FCC REPORT

Applicant:	Wuhan KQ GEO INSTRUMENTS CO., LTD.
Address of Applicant:	1401-A1,Hangyu Bld., Wuhan University Sci & Tech Park, Wuhan, China
Manufacturer/Factory:	Wuhan KQ GEO INSTRUMENTS CO., LTD.
Address of Manufacturer/Factory:	1401-A1,Hangyu Bld., Wuhan University Sci & Tech Park, Wuhan, China

Equipment Under Test (EUT)

Product Name:	satellite signals receiver
Model No.:	M8
Trade Mark:	KQ GEO
FCC ID:	2AMQ4-KQGEOM8
Applicable standards:	FCC CFR Title 47 Part 2:2016 FCC CFR Title 47 Part 90 Subpart I:2016
Date of sample receipt:	June 08, 2017
Date of Test:	June 09-24, 2017
Date of report issued:	June 26, 2017
Test Result :	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*June 26, 2017*	*Original*

Prepared By: Edward.Pan ***Date:*** *June 26, 2017*

Project Engineer

Check By: Andy.Wu ***Date:*** *June 26, 2017*

Reviewer

3 Contents

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4 Test Summary

Test Item	Test Description	Result
Maximum Permissible Exposure(MPE)	§ 1.1307(b)(1), § 2.1091	PASS* (Please refer to MPE Report)
Power and antenna height limits	§ 2.1046; § 90.205; § 90.279	PASS
Modulation Characteristics	§ 2.1047; § 90.207	N/A*
Occupied Bandwidth	§ 2.1049 ; § 90.209	PASS
Emission Mask	§ 90.210(d) ; § 90.210(e)	PASS
Transient frequency behavior	§ 90.214	PASS
Spurious Emissions at Antenna Terminal	§ 2.1051; § 90.210(d) § 90.210(e)	PASS
Field Strength of Spurious Radiation	§ 2.1053; § 90.210(d) § 90.210(e)	PASS
Frequency Stability vs. Temperature Frequency Stability vs. Voltage	§ 2.1055; § 90.213	PASS

Remark:

N/A*: Not application

5 General Information

5.1 General Description of EUT

Product Name:	satellite signals receiver
Model No.:	M8
Frequency Range	410MHz~469.9875MHz
Support Bandwidth	12.5KHz& 6.25KHz
Type of modulation	GMSK
Antenna Type	Integral antenna
Antenna Gain	5dBi
Power supply:	DC 7.4V 6800mAh lithium battery Battery charge by DC 8.4V

5.2 Related Submittal(s) / Grant (s)

Title 47 Part 2	General Requirements and Information for the Certification of Radio Apparatus
Title 47 Part 90	PRIVATE LAND MOBILE RADIO SERVICES

5.3 Description of Support Units

None.

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● FCC —Registration No.: 600491

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 22, 2016.

● Industry Canada (IC)

The 3m Semi-anechoic chamber of China Certification & Inspection Services Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
Tel: 0755-27798480
Fax: 0755-27798960

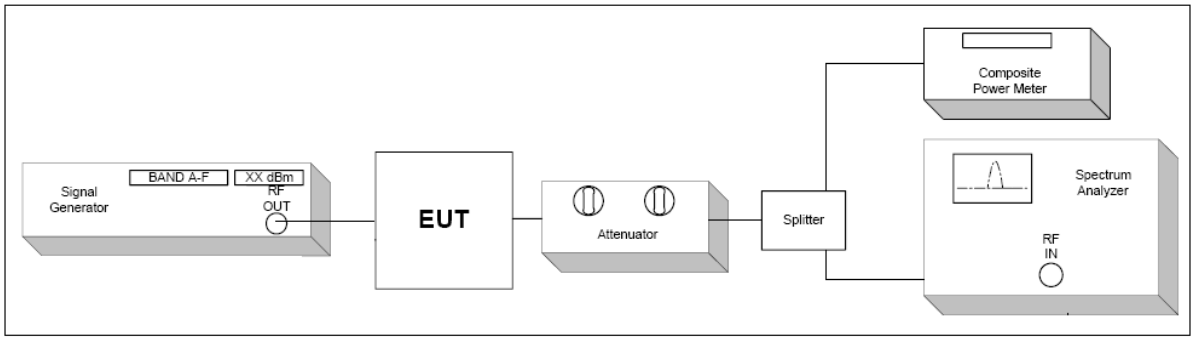
5.6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June 29 2016	June 28 2017
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June 29 2016	June 28 2017
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June 29 2016	June 28 2017
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 29 2016	June 28 2017
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 29 2016	June 28 2017
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	June 29 2016	June 28 2017
10	Coaxial Cable	GTS	N/A	GTS211	June 29 2016	June 28 2017
11	Coaxial cable	GTS	N/A	GTS210	June 29 2016	June 28 2017
12	Coaxial Cable	GTS	N/A	GTS212	June 29 2016	June 28 2017
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June 29 2016	June 28 2017
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	June 29 2016	June 28 2017
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 29 2016	June 28 2017
16	Band filter	Amindeon	82346	GTS219	June 29 2016	June 28 2017
17	RF Communication test set	HP	8920A	N/A	June 29 2016	June 28 2017
18	Programmable Constant Temp&Humi Test Chamber	WEWON	WH7H-150L-40-880	WH20170602 001	June. 06 2017	June. 06 2018

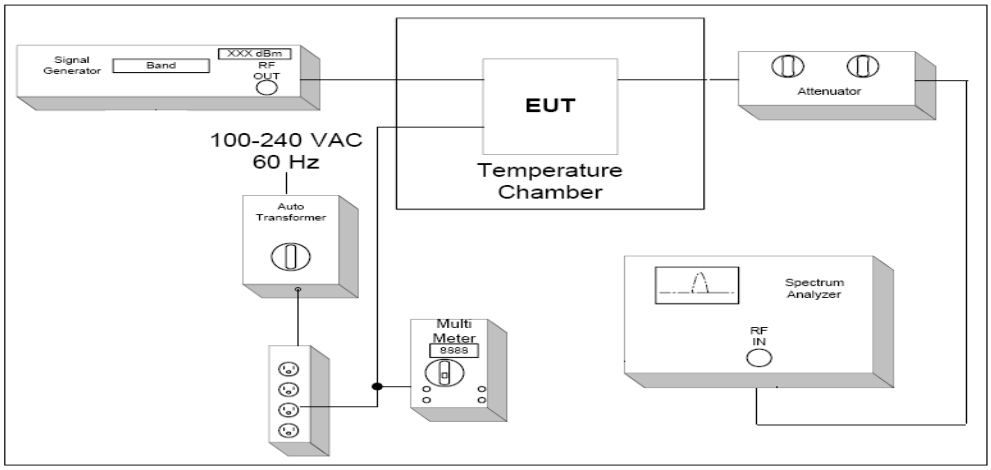
6 TEST CONFIGURATION AND CONDITIONS

6.1 Configuration of Tested System

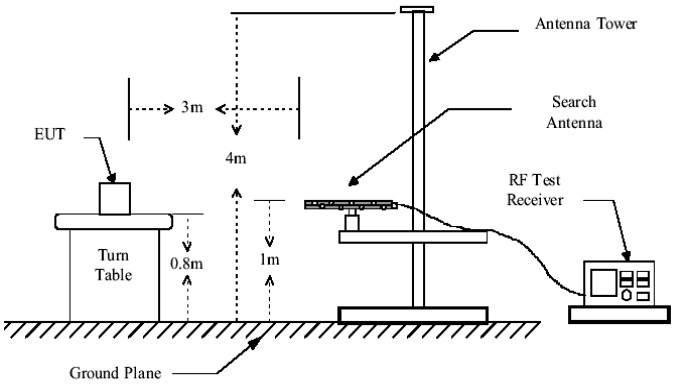
(A) RF Output Power, Occupied Bandwidth, Spurious Emissions at Antenna Terminal, Emission Mask.



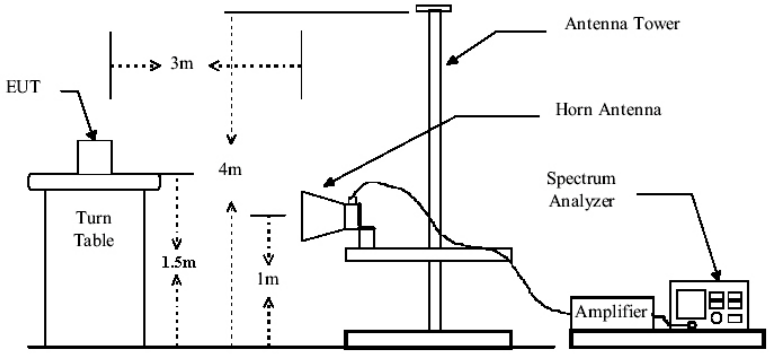
(B)Frequency stability Test Set-UP



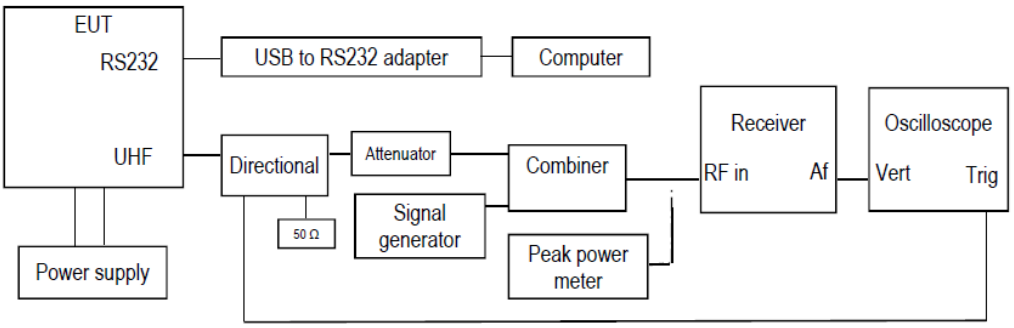
(C) Radiated Emission Test Set-Up, Frequency below 1000MHz



(D) Radiated Emission Test Set-UP Frequency over 1 GHz



(E) Transient Frequency Behavior Test Set-UP



6.2 Test Environments

Condition	Minimum value	Maximum value
Barometric pressure	86 kPa	106 kPa
Temperature	15°C	30°C
Relative Humidity	20 %	75 %
Power supply range	±5% of rated voltages	
Normal Test Condition	(1).Temperature: +15 °C to +30 °C; (2). voltage is 7.4V DC.	
Extreme Test Conditions:	(1). Temperatures: -30°C to +50°C.	

6.3 Test frequency selection

Mode	Channels frequency (MHz)		
	Low Ch.	Mid Ch.	High Ch.
6.25KHz Bandwidth	410.00	440.00	469.9875
12.5KHz Bandwidth	410.00	440.00	469.9875

6.4 DESCRIPTION OF TEST MODES

Test mode	Detail description of the test mode
GMSK+12.5KHz+TX	Keep the equipment in GMSK modulation and 12.5KHz bandwidth for TX mode
GMSK+6.25KHz+TX	Keep the equipment in GMSK modulation and 6.25KHz bandwidth for TX mode

7 TRANSMITTER OUTPUT POWER

7.1 Standard Applicable

According to FCC § 2.1046 and § 90.205 § 90.279.

The maximum allowable station effective radiated power (ERP) is dependent upon the station's antenna HAAT and required service area and will be authorized in accordance with table 2.

	Service area radius (km)									
	3	**8**	**13**	**16**	**24**	**32**	**40**	**48**	**64**	**80**
Maximum ERP (w)	2	100	[2]500	500	500	500	500	500	500	500
Up to reference HAAT (m)	15	15	15	27	63	125	250	410	950	2700

Effective antenna height (EAH) in meters (feet)	**Maximum effective radiated power (ERP) (watts)**
0-152 (0-500)	250
Above 152-305 (above 500-1000)	150
Above 305-457 (above 1000-1500)	75
Above 457-610 (above 1500-2000)	40
Above 610-762 (above 2000-2500)	20
Above 762-914 (above 2500-3000)	15
Above 914-1219 (above 3000-4000)	10
Above 1219 (above 4000)	5

Please refer the section §6.1 Configuration of Tested System.

7.2 Measurement Procedure

1. The RF output of EUT was connected to the Spectrum Analyzer by RF cable and attenuator, the path loss was compensated to the results for each measurement.
2. Set EUT at maximum power lever.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure the maximum conducted output power.

7.3 Measurement data

High Power

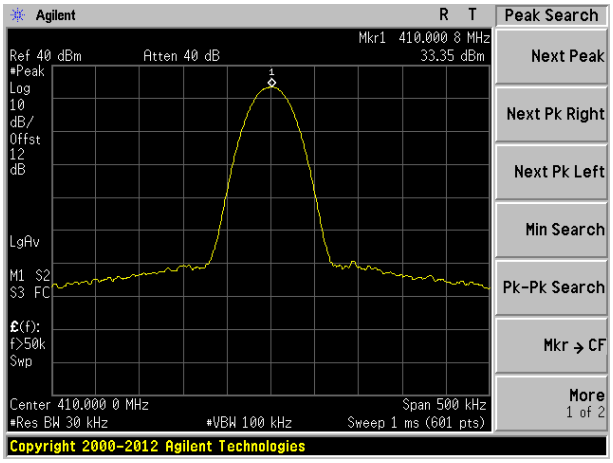
Test mode	Channel Freq.	Conducted output Power (dBm)	Conducted output Power (W)	Rated Power	Result
6.25KHz Bandwidth	Low	33.35	2.16	2W	Pass
	Middle	33.32	2.15		
	High	33.16	2.07		
12.5KHz Bandwidth	Low	33.47	2.22		
	Middle	33.70	2.34		
	High	33.56	2.27		

Low Power

Test mode	Channel Freq.	Conducted output Power (dBm)	Conducted output Power (W)	Rated Power	Result
6.25KHz Bandwidth	Low	27.24	0.530	0.5W	Pass
	Middle	27.25	0.531		
	High	27.36	0.545		
12.5KHz Bandwidth	Low	27.19	0.524		
	Middle	27.19	0.524		
	High	27.21	0.526		

High Power

6.25KHz Bandwidth

Lowest channel

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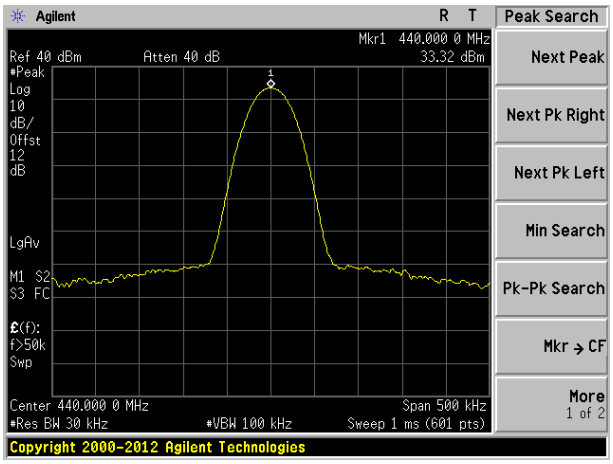
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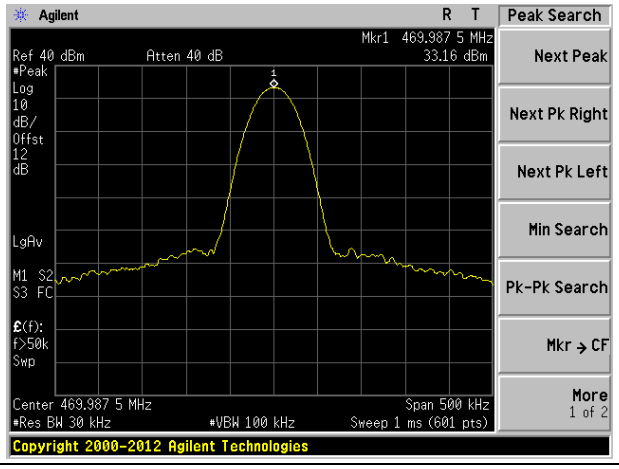
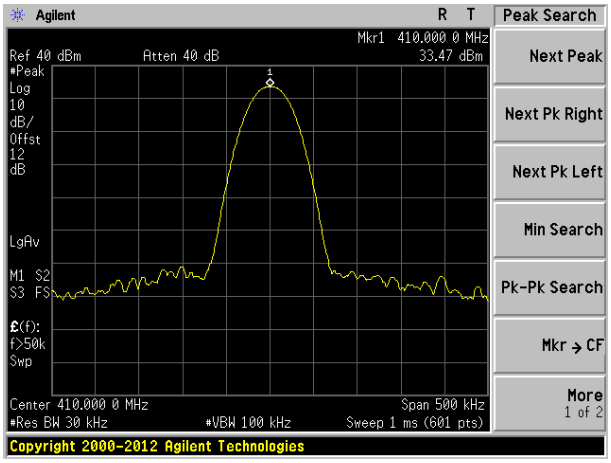


12.5KHz Bandwidth

Lowest channel

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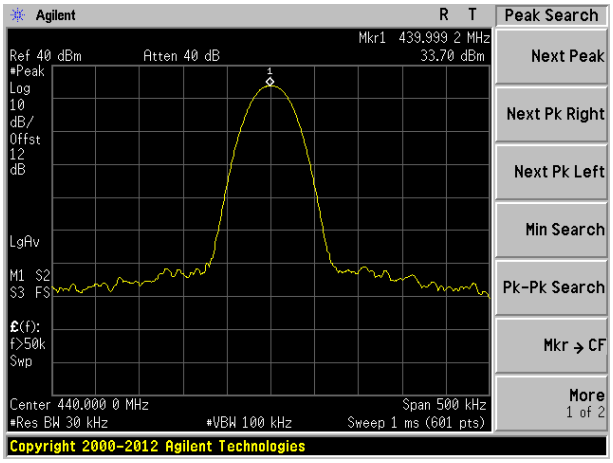
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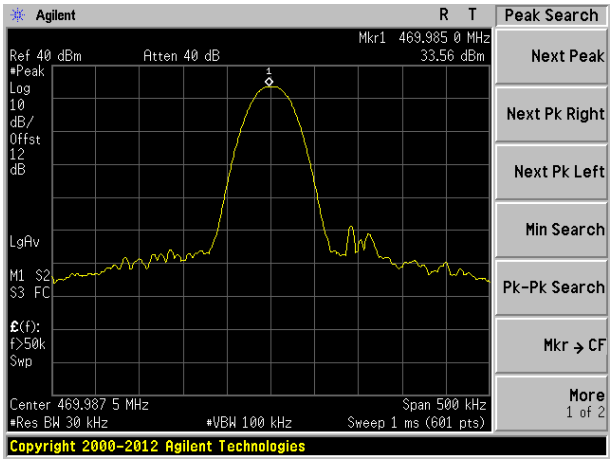
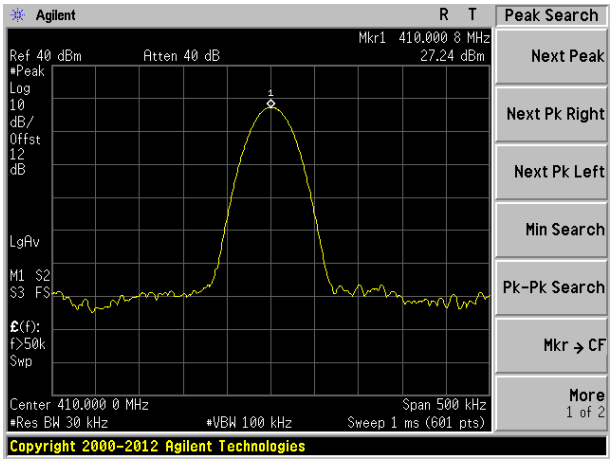


Low Power

6.25KHz Bandwidth

Lowest channel

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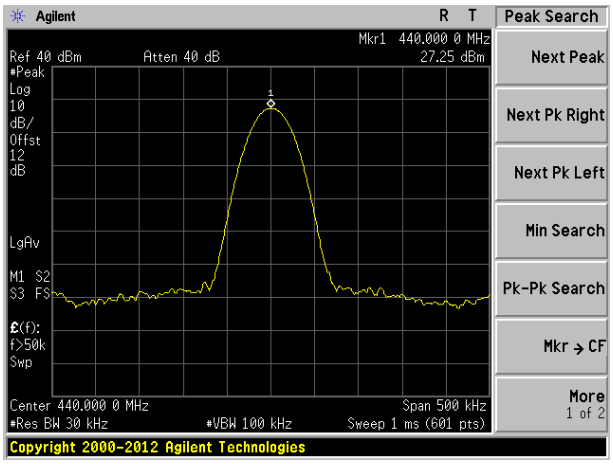
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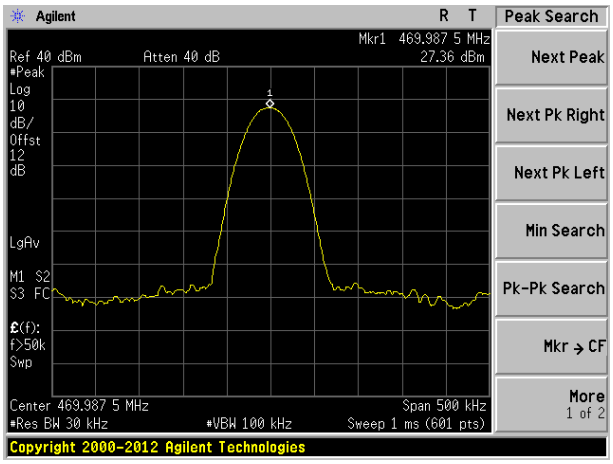
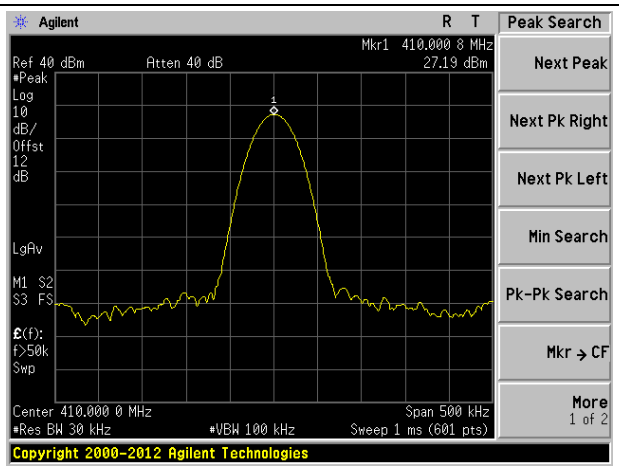
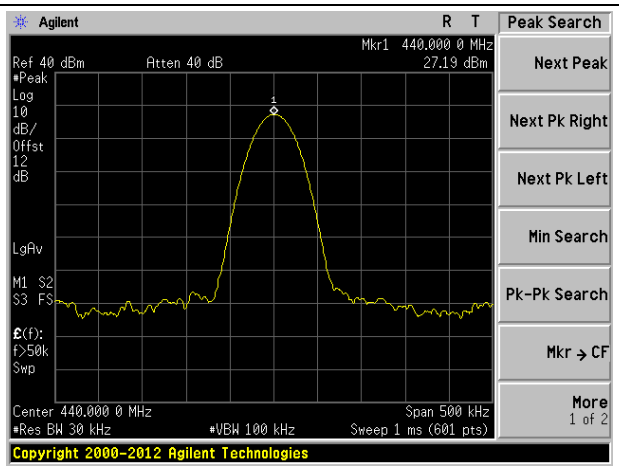


12.5KHz Bandwidth

Lowest channel

Middle channel

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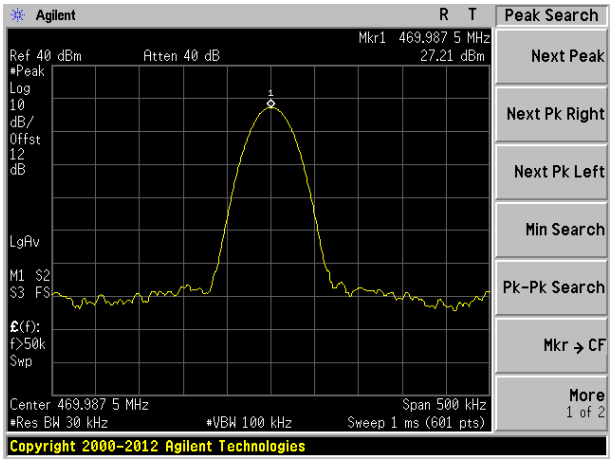


8 OCCUPIED BANDWIDTH

8.1 Standard Applicable

According to FCC §2.1049 , §90.209

8.2 Test setup

Please refer the section §6.1 Configuration of Tested System.

8.3 Test Procedure

1. The EUT RF output port was connected to spectrum analyzer.

2. The spectrum analyzer was setup to measure the Occupied Bandwidth (defined as the 99% Power Bandwidth).

4. The Occupied Bandwidth was measured of the EUT at low, middle and high channel of each type of modulation.

Spectrum analyzer settings:

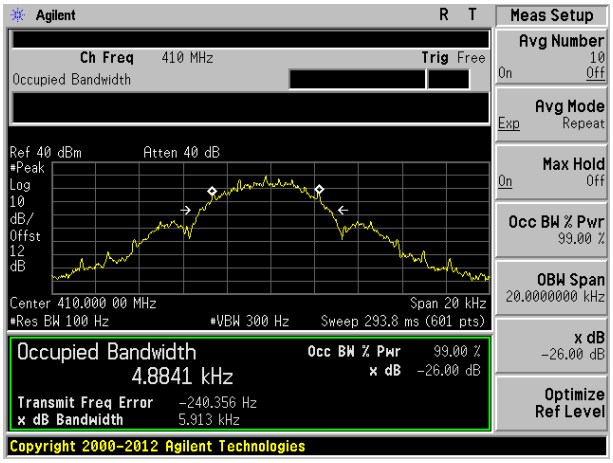
Detector: peak.

RBW= 100Hz, VBW=3RBW, Sweep: Auto

8.4 Measurement data

Modulation Type	Operation Mode	Test channel	99% Occupied Bandwidth (KHz)	26dB Emission Bandwidth (KHz)	Limit(KHz)	Result
GMSK	6.25KHz Bandwidth	Lowest	4.8841	5.913	6.00	Pass
		Middle	4.8796	5.921		
		Highest	4.8573	5.904		
GMSK	12.5KHz Bandwidth	Lowest	9.6720	10.679	11.25	Pass
		Middle	9.6989	10.744		
		Highest	9.7020	10.983		

6.25KHz Bandwidth

Lowest channel

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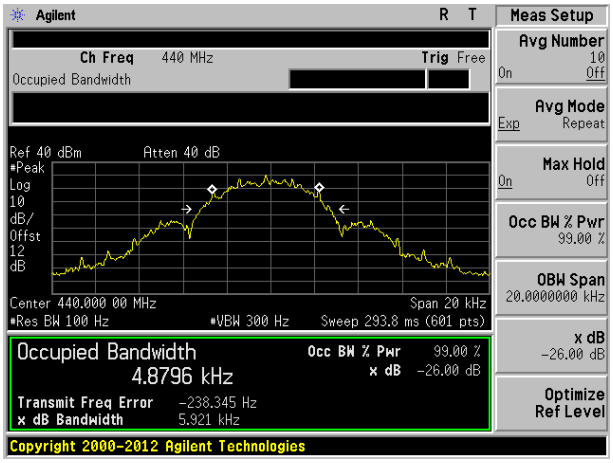
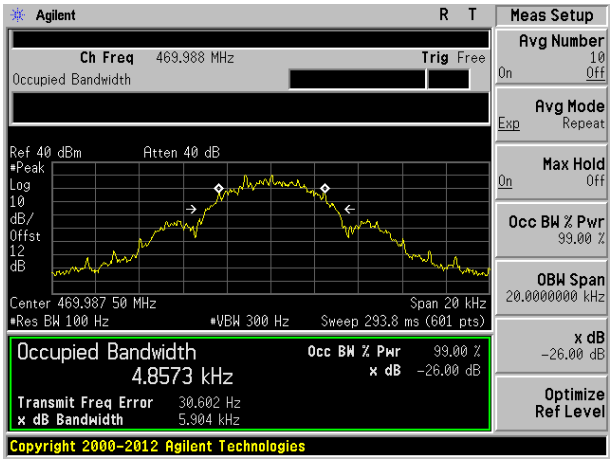
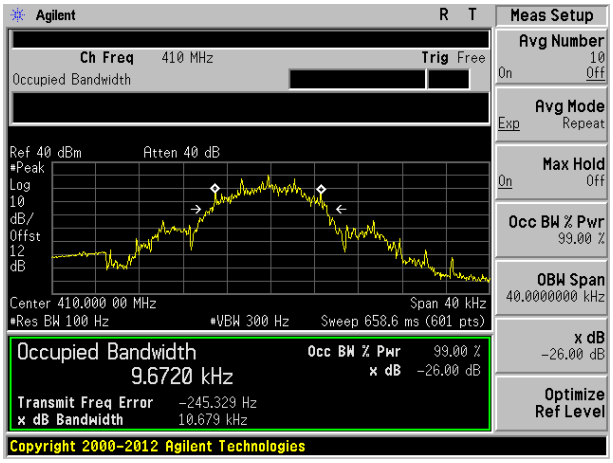

Highest channel


12.5KHz Bandwidth

Lowest channel

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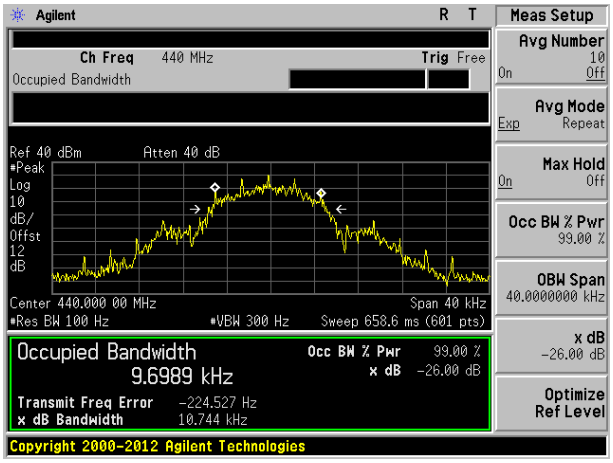
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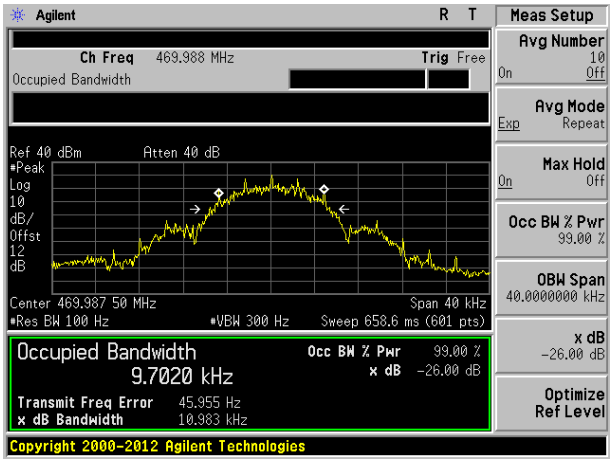


9 SPURIOUS EMISSION AT ANTENNA TERMINALS

9.1 Standard Applicable

According to FCC § 2.1051, § 90.210(d) and § 90.210(e)

9.2 Test setup

Please refer the section §6.1 Configuration of Tested System.

9.3 Measurement Procedure

1. The EUT RF output port was connected to spectrum analyzer.

2. The spurious emissions at antenna were measured at the RF output port of the EUT at low, middle and high channel of each type of modulation.

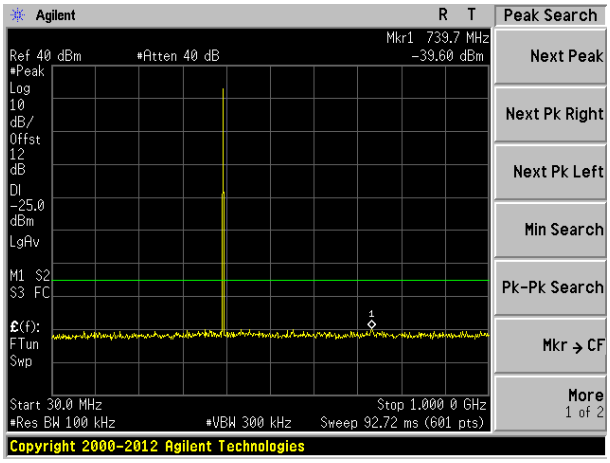
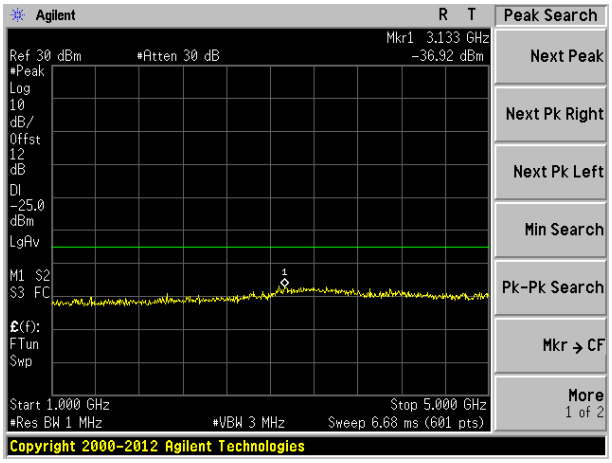
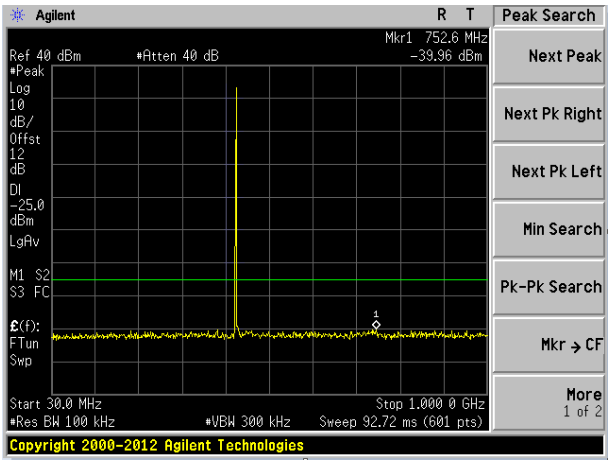
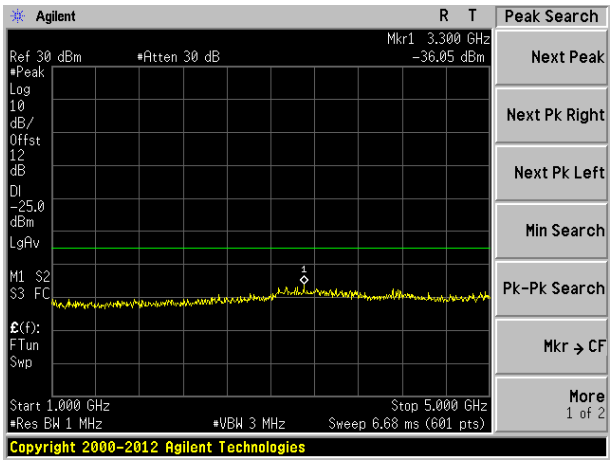
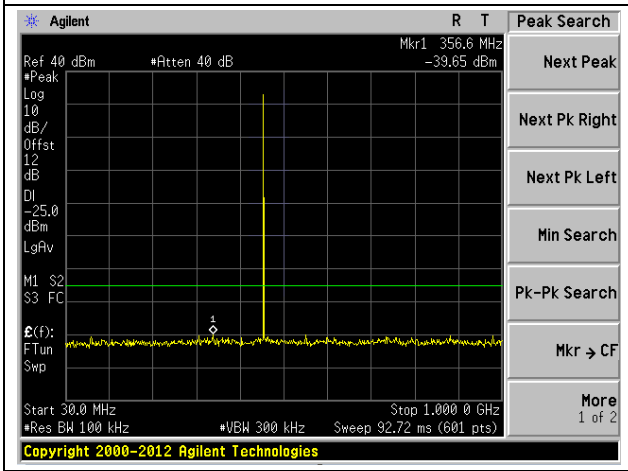
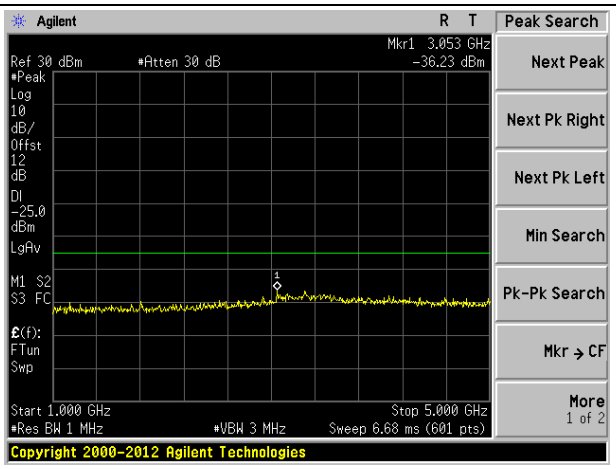
Spectrum analyzer settings:

Detector: Peak

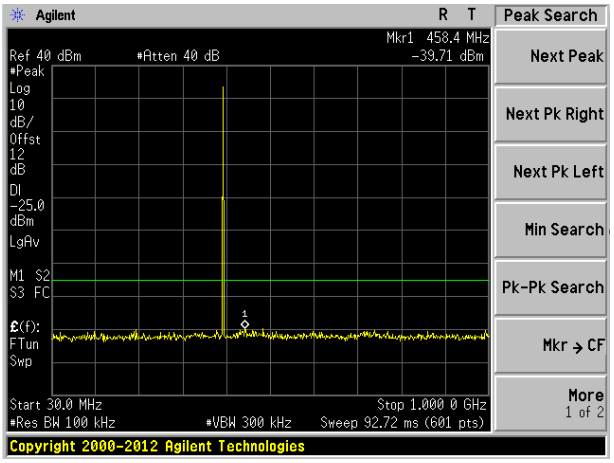
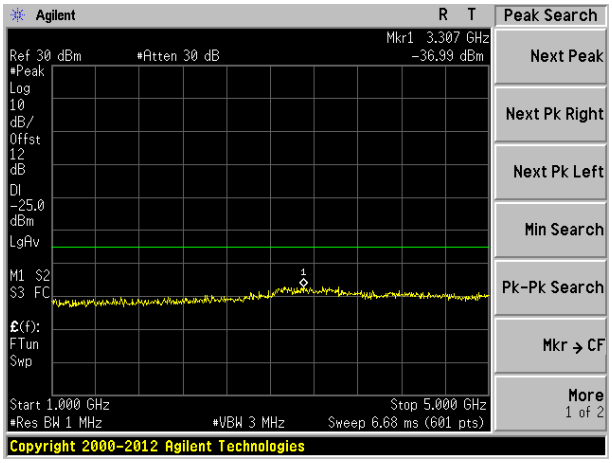
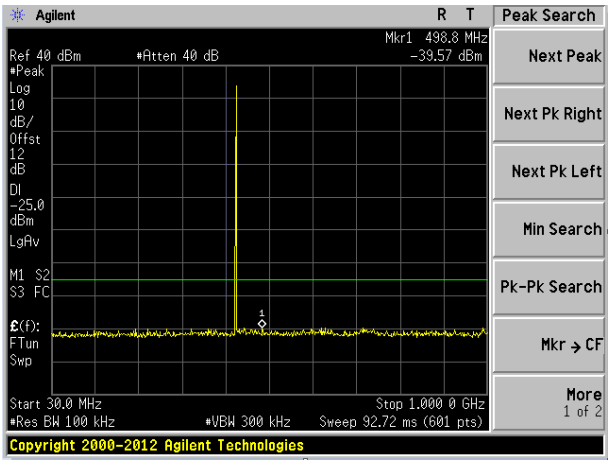
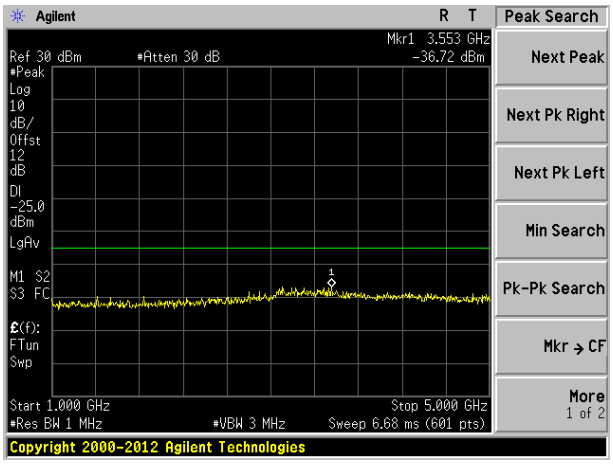
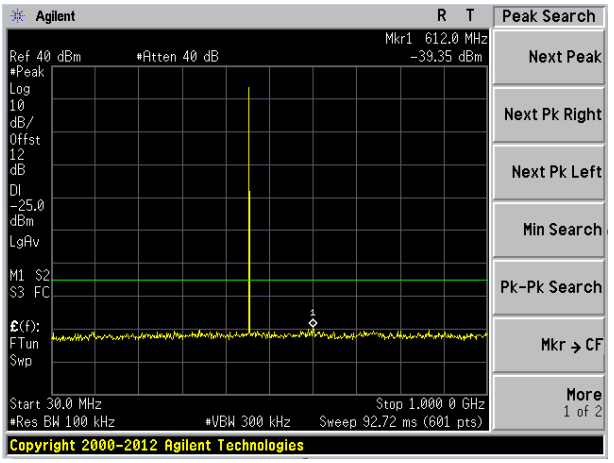
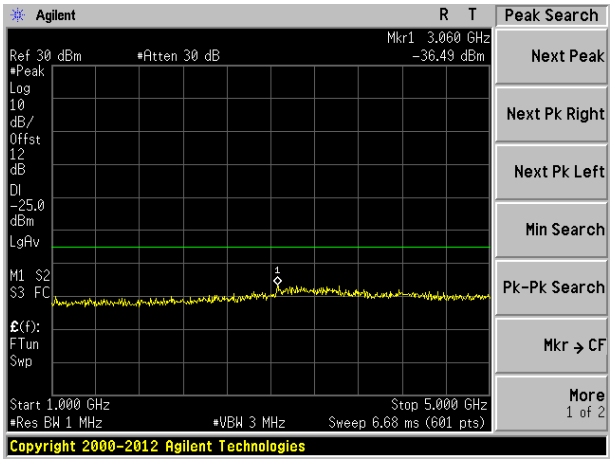
Below 1G: RBW=100kHz; VBW=300KHz; Above 1G: RBW=1 MHz ; VBW=3RBW

9.4 Measurement data

6.25KHz Bandwidth

Lowest channel	
	
30MHz-1GHz	1GHz-5GHz
Middle channel	
	
30MHz-1GHz	1GHz-5GHz
Highest channel	
	
30MHz-1GHz	1GHz-5GHz

12.5KHz Bandwidth

Lowest channel	
	
30MHz-1GHz	1GHz-5GHz
Middle channel	
	
30MHz-1GHz	1GHz-5GHz
Highest channel	
	
30MHz-1GHz	1GHz-5GHz

10 EMISSION MASK

10.1 Standard Applicable

According to FCC § 90.210(d) ; § 90.210(e)

10.2 Test setup

Please refer the section §6.1 Configuration of Tested System.

10.3 Measurement Procedure

Emission Mask C. For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier output power (P) as follows:

(1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5 kHz, but not more than 10 kHz: At least 83 log (f_d/5) dB;

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 10 kHz, but not more than 250 percent of the authorized bandwidth: At least 29 log (f_d^2/11) dB or 50 dB, whichever is the lesser attenuation;

(3) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.

(4) In the 1427-1432 MHz band, licensees are encouraged to take all reasonable steps to ensure that unwanted emissions power does not exceed the following levels in the 1400-1427 MHz band:

(i) For stations of point-to-point systems in the fixed service: −45 dBW/27 MHz.

(ii) For stations in the mobile service: −60 dBW/27 MHz.

(d) *Emission Mask D—12.5 kHz channel bandwidth equipment.* For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(1) On any frequency from the center of the authorized bandwidth f_0 to 5.625 kHz removed from f_0: Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least 7.27(f_d−2.88 kHz) dB.

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least 50 + 10 log (P) dB or 70 dB, whichever is the lesser attenuation.

(e) *Emission Mask E—6.25 kHz or less channel bandwidth equipment.* For transmitters designed to operate with a 6.25 kHz or less bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(1) On any frequency from the center of the authorized bandwidth f_0 to 3.0 kHz removed from f_0: Zero dB.

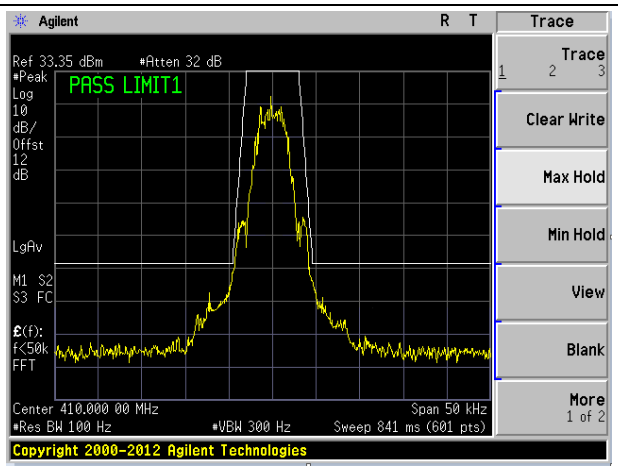
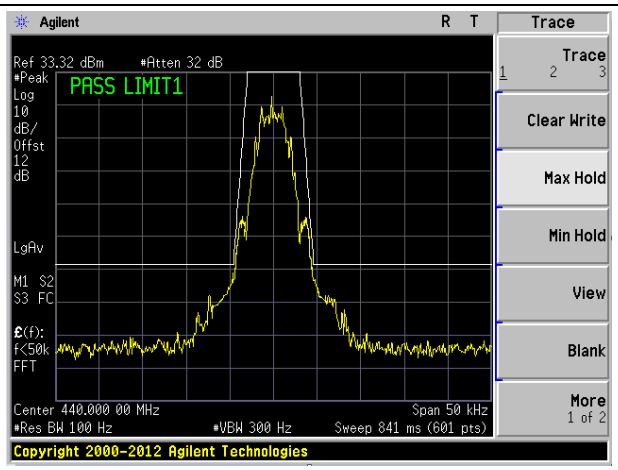
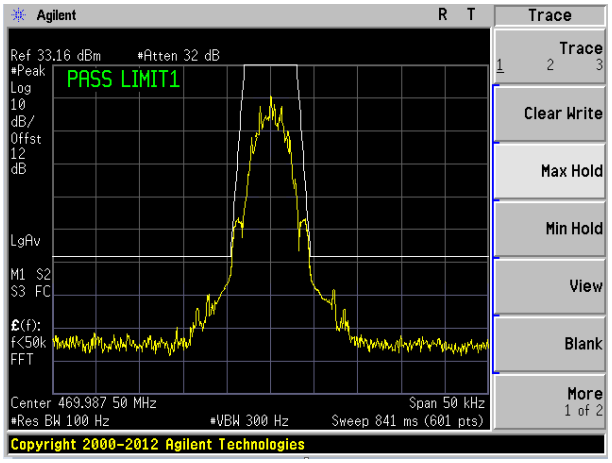
(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 3.0 kHz but no more than 4.6 kHz: At least 30 + 16.67(f_d−3 kHz) or 55 + 10 log (P) or 65 dB, whichever is the lesser attenuation.

(3) On any frequency removed from the center of the authorized bandwidth by more than 4.6 kHz: At least 55 + 10 log (P) or 65 dB, whichever is the lesser attenuation.

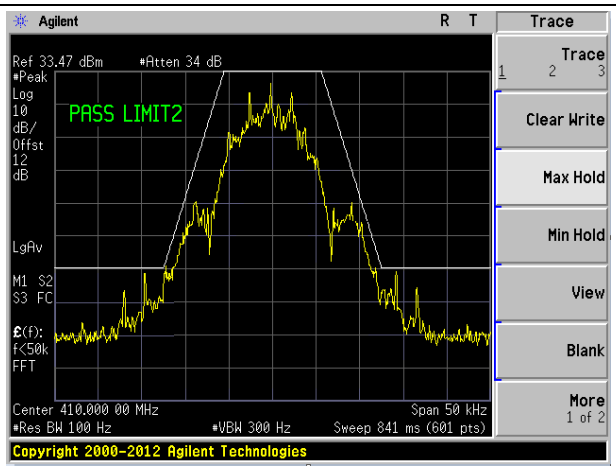
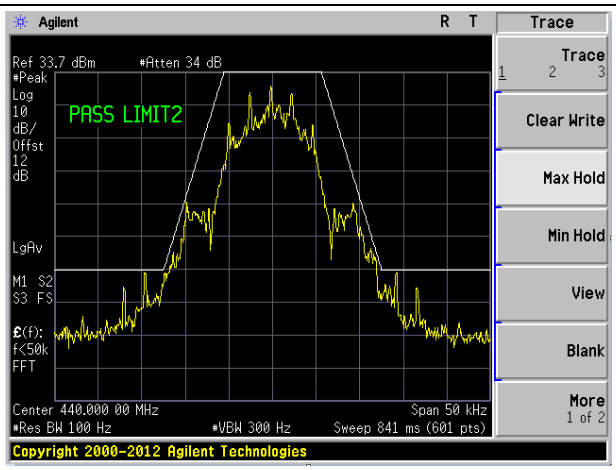
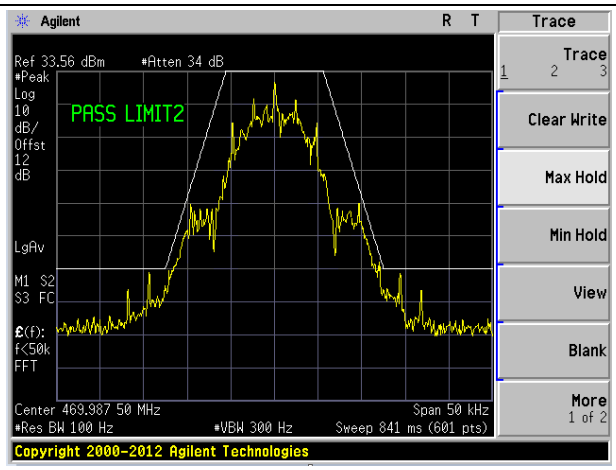
(4) The reference level for showing compliance with the emission mask shall be established using a resolution bandwidth sufficiently wide (usually two or three times the channel bandwidth) to capture the true peak emission of the equipment under test. In order to show compliance with the emission mask up to and including 50 kHz removed from the edge of the authorized bandwidth, adjust the resolution bandwidth to 100 Hz with the measuring instrument in a peak hold mode. A sufficient number of sweeps must be measured to insure that the emission profile is developed. If video filtering is used, its bandwidth must not be less than the instrument resolution bandwidth. For emissions beyond 50 kHz from the edge of the authorized bandwidth, see paragraph (o) of this section. If it can be shown that use of the above instrumentation settings do not accurately represent the true interference potential of the equipment under test, an alternate procedure may be used provided prior Commission approval is obtained.

10.4 Measurement data

6.25KHz Bandwidth

Lowest channel

Middle channel

Highest channel


12.5KHz Bandwidth

Lowest channel

Middle channel

Highest channel


11 TRANSIENT FREQUENCY BEHAVIOR

11.1 Standard Applicable

According to FCC § 90.214

Time intervals[1] [2]	Maximum frequency difference[3]	All equipment	
		150 to 174 MHz	421 to 512 MHz
Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels			
t_1[4]	±25.0 kHz	5.0 ms	10.0 ms
t_2	±12.5 kHz	20.0 ms	25.0 ms
t_3[4]	±25.0 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels			
t_1[4]	±12.5 kHz	5.0 ms	10.0 ms
t_2	±6.25 kHz	20.0 ms	25.0 ms
t_3[4]	±12.5 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels			
t_1[4]	±6.25 kHz	5.0 ms	10.0 ms
t_2	±3.125 kHz	20.0 ms	25.0 ms
t_3[4]	±6.25 kHz	5.0 ms	10.0 ms

[1] t_{on} is the instant when a 1 kHz test signal is completely suppressed, including any capture time due to phasing.

t_1 is the time period immediately following t_{on}.

t_2 is the time period immediately following t_1.

t_3 is the time period from the instant when the transmitter is turned off until t_{off}.

t_{off} is the instant when the 1 kHz test signal starts to rise.

[2] During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in §90.213.

[3] Difference between the actual transmitter frequency and the assigned transmitter frequency.

[4] If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

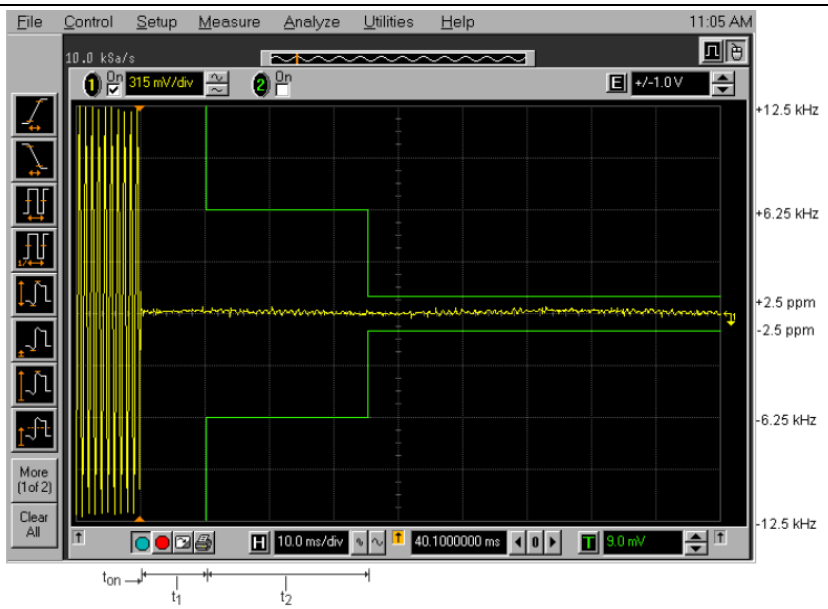
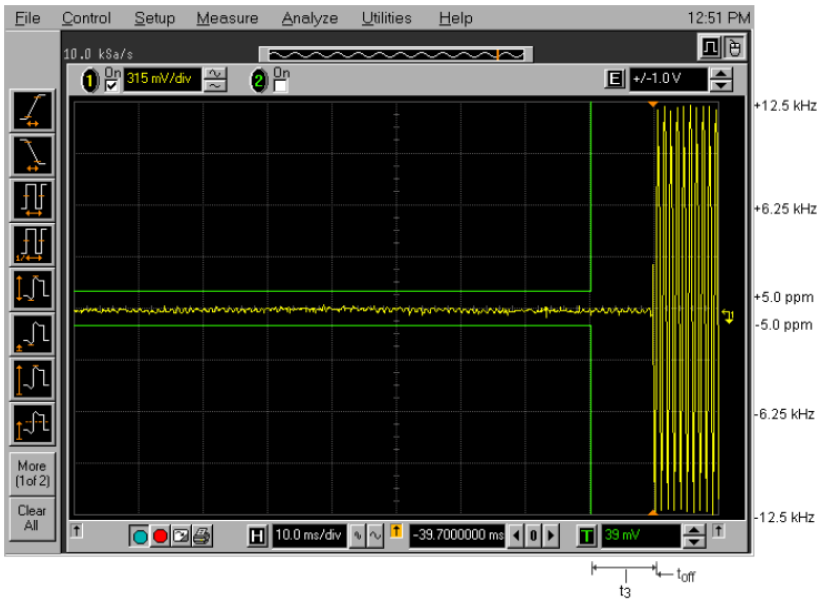
11.2 Test setup

Please refer the section §6.1 Configuration of Tested System.

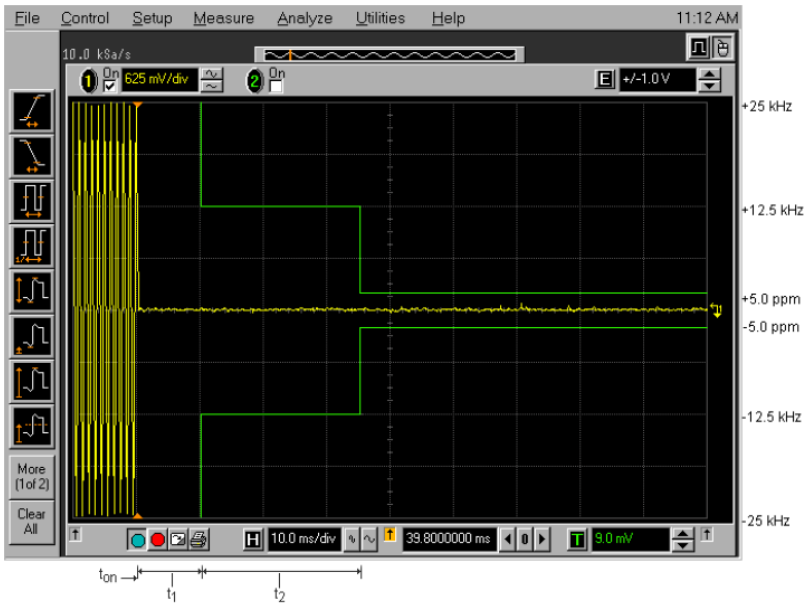
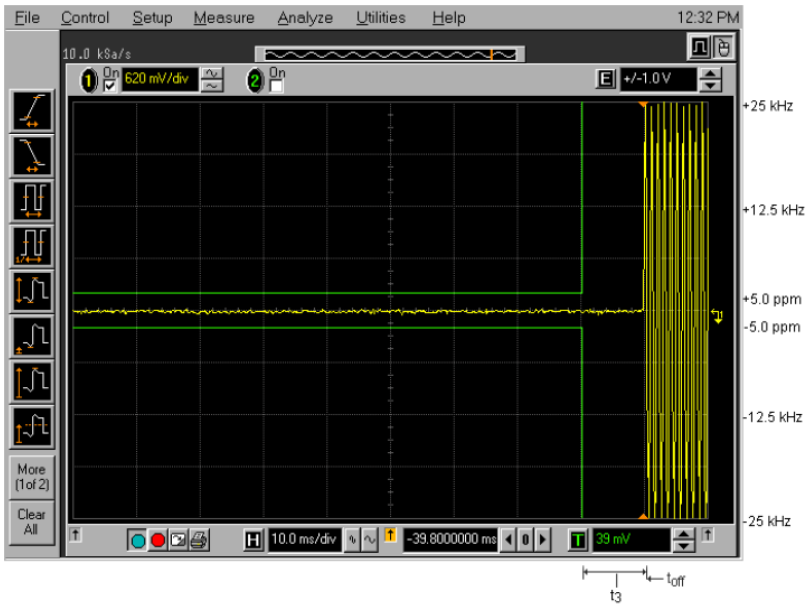
11.3 Measurement Procedure

The output of the EUT was connected to a power meter in order to get a reference power measurement. And the reference level is -20dBm. Once the reference power measurement was determined, an external signal source was connected to the Modulation Domain Analyzer in order to set the trigger level. The EUT was connected to the Modulation Domain Analyzer. In order to capture a single-shot turn-on of the transmitter signal, the modulation domain analyzer was set to trigger on the rising edge of the waveform. Plots were taken. The modulation domain analyzer was then adjusted to trigger on the falling edge of the transmitter waveform in order to capture a single-shot turn-off transient of the transmitter signal. Plots were taken.

6.25KHz Bandwidth

Power on

Power off


12.5KHz Bandwidth

Power on

Power off


12 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

12.1 Standard Applicable

According to FCC § 2.1053, § 90.210(d) and § 90.210(e)

12.2 EUT Setup (Block Diagram of Configuration)

Please refer the section §6.1 Configuration of Tested System.

12.3 Measurement Procedure

1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.
2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.
3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.
4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)

12.4 Measurement data

6.25KHz Bandwidth mode

Test mode:	Below 1G		Test channel:	Lowest channel
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
97.53	Vertical	-56.81	-25.00	Pass
820.000	V	-52.18		
1230.000	V	-47.38		
1640.000	V	-49.21		
2460.000	V	---		
3280.000	V	---		
58.45	Horizontal	-59.65	-25.00	Pass
820.000	H	-51.32		
1230.000	H	-48.66		
1640.000	H	-48.81		
2460.000	H	---		
3280.000	H	---		
Test mode:	**Above 1G**		**Test channel:**	**Middle channel**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
85.16	Vertical	-55.42	-25.00	Pass
820.000	V	-49.53		
1230.000	V	-49.89		
1640.000	V	-48.67		
2460.000	V	---		
3280.000	V	---		
69.74	Horizontal	-54.29	-25.00	Pass
820.000	H	-50.34		
1230.000	H	-49.04		
1640.000	H	-48.33		
2460.000	H	---		
3280.000	H	---		
Test mode:	**Above 1G**		**Test channel:**	**Highest channel**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
82.05	Vertical	-52.04	-25.00	Pass
820.000	V	-49.67		
1230.000	V	-48.79		
1640.000	V	-48.26		
2460.000	V	---		
3280.000	V	---		
50.91	Horizontal	-53.55	-25.00	Pass
820.000	H	-50.49		
1230.000	H	-48.79		
1640.000	H	-48.18		
2460.000	H	---		
3280.000	H	---		

12.5KHz Bandwidth mode

Test mode:	Below 1G		Test channel:	Lowest channel
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
108.86	Vertical	-55.69	-25.00	Pass
820.000	V	-51.04		
1230.000	V	-48.68		
1640.000	V	-48.53		
2460.000	V	---		
3280.000	V	---		
82.47	Horizontal	-53.85	-25.00	Pass
820.000	H	-51.24		
1230.000	H	-45.75		
1640.000	H	-48.33		
2460.000	H	---		
3280.000	H	---		
Test mode:	**Above 1G**		**Test channel:**	**Middle channel**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
75.35	Vertical	-55.35	-25.00	Pass
820.000	V	-49.75		
1230.000	V	-49.55		
1640.000	V	-48.67		
2460.000	V	---		
3280.000	V	---		
67.55	Horizontal	-57.53	-25.00	Pass
820.000	H	-51.42		
1230.000	H	-49.04		
1640.000	H	-48.97		
2460.000	H	---		
3280.000	H	---		
Test mode:	**Above 1G**		**Test channel:**	**Highest channel**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
85.64	Vertical	-55.35	-25.00	Pass
820.000	V	-50.75		
1230.000	V	-49.55		
1640.000	V	-48.86		
2460.000	V	---		
3280.000	V	---		
123.04	Horizontal	-57.53	-25.00	Pass
820.000	H	-50.42		
1230.000	H	-49.04		
1640.000	H	-48.66		
2460.000	H	---		
3280.000	H	---		

Remark:"---" means that the emission level is too low to be measured.

13 FREQUENCY STABILITY

13.1 Standard Applicable

According to FCC § 2.1055 and § 90.213

13.2 Test setup

Please refer the section §6.1 Configuration of Tested System.

13.3 Test Procedure

1. The EUT was placed inside the temperature chamber.

2. The RF output port was connected to a spectrum analyzer.

3. After the temperature stabilized for approximately 20 min, the transmitting frequency was measured by the spectrum analyzer and recorded.

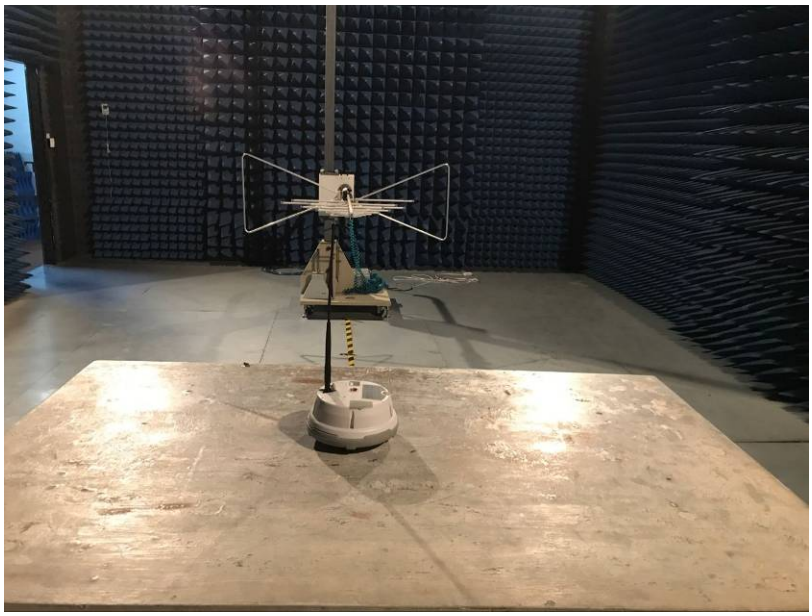
5. At room temperature, the frequency was measured when EUT was powered with the nominal voltage and with 85% and 115% of the nominal voltage.

13.4 Measurement data

6.25KHz Bandwidth mode						
Reference Frequency: Middle channel=440MHz						
Voltage with nominal Voltage	**Power Supplied (VDC)**	**Temperature (℃)**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit(ppm)**	**Result**
100%	7.4V	-30	8.0	0.018	2.5	Passed
100%		-20	7.5	0.017		Passed
100%		-10	8.0	0.018		Passed
100%		0	7.4	0.017		Passed
100%		10	7.3	0.017		Passed
100%		20	8.2	0.019		Passed
100%		30	8.3	0.019		Passed
100%		40	8.0	0.018		Passed
100%		50	8.5	0.019		Passed
12.5KHz Bandwidth mode						
Reference Frequency: Middle channel=440MHz						
Voltage with nominal Voltage	**Power Supplied (VDC)**	**Temperature (℃)**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit(ppm)**	**Result**
100%	7.4V	-30	8.2	0.019	2.5	Passed
100%		-20	7.8	0.018		Passed
100%		-10	8.1	0.018		Passed
100%		0	7.5	0.017		Passed
100%		10	7.6	0.017		Passed
100%		20	8.0	0.018		Passed
100%		30	8.2	0.019		Passed
100%		40	7.8	0.018		Passed
100%		50	7.6	0.017		Passed

14 Test Setup Photo

Radiated Emission



15 EUT Constructional Details

Reference to the test report No. GTS201706000003F01

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