
FCC Test Report

Report No.: AGC01665141102FE03

FCC ID : 2ADN6S42
APPLICATION PURPOSE : Original Equipment
PRODUCT DESIGNATION : 3G Smart Phone
BRAND NAME : TIGER
MODEL NAME : S42
CLIENT : Tiger International Electronic Company
DATE OF ISSUE : Nov.25, 2014
STANDARD(S) : FCC Part 15 Rules
TEST PROCEDURE(S) : DA 00-705
REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



CAUTION:

This report shall not be reproduced except in full without the written permission of the test laboratory and shall not be quoted out of context.



Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov.25, 2014	Valid	Original Report

TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY	5
2. GENERAL INFORMATION	6
2.1. PRODUCT DESCRIPTION	6
2.2. TABLE OF CARRIER FREQUENCIES.....	6
2.3. RECEIVER INPUT BANDWIDTH.....	7
2.4. EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE	7
2.5. EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR	7
2.6. RELATED SUBMITTAL(S) / GRANT (S)	8
2.7. TEST METHODOLOGY.....	8
2.8. SPECIAL ACCESSORIES.....	8
2.9. EQUIPMENT MODIFICATIONS	8
3. MEASUREMENT UNCERTAINTY.....	9
4. DESCRIPTION OF TEST MODES.....	9
5. SYSTEM TEST CONFIGURATION	10
5.1. CONFIGURATION OF EUT SYSTEM.....	10
5.2. EQUIPMENT USED IN EUT SYSTEM.....	10
5.3. SUMMARY OF TEST RESULTS	10
6. TEST FACILITY	11
7. PEAK OUTPUT POWER	12
7.1. MEASUREMENT PROCEDURE.....	12
7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	12
7.3. LIMITS AND MEASUREMENT RESULT	13
8. 20DB BANDWIDTH.....	17
8.1. MEASUREMENT PROCEDURE.....	17
8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	17
8.3. LIMITS AND MEASUREMENT RESULTS.....	17
9. CONDUCTED SPURIOUS EMISSION	21
9.1. MEASUREMENT PROCEDURE.....	21
9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	21
9.3. MEASUREMENT EQUIPMENT USED.....	21
9.4. LIMITS AND MEASUREMENT RESULT	21
10. RADIATED EMISSION	40
10.1. MEASUREMENT PROCEDURE.....	40
10.2. TEST SETUP	42

10.3. TEST RESULT 43

11. BAND EDGE EMISSION 51

11.1. MEASUREMENT PROCEDURE 51

11.2. TEST SET-UP 51

11.3. Radiated TEST RESULT 52

11.4 Conducted TEST RESULT 56

12. NUMBER OF HOPPING FREQUENCY..... 60

12.1. MEASUREMENT PROCEDURE..... 60

12.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION) 60

12.3. MEASUREMENT EQUIPMENT USED..... 60

12.4. LIMITS AND MEASUREMENT RESULT 60

13. TIME OF OCCUPANCY (DWELL TIME) 61

13.1. MEASUREMENT PROCEDURE..... 61

13.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION) 61

13.3. MEASUREMENT EQUIPMENT USED..... 61

13.4. LIMITS AND MEASUREMENT RESULT 61

Test Graph 62

14. FREQUENCY SEPARATION 63

14.1. MEASUREMENT PROCEDURE..... 63

14.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION) 63

14.3. MEASUREMENT EQUIPMENT USED..... 63

14.4. LIMITS AND MEASUREMENT RESULT 63

15. FCC LINE CONDUCTED EMISSION TEST 64

15.1. LIMITS OF LINE CONDUCTED EMISSION TEST 64

15.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST 64

15.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST 65

15.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST 65

15.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST 66

APPENDIX A: PHOTOGRAPHS OF TEST SETUP 68

APPENDIX B: PHOTOGRAPHS OF EUT 69

1. VERIFICATION OF CONFORMITY

Applicant	Tiger International Electronic Company
Address	Dera, Naif Satellite Market, Nakhil Road, Dubai, UAE
Manufacturer	SHENZHEN ELECTRONICAL TECHNOLOGY CO., LTD.
Address	C028 Third Floor, Foreign Trade Wholesale Market, Huaqiangbei, Futian District, Shenzhen, China
Product Designation	3G Smart Phone
Brand Name	TIGER
Test Model	S42
Date of test	Nov.18, 2014 to Nov.24, 2014
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-BR/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 radiated emission limits of FCC Rules Part 15.247.

Prepared By

Matt Zhang

Matt Zhang

Nov.25, 2014

Checked By

Kidd Yang

Kidd Yang

Nov.25, 2014

Authorized By

Solger Zhang

Solger Zhang

Nov.25, 2014

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is “3G Smart Phone” designed as a “Communication Device”. It is designed by way of utilizing the FHSS technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz
RF Output Power	5.75dBm(Max)
Bluetooth Version	V 3.0
Modulation	GFSK, $\pi/4$ -DQPSK, 8DPSK
Number of channels	79
Hardware Version	S135_MB_V1.5
Software Version	N/A
Antenna Designation	Integrated Antenna
Antenna Gain	0.8dBi
Power Supply	DC3.7V by Battery

2.2. TABLE OF CARRIER FREQUENCIES

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	0	2402MHZ
	1	2403MHZ
	:	:
	38	2440 MHZ
	39	2441 MHZ
	40	2442 MHZ
	:	:
	77	2479 MHZ
	78	2480 MHZ

2.3. RECEIVER INPUT BANDWIDTH

The input bandwidth of the receiver is 1.3MHz. In every connection one Bluetooth device is the master and the other one is slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally the type of connection (e.g. single or multislotted packet) is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings.

Repeating of a packet has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be sent on the same frequency, it is sent on the next frequency of the hopping sequence.

2.4. EXAMPLE OF A HOPPING SEQUENCE IN DATA MODE

Example of a 79 hopping sequence in data mode:

40,21,44,23,42,53,46,55,48,33,52,35,50,65,54,67
56,37,60,39,58,69,62,71,64,25,68,27,66,57,70,59
72,29,76,31,74,61,78,63,01,41,05,43,03,73,07,75
09,45,13,47,11,77,15,00,64,49,66,53,68,02,70,06
01, 51, 03, 55, 05, 04

2.5. EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR

The generation of the hopping sequence in connection mode depends essentially on two input values:

1. LAP/UAP of the master of the connection.
2. Internal master clock

The LAP (lower address part) are the 24 LSB's of the 48 BD_ADDRESS. The BD_ADDRESS is an unambiguous number of every Bluetooth unit. The UAP (upper address part) are the 24 MSB's of the 48 BD_ADDRESS.

The internal clock of a Bluetooth unit is derived from a free running clock which is never adjusted and is never turned off. For synchronization with other units only offsets are used. It has no relation to the time of the day. Its resolution is at least half the RX/TX slot length of 312.5 µs. The clock has a cycle of about one day (23h30). In most cases it is implemented as 28 bit counter. For the deriving of the hopping sequence the entire LAP (24 bits), 4 LSB's (4 bits) (Input 1) and the 27 MSB's of the clock (Input 2) are used. With these input values different mathematical procedures (permutations, additions, XOR-operations) are performed to generate the Sequence. This will be done at the beginning of every new transmission.

Regarding short transmissions the Bluetooth system has the following behavior:

The first connection between the two devices is established, a hopping sequence was generated. For transmitting the wanted data the complete hopping sequence was not used. The connection ended.

The second connection will be established. A new hopping sequence is generated. Due to the fact the Bluetooth clock has a different value, because the period between the two transmissions is longer (and it cannot be shorter) than the minimum resolution of the clock (312.5 µs). The hopping sequence will always differ from the first one.

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

This submittal(s) (test report) is intended for **FCC ID: 2ADN6S42** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

2.7. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in FCC DA 00-705. Radiated testing was performed at an antenna to EUT distance 3 meters.

2.8. SPECIAL ACCESSORIES

Refer to section 5.2.

2.9. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 2.75dB

Radiated measurement: +/- 3.2dB

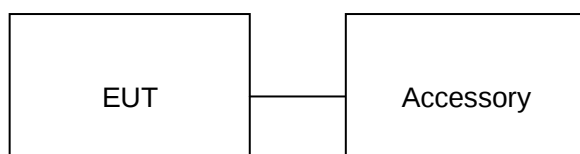
4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel GFSK
2	Middle channel GFSK
3	High channel GFSK
4	Low channel $\pi/4$ -DQPSK
5	Middle channel $\pi/4$ -DQPSK
6	High channel $\pi/4$ -DQPSK
7	Low channel 8DPSK
8	Middle channel 8DPSK
9	High channel 8DPSK
10	Normal Hopping
Note: 1. All the test modes can be supply by Built-in Li-ion battery, only the result of the worst case was recorded in the report, if no other cases. 2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.	

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configuration:



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	3G Smart Phone	S42	FCCID:2ADN6S42	EUT
2	Adapter	GMT-050120A	DC5V / 1200mA	Accessory
3	Battery	S42	DC3.7V / 1400 mAh	Accessory
4	Earphone	S42	N/A	Accessory
5	USB Cable	S42	N/A	Accessory

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Peak Output Power	Compliant
§15.247	20 dB Bandwidth	Compliant
§15.247	Spurious Emission	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Band Edges	Compliant
§15.207	Conduction Emission	Compliant
§15.247	Number of Hopping Frequency	Compliant
§15.247	Time of Occupancy	Compliant
§15.247	Frequency Separation	Compliant

6. TEST FACILITY

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	2/F., Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2003.

ALL TEST EQUIPMENT LIST

Description	Manufacturer	Model	Cal. Date	Cal. Due
Power Probe	R&S	NRP-Z23	07/25/2014	07/24/2015
RF attenuator	N/A	RFA20db	N/A	N/A
Spectrum Analyzer	Agilent	E4440A	02/17/2014	02/16/2015
Amplifier	EM	EM30180	02/17/2014	02/16/2015
Horn Antenna	EM	EM-AH-10180	02/17/2014	02/16/2015
Horn Antenna	A.H. Systems Inc.	SAS-574	07/25/2014	07/24/2015
EMI Test Receiver	Rohde & Schwarz	ESCI	07/25/2014	07/24/2015
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	08/16/2014	08/15/2015
LISN	R&S	ESH3-Z5	07/25/2014	07/24/2015
Loop Antenna	A.H.	SAS-562B	05/10/2014	05/09/2015
Isolation Transformer	LETEAC	LTBK	07/25/2014	07/24/2015
Radiation Cable 1	Sat	RE1	06/04/2014	06/03/2015
Radiation Cable 2	Sat	RE2	06/04/2014	06/03/2015
Conduction Cable	Sat	CE1	06/04/2014	06/03/2015

7. PEAK OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

For peak power test:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, middle and the bottom operation frequency individually.
3. $RBW > \text{the 20 dB bandwidth of the emission being measured}$, $VBW \geq RBW$.
4. Record the maximum power from the Spectrum Analyzer.

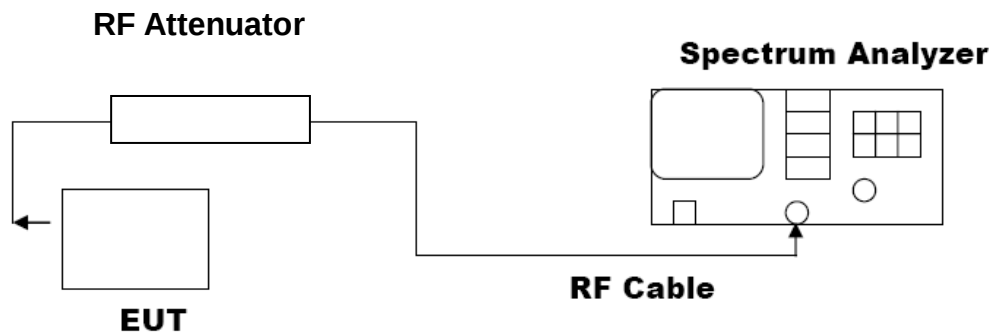
For average power test:

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.
5. The maximum peak power shall be less 125mW (21dBm).

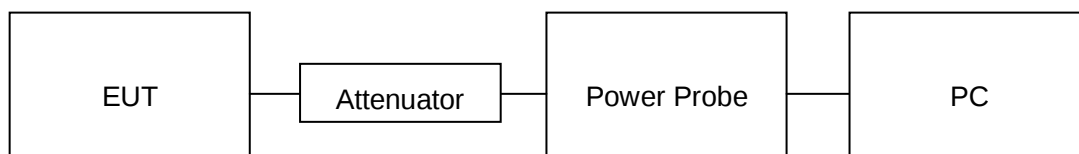
Note : The EUT was tested according to DA000705 for compliance to FCC 47CFR 15.247 requirements.

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

PEAK POWER TEST SETUP



AVERAGE POWER SETUP



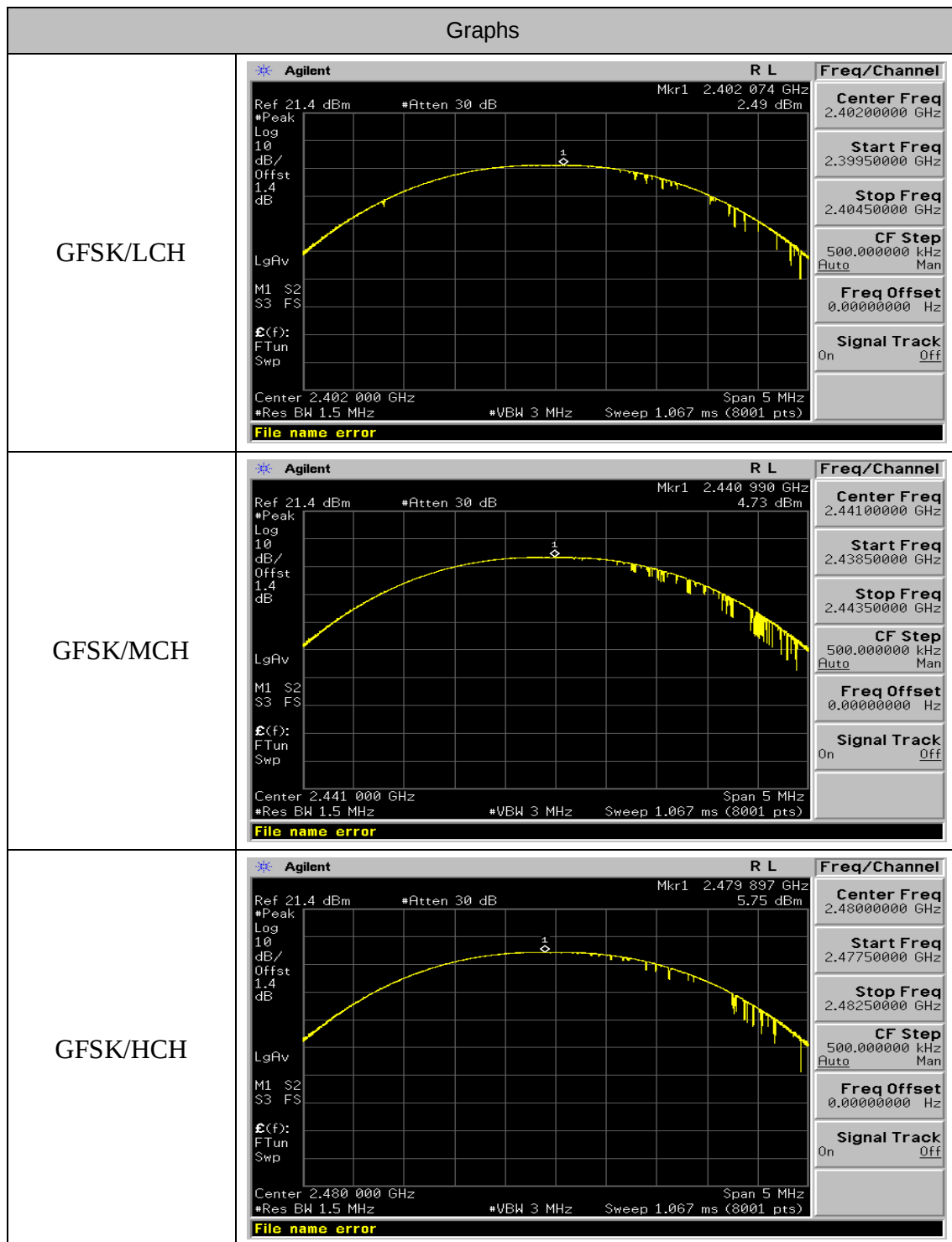
7.3. LIMITS AND MEASUREMENT RESULT

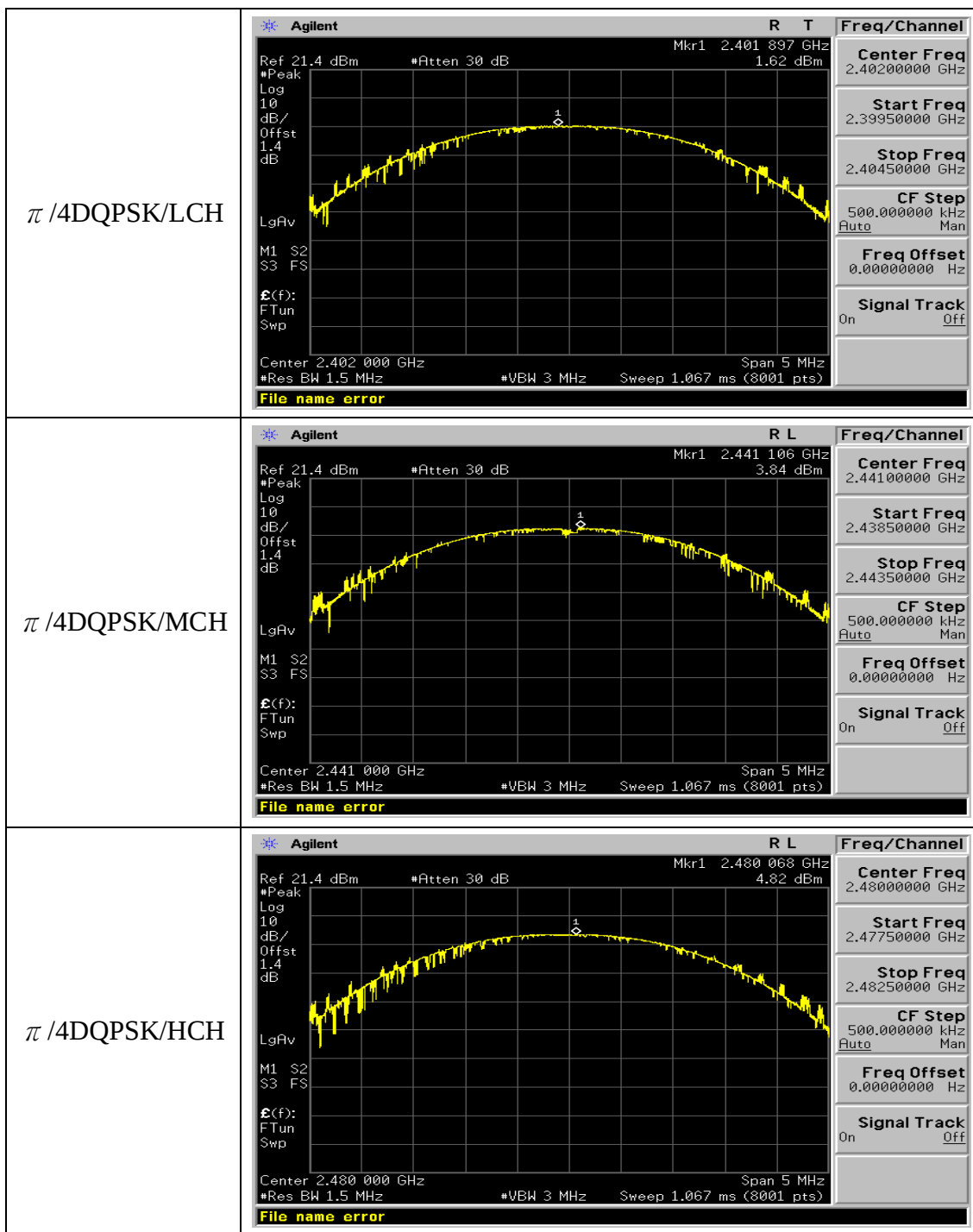
PEAK OUTPUT POWER MEASUREMENT RESULT FOR GFSK MODULATION				
Frequency (GHz)	Average Power (dBm)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.402	0.48	2.49	21	Pass
2.441	2.72	4.73	21	Pass
2.480	3.74	5.75	21	Pass

PEAK OUTPUT POWER MEASUREMENT RESULT FOR II /4-DQPSK MODULATION				
Frequency (GHz)	Average Power (dBm)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.402	-0.39	1.62	21	Pass
2.441	1.83	3.84	21	Pass
2.480	2.81	4.82	21	Pass

PEAK OUTPUT POWER MEASUREMENT RESULT FOR 8-DPSK MODULATION				
Frequency (GHz)	Average Power (dBm)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.402	-0.4	1.61	21	Pass
2.441	1.83	3.84	21	Pass
2.480	2.83	4.84	21	Pass

Test Graph





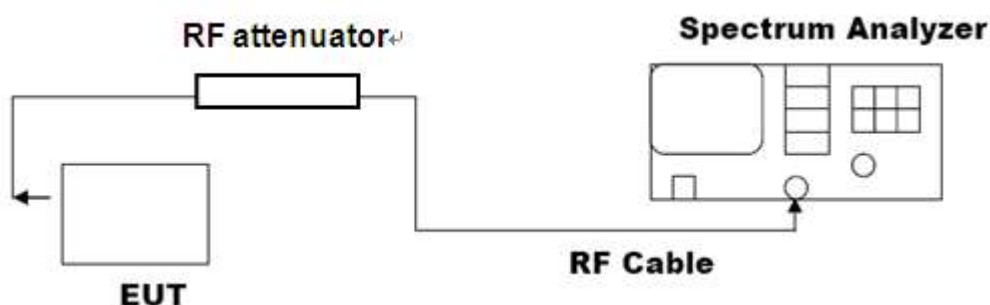
8DPSK/LCH	Agilent Ref 21.4 dBm *Atten 30 dB Mkr1 2.401 931 GHz 1.61 dBm Peak Log 10 dB/ Offst 1.4 dB LgAv M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.402 000 GHz Span 5 MHz #Res BW 1.5 MHz #VBW 3 MHz Sweep 1.067 ms (8001 pts) File name error Freq/Channel Center Freq 2.40200000 GHz Start Freq 2.39950000 GHz Stop Freq 2.40450000 GHz CF Step 500.000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
8DPSK/MCH	Agilent Ref 21.4 dBm *Atten 30 dB Mkr1 2.441 088 GHz 3.84 dBm Peak Log 10 dB/ Offst 1.4 dB LgAv M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.441 000 GHz Span 5 MHz #Res BW 1.5 MHz #VBW 3 MHz Sweep 1.067 ms (8001 pts) File name error Freq/Channel Center Freq 2.44100000 GHz Start Freq 2.43850000 GHz Stop Freq 2.44350000 GHz CF Step 500.000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
8DPSK/HCH	Agilent Ref 21.4 dBm *Atten 30 dB Mkr1 2.479 910 GHz 4.84 dBm Peak Log 10 dB/ Offst 1.4 dB LgAv M1 S2 S3 FS $\mathcal{E}(f)$: FTun Swp Center 2.480 000 GHz Span 5 MHz #Res BW 1.5 MHz #VBW 3 MHz Sweep 1.067 ms (8001 pts) File name error Freq/Channel Center Freq 2.48000000 GHz Start Freq 2.47750000 GHz Stop Freq 2.48250000 GHz CF Step 500.000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

8. 20DB 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 Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
RBW $\geq$ 1% of the 20 dB bandwidth, VBW $\geq$ RBW; Sweep = auto; Detector function = peak
4. Set SPA Trace 1 Max hold, then View.

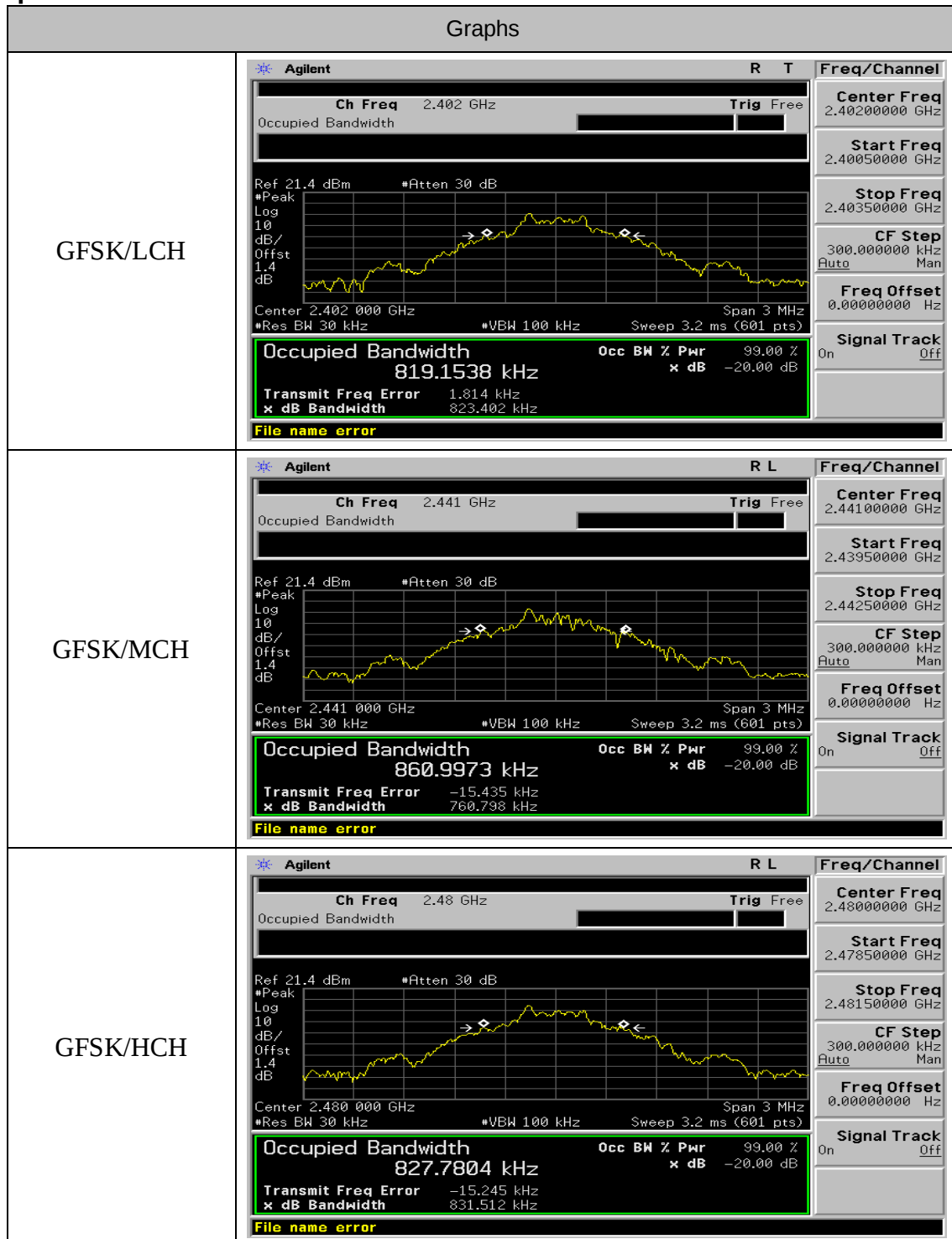
8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



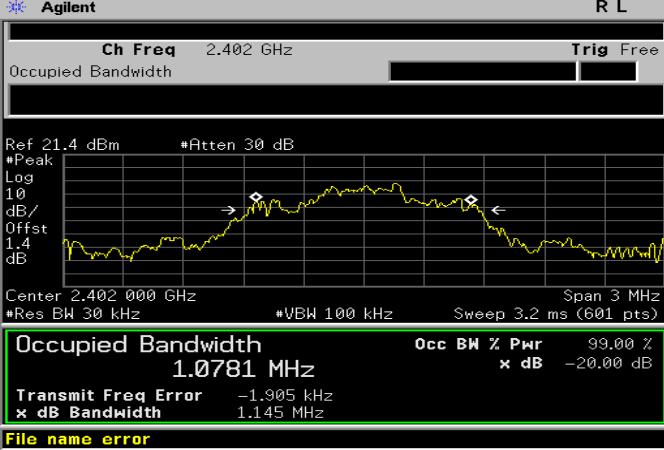
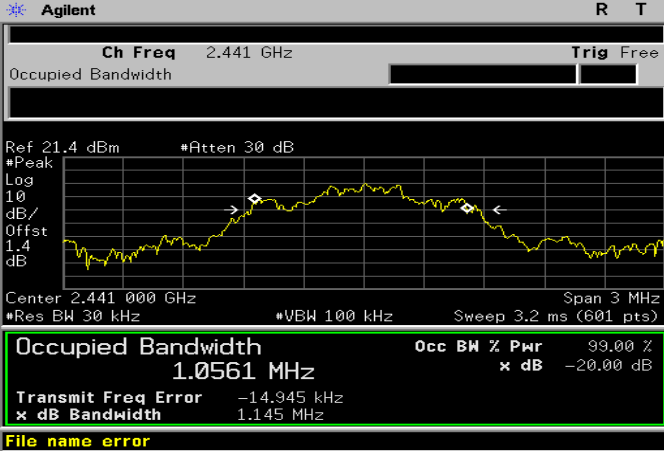
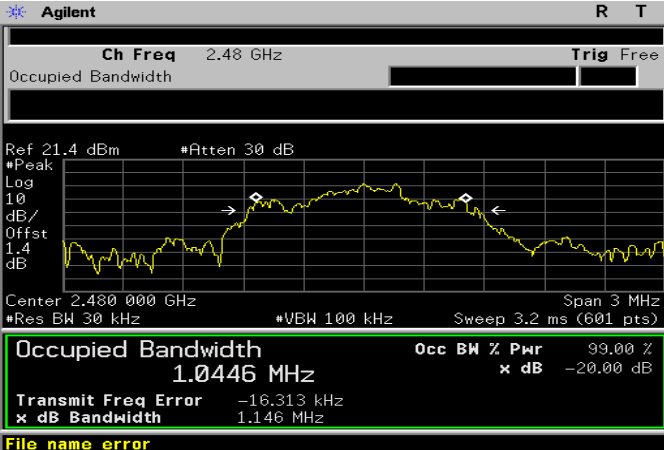
8.3. LIMITS AND MEASUREMENT RESULTS

Mode	Channel.	EBW [MHz]	OBW [MHz]	Verdict
GFSK	LCH	0.8234	0.8192	PASS
GFSK	MCH	0.7608	0.8610	PASS
GFSK	HCH	0.8315	0.8278	PASS
$\pi/4$ DQPSK	LCH	1.1244	1.0759	PASS
$\pi/4$ DQPSK	MCH	1.1283	1.0592	PASS
$\pi/4$ DQPSK	HCH	1.1309	1.0469	PASS
8DPSK	LCH	1.1452	1.0781	PASS
8DPSK	MCH	1.1446	1.0561	PASS
8DPSK	HCH	1.1462	1.0446	PASS

Test Graph



π /4DQPSK/LCH	Agilent Ch Freq 2.402 GHz Trig Free Occupied Bandwidth Ref 21.4 dBm *Atten 30 dB *Peak Log 10 dB/ Offst 1.4 dB Center 2.402 000 GHz *Res BW 30 kHz *VBW 100 kHz Sweep 3.2 ms (601 pts) Span 3 MHz Occupied Bandwidth 1.0759 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -9.963 kHz x dB Bandwidth 1.124 MHz File name error Freq/Channel Center Freq 2.40200000 GHz Start Freq 2.40050000 GHz Stop Freq 2.40350000 GHz CF Step 300.000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
π /4DQPSK/MCH	Agilent Ch Freq 2.441 GHz Trig Free Occupied Bandwidth Ref 21.4 dBm *Atten 30 dB *Peak Log 10 dB/ Offst 1.4 dB Center 2.441 000 GHz *Res BW 30 kHz *VBW 100 kHz Sweep 3.2 ms (601 pts) Span 3 MHz Occupied Bandwidth 1.0592 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -15.442 kHz x dB Bandwidth 1.128 MHz File name error Freq/Channel Center Freq 2.44100000 GHz Start Freq 2.43950000 GHz Stop Freq 2.44250000 GHz CF Step 300.000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
π /4DQPSK/HCH	Agilent Ch Freq 2.48 GHz Trig Free Occupied Bandwidth Ref 21.4 dBm *Atten 30 dB *Peak Log 10 dB/ Offst 1.4 dB Center 2.480 000 GHz *Res BW 30 kHz *VBW 100 kHz Sweep 3.2 ms (601 pts) Span 3 MHz Occupied Bandwidth 1.0469 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -18.214 kHz x dB Bandwidth 1.131 MHz File name error Freq/Channel Center Freq 2.48000000 GHz Start Freq 2.47850000 GHz Stop Freq 2.48150000 GHz CF Step 300.000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off

8DPSK/LCH	 Agilent R L Ch Freq 2.402 GHz Trig Free Occupied Bandwidth Ref 21.4 dBm *Atten 30 dB *Peak Log 10 dB/Offst 1.4 dB Center 2.402 000 GHz Span 3 MHz *Res BW 30 kHz *VBW 100 kHz Sweep 3.2 ms (601 pts) Occupied Bandwidth 1.0781 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -1.905 kHz x dB Bandwidth 1.145 MHz File name error Freq/Channel Center Freq 2.40200000 GHz Start Freq 2.40050000 GHz Stop Freq 2.40350000 GHz CF Step 300.000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
8DPSK/MCH	 Agilent R T Ch Freq 2.441 GHz Trig Free Occupied Bandwidth Ref 21.4 dBm *Atten 30 dB *Peak Log 10 dB/Offst 1.4 dB Center 2.441 000 GHz Span 3 MHz *Res BW 30 kHz *VBW 100 kHz Sweep 3.2 ms (601 pts) Occupied Bandwidth 1.0561 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -14.945 kHz x dB Bandwidth 1.145 MHz File name error Freq/Channel Center Freq 2.44100000 GHz Start Freq 2.43950000 GHz Stop Freq 2.44250000 GHz CF Step 300.000000 kHz Auto Man Freq Offset 0.00000000 Hz Signal Track On Off
8DPSK/HCH	 Agilent R T Ch Freq 2.48 GHz Trig Free Occupied Bandwidth Ref 21.4 dBm *Atten 30 dB *Peak Log 10 dB/Offst 1.4 dB Center 2.480 000 GHz Span 3 MHz *Res BW 30 kHz *VBW 100 kHz Sweep 3.2 ms (601 pts) Occupied Bandwidth 1.0446 MHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -16.313 kHz x dB Bandwidth 1.146 MHz File name error Freq/Channel Center Freq 2.48000000 GHz Start Freq 2.47850000 GHz Stop Freq 2.48150000 GHz CF Step 300.000000 kHz 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 the Span = wide enough to capture the peak level of the in-band emission and all spurious emissions from the lowest frequency generated in the EUT up through the 10th harmonic.
RBW = 100 kHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak.
4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to DA000705 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

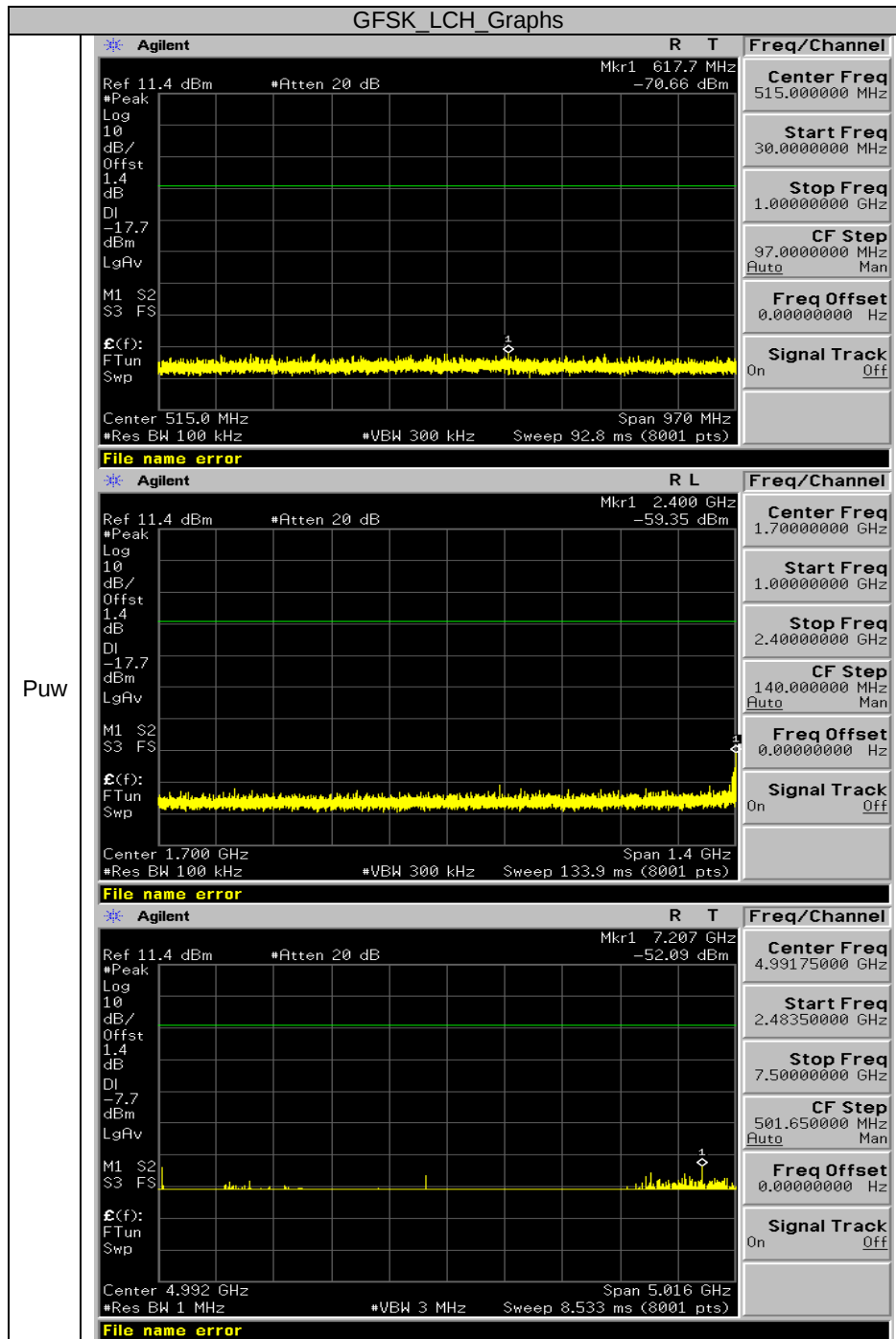
9.3. MEASUREMENT EQUIPMENT USED

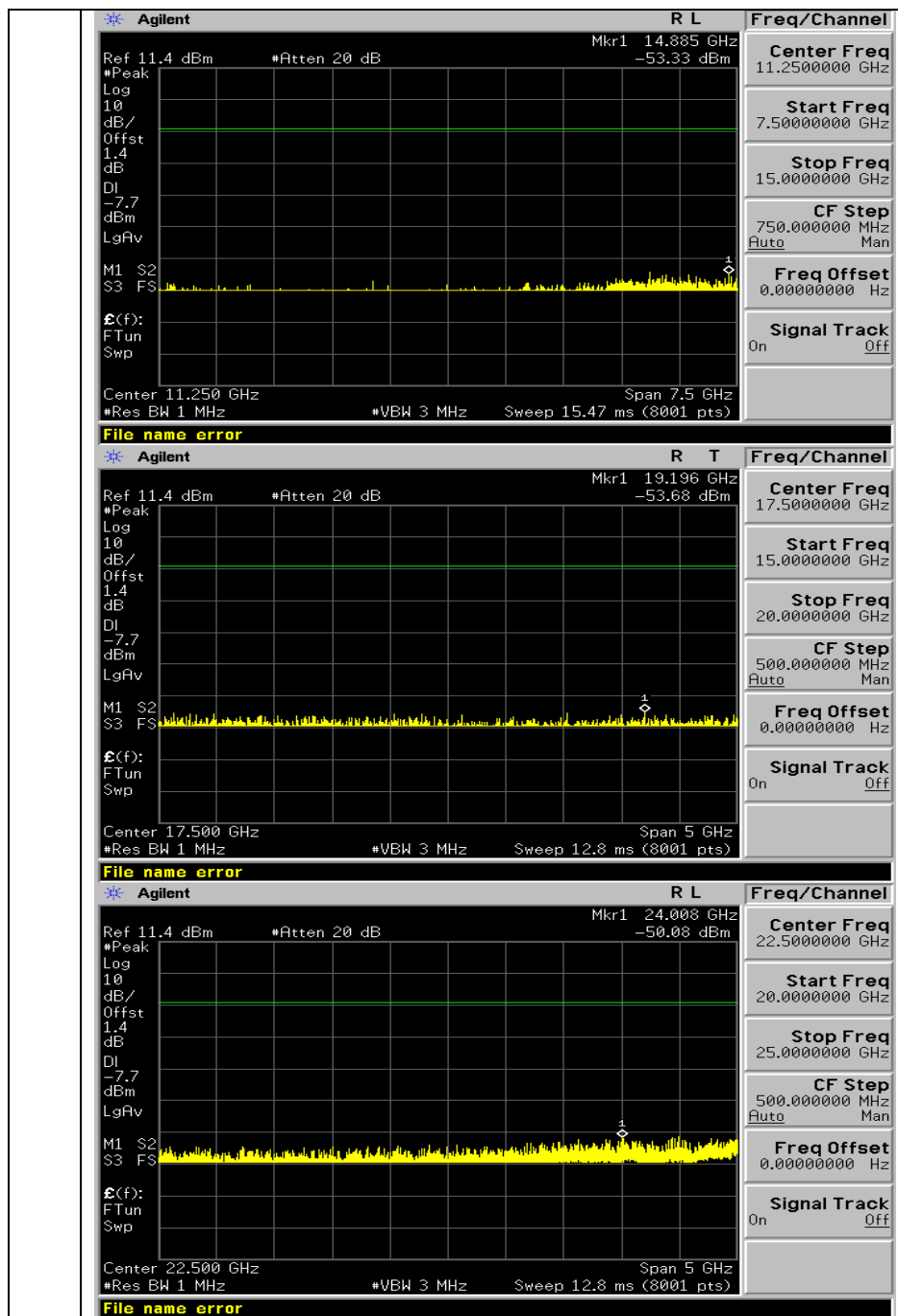
The same as described in section 6

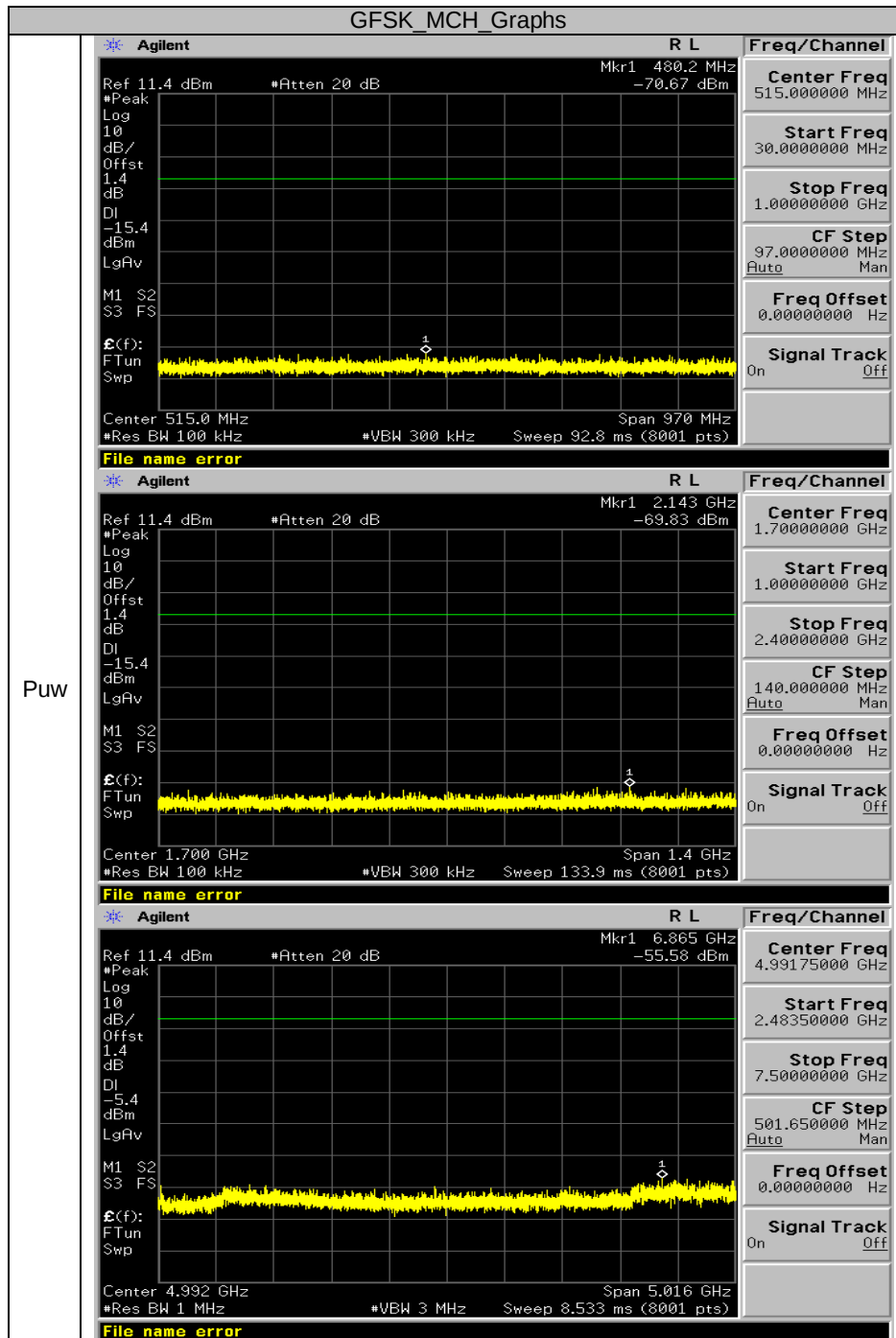
9.4. LIMITS AND MEASUREMENT RESULT

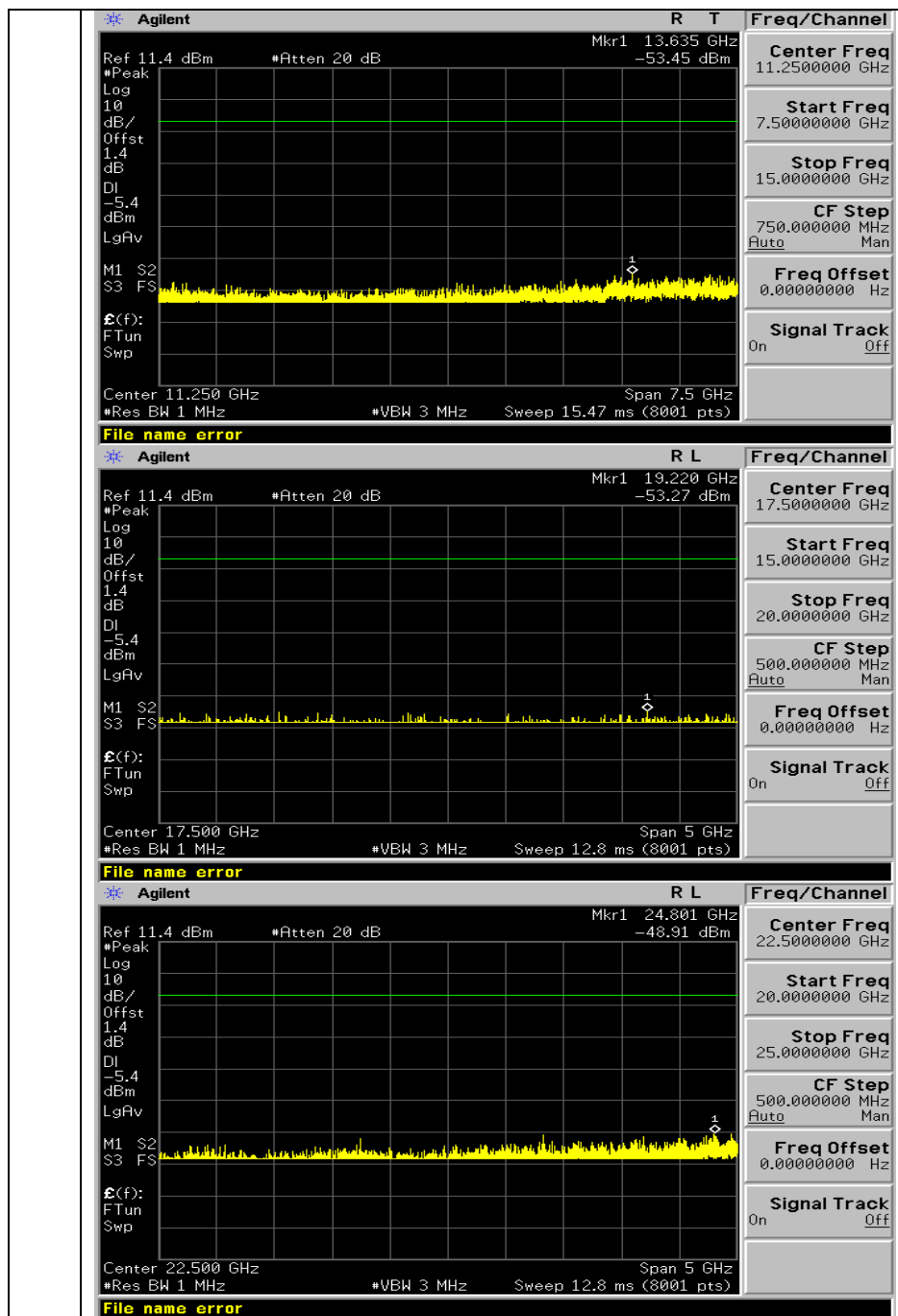
LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below 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

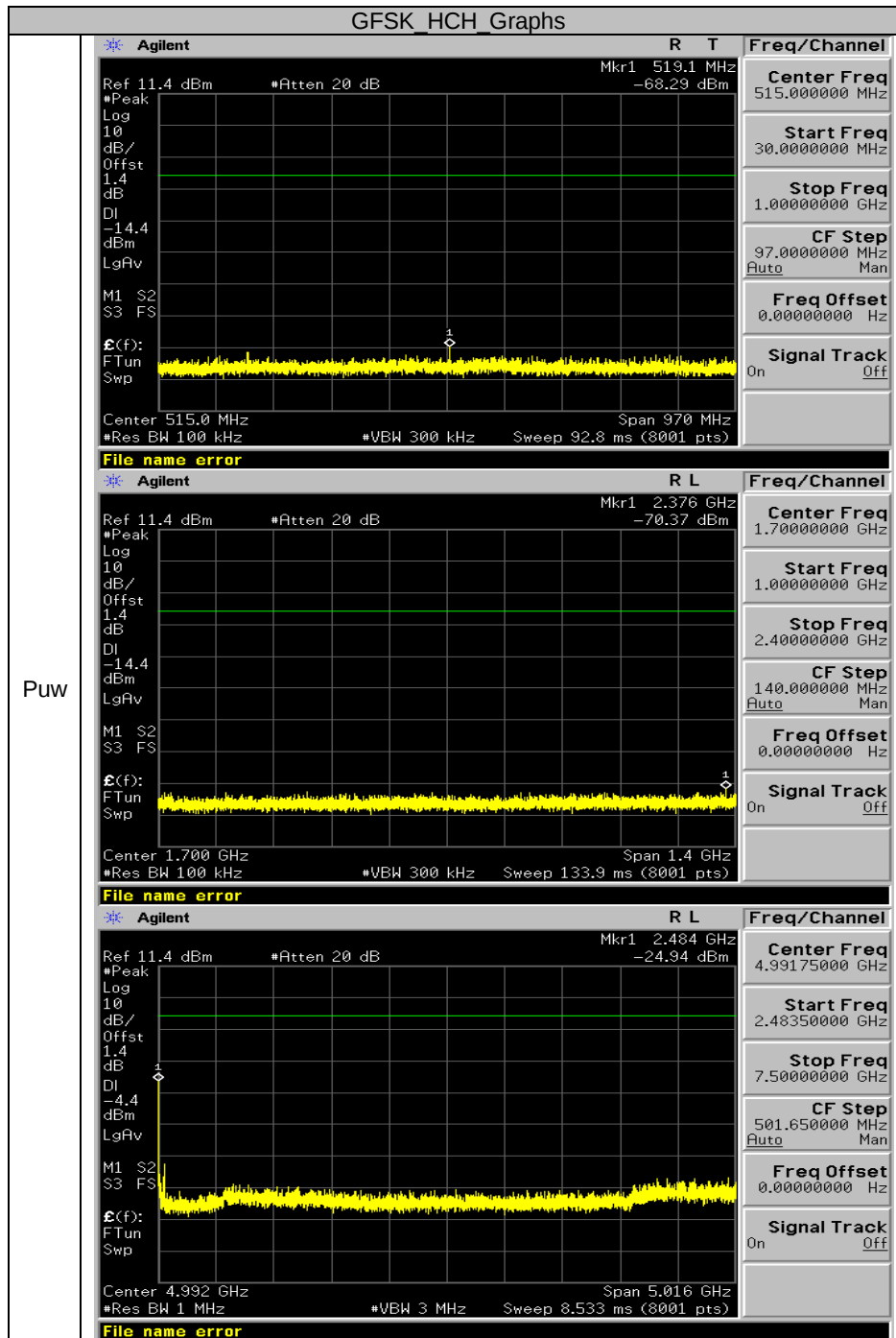
Test Graph

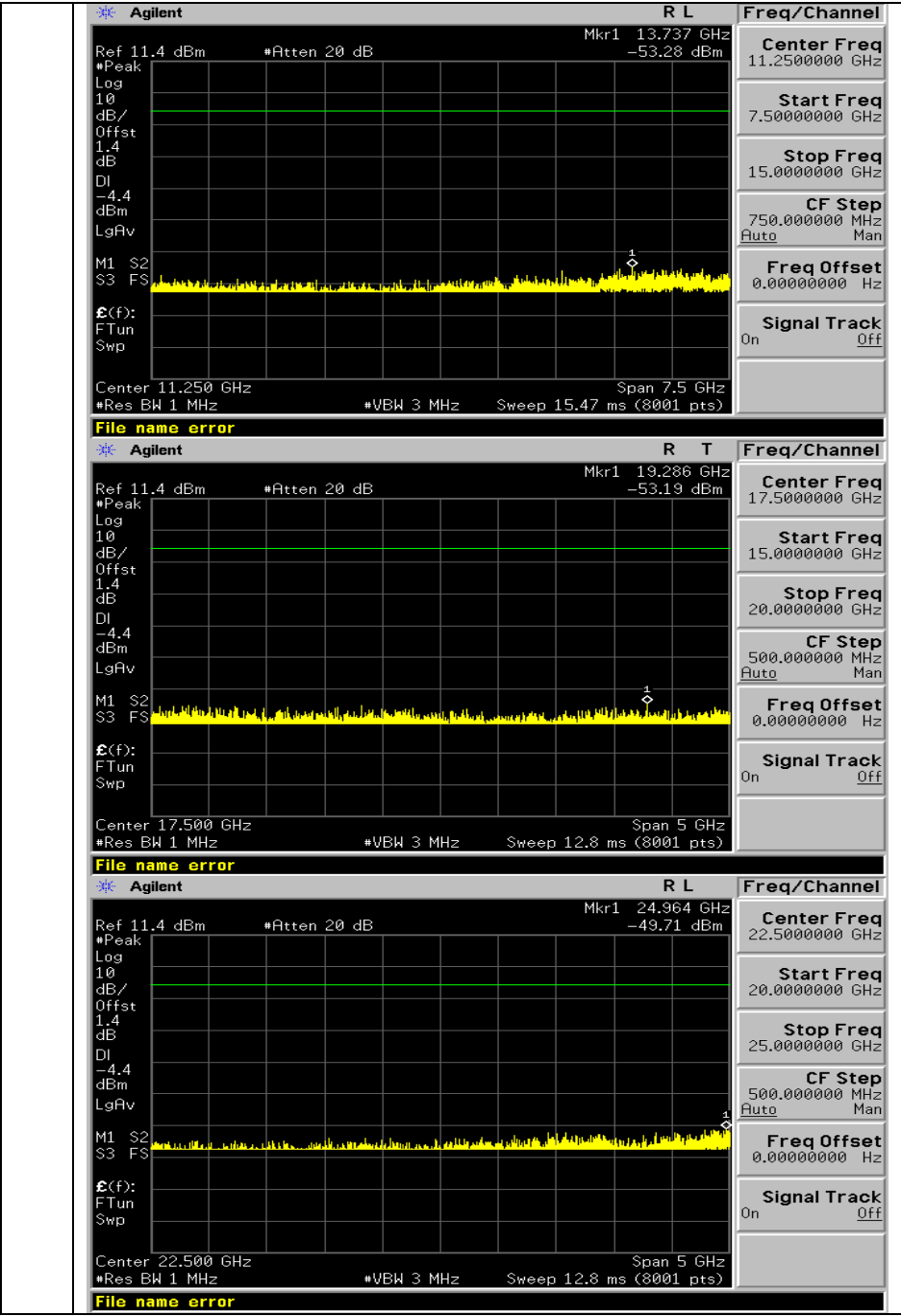


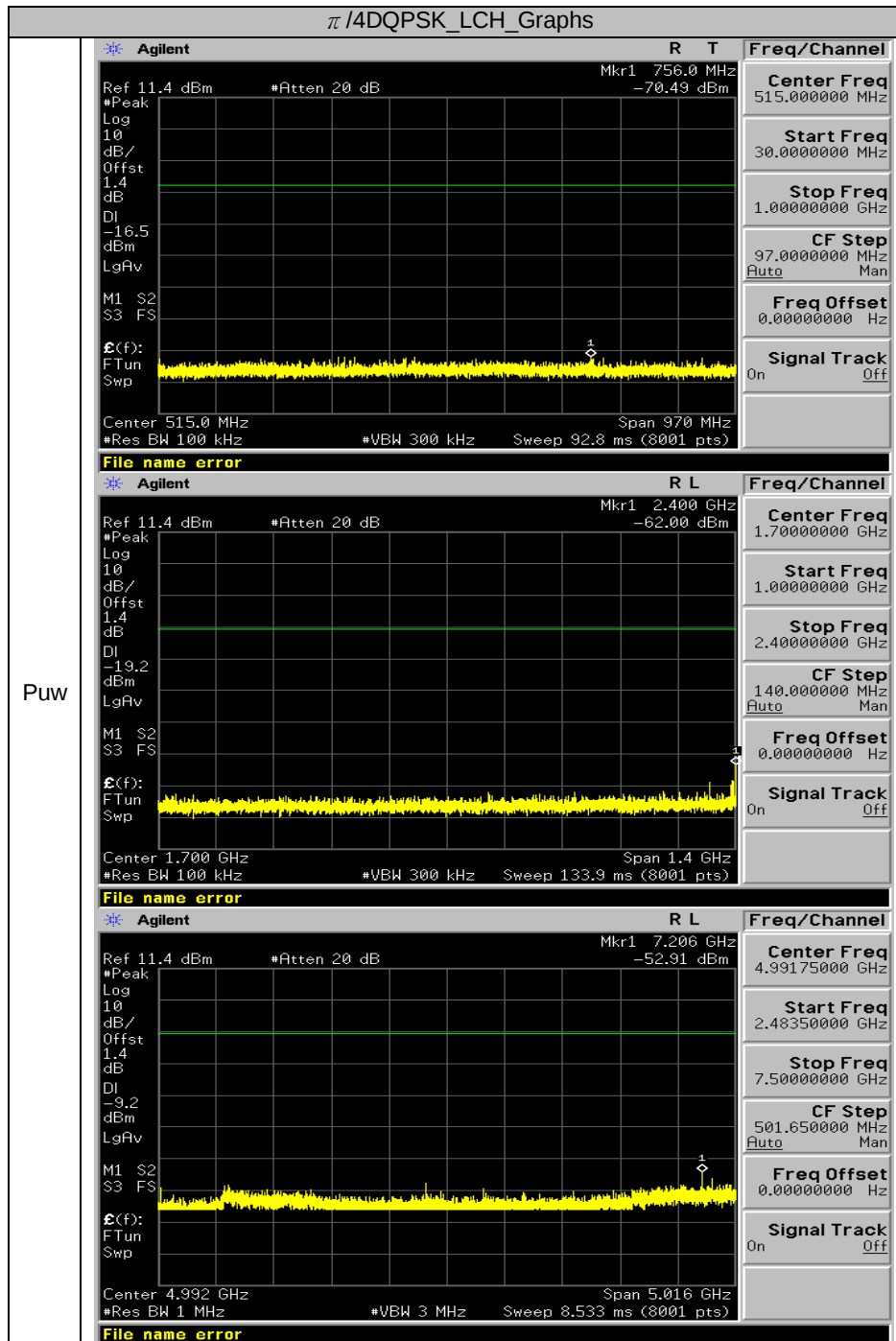


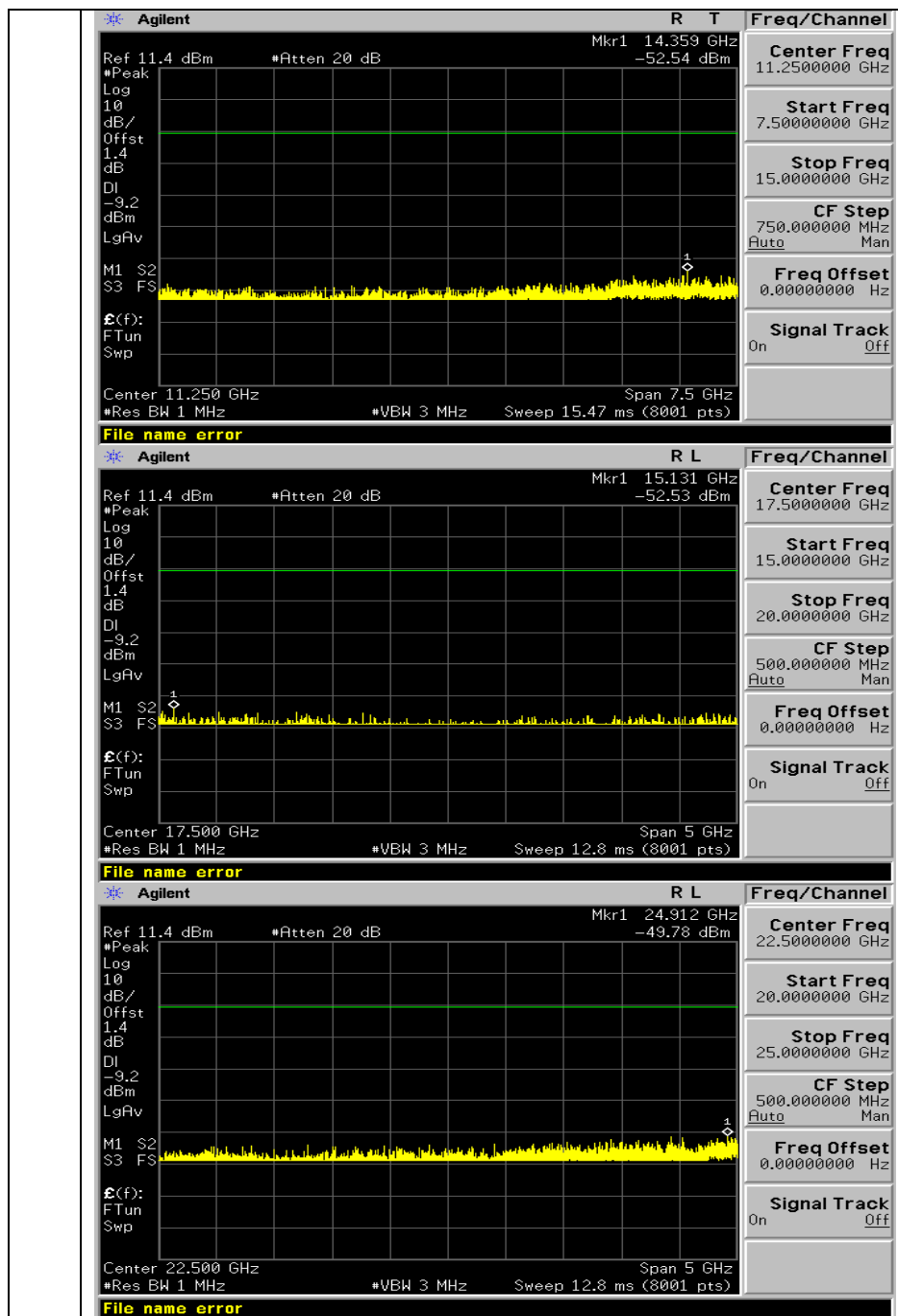


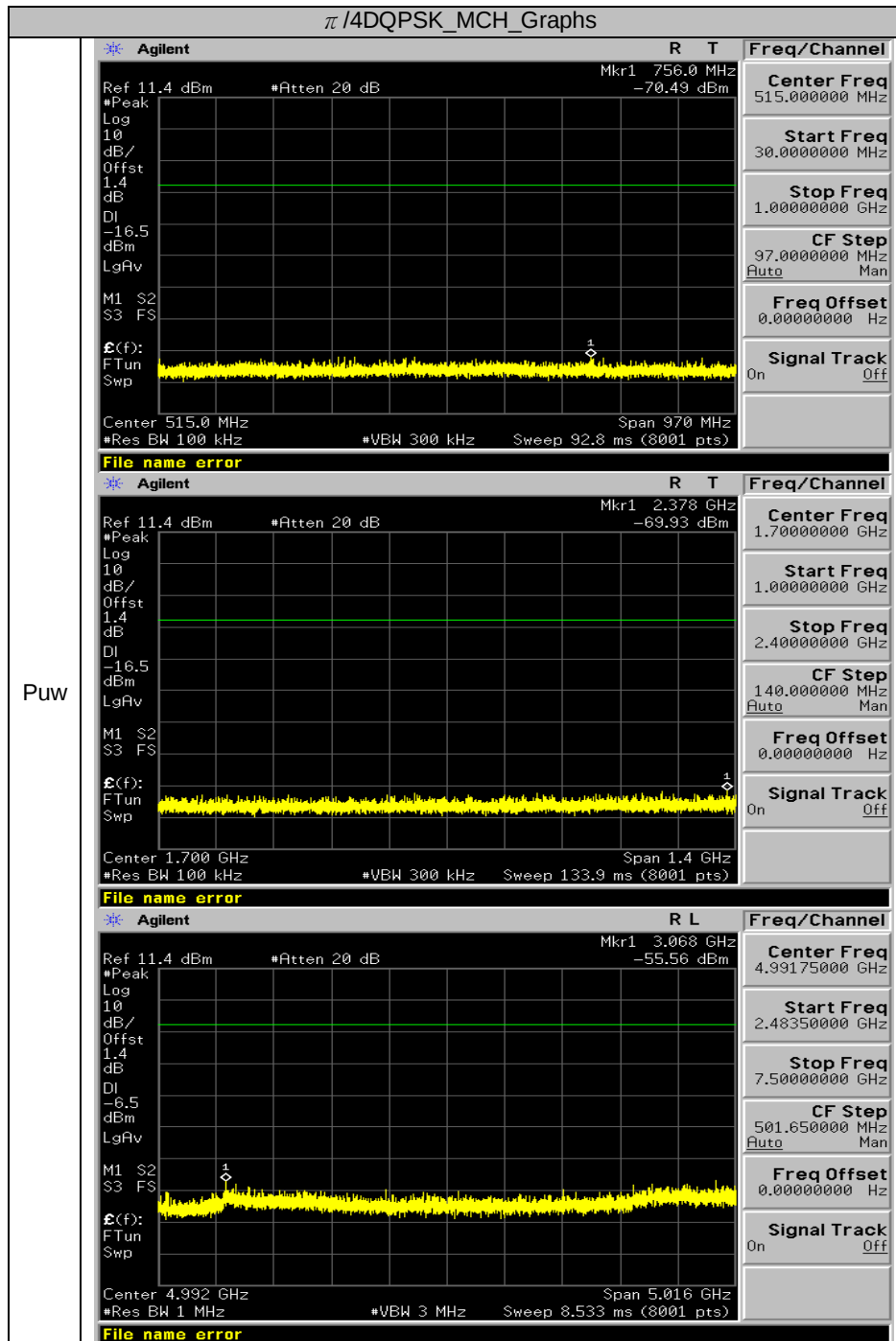


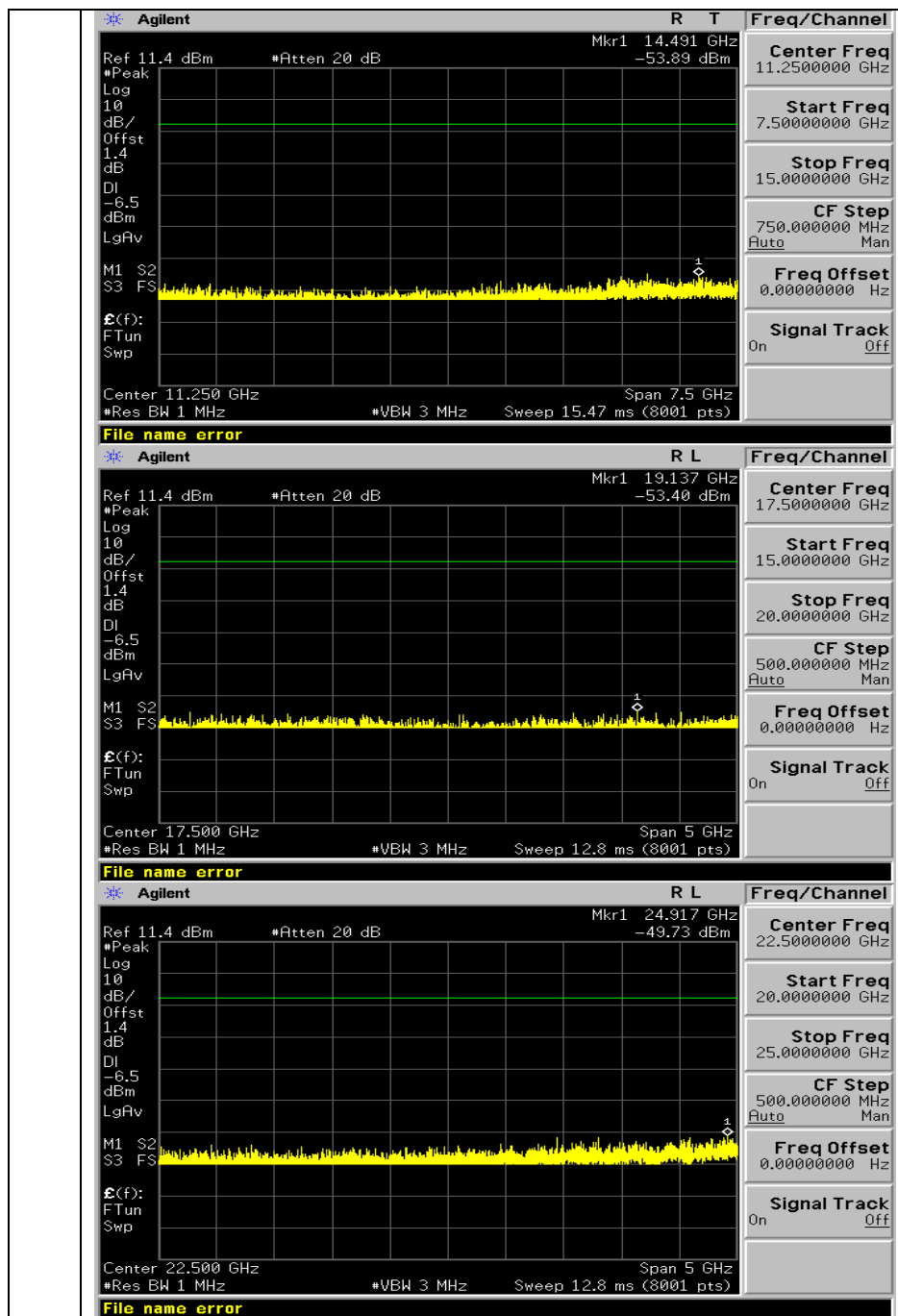


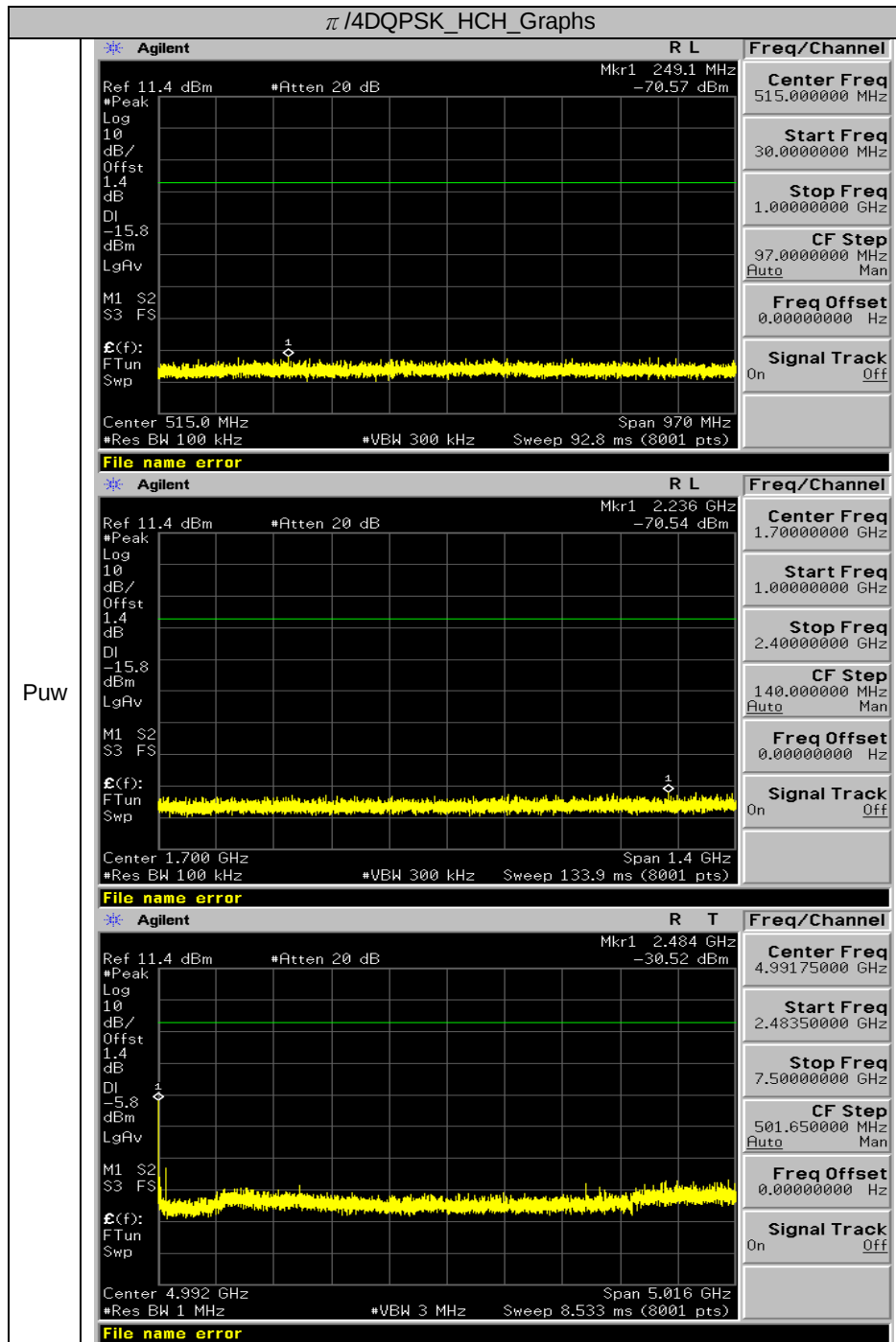


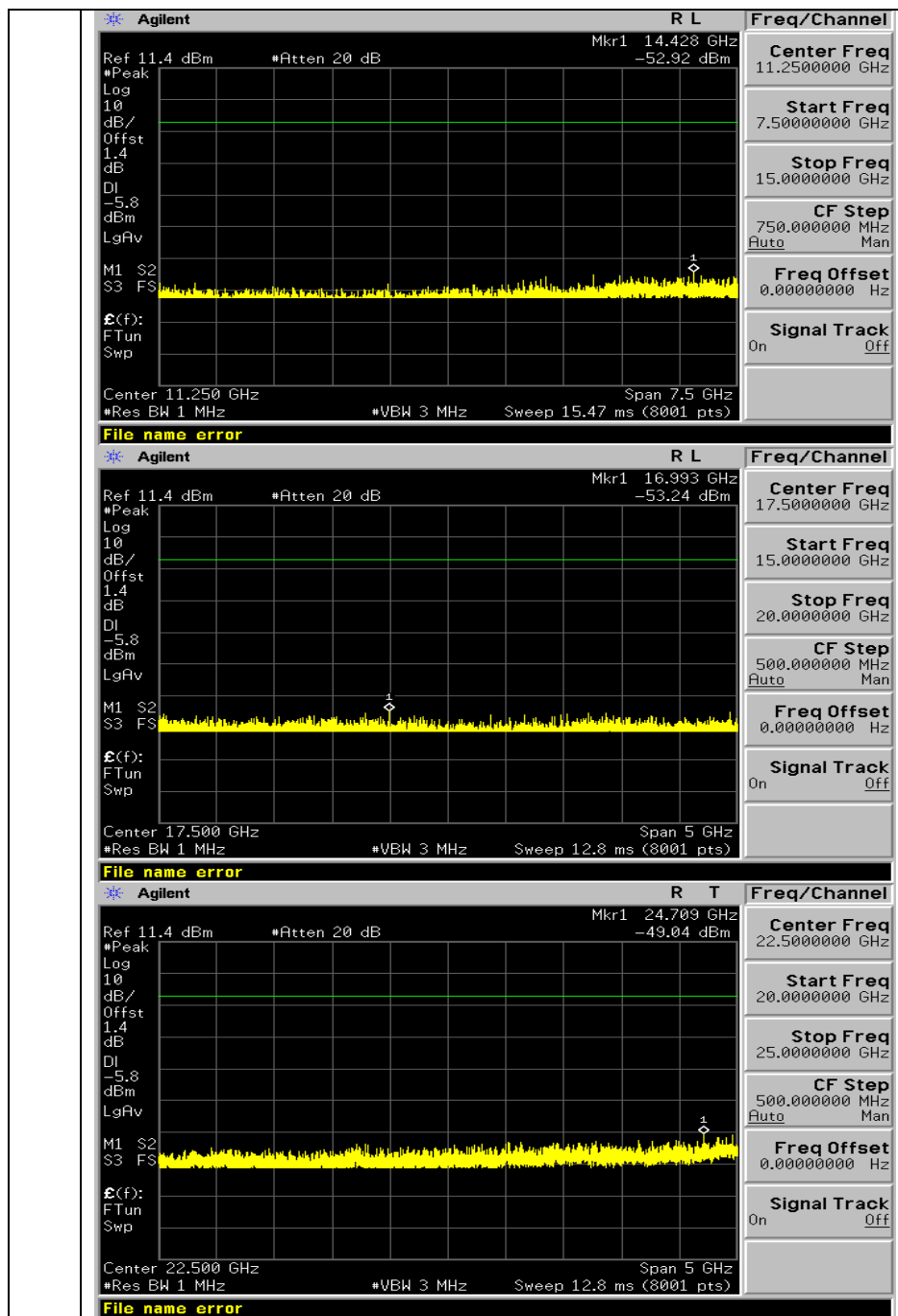


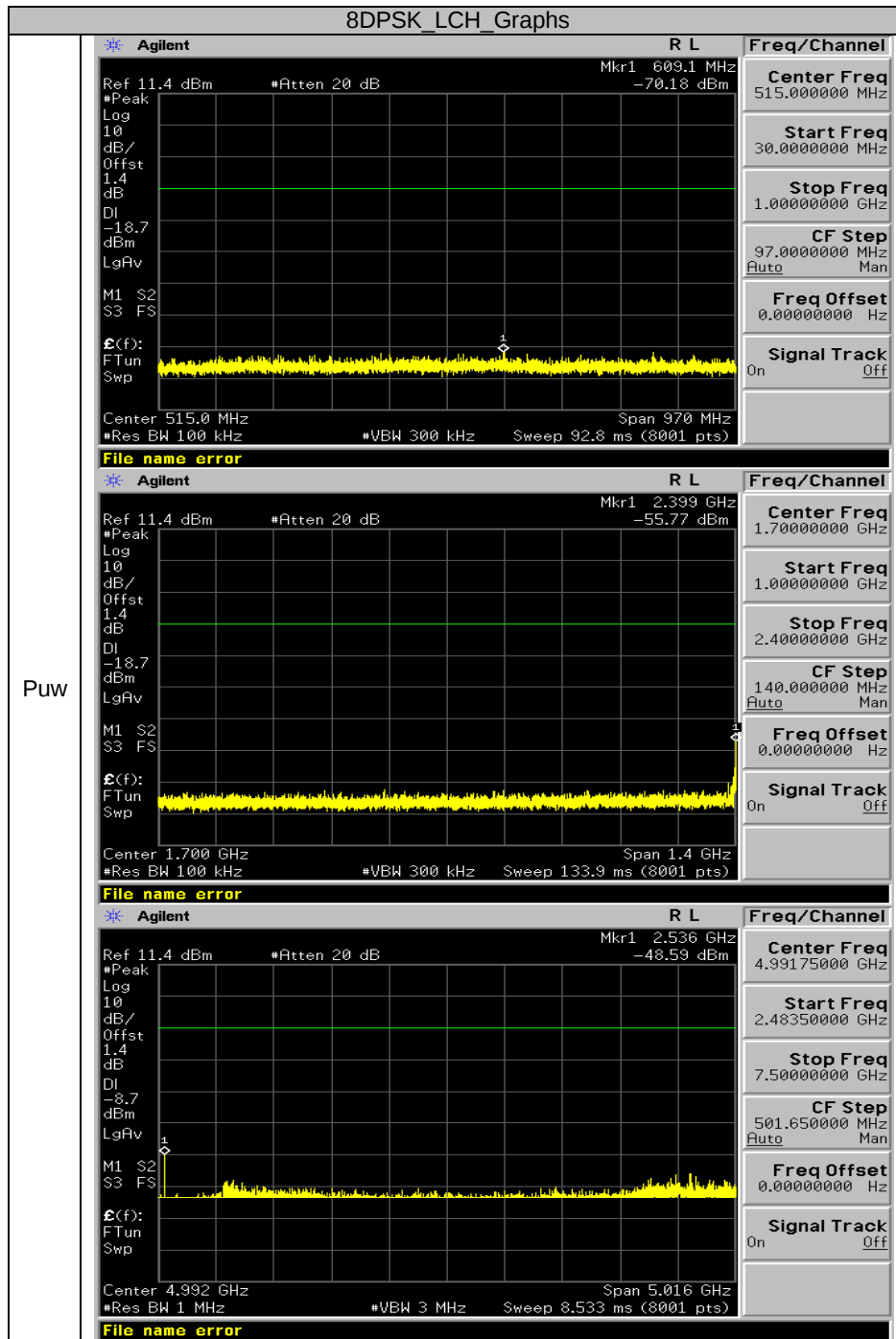


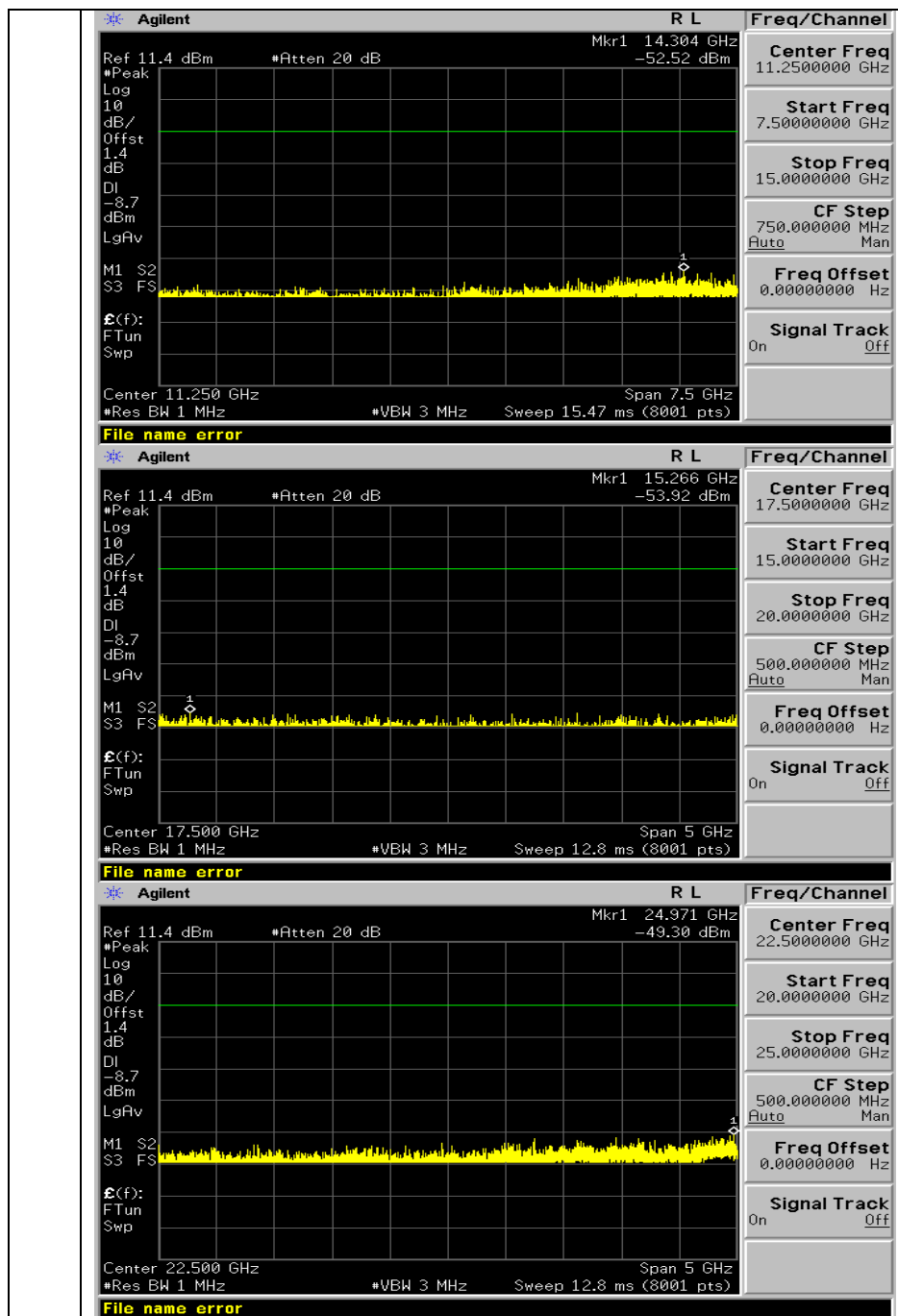


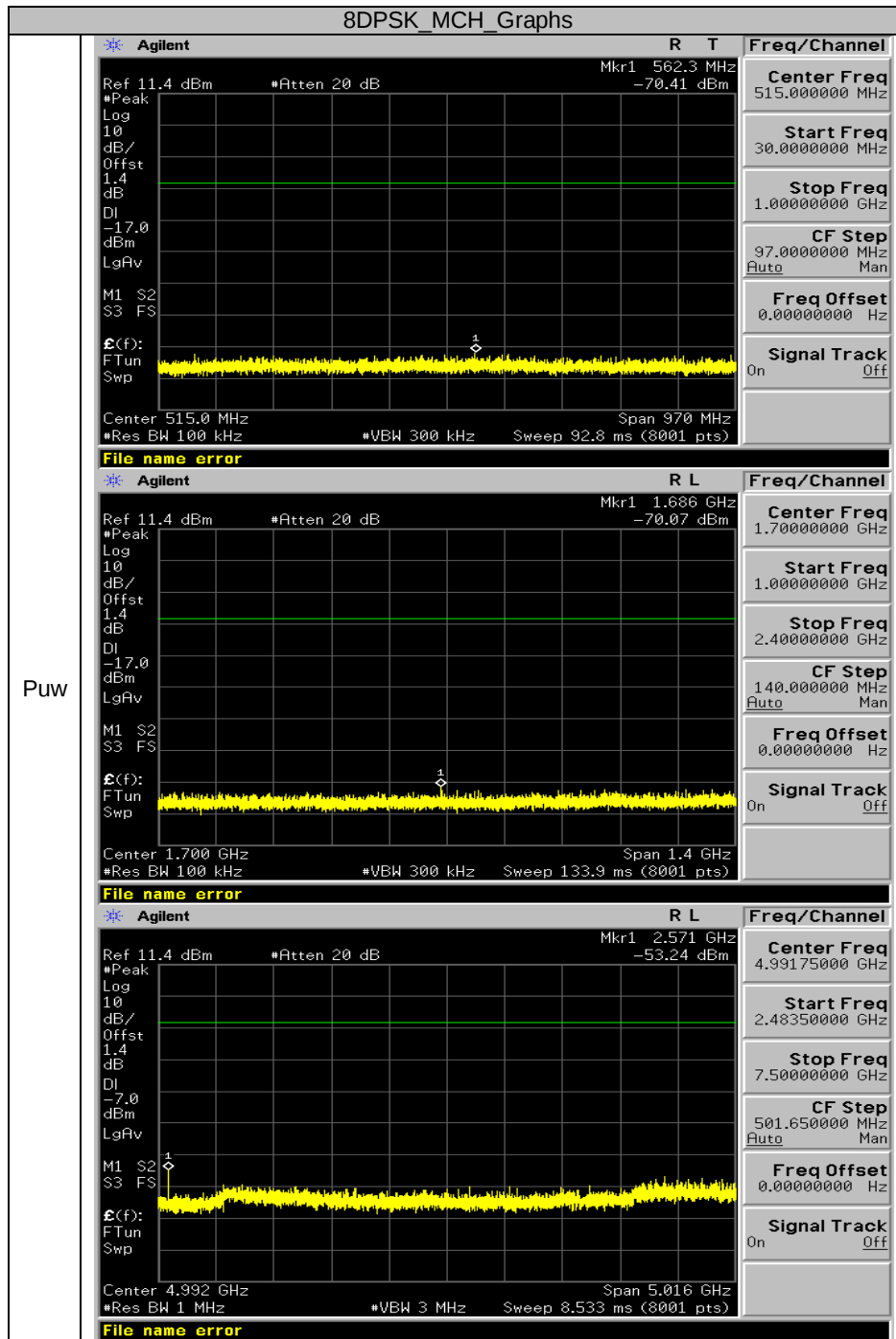


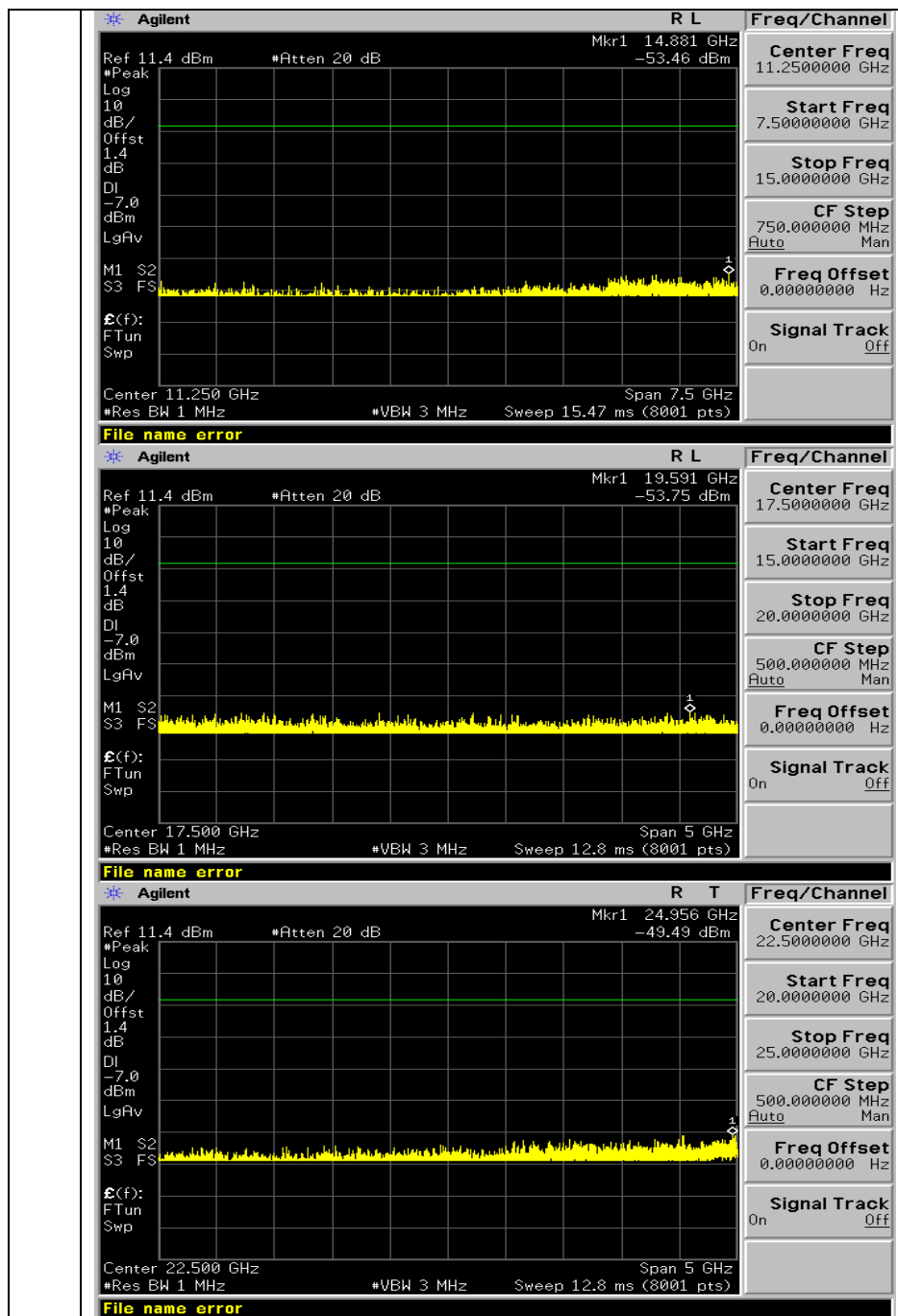


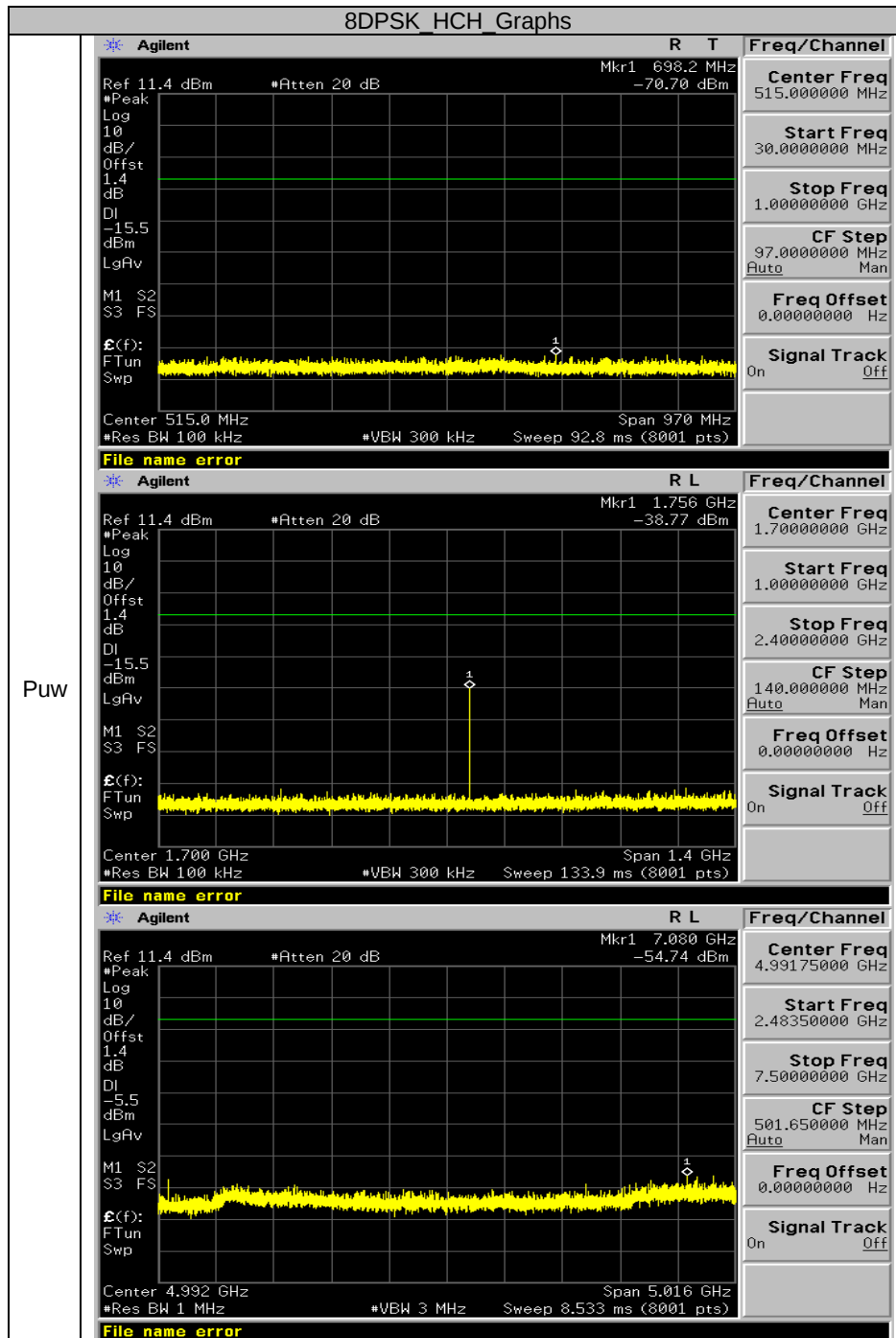


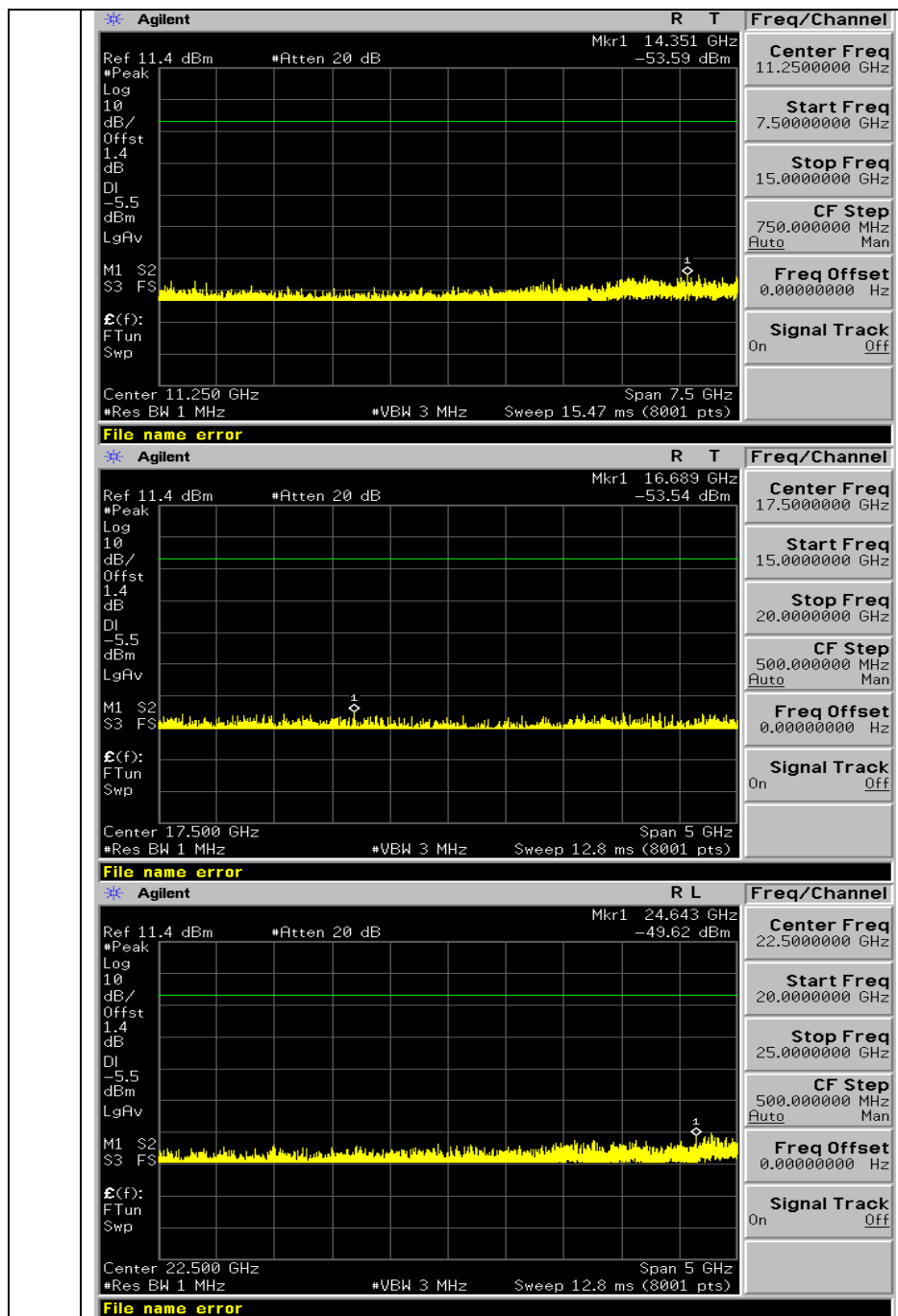












10. RADIATED EMISSION

10.1. 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.

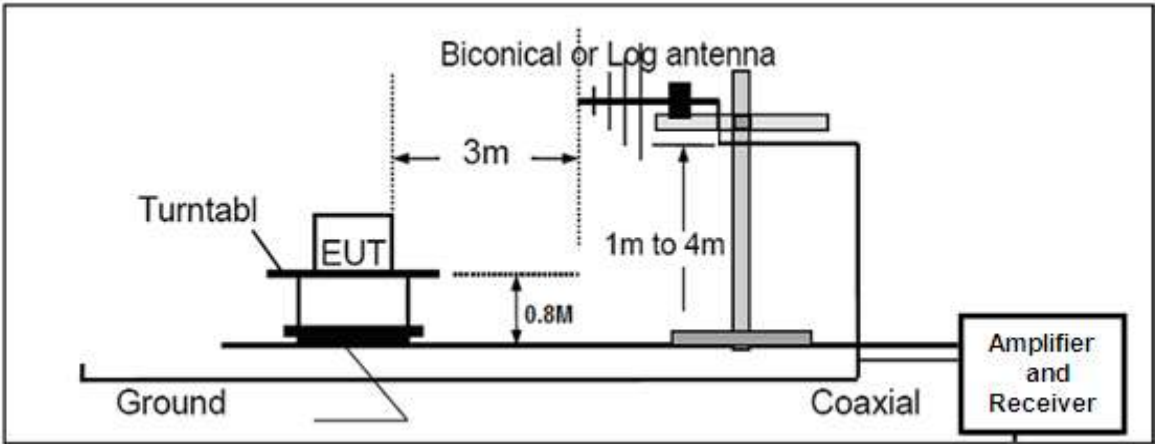
The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/1MHz for Peak, 1MHz/10Hz for Average

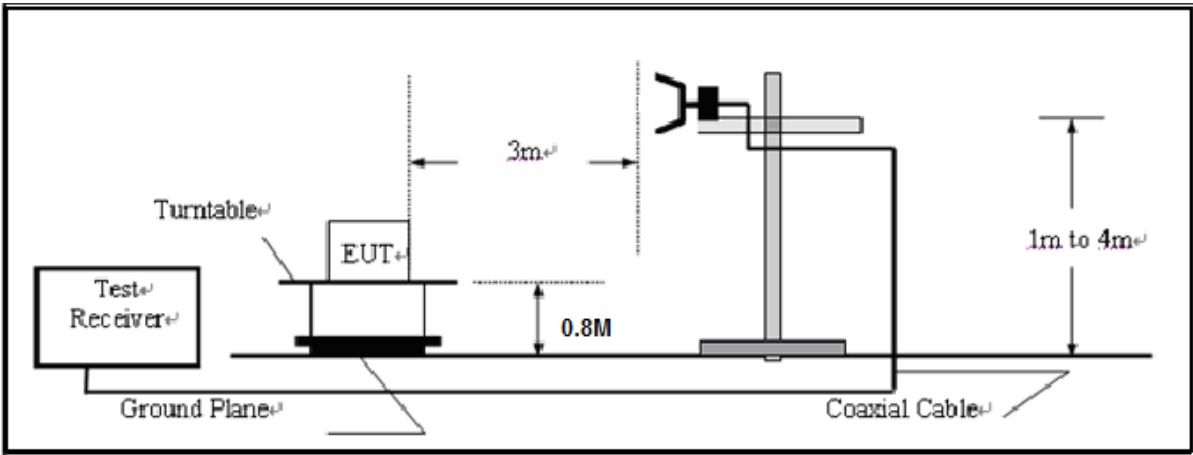
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

10.2. TEST SETUP

RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz

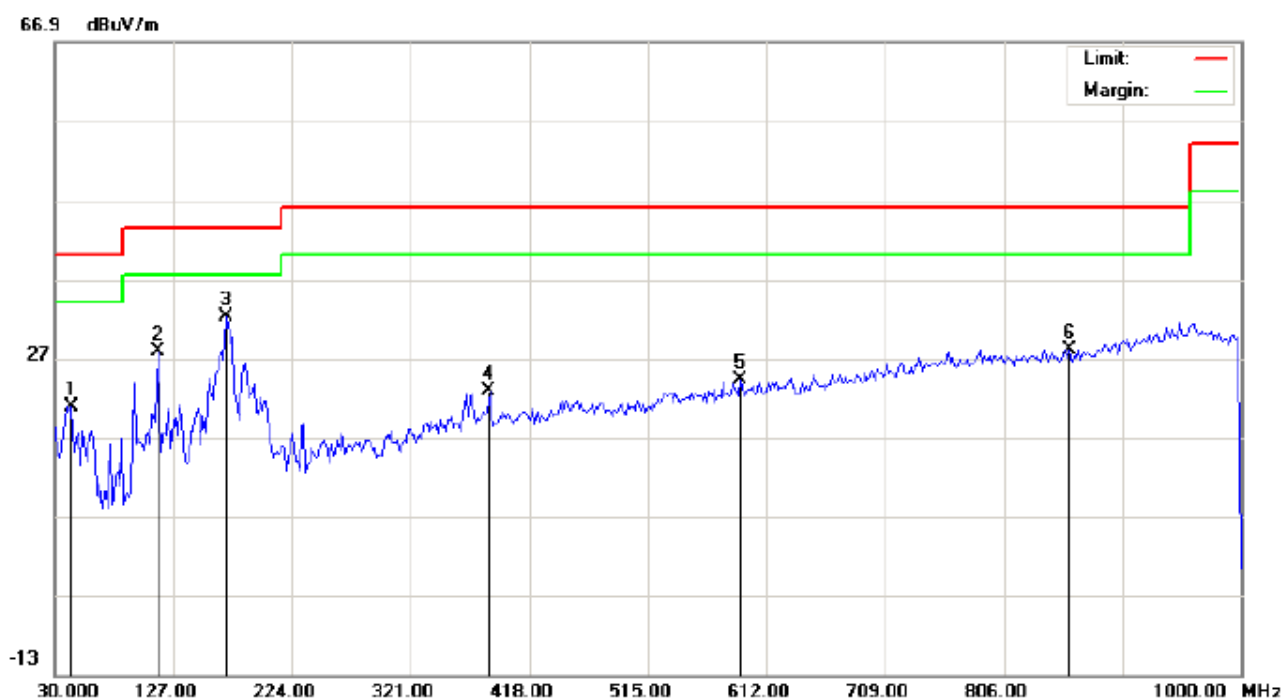


10.3. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

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

RADIATED EMISSION BELOW 1GHZ-Horizontal



Site: site #1
Limit: FCC Class B 3M Radiation
EUT: 3G Smart Phone
M/N: S42
Mode: High Channel GFSK
Note:

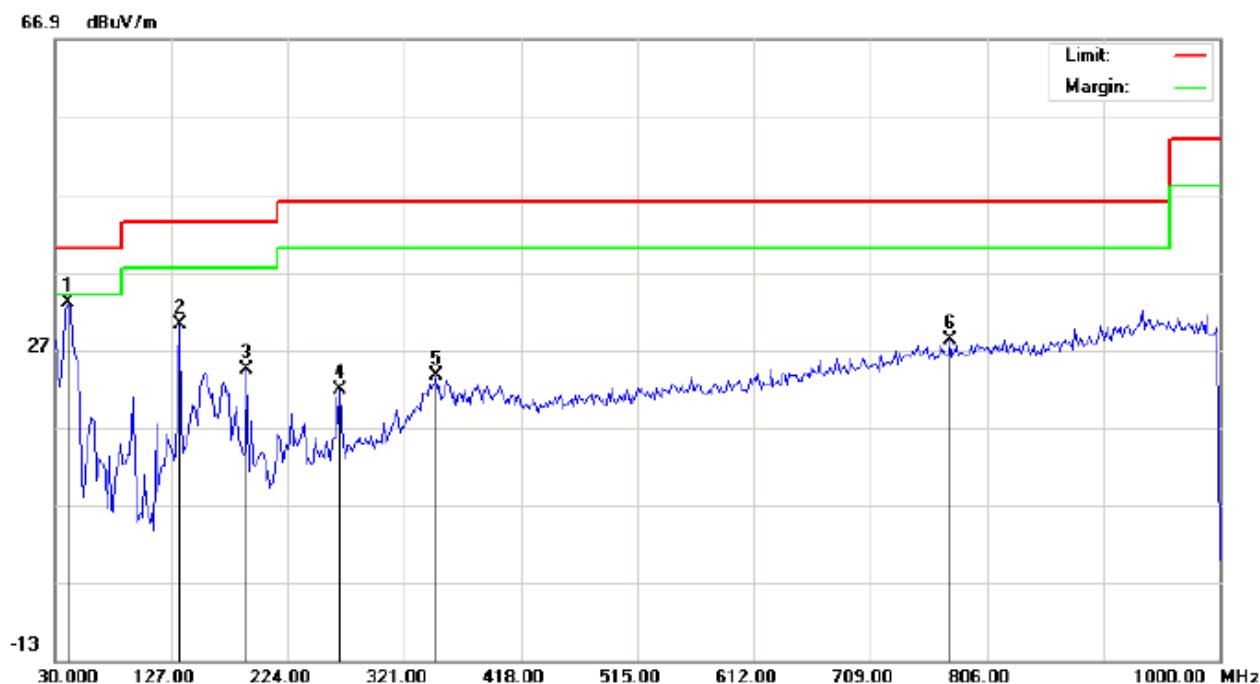
Polarization: **Horizontal**
Power: AC 120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		42.9333	9.07	11.71	20.78	40.00	-19.22	peak			
2		114.0667	16.35	11.45	27.80	43.50	-15.70	peak			
3	*	170.6500	19.14	13.06	32.20	43.50	-11.30	peak			
4		385.6666	3.73	18.98	22.71	46.00	-23.29	peak			
5		590.9833	0.64	23.50	24.14	46.00	-21.86	peak			
6		859.3500	0.50	27.55	28.05	46.00	-17.95	peak			

RESULT: PASS

RADIATED EMISSION BELOW 1GHZ-Vertical



Site: site #1	Polarization: Vertical	Temperature: 26
Limit: FCC Class B 3M Radiation	Power: AC 120V/60Hz	Humidity: 60 %
EUT: 3G Smart Phone	Distance: 3m	
M/N: S42		
Mode: High Channel GFSK		
Note:		

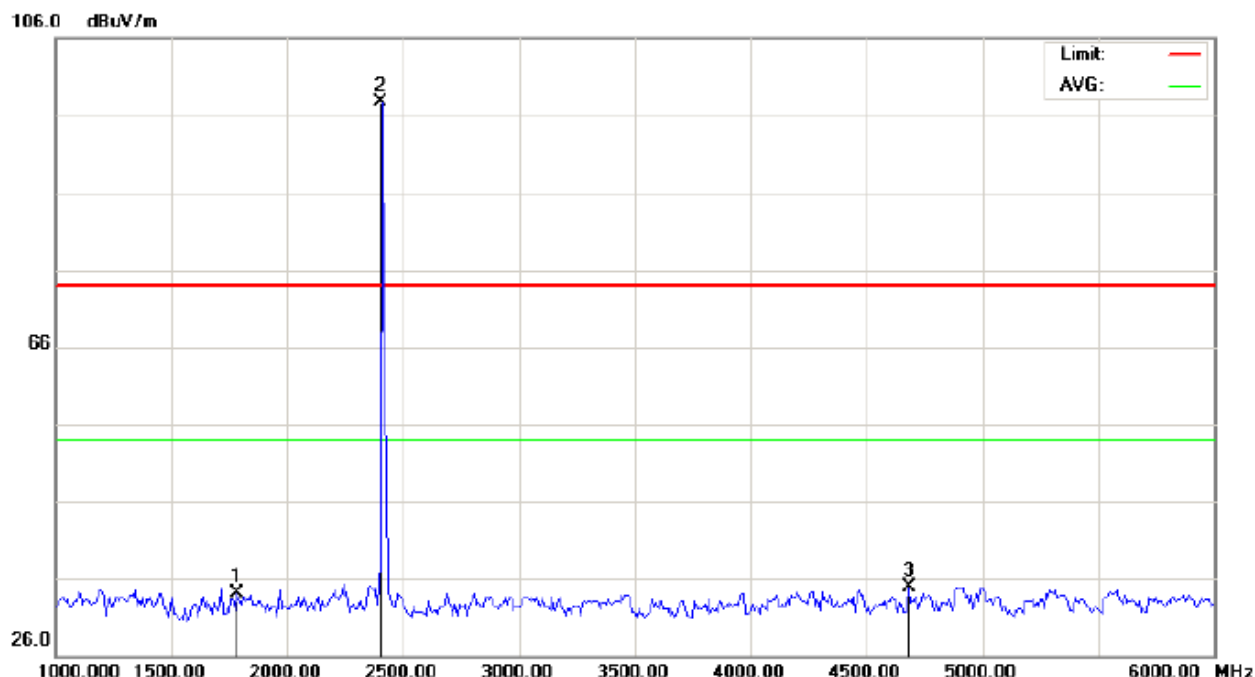
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	41.3167	24.24	8.81	33.05	40.00	-6.95	peak			
2		133.4667	17.82	12.48	30.30	43.50	-13.20	peak			
3		190.0500	12.95	11.52	24.47	43.50	-19.03	peak			
4		267.6500	7.37	14.43	21.80	46.00	-24.20	peak			
5		346.8667	5.13	18.53	23.66	46.00	-22.34	peak			
6		775.2833	1.13	26.98	28.11	46.00	-17.89	peak			

RESULT: PASS

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

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

RADIATED EMISSION TEST- (ABOVE 1GHZ)-LOW CHANNEL-HORIZONTAL

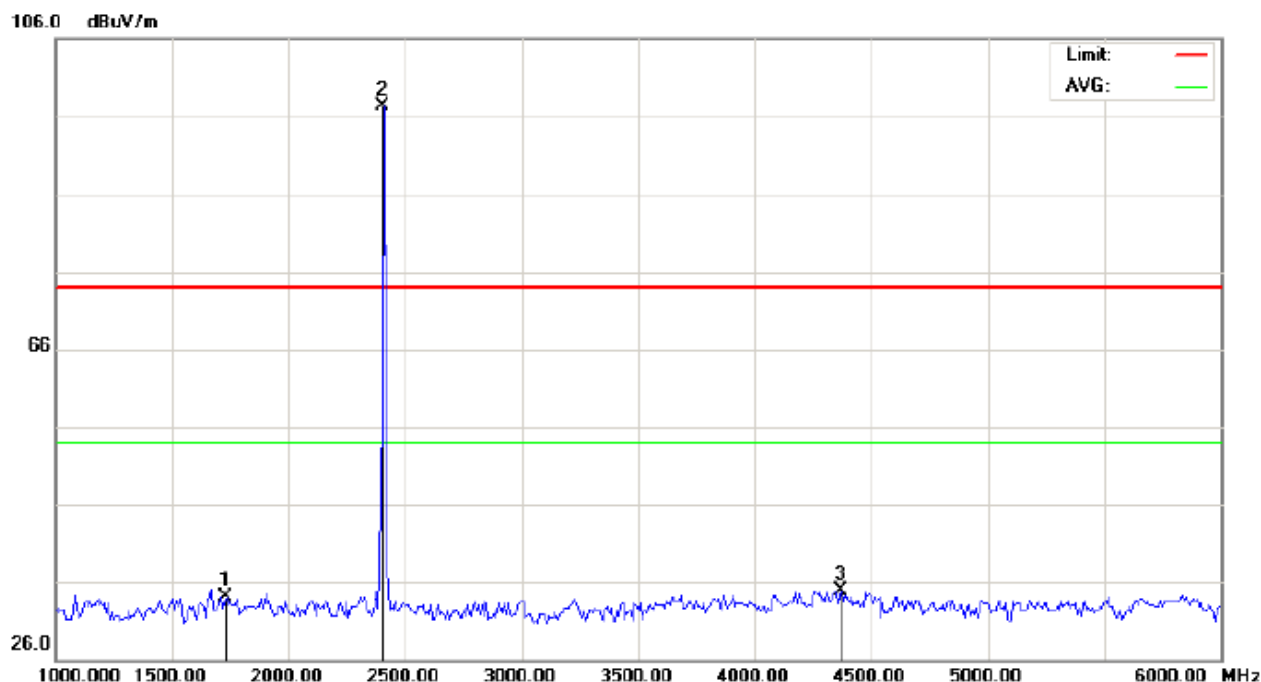


Site: site #1 Polarization: *Horizontal* Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 3G Smart Phone Distance:
M/N: S42
Mode: Low Channel GFSK
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1783.333	46.60	-12.40	34.20	74.00	-39.80	peak			
2	*	2402.000	107.33	-9.68	97.65	74.00	23.65	peak			
3		4683.333	37.61	-2.63	34.98	74.00	-39.02	peak			

RESULT: PASS

RADIATED EMISSION TEST- (ABOVE 1GHZ)-LOW CHANNEL- VERTICAL

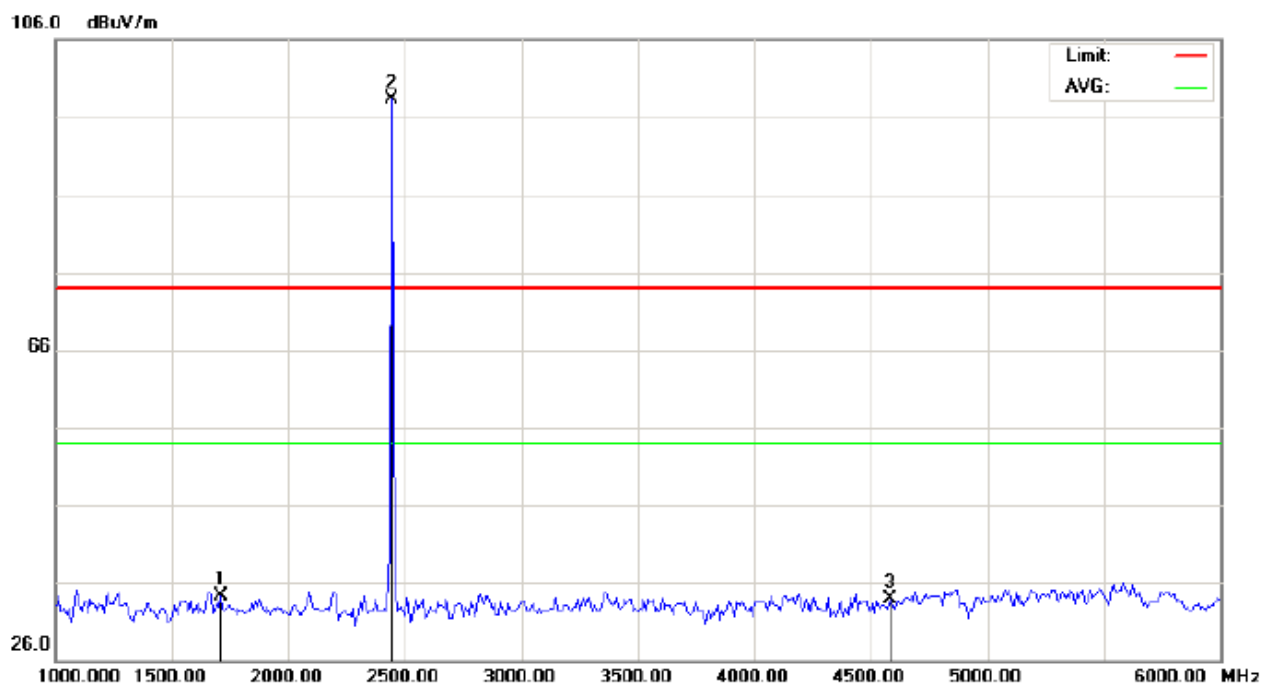


Site: site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 3G Smart Phone Distance:
M/N: S42
Mode: Low Channel GFSK
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1733.333	47.03	-12.93	34.10	74.00	-39.90	peak			
2	*	2402.000	107.08	-9.68	97.40	74.00	23.40	peak			
3		4366.667	38.56	-3.56	35.00	74.00	-39.00	peak			

RESULT: PASS

RADIATED EMISSION TEST- (ABOVE 1GHZ)-MIDDLE CHANNEL-HORIZONTAL

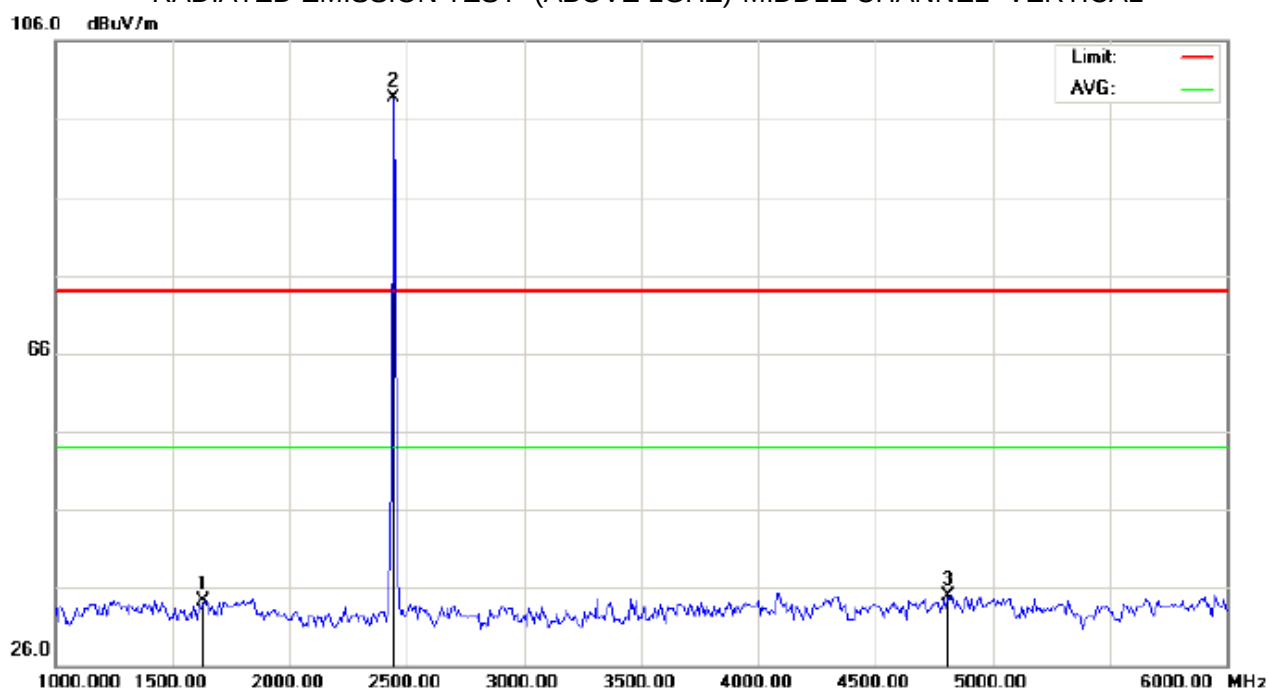


Site: site #1 Polarization: *Horizontal* Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 3G Smart Phone Distance:
M/N: S42
Mode: Middle Channel GFSK
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1708.333	47.44	-13.19	34.25	74.00	-39.75	peak			
2	*	2441.000	107.87	-9.63	98.24	74.00	24.24	peak			
3		4583.333	36.70	-2.89	33.81	74.00	-40.19	peak			

RESULT: PASS

RADIATED EMISSION TEST- (ABOVE 1GHZ)-MIDDLE CHANNEL- VERTICAL

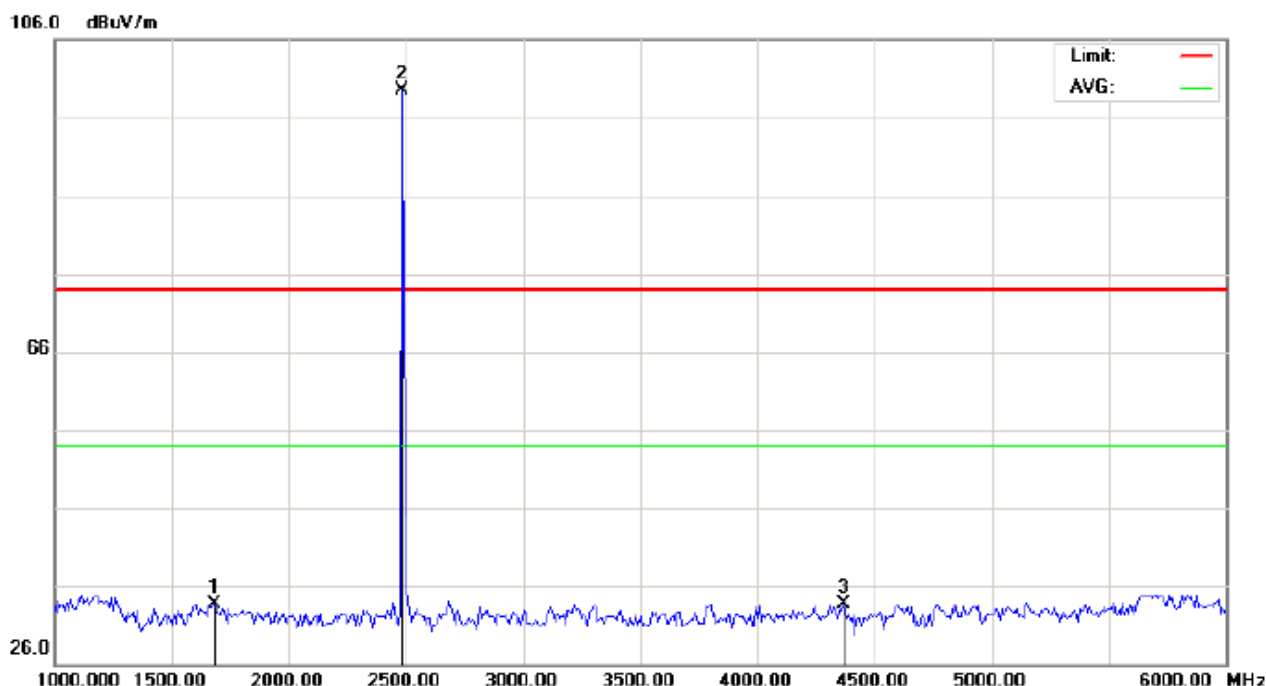


Site: site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 3G Smart Phone Distance:
M/N: S42
Mode: Middle Channel GFSK
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1633.333	48.27	-13.98	34.29	74.00	-39.71	peak			
2	*	2441.000	108.30	-9.63	98.67	74.00	24.67	peak			
3		4808.333	37.25	-2.30	34.95	74.00	-39.05	peak			

RESULT: PASS

RADIATED EMISSION TEST- (ABOVE 1GHZ)-HIGH CHANNEL-HORIZONTAL

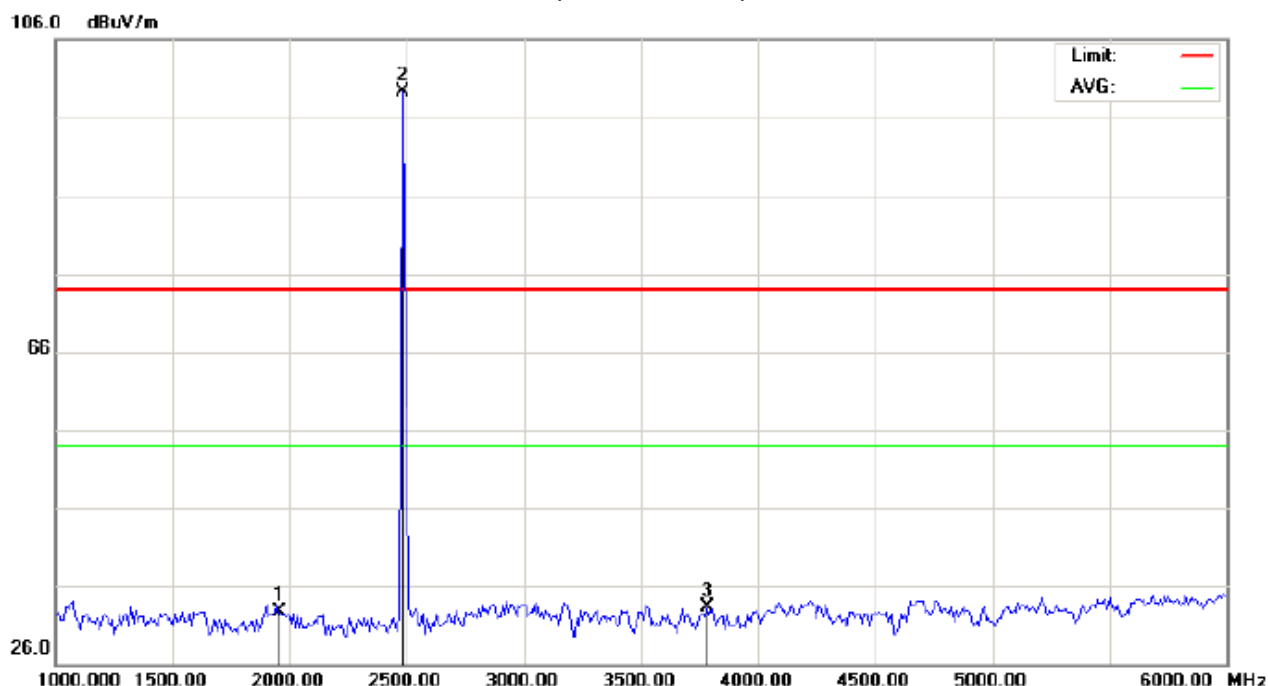


Site: site #1 Polarization: *Horizontal* Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 3G Smart Phone Distance:
M/N: S42
Mode: High Channel GFSK
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1683.333	47.14	-13.45	33.69	74.00	-40.31	peak			
2	*	2480.000	109.17	-9.59	99.58	74.00	25.58	peak			
3		4366.667	37.17	-3.56	33.61	74.00	-40.39	peak			

RESULT: PASS

RADIATED EMISSION TEST- (ABOVE 1GHZ)-HIGH CHANNEL- VERTICAL



Site: site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 3G Smart Phone Distance:
M/N: S42
Mode: High Channel GFSK
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1958.333	43.19	-10.56	32.63	74.00	-41.37	peak			
2	*	2480.000	108.88	-9.59	99.29	74.00	25.29	peak			
3		3783.333	39.36	-6.14	33.22	74.00	-40.78	peak			

RESULT: PASS

Note: 6~25GHz at least have 20dB margin. No recording in the test report.

Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.

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

11. BAND EDGE EMISSION

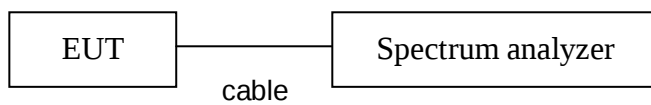
11.1. MEASUREMENT PROCEDURE

1. The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100kHz. The video bandwidth is set to 300kHz.
2. Transmitter set to the normal hopping mode at 2.4 and 2.4835 GHz.

11.2. TEST SET-UP

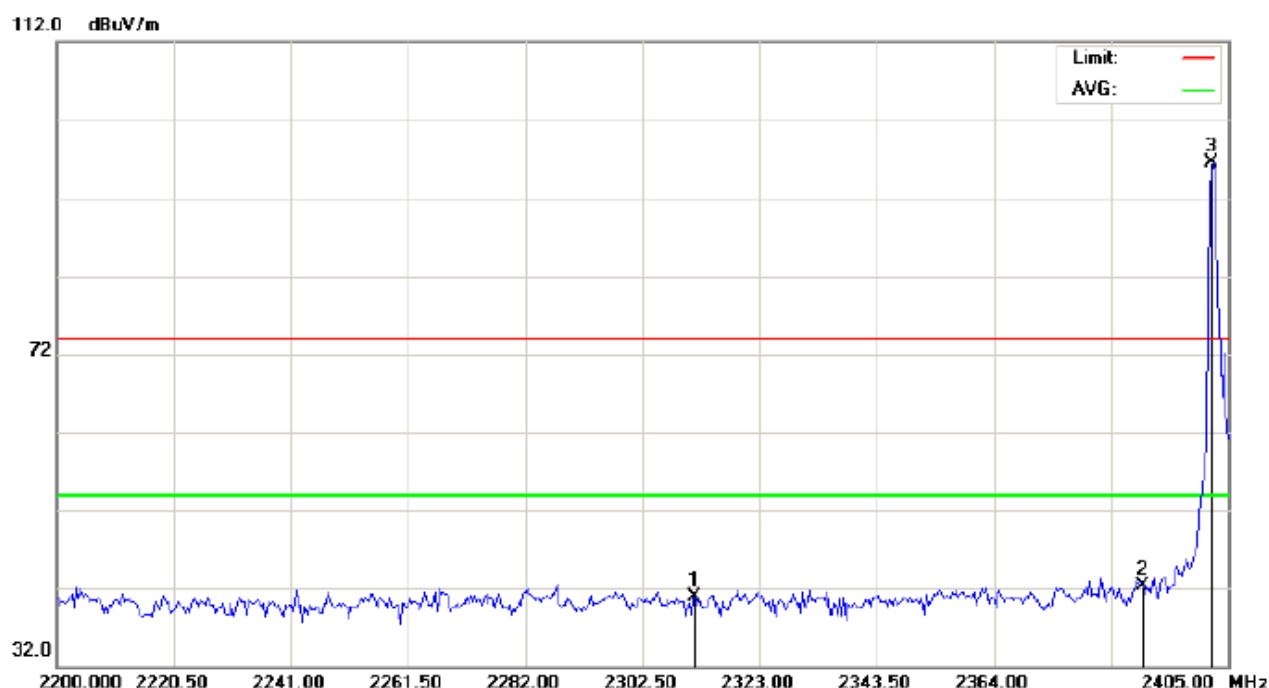
Radiated same as 10.2

Conducted set up



11.3. Radiated TEST RESULT

TEST PLOT OF BAND EDGE FOR LOW CHANNEL (3Mbps)-Horizontal



Site: site #1

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

Power:

Humidity: 60 %

EUT: 3G Smart Phone

Distance:

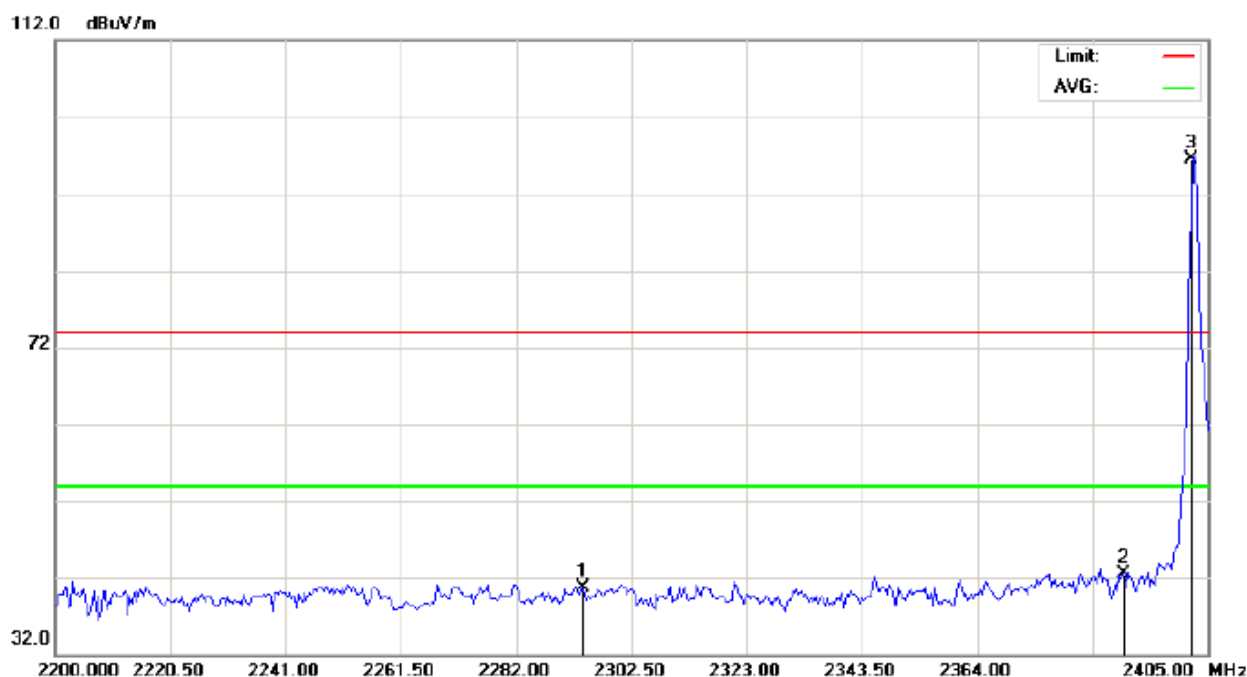
M/N: S42

Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2311.725	50.67	-9.78	40.89	74.00	-33.11	peak			
2		2390.000	51.94	-9.69	42.25	74.00	-31.75	peak			
3	*	2402.000	106.23	-9.68	96.55	74.00	22.55	peak			

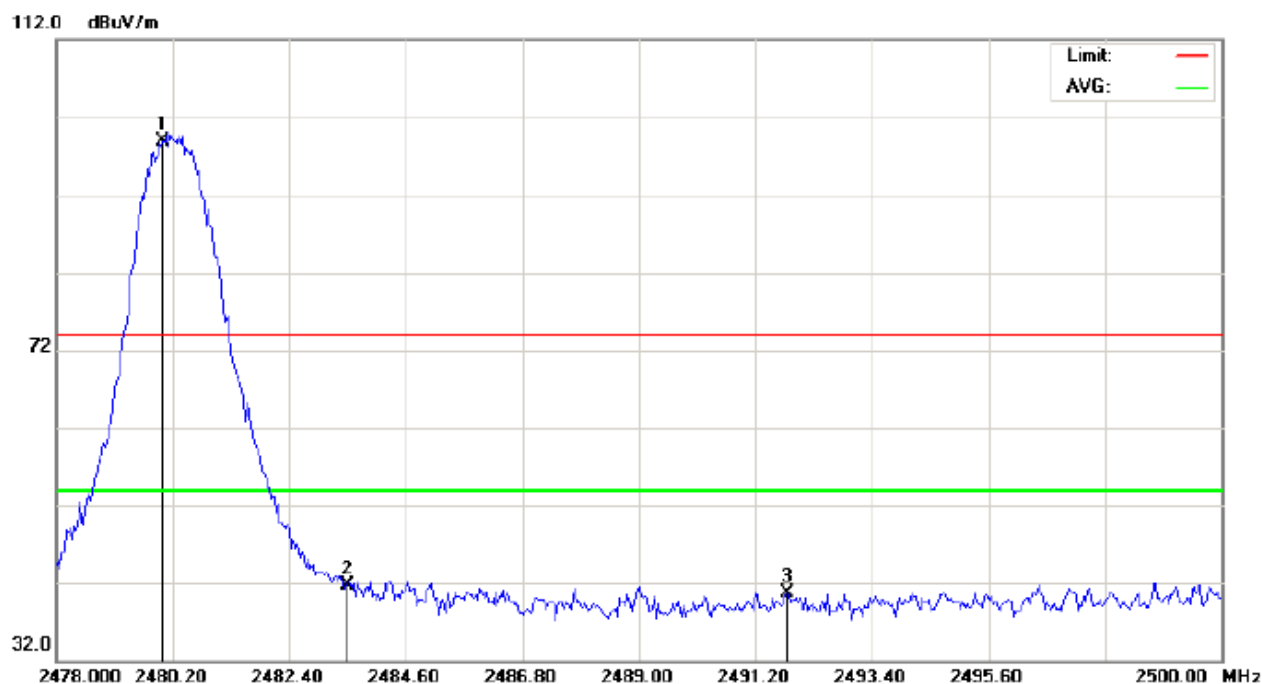
TEST PLOT OF BAND EDGE FOR LOW CHANNEL (3Mbps)-Vertical



Site: site #1	Polarization: Vertical	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: 3G Smart Phone	Distance:	
M/N: S42		
Mode: Low Channel TX		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2293.958	50.42	-9.80	40.62	74.00	-33.38	peak			
2		2390.000	52.15	-9.69	42.46	74.00	-31.54	peak			
3	*	2402.000	106.09	-9.68	96.41	74.00	22.41	peak			

TEST PLOT OF BAND EDGE FOR HIGH CHANNEL (3Mbps)-Horizontal



Site: site #1

Limit: FCC Class B 3M Radiation above 1GHZ(PK)

EUT: 3G Smart Phone

M/N: S42

Mode: High Channel TX

Note:

Polarization: *Horizontal*

Power:

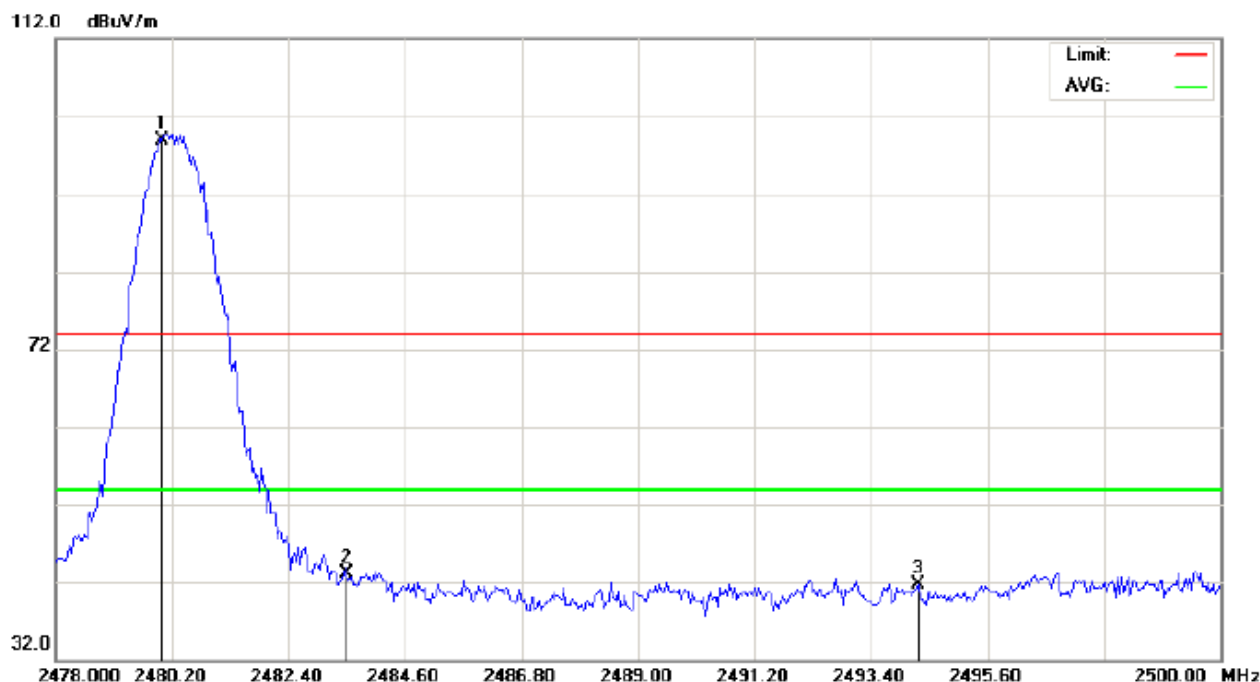
Distance:

Temperature: 26

Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	108.55	-9.59	98.96	74.00	24.96	peak			
2		2483.500	51.38	-9.59	41.79	74.00	-32.21	peak			
3		2491.787	50.19	-9.58	40.61	74.00	-33.39	peak			

TEST PLOT OF BAND EDGE FOR HIGH CHANNEL (3Mbps)-Vertical



Site: site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 3G Smart Phone Distance:
M/N: S42
Mode: High Channel TX
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	108.45	-9.59	98.86	74.00	24.86	peak			
2		2483.500	52.69	-9.59	43.10	74.00	-30.90	peak			
3		2494.280	51.34	-9.58	41.76	74.00	-32.24	peak			

RESULT: PASS

Note: The other modes radiation emission have enough 20dB margin.

Factor=Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

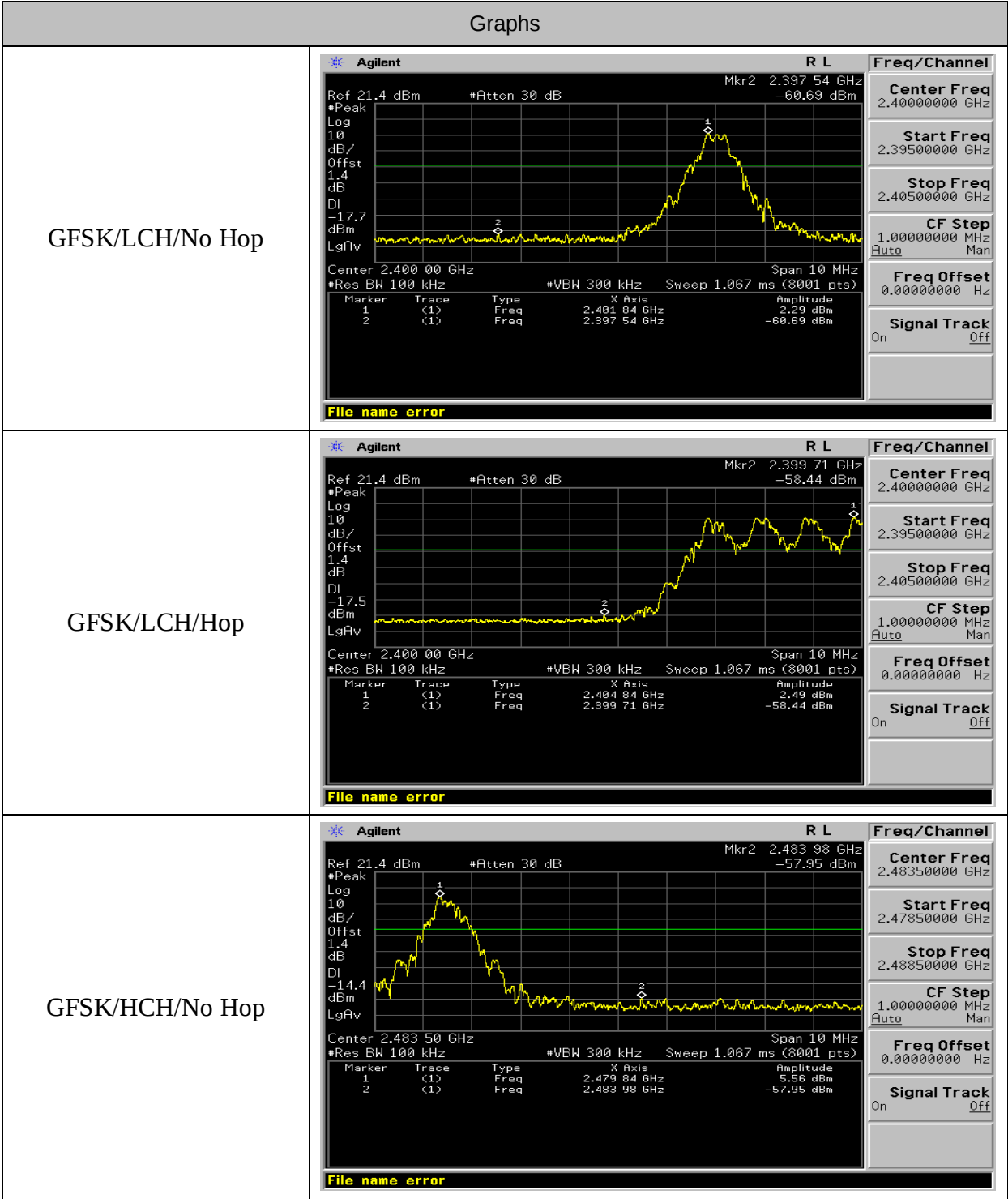
The "Factor" value can be calculated automatically by software of measurement system.

11.4 Conducted TEST RESULT

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBm]	Verdict
GFSK	LCH	2402	Off	-60.694	PASS
			On	-58.44	PASS
GFSK	HCH	2480	Off	-57.946	PASS
			On	-57.984	PASS
$\pi/4$ DQPSK	LCH	2402	Off	-54.736	PASS
$\pi/4$ DQPSK	HCH	2480	Off	-56.05	PASS
8DPSK	LCH	2402	Off	-59.458	PASS
8DPSK	HCH	2480	Off	-57.923	PASS

Note: All modes were tested, only the worst case record in the report.

Test Graph



GFSK/HCH/Hop

Agilent R L Freq/Channel

Ref 21.4 dBm *Atten 30 dB Mkr2 2.484 34 GHz -57.98 dBm

*Peak 1 10 dB/Offst 1.4 dB DI -14.6 dBm LgRv

Center 2.483 50 GHz Span 10 MHz

*Res BW 100 kHz *VBW 300 kHz Sweep 1.067 ms (8001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.479 83 GHz	5.45 dBm
2	(1)	Freq	2.484 34 GHz	-57.98 dBm

File name error

Center Freq 2.48350000 GHz

Start Freq 2.47850000 GHz

Stop Freq 2.48850000 GHz

CF Step 1.00000000 MHz Auto Man

Freq Offset 0.00000000 Hz

Signal Track On Off

$\pi/4$ DQPSK/LCH/No Hop

Agilent R L Freq/Channel

Ref 21.4 dBm *Atten 30 dB Mkr2 2.399 56 GHz -54.74 dBm

*Peak 1 10 dB/Offst 1.4 dB DI -19.4 dBm LgRv

Center 2.400 00 GHz Span 10 MHz

*Res BW 100 kHz *VBW 300 kHz Sweep 1.067 ms (8001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.402 03 GHz	0.64 dBm
2	(1)	Freq	2.399 56 GHz	-54.74 dBm

File name error

Center Freq 2.40000000 GHz

Start Freq 2.39500000 GHz

Stop Freq 2.40500000 GHz

CF Step 1.00000000 MHz Auto Man

Freq Offset 0.00000000 Hz

Signal Track On Off

$\pi/4$ DQPSK/HCH/No Hop

Agilent R L Freq/Channel

Ref 21.4 dBm *Atten 30 dB Mkr2 2.484 54 GHz -56.05 dBm

*Peak 1 10 dB/Offst 1.4 dB DI -16.5 dBm LgRv

Center 2.483 50 GHz Span 10 MHz

*Res BW 100 kHz *VBW 300 kHz Sweep 1.067 ms (8001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.480 08 GHz	3.55 dBm
2	(1)	Freq	2.484 54 GHz	-56.05 dBm

File name error

Center Freq 2.48350000 GHz

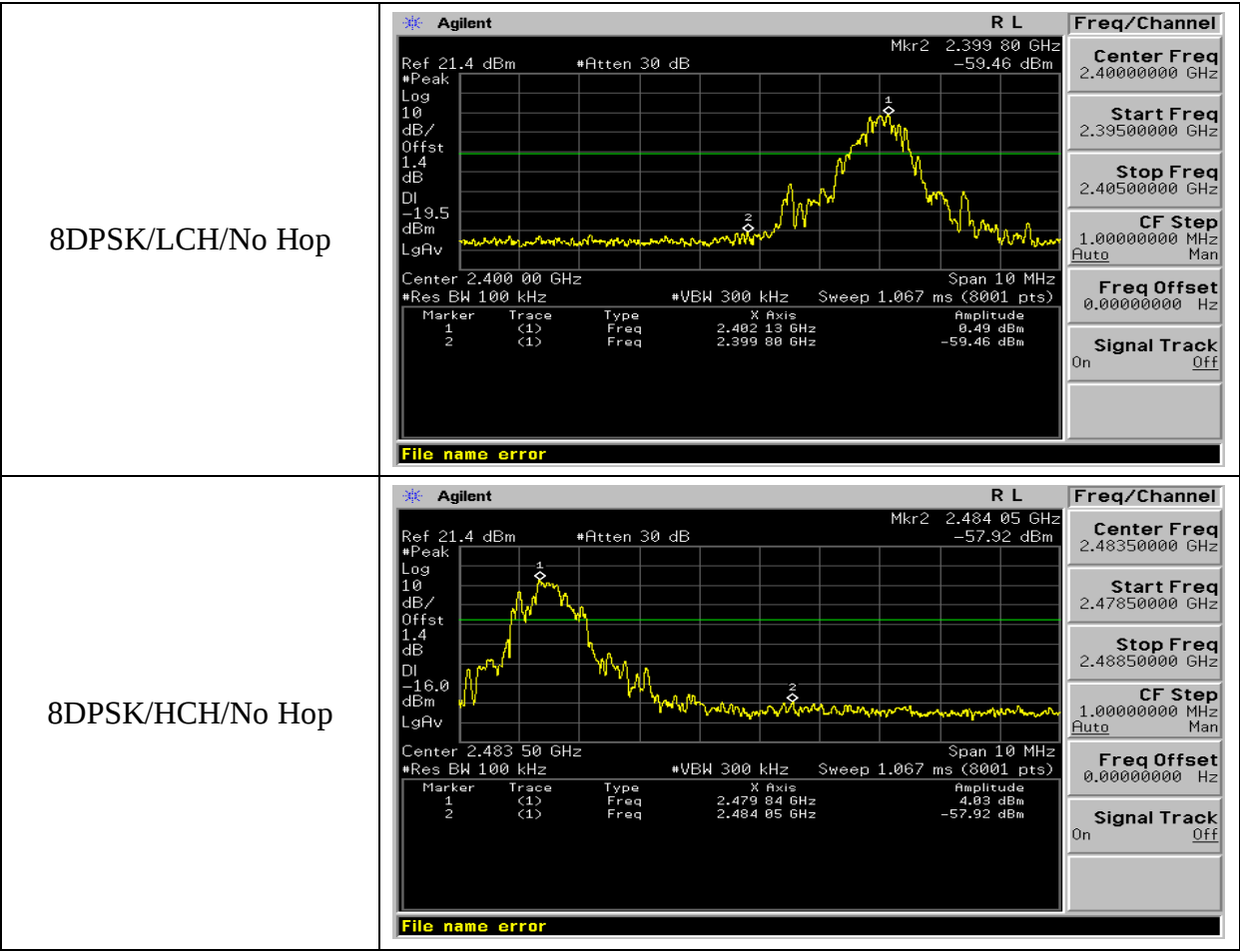
Start Freq 2.47850000 GHz

Stop Freq 2.48850000 GHz

CF Step 1.00000000 MHz Auto Man

Freq Offset 0.00000000 Hz

Signal Track On Off



12. NUMBER OF HOPPING FREQUENCY

12.1. MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer Start = 2.4GHz Stop = 2.4835GHz
4. Set the Spectrum Analyzer as RBW>=1%span, VBW>=RBW.

12.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 8.2

12.3. MEASUREMENT EQUIPMENT USED

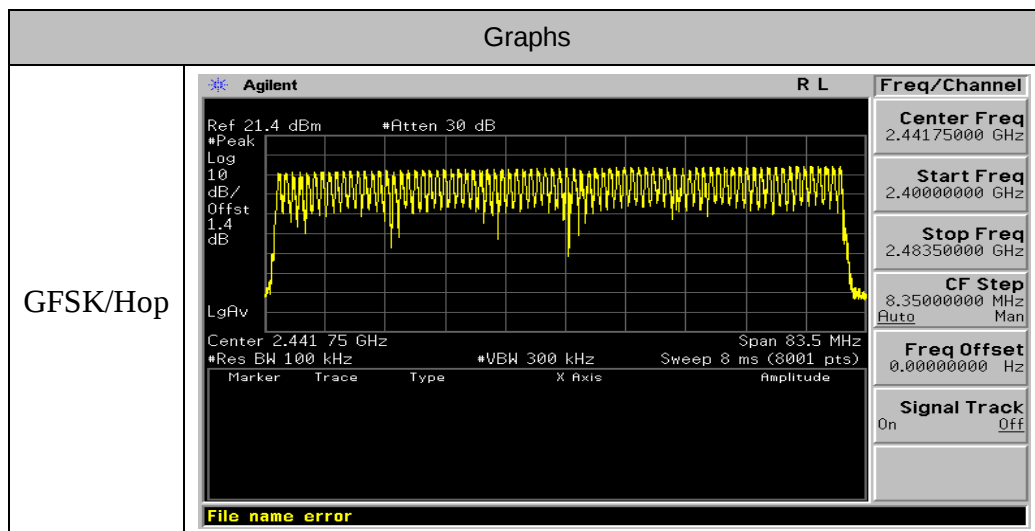
The same as described in section 6

12.4. LIMITS AND MEASUREMENT RESULT

Mode	Channel.	Number of Hopping Channel	Verdict
GFSK	Hop	79	PASS

Note: All modes were tested, only the worst case record in the report.

Test Graph



13. TIME OF OCCUPANCY (DWELL TIME)

13.1. MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.
3. Set Span = zero span, centered on a hopping channel
4. Set the spectrum analyzer as RBW=1MHz, VBW>=RBW, Span = 0 Hz

13.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 8.2

13.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6

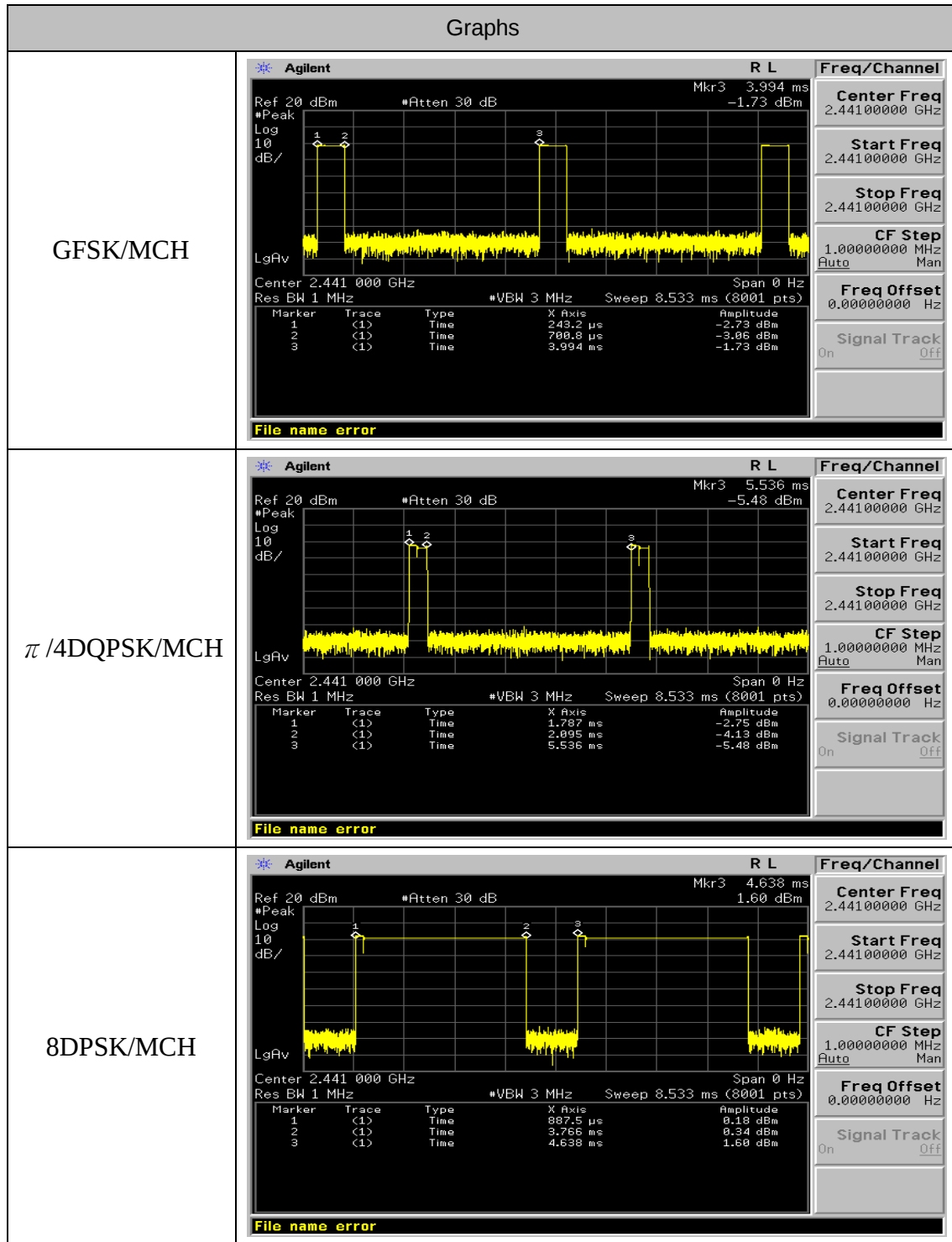
13.4. LIMITS AND MEASUREMENT RESULT

The Dwell Time=Burst Width*Total Hops. The detailed calculations are showed as follows:

- The duration for dwell time calculation: $0.4[s] * \text{hopping number} = 0.4[s] * 79[\text{ch}] = 31.6[s*ch]$;
- The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
- The hops per second for all channels: The selected EUT Conf uses a slot type of 5-Tx&1-Rx and a hopping rate of 1600 [ch*hop/s] for all channels. So the final hopping rate for all channels is $1600/6 = 266.67 [\text{ch*hop/s}]$
- The hops per second on one channel: $266.67 [\text{ch*hops/s}] / 79 [\text{ch}] = 3.38 [\text{hop/s}]$;
- The total hops for all channels within the dwell time calculation duration: $3.38 [\text{hop/s}] * 31.6[s*ch] = 106.67 [\text{hop*ch}]$;
- The dwell time for all channels hopping: $106.67 [\text{hop*ch}] * \text{Burst Width} [\text{ms/hop/ch}]$.

Mode	Channel.	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Verdict	Limit (ms)
GFSK	MCH	0.458	106.67	49.006	PASS	400
$\pi/4$ DQPSK	MCH	0.308	106.67	32.956	PASS	400
8DPSK	MCH	2.879	106.67	308.053	PASS	400

Test Graph



14. FREQUENCY SEPARATION

14.1. MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer
3. Set Span = wide enough to capture the peaks of two adjacent channels Resolution (or IF) Bandwidth (RBW) $\geq 1\%$ of the span Video (or Average) Bandwidth (VBW) $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold

14.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

14.3. MEASUREMENT EQUIPMENT USED

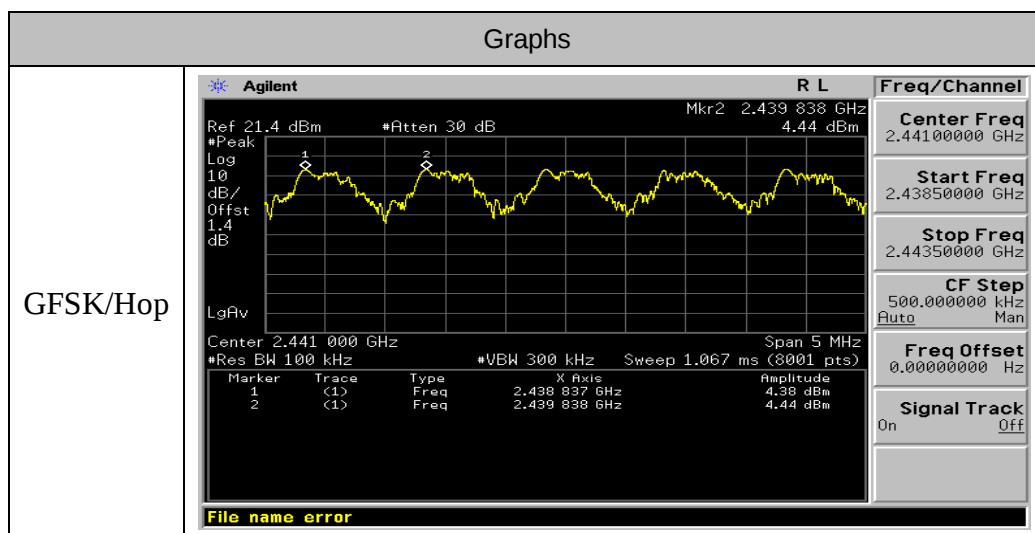
The same as described in section 6.3

14.4. LIMITS AND MEASUREMENT RESULT

Mode	Channel.	Carrier Frequency Separation [MHz]	Verdict
GFSK	Hop	1.001	PASS

Note: All modes were tested, only the worst case record in the report.

Test Graph



15. FCC LINE CONDUCTED EMISSION TEST

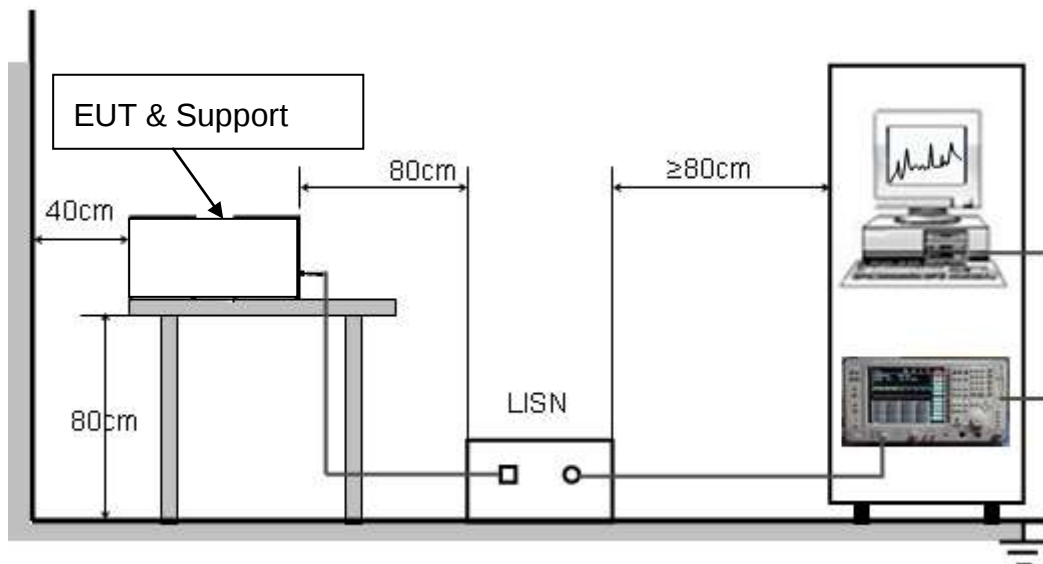
15.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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.

15.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



15.3. 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 DC 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.

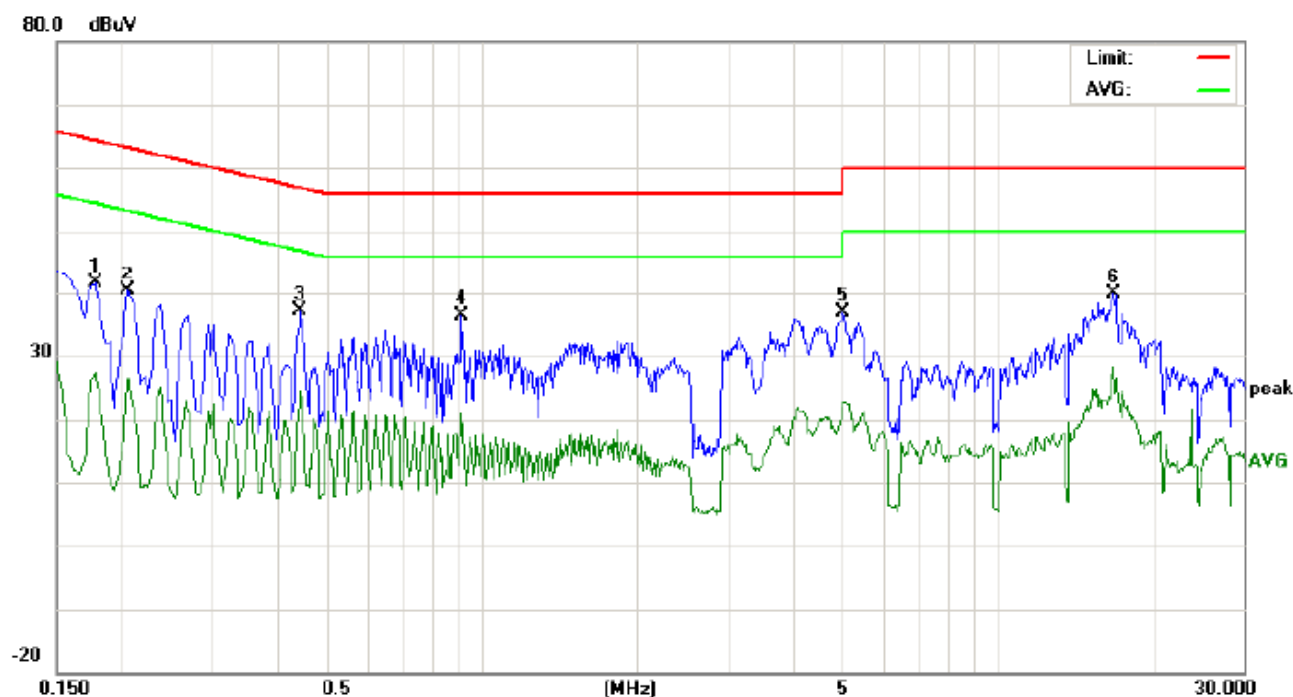
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

15.4. 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.

15.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

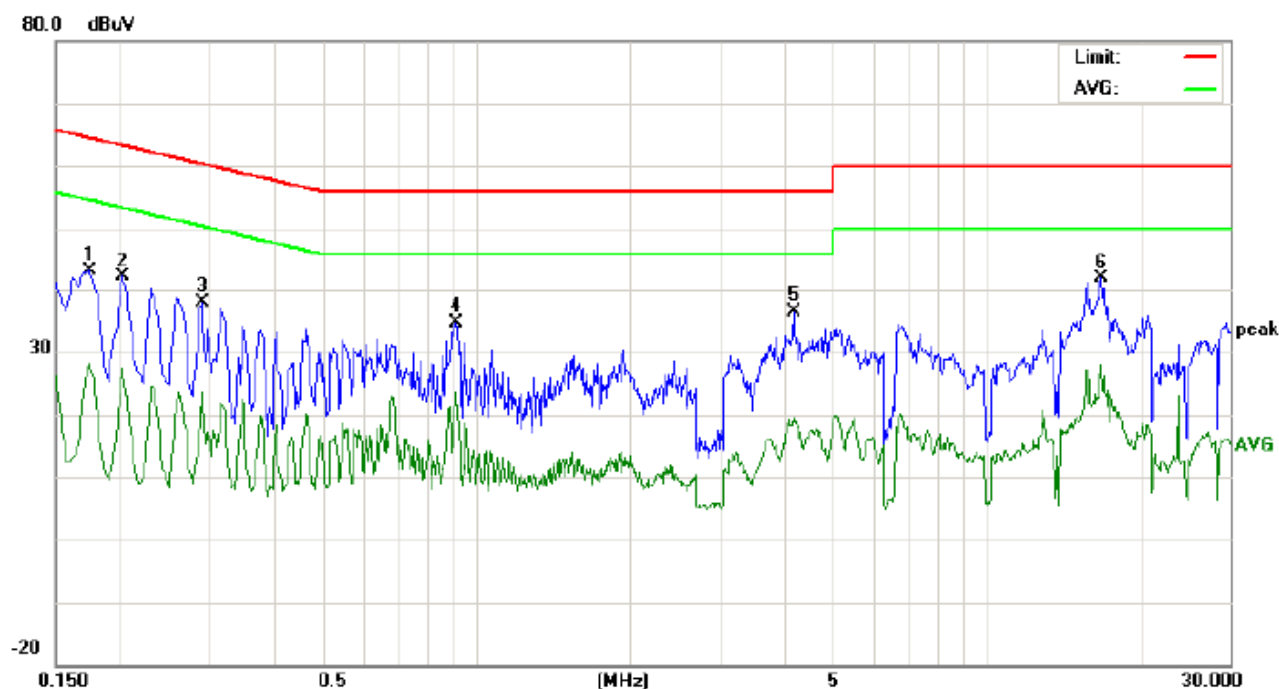
Line Conducted Emission Test Line 1-L



Site: Conduction Phase: **L1** Temperature: 26
Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 60 %
EUT: 3G Smart Phone
M/N: S42
Mode: High Channel GFSK
Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1780	31.50		17.27	10.19	41.69		27.46	64.57	54.57	-22.88	-27.11	P	
2	0.2060	30.26		16.26	10.22	40.48		26.48	63.36	53.36	-22.88	-26.88	P	
3	0.4460	26.86		14.06	10.36	37.22		24.42	56.95	46.95	-19.73	-22.53	P	
4	0.9180	25.90		10.44	10.40	36.30		20.84	56.00	46.00	-19.70	-25.16	P	
5	5.0220	26.72		12.42	10.24	36.96		22.66	60.00	50.00	-23.04	-27.34	P	
6	16.7740	29.78		18.17	10.13	39.91		28.30	60.00	50.00	-20.09	-21.70	P	

Line Conducted Emission Test Line 2-N



Site: Conduction Phase: **N** Temperature: 26
Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 60 %
EUT: 3G Smart Phone
M/N: S42
Mode: High Channel GFSK
Note:

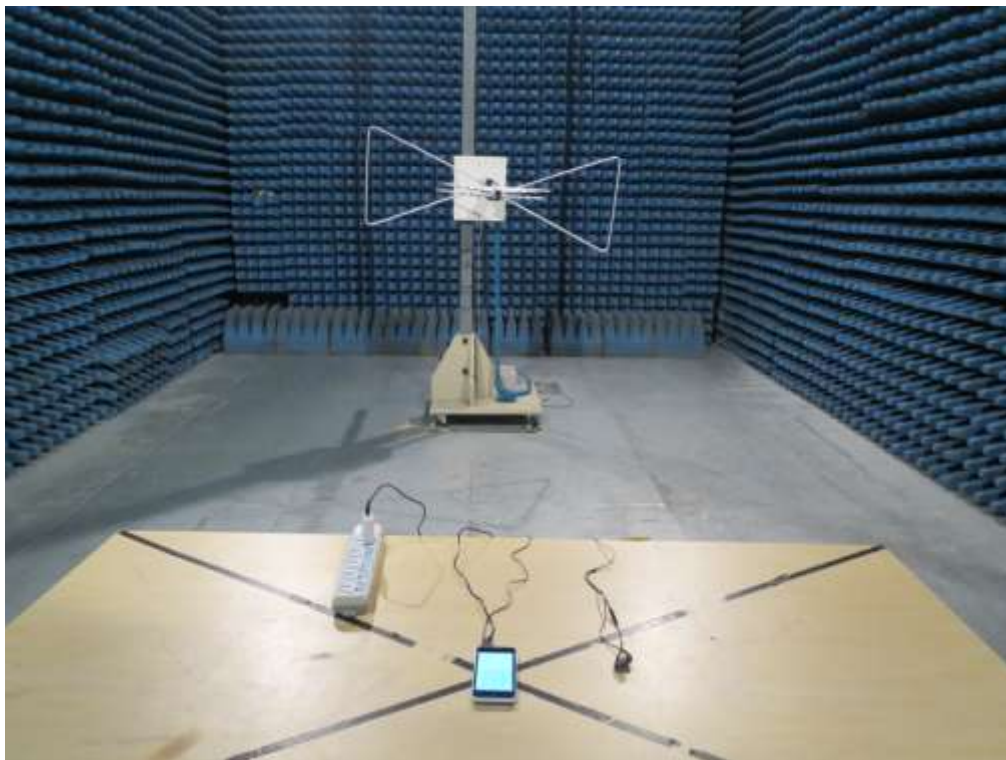
No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1740	32.94		17.97	10.19	43.13		28.16	64.76	54.76	-21.63	-26.60	P	
2	0.2020	32.02		17.09	10.22	42.24		27.31	63.52	53.52	-21.28	-26.21	P	
3	0.2900	27.48		13.43	10.29	37.77		23.72	60.52	50.52	-22.75	-26.80	P	
4	0.9140	24.20		12.17	10.40	34.60		22.57	56.00	46.00	-21.40	-23.43	P	
5	4.1860	25.96		8.99	10.35	36.31		19.34	56.00	46.00	-19.69	-26.66	P	
6	16.7700	31.68		17.86	10.13	41.81		27.99	60.00	50.00	-18.19	-22.01	P	

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



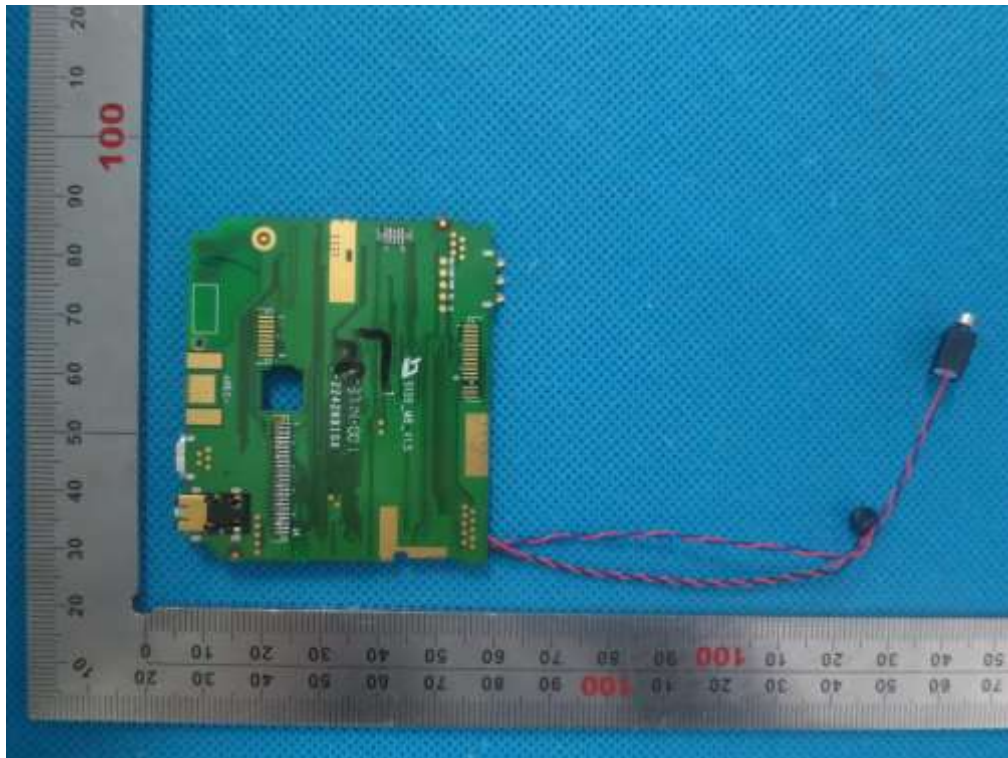
OPEN VIEW OF EUT-2



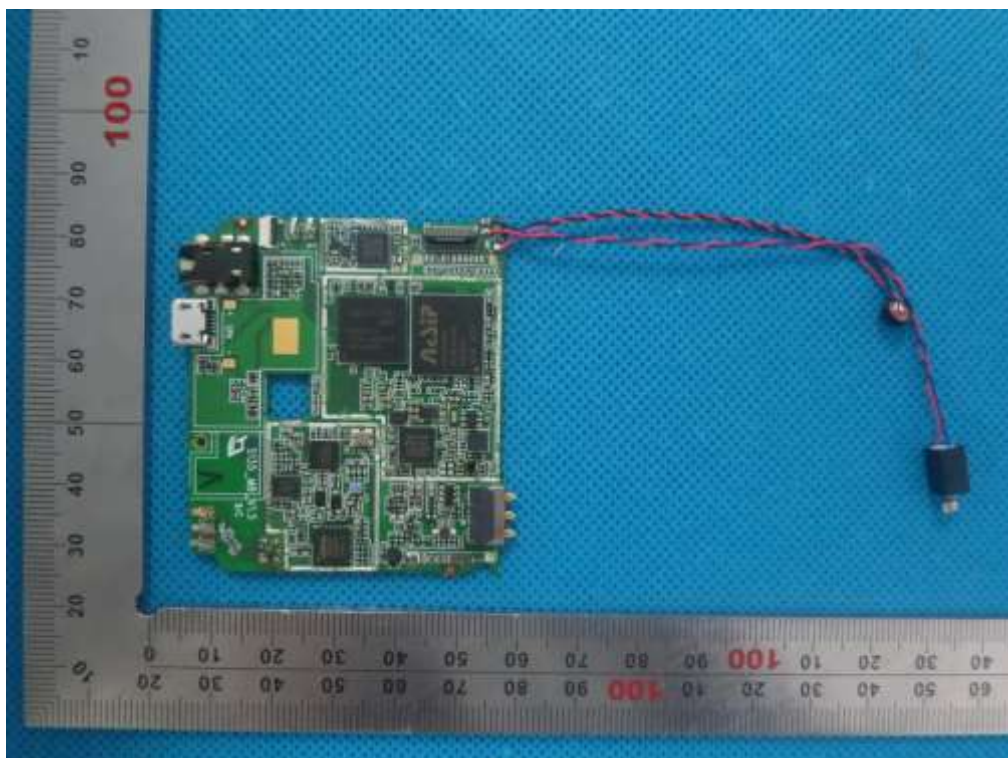
OPEN VIEW OF EUT-3



INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



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