

# FCC PART 15.247 TEST REPORT

For

## **MAXWEST INTERNATIONAL LIMITED**

No.1, Longgang Road, Buji, Longgang, Shenzhen City, Guangdong Province, P.R. China

FCC ID: 2AEN3GRAVITY5LTE

Report Type: Product Type: Gravity 5LTE Original Report Lion Niono **Test Engineer:** Lion Xiao Report Number: RDG151125001-00A **Report Date:** 2015-12-04 Jerry Zhang Jerry Zhang EMC Manager Reviewed By: **Test Laboratory:** Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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#### **GENERAL INFORMATION**

#### **Product Description for Equipment under Test (EUT)**

The MAXWEST INTERNATIONAL LIMITED's product, model number: Gravity 5LTE (FCC ID: 2AEN3GRAVITY5LTE) (the "EUT") in this report was a Gravity 5LTE, which was measured approximately:14.6 cm (L) x 7.2 cm (W) x 1.0 cm (H), rated input voltage: DC3.8V rechargeable Li-ion battery or DC5.0V charging from adapter.

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Adapter information:

Model: LPL-A005050100Z

Input: AC100-240V, 50/60 Hz 200mA MAX

Output: DC 5V, 1000mA

Note: The model Gravity 5LTE have different samples, they are the same electromagnetic emissions and electromagnetic compatibility characteristics, the difference between them is the colour, the details was explained in the attached declaration letter.

All measurement and test data in this report was gathered from production sample serial number: 151125001 (Assigned by BACL, Dongguan). The EUT was received on 2015-11-25.

## **Objective**

This report is prepared on behalf of *MAXWEST INTERNATIONAL LIMITED* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission's rules

The tests were performed in order to determine the Bluetooth BDR and EDR mode of EUT compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

#### Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: 2AEN3GRAVITY5LTE.

FCC Part 15C DTS submissions with FCC ID: 2AEN3GRAVITY5LTE.

FCC Part 22H, 24E, 27 PCE submissions with FCC ID: 2AEN3GRAVITY5LTE.

#### **Test Methodology**

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

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#### **Test Facility**

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

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Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

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## **SYSTEM TEST CONFIGURATION**

## **Description of Test Configuration**

The system was configured for testing in engineering mode.

## **EUT Exercise Software**

Test Software Version		Enginnering Mode-TX			
Test Frequency		2402MHz 2441MHz 2480MHz			
GFSK		N/A	N/A	N/A	
Power Level	π/4-DQPSK	N/A	N/A	N/A	
Setting	8DPSK	N/A	N/A	N/A	

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## **Equipment Modifications**

No modification was made to the EUT.

## **Support Equipment List and Details**

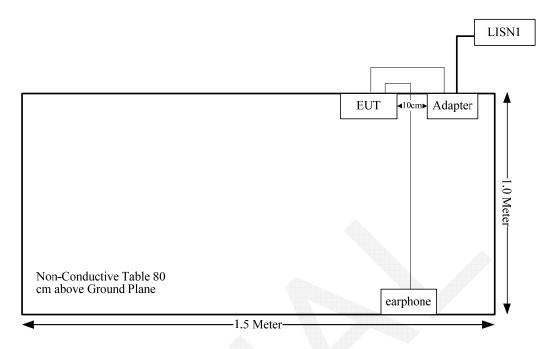
Manufacturer	Manufacturer Description		Serial Number	
/	1	/	/	

## **External Cable**

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	То
USB Cable	no	no	1.05	USB Port of Adater	EUT
Earphone Cable	no	no	1.5	Audio Port of EUT	Earphone

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## **Block Diagram of Test Setup**



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## SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(1)	20 dB Bandwidth	Compliance
§15.247(a)(1)	Channel Separation Test	Compliance
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliance
§15.247(b)(1)	Peak Output Power Measurement	Compliance
§15.247(d)	Band Edges	Compliance

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## FCC §15.247 (i) & §1.1310 & §2.1093- RF EXPOSURE

## **Applicable Standard**

According to §15.247(i) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

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According to KDB447498 D01 General RF Exposure Guidance v06:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq$  50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]  $\cdot [\sqrt{f(GHz)}] \le 3.0$  for 1-g SAR and  $\le 7.5$  for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $\leq 5$  mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

#### **Measurement Result**

The maximum target peak output power= 4.8 dBm (3.02 mW) at 2441 MHz [(max. power of channel, mW)/(min. test separation distance, mm)][ $\sqrt{f(GHz)}$ ] = 3.02/5\*( $\sqrt{2.441}$ ) = 0.94 < 3.0

So the stand-alone SAR evaluation is not necessary.

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## FCC §15.203 - ANTENNA REQUIREMENT

#### **Applicable Standard**

According to FCC § 15.203, 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 shall be considered sufficient to comply with the provisions of this Section. 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.

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#### **Antenna Connector Construction**

The EUT has one integral antenna arrangement for WiFi/BT, which was permanently attached and the antenna gain is -0.5 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

**Result:** Compliance.

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#### **Applicable Standard**

FCC§15.207

#### **Measurement Uncertainty**

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

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If  $U_{\rm lab}$  is less than or equal to  $U_{\rm cispr}$  of Table 1, then:

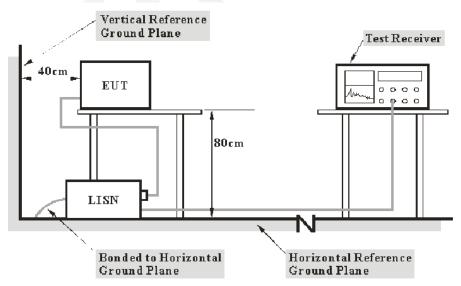
- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit. If  $U_{\text{lab}}$  is greater than  $U_{\text{cispr}}$  of Table 1, then:
- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{\text{lab}} U_{\text{cispr}})$ , exceeds the disturbance limit;
- non compliance is deemed to occur if any measured disturbance level, increased by  $(U_{\text{lab}} U_{\text{cispr}})$ , exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of 
$$U_{\text{cispr}}$$

Measurement	$U_{ m cispr}$
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

## **EUT Setup**



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

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The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source.

#### **EMI Test Receiver Setup**

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W	
150 kHz – 30 MHz	9 kHz	

#### **Test Procedure**

During the conducted emission test, the adapter was connected to the outlet of the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

#### **Corrected Amplitude & Margin Calculation**

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

 $V_C$ : corrected voltage amplitude  $V_R$ : reading voltage amplitude  $A_c$ : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

The "Margin" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

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## **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2015-10-20	2016-10-20
R&S	L.I.S.N	ESH2-Z5	892107/021	2015-07-16	2016-07-15
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-12-11	2015-12-11
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

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## **Test Results Summary**

According to the recorded data in following table, the EUT complied with the <u>FCC Part 15.207</u>, with the worst margin reading of:

#### 9.0 dB at 0.515791 MHz in the Neutral conducted mode

#### **Test Data**

#### **Environmental Conditions**

Temperature:	26.4°C
Relative Humidity:	50 %
ATM Pressure:	100.2 kPa

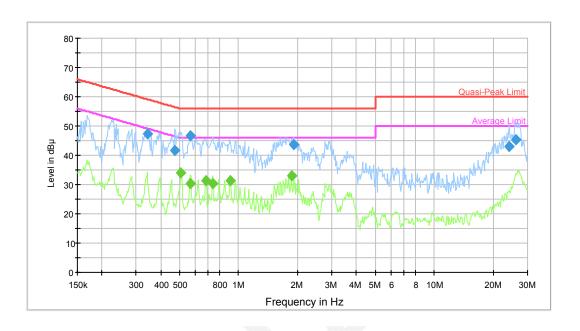
The testing was performed by Lion Xiao on 2015-11-27.

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<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Mode: Transmitting

## AC120 V, 60 Hz, Line:



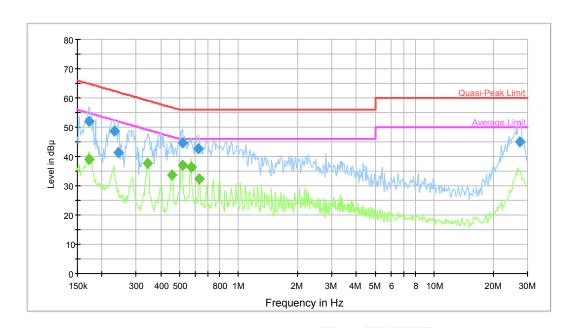
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Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.340821	47.3	9.000	L1	0.2	11.9	59.2	Compliance
0.472507	41.7	9.000	L1	0.2	14.8	56.5	Compliance
0.567545	46.5	9.000	L1	0.2	9.5	56.0	Compliance
1.920710	43.7	9.000	L1	0.2	12.3	56.0	Compliance
24.205331	42.9	9.000	L1	2.6	17.1	60.0	Compliance
26.212978	45.3	9.000	L1	3.1	14.7	60.0	Compliance

	Vereign Activity						
Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.507637	34.1	9.000	L1	0.2	11.9	46.0	Compliance
0.567545	30.4	9.000	L1	0.2	15.6	46.0	Compliance
0.681699	31.3	9.000	L1	0.2	14.7	46.0	Compliance
0.738241	30.3	9.000	L1	0.2	15.7	46.0	Compliance
0.908180	31.4	9.000	L1	0.2	14.6	46.0	Compliance
1.860457	33.0	9.000	L1	0.2	13.0	46.0	Compliance

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## AC120 V, 60 Hz, Neutral:



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				Total Control	400007		
Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.171759	52.0	9.000	N	0.2	12.9	64.9	Compliance
0.230654	48.7	9.000	N	0.2	13.7	62.4	Compliance
0.241949	41.3	9.000	N	0.2	20.7	62.0	Compliance
0.519918	44.7	9.000	N	0.2	11.3	56.0	Compliance
0.624492	42.8	9.000	N	0.2	13.2	56.0	Compliance
27.278408	44.9	9.000	N	2.9	15.1	60.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.171759	39.1	9.000	N	0.2	15.8	54.9	Compliance
0.340821	37.6	9.000	N	0.2	11.6	49.2	Compliance
0.457684	33.6	9.000	N	0.2	13.1	46.7	Compliance
0.515791	37.0	9.000	N	0.2	9.0	46.0	Compliance
0.572086	36.2	9.000	N	0.2	9.8	46.0	Compliance
0.629488	32.4	9.000	N	0.2	13.6	46.0	Compliance

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#### **Applicable Standard**

FCC §15.247 (d); §15.209; §15.205;

## **Measurement Uncertainty**

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

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If  $U_{\text{lab}}$  is less than or equal to  $U_{\text{cispr}}$  of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit. If  $U_{\text{lab}}$  is greater than  $U_{\text{cispr}}$  of Table 1, then:
- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{lab} U_{cispr})$ , exceeds the disturbance limit;
- non compliance is deemed to occur if any measured disturbance level, increased by  $(U_{\text{lab}} U_{\text{cispr}})$ , exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

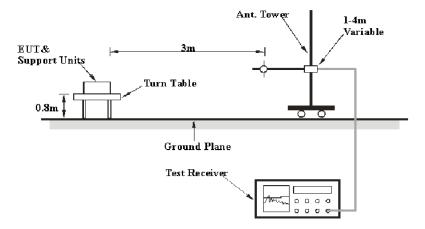
30M~200MHz: 5.0 dB 200M~1GHz: 6.2 dB 1G~6GHz: 4.45 dB 6G~18GHz: 5.23 dB

Table 1 – Values of  $U_{\rm cispr}$ 

Measurement						
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB					
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB					
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB					

#### **EUT Setup**

## **Below 1GHz:**



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#### **Above 1GHz:**



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

#### **EMI Test Receiver & Spectrum Analyzer Setup**

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 CHz	1MHz	3 MHz	/	PK
Above 1 GHz	1MHz	10 Hz	/	Ave.

## **Test Procedure**

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz - 1 GHz, peak and average detection modes for frequencies above 1 GHz.

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#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2015-11-23	2016-11-22
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW- 18405536-JO	15964001001	2015-09-06	2016-09-06

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#### **Corrected Amplitude & Margin Calculation**

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

#### **Test Results Summary**

According to the recorded data in following table, the EUT complied with the <u>FCC Title 47, Part 15, Subpart C, and section 15.205, 15.209 and 15.247</u>, with the worst margin reading of:

#### 9.95 dB at 2483.5 MHz in the Horizontal polarization

#### **Test Data**

#### **Environmental Conditions**

Temperature:	25.5 °C
Relative Humidity:	49 %
ATM Pressure:	100.1 kPa

<sup>\*</sup> The testing was performed by Lion Xiao on 2015-11-30.

Test Mode: Transmitting

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<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

BDR Mode (GFSK)

Frequency	R	eceiver	Rx A	ntenna	Cable	Amplifier	Corrected	FCC 1	15.247
(MHz)	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	loss (dB)	Gain (dB)	Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	(uDµ )	(110/21/111)	\	Low Chann	\ /	\ /	(ubp (/iii)	(αρμ ν/ιιι)	(ub)
2402	68.39	PK	Н	25.65	3.66	0.00	97.70	N/A	N/A
2402	58.64	AV	Н	25.65	3.66	0.00	87.95	N/A	N/A
2402	67.2	PK	V	25.65	3.66	0.00	96.51	N/A	N/A
2402	57.44	AV	V	25.65	3.66	0.00	86.75	N/A	N/A
2390	25.22	PK	Н	25.61	3.63	0.00	54.46	74.00	19.54
2390	13.41	AV	Н	25.61	3.63	0.00	42.65	54.00	11.35
4804	32.06	PK	Н	30.59	5.06	27.41	40.30	74.00	33.70
4804	20.18	AV	Н	30.59	5.06	27.41	28.42	54.00	25.58
7206	31.95	PK	Н	34.09	6.61	25.91	46.74	74.00	27.26
7206	19.68	AV	Н	34.09	6.61	25.91	34.47	54.00	19.53
9608	30.64	PK	Н	35.96	8.53	27.55	47.58	74.00	26.42
9608	16.97	AV	Н	35.96	8.53	27.55	33.91	54.00	20.09
4365	33.1	PK	Н	29.83	5.00	26.92	41.01	74.00	32.99
4365	21.71	AV	Н	29.83	5.00	26.92	29.62	54.00	24.38
239.4	35.7	QP	Н	12.21	1.86	21.48	28.29	46.00	17.71
				Iiddle Chan					
2441	69.1	PK	Н	25.75	3.76	0.00	98.61	N/A	N/A
2441	59.28	AV	Н	25.75	3.76	0.00	88.79	N/A	N/A
2441	68.55	PK	V	25.75	3.76	0.00	98.06	N/A	N/A
2441	58.21	AV	V	25.75	3.76	0.00	87.72	N/A	N/A
4882	32.36	PK	Н	30.79	5.19	27.42	40.92	74.00	33.08
4882	20.51	AV	Н	30.79	5.19	27.42	29.07	54.00	24.93
7323	32.55	PK	Н	34.38	6.75	25.88	47.80	74.00	26.20
7323	20.42	AV	Н	34.38	6.75	25.88	35.67	54.00	18.33
9764	30.9	PK	Н	36.33	8.62	27.20	48.65	74.00	25.35
9764	18.45	AV	Н	36.33	8.62	27.20	36.20	54.00	17.80
4365	33.48	PK	H	29.83	5.00	26.92	41.39	74.00	32.61
4365	21.88	AV	H	29.83	5.00	26.92	29.79	54.00	24.21
3160	33.39	PK	H	27.71	6.80	27.40	40.50	74.00	33.50
3160	21.33	AV	H	27.71	6.80	27.40	28.44	54.00	25.56
239.4	35.4	QP	Н	12.21	1.86	21.48	27.99	46.00	18.01
2490	69.72	DV		High Chann			09.26	NT/A	NT/A
2480 2480	68.73 58.21	PK AV	H H	25.85 25.85	3.68 3.68	0.00	98.26 87.74	N/A N/A	N/A N/A
2480	67.81	PK	V	25.85	3.68	0.00	97.34	N/A N/A	N/A N/A
2480	57.17	AV	V	25.85	3.68	0.00	86.70	N/A N/A	N/A
2483.5	25.12	PK	H	25.86	3.67	0.00	54.65	74.00	19.35
2483.5	13.27	AV	H	25.86	3.67	0.00	42.80	54.00	11.20
4960	31.67	PK	H	31.00	5.34	27.43	40.58	74.00	33.42
4960	19.83	AV	Н	31.00	5.34	27.43	28.74	54.00	25.26
7440	32.5	PK	Н	34.66	6.89	25.97	48.08	74.00	25.92
7440	20.06	AV	Н	34.66	6.89	25.97	35.64	54.00	18.36
9920	30.33	PK	Н	36.71	8.71	26.66	49.09	74.00	24.91
9920	18.65	AV	Н	36.71	8.71	26.66	37.41	54.00	16.59
4365	33.15	PK	Н	29.83	5.00	26.92	41.06	74.00	32.94
4365	21.92	AV	Н	29.83	5.00	26.92	29.83	54.00	24.17
239.4	35.8	QP	Н	12.21	1.86	21.48	28.39	46.00	17.61

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Report No.: RDG151125001-00A

EDR Mode ( $\pi/4$ -DOPSK):

Frequency	Re	eceiver	Rx A	ntenna	Cable	Amplifier	Corrected	FCC 1	5.247
(MHz)	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	loss (dB)	Gain (dB)	Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
			]	Low Chann	el: 2402 M	MHz	•		
2402	67.74	PK	Н	25.65	3.66	0.00	97.05	N/A	N/A
2402	55.6	AV	Н	25.65	3.66	0.00	84.91	N/A	N/A
2402	66.05	PK	V	25.65	3.66	0.00	95.36	N/A	N/A
2402	54.66	AV	V	25.65	3.66	0.00	83.97	N/A	N/A
2390	25.47	PK	Н	25.61	3.63	0.00	54.71	74.00	19.29
2390	13.88	AV	Н	25.61	3.63	0.00	43.12	54.00	10.88
4804	31.53	PK	Н	30.59	5.06	27.41	39.77	74.00	34.23
4804	21.75	AV	Н	30.59	5.06	27.41	29.99	54.00	24.01
7206	31.59	PK	Н	34.09	6.61	25.91	46.38	74.00	27.62
7206	21.42	AV	Н	34.09	6.61	25.91	36.21	54.00	17.79
9608	30.14	PK	Н	35.96	8.53	27.55	47.08	74.00	26.92
9608	18.41	AV	Н	35.96	8.53	27.55	35.35	54.00	18.65
4365	32.58	PK	Н	29.83	5.00	26.92	40.49	74.00	33.51
4365	20.32	AV	Н	29.83	5.00	26.92	28.23	54.00	25.77
239.4	35.3	QP	Н	12.21	1.86	21.48	27.89	46.00	18.11
				iddle Chan				1 27/1	27/1
2441	68.27	PK	Н	25.75	3.76	0.00	97.78	N/A	N/A
2441	56.88	AV	Н	25.75	3.76	0.00	86.39	N/A	N/A
2441	67.34	PK	V	25.75	3.76	0.00	96.85	N/A	N/A
2441	55.19	AV	V	25.75	3.76	0.00	84.70	N/A	N/A
4882	32.22	PK	H	30.79	5.19	27.42	40.78	74.00	33.22
4882	20.27	AV	Н	30.79	5.19	27.42	28.83	54.00	25.17
7323	32.1	PK	H	34.38	6.75	25.88	47.35	74.00	26.65
7323	20.08	AV	Н	34.38	6.75	25.88	35.33	54.00	18.67
9764	30.56	PK	H	36.33	8.62	27.20	48.31	74.00	25.69
9764	18.91	AV PK	Н	36.33 29.83	8.62	27.20	36.66	54.00	17.34
4365 4365	33.13		H H	29.83	5.00	26.92 26.92	41.04 29.43	74.00	32.96
	21.52	AV PK	Н					54.00	24.57
3160 3160	33.96 21.07	AV	Н	27.71 27.71	6.80	27.40 27.40	41.07 28.18	74.00	32.93 25.82
239.4	35	QP	Н	12.21	6.80 1.86	21.48	27.59	54.00 46.00	18.41
437.4	) 33	Qr Qr		High Chann			41.39	40.00	10.41
2480	67.3	PK	Н	25.85	3.68	0.00	96.83	N/A	N/A
2480	55.61	AV	Н	25.85	3.68	0.00	85.14	N/A	N/A
2480	66.79	PK	V	25.85	3.68	0.00	96.32	N/A	N/A
2480	54.6	AV	V	25.85	3.68	0.00	84.13	N/A	N/A
2483.5	25.98	PK	H	25.86	3.67	0.00	55.51	74.00	18.49
2483.5	13.93	AV	Н	25.86	3.67	0.00	43.46	54.00	10.54
4960	31.51	PK	Н	31.00	5.34	27.43	40.42	74.00	33.58
4960	19.01	AV	Н	31.00	5.34	27.43	27.92	54.00	26.08
7440	31.52	PK	Н	34.66	6.89	25.97	47.10	74.00	26.90
7440	19.41	AV	Н	34.66	6.89	25.97	34.99	54.00	19.01
9920	30.14	PK	Н	36.71	8.71	26.66	48.90	74.00	25.10
9920	18.7	AV	Н	36.71	8.71	26.66	37.46	54.00	16.54
4365	32.78	PK	Н	29.83	5.00	26.92	40.69	74.00	33.31
4365	20.9	AV	Н	29.83	5.00	26.92	28.81	54.00	25.19
239.4	35.2	QP	Н	12.21	1.86	21.48	27.79	46.00	18.21

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Report No.: RDG151125001-00A

EDR Mode (8-DPSK):

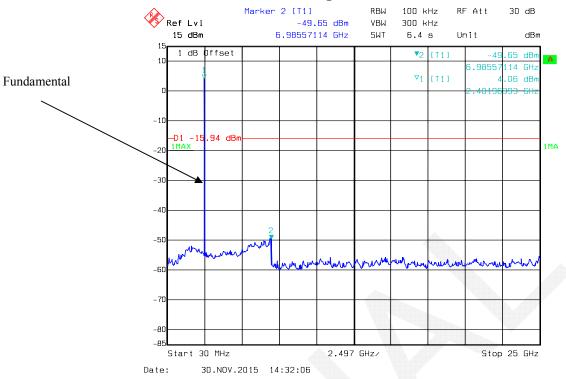
Frequency	Re	eceiver	Rx A	ntenna	Cable	Amplifier	Corrected	FCC 1	5.247
(MHz)	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	loss (dB)	Gain (dB)	Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
			]	Low Chann	el: 2402 M	MHz	•		
2402	67.4	PK	Н	25.65	3.66	0.00	96.71	N/A	N/A
2402	57.07	AV	Н	25.65	3.66	0.00	86.38	N/A	N/A
2402	65.22	PK	V	25.65	3.66	0.00	94.53	N/A	N/A
2402	55.75	AV	V	25.65	3.66	0.00	85.06	N/A	N/A
2390	25.67	PK	Н	25.61	3.63	0.00	54.91	74.00	19.09
2390	13.46	AV	Н	25.61	3.63	0.00	42.70	54.00	11.30
4804	30.22	PK	Н	30.59	5.06	27.41	38.46	74.00	35.54
4804	18.65	AV	Н	30.59	5.06	27.41	26.89	54.00	27.11
7206	31.37	PK	Н	34.09	6.61	25.91	46.16	74.00	27.84
7206	19.7	AV	Н	34.09	6.61	25.91	34.49	54.00	19.51
9608	29.43	PK	Н	35.96	8.53	27.55	46.37	74.00	27.63
9608	17.26	AV	Н	35.96	8.53	27.55	34.20	54.00	19.80
4365	32.9	PK	Н	29.83	5.00	26.92	40.81	74.00	33.19
4365	20.67	AV	Н	29.83	5.00	26.92	28.58	54.00	25.42
239.4	35.6	QP	Н	12.21	1.86	21.48	28.19	46.00	17.81
				iddle Chan					
2441	68.84	PK	Н	25.75	3.76	0.00	98.35	N/A	N/A
2441	58.56	AV	Н	25.75	3.76	0.00	88.07	N/A	N/A
2441	66.5	PK	V	25.75	3.76	0.00	96.01	N/A	N/A
2441	56.45	AV	V	25.75	3.76	0.00	85.96	N/A	N/A
4882	31.03	PK	H	30.79	5.19	27.42	39.59	74.00	34.41
4882	19.34	AV	Н	30.79	5.19	27.42	27.90	54.00	26.10
7323	31.93	PK	H	34.38	6.75	25.88	47.18	74.00	26.82
7323	19.08	AV	Н	34.38	6.75	25.88	34.33	54.00	19.67
9764	29.63	PK	H	36.33	8.62	27.20	47.38	74.00	26.62
9764	17.6	AV	Н	36.33	8.62	27.20	35.35	54.00	18.65
4365	33.11	PK	H	29.83	5.00	26.92	41.02	74.00	32.98
4365	21.36	AV	H	29.83	5.00	26.92	29.27	54.00	24.73
3160	33.69	PK	H	27.71	6.80	27.40	40.80	74.00	33.20
3160	21.5	AV	H H	27.71 12.21	6.80	27.40	28.61	54.00	25.39
239.4	35.2	QP		12.21 High Chann	1.86	21.48 MHz	27.79	46.00	18.21
2480	67.27	PK	Н	25.85	3.68	0.00	96.80	N/A	N/A
2480	55.14	AV	Н	25.85	3.68	0.00	84.67	N/A	N/A
2480	64.3	PK	V	25.85	3.68	0.00	93.83	N/A	N/A
2480	52.26	AV	V	25.85	3.68	0.00	81.79	N/A	N/A
2483.5	26.06	PK	H	25.86	3.67	0.00	55.59	74.00	18.41
2483.5	14.52	AV	Н	25.86	3.67	0.00	44.05	54.00	9.95
4960	31.24	PK	Н	31.00	5.34	27.43	40.15	74.00	33.85
4960	19.68	AV	Н	31.00	5.34	27.43	28.59	54.00	25.41
7440	32.46	PK	Н	34.66	6.89	25.97	48.04	74.00	25.96
7440	20.51	AV	Н	34.66	6.89	25.97	36.09	54.00	17.91
9920	29.94	PK	Н	36.71	8.71	26.66	48.70	74.00	25.30
9920	17.11	AV	Н	36.71	8.71	26.66	35.87	54.00	18.13
4365	33.42	PK	Н	29.83	5.00	26.92	41.33	74.00	32.67
4365	21.38	AV	Н	29.83	5.00	26.92	29.29	54.00	24.71
239.4	35.8	QP	Н	12.21	1.86	21.48	28.39	46.00	17.61

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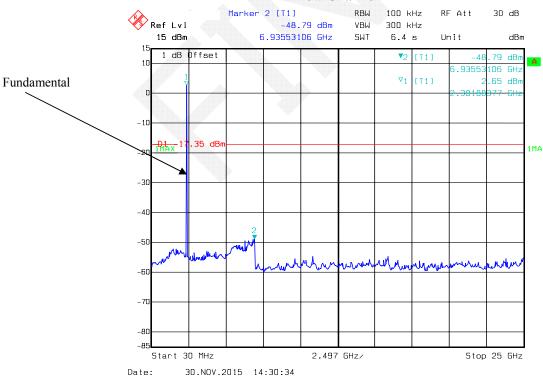






#### EDR Mode ( $\pi/4$ -DQPSK):

#### **Low Channel**



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-50

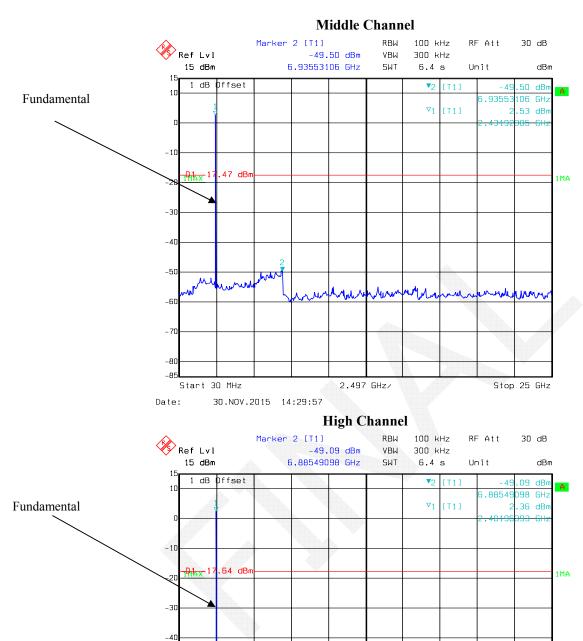
-60

-80 -85

Start 30 MHz

30.NOV.2015 14:29:20





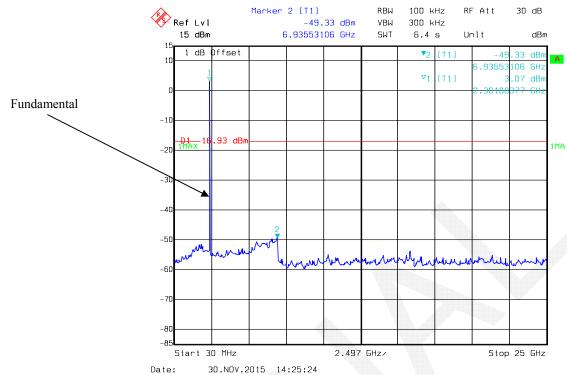
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2.497 GHz/

Stop 25 GHz

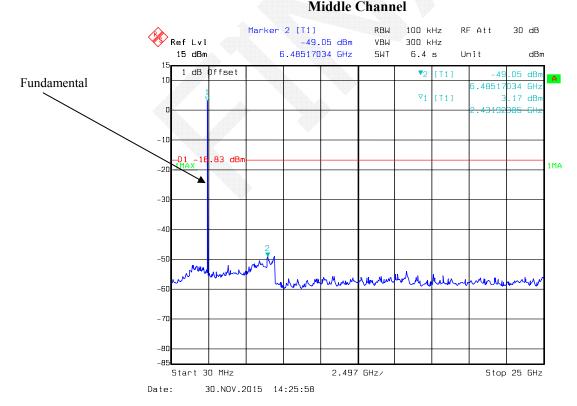
EDR Mode (8-DPSK):

## Low Channel

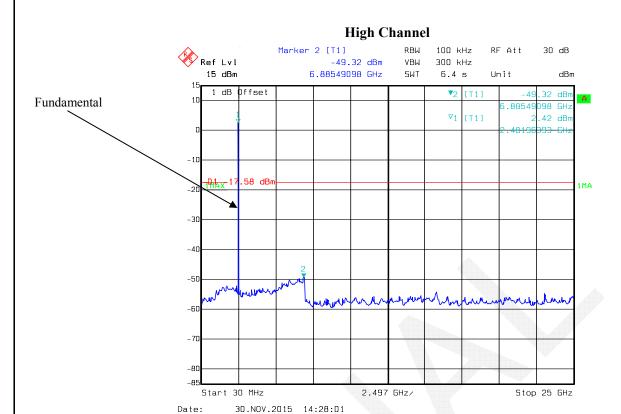


Report No.: RDG151125001-00A

#### Middle Channe



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## FCC §15.247(a) (1) - CHANNEL SEPARATION TEST

## **Applicable Standard**

Frequency hopping systems shall have hoping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.50 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW.

Report No.: RDG151125001-00A

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Procedure**

- 1. Set the EUT in transmitting mode, spectrum Bandwidth was set at 30 kHz, maxhold the channel.
- 2. Set the adjacent channel of the EUT maxhold another trace.
- 3. Measure the channel separation.

#### **Test Data**

#### **Environmental Conditions**

Victoria de la Companya del Companya de la Companya del Companya de la Companya d	
Temperature:	25.5 °C
Relative Humidity:	49 %
ATM Pressure:	100.1 kPa

<sup>\*</sup> The testing was performed by Lion Xiao on 2015-11-30.

Test Result: Compliance.

Please refer to following tables and plots

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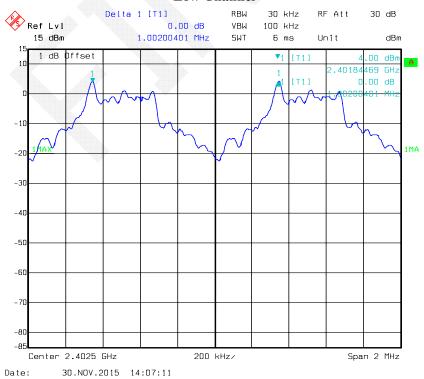
Test Mode: Transmitting

Mode	Channel	Frequency MHz	Channel Seperation MHz	Limit MHz	Result	
	Low	2402				
	Adjacent	2403	1.002			
BDR	Middle	2441	1.000	0.564	G I	
(GFSK)	Adjacent	2442	1.002	0.564	Compliance	
	High	2480	1.002			
	Adjacent	2479	1.002			
	Low	2402	1 002		Compliance	
	Adjacent	2403	1.002			
EDR	Middle	2441	1.002	0.759		
$(\pi/4\text{-DQPSK})$	Adjacent	2442	1.002	0.739		
	High	2480	1.002			
	Adjacent	2479	1.002			
	Low	2402	1.002			
	Adjacent	2403	1.002			
EDR	Middle	2441	1.002	0.785	Compliance	
(8DPSK)	Adjacent	2442	1.002	0.763	Compliance	
	High	2480	1.002			
	Adjacent	2479	1.002			

*Note: Limit=*  $(2/3) \times 20dB$  *bandwidth* 

## BDR Mode (GFSK):

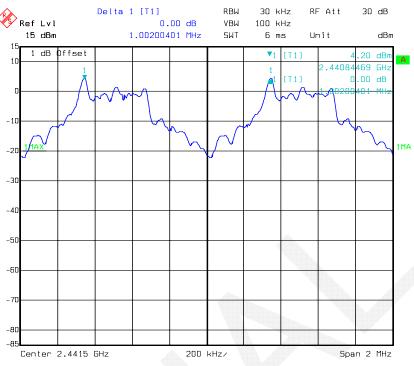
#### **Low Channel**



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## **Middle Channel**

Report No.: RDG151125001-00A



#### Date: 30.NOV.2015 14:08:31

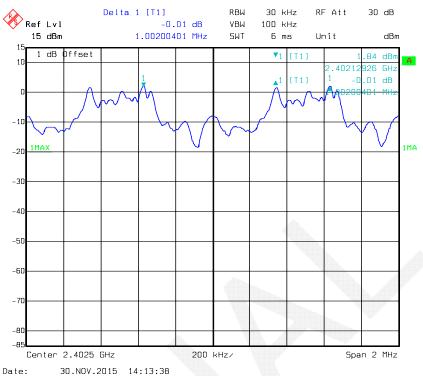
#### **High Channel**



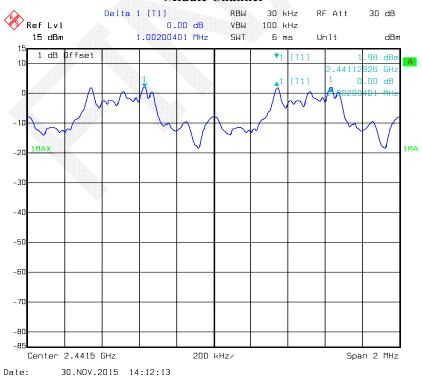
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Report No.: RDG151125001-00A



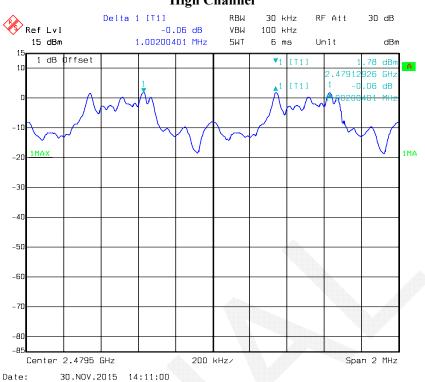
#### **Middle Channel**



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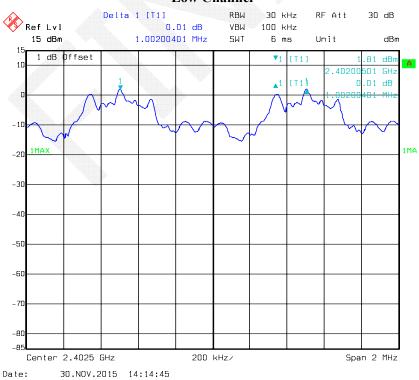
## **High Channel**

Report No.: RDG151125001-00A



## EDR Mode (8-DPSK):

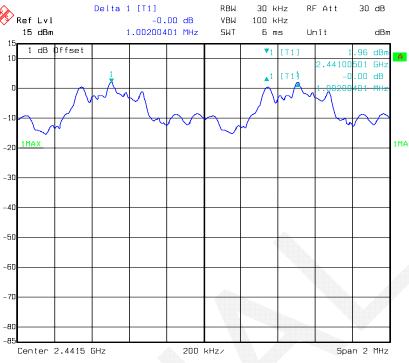
#### **Low Channel**



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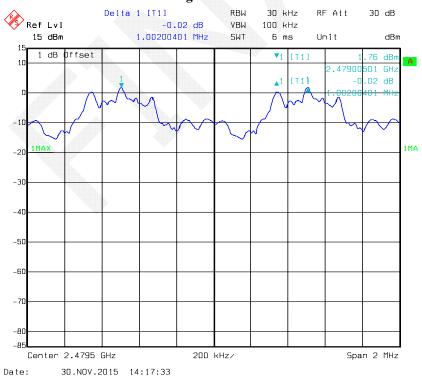
## **Middle Channel**

Report No.: RDG151125001-00A



Date: 30.NOV.2015 14:16:10

#### **High Channel**



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## FCC $\S15.247(a)$ (1) – 20 dB BANDWIDTH TESTING

#### **Applicable Standard**

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.

Report No.: RDG151125001-00A

#### **Test Procedure**

- 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 on the test table without connection to measurement instrument. Turn on the EUT. 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.

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data**

#### **Environmental Conditions**

	Applicate Telephone	
Temperature:	25.5 °C	
Relative Humidity:	49 %	
ATM Pressure:	100.1 kPa	

<sup>\*</sup> The testing was performed by Lion Xiao on 2015-11-30.

Test Result: Compliance.

Please refer to following tables and plots

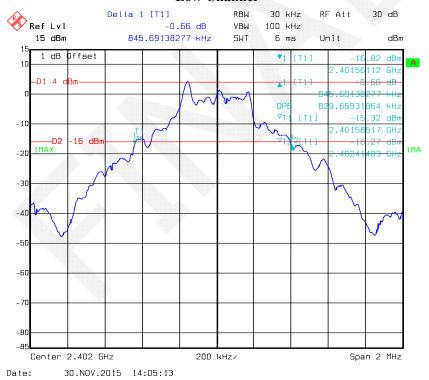
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Mode	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
DDD M. I	Low	2402	0.846
BDR Mode (GFSK)	Middle	2441	0.846
(OI SIC)	High	2480	0.846
EDD 14 1	Low	2402	1.138
EDR Mode (π/4-DQPSK):	Middle	2441	1.138
(M-4-DQI 5K).	High	2480	1.138
	Low	2402	1.178
EDR Mode (8-DPSK):	Middle	2441	1.178
(0-D1 5K).	High	2480	1.178

Report No.: RDG151125001-00A

## BDR Mode (GFSK):

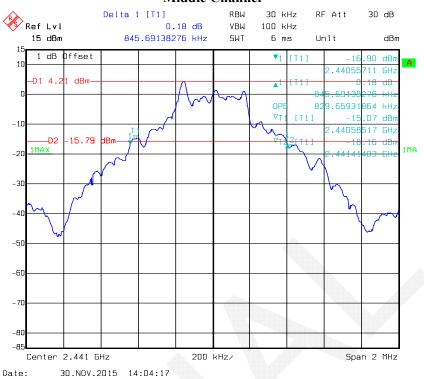
#### **Low Channel**



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#### **Middle Channel**

Report No.: RDG151125001-00A



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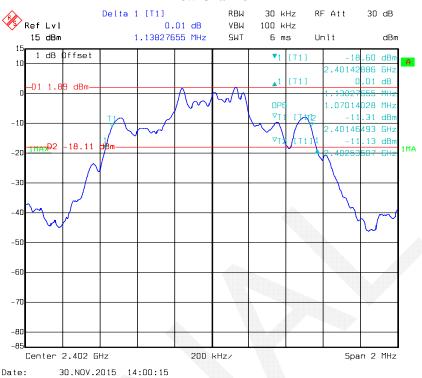
#### **High Channel**



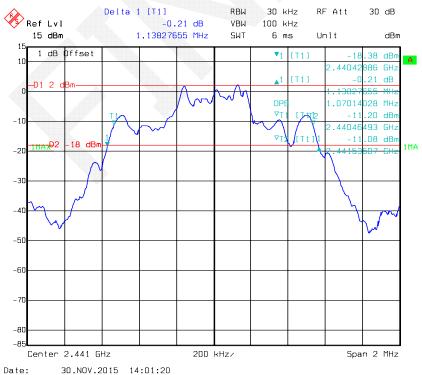
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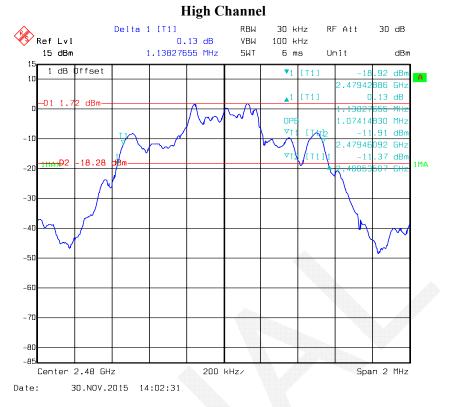
Report No.: RDG151125001-00A



#### Middle Channel



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## EDR Mode (8-DPSK):

#### **Low Channel**



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# **Middle Channel**

Report No.: RDG151125001-00A



#### Date: 30.NOV.2015 13:57:25

#### **High Channel**



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# FCC §15.247(a) (1) (iii) - QUANTITY OF HOPPING CHANNEL TEST

#### **Applicable Standard**

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Report No.: RDG151125001-00A

#### **Test Procedure**

- 1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- 2. Set the EUT in hopping mode from first channel to last.
- 3. By using the Max-Hold function record the Quantity of the channel.

## **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	25.5 °C
Relative Humidity:	49 %
ATM Pressure:	100.1 kPa

<sup>\*</sup> The testing was performed by Lion Xiao on 2015-11-30.

Test Result: Compliance.

Please refer to following tables and plots

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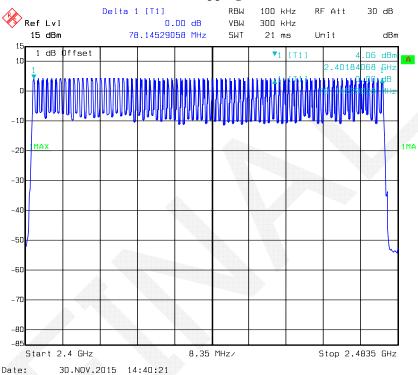
Test Mode: Transmitting

BDR Mode (GFSK):

Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	≥15

Report No.: RDG151125001-00A

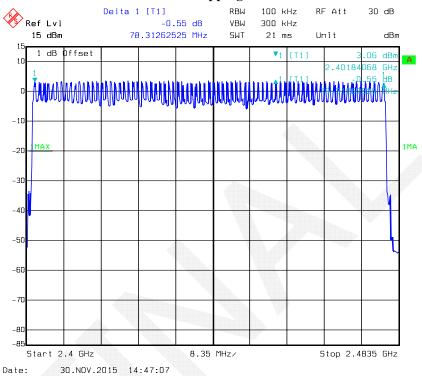
## **Number of Hopping Channels**



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Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	≥15

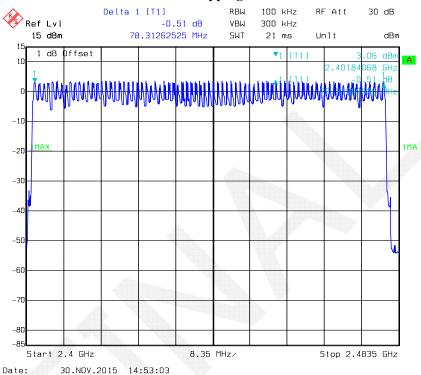
## **Number of Hopping Channels**



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Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	≥15

## **Number of Hopping Channels**



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# FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

#### **Applicable Standard**

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Report No.: RDG151125001-00A

#### **Test Procedure**

The EUT was worked in channel hopping; Spectrum SPAN was set as 0. Sweep was set as 0.4 \* channel no. (s), the quantity of pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell Time= time slot length \* hope rate/ number of hopping channels \* 31.6s Hop rate=1600/s

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

## **Test Data**

#### **Environmental Conditions**

Control of the Contro	
Temperature:	25.5 °C
Relative Humidity:	49 %
ATM Pressure:	100.1 kPa

<sup>\*</sup> The testing was performed by Lion Xiao on 2015-11-30.

Test Result: Compliance.

Please refer to following tables and plots

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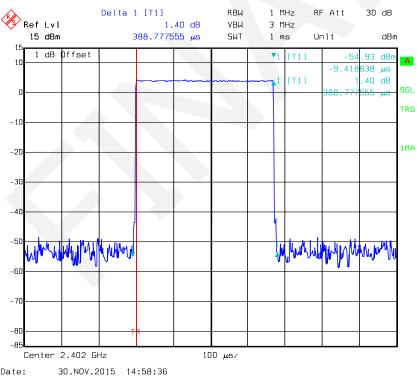
Test Mode: Transmitting

BDR Mode (GFSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result	
	Low	0.389	0.124	0.4	Compliance	
DH1	Middle	0.389	0.124	0.4	Compliance	
DIII	High	0.389	0.124	0.4	Compliance	
	Note: Dwell tim	Note: Dwell time=Pulse time (ms) × (1600/2/79) ×31.6 s				
	Low	1.651	0.264	0.4	Compliance	
DH3	Middle	1.651	0.264	0.4	Compliance	
<i>D</i> 113	High	1.651	0.264	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				6 s	
	Low	2.910	0.310	0.4	Compliance	
DH5	Middle	2.910	0.310	0.4	Compliance	
	High	2.910	0.310	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) × (1600/6/79) ×31.6 s					

Report No.: RDG151125001-00A

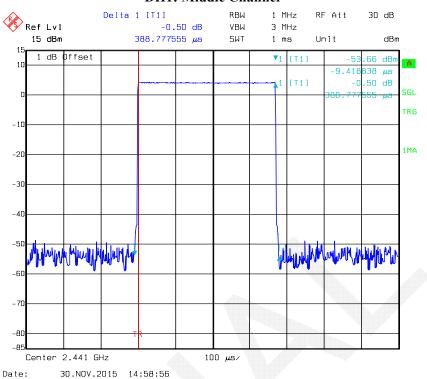
## **DH1: Low Channel**



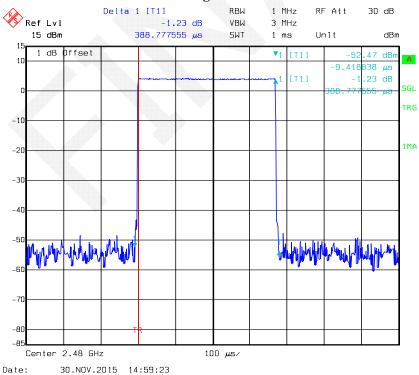
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## **DH1: Middle Channel**

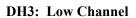
Report No.: RDG151125001-00A

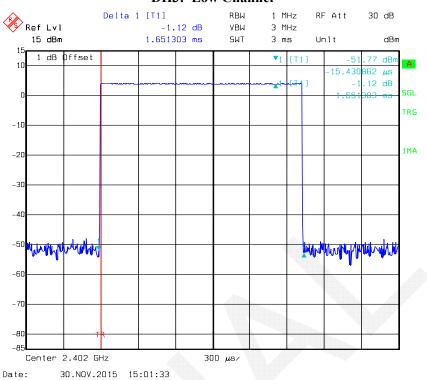


#### **DH1: High Channel**

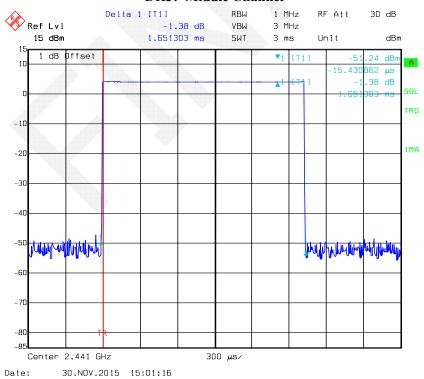


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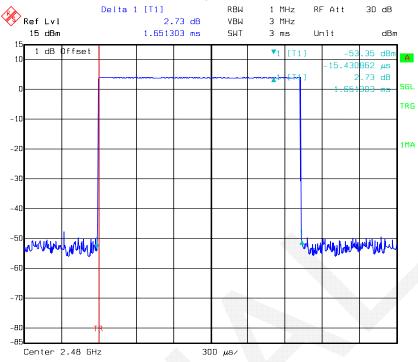
#### **DH3: Middle Channel**



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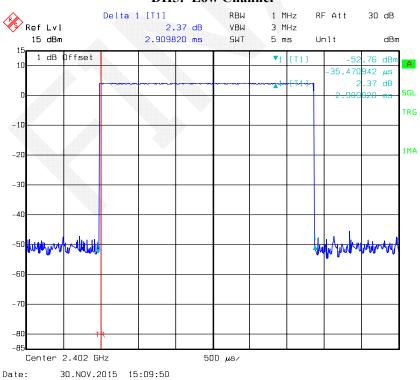
# DH3: High Channel

Report No.: RDG151125001-00A



#### Date: 30.NOV.2015 15:01:00

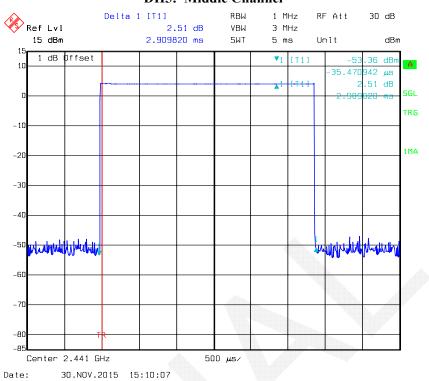
#### **DH5: Low Channel**



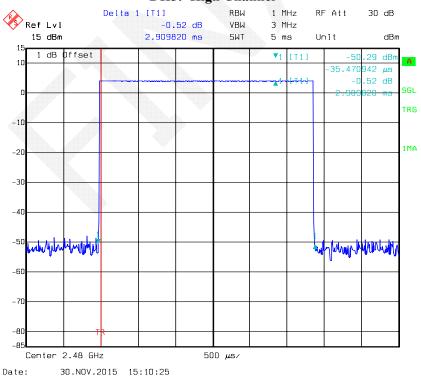
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# **DH5: Middle Channel**

Report No.: RDG151125001-00A



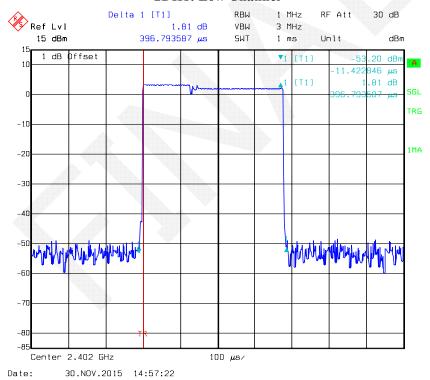
## **DH5: High Channel**



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Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result	
	Low	0.397	0.127	0.4	Compliance	
2DH1	Middle	0.397	0.127	0.4	Compliance	
	High	0.397	0.127	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s					
	Low	1.657	0.265	0.4	Compliance	
2DH3	Middle	1.657	0.265	0.4	Compliance	
2D113	High	1.657	0.265	0.4	Compliance	
	Note: Dwell tin	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
	Low	2.910	0.310	0.4	Compliance	
2DH5	Middle	2.910	0.310	0.4	Compliance	
	High	2.910	0.310	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s					

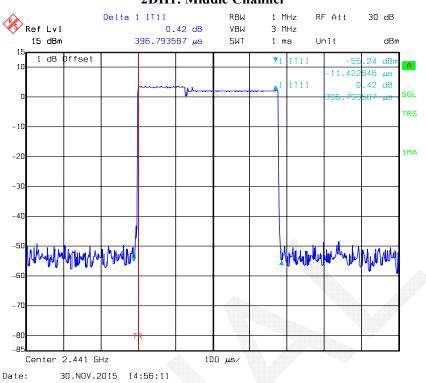
## 2DH1: Low Channel



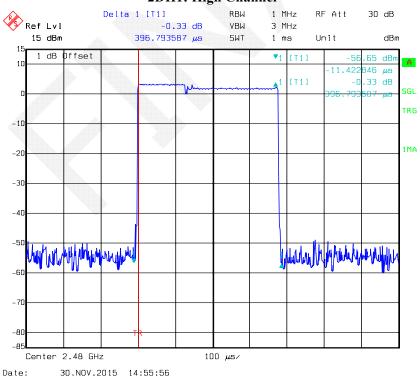
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# 2DH1: Middle Channel

Report No.: RDG151125001-00A



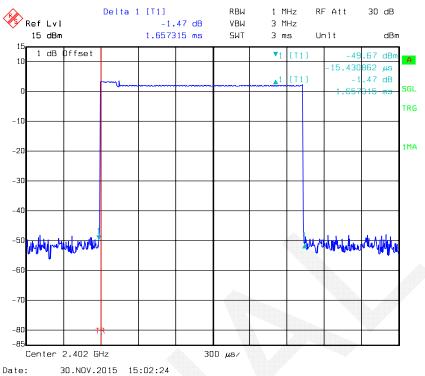
## 2DH1: High Channel

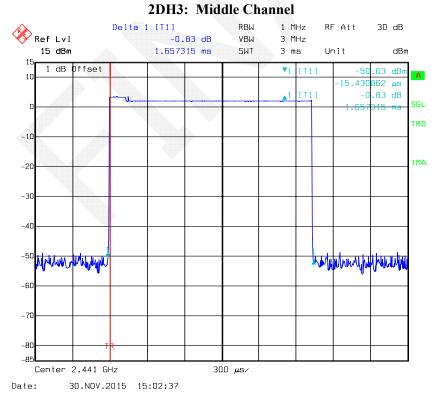


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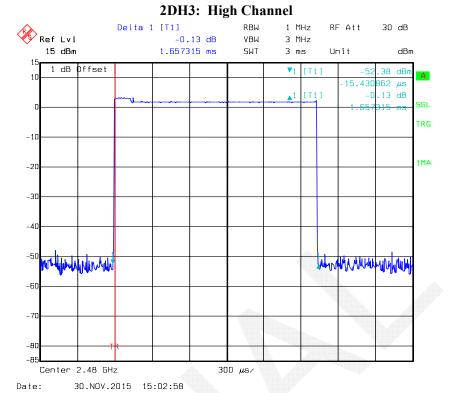




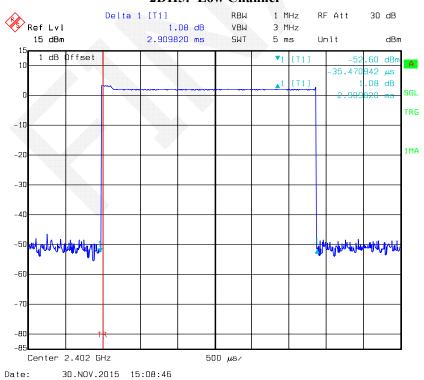




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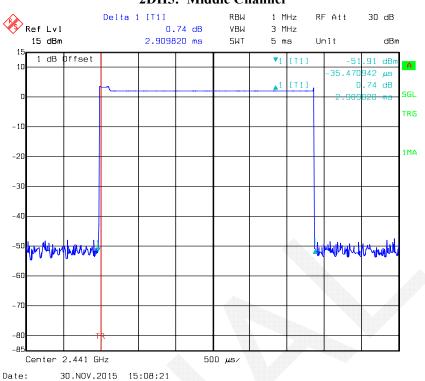
#### 2DH5: Low Channel



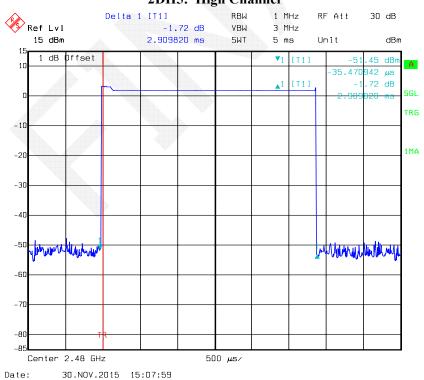
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# 2DH5: Middle Channel

Report No.: RDG151125001-00A



# 2DH5: High Channel

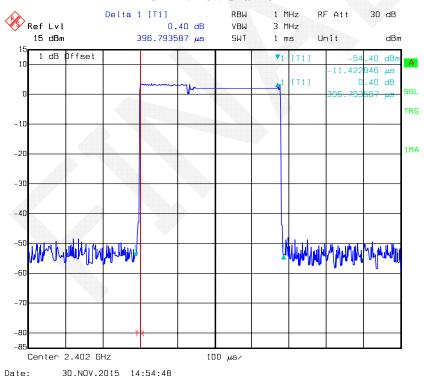


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# EDR Mode (8-DPSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result	
	Low	0.397	0.127	0.4	Compliance	
3DH1	Middle	0.397	0.127	0.4	Compliance	
3D111	High	0.397	0.127	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) × (1600/2/79) ×31.6 s					
	Low	1.657	0.265	0.4	Compliance	
3DH3	Middle	1.657	0.265	0.4	Compliance	
SDHS	High	1.657	0.265	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6				S	
	Low	2.910	0.310	0.4	Compliance	
3DH5	Middle	2.910	0.310	0.4	Compliance	
SDHS	High	2.910	0.310	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) × (1600/6/79) ×31.6 s					

#### 3DH1: Low Channel

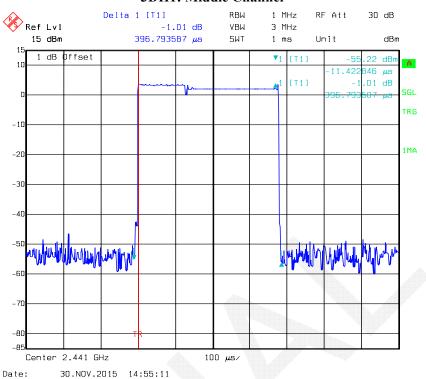


Date: 30.NOV.2015 14:54:46

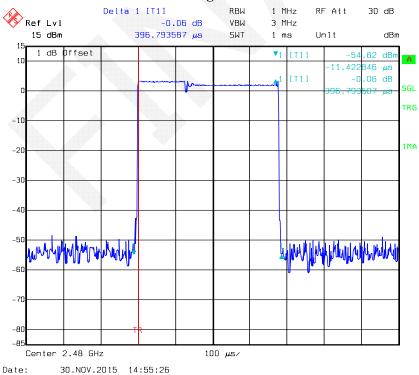
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## **3DH1: Middle Channel**

Report No.: RDG151125001-00A

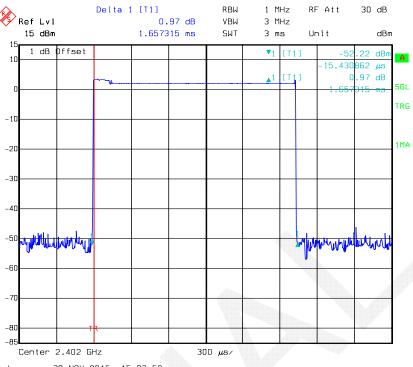


#### 3DH1: High Channel



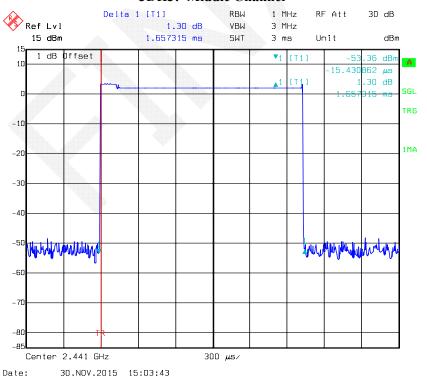
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#### 3DH3: Low Channel



#### Date: 30.NOV.2015 15:03:58

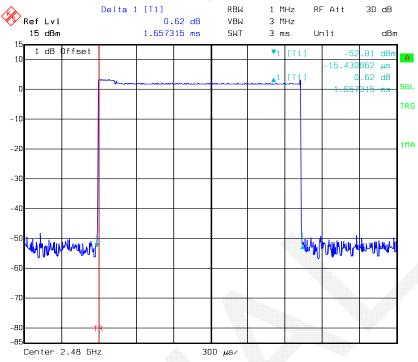
# 3DH3: Middle Channel



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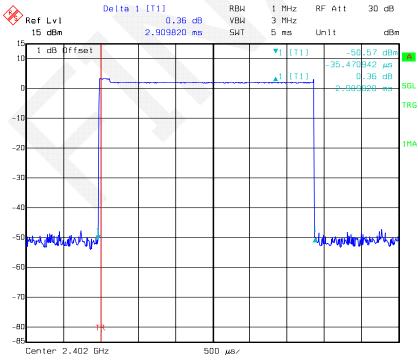
# 3DH3: High Channel

Report No.: RDG151125001-00A



#### Date: 30.NOV.2015 15:03:27

#### 3DH5: Low Channel

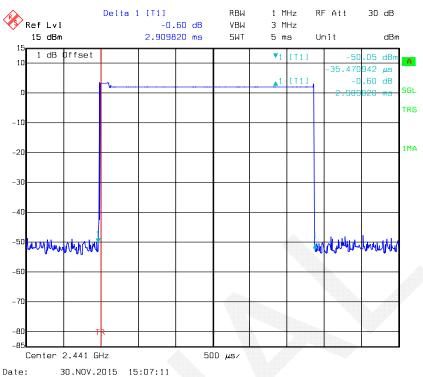


Date: 30.NOV.2015 15:05:33

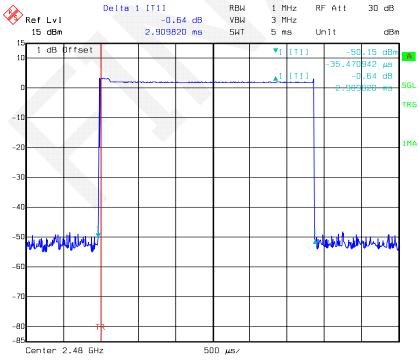
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# 3DH5: Middle Channel

Report No.: RDG151125001-00A



#### **3DH5: High Channel**



Date: 30.NOV.2015 15:07:26

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# FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

#### **Applicable Standard**

According to §15.247(b) (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

Report No.: RDG151125001-00A

#### **Test Procedure**

- 1. Place the EUT on a bench and set in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
- 3. Add a correction factor to the display.

## **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	25.5 °C
Relative Humidity:	49 %
ATM Pressure:	100.1 kPa

<sup>\*</sup> The testing was performed by Lion Xiao on 2015-11-30.

Test Result: Compliance.

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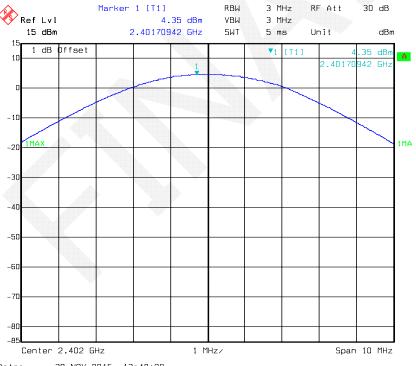
Test Mode: Transmitting

Mode	Frequency (MHz)	Peak Output power (dBm)	Limit (dBm)
BDR Mode (GFSK)	2402	4.35	30
	2441	4.74	30
	2480	4.38	30
EDR Mode (π/4-DQPSK)	2402	3.9	30
	2441	4.08	30
	2480	3.95	30
EDR Mode (8-DPSK)	2402	4.09	30
	2441	4.25	30
	2480	4.07	30

Note: The data above was tested in conducted mode.

# BDR Mode (GFSK):

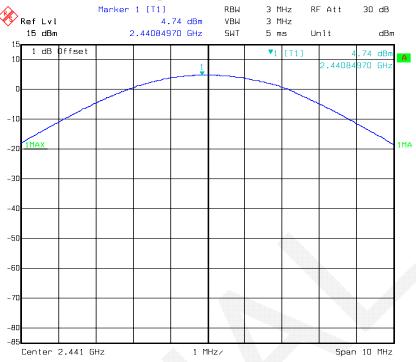
## **Output Power, 2402MHz**



Date: 30.NOV.2015 13:48:28

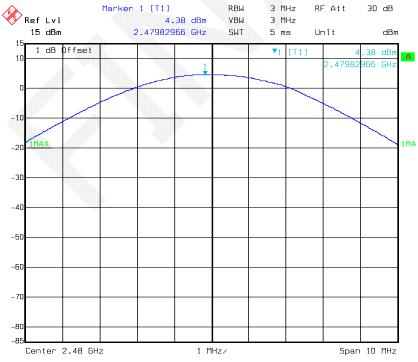
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#### **Output Power, 2441MHz**



Date: 30.NOV.2015 13:48:46

## **Output Power, 2480MHz**

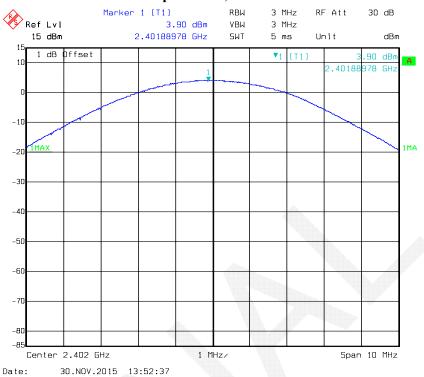


Date: 30.NOV.2015 13:50:46

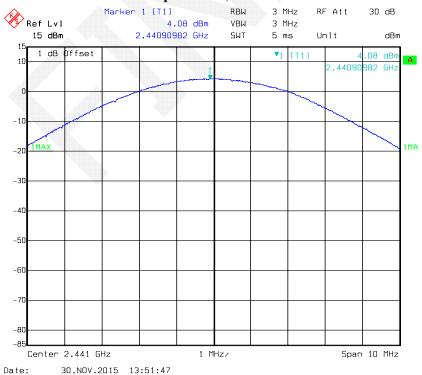
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## **Output Power, 2402MHz**

Report No.: RDG151125001-00A

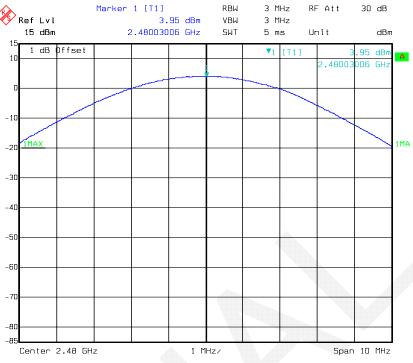


#### **Output Power, 2441MHz**



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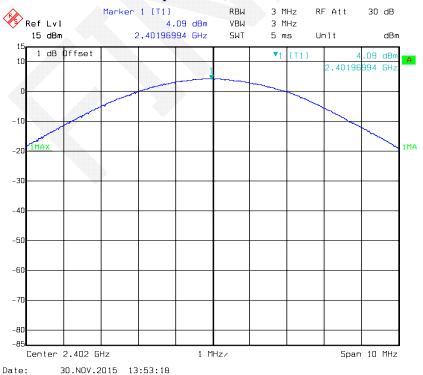
#### **Output Power, 2480MHz**



Date: 30.NOV.2015 13:51:26

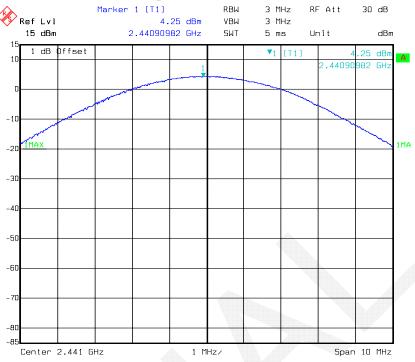
## EDR Mode (8-DPSK):

## **Output Power, 2402MHz**



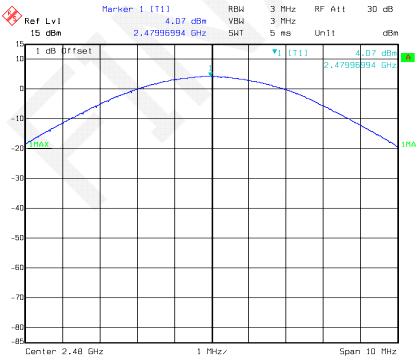
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#### **Output Power, 2441MHz**



Date: 30.NOV.2015 13:53:40

#### **Output Power, 2480MHz**



Date: 30.NOV.2015 13:54:29

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# FCC §15.247(d) - BAND EDGES TESTING

#### **Applicable Standard**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Report No.: RDG151125001-00A

#### **Test Procedure**

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
- 3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5. Repeat above procedures until all measured frequencies were complete.

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	25.5 °C	
Relative Humidity:	49 %	
ATM Pressure:	100.1 kPa	

<sup>\*</sup> The testing was performed by Lion Xiao on 2015-11-30.

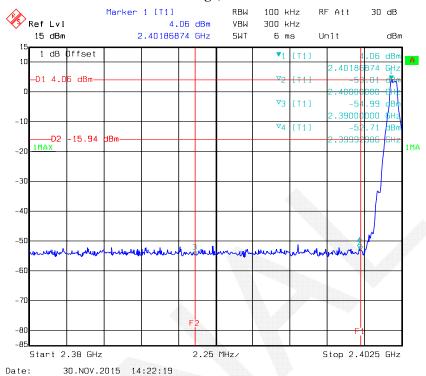
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## Test Result: Compliance

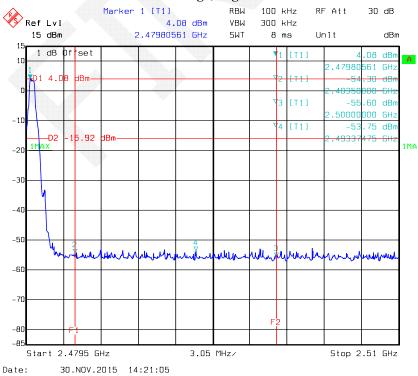
#### BDR Mode (GFSK):

## Band Edge, Left Side

Report No.: RDG151125001-00A



#### Band Edge, Right Side

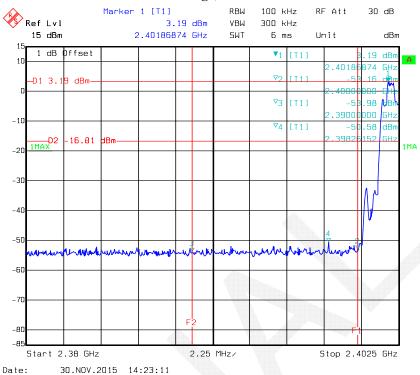


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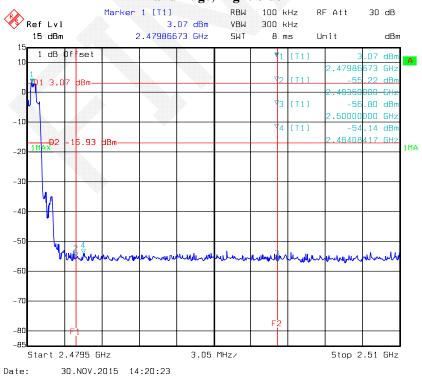
## EDR Mode ( $\pi/4$ -DQPSK):

# Band Edge, Left Side

Report No.: RDG151125001-00A



# Band Edge, Right Side

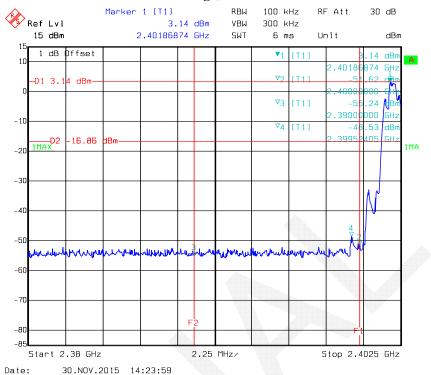


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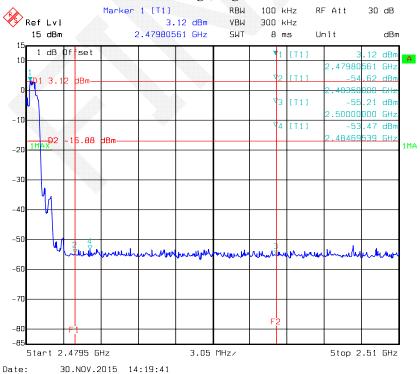
#### EDR Mode (8-DPSK):

#### Band Edge, Left Side

Report No.: RDG151125001-00A



#### Band Edge, Right Side



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## **DECLARATION LETTER**

#### MAXWEST INTERNATIONAL LIMITED

Add: No.1,Longgang Road,Buji,Longgang,ShenzhenCity,Guangdong Province, P.R. China

Tel: 9498007607 Fax: 9498007607

## **DECLARATION OF SIMILARITY**

Report No.: RDG151125001-00A

Date: 2015-11-25

Dear Sir or Madam:

We, MAXWEST INTERNATIONAL LIMITED, hereby declare that product name: Gravity 5LTE, model:Gravity 5LTE, they are the same electromagnetic emissions and electromagnetic compatibility characteristics. A description of the difference among the 3 samples and those that are declared similar are as follows:

1) They have different colours:golden ,black and silver.

The rest are the same.

Please contact me should there be need for any additional clarification or information.

Best Regards,

Signature: Rita Yu

Assistant Manager

\*\*\*\*\* END OF REPORT \*\*\*\*\*

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