

Shenzhen Asia Bright Industry Co., Ltd

TEST REPORT

SCOPE OF WORK FCC TESTING – e371

REPORT NUMBER 190325034SZN-003

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Intertek Report No.: 190325034SZN-003

Shenzhen Asia Bright Industry Co., Ltd

Application For Certification

FCC ID: 2ASVU-E371

WiFi Gateway PIR Dimmer Switch

Model: e371

2.4GHz Wi-Fi Transceiver

Report No.: 190325034SZN-003

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-18]

Prepared and Checked by:

Approved by:

Winkey Wang Senior Project Engineer Kidd Yang Technical Supervisor Date: 20 August 2019

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Intertek Report No.: 190325034SZN-003

MEASUREMENT/TECHNICAL REPORT

This report concerns (check one)	Original Grant <u>X</u> Class II Change
	Transmission Systems (Wi-Fi transmitter portion)
Deferred grant requested per 47 CFR	0.457(d)(1)(ii)? Yes No
Company Name agrees to notify the (If yes, defer until : date Commission by:
	date
of the intended date of announceme that date.	ent of the product so that the grant can be issued on
Transition Rules Request per 15.37?	Yes NoX
If no, assumed Part 15, Subpart C f 18] Edition] provision.	for intentional radiator - the new 47 CFR [10-01-
Report prepared by:	
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1.0 Summary of Test results

Applicant: Shenzhen Asia Bright Industry Co., Ltd Applicant Address: Building 10, Asia Industrial Park, Gangtou, Bantian, Shenzhen, China

Model: e371 FCC ID: 2ASVU-E371

TEST ITEM	REFERENCE	RESULTS
Max. Output power	15.247(b)(3)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(e)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d), 15.209, FCC 15.205	Pass
AC Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses an Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.



2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a WiFi Gateway PIR Dimmer Switch with Wi-Fi function operating at 2412-2462MHz for 802.11b/g/n-HT20, 11 channels with 5MHz channel spacing and 2.4G SRD function operated in 2440MHz. The EUT is powered by AC120V/60Hz. For more detailed features description, please refer to the user's manual.

Type of Modulation: BPSK, QPSK, 16QAM, 64QAM for OFDM; CCK, DQPSK, DBPSK for DSSS. Antenna Type: Integral Antenna Antenna Gain: 1.5dBi Max for 2.4G WIFI

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

2.2 Related Submittal(s) Grants

This is an application for certification of: DTS- Part 15 Digital Transmission Systems (2.4GHz Wi-Fi transmitter portion).

Remaining portions are subject to the following procedures:

- 1. Receiver portion of WiFi: exempt from technical requirement of this Part.
- 2. Other Digital Function: it was reported in the SDOC report: 190325033SZN-001.
- 3. For the 2.4G SRD function was tested and demonstrated in report 190325034SZN-004.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013) and KDB 558074 D01 v05r02. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "Justification Section" of this Application.

2.4 Test Facility

The Semi-anechoic chamber and shielded room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Longhua Branch** and located at 101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, Shenzhen, P.R. China. This test facility and site measurement data have been fully placed on file with File Number: CN1188.



3.0 System Test Configuration

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. The EUT was powered by AC120V/60Hz during the test.

On 802.11b/g/n-HT20 mode, only one antenna is used, and all data rate were tested and only the worst case data is shown in the report.

For maximizing emissions, the EUT was rotated through 360°, the EUT was placed on the styrene turntable with 0.8m up to 1GHz and 1.5 m above 1GHz. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

The rear of unit shall be flushed with the rear of the table.

Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified testing.

The parameters of test software setting:

During the test, Channel and power controlling software provided by the applicant 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 application and is going to be fixed on the firmware of the end product.

Test software: ESP Series Modules FCC& CE Test Tool V2.2.3.0. exe

3.3 Special Accessories

N/A.



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3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

3.5 Equipment Modification

Any modifications installed previous to testing by Shenzhen Asia Bright Industry Co., Ltd will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Longhua Branch.

3.6 Support Equipment List and Description

Description	Manufacturer	Model No.	Note
LED Lamp	/	/	provided by Intertek
Lamp holder	/	/	provided by Intertek
Mobile Phone	SAMSUNG	S7	provided by Intertek
AC Input Line	/	/	provided by Intertek Length: 1m
AC Output Line	/	/	provided by Intertek Length: 0.2m



Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):

The antenna power of the EUT was connected to the input of a broadband peak RF power meter. The power meter have a video bandwidth that is greater than DTS bandwidth and utilize a fast-responding diode detector. Power was read directly at the EUT antenna terminals with cable loss added.

For antennas with gains of 6 dBi or less, maximum allowed Transmitter output is 1 watt (+30 dBm).

IEEE 802.11b (Antenna Gain = 1.5dBi) (CCK, 1Mbps)					
Frequency (MHz)Output in dBm (Peak Reading)Output in mWatt					
Low Channel: 2412	20.42	110.2			
Middle Channel: 2437	20.25	105.9			
High Channel: 2462	20.05	101.2			

IEEE 802.11g (Antenna Gain = 1.5dBi) (16QAM, 6Mbps)					
Frequency (MHz)	Output in mWatt				
Low Channel: 2412	21.24	133.0			
Middle Channel: 2437	21.35	136.5			
High Channel: 2462	21.03	126.8			

IEEE 802.11n-HT20 (Antenna Gain = 1.5dBi) (64QAM, 6Mbps)					
Frequency (MHz)Output in dBm (Peak Reading)Output in mWate					
Low Channel: 2412	22.21	166.3			
Middle Channel: 2437	21.66	146.6			
High Channel: 2462	20.58	114.3			

Cable loss: <u>1.0</u> dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function

EUT max. output level = 22.21dBm EUT max. E.I.R.P = 22.21dBm + 1.5dBi = 23.71dBm = 234.96mW

For RF Exposure, the information is saved with filename: RF exposure.pdf.



Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a) (2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 KHz according to FCC KDB 558074 D01 v05r02. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

Limit: The 6 dB Bandwidth is at least 500 kHz.

IEEE 802.11b (CCK, 1Mbps)					
Frequency (MHz)6 dB Bandwidth (MHz)					
2412	8.596				
2437	8.553				
2462	9.030				

IEEE 802.11g (16QAM, 6Mbps)				
Frequency (MHz)6 dB Bandwidth (MHz)				
2412	16.281			
2437	16.281			
2462	16.281			

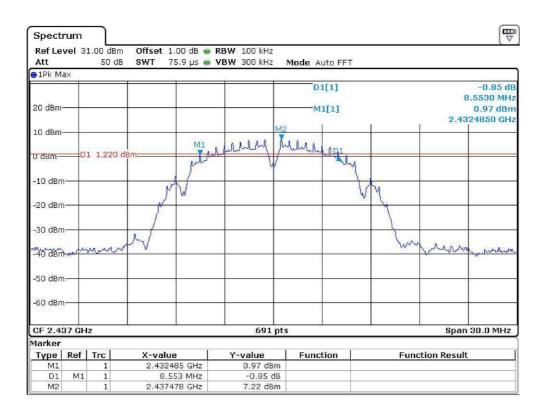
IEEE 802.11n-HT20 (64QAM, 6Mbps)					
Frequency (MHz)6 dB Bandwidth (MHz)					
2412	16.281				
2437	16.064				
2462	16.237				

The test plots are attached as below.



802.11b (6dB bandwidth)

Spectrum Ref Level 31.00 dBm Offset 1.00 dB 👄 RBW 100 kHz 50 dB 75.9 µs 🥌 **VBW** 300 kHz Mode Auto FFT Att SWT ●1Pk Max D1[1] -0.25 dB 8.5960 MHz 20 dBm -M1[1] 1.12 dBm 2.4074410 GHz 10 dBm whilehil Miller M1 The Agi L D1 1.710 de 0 dBm--10 dBm -20 dBm -30 dBm ٨. 21 mann Mars -40 dBm we -50 dBm -60 dBm CF 2.412 GHz 691 pts Span 30.0 MHz Marker Type Ref Trc X-value Y-value Function Function Result 2.407441 GHz M1 1 1.12 dBm 8.596 MHz -0.25 dB M1 D1 1 M2 2.411479 GHz 7.71 dBm 1





Spect	rum									
Ref Le Att	vel 3	1.00 dB 50			. BW 100 kHz ' BW 300 kHz	Mode A	uto FFT			1.
⊖1Pk M	ах		06 00		74 05					
20 dBm							([1] 1[1]			0.34 dB 0.0300 MHz -0.42 dBm
10 dBm	-				M	2			2.45	74410 GHz
0 dBm-	D	1 0.36		MILLA	men 1	while				
-10 dBn	1 		-	1			- Y	<u>.</u>	· · · · ·	
-20 dBn	n			N			W	4		
-30 dBn	- and	men	word					In	harmonar	man
-50 dBn										
-60 dBn	ŋ							-		
CF 2.4	62 GH	z			691 pt	s		34	Span	30.0 MHz
Marker			40-0000000 - 6 000000	T		1				
Type M1	Ref	Trc 1	2.457441	CUE	Y-value -0.42 dBm	Funct	tion	Fund	ction Result	
D1	M1	1	9.03	MHz	0.34 dB					
M2		1	2.462478	GHz	6.36 dBm					



802.11g (6dB bandwidth)

Spectrum Ref Level 31.00 dBm Offset 1.00 dB 👄 RBW 100 kHz Att 50 dB SWT 75.9 µs 🥃 **VBW** 300 kHz Mode Auto FFT 😑 1Pk Max D1[1] -0.14 dB 16.2810 MHz 20 dBm-M1[1] -3.15 dBm 2.4038380 GHz 10 dBm M2 D1 -3.160 demarkanthenthenthenthen perturalization 0 dBm Aspal D. -10 dBm--20 dBm-Mar Margarage -39 dBOW work -40 dBm -50 dBm--60 dBm-CF 2.412 GHz 691 pts Span 30.0 MHz Marker Type | Ref | Trc | X-value Y-value Function **Function Result** 2.403838 GHz M1 1 -3.15 dBm D1 16.281 MHz M1 -0.14 dB 1 M2 2.406964 GHz 2.84 dBm

Spect	rum						
Ref Le Att	vel 3	1.00 dB 50 v		 RBW 100 kHz VBW 300 kHz 	Mode Auto FFT		с <u>с</u>
)1Pk M	эx		50 - 50 - 50 - 50 - 50 - 50 - 50 - 50 -	12 IS			
					D1[1]		-0.12 di
20 dBm·							16.2810 MH
20 aBm·					M1[1]		-2.48 dBn 2.4288380 GH
10 dBm·					8	1 1	2.4200300 GH
TO UBIN			M2				
0 dBm—			M1, 1	0 0 0.	Martycolor	1 1 1	
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-10 dBm	-			, vi		1 I I	
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W. Ora							
-40 dBm							
-50 dBm	1 						
-60 dBm	η <u></u>						
CF 2.4	37 GH	z	J	691 pts	5		Span 30.0 MHz
1arker					2.5		
Type	Ref	Trc	X-value	Y-value	Function	Funct	ion Result
M1		1	2.428838 GHz				
D1	M1	1	16.281 MHz	and the second			
M2		1	2.431964 GHz	3.68 dBm			



20 dBm M1[1] 10 dBm M2 0 dBm M2 0 dBm M1 0 dBm M2 -10 dBm M2 -20 dBm M2 -30 dBm M2 -30 dBm M2 -50 dBm M2 -60 dBm M2	
20 dBm D1[1] 16 20 dBm M1[1] 2.453 10 dBm M2 0 0 dBm M1 0 -10 dBm M2 0 -20 dBm -10 -10 -30 dBm -4450 -10 -50 dBm -50 dBm -10	('
20 dBm M1[1] 2.450 10 dBm M2 0 0 dBm M1 0 -10 dBm M2 0 -10 dBm M2 0 -10 dBm M2 0 -20 dBm -10 0 -20 dBm -10 0 -20 dBm -10 0 -30 dBm -10 0 -50 dBm -10 0	
10 dBm M2 0 dBm D1 -4.450 dBm -10 dBm -20 dBm -20 dBm -30 dBm -30 dBm -40 dBm -50 dBm -50 dBm	0.04 dE 2810 MHz 4.49 dBm 88380 GHz
0 dBm 01 -4.450	0000 011
-10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -50 dBm -60 dBm	
-30 dBm -30 dBm -40 dBm -50 dBm -60 dBm	
-50 dBm	
-60 dBm	mul
CF 2.462 GHz 691 pts Span	
	30.0 MHz
Marker	
Type Ref Trc X-value Y-value Function Function Result	
M1 1 2.453838 GHz -4.49 dBm	
D1 M1 1 16.281 MHz 0.04 dB M2 1 2.456964 GHz 1.55 dBm	



802.11n-HT20 (6dB bandwidth)

Spectrum Ref Level 31.00 dBm Offset 1.00 dB 👄 RBW 100 kHz 50 dB 75.9 µs 🥃 **VBW** 300 kHz Mode Auto FFT SWT Att ●1Pk Max D1[1] -0.03 dB 16.2810 MHz 20 dBm -M1[1] -2.98 dBm 2.4038380 GHz 10 dBm -D1 -3.070 dBm + 1 M2 Aug Amerikan antration trantanter 0 dBm--10 dBm -20 dBm· Madanahalu -30 dBmmount -40 dBm--50 dBm--60 dBm-CF 2.412 GHz 691 pts Span 30.0 MHz Marker Function Type Ref Trc **Function Result** X-value Y-value 2.403838 GHz 16.281 MHz -2.98 dBm M1 1 -0.03 dB M1 D1 1 1 M2 2.407007 GHz 2.93 dBm

Spect	rum						E
Ref Le Att	vel 3:	1.00 dB 50 c			Mode Auto FFT		(·
)1Pk M	ах		96 OS	7.5			
					D1[1]		0.00 d
20 dBm							16.0640 MH
20 aBm					M1[1]		-1.87 dBr 2.4288380 GH
10 dBm					1		2.4200300 GP
to ubm	n ar		M2		28 2470 - 244		
0 dBm-			M1, 1	n A A	Ingentralant	and ungi	
o dom	D	1 -1.75	O dBm Anallandar	- Jun harring they	man an aller	and and the	
-10 dBn			ľ	Y		N.	
20 000							
-20 dBn	<u> </u>		1			_	<u>\</u>
		N - 1					Monthoundly
agnaeA	magn	Miron					- whowever the
0000	200						
-40 dBn	1						
-50 dBn	n						
-60 dBm	1						
CF 2.4	37 GH	z		691 pts	0	35	Span 30.0 MHz
1arker							
Type	pe Ref Trc X-value		Y-value	Function F		tion Result	
M1		1	2.428838 GHz	-1.87 dBm			
D1	M1	1	16.064 MHz	0.00 dB			
M2		1	2.431964 GHz	4.25 dBm			



Spect	rum						
Ref Le Att	vel 3	1.00 d 50			Mode Auto FFT		(;
∋1Pk M	ах			- 			
20 dBm					D1[1] M1[1]		-0.21 dl 16.2370 MH -4.26 dBn 2.4538380 GH
10 dBm	-						
0 dBm—		1 4 9	50 dBmt Aural parts	the forther we	M2	hardmarg1	
-10 dBm		1 ***.2.		Y		- N	
-20 dBm	i						<u> </u>
-30 dBr	n		<i>,</i> , <i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			_	Wy
-40 dBm		why	_				mumulu
-50 dBm	n						
10121 112							
-60 dBm							
CF 2.4	62 GH	z	i j	691 pts	;	1	Span 30.0 MHz
Marker	1						
Type M1	Ref			Y-value -4.26 dBm	Function	Funct	tion Result
D1	M1	1	2.453838 GHz 16.237 MHz	-4.26 dBm -0.21 dB			
M2	INIT	1	2.464475 GHz	1.75 dBm			
102	(i)	1	2.101113 GHz	arro dom			



Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

4.3 Maximum Power Density Reading, FCC Rule 15.247(e):

The Measurement Procedure PKPSD was set according to the FCC KDB 558074 D01 v05r02.

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

Limit: The Power Density does not exceed 8dBm/3 kHz.

IEEE 802.11b (CCK, 1Mbps)							
Frequency (MHz)	Power Density with RBW 100KHz						
2412	7.41						
2437	6.83						
2462	6.25						

IEEE 802.11g (16QAM, 6Mbps)							
Frequency (MHz)	Power Density with RBW 100KHz						
2412	2.75						
2437	4.81						
2462	1.64						

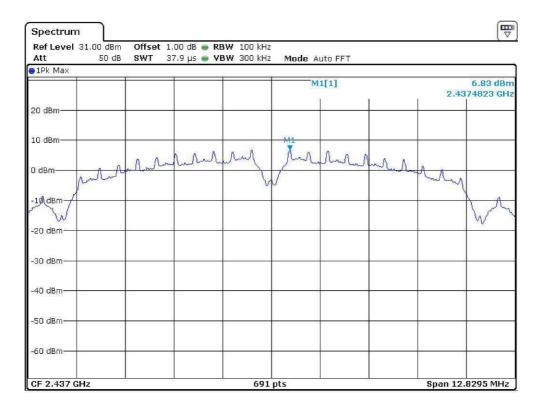
IEEE 802.11n-HT20 (64QAM, 6Mbps)							
Frequency (MHz)	Power Density with RBW 100KHz						
2412	3.47						
2437	3.89						
2462	1.87						

The test plots are attached as below.



802.11b

Spectrum Ref Level 31.00 dBm Offset 1.00 dB 👄 RBW 100 kHz Att 50 dB SWT 37.9 µs 🧉 VBW 300 kHz Mode Auto FFT 😑 1 Pk Max M1[1] 7.41 dBm 2.4114780 GHz 20 dBm 10 dBm Δ Λ . 1 A A A 1 1 0 dBm when -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm Span 12.894 MHz CF 2.412 GHz 691 pts

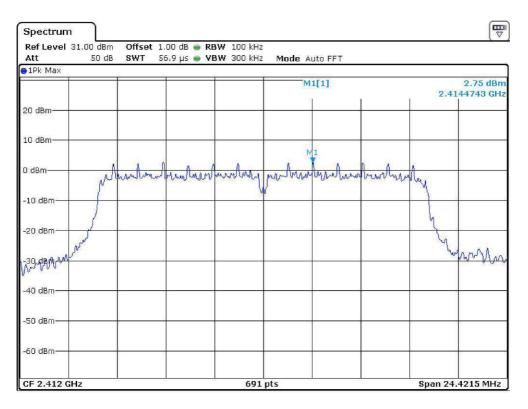


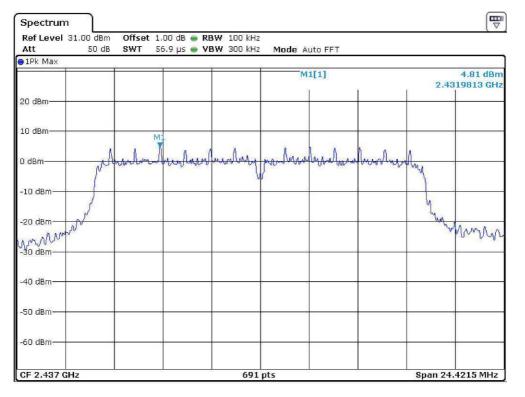


Spectrum			
Ref Level 31.00 dBn Att 50 dB			<u> </u>
) 1Pk Max	-	M1[1]	6.25 dBm
		milij	2.4614905 GHz
20 dBm			
10 dBm		WI	
0.40	Jul Mahal	and manter	hand have a find the second se
0 dBm	- Contraction	W	monty
-10 dgm			
-20 dBm			W ~\
-30 dBm			
-30 0611			
-40 dBm			
-50 dBm			
-60 dBm			
oo abiii			
CF 2.462 GHz		691 pts	Span 13.545 MHz



802.11g





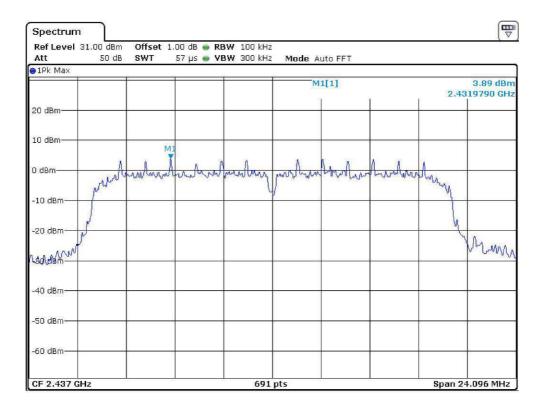


Spectrun	n								
	31.00 dBm		.00 dB 🥌 RI						
Att	50 dB	SWT 5	6.9 µs 🍙 VI	BW 300 kHz	Mode A	uto FFT			
1РК Мах				-	5.4	1[1]			1.64 dBm
						1[1]		2.45	69813 GHz
20 dBm									
20 0011									
10 dBm									
		м							
0 dBm			7				6 0.	2	
o abili	N.	montwind	hutun	mandury	monterio	My almos	humburn	A.	
-10 dBm	J.			1	/			M	
-10 uBm									
00 ID								5	
-20 dBm	5							Y	
	گر .							Z	
-30 dBm	N.							JA .	with
www									- www
-40 dBm	0	2					9		
-50 dBm									
-60 dBm									2
CF 2.462 0	GHz	1	1	691	pts	1	1	Span 24.	4215 MHz



802.11n-HT20

₽ Spectrum Ref Level 31.00 dBm Offset 1.00 dB 👄 RBW 100 kHz 50 dB 56.9 µs 🥌 **VBW** 300 kHz SWT Mode Auto FFT Att ●1Pk Max M1[1] 3.47 dBm 2.4069813 GHz 20 dBm 10 dBm M Austranting mouthantime Jurahun traduced and there 0 dBm m -10 dBm -20 dBm Mons 13R dp Arm -40 dBm -50 dBm -60 dBm Span 24.4215 MHz CF 2.412 GHz 691 pts





Spectrun	n								
Ref Level	31.00 dBm	Offset	1.00 dB 👄	RBW 100 kH:	Z				
Att	50 dB	SWT	56.9 µs 🥌	VBW 300 kH:	z Mode A	uto FFT			
⊖1Pk Max	¥	02	02						
		0			M	1[1]		2.45	1.87 dBm 69953 GHz
20 dBm			(
10 dBm							-		-
0 dBm	8			0 0	A	1. 1	n n	Å	
-10 dBm	warral	winther	Number	ulmentury	monthem	1 marthur	burnhar	hung	
10									
-20 dBm	J.							- No	
-30 dBm-		-			-	-			plup .
man									"hallow
-40 dBm									· · · · · ·
-50 dBm		-	-						
-60 dBm			_						·;,
CF 2.462 (GHz			691	. pts			Span 24.	3555 MHz



Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

4.4 Out of Band Conducted Emissions, FCC Rule 15.247(d)

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. The Measurement Procedure was set according to the FCC KDB 558074 D01 v05r02.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

Refer to the attached test plots for out of band conducted emissions data with rate of 1Mbps for 802.11b and 6Mbps for 802.11g and 6Mbps for 802.11n-HT20.

The test plots showed all spurious emission up to the tenth harmonic were measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

The test plots are attached as below.



802.11b

Channel 01 (2412MHz) Reference Level: 7.41dBm

Spectrum Ref Level 31.00 dBm Offset 1.00 dB 🖷 RBW 100 kHz 50 dB 24 ms 🥃 VBW 300 kHz Att SWT Mode Auto Sweep 🔵 1 Pk Max M1[1] -37.21 dBm 1.05820 GHz 20 dBm 10 dBm 0 dBm -10 dBm-D1 -12.590 dBm--20 dBm -30 dBm M1 millight AQuelBon 10 appendent to -50 dBm -60 dBm· Stop 2.4 GHz Start 1.0 MHz 691 pts Spectrum Ref Level 31.00 dBm Offset 1.00 dB 👄 RBW 100 kHz

Att	50 dB	SWT	226 ms 🥌 ۷	3W 300 kHz	Mode A	uto Sweep			
⊖1Pk Max			ai		_				
					M	1[1]			-30.47 dBm 9.8355 GHz
20 dBm		÷							
10 dBm									
0 dBm		0						-	3b)
-10 dBm		0.	8						
	D1 -12.590	dBm							
-20 dBm							M1		
-30 dBm	Not the server		malmanuture		May My Mohr	hyphistership h		1. A. muchaldhe	And the Action
Hoden-	Apple of the second	al Million Chi	mauruhayu	when have a firmer		s - Putt	Address of the second sec		all the median of
-50 dBm									
-60 dBm									5 M
Start 2.48	35 CH2			691	nte			Stor	0 25.0 GHz

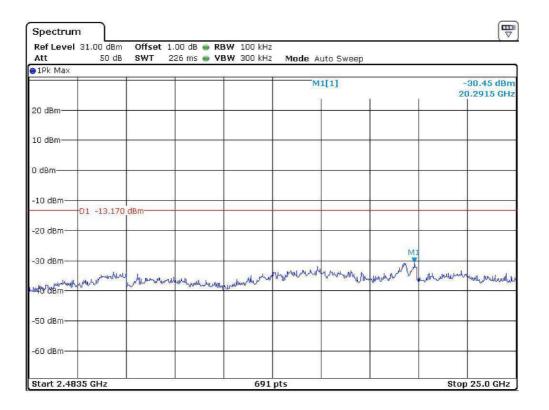


Spectrum			
Ref Level 31.00 dBm Att 50 dE			
1Pk Max		induc Paterri	J
		D1[1]	-42.63 dB -13.4590 MHz
20 dBm		M1[1]	7.29 dBm 2.4114620 GHz
10 dBm		A43	
0 dBm		WINNE	
-10 dBm		N	
-20 dBm			
-30 dBm			
-40 ABW - 10 mar 40000	and and a for a server the	Di wer V	my man monthly
-50 dBm-			
-60 dBm			
CF 2.4 GHz		691 pts	Span 60.0 MHz



Channel 06 (2437MHz) Reference Level: 6.83dBm

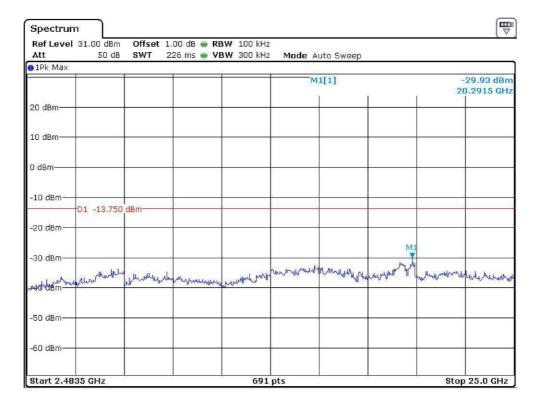
Spectrur	n								
Ref Level	31.00 dBm	Offset 1	.00 dB 🥌 R	BW 100 kHz					
Att	50 dB	SWT	24 ms 🧉 V	BW 300 kHz	Mode A	uto Sweep			
⊖1Pk Max	22			10					
			2		M	11[1]			37.28 dBm 218.00 MHz
20 dBm			<			-			
10 dBm		0	5		0				
0 dBm	24	2							- 10 - 5
-10 dBm	-D1 -13.170	dBm	8		a)				
-20 dBm			5		C			<u>1</u>	
-30 dBm	1	-	-						
149. dBmm	- 	b transfer a distant		which have and any	puttanna	Hick retorned we	and the states	har all the state	men ubortally bars
-50 dBm		-	<u> </u>		n			-	
-60 dBm									
Start 1.0	MHz			691	pts		02	Sto	p 2.4 GHz



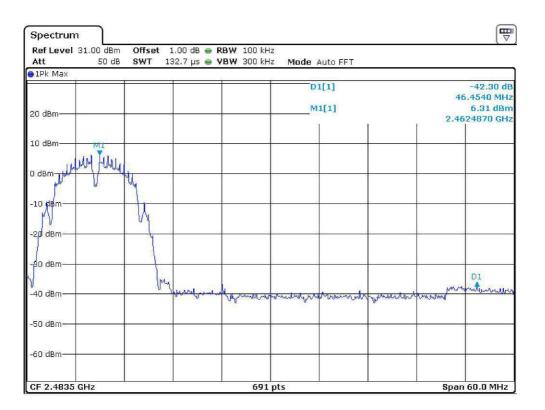


Channel 11 (2462MHz) Reference Level: 6.25dBm

Spectrum Ref Level 31.00 dBm Offset 1.00 dB 👄 RBW 100 kHz 50 dB SWT 24 ms 🥃 VBW 300 kHz Att Mode Auto Sweep 😑 1 Pk Max M1[1] -37.36 dBm 1.03040 GHz 20 dBm-10 dBm 0 dBm -10 dBm-D1 -13.750 dBm--20 dBm -30 dBm M1 7.49AdBaan American -50 dBm -60 dBm 691 pts Stop 2.4 GHz Start 1.0 MHz









802.11g

Channel 01 (2412MHz) Reference Level: 2.75dBm

Spectrum Ref Level 31.00 dBm Offset 1.00 dB 👄 RBW 100 kHz Att 50 dB SWT 24 ms 🥌 VBW 300 kHz Mode Auto Sweep ●1Pk Max M1[1] -31.78 dBm 2.39830 GHz 20 dBm-10 dBm 0 dBm -10 dBm-D1 -17.250 dBm--20 dBm--30 dBm 749 dBm 11 London Joseph Andre AllMaNifu -50 dBm -60 dBm Start 1.0 MHz Stop 2.4 GHz 691 pts Spectrum Ref Level 31.00 dBm Offset 1.00 dB 👄 RBW 100 kHz 50 dB 226 ms 🥌 YBW 300 kHz SWT Mode Auto Sweep Att 😑 1 Pk Max M1[1] -31.00 dBm 19.9005 GHz 20 dBm 10 dBm 0 dBm -10 dBm-D1 -17.250 dBm -20 dBm-M1 -30 dBm N Muships when the no would have have de why sha Mennight . Ha 40 dBm -50 dBm -60 dBm

Start 2.4835 GHz

691 pts

Stop 25.0 GHz



Spectrum				
		RBW 100 kHz VBW 300 kHz Mode	e Auto FFT	.
●1Pk Max		a		
			D1[1]	-32.76 dB
20 dBm			M1[1]	-7.1200 MHz 2.92 dBm 2.4069460 GHz
10 dBm				
0 dBm		ly ly	Rubertenburberburgerstiet	whenter
-10 dBm	6	+ +		
-20 dBm		+ +		
-30 dBm	an and the ange of the light have	DL DL		well would when
440.dBm.shaming	to a garried balling of and galling and			
-50 dBm			_	
-60 dBm				
CF 2.4 GHz				Span 60.0 MHz



Channel 06 (2437MHz) Reference Level: 4.81dBm

Att 1Pk Max	50 dB	SWT	24 ms 👜 V	BW 300 kHz	Mode A	uto Sweep			
JIEV MON	21		2		M	1[1]			38.00 dBr 367.30 MH
20 dBm									
10 dBm		0							
0 dBm	2.0	ă.							le.
-10 dBm—			8			-			
-20 dBm	D1 -15.190	dBm	8						-
-30 dBm	M1	-							
140.dapollul	MII .	and and a deal	and a Million	warmade M. Wy	munt	whentour and	when when when	the the strategy and the state	Atlanand faller an
-50 dBm			-						
-60 dBm			-						
Start 1.0	MHz			691	pts		×	Sto	p 2.4 GHz

	31.00 dBm		1.00 dB 🥌 R						
Att	50 dB	SWT	226 ms 🥌 🖌	BW 300 kHz	Mode A	uto Sweep			
1Pk Max		~		12 12					
					M	1[1]			-30.39 dBn
						1	ĭ	2	0.3235 GHz
20 dBm		-		+				-	
10 dBm									
0 dBm		5	- 2			2		0	200
-10 dBm		<i>.</i>	- P		0 0	-			
	D1 -15.190	dBm							-
-20 dBm			4					a	
20 0011									
							M.		
-30 dBm	0.00	0	we have been been a	1	CO M MARK		JUL .		
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-50 dBm									
a salit									
-60 dBm									20
Start 2.48			1	691	nte	ļ	1	Stor	25.0 GHz

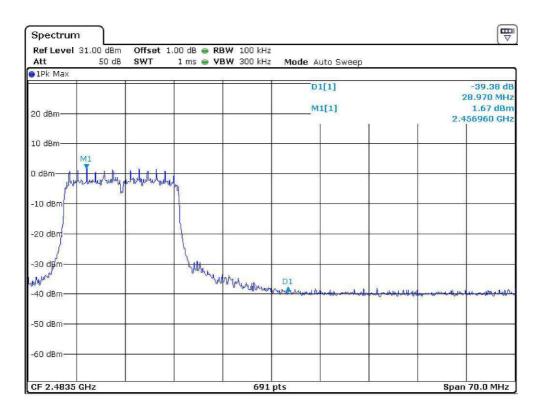


Channel 11 (2462MHz) Reference Level: 1.64dBm

Spectrur	n								
	31.00 dBm			RBW 100 kH					
Att	50 dB	SWT	24 ms 🥌	VBW 300 kH	z Mode A	auto Sweep			
●1Pk Max	12	Ê		~	0.0	11[1]		-0	7.71 dBm
						ITLT			0.90 MHz
20 dBm								2	
Lo dom									
10 dBm									
to abin			1-						
0 40									
0 dBm	2.	5	22			3		22.43	
-10 dBm	20								
	-D1 -18.360								
-20 dBm	DI -10.30U								
-30 dBm	-				-		-		
				MI					
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					100 100 100 100 100 100 100 100 100 100				
-50 dBm		ļ,		_	-				
-60 dBm		ļ		_	14				
Start 1.0		20	_		1 pts				2.4 GHz
Spectrur									₽
100	" 31.00 dBm	Offect	1 00 40 -	RBW 100 kH					[∇
Att	51.00 ubm 50 dB	SWT		VBW 300 kH		auto Sweep			
∋1Pk Max	116	05	0						
					IV	11[1]			0.20 dBm
						1	T I	20.	2915 GHz
20 dBm	-			_		-	-		
10 dBm					0		+ +		
0 dBm	2	-	-				+		
-10 dBm		-	8			8			
-20 dBm	-D1 -18.360	dBm							
2.9 9.90111									
-30 d8m							M1		

-30 dBm	a year and the	withoutubure	munit	moulder	Un portuber wood	homen	M. W. W. W. W.	e water with	hrhattanastat
-50 dBm									
-60 dBm		n , , , , , , , , , , , , , , , , , , ,			a				7)
Start 2.48	35 GHz	I		691	pts		12	Stop	25.0 GHz

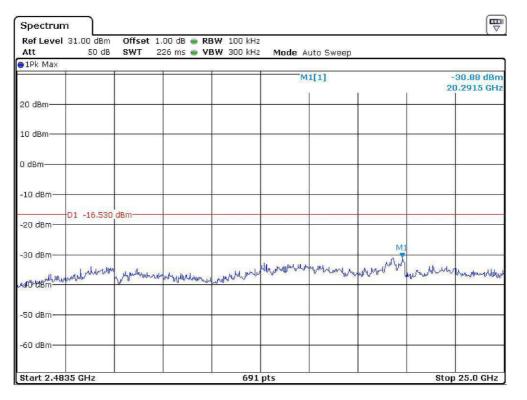






802.11n-HT20 Channel 01 (2412MHz) Reference Level: 3.47dBm

Spectrum Ref Level 31.00 dBm Offset 1.00 dB 🖷 RBW 100 kHz Att 50 dB SWT 24 ms 👄 🛛 🛛 🖉 🖉 🖉 24 ms Mode Auto Sweep ⊖1Pk Max M1[1] -32.21 dBm 2.39830 GHz 20 dBm 10 dBm 0 dBm -10 dBm D1 -16.530 dBm -20 dBm -30 dBm -40 dBod -50 dBm -60 dBm-Start 1.0 MHz 691 pts Stop 2.4 GHz





Spectrum			
	Offset 1.00 dB		
●1Pk Max			
		D1[1]	-34.17 dB -8.0750 MHz
20 dBm		M1[1]	2.65 dBm 2.4069460 GHz
10 dBm			
0 dBm		M1	Multarland
-10 dBm			
-20 dBm			
-30 dBm		W -	Monte aler ma
at a superior of the perior	our particular to White		
-50 dBm			
-60 dBm			
CF 2.4 GHz	691	pts	Span 60.0 MHz



Channel 06 (2437MHz) Reference Level: 3.89dBm

Spectrun	n								
Ne.	31.00 dBm	Offset 1	.00 dB 💩 RE	3W 100 kHz	8				(.)
Att	50 dB	SWT	24 ms 🧉 VE	3W 300 kHz	Mode At	uto Sweep			
⊖1Pk Max									
					M	1[1]			37.59 dBm
					1		í 1	1.	78720 GHz
20 dBm									
10 dBm									
0.10									
0 dBm								0	a S
-10 dBm		2			0 <u>8</u>			8	
	D1 -16.110	dam							
-20 dBm	DI -IU.IIU	aum						8	
-30 dBm									
		_					M1		
AldBorn	and the state of t		her was a start of the start of the	outradidually w	milliotuniciation	matchatration	have be been	-	and Aller
1									
-50 dBm									
eso abme									
-60 dBm	-								(j
Start 1.0 M	447	I		691	nts			Sto	p 2.4 GHz
uture 110				051	Pr. 2			010	<u>, , , , , , , , , , , , , , , , , , , </u>
									\frown
Spectrun	n]								
Ref Level	31.00 dBm	Offset 1	.00 dB 🍙 RE	3W 100 kHz					<u> </u>
Att	50 dB		26 ms 🥌 VE			uto Sweep			
😑 1 Pk Max	06	05			s				
					M	1[1]			30.57 dBm
					1	1		19	.7705 GHz
20 dBm									
1961 V.94 - 18000 Million									
10 dBm									
TO ARU-									
0 dBm									5

Spectrun	n]								
	31.00 dBm	Offset 1		W 100 kHz					<u> </u>
Att	50 dB	SWT 2	26 ms 👄 VE	3W 300 kHz	Mode A	uto Sweep			
TEN MAA					м	11[1]			30.57 dBm 9.7705 GHz
20 dBm									
10 dBm									
0 dBm		a							
-10 dBm									
-20 dBm	-D1 -16.110	dBm							
-30 dBm					a mu has I	No. Alexandre	MI		
WHO ABM	Muturnet	hurrandulung	haven have have a for the second s	while had the for the state of	Cull Mar V	of contact	whenev -	while when	ub yob march 11
-50 dBm		9			1			·	
-60 dBm									
Start 2.48	35 GHz			691	pts			Stop	25.0 GHz



Channel 11 (2462MHz) Reference Level: 1.87dBm

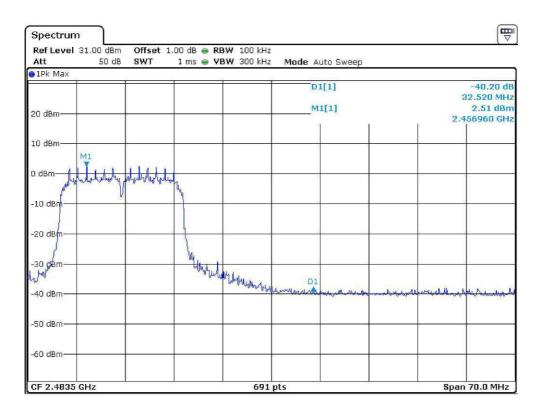
Spectrur	տ)								
	31.00 dBm 50 dB	SWT		RBW 100 kHz /BW 300 kHz		uto Cuison			
Att	50 UB	SWI	24 ms 🥌 🕻	BW SUU KHZ	MODE A	uto Sweep			
1Pk Max	1			1					00.00 ID
					M	1[1]			38.03 dBm
						n i	í	1	27.00 MHz
20 dBm		-						-	
10 dBm				_					
to abili									
0 dBm	2								a
-10 dBm			75				2	a	
-10 ubiii-									
	01 10 100	dD as							
-20 dBm	D1 -18.130	asm-							
20 40-									
-30 dBm		200							
		M1							
-40 dBay	the work and	ful and	- tal a the a plant and	and wall all and and and	molenne	Mr. Marily Martin	an alphana an	munerouter	chloricowica, a
						A			
-50 dBm									· · · · · · · · · · · · · · · · · · ·
-60 dBm			19	-			-		
Start 1.0	MHz	~		691	pts			Sto	p 2.4 GHz
Spectrur Ref Level	n 31.00 dBm	Offset	1.00 dB 👄 F	RBW 100 kHz	0				
Att	50 dB	SWT	226 ms 🥌 🛚	/BW 300 kHz	Mode A	uto Sweep			
a a million a second									
IPK Max	89								
1Pk Max	Ť	Ē	2		M	1[1]		.	30.68 dBm
91PK Max	21				м	1[1]			30.68 dBm).3235 GHz
					M	1[1]			
			-		M	1[1]	[
20 dBm					M	1[1]			
20 dBm					M	1[1]			
20 dBm					M	1[1]			
20 dBm 10 dBm					M	1[1]			
20 dBm 10 dBm					M	1[1]			
20 dBm 10 dBm 0 dBm					M	1[1]			
20 dBm 10 dBm 0 dBm					M	1[1]			
20 dBm 10 dBm 0 dBm					M	1[1]			
20 dBm 10 dBm 0 dBm -10 dBm	-01 -18.130	dBm			M	1[1]			
20 dBm 10 dBm 0 dBm -10 dBm	-D1 -18.130	dBm			M	1[1]			
20 dBm	-D1 -18.130	dBm-			M	1[1]	M	21	
20 dBm								21	
20 dBm						1[1]	. AN	21	0.3235 GHz
20 dBm 10 dBm -10 dBm -20 dBm				Willow Marker Partie		1[1]	. AN	21	
20 dBm 10 dBm -10 dBm -20 dBm	-D1 -18.130		Un Mercurylary			nuture and	. AN	21	0.3235 GHz
20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -30 dBm -30 dBm			Via Marueraper			1[1]	. AN	21	0.3235 GHz
20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -30 dBm -30 dBm						1[1]	. AN	21	0.3235 GHz
				Marala Palar		1[1]	. AN	21	0.3235 GHz

Start 2.4835 GHz

691 pts

Stop 25.0 GHz







Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 20dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

- [×] Not required, since all emissions are more than 20dB below fundamental
- [] See attached data sheet



Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b) (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.



Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

4.7 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD

Where	FS = Field Strength in dBμV/m
	RA = Receiver Amplitude (including preamplifier) in $dB\mu V$
	CF = Cable Attenuation Factor in dB
	AF = Antenna Factor in dB
	AG = Amplifier Gain in dB
	PD = Pulse Desensitization in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD

Example

Assume a receiver reading of 62.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB. The net field strength for comparison to the appropriate emission limit is 42 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 62.0 dBµV AF = 7.4 dB CF = 1.6 dB AG = 29.0 dB PD = 0 dB FS = 62 + 7.4 + 1.6 - 29 + 0 = 42 dBµV/m

Level in mV/m = Common Antilogarithm [(42 dB μ V/m)/20] = 125.9 μ V/m



Intertek Report No.: 190325034SZN-003

Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission (802.11g-Channel 06) at 4874.0MHz is passed by 8.2dB margin.

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf. Simultaneous transmission was considered during the test.

TEST PERSONNEL:

Sign on file

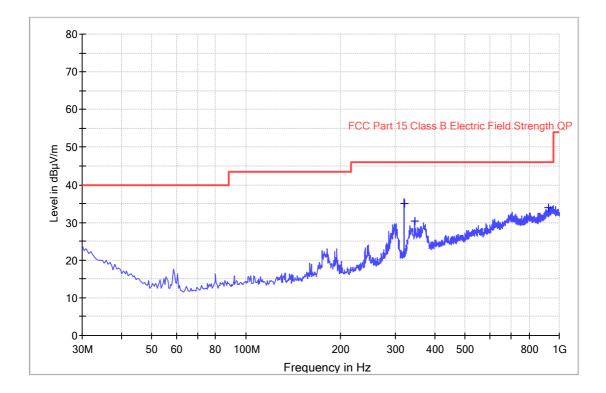
Winkey Wanq, Senior Project Engineer Typed/Printed Name

<u>16 August 2019</u> Date



Model: e371 Transmitting (802.11b-Channel 01)

ANT Polarity: Horizontal



Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
320.027000	35.1	1000.0	120.000	100	Н	16.1	10.9	46.0
351.029000	30.4	1000.0	120.000	100	Н	17.2	15.6	46.0
928.290000	34.2	1000.0	120.000	100	Н	26.5	11.8	46.0

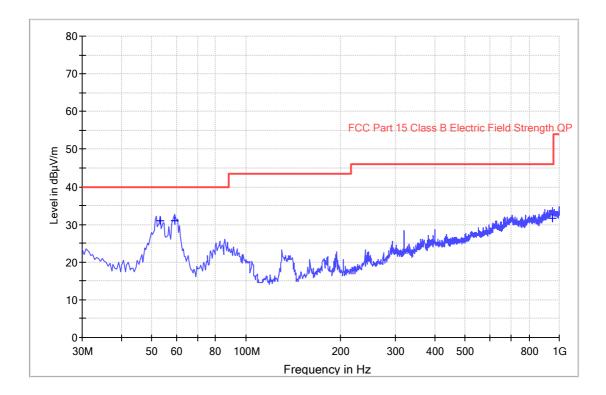
Remark:

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. QuasiPeak (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)
- 3. Margin (dB) = Limit Line($dB\mu V/m$) Level ($dB\mu V/m$)



Model: e371 Transmitting (802.11b-Channel 01)

ANT Polarity: Vertical



Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
52.731000	31.4	1000.0	120.000	100	V	8.5	8.6	40.0
59.233000	31.6	1000.0	120.000	100	V	8.1	8.4	40.0
935.395000	32.1	1000.0	120.000	100	V	26.7	13.9	46.0

Remark:

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. QuasiPeak (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)
- 3. Margin (dB) = Limit Line(dBµV/m) Level (dBµV/m)



Model: e371 Transmitting (802.11b-Channel 01)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	56.8	36.8	33.5	53.5	74.0	-20.5
Horizontal	*2390.000	56.5	36.4	29.1	49.2	74.0	-24.8

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	46.5	36.8	33.5	43.2	54.0	-10.8
Horizontal	*2390.000	39.8	36.4	29.1	32.5	54.0	-21.5

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz/VBW=10Hz for average value.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Model: e371 Transmitting (802.11b-Channel 06)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	58.0	36.7	33.4	54.7	74.0	-19.3
Horizontal	*7311.000	51.3	36.6	35.8	50.5	74.0	-23.5

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	47.9	36.7	33.4	44.6	54.0	-9.4
Horizontal	*7311.000	36.0	36.6	35.8	35.2	54.0	-18.8

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Model: e371 Transmitting (802.11b-Channel 11)

Radiated Emissions (above 1GHz)

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	Limit	(dB)
			Gain	(dB)	(dBµV/m)	at 3m	
			(dB)			(dBµV/m)	
Horizontal	*4924.000	56.7	36.8	33.3	53.2	74.0	-20.8
Horizontal	*7386.000	57.9	36.5	29.3	50.7	74.0	-23.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	46.6	36.8	33.3	43.1	54.0	-10.9
Horizontal	*7386.000	41.0	36.5	29.3	33.8	54.0	-20.2

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Model: e371 Transmitting (802.11g-Channel 01)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	58.4	36.8	33.5	55.1	74.0	-18.9
Horizontal	*2390.000	57.0	36.4	29.1	49.7	74.0	-24.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m	Margin (dB)
Horizontal	*4824.000	47.1	(dB) 36.8	33.5	43.8	<mark>(dBµV/m)</mark> 54.0	-10.2
Horizontal	*2390.000	41.5	36.4	29.1	34.2	54.0	-19.8

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz/VBW=10Hz for average value.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Model: e371 Transmitting (802.11g-Channel 06)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	58.4	36.7	33.4	55.1	74.0	-18.9
Horizontal	*7311.000	51.9	36.6	35.8	51.1	74.0	-22.9

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	49.1	36.7	33.4	45.8	54.0	-8.2
Horizontal	*7311.000	36.0	36.6	35.8	35.2	54.0	-18.8

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Model: e371 Transmitting (802.11g-Channel 11)

Radiated Emissions (above 1GHz)

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	Limit	(dB)
			Gain	(dB)	(dBµV/m)	at 3m	
			(dB)			(dBµV/m)	
Horizontal	*4924.000	58.2	36.8	33.3	54.7	74.0	-19.3
Horizontal	*7386.000	58.0	36.5	29.3	50.8	74.0	-23.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	47.4	36.8	33.3	43.9	54.0	-10.1
Horizontal	*7386.000	41.0	36.5	29.3	33.8	54.0	-20.2

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Model: e371 Transmitting (802.11n20-Channel 01)

Radiated Emissions (above 1GHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	55.8	36.8	33.5	52.5	74.0	-21.5
Horizontal	*2390.000	56.0	36.4	29.1	48.7	74.0	-25.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	46.5	36.8	33.5	43.2	54.0	-10.8
Horizontal	*2390.000	40.7	36.4	29.1	33.4	54.0	-20.6

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz/VBW=10Hz for average value.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Model: e371 Transmitting (802.11n20-Channel 06)

Radiated Emissions (above 1GHz)

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	Limit	(dB)
			Gain	(dB)	(dBµV/m)	at 3m	
			(dB)			(dBµV/m)	
Horizontal	*4874.000	56.4	36.7	33.4	53.1	74.0	-20.9
Horizontal	*7311.000	50.1	36.6	35.8	49.3	74.0	-24.7

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	46.5	36.7	33.4	43.2	54.0	-10.8
Horizontal	*7311.000	35.0	36.6	35.8	34.2	54.0	-19.8

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Model: e371 Transmitting (802.11n20-Channel 11)

Radiated Emissions (above 1GHz)

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	Limit	(dB)
			Gain	(dB)	(dBµV/m)	at 3m	
			(dB)			(dBµV/m)	
Horizontal	*4924.000	57.5	36.8	33.3	54.0	74.0	-20.0
Horizontal	*7386.000	57.9	36.5	29.3	50.7	74.0	-23.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	47.6	36.8	33.3	44.1	54.0	-9.9
Horizontal	*7386.000	42.9	36.5	29.3	35.7	54.0	-18.3

NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Intertek Report No.: 190325034SZN-003

Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

4.9 Conducted Emission

Worst Case Conducted Emission (802.11b-Channel 01) at 2.742MHz is passed by 7.7dB margin.

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: conducted photos.pdf.

TEST PERSONNEL:

Sign on file

Winkey Wanq, Senior Project Engineer Typed/Printed Name

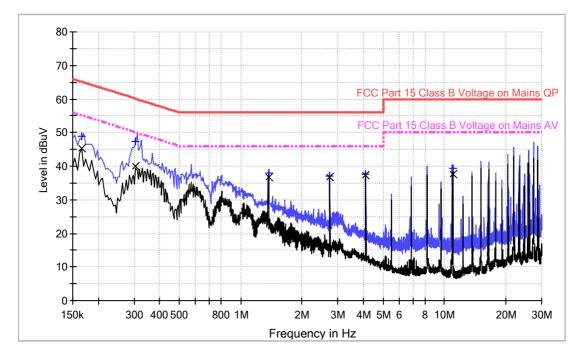
16 August 2019 Date



Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371 Worst Case Operating Mode: Transmitting (802.11b-Channel 01) Phase: Live

Graphic / Data Table

Conducted Emissions Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency	QuasiPeak	Bandwidth	Line	Corr.	Margin	Limit
(MHz)	(dBuV)	(kHz)		(dB)	(dB)	(dBuV)
0.166000	49.0	9.000	L1	9.7	16.2	65.2
0.306000	47.4	9.000	L1	9.5	12.7	60.1
1.370000	37.9	9.000	L1	9.4	18.1	56.0
2.742000	37.1	9.000	L1	9.4	18.9	56.0
4.114000	37.6	9.000	L1	9.4	18.4	56.0
10.962000	39.4	9.000	L1	9.6	20.6	60.0

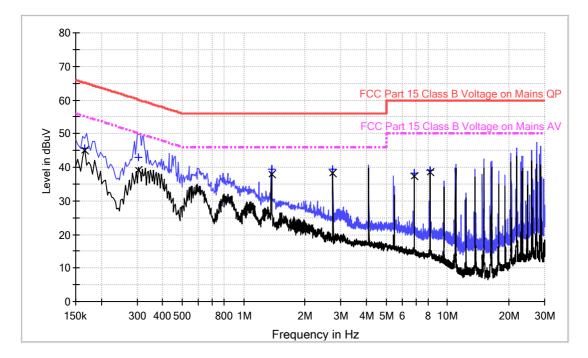
Limit and Margin AV

Frequency	Average	Bandwidth	Line	Corr.	Margin	Limit
(MHz)	(dBuV)	(kHz)		(dB)	(dB)	(dBuV)
0.166000	45.3	9.000	L1	9.7	9.9	55.2
0.306000	40.0	9.000	L1	9.5	10.1	50.1
1.370000	36.7	9.000	L1	9.4	9.3	46.0
2.742000	36.8	9.000	L1	9.4	9.2	46.0
4.114000	37.5	9.000	L1	9.4	8.5	46.0
10.962000	37.7	9.000	L1	9.6	12.3	50.0



Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371 Worst Case Operating Mode: Transmitting (802.11b-Channel 01) Phase: Neutral

Graphic / Data Table



Conducted Emissions Pursuant to FCC 15.207: Emissions Requirement

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.166000	45.6	9.000	N	9.6	19.6	65.2
0.306000	42.9	9.000	Ν	9.5	17.2	60.1
1.370000	39.3	9.000	N	9.3	16.7	56.0
2.742000	39.3	9.000	N	9.3	16.7	56.0
6.850000	38.2	9.000	N	9.4	21.8	60.0
8.222000	39.0	9.000	N	9.4	21.0	60.0

Limit and Margin AV

Frequency	Average	Bandwidth	Line	Corr.	Margin	Limit
(MHz)	(dBuV)	(kHz)		(dB)	(dB)	(dBuV)
0.166000	45.0	9.000	N	9.6	10.2	55.2
0.306000	39.2	9.000	N	9.5	10.9	50.1
1.370000	37.9	9.000	N	9.3	8.1	46.0
2.742000	38.3	9.000	N	9.3	7.7	46.0
6.850000	37.3	9.000	N	9.4	12.7	50.0
8.222000	38.6	9.000	N	9.4	11.4	50.0



Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

- 4.10 Radiated Emissions from Digital Section of Transceiver, FCC Ref: 15.109
- [] Not required No digital part
- [] Test results are attached
- [x] Included in the separated report.



Applicant: Shenzhen Asia Bright Industry Co., Ltd Date of Test: 16 August 2019 Model: e371

4.11 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The Transmitter ON time was determined from the resultant time-amplitude display:

	See attached spectrum analyzer chart (s) for Transmitter timing
	See Transmitter timing diagram provided by manufacturer
х	Not applicable, duty cycle was not used.



5.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.pdf & internal photos.pdf.

6.0 **Product Labeling**

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf.

7.0 <u>Technical Specifications</u>

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.

8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

9.0 <u>Confidentiality Request</u>

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.

10.0 Discussion of Pulse Desensitization

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF.*

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.



TEST REPORT

11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ182-02	RF Power Meter	Anritsu	ML2496A	1302005	28-May-2019	28-May-2020
SZ182-02-01	Power Sensor	Anritsu	MA2411B	1207429	28-May-2019	28-May-2020
SZ061-12	BiConiLog Antenna	ETS	3142E	00166158	14-Sep-2018	14-Sep-2019
SZ185-01	EMI Receiver	R&S	ESCI	100547	4-Jan-2019	4-Jan-2020
SZ061-08	Horn Antenna	ETS	3115	00092346	14-Sep-2018	14-Sep-2019
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	14-Sep-2018	14-Sep-2019
SZ061-06	Active Loop Antenna	Electro- Metrics	EM-6876	217	24-May-2019	24-May-2021
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	28-May-2019	28-May-2020
SZ056-06	Signal Analyzer	R&S	FSV 40	101101	28-May-2019	28-May-2020
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	15-Jan-2019	15-Jan-2020
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	15-Dec-2018	15-Dec-2020
SZ062-02	RF Cable	RADIALL	RG 213U		02-Jun-2019	02-Dec-2019
SZ062-05	RF Cable	RADIALL	0.04- 26.5GHz		02-Jun-2019	02-Dec-2019
SZ062-12	RF Cable	RADIALL	0.04- 26.5GHz		02-Jun-2019	02-Dec-2019
SZ067-04	Notch Filter	Micro-Tronics	BRM50702- 02		28-May-2019	28-May-2020
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	26-Oct-2018	26-Oct-2019
SZ187-01	Two-Line V- Network	R&S	ENV216	100072	26-Oct-2018	26-Oct-2019
SZ188-03	Shielding Room	ETS	RFD-100	4100	29-Oct-2018	29-Oct-2019