

What Next?

A Crash Course in some of the Regulatory Requirements outside of just EMC

EMC &
COMPLIANCE
INTERNATIONAL

Texecom

CE

UK

CA

=

Radio Equipment Directive (RED)
Machinery Directive
Noise Emissions for Outdoor Equipment
Pressure Equipment
Simple Pressure Vessels
Medical Devices
Active Implantable Medical Devices
In Vitro Diagnostic Medical Devices
Equipment for use in Explosive Atmospheres (ATEX)
The Eco-design of Energy related Products (ErP)
Low Voltage Directive (LVD)
Electromagnetic Compatibility (EMC) Directive
Restriction of Hazardous Substances Directive (RoHS)
Appliances Burning Gaseous Fuels
Efficiency requirements for hot-water boilers
Recreational Craft
Toys Directive
Personal Protective Equipment (PPE)
Construction Products Regulation (CPR)
Pyrotechnical Articles
Lifts Directive
Explosives for Civil Uses
Cableway Installations
Measuring Instruments
Non-automatic Weighing Instruments



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Lifts Directive

Explosives for Civil Uses


Cableway Installations

Measuring Instruments

Non-automatic Weighing Instruments


EMCD	LVD	RED	RoHSD	ATEXD	CPR
Compatibility with the electromagnetic environment	Protection from harm	Efficient and effective use of radio spectrum	Substances not in excess of concentration limits	Prevent the ignition of explosive atmospheres	As per the Declaration of Performance
Electromagnetic emissions	Hazards arising from the equipment	Efficient and effective use of radio spectrum	Substances not in excess of concentration limits	General requirements	Instructions
Electromagnetic immunity	Hazards due to external influences			Supplementary requirements	Reproducibility
				Protective systems	etc...
EN 61000-3-2 EN 50130-4	EN 62368	EN 300 220-2	EN 63000	EN 60079-0 EN 60079-11	EN 54-3 EN 54-23 EN 54-25



 Search for "Obligations of Manufacturers"

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Module A: Internal Production Control

Module C: Conformity to Type

Module B: Type Examination

Module D: Production Quality Assurance

Module E: Product Quality Assurance

Module F: Product Verification

Module G: Unit Verification

Module H: Full Quality Assurance

EMCD Article 14





Module A: Internal Production Control

LVD Annex III

Module B: Type Examination

Module C: Conformity to Type

Module D: Production Quality Assurance

Module E: Product Quality Assurance

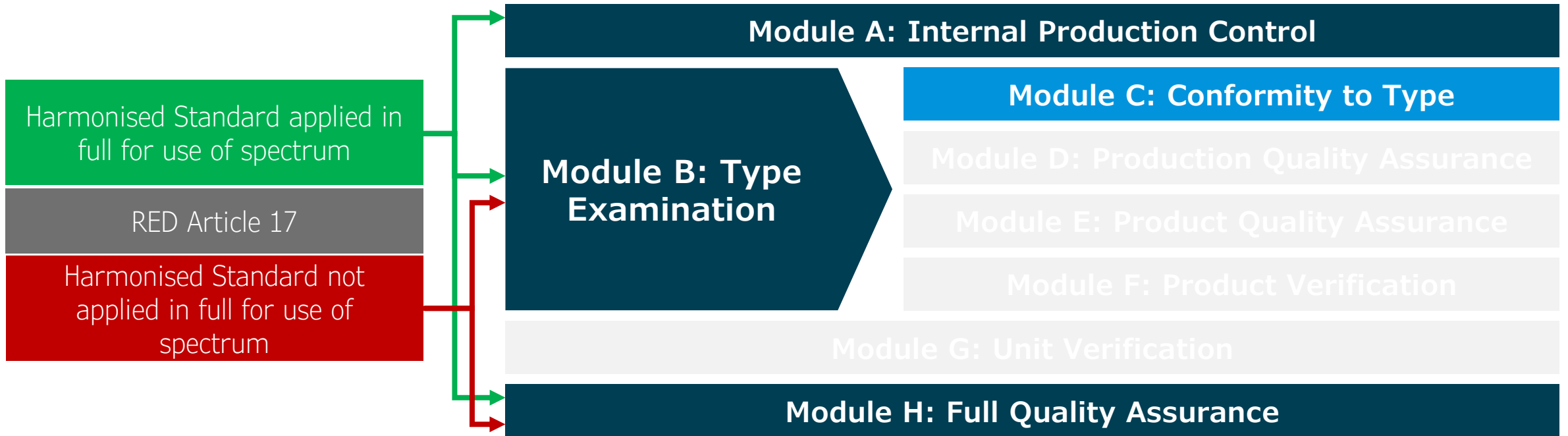
Module F: Product Verification

Module G: Unit Verification

Module H: Full Quality Assurance



Conformity Assessment Procedures



Check RED Article 17



Module A: Internal Production Control

RoHSD Article 7

Module B: Type Examination

Module C: Conformity to Type

Module D: Production Quality Assurance

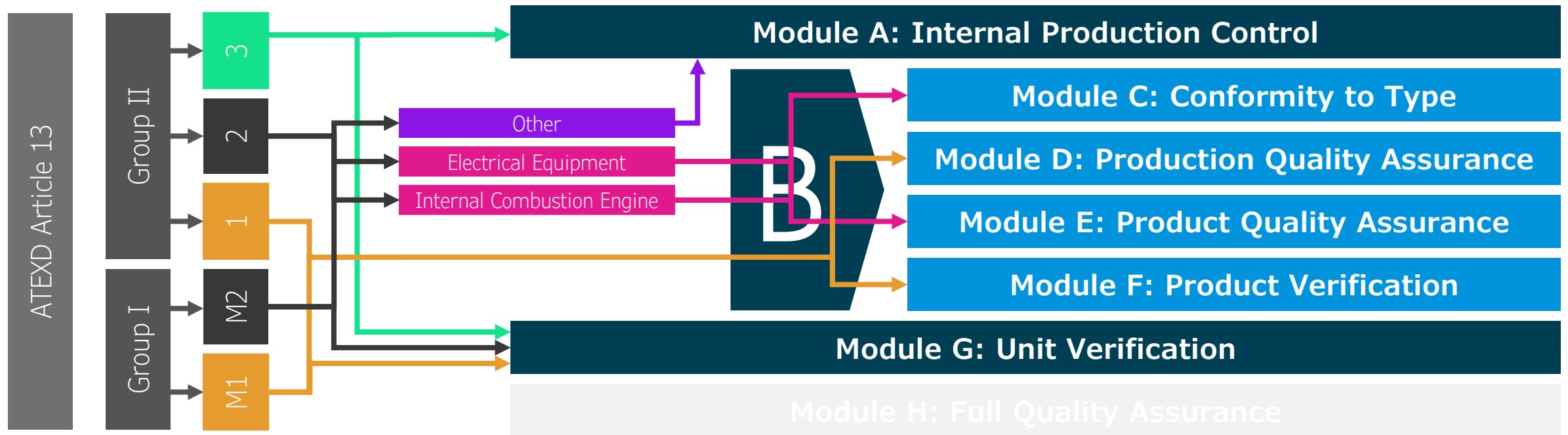
Module E: Product Quality Assurance

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Check ATEXD Annexes III to IX

EMCD

LVD

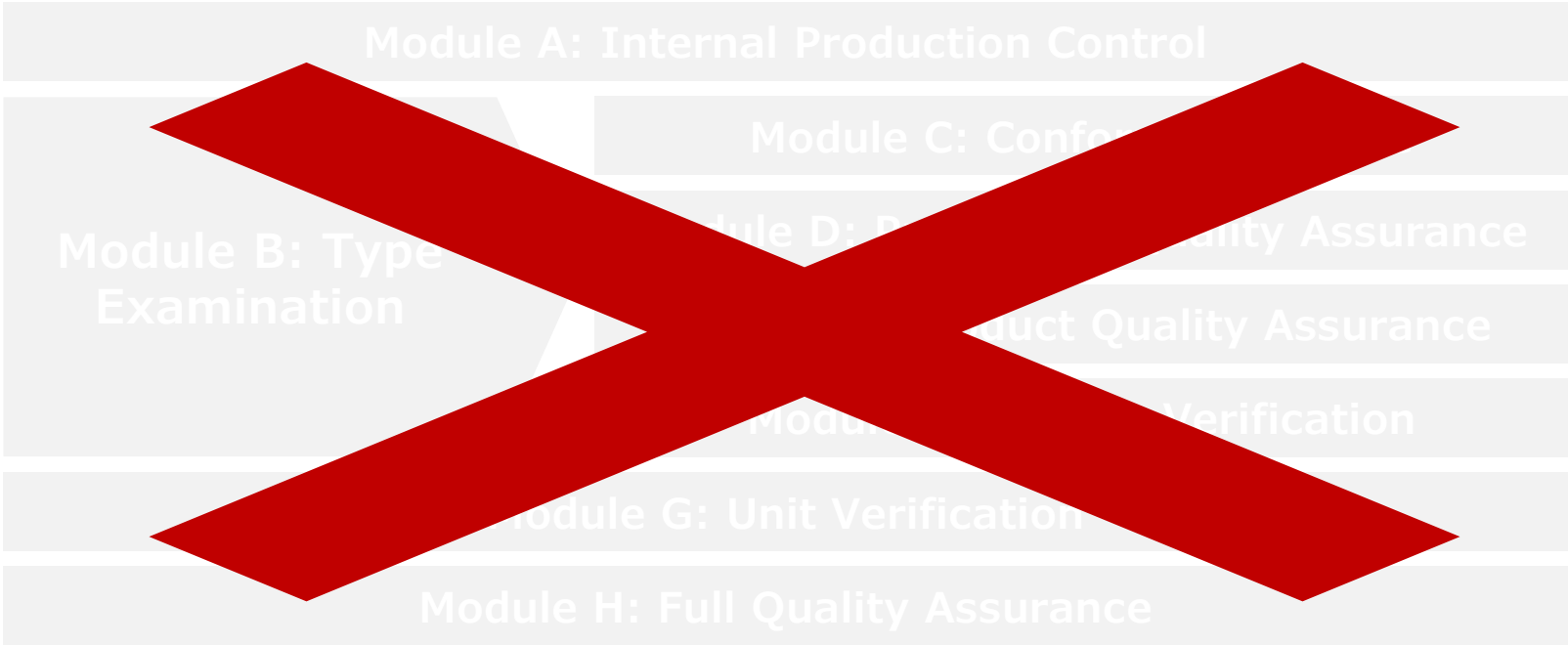
RED

RoHSD

ATEXD

CPR

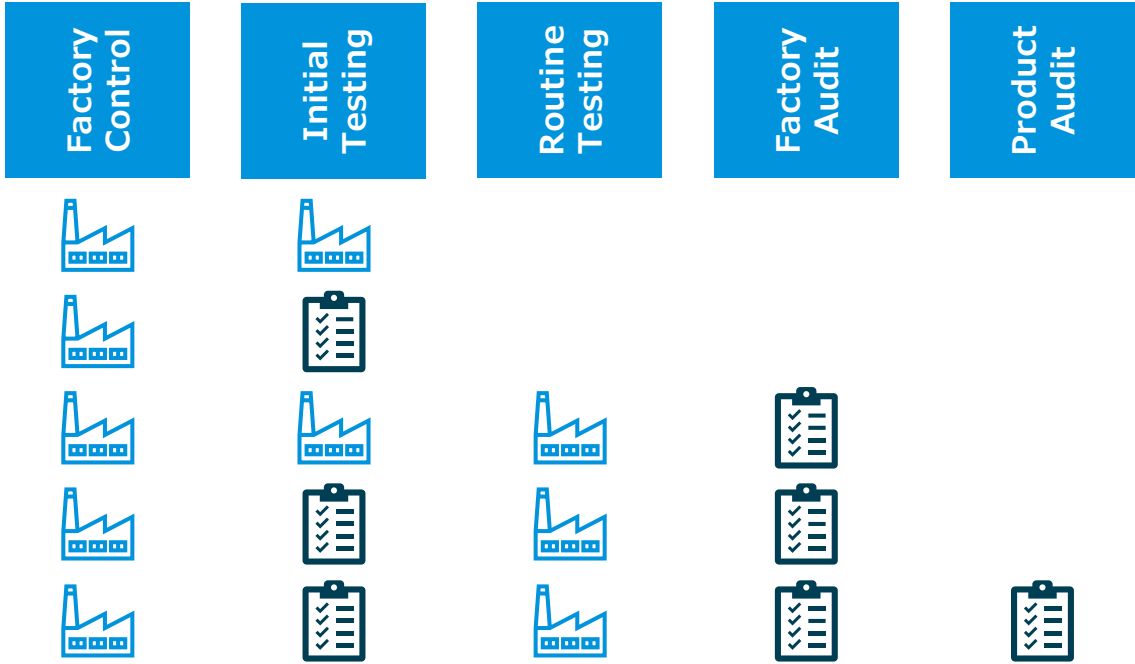
CPR Annex V





CPR Annex V

- System 4
- System 3
- System 2+
- System 1
- System 1+



Directive	Essential Requirement	Evidence	
ATEXD	General Requirements	Risk Assessment plus:	Test Report
	Supplementary Requirements	Risk Assessment plus:	Test Report
	Protective Systems	Risk Assessment plus:	Test Report
EMCD	Emissions	Risk Assessment plus:	Worst Case Analysis plus Test Report
	Immunity	Risk Assessment plus:	Test Report
LVD	Hazards arising from the Equipment	Risk Assessment plus:	Test Report
	Hazards due to External Influences	Risk Assessment plus:	Test Report
CPR	Instructions	Risk Assessment plus:	Test Report
	Reproducibility and Repeatability	Risk Assessment plus:	Test Report
	Durability	Risk Assessment plus:	Internal Test Evidence
	etc...	Risk Assessment plus:	Test Report
RED	Spectrum Usage	Risk Assessment plus:	Test Report plus Technical Justification
RoHSD	Chemical Composition	Risk Assessment plus:	Documentation from Components



Essential Requirement	Hazard	Risk Assessment	Mitigation and Evidence
EMC Emissions	Radiated emissions below 1 GHz	The device is normally idle (beacon not lit, radio polling), but also has flashing (beacon lit, radio polling) and download (beacon not lit, radio communicating) modes. Emissions could be worst in active or transmitting mode, but unlikely to be worst in idle mode. Flashing rate could have an impact, so test with fastest rate of flash. Colour variant of the lens will not have an impact.	Full tests in (fast) flashing and download modes. Test report documenting this.
	Radiated emissions above 1 GHz	Beacon electronics are low-frequency, and so emissions above 1 GHz are likely to be caused by the radio electronics.	Full tests in download mode only. Test report documenting this.
	Conducted emissions on power cables	Mode of operation could affect emissions, but unclear which mode will be worst (likely down to which draws most current through the switched-mode PSU).	Full tests in (fast) flashing and download modes. Test report documenting this.
	Conducted emissions on signal cables	No signal cables, so no risk.	None.



Essential Requirement	Hazard	Risk Assessment	Mitigation and Evidence
Radio Spectrum Usage	Ricochet Radio Bandwidth	Uses a pre-tested module and is unlikely to be impacted by the surrounding electronics.	Refer to module's existing test report only.
	Ricochet Radio Frequency Stability	Uses a pre-tested module and is unlikely to be impacted by the surrounding electronics.	Refer to module's existing test report only.
	Ricochet Radio Output Power	The results of this test could be impacted by the surrounding electronics. Comparison needed to show this isn't affected.	Repeat this test on the beacon, and compare the results to the module's test report.
	Ricochet Radio Spurious Emissions	The results of this test could be impacted by the surrounding electronics. Comparison needed to show this isn't affected.	Repeat this test on the beacon, and compare the results to the module's test report.
	Ricochet Radio Receiver Performance	The results of this test could be impacted by the surrounding electronics. Comparison needed to show this isn't affected.	Justify not testing this based on the comparison of the two tests above.

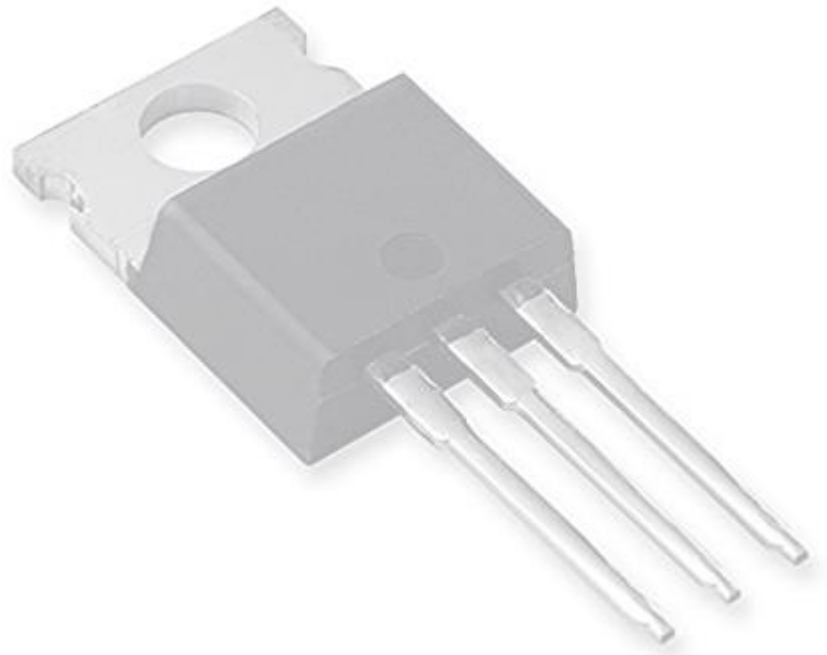


Modes of Operation



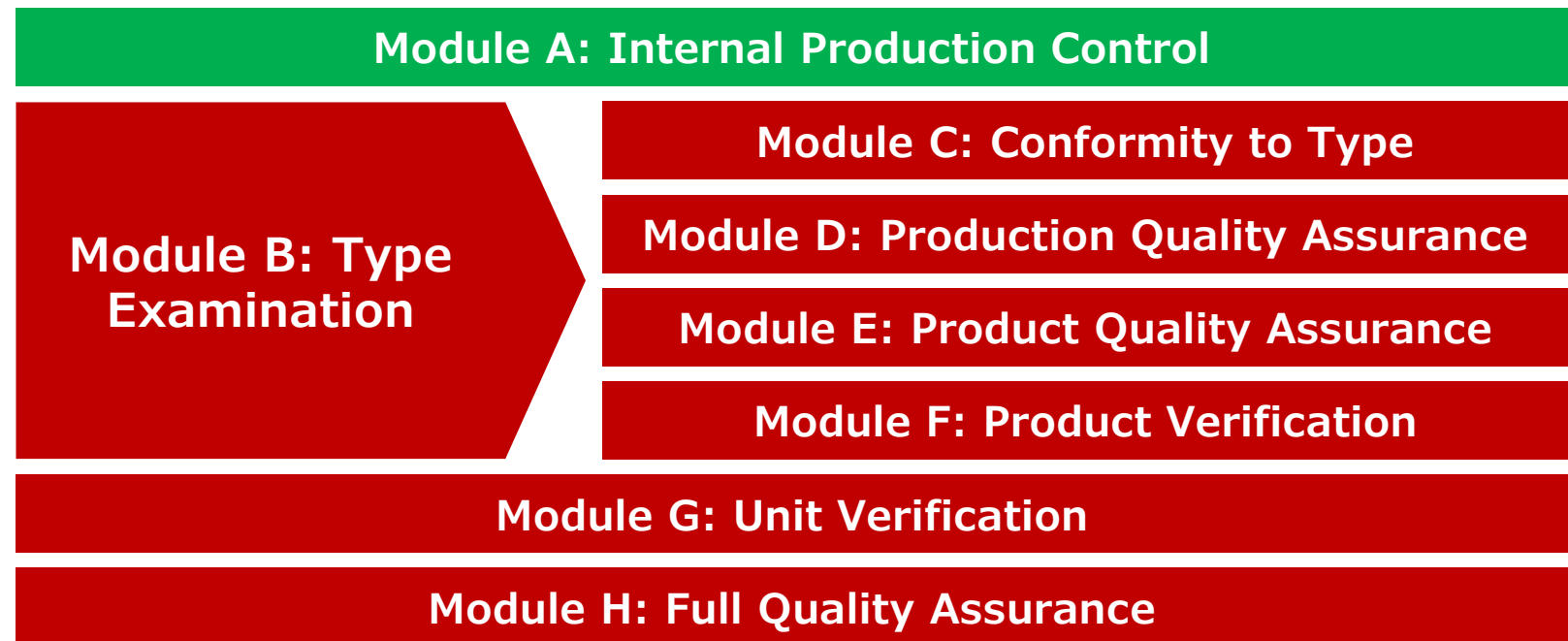
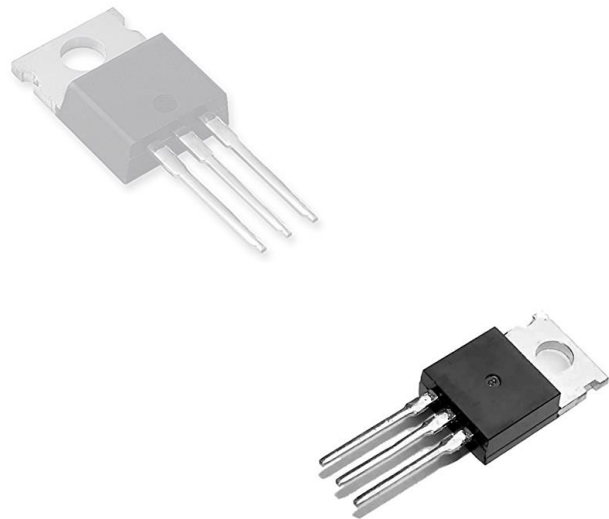
1. 2.4 GHz Wi-Fi Traffic
2. 5 GHz Wi-Fi Traffic
3. NFC Traffic
4. Bluetooth Traffic
5. 2G Traffic:
 - 900 MHz
 - 1800 MHz
6. 3G Traffic:
 - 900 MHz
 - 2100 MHz
7. 4G Traffic:
 - 700 MHz
 - 800 MHz
 - 2100 MHz
 - 2600 MHz
8. Wireless Idle
9. Battery Powered
10. Battery Charging
11. SD Card Read/Write
12. Touch Screen
13. Front / Rear Camera
14. GPS / compass
15. Gyroscope / accelerometer
16. Temperature sensor
17. Fingerprint scanner

Component Changes



Directive	Essential Requirement	Risk Assessment
ATEXD	General Requirements	Could affect overall available energy
	Supplementary Requirements	Unlikely to have an impact
	Protective Systems	Unlikely to have an impact
EMCD	Emissions	Unlikely to have an impact
	Immunity	Could have worse performance in some tests
LVD	Hazards arising from the Equipment	Unlikely to have an impact
	Hazards due to External Influences	Could be unsuitable in extreme temperatures
CPR	Instructions	Unlikely to have an impact
	Reproducibility and Repeatability	May affect reproducibility or repeatability
	Durability	Could be unsuitable in extreme temperatures
	etc...	Unlikely to have an impact
RED	Spectrum Usage	Unlikely to have an impact
RoHSD	Chemical Composition	Composition will need reviewing

Component Changes



USA: FCC & NRTL

	FCC (Radio and EMC)	NRTL (Safety)
Overarching Rules	FCC Code of Federal Regulations	Governed by OSHA
Accepted Standards	Slightly different to EU	Can use IEC standards
Certification Bodies	Telecommunication Certification Body (TCB)	Nationally Recognised Test Laboratory (NRTL)
Marking	FCC ID or Logo	Depends on the NRTL used

Canada: ISED & NRTL

	ISED (Radio and EMC)	NRTL (Safety)
Overarching Rules	ISED Procedures	Governed by SCC
Accepted Standards	Very similar to FCC	Can use IEC standards
Certification Bodies	Conformity Assessment Body (CAB)	Nationally Recognised Test Laboratory (NRTL)
Marking	ISED ID	Depends on the NRTL used

Japan: MIC, VCCI, PSE

	MIC (Radio)	VCCI (EMC)	PSE (Safety)
Overarching Rules	MIC Ordinances and Japan Radio Law	VCCI Rules	METI Rules
Accepted Standards	Unique to Japan	Slightly different to EU / FCC / ISED	Can use IEC standards
Certification Bodies	Conformity Assessment Body (CAB)	N/A	Conformity Assessment Body (CAB)
Marking	MIC ID and Giteki mark	VCCI mark	PSE Diamond or Circle mark

Australia & New Zealand: RCM

	RCM / EESS (Radio, EMC, Safety)
Overarching Rules	Equipment Safety Rules
Accepted Standards	Read-across from EU and FCC
Certification Bodies	Responsible Supplier
Marking	RCM Logo



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