

Produkte
Products

Prüfbericht - Nr.: 14034088 001			Seite 1 von 12		
<i>Test Report No.:</i>			<i>Page 1 of 12</i>		
Auftraggeber: <i>Client:</i>		ConnecteDevice Ltd. 8F, Tai Yip Building 141 Thomson Road, Wanchai Hong Kong			
Gegenstand der Prüfung: <i>Test Item:</i>		Bluetooth Low Energy Smart Watch			
Bezeichnung: <i>Identification:</i>	COGITO CD002	Serien-Nr.: <i>Serial No.:</i>	Engineering sample		
Wareneingangs-Nr.: <i>Receipt No.:</i>	00130916268-001	Eingangsdatum: <i>Date of Receipt:</i>	16.09.2013		
Prüfört: <i>Testing Location:</i>	TÜV Rheinland Hong Kong Ltd. 8/F, First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong Global United Technology Services Co., Ltd. 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>		Test sample(s) is/are not damaged and suitable for testing.			
Prüfgrundlage: <i>Test Specification:</i>	FCC Part 15 Subpart C RSS-210 Issue 8 RSS-Gen Issue 3 ANSI C63.4-2003 CISPR 22:1997				
Prüfergebnis: <i>Test Results:</i>	Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and passed .				
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland Hong Kong Ltd. 8 - 10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay Kowloon, Hong Kong				
geprüft/ tested by:		kontrolliert/ reviewed by:			
21.03.2014 Hugo Wan Senior Project Manager 		21.03.2014 Sharon Li Section Manager 			
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>
Sonstiges: FCCID: QITCD002 IC: 7343A-CD002					
Other Aspects					
Abkürzungen: P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet			Abbreviations: P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested		
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>					

Table of Content

	Page
Cover Page	1
Table of Content	2
Product information.....	3
Manufacturers declarations	3
Product function and intended use	3
Submitted documents.....	3
Remark	3
List of Test and Measurement Instruments.....	4
Results FCC Part 15 – Subpart C / RSS-Gen, RSS-210	5
FCC 15.203 / RSS-Gen 7.1.2 – Antenna Requirement 1	Pass..... 5
FCC 15.204 / RSS-Gen 7.1.2 – Antenna Requirement 2	Pass..... 5
RSS-Gen 5.4 – Transmitter External Control.....	Pass..... 5
FCC 15.207 / RSS-Gen 7.2.4 – Disturbance Voltage on AC Mains.....	N/A..... 5
FCC 15.247 (a)(2) / RSS-210 A8.2 (a) – 6dB Bandwidth Measurement	Pass..... 6
FCC 15.247 (b) (1), (3) / RSS-210 A8.4 (4) – Maximum Peak Output Power	Pass..... 7
FCC 15.247 (d) / RSS-210 A8.5 – Spurious Conducted Emissions.....	Pass..... 8
FCC 15.247 (d) / RSS-Gen 7.2.2, 7.2.5 – Spurious Radiated Emissions.....	Pass..... 9
FCC 15.247 (d) / RSS-210 A8.5 – Band Edge Emissions	Pass..... 11
FCC 15.205 / RSS-Gen 7.2.2 – Restricted Bands Next to The Band Edge	Pass..... 11
FCC 15.247 (e) / RSS-210 A8.2 (b) – Power Spectral Density	Pass..... 12
Appendix 1 – Test protocols	14 pages
Appendix 2 – Test setup	2 pages
Appendix 3 – Photo documentation	7 pages
Appendix 4 – Product documentation	10 pages

Product information

Manufacturers declarations

	Transceiver BLE Mode
Operating frequency range	2402 - 2480 MHz
Type of modulation	GFSK
Number of channels	40
Channel separation	2 MHz
Type of antenna	Chip Antenna
Antenna gain (dBi)	3.1
Power level	fix
Type of equipment	stand alone radio device
Connection to public utility power line	No
Nominal voltage	V _{nor} : 3.0 VDC
Independent Operation Modes	Transmitting Receiving

Product function and intended use

The COGITO is a Bluetooth connected watch with analog movement that connects with the iPhone and android device with the following features

- Notifications for incoming calls, missed calls, text messages, calendar reminders, etc
- Remind when the device is out of range or at critical battery level
- Locate the watch by pressing the 'find my watch icon' in COGITO WATCH app.

For details, please refer to the datasheet.

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User manual

Remark

Special accessories and auxiliary equipment

Nil

List of Test and Measurement Instruments

Global United Technology Services Co., Ltd.

(FCC Registration number: 600491, IC Registration number: 9079A-2)

Equipment	Manufacturer	Type	S/N	Cal Due Date
3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	--	05 Apr 2015
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	--	N/A
ESU EMI Test Receiver	R&S	ESU26	--	28 Jun 2014
Loop Antenna	Zhinan	ZN30900A	--	28 Jun 2014
Bi-log Hybrid Antenna	SCHWARZBECK	VULB9163	--	08 Mar 2015
Double-ridged horn antenna	SCHWARZBECK	9120D	--	08 Mar 2015
Horn Antenna	ETS-LINDGREN	3160-09	--	08 Mar 2015
RF Amplifier	HP	8347A	--	28 Jun 2014
RF Amplifier	HP	8349B	--	28 Jun 2014
EMI Test Software	AUDIX	E3	--	N/A
Coaxial cable	GTS	N/A	--	28 Jun 2014
Coaxial Cable	GTS	N/A	--	28 Jun 2014
Thermo meter	N/A	N/A	--	30 Jun 2014

TÜV Rheinland Hong Kong Ltd.

Equipment	Manufacturer	Type	S/N	Cal Due Date
Spectrum Analyzer	Rohde & Schwarz	FSP30	100007	03 Dec 2014

Results FCC Part 15 – Subpart C / RSS-Gen, RSS-210

FCC 15.203 / RSS-Gen 7.1.2 – Antenna Requirement 1		Pass
FCC Requirement:	No antenna other than that furnished by the responsible party shall be used with the device	
IC Requirement:	A transmitter can only be sold or operated with antennas with which it was approved. Any antenna of the same type having equal or lesser gain as an antenna that had been successfully tested with the transmitter, will also be considered approved with the transmitter, and may be used and marketed with the transmitter.	
Results:	Permanent attached antenna	
Verdict:	Pass	

FCC 15.204 / RSS-Gen 7.1.2 – Antenna Requirement 2		Pass
FCC Requirement:	Provide information for every antenna proposed for the use with the EUT	
IC Requirement:	When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer.	
Results:	a) Antenna type: Chip Antenna b) Manufacturer and model no: N.A. c) Gain with reference to an isotropic radiator: 3.1 dBi	
Verdict:	Pass	

RSS-Gen 5.4 – Transmitter External Control		Pass
IC Requirement:	The device shall not have any external controls accessible to the user that enable it to be adjusted, selected or programmed to operate in violation of the limits prescribed in the applicable RSS.	
Results:	The device does not have any transmitter external controls accessible to the user that can be adjusted and operated in violation of the limits of this standard.	
Verdict:	Pass	

FCC 15.207 / RSS-Gen 7.2.4 – Disturbance Voltage on AC Mains		N/A
The EUT does not have AC mains power input power, hence this test is not applicable.		

FCC 15.247 (a)(2) / RSS-210 A8.2 (a) – 6dB Bandwidth Measurement			Pass
FCC Requirement: Systems using digital modulation techniques may operate in the 902 – 928 MHz, 2400 – 2483.5 MHz, and 5725 – 5850 MHz bands. The minimum 6dB bandwidth shall be at least 500kHz.			
IC Requirement: The minimum -6 dB bandwidth shall be at least 500 kHz.			
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 / RSS-Gen Mode of operation : BLE Tx mode, (2402MHz, 2440MHz, 2480MHz) Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 100KHz/ 300KHz Supply voltage : 3.0 VDC from DC power supply Temperature : 23°C Humidity : 50%			
Results: For test protocols please refer to Appendix 1, page 2-3.			
Channel frequency (MHz)	6 dB left (MHz)	6 dB right (MHz)	6dB bandwidth (MHz)
2402	0.576	0.126	0.702
2440	0.594	0.090	0.684
2480	0.114	0.576	0.690

FCC 15.247 (b) (1), (3) / RSS-210 A8.4 (4) – Maximum Peak Output Power					Pass
BLE Tx mode					
FCC Requirement: For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850MHz bands: 1 Watt (30dBm) IC Requirement: For systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W.					
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 / RSS-Gen Mode of operation : BLE Tx mode, (2402MHz, 2440MHz, 2480MHz) Port of testing : Temporary antenna port Detector : Peak RBW/VBW : $\geq$ DTS BW / $\geq$ 3xRBW Span : $\geq$ 3 x RBW Supply voltage : 3.0 VDC from DC power supply Temperature : 23°C Humidity : 50%					
Results: For test protocols please refer to Appendix 1, page 4-5.					
Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Output power (dBm)	Limit (W/dBm)	Verdict
2402	-2.93	0.00	-2.93	1 / 30.0	Pass
2440	-3.62	0.00	-3.62	1 / 30.0	Pass
2480	-4.61	0.00	-4.61	1 / 30.0	Pass

FCC 15.247 (d) / RSS-210 A8.5 – Spurious Conducted Emissions					Pass
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 / RSS-Gen Mode of operation : Tx mode (2402MHz, 2440MHz, 2480MHz) Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 100 kHz / 300 kHz Supply voltage : 3.0 VDC from DC power supply Temperature : 23 °C Humidity : 50 %					
FCC 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.					
IC Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits.					
Results: All three transmit frequency modes comply with the limit stated in subclause 15.247(d). For test protocols refer to Appendix 1, page 6-7.					
BLE Tx mode					
Operating frequency (MHz)	Spurious frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict
2402	4850.007	-57.02	-4.12	-52.90	Pass
2440	4850.007	-57.28	-5.67	-51.61	Pass
2480	4950.007	-57.50	-6.33	-51.17	Pass

FCC 15.247 (d) / RSS-Gen 7.2.2, 7.2.5 – Spurious Radiated Emissions			Pass
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode (2402MHz, 2440MHz, 2480MHz), hopping off Port of testing : Enclosure Detector : Peak RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 1 MHz for f > 1 GHz Supply voltage : 3.0 VDC from battery Temperature : 23°C Humidity : 50%			
FCC Requirement: In any 100kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a).			
IC Requirement: Spurious emissions from licence-exempt transmitters shall comply with the field strength limits shown in RSS-Gen table 5. Unwanted emissions falling into restricted bands of Table 3 shall comply with the limits specified in RSS-Gen. Unwanted emissions not falling within restricted frequency bands shall either comply with the limits specified in the applicable RSS, or with those specified in RSS-Gen.			
Results: Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types. All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.			
BLE Tx mode			
Tx frequency 2402MHz		Vertical Polarization	
Freq MHz	Level dBµV/m	Limit/ Detector dBµV/m	
4804.000	38.2	74.0 / P	
4804.000	23.9	54.0 / A	
Tx frequency 2402MHz		Horizontal Polarization	
Freq MHz	Level dBµV/m	Limit/ Detector dBµV/m	
4804.000	37.8	74.0 / P	
4804.000	23.5	54.0 / A	
Tx frequency 2440MHz		Vertical Polarization	
Freq MHz	Level dBµV/m	Limit/ Detector dBµV/m	
4882.000	35.6	74.0 / P	
4882.000	20.8	54.0 / A	
Tx frequency 2440MHz		Horizontal Polarization	
Freq MHz	Level dBµV/m	Limit/ Detector dBµV/m	
4893.000	36.3	74.0 / P	

4893.000	23.8	54.0 / A
Tx frequency 2480MHz Vertical Polarization		
Freq MHz	Level dBµV/m	Limit/ Detector dBµV/m
4960.000	37.6	74.0 / P
4960.000	20.1	54.0 / A
Tx frequency 2480MHz Horizontal Polarization		
Freq MHz	Level dBµV/m	Limit/ Detector dBµV/m
4960.000	38.3	74.0 / P
4960.000	23.0	54.0 / A

FCC 15.247 (d) / RSS-210 A8.5 – Band Edge Emissions		Pass
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 / RSS-Gen Mode of operation : BLE Tx mode (2402MHz, 2480MHz) Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 100 kHz / 300 kHz Supply voltage : 3.0 VDC from DC power supply Temperature : 23°C Humidity : 50%		
FCC 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.		
IC Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits.		
Results:		The peak found outside any 100 kHz bandwidth of the operating frequency band comply with the requirement. For test protocols refer to Appendix 1, page 8.

FCC 15.205 / RSS-Gen 7.2.2 – Restricted Bands Next to The Band Edge		Pass
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 / RSS-Gen Mode of operation : BLE Tx mode (2402MHz, 2480MHz) Port of testing : Enclosure Detector : Peak RBW/VBW : 1 MHz / 1 MHz Supply voltage : 3.0 VDC from battery Temperature : 23°C Humidity : 50%		
FCC Requirement: Radiated emissions which fall in the restricted bans, as defined in 15.205 (a), must also comply with the radiated emission limits specified in 15.209(a).		
IC Requirement: Unwanted emissions falling into restricted bands of Table 3 shall comply with the limits specified in RSS-Gen		
Results:		There is no peak found in the restricted bands. For test protocols refer to Appendix 1, page 9-12.

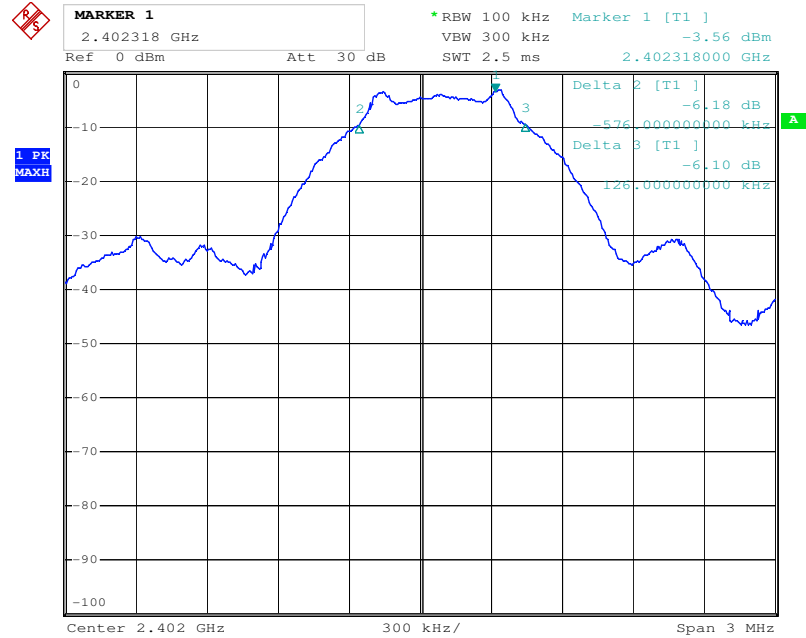
FCC 15.247 (e) / RSS-210 A8.2 (b) – Power Spectral Density			Pass
FCC Requirement: For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. IC Requirement: The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.			
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 / RSS-Gen Mode of operation : BLE Tx mode (2402MHz, 2440MHz, 2480MHz) Port of testing : Temporary antenna port Detector : Peak RBW/VBW : ≥ 100 KHz / $\geq 3 \times$ RBW span : $\geq 1.5 \times$ DTS BW Supply voltage : 3.0 VDC from DC power supply Temperature : 23°C Humidity : 50%			
Results: For test protocols please refer to Appendix 1, page 13-14.			
Operating frequency (MHz)	Power density (dBm)	Limit (dBm)	Verdict
2402	-3.32	8.0	Pass
2440	-4.03	8.0	Pass
2480	-4.98	8.0	Pass

Appendix 1

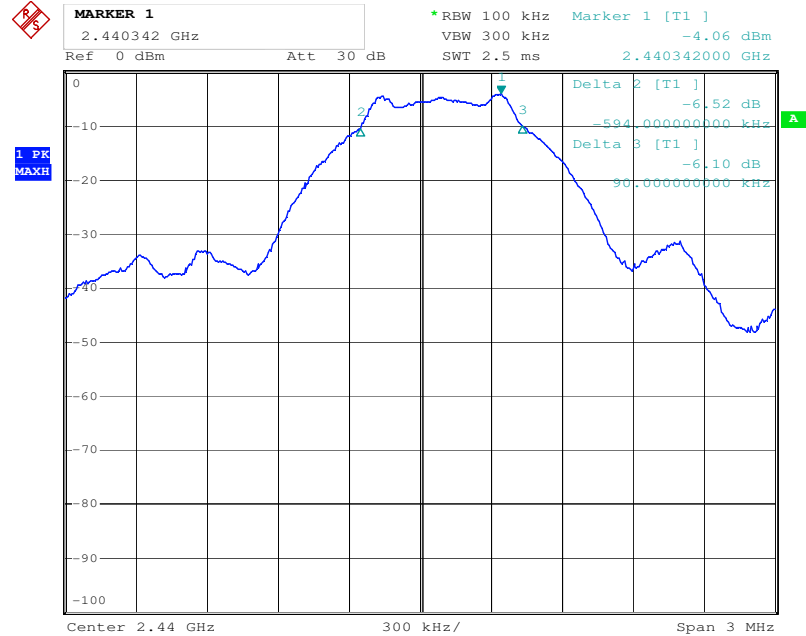
Test Results

6 dB Bandwidth Measurement

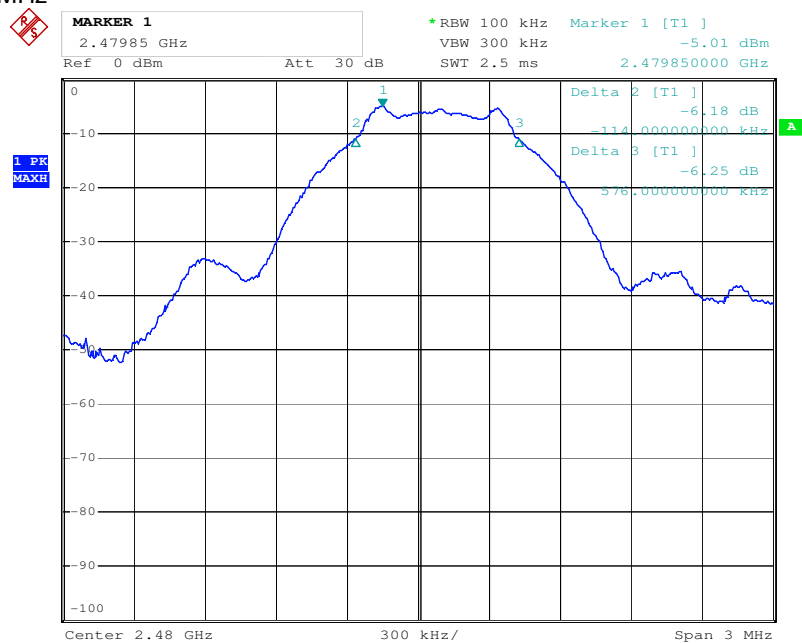
Tx frequency: 2402MHz



Tx frequency: 2440MHz



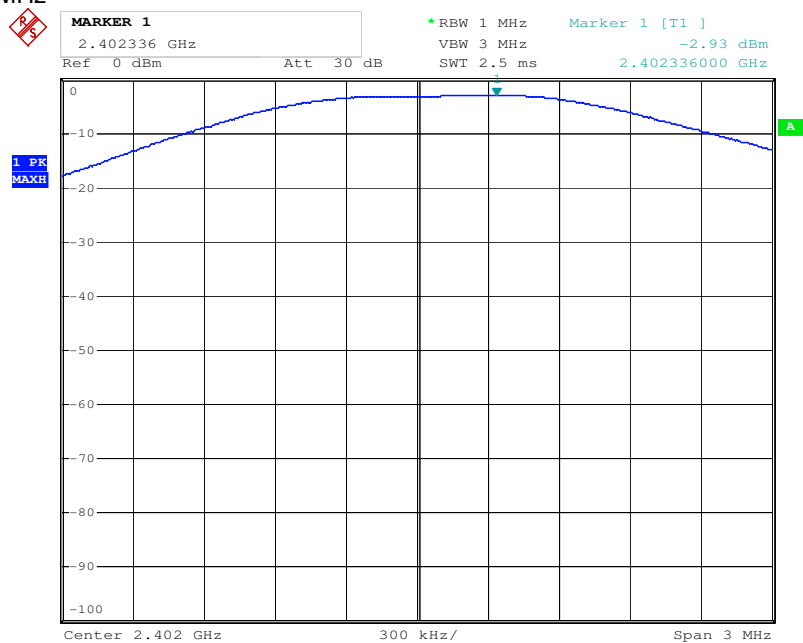
Tx frequency: 2480MHz



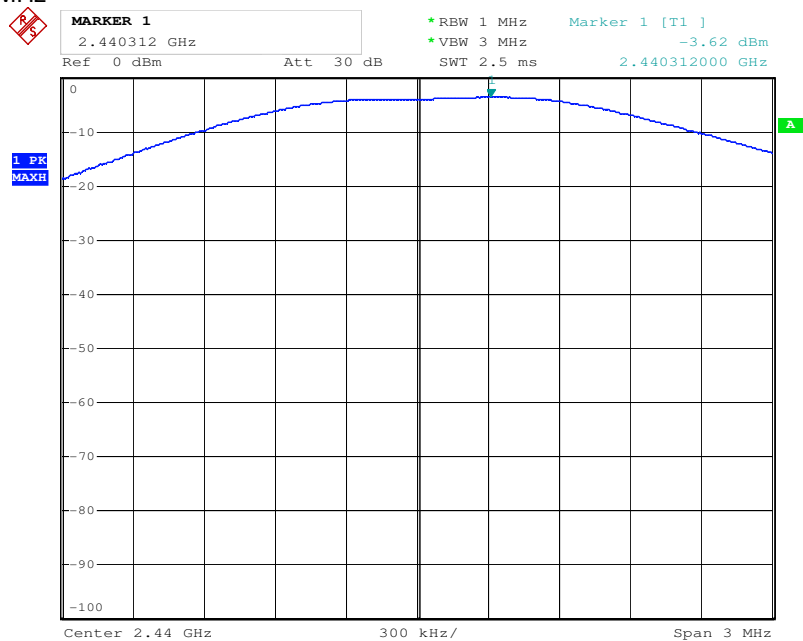
Peak Output Power

BLE Mode

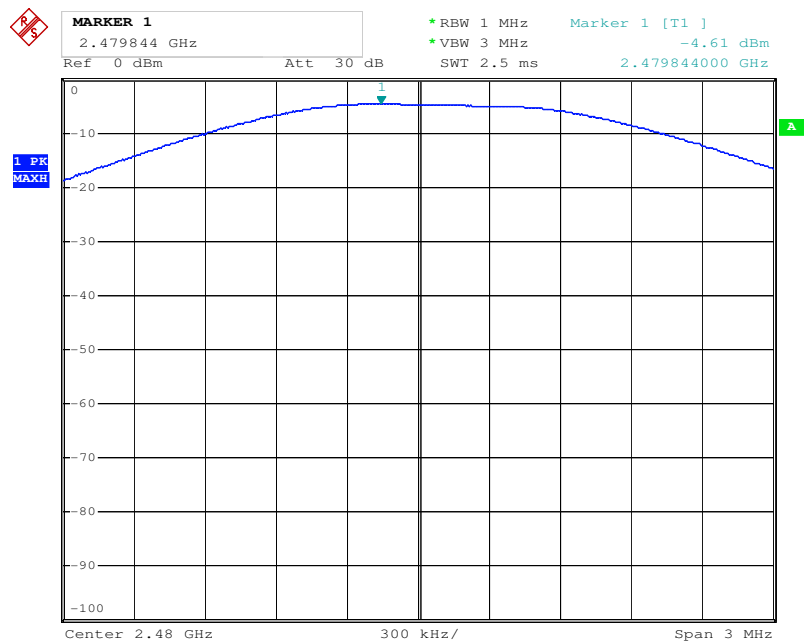
Tx frequency: 2402MHz



Tx frequency: 2440MHz



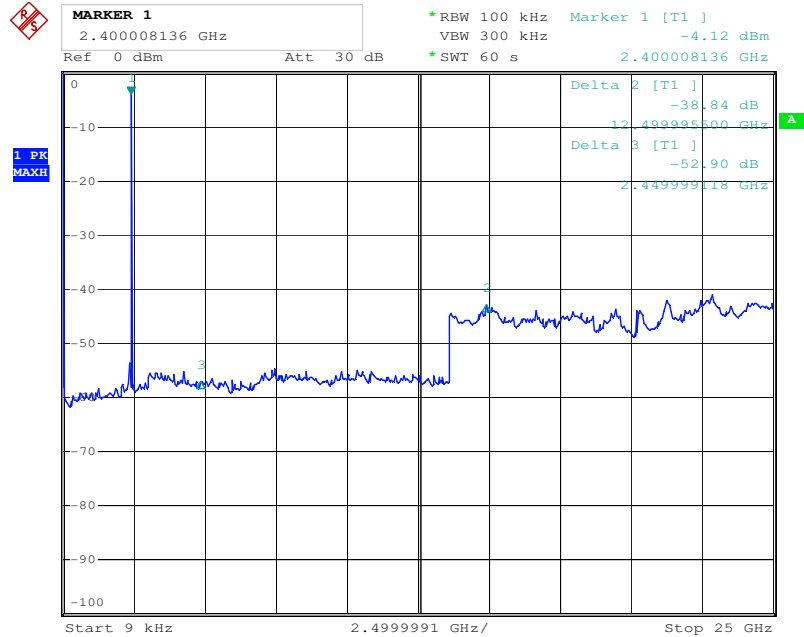
Tx frequency: 2480MHz



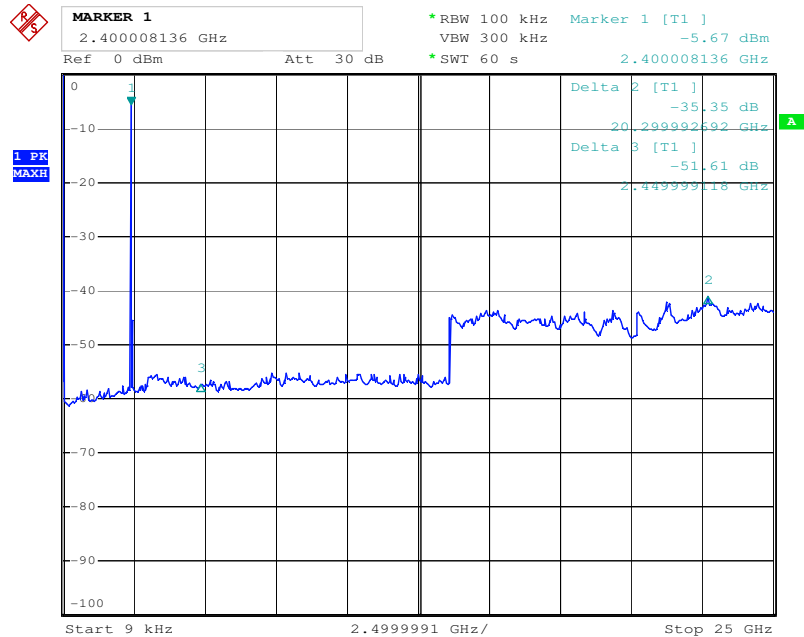
Spurious Conducted Emissions

BLE mode

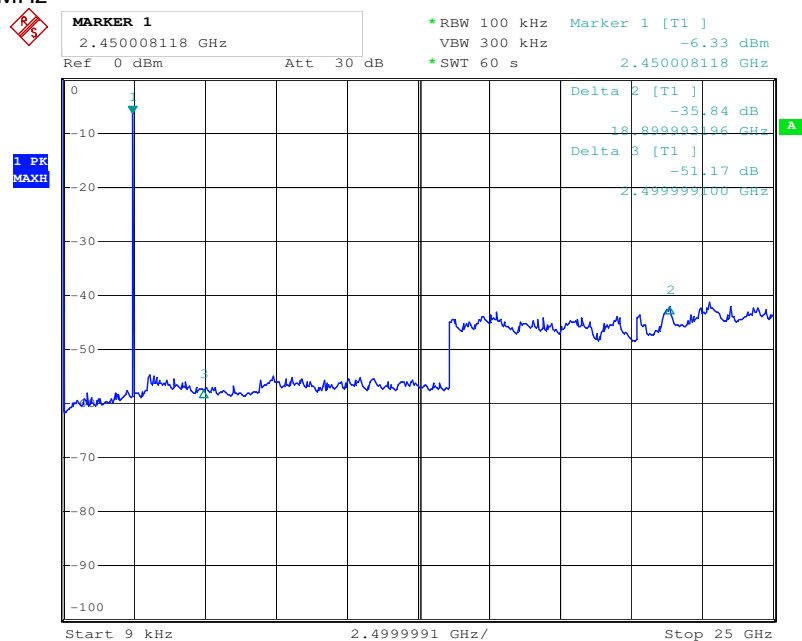
Tx frequency: 2402MHz



Tx frequency: 2440MHz



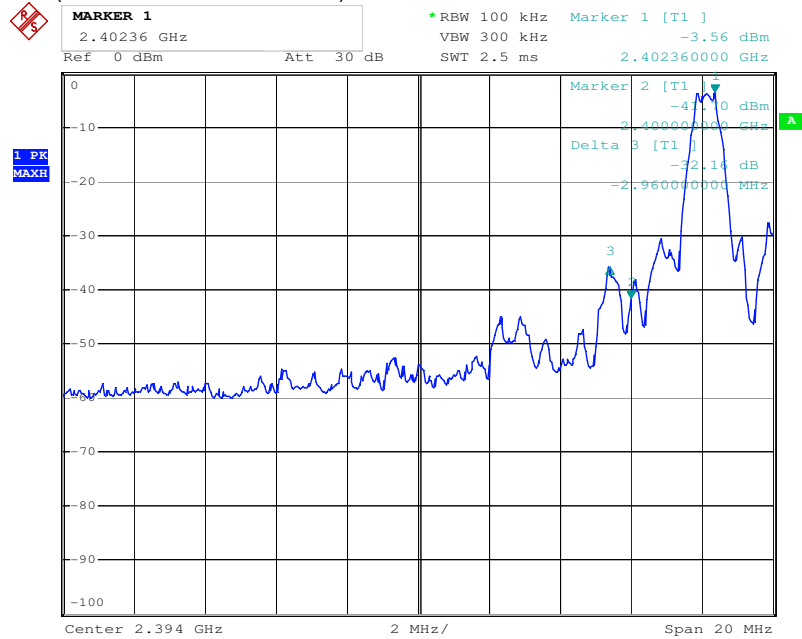
Tx frequency: 2480MHz



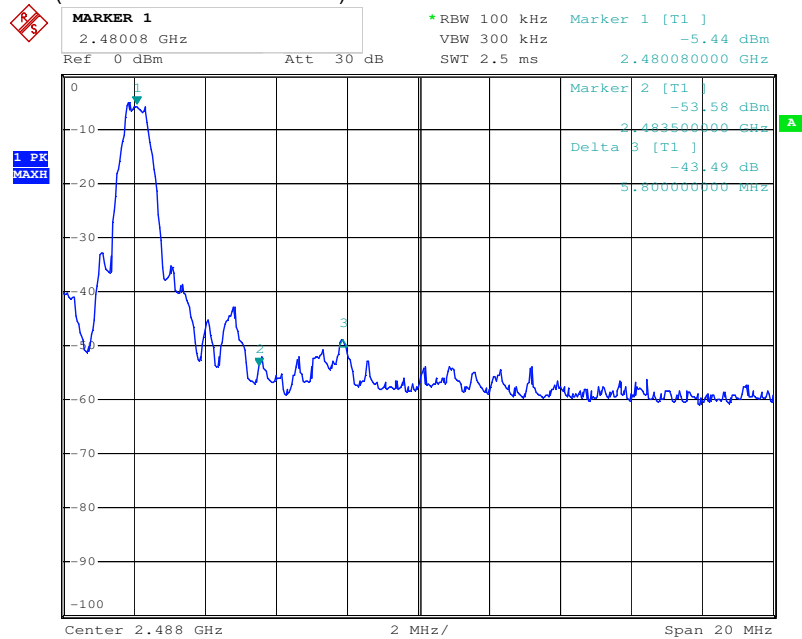
Band Edge Compliance

BLE mode

Tx frequency: 2402MHz (conducted measurement)



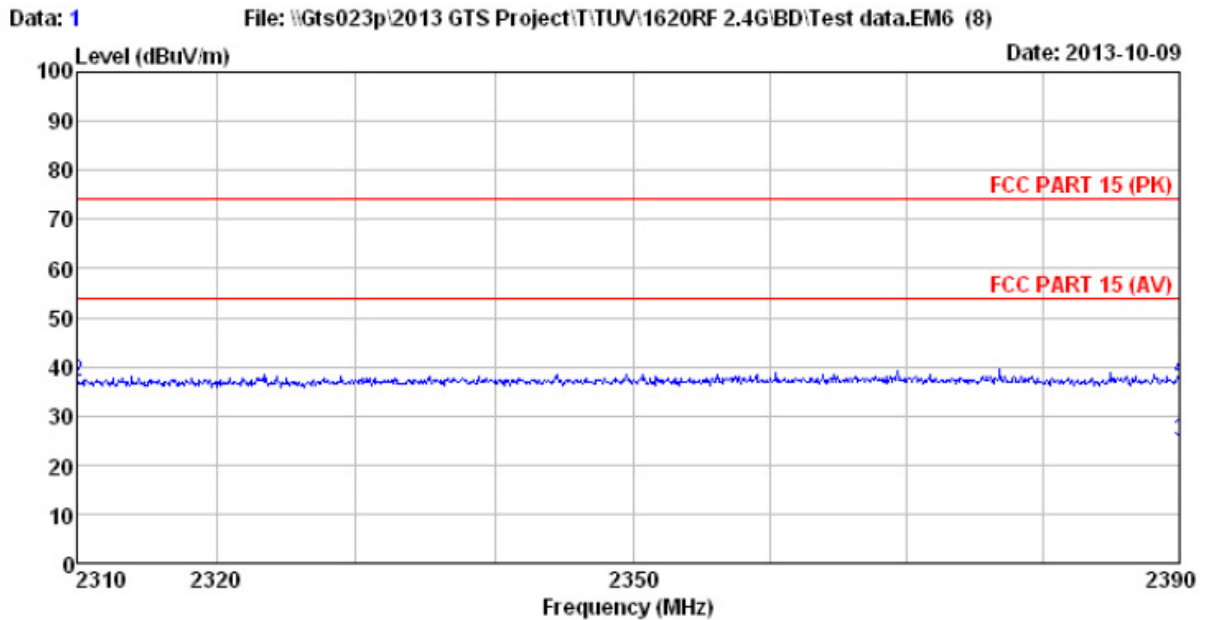
Tx frequency: 2480MHz (conducted measurement)



Restricted Bands Next to The Band Edge

BLE mode

Tx frequency: 2402MHz (radiated measurement)



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D(>1G)-2013 VERTICAL
 EUT : Bluetooth LE Watch
 Model No. : COOK00
 Sample No. : 00130916268-001
 TUV Order No: 144008321
 Test Mode : TX on mode
 Remark : 2402MHz

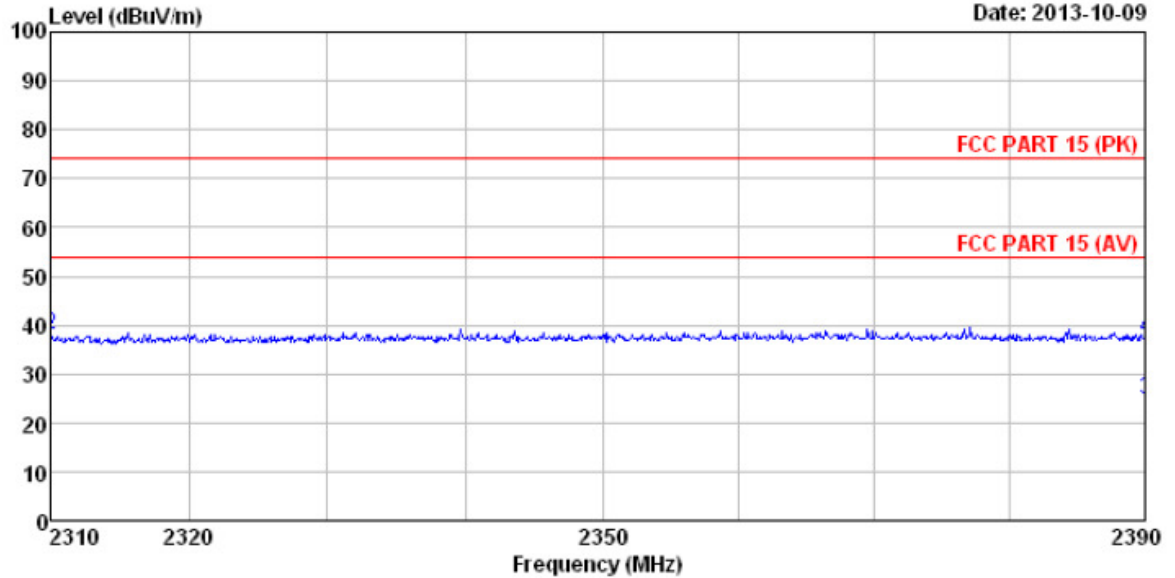
	Freq	ReadAntenna Level	Cable Factor	Preamp Loss Factor	Limit Level	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB
1	2310.000	26.18	27.03	5.30	34.11	24.40	54.00 -29.60 Average
2	2310.000	38.54	27.03	5.30	34.11	36.76	74.00 -37.24 Peak
3	2390.000	26.23	27.29	5.38	34.01	24.89	54.00 -29.11 Average
4	2390.000	38.69	27.29	5.38	34.01	37.35	74.00 -36.65 Peak

Vertical Polarization

Data: 3

File: \\Gts023p\2013 GTS Project\T\TUV\1620RF 2.4G\BD\Test data.EM6 (8)

Date: 2013-10-09

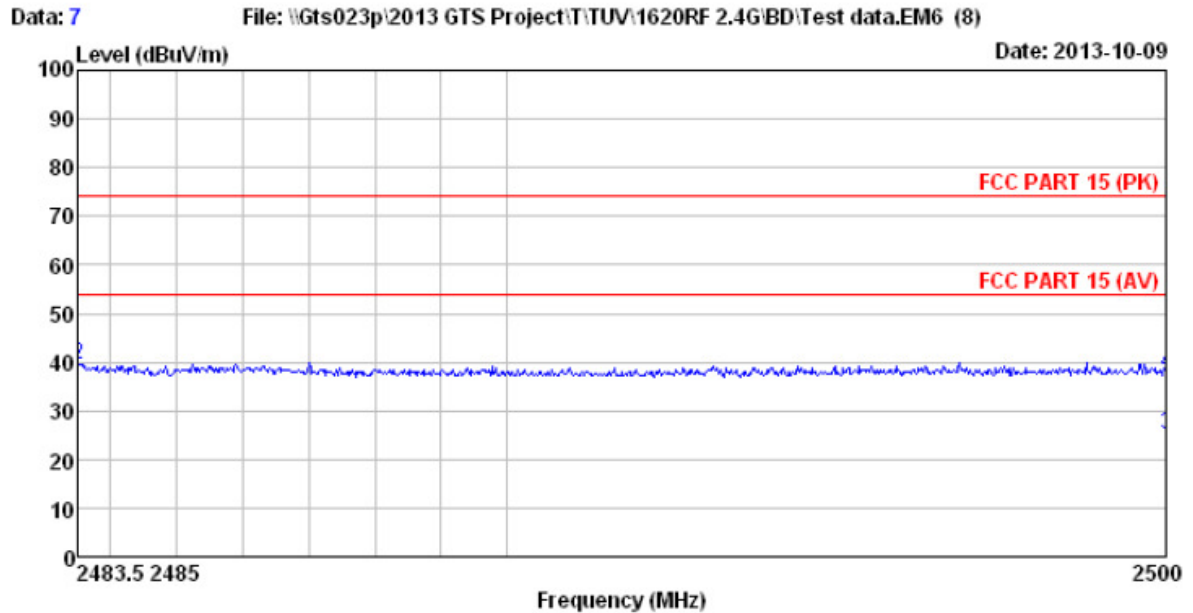


Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D(>1G)-2013 HORIZONTAL
 EUT : Bluetooth LE Watch
 Model No. : COOK00
 Sample No. : 00130916268-001
 TUV Order No: 144008321
 Test Mode : TX on mode
 Remark : 2402MHz

	Read	Antenna	Cable	Preamp	Level	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	26.11	27.03	5.30	34.11	24.33	54.00	-29.67 Average
2	2310.000	39.62	27.03	5.30	34.11	37.84	74.00	-36.16 Peak
3	2390.000	26.19	27.29	5.38	34.01	24.85	54.00	-29.15 Average
4	2390.000	38.73	27.29	5.38	34.01	37.39	74.00	-36.61 Peak

Horizontal Polarization

Tx frequency: 2480MHz (radiated measurement)



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D(>1G)-2013 VERTICAL
 EUT : Bluetooth LE Watch
 Model No. : COOK00
 Sample No. : 00130916268-001
 TUV Order No: 144008321
 Test Mode : TX on mode
 Remark : 2480MHz

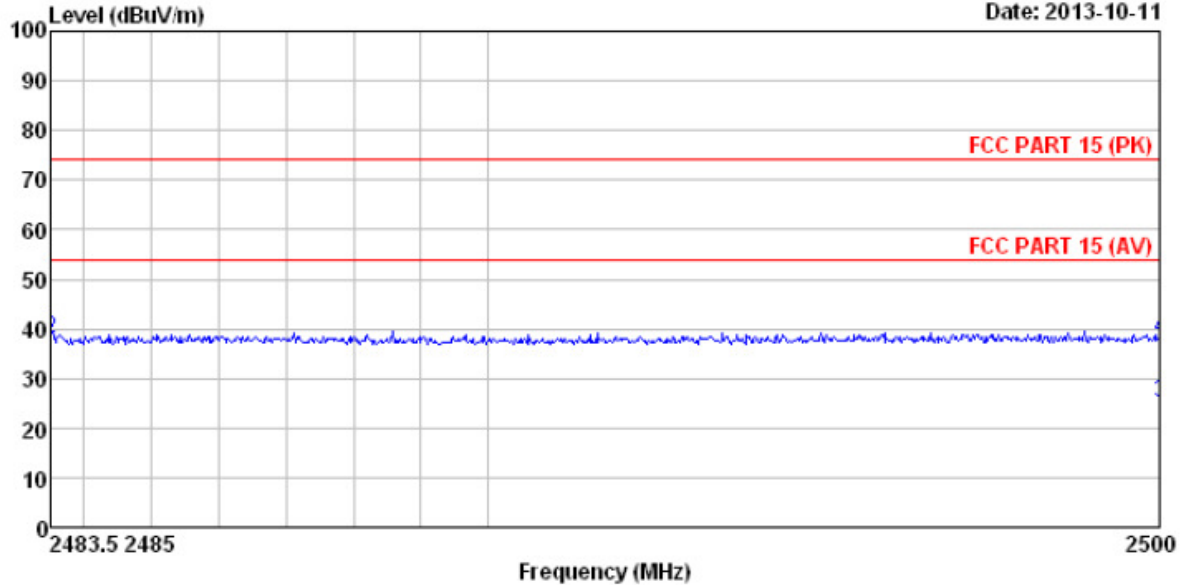
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	28.81	27.55	5.47	33.92	27.91	54.00	-26.09	Average
2	2483.500	40.44	27.55	5.47	33.92	39.54	74.00	-34.46	Peak
3	2500.000	25.92	27.60	5.49	33.90	25.11	54.00	-28.89	Average
4	2500.000	38.62	27.60	5.49	33.90	37.81	74.00	-36.19	Peak

Vertical Polarization

Data: 5

File: \\Gts023p\2013 GTS Project\TUV\1620RF 2.4G\BD\Test data.EM6 (8)

Date: 2013-10-11



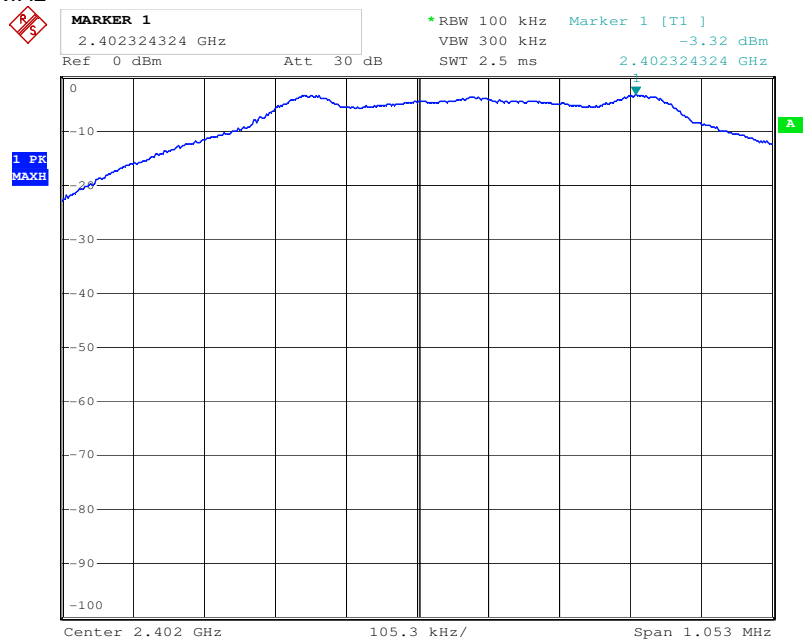
Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D(>1G)-2013 HORIZONTAL
 EUT : Bluetooth LE Watch
 Model No. : C00K00
 Sample No. : 00130916268-001
 TUV Order No: 144008321
 Test Mode : TX on mode
 Remark : 2480MHz

	Freq	ReadAntenna	Cable Preamp	Limit	Over	
	Level	Factor	Loss Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m
1	2483.500	28.94	27.55	5.47	33.92	28.04
2	2483.500	38.96	27.55	5.47	33.92	38.06
3	2500.000	25.95	27.60	5.49	33.90	25.14
4	2500.000	38.75	27.60	5.49	33.90	37.94

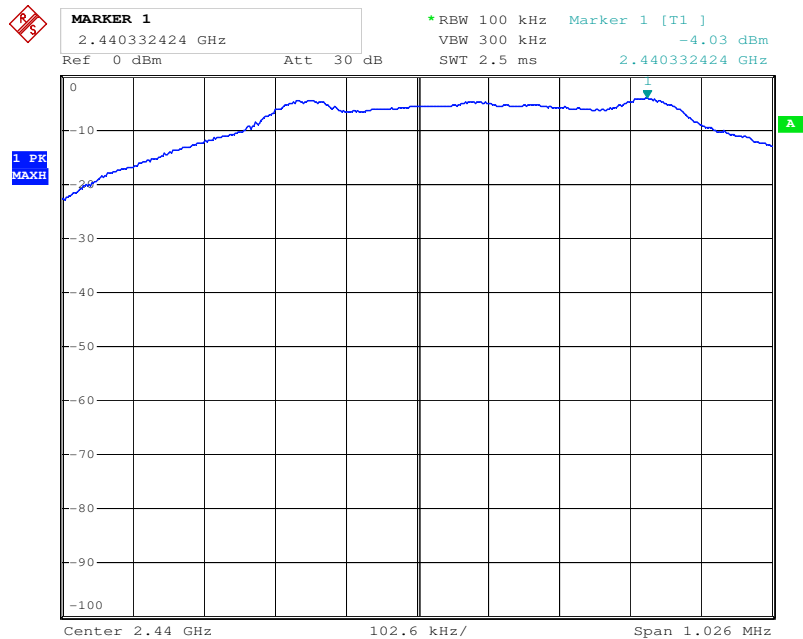
Horizontal Polarization

Power Spectral Density

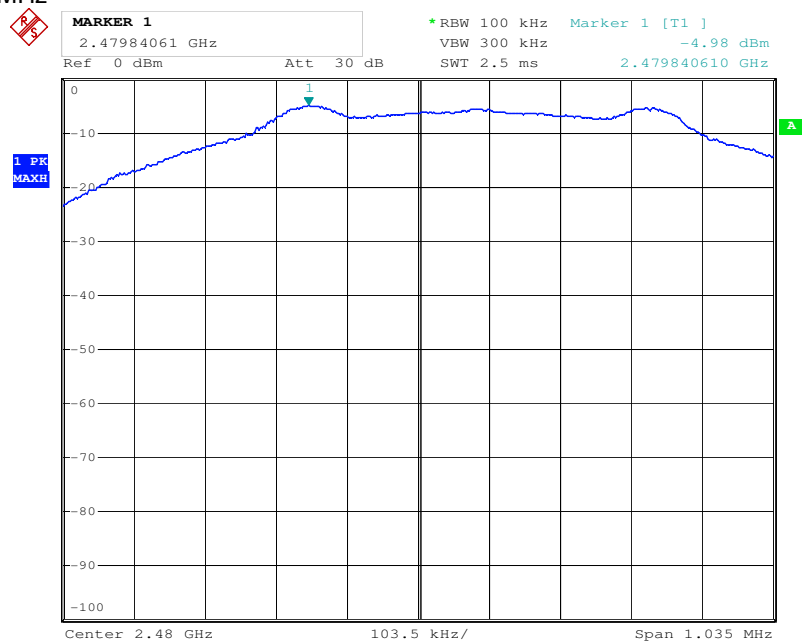
Tx frequency: 2402MHz



Tx frequency: 2440MHz

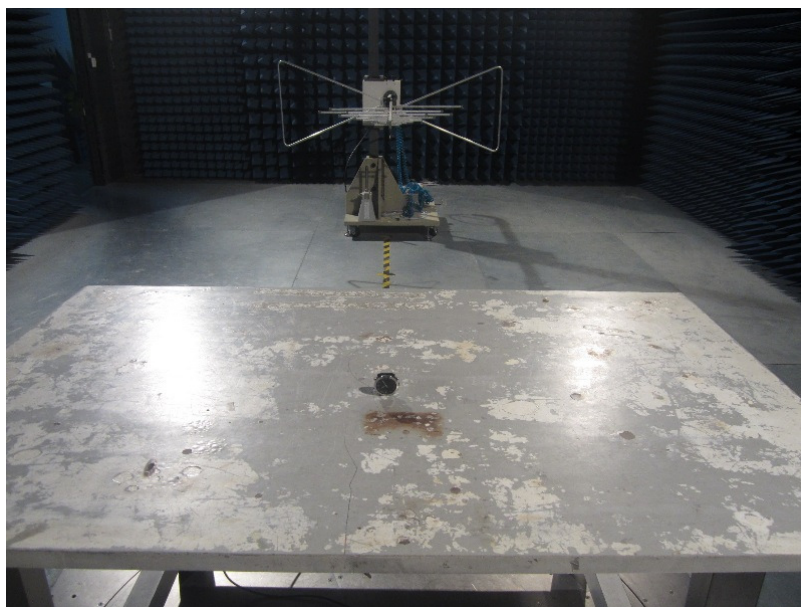


Tx frequency: 2480MHz

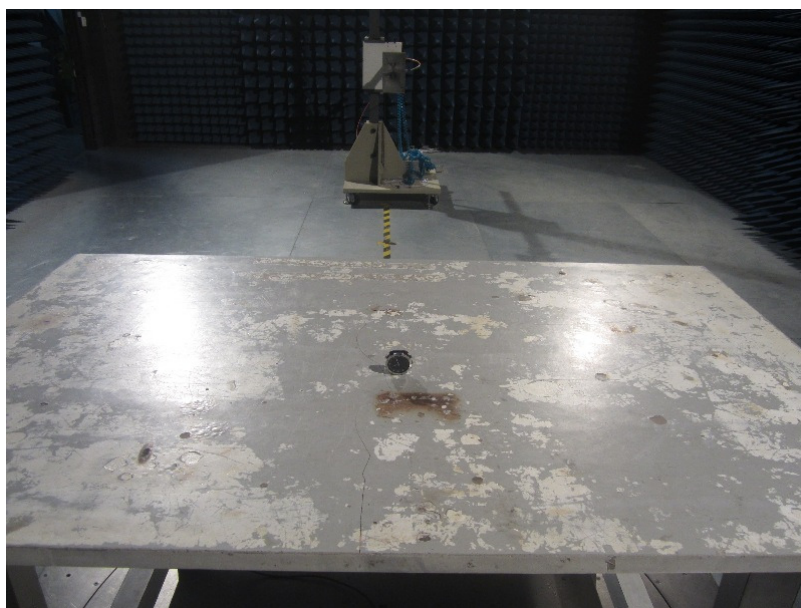


Appendix 2

Test Setup Photos



Set-up for Radiated Emission



Set-up for Radiated Emission

Appendix 3

Construction Photos



External View



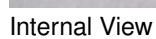
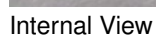
External View

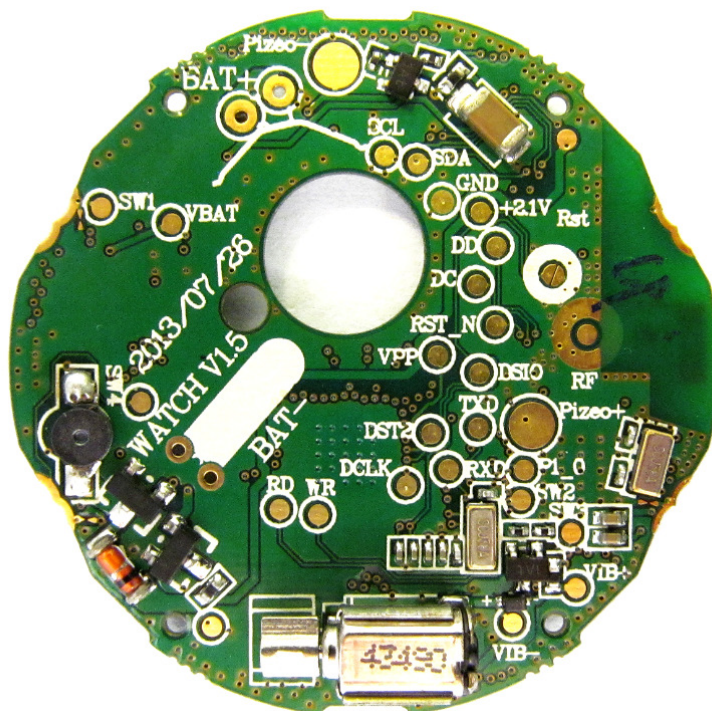


External View

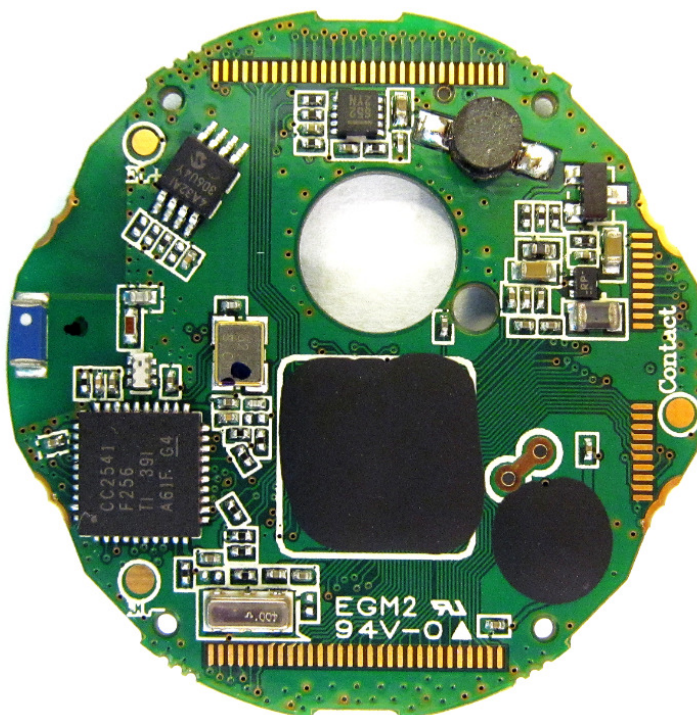


Internal View

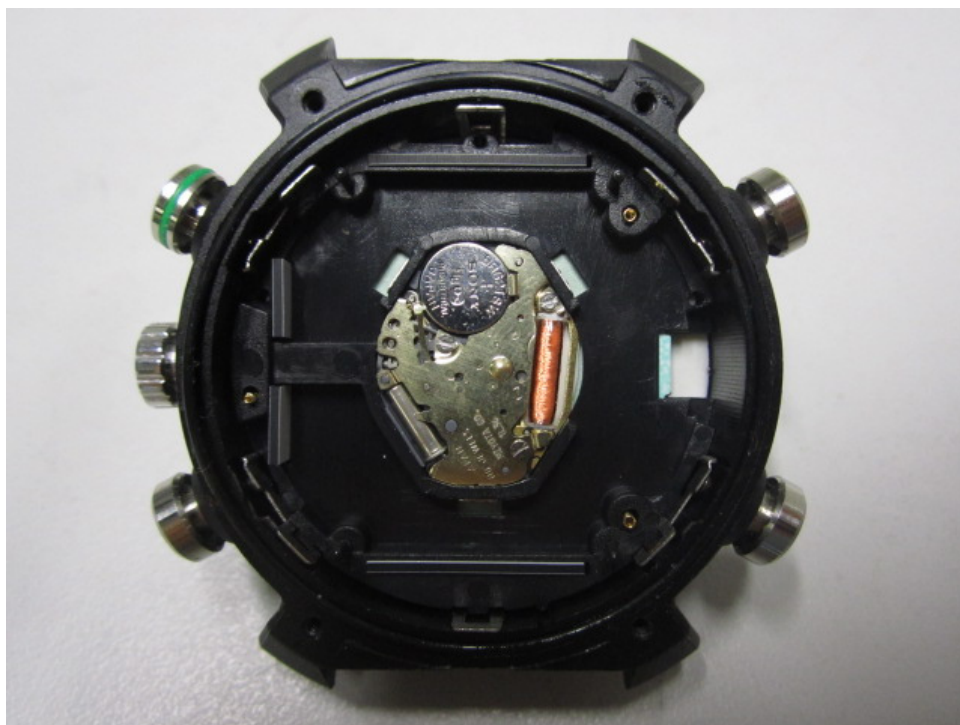




Internal View



Internal View



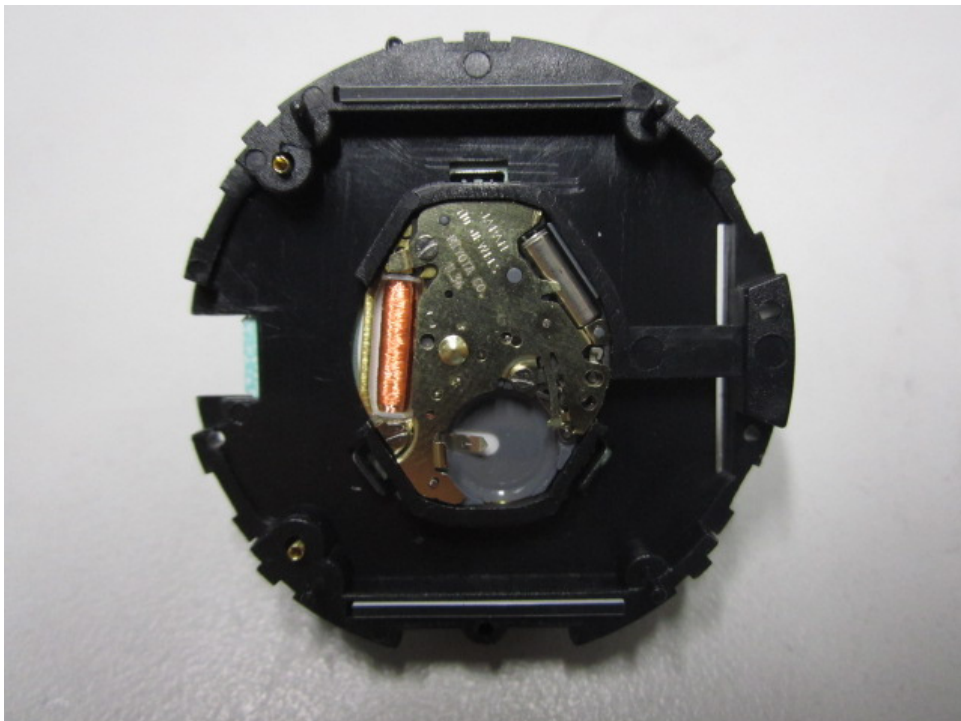
Internal View



Internal View



Internal View



Internal View

Appendix 4

Technical Documents

1.1 FCCID / IC Label Artwork

Standard sku



1.2 Operational Descriptions

1.2.1 Product Descriptions

The COGITO is a Bluetooth connected watch with analog movement that connects with the iPhone and android device with the following features

- Notifications for incoming calls, missed calls, text messages, calendar reminders, etc
- Remind when the device is out of range or at critical battery level
- Locate the watch by pressing the 'find my watch icon' in COGITO WATCH app.

For details, please refer to the datasheet.

1.2.2 Technical Background of the Wireless Technology

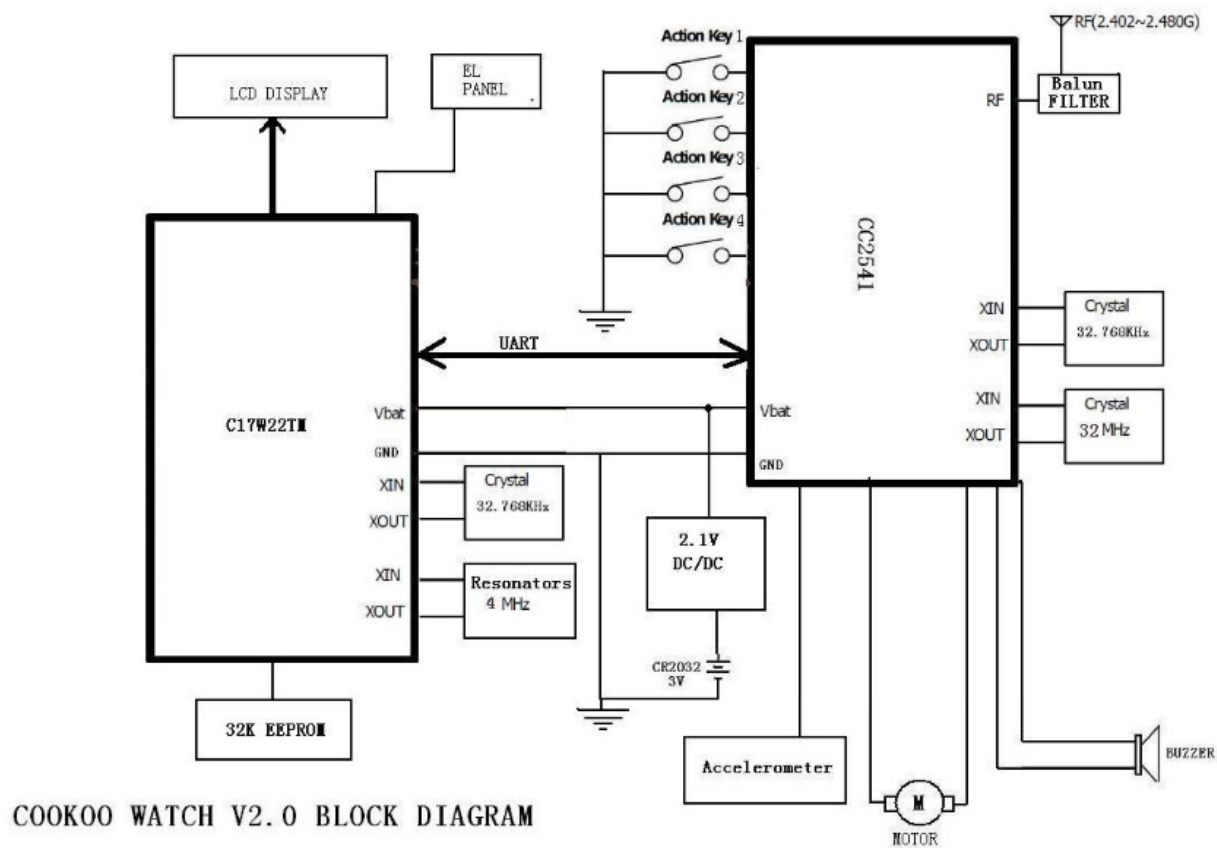
There are three characteristics of Bluetooth low-energy technology that underlie its ULP performance: maximized standby time, fast connection, and low peak transmit/receive power.

Switching the radio "on" for anything other than very brief periods dramatically reduces battery life, so any transmitting or receiving that has to be done needs to be done quickly. The first trick Bluetooth low-energy technology uses to minimize time on air is to employ only three "advertising" channels to search for other devices or promote its own presence to devices that might be looking to make a connection. In comparison, Classic Bluetooth technology uses 32 channels.

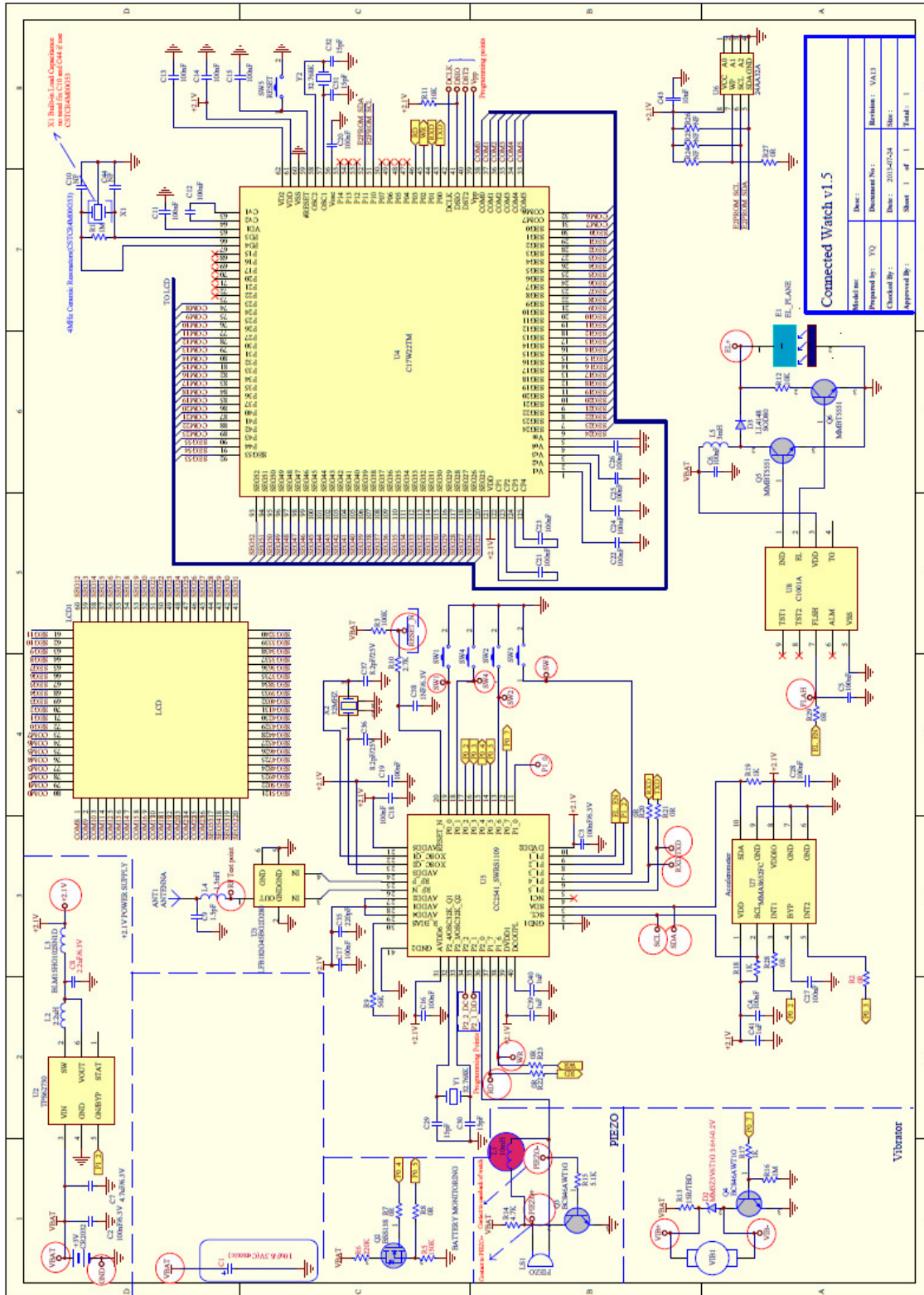
This means Bluetooth low-energy technology has to switch "on" for just 0.6 to 1.2 ms to scan for other devices, while Classic Bluetooth technology requires 22.5ms to scan its 32 channels. Consequently, Bluetooth low-energy technology uses 10 to 20 times less power than Classic Bluetooth technology to locate other radios.

Once connected, Bluetooth low-energy technology switches to one of its 37 data channels. During the short data transmission period the radio switches between channels in a pseudo-random pattern using the Adaptive Frequency Hopping (AFH) technology pioneered by Classic Bluetooth technology

1.3 Block Diagram



1.4 Schematics



1.5 Bill of Materials

Part Name	Manufacturer	CASE	Description	Quantity	Designators
0R-1%-0201,0R,1%	YAGEO	0201	0R Resistor Chip	10	R2,R7,R8,R20,R21,R22,R23,R27,R28,R29
R15R-1%-0402,15R,1%	YAGEO	0402	15R Resistor	1	R13
R1K-1%-0201,1K,1%	YAGEO	0201	1K Resistor Chip	3	R17, R18, R19
R2.7K-1%-0201,2.7K,1%	YAGEO	0201	2.7K Resistor Chip	1	R10
R4.7K-1%-0402,4.7K,1%	YAGEO	0402	4.7K Resistor	1	R14
				NF	R24,R25,R26
R5.1K-1%-0201,5.1K,1%	YAGEO	0201	5.1K Resistor	1	R15
R10K-1%-0201,10K,1%	YAGEO	0201	10K Resistor Chip	1	R11
R10K-1%-0402,10K,1%	YAGEO	0402	10K Resistor Chip	1	R12
R150K-1%-0201,150K,1%	YAGEO	0201	150K Resistor Chip	1	R5
R220K-1%-0201,220K,1%	YAGEO	0201	220K Resistor Chip	1	R6
R56K-1%-0201,56K,1%	YAGEO	0201	56K Resistor Chip	1	R9
R100K-1%-0201,100K,1%	YAGEO	0201	100K Resistor Chip	1	R3
R1M-1%-0201,1M,1%	YAGEO	0201	1M Resistor Chip	2	R1, R16
C-8.2PF-5%-25V-0201,8.2pF,0.5%	MURATA	0201	8.2pF Monolithic Ceramic Capacitor COG GRM0335C1E8R2DA01D	2	C36,C37
				NF	C10,C44
C-15PF-5%-25V-0201,15pF,5%	MURATA	0201	15pF Monolithic Ceramic Capacitor COG GRM0335C1E150JA01D	4	C29,C30,C31,C32
C-220PF-5%-25V-0201,220pF,0.5%	MURATA	0201	220pF Monolithic Ceramic Capacitor X5R/GRM033R71E221JA01D	1	C35
C-1nF-10%-6V3-0201,1nF,10%	MURATA	0201	1nF Monolithic Ceramic Capacitors X7R/GRM033R71C102KA01D	1	C38
C-10nF-10%-6V3-0201,10nF,10%	MURATA	0201	10nF Monolithic Ceramic Capacitors X7R/GRM033R70J103KA01D	1	C43
					C2,C3,C4,C5,C6,C7,C8
C-100nF-10%-6V3-0201,100nF,10%	MURATA	0201	100nF Monolithic Ceramic Capacitor X5R	23	C13,C14,C15,C16,C17,C18,C19,C20,C21,C22,C23,C24,C25,C26,C27,C28
C-1uF-10%-6V3-0402,1uF,±10%	MURATA	0402	1uF Monolithic Ceramic Capacitor X5R GRM155R60J105KE19D	3	C39,C40,C41
C-4.7uF-10%-6V3-0603,4.7uF,10%	MURATA	0603	4.7uF Monolithic Ceramic Capacitor X5RGRM188R60J475KE19D	1	C7
C-2.2uF-10%-6V3-0603,2.2uF,10%	MURATA	0603	2.2uF Monolithic Ceramic Capacitor X5R GRM188R60J225KE19D	1	C8
C-10uF-10%-6V3-1206,4.7uF,10%	MURATA	1206	10uF Monolithic Ceramic Capacitor X5R GRM31CR60J106KA01L	1	C1
GRM1555C1HR5CZ01/ 0402/COG/1.5pF	MURATA	0402	GRM1555C1HR5CZ01	1	C9
LQM21PN2R2NGC 2.2uH	MURATA	0805	2.2uH Chip Coil	1	L2
BLM15HG102SN1D	MURATA	0402	EMI Filter Beads	1	L3
LQP15MN1N5B02 1.5nH/0402	MURATA	0402	LQP15MN1N5B02	1	L4
3mH 65 OHM		2814	EL Coil 2814 180 电感	1	L5
LL4148	Fairchild Semiconductor	SOD80	Small Signal Diode	1	D3
MM5Z3V6T1G	ONSEMI	SOD-523	3.6V ZENER Diode	1	D2
4MHZ Ceramic Resonators	Murata	CSTCR4M00G53	4.5±0.2 2.0±0.2 1.2max(Built-in Load Capacitance)	1	X1
32MHZ	siward/TXC	3225	XTL571100-R68-053 ±/-10ppm	1	X2
32.768K	siward/XTL721-R68-054	3215	XTL721-R68-054_32.768K ±/-10ppm	2	Y1,Y2
	Diodes / Fairchild		N-Channel Logic Level Enhancement Mode Field Effect Transistor		
BSS138		SOT-23		1	Q2
BC846AWT1G	ONSEMI	SOT-323	General Purpose Transistors NPN Silicon	2	Q3 Q4
BC846AW	NXP	SOT-323	General Purpose Transistors NPN Silicon		
MMBT5551	Fairchild Semiconductor	SOT-23	General Purpose Transistors NPN Silicon	2	Q5 Q6
TPS62730	TEXAS INSTRUMENTS	SON-6	Step Down Converter with Bypass Mode	1	U2
LFB182G45BG2D280	MURATA	1608	Balance Matching BAND PASS FILTER	1	U3
S1C17W22(S1C17711)	EPSON	3x3 125_PIN	CMOS 16-BIT SINGLE CHIP MICROCONTROLLER	1	U4
CC2541F256	TEXAS INSTRUMENTS	6x6 QFN40	2.4GHz Bluetooth low energy and proprietary system -on-Chip	1	U5
24AA32A	MICROCHIP	MSOP8	32K I2C™ Serial EEPROM 1.7V~5.5V	1	U6
MMA8652FC	Freescale Semiconductor	DFN-10	3-Axis, 12-bit Digital Accelerometer	1	U7
C1001A	RCL		EL LAMP DRIVER IC	1	U8
3C-9.5Z-1.4BL	MAFUKBU	3"4"10MM	VIBRATOR MOTOR	1	VIB1
CAN4311712002453K	YAGEO	3216	2.4G Chip Type Antenna	1	ANT1
PCB		FR4	PCB 35.00mm x 35.40mmx0.8mm(max)	1	PCB

1.6 User Manual



Pairing: When the watch is OFF, press COMMAND + POWER buttons until 1st beep (approx. 3 sec) and all icons will blink every 2 sec.

Reset the watch: Press and hold the COMMAND + POWER + PAGE LEFT + PAGE RIGHT buttons until you see the ALERT icon on the CONNECTED Display and then the watch turns off.

NOTIFICATIONS

Incoming Call, Missed Call notification:

Caller ID (iOS only at this moment) will be displayed during incoming calls. Call numbers will be display if the number is not stored in your phone book.

Caller ID support Latin characters only.

TEXT and social media app alerts:

Support SMS, MMS and social media posts on Facebook, Twitter and message notification from WhatsApp, WeChat, Skype and more...



Email alerts:

Inbound email alerts.



Calendar and Reminder alerts:

Alerts you when there are upcoming events or reminders.



Alarms:

Alerts you when you have alarms. This function is currently supported by Android only.



Low and Critical battery alerts:

The CONNECTED display shows the battery percentage and the Low and Critical battery icons blinks respectively.



To find the COGITO watch:

The watch beeps and blinks when tapping the find my watch icon 

in the CONNECTED WATCH app.



To activate out of range notification:

After tapping the out of range icon , the watch beeps and blinks when your phone and watch are apart from each other.

FCC/ Industry Canada Notice

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.

Caution: Changes or modifications to this Bluetooth® device not expressly approved by the party responsible for compliance could void the user's authority to operate it.

Certification and Safety approvals

This product is CE marked according to the provisions of the R&TTE Directive (99/5/EC). We declare that this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. For further information, please refer to website.

Bluetooth® is a trademark owned by Bluetooth SIG, Inc. and is used by the manufacturer under license.

IC Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil

ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

NCC

本產品符合低功率電波輻射性電機管理辦法 第十二條、第十四條等條文規定：

1. 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。
2. 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Company name : CONNECTEDDEVICE Ltd -8/F, Tai Yip Building, 141 Thomson Rd, Wan Chai, HongKong

EN Note on environmental protection:

After the implementation of the European Directive 2002/96/EU in the national legal system, the following applies: Electrical and electronic devices may not be disposed of with domestic waste. Consumers are obliged by law to return electrical and electronic devices at the end of their service lives to the public collecting points set up for this purpose or point of sale. Details to this are defined by the national law of the respective country. This symbol on the product, the instruction manual or the package indicates that a product is subject to these regulations. By recycling, reusing the materials or other forms of utilizing old devices, you are making an important contribution to protecting our environment.



FR Remarques concernant la protection de l'environnement:

Conformément à la directive européenne 2002/96/CE et 2006/66/CE, et afin d'atteindre un certain nombre d'objectifs en matière de protection de l'environnement, les règles suivantes doivent être appliquées:

Les appareils électriques et électroniques ainsi que les batteries ne doivent pas être éliminés avec les déchets ménagers. Le pictogramme "picto" présent sur le produit, son manuel d'utilisation ou son emballage indique que le produit est soumis à cette réglementation. Le consommateur doit retourner le produit/la batterie usager aux points de collecte prévus à cet effet. Il peut aussi le remettre à un revendeur. En permettant enfin le recyclage des produits ainsi que les batteries, le consommateur contribuera à la protection de notre environnement. C'est un acte écologique.

ES Nota sobre la protección medioambiental:

Después de la puesta en marcha de la directiva Europea 2002/96/EU y 2006/66/EU en el sistema legislativo nacional, se aplicara lo siguiente:

Los aparatos eléctricos y electrónicos, así como las baterías, no se deben evacuar en la basura doméstica. El usuario está legalmente obligado a llevar los aparatos eléctricos y electrónicos, así como pilas y pilas recargables, al final de su vida útil a los puntos de recogida comunales o a devolverlos al lugar donde los adquirió. Los detalles quedaran definidos por la ley de cada país. El símbolo en el producto, en las instrucciones de uso o en el embalaje hace referencia a ello. Gracias al reciclaje, al reciclaje del material o a otras formas de reciclaje de aparatos/pilas usados, contribuye Usted de forma importante a la protección de nuestro medio ambiente.

DE Hinweis zum Umweltschutz:

Ab dem Zeitpunkt der Umsetzung der europäischen Richtlinien 2002/96/EG und 2006/66/EG in nationales Recht gilt folgendes:

Elektrische und elektronische Geräte sowie Batterien dürfen nicht mit dem Hausmüll entsorgt werden. Der Verbraucher ist gesetzlich verpflichtet, elektrische und elektronische Geräte sowie Batterien am Ende ihrer Lebensdauer an den dafür eingerichteten, öffentlichen Sammelstellen oder an die Verkaufsstelle zurückzugeben. Einzelheiten dazu regelt das jeweilige Landesrecht. Das Symbol auf dem Produkt, der Gebrauchsanleitung oder der Verpackung weist auf diese Bestimmungen hin. Mit der Wiederverwertung, der stofflichen Verwertung oder anderen Formen der Verwertung von Altgeräten/Batterien leisten Sie einen wichtigen Beitrag zum Schutz unserer Umwelt.

IT Informazioni per protezione ambientale:

Dopo l'implementazione della Direttiva Europea 2002/96/EU e 2006/66/EU nel sistema legale nazionale, ci sono le seguenti applicazioni:

Le apparecchiature elettriche ed elettroniche e le batterie non devono essere smaltite con i rifiuti domestici. I consumatori sono obbligati dalla legge a restituire i dispositivi elettrici ed elettronici e le batterie alla fine della loro vita utile ai punti di raccolta pubblici preposti per questo scopo o nei punti vendita. Dettagli di quanto riportato sono definiti dalle leggi nazionali di ogni stato. Questo simbolo sul prodotto, sul manuale d'istruzioni o sull'imballo indicano che questo prodotto è soggetto a queste regole. Riciclando, ri-utilizzando i materiali o utilizzando sotto altra forma i vecchi prodotti/le batterie, darete un importante contributo alla protezione dell'ambiente.

DU Notitie aangaande de bescherming van het milieu:

Ten gevolge van de invoering van de Europese Richtlijn 2002/96/EU en 2006/66/EU in het nationaal juridisch systeem, is het volgende van toepassing:

Elektrische en elektronische apparatuur, zoals batterijen mag niet met het huisvuil weggegooid worden. Consumenten zijn wettelijk verplicht om elektrische en elektronische apparaten zoals batterijen op het einde van gebruik in te dienen bij openbare verzamelplaatsen speciaal opgezet voor dit doeleinde of bij een verkooppunt. Verdere specificaties aangaande dit onderwerp zijn omschreven door de nationale wet van het betreffende land. Dit symbool op het product, de gebruiksaanwijzing of de verpakking duidt erop dat het product onderworpen is aan deze richtlijnen. Door te recyclen, hergebruiken van materialen of andere vormen van hergebruiken van oude toestellen/batterijen, levert u een grote bijdrage aan de bescherming van het milieu.

Fin Ympäristönsuojelua koskeva ohje:

Siitä lähtien, kun Euroopan unionin direktiivi 2002/96/EU ja 2006/66/EU otetaan käyttöön kansallisessa lainsäädännössä, pätevät seuraavat määräykset:

Sähkö- ja elektroniikkalaitteita ja paristoja ei saa hävittää talousjätteen mukana. Kuluttajalla on lain mukaan velvollisuus toimittaa sähkö- ja elektroniikkalaitteet niiden käyttöänsä päätyttyä niille varattuihin julkisiin keräyspisteisiin tai palauttaa ne myyntipaikkaan. Tähän liittyvistä yksityiskohdista säädetään kulloisenkin osavaltion laissa. Näistä määräyksistä mainitaan myös tuotteen symbolissa, käyttöohjeessa tai pakkauskassessa. Uudelleenkäytöllä, materiaalien/paristojen uudelleenkäytöllä tai muilla vanhojen laitteiden uudelleenkäyttötavoilla on tärkeä vaikutus yhteisen ympäristömme suojelussa.