TCT 通测检测 TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID: 2ABNBHX-P760

IC: 12171A-HXP760

Product: Jam Levity

Model No.: HX-P760

Additional Model: N/A

Trade Mark: Jam

Report No.: TCT160114E020

Issued Date: Jan. 26, 2016

Issued for:

GOLDEN CHINA AUDIO (HK) PRODUCT LIMITED (AOK)
UNIT 2509, 25/F HO KING COMM CTR 2-16 FA YUEN ST KLN
HONG KONG

Issued By:

Shenzhen Tongce Testing Lab.

1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China

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1. Test Certification

Product:	Jam Levity
Model No.:	HX-P760
Additional Model:	N/A
Applicant:	GOLDEN CHINA AUDIO (HK) PRODUCT LIMITED (AOK)
Address:	UNIT 2509, 25/F HO KING COMM CTR 2-16 FA YUEN ST KLN HONG KONG
Manufacturer:	GOLDEN CHINA AUDIO (HK) PRODUCT LIMITED (AOK)
Address:	UNIT 2509, 25/F HO KING COMM CTR 2-16 FA YUEN ST KLN HONG KONG
Date of Test:	Jan. 14, – Jan. 25, 2016
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247 §RSS GEN, §RSS 247

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:	Beryl Zhao	***Date:***	***Jan. 25, 2016***
	Beryl Zhao		
Reviewed By:	Joe Zhou	***Date:***	***Jan. 26, 2016***
	Joe Zhou		
Approved By:	Tomsin	***Date:***	***Jan. 26, 2016***
	Tomsin		

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2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna Requirement	§15.203/§15.247 (c); §RSS Gen sect. 8.3	PASS
AC Power Line Conducted Emission	§15.207; §RSS Gen sect. 8.8	PASS
Conducted Peak Output Power	§15.247 (b)(1); §RSS 247 sect. 5.4(2)	PASS
20dB Occupied Bandwidth 99% Occupied Bandwidth	§15.247 (a)(1); §RSS 247 sect. 5.1(3); §RSS Gen sect. 6.6	PASS
Carrier Frequencies Separation	§15.247 (a)(1); §RSS 247 sect. 5.1(2)	PASS
Hopping Channel Number	§15.247 (a)(1); §RSS 247 sect. 5.1(4)	PASS
Dwell Time	§15.247 (a)(1); §RSS 247 sect. 5.1(4)	PASS
Radiated Emission	§15.205/§15.209; §RSS Gen sect. 8.9	PASS
Band Edge	§15.247(d); §RSS 247 sect. 5.5	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

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3. EUT Description

Product Name:	Jam Levity
Model :	HX-P760
Additional Model:	N/A
Trade Mark:	**Jam**
Operation Frequency:	2402MHz~2480MHz
Transfer Rate:	1/2/3Mbits/s
Number of Channel:	79
Modulation Type:	GFSK, π/4-DQPSK, 8DPSK
Modulation Technology:	FHSS
Antenna Type:	Internal Antenna
Antenna Gain:	2.1dBi
Power Supply:	For Bluetooth Speaker: Rechargeable Li-ion Battery DC3.7V For charging base: Adapter Information: MODEL: LY036SPS-120300U INPUT: AC100-240V~ 50-60Hz 1A OUTPUT: DC 12V, 3A

Operation Frequency each of channel for GFSK, π/4-DQPSK, 8DPSK

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
…	…	…	…	…	…	…	…
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
…	…	…	…	…	…	…	…
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz	-	

Remark: Channel 0, 39 &78 have been tested for GFSK, π/4-DQPSK, 8DPSKmodulation mode.

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4. Genera Information

4.1. Test environment and mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations
The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

3. For conducted measurements (Output Power, 20dB Occupied Bandwidth, Carrier Frequencies Separation, Hopping Channel Number, Dwell Time, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

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5. Facilities and Accreditations

5.1. Facilities

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

- FCC - Registration No.: 572331

  Shenzhen Tongce Testing Lab

  The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

  The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

- CNAS - Registration No.: CNAS L6165

  Shenzhen TCT Testing Technology Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6165.

5.2. Location

Shenzhen Tongce Testing Lab
Address: 1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China
Tel: 86-755-36638142

5.3. Measurement Uncertainty

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	±2.56dB
2	RF power, conducted	±0.12dB
3	Spurious emissions, conducted	±0.11dB
4	All emissions, radiated(<1G)	±3.92dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
7	Humidity	±1.0%

6. Test Results and Measurement Data

6.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c); RSS Gen section 8.3

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

RSS Gen section 8.3 requirement:

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.

Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for the licence-exempt apparatus.

Testing shall be performed using the highest gain antenna of each combination of licence-exempt transmitter and antenna type, with the transmitter output power set at the maximum level.9 When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna manufacturer.

User manuals for transmitters equipped with detachable antennas shall also contain the following notice in a conspicuous location:

This radio transmitter (identify the device by certification number or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi).

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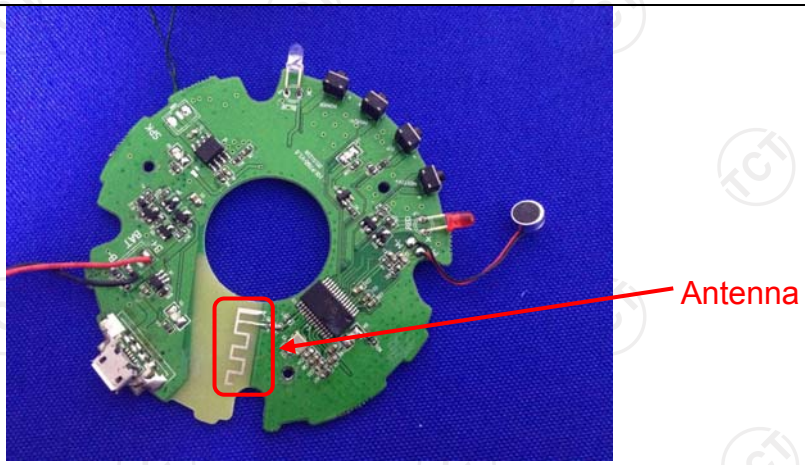
E.U.T Antenna:	
The Bluetooth antenna is an internal antenna which permanently attached, and the best case gain of the antenna is 2.1dBi.	



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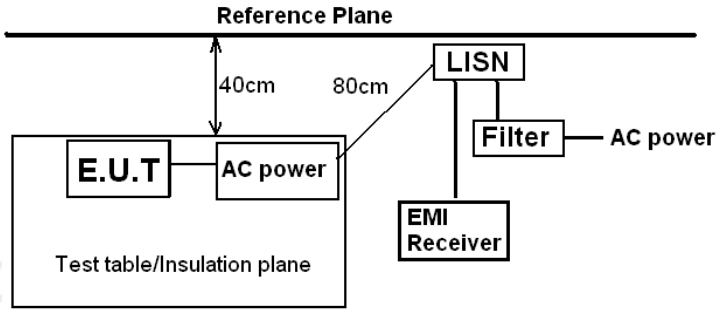
6.2. Conducted Emission

6.2.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.207; RSS Gen</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.4:2014</td></tr>
<tr><td>Frequency Range:</td><td>150 kHz to 30 MHz</td></tr>
<tr><td>Receiver setup:</td><td>RBW=9 kHz, VBW=30 kHz, Sweep time=auto</td></tr>
<tr><td>Limits:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
</td></tr>
<tr><td>Test Setup:</td><td> 

Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m</td></tr>
<tr><td>Test Mode:</td><td>Refer to item 4.1</td></tr>
<tr><td>Test Procedure:</td><td>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.</td></tr>
<tr><td>Test Result:</td><td>PASS</td></tr>
</table>

6.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCS30	100139	Sep. 11, 2016
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 16, 2016
Coax cable	TCT	CE-05	N/A	Sep. 11, 2016
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

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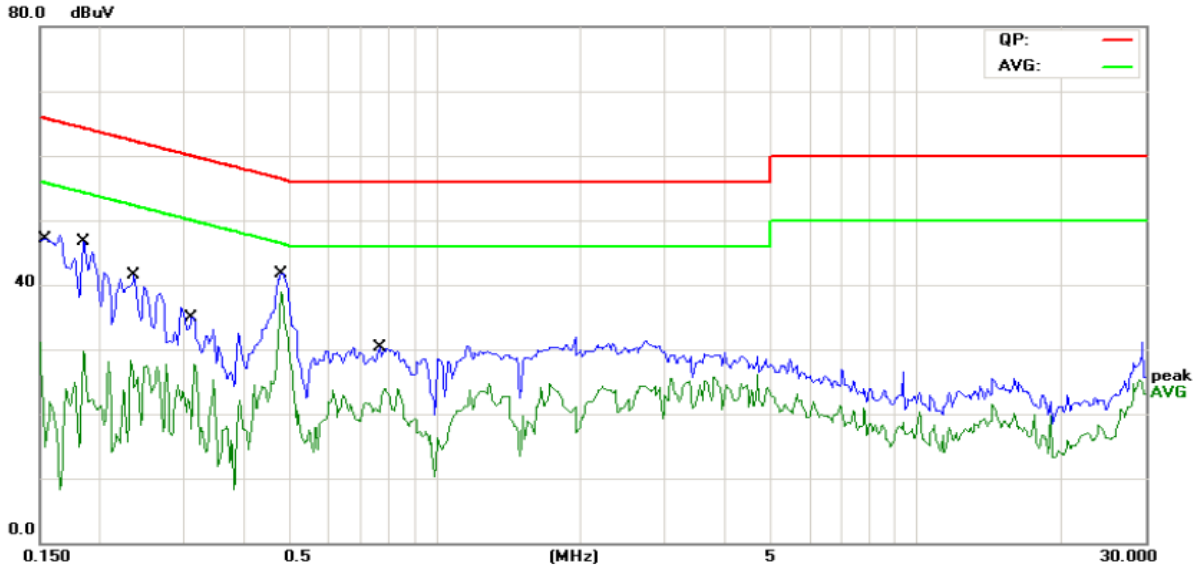
6.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site Chamber #2 Phase: *L1* Temperature: 23 (C)

Limit: FCC Part 15B Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 54 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1539	33.21	11.49	44.70	65.78	-21.08	QP	
2		0.1539	14.82	11.49	26.31	55.78	-29.47	AVG	
3		0.1852	29.82	11.48	41.30	64.24	-22.94	QP	
4		0.1852	12.12	11.48	23.60	54.24	-30.64	AVG	
5		0.2359	23.93	11.44	35.37	62.24	-26.87	QP	
6		0.2359	9.63	11.44	21.07	52.24	-31.17	AVG	
7		0.3102	19.52	11.40	30.92	59.96	-29.04	QP	
8		0.3102	10.14	11.40	21.54	49.96	-28.42	AVG	
9		0.4781	28.85	11.31	40.16	56.37	-16.21	QP	
10	*	0.4781	23.75	11.31	35.06	46.37	-11.31	AVG	
11		0.7632	15.61	11.21	26.82	56.00	-29.18	QP	
12		0.7632	10.08	11.21	21.29	46.00	-24.71	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

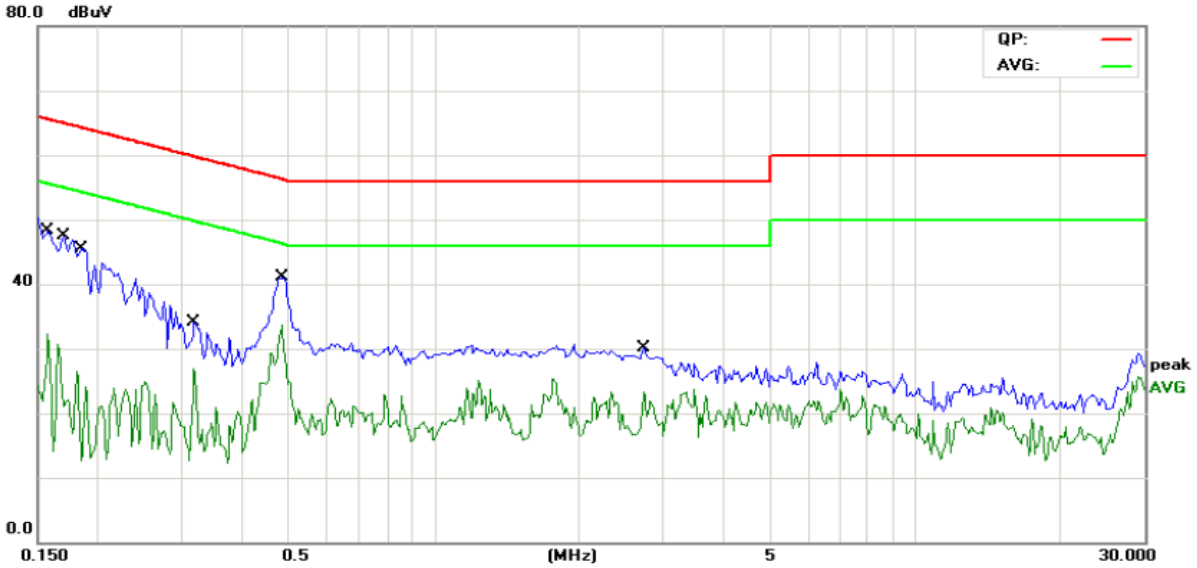
Margin (dB) = Measurement (dBμV) – Limits (dBμV)

Q.P. =Quasi-Peak

AVG =average

** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz*

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site Chamber #2 Phase: N Temperature: 23 (C)

Limit: FCC Part 15B Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 54 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1578	33.05	11.51	44.56	65.57	-21.01	QP	
2		0.1578	12.90	11.51	24.41	55.57	-31.16	AVG	
3		0.1695	31.71	11.50	43.21	64.98	-21.77	QP	
4		0.1695	12.00	11.50	23.50	54.98	-31.48	AVG	
5		0.1852	29.80	11.50	41.30	64.24	-22.94	QP	
6		0.1852	10.88	11.50	22.38	54.24	-31.86	AVG	
7		0.3180	17.67	11.42	29.09	59.76	-30.67	QP	
8		0.3180	8.22	11.42	19.64	49.76	-30.12	AVG	
9		0.4820	27.95	11.32	39.27	56.30	-17.03	QP	
10	*	0.4820	21.36	11.32	32.68	46.30	-13.62	AVG	
11		2.7320	14.47	11.42	25.89	56.00	-30.11	QP	
12		2.7320	8.41	11.42	19.83	46.00	-26.17	AVG	

Note1:

Freq. = Emission frequency in MHz

Reading level (dBµV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement (dBµV) = Reading level (dBµV) + Corr. Factor (dB)

Limit (dBµV) = Limit stated in standard

Margin (dB) = Measurement (dBµV) – Limits (dBµV)

Q.P. =Quasi-Peak AVG =average

** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.*

Note2:

Measurements were conducted in all three channels (high, middle, low) and three modulation (GFSK, Pi/4 DQPSK, 8DPSK), and the worst case Mode (Highest channel and GFSK) was submitted only.

6.3. Conducted Output Power

6.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (b)(3); RSS 247 sect. 5.4(2)
Test Method:	ANSI C63.10:2013 and DA00-705
Limit:	Section 15.247 (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following: (1) 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.
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	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 Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission.
Test Result:	PASS

6.3.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSU	200054	Sep. 11, 2016
RF Cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

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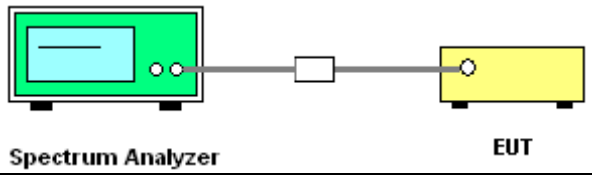
6.4. 20dB Occupy Bandwidth & 99% Occupy Bandwidth

6.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(1); RSS 247 sect. 5.1(3), RSS Gen sect. 6.6
Test Method:	ANSI C63.10:2013 and DA00-705
Limit:	N/A
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines. 2. 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. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW≥1% of the 20 dB bandwidth; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold. 5. Measure and record the results in the test report.
Test Result:	PASS

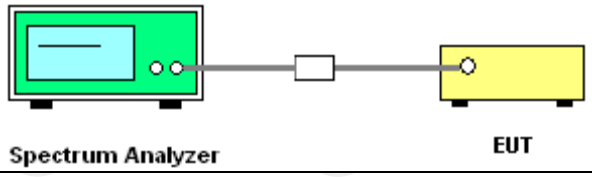
6.4.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	R&S	FSU	200054	Sep. 11, 2016
RF cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.5. Carrier Frequencies Separation

6.5.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(1); RSS 247 sect. 5.1(2)
Test Method:	ANSI C63.10:2013 and DA00-705
Limit:	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.
Test Setup:	
Test Mode:	Hopping mode
Test Procedure:	1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines. 2. 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. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Enable the EUT hopping function. 5. 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; Trace = max hold. 6. Measure and record the results in the test report.
Test Result:	PASS

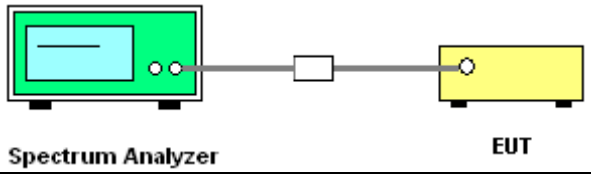
6.5.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	R&S	FSU	200054	Sep. 11, 2016
RF cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.6. Hopping Channel Number

6.6.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(1); RSS 247 sect. 5.1(4)
Test Method:	ANSI C63.10:2013 and DA00-705
Limit:	Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.
Test Setup:	
Test Mode:	Hopping mode
Test Procedure:	1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines. 2. 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. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Enable the EUT hopping function. 5. Use the following spectrum analyzer settings: Span = the frequency band of operation; RBW ≥1% of the span; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold. 6. The number of hopping frequency used is defined as the number of total channel. 7. Record the measurement data derived from spectrum analyzer.
Test Result:	PASS

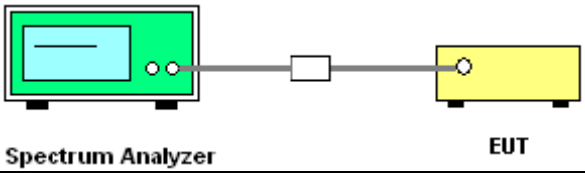
6.6.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	R&S	FSU	200054	Sep. 11, 2016
RF cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.7. Dwell Time

6.7.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(1); RSS 247 sect. 5.1(4)
Test Method:	ANSI C63.10:2013 and DA00-705
Limit:	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.
Test Setup:	
Test Mode:	Hopping mode
Test Procedure:	1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines. 2. 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. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Enable the EUT hopping function. 5. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW≥RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold. 6. Measure and record the results in the test report.
Test Result:	PASS

6.7.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	R&S	FSU	200054	Sep. 11, 2016
RF cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

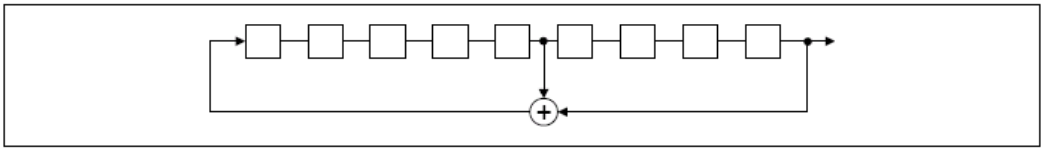
6.8. Pseudorandom Frequency Hopping Sequence

Test Requirement:	FCC Part15 C Section 15.247 (a)(1) requirement; RSS 247 sect. 5.1(2) requirement

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. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

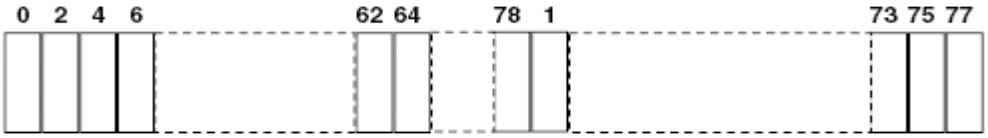
EUT Pseudorandom Frequency Hopping Sequence

The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first one of 9 consecutive ones; i.e. the shift register is initialized with nine ones.
• Number of shift register stages: 9
• Length of pseudo-random sequence: 2^9 -1 = 511 bits
• Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.
The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

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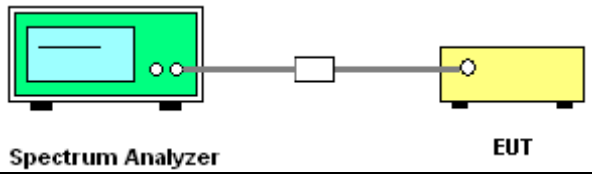
6.9. Conducted Band Edge Measurement

6.9.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (d); RSS 247 sect. 5.5
Test Method:	ANSI C63.10:2013 and DA00-705
Limit:	In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows the guidelines in Band-edge Compliance of RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Set RBW = 100 kHz (≥1% span=10MHz), VBW = 300 kHz (≥RBW). Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used. 4. Enable hopping function of the EUT and then repeat step 2 and 3. 5. Measure and record the results in the test report.
Test Result:	PASS

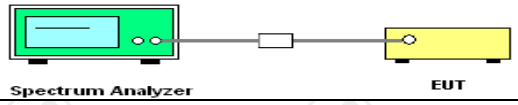
6.9.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	R&S	FSU	200054	Sep. 11, 2016
RF cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.10. Conducted Spurious Emission Measurement

6.10.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (d); RSS 247 sect. 5.5
Test Method:	ANSI C63.10:2013 and DA00-705
Limit:	In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows the guidelines in Spurious RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines 2. 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. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Set RBW = 100 kHz, VBW = 300kHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. 5. Measure and record the results in the test report. 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
Test Result:	PASS

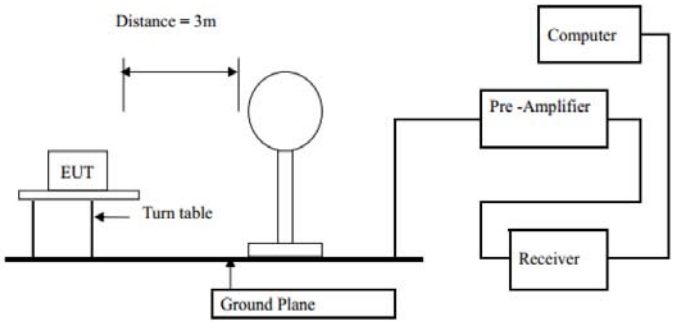
6.10.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016
RF cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.11. Radiated Spurious Emission Measurement

6.11.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209;
RSS Gen sect. 8.9</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.4: 2014 and ANSI C63.10: 2013</td></tr>
<tr><td>Frequency Range:</td><td>9 kHz to 25 GHz</td></tr>
<tr><td>Measurement Distance:</td><td>3 m</td></tr>
<tr><td>Antenna Polarization:</td><td>Horizontal & Vertical</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td>9kHz- 150kHz</td><td>Quasi-peak</td><td>200Hz</td><td>1kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>150kHz-30MHz</td><td>Quasi-peak</td><td>9kHz</td><td>30kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency</td><td>Field Strength (microvolts/meter)</td><td>Measurement Distance (meters)</td></tr>
<tr><td>0.009-0.490</td><td>2400/F(KHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(KHz)</td><td>30</td></tr>
<tr><td>1.705-30</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100</td><td>3</td></tr>
<tr><td>88-216</td><td>150</td><td>3</td></tr>
<tr><td>216-960</td><td>200</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
<table>
<tr><td>Frequency</td><td>Field Strength (microvolts/meter)</td><td>Measurement Distance (meters)</td><td>Detector</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>500</td><td>3</td><td>Average</td></tr>
<tr><td>5000</td><td>3</td><td>Peak</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td>For radiated emissions below 30MHz
 

30MHz to 1GHz</td></tr>
</table>

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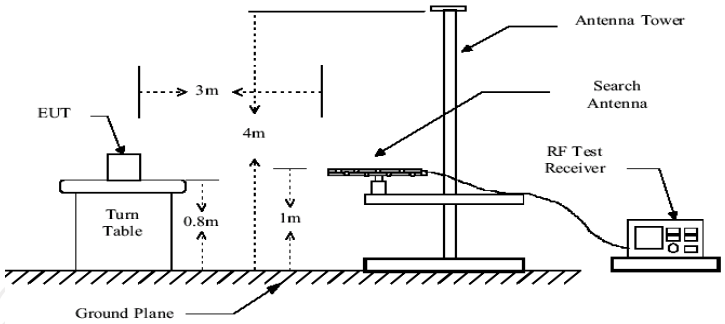
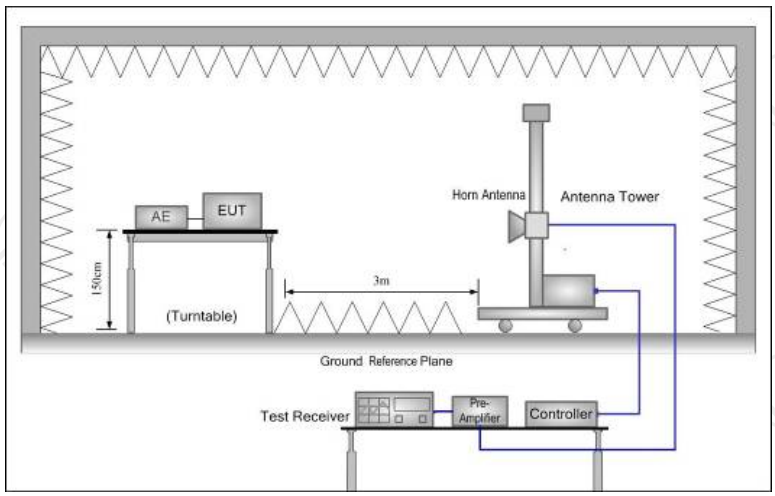
<table>
<tr><td></td><td> 

Above 1GHz

</td></tr>
<tr><td>Test Mode:</td><td>Transmitting mode with modulation</td></tr>
<tr><td>Test Procedure:</td><td>1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines.
2. For the radiated emission test below 1GHz:
The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level.
For the radiated emission test above 1GHz:
Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT,</td></tr>
</table>

	depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak (3) For average measurement: use duty cycle correction factor method per 15.35(c). Duty cycle = On time/100 milliseconds On time =N1*L1+N2*L2+...+Nn-1*LNn-1+Nn*Ln Where N1 is number of type 1 pulses, L1 is length of type 1 pulses, etc. Average Emission Level = Peak Emission Level + 20*log(Duty cycle) Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
Test results:	PASS

6.11.2. Test Instruments

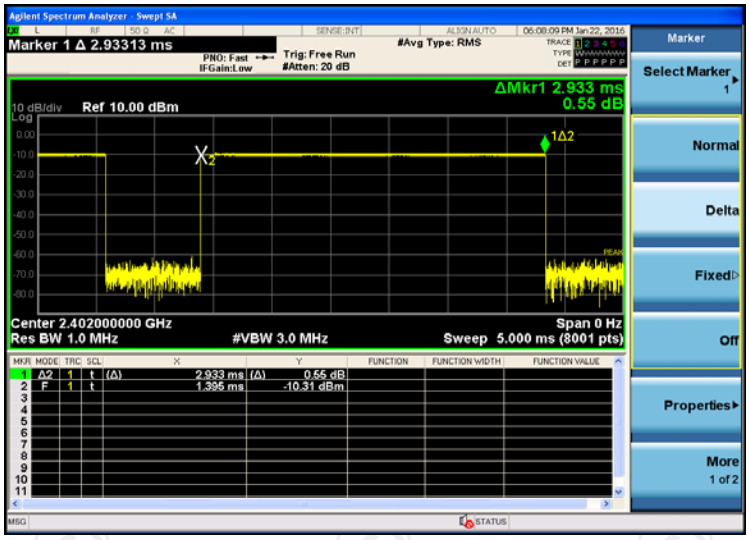
Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
ESPI Test Receiver	ROHDE&SCHWARZ	ESVD	100008	Sep. 11, 2016
Spectrum Analyzer	ROHDE&SCHWARZ	FSEM	848597/001	Sep. 11, 2016
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 11, 2016
Pre-amplifier	HP	8447D	2727A05017	Sep. 11, 2016
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 13, 2016
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 13, 2016
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 13, 2016
Horn Antenna	Schwarzbeck	BBHA 9170	373	Sep. 13, 2016
Antenna Mast	CCS	CC-A-4M	N/A	N/A
Coax cable	TCT	RE-low-01	N/A	Sep. 11, 2016
Coax cable	TCT	RE-high-02	N/A	Sep. 11, 2016
Coax cable	TCT	RE-low-03	N/A	Sep. 11, 2016
Coax cable	TCT	RE-high-04	N/A	Sep. 11, 2016
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

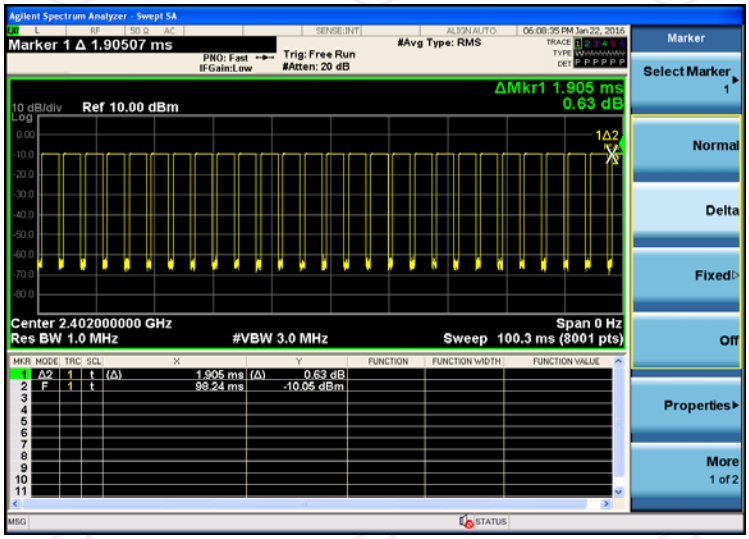
6.11.3. Test Data

Duty cycle correction factor for average measurement

DH5 on time (One Pulse) Plot on Channel 00



DH5 on time (Count Pulses) Plot on Channel 00



Note:

1. *Worst case Duty cycle = on time/100 milliseconds = (2.933*26+1.905)/100=0. 78163*
2. *Worst case Duty cycle correction factor = 20*log (Duty cycle) = -2.14dB*
3. *DH5 has the highest duty cycle worst case and is reported.*
4. *The average levels were calculated from the peak level corrected with duty cycle correction factor (-2.14dB) derived from 20log (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.*

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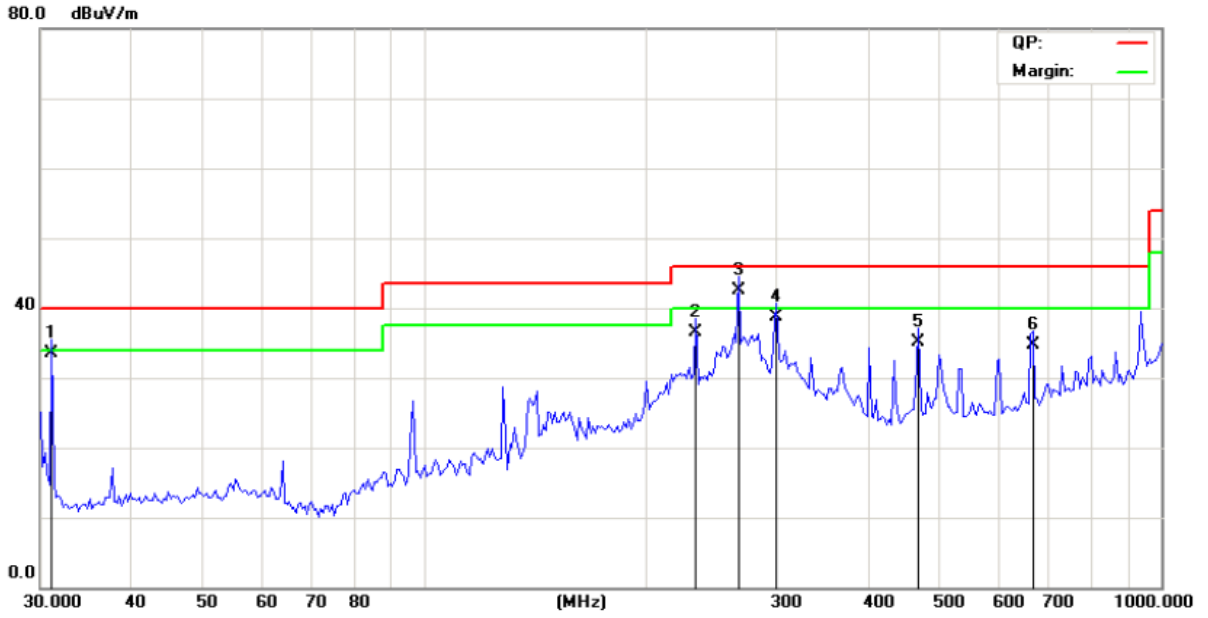
Please refer to following diagram for individual

Below 1GHz

Horizontal:

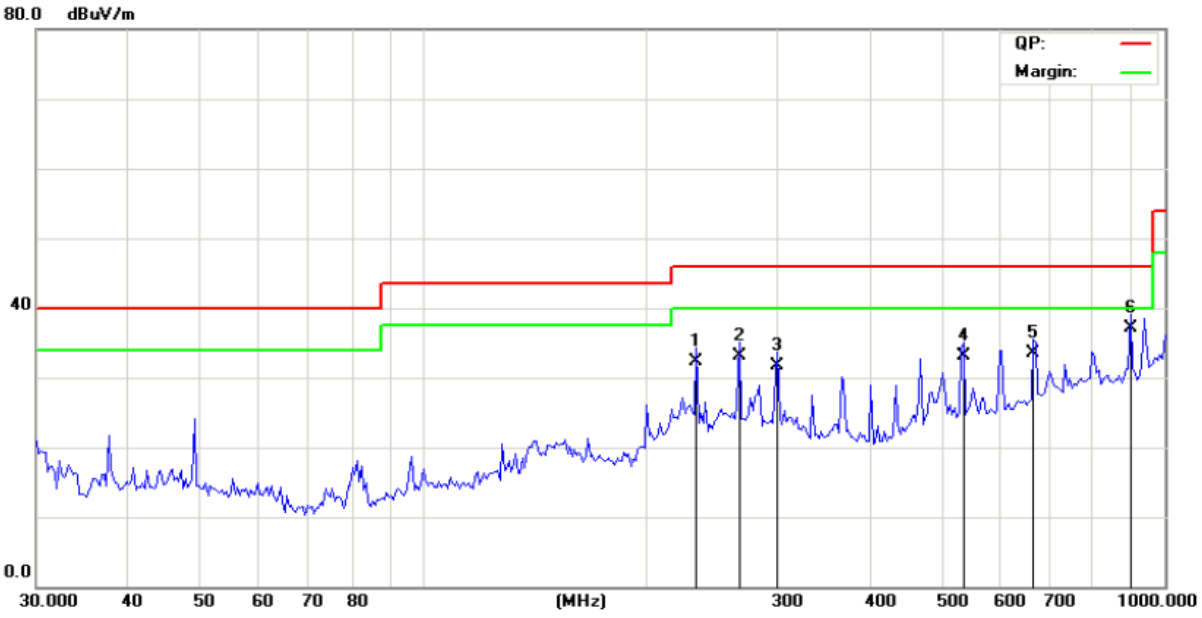


Site Chamber #2 Polarization: *Horizontal* Temperature: 23 (C)

Limit: FCC Part 15B Class B RE_3 m Power: DC 3.7V Humidity: 54 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		31.0728	47.11	-13.59	33.52	40.00	-6.48	QP	
2		233.4881	47.05	-10.53	36.52	46.00	-9.48	QP	
3	*	266.8394	51.87	-9.38	42.49	46.00	-3.51	QP	
4		300.6988	47.03	-8.25	38.78	46.00	-7.22	QP	
5		468.1650	39.09	-3.99	35.10	46.00	-10.90	QP	
6		669.9523	35.16	-0.49	34.67	46.00	-11.33	QP	

Vertical:



Site Chamber #2 Polarization: *Vertical* Temperature: 23 (C)

Limit: FCC Part 15B Class B RE_3 m Power: DC 3.7V Humidity: 54 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		233.4881	42.85	-10.53	32.32	46.00	-13.68	QP	
2		266.8394	42.43	-9.38	33.05	46.00	-12.95	QP	
3		300.6988	40.00	-8.25	31.75	46.00	-14.25	QP	
4		535.0375	35.67	-2.60	33.07	46.00	-12.93	QP	
5		665.2609	34.15	-0.59	33.56	46.00	-12.44	QP	
6	*	899.9577	34.50	2.67	37.17	46.00	-8.83	QP	

Note: *1.The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported*

2. Measurements were conducted in all three channels (high, middle, low) and three modulation (GFSK, Pi/4 DQPSK，8DPSK), and the worst case Mode (Highest channel and GFSK) was submitted only.

Above 1GHz

Modulation Type: GFSK									
Low channel: 2402 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level Peak (dBμV/m)	Emission Level AV (dBμV/m)	Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
2390	H	45.03	---	-8.23	36.8	---	74	54	-17.2
4804	H	39.52	---	6.59	46.11	---	74	54	-7.89
7206	H	35.81	---	12.87	48.68	---	74	54	-5.32
---	H	---	---	---	---	---	---	---	---
2390	V	38.26	---	-8.23	30.03	---	74	54	-23.97
4804	V	38.70	---	6.59	45.29	---	74	54	-8.71
7206	V	37.23	---	12.87	50.10	---	74	54	-3.90
---	V	---	---	---	---	---	---	---	---

Middle channel: 2441 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level Peak (dBμV/m)	Emission Level AV (dBμV/m)	Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
4882	H	38.34	---	7.01	45.35	---	74	54	-8.65
7323	H	36.91	---	13.21	50.12	---	74	54	-3.88
---	H	---	---	---	---	---	---	---	---
4882	V	36.12	---	7.01	43.13	---	74	54	-10.87
7323	V	37.78	---	13.21	50.99	---	74	54	-3.01
---	V	---	---	---	---	----	---	---	---

High channel: 2480 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level Peak (dBμV/m)	Emission Level AV (dBμV/m)	Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
2483.5	H	41.21	---	-7.52	33.69	---	74	54	-20.31
4960	H	41.29	---	7.44	48.73	---	74	54	-5.27
7440	H	35.65	---	13.54	49.19	---	74	54	-4.81
---	H	---	---	---	---	---	---	---	---
2483.5	V	38.51	---	-7.52	30.99	---	74	54	-23.01
4960	V	40.31	---	7.44	47.75	---	74	54	-6.25
7440	V	37.19	---	13.54	50.73	---	74	54	-3.27
---	V	---	---	---	---	---	---	---	---

Note:

1. *Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier*
2. *Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
4. *Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.*
5. *Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.*
6. *Measurements were conducted in all three modulation (GFSK, Pi/4 DQPSK, 8DPSK), and the worst case Mode (GFSK) was submitted only.*

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Appendix A: Test Result of Conducted Test

20dB Occupied Bandwidth

Test Result

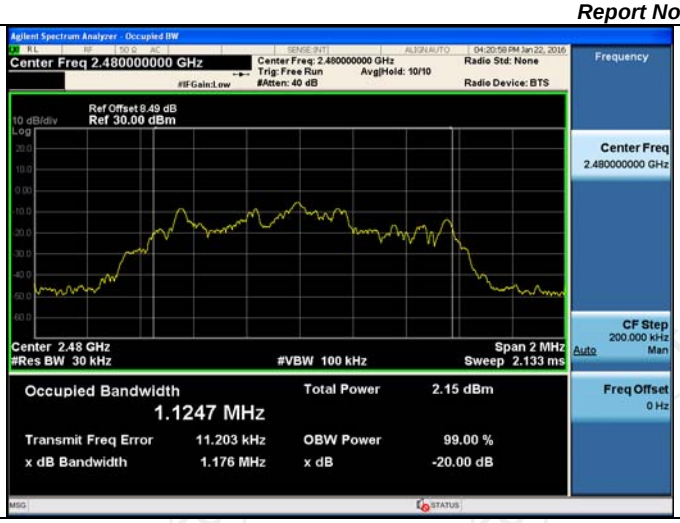
Mode	Channel.	20dB Bandwidth [MHz]	99% OBW [MHz]	Verdict
GFSK	LCH	1.024	0.90132	PASS
GFSK	MCH	1.019	0.87163	PASS
GFSK	HCH	1.004	0.87955	PASS
π /4DQPSK	LCH	1.092	1.0464	PASS
π /4DQPSK	MCH	1.136	1.0244	PASS
π /4DQPSK	HCH	1.132	1.0525	PASS
8DPSK	LCH	1.180	1.1162	PASS
8DPSK	MCH	1.175	1.1230	PASS
8DPSK	HCH	1.176	1.1247	PASS

Test Graph

Graphs			
GFSK/LCH			
GFSK/MCH			

GFSK/HCH			
π/4DQPSK/LCH			
π/4DQPSK/MCH			

π/4DQPSK/HCH			
8DPSK/LCH			
8DPSK/MCH			

8DPSK/HCH		 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Trig: Free Run Avg|Hold: 10/10 #Atten: 40 dB Radio Std: None Radio Device: BTS Frequency Ref Offset 8.49 dB 10 dB/div Ref 30.00 dBm Log Center Freq 2.480000000 GHz Center 2.48 GHz #Res BW 30 kHz #VBW 100 kHz Span 2 MHz Sweep 2.133 ms CF Step 200.000 kHz Auto Man Freq Offset 0 Hz Occupied Bandwidth 1.1247 MHz Total Power 2.15 dBm Transmit Freq Error 11.203 kHz OBW Power 99.00 % x dB Bandwidth 1.176 MHz x dB -20.00 dB MSG STATUS	

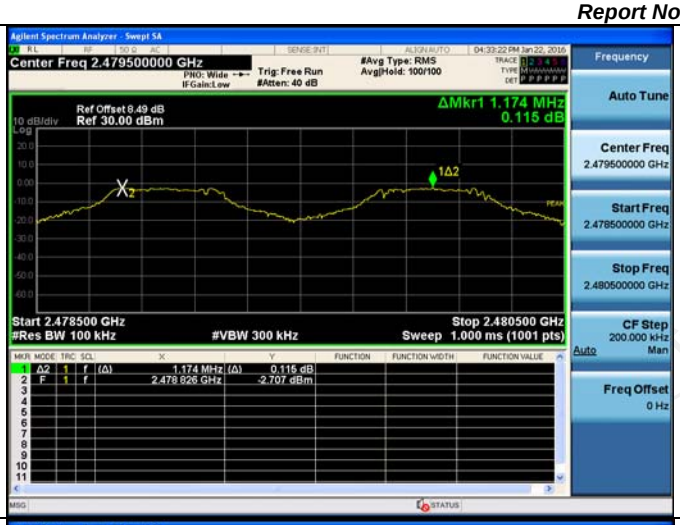
Carrier Frequency Separation

Result Table

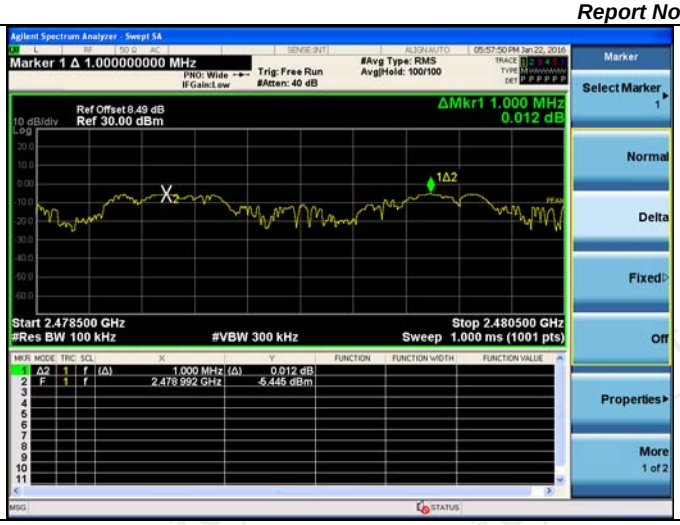
Mode	Channel.	Carrier Frequency Separation [MHz]	Verdict
GFSK	LCH	1.318	PASS
GFSK	MCH	1.160	PASS
GFSK	HCH	1.174	PASS
π/4DQPSK	LCH	1.010	PASS
π/4DQPSK	MCH	1.004	PASS
π/4DQPSK	HCH	1.002	PASS
8DPSK	LCH	1.000	PASS
8DPSK	MCH	1.002	PASS
8DPSK	HCH	1.000	PASS

Test Graph

Graphs			
GFSK/LCH			
GFSK/MCH			

GFSK/HCH			
π/4DQPSK/LCH			
π/4DQPSK/MCH			

π/4DQPSK/HCH			
8DPSK/LCH			
8DPSK/MCH			

8DPSK/HCH			

Agilent Spectrum Analyzer - Swept SA
Marker 1 Δ 1.000000000 MHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
Ref Offset 8.49 dB
10 dB/div
Ref 30.00 dBm
ΔMkr1 1.000 MHz
0.012 dB
1Δ2
Start 2.478500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.480500 GHz
Sweep 1.000 ms (1001 pts)
1 Δ2 1 f (Δ) 1.000 MHz 0.012 dB
2 F 1 f 2.478 992 GHz -5.445 dBm
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2

Dwell Time

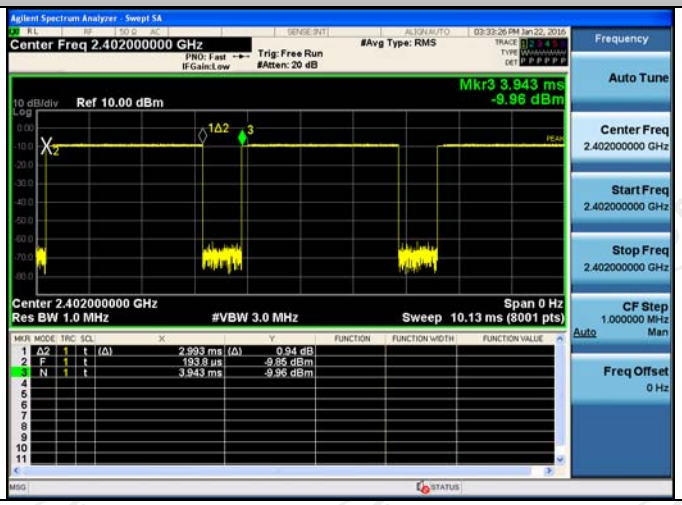
Result Table

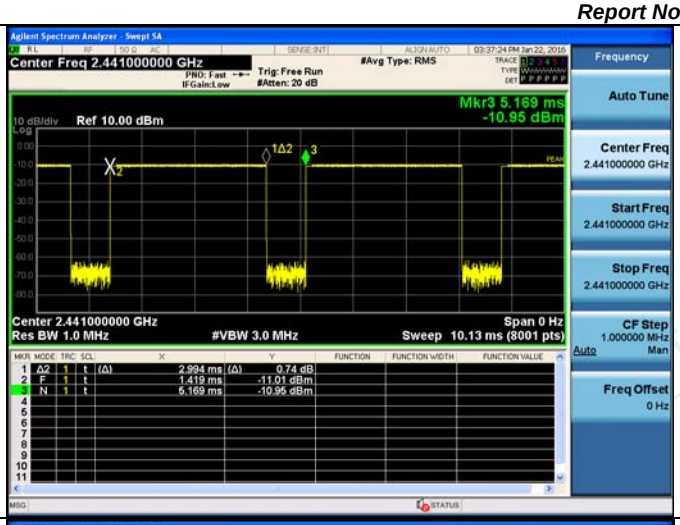
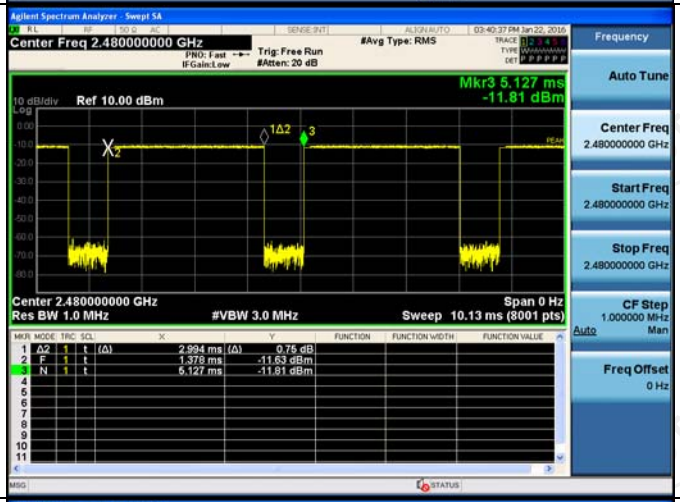
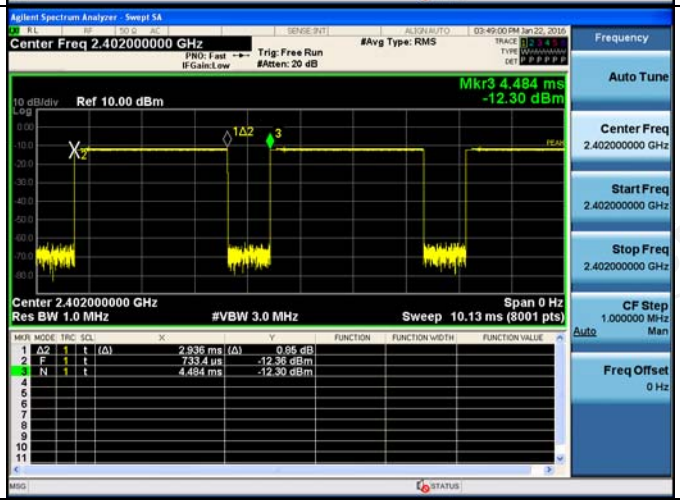
The Dwell Time=Burst Width*Total Hops. The detailed calculations are showed as follows:

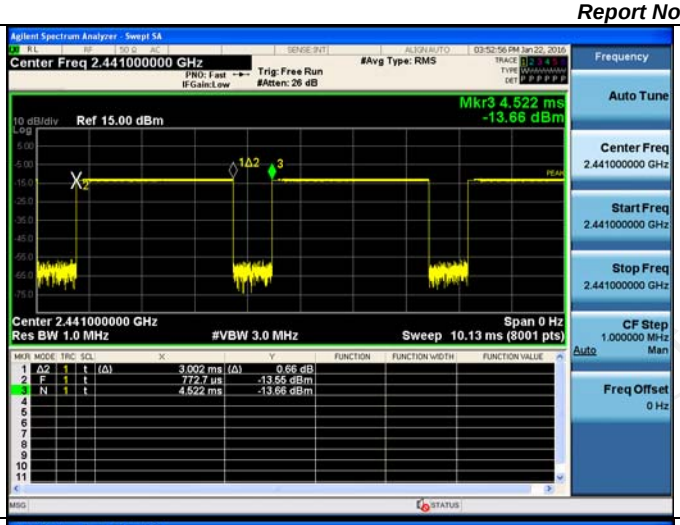
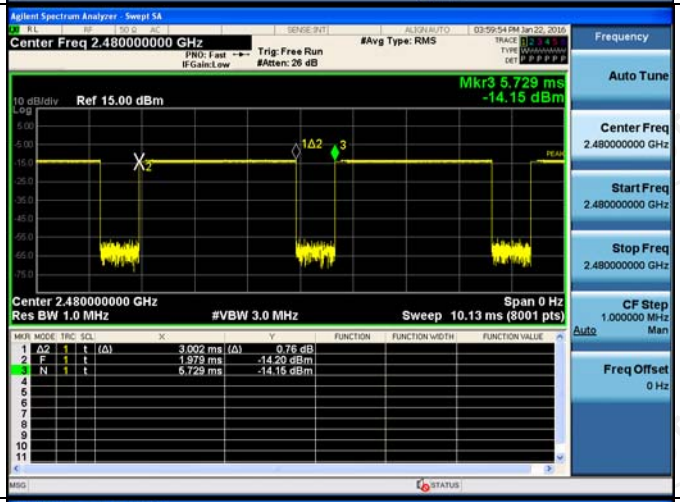
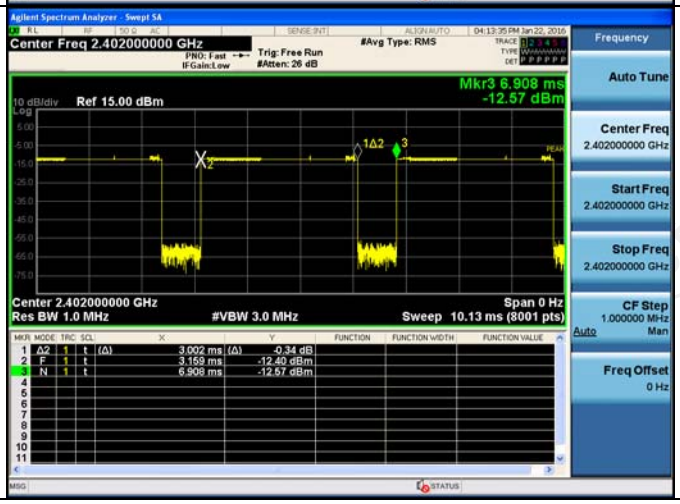
- The duration for dwell time calculation:0.4[s]*hopping number=0.4[s]*79[ch]=31.6[s*ch];
- The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
- The hops per second for all channels: The selected EUT Conf uses a slot type of 5-Tx&1-Rx and a hopping rate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

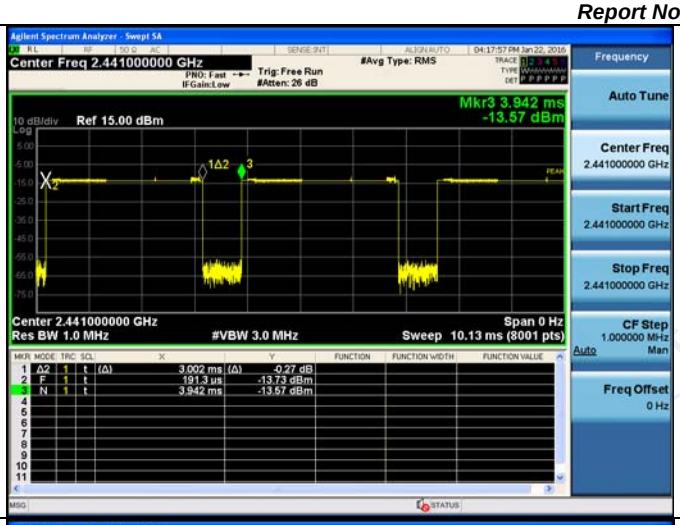
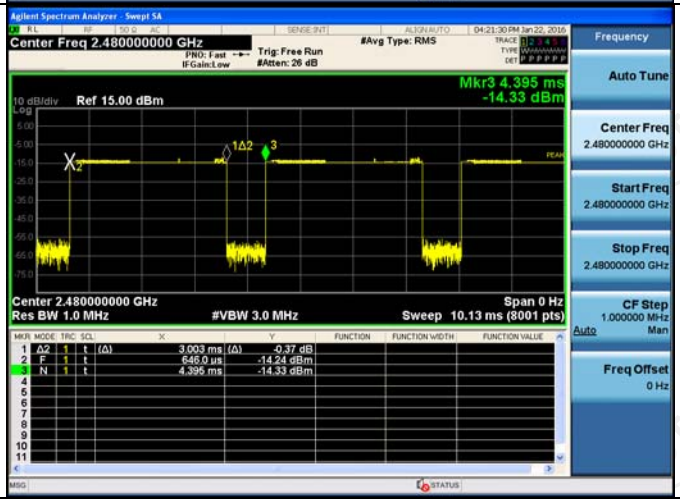
Mode	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Duty Cycle [%]	Verdict
GFSK	LCH	2.993	106.7	0.319	79.83	PASS
GFSK	MCH	2.994	106.7	0.319	79.84	PASS
GFSK	HCH	2.994	106.7	0.319	79.86	PASS
π/4DQPSK	LCH	2.936	106.7	0.313	78.28	PASS
π/4DQPSK	MCH	3.002	106.7	0.32	80.07	PASS
π/4DQPSK	HCH	3.002	106.7	0.32	80.04	PASS
8DPSK	LCH	3.002	106.7	0.32	80.07	PASS
8DPSK	MCH	3.002	106.7	0.32	80.04	PASS
8DPSK	HCH	3.003	106.7	0.32	80.10	PASS

Test Graph

Graphs		
GFSK/LCH		

GFSK/MCH			
GFSK/HCH			
π/4DQPSK/LCH			

π/4DQPSK/MCH			
π/4DQPSK/HCH			
8DPSK/LCH			

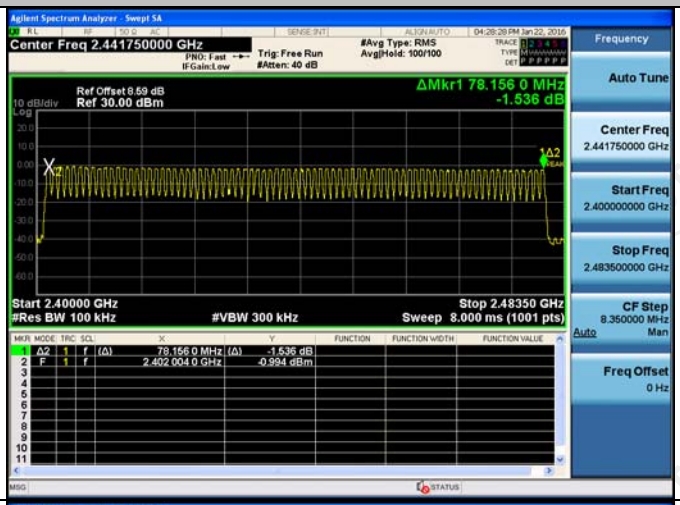
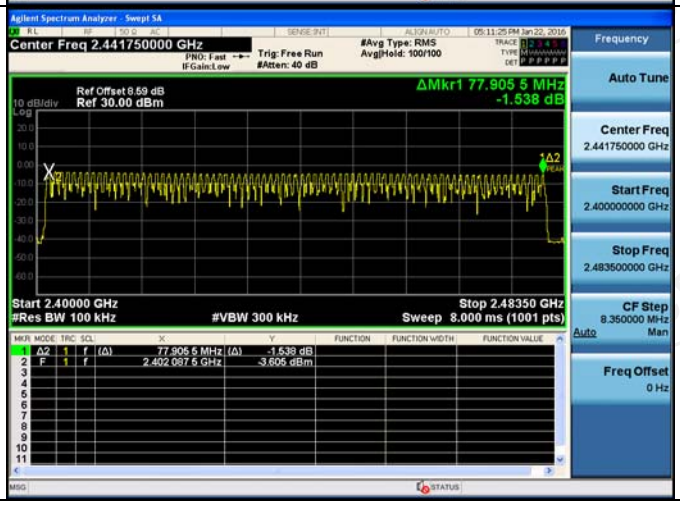
8DPSK/MCH			
8DPSK/HCH			

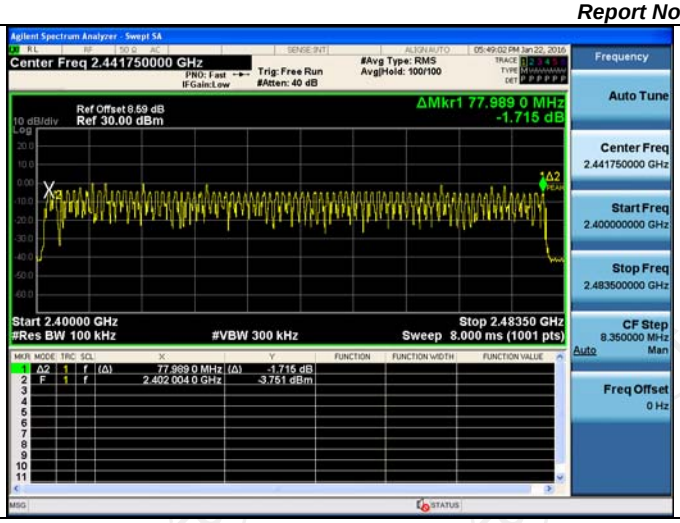
Hopping Channel Number

Result Table

Mode	Channel.	Number of Hopping Channel	Verdict
GFSK	Hop	79	PASS
π/4DQPSK	Hop	79	PASS
8DPSK	Hop	79	PASS

Test Graph

Graphs			
GFSK/Hop			
π/4DQPSK/Hop			

8DPSK/Hop			

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
05:49:02 PM Jan 22, 2016
Ref Offset 8.59 dB
10 dB/div
Ref 30.00 dBm
ΔMkr1 77.989 0 MHz
-1.715 dB
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (1001 pts)
1 Δ2 1 f (Δ) 77.989 0 MHz (Δ) -1.715 dB
2 F 1 f 2.402 004 0 GHz -3.751 dBm
Frequency
Auto Tune
Center Freq
2.441750000 GHz
Start Freq
2.400000000 GHz
Stop Freq
2.483500000 GHz
CF Step
8.350000 MHz
Auto
Man
Freq Offset
0 Hz