Registration Num:428261

Report No.: RZA2009-1166CC-1

TESTING
No. L2264

Part 15C

TEST REPORT

Product Name	CDMA Mobile phone
FCC ID	QMNRM-583
Model	RM-583
Applicant	Nokia Inc.

TA Technology (Shanghai) Co., Ltd.

GENERAL SUMMARY

Product Name	CDMA Mobile phone	**Model**	RM-583
FCC ID	QMNRM-583	**Report No.**	RZA2009-1166CC-1
Client	Nokia Inc.		
Manufacturer	BYD Precision Manufacture Company Limited.		
Reference Standard(s)	**FCC Part 15 Subpart C: (2008)** **15.205** Restricted bands of operation; **15.207** Conducted limits; **15.209** Radiated emission limits; general requirements; **15.247** Operation within the bands 902-928 MHz,2400-2483.5 MHz, and 5725-5850MHz. **ANSI C63.4** Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40GHz. (2003) **DA00-705** Filing and Frequency Measurement Guidelines For Frequency Hopping Spread Spectrum System.(2000)		
Conclusion	This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 2 of this test report are below limits specified in the relevant standards. General Judgment: **Pass** **(Stamp)** **Date of issue: September 11th, 2009**		
Comment	The test result only responds to the measured sample.		

Approved by Yang Weizhong **Revised by** Xu kai **Performed by** Liu Wei

TABLE OF CONTENT

1. General Information

1.1. Notes of the test report

TA Technology (Shanghai) Co., Ltd. guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

TA Technology (Shanghai) Co., Ltd. is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. This report only refers to the item that has undergone the test.

This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

1.2. Testing laboratory

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201210
Country:	P. R. China
Contact:	Yang Weizhong
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	http://www.ta-shanghai.com
E-mail:	yangweizhong@ta-shanghai.com

1.3. Applicant Information

Company:	Nokia Inc.
Address:	12278 Scripps Summit Drive 92131
City:	San Diego, CA
Postal Code:	92131
Country:	USA
Telephone:	+1 858 831 5000
Fax:	+1 858 831 6500

1.4. Manufacturer Information

Company:	BYD Precision Manufacture Company Limited.
Address:	No.1, kechuang Dong 5 jie, Tongzhou District
City:	Beijing
Postal Code:	101111
Country:	China
Telephone:	+86 10 58018888 ext.71763
Fax:	+86 10 58018888 ext.73000

1.5. Information of EUT

General information

Device type:	Portable device	
Name of EUT:	CDMA Mobile phone	
MEID:	A00000017A527A/ A00000017A5276	
Device operating configurations:		
Mode	Basic Rate	Enhanced Data Rate(EDR)
Modulation	GFSK	8DQPSK
Packet Type:(Maximum Payload)	DH5	3DH5
Date Rate (M bit/s)	1	3
Emission Designator	1M5G7D	
Max Conducted Power	-0.34dBm	
Antenna type:	internal antenna	
Power supply:	Battery or Charger	
Rated Power Supply Voltage:	3.7V	
Operating frequency range(s)	2400 ~ 2483.5 MHz	
Hardware version:	3500	
Software version:	BJ_2000B02_R800	
Used host products:	IBM T61 (Mode:8892-BAC; S/N:L3-C9644)	

Auxiliary equipment details

AE1: Battery

Model:	BL-4C
Manufacture:	Nokia Inc.
IMEI or SN:	0670389462040Q154D21817422

AE2: Travel Adaptor

Model:	AC-6U
Manufacture:	Nokia Inc.
IMEI or SN:	40904991139614028790675591

AE3:USB Cable

Model:	CA-101
IMEI or SN:	07306359124T1210504

AE4: Headset

Model:	WH-101 HS-105
IMEI or SN:	06942879184E2602758

AE5: Notebook

Model:	IBM T61 8892-BAC
IMEI or SN:	L3-C9644

Equipment Under Test (EUT) is Mobile Phone with internal antenna. It consists of mobile phone, battery and adaptor and the detail about these is in chapter 1.5 in this report. The EUT supports Bluetooth.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. Test Date

The test is September 7 , 2009 to September 14, 2009.

1.7. Test Report Revision

Date	Revision	Description
Sept. 8 ,2009	0	First Revision
Sept. 14 ,2009	1	1.Put max conducted power on page of 6. 2. Add AC power line conducted emission test. also in both GFSK and EDR modulation, three channels. 3. Add test of Peak Power Output –Conducted ,Occupied Bandwidth (20dB), Frequency Separation, Dwell Time test, Band Edge Compliance, Number of Hopping Frequency, Spurious RF Conducted Emissions and Radiates Emission for EDR mode.

2. Test Information

2.1. Summary of test results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	Peak Power Output -Conducted	15.247(b)(1)	PASS
2	Occupied Bandwidth (20dB)	15.247(a)(1)	PASS
3	Frequency Separation	15.247(a)(1)	PASS
4	Time of Occupancy (Dwell Time)	15.247(a)(1)(iii)	PASS
5	Band Edge Compliance	15.247(d)	PASS
6	Number of Hopping Frequency	15.247(a)(1)(iii)	PASS
7	Spurious RF Conducted Emissions	15.247(d)	PASS
8	Radiates Emission	15.247(d),15.205,15.209	PASS
9	AC Power line Conducted Emission	15.207	PASS

2.2. Peak power output –conducted

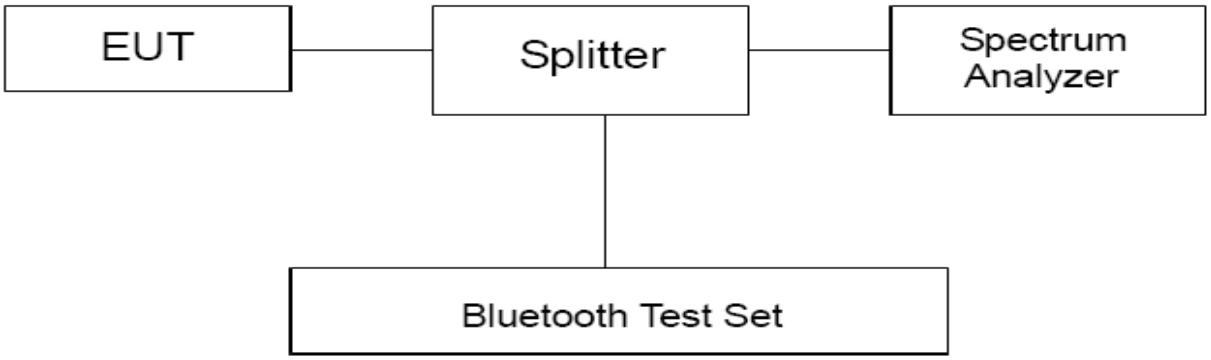
Ambient condition

Temperature	Relative humidity	Pressure
24°C	50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The EUT is controlled by the Bluetooth test set to ensure max power transmission with proper modulation. These measurements have been tested at following channels: 0, 39, and 78.

Test Setup



Limits

Rule Part 15.247 (b) (1)specifies that " For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.."

Peak Output Power	≤ 1W (30dBm)

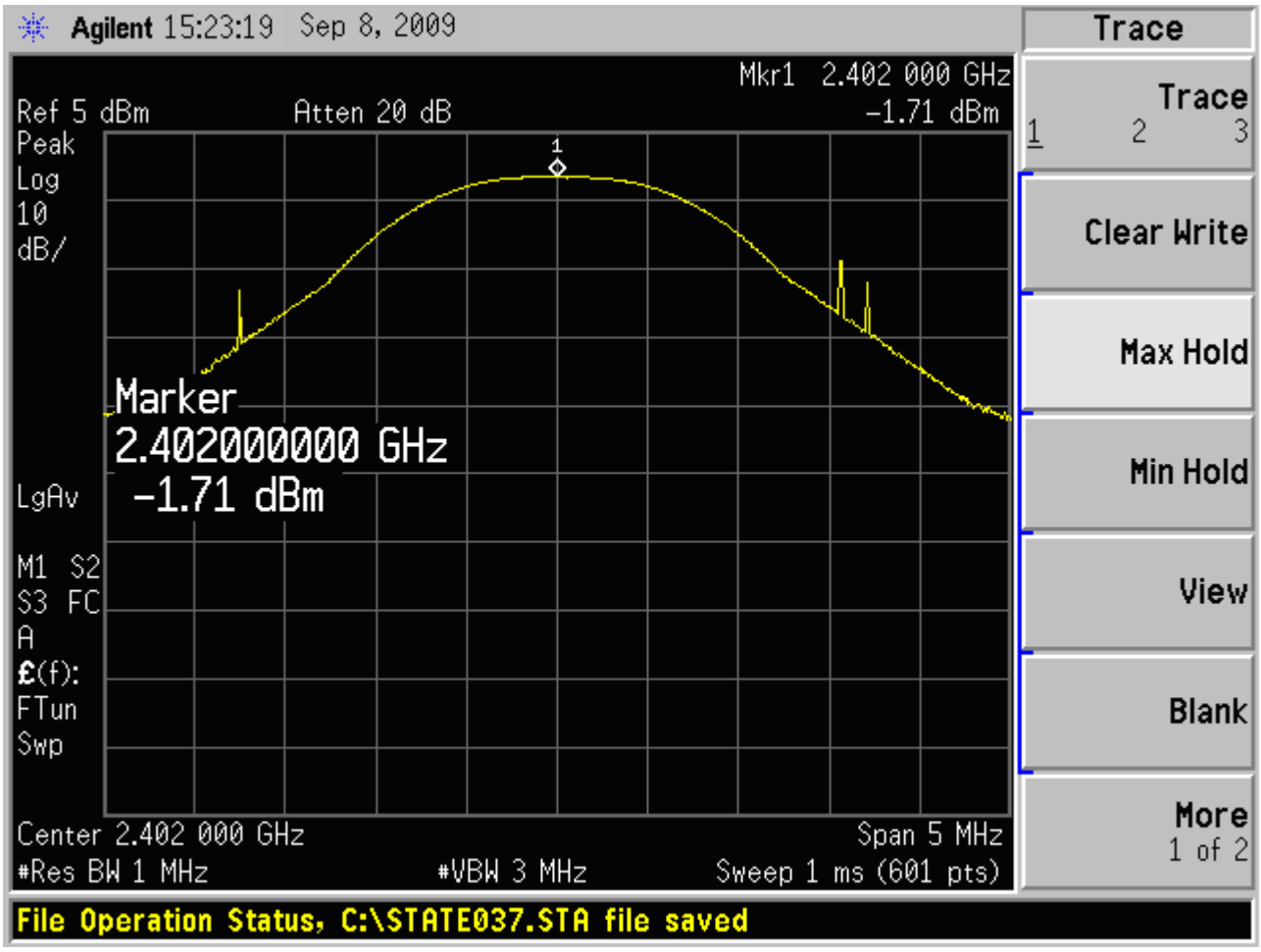
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 2. U= 0.44 dB.

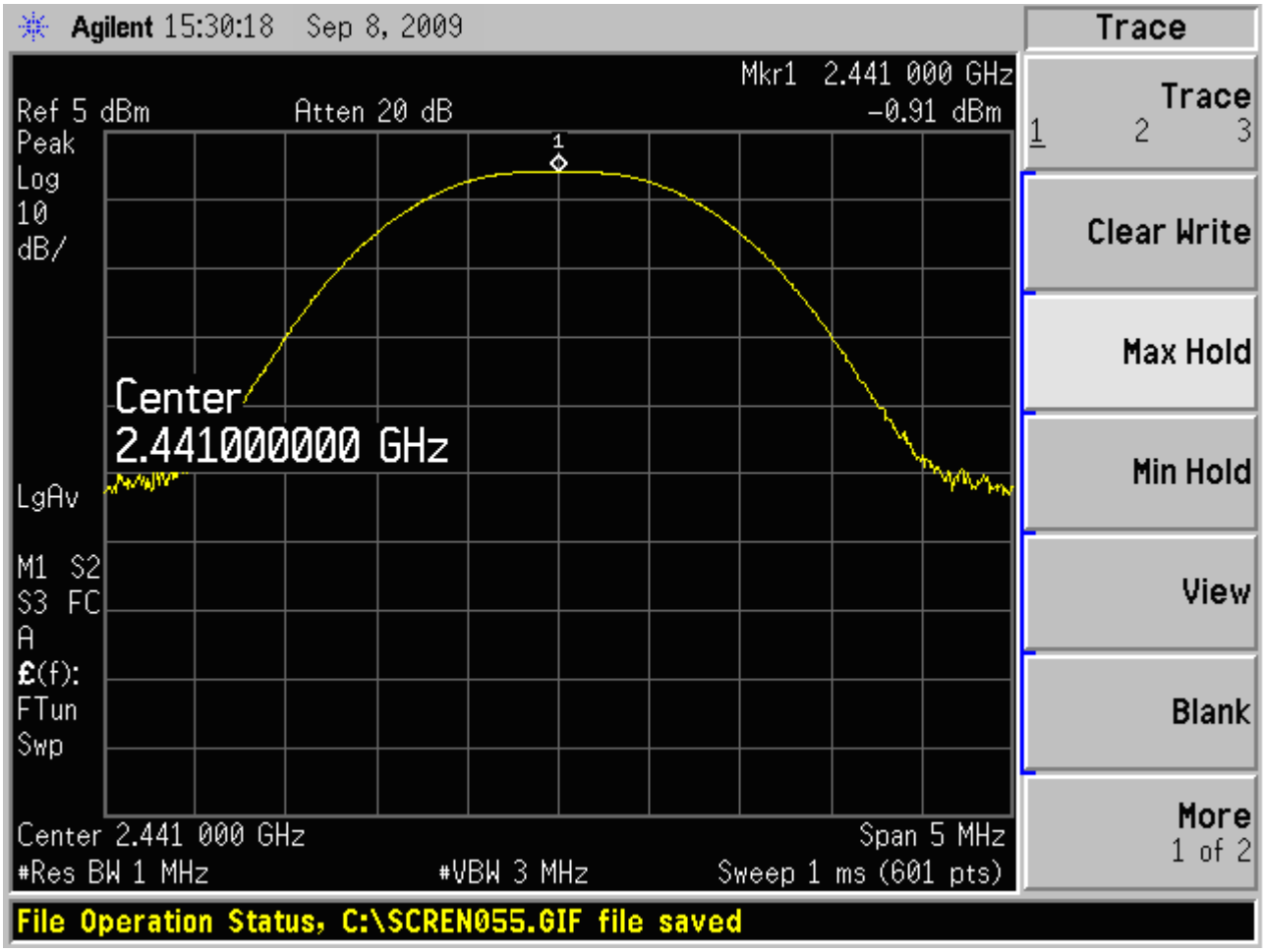
Test Results

Basic Rate DH5

Channel	Frequency (MHz)	Peak Output Power (dBm)	Conclusion
0	2402	-1.71	PASS
39	2441	-0.91	PASS
78	2480	-1.21	PASS

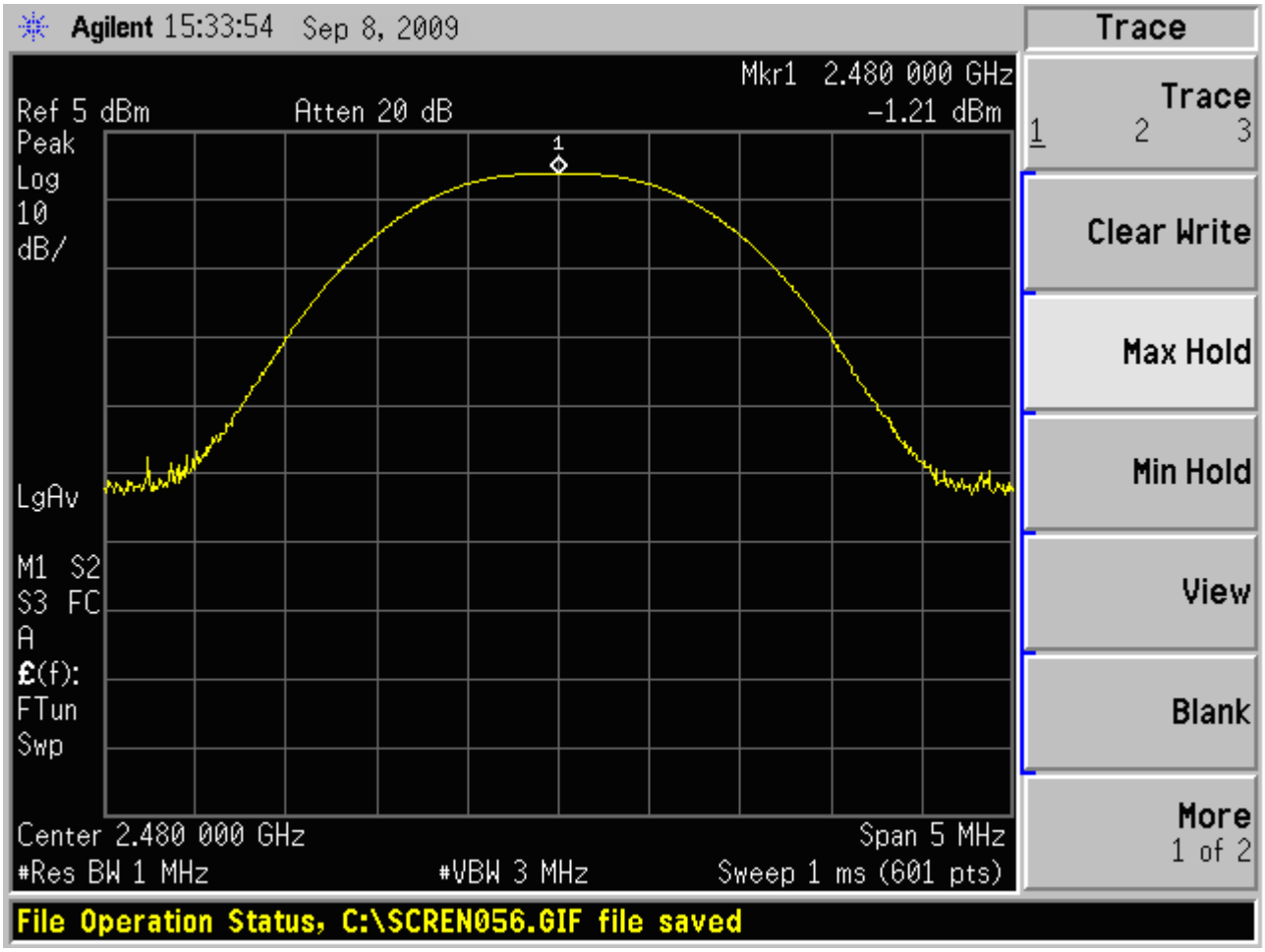


Carrier frequency (MHz): 2402
Channel No.:0



Carrier frequency (MHz): 2441

Channel No.:39

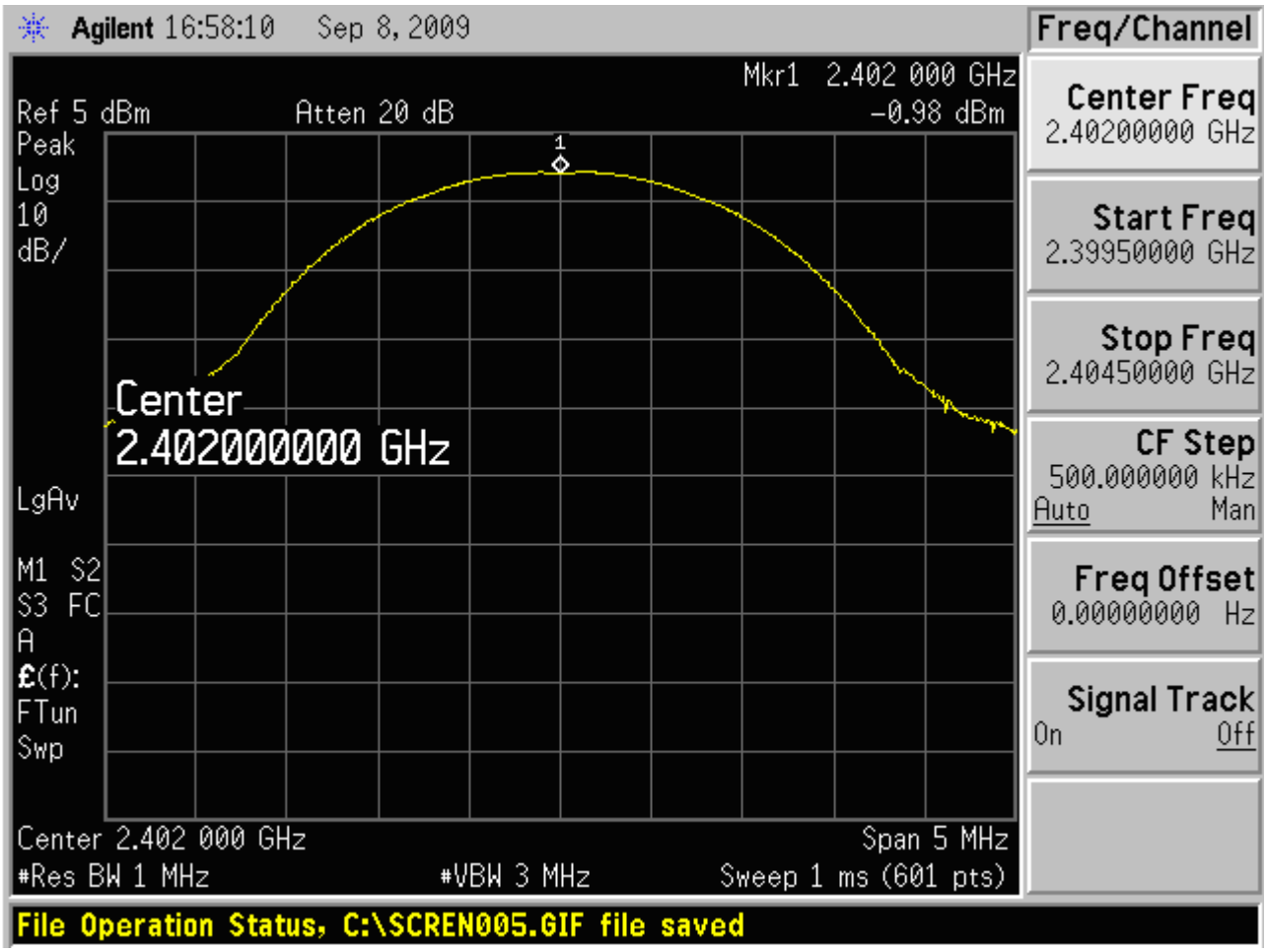


Carrier frequency (MHz): 2480

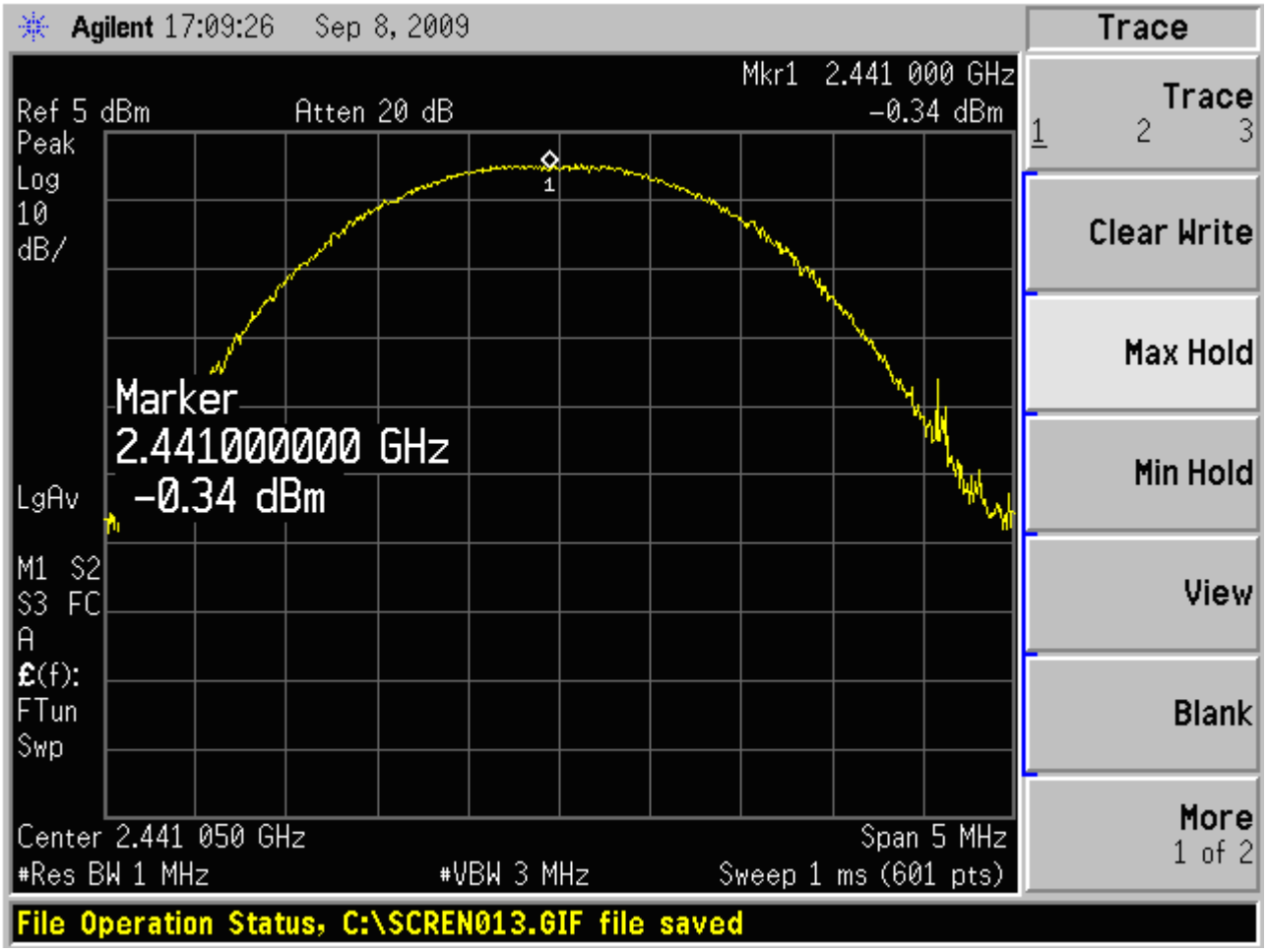
Channel No.:78

EDR 3DH5

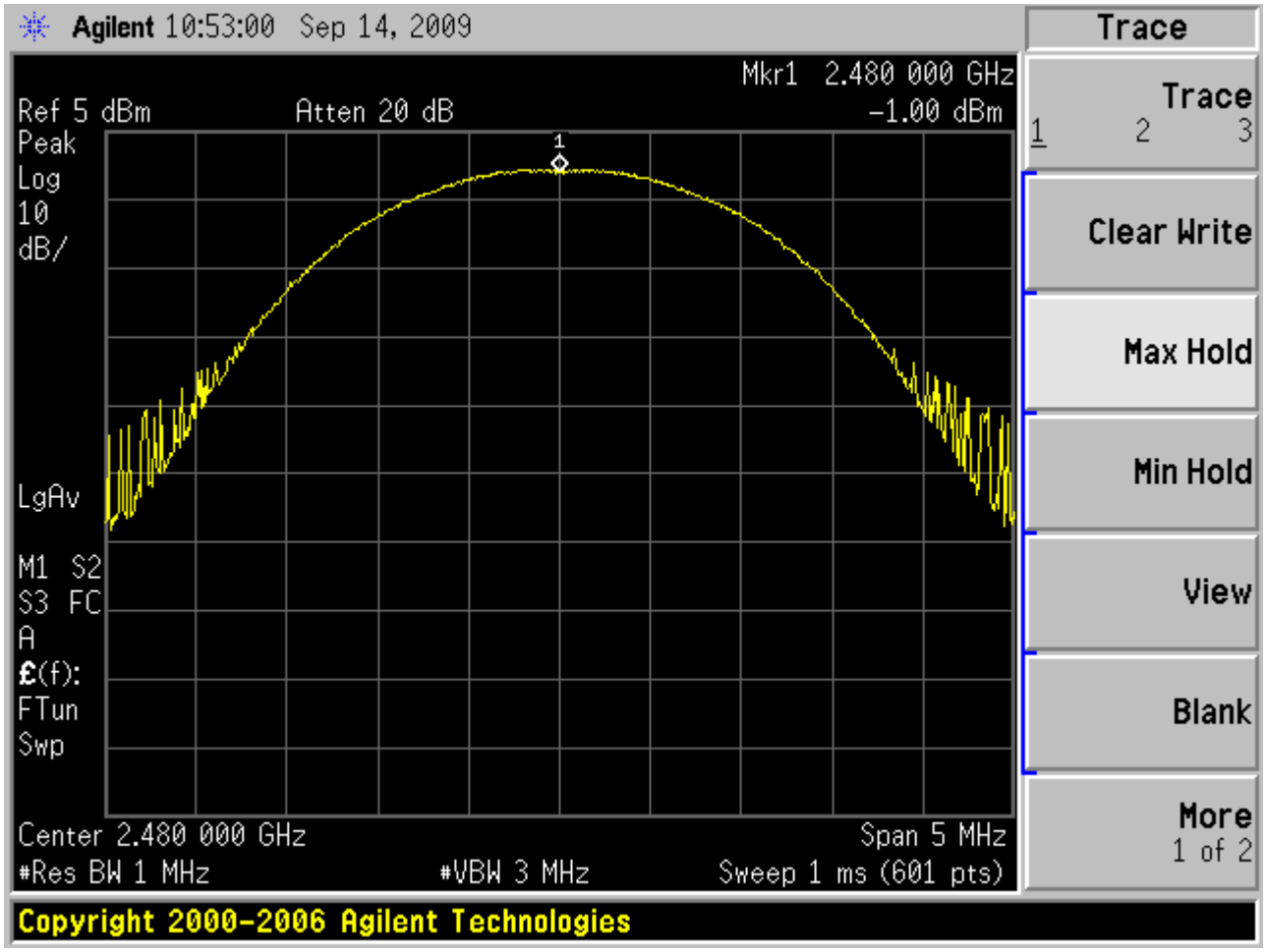
Channel	Frequency (MHz)	Peak Output Power (dBm)	Conclusion
0	2402	-0.98	PASS
39	2441	-0.34	PASS
78	2480	-1.0	PASS



Carrier frequency (MHz): 2402
Channel No.:0



Carrier frequency (MHz): 2441
Channel No.:39



Carrier frequency (MHz): 2480
Channel No.:78

2.3. Occupied Bandwidth (20dB)

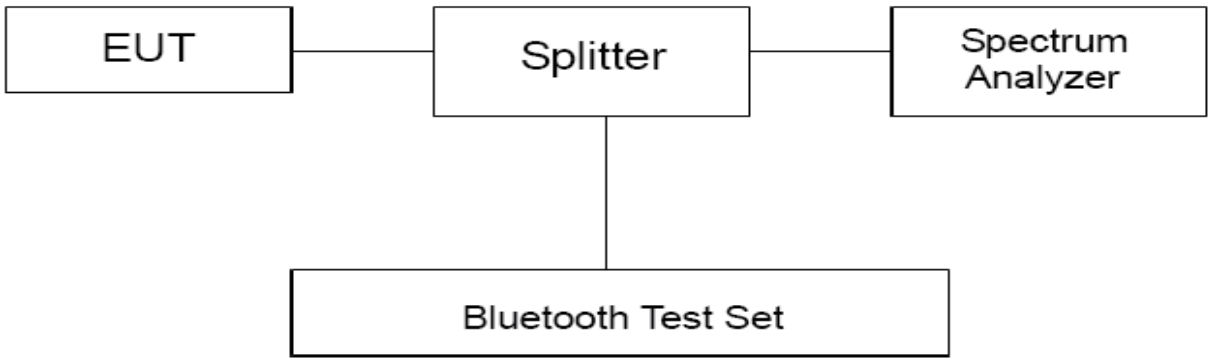
Ambient condition

Temperature	Relative humidity	Pressure
24°C	55%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The occupied bandwidth is measured using spectrum analyzer. RBW is set to 10 kHz on spectrum analyzer. -20dB occupied bandwidths are recorded.

Test Setup



Limits

No specific occupied bandwidth requirements in part 15.247(a) (1).

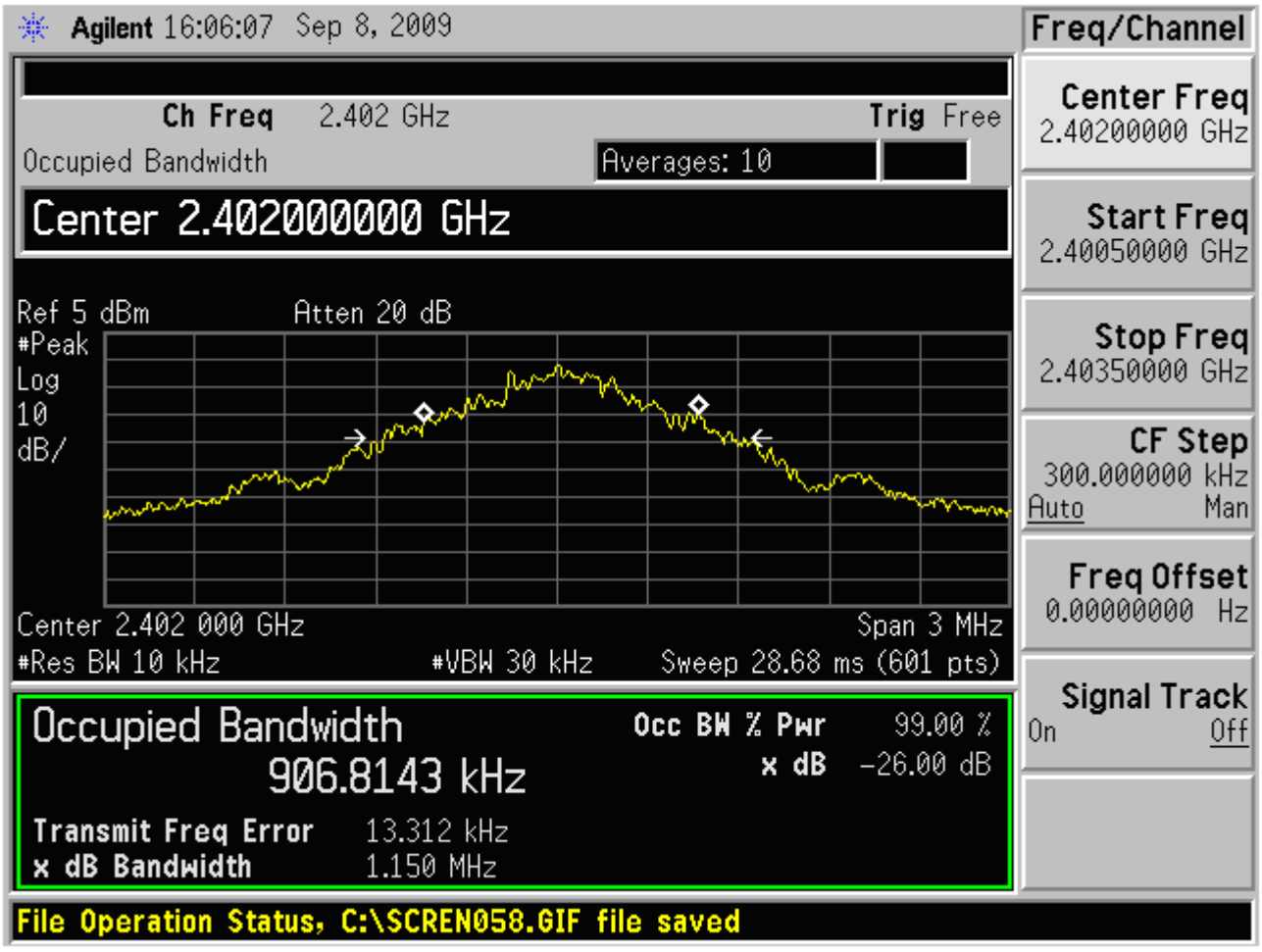
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 2. U= 936 Hz.

Test Result

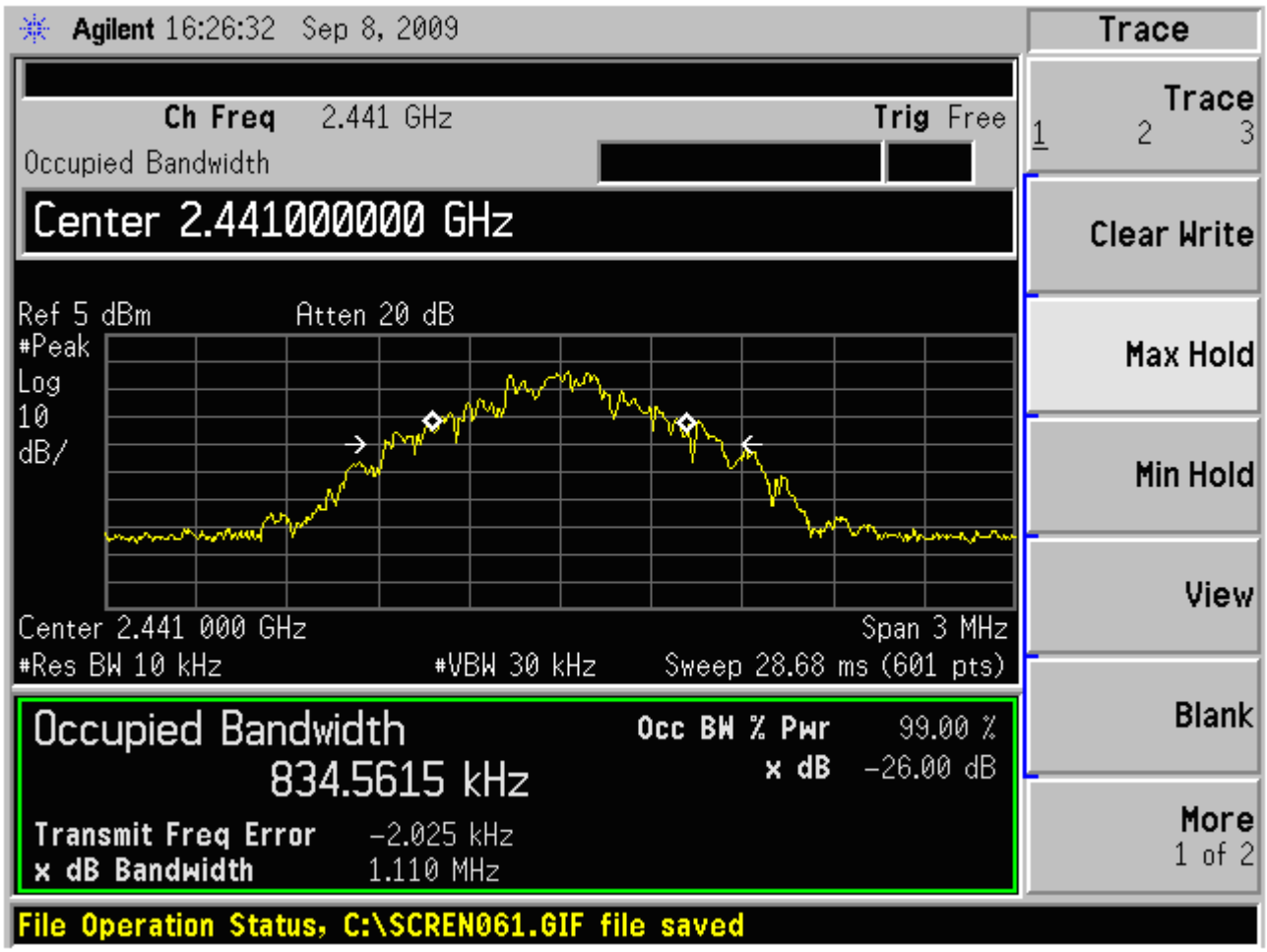
Basic Rate DH5

Channel	Frequency (MHz)	20dB Bandwidth (kHz)
0	2402	906.81
39	2441	834.56
78	2480	829.17



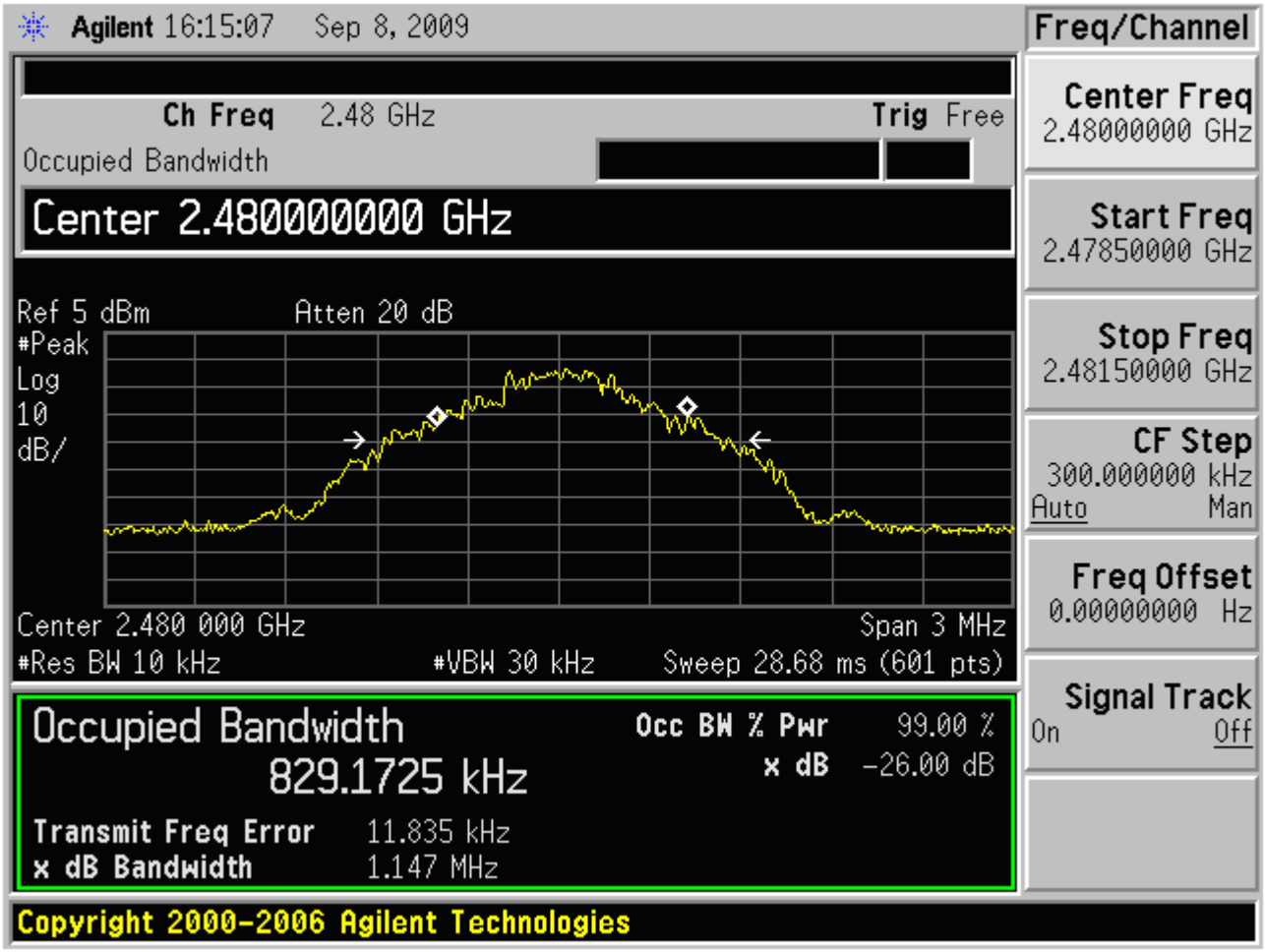
Carrier frequency (MHz): 2402

Channel No.:0



Carrier frequency (MHz): 2441

Channel No.:39

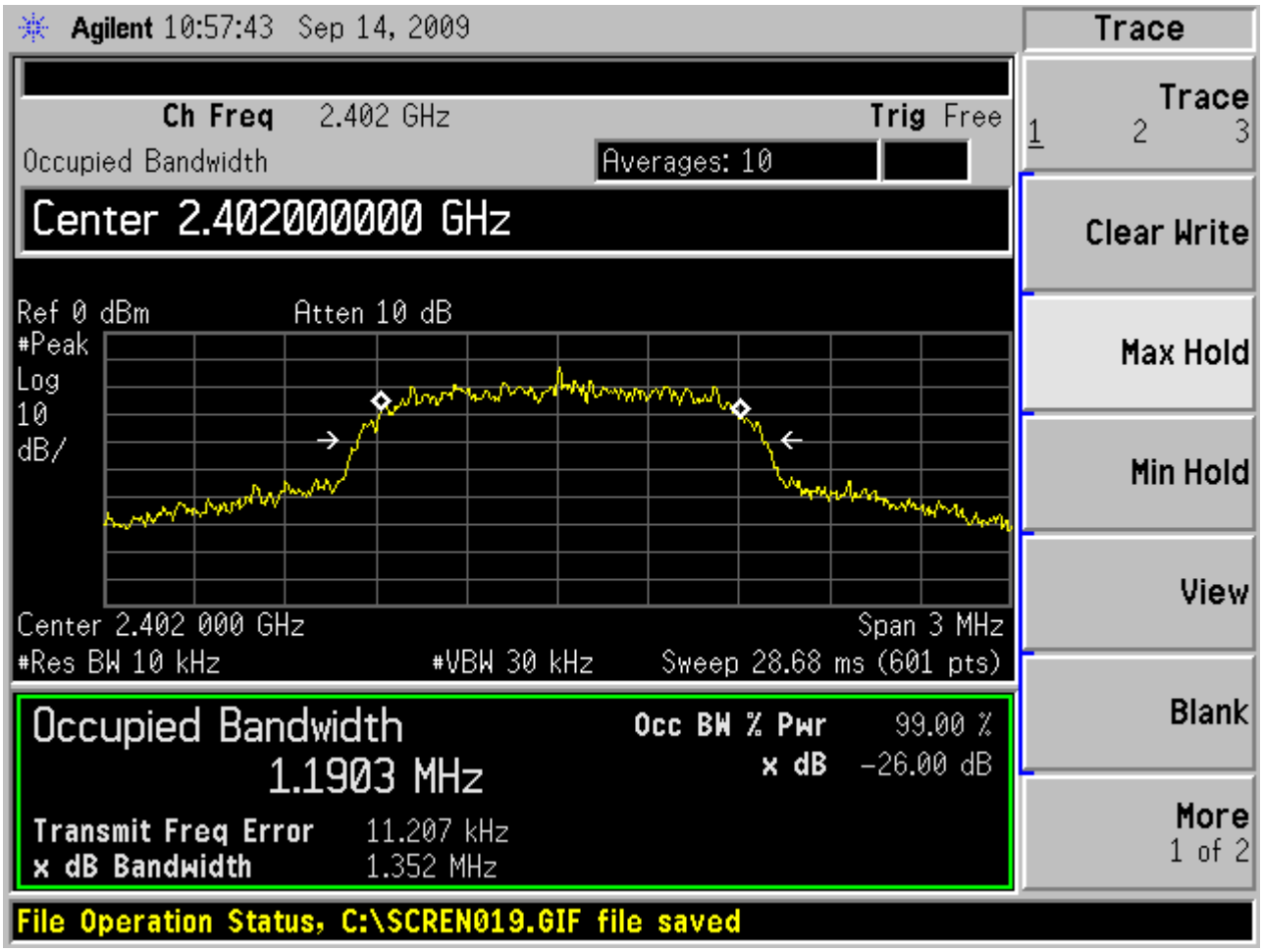


Carrier frequency (MHz): 2480

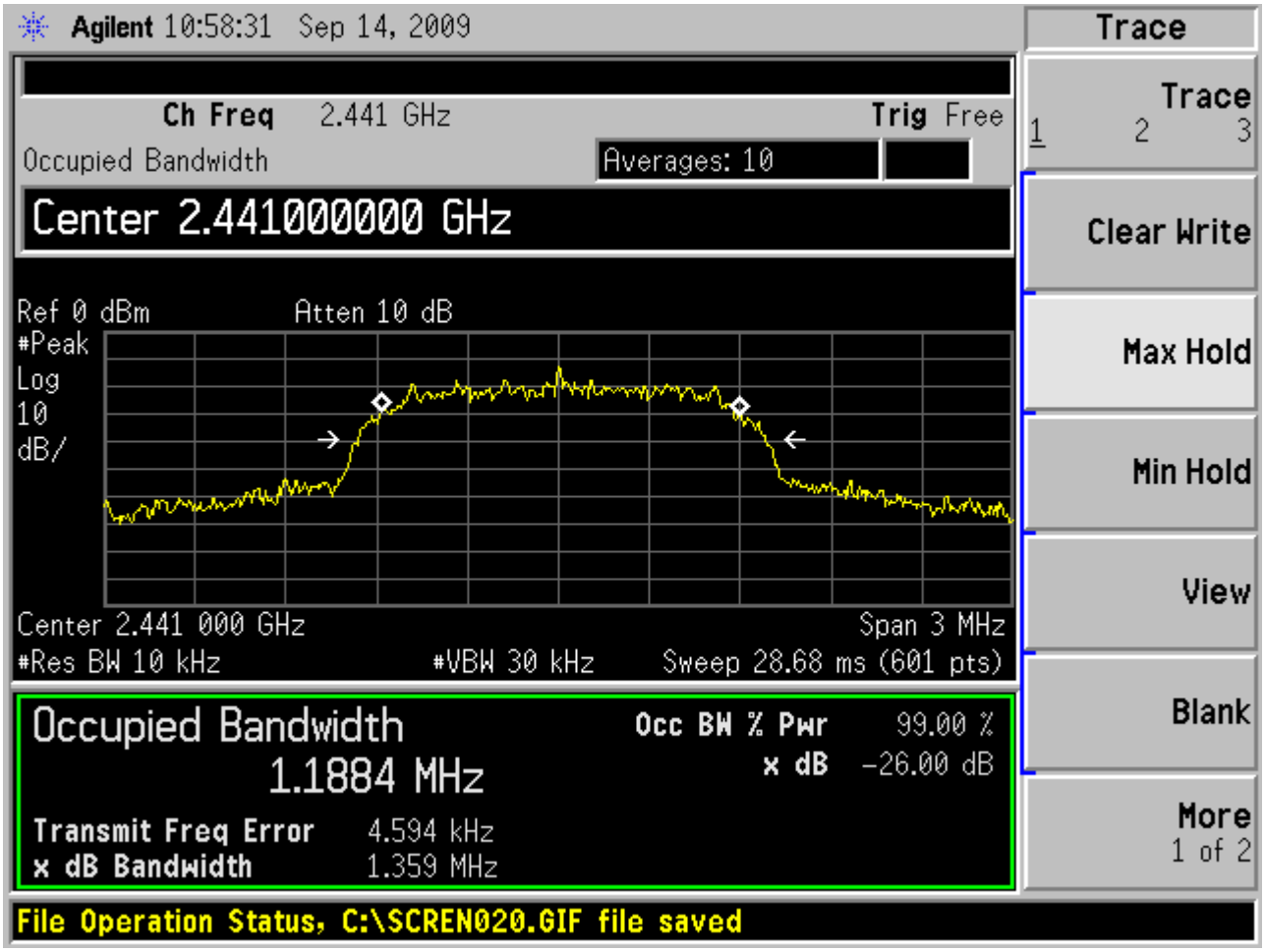
Channel No.:78

EDR 3DH5

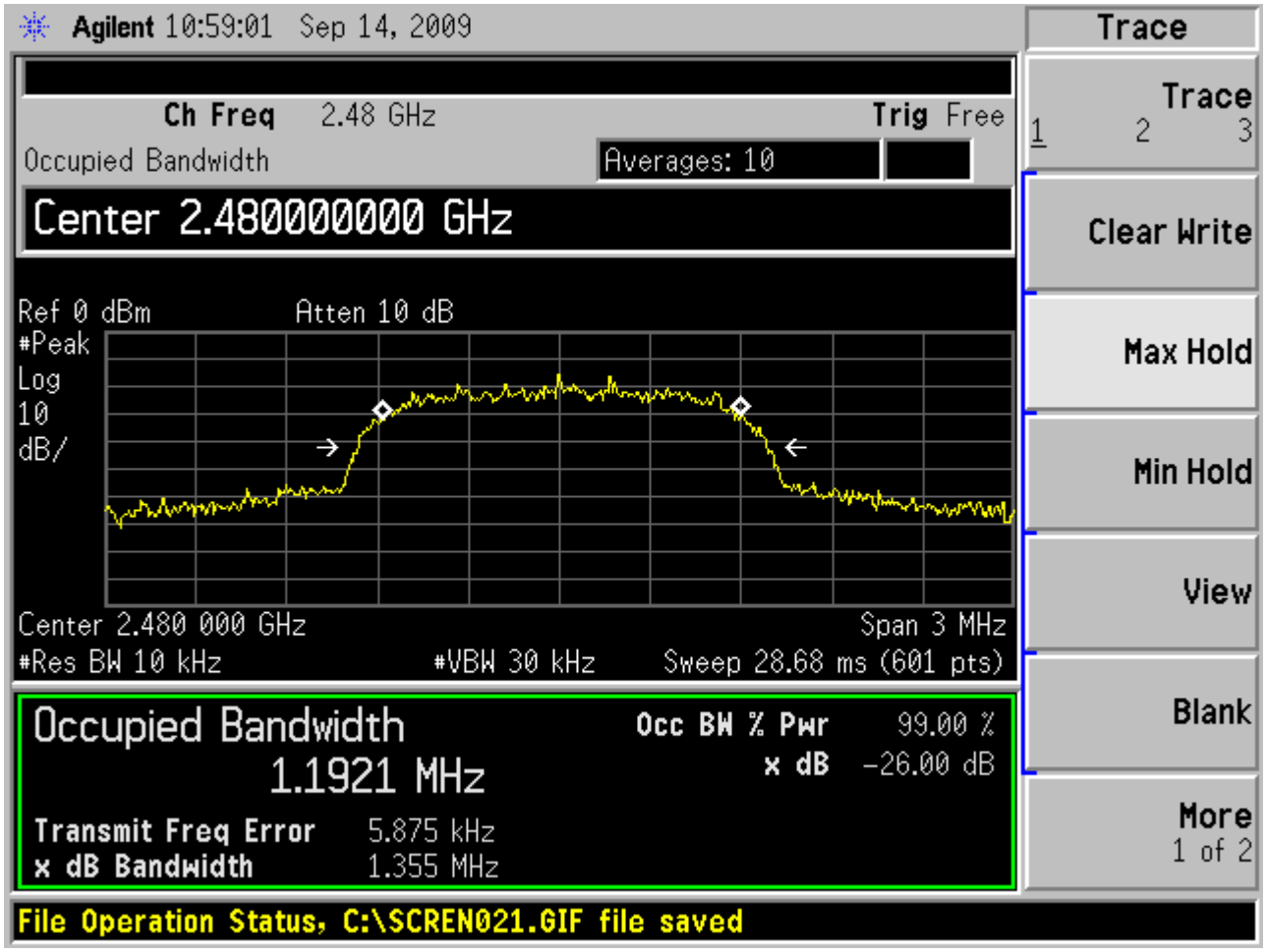
Channel	Frequency (MHz)	20dB Bandwidth (kHz)
0	2402	1190.3
39	2441	1188.4
78	2480	1192.1



Carrier frequency (MHz): 2402
Channel No.:0



Carrier frequency (MHz): 2441
Channel No.:39



Carrier frequency (MHz): 2480
Channel No.:78

2.4. Frequency Separation

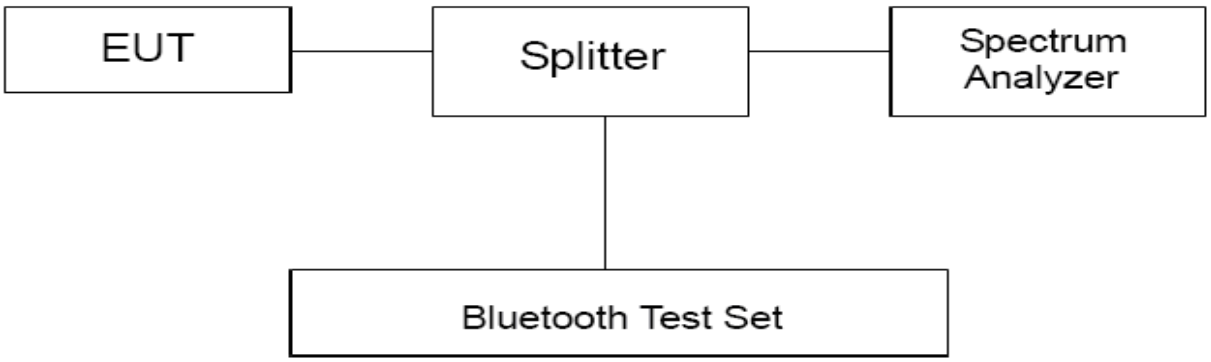
Ambient condition

Temperature	Relative humidity	Pressure
24°C	50%	101.5kPa

Method of Measurement

The Equipment Under Test (EUT) was set up in a shielded room to perform the spurious emissions measurements. The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. Set EUT ON Hopping on mode.

Test setup



Limits

Rule Part 15.247(a)(1)specifies that “Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. ”

Note: The value of two-thirds of 20 dB bandwidth is always greater than 25 kHz.

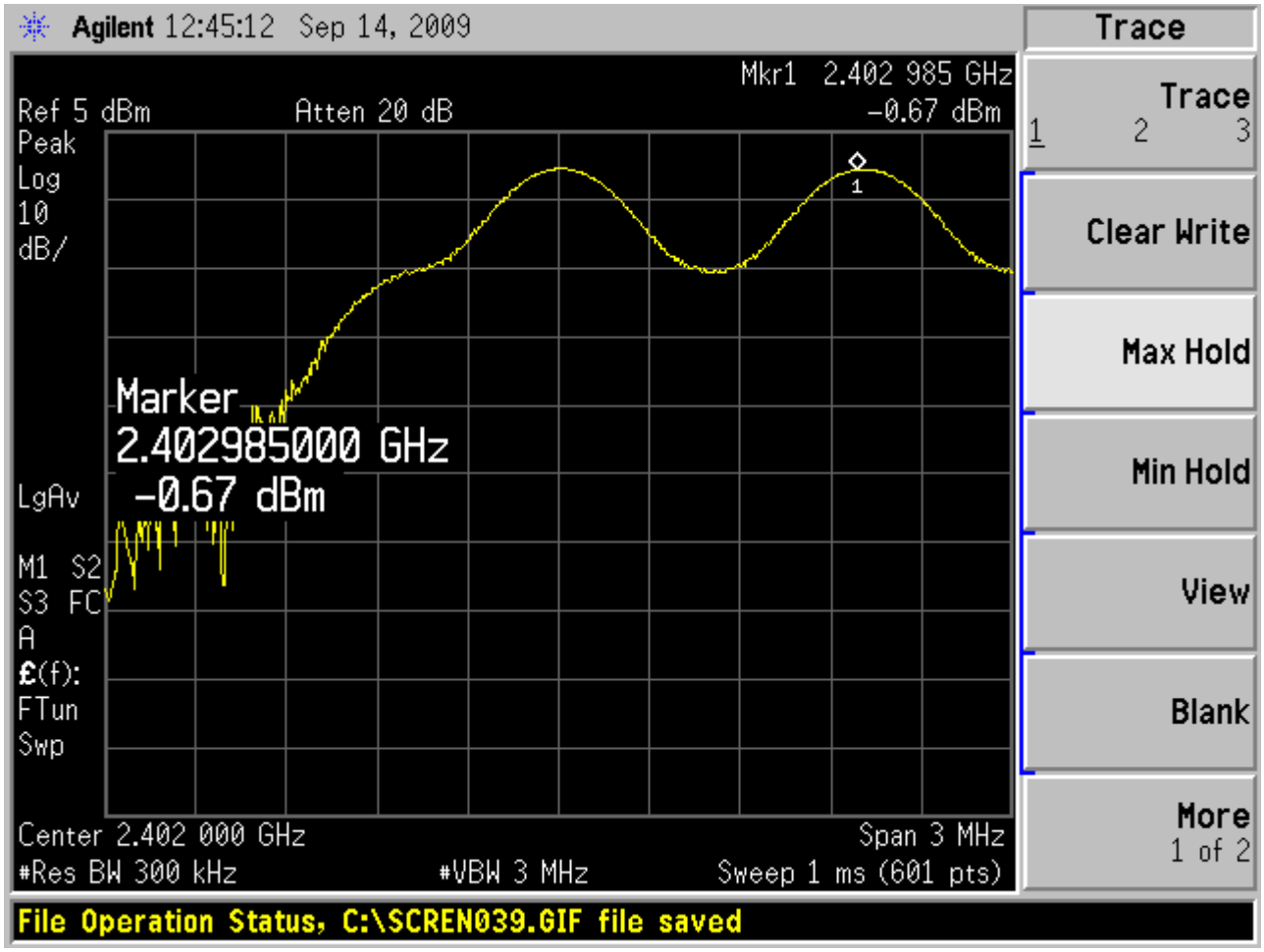
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the

normal distribution is with the coverage factor k = 2. U= 936 Hz.

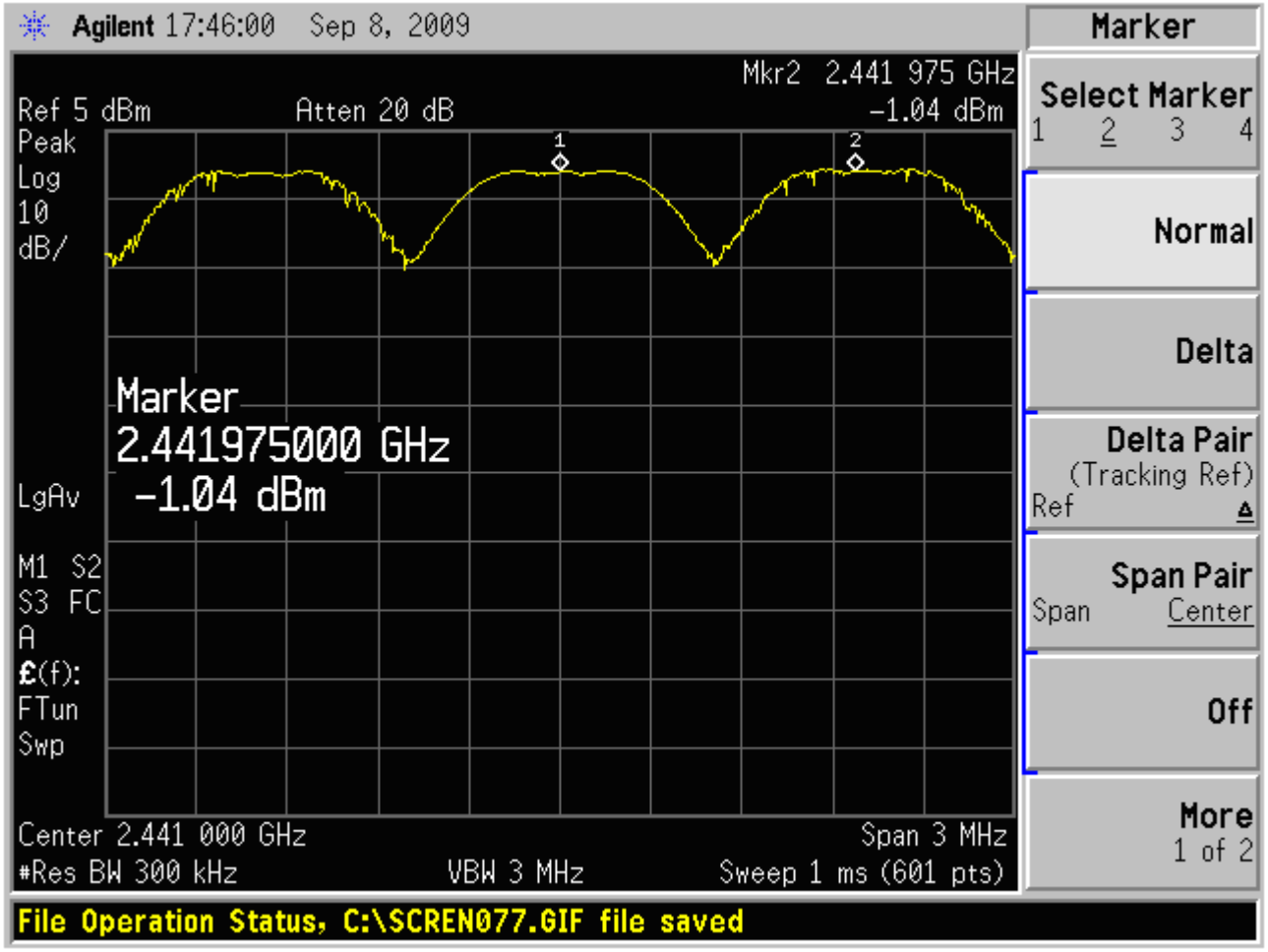
Test Result

Basic Rate DH5

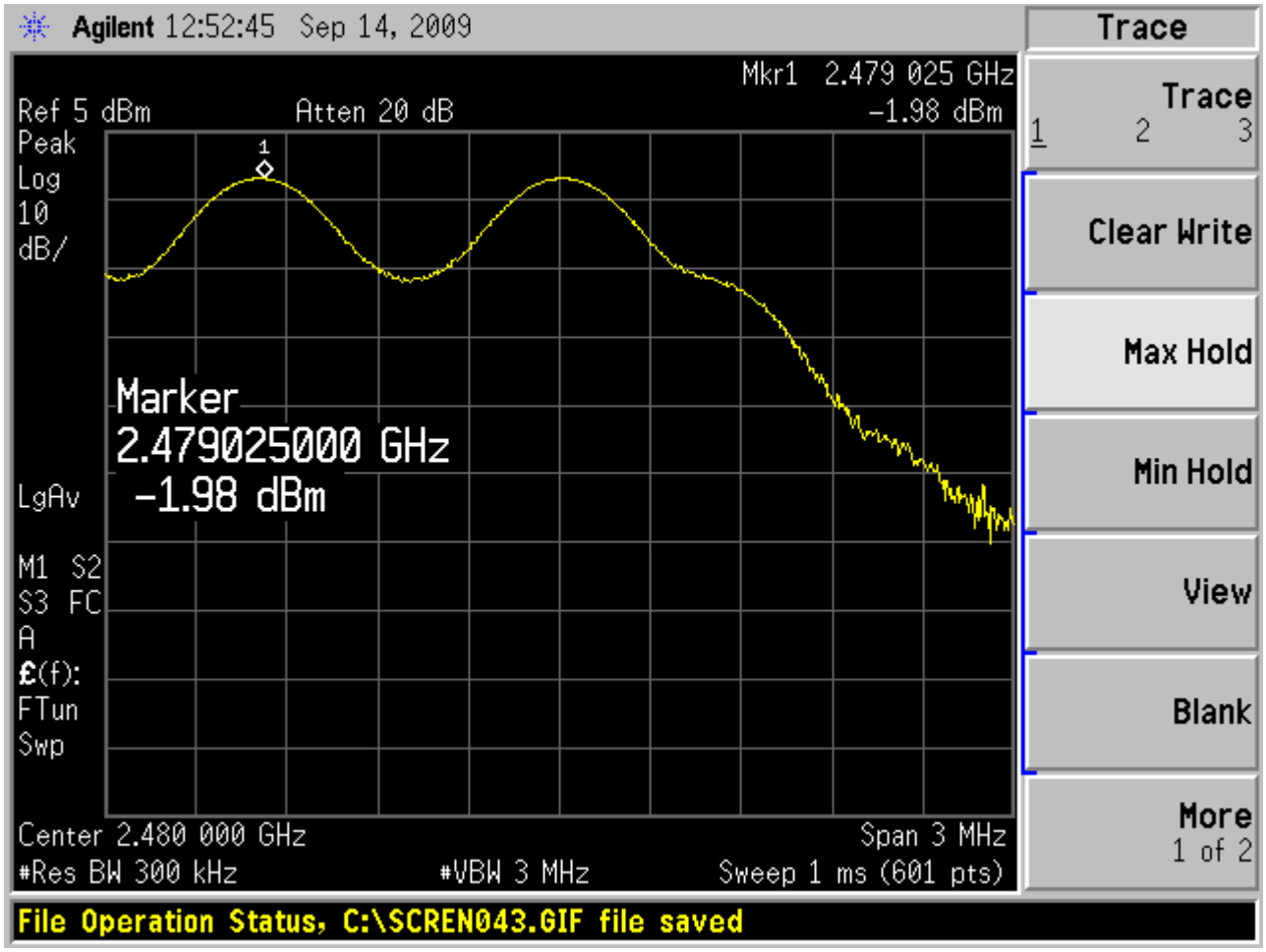


Carrier frequency (MHz): 2402

Channel No.:0



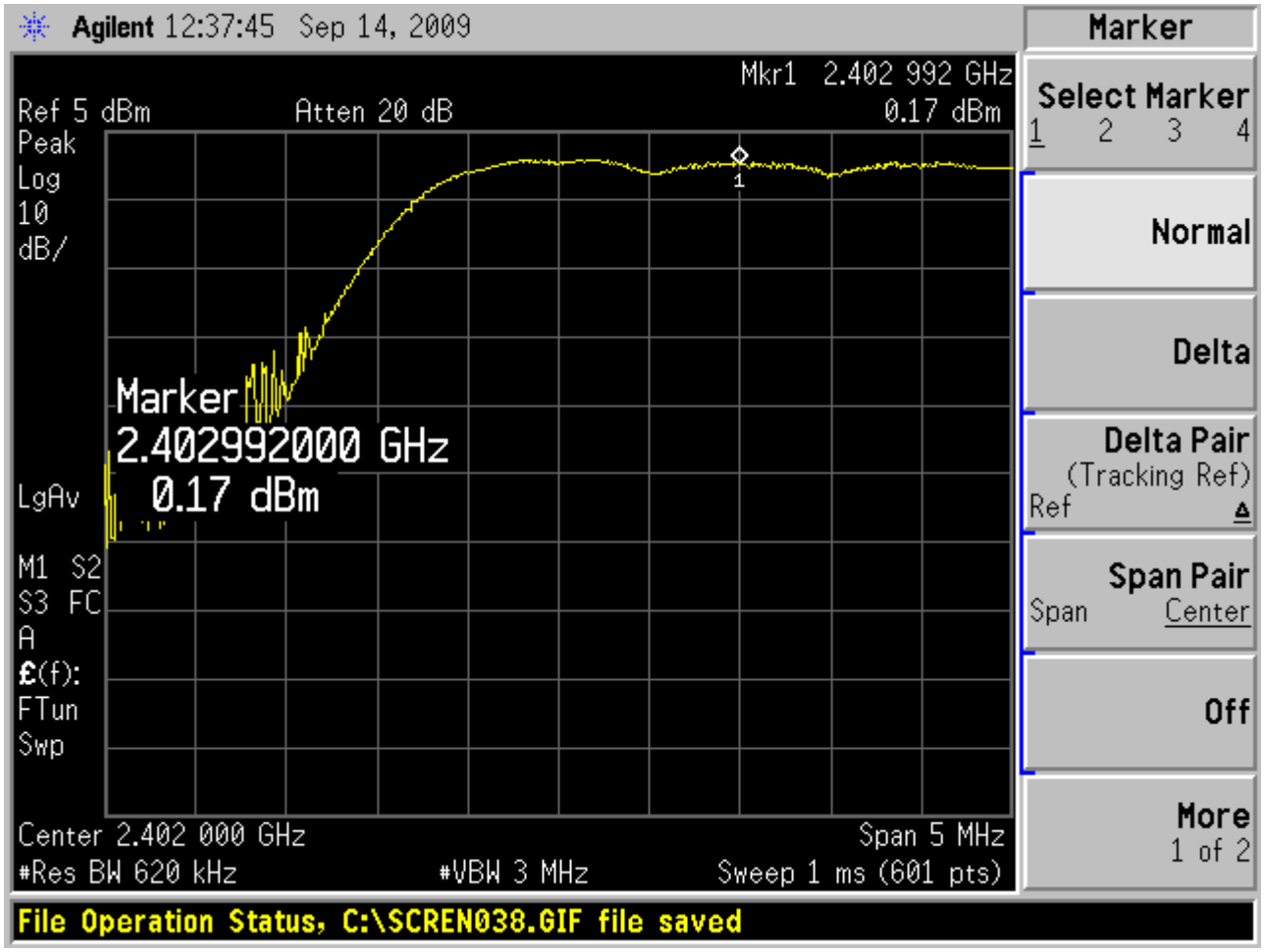
Carrier frequency (MHz): 2441
Channel No.:39



Carrier frequency (MHz): 2480
Channel No.:78

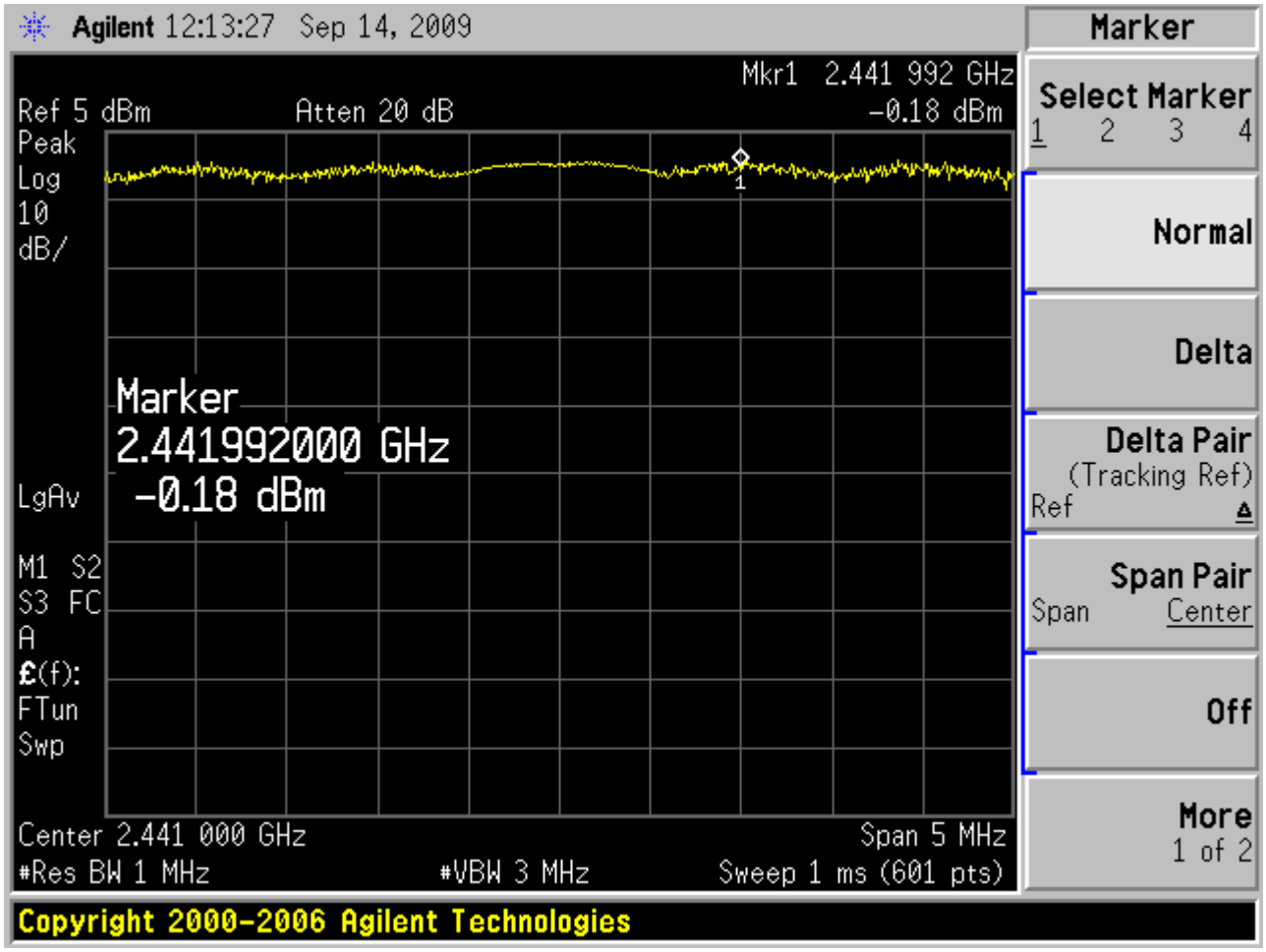
Carrier frequency (MHz)	Carrier frequency separation(kHz)	Limit(kHz)	Conclusion
2402	985	604.54	PASS
2441	950	556.37	PASS
2480	975	552.78	PASS

EDR 3DH5

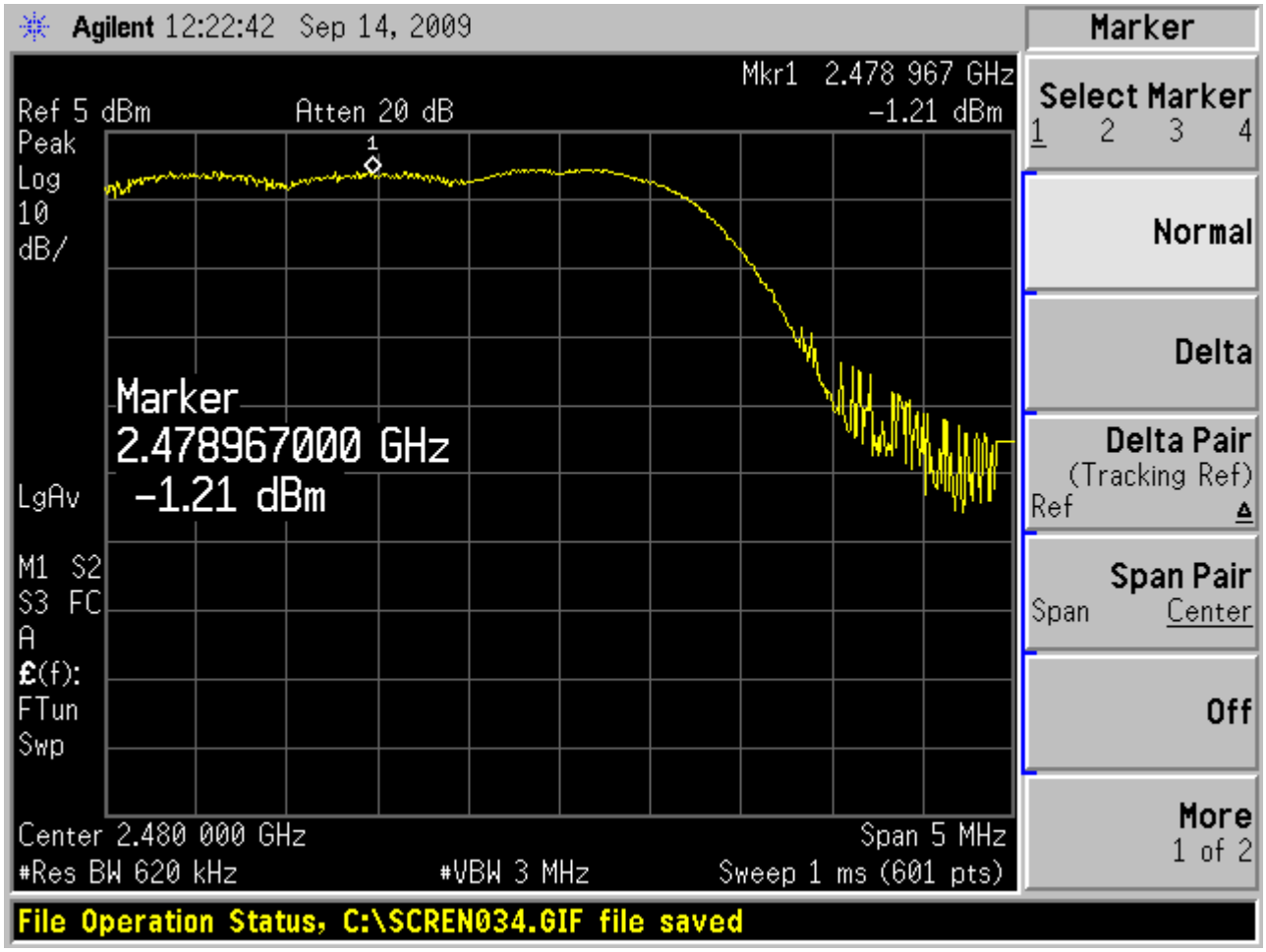


Carrier frequency (MHz): 2402

Channel No.:0



Carrier frequency (MHz): 2441
Channel No.:39



Carrier frequency (MHz): 2480
Channel No.:78

Carrier frequency (MHz)	Carrier frequency separation(kHz)	Limit(kHz)	Conclusion
2402	992	793.5	Pass
2441	992	792.3	Pass
2480	1033	794.7	Pass

2.5. Time of Occupancy (Dwell Time)

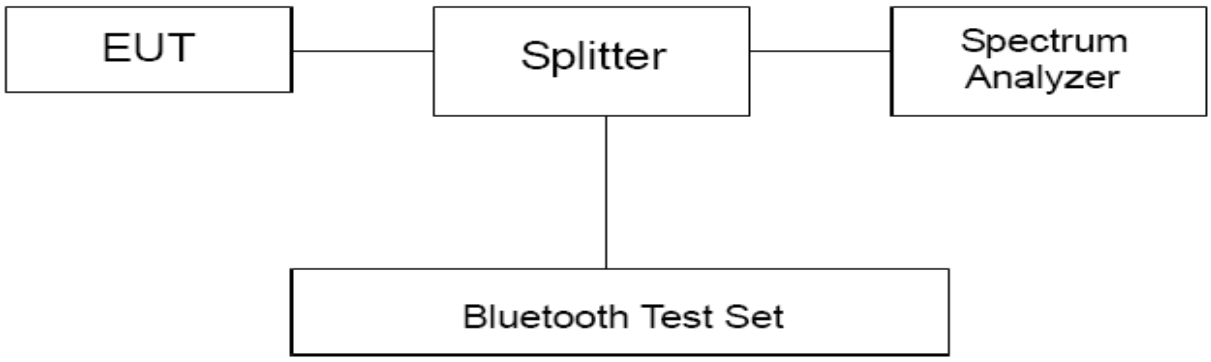
Ambient condition

Temperature	Relative humidity	Pressure
24°C	56%	101.5kPa

Methods of Measurement

The Equipment Under Test (EUT) was set up in a shielded room to perform the dwell time measurements. The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The time slot length is measured of three different packet types, which are available in the Bluetooth technology. Those are DH1, DH3 and DH5 packets. The dwell time is calculated by:
Dwell time = time slot length * hop rate * 0.4s with:
- hop rate=1600 * 1/s for DH1 packets =1600
- hop rate=1600/3 * 1/s for DH3 packets =533.33
- hop rate=1600/5 * 1/s for DH5 packets =320

Test Setup



Limits

Rule Part 22.913(a) specifies that " Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed..”

Dwell time	⩽ 400ms

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2. U_{DH1}= 0.64ms, U_{DH3}= 0.80ms, U_{DH5}= 0.70ms.

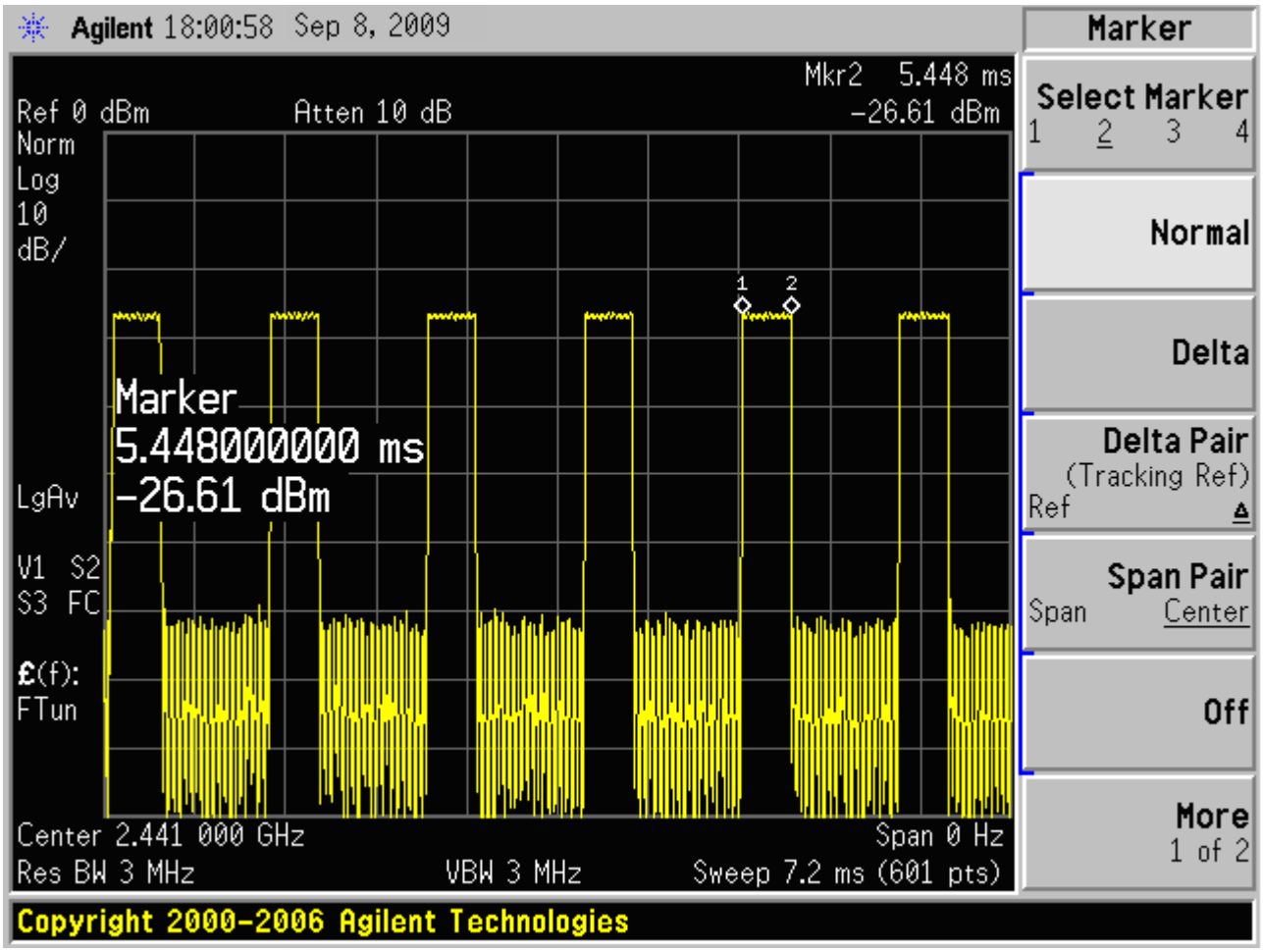
Test Results

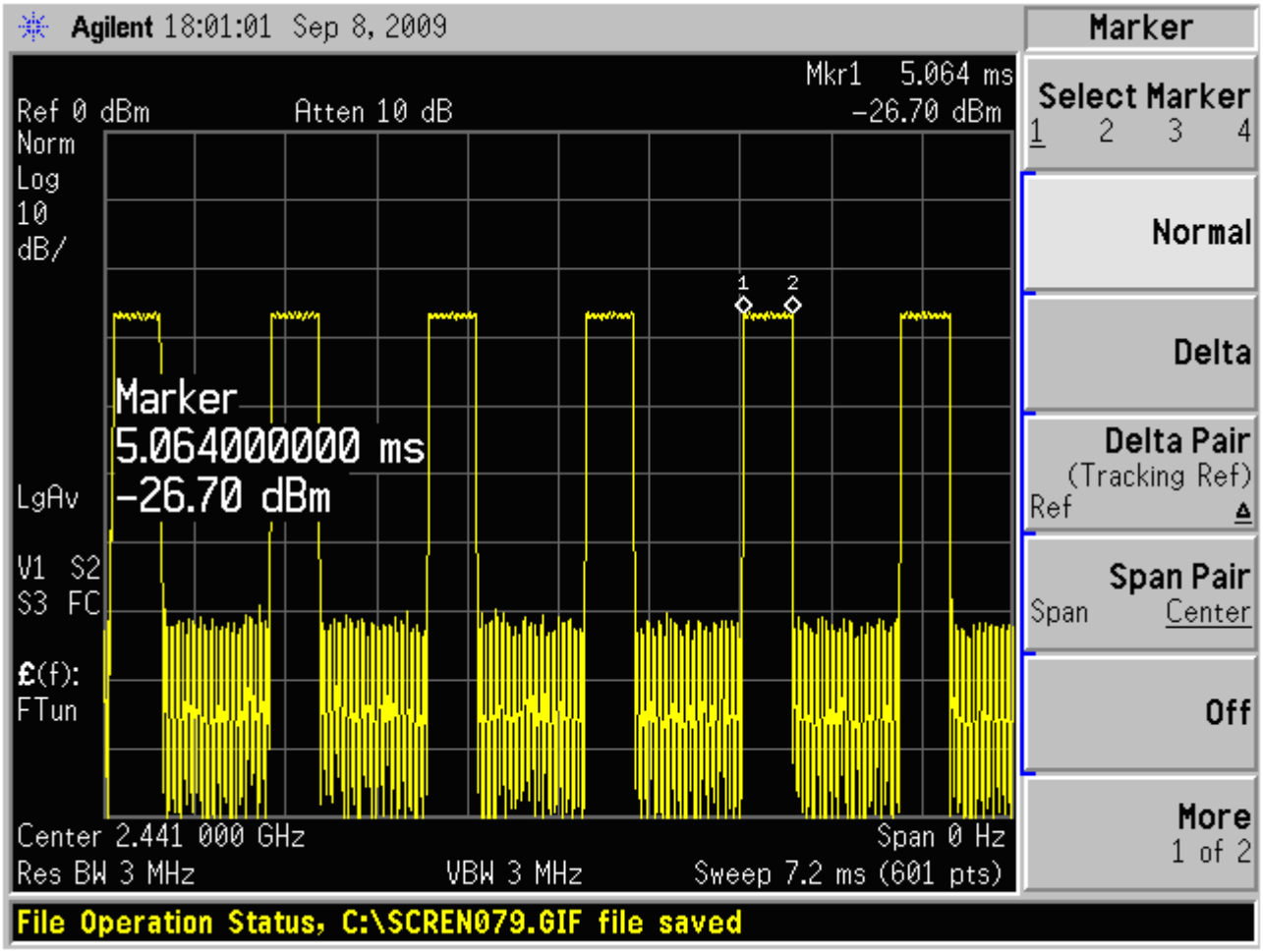
Basic Rate

CH 39

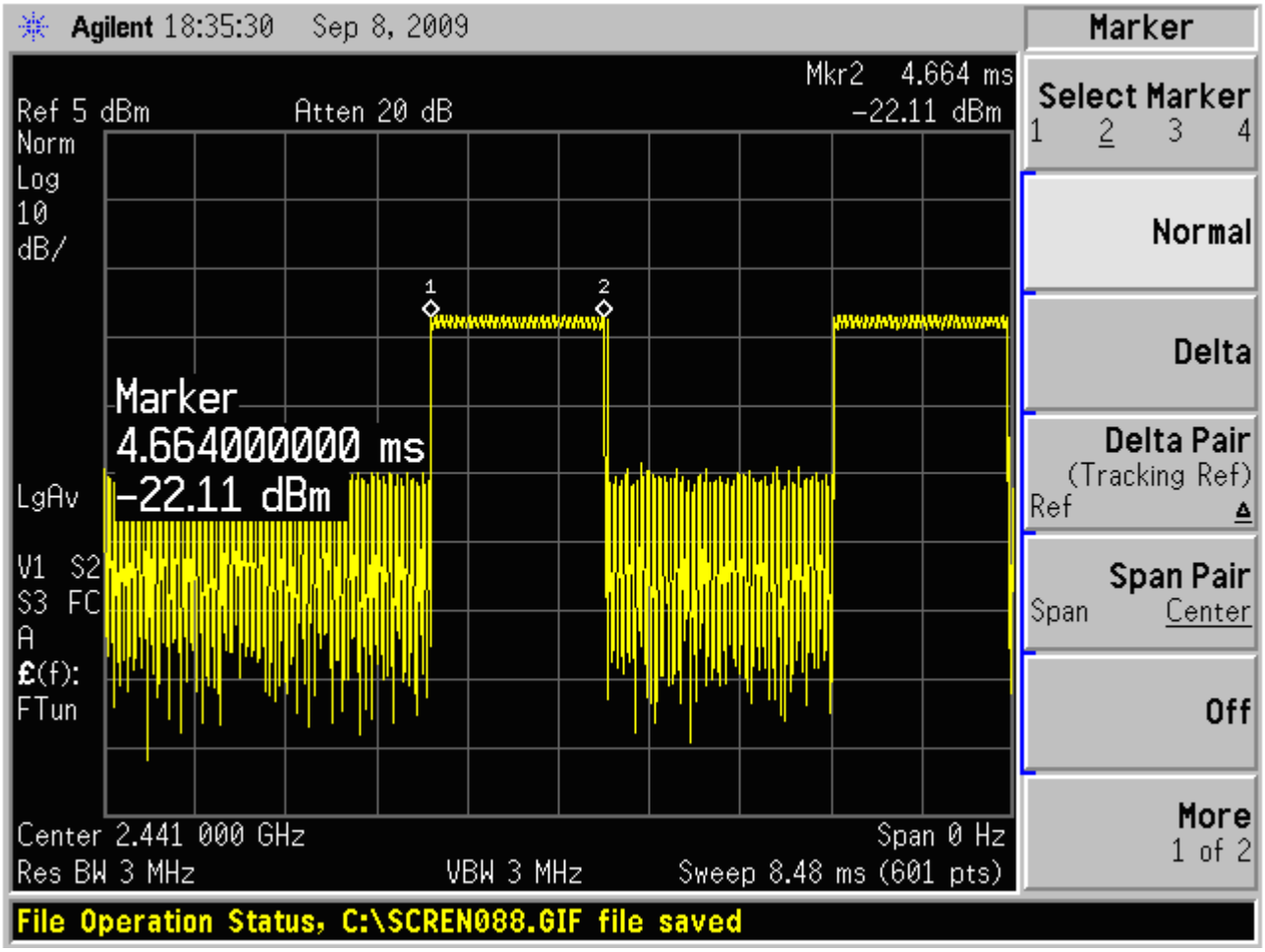
Packet type	hop rate (1/s)	Time slot length(ms)	Dwell time	Limit	Conclusion
DH1	1600	0.384	245.76 ms	400ms	PASS
DH3	533.33	1.611	343.68 ms	400ms	PASS
DH5	320	2.869	367.23 ms	400ms	PASS

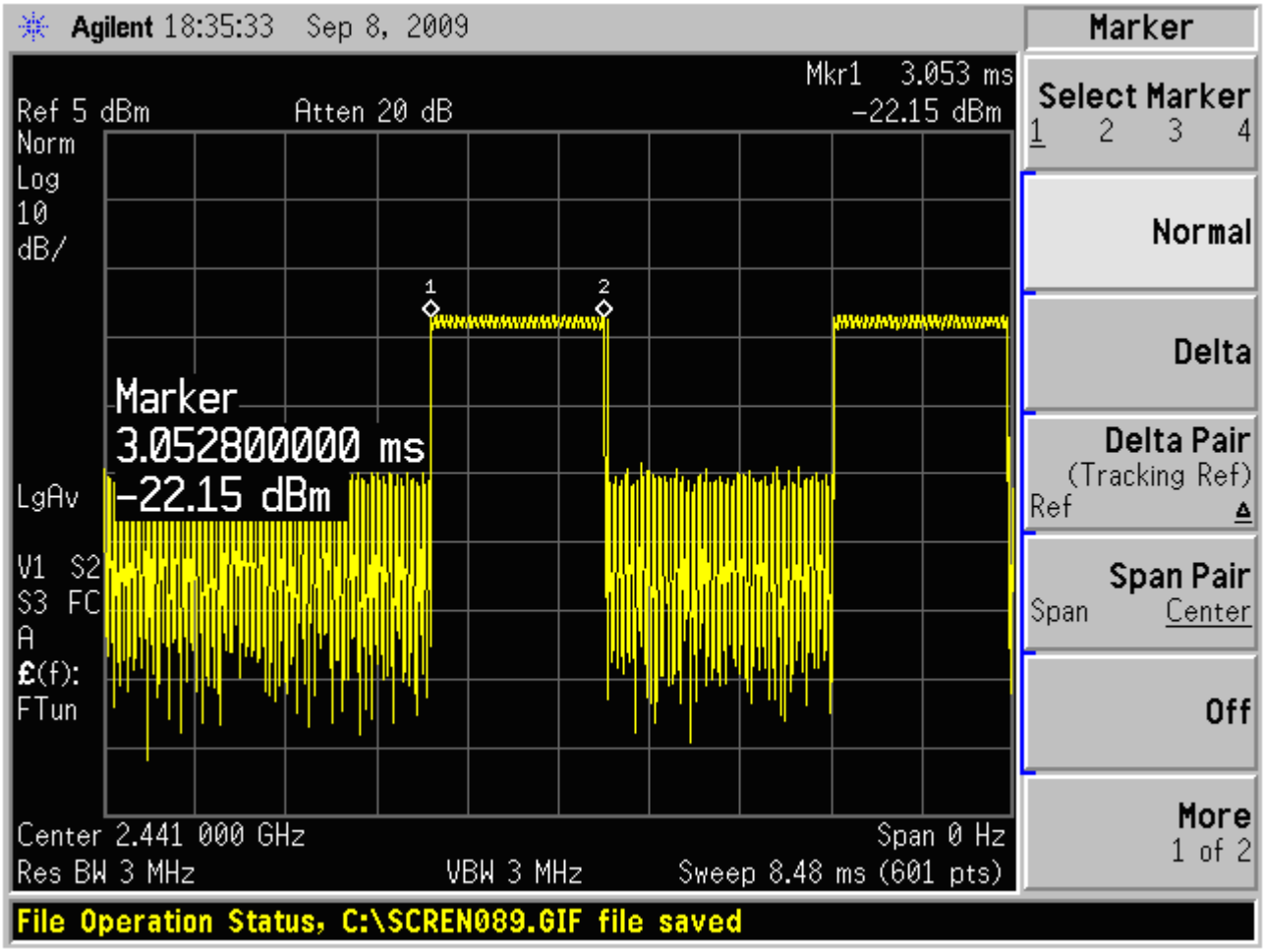
Note: Dwell time = time slot length * hop rate * 0.4s





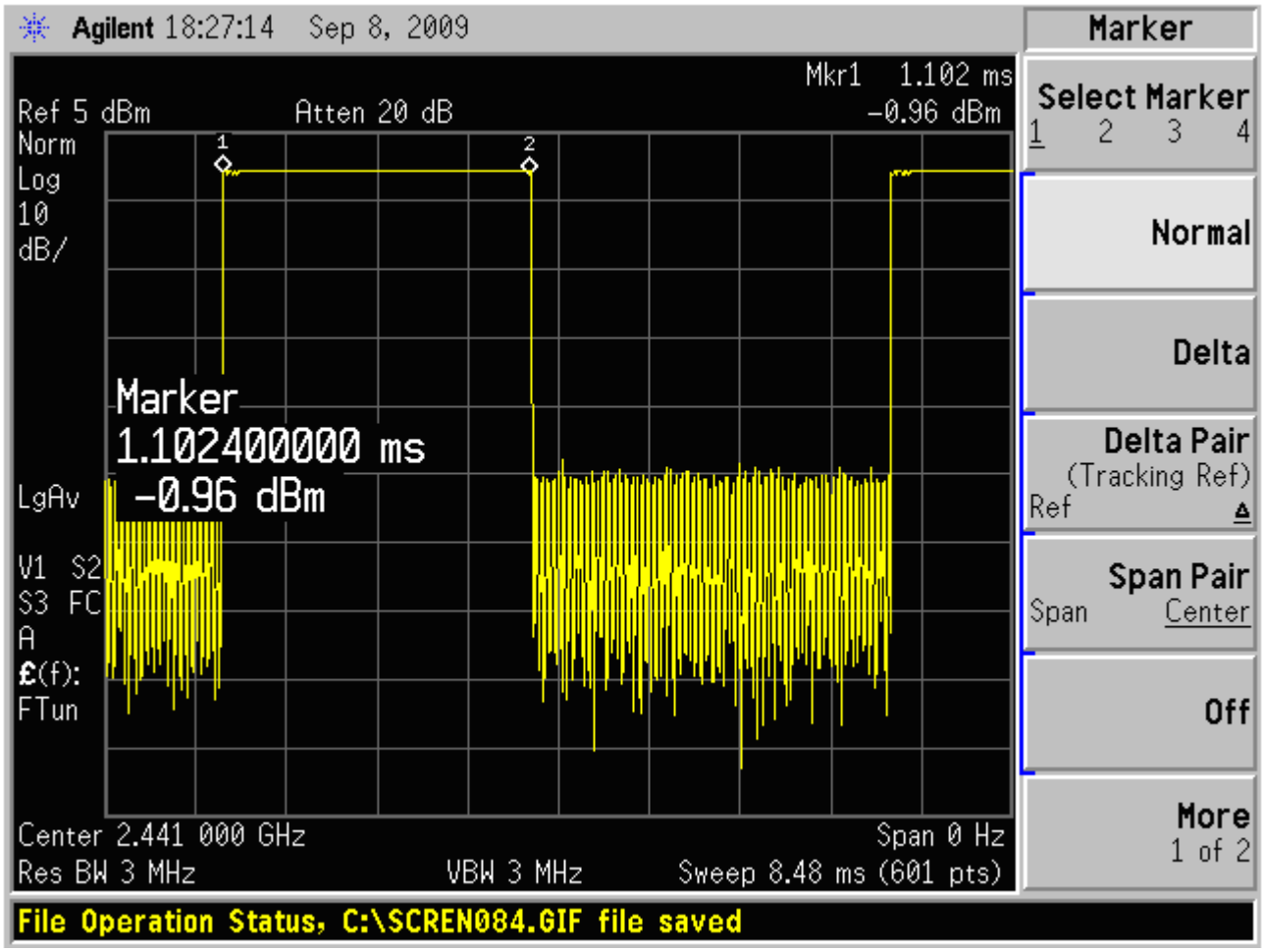
Carrier frequency (MHz): 2441
Packet type: DH1

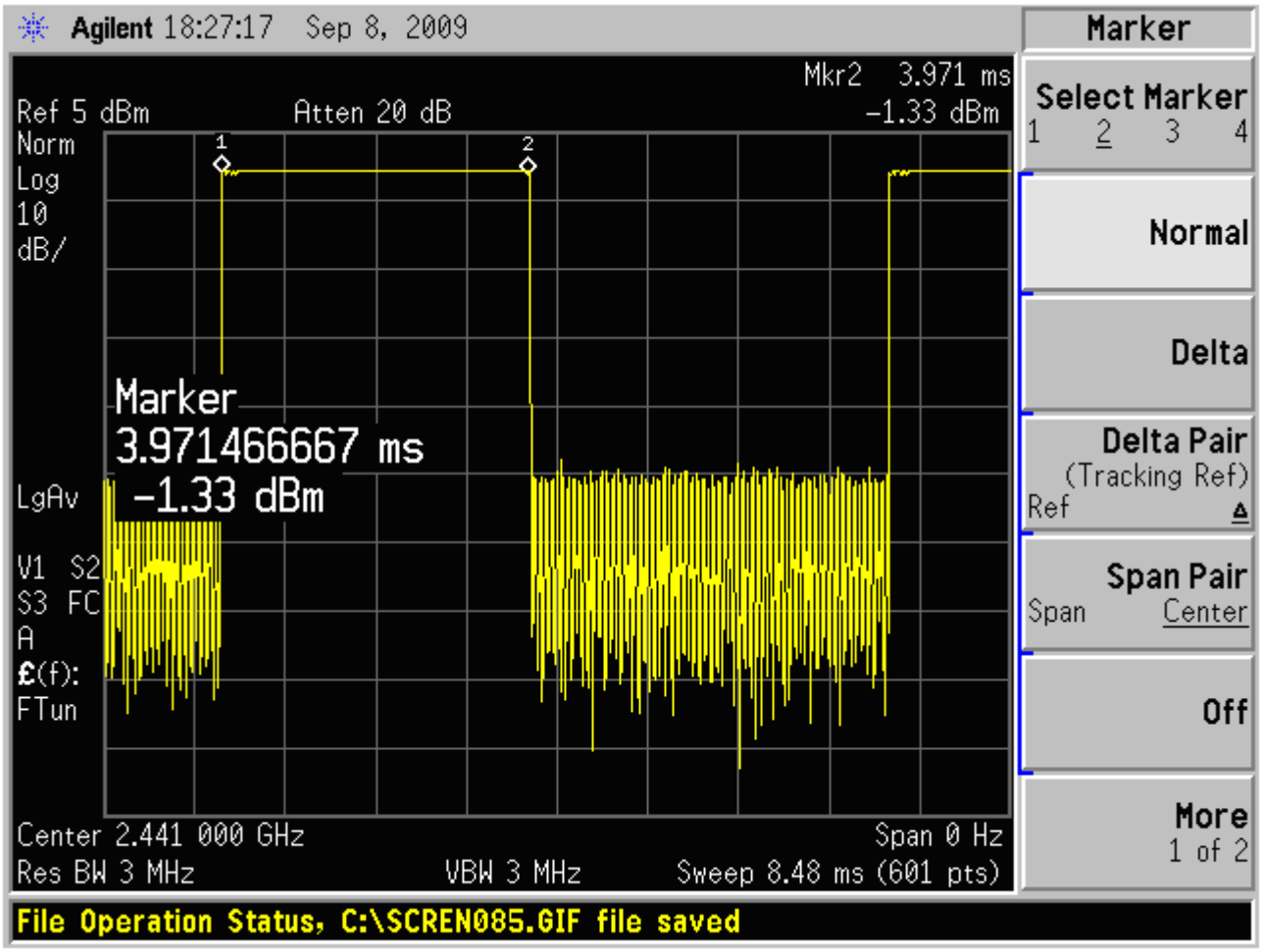

Agilent 18:35:30 Sep 8, 2009
Marker
Mkr2 4.664 ms
-22.11 dBm
Ref 5 dBm
Atten 20 dB
Norm
Log
10
dB/
1
2
Marker
4.664000000 ms
-22.11 dBm
LgAv
V1 S2
S3 FC
A
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 3 MHz
VBW 3 MHz
Sweep 8.48 ms (601 pts)
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
File Operation Status, C:\SCREN088.GIF file saved



Carrier frequency (MHz): 2441

Packet type: DH3


Agilent 18:27:14 Sep 8, 2009
Mkr1 1.102 ms
Ref 5 dBm
Atten 20 dB
-0.96 dBm
Norm
Log
10
dB/
Marker
1.102400000 ms
-0.96 dBm
LgAv
V1 S2
S3 FC
A
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 3 MHz
VBW 3 MHz
Sweep 8.48 ms (601 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
File Operation Status, C:\SCREN084.GIF file saved



Carrier frequency (MHz): 2441

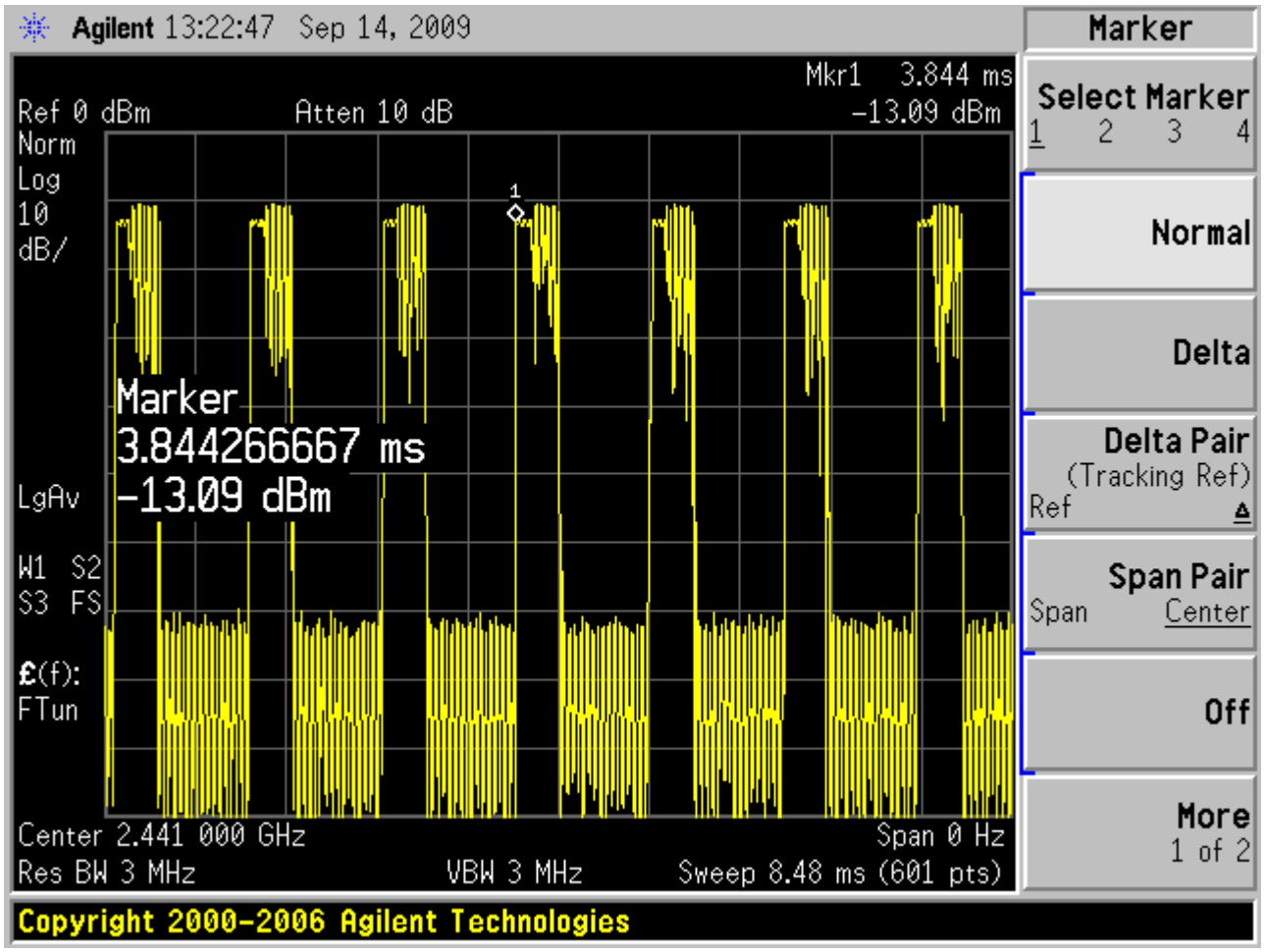
Packet type: DH5

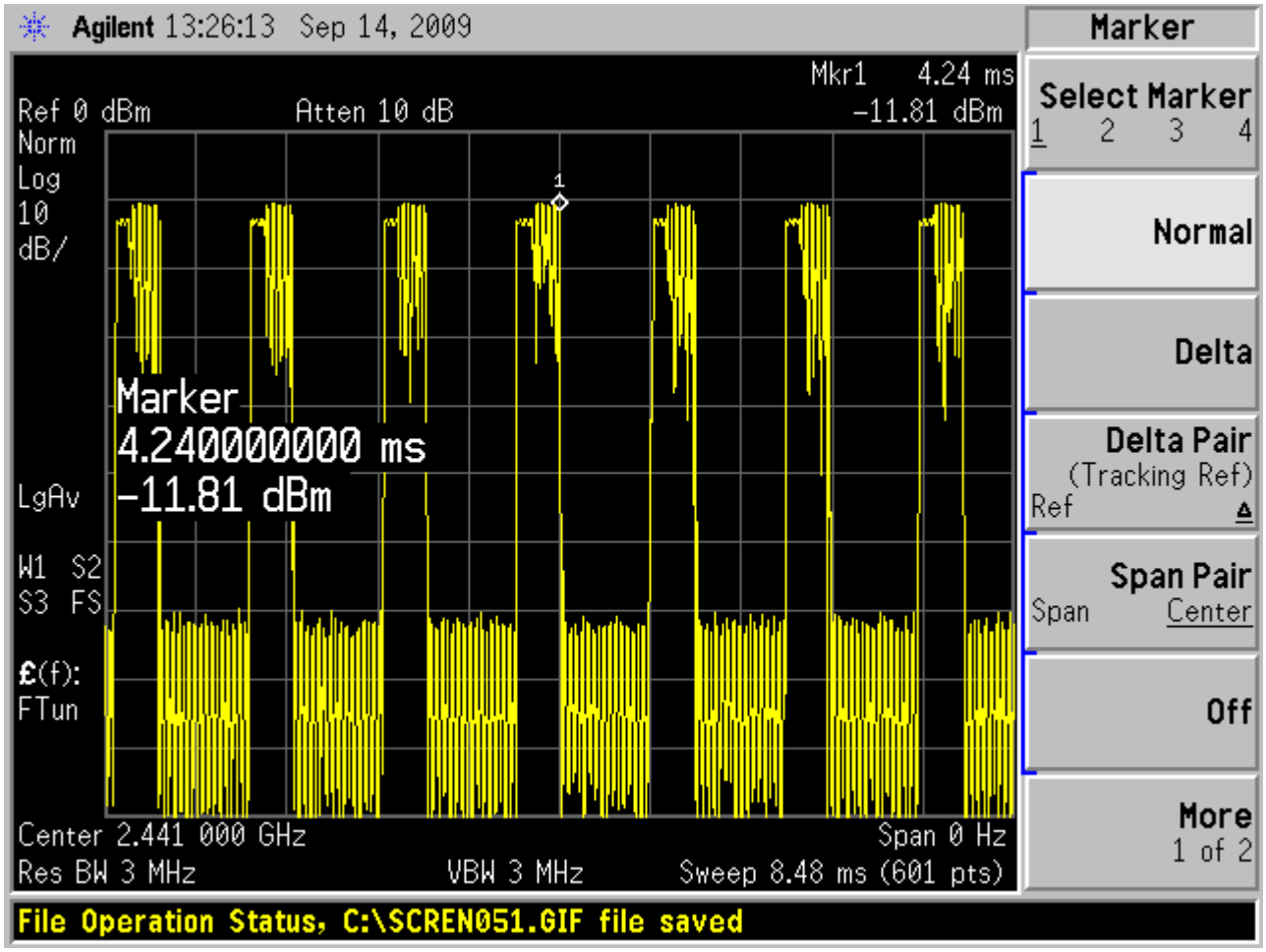
EDR

CH 39

Packet type	hop rate (1/s)	Time slot length(ms)	Dwell time	Limit	Conclusion
3DH1	1600	0.396	253.44	400ms	PASS
3DH3	533.33	1.639	349.65	400ms	PASS
3DH5	320	2.911	372.61	400ms	PASS

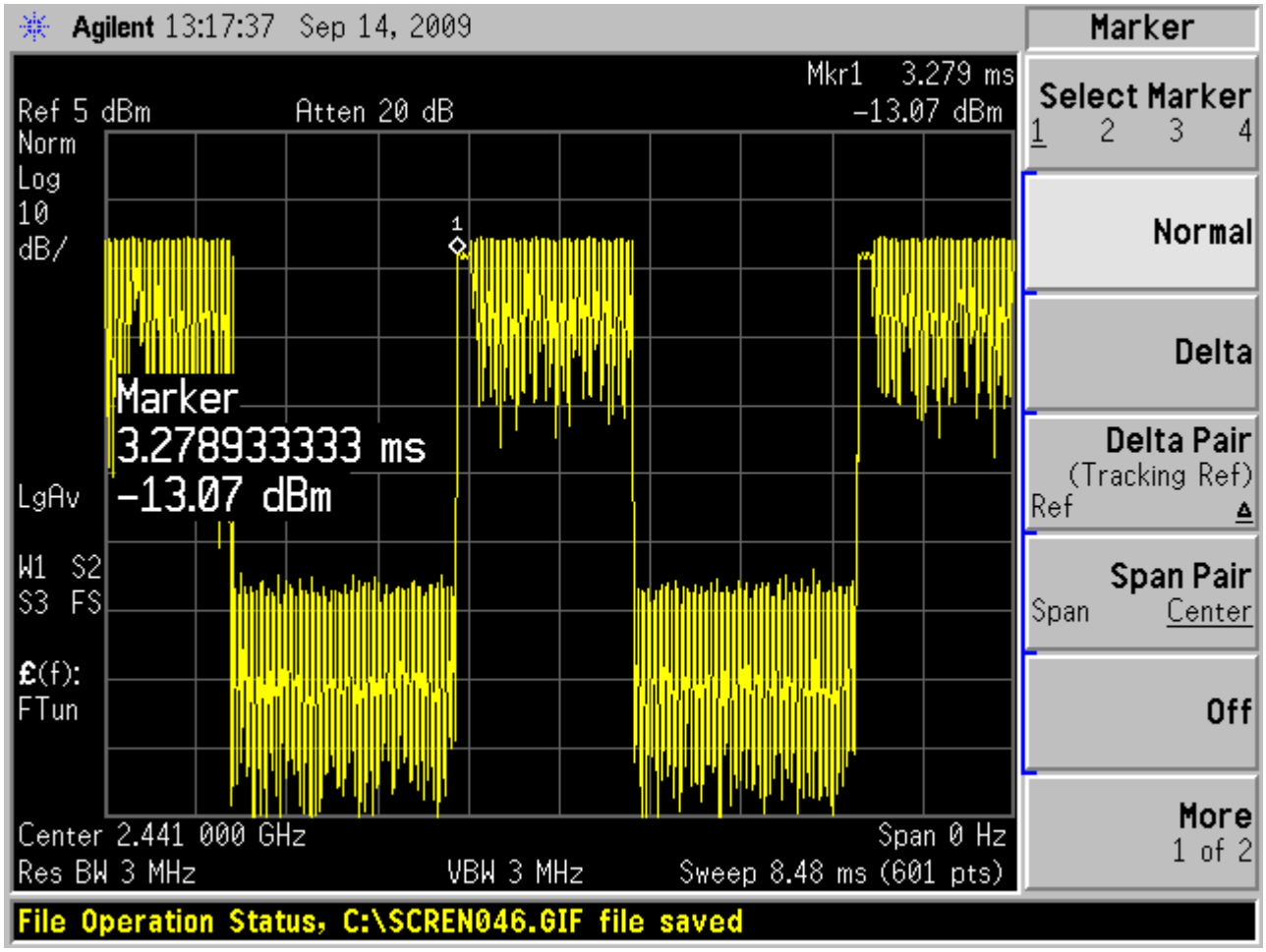
Note: Dwell time = time slot length * hop rate * 0.4s

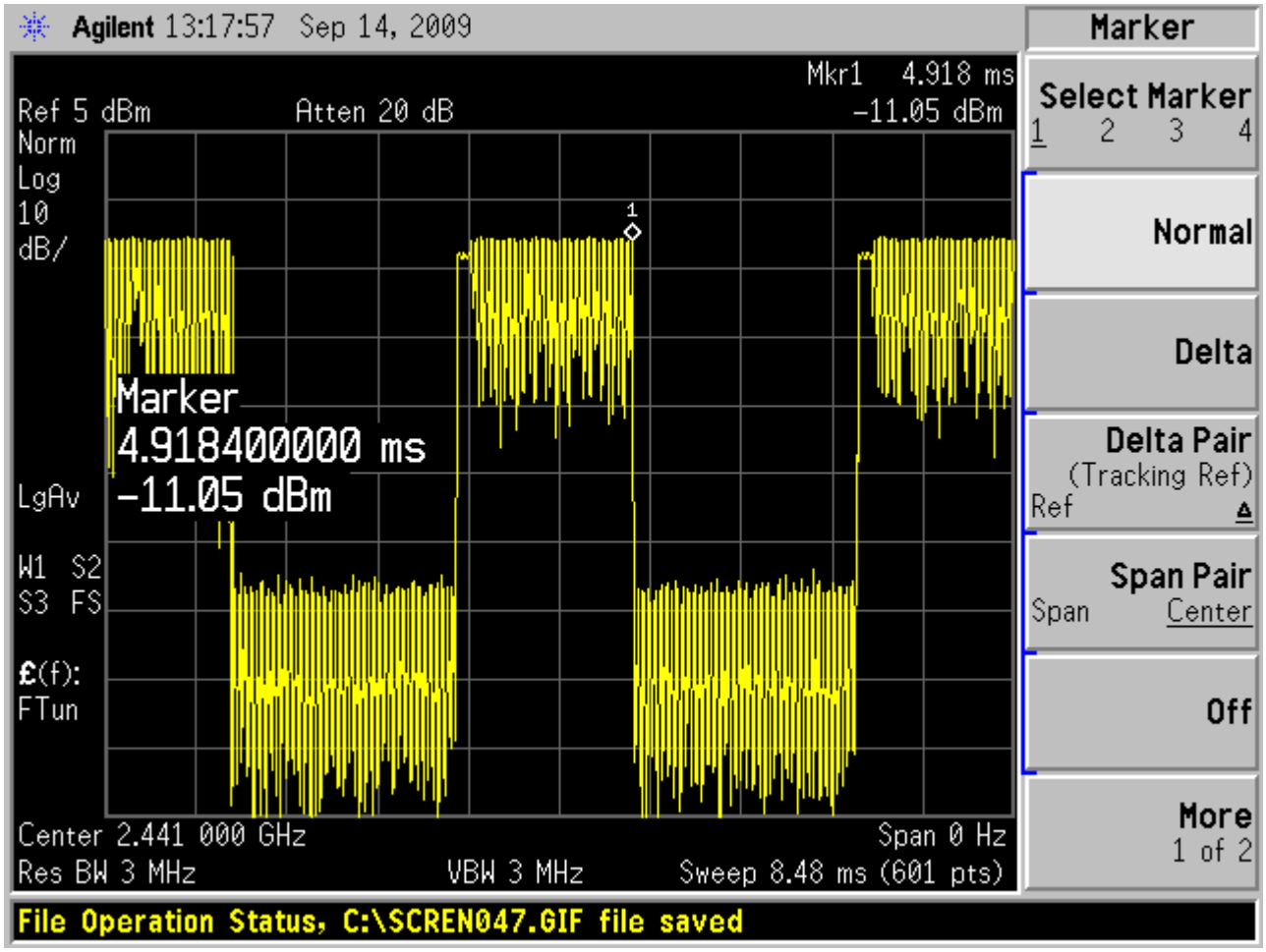




Carrier frequency (MHz): 2441

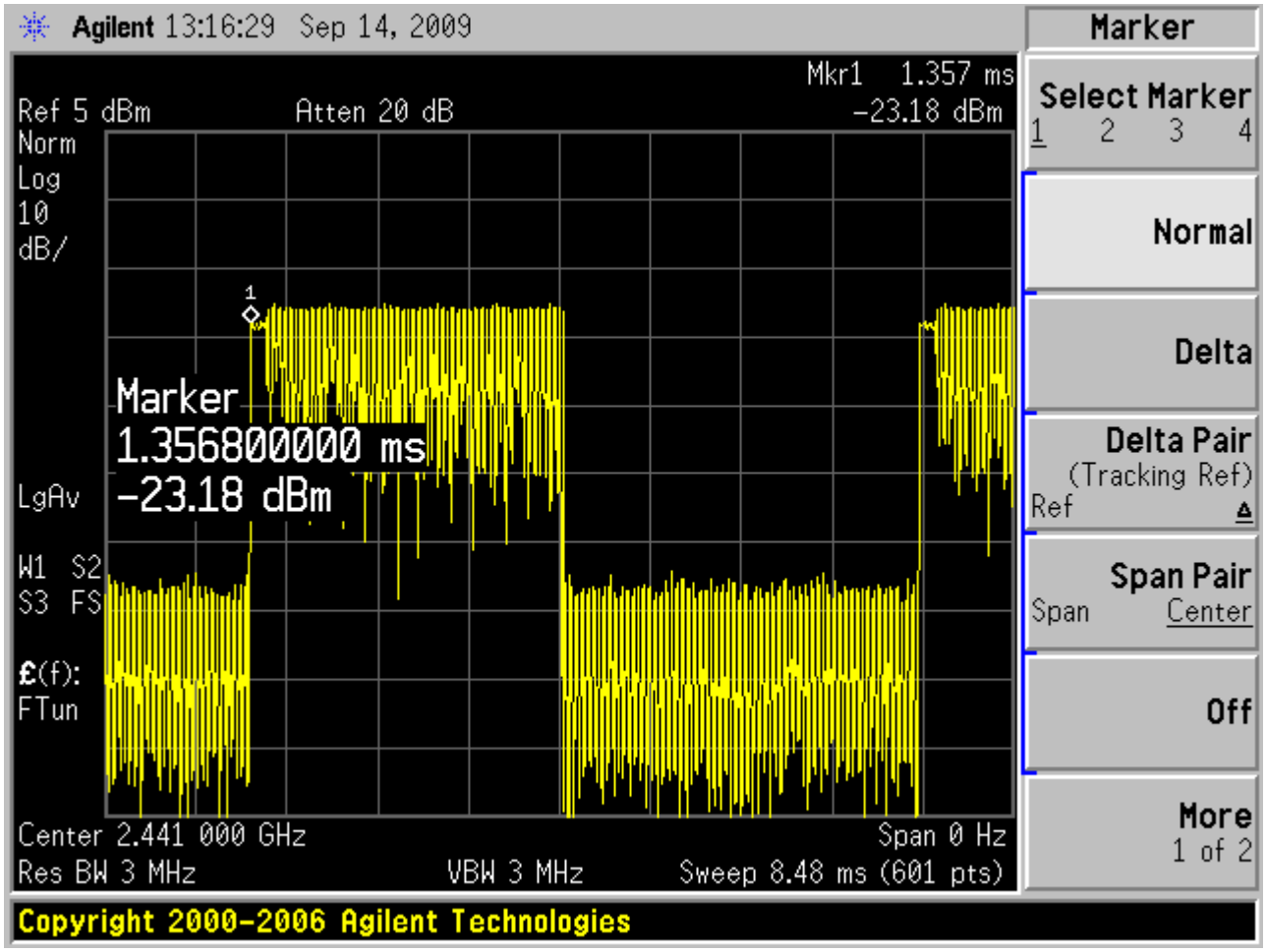
Packet type: 3DH1

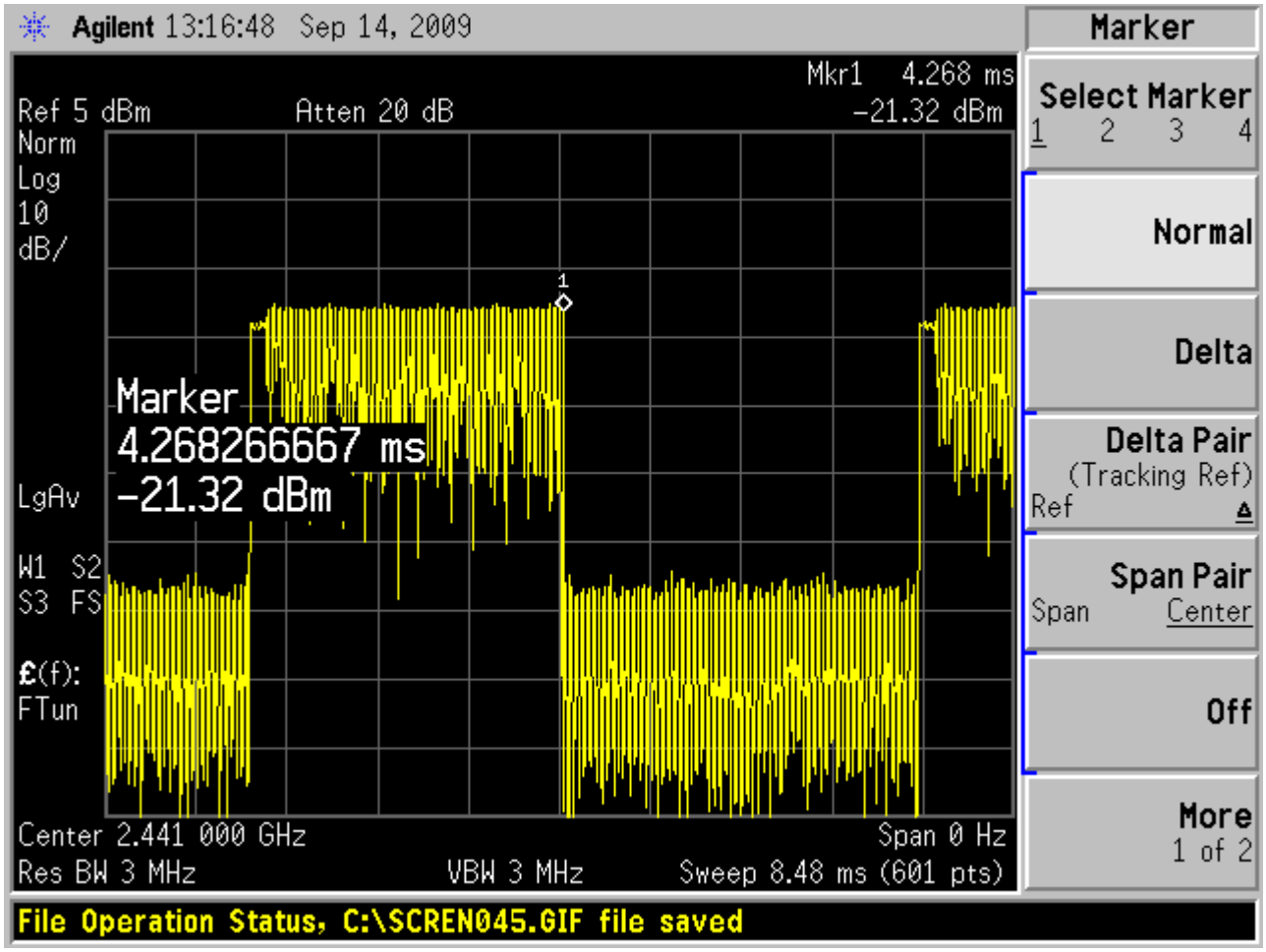

Agilent 13:17:37 Sep 14, 2009
Marker
Mkr1 3.279 ms
Ref 5 dBm
Atten 20 dB
-13.07 dBm
Norm
Log
10
dB/
Marker
3.278933333 ms
-13.07 dBm
LgAv
W1 S2
S3 FS
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 3 MHz
VBW 3 MHz
Sweep 8.48 ms (601 pts)
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
File Operation Status, C:\SCREN046.GIF file saved



Carrier frequency (MHz): 2441

Packet type: 3DH3


Agilent 13:16:29 Sep 14, 2009
Mkr1 1.357 ms
Ref 5 dBm
Atten 20 dB
-23.18 dBm
Norm
Log
10
dB/
Marker
1.356800000 ms
-23.18 dBm
LgAv
W1 S2
S3 FS
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 3 MHz
VBW 3 MHz
Sweep 8.48 ms (601 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
Copyright 2000-2006 Agilent Technologies



Carrier frequency (MHz): 2441

Packet type: 3DH5

2.6. Band Edge Compliance

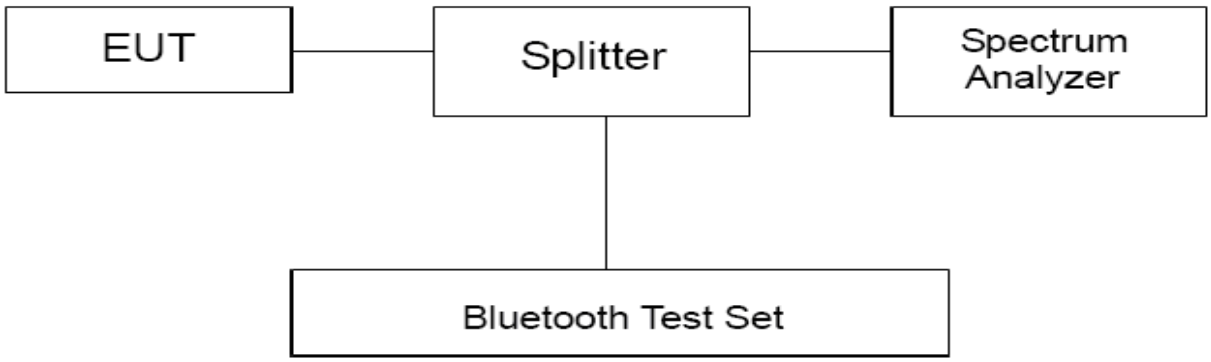
Ambient condition

Temperature	Relative humidity	Pressure
24°C	55%	101.5kPa

Method of Measurement

The Equipment Under Test (EUT) was set up in a shielded room to perform the spurious emissions measurements. The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 100 KHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 15.247(d) specifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.”

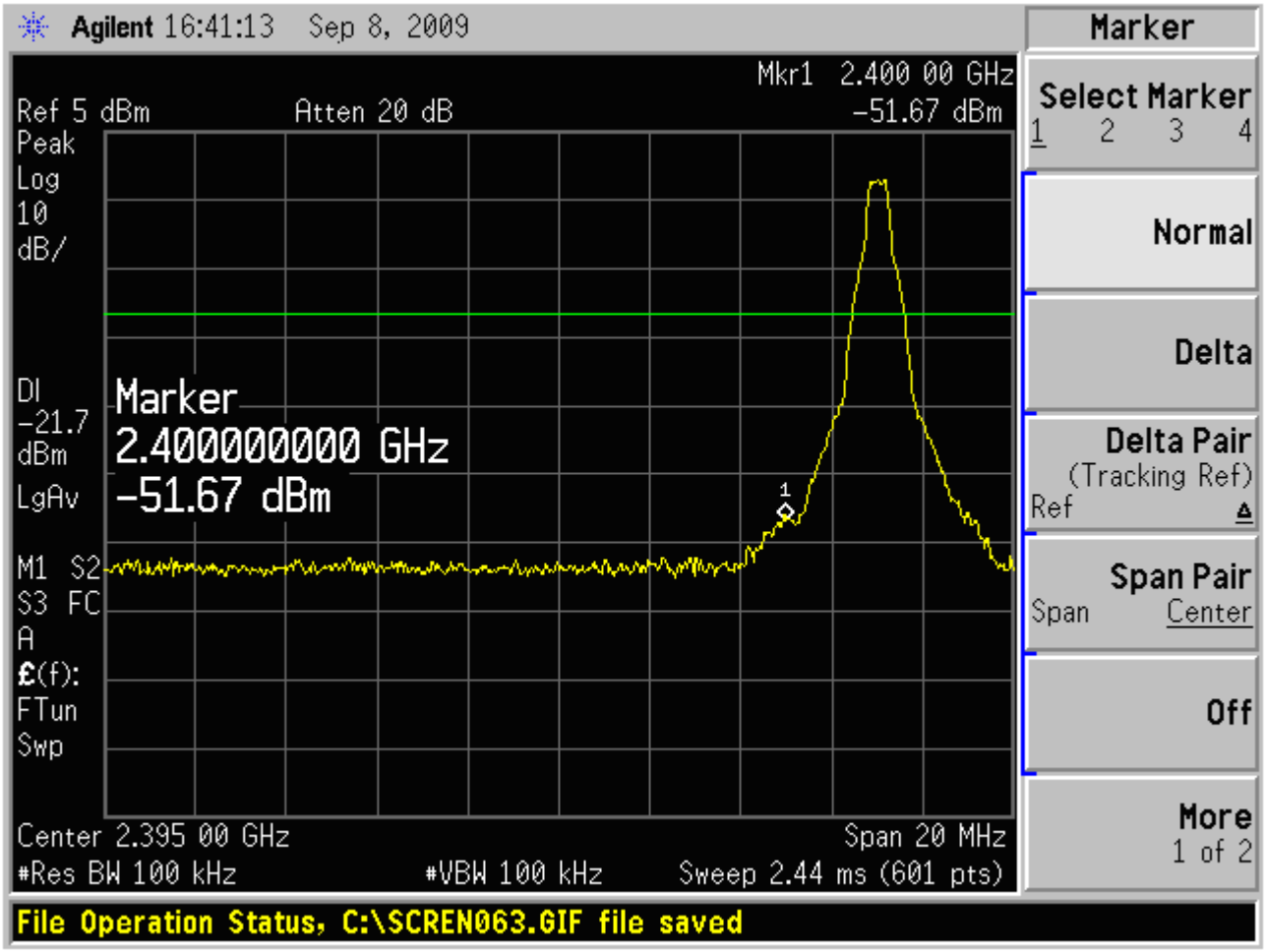
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

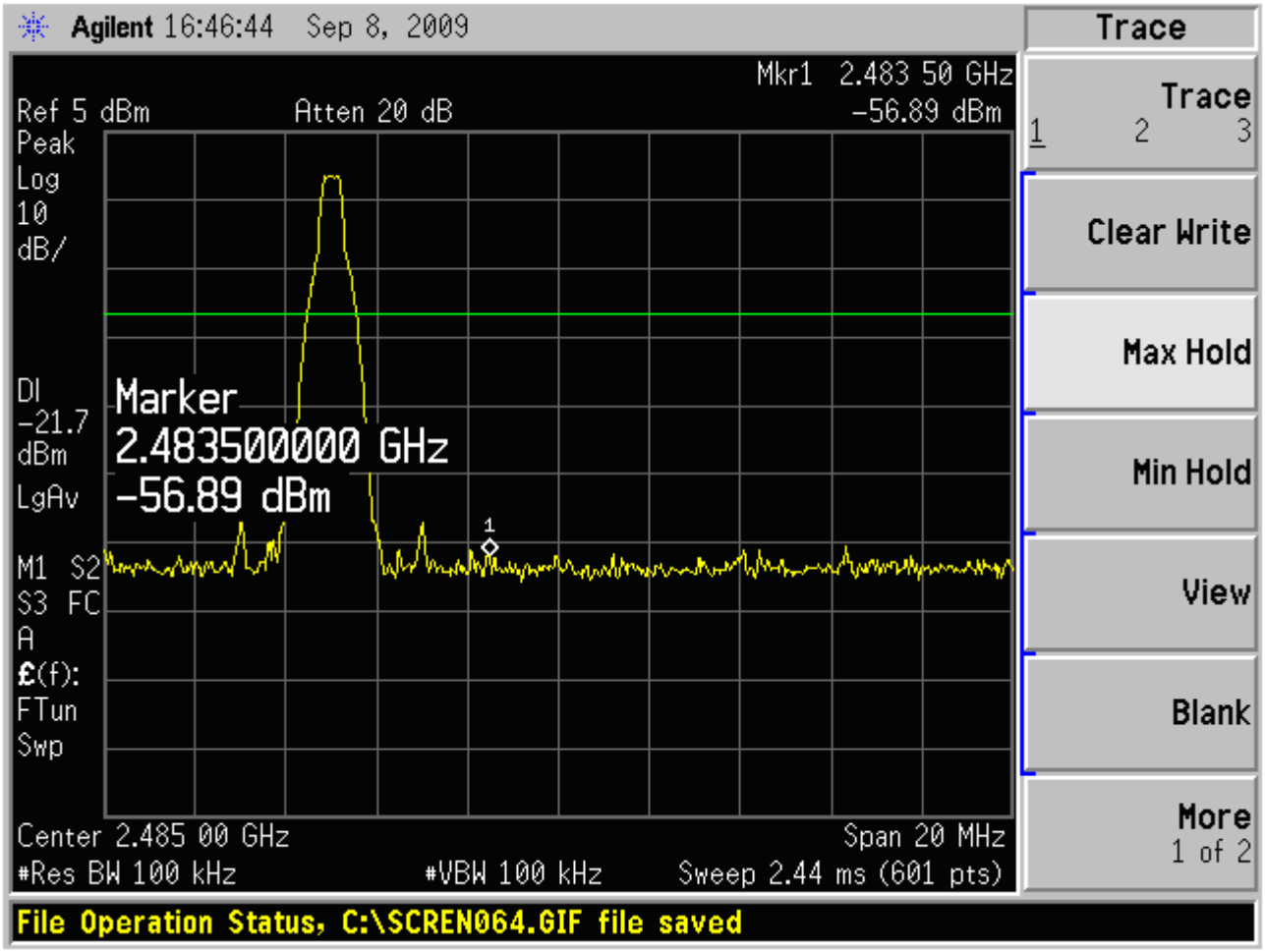
Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

Test Result

Basic Rate DH5

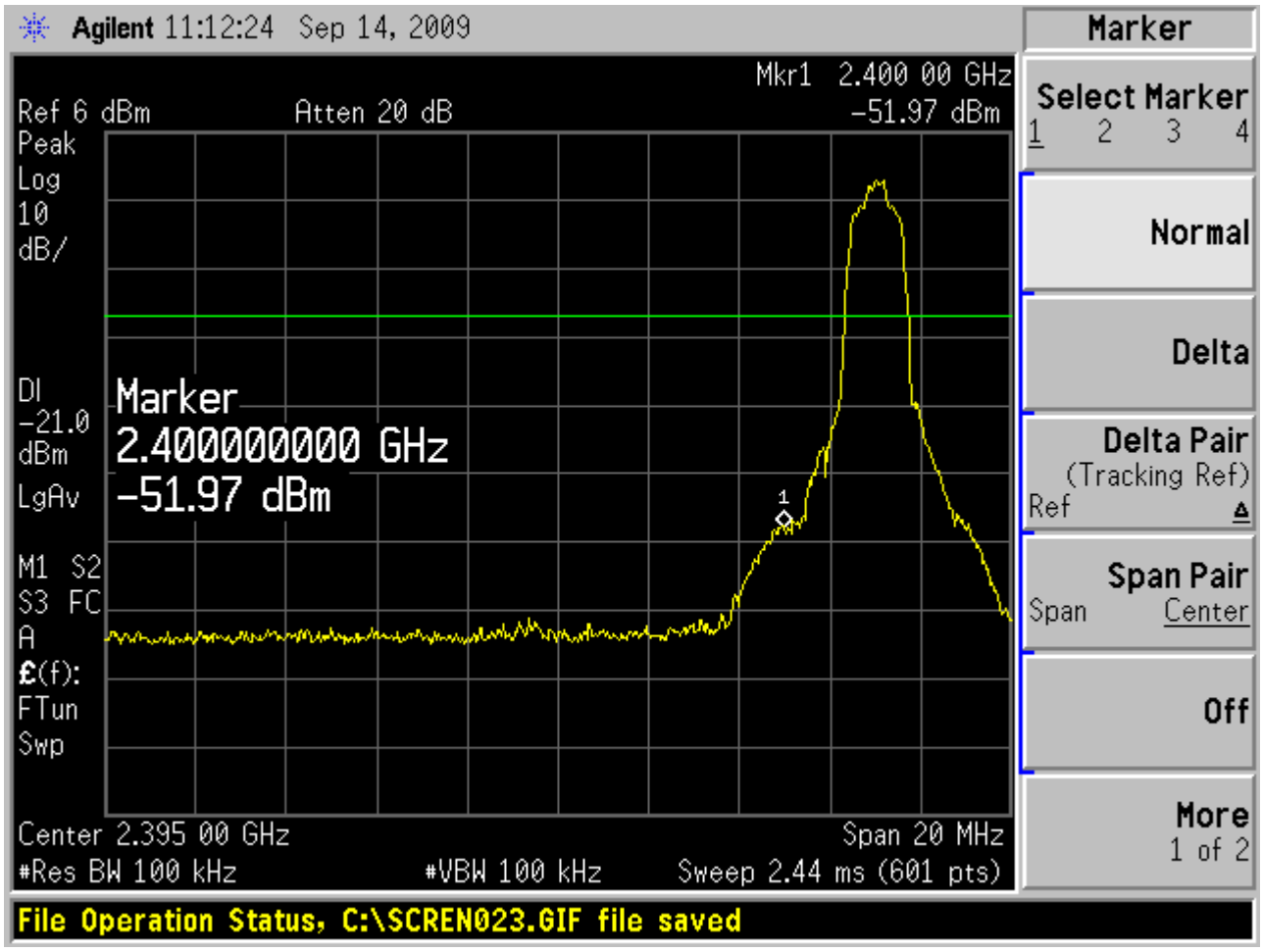


Carrier frequency (MHz): 2402
Channel No.:0

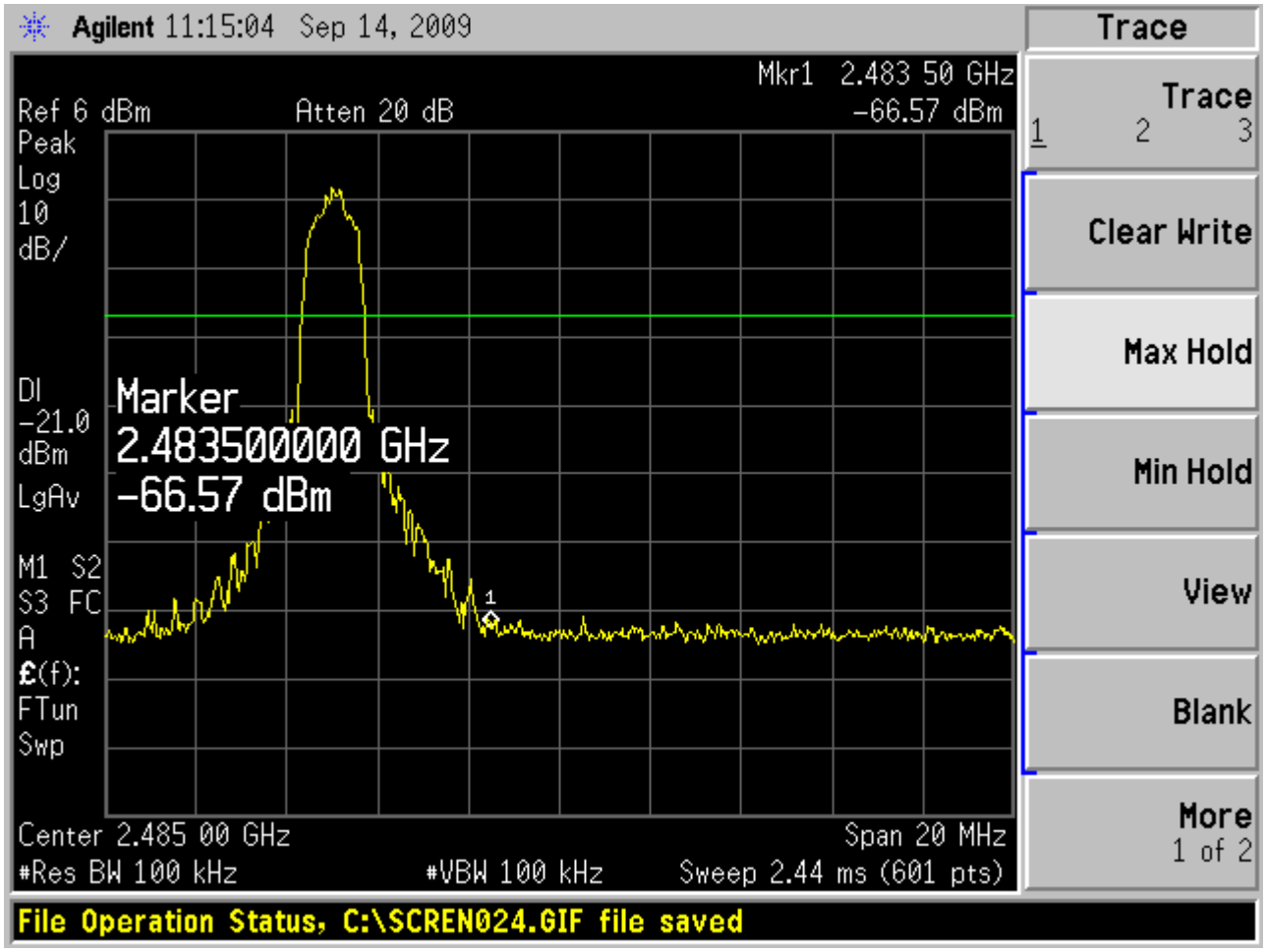


Carrier frequency (MHz): 2480
Channel No.:78

EDR 3DH5



Carrier frequency (MHz): 2402
Channel No.:0



Carrier frequency (MHz): 2480
Channel No.:78

2.7. Number of hopping Frequency

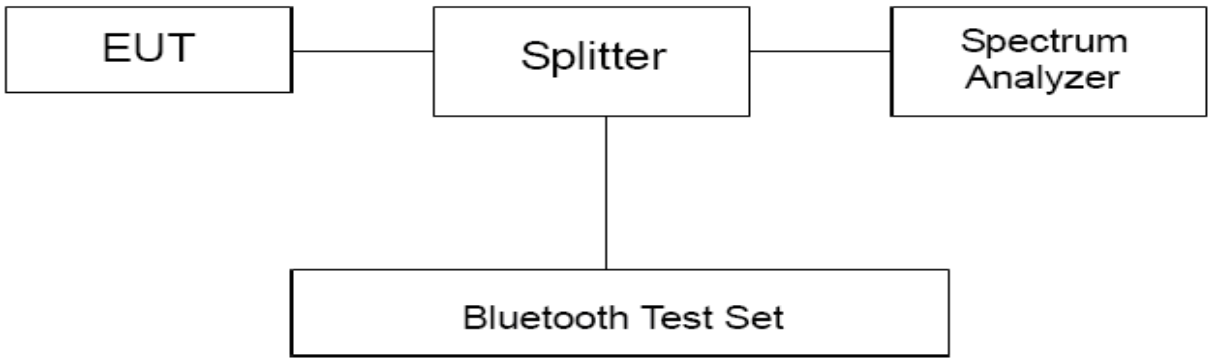
Ambient condition

Temperature	Relative humidity	Pressure
24°C	55%	101.5kPa

Method of Measurement

The Equipment Under Test (EUT) was set up in a shielded room to perform the spurious emissions measurements. The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. Set EUT ON Hopping on mode.

Test setup



Limits

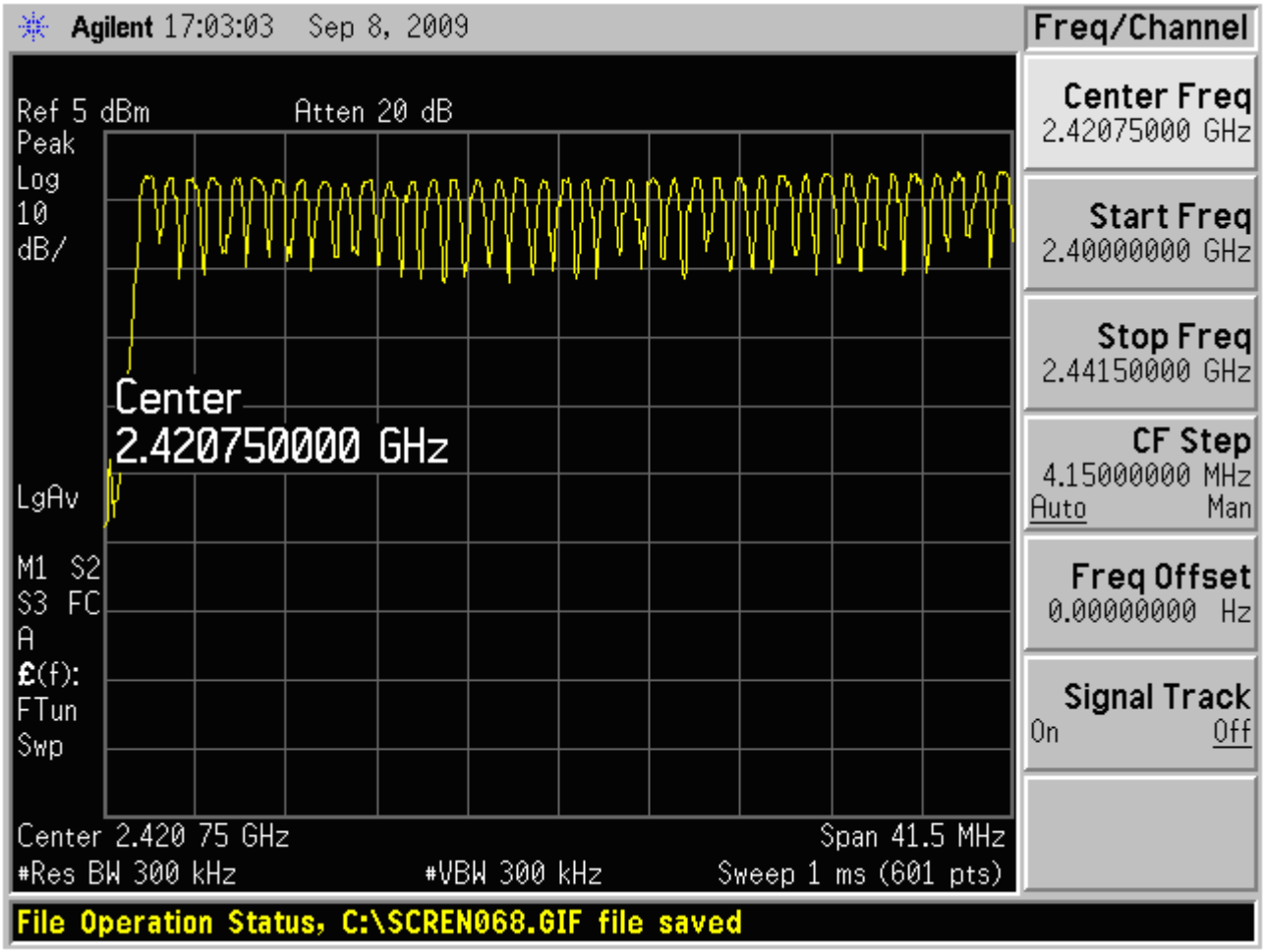
Rule Part 15.247(a) (1) (iii) specifies that" Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels..".

Limits	⩾ 15 channels

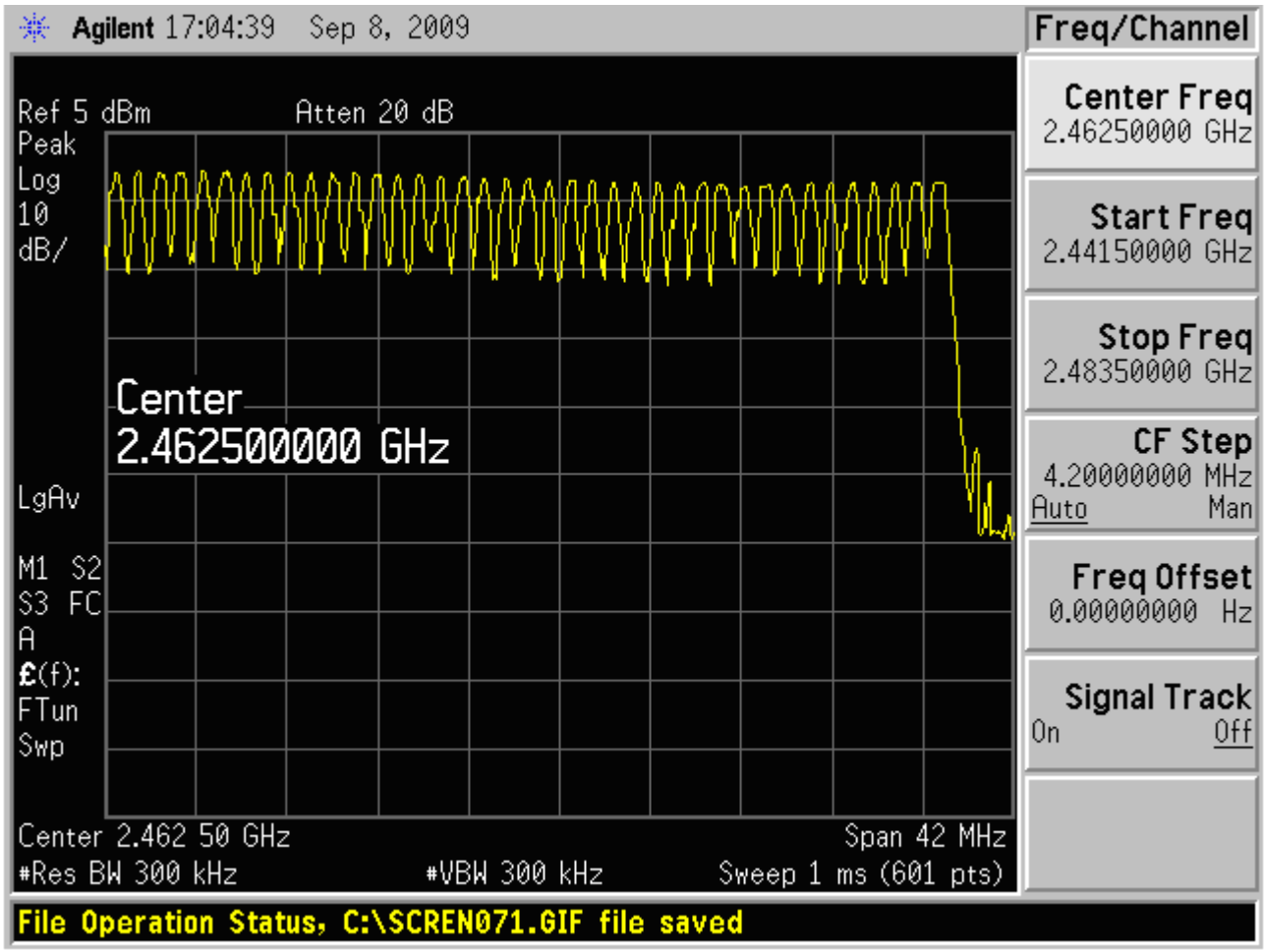
Test Result

Basic Rate DH5

Carrier frequency MHz	Number of hopping channels	conclusion
2441	79	PASS



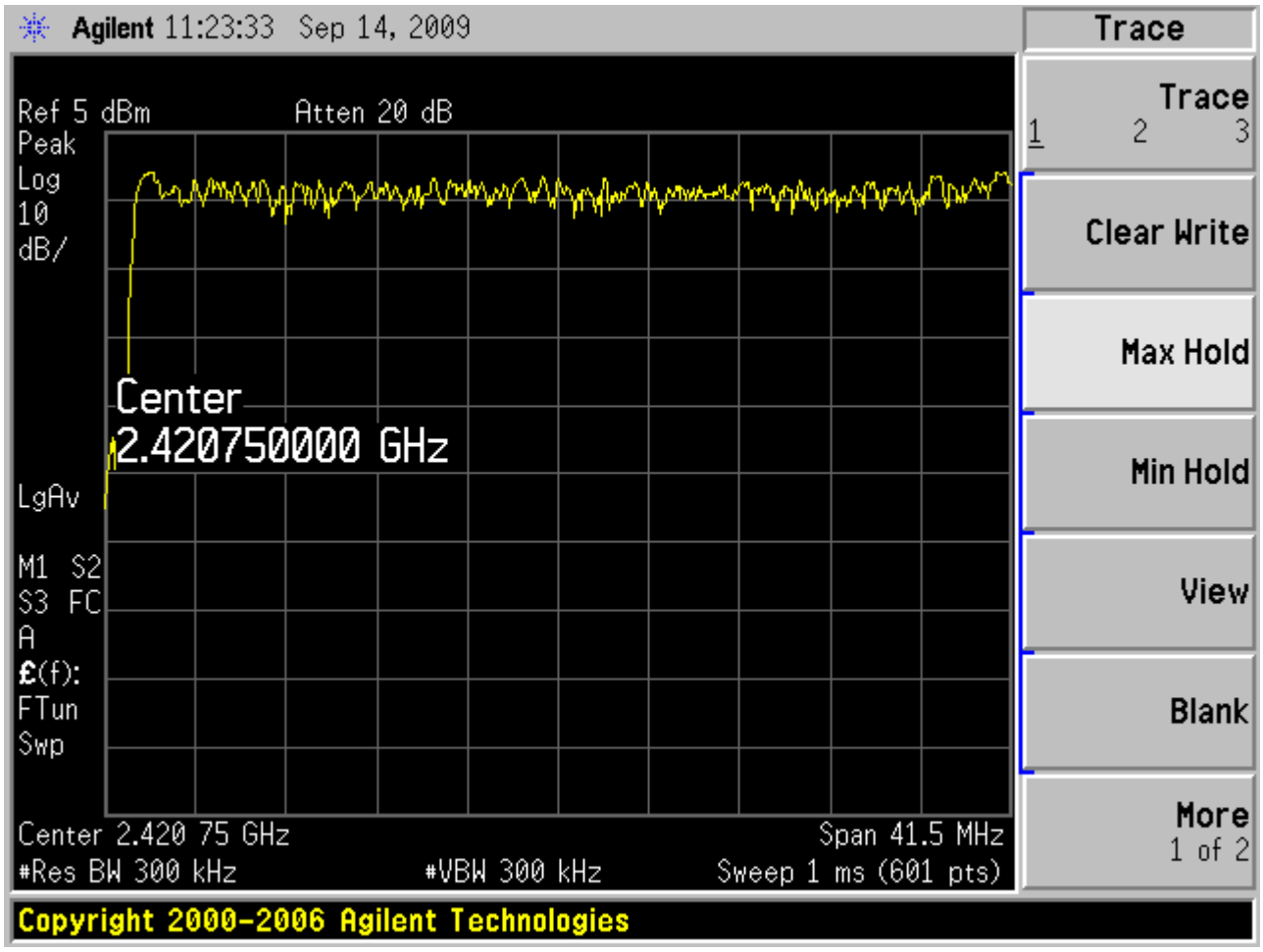
2400 MHz – 2441 MHz



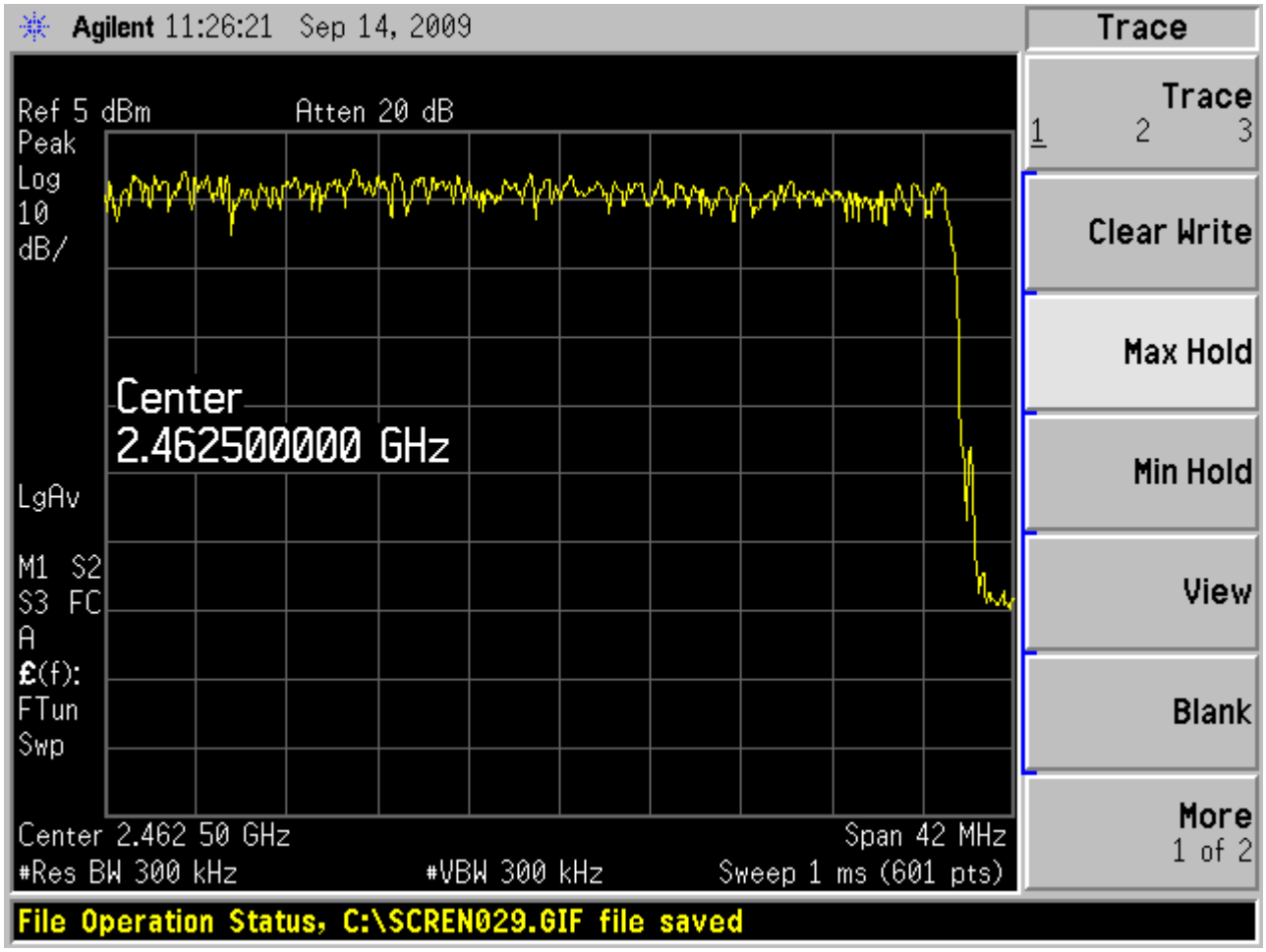
2441 MHz – 2483.5 MHz

EDR 3DH5

Carrier frequency MHz	Number of hopping channels	conclusion
2441	79	PASS



2400 MHz – 2441 MHz



2441 MHz – 2483.5 MHz

2.8. Spurious RF conducted emissions

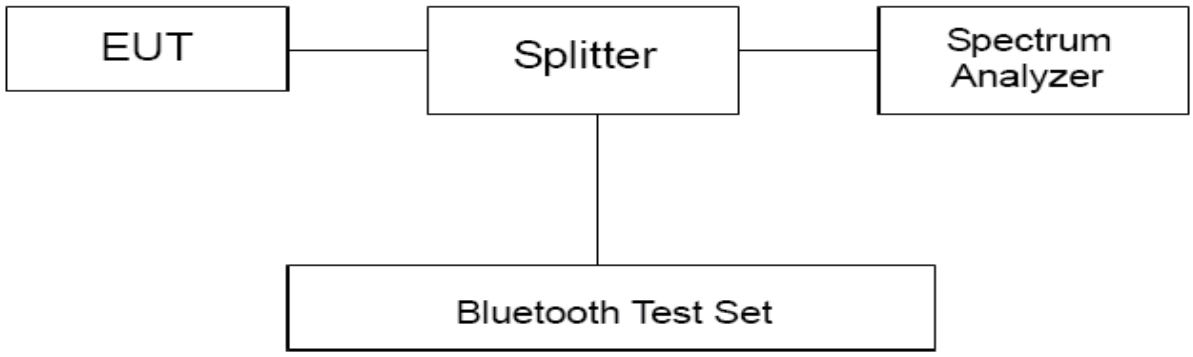
Ambient condition

Temperature	Relative humidity	Pressure
24°C	55%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The spectrum analyzer scans from 30MHz to 26GHz. The peak detector is used and RBW is set to 100 kHz on spectrum analyzer.

Test setup



Limits

Rule Part 15.247(d) pacifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.”

Basic Rate DH5:

Carrier frequency (MHz)	Reference value (dBm)	Limit
2402	-1.71	≤-21.71
2441	-0.91	≤-20.91
2480	-1.21	≤-21.21

EDR 3DH5

Carrier frequency (MHz)	Reference value (dBm)	Limit
2402	-0.98	≤-20.98
2441	-0.34	≤-20.34
2480	-1.0	≤-21.00

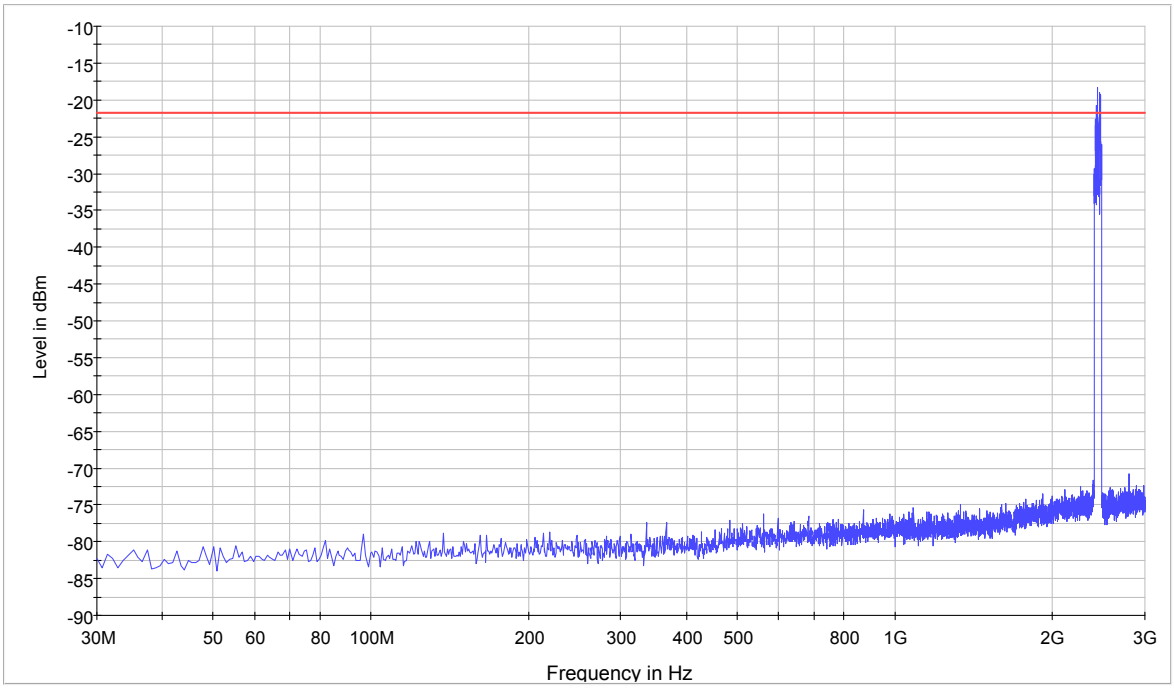
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

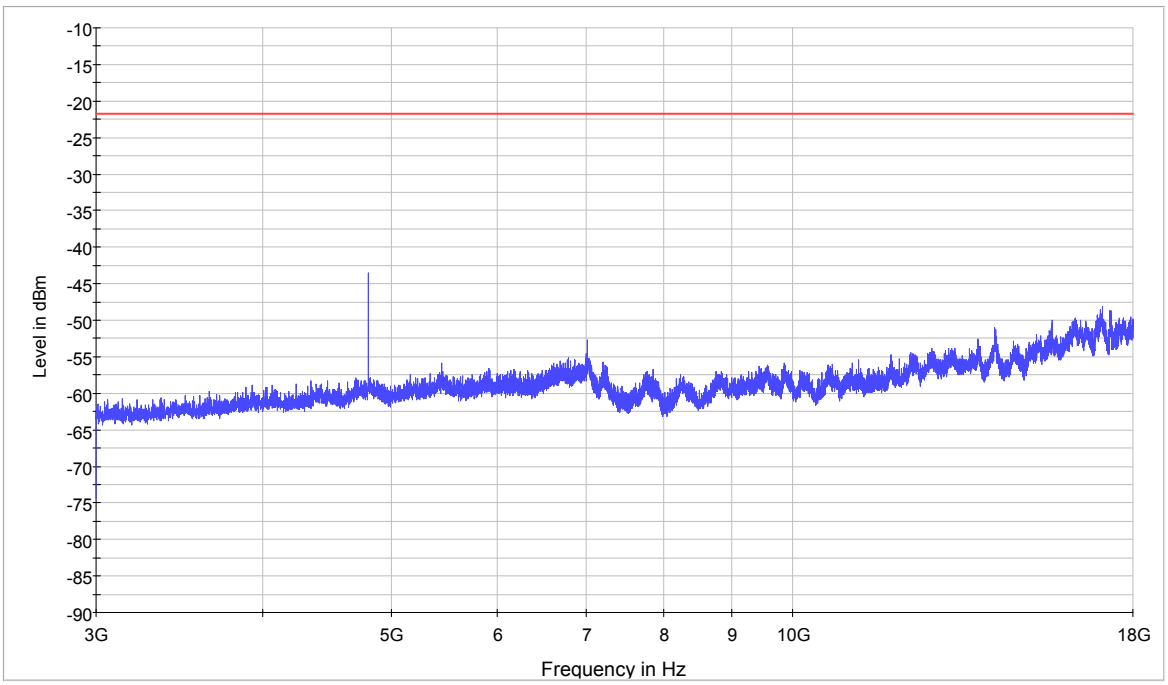
Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

Test Result

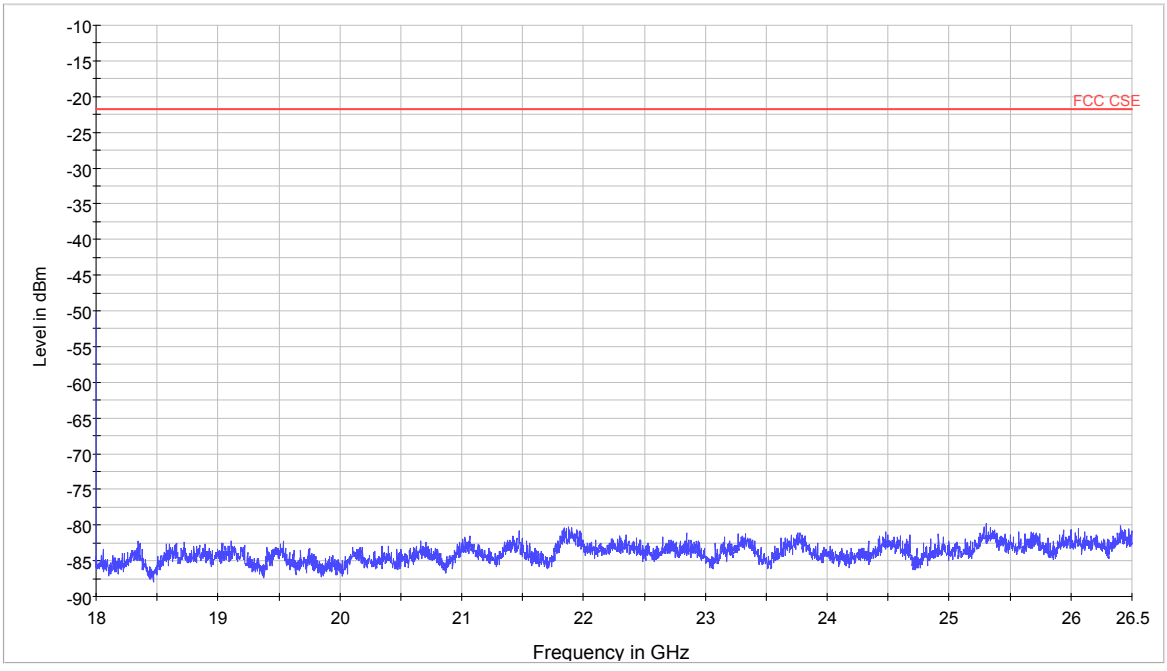
Basic Rate DH5



Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2402
Spurious RF conducted emissions from 30MHz to 3GHz



Spurious RF conducted emissions from 3GHz to 18GHz

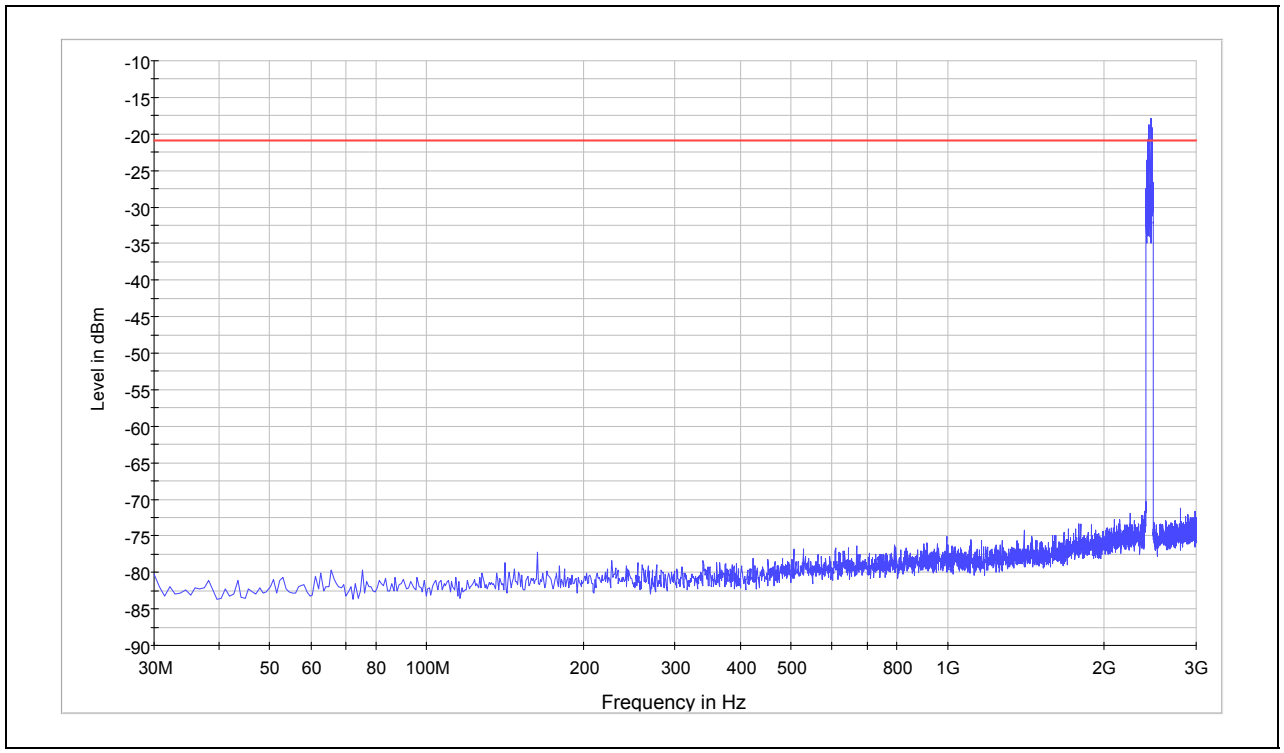


Spurious RF conducted emissions from 18GHz to 26.5GHz

Channel No.:0

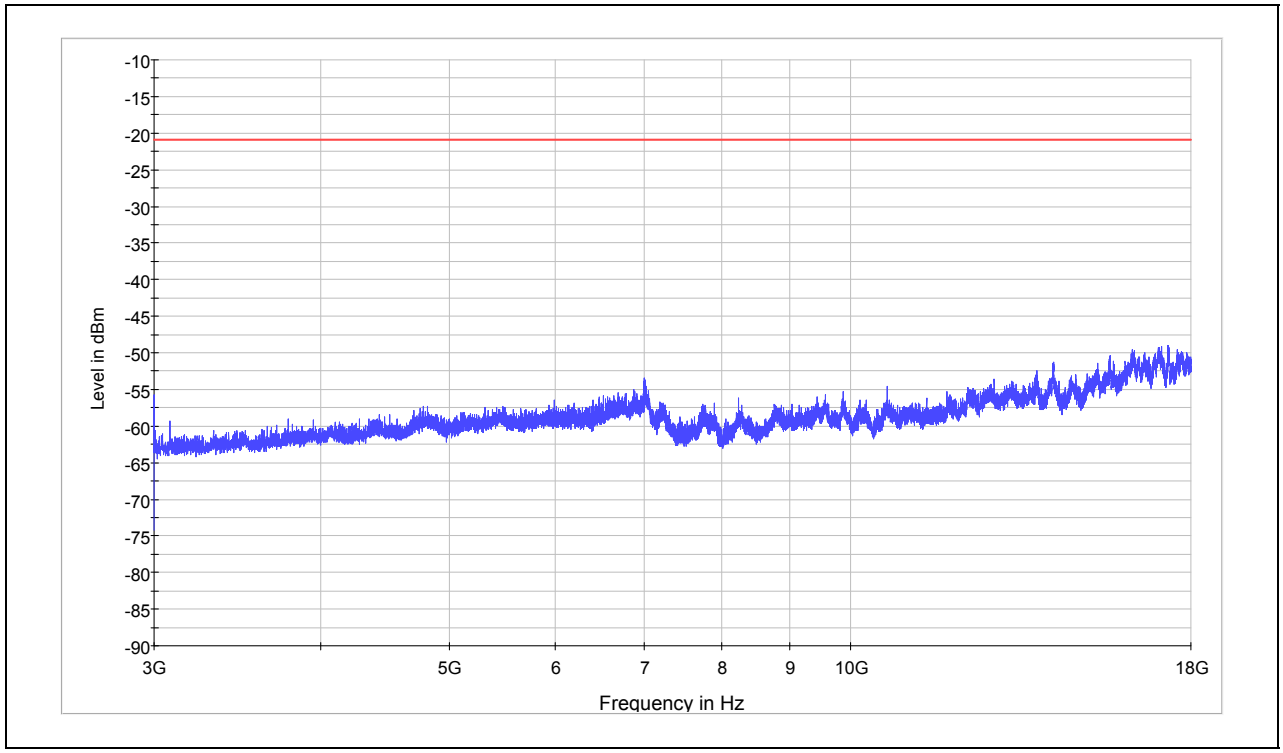
Harmonic	TX ch.0 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4804	-43.76	-21.71
3	7206	Nf	-21.71
4	9608	Nf	-21.71
5	12010	Nf	-21.71
6	14412	Nf	-21.71
7	16814	Nf	-21.71
8	19216	Nf	-21.71
9	21618	Nf	-21.71
10	24020	Nf	-21.71
Nf: noise floor			

Note: The other Spurious RF conducted emissions level is no more than noise floor.

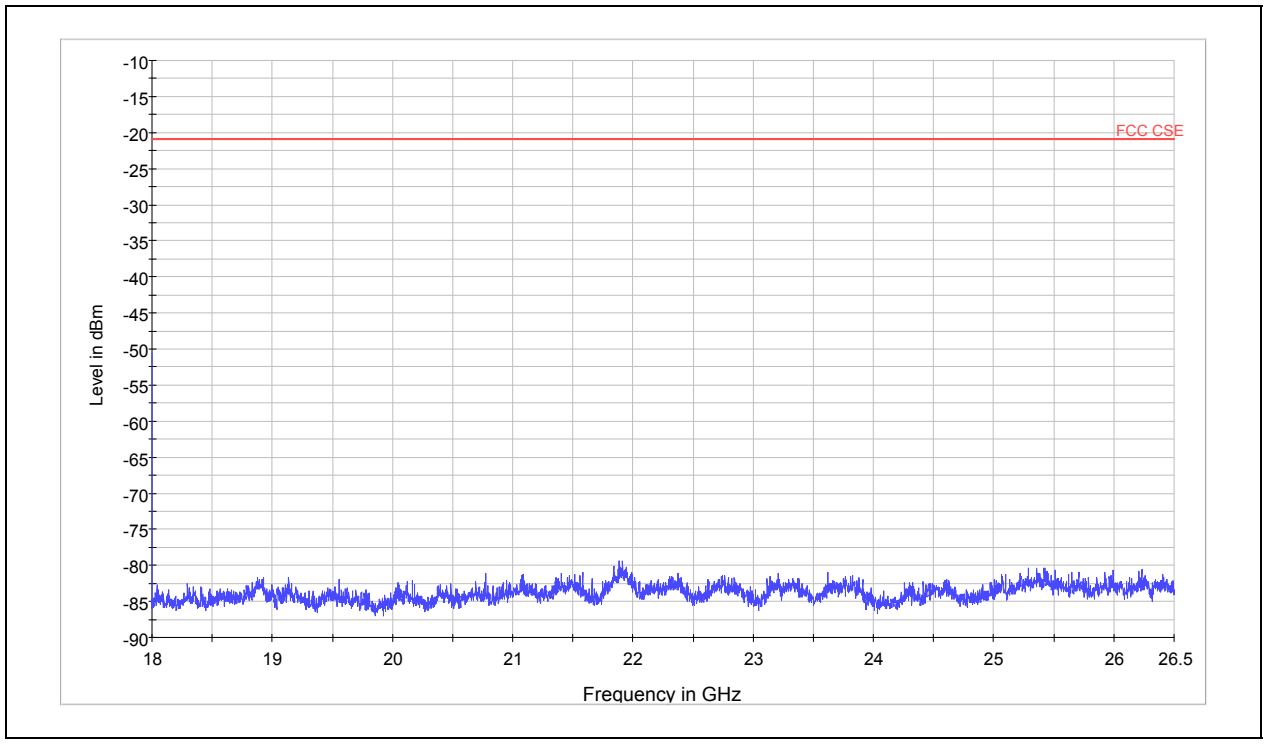


Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2441

Spurious RF conducted emissions from 30MHz to 3GHz



Spurious RF conducted emissions from 3GHz to 18GHz

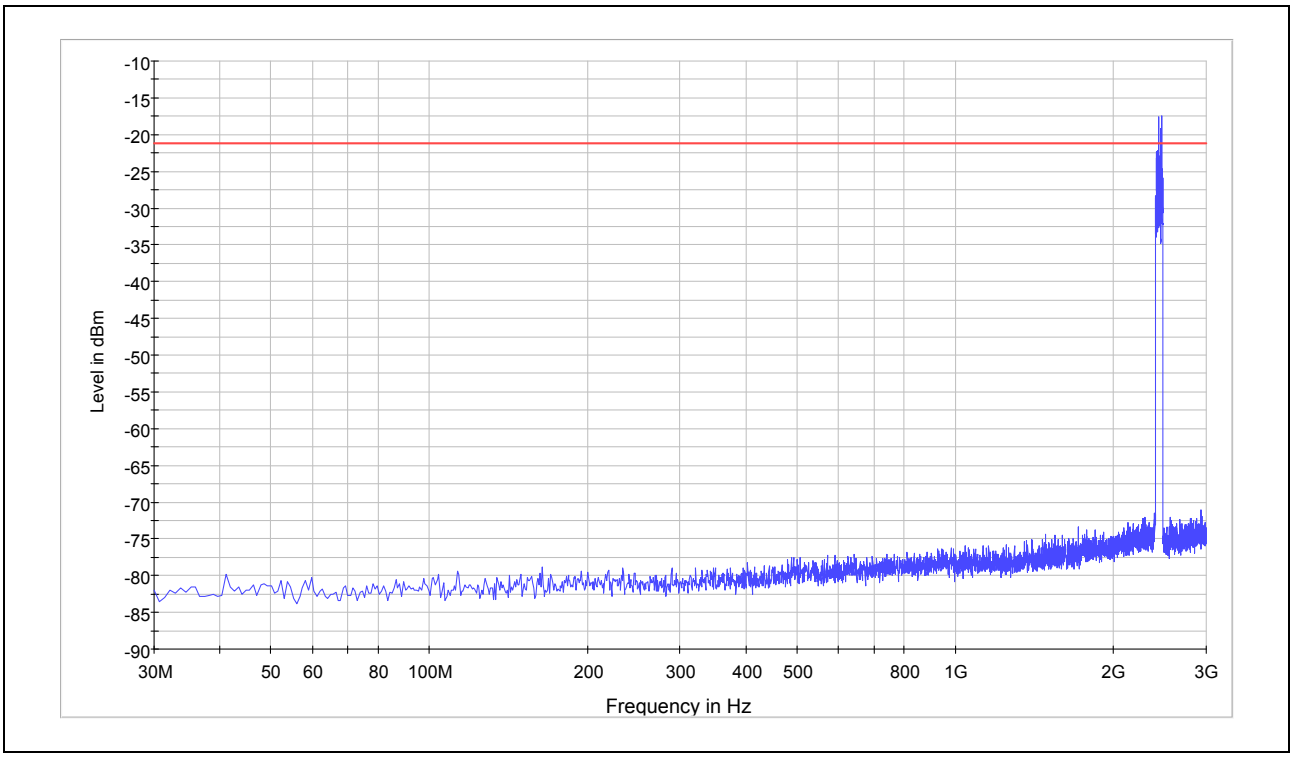


Spurious RF conducted emissions from 18GHz to 26.5GHz

Channel No.:39

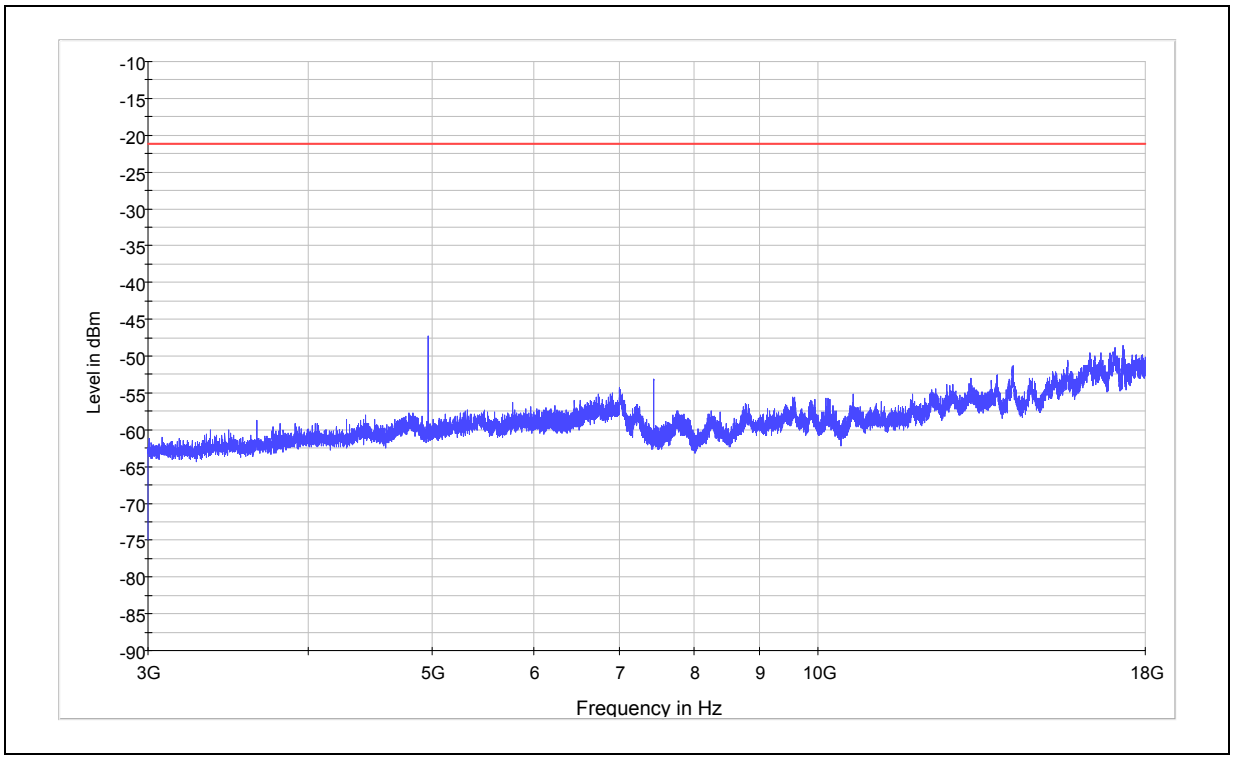
Harmonic	TX ch.39 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4882	Nf	-20.91
3	7323	Nf	-20.91
4	9764	Nf	-20.91
5	12205	Nf	-20.91
6	14646	Nf	-20.91
7	17087	Nf	-20.91
8	19528	Nf	-20.91
9	21969	Nf	-20.91
10	24410	Nf	-20.91
Nf: noise floor			

Note: The other Spurious RF conducted emissions level is no more than noise floor.

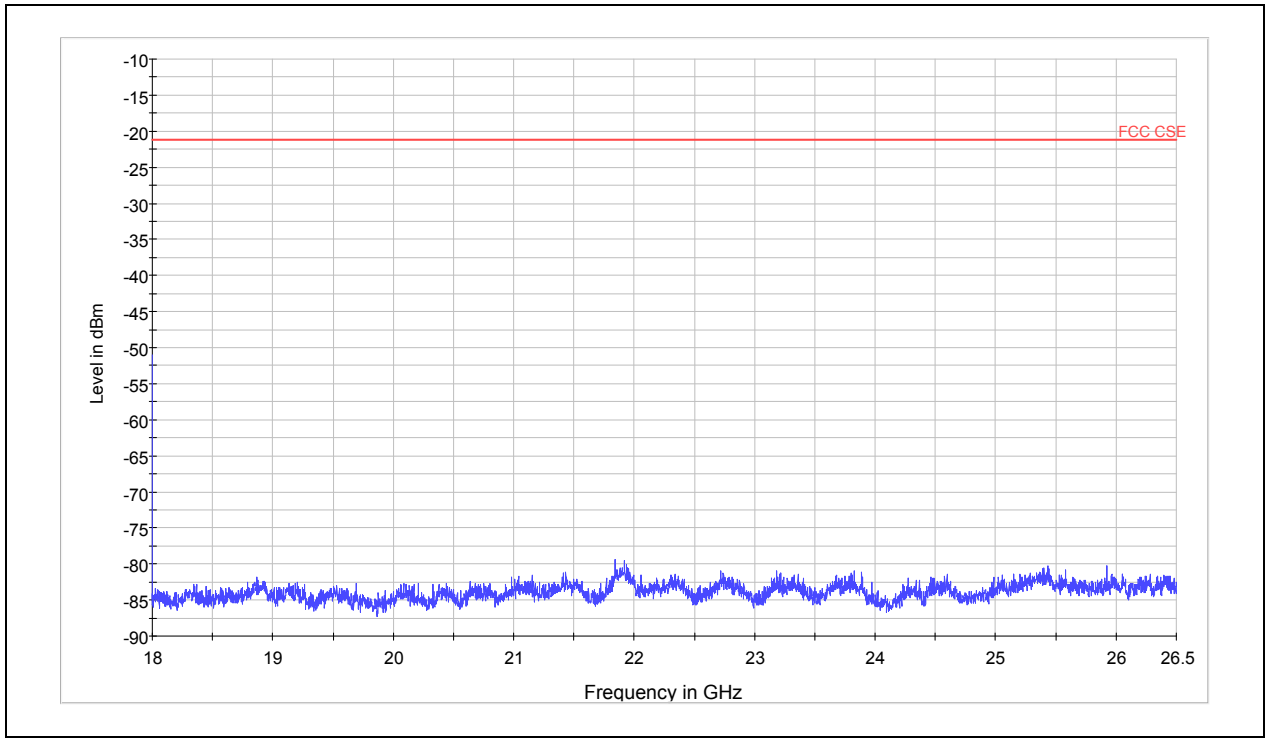


Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2480

Spurious RF conducted emissions from 30MHz to 3GHz



Spurious RF conducted emissions from 3GHz to 18GHz



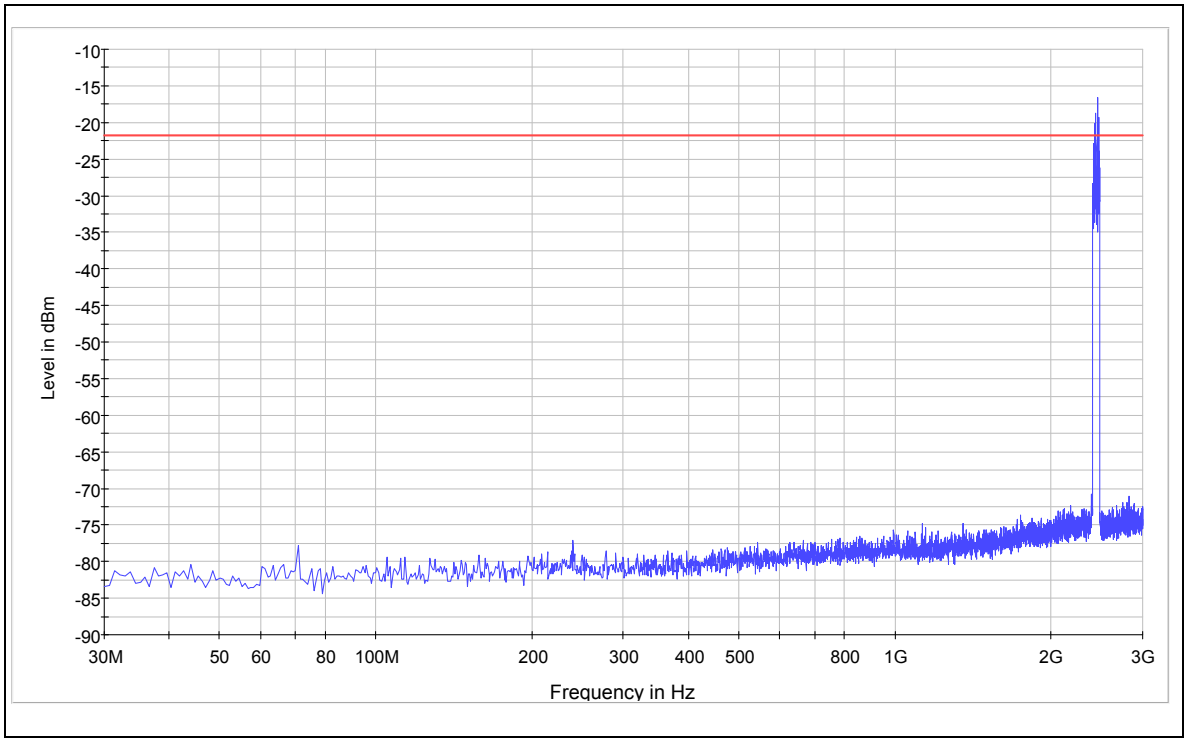
Spurious RF conducted emissions from 18GHz to 26.5GHz

Channel No.:78

Harmonic	TX ch.78 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4960	-47.34	-21.21
3	7440	-53.23	-21.21
4	9920	Nf	-21.21
5	12400	Nf	-21.21
6	14880	Nf	-21.21
7	17360	Nf	-21.21
8	19840	Nf	-21.21
9	22320	Nf	-21.21
10	24800	Nf	-21.21
Nf: noise floor			

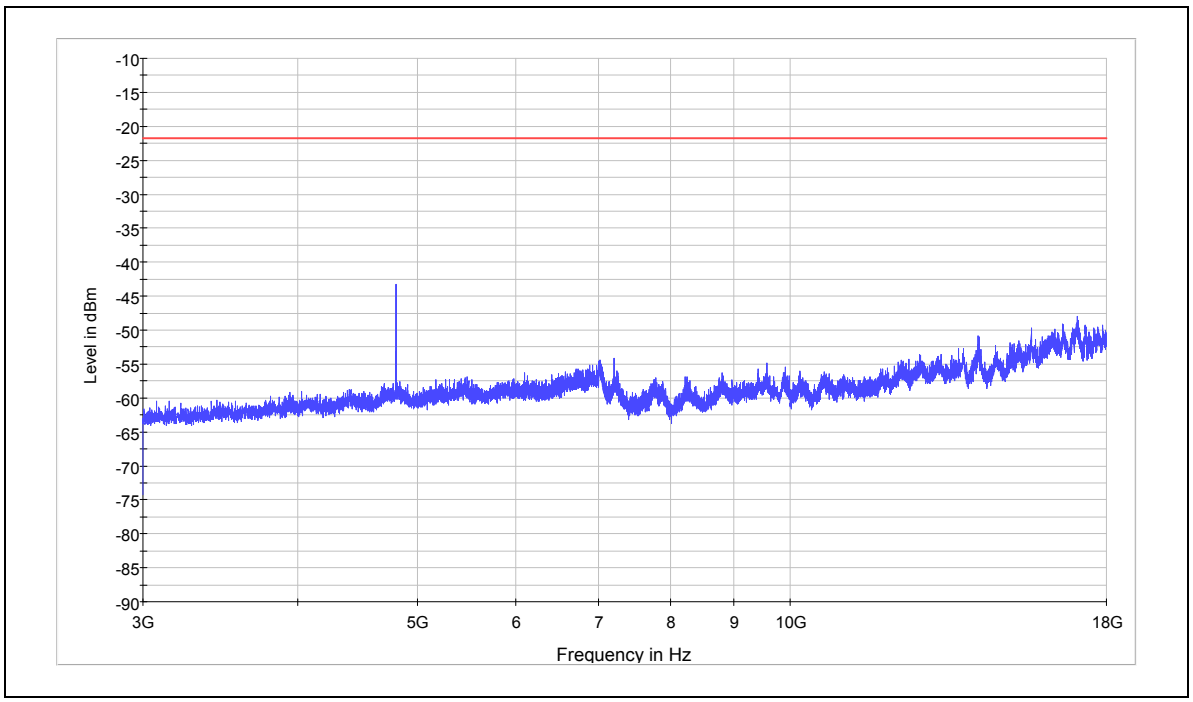
Note: The other Spurious RF conducted emissions level is no more than noise floor.

EDR 3DH5

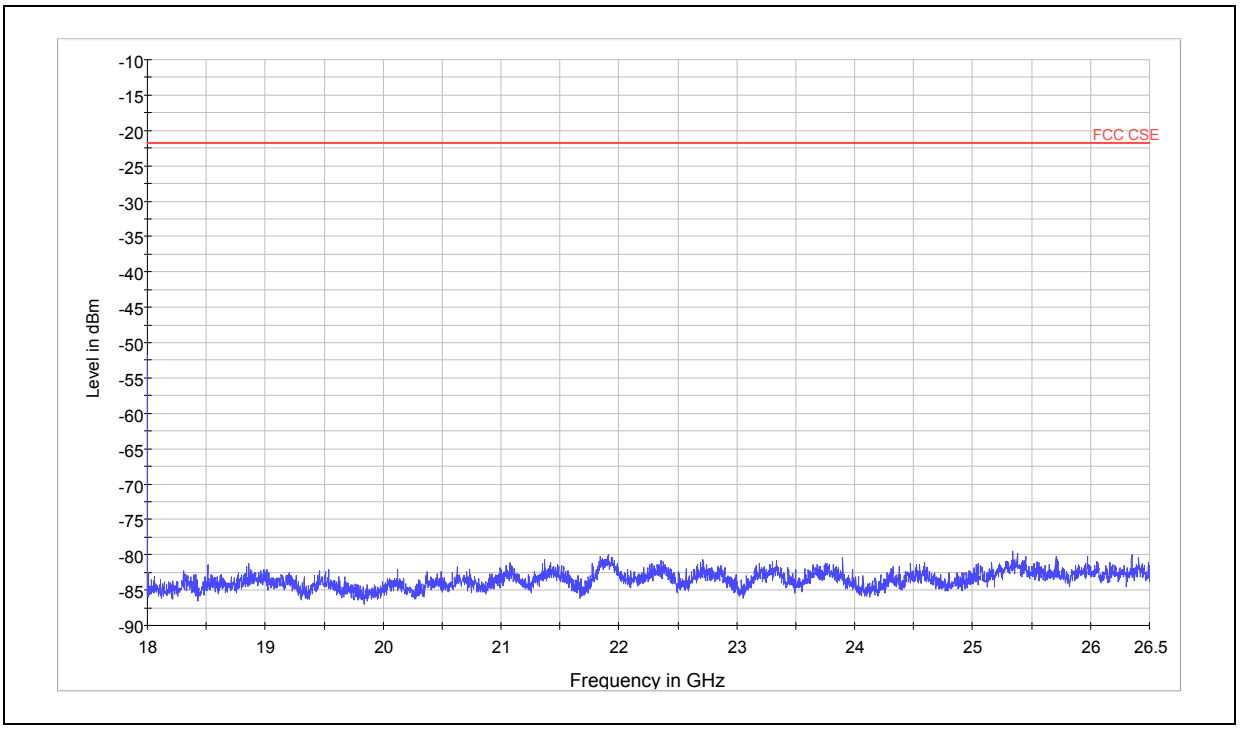


Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2402

Spurious RF conducted emissions from 30MHz to 3GHz



Spurious RF conducted emissions from 3GHz to 18GHz

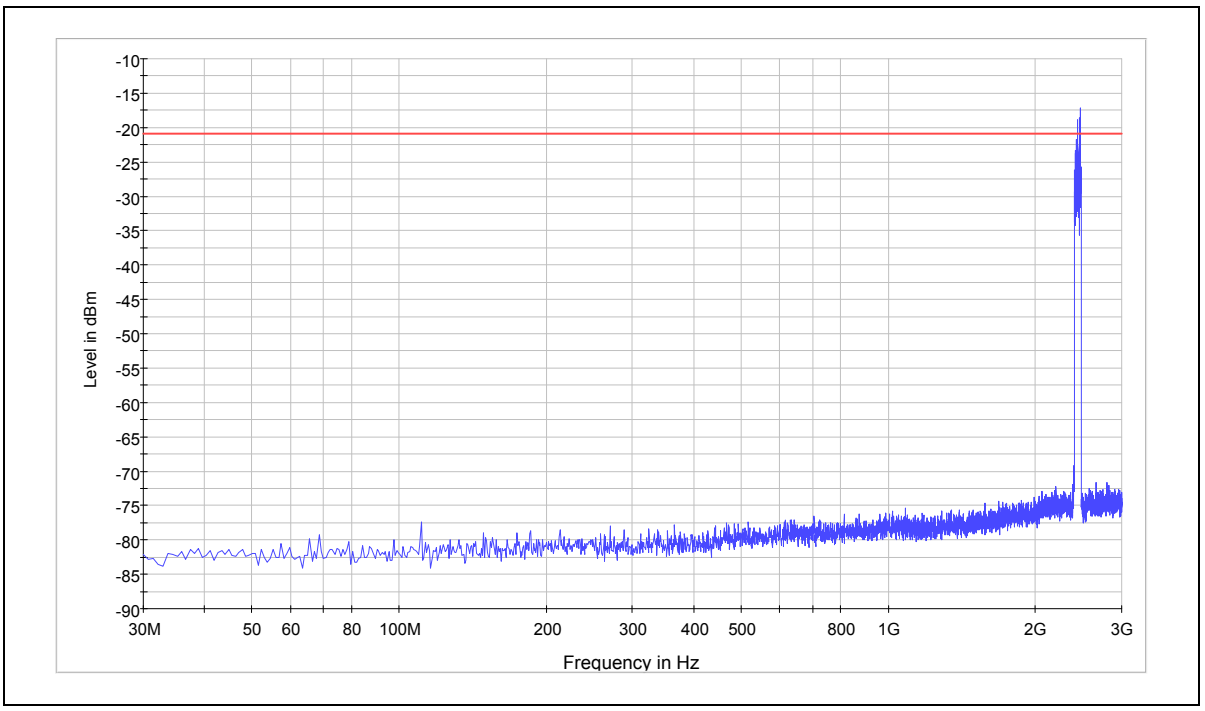


Spurious RF conducted emissions from 18GHz to 26.5GHz

Channel No.:0

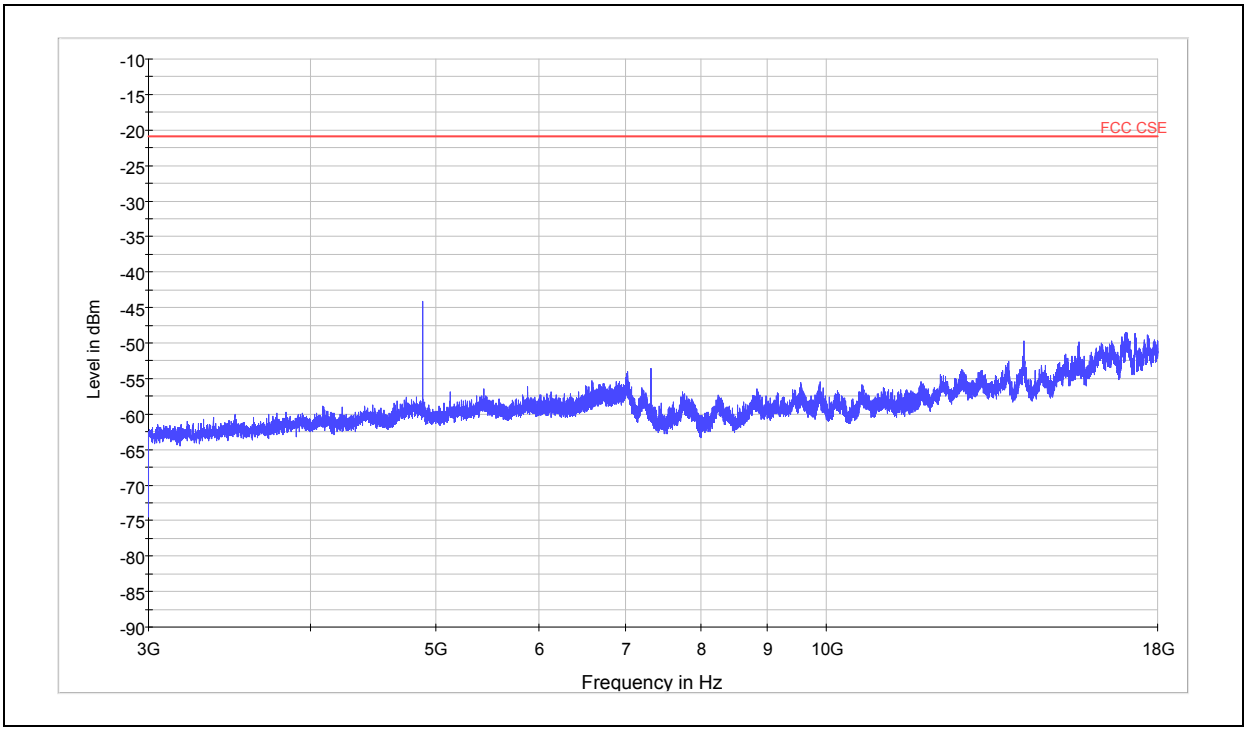
Harmonic	TX ch.0 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4804	-43.238	-20.98
3	7206	Nf	-20.98
4	9608	Nf	-20.98
5	12010	Nf	-20.98
6	14412	Nf	-20.98
7	16814	Nf	-20.98
8	19216	Nf	-20.98
9	21618	Nf	-20.98
10	24020	Nf	-20.98
Nf: noise floor			

Note: The other Spurious RF conducted emissions level is no more than noise floor.

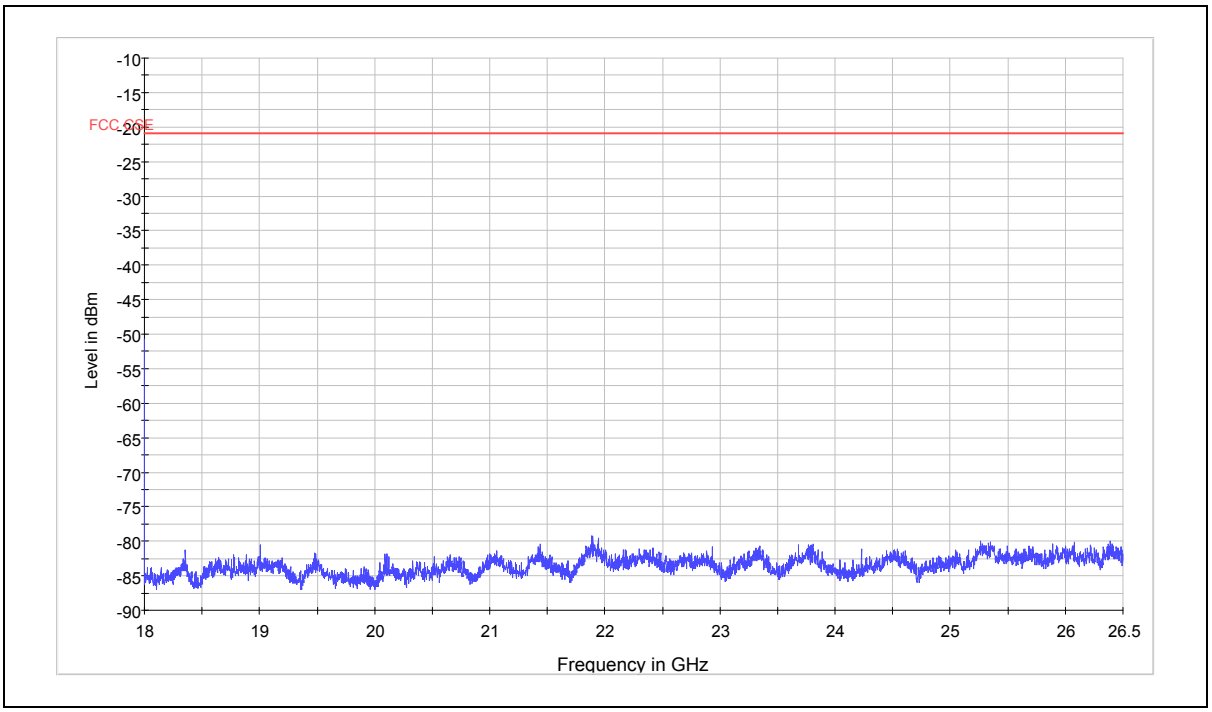


Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2441

Spurious RF conducted emissions from 30MHz to 3GHz



Spurious RF conducted emissions from 3GHz to 18GHz

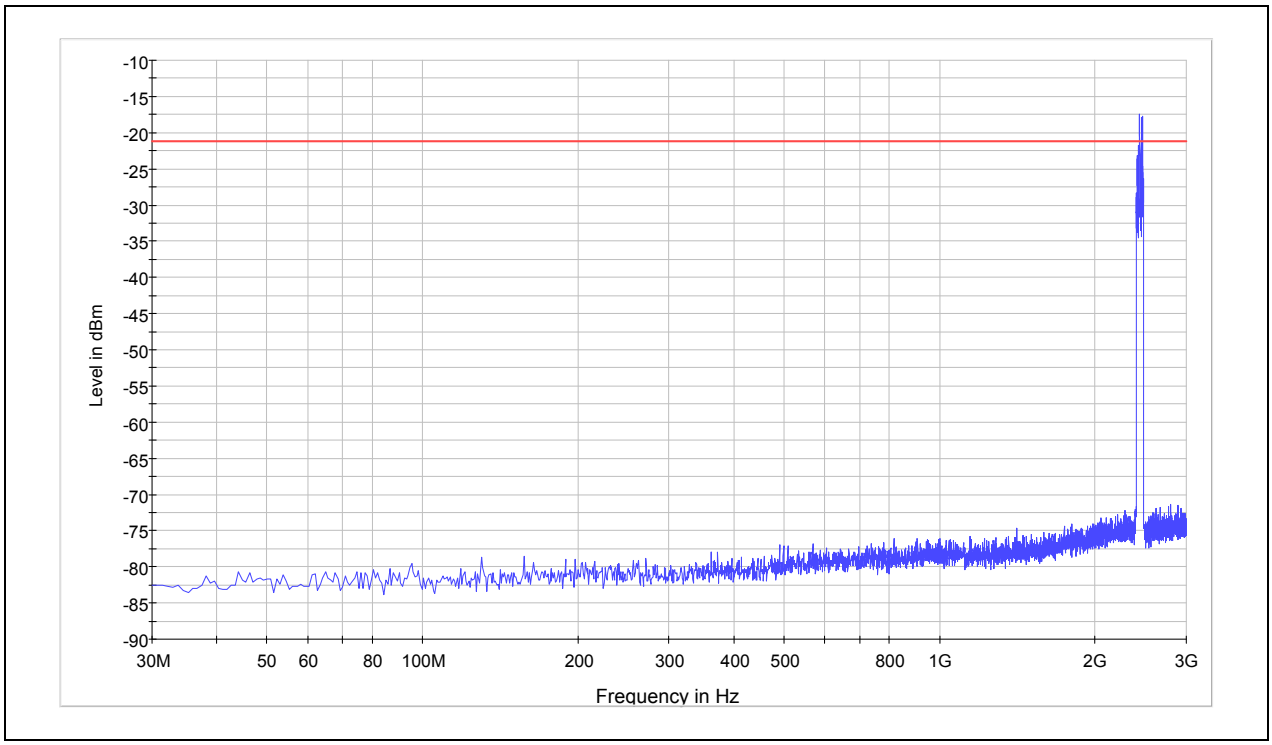


Spurious RF conducted emissions from 18GHz to 26.5GHz

Channel No.:39

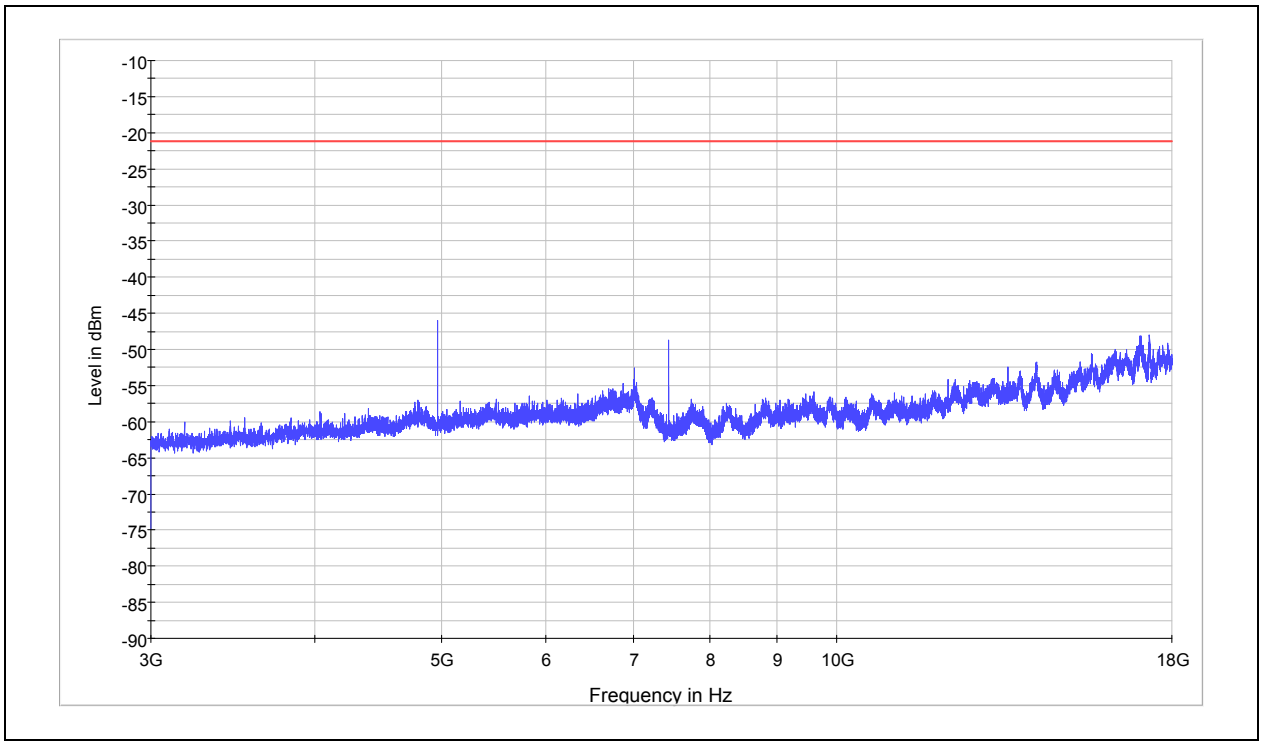
Harmonic	TX ch.39 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4882	-44.084	-20.34
3	7323	-53.622	-20.34
4	9764	Nf	-20.34
5	12205	Nf	-20.34
6	14646	Nf	-20.34
7	17087	Nf	-20.34
8	19528	Nf	-20.34
9	21969	Nf	-20.34
10	24410	Nf	-20.34
Nf: noise floor			

Note: The other Spurious RF conducted emissions level is no more than noise floor.

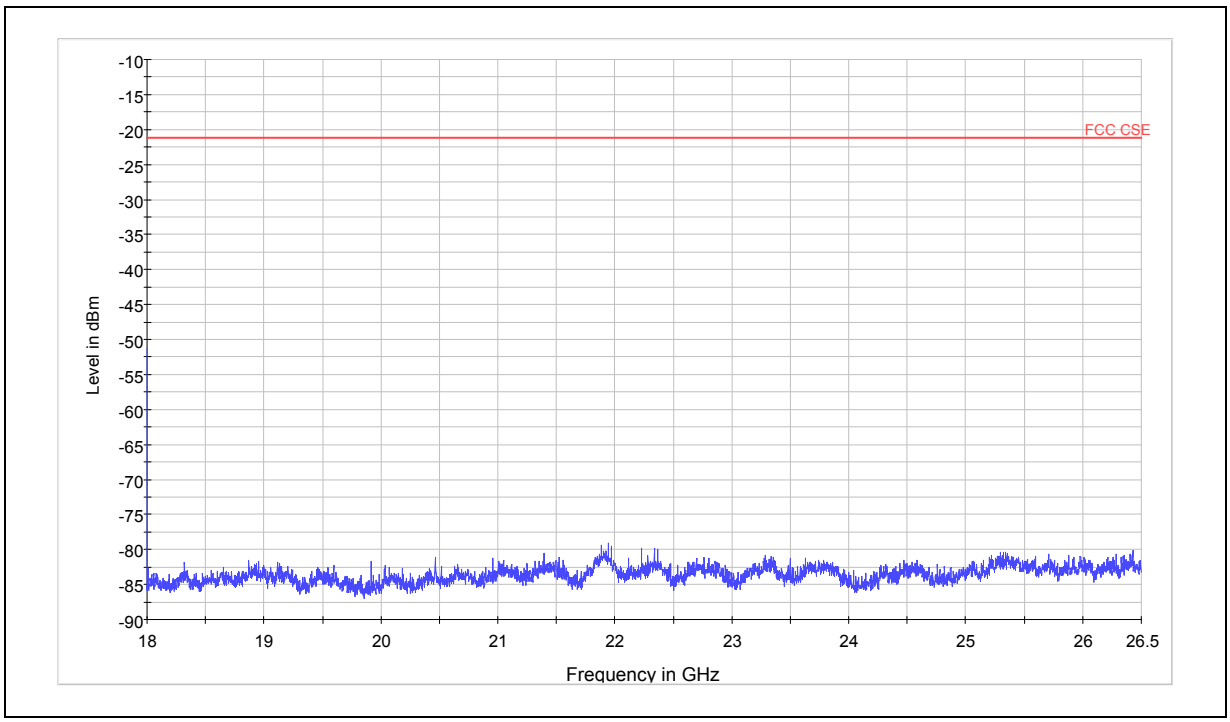


Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2480

Spurious RF conducted emissions from 30MHz to 3GHz



Spurious RF conducted emissions from 3GHz to 18GHz



Spurious RF conducted emissions from 18GHz to 26.5GHz

Channel No.:78

Harmonic	TX ch.78 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	4960	-45.962	-21.00
3	7440	-48.658	-21.00
4	9920	Nf	-21.00
5	12400	Nf	-21.00
6	14880	Nf	-21.00
7	17360	Nf	-21.00
8	19840	Nf	-21.00
9	22320	Nf	-21.00
10	24800	Nf	-21.00
Nf: noise floor			

Note: The other Spurious RF conducted emissions level is no more than noise floor.

2.9. Radiates Emission

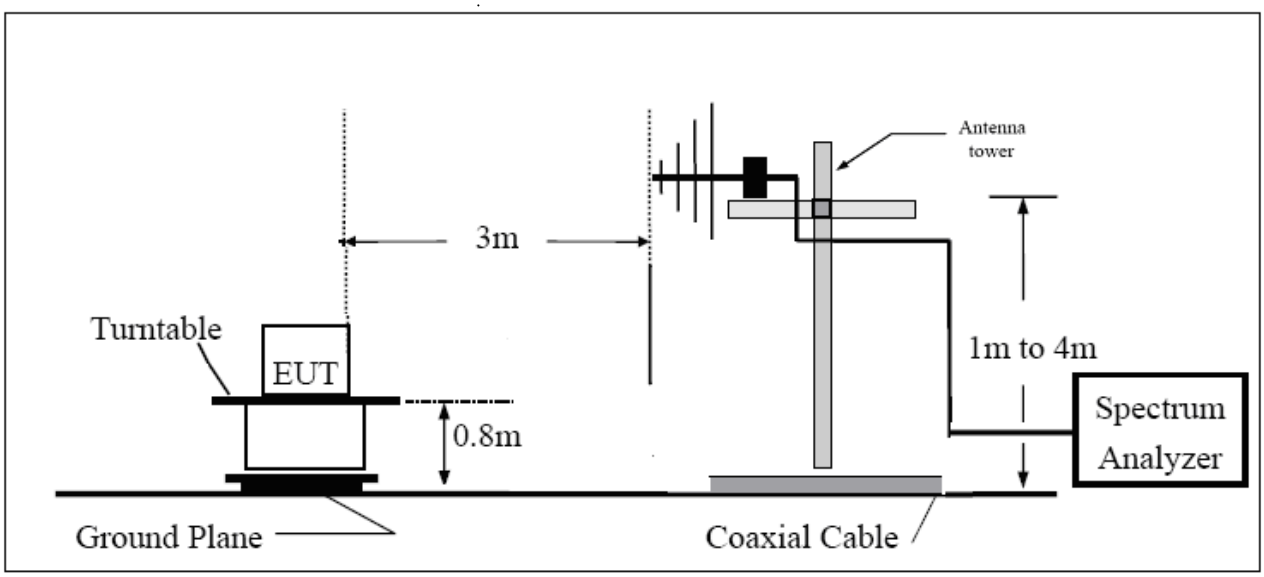
Ambient condition

Temperature	Relative humidity	Pressure
24°C	50%	102.5kPa

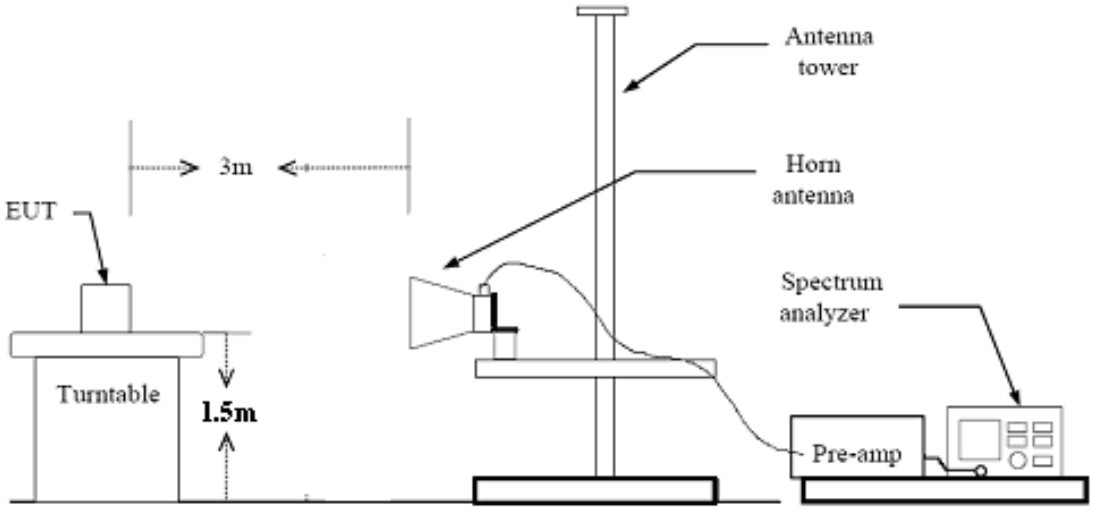
Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.4-2003.The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration. Sweep the whole frequency band through the range from 30MHz to 26GHz During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Below 1GHz



Above 1GHz



Limits

Rule Part 15.247(d) specifies that “In addition, radiated 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) (see § 15.205(c)).”

Limit in restricted band

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

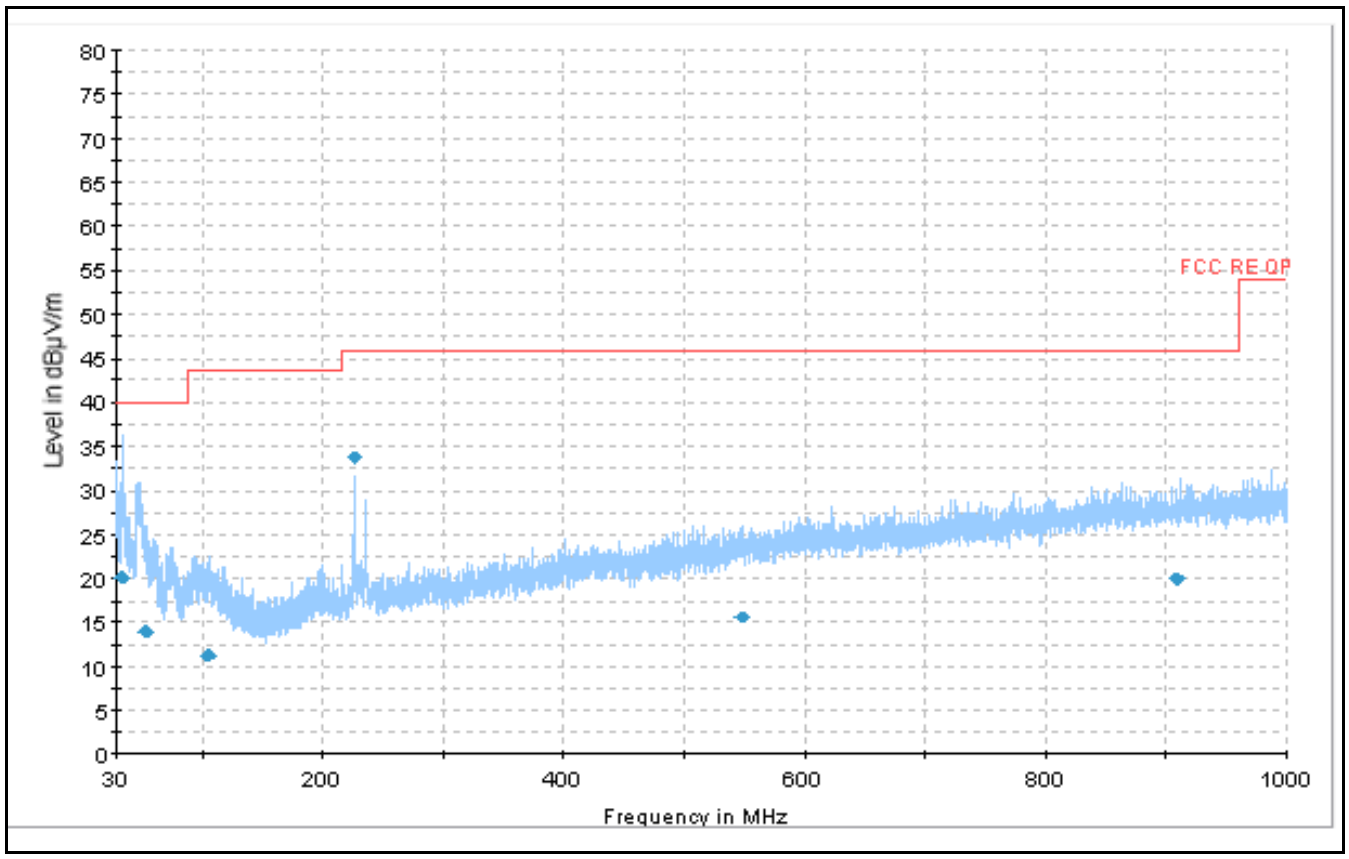
§15.35(b)
..., there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit....

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96. U=3.92 dB.

Test result

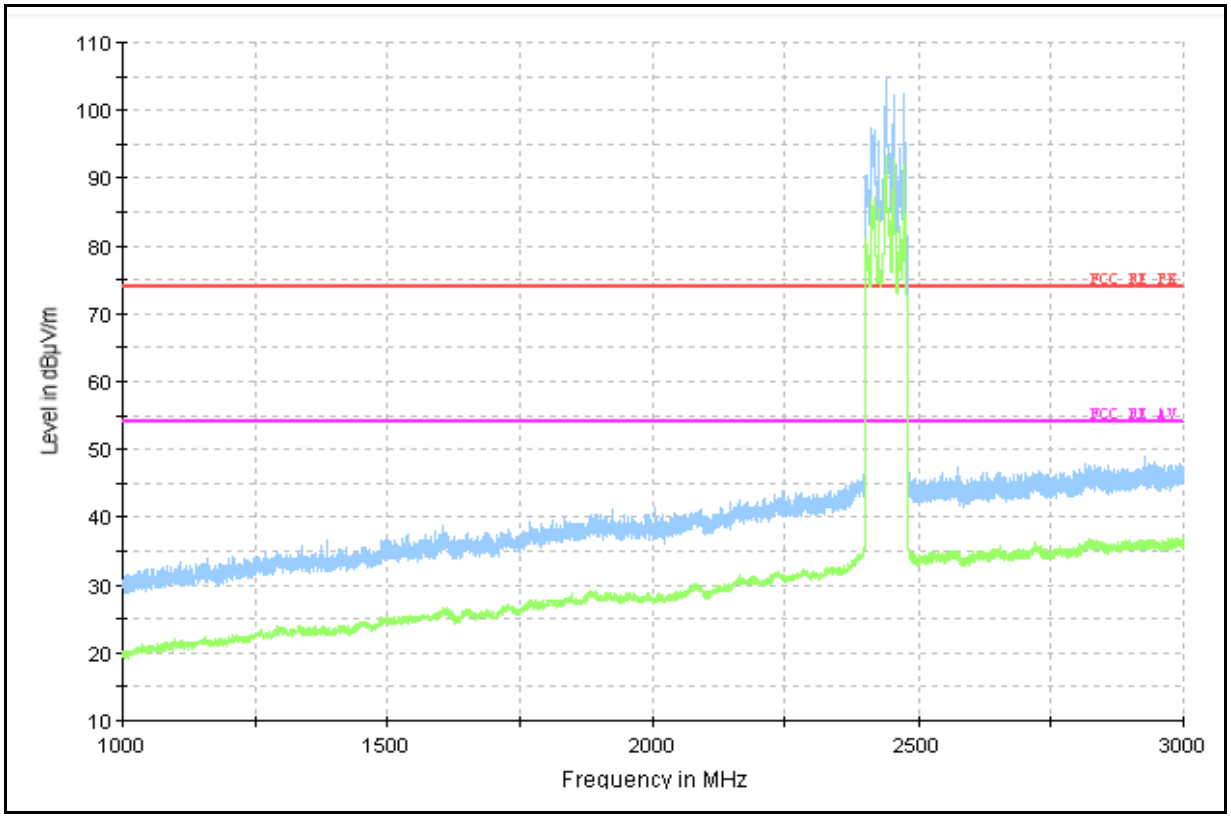
Basic Rate DH5



Radiates Emission from 30MHz to 1GHz

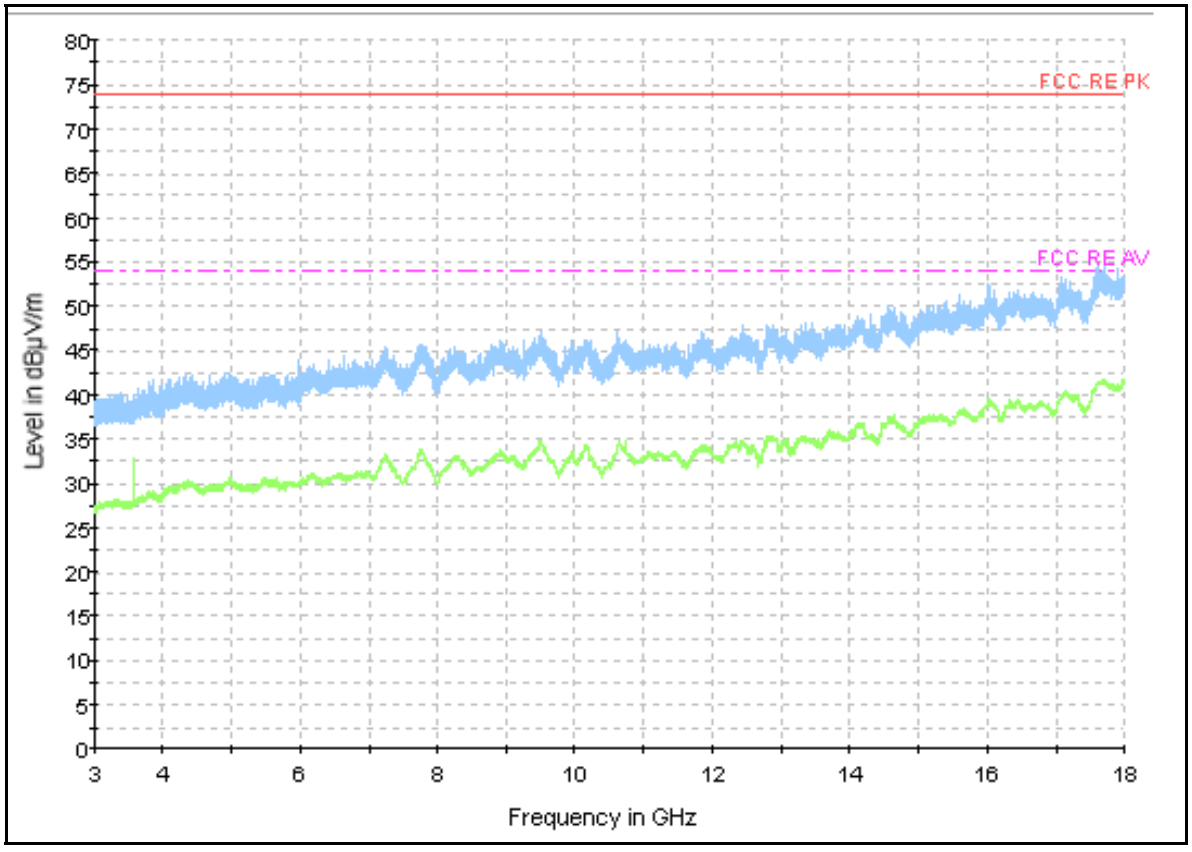
Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
33.852000	20.2	196.0	V	45.0	19.8	40.0
53.406375	13.9	125.0	V	136.0	26.1	40.0
105.767750	11.2	225.0	V	172.0	32.3	43.5
226.695250	33.7	125.0	H	45.0	12.3	46.0
548.357875	15.6	175.0	H	0.0	30.4	46.0
908.752250	20.0	175.0	H	120.0	26.0	46.0

Note: Emissions above 1GHz are all more than 20dBm lower than limit

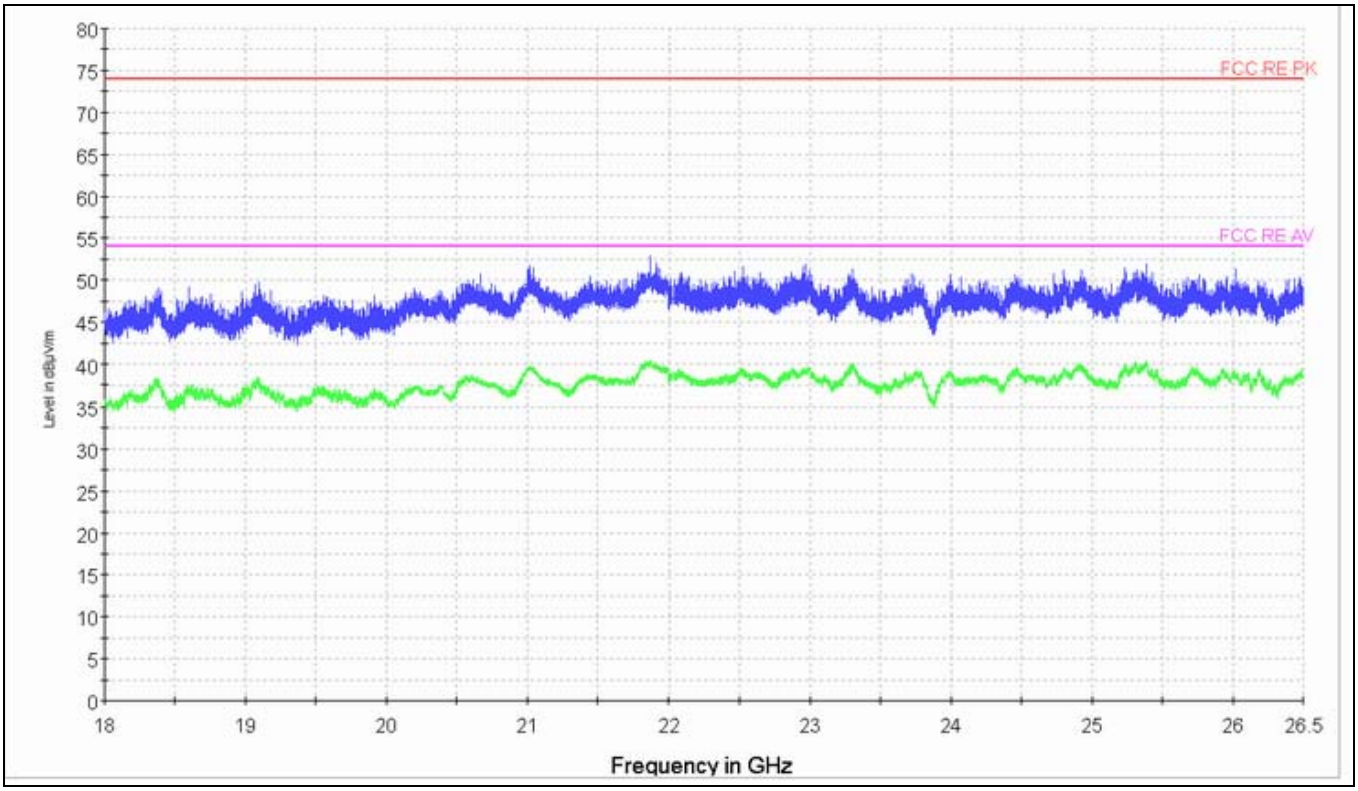


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

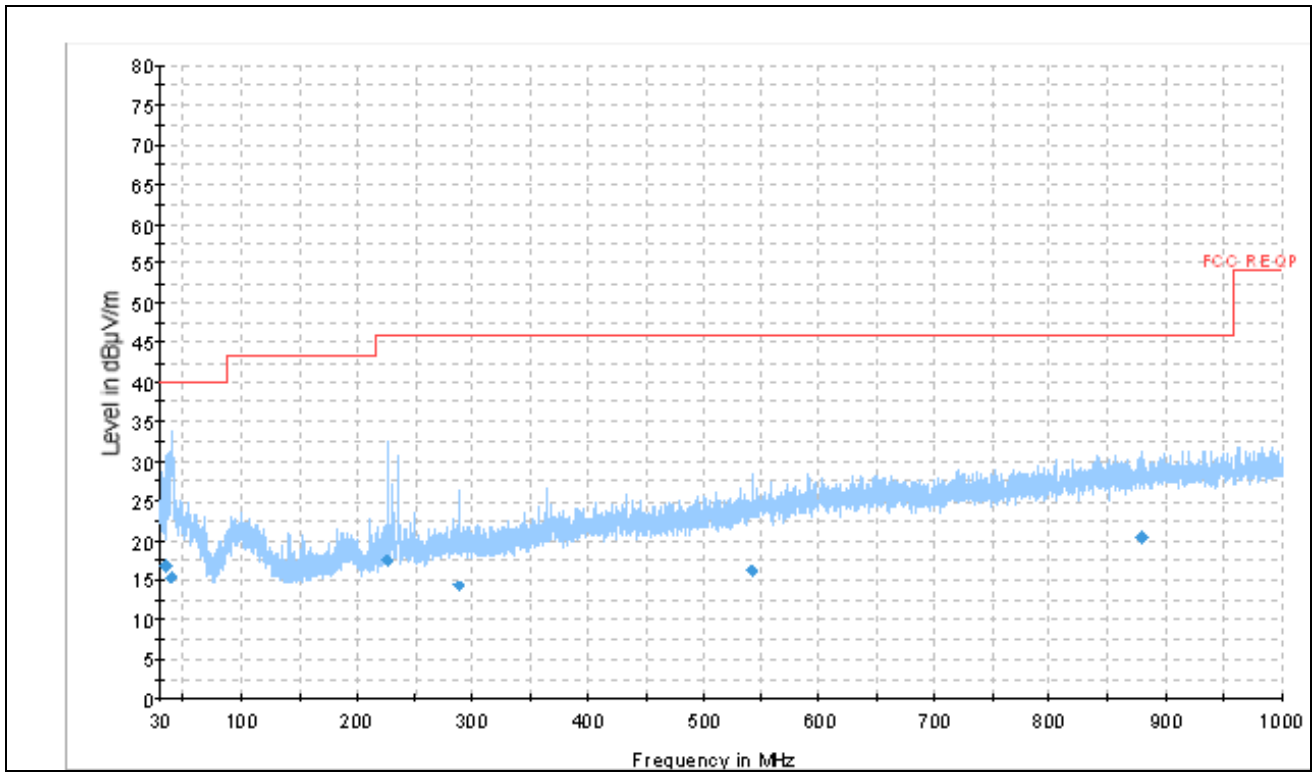


Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

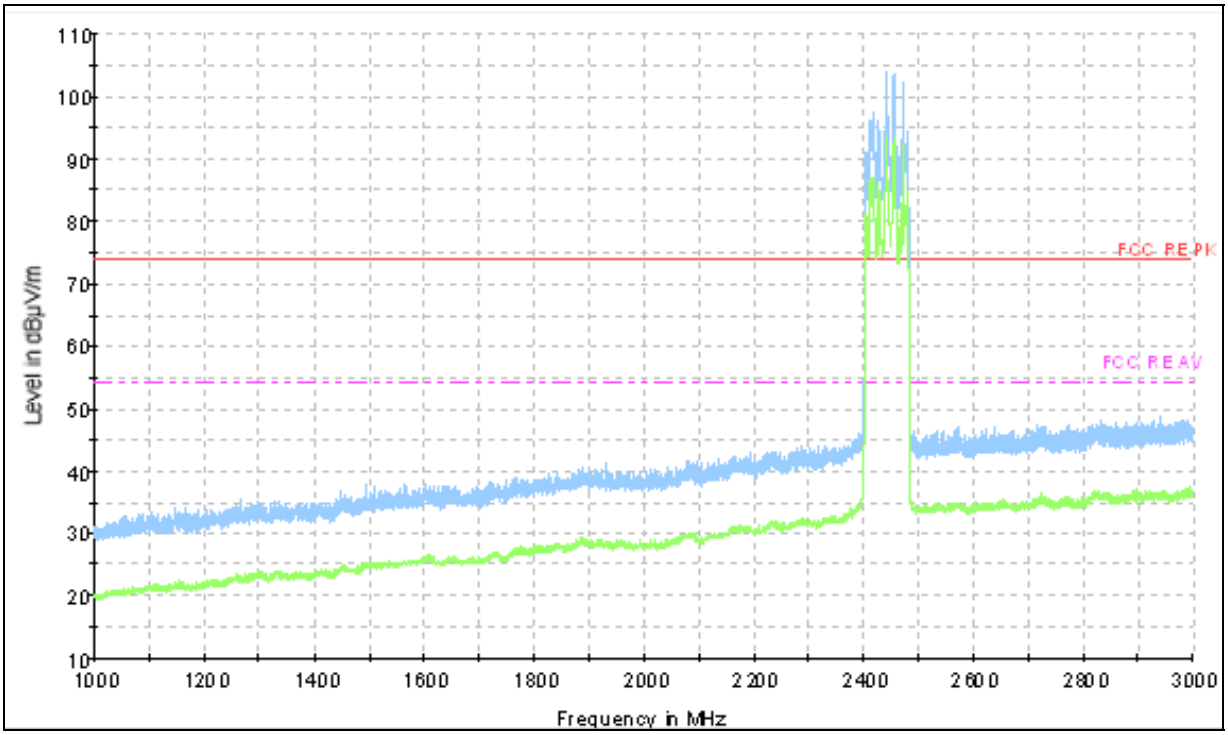
Channel 0



Radiates Emission from 30MHz to 1GHz

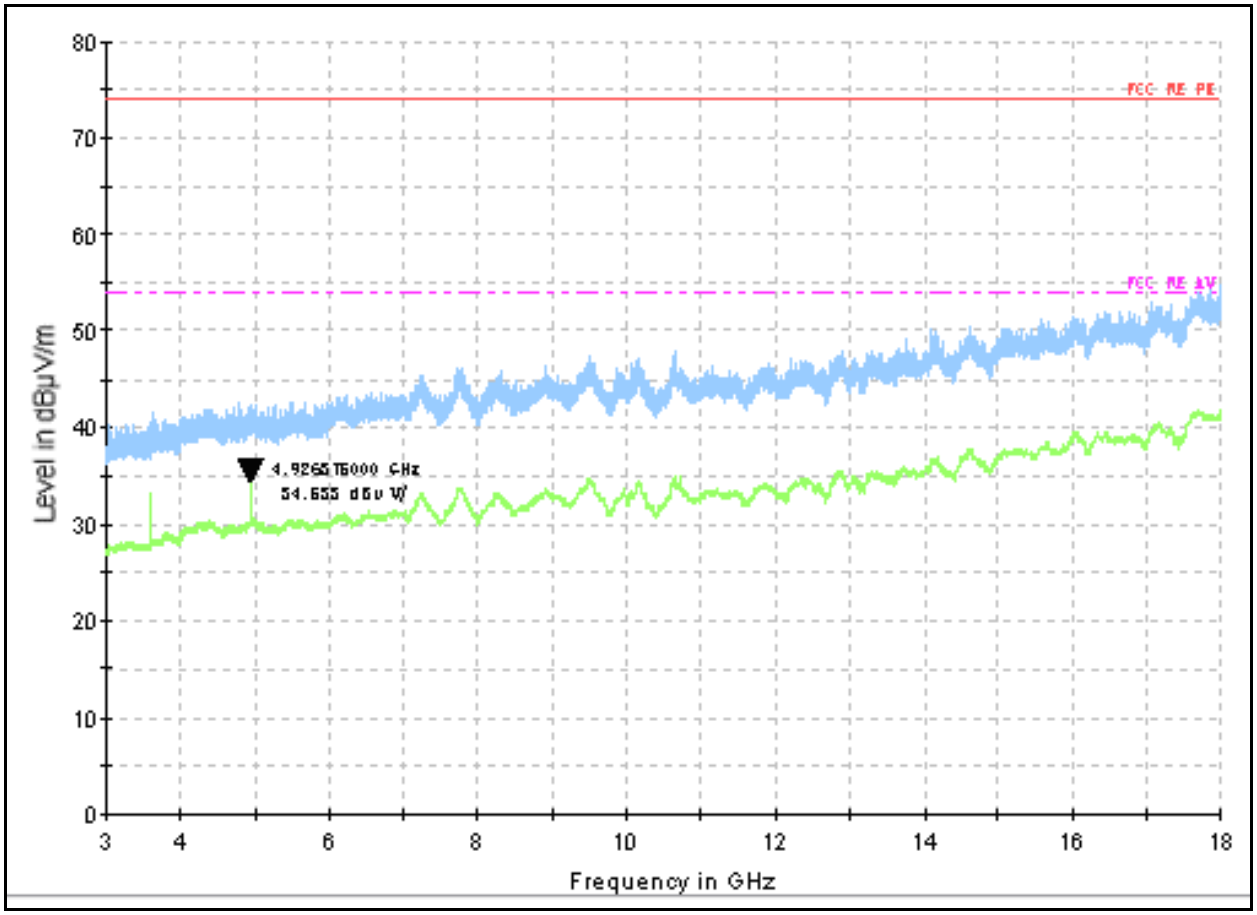
Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
35.28875	16.8	100.0	V	210	23.2	40.0
39.54375	15.3	100.0	V	139	24.7	40.0
226.6000	17.5	200.0	V	97	30.0	43.5
288.0000	14.3	115.0	V	181	31.7	46
541.9000	16.2	133.0	H	155	29.8	46
880.0000	20.3	110	H	86	25.7	46

Note: Emissions above 1GHz are all more than 20dBm lower than limit

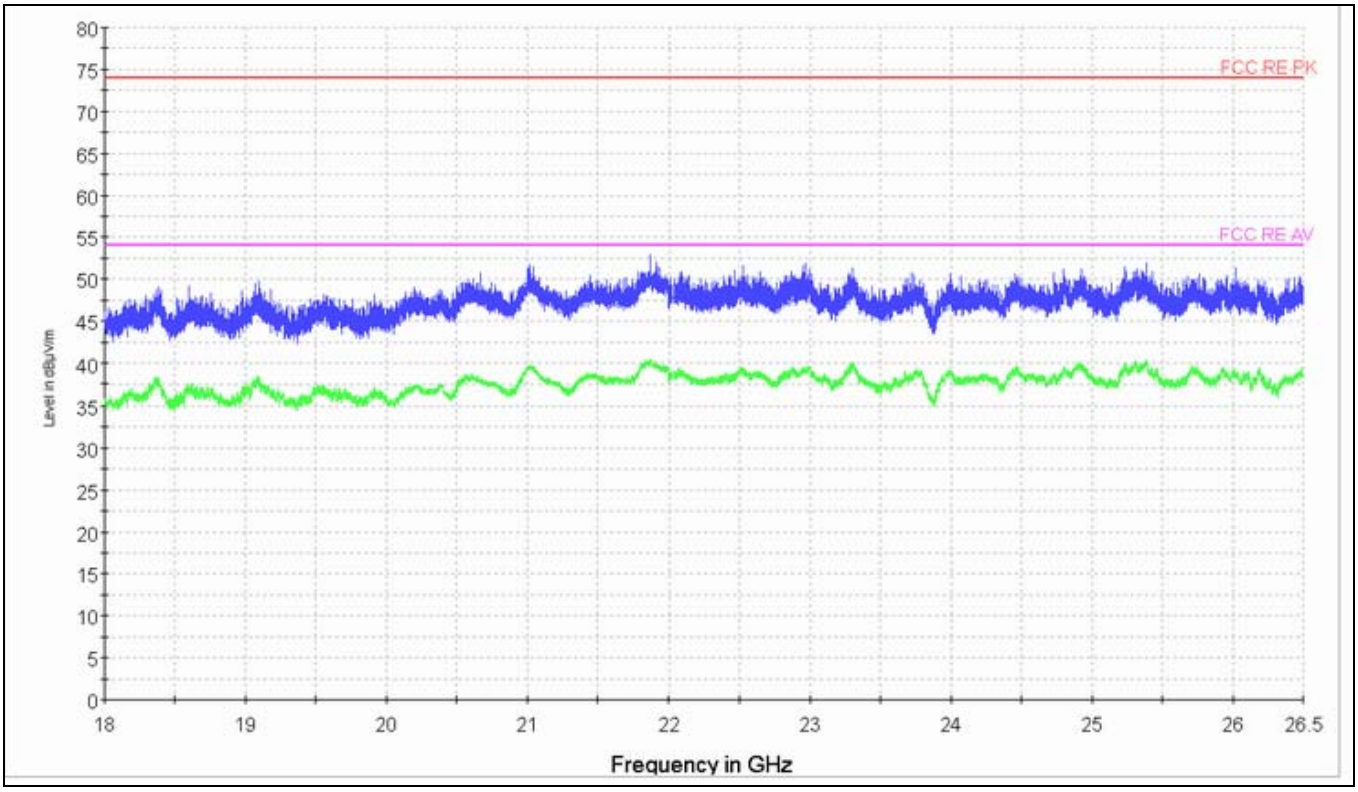


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

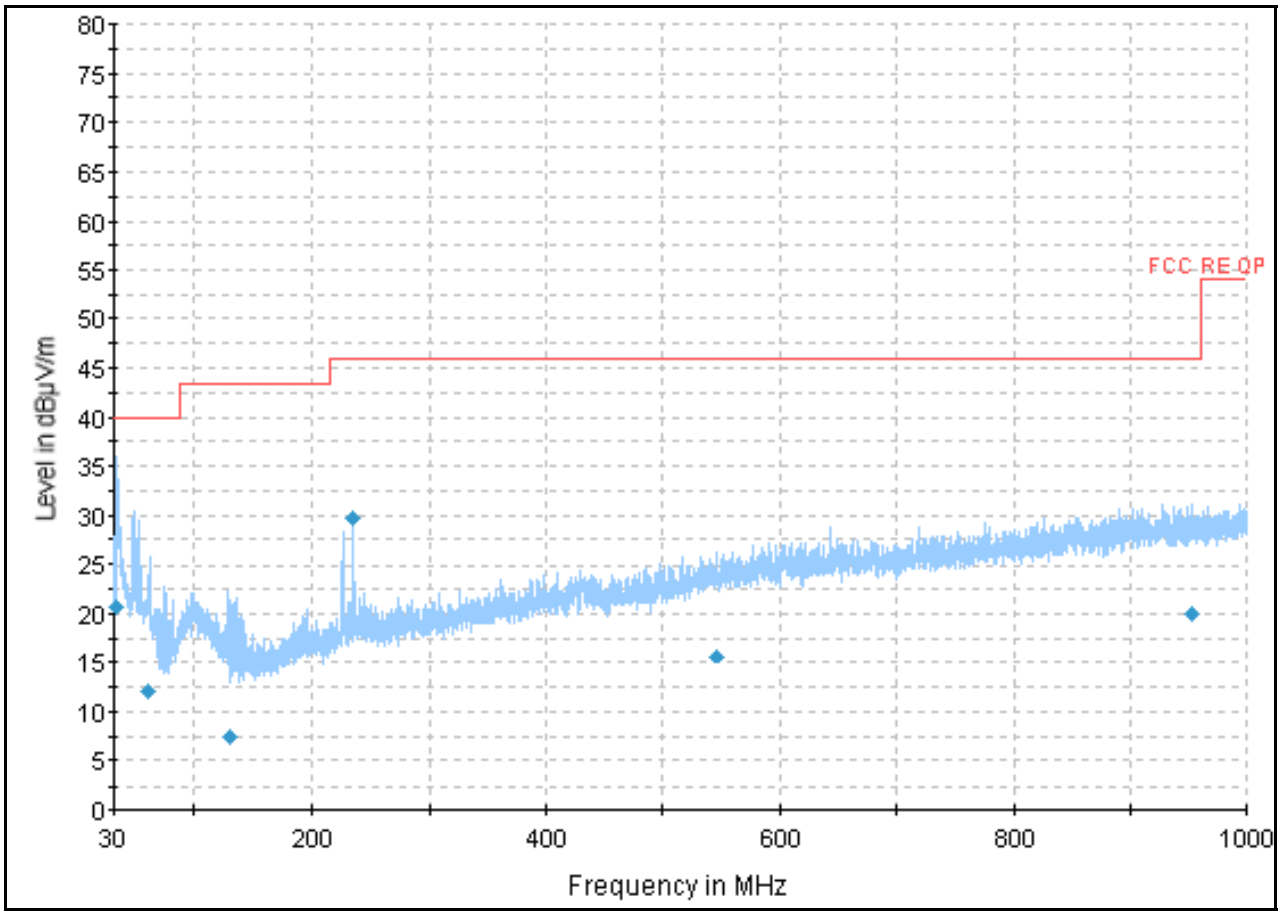


Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

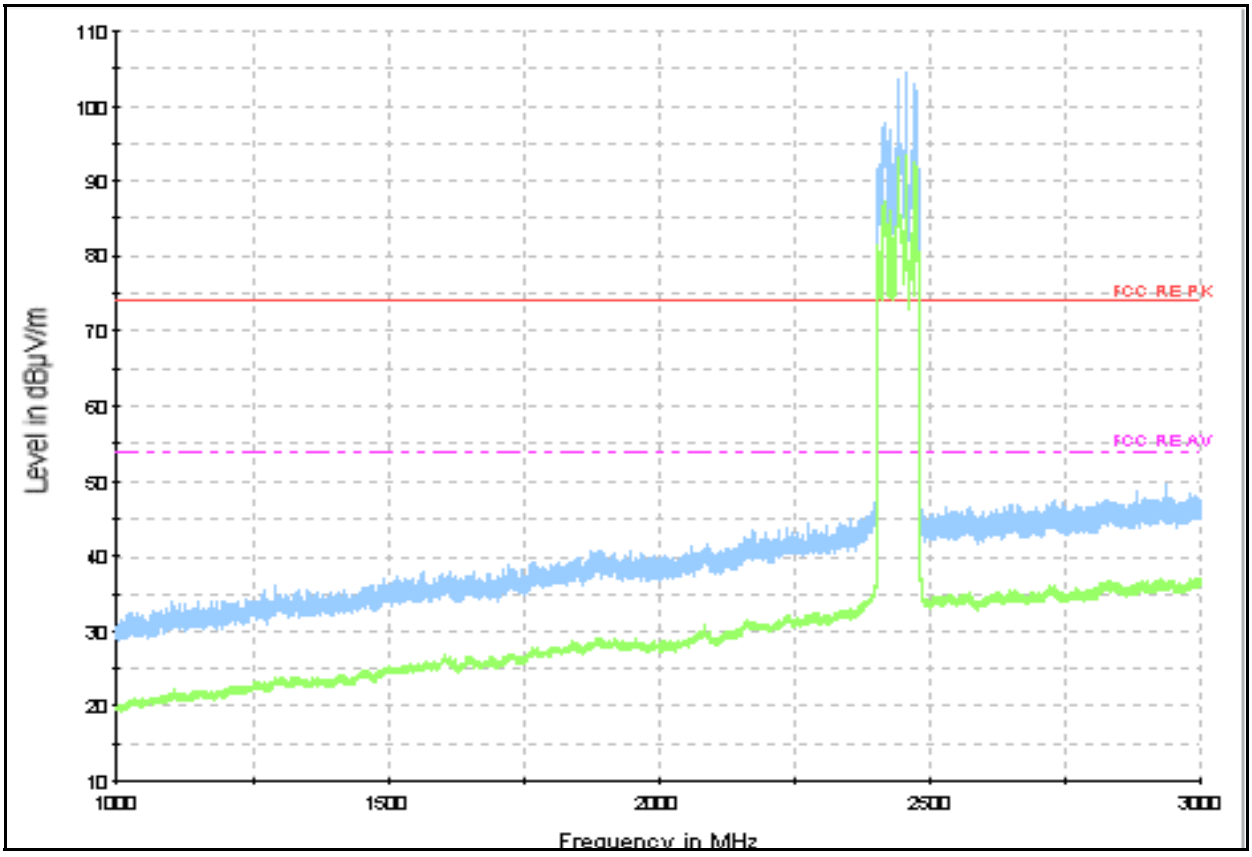
Channel 39



Radiates Emission from 30MHz to 1GHz

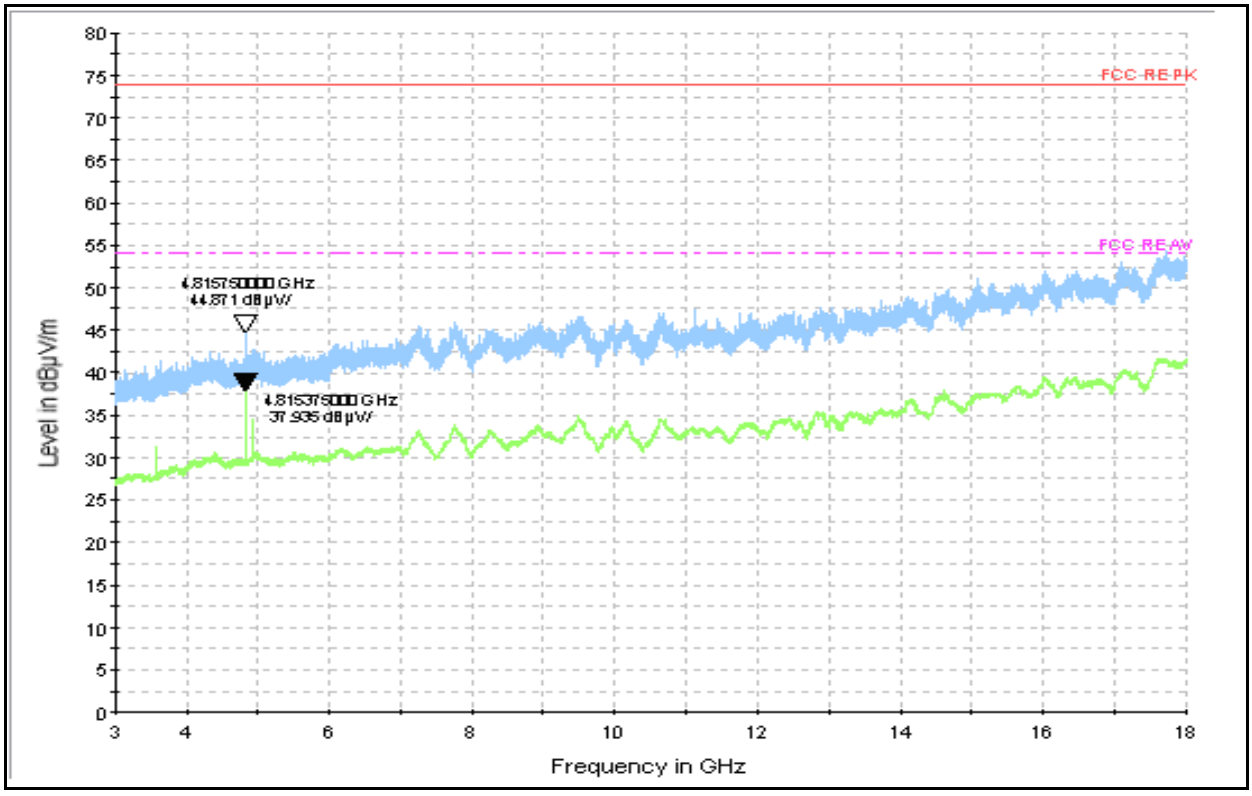
Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
33.989750	20.6	200.0	V	213.0	19.4	40.0
60.441000	12.1	100.0	V	13.0	27.9	40.0
129.906000	7.5	125.0	V	135.0	36.0	43.5
235.918125	29.7	115.0	H	59.0	16.3	46.0
547.365000	15.7	125.0	H	59.0	30.3	46.0
953.270000	19.9	225.0	V	167.0	26.1	46.0

Note: Emissions above 1GHz are all more than 20dBm lower than limit

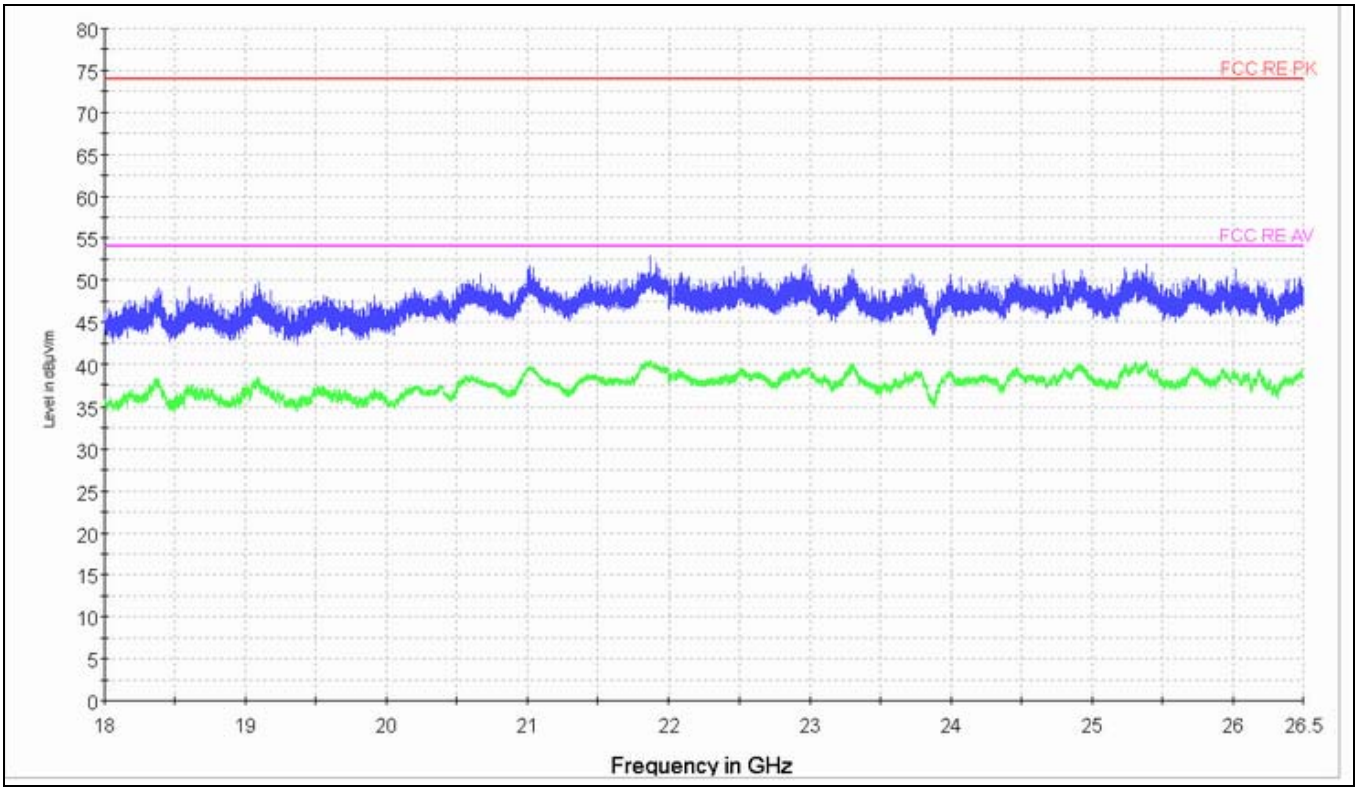


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



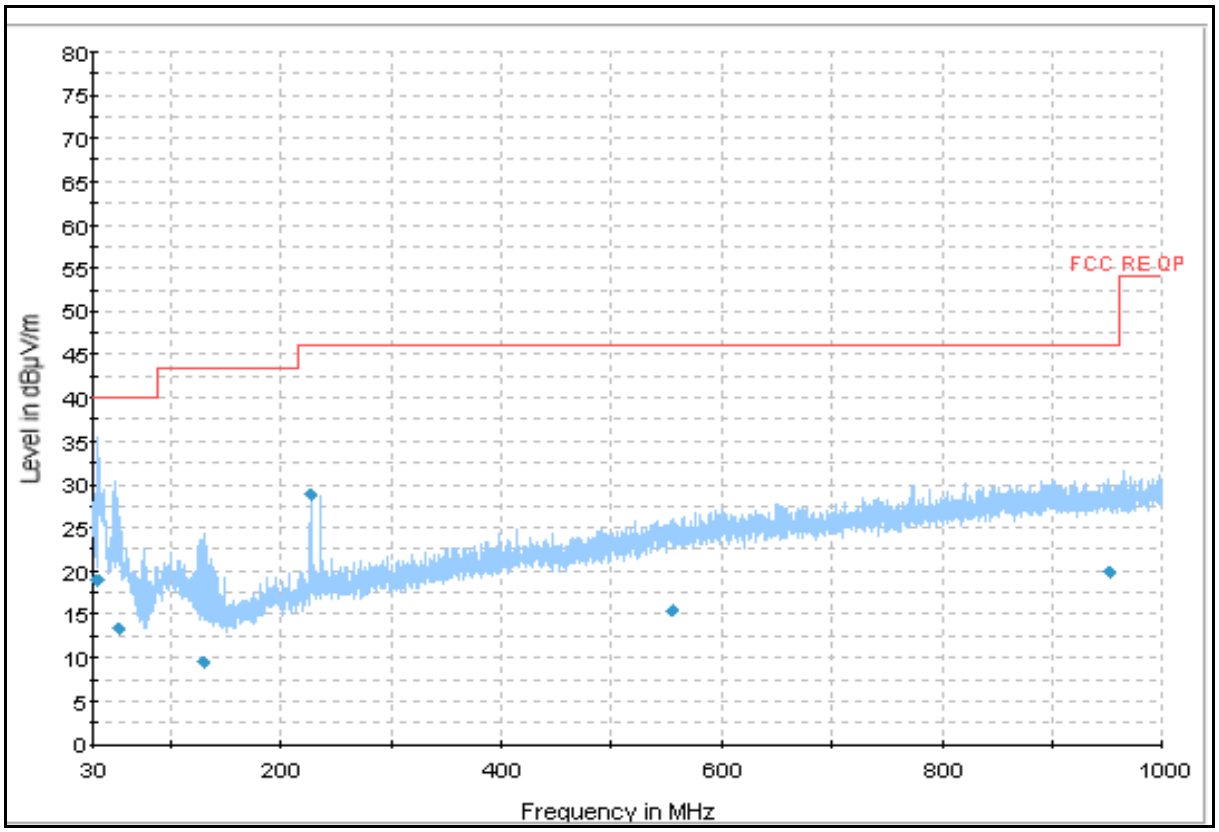
Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

Channel 78

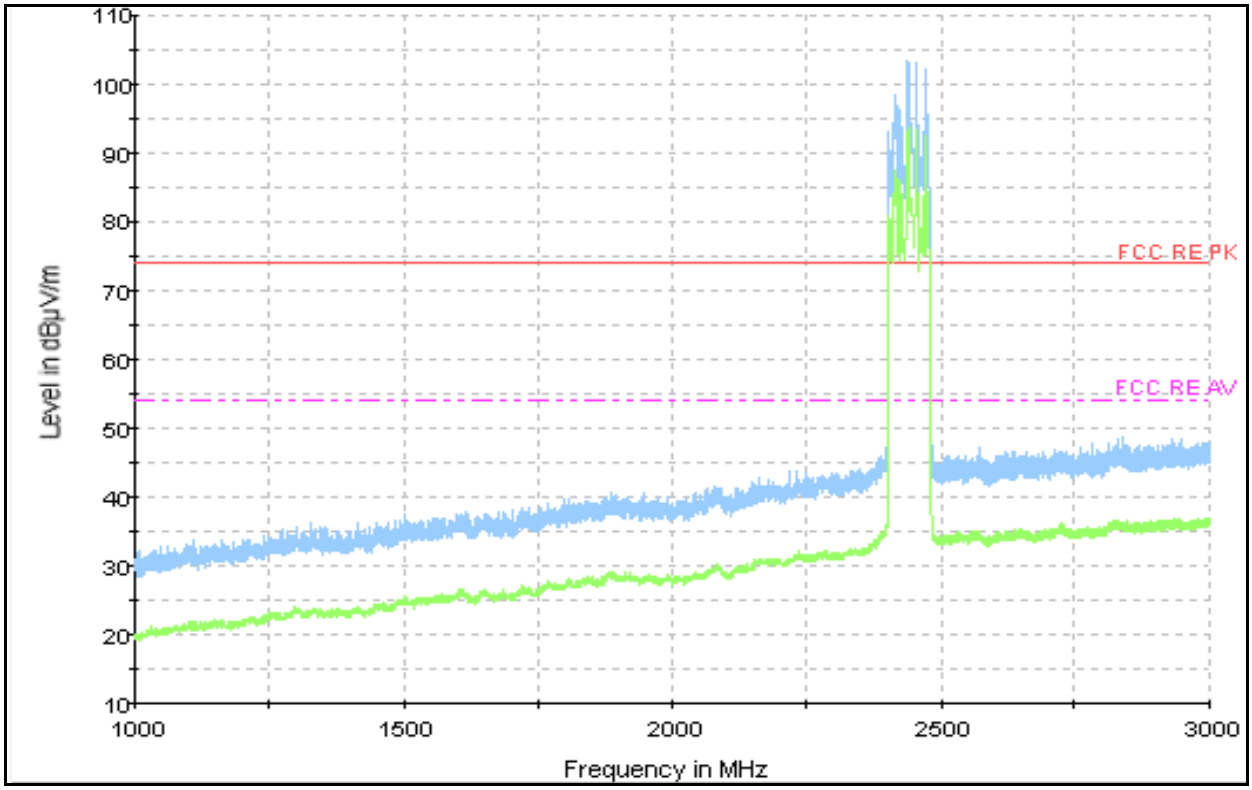
EDR 3DH5



Radiates Emission from 30MHz to 1GHz

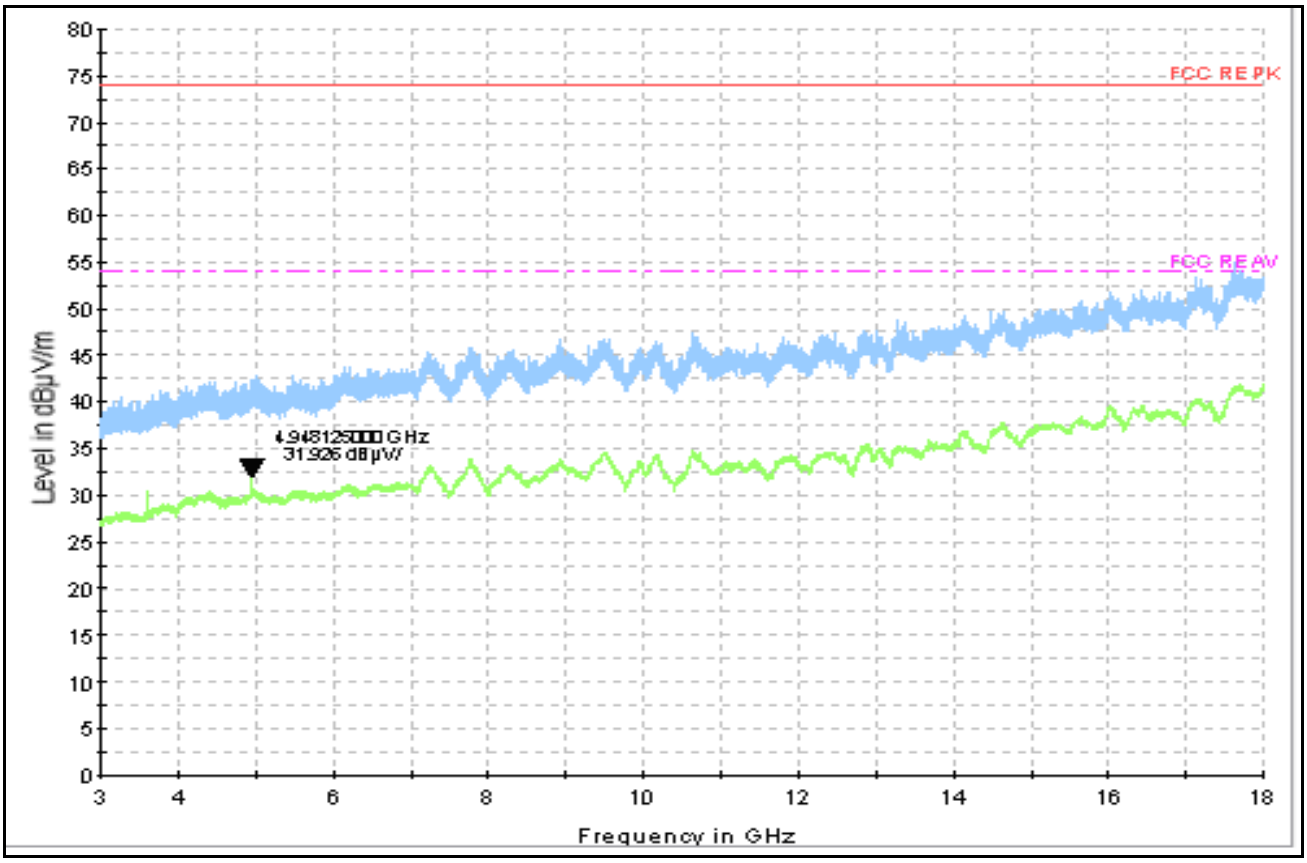
Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
33.862375	19.0	209.0	V	130.0	21.0	40.0
52.618250	13.3	100.0	V	28.0	26.7	40.0
129.800500	9.5	100.0	V	5.0	34.0	43.5
226.730250	28.8	100.0	V	96.0	17.2	46.0
555.672000	15.5	100.0	V	45.0	30.5	46.0
951.483000	19.9	203.0	H	105.0	26.1	46.0

Note: Emissions above 1GHz are all more than 20dBm lower than limit

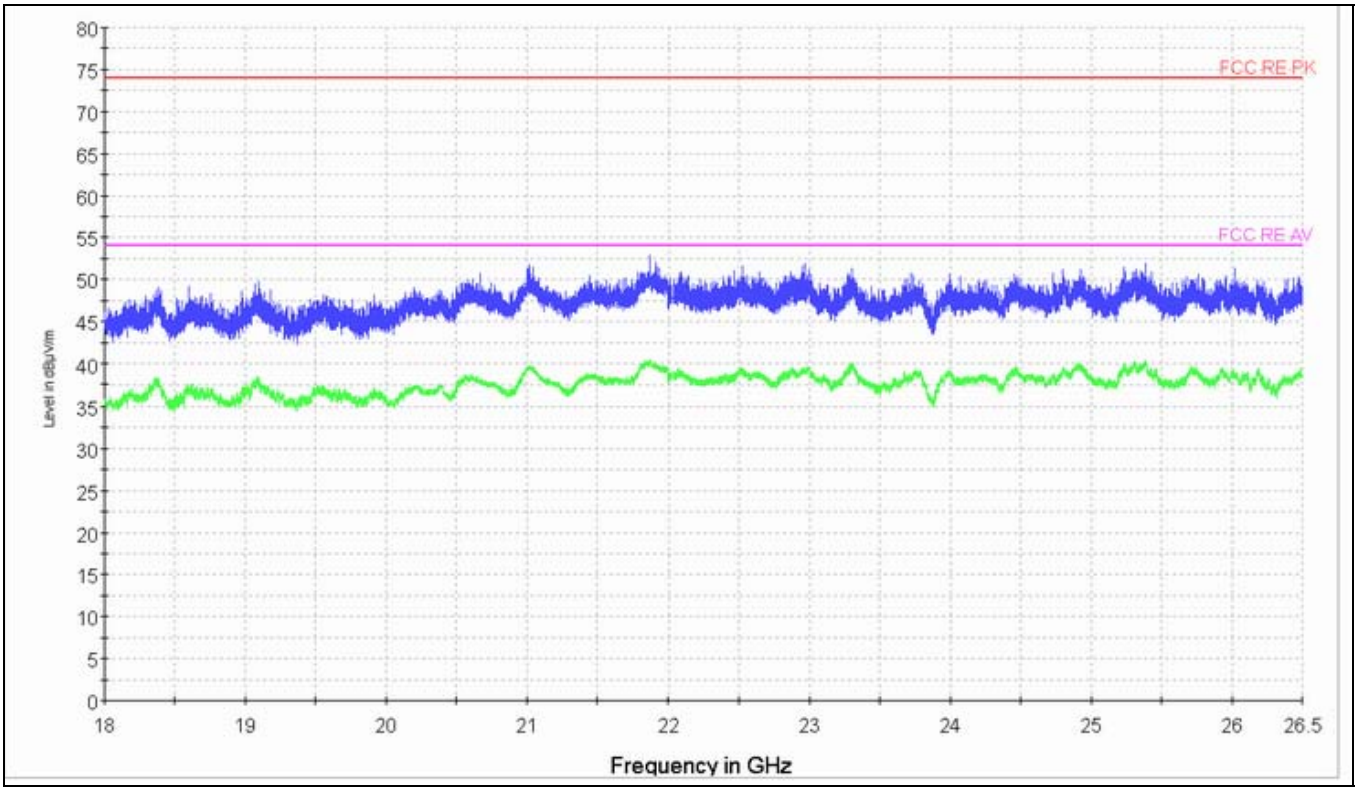


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

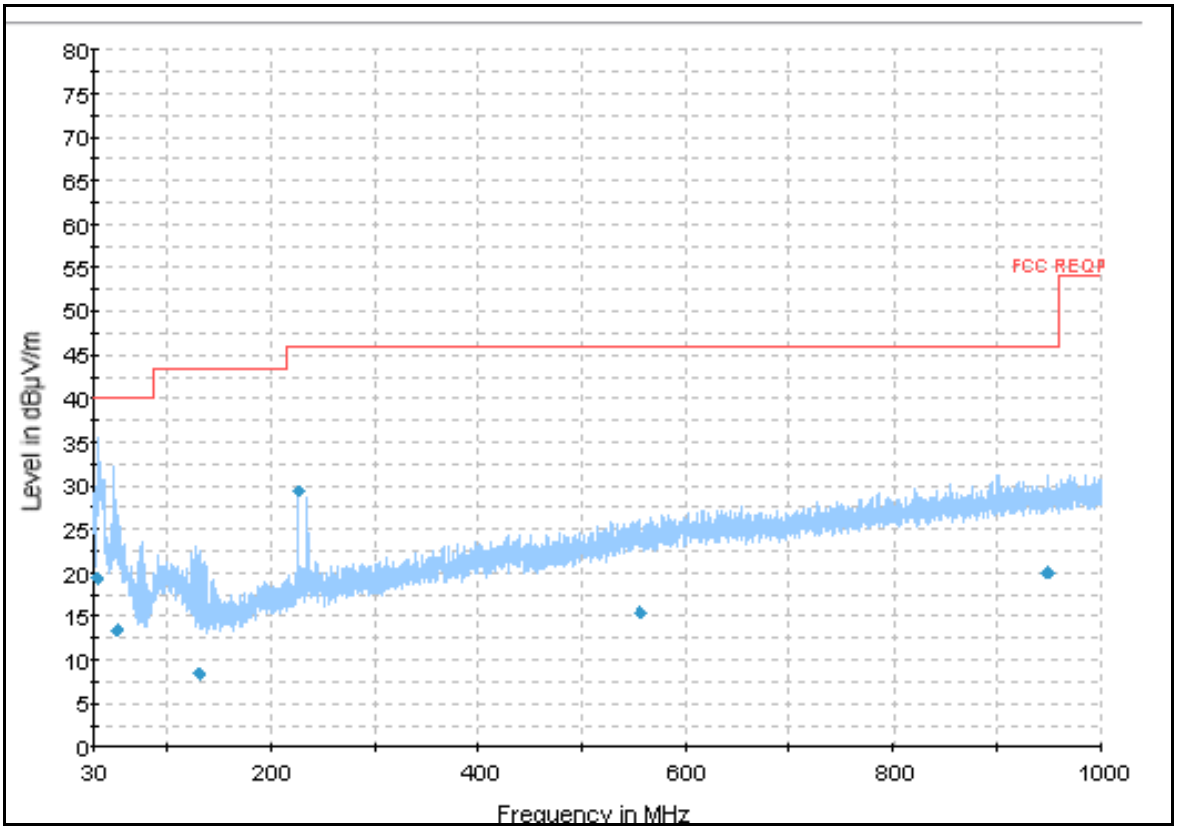


Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

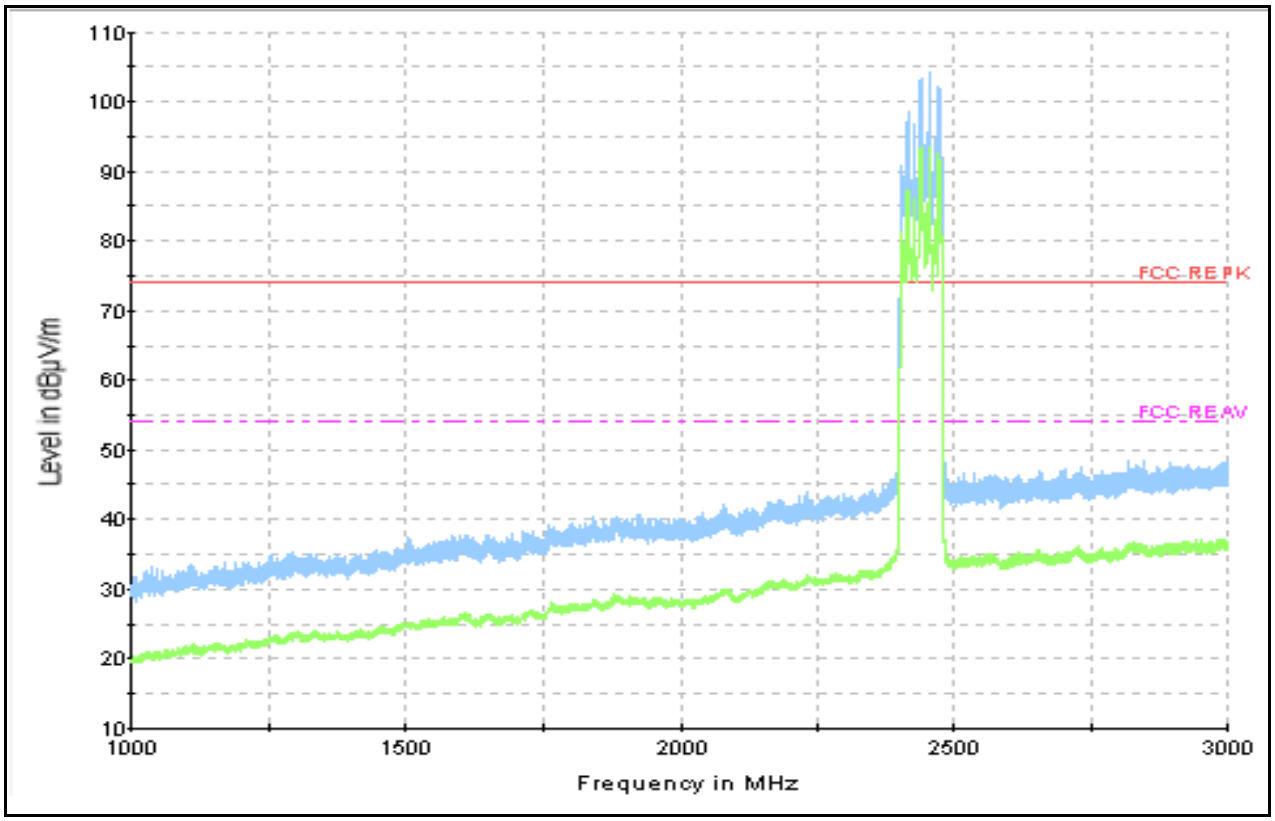
Channel 0



Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
33.839875	19.4	200.0	V	210.0	20.6	40.0
53.237250	13.5	100.0	V	5.0	26.5	40.0
131.001875	8.5	125.0	V	45.0	35.0	43.5
226.728625	29.3	100.0	V	105.0	16.7	46.0
556.506375	15.5	209.0	V	135.0	30.5	46.0
949.219500	20.0	116.0	V	45.0	26.0	46.0

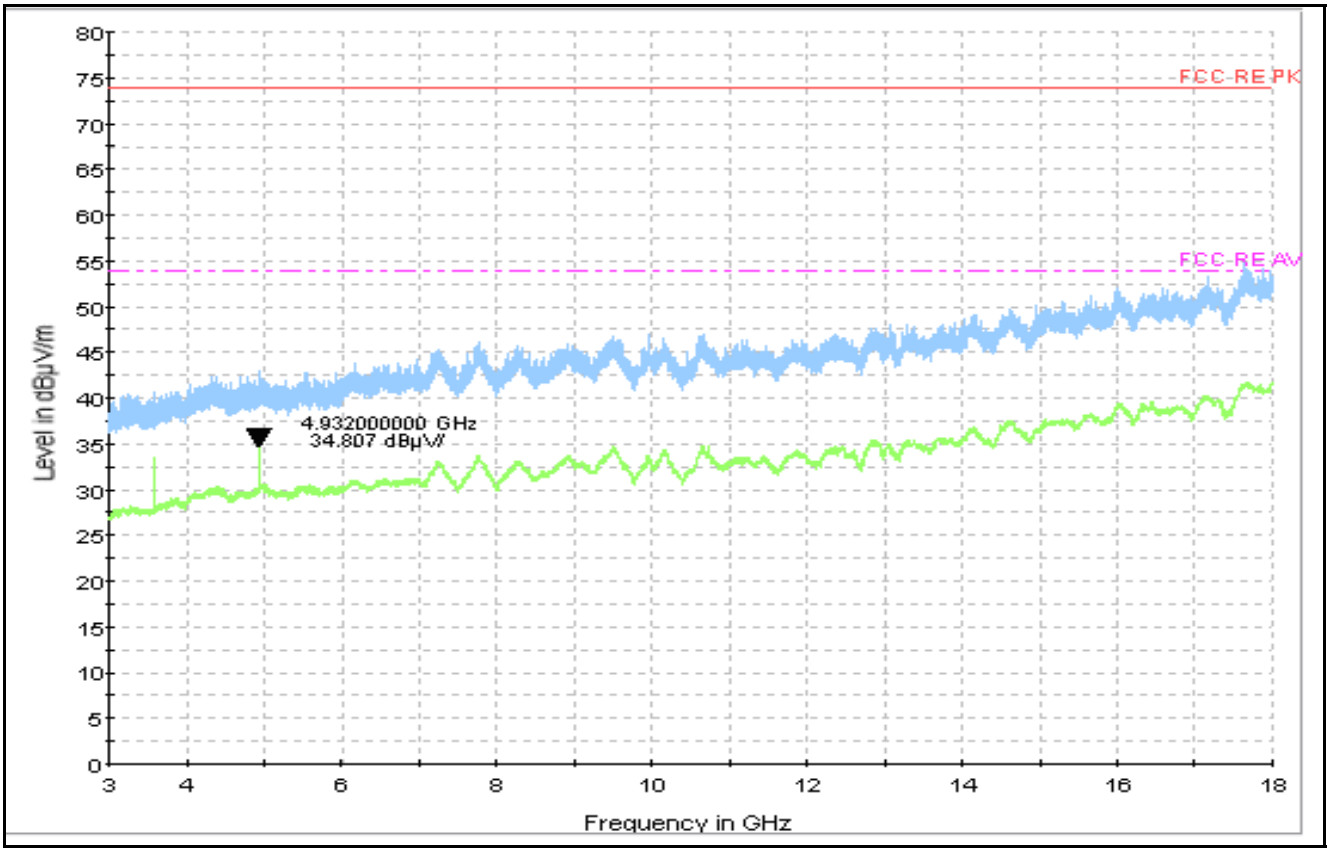
Note: Emissions above 1GHz are all more than 20dBm lower than limit

Radiates Emission from 30MHz to 1GHz

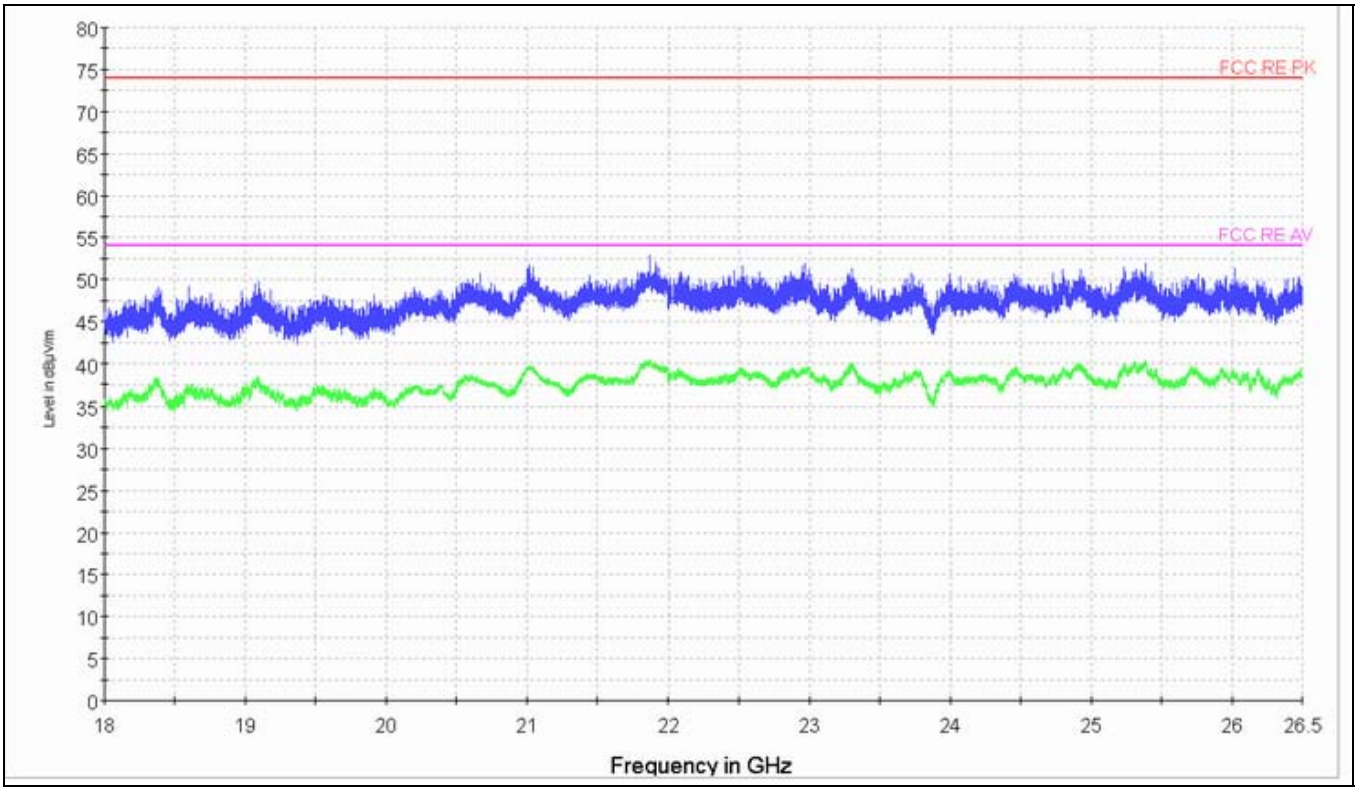


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

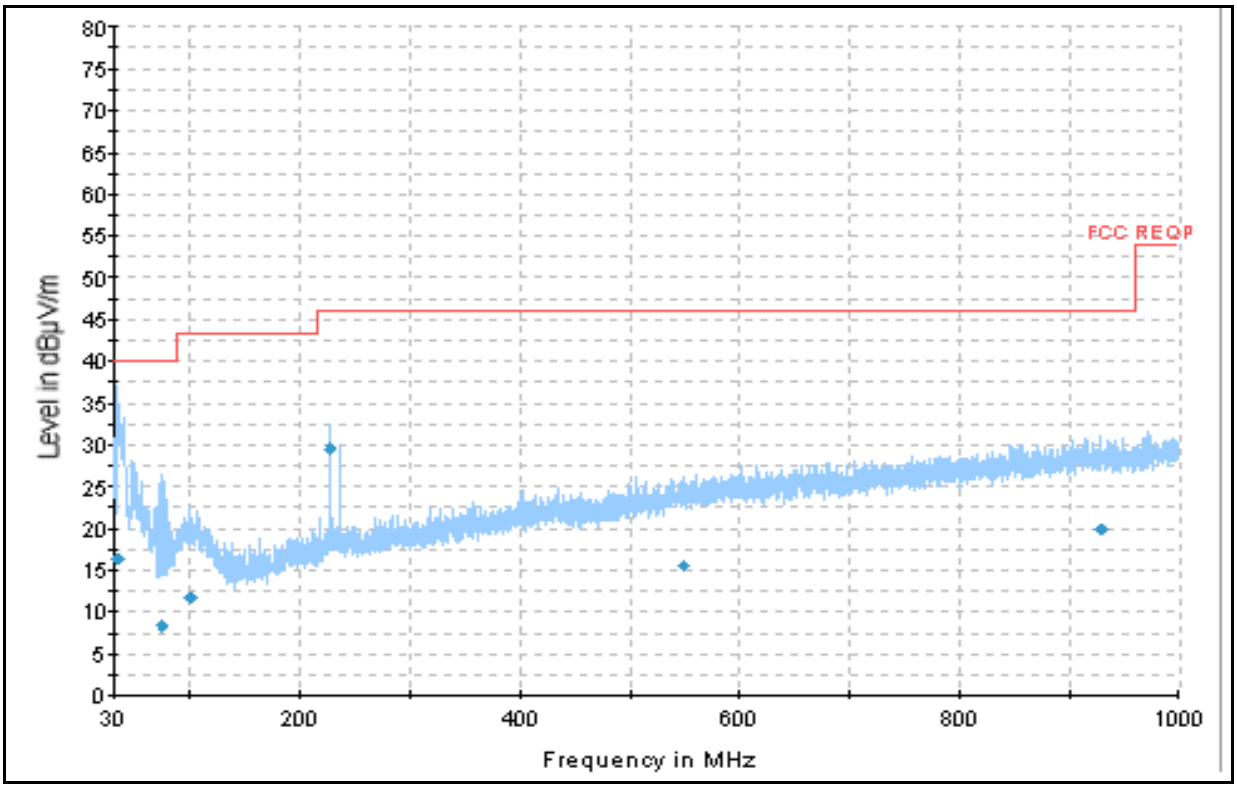


Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

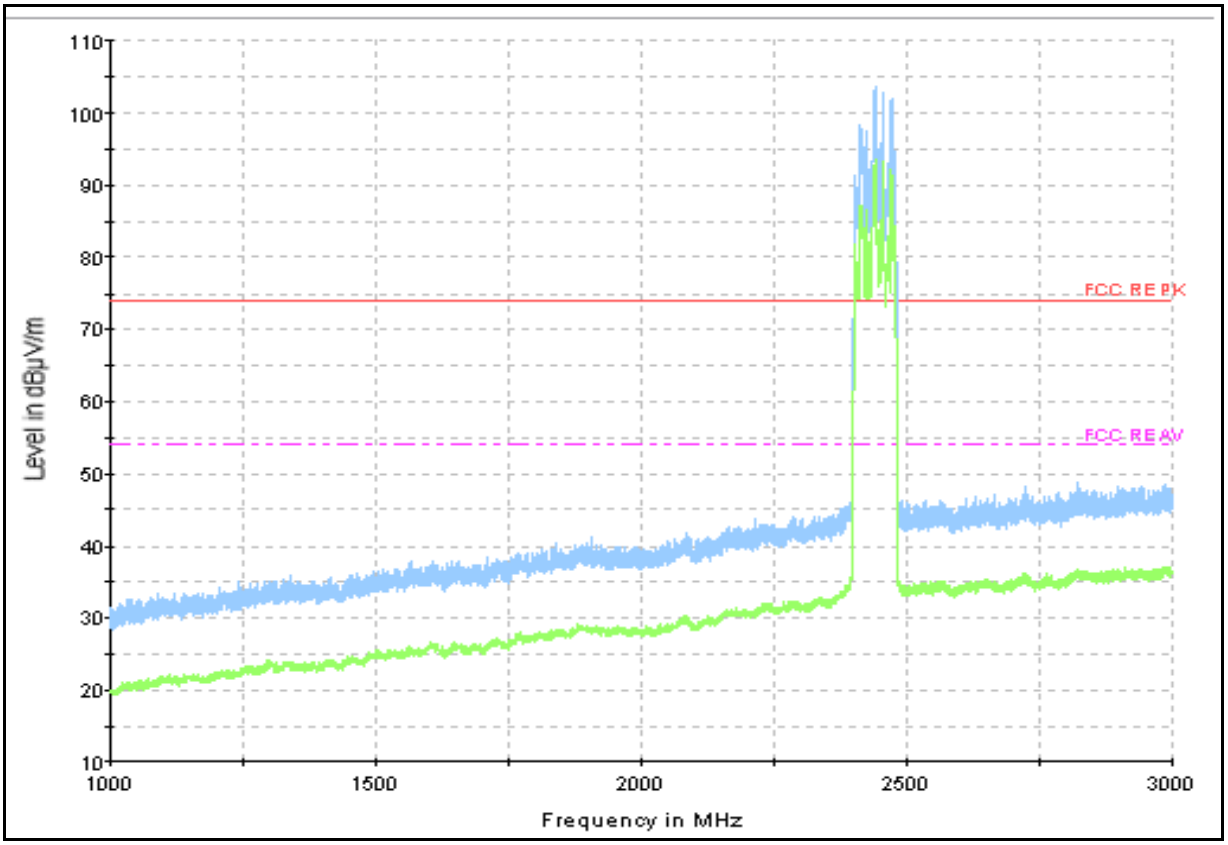
Channel 39



Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBuV/m)
33.780250	16.3	209.0	V	225.0	23.7	40.0
74.765375	8.3	125.0	V	0.0	31.7	40.0
100.592625	11.8	125.0	V	57.0	31.7	43.5
226.715500	29.6	100.0	V	104.0	16.4	46.0
548.664500	15.5	175.0	V	24.0	30.5	46.0
930.271625	20.0	100.0	V	89.0	26.0	46.0

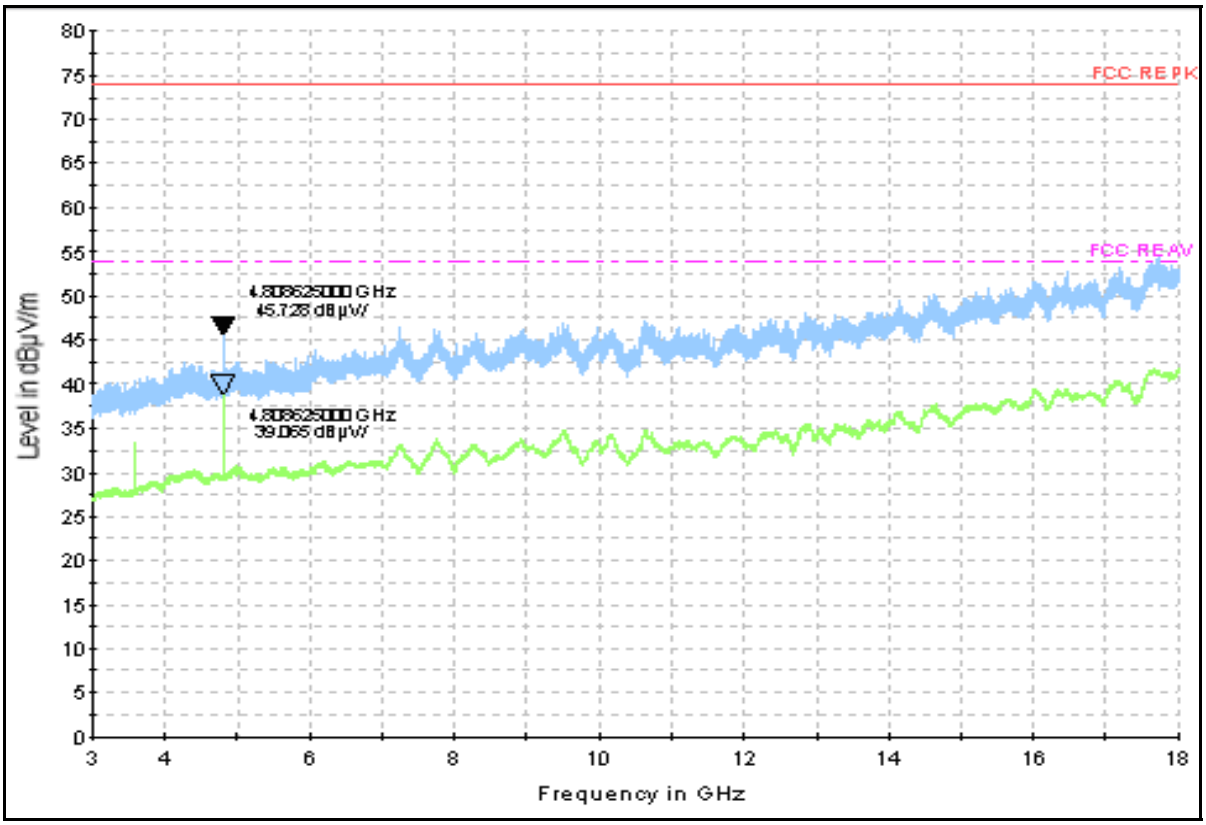
Note: Emissions above 1GHz are all more than 20dBm lower than limit

Radiates Emission from 30MHz to 1GHz

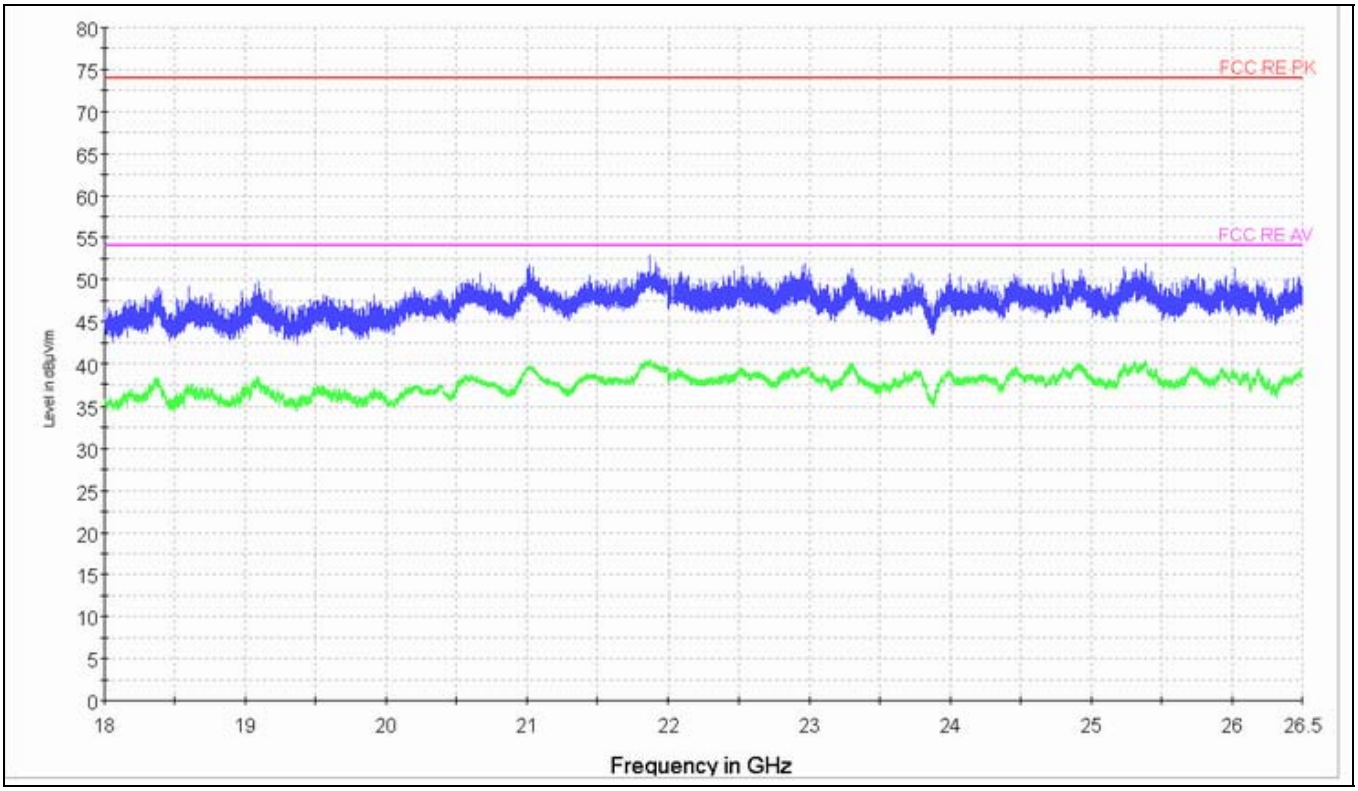


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



Radiates Emission from 3GHz to 18GHz



Radiates Emission from 18GHz to 26.5GHz

Channel 78

2.10. Conducted Emission

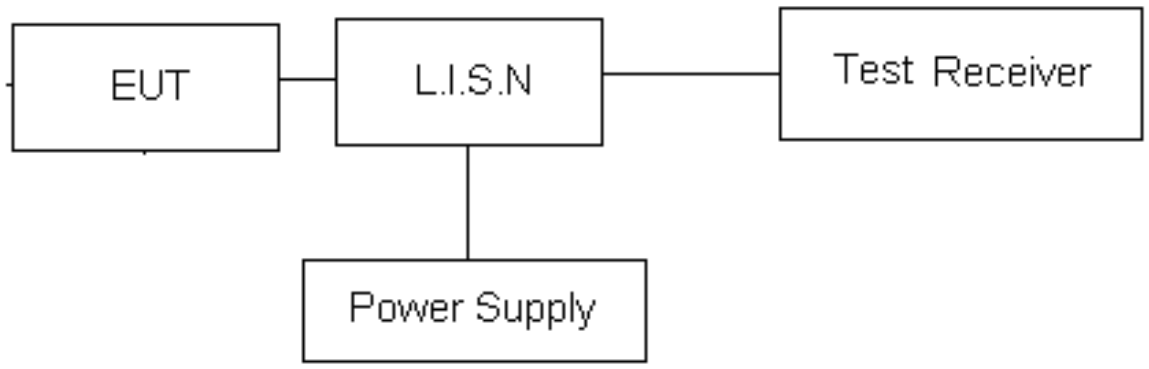
Ambient condition

Temperature	Relative humidity	Pressure
25°C	58%	101.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2003. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. The measurement result should include both L line and N line.

Test Setup



Limits

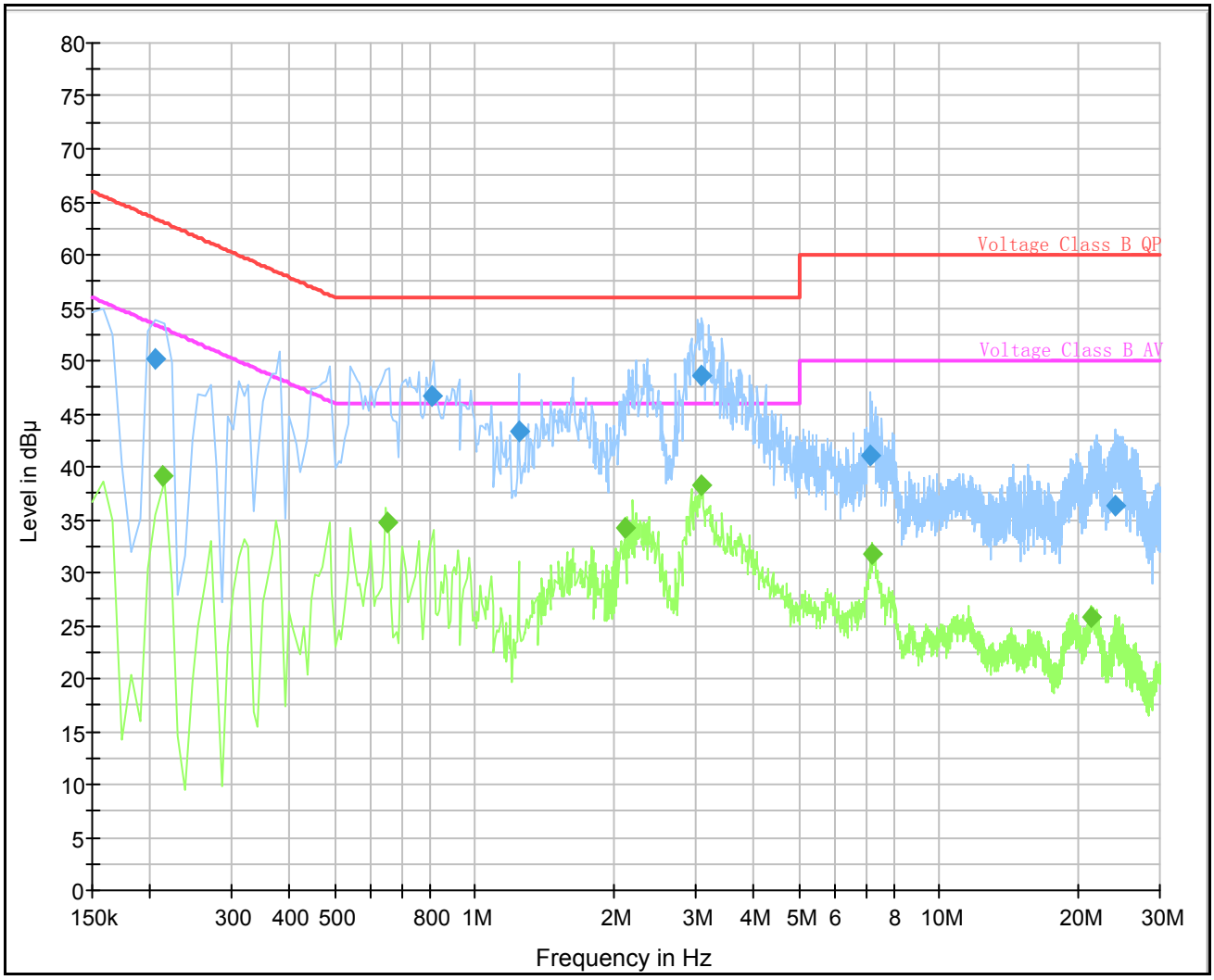
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

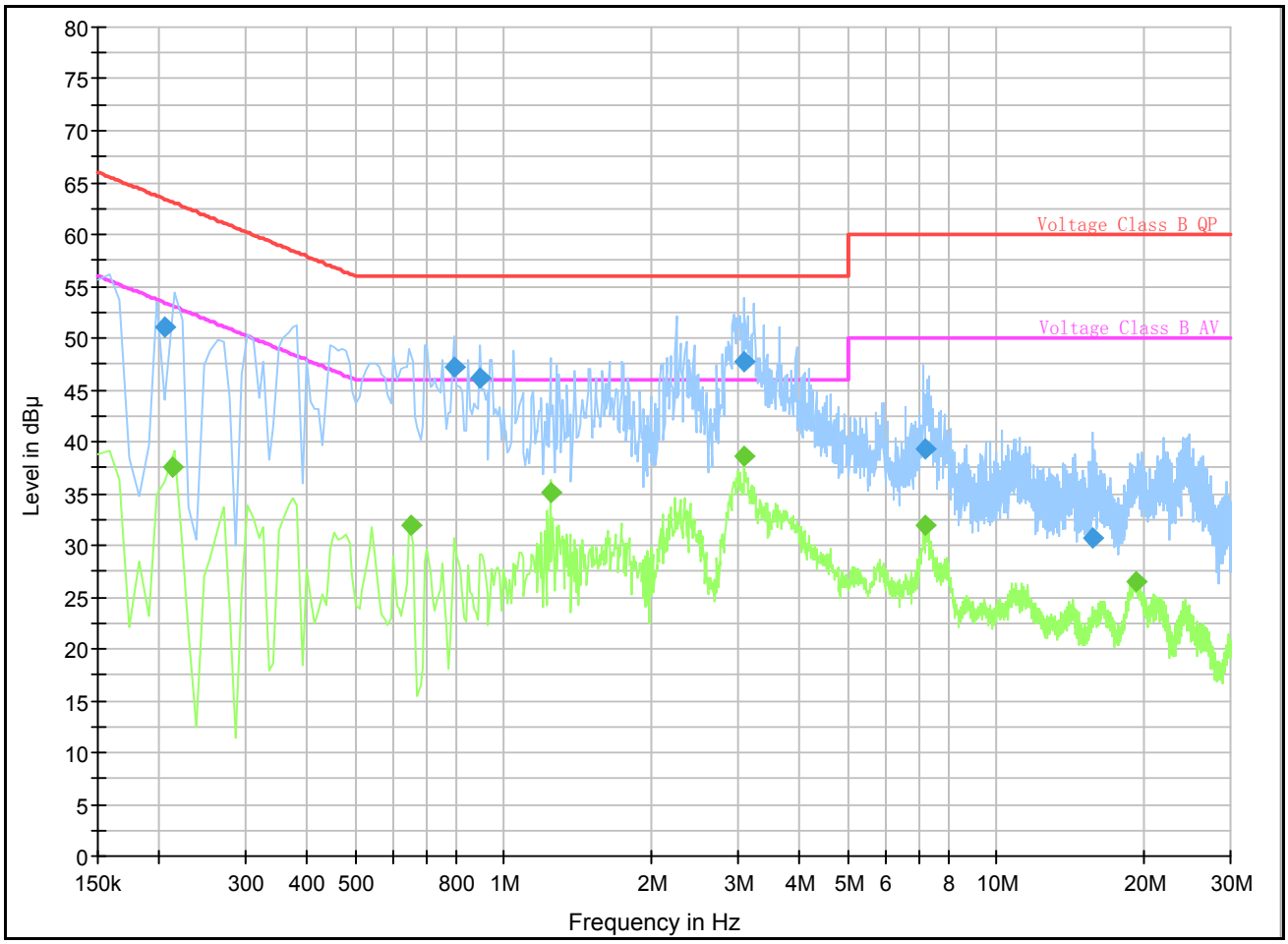
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96. U= 2.69 dB.

Test Results

Basic Rate DH5



L line

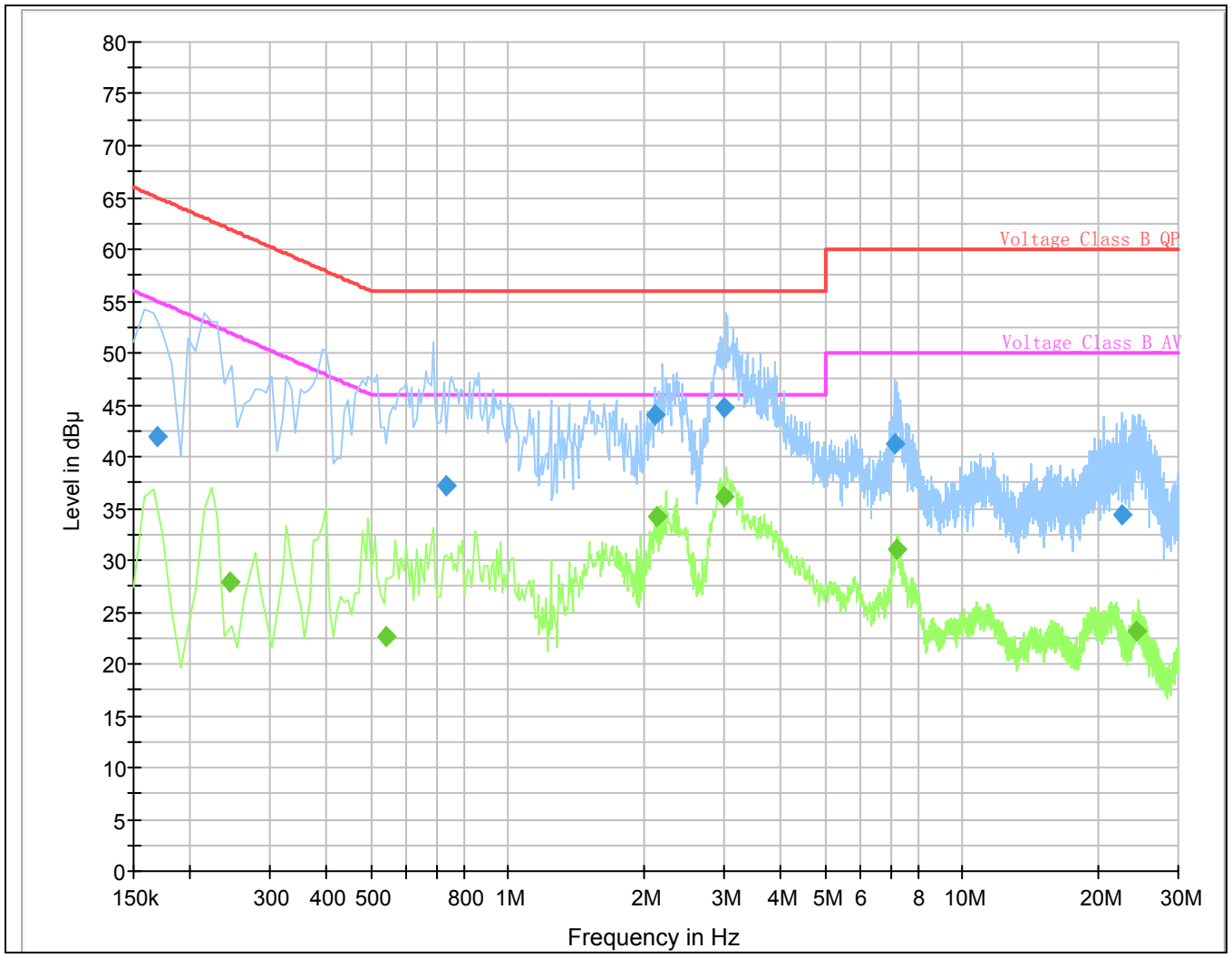


N Line

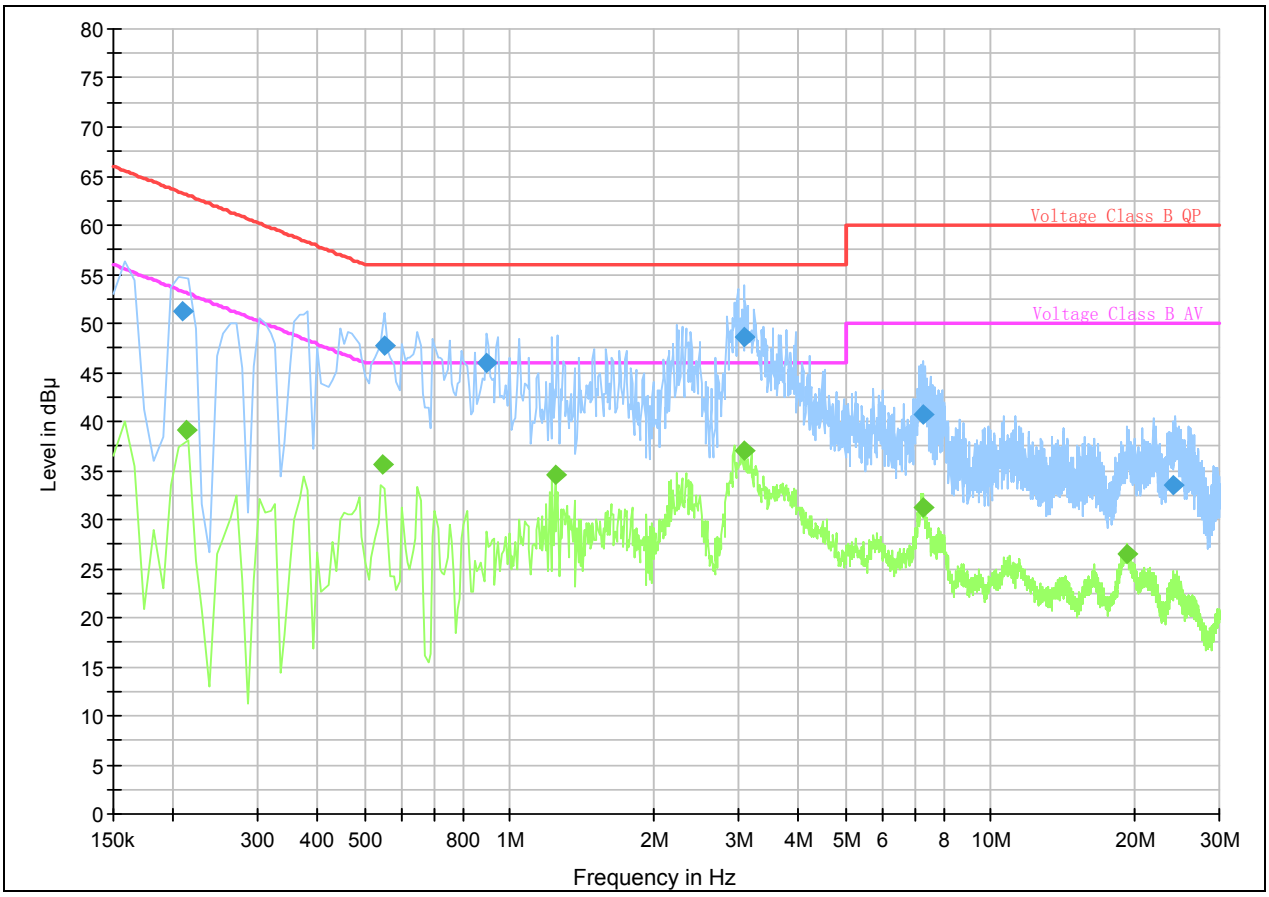
Conducted Emission from 150 KHz to 30 MHz

Channel No.:0

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.649000	Average	L	34.7	46.0	11.3
0.649000	Average	N	32.0	46.0	14.0
1.245000	Average	N	35.1	46.0	10.9
2.121000	Average	L	34.3	46.0	11.7
3.089000	Average	L	38.2	46.0	7.8
3.093000	Average	N	38.5	46.0	7.5
0.205000	Quasi-peak	N	51.1	63.4	12.3
0.797000	Quasi-peak	N	47.2	56.0	8.8
0.813000	Quasi-peak	L	46.7	56.0	9.3
0.897000	Quasi-peak	N	46.1	56.0	9.9
3.089000	Quasi-peak	L	48.7	56.0	7.4
3.073000	Quasi-peak	N	47.7	56.0	8.3


Voltage Class B QP
Voltage Class B AV
Level in dBµ
Frequency in Hz
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
150k
300
400
500
800
1M
2M
3M
4M
5M
6
8
10M
20M
30M

L line

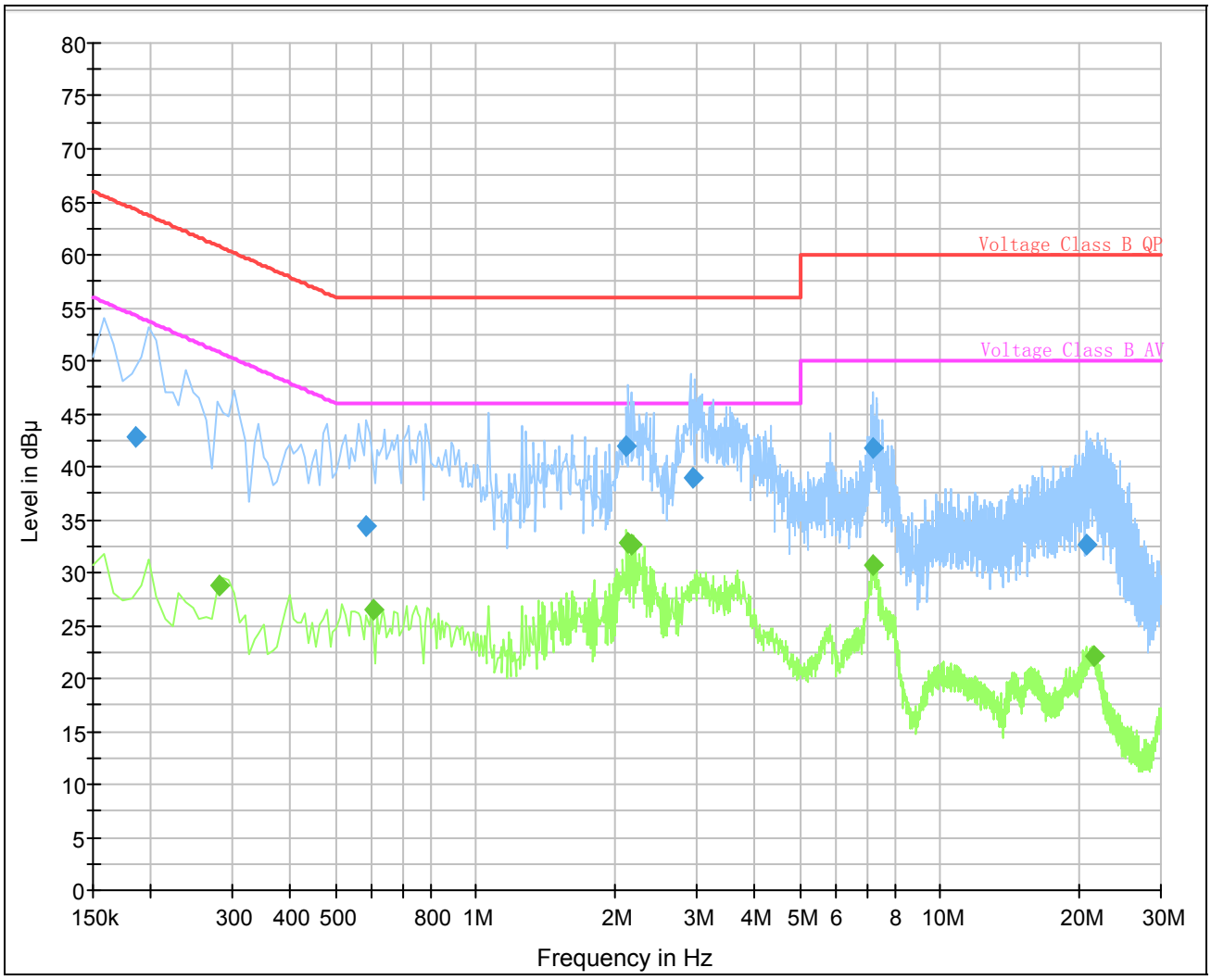


N Line

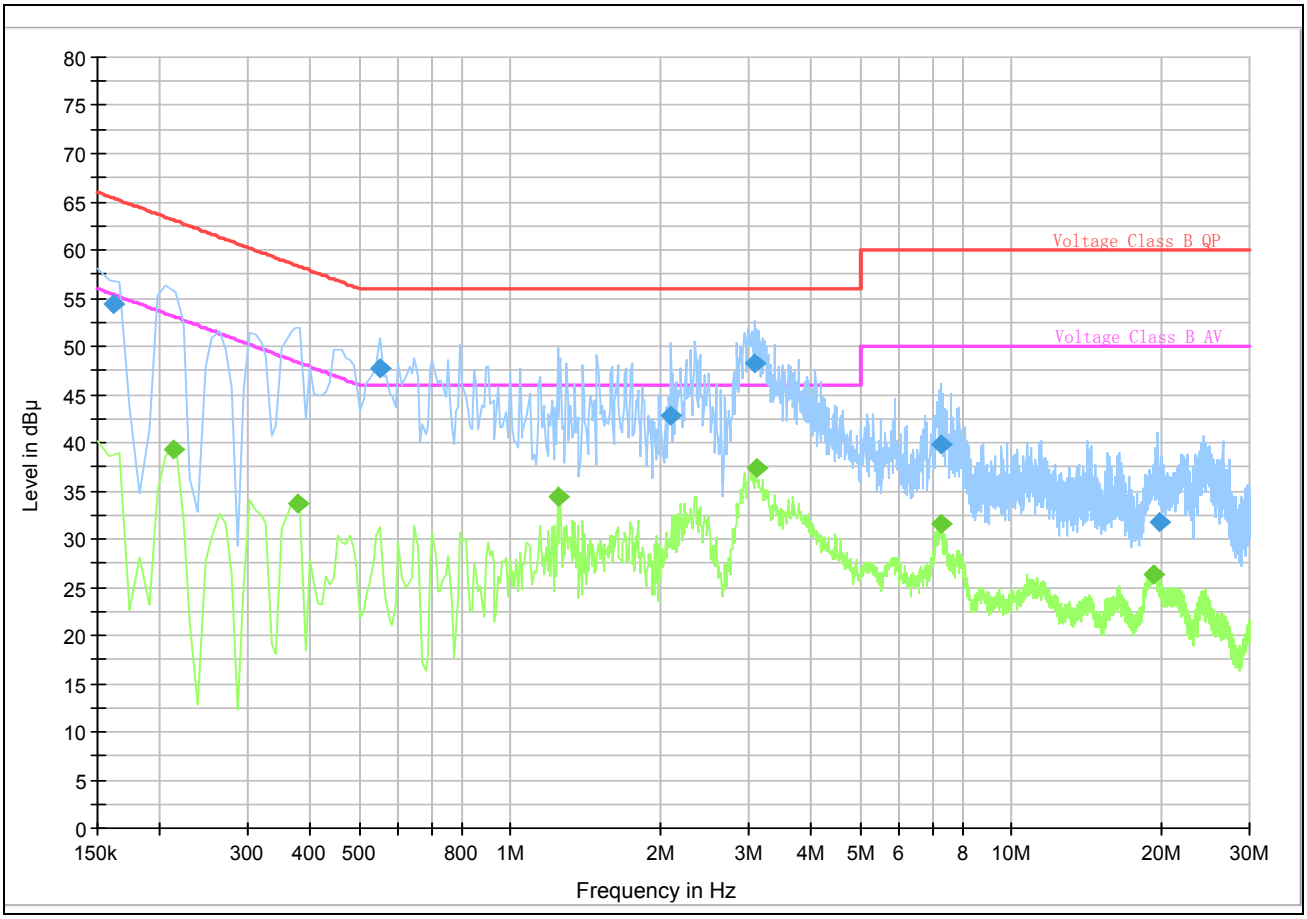
Conducted Emission from 150 KHz to 30 MHz

Channel No.:39

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.213000	Average	N	39.1	53.1	14.0
0.545000	Average	N	35.6	46.0	10.4
1.245000	Average	N	34.6	46.0	11.4
2.137000	Average	L	34.2	46.0	11.8
2.997000	Average	L	36.1	46.0	9.9
3.085000	Average	N	37.0	46.0	9.0
0.209000	Quasi-peak	N	51.2	63.2	12.0
0.549000	Quasi-peak	N	47.8	56.0	8.2
0.897000	Quasi-peak	N	46.0	56.0	10.0
2.105000	Quasi-peak	L	44.0	56.0	12.0
2.997000	Quasi-peak	L	44.7	56.0	11.3
3.089000	Quasi-peak	N	48.6	56.0	7.4


Voltage Class B QP
Voltage Class B AV
Level in dBµ
Frequency in Hz
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
150k
300
400
500
800
1M
2M
3M
4M
5M
6
8
10M
20M
30M

L line



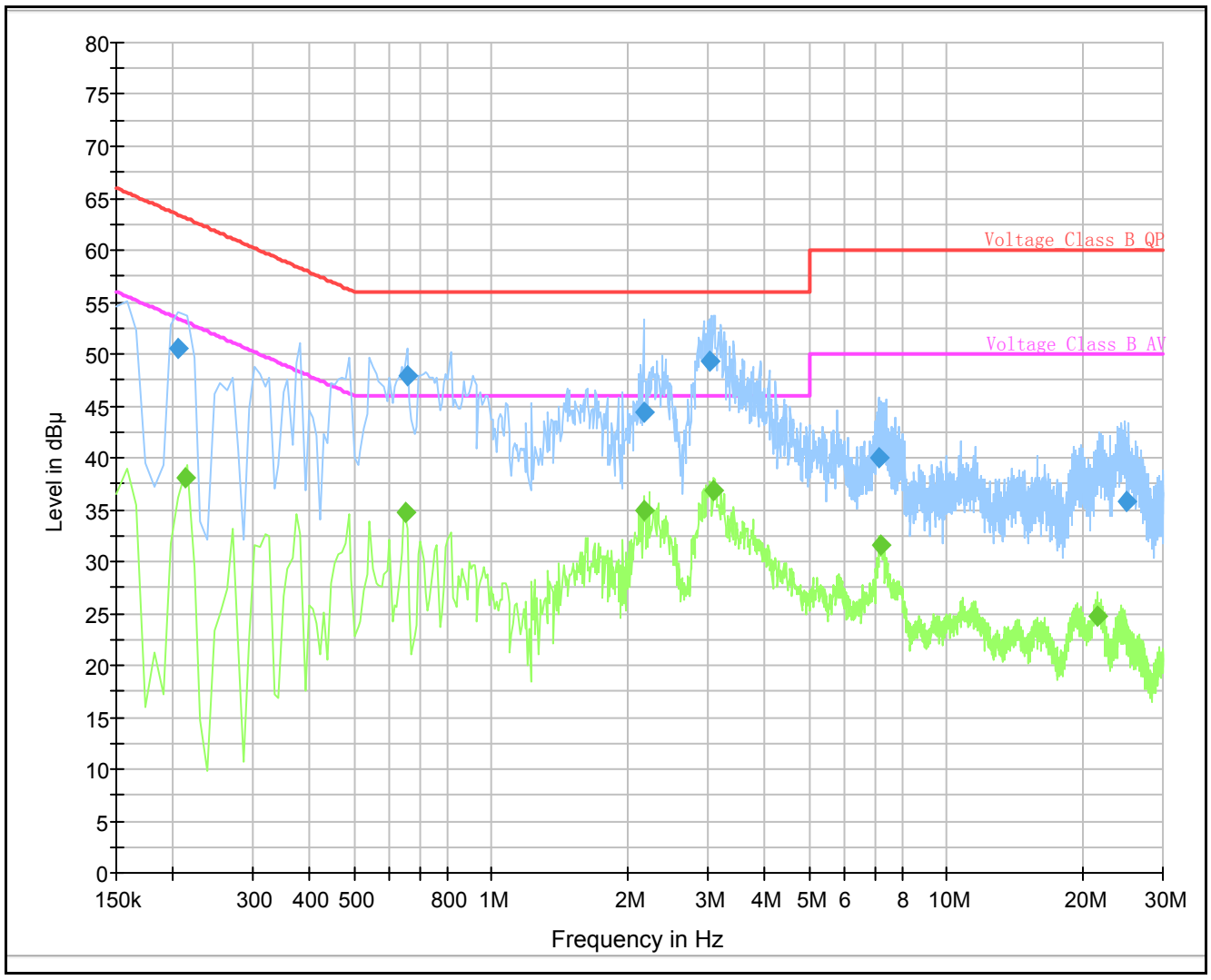
N Line

Conducted Emission from 150 KHz to 30 MHz

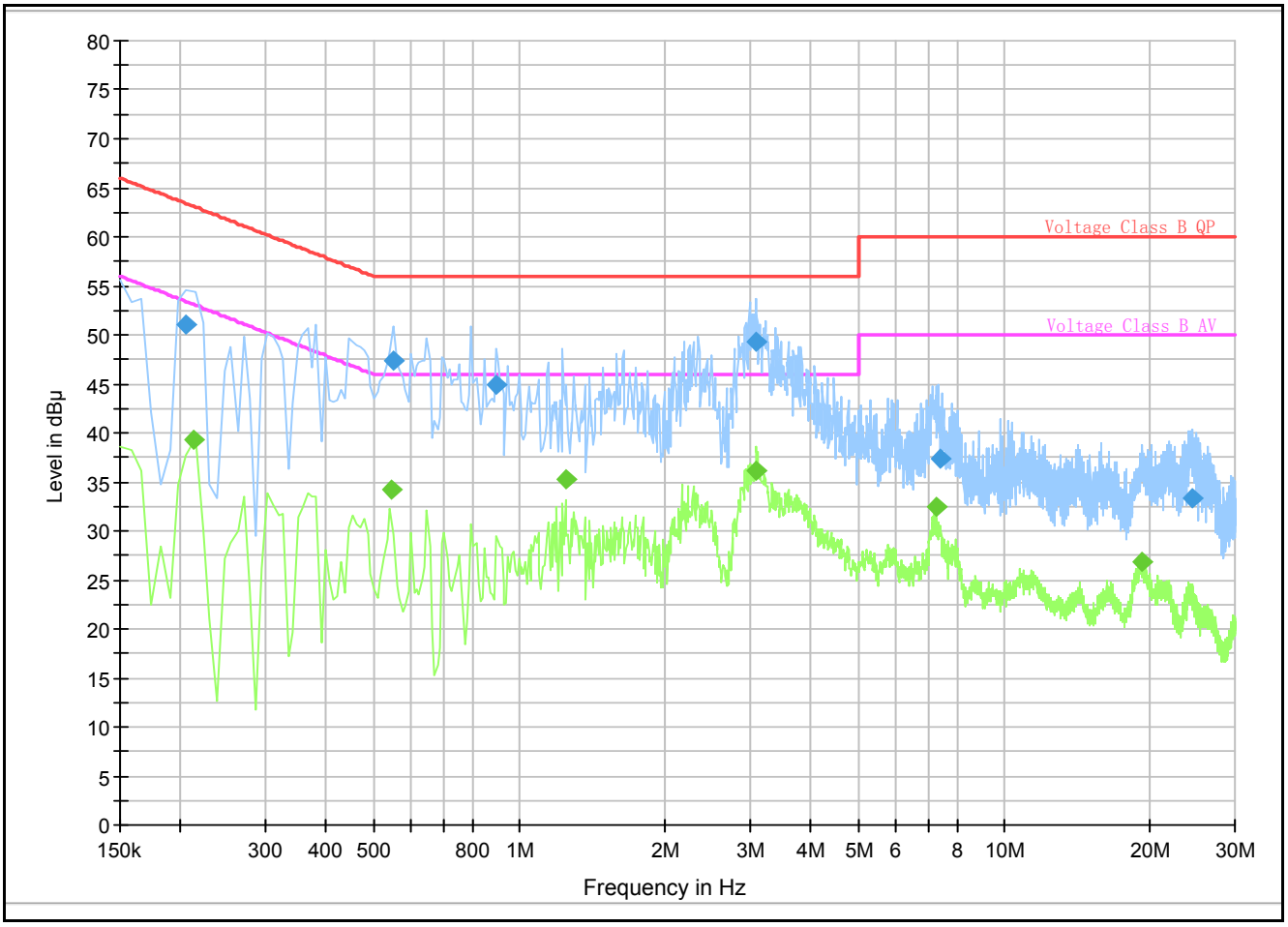
Channel No.:78

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.213000	Average	N	39.3	53.1	13.8
0.377000	Average	N	33.8	48.3	14.5
1.245000	Average	N	34.5	46.0	11.5
2.137000	Average	L	32.8	46.0	13.2
2.165000	Average	L	32.6	46.0	13.4
3.099000	Average	N	37.5	46.0	8.5
0.161000	Quasi-peak	N	54.4	65.4	11.0
0.549000	Quasi-peak	N	47.8	56.0	8.2
2.093000	Quasi-peak	N	42.8	56.0	13.2
2.105000	Quasi-peak	L	41.9	56.0	14.1
2.945000	Quasi-peak	L	38.9	56.0	17.1
3.081000	Quasi-peak	N	48.2	56.0	7.8

EDR 3DH5



L Line

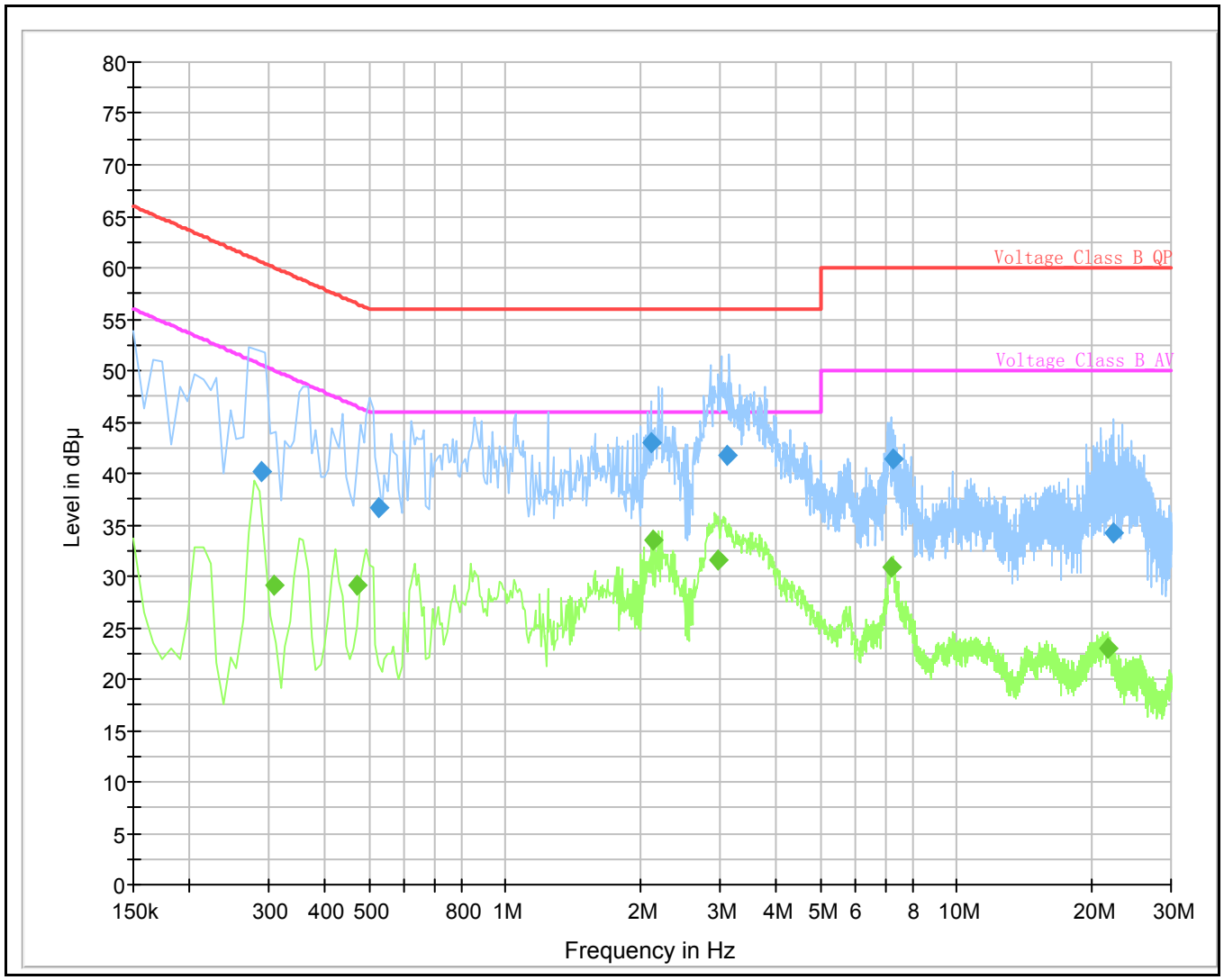


N Line

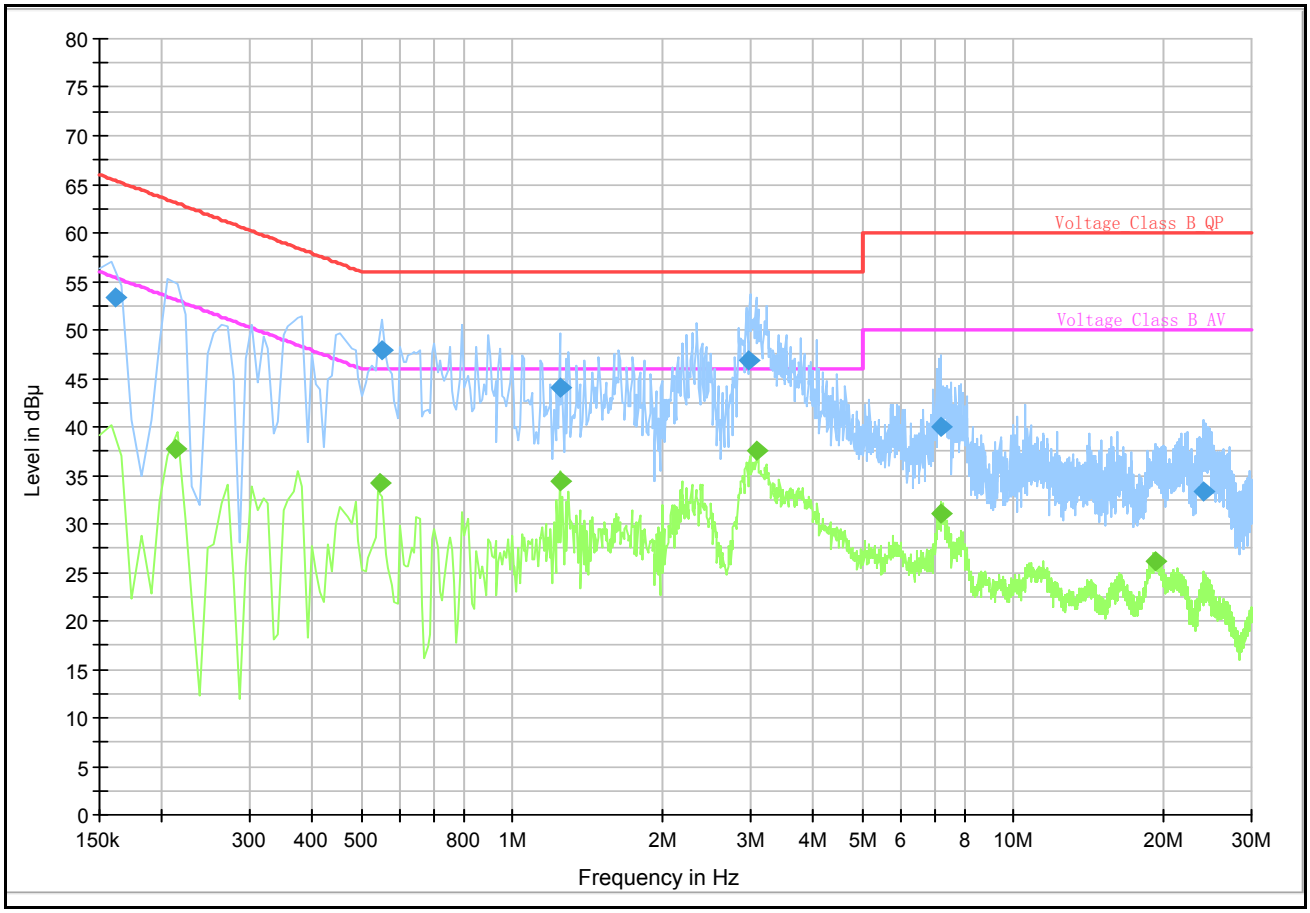
Conducted Emission from 150 KHz to 30 MHz

Channel No.:0

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.213000	Average	L	38.0	53.1	15.1
0.213000	Average	N	39.3	53.1	13.8
0.545000	Average	N	34.3	46.0	11.7
0.649000	Average	L	34.8	46.0	11.2
2.163000	Average	L	35.0	46.0	11.0
3.093000	Average	L	36.9	46.0	9.1
0.549000	Quasi-peak	N	47.4	56.0	8.6
0.653000	Quasi-peak	L	47.9	56.0	8.1
0.893000	Quasi-peak	N	45.0	56.0	11.0
2.163000	Quasi-peak	L	44.3	56.0	11.7
3.037000	Quasi-peak	L	49.3	56.0	6.7
3.081000	Quasi-peak	N	49.3	56.0	6.7


Voltage Class B QP
Voltage Class B AV
Level in dBµ
Frequency in Hz
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
150k
300
400
500
800
1M
2M
3M
4M
5M
6
8
10M
20M
30M

L line

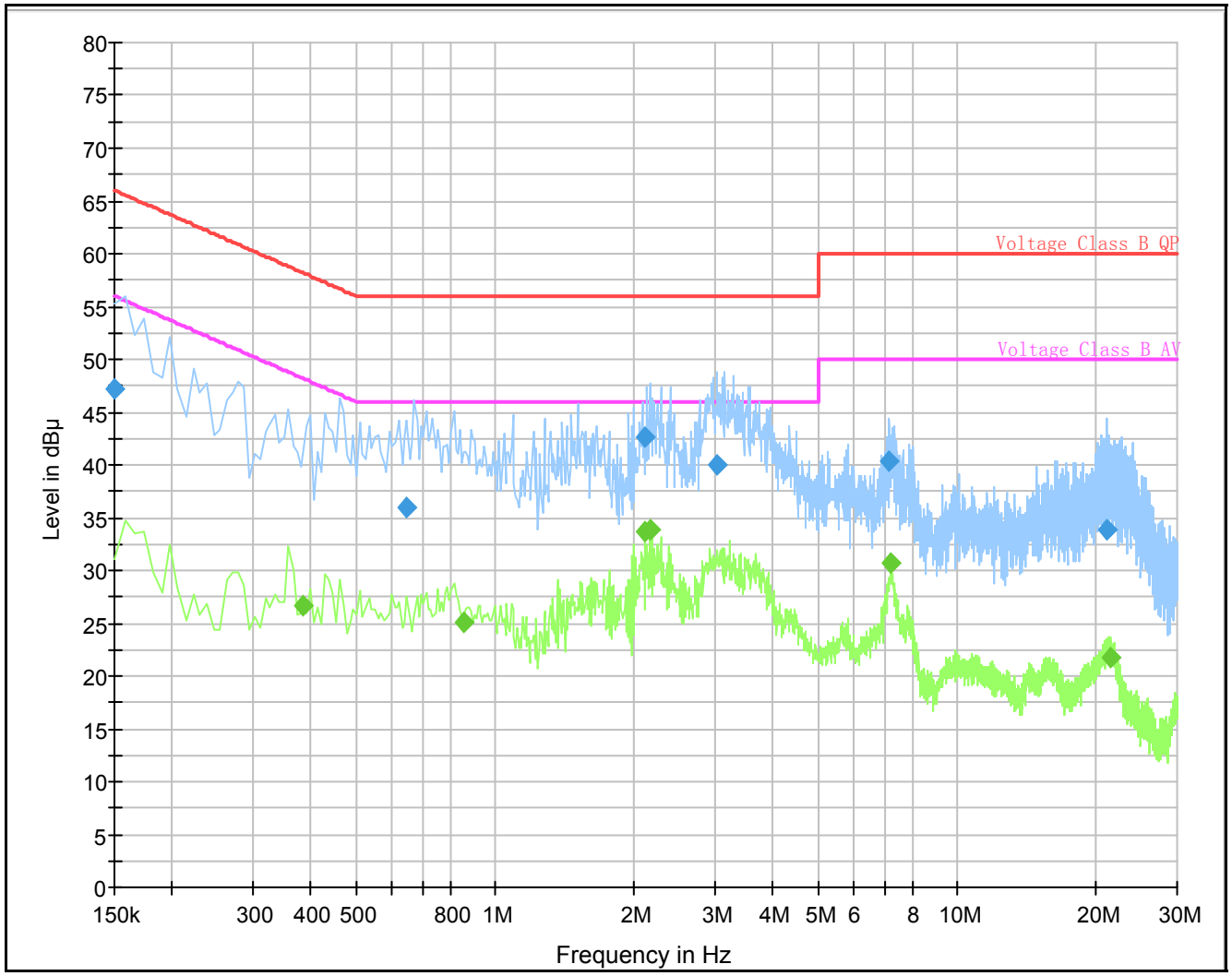


N Line

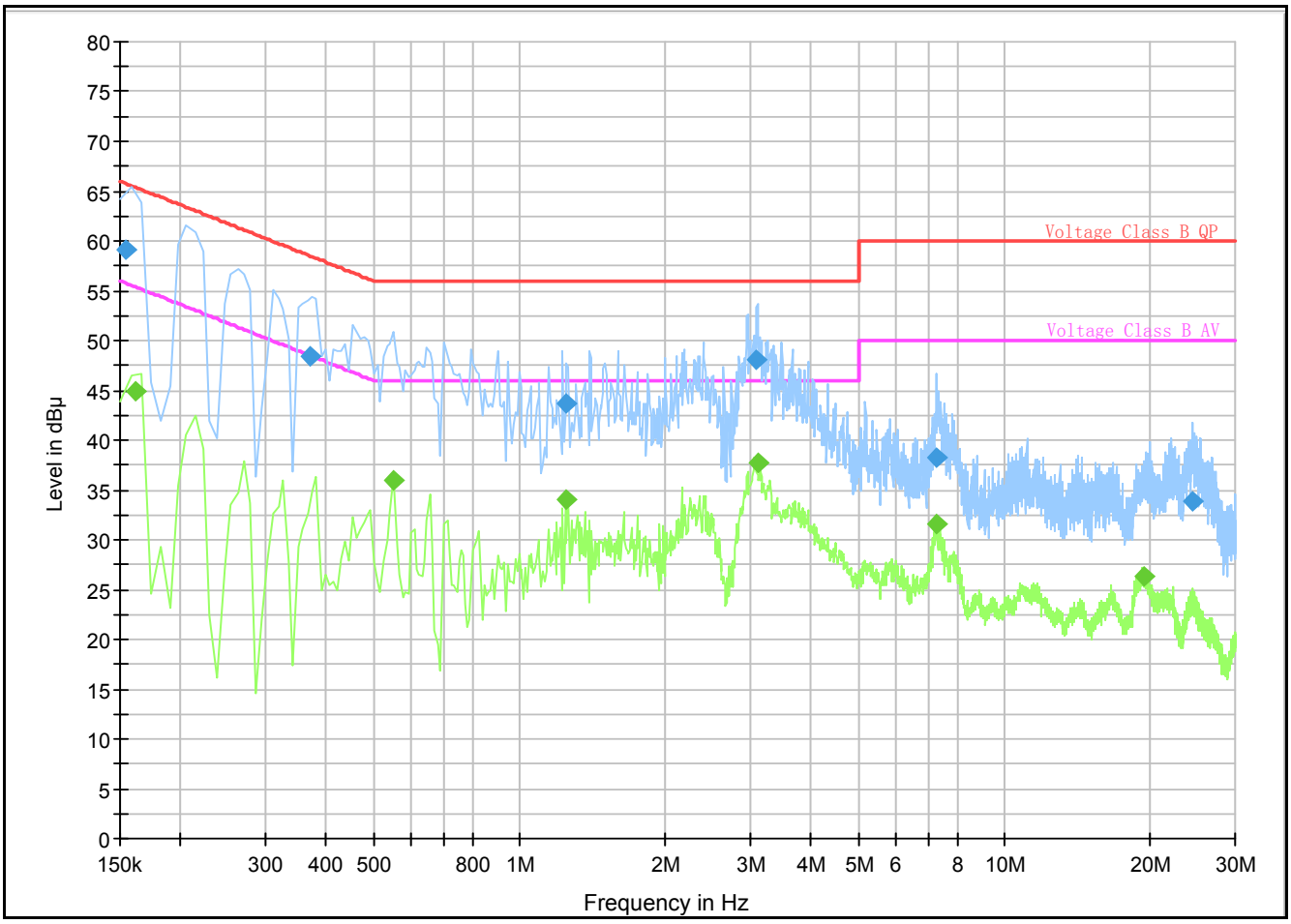
Conducted Emission from 150 KHz to 30 MHz

Channel No.:39

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
0.213000	Average	N	37.7	53.1	15.4
0.309000	Average	L	29.1	50.0	20.9
0.469000	Average	L	29.1	46.5	17.4
0.545000	Average	N	34.2	46.0	11.8
1.245000	Average	N	34.4	46.0	11.6
3.089000	Average	N	37.5	46.0	8.5
0.161000	Quasi-peak	N	53.4	65.4	12.0
0.549000	Quasi-peak	N	47.9	56.0	8.1
1.245000	Quasi-peak	N	44.1	56.0	11.9
2.105000	Quasi-peak	L	43.0	56.0	13.0
2.981000	Quasi-peak	N	46.9	56.0	9.1
3.121000	Quasi-peak	L	41.8	56.0	14.2


Voltage Class B QP
Voltage Class B AV
Level in dBµ
Frequency in Hz
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
150k
300
400
500
800
1M
2M
3M
4M
5M
6
8
10M
20M
30M

L line



N Line

Conducted Emission from 150 KHz to 30 MHz

Channel No.:78

Frequency (MHz)	Detector	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)
3.099000	Average	N	37.8	46.0	8.2
0.549000	Average	N	36.0	46.0	10.0
0.162000	Average	N	44.9	55.4	10.5
1.245000	Average	N	34.0	46.0	12.0
2.165000	Average	L	33.8	46.0	12.2
2.105000	Average	L	33.7	46.0	12.3
0.154000	Quasi-peak	N	59.1	65.8	6.7
3.093000	Quasi-peak	N	48.0	56.0	8.0
0.369000	Quasi-peak	N	48.4	58.5	10.1
1.245000	Quasi-peak	N	43.8	56.0	12.2
2.105000	Quasi-peak	L	42.7	56.0	13.3
3.029000	Quasi-peak	L	40.1	56.0	15.9

3. Main Test Instruments

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Valid Period
01	Base Station Simulator	CMU200	R&S	118133	2009-06-02	One year
02	Base Station Simulator	E5515C	Agilent	GB46490218	2008-09-14	One year
03	BT Base Station Simulator	CBT	R&S	1153.9000.35	2009-04-08	One year
04	Signal Analyzer	FSV	R&S	100815	2009-06-29	One year
05	Signal generator	SMR27	R&S	1606.6000.02	2009-06-29	One year
06	Spectrum Analyzer	E4445A	Agilent	MY46181146	2009-06-08	One year
07	EMI Test Receiver	ESCI	R&S	100948	2009-07-02	One year
08	Trilog Antenna	VULB 9163	SCHWARZBECK	9163-391	2009-05-14	One year
09	Horn Antenna	HF907	R&S	100126	2009-05-20	One year
10	Power Splitter	11667A	Agilent	52960	NA	NA
11	Semi-Anechoic Chamber	9.6*6.7*6.6m	ETS-Lindgren	NA	NA	NA
12	EMI test software	ES-K1	R&S	NA	NA	NA

*******END OF REPORT BODY*******

ANNEX A: EUT Test Setup