M4GLTE
Date of test	Apr.27, 2015 to May 13,2015
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-BGN/RF

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with requirement of FCC Part 15 Rules requirement.

Prepared By

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May 14, 2015

Checked By

Kidd Yang

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May 14, 2015

Authorized By

Solger Zhang

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May 14, 2015

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as “Mobile Phone”. It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.412 GHz~2.462GHz
Output Power	IEEE 802.11b:9.69dBm; IEEE 802.11g:8.33dBm; IEEE 802.11n(20):8.26dBm; IEEE 802.11n(40):6.3dBm
Modulation	DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)
Number of channels	11
Hardware Version	L800B-25
Software Version	SW-M4QL-OEM-L800B-V01-20150101
Antenna Designation	Integrated Antenna
Antenna Gain	1.0dBi
Power Supply	DC3.7V by Battery

2.2. TABLE OF CARRIER FREQUENCIES

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	1	2412 MHZ
	2	2417 MHZ
	3	2422 MHZ
	4	2427 MHZ
	5	2432 MHZ
	6	2437 MHZ
	7	2442 MHZ
	8	2447 MHZ
	9	2452 MHZ
	10	2457 MHZ
	11	2462 MHZ

Note: For 20MHZ bandwidth system use Channel 1 to Channel 11
For 40MHZ bandwidth system use Channel 3 to Channel 9

2.3. IEEE 802.11N MODULATION SCHEME

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Data rate(Mbps)	
									800nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	Guard interval

2.4. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AEMHM4GLTE** filing to comply with the FCC Part 15 requirements.

2.5. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 (2003).

Radiated testing was performed at an antenna to EUT distance 3 meters.

Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.247 rules KDB 558074 D01 DTS Meas Guidance v03r02.

2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

2.7. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 2.75dB

Radiated measurement: +/- 3.2dB

4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel TX
2	Middle channel TX
3	High channel TX
4	Normal operating

Note:

Transmit by 802.11b with Data rate (1/2/5.5/11)

Transmit by 802.11g with Data rate (6/9/12/18/24/36/48/54)

Transmit by 802.11n (20MHz) with Data rate (6.5/13/19.5/26/39/52/58.5/65)

Transmit by 802.11n (40MHz) with Data rate

(13.5/27/40.5/54/81/108/121.5/135)

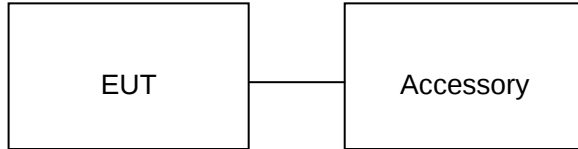
Note:

1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the eut is operating at its maximum duty cycle>or equal 98%
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure:



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	M4GLTE	FCC ID: 2AEMHM4GLTE	EUT
2	Adapter	M4GLTE	DC5V /1A	Accessory
3	Battery	M4GLTE	DC3.7V/ 2000mAh	Accessory
4	Earphone	M4GLTE	N/A	Accessory
5	USB Cable	M4GLTE	N/A	Accessory

Note: All the accessories have been used during the test in conduction emission test.

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Output Power	Compliant
§15.247	6 dB Bandwidth	Compliant
§15.247	Conducted Spurious Emission	Compliant
§15.247	Maximum Conducted Output Power SPECTRAL Density	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Band Edges	Compliant
§15.207	Line Conduction Emission	Compliant

Note: The EUT received power from DC3.7V lithium battery.

6. TEST FACILITY

Site	Compliance Certification Services (Shenzhen) Inc.
Location	No.10-1 Mingkeda Logistics park, No.18, Huanguan South Rd.,Guan Lan Town, Baoan District, Shenzhen, China
Description	Test Firm Registration Number: 441872

TEST EQUIPMENT LIST

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Power Sensor	R&S	NRP-Z23	100323	07/25/2014	07/24/2015
PC	HP	4-1220TX	MY45100361	--	--
RF attenuator	N/A	RFA20db	68	07/25/2014	07/24/2015
Spectrum Analyzer	Agilent	E4440A	US41421290	02/17/2015	02/16/2016
Amplifier	EM	EM30180	0607030	02/17/2015	02/16/2016
Horn Antenna	EM	EM-AH-10180	67	02/17/2015	02/16/2016
Horn Antenna	A.H. Systems Inc.	SAS-574	N/A	07/25/2014	07/24/2015
EMI Test Receiver	Rohde & Schwarz	ESCI	100694	07/25/2014	07/24/2015
WIDEBAND FREQUENCY ANTENNA	SCHWARZBECK	VULB9168	26	08/16/2014	08/15/2015
Loop Antenna	A.H.	SAS-526B	SEL0097	05/10/2014	05/09/2015
Loop Antenna	A.H.	SAS-526B	SEL0097	05/09/2015	05/08/2016
LISN	R&S	ESH3-Z5	8389791009	07/25/2014	07/24/2015
Radiation Cable 1	Sat	RE1	R003	06/04/2014	06/03/2015
Radiation Cable 2	Sat	RE2	R002	06/04/2014	06/03/2015
Conduction Cable	Sat	CE1	C001	06/04/2014	06/03/2015

Radiated Emission Test Site 966(2)					
Name of Equipment	Manufacturer	Model	S/N	Calibration Date	Calibration Due.
PSA Series Spectrum Analyzer	Agilent	E4446A	US44300399	Mar.01, 2015	Mar.01, 2016
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	Mar.09, 2015	Mar.08, 2016
Amplifier	MITEQ	AM-1604-3000	1123808	Mar.18, 2015	Mar.17, 2016
High Noise Amplifier	Agilent	8449B	3008A01838	Mar.18, 2015	Mar.17, 2016
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	July 10, 2014	July 09, 2015
Bilog Antenna	SCHAFFNER	CBL6143	5082	Mar.01, 2015	Mar.01, 2016
Horn Antenna	SCHWARZBECK	BBHA9120	D286	Mar.01, 2015	Mar.01, 2016
Loop Antenna	COM-POWER	AL-130	121044	Sep.27, 2014	Sep.26, 2015
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
Temp. / Humidity Meter	Anymetre	JR913	N/A	Feb.28, 2015	Feb.27, 2016
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model	S/N	Calibration Date	Calibration Due.
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	Mar.09, 2015	Mar.08, 2016
LISN(EUT)	ROHDE&SCHWARZ	ENV216	101543-WX	Mar.09, 2015	Mar.08, 2016
LISN	EMCO	3825/2	8901-1459	Mar.09, 2015	Mar.08, 2016
Temp. / Humidity Meter	VICTOR	HTC-1	N/A	Mar.04, 2015	Mar.03, 2016
Test S/W	FARAD	EZ-EMC/ CCS-3A1-CE			

7. OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

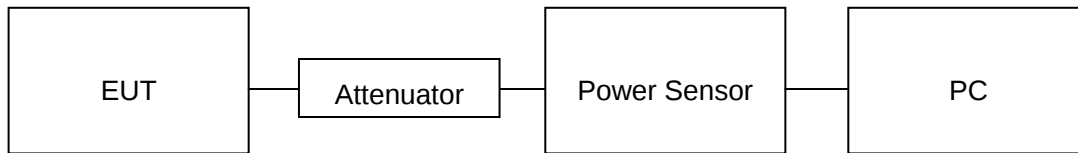
For max average conducted output power test:

1. Connect EUT RF output port to power probe through an RF attenuator.
2. Connect the power probe to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

Note : The EUT was tested according to KDB 558074v03r02 for compliance to FCC 47CFR 15.247 requirements.

7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

AVERAGE POWER SETUP



7.3. LIMITS AND MEASUREMENT RESULT

TEST ITEM	OUTPUT POWER
TEST MODE	802.11b with data rate 1

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	9.69	30	Pass
2.437	9.67	30	Pass
2.462	9.44	30	Pass

TEST ITEM	OUTPUT POWER
TEST MODE	802.11g with data rate 6

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	8.33	30	Pass
2.437	8.27	30	Pass
2.462	8.25	30	Pass

TEST ITEM	OUTPUT POWER
TEST MODE	802.11n 20 with data rate 6.5

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	8.26	30	Pass
2.437	8.23	30	Pass
2.462	8.19	30	Pass

TEST ITEM	OUTPUT POWER
TEST MODE	802.11n 40 with data rate 13.5

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.422	6.3	30	Pass
2.437	6.21	30	Pass
2.452	6.17	30	Pass

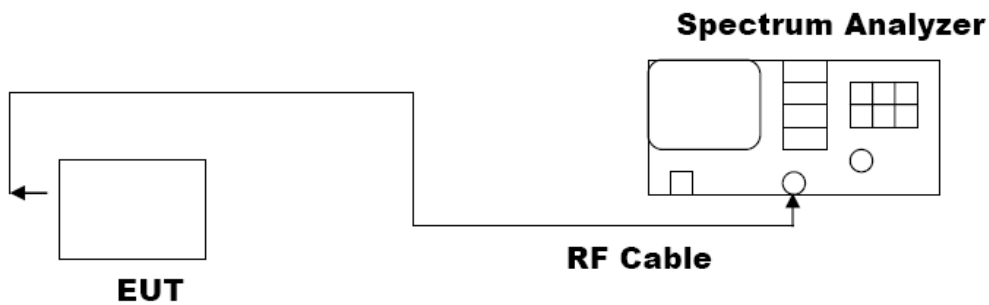
8. 6DB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW $\geq$ 3 $\times$ RBW.
4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

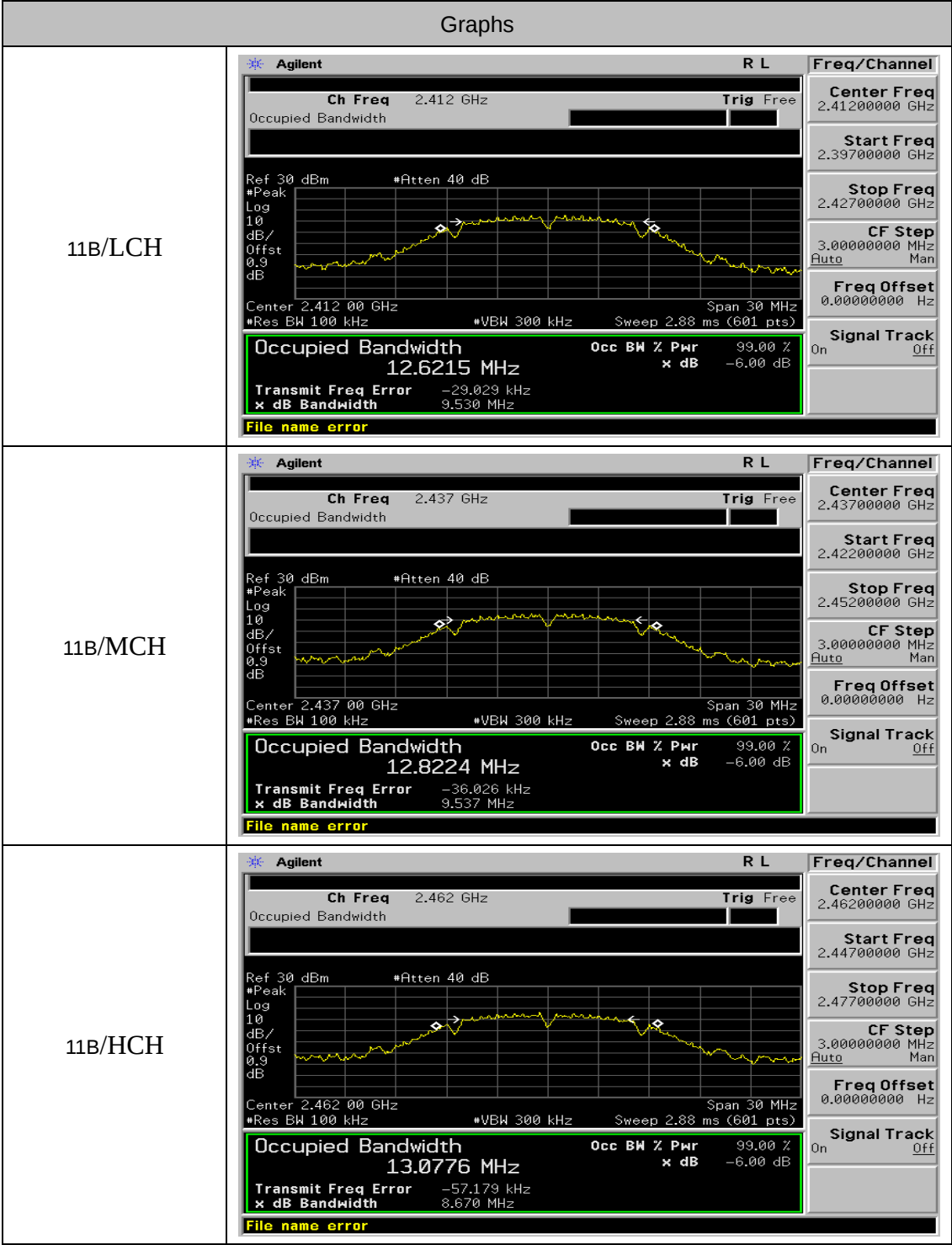
8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



8.3. LIMITS AND MEASUREMENT RESULTS

Mode	Channel	6dB Bandwidth [MHz]	OBW [MHz]	Verdict
11B	LCH	9.53	12.62	PASS
11B	MCH	9.54	12.82	PASS
11B	HCH	8.67	13.08	PASS
11G	LCH	12.18	16.34	PASS
11G	MCH	15.07	16.41	PASS
11G	HCH	15.71	16.40	PASS
11N20SISO	LCH	15.15	17.52	PASS
11N20SISO	MCH	17.62	17.59	PASS
11N20SISO	HCH	15.08	17.58	PASS
11N40SISO	LCH	33.89	35.72	PASS
11N40SISO	MCH	35.24	35.85	PASS
11N40SISO	HCH	35.23	35.70	PASS

Test Graph



11G/LCH	Agilent R T Freq/Channel Ch Freq 2.412 GHz Trig Free Occupied Bandwidth Ref 30 dBm *Atten 40 dB *Peak Log 10 dB/Offst 0.9 dB Center 2.412 00 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 2.88 ms (601 pts) Span 30 MHz Occupied Bandwidth 16.3445 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 24.536 kHz x dB Bandwidth 12.178 MHz File name error Center Freq 2.41200000 GHz Start Freq 2.39700000 GHz Stop Freq 2.42700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11G/MCH	Agilent R T Freq/Channel Ch Freq 2.437 GHz Trig Free Occupied Bandwidth Ref 30 dBm *Atten 40 dB *Peak Log 10 dB/Offst 0.9 dB Center 2.437 00 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 2.88 ms (601 pts) Span 30 MHz Occupied Bandwidth 16.4122 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -3.895 kHz x dB Bandwidth 15.072 MHz File name error Center Freq 2.43700000 GHz Start Freq 2.42200000 GHz Stop Freq 2.45200000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11G/HCH	Agilent R T Freq/Channel Ch Freq 2.462 GHz Trig Free Occupied Bandwidth Ref 30 dBm *Atten 40 dB *Peak Log 10 dB/Offst 0.9 dB Center 2.462 00 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 2.88 ms (601 pts) Span 30 MHz Occupied Bandwidth 16.4044 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -17.690 kHz x dB Bandwidth 15.706 MHz File name error Center Freq 2.46200000 GHz Start Freq 2.44700000 GHz Stop Freq 2.47700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

11N20SISO/LCH	Agilent R L Freq/Channel Ch Freq 2.412 GHz Trig Free Occupied Bandwidth Ref 30 dBm *Atten 40 dB *Peak Log 10 dB/ Offst 0.9 dB Center 2.412 00 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 2.88 ms (601 pts) Span 30 MHz Occupied Bandwidth 17.5173 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 23.015 kHz x dB Bandwidth 15.151 MHz File name error Center Freq 2.41200000 GHz Start Freq 2.39700000 GHz Stop Freq 2.42700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11N20SISO/MCH	Agilent R T Freq/Channel Ch Freq 2.437 GHz Trig Free Occupied Bandwidth Ref 30 dBm *Atten 40 dB *Peak Log 10 dB/ Offst 0.9 dB Center 2.437 00 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 2.88 ms (601 pts) Span 30 MHz Occupied Bandwidth 17.5921 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 7.897 kHz x dB Bandwidth 17.615 MHz File name error Center Freq 2.43700000 GHz Start Freq 2.42200000 GHz Stop Freq 2.45200000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11N20SISO/HCH	Agilent R T Freq/Channel Ch Freq 2.462 GHz Trig Free Occupied Bandwidth Ref 30 dBm *Atten 40 dB *Peak Log 10 dB/ Offst 0.9 dB Center 2.462 00 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 2.88 ms (601 pts) Span 30 MHz Occupied Bandwidth 17.5801 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -11.540 kHz x dB Bandwidth 15.082 MHz File name error Center Freq 2.46200000 GHz Start Freq 2.44700000 GHz Stop Freq 2.47700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

11N40SISO/LCH	Agilent R L Freq/Channel Ch Freq 2.422 GHz Trig Free Occupied Bandwidth Ref 30 dBm *Atten 40 dB *Peak Log 10 dB/ Offst 0.9 dB Center 2.422 00 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 5.76 ms (601 pts) Span 60 MHz Occupied Bandwidth 35.7237 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 31.999 kHz x dB Bandwidth 33.886 MHz File name error Center Freq 2.42200000 GHz Start Freq 2.39200000 GHz Stop Freq 2.45200000 GHz CF Step 6.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11N40SISO/MCH	Agilent R L Freq/Channel Ch Freq 2.437 GHz Trig Free Occupied Bandwidth Ref 30 dBm *Atten 40 dB *Peak Log 10 dB/ Offst 0.9 dB Center 2.437 00 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 5.76 ms (601 pts) Span 60 MHz Occupied Bandwidth 35.8506 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 14.908 kHz x dB Bandwidth 35.236 MHz File name error Center Freq 2.43700000 GHz Start Freq 2.40700000 GHz Stop Freq 2.46700000 GHz CF Step 6.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11N40SISO/HCH	Agilent R L Freq/Channel Ch Freq 2.452 GHz Trig Free Occupied Bandwidth Ref 30 dBm *Atten 40 dB *Peak Log 10 dB/ Offst 0.9 dB Center 2.452 00 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 5.76 ms (601 pts) Span 60 MHz Occupied Bandwidth 35.7038 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -23.955 kHz x dB Bandwidth 35.232 MHz File name error Center Freq 2.45200000 GHz Start Freq 2.42200000 GHz Stop Freq 2.48200000 GHz CF Step 6.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

9. CONDUCTED SPURIOUS EMISSION

9.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW>RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW>RBW) are conform to the requirement.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2.

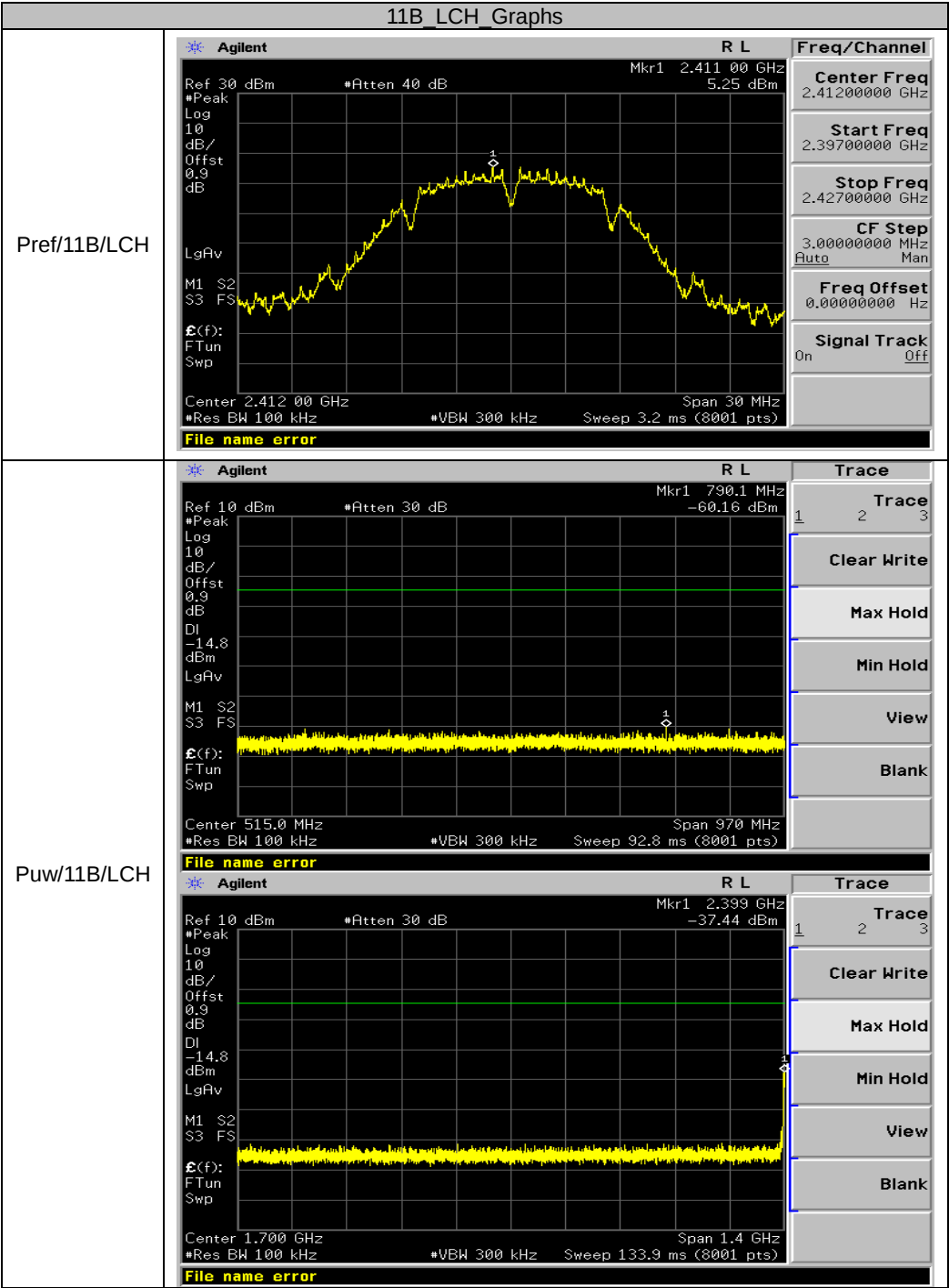
9.3. MEASUREMENT EQUIPMENT USED

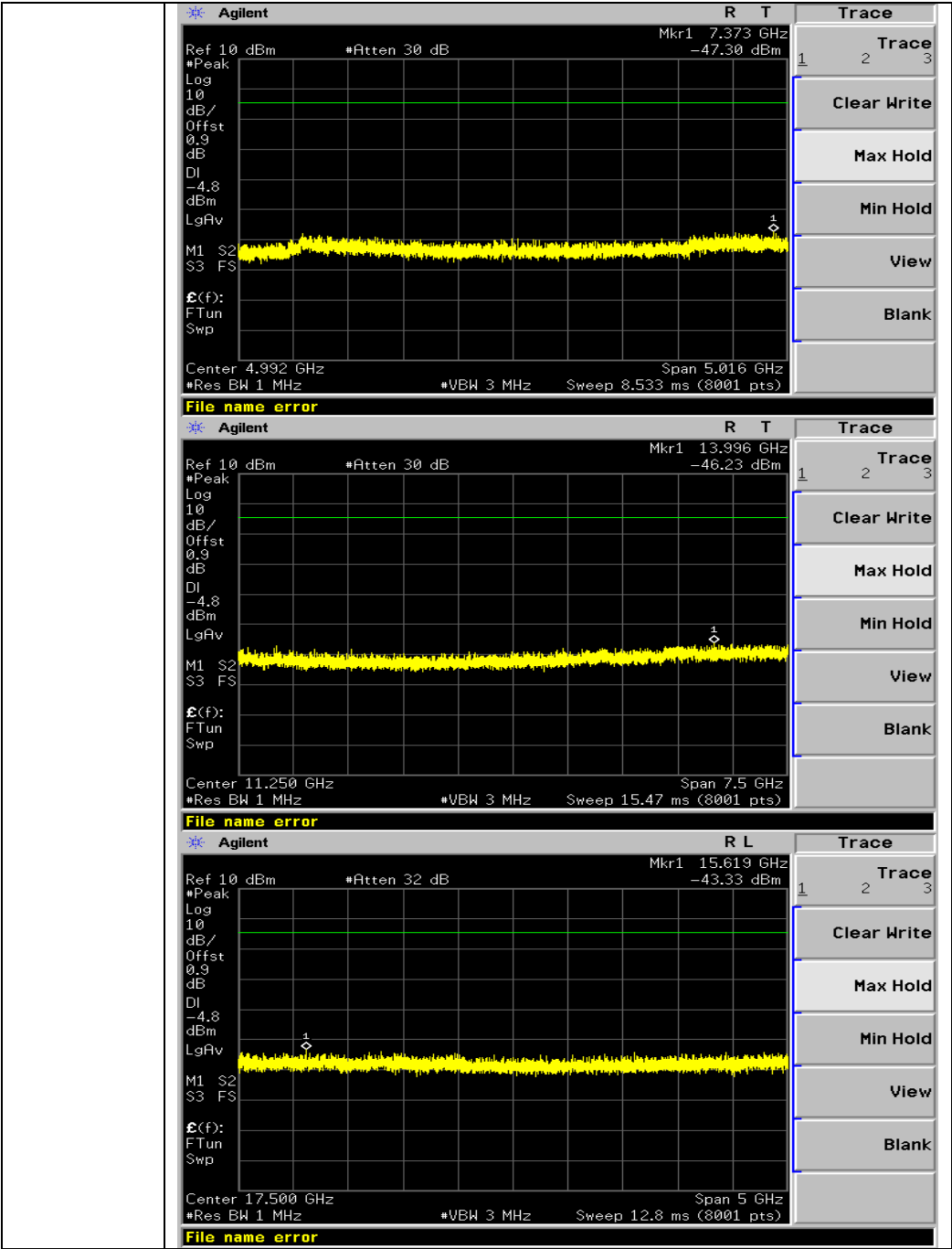
The same as described in section 6.

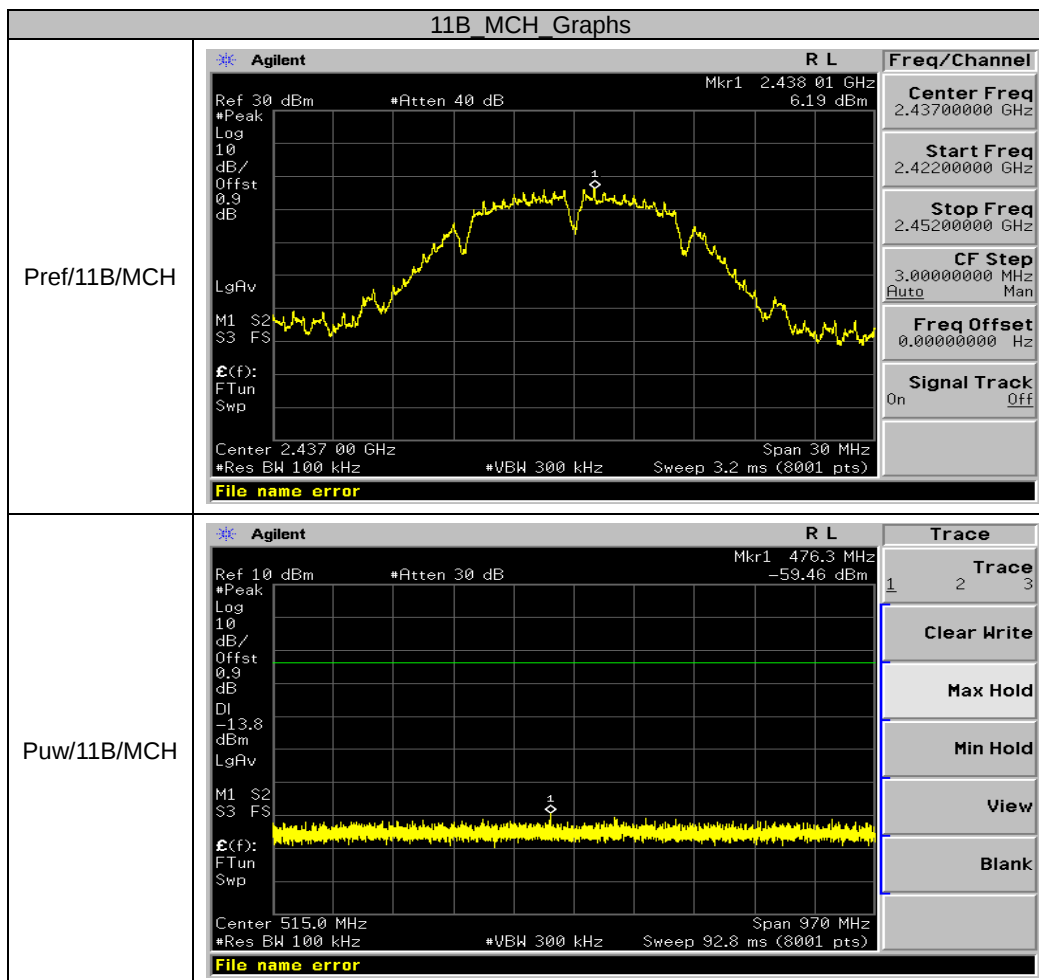
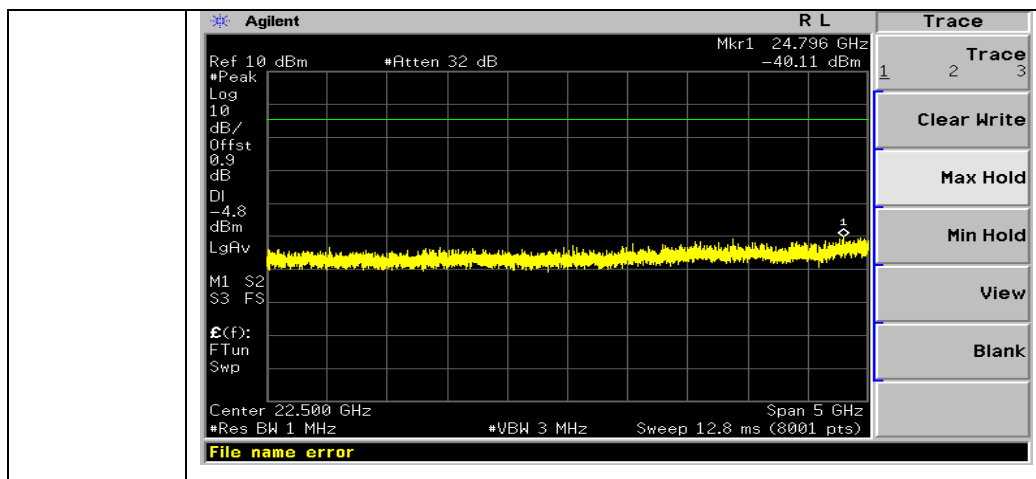
9.4. LIMITS AND MEASUREMENT RESULT

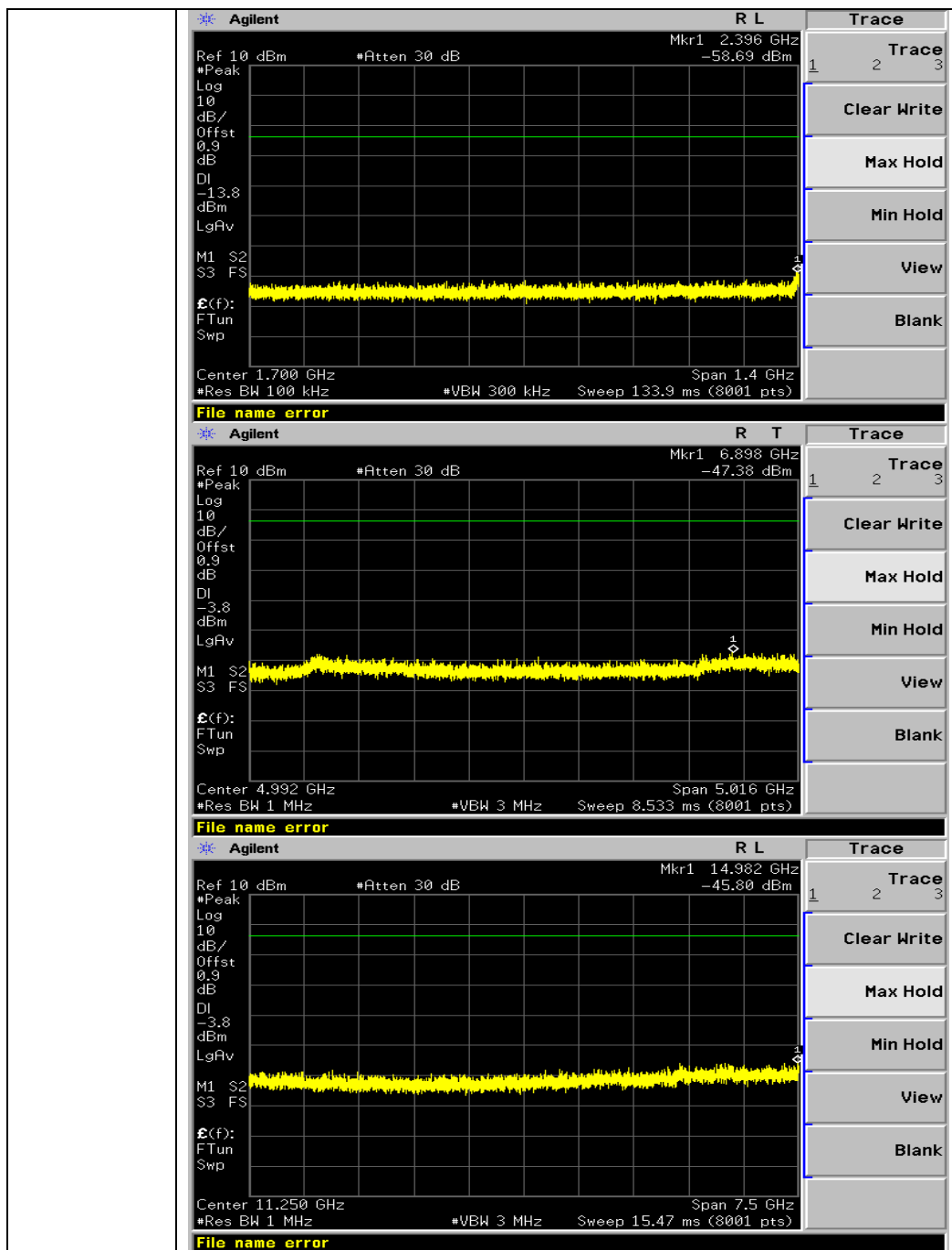
LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a))	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS
	At least -20dBc than the limit Specified on the TOP Channel	PASS

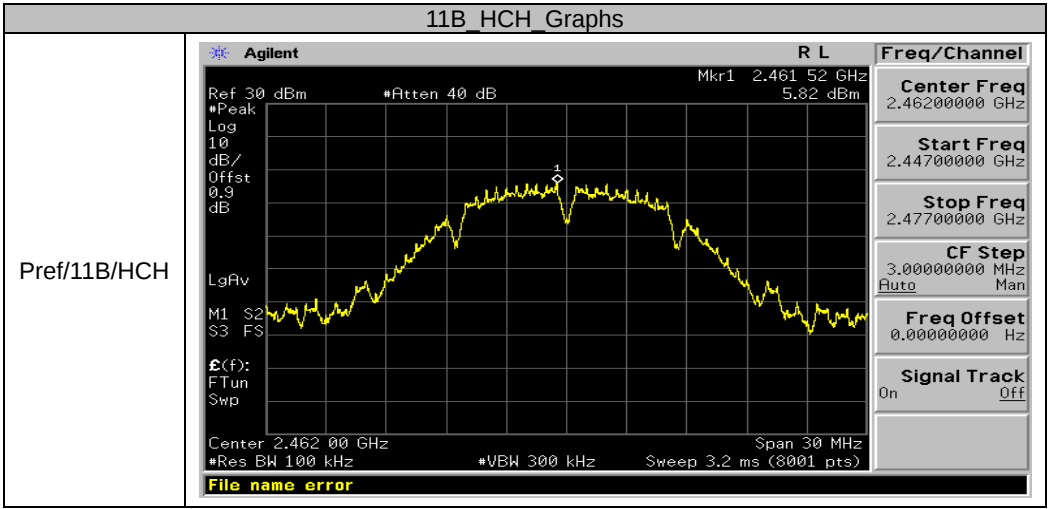
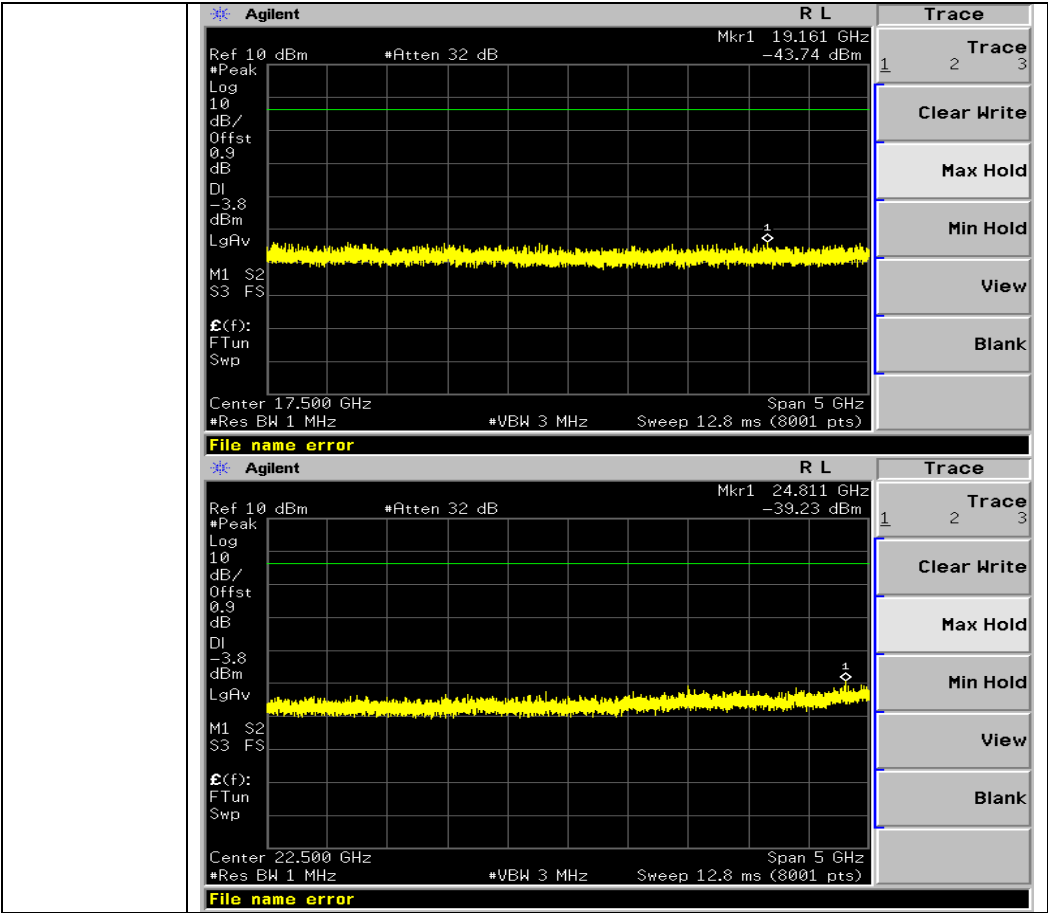
Test Graph

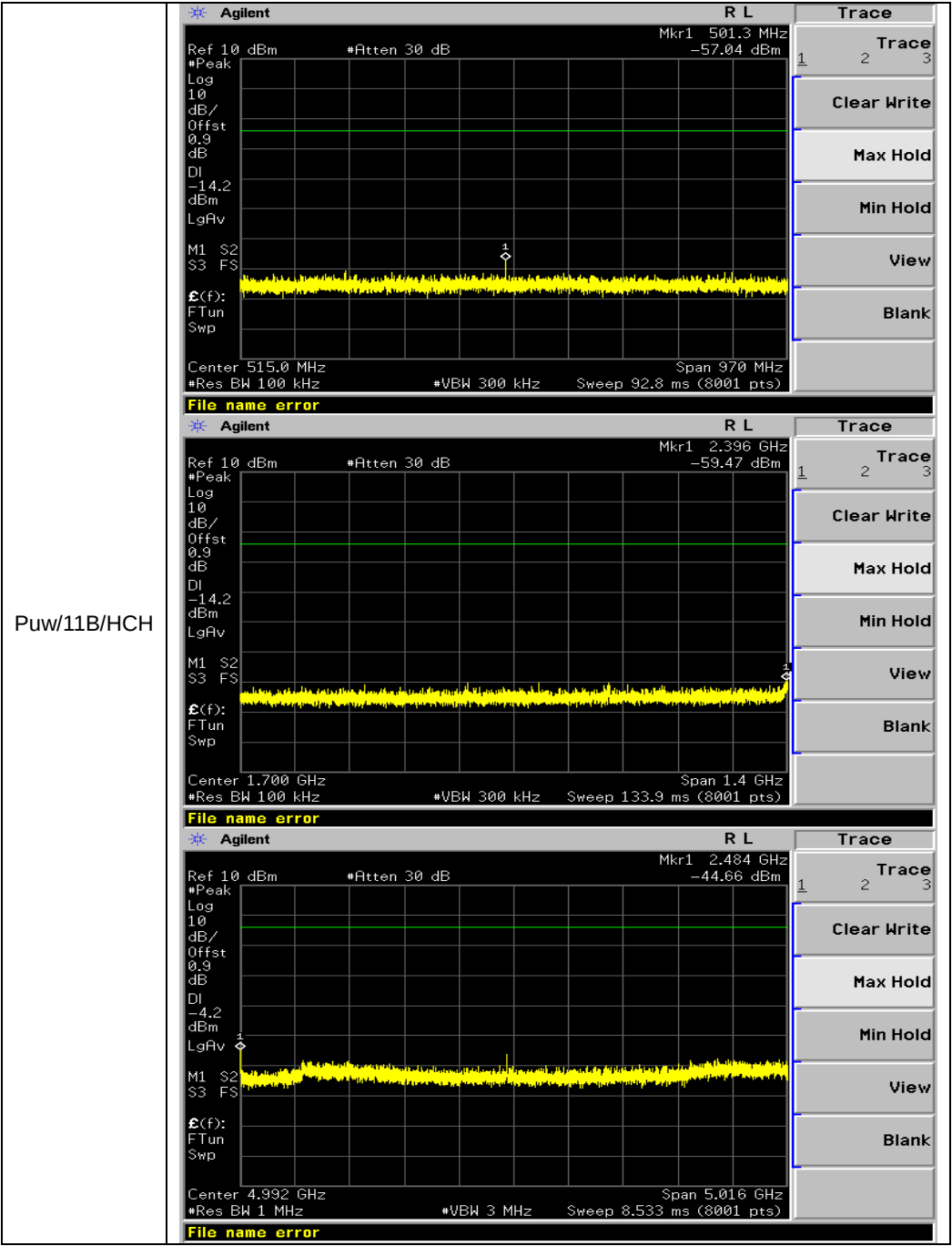














Agilent

R T

Trace

Ref 10 dBm

#Atten 32 dB

Mkr1 24.901 GHz

-39.41 dBm

#Peak

Log

10

dB/

Offst

0.9

dB

DI

-4.2

dBm

LgRv

M1 S2

S3 FS

Ⓔ(f):

FTun

Swp

Center 22.500 GHz

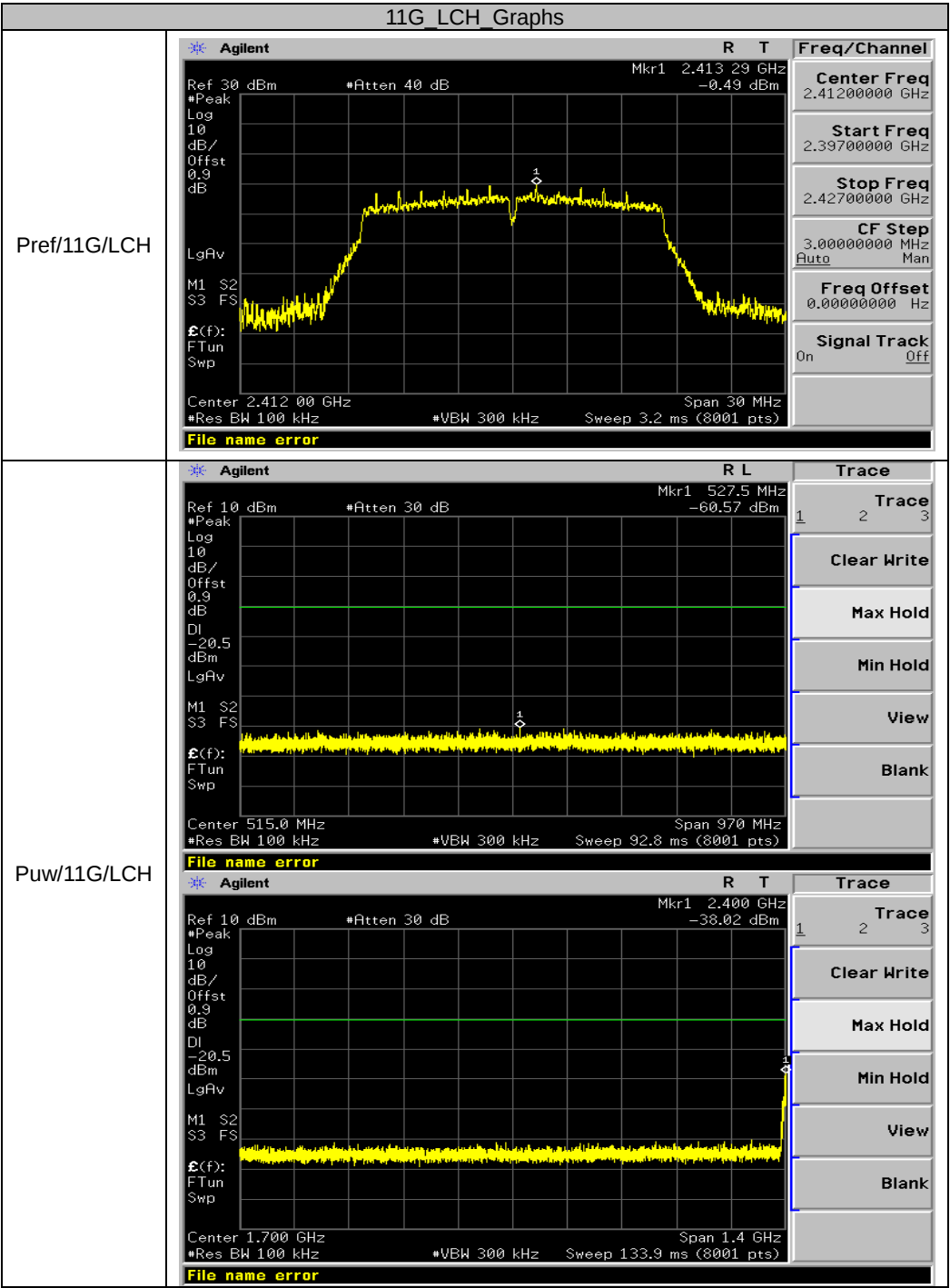
#Res BW 1 MHz

#VBW 3 MHz

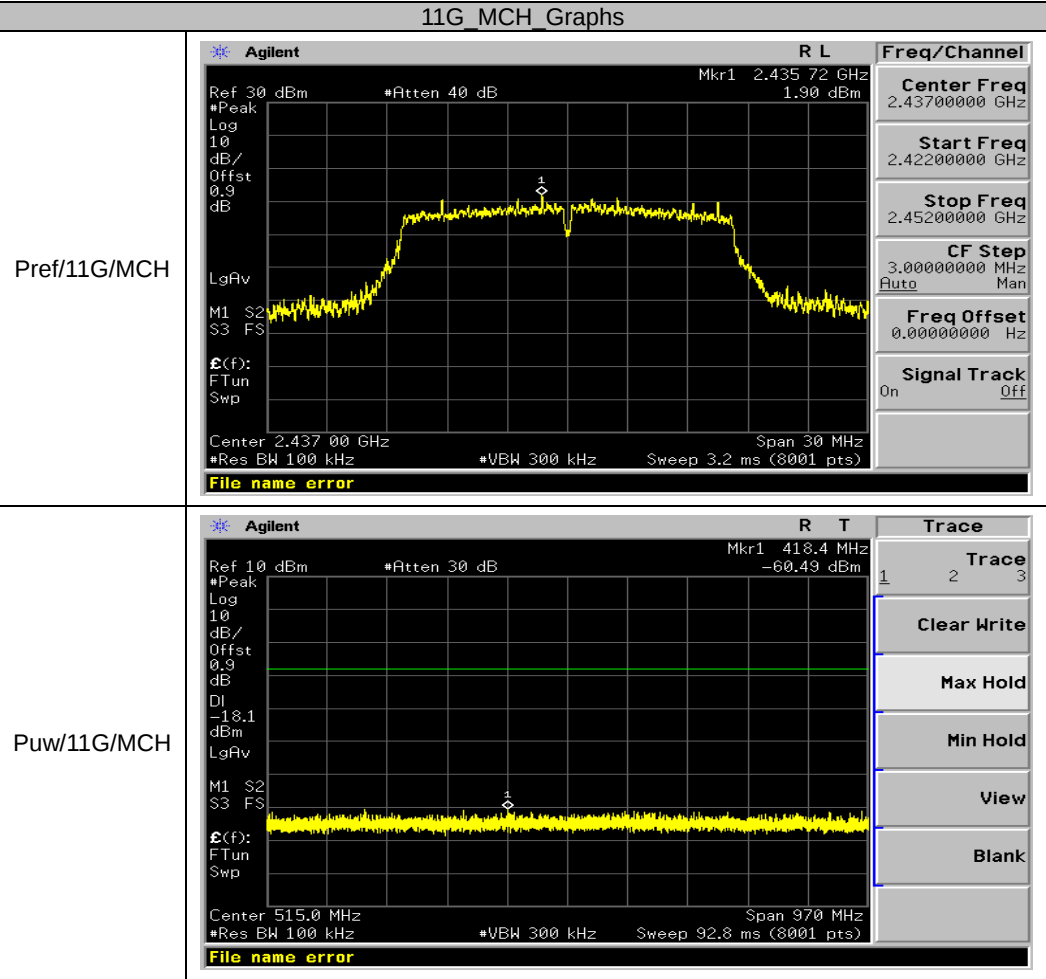
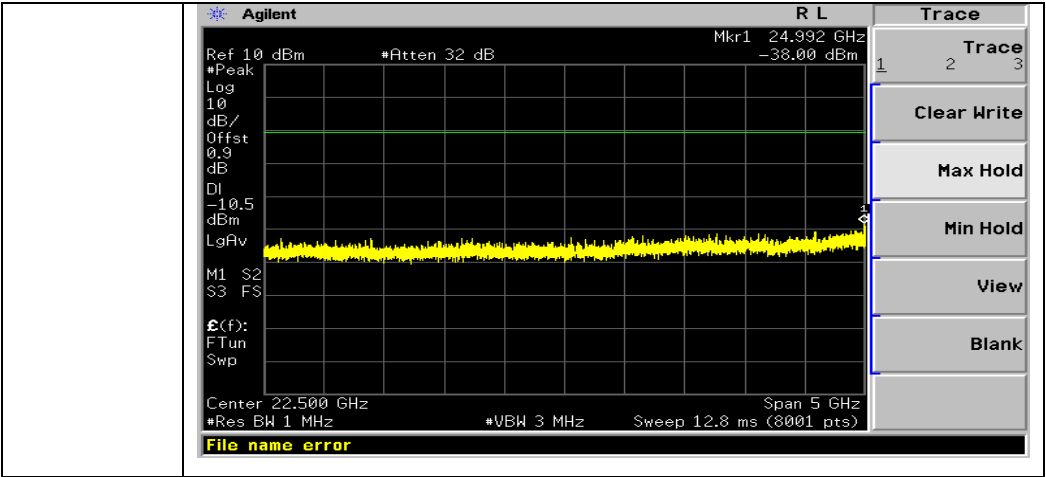
Sweep 12.8 ms (8001 pts)

Span 5 GHz

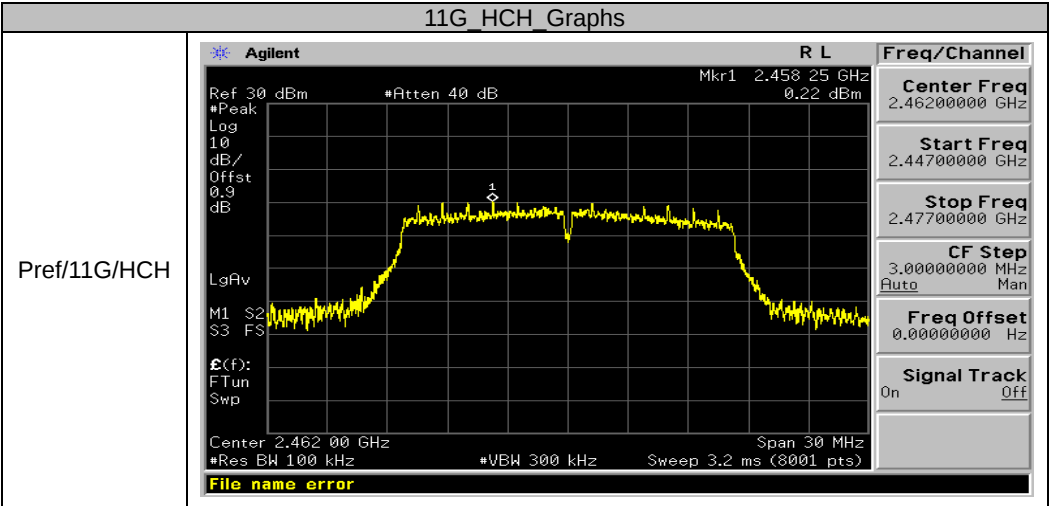
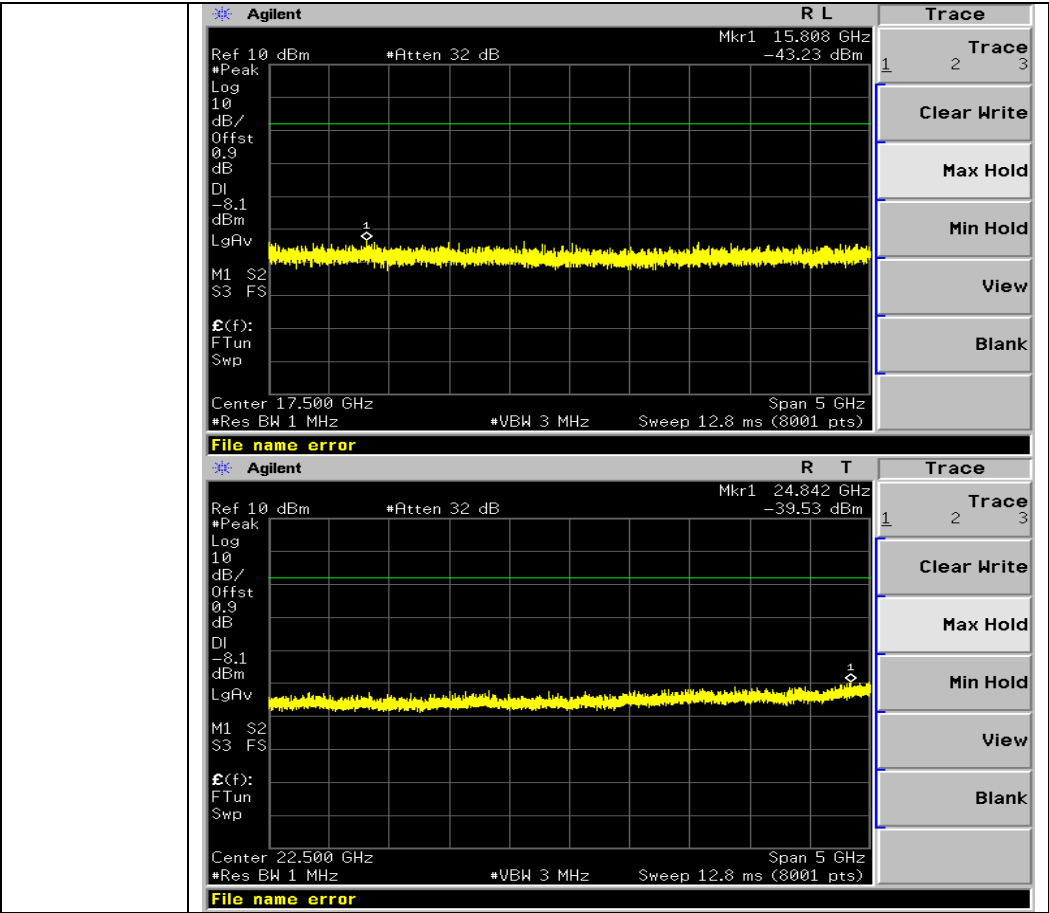
File name error

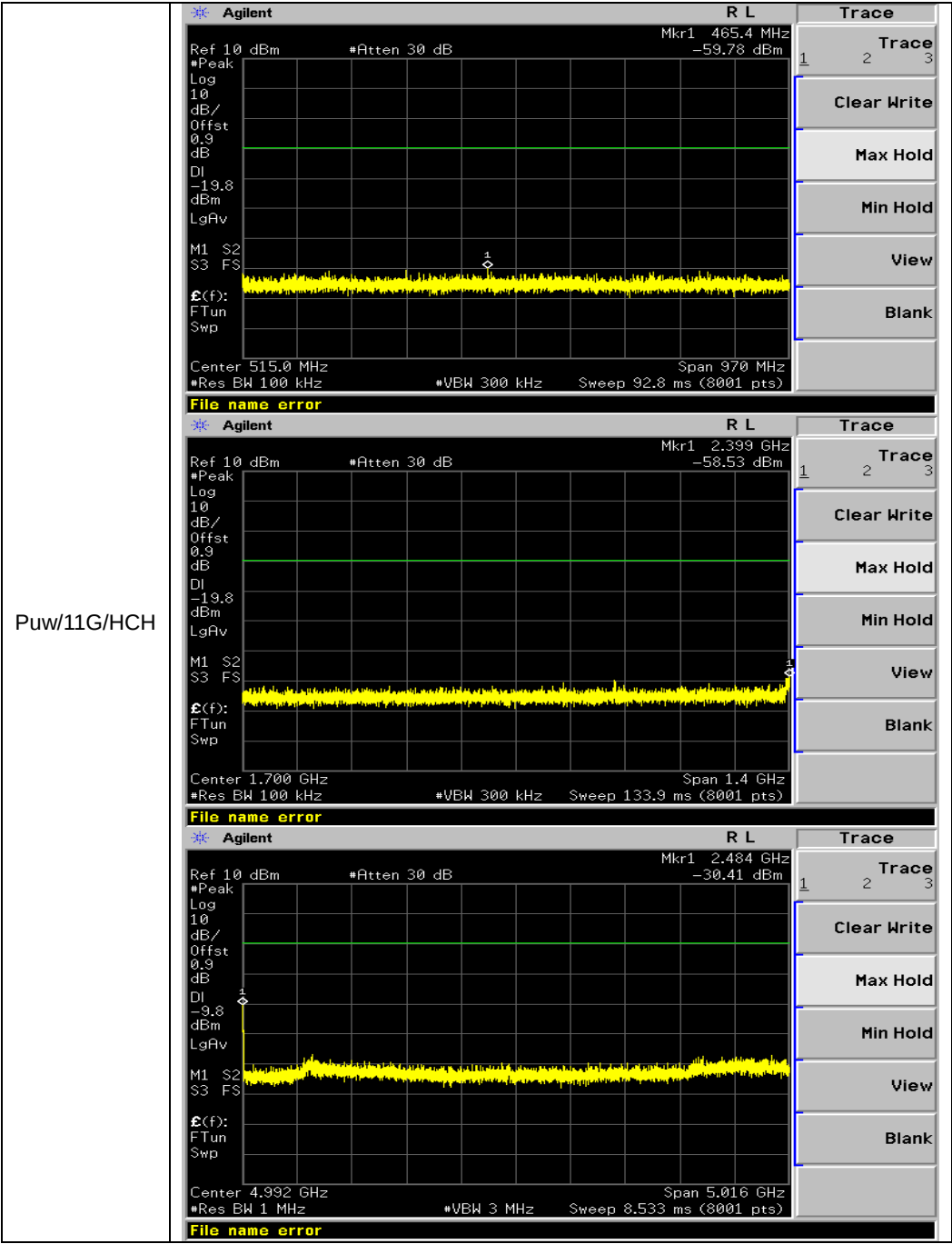




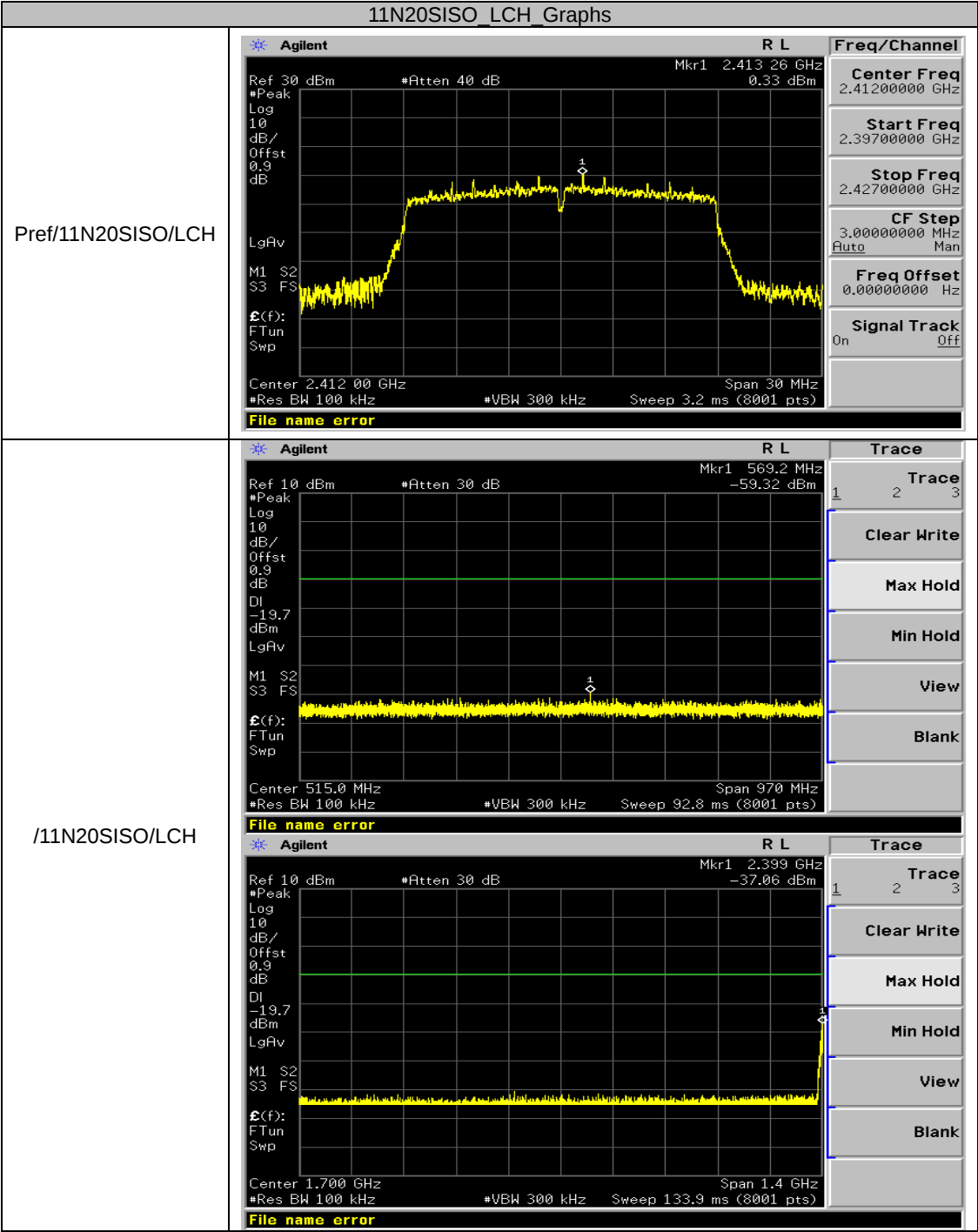


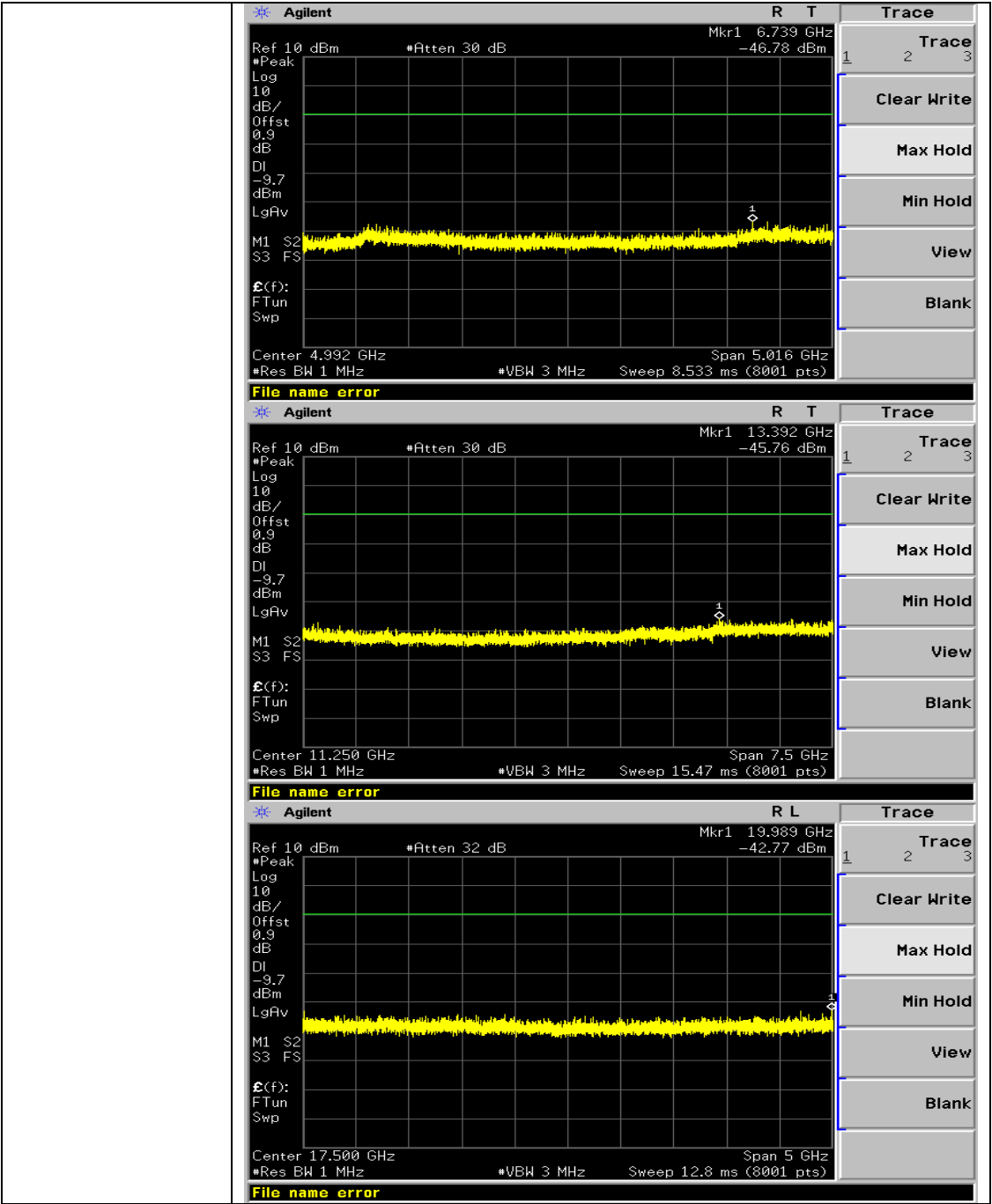


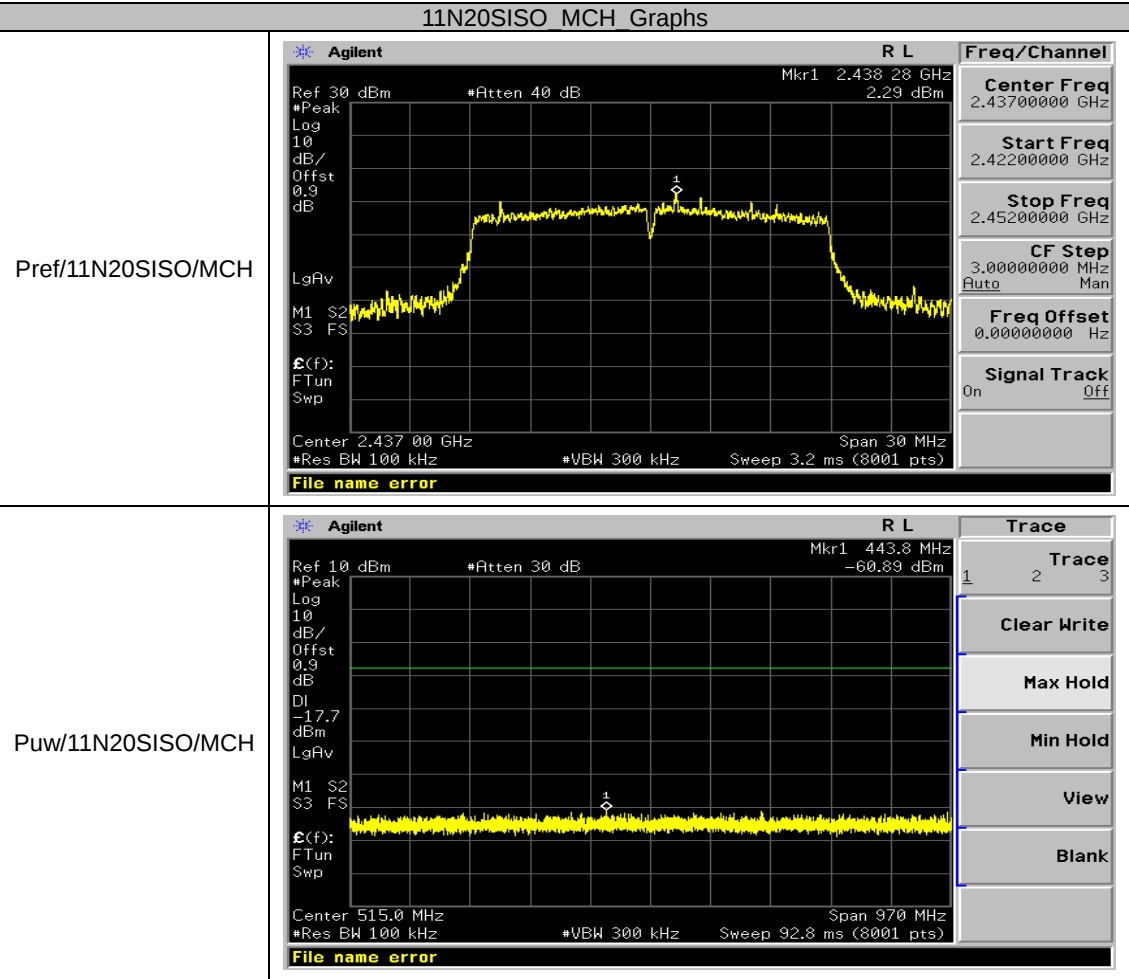
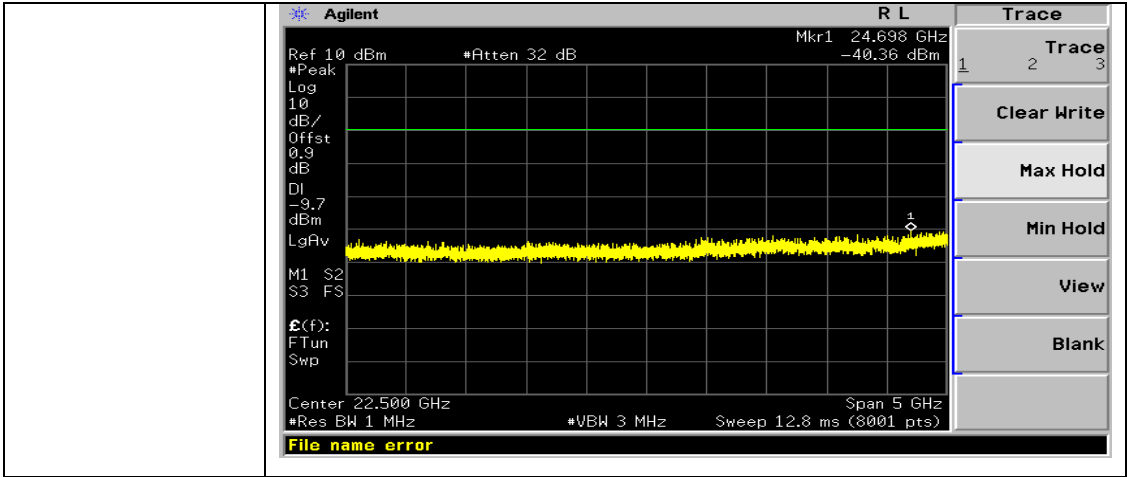


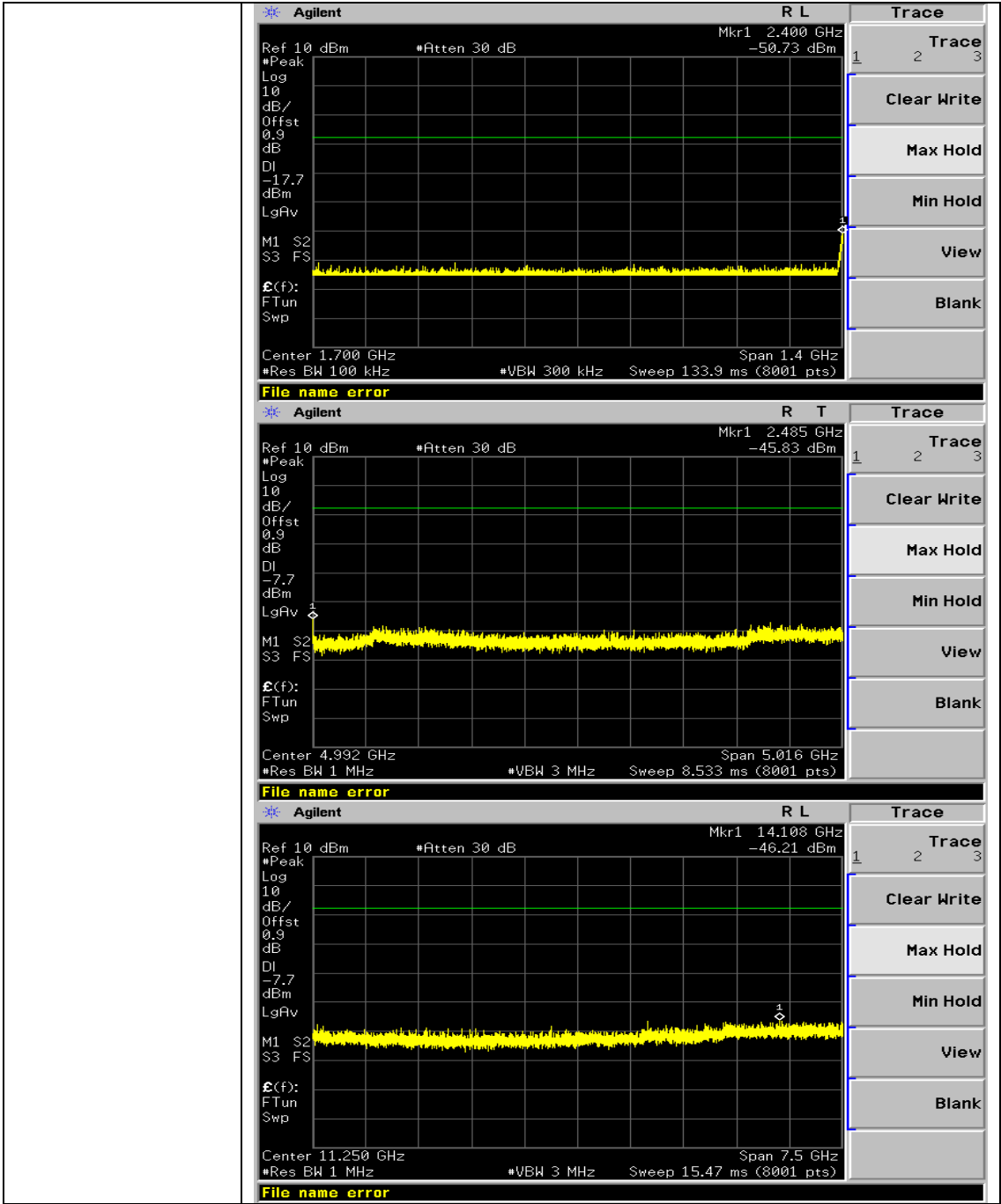




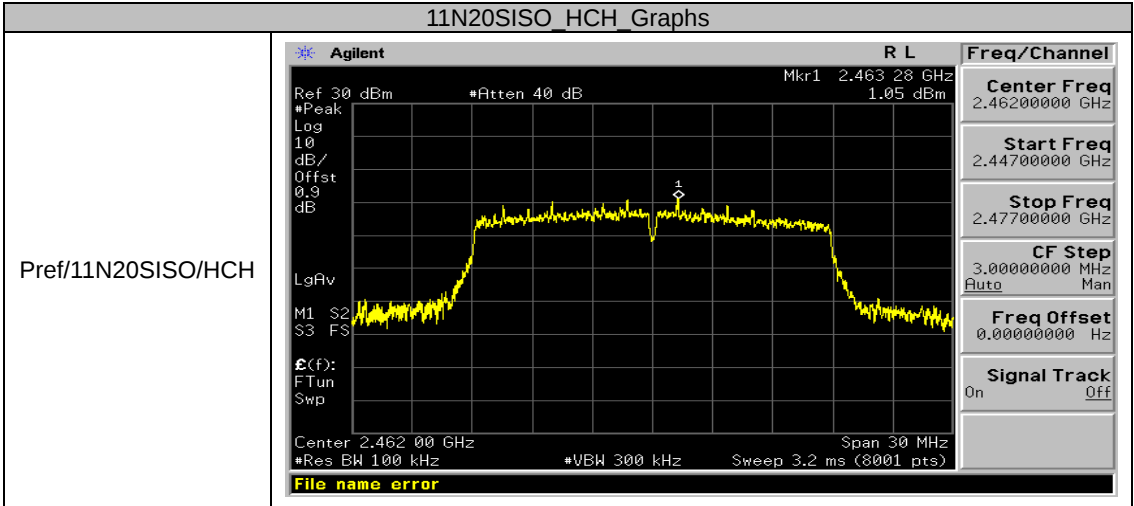
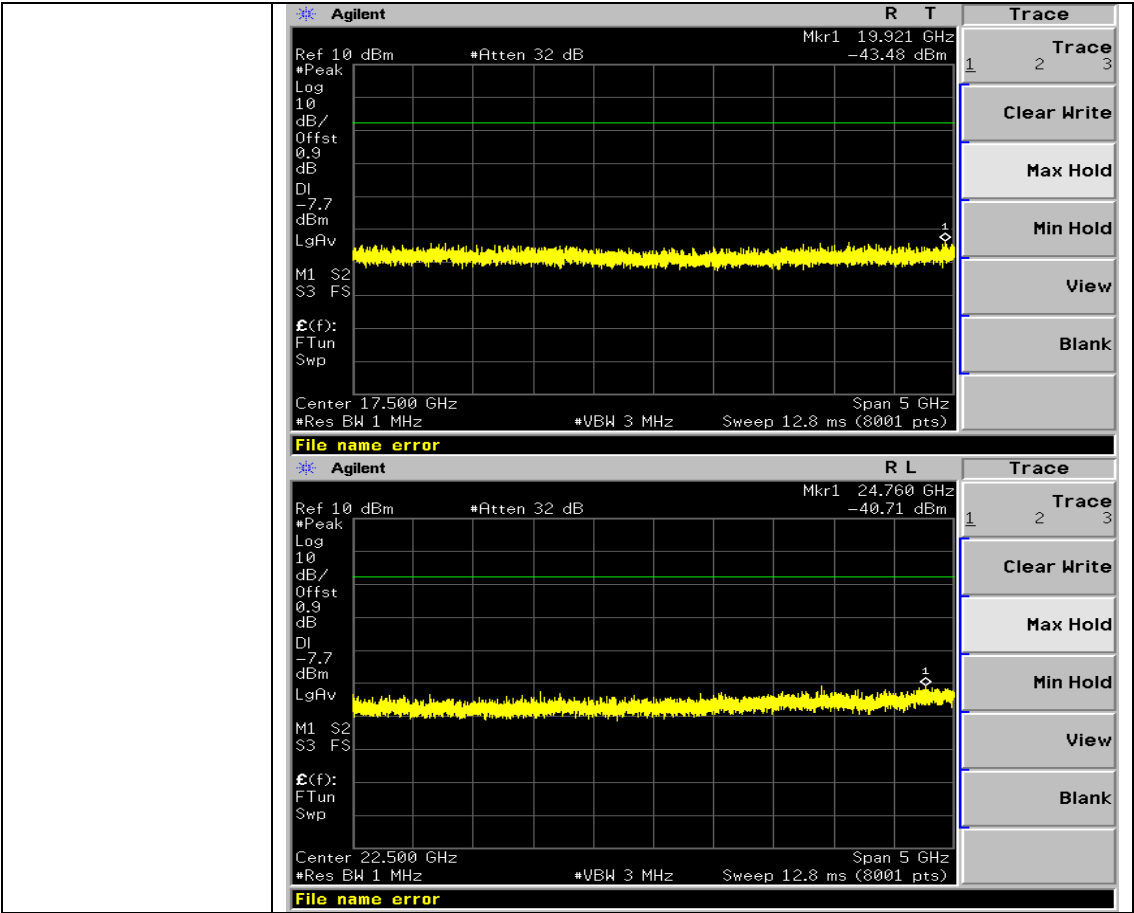


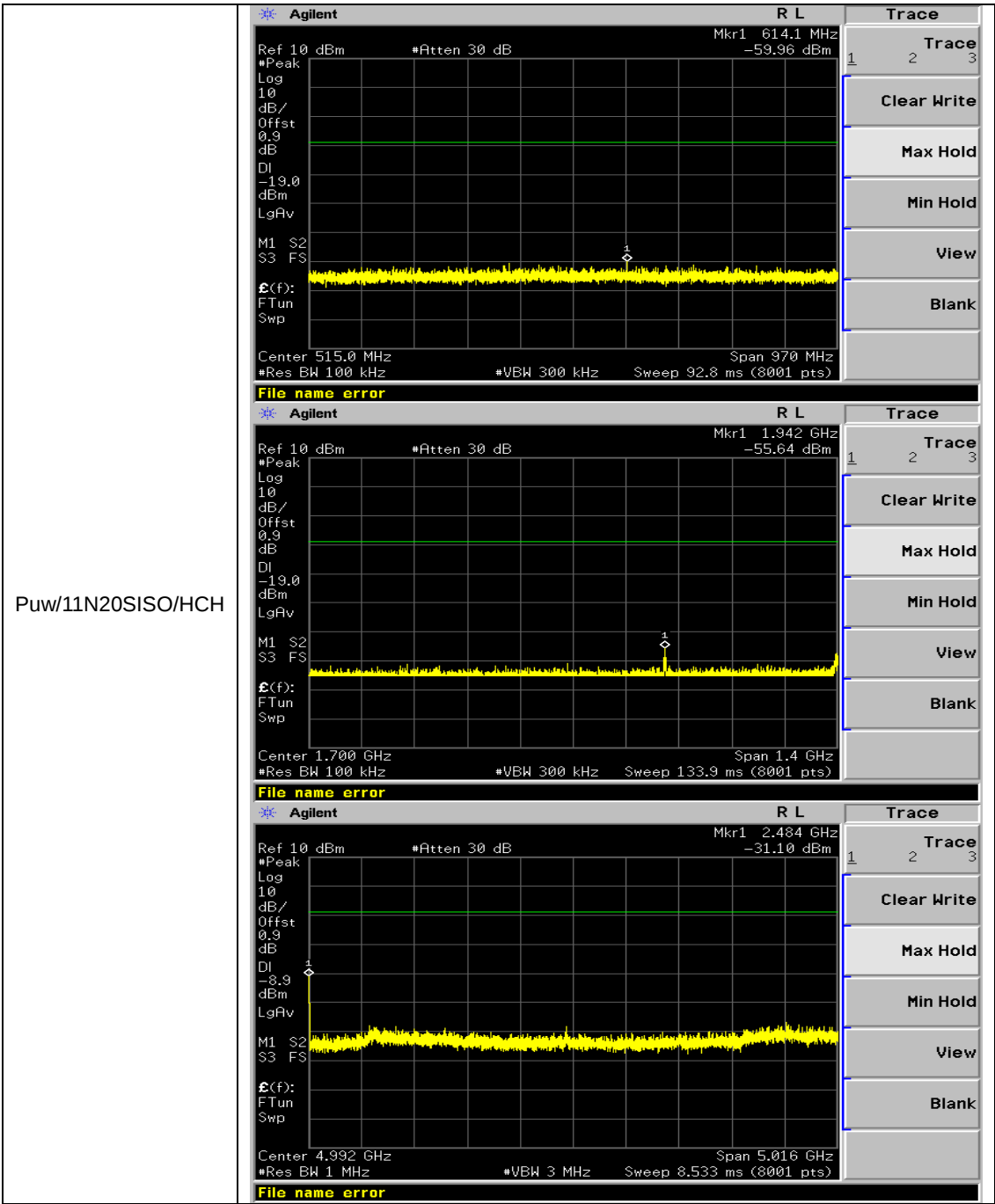




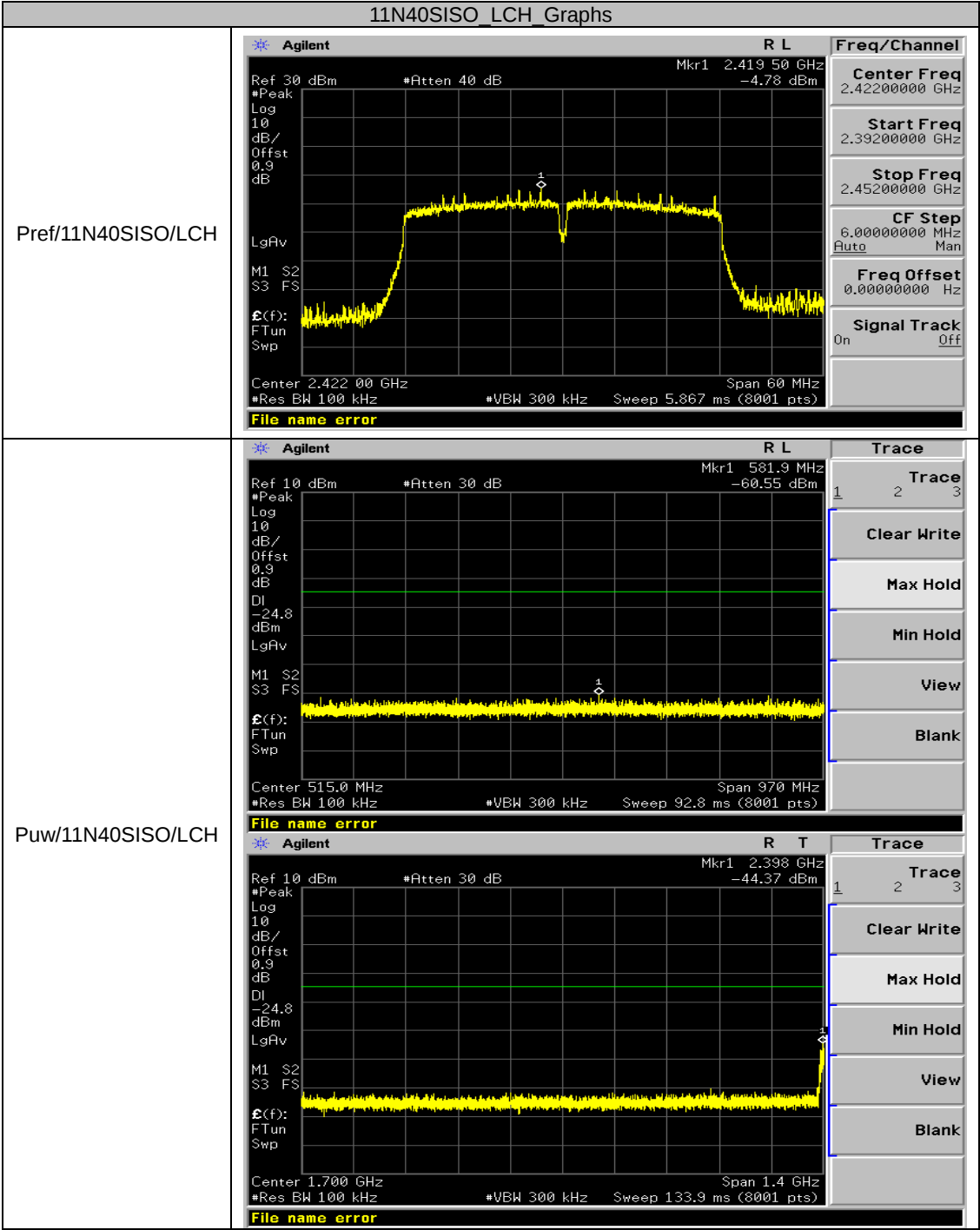


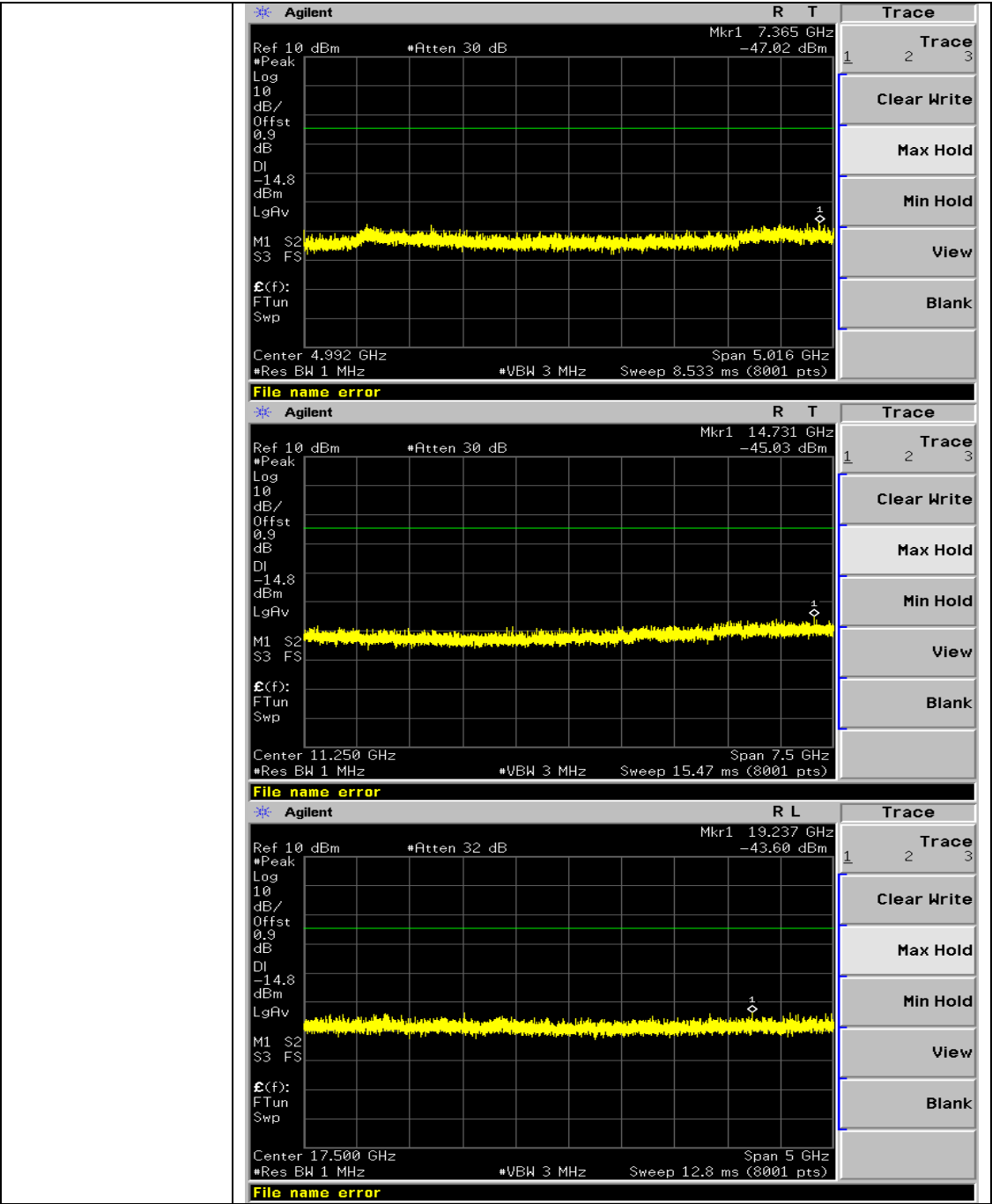
File name error

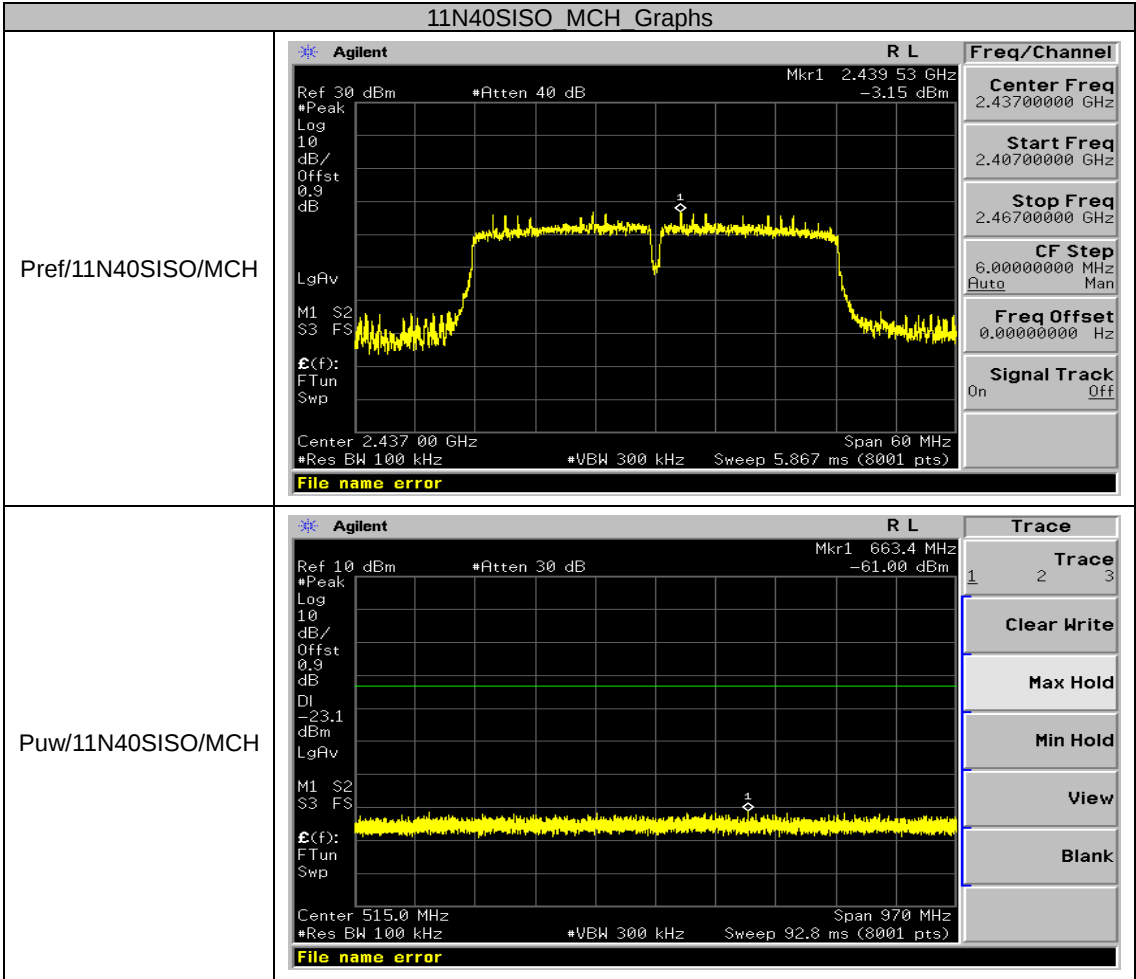
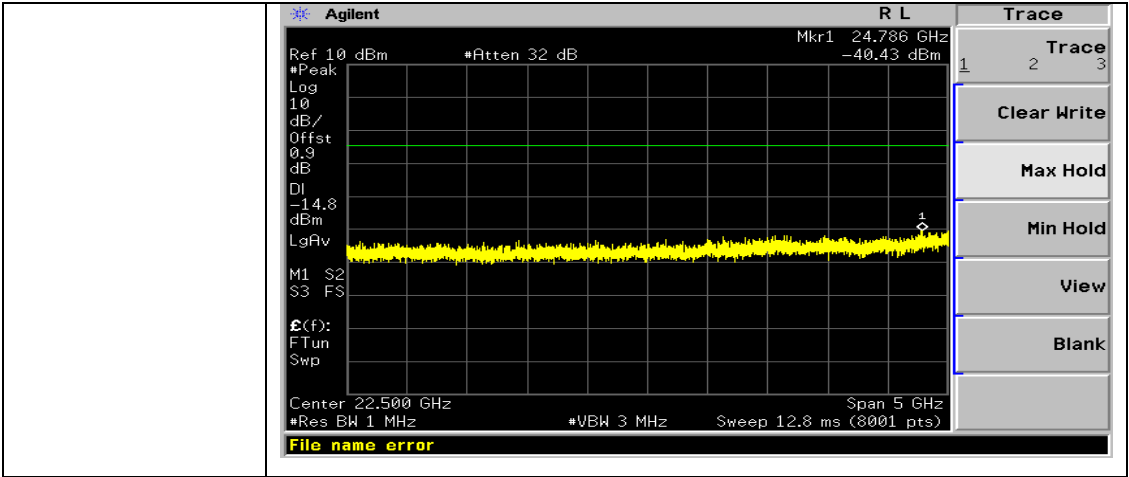


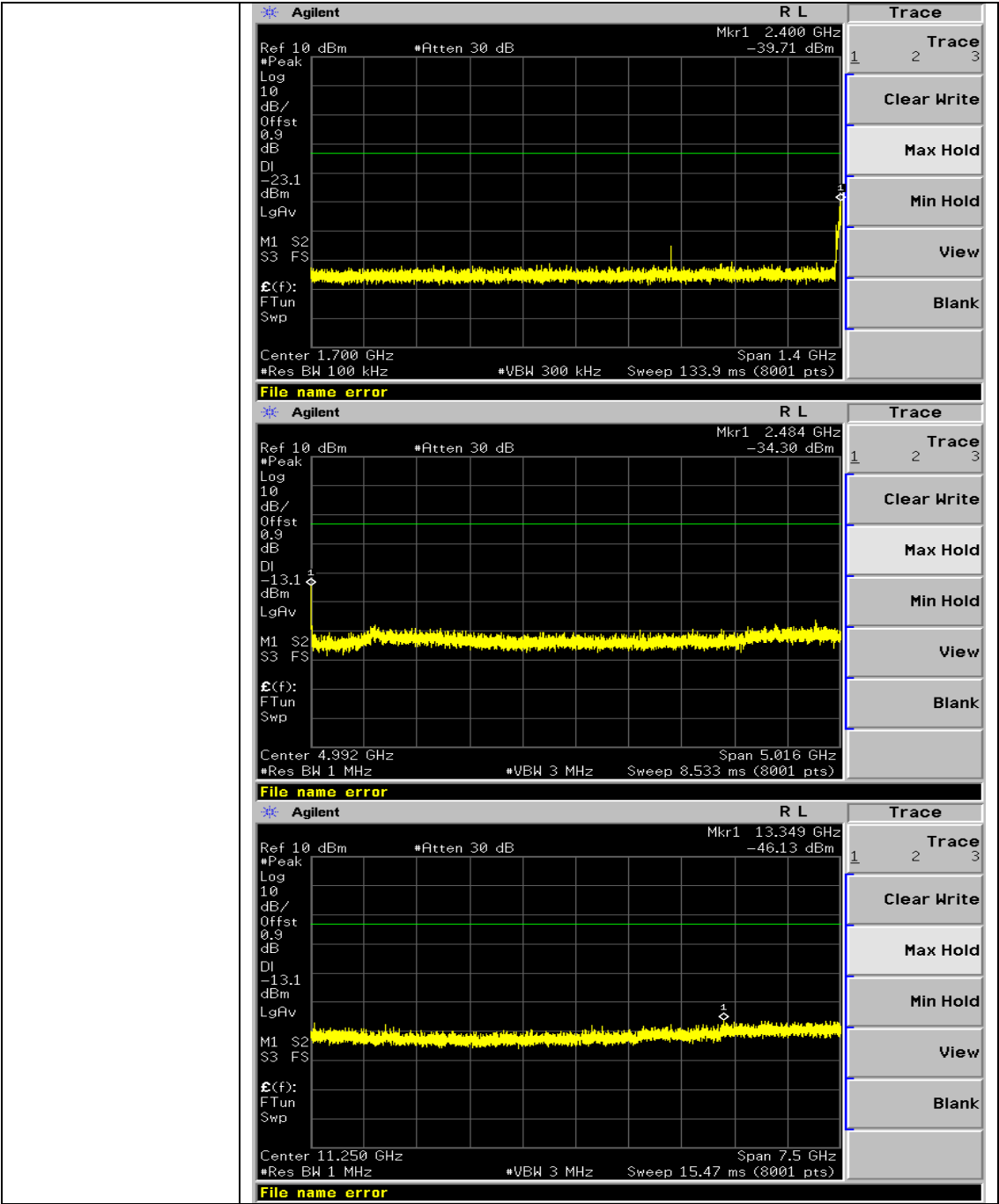


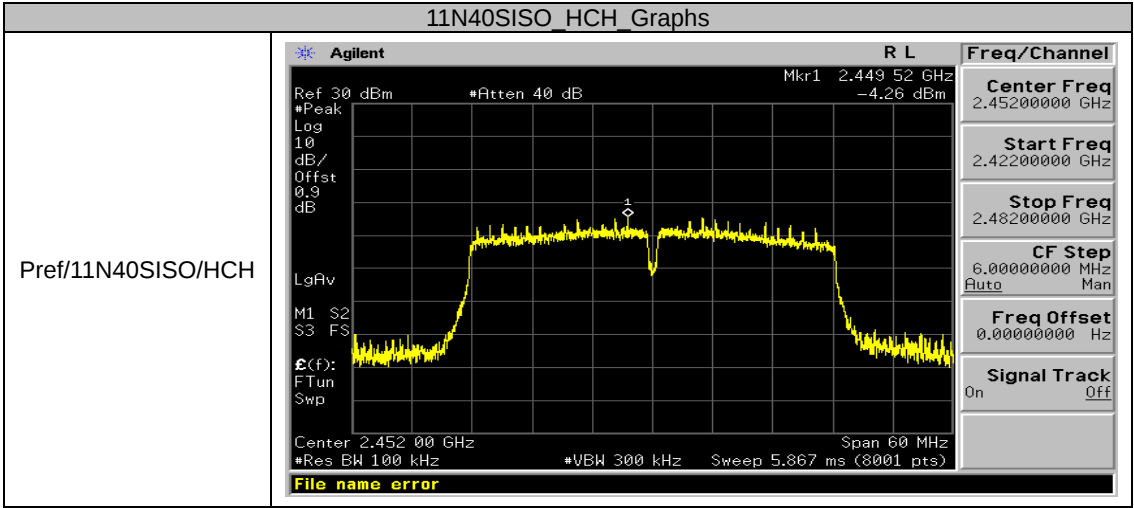
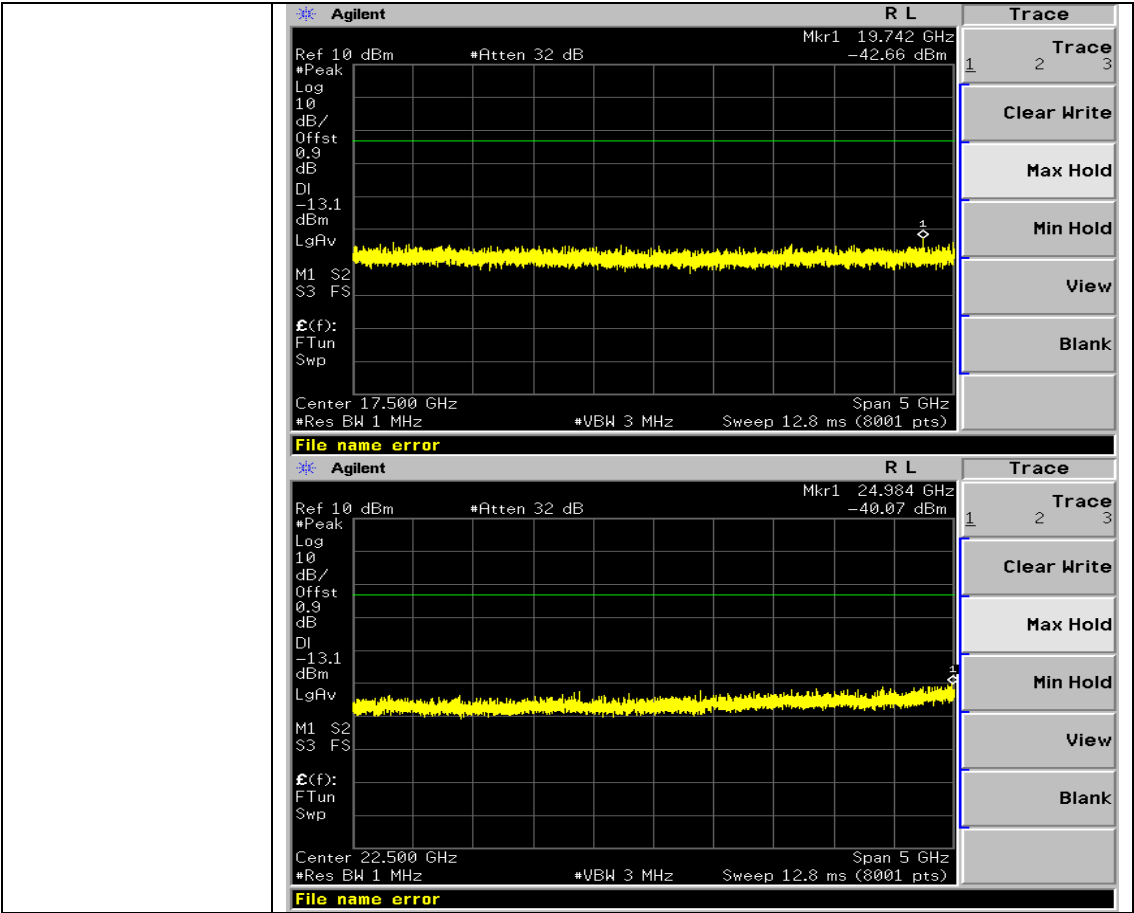


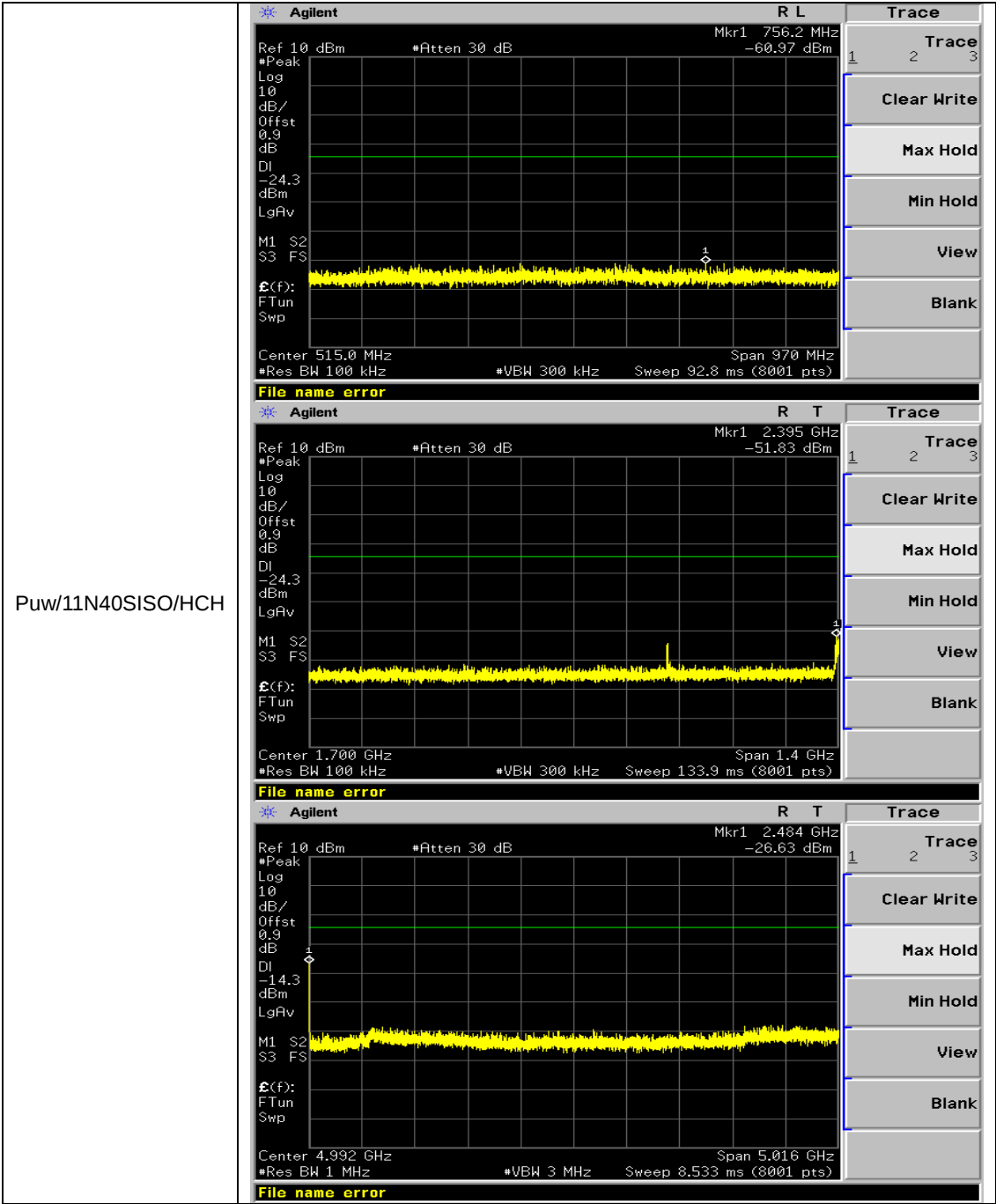


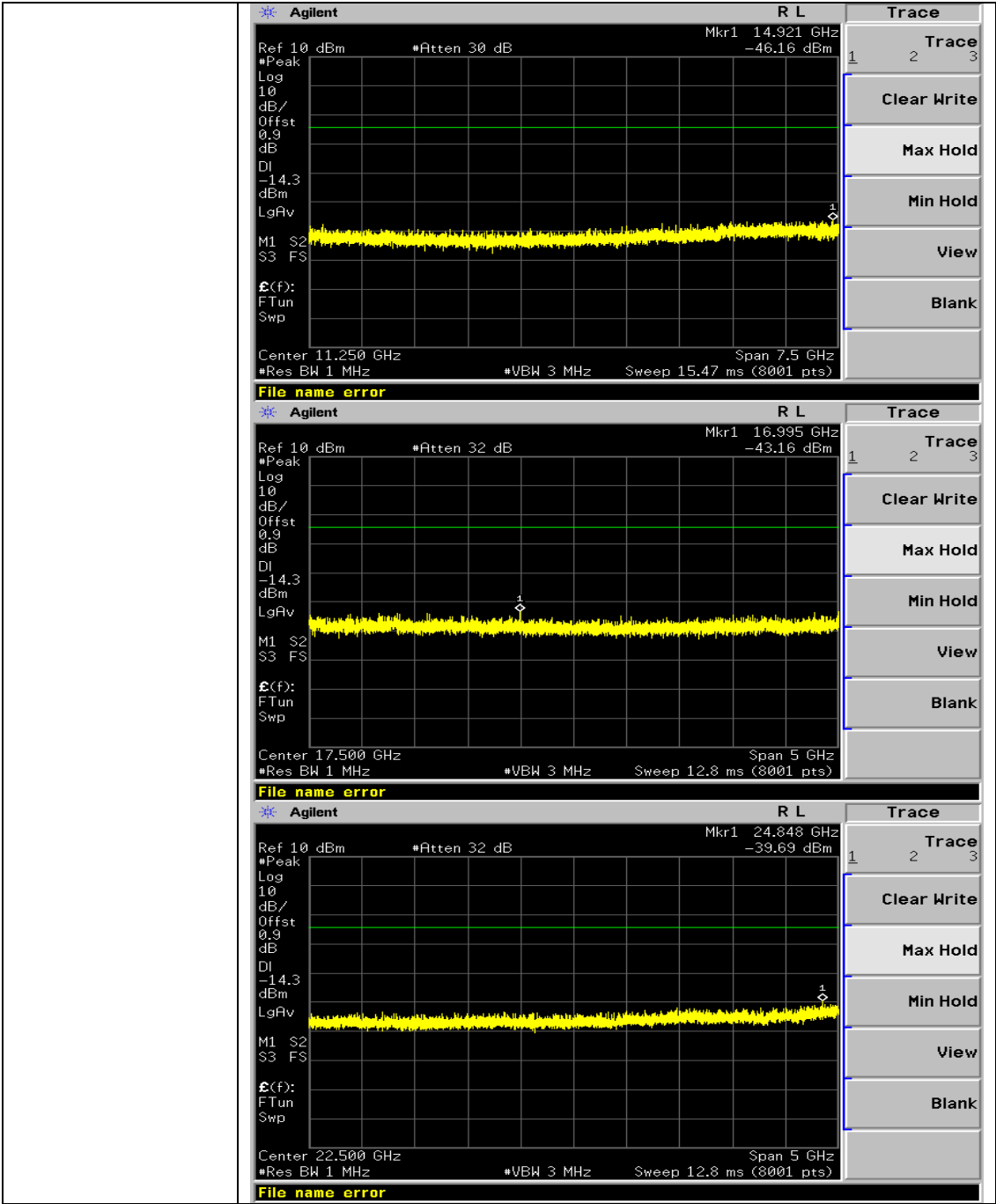












10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

10.1 MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set SPA Trace 1 Max hold, then View.

Note: The method of AVGPDS in the KDB 558074 item 10.3 was used in this testing.

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

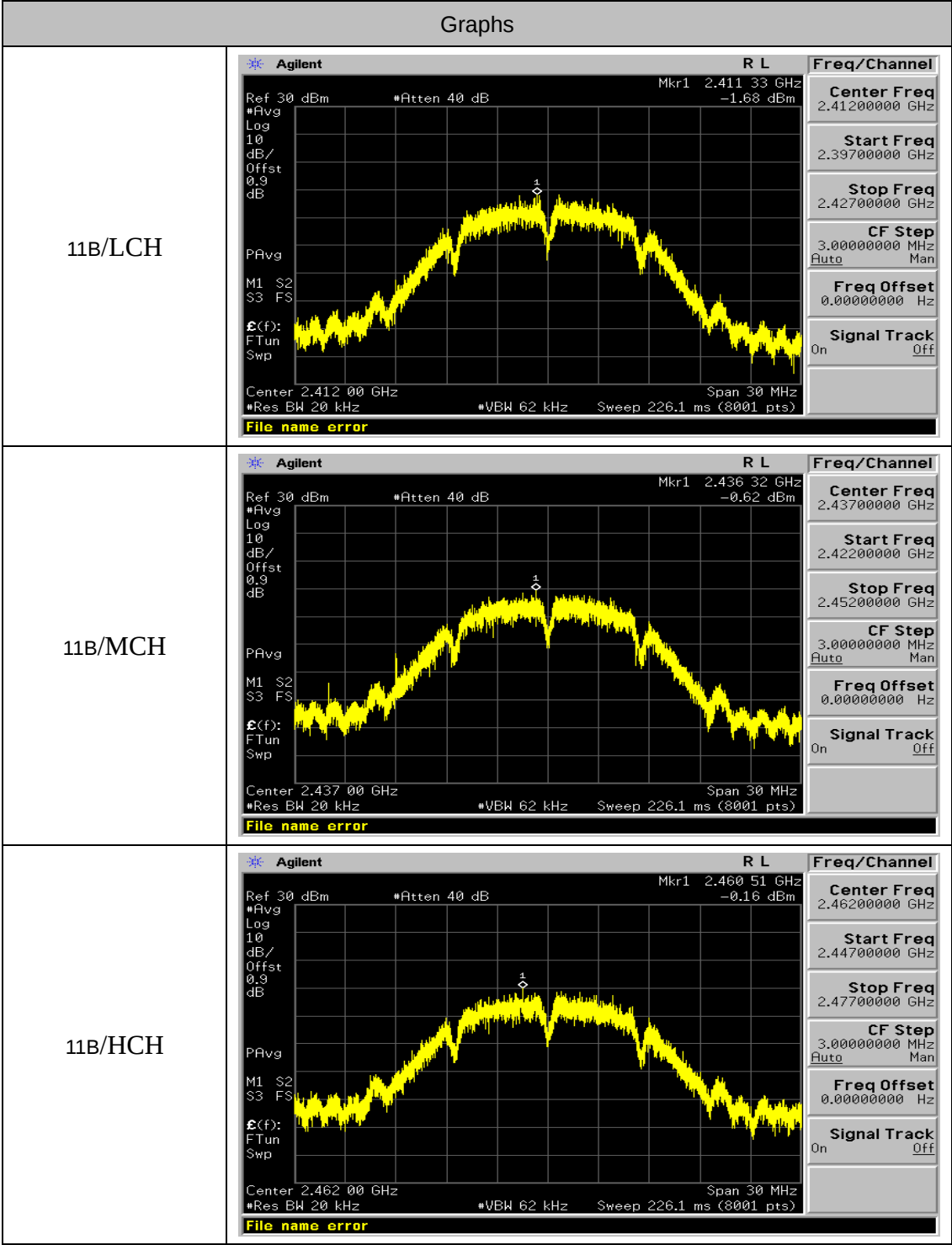
10.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

10.4 LIMITS AND MEASUREMENT RESULT

Mode	Channel	Av.PSD [dBm/20kHz]	Limit[dBm/3kHz]	Verdict
11B	LCH	-1.68	8	PASS
11B	MCH	-0.62	8	PASS
11B	HCH	-0.16	8	PASS
11G	LCH	-7.25	8	PASS
11G	MCH	-3.28	8	PASS
11G	HCH	-6.79	8	PASS
11N20SISO	LCH	-7.88	8	PASS
11N20SISO	MCH	-4.41	8	PASS
11N20SISO	HCH	-4.8	8	PASS
11N40SISO	LCH	-13.91	8	PASS
11N40SISO	MCH	-11.07	8	PASS
11N40SISO	HCH	-13.02	8	PASS

Test Graph



11G/LCH	Agilent R L Freq/Channel Ref 30 dBm *Atten 40 dB Mkr1 2.413 00 GHz -7.25 dBm #Aavg Log 10 dB/ Offst 0.9 dB PAvg M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.412 00 GHz Span 30 MHz *Res BW 20 kHz *VBW 62 kHz Sweep 226.1 ms (8001 pts) File name error Center Freq 2.41200000 GHz Start Freq 2.39700000 GHz Stop Freq 2.42700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11G/MCH	Agilent R L Freq/Channel Ref 30 dBm *Atten 40 dB Mkr1 2.436 37 GHz -3.28 dBm #Aavg Log 10 dB/ Offst 0.9 dB PAvg M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.437 00 GHz Span 30 MHz *Res BW 20 kHz *VBW 62 kHz Sweep 226.1 ms (8001 pts) File name error Center Freq 2.43700000 GHz Start Freq 2.42200000 GHz Stop Freq 2.45200000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11G/HCH	Agilent R L Freq/Channel Ref 30 dBm *Atten 40 dB Mkr1 2.463 24 GHz -6.79 dBm #Aavg Log 10 dB/ Offst 0.9 dB PAvg M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.462 00 GHz Span 30 MHz *Res BW 20 kHz *VBW 62 kHz Sweep 226.1 ms (8001 pts) File name error Center Freq 2.46200000 GHz Start Freq 2.44700000 GHz Stop Freq 2.47700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

11N20SISO/LCH	Agilent R L Freq/Channel Ref 30 dBm *Atten 40 dB Mkr1 2.410 38 GHz -7.88 dBm #Avg Log 10 dB/ Offst 0.9 dB PAvg M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.412 00 GHz Span 30 MHz *Res BW 20 kHz #VBW 62 kHz Sweep 226.1 ms (8001 pts) File name error Center Freq 2.41200000 GHz Start Freq 2.39700000 GHz Stop Freq 2.42700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11N20SISO/MCH	Agilent R L Freq/Channel Ref 30 dBm *Atten 40 dB Mkr1 2.436 38 GHz -4.41 dBm #Avg Log 10 dB/ Offst 0.9 dB PAvg M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.437 00 GHz Span 30 MHz *Res BW 20 kHz #VBW 62 kHz Sweep 226.1 ms (8001 pts) File name error Center Freq 2.43700000 GHz Start Freq 2.42200000 GHz Stop Freq 2.45200000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11N20SISO/HCH	Agilent R L Freq/Channel Ref 30 dBm *Atten 40 dB Mkr1 2.460 76 GHz -4.80 dBm #Avg Log 10 dB/ Offst 0.9 dB PAvg M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.462 00 GHz Span 30 MHz *Res BW 20 kHz #VBW 62 kHz Sweep 226.1 ms (8001 pts) File name error Center Freq 2.46200000 GHz Start Freq 2.44700000 GHz Stop Freq 2.47700000 GHz CF Step 3.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

11N40SISO/LCH	Agilent R L Mkr1 2.426 00 GHz -13.91 dBm Ref 30 dBm *Atten 40 dB *PAvg Log 10 dB/ Offst 0.9 dB PAvg M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.422 00 GHz *Res BW 20 kHz *VBW 62 kHz Sweep 452.3 ms (8001 pts) File name error Freq/Channel Center Freq 2.42200000 GHz Start Freq 2.39200000 GHz Stop Freq 2.45200000 GHz CF Step 6.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11N40SISO/MCH	Agilent R L Mkr1 2.428 26 GHz -11.07 dBm Ref 30 dBm *Atten 40 dB *PAvg Log 10 dB/ Offst 0.9 dB PAvg M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.437 00 GHz *Res BW 20 kHz *VBW 62 kHz Sweep 452.3 ms (8001 pts) File name error Freq/Channel Center Freq 2.43700000 GHz Start Freq 2.40700000 GHz Stop Freq 2.46700000 GHz CF Step 6.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
11N40SISO/HCH	Agilent R L Mkr1 2.454 54 GHz -13.02 dBm Ref 30 dBm *Atten 40 dB *PAvg Log 10 dB/ Offst 0.9 dB PAvg M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.452 00 GHz *Res BW 20 kHz *VBW 62 kHz Sweep 452.3 ms (8001 pts) File name error Freq/Channel Center Freq 2.45200000 GHz Start Freq 2.42200000 GHz Stop Freq 2.48200000 GHz CF Step 6.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

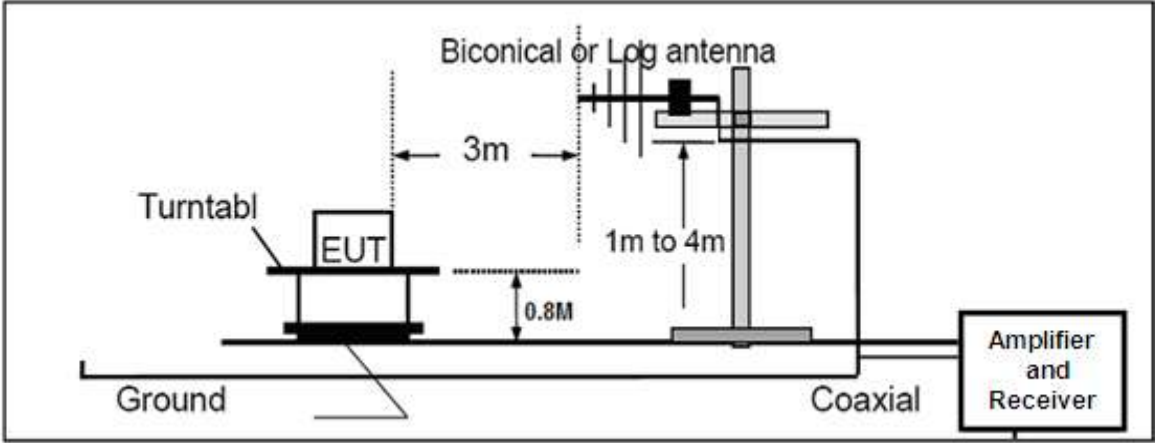
11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

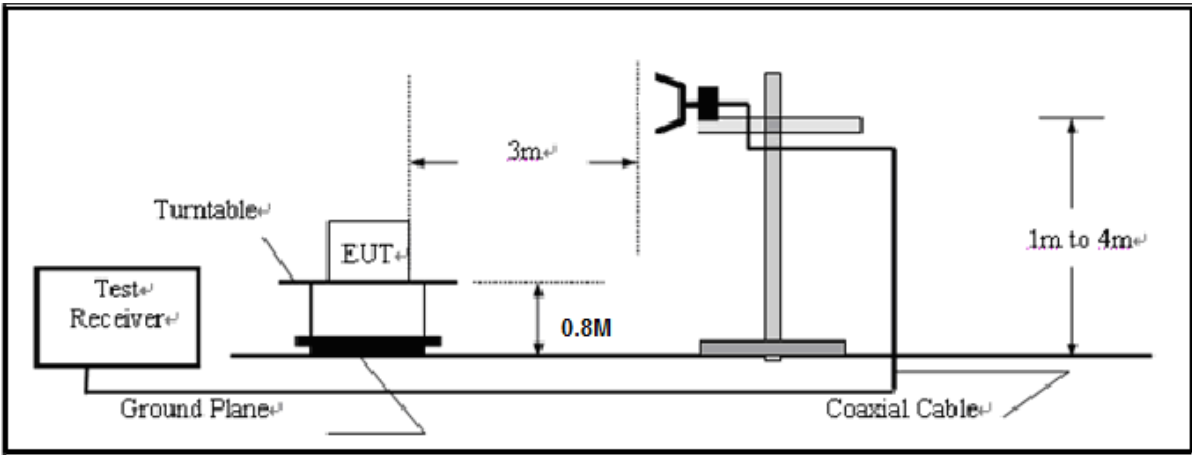
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

11.2. TEST SETUP

RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested For restricted band radiated emission,
the test records reported below are the worst result compared to other modes.

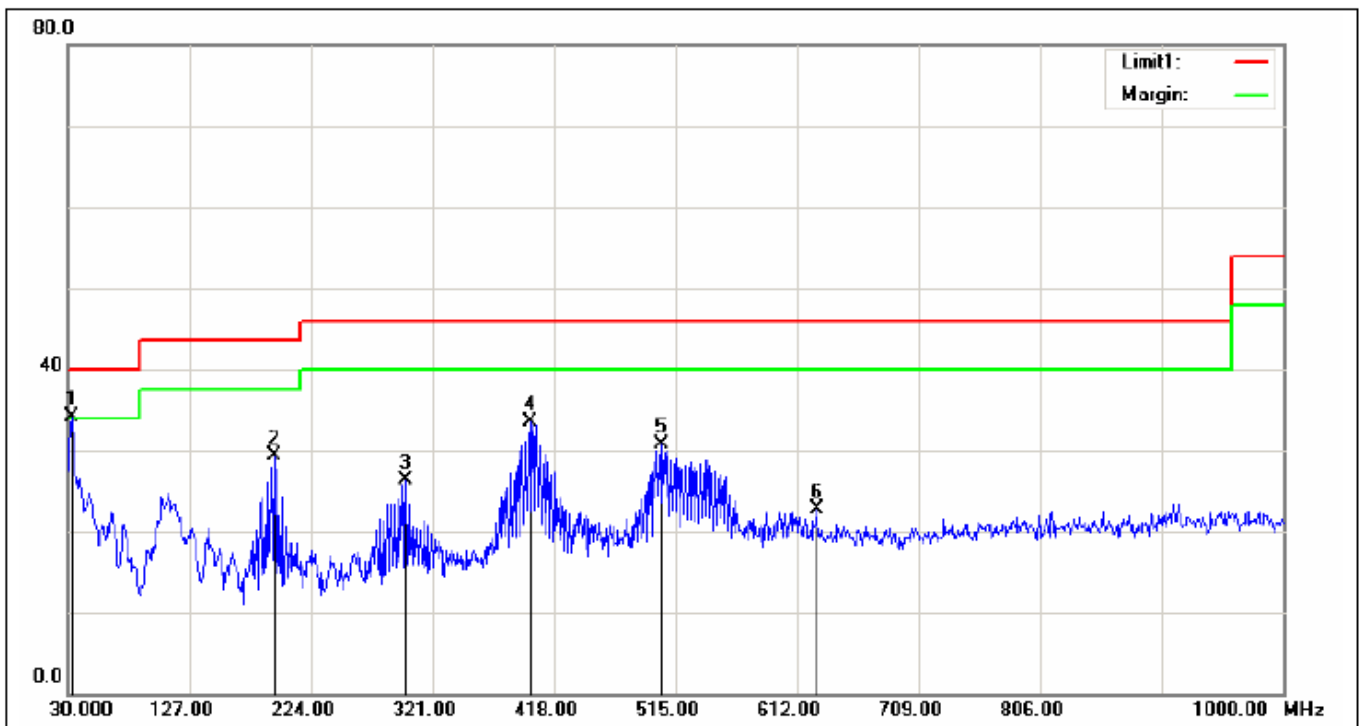
11.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

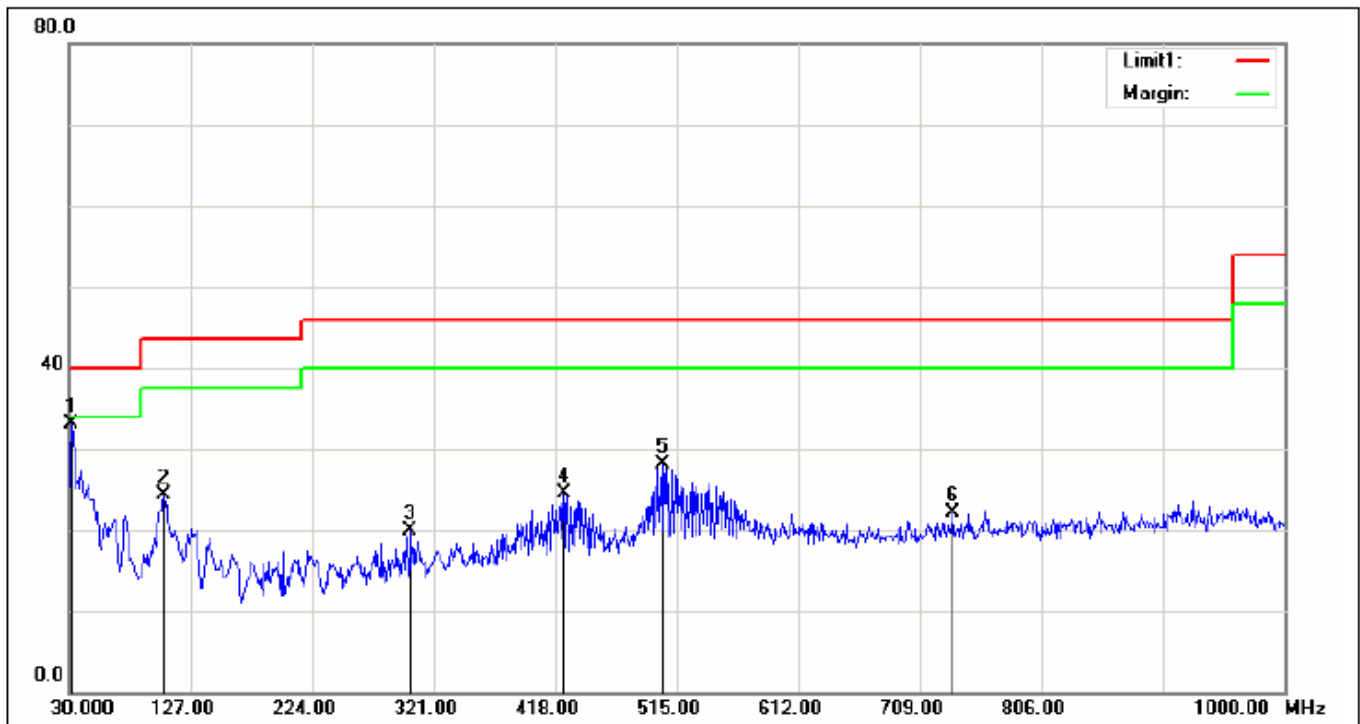
RADIATED EMISSION BELOW 1GHZ

Job No.:	20150428	Ant.Polar.:	Horizontal
Standard:	FCC Part15 Class B (30-1000MHz)	Test Distance:	3m
Test item:	Radiated Emission Measurement	Power:	AC 120V/60Hz
Temp.(C)/Hum.(%RH):	24(C)/52%RH	Date:2015-4-28	Time:16:58:43
Company:		EUT:	
Model:	M4GLTE	Test By:	Jimmy
Test Mode:	11B 2412		



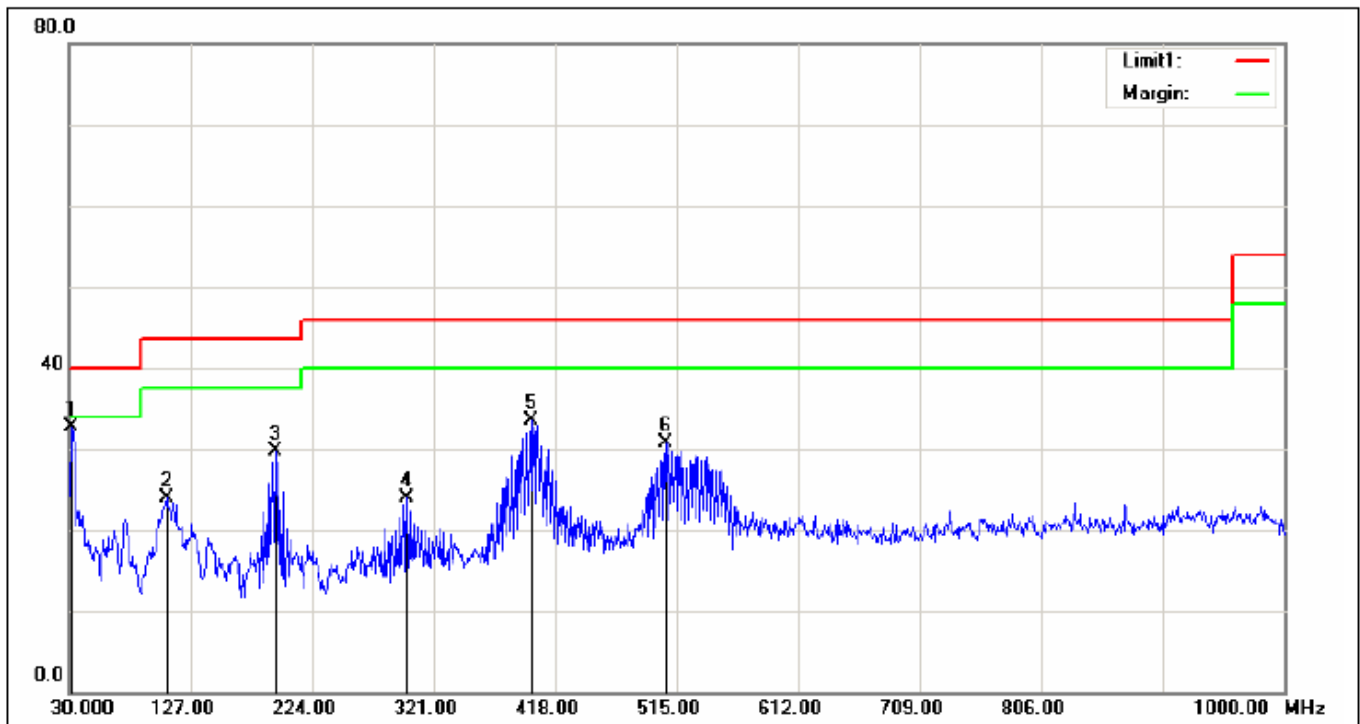
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1*	32.9100	47.49	-13.43	34.06	40.00	-5.94			peak
2	194.9000	52.09	-22.80	29.29	43.50	-14.21			peak
3	299.6600	45.94	-19.60	26.34	46.00	-19.66			peak
4	398.6000	49.58	-16.14	33.44	46.00	-12.56			peak
5	503.3600	45.03	-14.32	30.71	46.00	-15.29			peak
6	627.5200	35.28	-12.61	22.67	46.00	-23.33			peak

Job No.:	20150428	Ant.Polar.:	Vertical
Standard:	FCC Part15 Class B (30-1000MHz)	Test Distance:	3m
Test item:	Radiated Emission Measurement	Power:	AC 120V/60Hz
Temp.(C)/Hum.(%RH):	24(C)/52%RH	Date:2015-4-28	Time:16:59:31
Company:		EUT:	
Model:	M4GLTE	Test By:	Jimmy
Test Mode:	11B 2412		



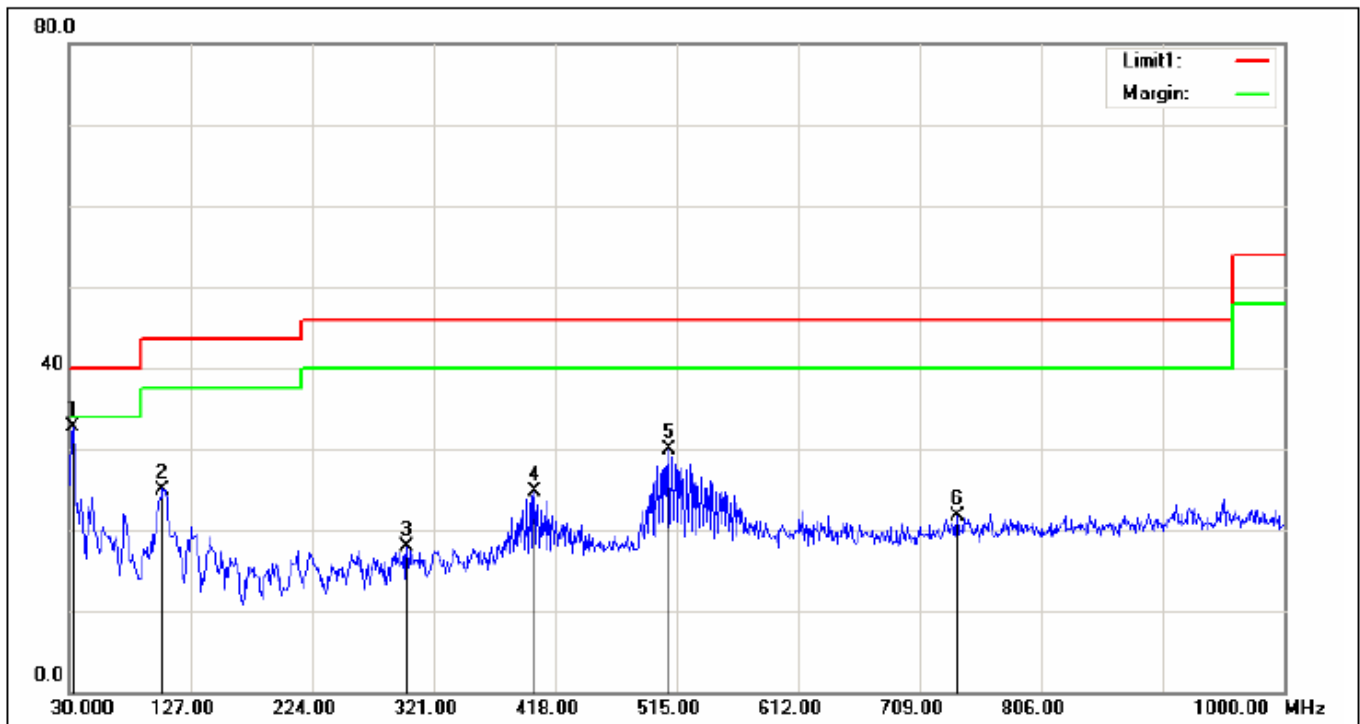
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1*	31.9400	45.93	-12.80	33.13	40.00	-6.87			peak
2	105.6600	46.85	-22.63	24.22	43.50	-19.28			peak
3	302.5700	39.41	-19.47	19.94	46.00	-26.06			peak
4	424.7900	39.99	-15.50	24.49	46.00	-21.51			peak
5	503.3600	42.42	-14.32	28.10	46.00	-17.90			peak
6	735.1900	33.53	-11.47	22.06	46.00	-23.94			peak

Job No.:	20150428	Ant.Polar.:	Horizontal
Standard:	FCC Part15 Class B (30-1000MHz)	Test Distance:	3m
Test item:	Radiated Emission Measurement	Power:	AC 120V/60Hz
Temp.(C)/Hum.(%RH):	24(C)/52%RH	Date:2015-4-28	Time:17:01:05
Company:		EUT:	
Model:	M4GLTE	Test By:	Jimmy
Test Mode:	11B 2437		



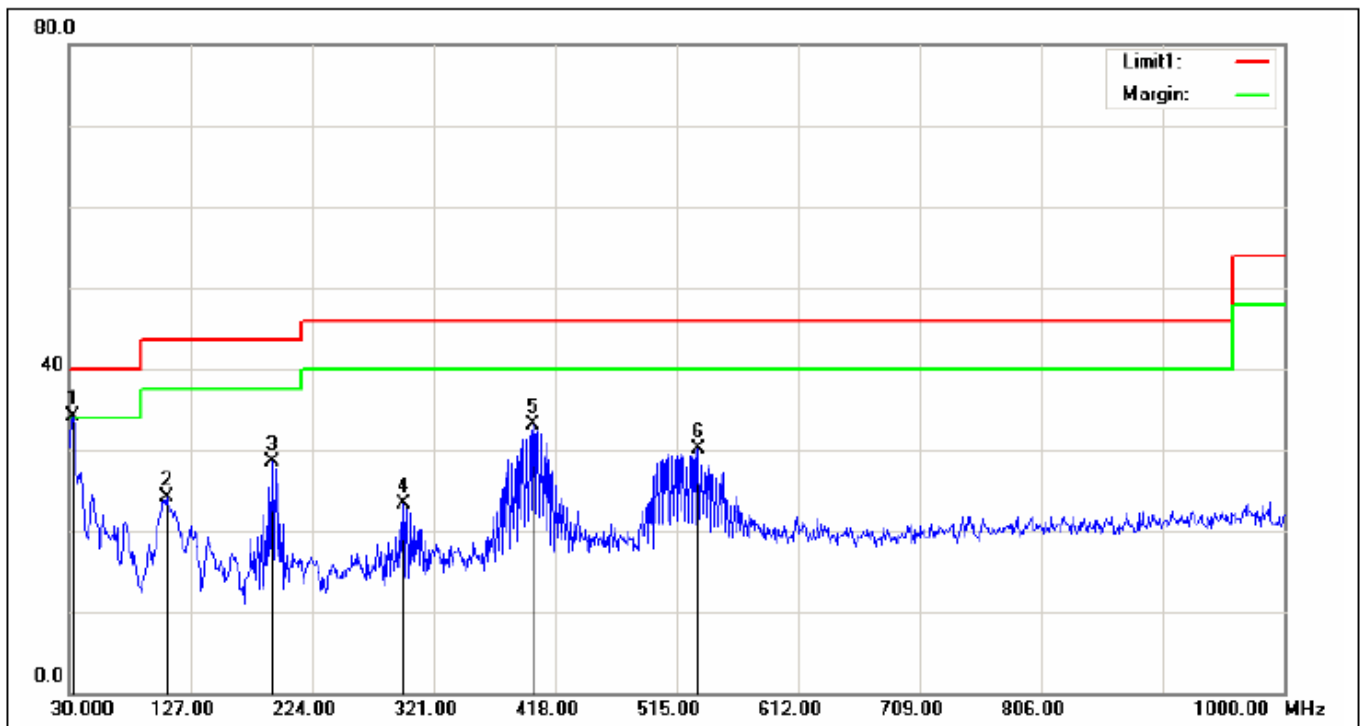
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1*	31.9400	45.60	-12.80	32.80	40.00	-7.20			peak
2	107.6000	46.26	-22.27	23.99	43.50	-19.51			peak
3	194.9000	52.52	-22.80	29.72	43.50	-13.78			peak
4	299.6600	43.52	-19.60	23.92	46.00	-22.08			peak
5	398.6000	49.68	-16.14	33.54	46.00	-12.46			peak
6	506.2700	44.97	-14.28	30.69	46.00	-15.31			peak

Job No.:	20150428	Ant.Polar.:	Vertical
Standard:	FCC Part15 Class B (30-1000MHz)	Test Distance:	3m
Test item:	Radiated Emission Measurement	Power:	AC 120V/60Hz
Temp.(C)/Hum.(%RH):	24(C)/52%RH	Date:2015-4-28	Time:17:00:11
Company:		EUT:	
Model:	M4GLTE	Test By:	Jimmy
Test Mode:	11B 2437		



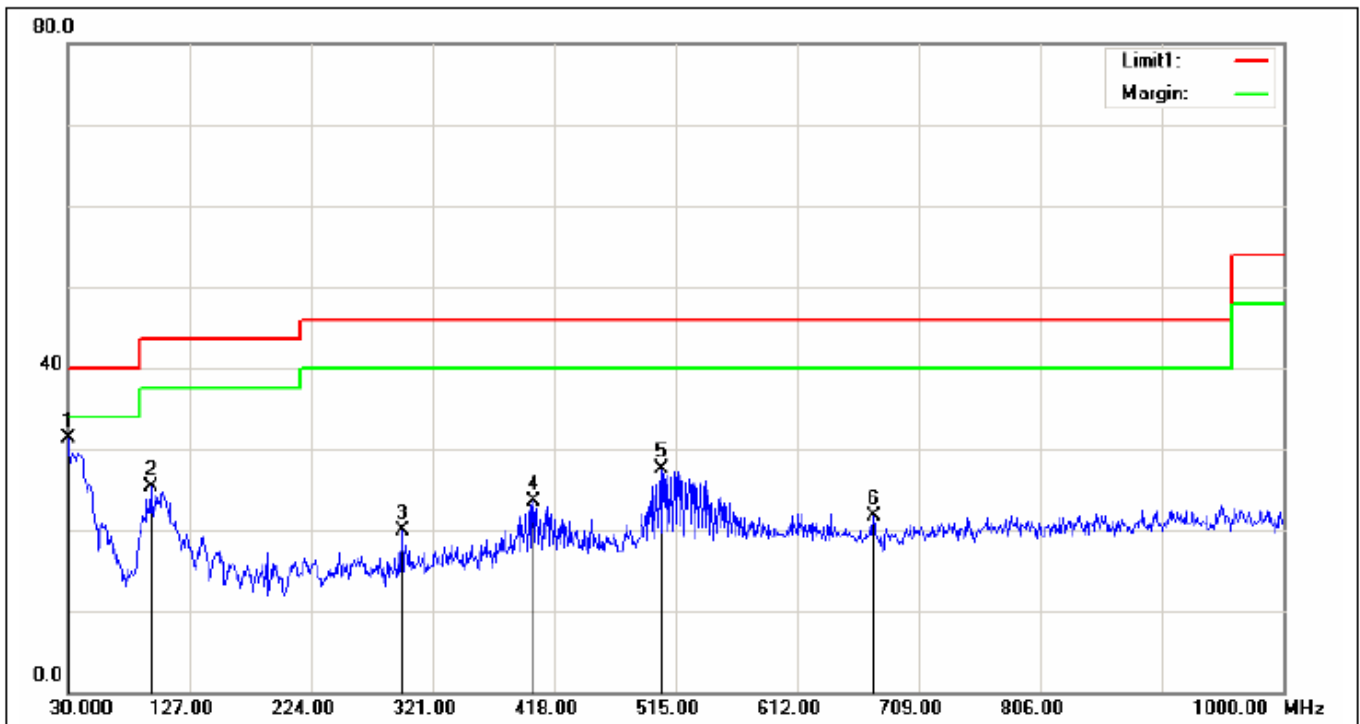
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1*	32.9100	46.07	-13.43	32.64	40.00	-7.36			peak
2	104.6900	47.81	-22.81	25.00	43.50	-18.50			peak
3	299.6600	37.50	-19.60	17.90	46.00	-28.10			peak
4	401.5100	40.81	-16.02	24.79	46.00	-21.21			peak
5	509.1800	44.18	-14.25	29.93	46.00	-16.07			peak
6	739.0700	33.04	-11.37	21.67	46.00	-24.33			peak

Job No.:	20150428	Ant.Polar.:	Horizontal
Standard:	FCC Part15 Class B (30-1000MHz)	Test Distance:	3m
Test item:	Radiated Emission Measurement	Power:	AC 120V/60Hz
Temp.(C)/Hum.(%RH):	24(C)/52%RH	Date:2015-4-28	Time:17:01:56
Company:		EUT:	
Model:	M4GLTE	Test By:	Jimmy
Test Mode:	11B 2462		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1*	32.9100	47.45	-13.43	34.02	40.00	-5.98			peak
2	107.6000	46.43	-22.27	24.16	43.50	-19.34			peak
3	191.9900	51.41	-22.83	28.58	43.50	-14.92			peak
4	296.7500	43.24	-19.86	23.38	46.00	-22.62			peak
5	400.5400	49.13	-16.06	33.07	46.00	-12.93			peak
6	532.4600	43.80	-13.74	30.06	46.00	-15.94			peak

Job No.:	20150428	Ant.Polar.:	Vertical
Standard:	FCC Part15 Class B (30-1000MHz)	Test Distance:	3m
Test item:	Radiated Emission Measurement	Power:	AC 120V/60Hz
Temp.(C)/Hum.(%RH):	24(C)/52%RH	Date:2015-4-28	Time:17:02:57
Company:		EUT:	
Model:	M4GLTE	Test By:	Jimmy
Test Mode:	11B 2462		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1*	30.0000	42.95	-11.64	31.31	40.00	-8.69			peak
2	95.9600	49.44	-24.11	25.33	43.50	-18.17			peak
3	296.7500	39.71	-19.86	19.85	46.00	-26.15			peak
4	401.5100	39.53	-16.02	23.51	46.00	-22.49			peak
5	503.3600	41.73	-14.32	27.41	46.00	-18.59			peak
6	673.1100	33.96	-12.22	21.74	46.00	-24.26			peak

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin= Result -Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

3. 30MHz~1GHz:(Scan with 11b,11g,11n, the worst casw is 11b Mode)

RADIATED EMISSION ABOVE 1GHZ

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
TX 11b 2412MHz							
4824.115	46.61	10.44	57.05	74	-16.95	Pk	Horizontal
4824.115	31.46	10.44	41.9	54	-12.1	AV	Horizontal
7236.060	43.28	12.39	55.67	74	-18.33	pk	Horizontal
7236.060	33.69	12.39	46.08	54	-7.92	AV	Horizontal
4824.065	49.34	10.39	59.73	74	-14.27	Pk	Vertical
4824.107	33.67	10.39	44.06	54	-9.94	AV	Vertical
7236.146	48.82	12.68	61.5	74	-12.5	Pk	Vertical
7236.113	30.52	12.68	43.2	54	-10.8	AV	Vertical
TX 11b 2437MHz							
4874.119	49.26	10.39	59.65	74	-14.35	Pk	Horizontal
4874.124	33.73	10.39	44.12	54	-9.88	AV	Horizontal
7311.092	48.61	12.68	61.29	74	-12.71	Pk	Horizontal
7311.141	30.52	12.68	43.2	54	-10.8	AV	Horizontal
4874.047	49.29	10.39	59.68	74	-14.32	Pk	Vertical
4874.046	33.39	10.39	43.78	54	-10.22	AV	Vertical
7311.118	48.48	12.68	61.16	74	-12.84	Pk	Vertical
7311.129	30.67	12.68	43.35	54	-10.65	AV	Vertical
TX 11b 2462MHz							
4924.086	49.34	10.39	59.73	74	-14.27	pk	Horizontal
4924.057	33.32	10.39	43.71	54	-10.29	AV	Horizontal
7386.116	48.83	12.68	61.51	74	-12.49	pk	Horizontal
7386.049	30.74	12.68	43.42	54	-10.58	AV	Horizontal
4924.092	49.35	10.39	59.74	74	-14.26	pk	Vertical
4924.052	33.84	10.39	44.23	54	-9.77	AV	Vertical
7386.094	48.61	12.68	61.29	74	-12.71	pk	Vertical
7386.106	30.37	12.68	43.05	54	-10.95	AV	Vertical

RESULT: PASS

Note: 1~25GHz scan with 11b. No recording in the test report at least have 20dB margin.

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Emission Level = Meter Reading + Factor

Margin = Emission Level - Limit

12. BAND EDGE EMISSION

12.1. MEASUREMENT PROCEDURE

1) Radiated restricted band edge measurements

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting

2) Conducted Emissions at the bang edge

a) The transmitter output was connected to the spectrum analyzer

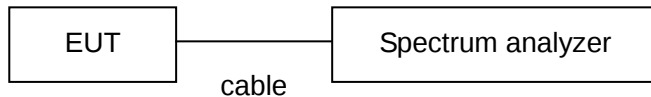
b) Set RBW=100kHz, VBW=300kHz

c) Suitable frequency span including 100kHz bandwidth from band edge

12.2. TEST SET-UP

Radiated same as 11.2

Conducted set up



12.3. Radiated Test Result

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
TX 11b 2412MHz							
2399.900	80.61	-13	67.61	74	-6.39	peak	Horizontal
2399.900	61.76	-13	48.76	54	-5.54	AVG	Horizontal
2400.000	82.87	-12.99	69.88	74	-4.41	peak	Horizontal
2400.000	61.63	-12.99	48.64	54	-5.74	AVG	Horizontal
2399.900	81.58	-13	68.58	74	-5.42	peak	Vertical
2399.900	61.91	-13	48.91	54	-5.09	AVG	Vertical
2400.000	78.62	-12.99	65.63	74	-8.37	peak	Vertical
2400.000	59.75	-12.99	46.76	54	-7.24	AVG	Vertical
TX 11b 2462MHz							
2483.500	78.27	-12.78	65.49	74	-8.51	peak	Horizontal
2483.500	60.31	-12.78	47.53	54	-6.47	AVG	Horizontal
2483.600	79.48	-12.77	66.71	74	-7.29	peak	Horizontal
2483.600	60.46	-12.78	47.68	54	-6.32	AVG	Horizontal
2483.500	77.29	-12.78	64.51	74	-9.49	peak	Vertical
2483.500	60.52	-12.78	47.74	54	-6.26	AVG	Vertical
2483.600	78.82	-12.77	66.05	74	-7.95	peak	Vertical
2483.600	59.67	-12.77	46.9	54	-7.1	AVG	Vertical

RESULT: PASS

Note: Scan with 11b,11g,11n, the worst casw is 11b Mode

Factor=Antenna Factor + Cable loss - Amplifier gain,

Emission Level = Meter Reading + Factor

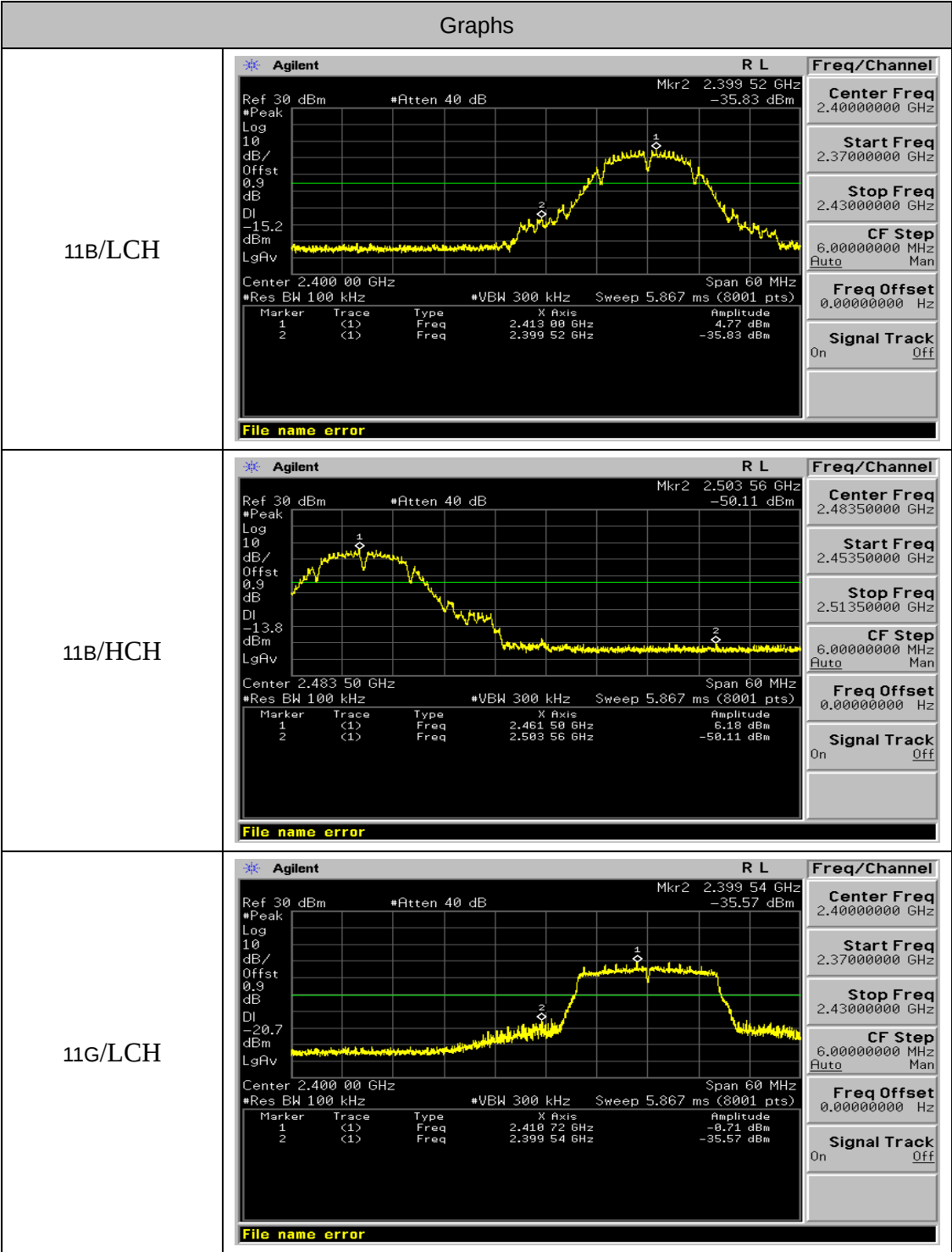
Margin= Emission Level -Limit.

The “Factor” value can be calculated automatically by software of measurement system.

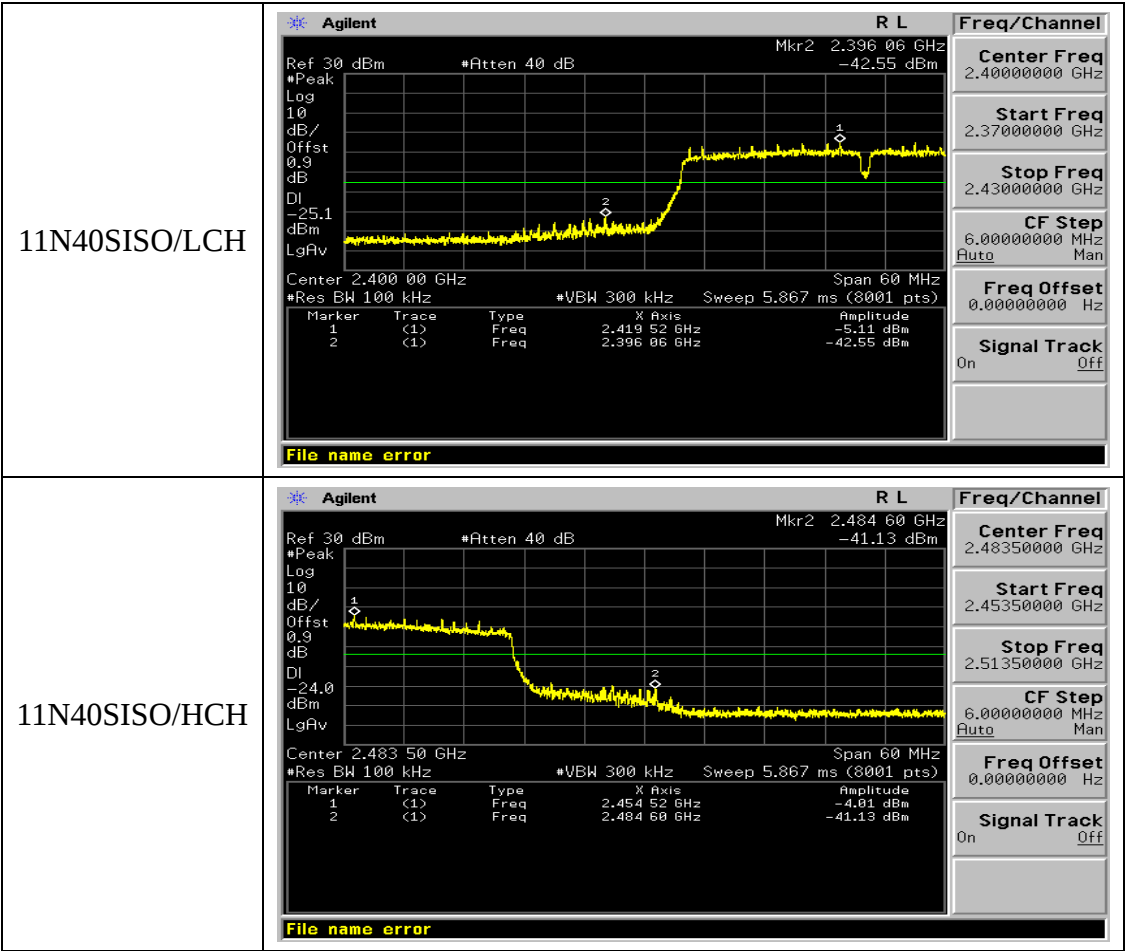
12.4. Conducted Test Result

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	4.77	-35.83	-15.23	PASS
11B	HCH	6.18	-50.11	-13.82	PASS
11G	LCH	-0.71	-35.57	-20.71	PASS
11G	HCH	0.04	-40.8	-19.96	PASS
11N20SISO	LCH	-0.42	-34.89	-20.42	PASS
11N20SISO	HCH	0.08	-40.14	-19.92	PASS
11N40SISO	LCH	-5.11	-42.55	-25.11	PASS
11N40SISO	HCH	-4.01	-41.14	-24.01	PASS

Test Graph



11G/HCH	Agilent Ref 30 dBm *Atten 40 dB Mkr2 2.484 89 GHz -40.80 dBm Log 10 dB/ Offst 0.9 dB DI -20.0 dBm LgAv Center 2.483 50 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 5.867 ms (8001 pts) Span 60 MHz <table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.460 72 GHz</td><td>0.84 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.484 89 GHz</td><td>-40.80 dBm</td></tr></table> Freq/Channel Center Freq 2.48350000 GHz Start Freq 2.45350000 GHz Stop Freq 2.51350000 GHz CF Step 6.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off File name error	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.460 72 GHz	0.84 dBm	2	(1)	Freq	2.484 89 GHz	-40.80 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.460 72 GHz	0.84 dBm												
2	(1)	Freq	2.484 89 GHz	-40.80 dBm												
11N20SISO/LCH	Agilent Ref 30 dBm *Atten 40 dB Mkr2 2.399 79 GHz -34.88 dBm Log 10 dB/ Offst 0.9 dB DI -20.4 dBm LgAv Center 2.400 00 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 5.867 ms (8001 pts) Span 60 MHz <table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.410 73 GHz</td><td>-6.42 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.399 79 GHz</td><td>-34.88 dBm</td></tr></table> Freq/Channel Center Freq 2.40000000 GHz Start Freq 2.37000000 GHz Stop Freq 2.43000000 GHz CF Step 6.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off File name error	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.410 73 GHz	-6.42 dBm	2	(1)	Freq	2.399 79 GHz	-34.88 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.410 73 GHz	-6.42 dBm												
2	(1)	Freq	2.399 79 GHz	-34.88 dBm												
11N20SISO/HCH	Agilent Ref 30 dBm *Atten 40 dB Mkr2 2.483 60 GHz -40.14 dBm Log 10 dB/ Offst 0.9 dB DI -19.9 dBm LgAv Center 2.483 50 GHz *Res BW 100 kHz *VBW 300 kHz Sweep 5.867 ms (8001 pts) Span 60 MHz <table><tr><th>Marker</th><th>Trace</th><th>Type</th><th>X Axis</th><th>Amplitude</th></tr><tr><td>1</td><td>(1)</td><td>Freq</td><td>2.457 01 GHz</td><td>0.88 dBm</td></tr><tr><td>2</td><td>(1)</td><td>Freq</td><td>2.483 60 GHz</td><td>-40.14 dBm</td></tr></table> Freq/Channel Center Freq 2.48350000 GHz Start Freq 2.45350000 GHz Stop Freq 2.51350000 GHz CF Step 6.00000000 MHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off File name error	Marker	Trace	Type	X Axis	Amplitude	1	(1)	Freq	2.457 01 GHz	0.88 dBm	2	(1)	Freq	2.483 60 GHz	-40.14 dBm
Marker	Trace	Type	X Axis	Amplitude												
1	(1)	Freq	2.457 01 GHz	0.88 dBm												
2	(1)	Freq	2.483 60 GHz	-40.14 dBm												



13. FCC LINE CONDUCTED EMISSION TEST

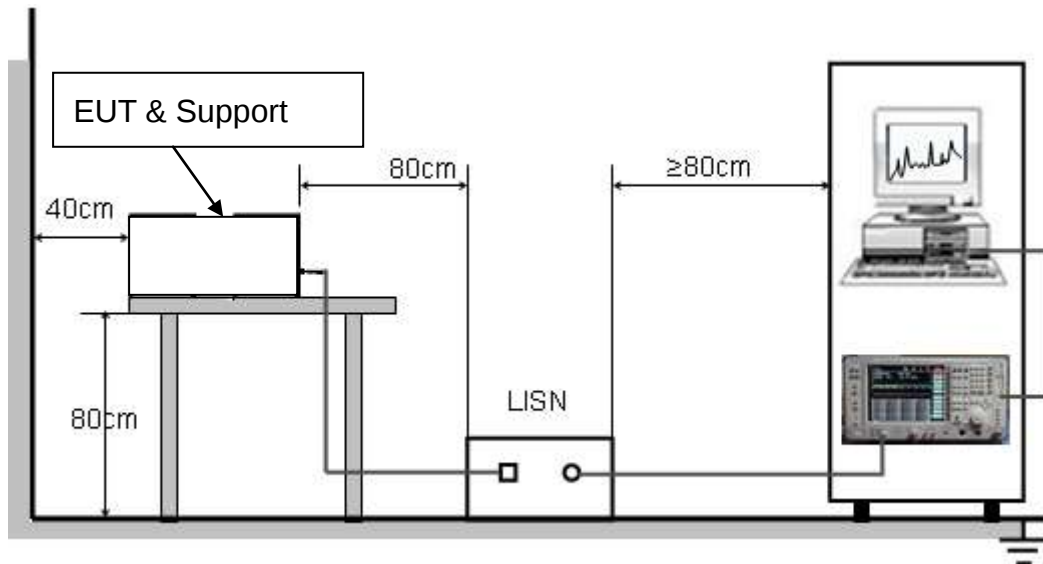
13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

13.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.4.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hz power by a LISN..
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

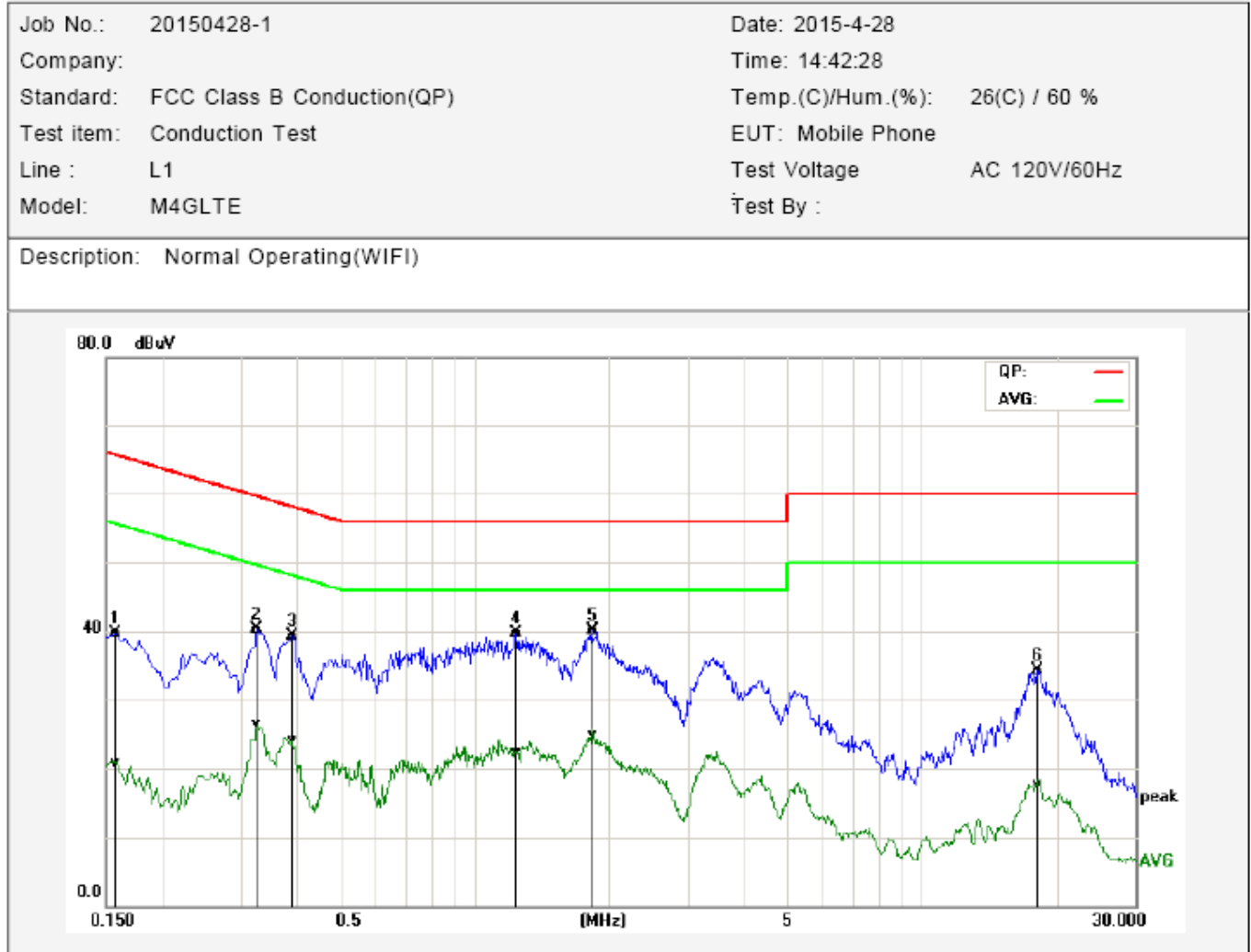
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

13.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION TEST LINE 1-L

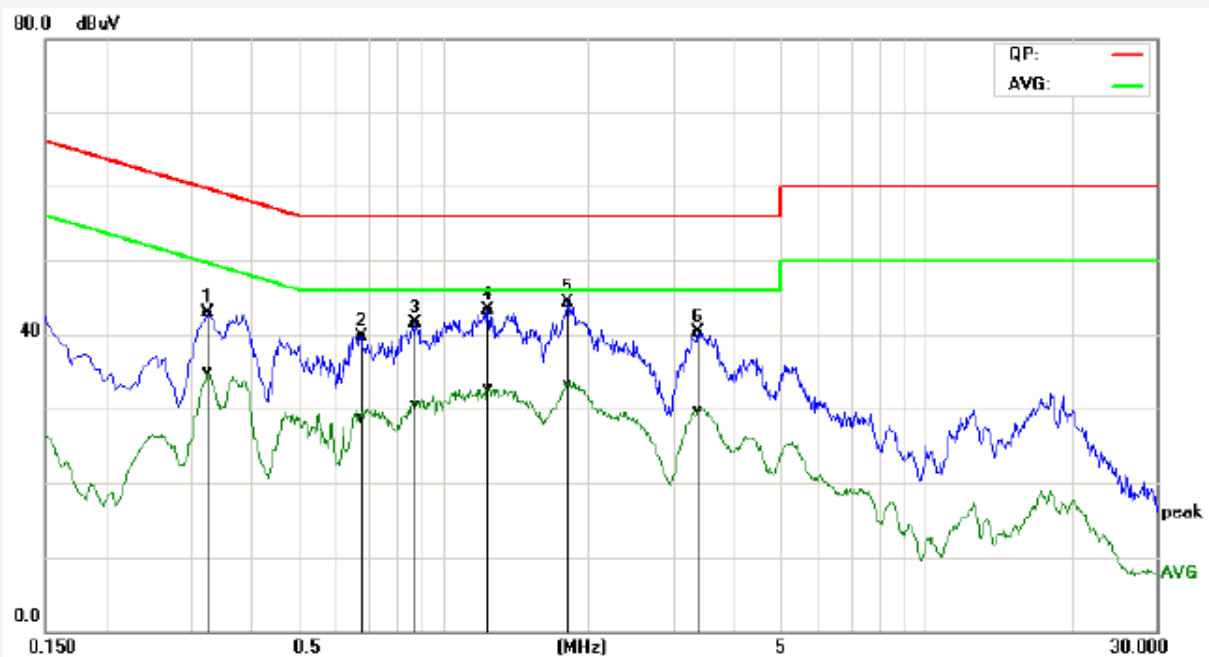


No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1P	0.1580	29.86	11.13	9.78	39.64	20.91	65.56	55.57	-25.92	-34.66	Pass
2P	0.3260	30.59	16.79	9.75	40.34	26.54	59.55	49.55	-19.21	-23.01	Pass
3P	0.3899	29.51	14.42	9.72	39.23	24.14	58.06	48.07	-18.83	-23.93	Pass
4P	1.2420	29.86	12.56	9.79	39.65	22.35	56.00	46.00	-16.35	-23.65	Pass
5*	1.8340	30.30	15.13	9.75	40.05	24.88	56.00	46.00	-15.95	-21.12	Pass
6P	18.1100	24.48	7.93	9.72	34.20	17.65	60.00	50.00	-25.80	-32.35	Pass

Line Conducted Emission Test Line 2-N

Job No.:	20150428-1	Date:	2015-4-28
Company:		Time:	14:45:29
Standard:	FCC Class B Conduction(QP)	Temp.(C)/Hum.(%):	26(C) / 60 %
Test item:	Conduction Test	EUT:	Mobile Phone
Line :	N	Test Voltage	AC 120V/60Hz
Model:	M4GLTE	Test By :	

Description: Normal Operating(WIFI)



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1P	0.3260	33.17	25.21	9.69	42.86	34.90	59.55	49.55	-16.69	-14.65	Pass
2P	0.6780	30.00	19.02	9.78	39.78	28.80	56.00	46.00	-16.22	-17.20	Pass
3P	0.8740	31.74	20.86	9.74	41.48	30.60	56.00	46.00	-14.52	-15.40	Pass
4P	1.2380	33.56	22.95	9.71	43.27	32.66	56.00	46.00	-12.73	-13.34	Pass
5*	1.8140	34.50	23.61	9.73	44.23	33.34	56.00	46.00	-11.77	-12.66	Pass
6P	3.3780	30.57	20.03	9.70	40.27	29.73	56.00	46.00	-15.73	-16.27	Pass

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC LINE CONDUCTED EMISSION TEST SETUP



FCC RADIATED EMISSION TEST SETUP

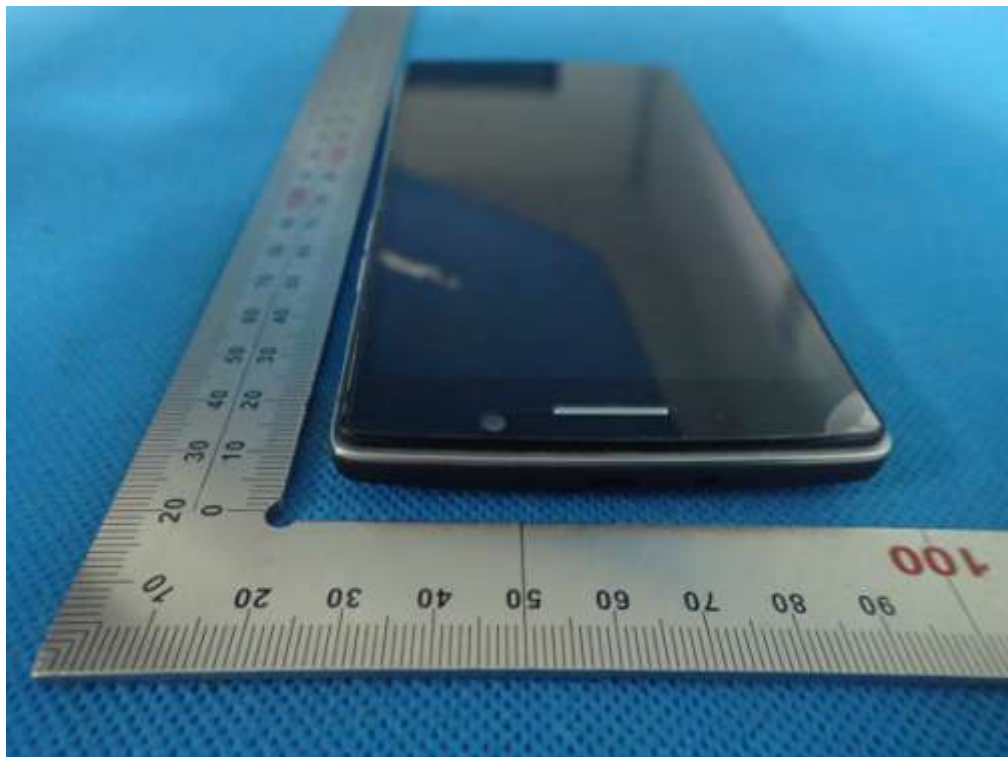


APPENDIX B: PHOTOGRAPHS OF EUT

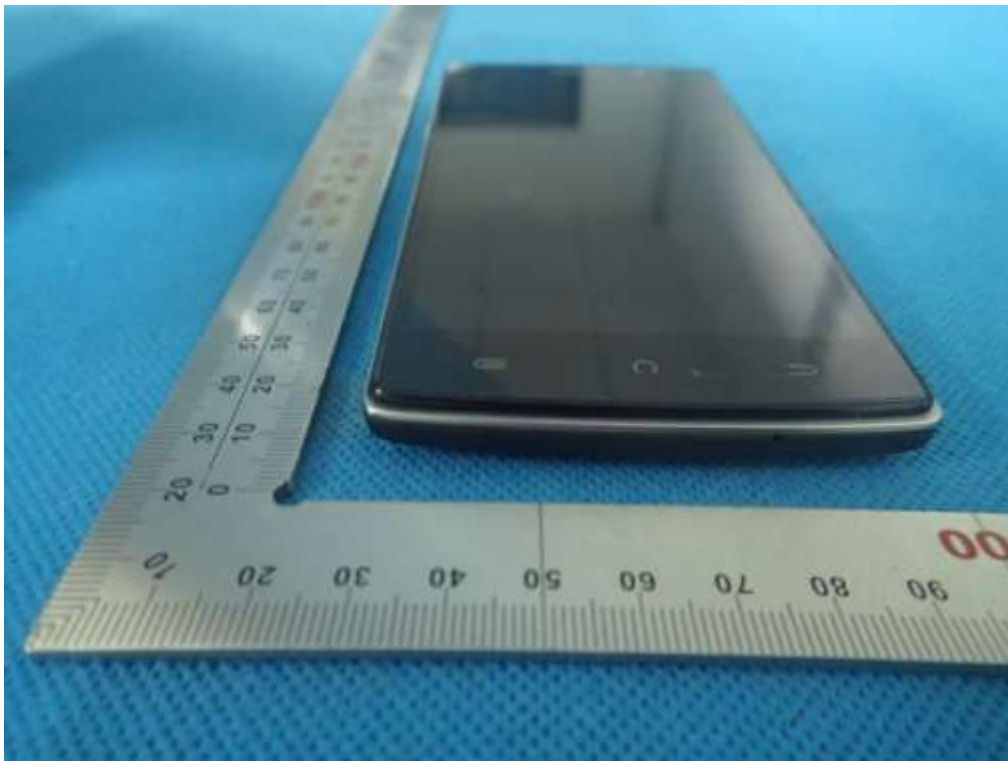
TOTAL VIEW OF EUT



TOP VIEW OF EUT



BOTTOM VIEW OF EUT



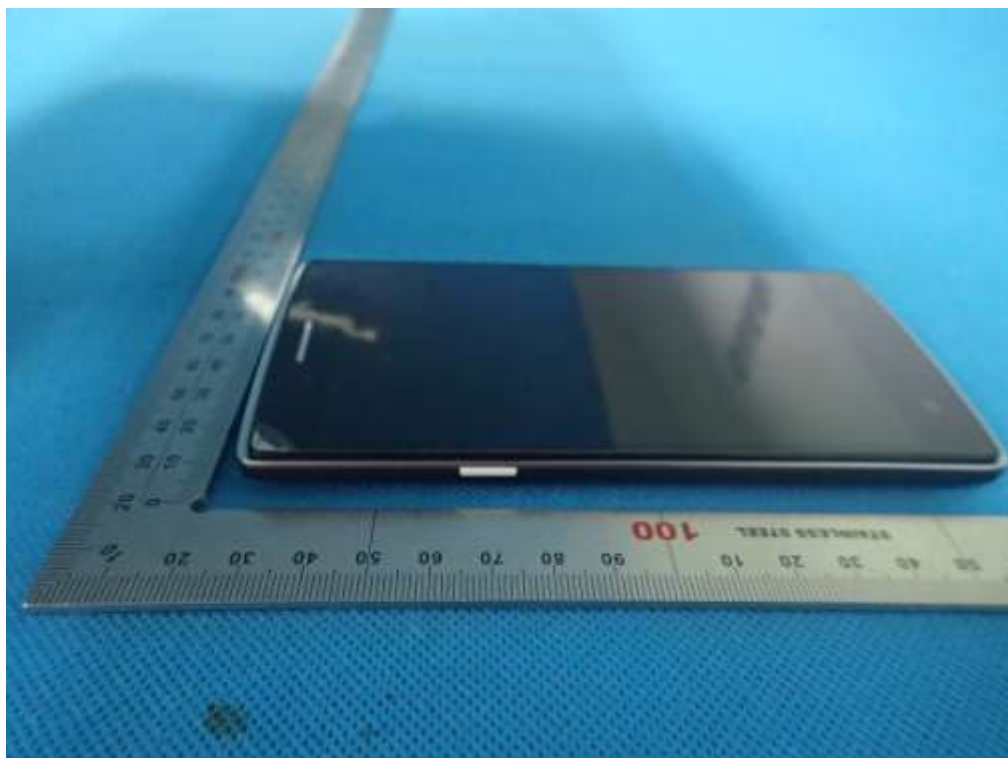
FRONT VIEW OF EUT



BACK VIEW OF EUT



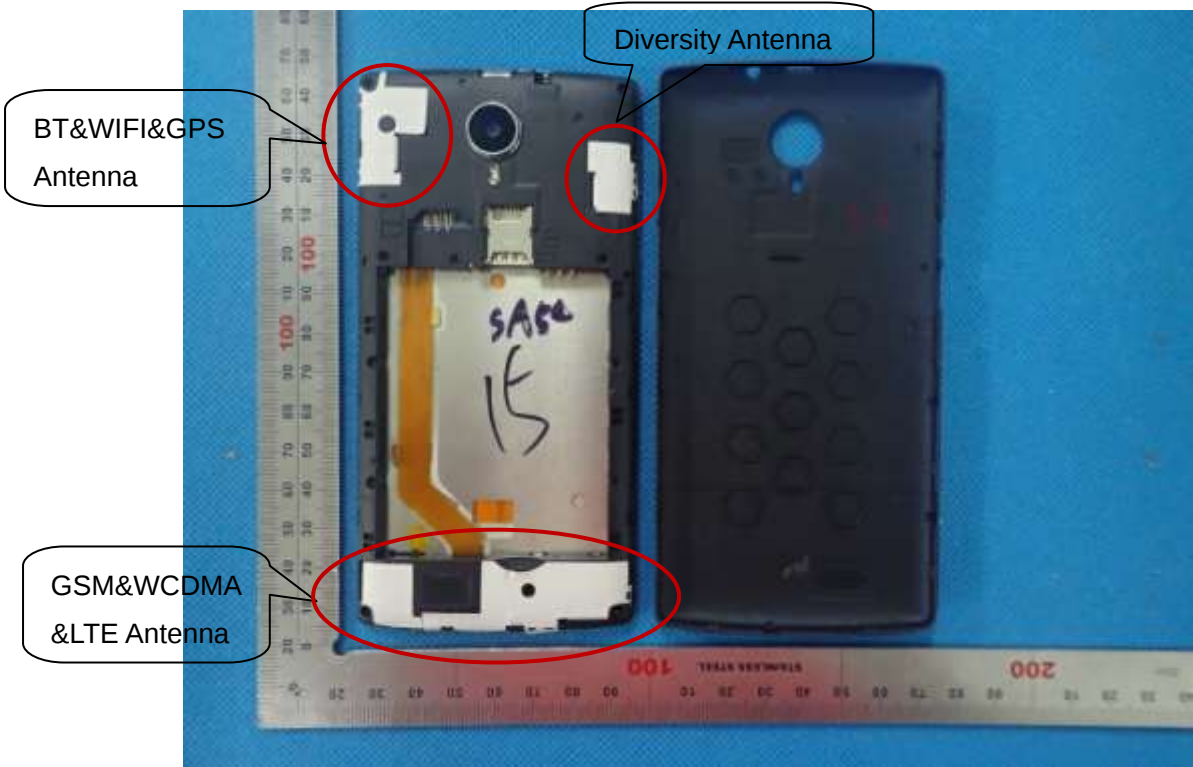
LEFT VIEW OF EUT



RIGHT VIEW OF EUT



OPEN VIEW OF EUT-1



OPEN VIEW OF EUT-2



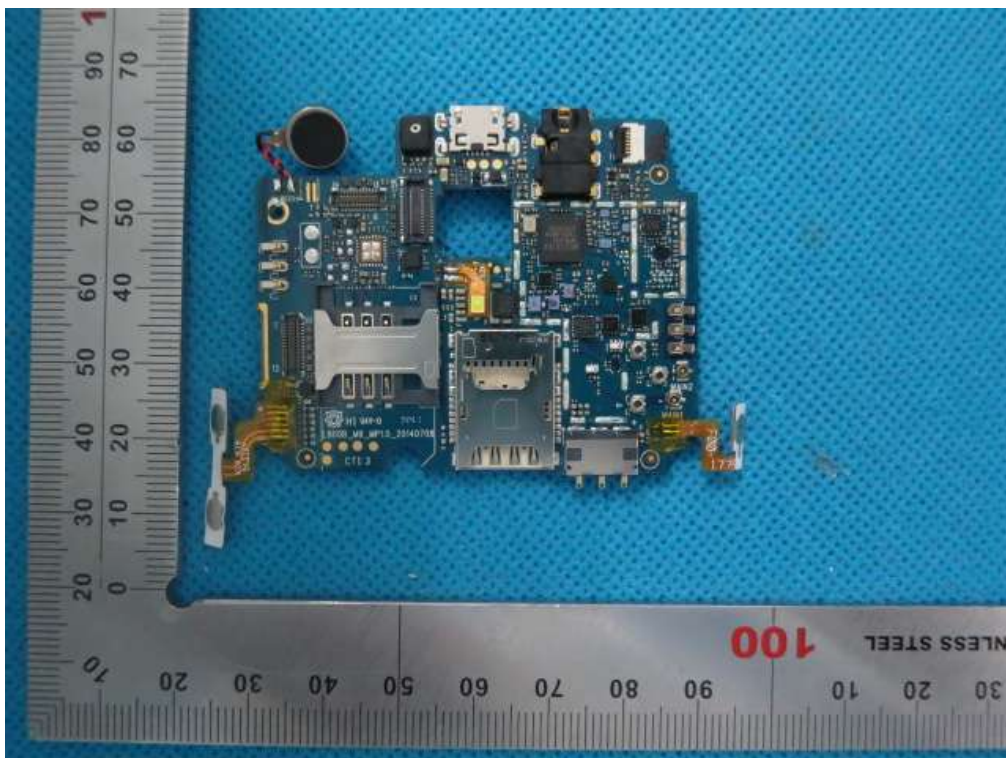
OPEN VIEW OF EUT-3



INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



-----END OF REPORT-----