FCC/IC - TEST REPORT

Report Number	:	**68.960.14.021.01**	Date of Issue:	August 4, 2014

Model	:	i47
Product Type	:	2.4inch 3G Feature Phone
Applicant	:	PERI INTERNATIONAL LIMITED
Address	:	RM 1605C HO KING COMM CTR 2-16 FA YUEN ST MONGKOK KLN HONG KONG
Production Facility	:	PERI INTERNATIONAL LIMITED
Address	:	RM 1605C HO KING COMM CTR 2-16 FA YUEN ST MONGKOK KLN HONG KONG

Test Result	:	■ **Positive** ☐ **Negative**
Total pages including Appendices	:	49

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1 Table of Contents

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2 Details about the Test Laboratory

Details about the Test Laboratory
Test Site 1

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, Shenzhen City, 518052, P. R. China
Telephone:	86 755 8828 6998
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Test Site 2

Company name:	Attestation of Global Compliance(Shenzhen) Co., Ltd. 2 F, Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang Street, Bao'an District, Shenzhen, China
FCC – Registration No.:	259865
Telephone:	86 755 2978 4239
Fax:	86 755 2600 8484

3 Description of the Equipment Under Test

Product:	2.4inch 3G Feature Phone
Model no.:	i47
FCC ID:	2ACRY-3GI47
IC ID:	NIL
Brand Name:	SEA LION
Options and accessories:	Test Software: Maui META 3G
Rating:	AC100-240V 50/60 Hz 0.15A
RF Transmission Frequency:	2402-2480MHz
No. of Operated Channel:	79
Modulation:	GFSK, π/4-DQPSK, 8DPSK
Antenna Type:	Integral
Antenna Gain:	-1.0dBi
Description of the EUT:	The Equipment Under Test (EUT) is a Mobile phone with bluetooth operated at 2.4GHz

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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2013 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators
RSS-Gen Issue 3 December 2010	General Requirements and Information for the Certification of Radio Apparatus
RSS-210 Issue 8 December 2010	RSS-210 — Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

All the test methods were according to Public Notice DA 00-705 -Frequency Hopper Spread Spectrum Test Procedure released by FCC on March 30, 2000 and C63.10 (2009).

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5 Summary of Test Results

Technical Requirements					
FCC Part 15 Subpart C, RSS-Gen, RSS-210					
Test Condition			Pages	Test Site	Test Result
§15.207	RSS-GEN A7.2.4	Conducted emission AC power port	10	Site 2	Pass
§15.247(b)(1)	RSS-210 A8.4	Conducted peak output power	13	Site 2	Pass
§15.247(a)(2)	RSS-210 A8.2(a)	6dB bandwidth	---	---	N/A
§15.247(a)(1)	RSS-210 A8.1(a) & RSSGEN 4.6.2	20dB bandwidth and 99% Occupied Bandwidth	15	Site 2	Pass
§15.247(a)(1)	RSS-210 A8.1(b)	Carrier frequency separation	20	Site 2	Pass
§15.247(a)(1)(iii)	RSS-210 A8.1(d)	Number of hopping frequencies	23	Site 2	Pass
§15.247(a)(1)(iii)	RSS-210 A8.1(c)	Dwell Time	25	Site 2	Pass
§15.247(e)	RSS-210 A8.2(b)	Power spectral density*	---	---	N/A
§15.247(d)	RSS-210 A8.5	Spurious RF conducted emissions	36	Site 2	Pass
§15.247(d)	RSS-210 A8.5	Band edge	40	Site 2	Pass
§15.247(d) & §15.209 &	RSS-210 2.5 & RSSGEN 7.2.5 & RSSGEN 6.1	Spurious radiated emissions for transmitter and receiver	45	Site 2	Pass
§15.203	RSSGEN 7.1.2	Antenna requirement	See note 2		Pass

Note 1: N/A=Not Applicable.

Note 2: The EUT uses a permanently ceramic antenna, which gain is 0dBi. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

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6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2ACRY-3GI47 complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules and RSS-210.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: July 10, 2014

Testing Start Date: July 11, 2014

Testing End Date: August 4, 2014

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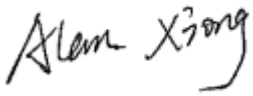
Reviewed by: Prepared by:

John Zhi
EMC Project Manager



Alan Xiong
EMC Project Engineer

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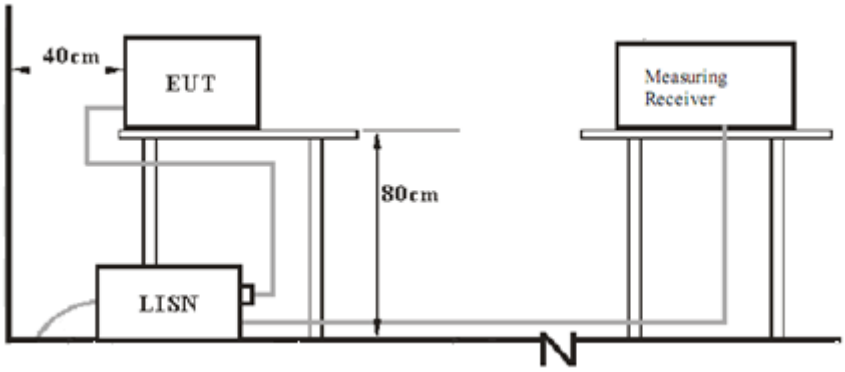
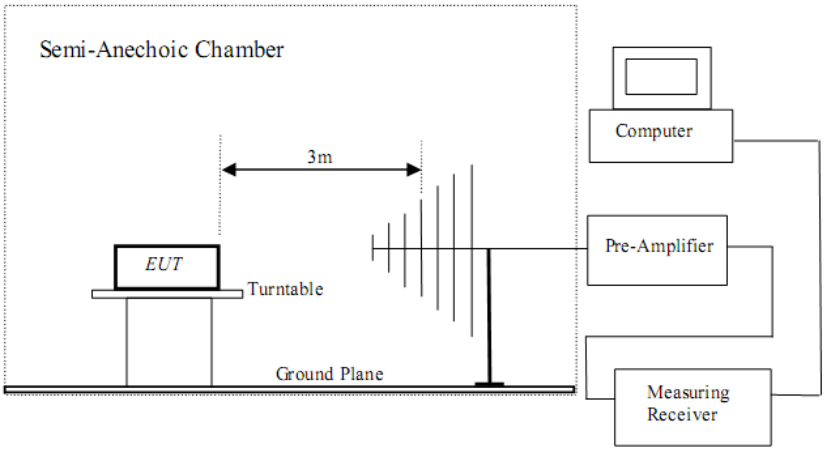
7 Test Setups

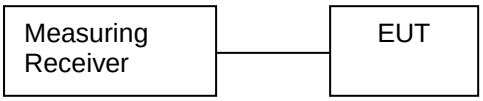
7.1 AC Power Line Conducted Emission test setups



7.2 Radiated test setups



7.3 Conducted RF test setups



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8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
NoteBook	Lenovo	X220	---

EUT Cable List and Details:

CABLE DESCRIPTION	LENGTH (M)	SHIELDED/ UNSHIELDED	WITH CORE/ WITHOUT CORE
USB Cable	0.8	Shielded	Without Core
Earphone Cable	1.2	Unshielded	Without Core

Test software: Maui META 3G, which used to control the EUT in continues transmitting mode

The system was configured to hopping mode and non-hopping mode.

Hopping mode: typical working mode (normal hopping status)

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power

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9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

Limit

According to §15.207 & RSS-GEN A7.2.4, conducted emissions limit as below:

Frequency MHz	QP Limit dBµV	AV Limit dBµV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Decreasing linearly with logarithm of the frequency

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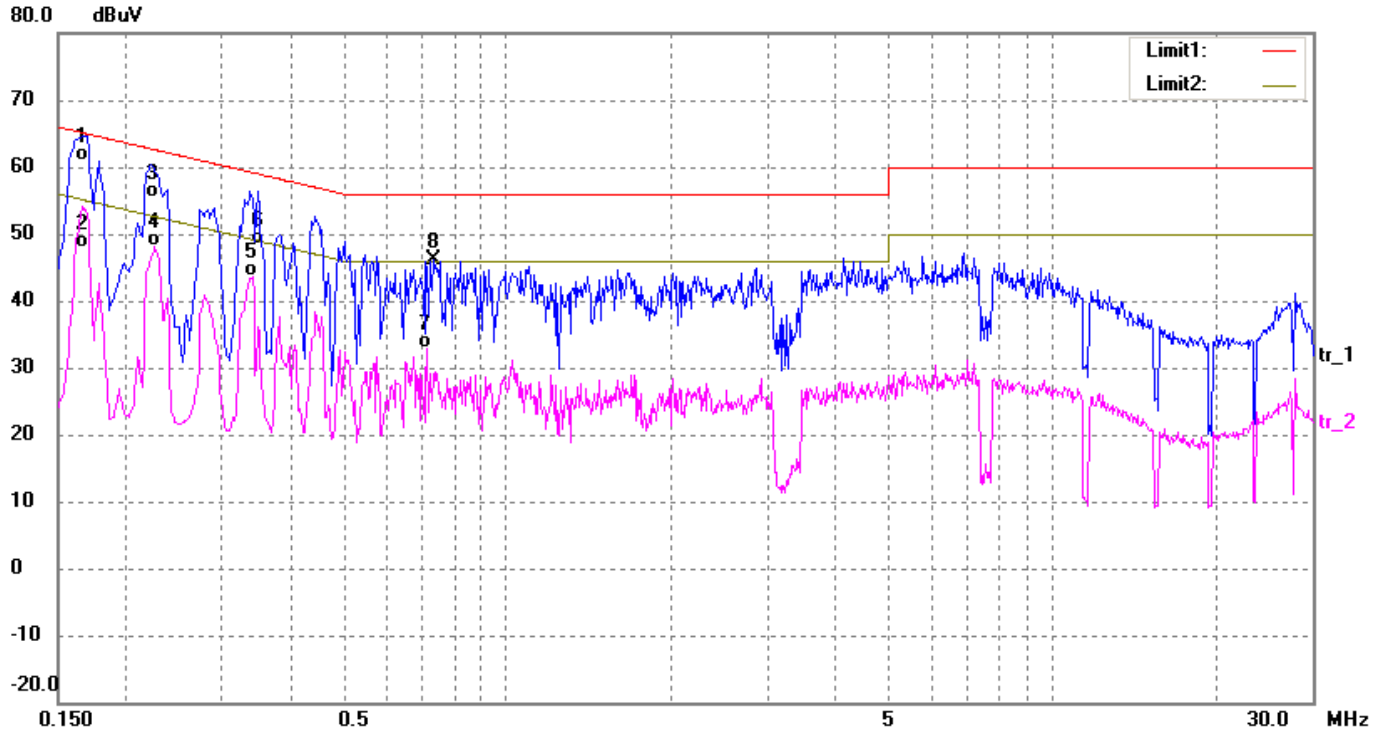
Conducted Emission

Product Type	:	2.4inch 3G Feature Phone
M/N	:	i47
Operating Condition	:	Transmitting
Test Specification	:	Line
Comment	:	AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1660	51.31	9.50	60.81	65.16	-4.35	QP
2	0.1660	38.50	9.50	48.00	55.16	-7.16	AVG
3	0.2220	45.79	9.50	55.29	62.74	-7.45	QP
4	0.2260	38.63	9.50	48.13	52.60	-4.47	AVG
5	0.3420	34.22	9.50	43.72	49.15	-5.43	AVG
6	0.3500	38.83	9.50	48.33	58.96	-10.63	QP
7	0.7140	23.19	9.71	32.90	46.00	-13.10	AVG
8	0.7340	36.30	9.73	46.03	56.00	-9.97	QP

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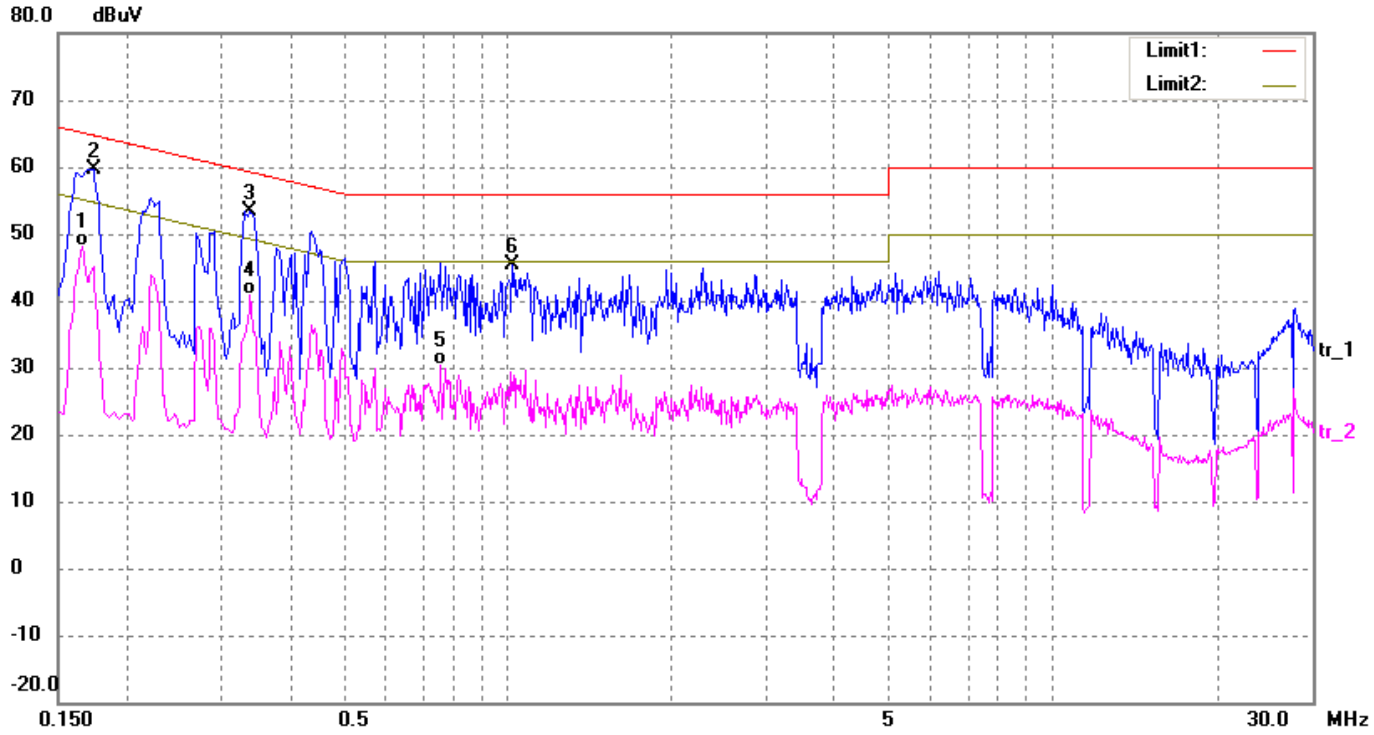
Conducted Emission

Product Type	:	2.4inch 3G Feature Phone
M/N	:	i47
Operating Condition	:	Transmitting
Test Specification	:	Neutral
Comment	:	AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1660	38.65	9.50	48.15	55.16	-7.01	AVG
2	0.1740	50.19	9.50	59.69	64.77	-5.08	QP
3	0.3380	43.92	9.50	53.42	59.25	-5.83	QP
4	0.3380	31.38	9.50	40.88	49.25	-8.37	AVG
5	0.7580	20.58	9.76	30.34	46.00	-15.66	AVG
6	1.0220	35.33	10.00	45.33	56.00	-10.67	QP

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9.2 Conducted peak output power

Test Method

1. Use the following spectrum analyzer settings:
   Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
   RBW > the 20 dB bandwidth of the emission being measured, VBW≥RBW,
   Sweep = auto, Detector function = peak, Trace = max hold
2. Add a correction factor to the display.
3. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power

Limits

According to §15.247 (b) (1) and RSS-210 A8.4, conducted peak output power limit as below:

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	≤1	≤30

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Conducted peak output power

Bluetooth Mode GFSK modulation Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2402MHz	-1.231	Pass
Middle channel 2441MHz	-0.129	Pass
High channel 2480MHz	1.272	Pass

Bluetooth Mode 8DPSK modulation Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2402MHz	-0.904	Pass
Middle channel 2441MHz	-2.011	Pass
High channel 2480MHz	0.450	Pass

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9.3 20 dB bandwidth and 99% Occupied Bandwidth

Test Method

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Limit [kHz]
N/A

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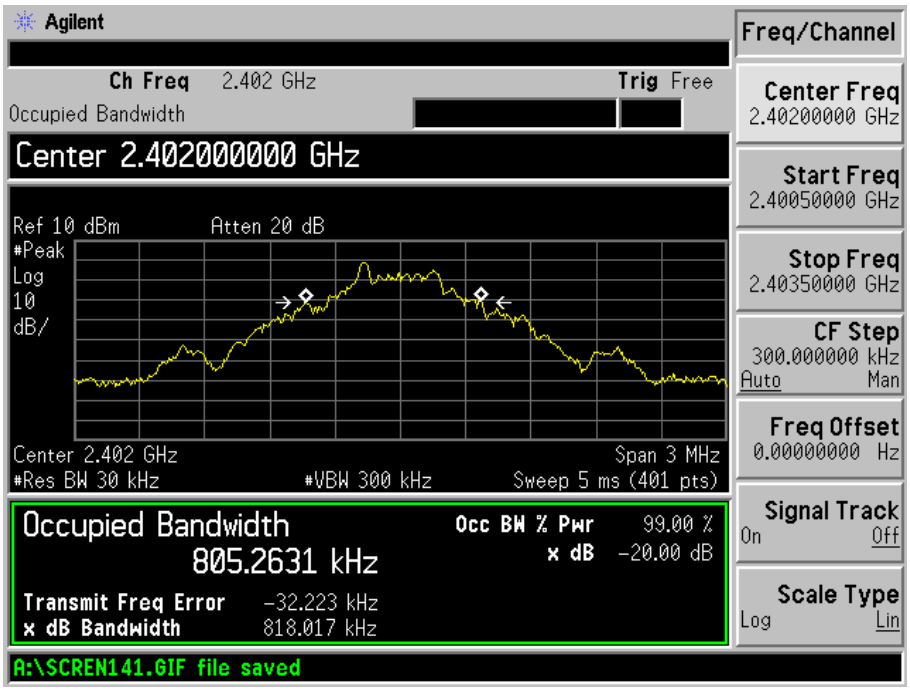
20 dB bandwidth and 99% Occupied Bandwidth

Bluetooth Mode GFSK Modulation test result

Frequency MHz	20 dB Bandwidth kHz	99% Bandwidth kHz	Limit kHz	Result
2402	818.017	805.2631	--	Pass
2441	806.994	832.1147	--	Pass
2480	807.808	803.9995	--	Pass



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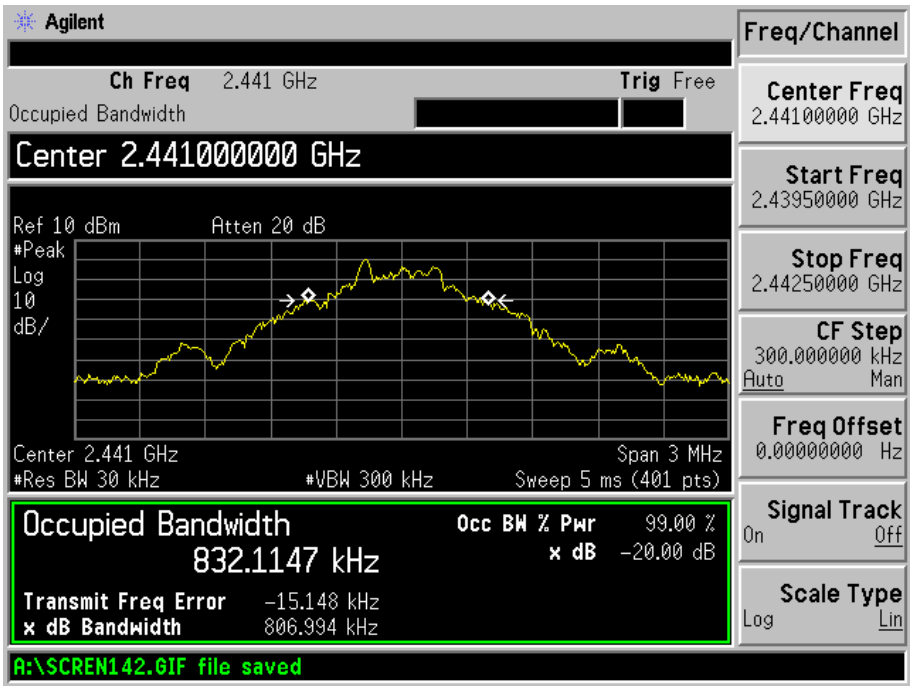
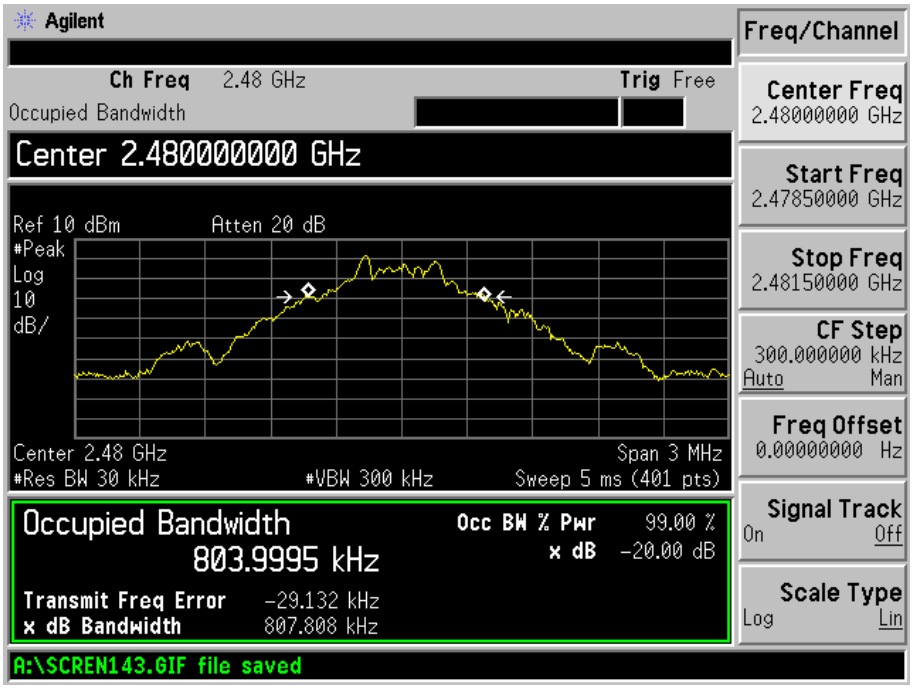
20 dB bandwidth and 99% Occupied Bandwidth





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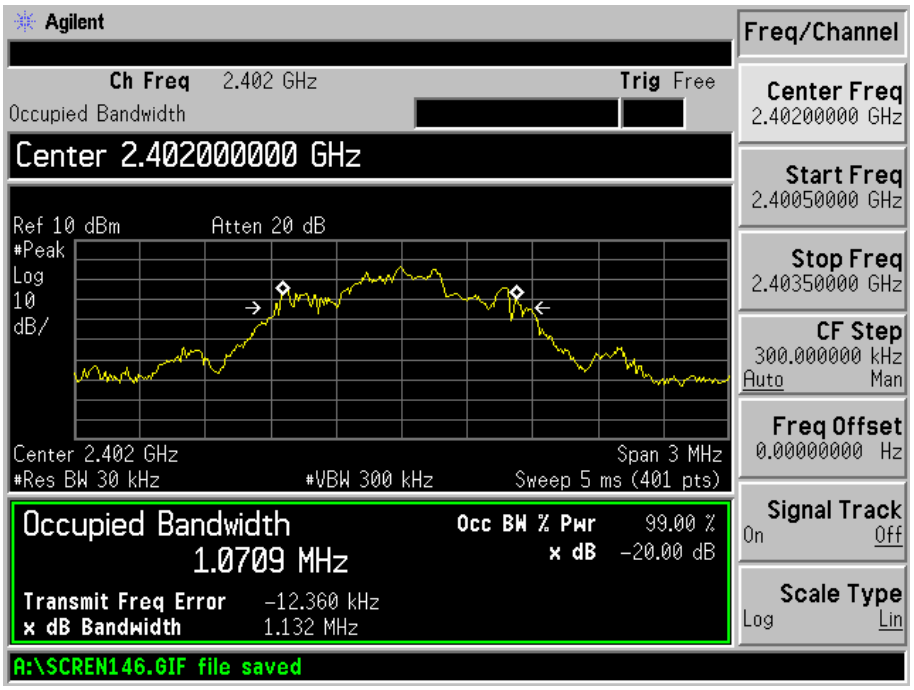
20 dB bandwidth and 99% Occupied Bandwidth

Bluetooth Mode 8DPSK Modulation test result

Frequency MHz	20 dB Bandwidth kHz	99% Bandwidth kHz	Limit kHz	Result
2402	1132	1070.9	--	Pass
2441	1146	1059.2	--	Pass
2480	1148	1064.0	--	Pass



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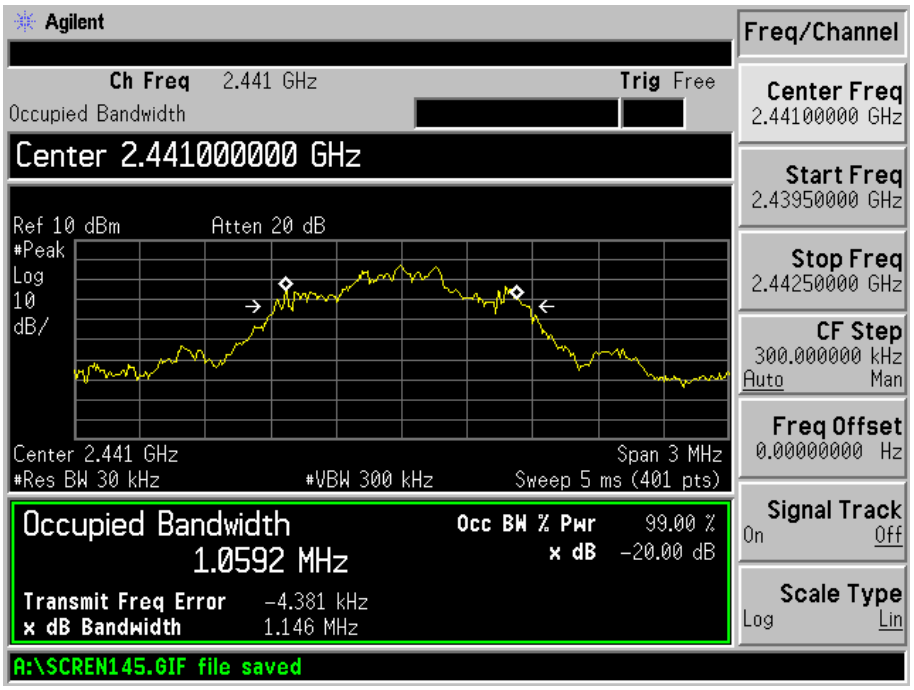
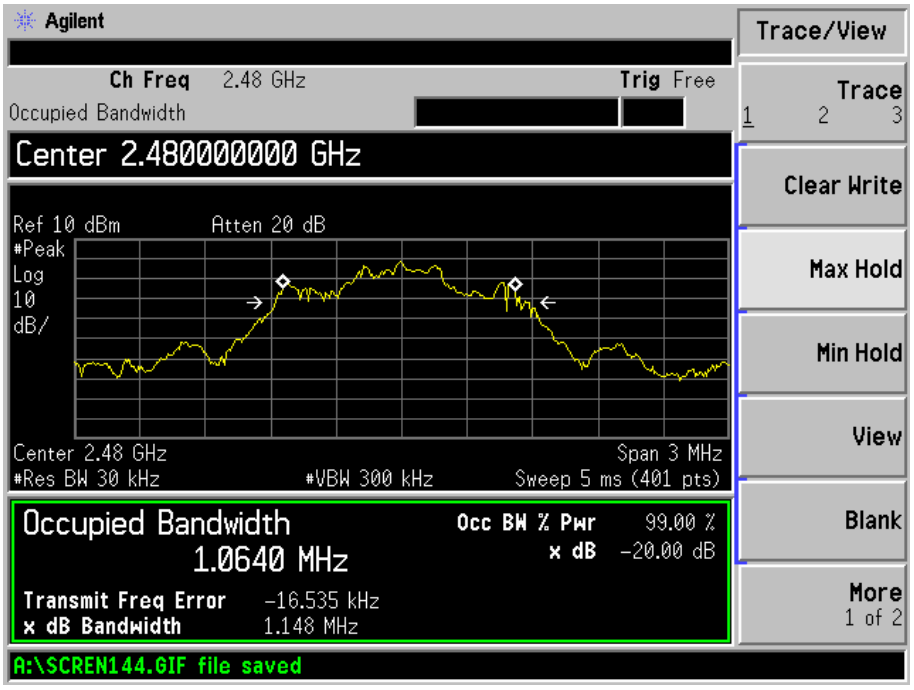
20 dB bandwidth and 99% Occupied Bandwidth





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9.4 Carrier Frequency Separation

Test Method

1. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels, RBW ≥ 1% of the span, VBW) ≥RBW, Sweep = auto, Detector function = peak
2. By using the Max-Hold function record the separation of two adjacent channels.
3. Measure the frequency difference of these two adjacent channels by spectrum analyzer marker function.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Limit kHz
⩾25KHz or 2/3 of the 20 dB bandwidth which is greater

GFSK Modulation Limit

Frequency MHz	2/3 of 20 dB Bandwidth kHz
2402	545.3
2441	538.0
2480	538.5

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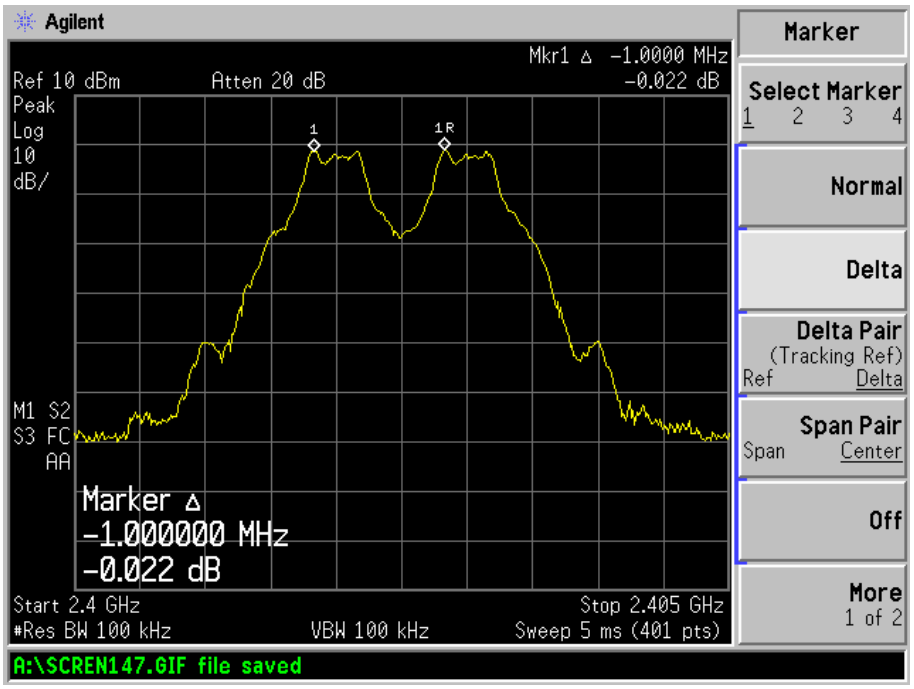
Carrier Frequency Separation

Test result: The measurement was performed with the typical configuration (normal hopping status), here GFSK modulation mode was used to show compliance.

GFSK Modulation test result

Frequency MHz	Carrier Frequency Separation kHz	Result
2402	1000	Pass
2441	1000	Pass
2480	1000	Pass



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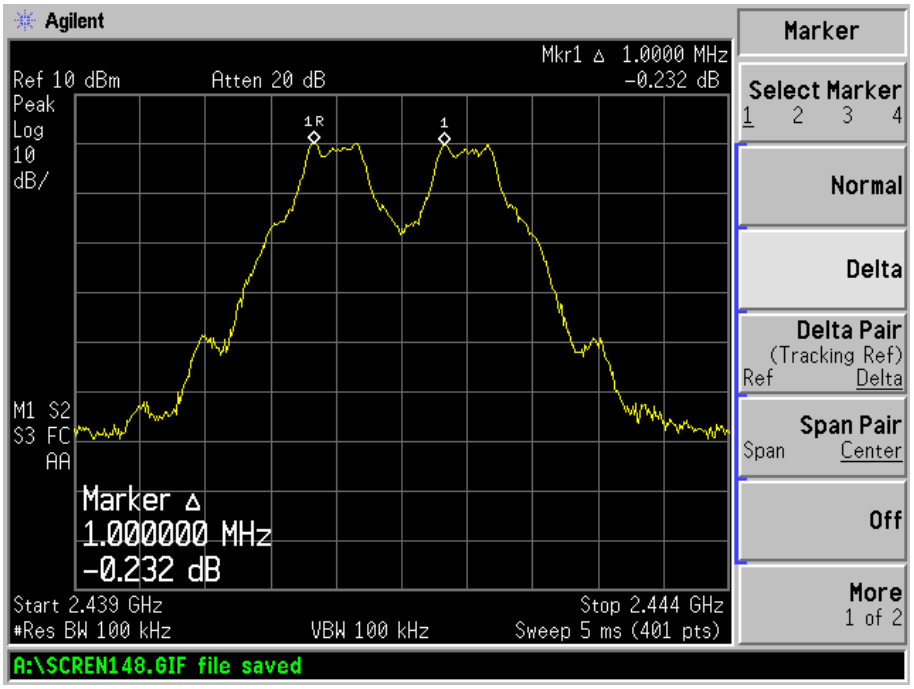
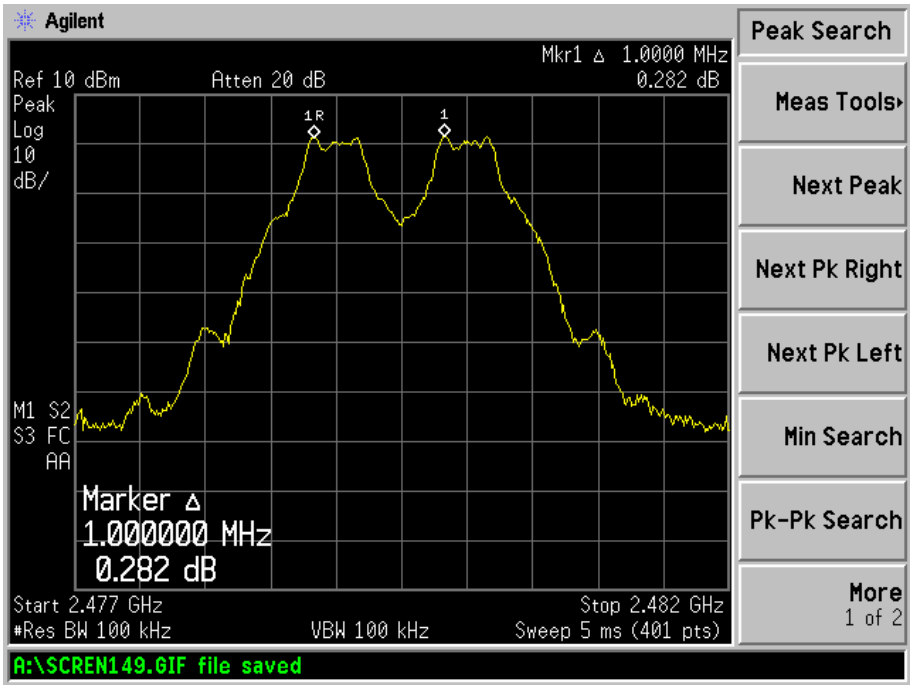
Carrier Frequency Separation





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9.5 Number of hopping frequencies

Test Method

1. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels, RBW ≥ 1% of the span, VBW) ≥RBW, Sweep = auto, Detector function = peak
2. Set the spectrum analyzer on Max-Hold Mode, and then keep the EUT in hopping mode.
3. Record all the signals from each channel until each one has been recorded.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Limit number
⩾ 15

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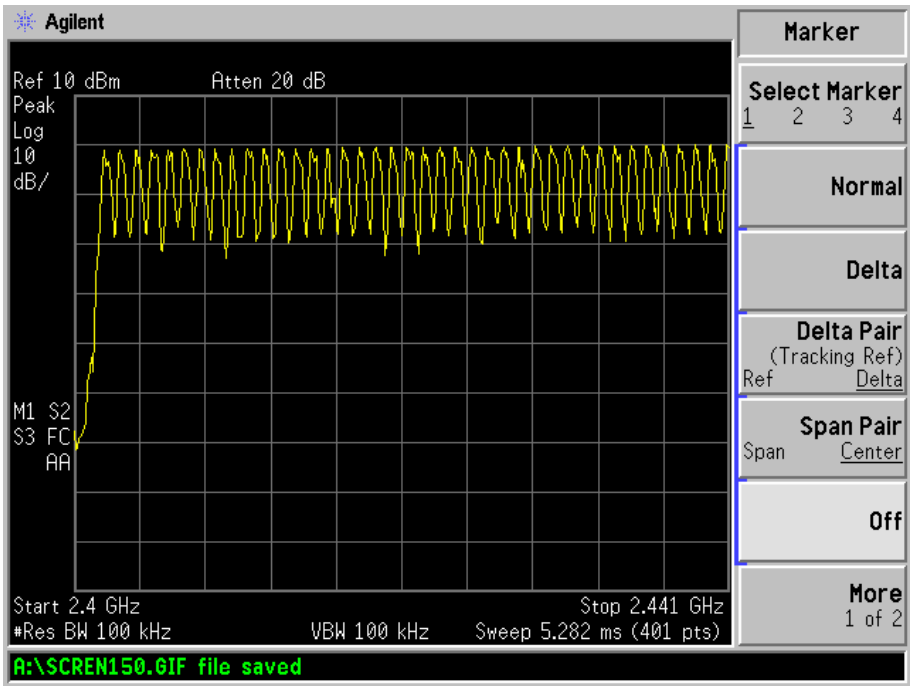
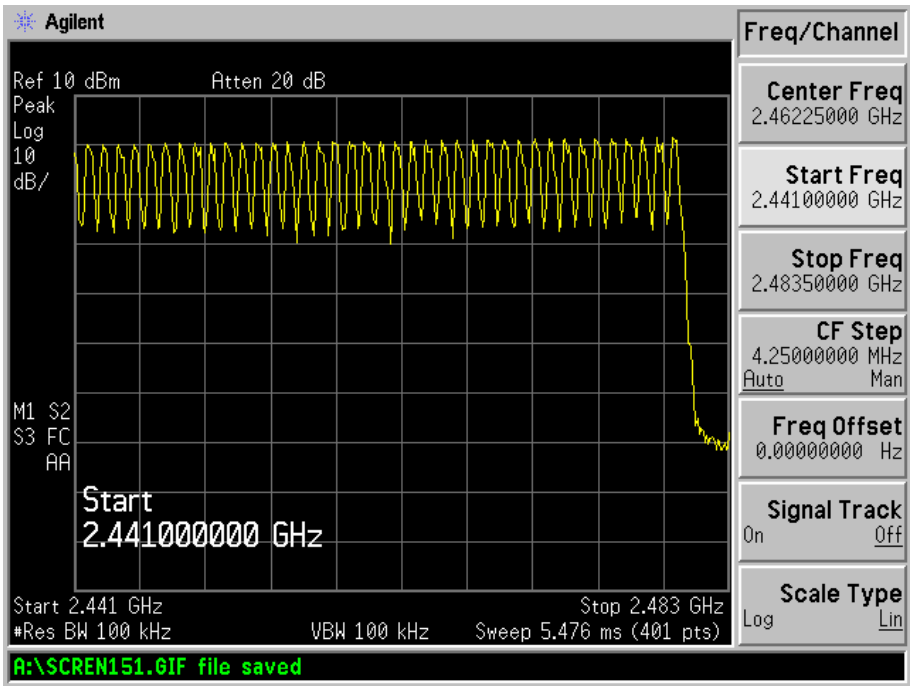
Number of hopping frequencies

Test result: The measurement was performed with the typical configuration (normal hopping status), and the total hopping channels is constant for the all modulation mode according with the Bluetooth Core Specification. Here GFSK modulation mode was used to show compliance.

Number of hopping frequencies	Result
79	Pass





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9.6 Dwell Time

Test Method

1. Connect EUT antenna terminal to the spectrum analyzer with a low loss cable. Equipment mode: Spectrum analyzer
2. RBW: 1MHz; VBW: 1MHz; SPAN: Zero Span
3. Adjust the center frequency of spectrum analyzer on any frequency be measured.
4. Measure the Dwell Time by spectrum analyzer Marker function.
5. Repeat above procedures until all frequencies measured were complete.

Limit

According to §15.247(a)(1)(iii) & RSS-210 A8.1(c) The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

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Dwell Time

Dwell time

The maximum dwell time shall be 0,4 s.
According to the Bluetooth Core Specification, the worse result (DH5 mode) was reported to show compliance.

The Dwell Time = Burst Width * Total Hops. The detailed calculations are showed as follows:
The duration for dwell time calculation: 0.4 [s] * hopping number = 0.4 [s] * 79 [ch] = 31.6 [s*ch];

The burst width, which is directly measured, refers to the duration on one channel hop.

The maximum number of hopping channels in 31.6s for DH5=1600 / 6 / 79 *31.6=106.67

Test Result

Modulation	Frequency (MHz)	Reading (μs)	Total Hops	Test Result (ms)	Limit (ms)	Result
DH1	2402	0.35	320	112	< 400	Pass
	2442	0.37	320	118.4	< 400	Pass
	2480	0.36	320	115.2	< 400	Pass
DH3	2402	1.63	160	260.8	< 400	Pass
	2442	1.62	160	259.2	< 400	Pass
	2480	1.61	160	257.6	< 400	Pass
DH5	2402	2.88	106.67	307.2	< 400	Pass
	2442	2.87	106.67	306.1	< 400	Pass
	2480	2.87	106.67	306.1	< 400	Pass
3DH1	2402	0.38	320	121.6	< 400	Pass
	2442	0.37	320	118.4	< 400	Pass
	2480	0.38	320	121.6	< 400	Pass
3DH3	2402	1.62	160	259.2	< 400	Pass
	2442	1.62	160	259.2	< 400	Pass
	2480	1.62	160	259.2	< 400	Pass
3DH5	2402	2.87	106.67	306.1	< 400	Pass
	2442	2.87	106.67	306.1	< 400	Pass
	2480	2.88	106.67	307.2	< 400	Pass

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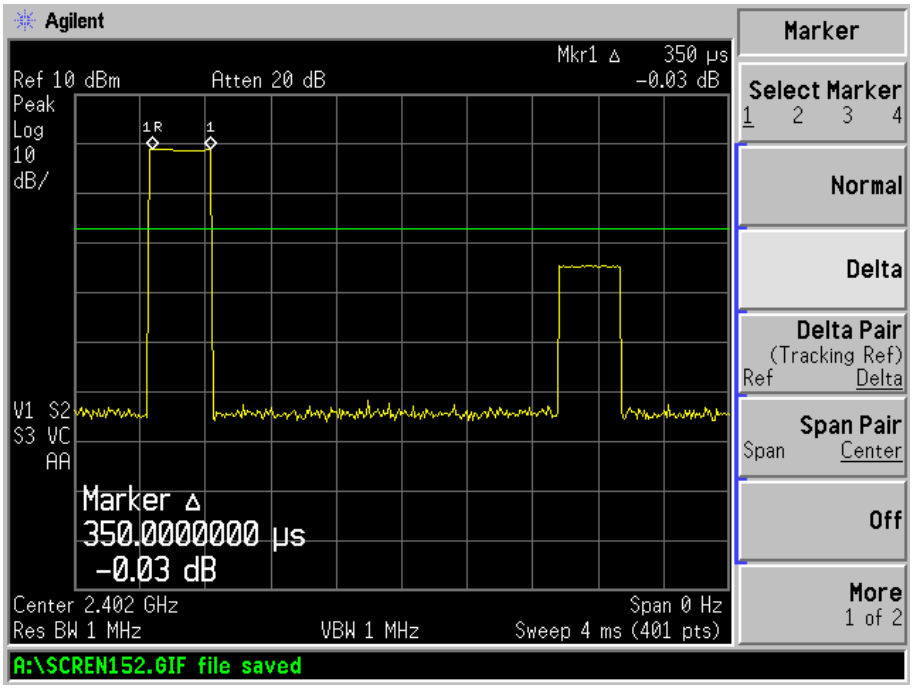
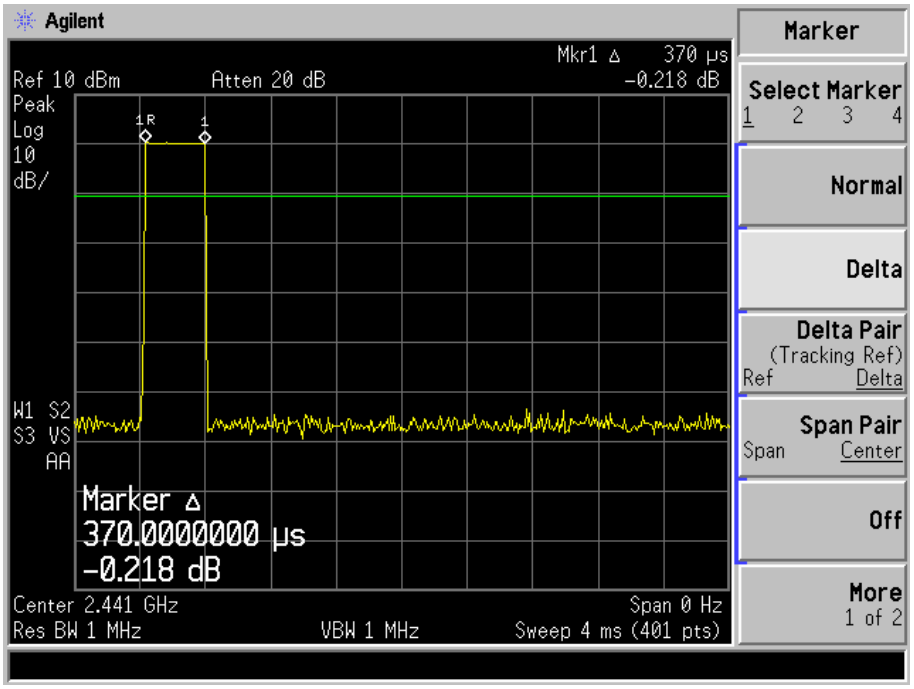
DH1





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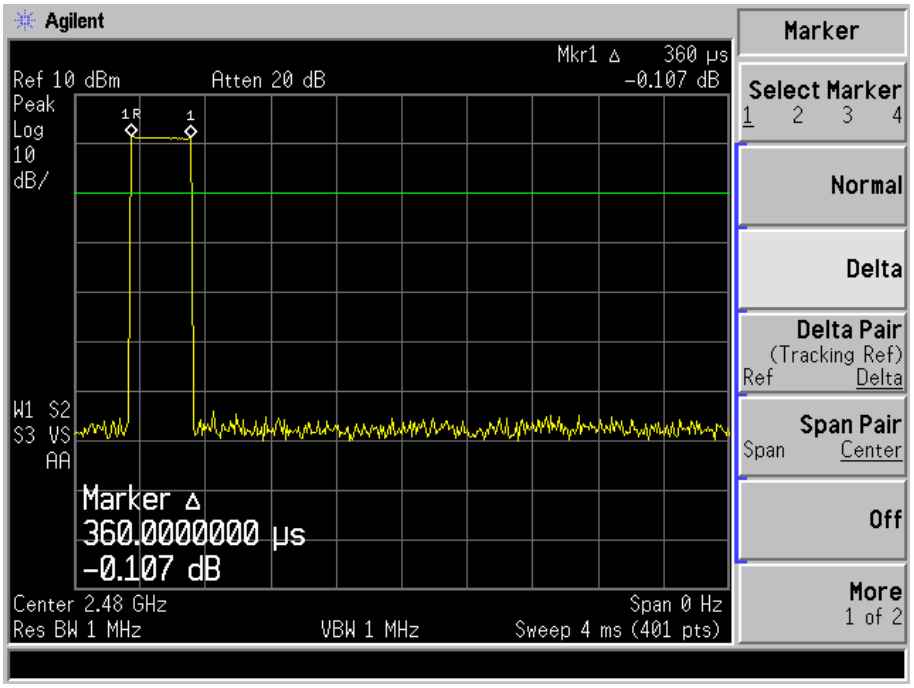
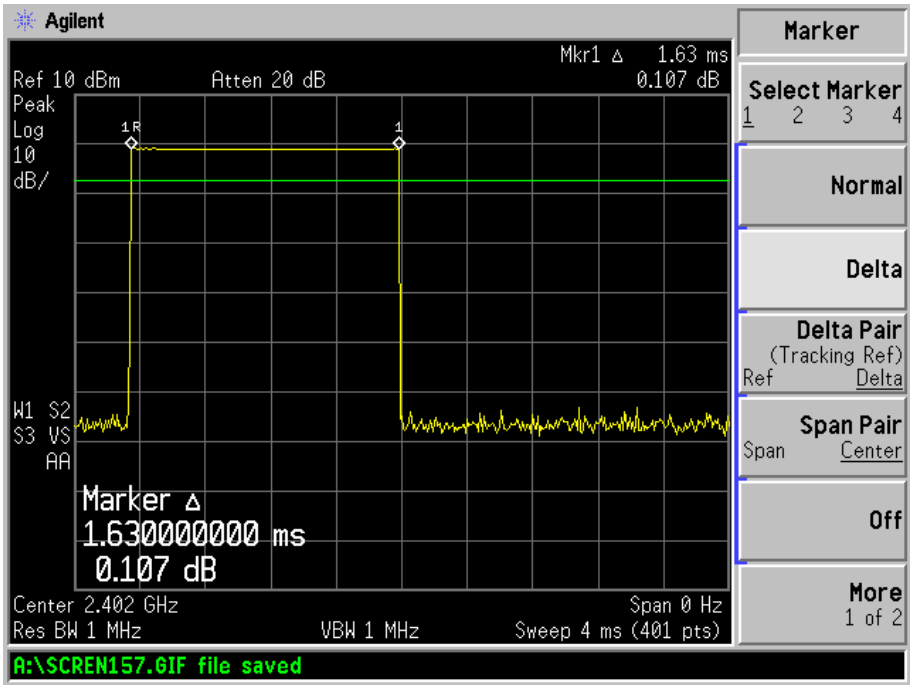


DH3



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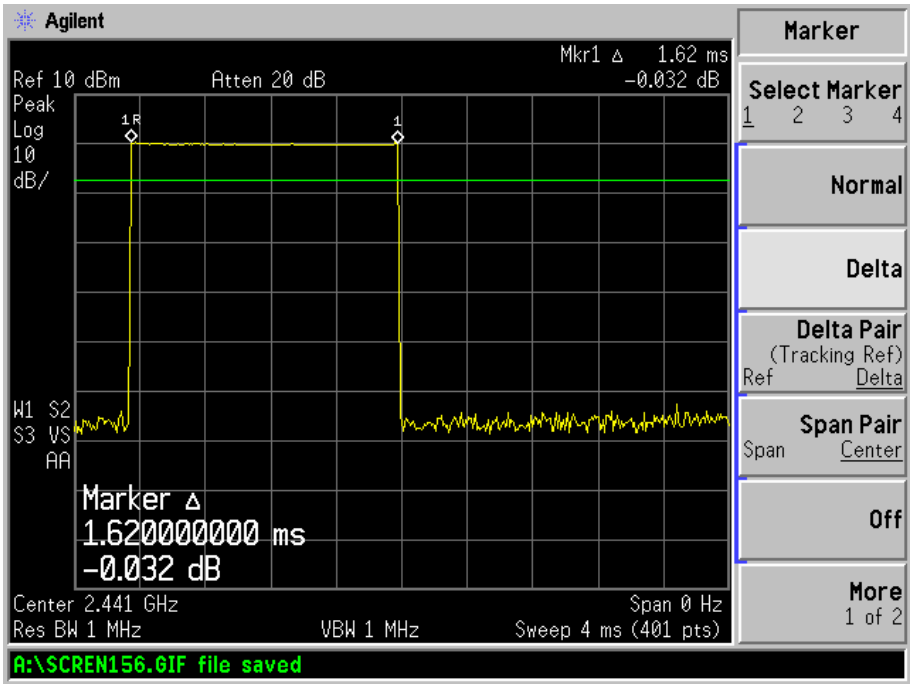

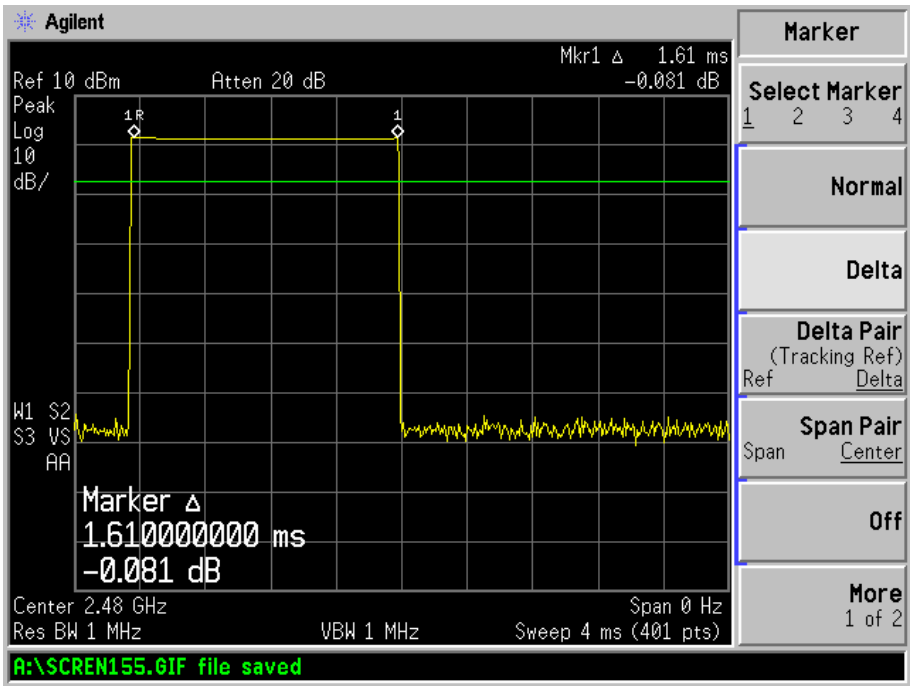

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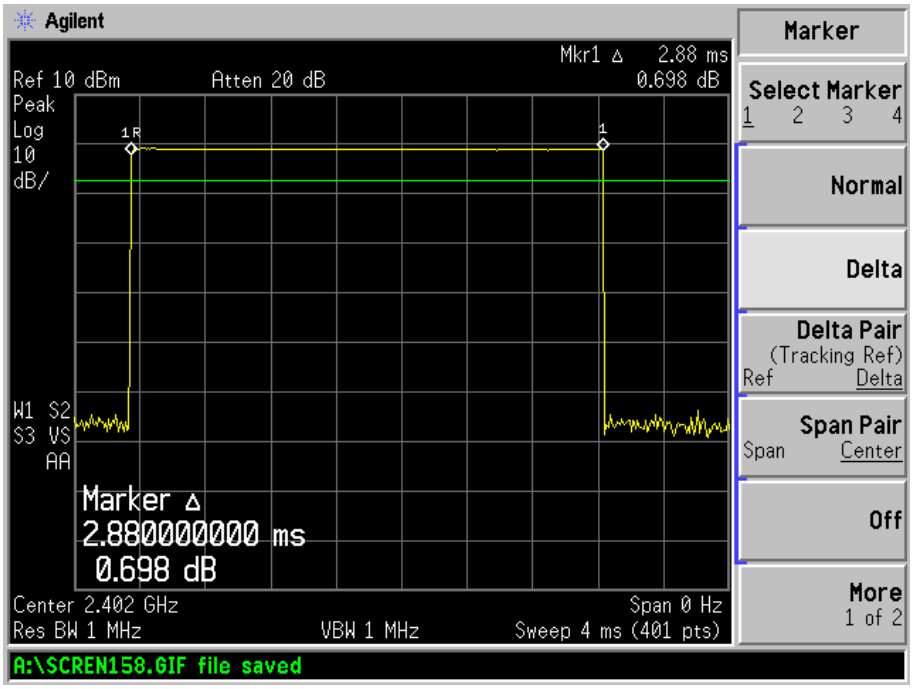
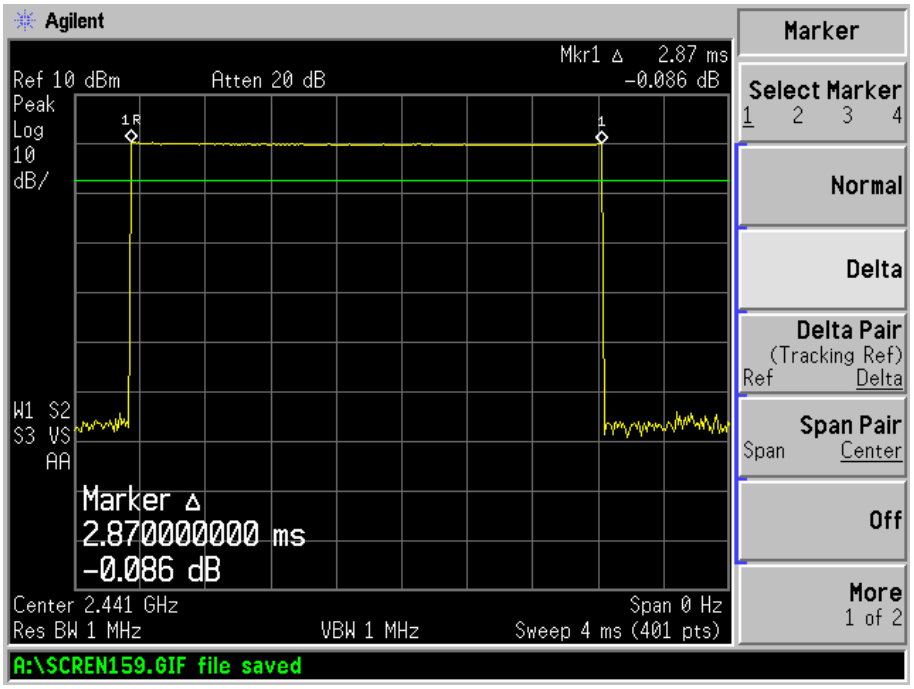
DH5





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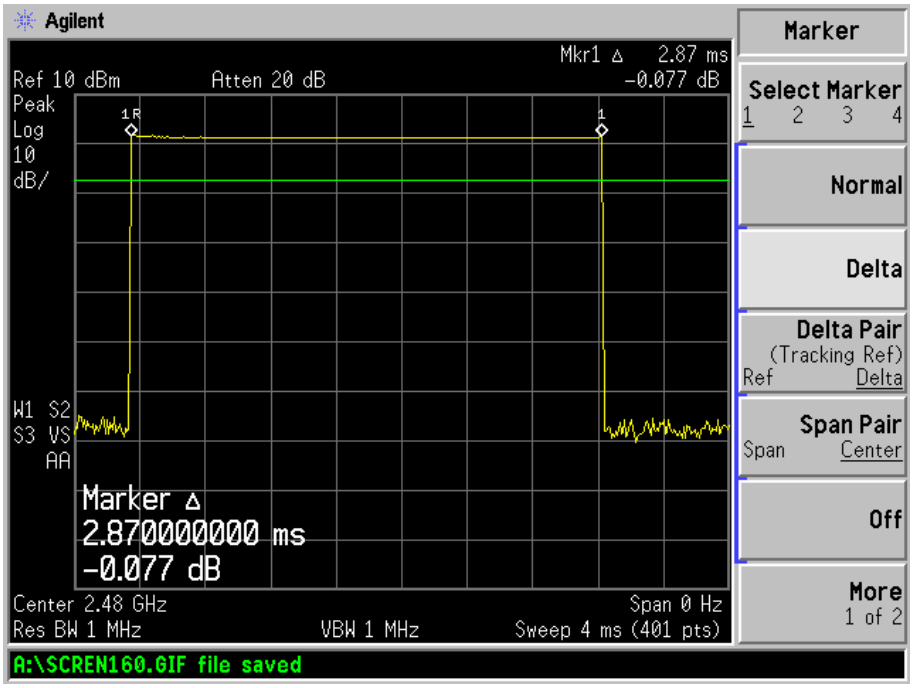
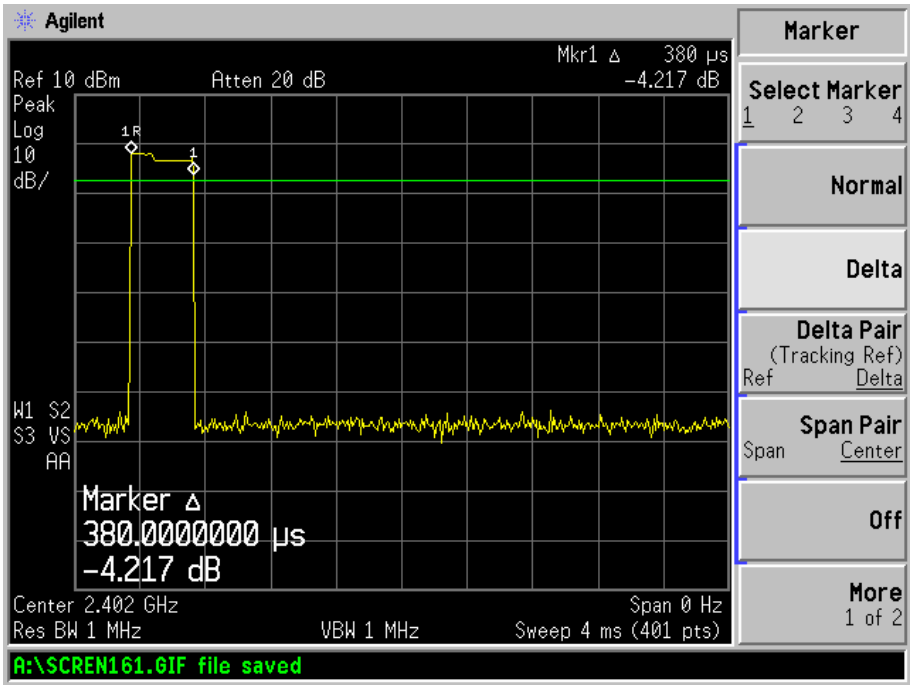


3DH1



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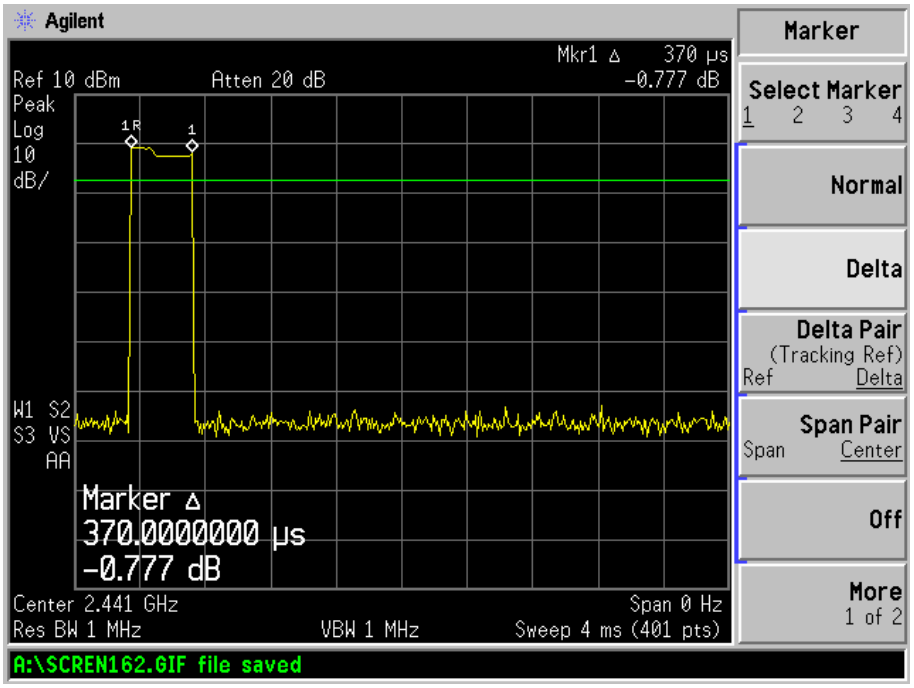

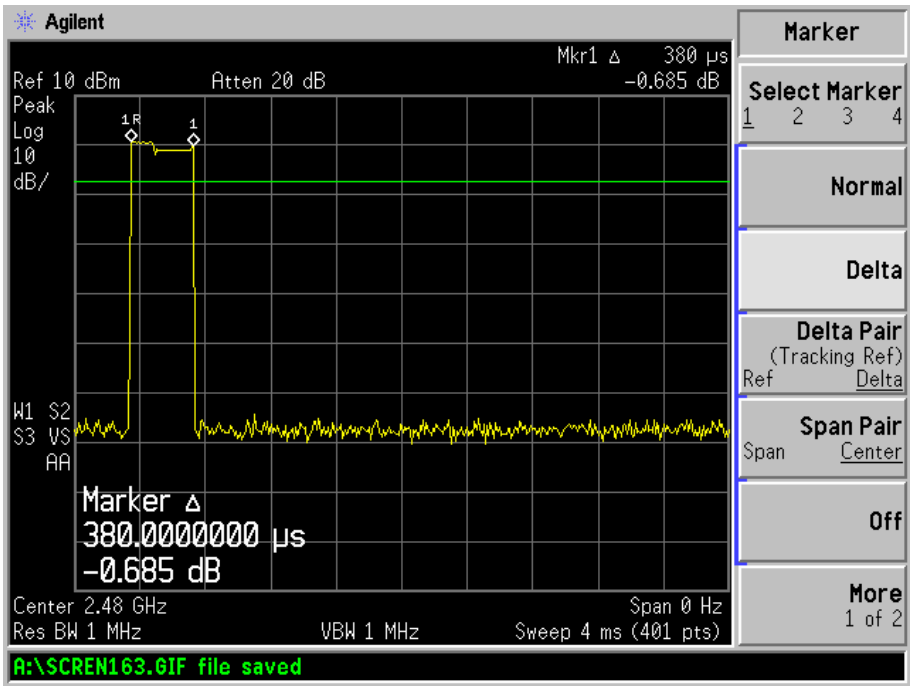

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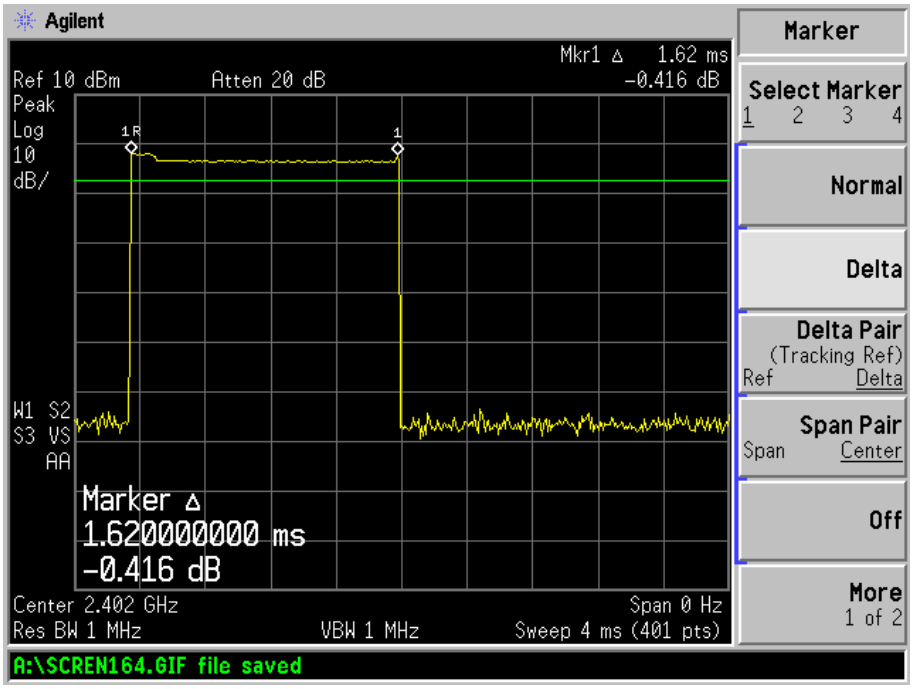
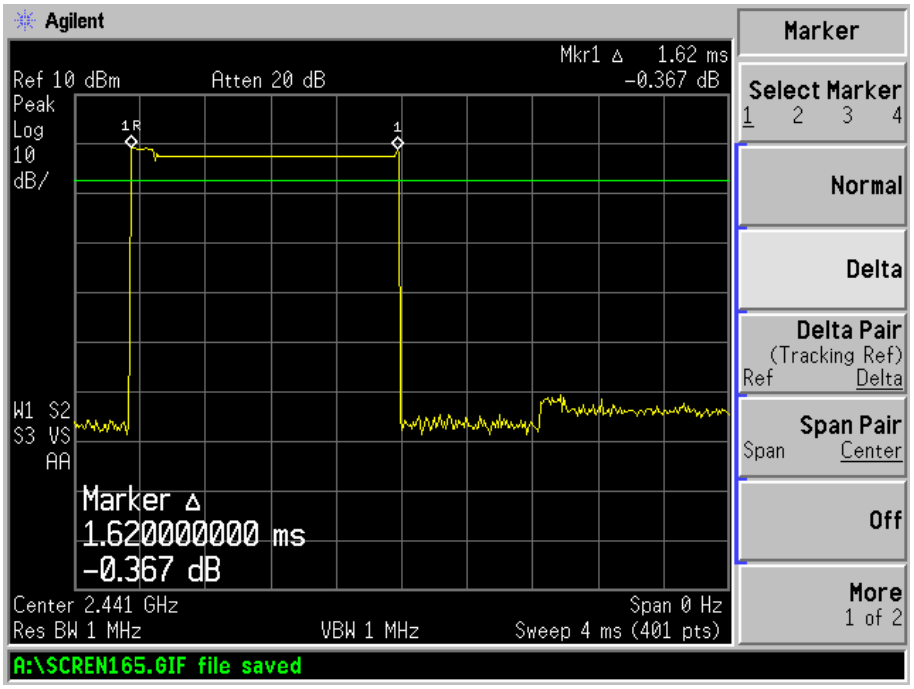
3DH3





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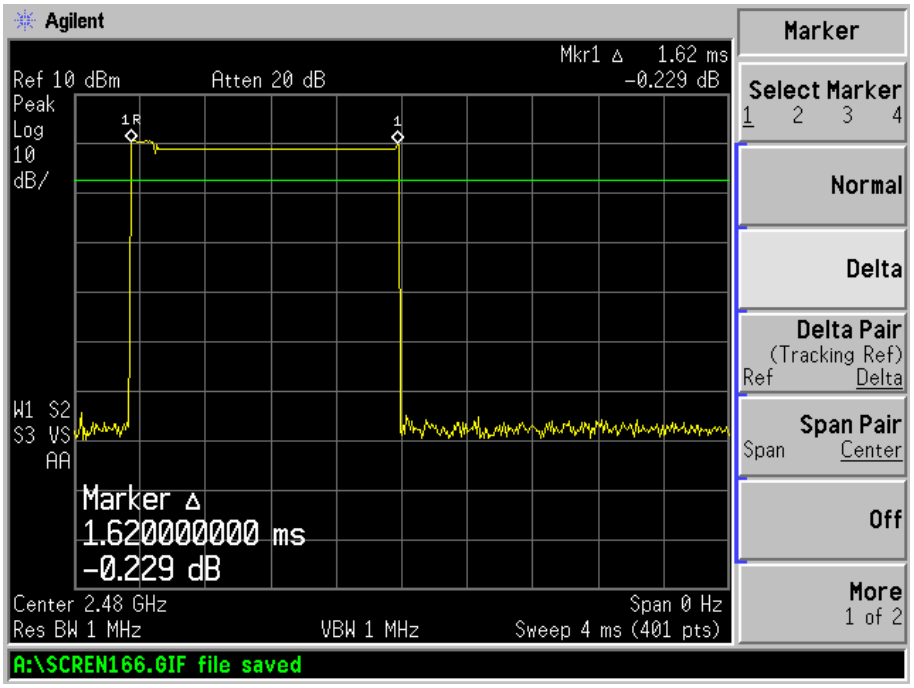
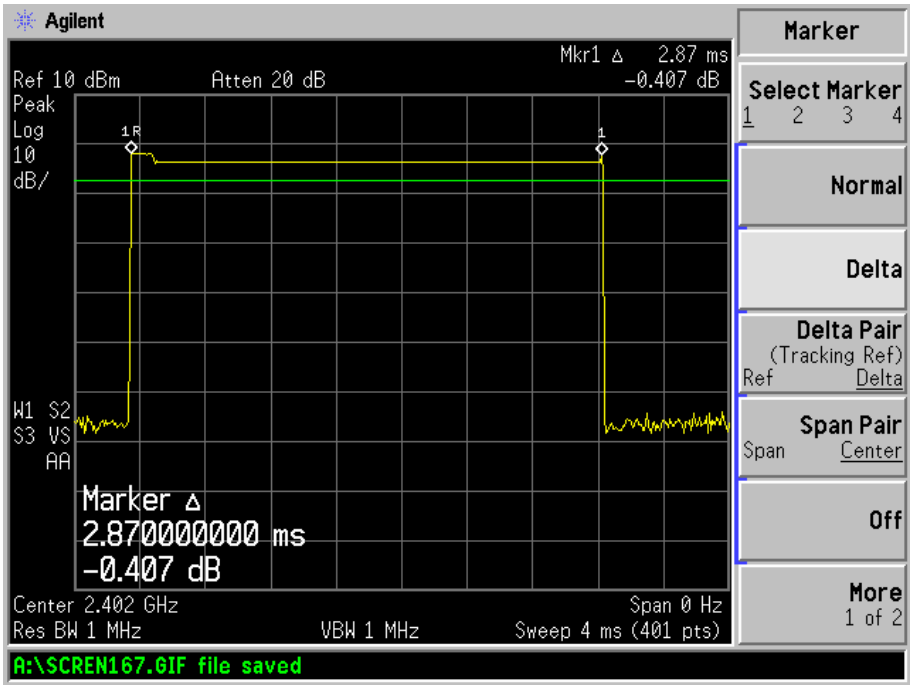


3DH5



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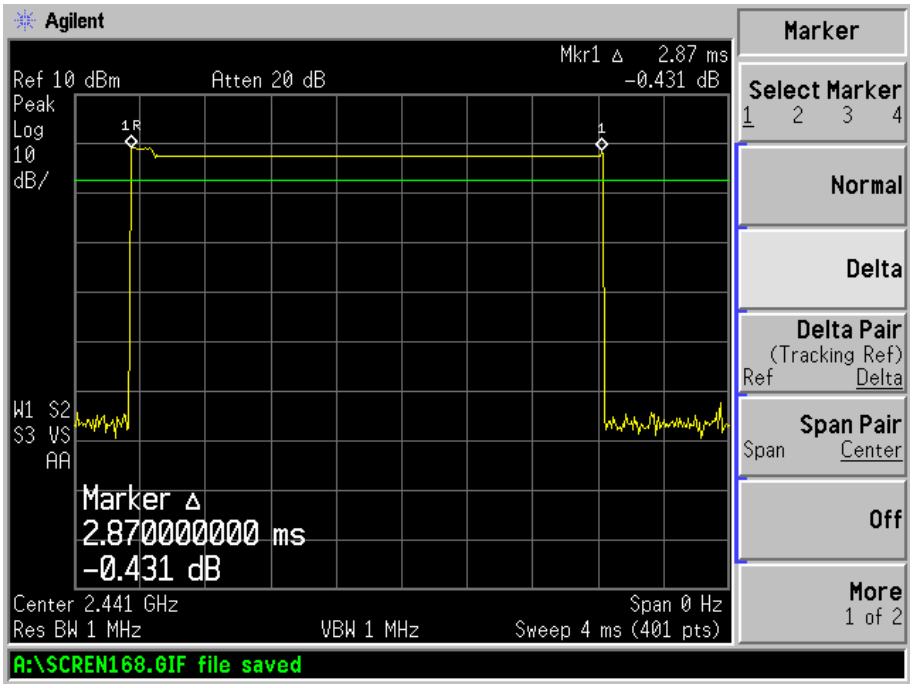

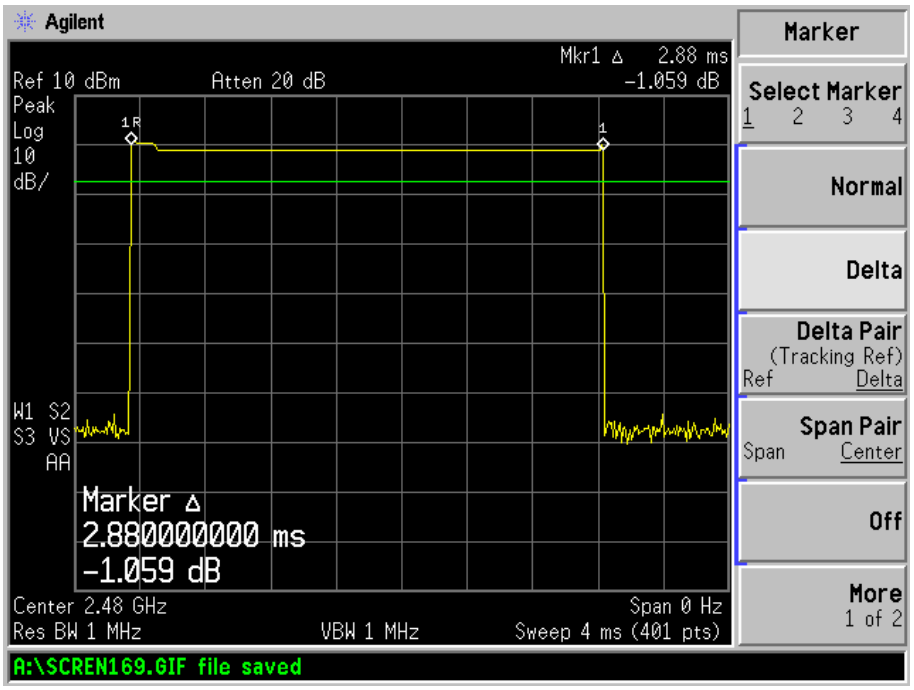

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9.7 Spurious RF conducted emissions

Test Method

1. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
   RBW = 100 kHz, VBW≥RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
3. The level displayed must comply with the limit specified in this Section. Submit these plots.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Frequency Range MHz	Limit (dBc)
30-25000	-20

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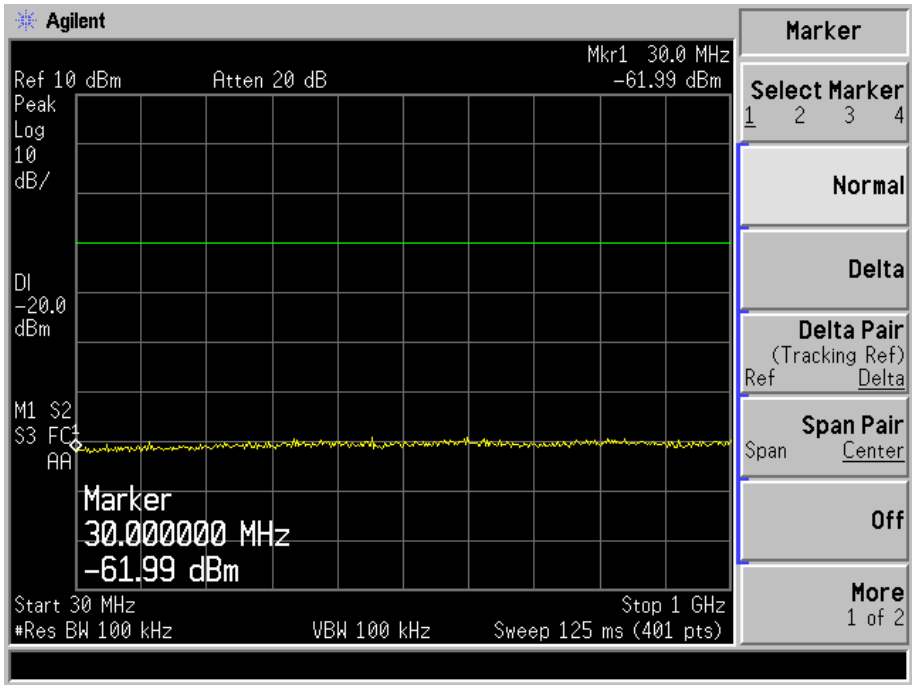
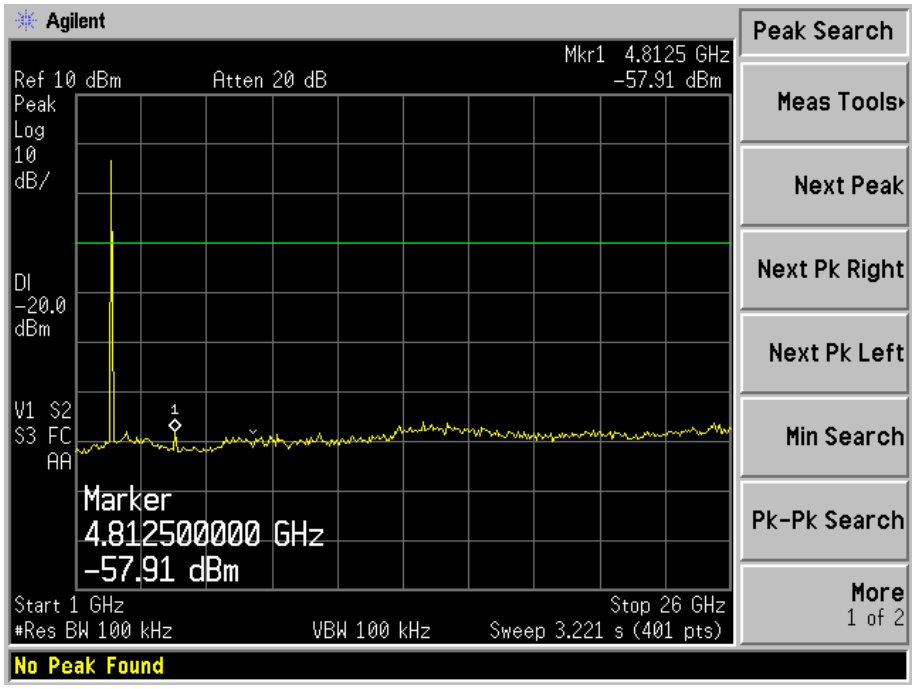
Spurious RF conducted emissions

Only the worse case (which is subject to the maximum EIRP, GFSK mode) test result is listed in the report.

2402MHz





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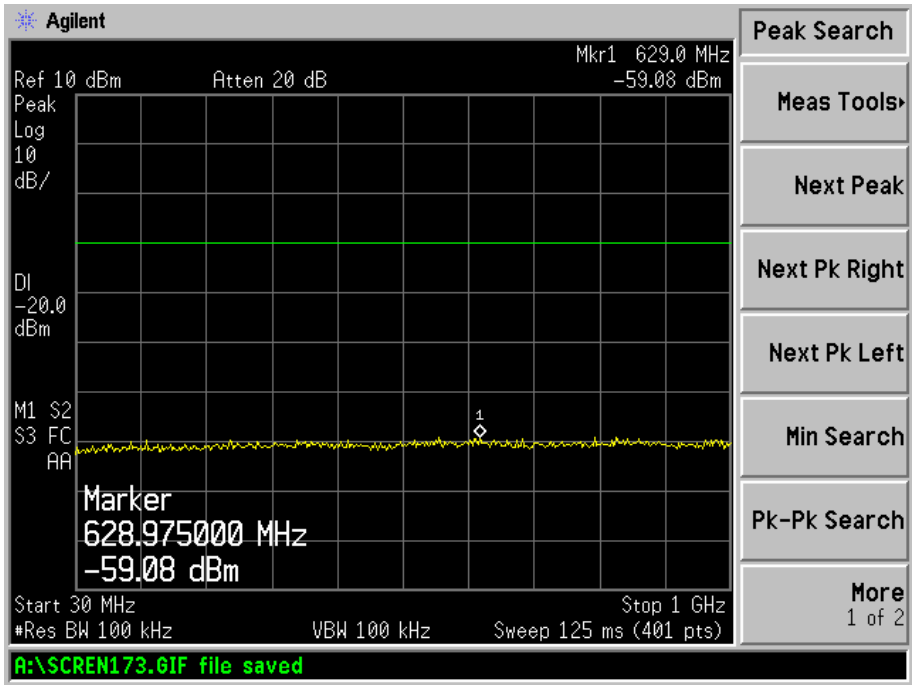
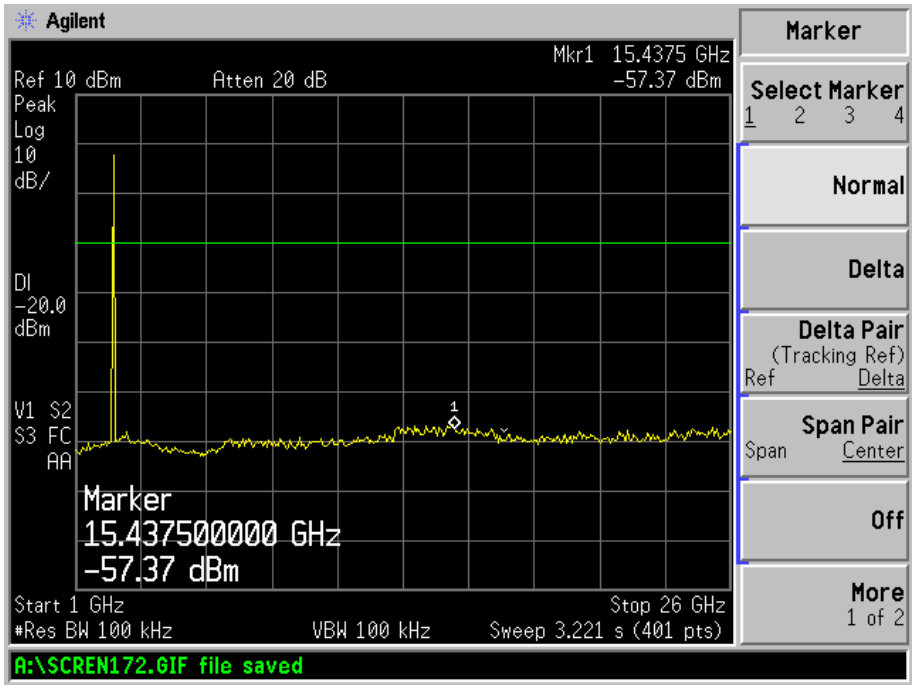
Spurious RF conducted emissions

2441MHz





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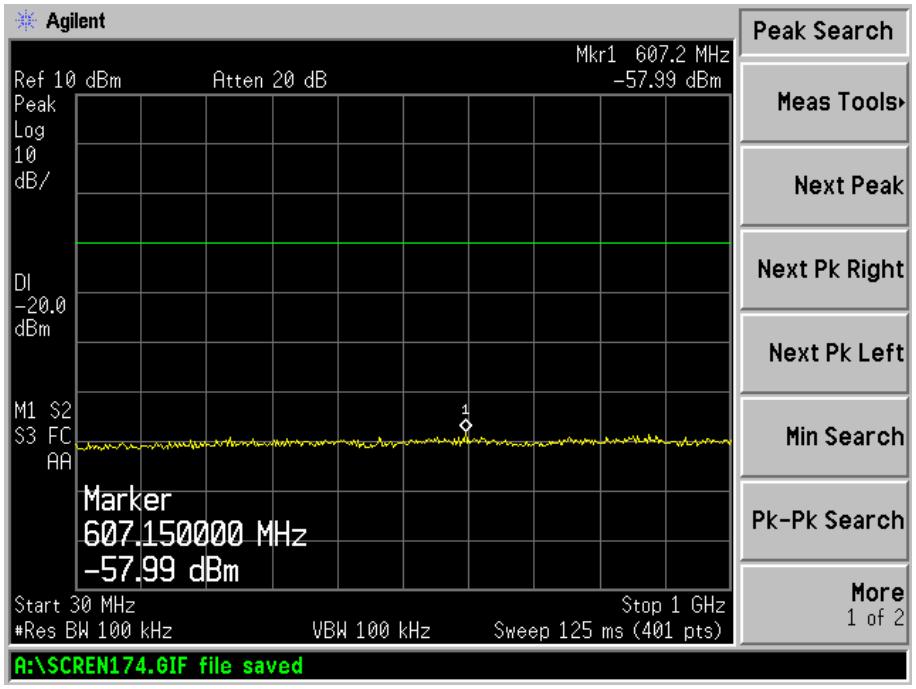
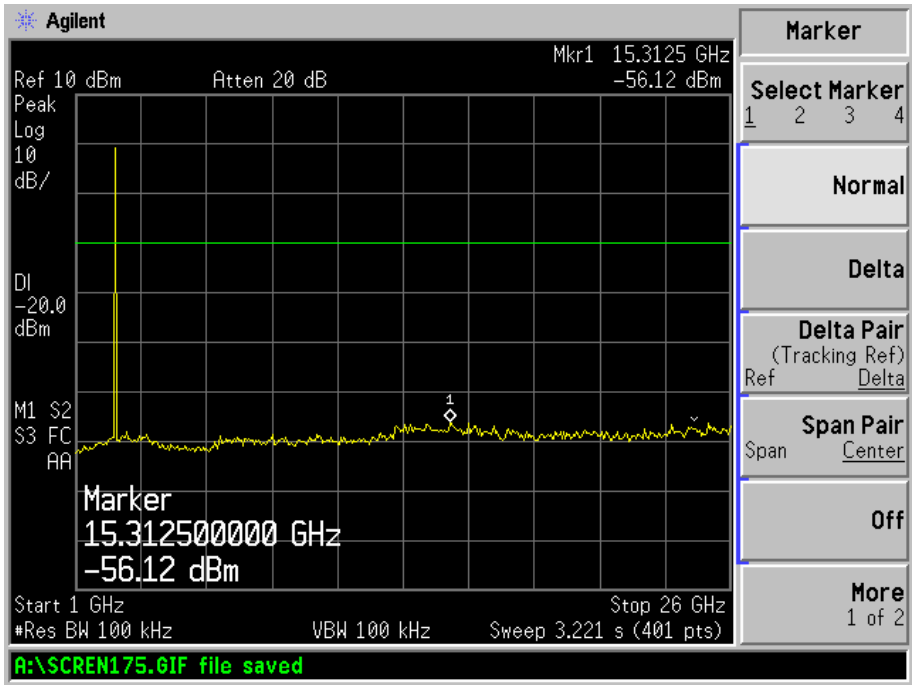
Spurious RF conducted emissions

2480MHz





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9.8 Band edge testing

Test Method

1 Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz, VBW≥RBW, Sweep = auto, Detector function = peak, Trace = max hold
2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
3 The level displayed must comply with the limit specified in this Section. .
4 Repeat the test at the hopping off and hopping on mode, submit all the plots.

Limit:

According to §15.247(d) and RSS-210 A8.5, in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in 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. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a) and RSS-Gen7.2.2, must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)) and RSS-Gen.

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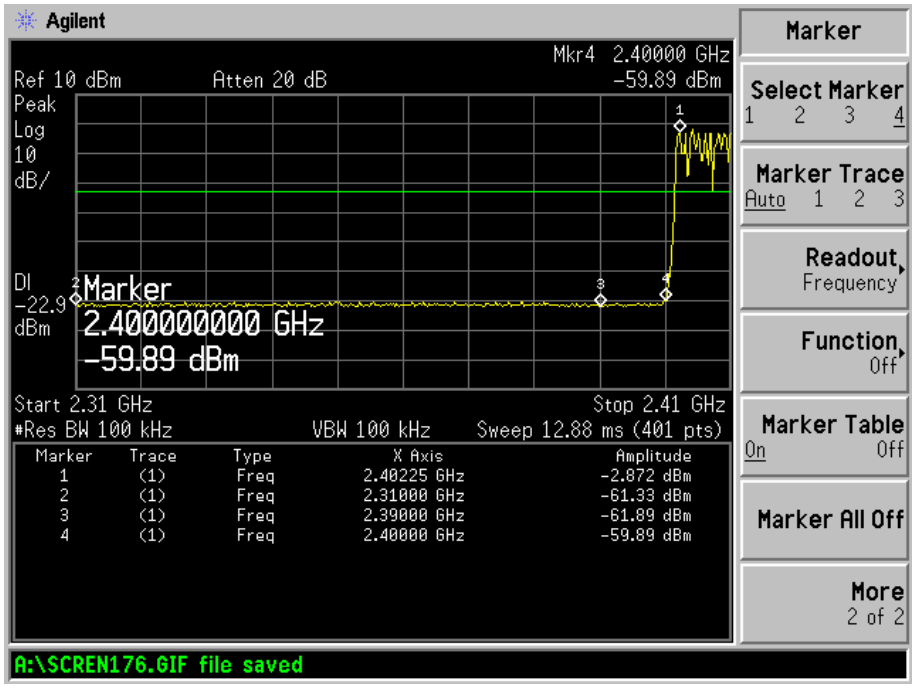
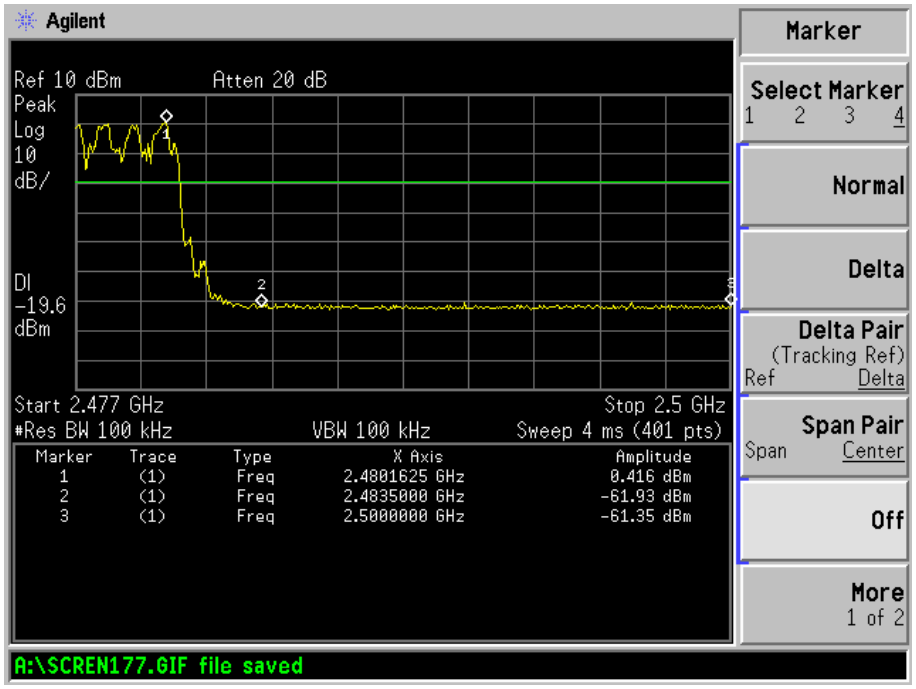
Band edge testing

GFSK Modulation Test Result:
Hopping on mode:





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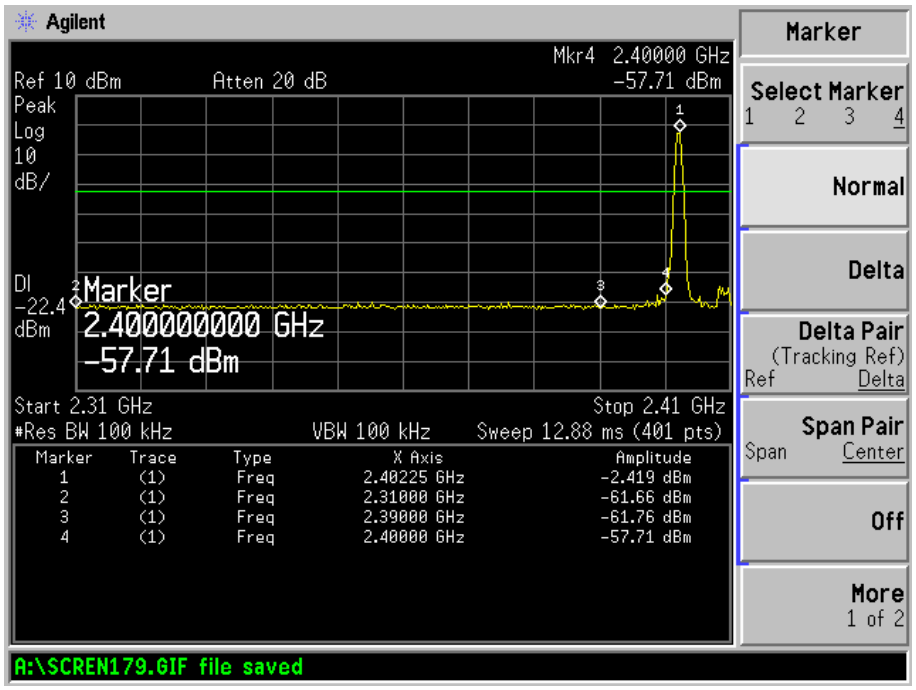
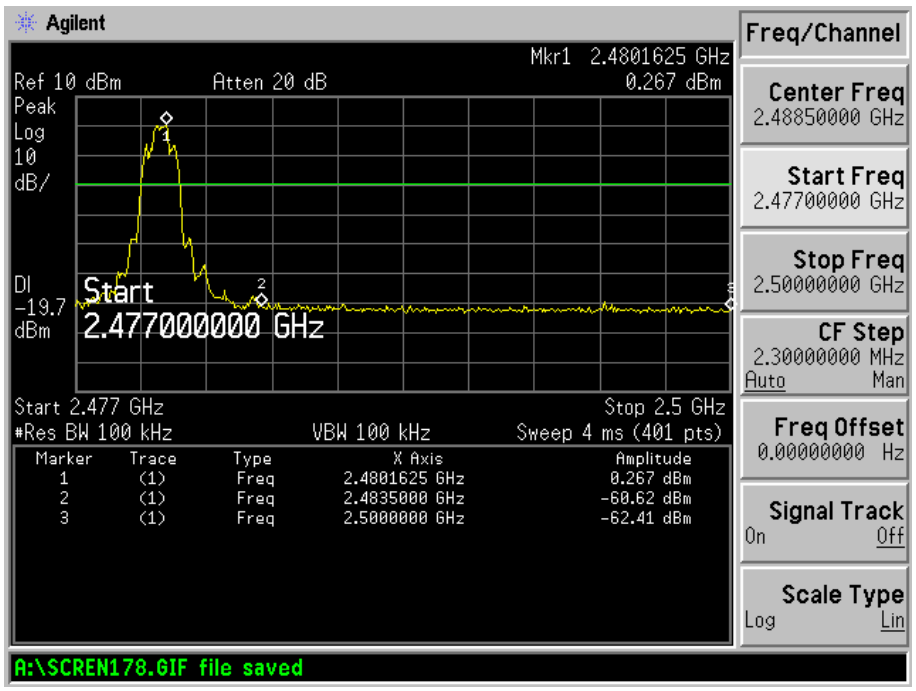
Band edge testing

Hopping off mode:





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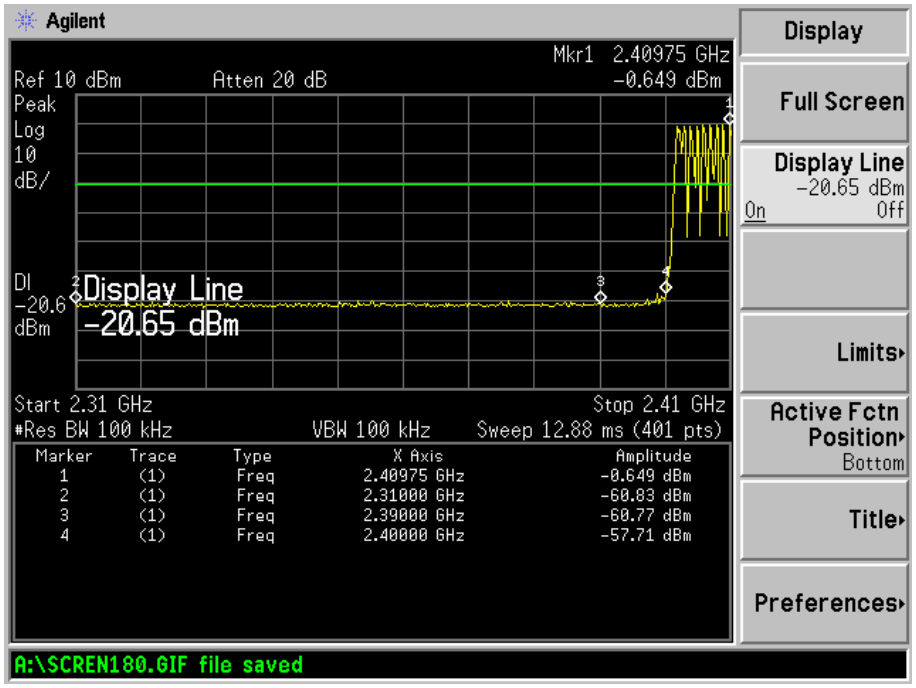
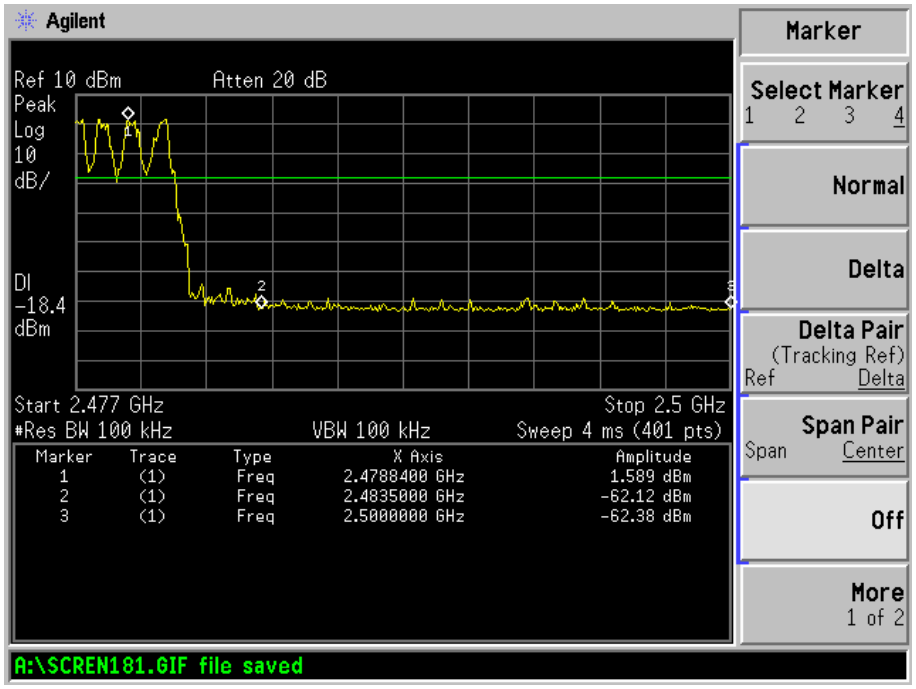
Band edge testing

8DPSK Modulation Test Result:
Hopping on mode:





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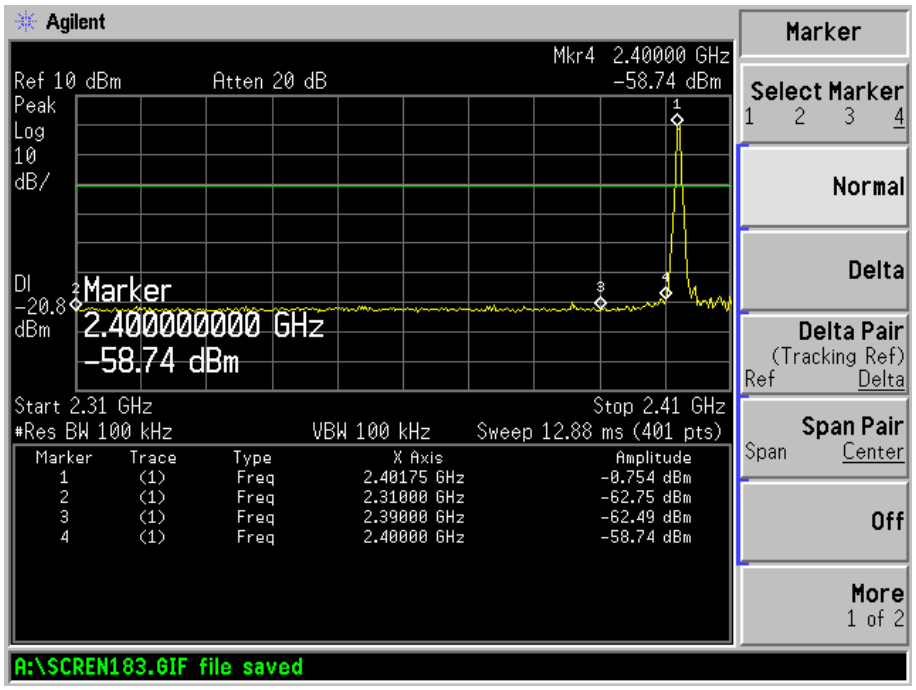
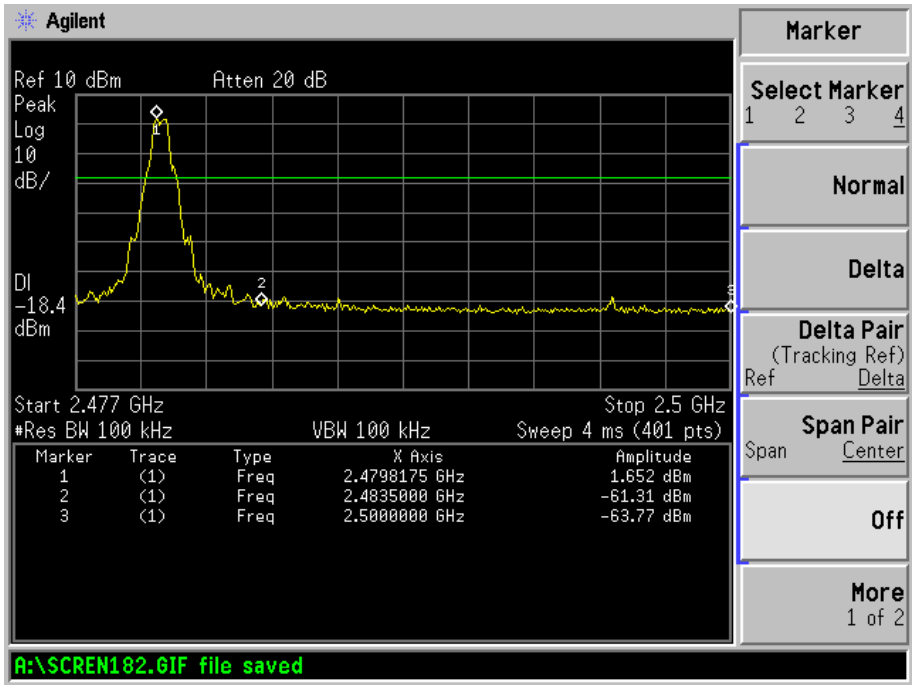
Band edge testing

Hopping off mode:





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9.9 Spurious radiated emissions for transmitter and receiver

Test Method

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
3. Use the following spectrum analyzer settings:
   Span = wide enough to fully capture the emission being measured, RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1 GHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Follow the guidelines in ANSI C63.4-1992 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc.
   The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength,submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the duty cycle per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(duty cycle/100 ms), in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Limit

According to part 15.247(d), the radio emission outside the operating frequency band 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. Radiated emissions which fall in the restricted bands, as defined in section15.205, must comply with the radiated emission limits specified in section 15.209.

Frequency MHz	Field Strength uV/m	Field Strength dBµV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

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Spurious radiated emissions for transmitter and receiver

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

The only worse case (which is subject to the maximum EIRP, GFSK mode) test result is listed in the report.

Transmitting spurious emission test result as below:

Bluetooth Mode GFSK Modulation 2402MHz Test Result

Frequency	Reading	Correct	Emission Level	Polarization	Limit	Detector	Result
MHz	dBuV	dB/m	dBuV/m		dBµV/m		
44.58	18.02	6.80	24.82	Horizontal	40	QP	Pass
98.49	17.43	5.75	23.18	Horizontal	43.5	QP	Pass
61.3	19.95	4.95	24.90	Vertical	40	QP	Pass
99.5	15.62	6.01	21.63	Vertical	43.5	QP	Pass
*4804	42.11	0.53	42.64	Horizontal	74	PK	Pass
*4804	42.11	0.53	42.64	Vertical	74	PK	Pass

Bluetooth Mode GFSK Modulation 2441MHz Test Result

Frequency	Reading	Correct	Emission Level	Polarization	Limit	Detector	Result
MHz	dBuV	dB/m	dBuV/m		dBµV/m		
*4882	42.36	0.54	42.90	Horizontal	74	PK	Pass
*4882	42.47	0.54	43.01	Vertical	74	PK	Pass

Bluetooth Mode GFSK Modulation 2480MHz Test Result

Frequency	Reading	Correct	Emission Level	Polarization	Limit	Detector	Result
MHz	dBuV	dB/m	dBuV/m		dBµV/m		
*4960	42.22	0.54	42.76	Horizontal	74	PK	Pass
*4960	42.77	0.54	43.31	Vertical	74	PK	Pass

Remark:

(1) QP Emission Level= Antenna Factor +Cable Loss + Reading
PK Emission Level= Antenna Factor +Cable Loss - Amp. factor + Reading
AV Emission Level= PK Emission Level+20log(dutycycle)

(2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.

(3) "*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

(4) Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 2th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured. The measurements greater than 20dB below the limit from 9kHz to 30MHz.

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Receiving emission test result as below:

Frequency	Reading	Correct	Emission Level	Polarization	Limit	Detector	Result
MHz	dBuV	dB/m	dBuV/m		dBµV/m		
318.8170	15.90	9.27	25.17	Horizontal	46	QP	Pass
459.1144	16.54	10.53	27.07	Horizontal	46	QP	Pass
578.6699	18.01	12.42	30.43	Vertical	46	QP	Pass
893.8567	16.25	16.75	33.00	Vertical	46	QP	Pass
1000-25000	--	--	--	Horizontal	74	PK	Pass
1000-25000	--	--	--	Vertical	74	PK	Pass

Remark:

(1) QP Emission Level= Antenna Factor +Cable Loss + Reading
PK Emission Level= Antenna Factor +Cable Loss - Amp. factor + Reading
AV Emission Level= PK Emission Level+20log (dutycycle)

(2) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are the noise floor or attenuated more than 20db below the permissible limits or the field strength is too small to be measured.

(3) "*" means the emission(s) appear within the restrict bands shall follow the requirement of section RSS-Gen.

(4) Testing is carried out with frequency rang 30MHz to 10th Harmonics frequency, which above 1GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

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10 Test Equipment List

List of Test Instruments

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE	
CE	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-05-06	☒
	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-05-06	☒
	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-05-06	☒
C	Spectrum Analyzer	Agilent	E4402B	US41192821	2015-05-06	☒
	Attenuator	ATTEN	ATS100-4-20	/	2015-05-06	☒
RE	Spectrum Analyzer	R&S	FSP	836079/035	2015-05-06	☒
	EMI Test Receiver	R&S	ESVB	825471/005	2015-05-06	☒
	Pre-amplifier	Agilent	8447F	3113A06717	2015-05-06	☒
	Pre-amplifier	Compliance Direction	PAP-0118	24002	2015-05-06	☒
	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2015-04-19	☒
	Horn Antenna	ETS	3117	00086197	2015-04-19	☒
	Horn Antenna	ETS	3116B	00088203	2015-04-19	☒
	Loop Antenna	SCHWARZECK	HFRA 5165	9365	2015-04-19	☒

C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth
- 20dB bandwidth and 99% Occupied Bandwidth
- Carrier frequency separation
- Number of hopping frequencies
- Dwell Time
- Power spectral density*
- Spurious RF conducted emissions
- Band edge

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11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

Items	Extended Uncertainty
Radiated spurious emission	5.10dB (30MHz-1GHz) 2.27dB (1GHz -25GHz)
Conducted spurious emission	2.10dB(30MHz-25GHz)
Bandwidth test	$1*10^{-9}$
Conducted emission	2.88dB

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