

# Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC141072
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# FCC Radio Test Report FCC ID: 2ABQO-ROCKOUT

# **Original Grant**

Report No. : TB-FCC141072

**Applicant**: DongGuan Meiluodi Electronics Co., Ltd

**Equipment Under Test (EUT)** 

**EUT Name** : SPEAKER BAG

Model No. : ROCK OUT 2 SOLAR

Series Model : AMK-3W9-02B

No.

**Brand Name**: GOAL ZERO

**Receipt Date** : 2014-06-28

**Test Date** : 2014-06-29 to 2014-07-11

**Issue Date** : 2014-07-16

**Standards**: FCC Part 15, Subpart C(15.247)

Test Method : ANSI C63.4:2003

Conclusions : PASS

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

The EUT technically complies with the FCC requirements

Test/Witness Engineer :

Approved& Authorized :

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1. 0



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# 1. General Information about EUT

#### 1.1 Client Information

**Applicant**: Dongguan Meiluodi Electronics Co., Ltd

Address : No.16, Zhenxing Road, Shangjiao, Chang'an, Dongguan,

Guangdong, 523876, China

Manufacturer : Dongguan Meiluodi Electronics Co., Ltd

Address : No.16, Zhenxing Road, Shangjiao, Chang'an, Dongguan,

Guangdong, 523876, China

# 1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	SPEAKER BAG			
Models No.	:	ROCK OUT 2 SOLAR, AMK-3W9-02B			
Model Difference	:	All models are identical in the same PCB layout, interior structure and electrical circuits, The only difference is model name for commercial purpose.			
Product Description	=	Operation Frequency: Bluetooth:2402~2480MHz  Number of Channel:  Bluetooth:79 Channels see note (2)  Max Peak Output Power:  GFSK:-2.10 dBm (Conducted Power)  Antenna Gain:  0 dBi PCB Antenna  Modulation Type:  GFSK 1Mbps(1 Mbps)  1 /4-DQPSK(2 Mbps)  8-DPSK(3 Mbps)			
Power Supply	:	DC Voltage supplied from Host System by USB cable DC power by Li-ion Battery			
Power Rating	:	DC 5.0V by USB cable. DC 3.7V 800mAh Li-ion Battery			
Connecting I/O Port(S)	:	Please refer to the User's Manual			
Note:					

#### Note:

- (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (2) This Test Report is FCC Part 15.247 for Bluetooth, and test procedure in accordance with Public Notice: DA 00-705.
- (3) Channel List:

Channel Frequency Channel Frequency Channel Frequer
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	(MHz)		(MHz)		(MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

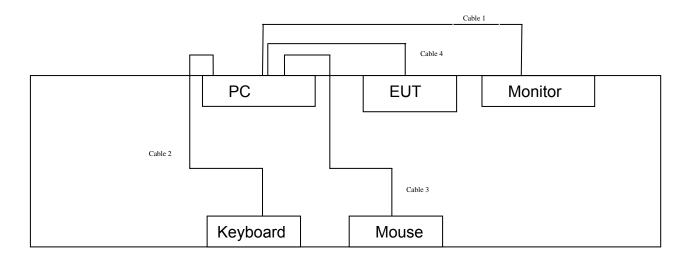
<sup>(4)</sup> The Antenna information about the equipment is provided by the applicant.



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#### 1.3 Block Diagram Showing the Configuration of System Tested

#### TX Mode



# 1.4 Description of Support Units

Equipment Information								
Name	Model	FCC ID/DOC	Manufacturer	Used "√"				
LCD Monitor	E170Sc	DOC	DELL	√				
PC OPTIPLEX380 DOC		DELL	√					
Keyboard	L100	DOC	DELL	√				
Mouse	M-UARDEL7	DOC	DELL	√				
Cable Information								
Number	Number Shielded Type Ferrite Core Length Note							
Cable 1	YES	YES(2)	1.8M					
Cable 2	YES	NO	1.5M					
Cable 3	YES	NO	1.5M					
Cable 4 NO		NO	0.2M	Accessories				

# 1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.



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For Conducted Test			
Final Test Mode Description			
Mode 1	USB Charging with TX GFSK Mode		

For Radiated Test			
Final Test Mode	Description		
Mode 1	USB Charging with TX GFSK Mode		
Mode 2	TX Mode(GFSK) Channel 00/39/78		
Mode 3	TX Mode( IT /4-DQPSK) Channel 00/39/78		
Mode 4	TX Mode(8-DPSK) Channel 00/39/78		
Mode 5	Hopping Mode(GFSK)		
Mode 6	Hopping Mode( π /4-DQPSK)		
Mode 7	Hopping Mode(8-DPSK)		

#### Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate. We have pretested all the test mode above.

According to ANSI C63.4 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

TX Mode: GFSK (1 Mbps)
TX Mode: 8-DPSK (3 Mbps)

(2) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on X-plane as the normal use. Therefore only the test data of this X-plane was used for radiated emission measurement test.

# 1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of Bluetooth mode.

Test Software Version	Test Program: RF Control Kit V1.0. exe			
Frequency	2402 MHz	2441MHz	2480 MHz	
GFSK	DEF	DEF	DEF	
π /4-DQPSK	DEF	DEF	DEF	
8-DPSK	DEF	DEF	DEF	



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## 1.7 Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at:

1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China.

At the time of testing, the following bodies accredited the Laboratory:

#### **CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

#### FCC List No.: (811562)

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

#### IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.



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# 2. Test Summary

FCC Part 15 Subpart C(15.247)					
Standard Section	Test Item	Judgment	Remark		
15.203	Antenna Requirement	PASS	N/A		
15.207	Conducted Emission	PASS	N/A		
15.205	Restricted Bands	PASS	N/A		
15.247(a)(1)	Hopping Channel Separation	PASS	N/A		
15.247(a)(1)	Dwell Time	PASS	N/A		
15.247(b)(1)	Peak Output Power	PASS	N/A		
15.247(b)(1)	Number of Hopping Frequency	PASS	N/A		
15.247(c)	Radiated Spurious Emission	PASS	N/A		
15.247(c)	Antenna Conducted Spurious Emission	PASS	N/A		
15.247(a) 20dB Bandwidth		PASS	N/A		
Note: N/A is an abbreviation for Not Applicable.					



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# 3. Conducted Emission Test

#### 3.1 Test Standard and Limit

3.1.1Test Standard FCC Part 15.207

#### 3.1.2 Test Limit

#### **Conducted Emission Test Limit**

Fraguanay	Maximum RF Line Voltage (dBμV)		
Frequency	Quasi-peak Level	Average Level	
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *	
500kHz~5MHz	56	46	
5MHz~30MHz	60	50	

#### Notes:

- (1) \*Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

# 3.2 Test Setup



#### 3.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.



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I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

# 3.4 Test Equipment Used

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test	ROHDE&	ESCI	400004	2013-08-10	2014-08-09
Receiver	Receiver SCHWARZ		100321	2013-00-10	2014-08-09
50ΩCoaxial	Anritsu	MP59B	X10321	2013-08-10	2014-08-09
Switch			X10321	2013-00-10	2014-00-09
L.I.S.N	Rohde & Schwarz	ENV216	101131	2013-08-10	2014-08-09
L.I.S.N	SCHWARZBECK	NNBL 8226-2	8226-2/164	2013-08-10	2014-08-09

# 3.5 EUT Operating Mode

Please refer to the description of test mode.

#### 3.6 Test Data

Please see the next page.



EUT: SPEAKER BAG Model Name: **ROCK OUT 2 SOLAR** 25 ℃ **Relative Humidity:** Temperature: 55% **Test Voltage:** AC 120V/60 Hz Terminal: Line **Test Mode:** USB Charging with TX GFSK Mode 2402 MHz Remark: Only worse case is reported 90.0 dBuV QP: AVG: -10 0.150 0.5 (MHz) 30.000 Reading Correct Measure-Over Limit No. Mk. Freq. Level Factor ment MHz dΒ dBuV dBuV dBuV dΒ Detector Comment 1 0.4500 40.56 10.02 50.58 56.87 -6.29 QΡ -8.47 2 0.4500 28.38 10.02 38.40 46.87 AVG 37.97 56.00 -7.94 3 0.8260 10.09 48.06 QΡ 4 0.8260 22.87 10.09 32.96 46.00 -13.04 AVG 5 1.4100 37.81 10.06 47.87 56.00 -8.13 QΡ 23.27 46.00 -12.67 6 1.4100 10.06 33.33 **AVG** 2.1140 7 37.36 10.06 47.42 56.00 -8.58 QΡ 2.1140 23.78 10.06 33.84 46.00 -12.16 AVG 8 3.3380 35.71 56.00 -10.27 QΡ 9 10.02 45.73 46.00 -14.05 AVG 10 3.3380 21.93 10.02 31.95 Emission Level= Read Level+ Correct Factor



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EUT:	SPEAKER B	AG	Model I	Name :		ROCK OUT	2 SOLAR					
Temperature:	25 ℃		Relative	e Humi	dity:	55%						
Test Voltage:	AC 120V/60	AC 120V/60 Hz										
Terminal:	Neutral											
Test Mode:	USB Chargir	USB Charging with TX GFSK Mode 2402 MHz										
Remark:	Only worse of	ase is repo	rted									
90.0 dBuV												
						QP: AVG:						
						ma.						
			v									
	A Anniu Million A A.		hanifikka nijiraha	4 Williams								
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		AL Alab Al	1		a action the cold	horozakkydlókrác á n	Total Marian					
	111						peak					
M V							peak					
-10 0.150	0.5	(MH	-1	5			30.000					
0.130	0.3	(1111)	د,	J			30.000					
No Ma For	Reading	Correct	Measure-	Limit	Over							
No. Mk. Fre		Factor	ment		Over	Datastas	0					
1 * 0.45		dB	dBuV	dBuV	dB	Detector	Comment					
		10.03	50.04	56.73	-6.69	QP						
2 0.45		10.03	35.71		-11.02	AVG						
3 1.12		10.15	47.96	56.00	-8.04	QP						
4 1.12		10.15	31.58		-14.42	AVG						
5 1.40		10.12	47.05	56.00		QP						
6 1.40		10.12	31.41		-14.59	AVG						
7 2.46		10.06	46.86	56.00	-9.14	QP						
8 2.46		10.06	31.96		-14.04	AVG						
9 3.18	20 34.60	10.06	44.66	56.00	-11.34	QP						
10 3.18	20 19.64	10.06	29.70	46.00	-16.30	AVG						
Emission Level=	Read I evel+	Correct Fa	ctor									



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# 4. Radiated Emission Test

# 4.1 Test Standard and Limit

4.1.1 Test Standard FCC Part 15.209

4.1.2 Test Limit

#### Radiated Emission Limit (9 kHz~1000MHz)

Radiated Lillission Lillit (3 KHZ 1000MHZ)								
Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)						
0.009~0.490	2400/F(KHz)	300						
0.490~1.705	24000/F(KHz)	30						
1.705~30.0	30	30						
30~88	100	3						
88~216	150	3						
216~960	200	3						
Above 960	500	3						

# Radiated Emission Limit (Above 1000MHz)

Frequency	Class B (dBuV/m)(at 3m)				
(MHz)	Peak	Average			
Above 1000	74	54			

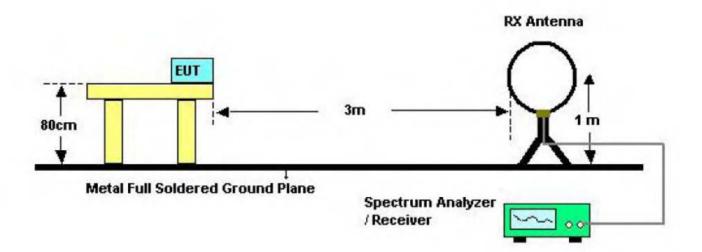
#### Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level (dBuV/m)=20log Emission Level (uV/m)

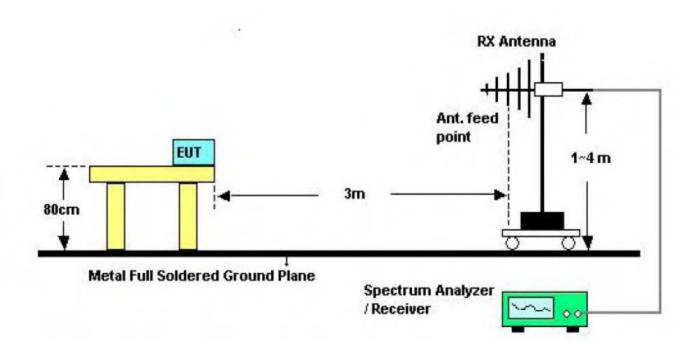


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# 4.2 Test Setup



Bellow 30MHz Test Setup



Bellow 1000MHz Test Setup



Turntable

EUT

0.8 m lm to 4m

Coaxial Cable

Above 1GHz Test Setup

#### 4.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above the ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (5) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (6) For the actual test configuration, please see the test setup photo.

# 4.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power in TX mode.

# 4.5 Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
Equipment	Wanuacturer		ochai ito:	Last Gai.	Date



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Spectrum	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015	
Analyzer						
Spectrum	Rohde & Schwarz	FSP30	DE25181	Aug. 10, 2013	Aug.09, 2014	
Analyzer		F3F30	5220101	g,		
EMI Test	Rohde & Schwarz	5001	101165	Aug. 10, 2013	Aug.09, 2014	
Receiver	Nonde & Schwarz	ESCI	101165	Aug. 10, 2013	Aug.09, 2014	
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 07, 2014	Mar.06, 2015	
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 07, 2014	Mar.06, 2015	
Pre-amplifier	HP	11909A	185903	Mar. 07, 2014	Mar.06, 2015	
Pre-amplifier	HP	8447B	3008A00849	Mar. 07, 2014	Mar.06, 2015	
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 07, 2014	Mar.06, 2015	
Signal	Rohde & Schwarz	SML03	IKW682-054	Feb. 11, 2014	Feb.10, 2015	
Generator	TOTILE & SCHWAIZ	SIVILOS	11(4/002-004	1 60. 11, 2014	1 60.10, 2015	
Positioning	ETC LINDODEN	2000	NI/A	NI/A	NI/A	
Controller	ETS-LINDGREN	2090	N/A	N/A	N/A	

# 4.6 Test Data

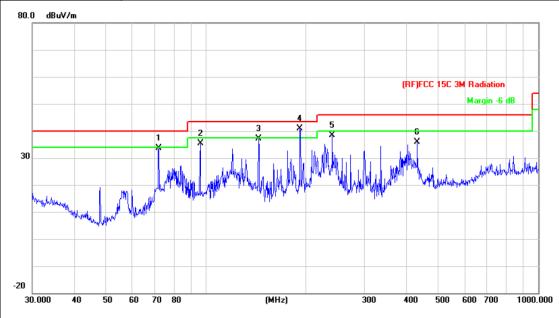
Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Test data please refer the following pages.



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR						
Temperature:	25 ℃	Relative Humidity:	55%						
Test Voltage:	DC 5V	DC 5V							
Ant. Pol.	Horizontal								
Test Mode:	TX GFSK Mode 2402MH	z							
Remark:	Only worse case is reported								
00.0 40.47-									



No.	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		72.0843	57.23	-23.54	33.69	40.00	-6.31	peak
2		96.0986	57.58	-22.16	35.42	43.50	-8.08	peak
3		143.8295	58.80	-21.67	37.13	43.50	-6.37	peak
4	*	191.7450	61.58	-20.81	40.77	43.50	-2.73	peak
5		239.9874	56.92	-18.59	38.33	46.00	-7.67	peak
6		432.5457	48.57	-12.78	35.79	46.00	-10.21	peak



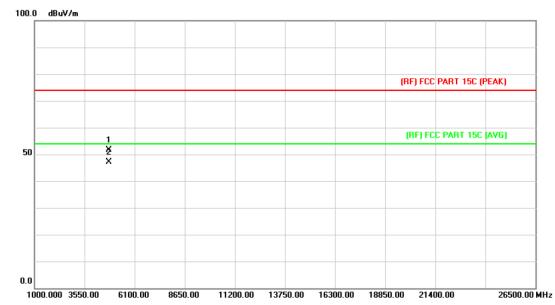
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UT:		SPEAKER BAG				odel Name :		ROCK OUT 2 SOLAR			
emperatu	ire:	25 °	С		Re	elative Humi	idity:	55%	6		
est Voltaç	ge:	DC 5	DC 5V								
nt. Pol.		Verti	cal								
est Mode	:	TX G	3FSK	Mode 2	2402MHz						
Remark: Only worse case is reported											
80.0 dBuV/n	n	1	-	-							
							(RF)F0	CC 15C :	3M Radiation	1	
									Margin -6	dB [	
			2								
30	1 *		<del>*</del>	3 X	¥ 5				5		
30	J.M	41				n ch	ı lo	أزاين	والمراب والما	استطاليال	
JM^4/4	rly Nahaha	M	Andy VIII	A. Marian Maria	LL MANA			Mystel	HANNA MALANA	מייי ניואןיינע	
MANY IN	No.	Abus (Ibra)	, MIM	Makhaka	a. Jak MMMMM	VIII. I VAN HANDY PARVA	Marria de la constanta de la c				
					. 141						
20 30.000 4	10 50	60 7	70 80		(MHz)	300	400	500	600 700	1000.00	
30.000 4	10 30	6U 7	0 80		(MHZ)	300	400	300	600 700	1000.00	
			Re	ading	Correct	Measure-			_		
No. M	k. F	req.	L	evel	Factor	ment	Limit	t	Over		
	N	ИHz	C	dBu∀	dB/m	dBuV/m	dBuV	/m	dB	Detecto	
1	47.9	9940	5	6.50	-23.54	32.96	40.0	00	-7.04	peak	
2 *	71.8	8320	6	0.22	-23.56	36.66	40.0	00	-3.34	peak	
3	96.0	0986	5	2.94	-22.16	30.78	43.5	50	-12.72	peak	
	143.	8295	5	5.11	-21.67	33.44	43.5	50	-10.06	peak	
4				1 OF	-20.81	31.04	43.5	50	-12.46	peak	
5	191.	7450	5	1.85	20.01						
		.7450 .6223		9.24	-10.12	29.12	46.0	00	-16.88	peak	



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EUT:	SPEAKER BAG Model Name : ROCK OUT 2 SOLA						
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V						
Ant. Pol.	Horizontal						
Test Mode:	TX GFSK Mode 2402MH	z					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						

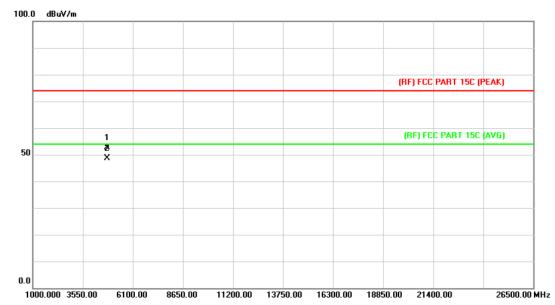


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4804.210	38.18	13.44	51.62	74.00	-22.38	peak
2	*	4804.210	33.80	13.44	47.24	54.00	-6.76	AVG



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EUT:	SPEAKER BAG Model Name : ROCK OUT 2 SC								
Temperature:	25 ℃	Relative Humidity:	55%						
Test Voltage:	DC 3.7V	DC 3.7V							
Ant. Pol.	Vertical								
Test Mode:	TX GFSK Mode 2402MH	z							
Remark:	No report for the emission which more than 10 dB below the prescribed limit.								

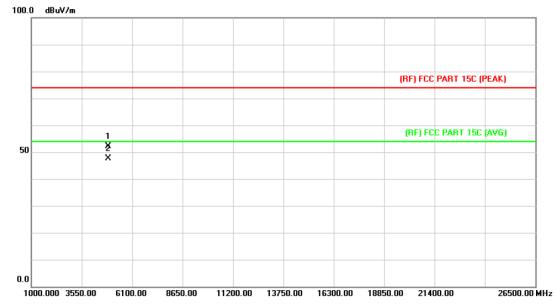


No	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4804.210	39.24	13.44	52.68	74.00	-21.32	peak
2	*	4804.210	35.13	13.44	48.57	54.00	-5.43	AVG



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Horizontal						
Test Mode:	TX GFSK Mode 2441MH	z					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
processes and							

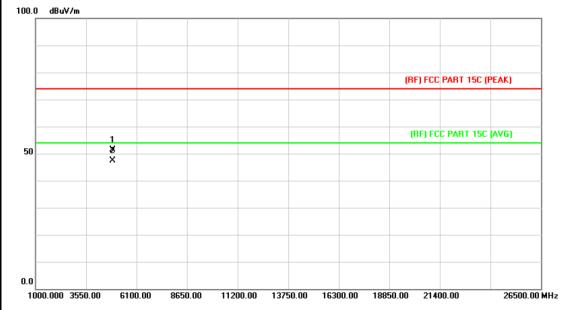


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4882.140	38.15	13.90	52.05	74.00	-21.95	peak
2	*	4882.140	33.72	13.90	47.62	54.00	-6.38	AVG



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Vertical						
Test Mode:	TX GFSK Mode 2441MF	z					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						

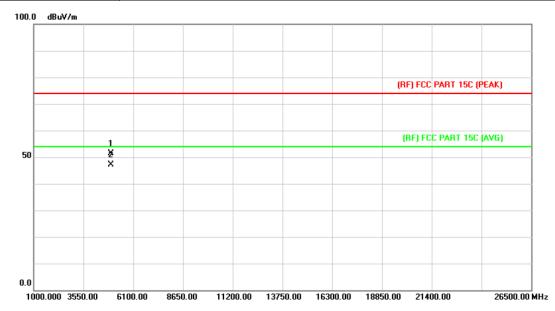


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4882.140	37.58	13.90	51.48	74.00	-22.52	peak
2	*	4882.140	33.39	13.90	47.29	54.00	-6.71	AVG



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR					
Temperature:	<b>25</b> ℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Horizontal							
Test Mode:	TX GFSK Mode 2480MH	z						
Remark:	No report for the emissio prescribed limit.	No report for the emission which more than 10 dB below the prescribed limit.						

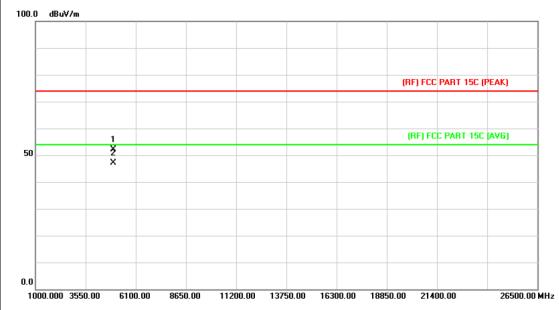


1	No.	Mk.	Freq.	-	Correct Factor	Measure- ment	Limit	Over	
			MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1			4960.110	37.00	14.36	51.36	74.00	-22.64	peak
2		*	4960.110	32.78	14.36	47.14	54.00	-6.86	AVG



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V					
Ant. Pol.	Vertical					
Test Mode:	TX GFSK Mode 2480MH	z				
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					

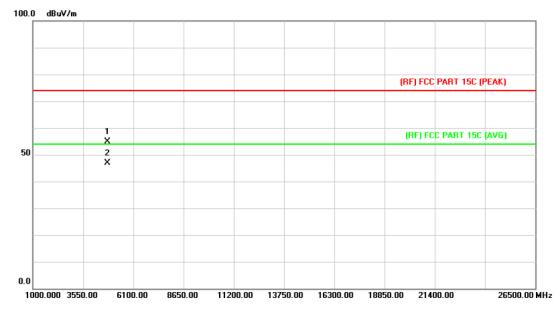


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4960.110	37.70	14.36	52.06	74.00	-21.94	peak
2	*	4960.110	32.88	14.36	47.24	54.00	-6.76	AVG



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V					
Ant. Pol.	Horizontal					
Test Mode:	TX 8-DPSK Mode 2402N	1Hz				
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					

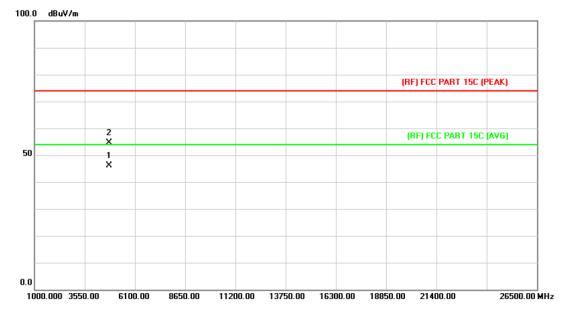


No	o. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4803.454	46.58	8.18	54.76	74.00	-19.24	peak
2	*	4803.786	38.80	8.18	46.98	54.00	-7.02	AVG



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V					
Ant. Pol.	Vertical					
Test Mode:	TX 8-DPSK Mode 2402N	1Hz				
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					

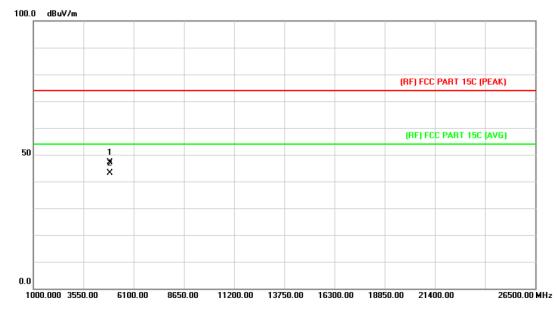


N	o. N	۱k.	Freq.	-	Correct Factor	Measure- ment	Limit	Over	
			MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4	1803.780	37.98	8.18	46.16	54.00	-7.84	AVG
2		4	1803.980	46.49	8.18	54.67	74.00	-19.33	peak



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR					
Temperature:	25 ℃	Relative Humidity: 55%						
Test Voltage:	DC 3.7V	C 3.7V						
Ant. Pol.	Horizontal	Horizontal						
Test Mode:	TX 8-DPSK Mode 2441N	1Hz						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.							

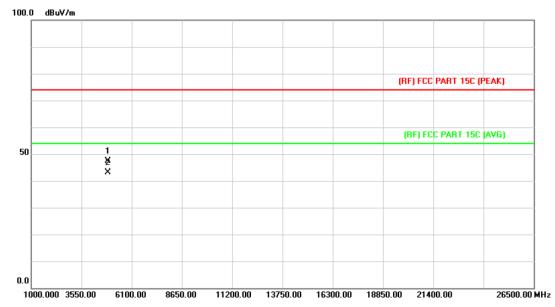


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4882.340	33.28	13.90	47.18	74.00	-26.82	peak
2	*	4882.340	29.16	13.90	43.06	54.00	-10.94	AVG



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	OC 3.7V						
Ant. Pol.	Vertical	Vertical						
Test Mode:	TX 8-DPSK Mode 2441N	TX 8-DPSK Mode 2441MHz						
Remark:	No report for the emissio prescribed limit.	n which more than 10 o	dB below the					

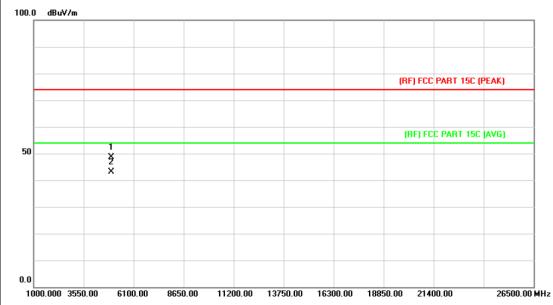


No	. Mk.	Freq.			Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4882.340	33.49	13.90	47.39	74.00	-26.61	peak
2	*	4882.340	29.31	13.90	43.21	54.00	-10.79	AVG



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	C 3.7V						
Ant. Pol.	Horizontal	Horizontal						
Test Mode:	TX 8-DPSK Mode 2480N	1Hz						
Remark:	No report for the emissio prescribed limit.	n which more than 10 o	dB below the					

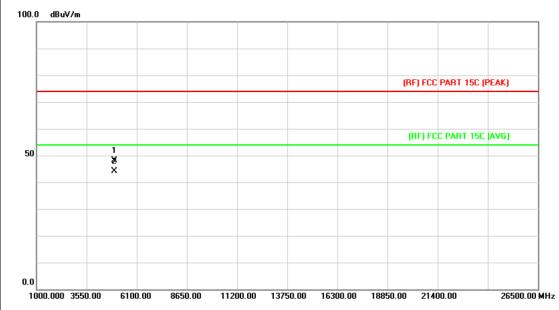


No.	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4960.110	34.26	14.36	48.62	74.00	-25.38	peak
2	*	4960.110	28.69	14.36	43.05	54.00	-10.95	AVG



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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	C 3.7V						
Ant. Pol.	Vertical	Vertical						
Test Mode:	TX 8-DPSK Mode 2480N	TX 8-DPSK Mode 2480MHz						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.							



No	. Mk.	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4960.110	33.89	14.36	48.25	74.00	-25.75	peak
2	*	4960.110	29.75	14.36	44.11	54.00	-9.89	AVG



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# 5. Restricted Bands Requirement

#### 5.1 Test Standard and Limit

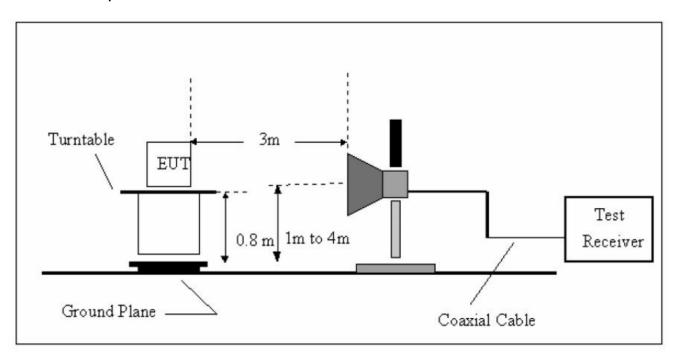
5.1.1 Test Standard FCC Part 15.209 FCC Part 15.205

5.1.2 Test Limit

Restricted Frequency	Class B (dBuV/m)(at 3m)				
Band (MHz)	Peak	Average			
2310 ~2390	74	54			
2483.5 ~2500	74	54			
Note: All restriction bonds boss	la a a a 4 a 4 a 4 a a 1 a a 1 a 4 la a a a 4	!			

Note: All restriction bands have been tested, only the worst case is reported.

#### 5.2 Test Setup



#### 5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked



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and then Quasi Peak detector mode re-measured.

(4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.

- (5) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (6) For the actual test configuration, please see the test setup photo.

### 5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

## 5.5 Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015
Spectrum Analyzer	Rohde & Schwarz	FSP30	DE25181	Aug. 10, 2013	Aug.09, 2014
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Aug. 10, 2013	Aug.09, 2014
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 07, 2014	Mar.06, 2015
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 07, 2014	Mar.06, 2015
Pre-amplifier	HP	11909A	185903	Mar. 07, 2014	Mar.06, 2015
Pre-amplifier	HP	8447B	3008A00849	Mar. 07, 2014	Mar.06, 2015
Cable	HUBER+SUHNE R	100	SUCOFLEX	Mar. 07, 2014	Mar.06, 2015
Signal	Rohde & Schwarz	SML03	IKW682-054	Feb. 11, 2014	Feb.10, 2015
Generator	Nonue & Schwarz	SIVILOS	111111002-054	1 60. 11, 2014	1 60.10, 2015
Positioning	ETS-LINDGREN	2090	N/A	N/A	N/A
Controller	213 ENABOREM	2000	14//1	14// \	13// \

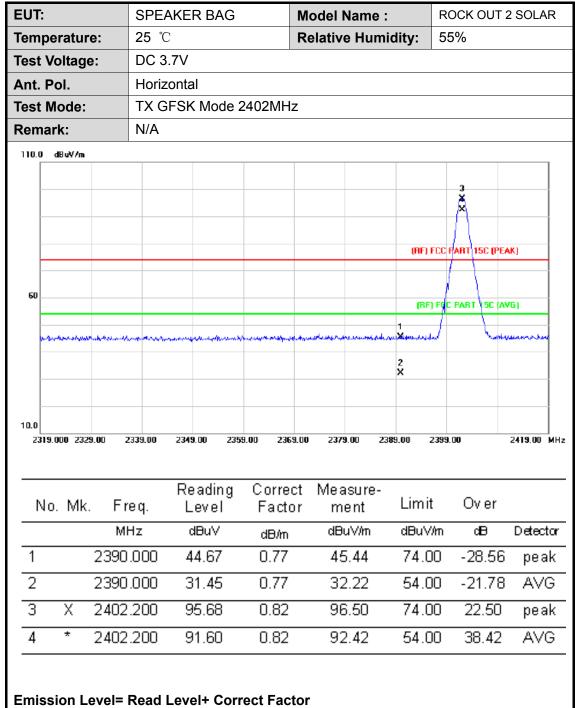
#### 5.6 Test Data

All restriction bands have been tested, only the worst case is reported.



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#### (1) Radiation Test





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EUT	:		SPE	AKER BA	\G	Mod	del Naı	ne :	R	ROCK OUT 2 SOLAR		
Tem	peratu	re:	25 °C	C		Rel	ative H	lumidit	<b>y:</b> 5	55%		
Test	Voltag	e:	DC 3	3.7V								
Ant.	Pol.		Verti	cal								
Test	Mode:		TX G	FSK Mo	de 2402M	Hz						
Rem	nark:		N/A									
110.0	dBuV/m											
10.0	19.000 232		2339.00	2349.00	d-2000 2	369.00	2379.00	1 1 1 2 X 2389.00	(RF) FO			
_ I	No. Mi	к. F	re q.	Readi Leve		rect (	Measu men		_imit	Ov er		
_		М	lHz	dBu∖	/ dB/	m	dBu∀/	m c	dBuV/m	αÐ	Detector	
1		2390	.000	44.48	3 0.7	7	45.2	5	74.00	-28.75	, peak	
2		2390	0.000	31.4	1 0.7	7	32.1	В :	54.00	-21.82	. AVG	
3	Х	2402	2.200	91.87	7 0.8	2	92.6	9	74.00	18.69	peak	
4	*	2402	2 200	88.40	0.8	2	89.2	2	54.00	35.22	AVG	



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EUT:			SPEA	KER BAG	ı	Model Nam	e :	ROCK OUT 2 SOLAR	
Tem	peratur	e:	25 ℃	;	1	Relative Hu	ımidity:	55%	
Test	Voltage	e:	DC 3	.7V	'				
Ant.	Pol.		Horiz	ontal					
Test	Mode:		TX G	FSK Mode 2	2480 MHz	2			
Rem	nark:		N/A						
110.0	dBuV/m								
10.0	54.000 246	4.00 2	474.00	2484.00 249	1.00 2504.	00 2514.00	(RF)	FCC PART 15C (PE	
1	No. Mk	. Fr	eq.	Reading Level	Correc Factor		e- Limit	Ov er	
		MI	Hz	dBu∀	dB/m	dBuV/m	dBu∀⁄	m dB	Detector
1	Х	2479	.900	93.20	1.15	94.35	74.0	0 20.35	peak
•				89.89	1.15	91.04	54.0	0 37.04	AVG
2	*	2479	.900	05.05					
	*	2479 2483		55.61	1.17	56.78	74.0	0 -17.22	! peak



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			SPE	AKER B	AG	N	lodel I	Name		ROC	CK OUT	2 SOLAR		
empe	rature	<b>ə</b> :	25 °C			R	elativ	e Hum	idity:	55%	6			
est V	oltage	:	DC 3	.7V										
nt. P	ol.		Verti	cal										
est M	ode:		TX G	FSK Mo	ode 24	180 MHz								
emar	k:		N/A											
110.0	dBu∀/m	·												
	the way the state of the state	princes of the last of the las		1 2 2	Jan-vas India	rinas y verifica de la frances	namusiyan adaha	nermani candrassa		) FCC PA	RT 15C (PEA	/G)		
10.0 2 <b>454</b> .0	000 2464	.00 24	474.00	2484.00	2494.0	0 2504.00	) 2514	.00 25	524.00	2534.00		2554.00 MH		
—— No	. Mk.	Fr	eq.	Read Leve		Correct Factor		asure- ent	Lim	it	Ov er			
	. 17110.	MH	<u> </u>	dBu\		dB/m		uV/m	dBu'		αB	Detecto		
1	Х	2479		91.0		1.15		2.16	74.		18.16	peak		
2	*	2480	.000	87.6	i4	1.15	88	3.79	54.	00	34.79	AVG		
3		2483	.500	52.8	9	1.17	54	4.06	74.	00	-19.94	peak		
			.500	47.5		1.17	40	3.74	54.	00	-5.26	AVG		



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UT:			SPE	AKE	R BA	G		Me	odel I	Nam	e:		R	OCK	OUT 2	SOLA	٩R
Гет	peratui	re:	25 '	°C	Relative Humidity: 55%												
Гest	Voltag	e:	DC :	3.7V													
۹nt.	Pol.		Hori	zonta	l												
Гest	Mode:		TX 8	B-DPS	SK M	ode :	2402N	ИHz									
Rem	ark:		N/A														
110.0	dBuV/m																7
												_					
												9					
Ì												1					1
												BF	) FCC	PART 15	C (PEA	K)	
												$\pm$	$\exists$				
60												1	E) PC	C PART 1	5C (AV	G)	-
										1			1			_,	
	months to the standards	arangera de	444.de-4	والمعداليسيديان	hyfdyddyddyng og yd	d-state april	فيها سياديه ويواف		appell/weeks	en X+1	Newson	_		Telepoorder production	وميال ويوسه ب	Mequinia	-
										2 X							
ĺ																	
10.0																	1
L	27.000 233	87. <b>0</b> 0 2	347.00	2357	.00	2367.0	0 237	77.00	2387	7.00	2397	7.00	2407	.00		2427.00	_ MHz
— N	lo. Mk	. Fr	eq.		adin ev e l		Corre Fact		Me a	sur ent	e-	Lim	nit	Ov	er		
		MH	Ηz	d	Bu∀		dB/m		dBı	uV/m	l	dBu	V/m	d	В	Detec	ctor
1		2390	.000	4.	4.82		0.77		45	5.59		74	.00	-28	3.41	pe	ak
2		2390	.000	3	1.33		0.77		32	2.10		54	.00	-21	1.90	ΑV	/G
3	*	2402	.000	9	1.25		0.82		92	2.07		54	.00	38	.07	ΑV	/G
4	Χ	2402	.200	9.	4.53		0.82		95	5.35		74	.00	21	.35	pe	ak
 Emis	ssion L	.evel=	Read	Leve	el+ C	orre	ct Fac	tor									



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	eratur	e:	25 °C	7										
st \				25 °C Relative Humidity: 55%										
	Voltage	e:	DC 3	3.7V										
nt. I	Pol.		Verti	cal										
st I	Mode:		TX 8	X 8-DPSK Mode 2402MHz										
∍ma	ark:		N/A											
10.0	dBuV/m													,
										4 8				
										M				
										(BF)	FCC P	ART 15C (PE	AK)	
										$\Box$	$\Box$			
60										m	) FCC	PART 15C (A	VGI	-
F									1	1	1	150	,,,,	
W)	بالرائيهميالهما	Albert de sarye	-aray apakalesi	والمساوية والمساورة	ليبحال أعليها فالدايب	سيناهم	fyrdywlyspub.	-delicary (gra	,Xuu, mu	r.W	~	المعادد	والمستعالين المرام ويهال	4
									2 X					
														1
0.0 2 <b>3</b> 23	7.000 233	7.00	2347.00	2357.00	2367.0	0 2377	<b>7.00</b>	2387.0	0 239	7.00	2407.0	10	2427.00	_ MHz
N	o. Mk	Fı	eq.	Readi Leve		Correc Facto		/leas		Limi	it	Ov er		
		М	Hz	dBu∀	,	dB/m		dBu\	√/m	dBu\	//m	αÐ	Detec	tor
1		2390	.000	44.64	1	0.77		45	41	74.0	00	-28.59	pea	ak
2		2390	.000	31.25	5	0.77		32.	02	54.0	00	-21.98	AV	G
3	*	2402	.100	88.23	3	0.82		89.	05	54.0	00	35.05	AV	G
4	Χ	2402	.200	91.28	3	0.82		92.	08	74.0	00	18.08	pea	ak



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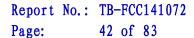
EUT:	SPEAKER BAG	Mo	odel Name :	F	OCK OUT	2 SOLAR			
Temperature:	25 ℃	Re	lative Humid	dity: 5	55%				
Test Voltage:	DC 3.7V	OC 3.7V							
Ant. Pol.	Horizontal								
Test Mode:	TX 8-DPSK Mod	de 2480MHz							
Remark:	N/A								
110.0 dBuV/m									
10.0 2454.000 2464.00		494.00 2504.00	2514.00 252	(RF) FO	C PART 15C (PEA	/G)			
No. Mk. F	Reading req. Level	Correct Factor	Measure- ment	Limit	Ov er				
M	1Hz dBu∀	dB/m	dBuV/m	dBuV/m	d⊟	Detector			
1 X 2480	0.000 91.45	1.15	92.60	74.00	18.60	peak			
2 * 2480	0.200 87.90	1.15	89.05	54.00	35.05	AVG			
3 2483	3.500 53.67	1.17	54.84	74.00	-19.16	peak			
4 2483	3.500 48.90	1.17	50.07	54.00	-3.93	AVG			

Emission Level= Read Level+ Correct Factor



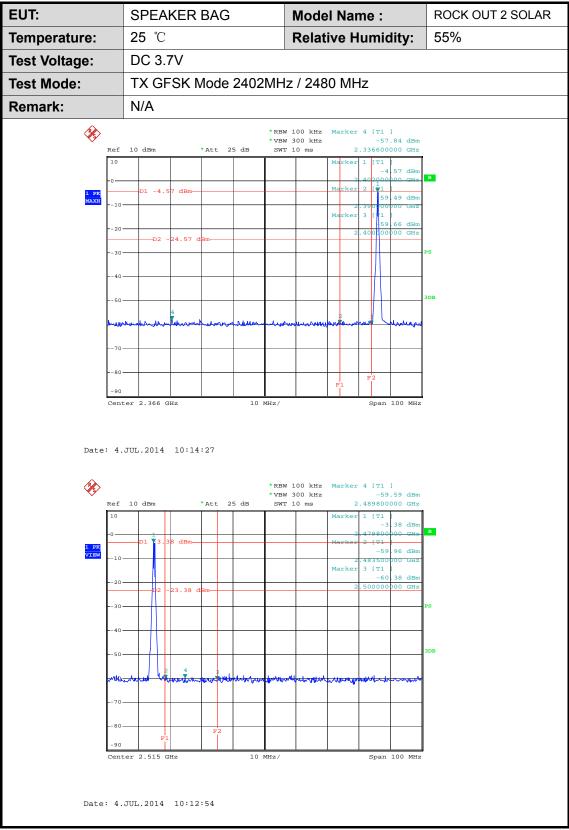
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EUT	Γ:		SPEA	KER BAG		Mode	l Name :		ROC	COUT 2	SOLA	R
Tem	peratu	re:	25 ℃			Relat	ive Hum	idity:	55%			
Tes	t Voltag	je:	DC 3.	7V								
Ant	. Pol.		Vertic	al								
Test	t Mode	:	TX 8-	DPSK Mod	e 2480N	1Hz						
Ren	nark:		N/A									
110.0	O dBuV/m											
												ļ
			8	ŧ								
			+					(BF) F	CC PART	15C (PEA	K)	
60			$\bot$						F60 040	T 150 (110		
				2 *				(BF)	FCC PAR	T 15C (AVI	3)	
	ndermal weather	Balanta Sanda Marada Jarah	and the	* washell the make	Marshma	late france (no. no. no.	of the same and the same	Marie Ma	المراميون والمرامون	mondones	Adamparani Adamparani	
10.0	  54.000 24	54.00 2	474.00	2484.00 249	4.00 250	4.00 2	514.00 25	24.00 2	534.00		2 <b>5</b> 54.00 1	MH>
	No. M	k F	re q.	Reading Level	Corre Fact		e asure- ment	Limi	t (	Ov er		
_			Hz	dBuV	dB/m		#BuV/m	dBu∀	7/m	αÐ	Detec	tor
1	Х	2479	9.900	86.38	1.15		87.53	74.0	00	13.53	pea	ık
2	*	2480	).200	84.57	1.15		85.72	54.0	00 :	31.72	ΑV	G
3		2483	3.500	49.49	1.17	•	50.66	74.0	)0 -	23.34	pea	ık
4		2483	3.500	45.90	1.17		47.07	54.0	00	-6.93	ΑV	G
Emi	ssion I	_evel=	Read L	₋evel+ Corı	ect Fac	tor						





(2) Conducted Test







EUT: SPEAKER BAG **Model Name: ROCK OUT 2 SOLAR** Temperature: 25 ℃ **Relative Humidity:** 55% **Test Voltage:** DC 3.7V **Test Mode: GFSK Hopping Mode** Remark: N/A **%** \*RBW 100 kHz \*VBW 300 kHz -58.18 dBm SWT 10 ms Span 100 MHz Center 2.375 GHz 10 MHz/ Date: 4.JUL.2014 11:10:17 **%** \*RBW 100 kHz Marker 4 [T1 ]

\*VBW 300 kHz -57.72 dBm
SWT 10 ms 2.496400000 GHz \*Att 25 dB 10 dBm Center 2.501 GHz Span 100 MHz Date: 4.JUL.2014 11:12:58



EUT: SPEAKER BAG **Model Name: ROCK OUT 2 SOLAR** 25 ℃ **Relative Humidity:** Temperature: 55% **Test Voltage:** DC 3.7V **Test Mode:** TX 8-DPSK Mode 2402MHz / 2480 MHz Remark: N/A **%** \*RBW 100 kHz Marker 4 [T1 ] \*VBW 300 kHz -58.40 dBm SWT 10 ms 01 -6.9 dBm-Center 2.366 GHz Span 100 MHz 10 MHz/ Date: 4.JUL.2014 10:08:41 **%** \*RBW 100 kHz Marker 4 [T1 ]

\*VBW 300 kHz -59.25 dBm
SWT 10 ms 2.491200000 GHz 25 dB 10 dBm • Att 2 [T1 dBm 3 [T1 -6 Span 100 MHz Date: 4.JUL.2014 10:10:11



EUT: SPEAKER BAG **Model Name: ROCK OUT 2 SOLAR** Temperature: 25 ℃ **Relative Humidity:** 55% **Test Voltage:** DC 3.7V **Test Mode:** 8-DPSK Hopping Mode Remark: N/A **%** \*RBW 100 kHz Marker 4 [T1 ] \*VBW 300 kHz -58.07 dBm D1 -5.04 dBm Center 2.375 GHz Span 100 MHz 10 MHz/ Date: 4.JUL.2014 11:08:10 \*RBW 100 kHz Marker 4 [T1 ]

\*VBW 300 kHz -58.01 dBm
SWT 10 ms 2.495400000 GHz \*Att 25 dB 10 dBm Center 2.501 GHz Date: 4.JUL.2014 10:56:46



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6. Number of Hopping Channel

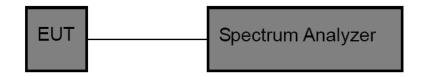
## 6.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.247 (a)(1)

6.1.2 Test Limit

Section	Test Item	Limit
15.247	Number of Hopping Channel	>15

### 6.2 Test Setup



### 6.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=100 KHz, VBW=100 KHz, Sweep time= Auto.

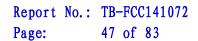
### 6.4 EUT Operating Condition

The EUT was set to the Hopping Mode by the Customer.

### 6.5 Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015

### 6.6 Test Data





EUT: SPEAKER BAG Model Name: ROCK OUT 2 SOLAR

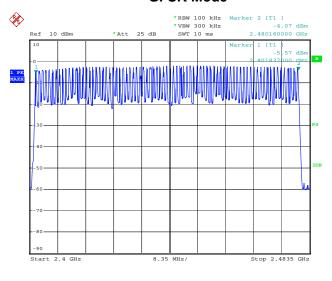
Temperature: 25 ℃ Relative Humidity: 55%

Test Voltage: DC 3.7V

Test Mode: Hopping Mode (GFSK/ 8-DPSK)

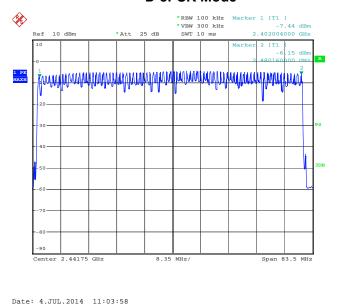
111 3	- ( /	
Frequency Range	Quantity of Hopping Channel	Limit
2402MHz~2480MHz	79	>15
2402WITZ~246UWITZ	79	/15

#### **GFSK Mode**



Date: 4.JUL.2014 10:36:36

#### **D-8PSK Mode**





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# 7. Average Time of Occupancy

### 7.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.247 (a)(1)

5.1.2 Test Limit

Section	Test Item	Limit
15.247(a)(1)/ RSS-210	Average Time of	0.4.000
Annex 8(A8.1d)	Occupancy	0.4 sec

### 7.2 Test Setup



### 7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=1MHz, VBW=1MHz.
- (3) Use video trigger with the trigger level set to enable triggering only on full pulses.
- (4) Sweep Time is more than once pulse time.
- (5) Set the center frequency on any frequency would be measure and set the frequency span to zero.
- (6) Measure the maximum time duration of one single pulse.
- (7) Set the EUT for packet transmitting.
- (8) Measure the maximum time duration of one single pulse.

### 7.4 EUT Operating Condition

The EUT was set to the Hopping Mode by the Customer.

### 7.5 Test Equipment

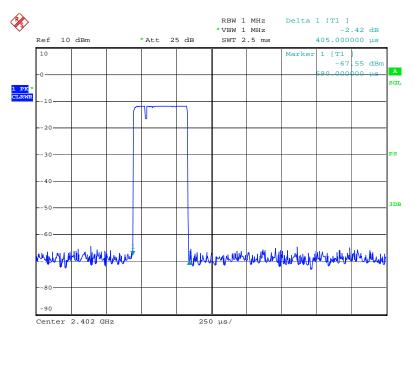
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum	Agilent		MY45106456	Mar. 20, 2014	Mar. 19. 2015
Analyzer	Agiletti	E4407B	W 1 45 100456	Mai. 20, 2014	Mai. 19, 2015



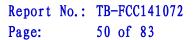
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### 7.6 Test Data

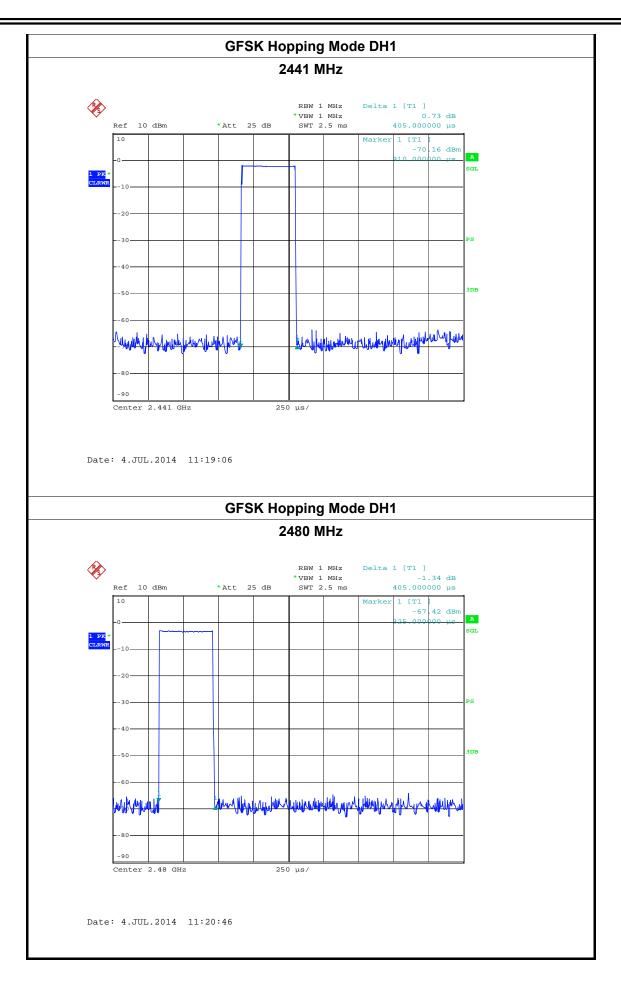
EUT:		SPEAKER	R BAG	Model Name	:	ROCK	OUT 2 SOLAR
Temperature:	emperature: 25 °C Relative Humidity: 55%						
Test Voltage:		DC 3.7V					
Test Mode:	Test Mode: Hopping Mode (GFSK DH1)						
Channel	Pu	Ise Time	Total of	Period Time	Lir	nit	Result
(MHz)	(MHz) (ms) Dwell (ms) (s) (r				(m	ıs)	Result
2402		0.405	129.60				
2441		0.405	129.60	31.60	40	00	PASS
2480		0.405	129.60				
GFSK Hopping Mode DH1							
2402 MHz							



Date: 4.JUL.2014 11:19:29









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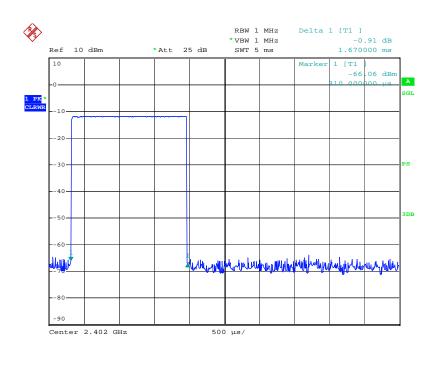
EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR
Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		

Test Mode:	Hopping Mode	(GESK DH3)
ical mode.	I lopping Mode	

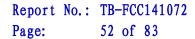
Channel (MHz)	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
2402	1.670	267.20			
2441	1.670	267.20	31.60	400	PASS
2480	1.670	267.20			

### **GFSK Hopping Mode DH3**

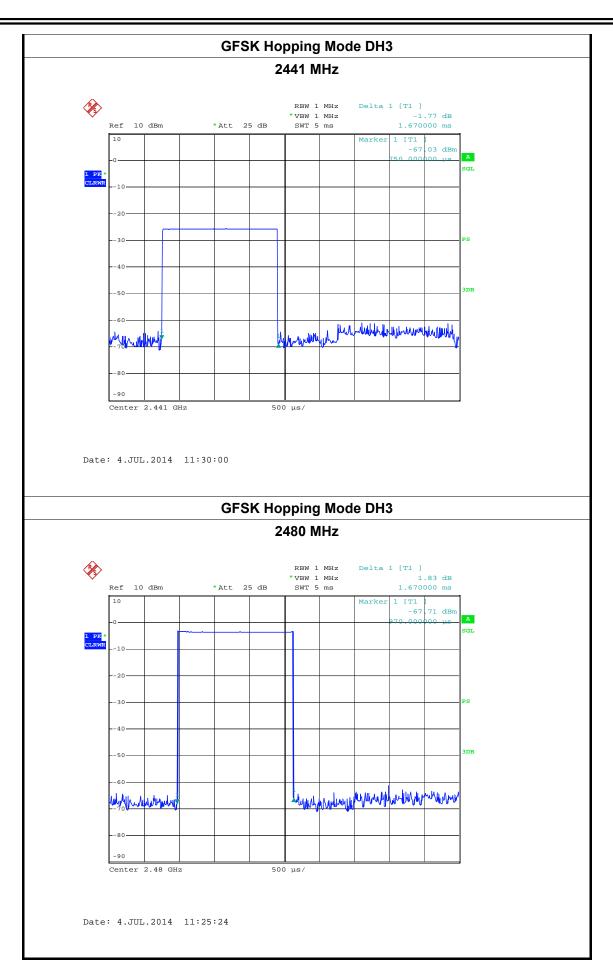
### 2402 MHz



Date: 4.JUL.2014 11:30:51









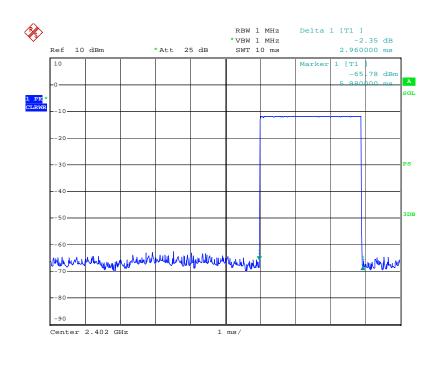
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EUT:		SPEAKER	R BAG	Model Name		ROCK	OUT 2 SOL	.AR
Temperature:		25 ℃		Relative Hum	idity:	55%		
Test Voltage:		DC 3.7V						
Test Mode:		Hopping I	Hopping Mode (GFSK DH5)					
Channel	Pυ	lse Time	Total of	Period Time	Liı	nit		

Channel (MHz)	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
2402	2.960	315.73			
2441	2.960	315.73	31.60	400	PASS
2480	2.960	315.73			

### **GFSK Hopping Mode DH5**

### 2402 MHz

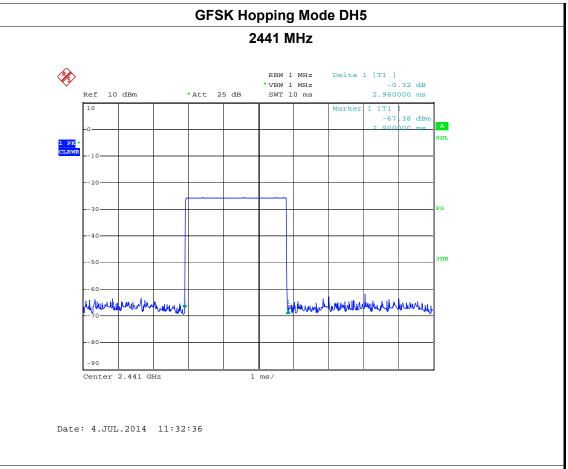


Date: 4.JUL.2014 11:31:51

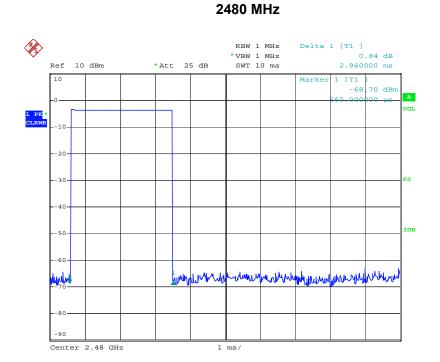


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GFSK Hopping Mode DH5
2441 MHz



### **GFSK Hopping Mode DH5**



Date: 4.JUL.2014 11:33:29



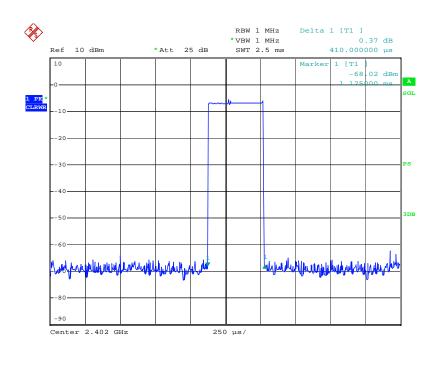
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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		

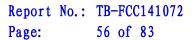
п		1.0000	(0 = 1 011	,		
ı	Channel	Pulse Time	Total of	Period Time	Limit	Result
ı	(MHz)	(ms)	Dwell (ms)	(s)	(ms)	Result
I	2402	0.410	131.20	31.60		
I	2441	0.410	131.20		400	PASS
I	2480	0.410	131.20			

### 8-DPSK Hopping Mode DH1

### 2402 MHz



Date: 4.JUL.2014 11:38:06





8-DPSK Hopping Mode DH1 2441 MHz RBW 1 MHz \*VBW 1 MHz SWT 2.5 ms -2.79 dB 410.000000 µs Ref 10 dBm \*Att 25 dB -65 Center 2.441 GHz 250 μs/ Date: 4.JUL.2014 11:36:15 8-DPSK Hopping Mode DH1 2480 MHz Delta 1 [T1 ] RBW 1 MHz \*VBW 1 MHz 410.000000 µs Ref 10 dBm \*Att 25 dB SWT 2.5 ms Marker 1 [T1 -69 71 dBn Center 2.48 GHz Date: 4.JUL.2014 11:35:09



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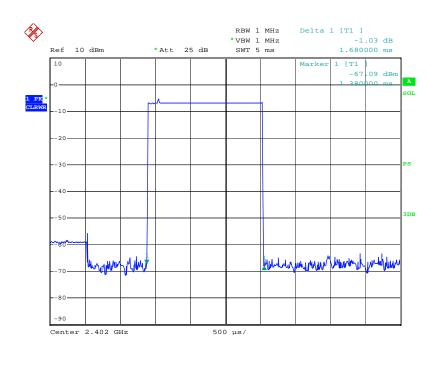
EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR
Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		

Test Mode:	Hopping Mode	(8-DPSK DH3)
------------	--------------	--------------

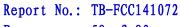
100111101101	oppgout (o _ 1. o 2o)				
Channel	Pulse Time	Total of	Period Time	Limit	Popult
(MHz)	(ms)	Dwell (ms)	(s)	(ms)	Result
2402	1.680	268.80			
2441	1.680	268.80	31.60	400	PASS
2480	1.680	268.80			

### 8-DPSK Hopping Mode DH3

### 2402 MHz

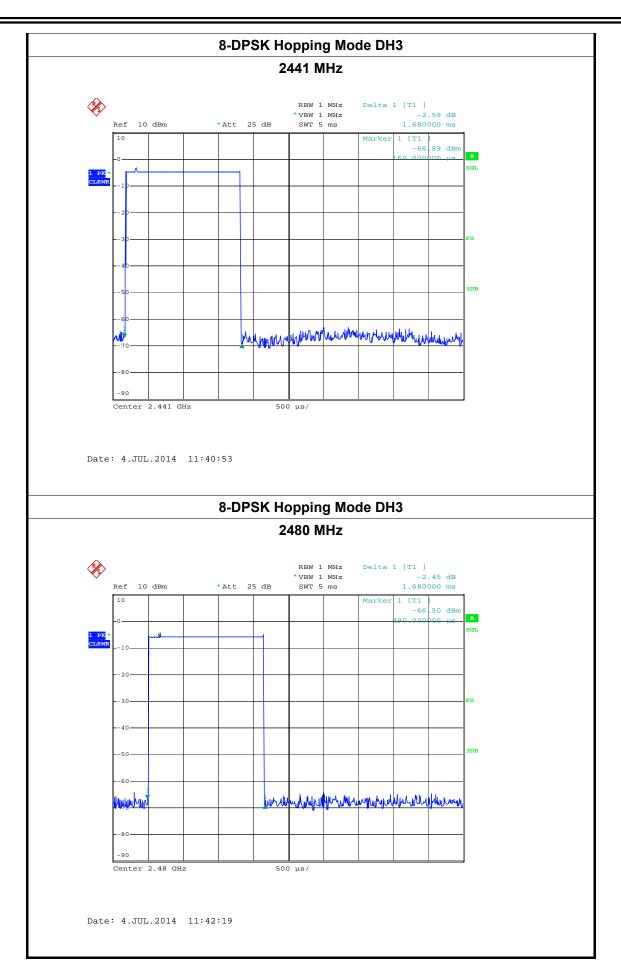


Date: 4.JUL.2014 11:39:35





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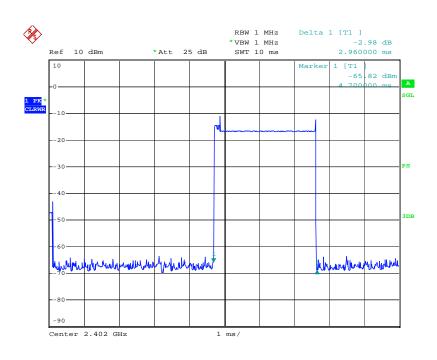
EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		

Test Mode:	Hopping Mode (8-DPSK DH5)	)

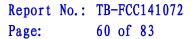
	riepping mede (e.g. externe)				
Channel	Pulse Time	Total of	Period Time	Limit	Popult
(MHz)	(ms)	Dwell (ms)	(s)	(ms)	Result
2402	2.960	315.73			
2441	2.960	315.73	31.60	400	PASS
2480	2.960	315.73			

### 8-DPSK Hopping Mode DH5

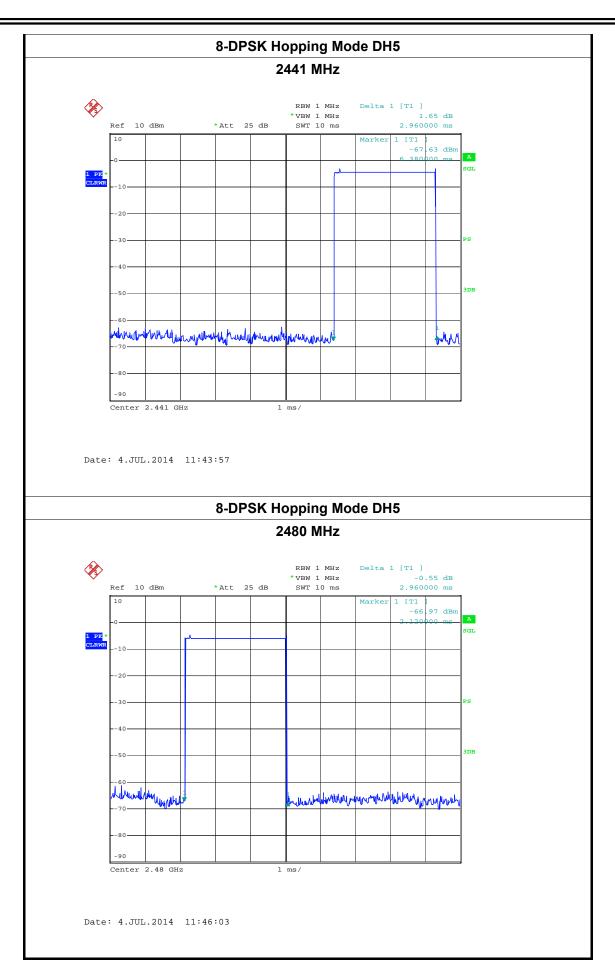
### 2402 MHz



Date: 4.JUL.2014 11:45:11









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# 8. Channel Separation and Bandwidth Test

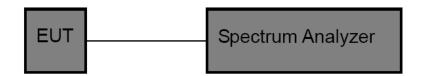
### 8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247

8.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Bandwidth	<=1 MHz	2400~2483.5
	(20dB bandwidth)	
	>25KHz or >two-thirds of	
Channel Separation	the 20 dB bandwidth	2400~2483.5
	Which is greater	

### 8.2 Test Setup



#### 8.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Channel Separation: RBW=30 kHz, VBW=100 kHz.

Bandwidth: RBW=30 kHz, VBW=100 kHz.

- (3) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
- (4) Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:30 kHz, and Video Bandwidth:100 kHz. Sweep Time set auto.

### 8.4 EUT Operating Condition

The EUT was set to the Hopping Mode for Channel Separation Test and continuously transmitting for the Bandwidth Test.



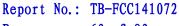
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# 8.5 Test Equipment

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015

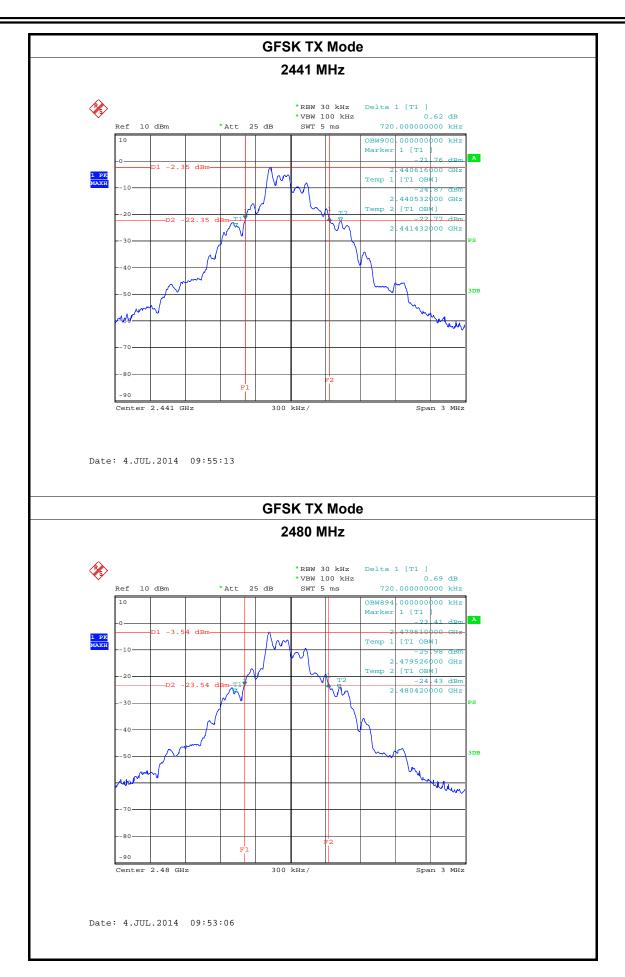
# 8.6 Test Data

EUT:	SPEAK	(ER BAG		Mode	Name	e :	ı	ROCK OUT 2 SOLAR
Temperature:	25 ℃			Relati	ve Hu	midity	y:	55%
Test Voltage:	DC 3.7	DC 3.7V						
Test Mode:	est Mode: TX Mode (GFSK)							
Channel frequence (MHz)	cy 99	9% OBW (k	(Hz)	20dE	Band (kHz)		h	20dB Bandwidth *2/3 (kHz)
2402		900.0000	1		720.0			480.00
2441		900.0000			720.0	0		480.00
2480		894.0000			720.0	0		480.00
	1	G	FSK T	X Mode	9			
			2402	MHz				
Ref 10 10 -0 -10 -20 -30 -40 -50 -70	D1 -4.83 d	*Att 25 di	* VBI	N 30 kHz N 100 kHz F 5 ms	OBW900.	0.000000 0000000 1 [T1 ] -24 4016220 [T1 OBW -27 4015380 [T1 OBW	23 dBm 000 GHz 11 62 dBm 000 GHz 11 33 dBm	FS 3DB
-90 Center Date: 4.JUL	2.402 GHz	:57:11	300 kHz/	F2		Spar	n 3 MHz	





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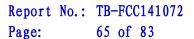
EUT:	SPEAKER BAG		Mode	Model Name :		ROCK OUT 2 SOLAR
Temperature:	25 ℃		Relati	ve Hum	idity:	55%
Test Voltage:	DC 3.7V				·	
Test Mode:	TX Mode	(8-DPSK)				
Channel frequen	cy 99%	OBW (kHz)	20di	Bandw	/idth	20dB Bandwidth
(MHz)				(kHz)		*2/3 (kHz)
2402	•	1116.00		1170.00		780.00
2441		1116.00		1170.00		780.00
2480		1122.10		1170.00		780.00
		8-DPS	K TX Mod	de		
		24	02 MHz			
Ref 10 10 -0 -102030	dBm , , , , , , , , , , , , , , , , , , ,		*RBW 30 kHz *VBW 100 kHz SWT 5 ms	OBW 1.11 Marker 1  2.40 Temp 1 [T  2.40 Temp 2 [T	T1 ]  0.58 dB 0000000 MHz 60000 00 MHz (T1 )  -27 46 dbm 1406000 GHz 1 OBW1  -24 58 dBm 2540000 GHz	<b>A</b>
40				4		

300 kHz/

Span 3 MHz

Date: 4.JUL.2014 10:04:50

Center 2.402 GHz





8-DPSK TX Mode 2441 MHz \*RBW 30 kHz Delta 1 [T1 ]
\*VPW 100 kHz 1.20 dB **P**S> \*Att 25 dB Ref 10 dBm SWT 5 ms 1.170000000 MHz OBW 1.116000000 MHz Marker 1 [T1] .440394000 GHz 01 -4.9 dBm [T1 OBW] 24.91 -D2 Center 2.441 GHz 300 kHz/ Span 3 MHz Date: 4.JUL.2014 10:01:49 8-DPSK TX Mode 2480 MHz \*RBW 30 kHz \*VBW 100 kHz SWT 5 ms Delta 1 [T1 ] 0.51 dB Ref 10 dBm \*Att 25 dB 1.170000000 MHz OBW 1.122000000 MHz Marker 1 [T1 ] 479388000 GHz [T1 OBW] D1 -6.4 dBm 479406000 GHz [T1 OBW] -20 -23.99 dBm 480528000 GHz -30-Center 2.48 GHz 300 kHz/ Span 3 MHz Date: 4.JUL.2014 10:03:04



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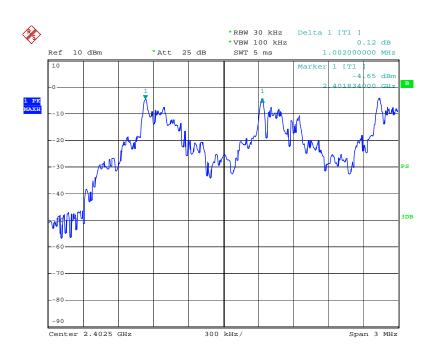
EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		

**Test Mode:** Hopping Mode (GFSK)

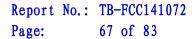
Channel frequency (MHz)	Separation Read Value (kHz)	Separation Limit (kHz)
2402	1002.00	480.00
2441	1002.00	480.00
2480	1002.00	480.00

### **GFSK Hopping Mode**

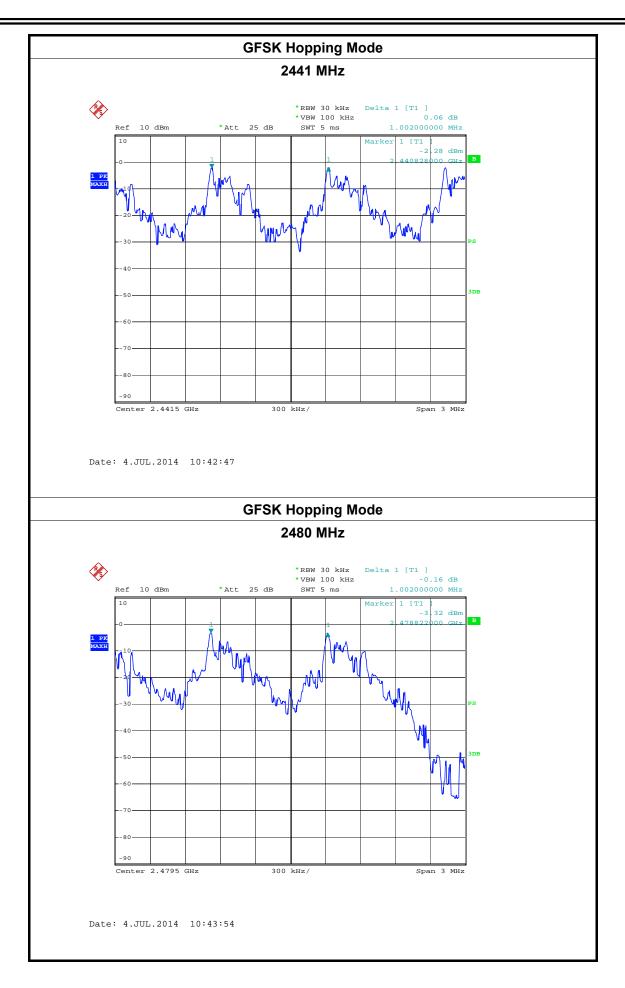
### 2402 MHz



Date: 4.JUL.2014 10:41:11









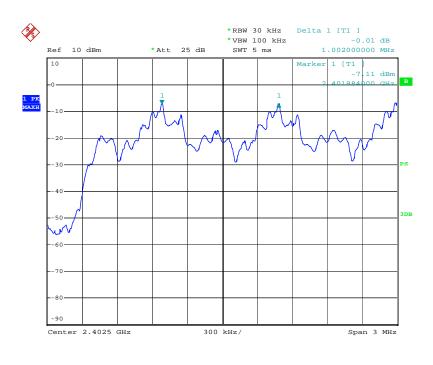
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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR
Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Test Mode:	Hopping Mode (8-DPSK)	)·	

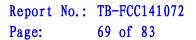
Channel frequency (MHz)	Separation Read Value	Separation Limit (kHz)
	(kHz)	
2402	1002.00	780.00
2441	1050.00	780.00
2480	1002.00	780.00

### 8-DPSK Hopping Mode

### 2402 MHz



Date: 4.JUL.2014 10:48:40





8-DPSK Hopping Mode 2441 MHz **P**S> Delta 1 [T1 ] 0.02 dB 1.002000000 MHz \*RBW 30 kHz \*VBW 100 kHz Ref 10 dBm \*Att 25 dB SWT 5 ms Marker 80 dBr Center 2.4415 GHz 300 kHz/ Span 3 MHz Date: 4.JUL.2014 10:47:43 8-DPSK Hopping Mode 2480 MHz \*RBW 30 kHz \*VBW 100 kHz SWT 5 ms Delta 1 [T1 ] -0.16 dB 1.002000000 MHz Ref 10 dBm \*Att 25 dB 97 dBm Center 2.4795 GHz 300 kHz/ Span 3 MHz Date: 4.JUL.2014 10:46:12



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# 9. Peak Output Power Test

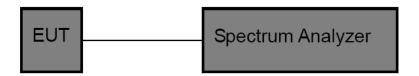
### 9.1 Test Standard and Limit

9.1.1 Test Standard FCC Part 15.247 (b) (1)

9.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Peak Output Power	Hopping Channels>75 Power<1W(30dBm) Other <125 mW(21dBm)	2400~2483.5

### 9.2 Test Setup



### 9.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Peak Detector: RBW=1 MHz, VBW=3 MHz for bandwidth less than 1MHz. RBW=3 MHz, VBW=3 MHz for bandwidth more than 1MHz.

### 9.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

### 9.5 Test Equipment

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015

### 9.6 Test Data



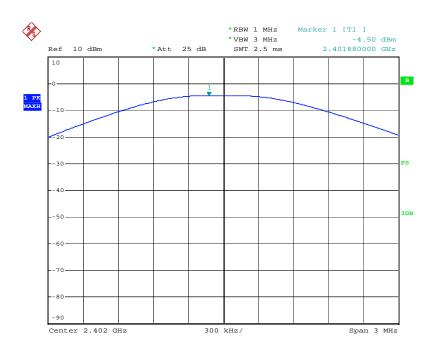
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EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Test Mode:	TX Mode (GFSK)		

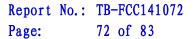
root moder	177 111000	(51 511)		
Channel frequency (MHz)		Test Result (dBm)	Limit (dBm)	
2402		-4.500		
2441		-2.100	21	
2480		-3.330		

### **GFSK TX Mode**

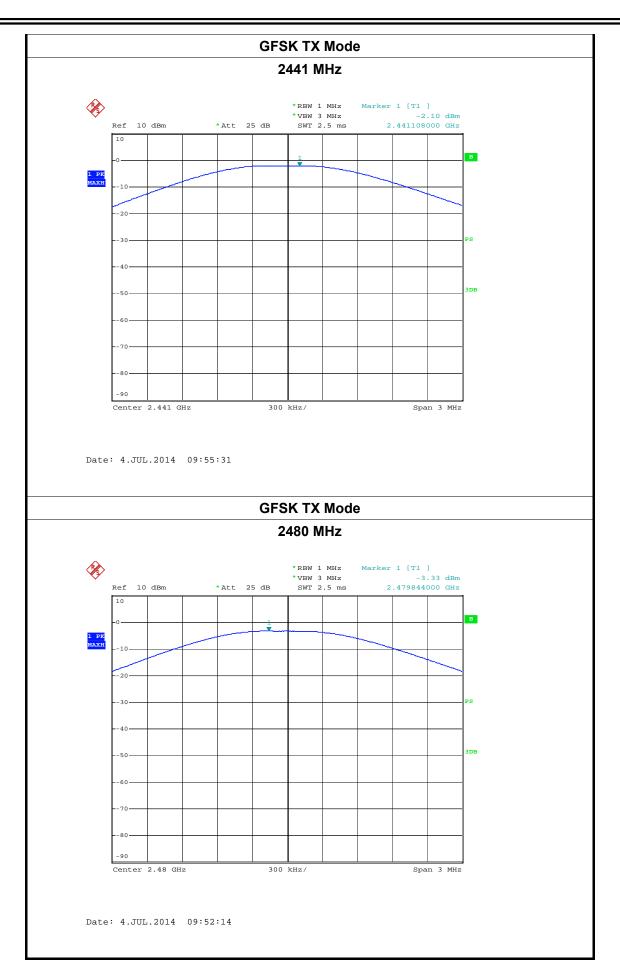
### 2402 MHz



Date: 4.JUL.2014 09:55:59









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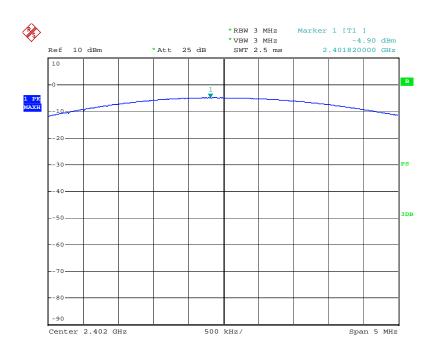
EUT:	SPEAKER BAG	Model Name :	ROCK OUT 2 SOLAR
Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
	T) ( 1.4		

X Mode (8-DPSK)

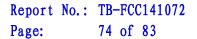
Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)	
2402	-4.900		
2441	-2.360	21	
2480	-3.570		

### 8-DPSK TX Mode

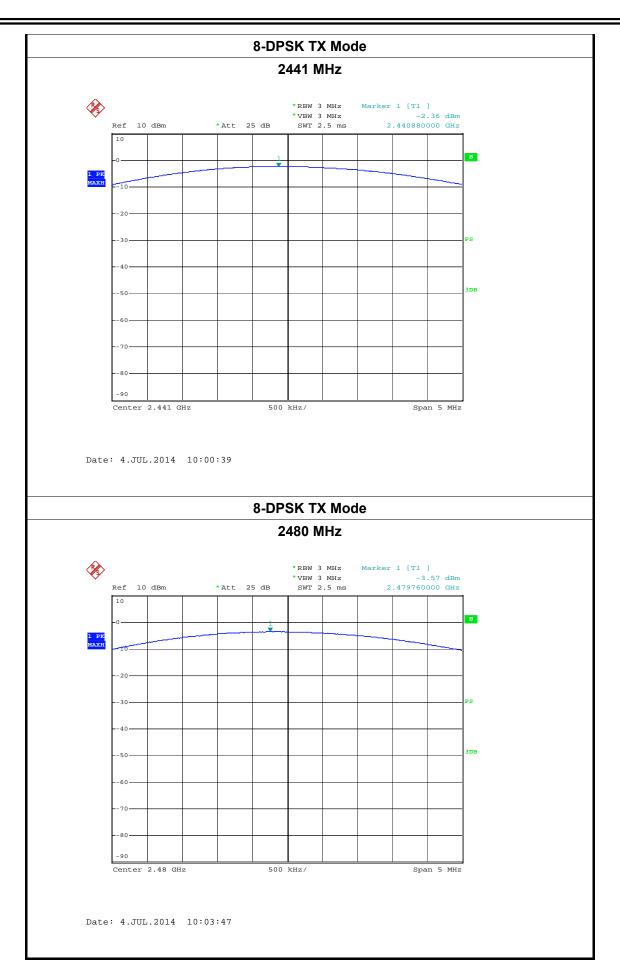
### 2402 MHz



Date: 4.JUL.2014 09:59:56









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10. Antenna Conducted Spurious Emission

### 10.1 Test Standard and Limit

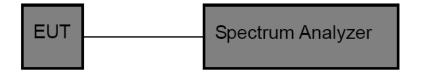
10.1.1 Test Standard FCC Part 15.247 (d)

#### 10.1.2 Test Limit

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. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above~960	500	3

### 10.2 Test Setup



### 10.3 Test Procedure

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

(2) Spectrum Setting:

RBW=100 KHz, VBW=300 KHz.

Frequency range: from 30MHz to 25 GHz



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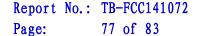
## 10.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

# 10.5 Test Equipment

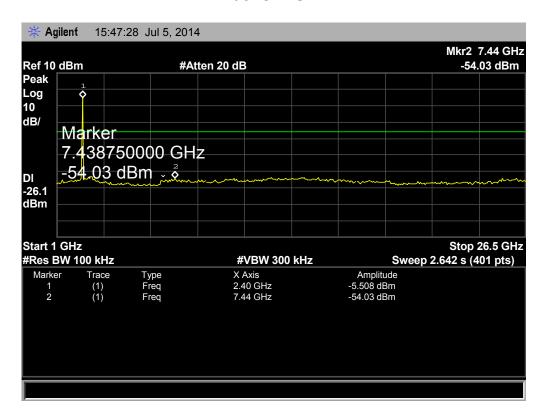
Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum	Agilent		MY45106456	Mar. 20. 2014	Mar. 19. 2015
Analyzer	Agilon	E4407B	101145100450	IVIAI. 20, 2014	IVIAI. 19, 2015

### 10.6 Test Data

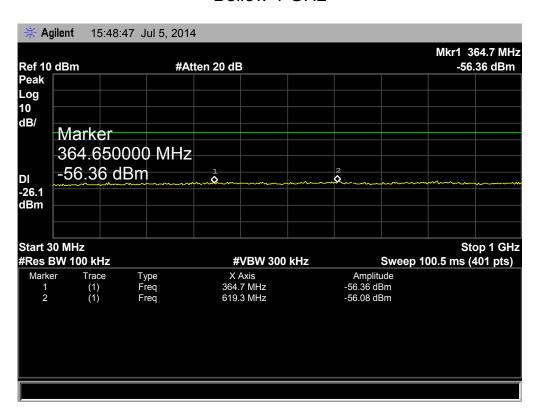


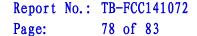


## TX CH 00 2402MHz (1 Mbps)



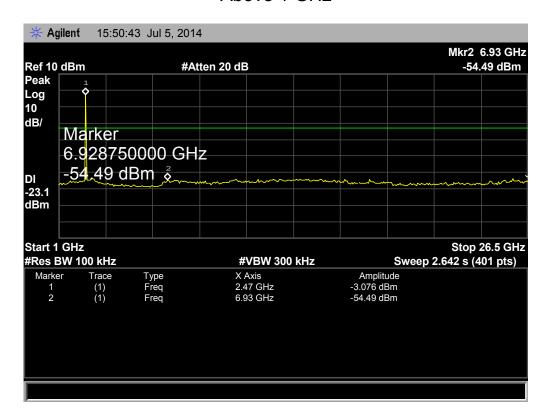
Bellow 1 GHz



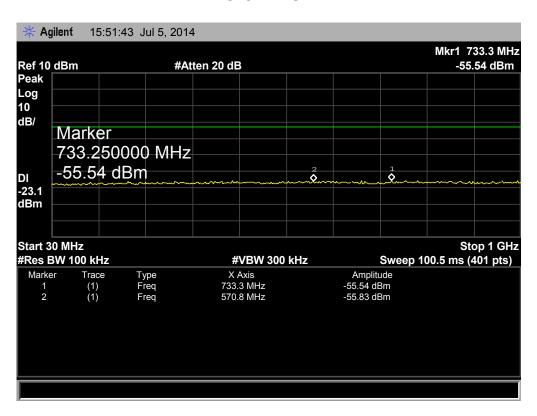


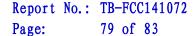


TX CH 39 2441MHz (1 Mbps)



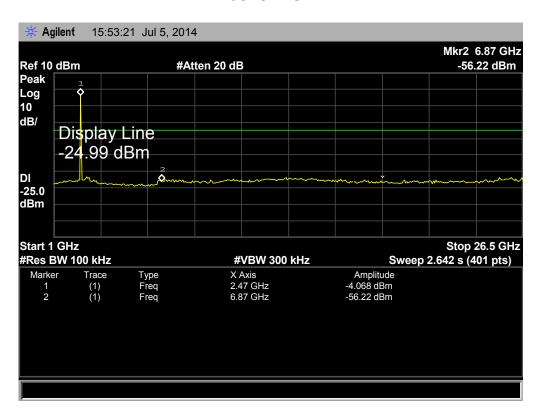
Bellow 1 GHz



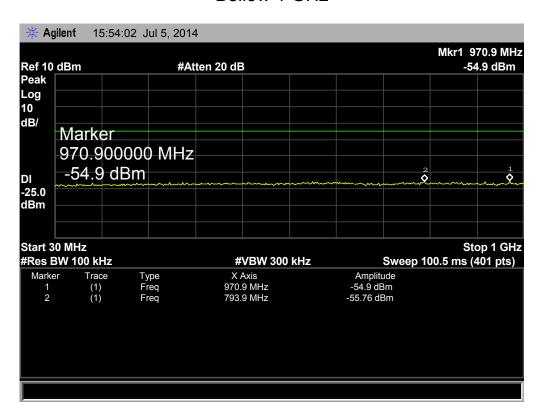


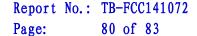


## TX CH 78 2480MHz (1 Mbps)



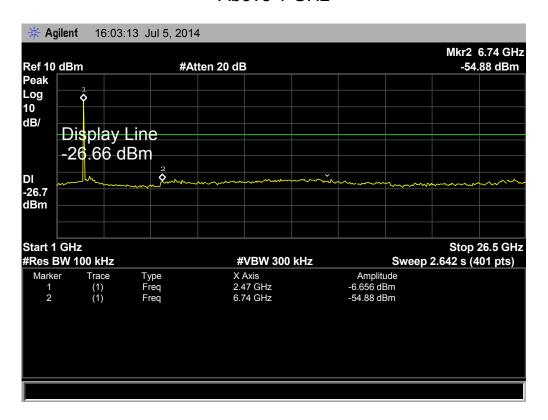
Bellow 1 GHz



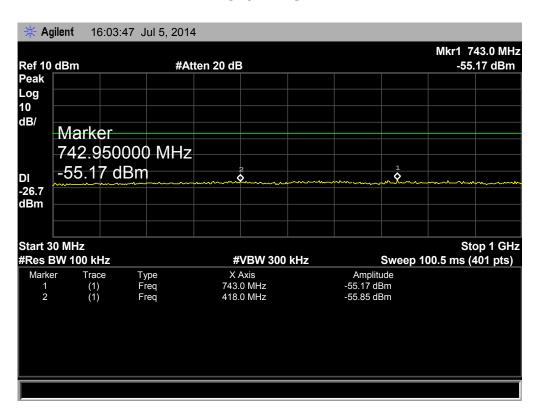


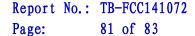


### TX CH 00 2402MHz (3 Mbps)



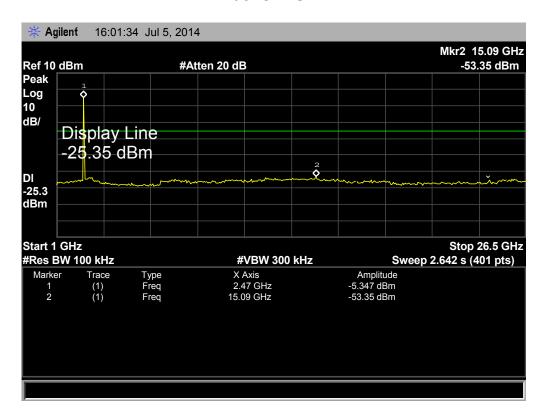
Bellow 1 GHz



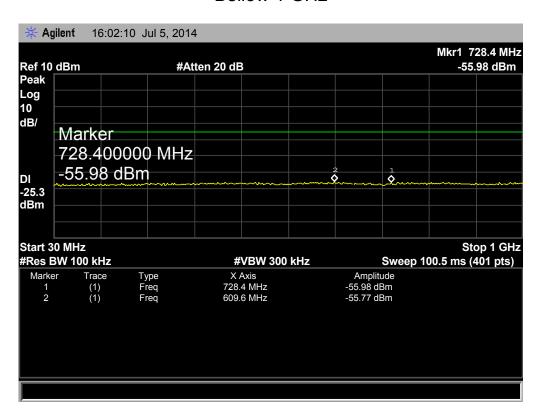


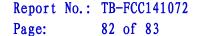


### TX CH 39 2441MHz (3 Mbps)



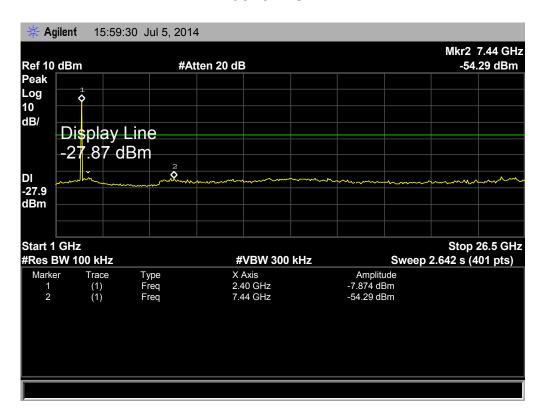
Bellow 1 GHz



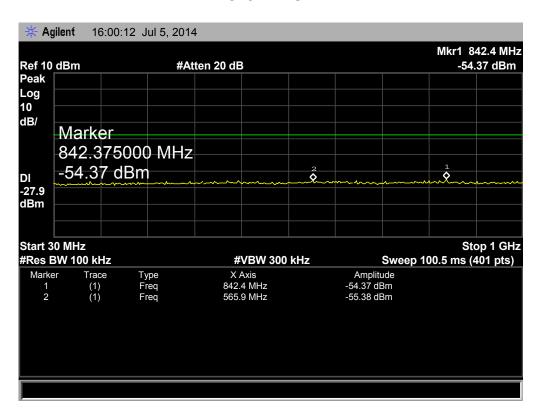




### TX CH 78 2480MHz (3 Mbps)



Bellow 1 GHz





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# 11. Antenna Requirement

### 11.1 Standard Requirement

### 11.1.1 Standard

FCC Part 15.203

### 11.1.2 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 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.

### 11.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 0 dBi, and the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

### 11.2 Result

The EUT antenna is a PCB Antenna. It complies with the standard requirement.