

FCC/IC – Test report					
Report Number	:	60/790.15.004.0	1	Date of Issue	: <u>April 1, 2015</u>
Model	:	Joule GPS Plus	5		
Product Type	<u>:</u>	GPS Bike Com	puter		
Applicant	:	DAYTON INDUS	STRIAL C	O.,LTD	
Address	: 2-12 Kwai Fat Road,11-A Kwai Chung,New Territories,Hong Kong				
Production Facility	:	KENDY ENTER	PISE LTD)	
Address	<u>:</u>	2-12 Kwai Fat R	oad,11-A	Kwai Chung,N	ew Territories,Hong Kong
Test Result	:	Positive	Negati	ve	
Total pages including Appendices	:	44			

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2. Details about the Test Laboratory

Details about the Test Laboratory

Test site 1 Company name:	TÜV SÜD HONG KONG LTD. 3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin HK.
Telenhone [.]	852 2776 1323

Fax: 85	52 2776 1372

Test site 2

Company name: Shenzhen Academy of Metrology and Quality Inspection No.4 TongFa Road, Xili TownNanshan District, Shenzhen, China Test Firm FCC Registration number:994606

> National Digital Electronic Product Test No.4 TongFa Road, Xili TownNanshan District, Shenzhen, China IC Assigned Code: 11177A



3. Description of the Equipment Under Test

Description of the Equipment Under Test

Product:	GPS Bike Computer
Model no.:	Joule GPS Plus
Serial number:	NIL
Options and accessories:	NIL
FCC ID:	O4GJ2BLE
IC:	7666A-J2BLE
Rated Voltage:	3.7 VDC
Rated Current:	NIL
Rated Power:	NIL
Frequency:	2402-2480MHz
RF Transmission Frequency:	2402-2480MHz
Antenna gain:	0 dBi
No. of Operated Channel:	40
Modulation:	GFSK
Description of the EUT:	Battery operated –Internal 3.7Vrechargable battery

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4. Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C, Intentional	PART 15 – RADIO FREQUENCY DEVICES
Radiators, 10-1-12 Edition	Subpart C – Intentional Radiators
RSS-Gen Issue 4	General Requirements and Information for the
November 2014	Certification of Radio Apparatus
RSS-210 Issue 8	RSS-210 — Licence-exempt Radio Apparatus (All
December 2010	Frequency Bands): Category I Equipment
	American National Standard of Procedures for
ANSI C63.10:2013	Compliance Testing of Unlicensed Wireless
	Devices

5. Mode of Operation

All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode

Mode 1: GFSK Continuous Transmitting Mode

Mode 2: BT Link Mode

Note:

The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "X axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.



6. Summary of Test Standards and Results

Emission Tests					
Test Condition	Pages	Toot oito	Test Result		
Test Condition	1 ages	1631 3116	Pass	Fail	N/A
AC Line Conducted Emissions					
FCC§15.207(a)	8	Site 2	\boxtimes		
RSS-GEN 8.8					
Spurious Emissions at Antenna Terminals	11	Site 2	\square		
FCC §2.1051 & §15.247(d)					
Spurious Radiated Emissions				_	_
FCC §15.205, §15.209 & §15.247(d)	25	Site 2	\bowtie		
RSS-GEN 6.13					
6 dB Bandwidth& 99%OBW				_	
FCC §15.247(a)(2)	30	Site 2	\bowtie		
RSS-GEN6.6& RSS 210 A8.2(a)					
Peak Output Power					
FCC §15.247(b)	35	Site 2	\bowtie		
RSS-GEN 6.12& RSS 210 A8.4(4)					
100 kHz Bandwidth of Band Edges		0.4			
FCC §15.247(d)	36	Site 2	\bowtie		
RSS 210 A8.5					
Power Spectral Density					
FCC §15.247(e)	38	Site 2	\bowtie		
RSS 210 A8.2(b)					
Antenna Requirements	42	Site 2	\square		
FCC §15.203					



7. General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: O4GJ2BLE complies with the FCC Part 15, Subpart C Rules.

This submittal(s) (test report) is intended for IC: 7666A-J2BLE, complies with the IC RSS 210 and RSS-GEN Rules.

All the configurations of the product were tested and only the worst test results are listed in the report.

SUMMARY:

All tests according to the regulations cited on page 6 were

- Performed
- □ Not Performed

The Equipment Under Test

- - Fulfills the general approval requirements.
- □ **Does not** fulfill the general approval requirements.

Sample Received Date:	February 15, 2015			
Testing Start Date:	March 5, 2015			
Testing End Date:	March 25, 2015			

- TÜV SÜD HONG KONG LTD. -

Reviewed by:







Edmond FUNG

CHAN Kwong Ngai

Report Number: 60/790.15.004.01

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8. Emission Test Results

8.1 AC Line Conducted Emissions

TEST CONFIGURATION



TEST PROCEDURE

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2014.
- 2. Support equipment, if needed, was placed as per ANSI C63.4-2014.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2014.
- 4. The EUT received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5. All support equipments received AC power from a second LISN, if any.
- 6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Test setup set: RBW=200 Hz VBW=1 KHz for 9 KHz to 150 KHz and RBW=9 KHz VBW=50 KHz for 150 KHz to 30MHz.
- 7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.

CONDUCTED POWER LINE EMISSION LIMIT

For unintentional device, according to § 15.207 and RSS-Gen Line Conducted Emission Limits is as following :

Engguarau	Maximum RF Line Voltage (dBμV)				
r requency (MHz)	CLASS A		CLA	SS B	
(MIIIZ)	Q.P.	Ave.	Q.P.	Ave.	
0.15 - 0.50	79	66	66-56*	56-46*	
0.50 - 5.00	73	60	56	46	
5.00 - 30.0	73	60	60	50	

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Test Result Passed
Not Passed

TEST RESULTS

Date of test	:	March 25, 2015
Test requirement	:	FCC §15.207
Test method	:	ANSI C63.4:2014
Operating mode	:	Transmit mode
Remarks	:	L line



Fraguanay	QP(d	BuV)	AV(dBuV)		
Frequency	Reading	Limit	Reading	Limit	
0.458	48.4	56.7	40.7	46.7	
1.222	38.6	56	33.2	46.0	
22.640	40.5	60	34.4	50.0	
/	/	/	/	/	
/	/	/	/	/	
/	/	/	/	/	

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Test Result ⊠ Passed □ Not Passed

Date of test	:	March 25, 2015
Test requirement	:	FCC §15.207
Test method	:	ANSI C63.4:2014
Operating mode	:	Transmit mode
Remarks	:	N line



Frequency	QP(d	BuV)	AV(dBuV)				
Frequency	Reading	Limit	Reading	Limit			
0.458	40.7	56.7	33.2	46.7			
22.600	37.7	60.0	31.9	50.0			
/	/	/	/	/			
/	/	/	/	/			
/	/	/	/	/			
/	/	/	/	/			



8.2 Spurious Emissions at Antenna Terminals

TEST CONFIGURATION



TEST PROCEDURE

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=100 kHz and VBW= 300 KHz to measure the peak field strength, and measure frequency range from 9 KHz to 26.5GHz.

LIMIT

1. Below -20dB of the highest emission level in operating band.

2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

TEST RESULTS

Date of test	:	March 9, 2015
Test requirement	:	FCC Part 15-15.247
Test method	:	ANSI C63.10:2013
Operating mode	:	Transmit mode
Frequency channel	:	2402MHz
Remarks	:	9kHz-25GHz (Conducted)

Test Result ⊠ Passed □ Not Passed







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A cilent See	atoria Analian	e Surant SA								
Aglient spe	RF	50 Ω AC		SE	NSE:INT		ALIGN AUTO	11:50:21 A	M Mar09, 2015	Eroquopov(
Center F	req 515	.000000	MHz PNO: Close IFGain:Low	→→ Trig: Fre #Atten: 2	e Run 20 dB	Avg Type Avg Hold:	: Log-Pwr : 100/100	TRAC TY D	CE 1 2 3 4 5 6 PE MWWWW ET P P P P P P	Frequency
10 dB/div	Ref Offs Ref 10	et 3.5 dB .00 dBm					Mk	r1 525.6 -66.4	82 MHz 38 dBm	Auto Tune
0.00										Center Freq 515.000000 MHz
-10.0									-19.15 dBn	Start Freq 30.000000 MHz
-30.0										Stop Freq 1.000000000 GHz
-40.0										CF Step 97.000000 MHz
-60.0	De auto estar es tarres	d la cal la cita con	annata alegadarata	anta) in control facilitate state	1		و و و و و و و و و و و و و و و و و و و	n all fin futbour	Antonia and public pr	Freq Offset
-80.0	en en gelen de la service de la service en en en gelen de la service de la servic	Greendig annest	ni da sa kula sa na na na karaka	n dana (that na hera (franta) n	Ni landutan Junu asa	an a	a a sur ci all'i a dalla da	steate, we enged as a	a de la cia de contrata	0 Hz
Start 30.0 #Res BW	0 MHz 100 kHz		#VI	300 kHz	 :	s	weep 5.	Stop 1. 333 ms (4	0000 GHz 10000 pts)	
MSG							STATU	s		



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N A 1 - 1 C											
Agilent Sp	Dectrum Analyz	er - Swept S	A		CE.	NCEINT		ALICN AUTO	11-E0-2E A	M Mor 00, 2015	
Center	Freq 4.9	91750	000 G	Hz NO: Close ↔ FGain:Low	Trig: Fre #Atten: 2	e Run 10 dB	Avg Type Avg Hold	: Log-Pwr : 40/100	TRAC TYI Di	DE 1 2 3 4 5 6 PE M	Frequency
10 dB/div	Ref Offs Ref 10	set 3.5 d).00 dB	B m					Mk	r1 4.804 -48.4	32 GHz 06 dBm	Auto Tune
0.00											Center Freq 4.991750000 GHz
-10.0										-19.15 dBn	Start Freq 2.483500000 GHz
-30.0											Stop Freq 7.50000000 GHz
-50.0					∮ ¹						CF Step 501.650000 MHz <u>Auto</u> Man
-60.0 -70.0 <mark>-1</mark> 994	hii tu uu kan ⁱⁿ			la alti de se altera la	an a	abadagi bali bali bali ba Mangagi ma ^{ndagi bali bali}) an thirthic an a _{Intern} ess an		n din naminina Anista _{k ka} natat	landad Hitelada Incelsi Mittelada	Freq Offset 0 Hz
-80.0											
Start 2.4 #Res BV	84 GHz V 100 kH;	z		#VBN	/ 300 kHz		s	weep 1	Stop 7 8.67 ms (4	.500 GHz 0000 pts)	
MSG								STATU	IS		



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Agil	lent Spec	trum Analy	zer - Swep	t SA			0.00	UCE-INT			11,50,49.4	M Mar 00, 2015	
Cent	Ior Ei	™ 17	5000				SEI	NSE:INT	Ava Tv	pe: Log-Pwr	TRA	DE 1 2 3 4 5 6	Frequency
Cont		cq I7	.3000	00000	PNO: Clo	ose ↔→	Trig: Fre	e Run	Avg Ho	ld: 38/100	TY	PE MWWWW	
					IFGain:L	ow	#Atten: 2	0 dB			D	ET P P P P P P	
										Mkr1	19.000 1	00 GHz	Auto Tune
10 AB	lidiu	Pof 1	0 00 d	as Rm							-60.5	85 dBm	
Log	nurv	Kerri	0.00 u	BIII									
													Center Fred
0.00													47 500000000 000-
0.00													17.50000000 GHZ
-10.0													Otart From
												10.15	StartFreq
-20.0												-19.15 dBn	15.00000000 GHz
20.0													
-30.0													Stop Freq
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-40.0													
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-70.0	สมนักส์สะ	<mark>اهاندي ريد. انس</mark>	n i a se a	a se a la constantina de la constantin La constantina de la c	والمتر والمتر		and the part of the local division of the lo	and the second state of th	للمتفاتل وفمعيين أد	Contraction of the second	P - 10	Colling of the state	0 47
													0112
-80.0													
00.0													
Start	15.0	00 GH	,								Stop 20	.000 GHz	
#Res	BW	100 kH	z		#	VBW	300 kHz			Sweep_1	8.67 ms (4	0000 pts)	
	- 44		_									pes/	
MSG										STATU	s		



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ted)

Test Result ⊠ Passed □ Not Passed

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🊺 Ag	jilent Spect	trum An	alyzer - Swe	pt SA									- 6 💌
Cen	L Iter Fr	_{RF}	5.0045	▲ DC 500 MH	Z	SEI	NSE:INT	Avg Type	ALIGN AUTO	11:52:32 A	M Mar 09, 2015 E <mark>1 2 3 4 5</mark> 6	Fr	equency
10 dE	B/div	Ref (Offset 3.8	5 dB d Bm	PNO: Fast ↔ IFGain:Low	#Atten: 2	e Run 0 dB	Avg Hold:	100/100	Mkr1 30 -65.8	1.4 kHz 23 dBm		Auto Tune
Log 0.00												(15	Center Freq 6.004500 MHz
-10.0 -20.0											-24.47 dBn		Start Freq 9.000 kHz
-30.0 -40.0												30	Stop Freq 0.000000 MHz
-50.0 -60.0	1-											2 <u>Auto</u>	CF Step 2.999100 MHz Man
-70.0	The second	ek.New.M	whatewrit	Whenton	na that an international state	hMuni ^{li} tingula	hadminikkan	landa Musilanad	ha Marka Jarsana	nuunuutu	arat/Mentiletaly.auto		Freq Offset 0 Hz
Star #Res	t9 kH sBW	z 100 l	Hz		#VBW	/ 300 kHz		s	weep 2.0	Stop 3 667 ms (4	0.00 MHz 0000 pts)		
MSG									STATUS	🗜 DC Cou	upled		

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🎉 Agilent	Spectrum Analy	zer - Swept SA									
IXI RL Cente	RF r Freg 51	50 Ω AC	∈ 0 MHz		SEI	NSE:INT	Avg Type	ALIGN AUTO	11:52:39 A TRAC	M Mar 09, 2015	Frequency
			PN0 IFG): Close ↔ ain:Low	Trig: Free #Atten: 2	e Run 0 dB	Avg Hold:	100/100	TY D	PE M WWWWW ET P P P P P P	
10 dB/di	Ref Of iv Ref 1	fset 3.5 dB 0.00 dBn	n					Mk	r1 686.5 -65.8	62 dBm	Auto Tune
0.00											Center Fred 515.000000 MHz
-10.0											
-20.0											Start Free 30.000000 MHz
-30.0										-24.47 dBh	Stop Fred
-40.0											1.000000000 GHz
-50.0											CF Step 97.000000 MHz
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-80.0	an an tai su an tai	men kann dêne a sene ta	in part in the	an in a season in statement	l (fi ^{nder} sterner og sen som s Till finder som sen som	la marata da p	Aller on a leaf all deals	ne (Contra) e de la factoria de la f	a and a start of the	<mark>i (1900), para da juan da minina da p</mark> er	
Start 3 #Res E	0.0 MHz 3W 100 kH	z		#VBW	/ 300 kHz			weep 5.	Stop 1.0 333 ms (4	0000 GHz 0000 pts)	
MSG								STATU	s		



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and a second																	20
M RI	ent Spect	rum Ana	lyzer - Si	wept SA					CER			ALIG		11-52-51	M Mar 09, 2015		×
Cent	er Fr	eq 4	.991	7500	00 G	HZ NO: Cl FGain:	ose ↔	. Trig #Att	: Free en: 2	e Run 0 dB	Avg T Avg H	Type: Lo lold: 44/	g-Pwr 100	TR4 TR4	CE 1 2 3 4 5 6 PE MWWWW DET P P P P P P	Frequency	
10 dB/	/div	Ref (Ref)ffset (10.00	3.5 dB I dBI	3 11								Mkr	1 4.880 -48.8	32 GHz 30 dBm	Auto Tu	ne
0.00																Center Fr 4.991750000 G	eq Hz
-10.0 -															-24.47 dBn	Start Fr 2.483500000 G	eq Hz
-30.0 -																Stop Fr 7.500000000 G	eq Hz
-50.0									1							CF Sto 501.650000 M <u>Auto</u> M	ep IHz 1an
-70.0	u de la la	landa ahri <mark>Hana ann</mark>	n hel (der) <mark>, (der (</mark> der)	n fin de Maria de se		uldustere <mark>augusteren</mark> g	u jindahara Managaran	an dard	din Julia National State	leange an the second		anang dada Mang talah	Hertenen ^{Mennen} tenen		n da jariki kariji D. Imelan distagan	Freq Offs 0	set Hz
-80.0																	
Start #Res	2.484 BW 1	GHz 100 k	z Hz				#VBN	/ 300	kHz			Swe	ep 18	Stop 3.67 ms (7.500 GHz 40000 pts)		
MSG													STATUS	5			



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Mail end Spectrum Analyser - Swept SA SENSE:INT ALIGN AUTO 11:53:05 AM Mar09, 2015 Frequency Center Freq 17:500000000 GHz PNO: Close +→ IFGainLow Trig: Free Run #Atten: 20 dB Avg Type: Log-Pwr Avg/Hold: 38/100 Trace 2:3:3:5 Det PPPPP Auto Tune 0.00 Ref Offset 3.5 dB 10 dB/div Mkr1 18.861 222 GHz -60.831 dBm Auto Tune Auto Tune 0.00 Image: Specific and the s	and a		_		_	_	_	_	_	_	
Center Freq 17.500000000 GHz PN0: Close ++ Trig: Free Run Avg Type: Log-Pwr Trace: 12.34.94 Preduction of the state of the sta	Agilent Sp	ectrum Analyze	r - Swept SA		CE	ICE-INT			11,52,05.4	M Mar 00, 2015	
Center Freq IFGainLow Trig: Free Run #Atten: 20 dB AvgHold: 38/100 Trig: Free Run Der PPPPP AvgHold: 38/100 Trig: Free Run Der PPPP Auto Tune 10 dB/div Ref Offset 3.5 dB Mkr1 18.861 222 GHz -60.831 dBm Auto Tune 000 Interview Interview Interview Interview Interview Interview Interview 10 dB/div Ref Offset 3.5 dB Interview Inte	Center	Fred 17 4			SEF	NSE:INT		Log-Pwr	11:53:05 A TRAC	M Maru9, 2015	Frequency
IFGein:Low #Atten: 20 dB Der PLP PP Auto Tune Auto Tune 10 dB/div Ref Offset 3.5 dB	Center		00000000	PNO: Close +++	Trig: Free	Run	Avg Hold: 38/100				
Ref Offset 3.5 dB Mkr1 18.861 222 GHz -60.831 dBm Auto Tune 0.00 -60.831 dBm -60.831 dBm Center Freq 17.50000000 GHz 100 -200 -200 -200 -200 -200 200 -200 <t< td=""><td></td><td></td><td></td><td>IFGain:Low</td><td>#Atten: 2</td><td>0 dB</td><td></td><td></td><td>ET P P P P P P</td><td></td></t<>				IFGain:Low	#Atten: 2	0 dB			ET P P P P P P		
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000 Image: state of the											Center Fred
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200	-10.0										
200 Image: state sta											Start Freq
 2447 dBr 2447 dBr 2447 dBr 2447 dBr 2447 dBr 20.0000000 GHz 20.00000000 GHz 20.0000000 GHz 20.000000 GHz 20.000000 GHz 20.000000 GHz 20.0000000 GHz 20.00000000 GHz 20.00000000 GHz 20.00000000 GHz<td>-20.0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>15.00000000 GHz</td>	-20.0										15.00000000 GHz
300 Image: state sta	20.0									-24.47 dBn	
300 Image: Stop Freq 20.00000000 GHz 400 Image: Stop Freq 20.00000000 GHz 500 Image: Stop Freq 20.00000000 GHz 600 Image: Stop Freq 20.00000000 GHz 700 Image: Stop Freq 20.00000000 GHz 600 Image: Stop Freq 20.0000000 GHz 700 Image: Stop Freq 20.00000000 GHz <td></td>											
4000 20.000000000 GHz 4000 20.000000000 GHz 4000 1 <td>-30.0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Stop Frea</td>	-30.0										Stop Frea
-400											20 00000000 GHz
-600 -1 <	-40.0										20.0000000000000
600 CF Step 600 1											
500 0 100 100 100 100 100 100 100 100 10											CF Step
Auto Man 200 Auto 200 Auto	-50.0										500.000000 MHz
-60 0 -70 0 -7								▲1			Auto Man
-70 0	-60.0							── ?	1		
-700 And the advector of the dark of the second	ويليد	منابقان مناجي	ni , dati , ati and	and the state of the second	a na superior de la competition	the load	alline of the	ala a palata a pa	and the second	internet Man Plan	
1900	70.0	e alta dan sabilar.	a na an ann an an an an an an an an an a	ويستخذ التكاو المترك الأتكلك كالارجاس	telefilite control to the state	والمعقف والمراجع	أأدادا وبالناز والتدرياتين	Na kilata manakili d	<mark>i Mahihi Masukati Nasa</mark>	a and the second se	Freq Offset
	SYOLO ALLAN										0 Hz
	-80.0										
Start 15.000 GHz Stop 20.000 GHz	Start 15.	.000 GHz							Stop 20	.000 GHz	
#Res BW 100 kHz #VBW 300 kHz Sweep 18.67 ms (40000 pts)	#Res BV	V 100 kHz		#VBW	/ 300 kHz		S	weep 18	3.67 ms (4	0000 pts)	
MSG STATUS	MSG							STATU	5		



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Test Result Passed Not Passed

Date of test	:	March 9, 2015
Test requirement	:	FCC Part 15-15.247
Test method	:	ANSI C63.10:2013
Operating mode	:	Transmit mode
Frequency channel	:	2480 MHz
Remarks	:	9kHz-25GHz (Conducted



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🎉 Agilent Spe	ctrum Analyzer - Swept SA	A								×
X/ RL Center F	RF 50 Ω <u>A</u> C	MHz	SEI	ISE:INT	Avg Type	LIGN AUTO	11:55:26 A TRA	M Mar 09, 2015	Frequency	
o criter i	104 10:004000	PNO: Fast ↔ IFGain:Low	Trig: Free #Atten: 2	e Run 0 dB	Avg Hold:	100/100	TY D	PE M WWWWW ET P P P P P P		
10 dB/div	Ref Offset 3.5 dE Ref 10.00 dB	3 m					Mkr1 28 -65.1	8.7 kHz 40 dBm	Auto Tu	INE
- ⁰ g									Center Fr	rec
0.00									15.004500 N	1Hz
10 N										
									Start Fr	rec
20.0								-20.70 dBn	9.000 k	(Hz
30.0									Oten Fr	
1									30.000000 N	rec //Hz
40.0										
50.0									CF St	tep
									<u>Auto</u> N	/an
-60.0 1										
70.0	able bet to be to a second	1 1 4 0 0 1 0 1 1 1	a alk talar		1.0.0.5.0	and a trans		Adv a level	Freq Offe	set
		ala da	AN ALAN AND AND AND AND AND AND AND AND AND A	alar tean alar	a da Alandara d Alandara da Alandara da Aland		ala ang ang ang ang ang ang ang ang ang an	nya pinanya anya	•	112
80.0										
Start 9 kH	7						Stop 3	0.00 MHz		
#Res BW	100 kHz	#VBW	/ 300 kHz		S	weep 2.	667 ms (4	0000 pts)		
ISG						STATUS	DC Co	upled		



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								t SA	alyzer - Swept	Spectrum /	Agilent
Frequency	1 Mar 09, 2015	11:55:39 AM	ALIGN AUTO		ISE:INT	SEN		AC	50 Ω	R	RL
		TYF	100/100	Avg Hold	e Run 0 dB	Trig: Free #Atten: 20	IZ IO: Close ↔ Gain:Low	UUUU GI PI IF	.70000	r Freq	enter
Auto Tune	51 GHz 15 dBm	1.240 3 -46.2	Mkr1					dB Bm	Offset 3.5 10.00 d	Re iv R e	lB/di
Center Freq											
1.700000000 GHz											[
Start Freq											\vdash
1.000000000 GHz	-20.70 dBn										╞
Stop Fred											L
2.400000000 GHz											
CF Step									•'		
140.000000 MHz <u>Auto</u> Man											'
Freq Offset 0 Hz	nghalaning ka balana di Nana sa	alisten over it plat over som som som	a de la d La de la d	ili dalama di tati Asiya dalama dalama				Roma (not) a septima National a section a section	, la gui la la	uti shika a) <mark>locita</mark>
									and the second second	in in the second second	.0
	000 GHz 0000 pts)	Stop 2.4 333 ms (4	weep 5.3			300 kHz	#VBW		Hz (Hz	.0000 (W 100	nt 1. es B
			STATUS								6



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								ot SA	Analyzer - Swe	ent Spectrum	Agile
Frequency	Mar 09, 2015	11:55:52 AM	ALIGN AUTO	A	NSE:INT	SEI	011-	AC	F 50 Ω		RL
	E M WWWWW P P P P P P P	TYP	40/100	Avg Hold	e Run 20 dB	Trig: Free #Atten: 2	CIEZ PNO: Close ↔→ FGain:Low	100000	11.2500	er Fred	ent
Auto Tune	99 GHz 53 dBm	14.774 -63.9	Mkr1					i dB IBm	f Offset 3.9 e f 10.00 (R /div R	dB
Center Free											ا "
11.25000000 GH											
Start Free	20 70 40-										
	-2112110940										3.0 =
Stop Fred 15.00000000 GH).0 -
).0 -
CF Step 750.000000 MH: Auto Mai).O
	1										1.0
Freq Offse 0 H	and the state of the state	a dell'Allander <mark>A statication della d</mark>	Million Strategy and the second	and knowledge of the	andana dahalad <mark>anta apinterinan</mark>	en de segne des de del Trada de la constant de	a <mark>ha alasta sala stat</mark> <mark>A hasa sa kata sa sa</mark>	adola philosofi Anna anna anna anna	normaniti dan Manananiti dan	nada (ing jarah ing Mangalan ang	0.0
											0.0
	000 CH-	Stop 15								7 500 /	
	0000 GH2 0000 pts)	.67 ms (4	weep 26	s	:	300 kHz	#VBW		HZ KHZ	BW 10	Res
			STATUS								



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Agilent Spec	trum Analyzer - Swep	et SA								
RL	RF 50 Ω		247	SEI	NSE:INT		LIGN AUTO	11:56:05 A	M Mar 09, 2015	Frequency
	leq 22.5000	F	NO: Close ↔ FGain:Low	Trig: Free #Atten: 2	e Run 0 dB	Avg Hold:	36/100	TY	PE MWWWWW ET P P P P P P	
0 dB/div	Ref Offset 3.5 Ref 10.00 c	dB I Bm					Mkr1	24.422 4 -56.7	486 GHz '64 dBm	Auto Tun
										Center Fre
).00										22.500000000 GH
0.0										Otort Era
0.0									-20.70 dBn	20.000000000 GH
0.0										Stop Fre
0.0										
50.0										CF Ste
20.0	. الطفر	. Janatha a s	الله		, tidal i	1	at efficient and the	and taken of the life in the	and the sector of the sector o	<u>Auto</u> Ma
Anna da	Under an Instantial States	and the state	a in the internet of the		in the second	n a bart a state a state na station i state de state	daha manina	Seale (Sealed a find) Aligned		Ener Offer
70.0				1 1 10						
80.0										
tart 20.0 Res BW	00 GHz 100 kHz		#VBW	300 kHz		s	weep 1	:Stop 2 / 18.67 ms	5.000 GHz 10000 pts)	
SG							STAT	บร		



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8.3 Spurious Radiated Emissions

TEST CONFIGURATION

Frequency range 9 KHz - 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz





TEST PROCEDURE

- 1. The EUT was placed on a turn table which is 0.8m above ground plane for below 1GHz and EUT was placed on a turn table which is 1.5m above ground plane with absorber refer to ANSI C63.10:2013
- 2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
- 3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 4. Repeat above procedures until all frequency measurements have been completed.
- 5 The EUT minimum operation frequency was 32.768 KHz and maximum operation frequency was 2480MHz.so radiated emission test frequency band from 9 KHz to 25GHz.
- 6. Test antenna was located distance from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used	Test Distance used
9KHz-30MHz	Loop Antenna	3m
30MHz-1GHz	Bilog Antenna	3m
1GHz-18GHz	Horn Antenna	3m
18GHz-26.5GHz	Horn Antenna	1m
26.5GHz-40GHz	Horn Antenna	1m

7. Set the spectrum analyzer/receiver in the following setting as:

9 KHz to 30MHz (Test Receiver):

RBW=200 Hz/VBW=1 KHz/Sweep=Auto/Dector: QP for 9 KHz to 150 KHz and RBW=9 KHz/VBW=120 KHz/Sweep=Auto/Dector: QP for 150 KHz to 30MHz

30MHz to 1 GHz (Test Receiver):

RBW=120 KHz/VBW=1MHz/Sweep=Auto/Dector: QP

Above 1 GHz (Spectrum analyzer)

a) Peak values: RBW=1MHz/VBW=3MHz/Sweep=Auto/Dector: Peak

b) Average values: RBW=1MHz/VBW=10Hz/Sweep=1s/Dector: Peak

RADIATION LIMIT

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table.

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Test Result Passed
Not Passed

Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	$20\log(30) + 40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST RESULTS

Date of test	:	March 24, 2015
Test requirement	:	FCC §15.205, §15.209 & §15.247(d)
Test method	:	ANSI C63.10:2013
Operating mode	:	Transmit mode
Frequency channel	:	2440MHz
Remarks	:	9kHz-1GHz (Radiated)

Frequency	Correct Factor	Result	Limit	Margin	Remark	Ant. Polar.
(MHZ)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		H / V
30.0	-35.9	16.8	40	-23.2	QP	Н
48.5	-33.4	17.1	40	-22.9	QP	Н
102.2	-34.7	16.5	43.5	-27.0	QP	Н
435.5	-39.8	23.4	46	-22.6	QP	Н
512.7	-28.4	24.7	46	-21.3	QP	Н
892.8	-22.5	31.4	46	-14.6	QP	Н
30.0	-37.3	20.2	40	-19.8	QP	V
48.5	34.3	16.7	40	-23.3	QP	V
102.2	-34.1	18.4	43.5	-25.1	QP	V
435.5	-30.7	20.9	46	-25.1	QP	V
512.7	-29.4	24.2	46	-21.8	QP	V
892.8	-23.2	29.8	46	-16.2	QP	V

Remark:

1. No emissions can be detected between 9 kHz and 30 MHz

2. All three channels (2042MHz, 2440MHzand2480MHz) were performed test, and the 2440MHz was the worst case.

3. Margin=Results-Limit



Test Result Passed

Test Result Passed

Not Passed

Not Passed

Date of test	:	March 24, 2015
Test requirement	:	FCC §15.205, §15.209 & §15.247(d)
Test method	:	ANSI C63.10:2013
Operating mode	:	Transmit mode
Frequency channel	:	2402MHz
Remarks	:	1GHz-25GHz (Radiated)

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
4804.000	58	-5.4	52.6	74.00	-21.4	peak	Н
4804.000	46.9	-5.4	41.5	54.00	-12.5	Average	Н
7202.000	59.6	-2.7	56.9	74.00	-17.1	peak	Н
7202.000	49.8	-2.7	47.1	54.00	-6.9	Average	Н
4804.000	61.2	-5.4	55.8	74.00	-18.2	peak	V
4804.000	47.9	-5.4	42.5	54.00	-11.5	Average	V
7204.000	56.1	-2.7	53.4	74.00	-20.6	peak	V
7206.000	46.6	-2.7	43.9	54.00	-10.1	Average	V

Date of test	:	March 24, 2015
Test requirement	:	FCC §15.205, §15.209 & §15.247(d)
Test method	:	ANSI C63.10:2013
Operating mode	:	Transmit mode
Frequency channel	:	2440MHz
Remarks	:	1GHz-25GHz (Radiated)

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
4880.000	55.2	-5.4	49.8	74.00	-24.2	peak	Н
4880.000	45.6	-5.4	40.2	54.00	-13.8	Average	Н
7320.000	55.3	-2.5	52.8	74.00	-21.2	peak	Н
7320.000	45.6	-2.5	43.1	54.00	-10.9	Average	Н
4880.000	56.9	-5.4	51.5	74.00	-22.5	peak	V
4880.000	45.2	-5.4	39.8	54.00	-14.2	Average	V
7318.000	54.9	-2.5	52.4	74.00	-21.6	peak	V
7318.000	48.1	-2.5	45.6	54.00	-8.4	Average	V

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Test Result

Not Passed

Date of test	:	March 24, 2015
Test requirement	:	FCC §15.205, §15.209 & §15.247(d)
Test method	:	ANSI C63.10:2013
Operating mode	:	Transmit mode
Frequency channel	:	2480MHz
Remarks	:	1GHz-25GHz (Radiated)

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
4960.000	56.7	-5.4	51.3	74.00	-22.7	peak	Н
4960.000	44.1	-5.4	38.7	54.00	-15.3	Average	Н
7440.000	51.7	-2.1	49.6	74.00	-24.4	peak	Н
7440.000	42.3	-2.1	40.2	54.00	-13.8	Average	Н
4960.000	57.8	-5.4	52.4	74.00	-21.6	peak	V
4960.000	46.4	-5.4	41.0	54.00	-13.0	Average	V
7440.000	55.3	-2.1	53.2	74.00	-20.8	peak	V
7440.000	41.7	-2.1	39.6	54.00	-14.4	Average	V

Remark:

- 2. The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable
- 4. The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
- 5. Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
- 6. Adjust the emission and slightly height of the antenna to locate the position with maximum reading.

7. Margin-=Results-Limit

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^{1.} The EUT was placed on the top of the turntable in test site area.



8.4 6dB & 99%Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=100 KHz and VBW=300 KHz.

The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB. According to KDB558074 D01 V03 for one of the following procedures may be used to determine the modulated DTS device signal bandwidth.

1. Set RBW = 100 kHz.

- 2. Set the video bandwidth (VBW) = 300 KHz.
- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.

7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

8. Measure the maximum width of the emission that use 99% occupied bandwidth function.

TEST RESULTS

See next page



Date of test	:	March 9, 2015	March 9, 2015					
Test requirement	:	FCC §15.247(a)(2)	Not Passed					
Test method	:	ANSI C63.10:2013 and KDB558074						
Operating mode	:	Transmit mode						
Frequency channel	:	2402MHz						
Remarks	:	6dB and 99% Bandwidth (Conducted)						
Frequency (MHz)		6dB Bandwidth (kHz)	99% Bandwidth (kHz)	Limit (kHz)				

2		680.9			104	17.9			>500
🎉 Agilent Spectrum Anal	yzer - Occupied BW								
Contor From 2	50 Ω AC		SENSE:INT	2000000 GHz	ALIGN AUTO	11:49:16 Radio St	AM Mar 09, 2015	Frequency	
Center Freq 2.	402000000 G		Trig: Free Run	Avg Hol	d:>10/10	Rudio St			
	#1	FGain:Low	#Atten: 20 dB			Radio De	vice: BTS		
Re	f Offset 3.5 dB								
10 dB/div Re	ef 13.50 dBm								
Log								0	
0.50			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					CenterFreq	
-6.50				and a second				2.40200000 GHZ	
-16.5		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							
-26.5	and a second second				- Anno				
-36.5						- why	wasana		
-46.5									
-56.5									
-66.5									
-76.5									
Center 2.402 G	Hz					S	pan 3 MHz	CF Step	
#Res BW 100 k	HZ		#VBM 30) KHZ		sweep	1.067 ms	300.000 kHz	
Occupied	Bandwidth		Total	Power	6.72	2 dBm		<u>Auto</u> Man	
Occupieu	Danuwiuli	170 141			0.11				
	1.04	479 MIF	1Z					Freq Offset	
Transmit Fr	eq Error	34.622 k	Hz OBW	Power	99	9.00 %		0 Hz	
v dB Bondu	idth	600 0 L	Un vdD		e	00 48			
	iuui	000.3 K			-0.	00 UB			
MSG					STATU	S			



Date of test	:	March 9, 2015	March 9, 2015					
Test requirement	:	FCC §15.247(a)(2)	FCC §15.247(a)(2)					
Test method	:	ANSI C63.10:2013 and KDB	ANSI C63.10:2013 and KDB558074					
Operating mode	:	Transmit mode						
Frequency channel	:	2440MHz	2440MHz					
Remarks	:	6dB and 99% Bandwidth (Conducted)						
Frequency		6dB Bandwidth	99% Bandwidth	Limit				
(MHz)		(kHz) (kHz) (kHz)						

102	676.4		1040.8		>
Agilent Spectrum Analyzer - Oc	cupied BW				
Center Freq 2.4400	000000 GHz #IFGain:Low #Atter	r Freq: 2.440000000 GHz Free Run Avg Hold 1: 20 dB	ALIGN AUTO 11:52: Radio 1 1: 10/10 Radio 1	Std: None	Frequency
Ref Offse 10 dB/div Ref 13.4 Log	t 3.5 dB 50 dBm				
3.50 -6.50					Center Freq 2.440000000 GHz
-18.5 -26.5 -36.5			have been and the second secon		
-46.5				Jonaho and Ala	
-66.5					
Center 2.44 GHz #Res BW 100 kHz	#	VBW 300 kHz	Swee	Span 3 MHz p 1.067 ms	CF Step 300.000 kHz
Occupied Band	dwidth 1.0408 MHz	Total Power	1.88 dBm		Freg Offset
Transmit Freq Er	tor 34.029 kHz	OBW Power	99.00 %		0 Hz
x dB Bandwidth	676.4 kHz	x dB	-6.00 dB		



Date of test	:	March 9, 2015	Test Result					
Test requirement	:	FCC §15.247(a)(2)	FCC §15.247(a)(2)					
Test method	:	ANSI C63.10:2013 and KDB	ANSI C63.10:2013 and KDB558074					
Operating mode	:	Transmit mode						
Frequency channel	:	2480MHz						
Remarks	:	6dB and 99% Bandwidth (Conducted)						
Frequency		6dB Bandwidth	99% Bandwidth	Limit				
(MHz)		(kHz)	(kHz)	(kHz)				
2402		680.4 1100.2 >500						

2402		680.4		1100.2		>500
Magilent Spectrum Ani	alyzer - Occupied BW 50 Ω AC .480000000 G #I	Hz Cente FGain:Low #Atter	SENSE:INT r Freq: 2.48000000 GHz Free Run Avg Hol n: 20 dB	ALIGN AUTO 11:54: Radio d: 10/10 Radio	54 AM Mar 09, 2015 Std: None Device: BTS	Frequency
10 dB/div R Log .000 -10.0	ef Offset 3.5 dB ef 10.00 dBm					Center Freq 2.480000000 GHz
-200 -30.0 -40.0 -50.0 -60.0						
-70.0 -80.0 Center 2.48 GI #Res BW 100	Hz kHz	#	VBW 300 kHz	Swee	Span 3 MHz p 1.067 ms	CF Step
Occupied	Bandwidth 1.1(002 MHz	Total Power	5.85 dBm		Auto Man Freq Offset 0 Hz
x dB Bandv	vidth	680.4 kHz	x dB	-6.00 dB		
MSG				STATUS		



TEST CONFIGURATION Power Sensor EUT **TEST PROCEDURE** According to KDB558074 D01 DTS Measurement Guidance Section 9.1 Maximum peak conducted output power, 9.1.1. The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector. LIMIT The Maximum Peak Output Power Measurement is 30dBm. **TEST RESULTS** Test Result Date of test March 9, 2015 : \square Passed Not Passed **Test requirement** FCC §15.247(b) : Test method ANSI C63.10:2013 and KDB558074 : **Operating mode Transmit mode** : **Frequency channel** 2402/2440/2480MHz : Remarks **Peak Output Power (Conducted)** :

Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)
2402	-1.60	30
2440	-2.42	30
2480	-3.42	30

Note: The relevant measured result has the offset with cable loss already.

Peak Output Power Measurements

8.5

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8.6 100 kHz Bandwidth of Band Edges

TEST CONFIGURATION



TEST REQUIREMENT

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

TEST PROCEDURE

- 1. The EUT was placed on a turn table which is 1.5m above ground plane with absorber refer to ANSI C63.10:2013
- 2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
- 3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 4. Repeat above procedures until all frequency measurements have been completed.
- 5. Test antenna was located 3 distances from the EUT on an adjustable mast.
- 6. Set the spectrum analyzer/receiver in the following setting as:

Above 1 GHz (Spectrum analyzer)

- a) Peak values: RBW=1MHz/VBW=3MHz/Sweep=Auto/Dector: Peak
- b) Average values: RBW=1MHz/VBW=10Hz/Sweep=1s/Dector: Peak

LIMIT

Below -20dB of the highest emission level in operating band. Radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)

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Test Result Passed
Not Passed

TEST RESULTS

Date of test	:	March 25, 2015
Test requirement	:	FCC §15.247(d)
Test method	:	ANSI C63.10:2013
Operating mode	:	Transmit mode
Frequency channel	:	2402MHz & 2480MHz
Remarks	:	Bandwidth of Band Edges (Radiated)

Channel	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
	2390	52.1	74.00	-21.9	peak	Н
24021411-	2390	39.5	54.00	-14.5	Average	Н
2402MHZ	2390	50.8	74.00	-23.2	peak	V
	2390	37.7	54.00	-16.3	Average	V
	2483.5	51.4	74.00	-22.6	peak	Н
2480MUz	2483.5	40.5	54.00	-13.5	Average	Н
2400IVITIZ	2483.5	52.2	74.00	-21.8	peak	V
	2483.5	39.6	54.00	-14.4	Average	V

Remark:

- 1. The EUT was placed on the top of the turntable in test site area.
- 2. The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable
- 4. The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
- 5. Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
- 6. Adjust the emission and slightly height of the antenna to locate the position with maximum reading.

7. Margin-=Results-Limit



8.7 Power Spectral Density

TEST CONFIGURATION



TEST PROCEDURE

- 1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
- 2. Set the RBW = 3 kHz.
- 3. Set the VBW = 10 KHz.
- 4. Set the span to 1.5 times the DTS channel bandwidth.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum power level.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
- 11. The resulting peak PSD level must be 8 dBm.

LIMIT

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST RESULTS

See next page.

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Date of test	:	March 9	0, 2015	Test Result					
Test requirement	:	FCC §1:	FCC §15.247(e)						
Test method	:	ANSI C	63.10:2013 and KDB558074						
Operating mode	:	Transm	Transmit mode						
Frequency channel	:	2402MHz							
Remarks	:	Power S	Power Spectral Density (Conducted)						
Enggueneu			DCD	Limit					





Note: The relevant measured result has the offset with cable loss already.

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Date of test	:	March 9, 2015	i	Test Result				
Test requirement	:	FCC §15.247(e)	Not Passed				
Test method	:	ANSI C63.10:2	ANSI C63.10:2013 and KDB558074					
Operating mode	:	Transmit mode						
Frequency channel	:	2440MHz						
Remarks	:	Power Spectral Density (Conducted)						
Frequency	V		PSD	Limit				



Note: The relevant measured result has the offset with cable loss already.

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Date of test	:	March 9, 2015	Test Result	
Test requirement	:	FCC §15.247(e)	☑ Passed ☑ Not Passed	
Test method	:	ANSI C63.10:2013 and KDB558074		
Operating mode	:	Transmit mode		
Frequency channel	:	2480MHz		
Remarks	:	Power Spectral Density (Conducted)		
Frequency		PSD	Limit	



Note: The relevant measured result has the offset with cable loss already.

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8.8 Antenna Requirement

LIMIT

For intentional device, according to 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Antenna Connector Construction

The antenna used in this product is PCB antenna. And the maximum Gain of this antenna is 0.0 dBi.

Measurement Parameters

Measurement Parameter			
Detector	Peak		
Sweep time	Auto		
RBW	3 MHz		
VBW	10 MHz		
Trace	Max hold		

TEST RESULTS

	Low Channel	Middle Channel	High Channel
Conducted power (dBm)	-1.60	-2.42	-3.42
Radiated power (dBm)	-1.80	-2.54	-3.55
Gain (dB)	-0.20	-0.12	-0.13
Measurement uncertainty	±1.5dB(Cond.)/3dB(Rad.)		



Test Equipment List 9.

Radiated Emission				
Description	Type No.	Serial No.	Calibrated date	Calibrated until
EMI Test Receiver	ESU40	SB8501/09	2014.05.16	2015.05.15
Bilog Antenna	Schwarzbeck	SB8501/04	2015.01.12	2016.01.11
Horn Antenna	HF906	SB3435	2015.01.12	2016.01.11
Amplifier(1-18GHz)		SB3435/01	2015.01.12	2016.01.11
Amplifier(18-40GHz)		SB3435/02	2015.01.12	2016.01.11
Horn Antenna	AT4560	SB5392/02	2014.05.16	2015.05.15
3m Semi-anechoic cham	ber 9X6X6	SB3450/01	2014.10.12	2015.10.11
Loop Antenna	6512	29604	2014.09.25	2015.09.24
RF cable(3.5m)	/	S02-1404-09-047	2014.05.11	2015.05.10
RF cable(1.2m)	/	S02-1404-09-052	2014.05.11	2015.05.10
Test Software	EMC32	N/A	N/A	N/A
Radiated Bandedge Emis	sion			
Description	Type No.	Serial No.	Calibrated date	Calibrated until
EMI Test Receiver	ESU40	SB8501/09	2014.05.16	2015.05.15
Horn Antenna	HF906	SB3435	2014.01.20	2017.01.19
Amplifier(1-18GHz)		SB3435/01	2014.01.20	2015.01.19
3m Semi-anechoic cham	ber 9X6X6	SB3450/01	2014.10.12	2015.10.11
RF cable(3.5m)	/	S02-1404-09-047	2014.05.11	2015.05.10
RF cable(1.2m)	/	S02-1404-09-052	2014.05.11	2015.05.10
Test Software	EMC32	N/A	N/A	N/A
6dB & 99% bandwidth	measurement & Power	Spectral Density		
Description	Type No.	Serial No.	Calibrated date	Calibrated until
RF cable(0.4m)	/	S02-1404-09-065	2014.05.11	2015.05.10
Spectrum Analyzer	N9020A	MY53420615	2014.05.12	2015.05.11
			·	•
AC Conducted Emission measurement				
Description	Type No.	Serial No.	Calibrated date	Calibrated until
Test Receiver	ESCS	SB3319	2014.05.16	2015.05.15
LISN	ESH2-Z5	SB3321	2014.05.16	2015.05.15
LISN	ESH2-Z5	SB2604	2014.05.16	2015.05.15
Test Software	ESK1	N/A	N/A	N/A
RF cable(1.0m)	/	S02-1404-09-055	2014.05.11	2015.05.10
· · · · · ·				
Peak Power measurem	nent			
Description	Type No.	Serial No.	Calibrated date	Calibrated until
Power Sensor	U2021XA	MY53180015	2014.05.24	2015.05.23
Power Sensor	U2021XA	MY53260040	2014.05.24	2015.05.23
Power Sensor	U2021XA	MY53360002	2014.05.24	2015.05.23
Power Sensor	U2021XA	MY53360006	2014.05.24	2015.05.23
USB Modular				
Simultaneous Data	U2531A	TW53353509	N.C.R	/
Acquisition				

N.C.R: No calibration request.

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10. System Measurement Uncertainty

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

System Measurement Uncertainty

Items		Extended Uncertainty	
RE	Field strength ($dB\mu V/m$)	U=3.59dB(9kHz-30MHz) U=5.08dB(30MHz-1GHz) U=4.56dB (1GHz-18GHz) U=4.42dB (18GHz-25GHz)	
CE	Disturbance Voltage (dBµV)	U=2.7dB	

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