

EMF Compliance Records for Transmitters used by M7CBR

REQUIRED AS PART OF THE RADIOCOMMUNICATIONS
LICENSE ISSUED TO AMATEUR RADIO OPERATORS

CAMERON BOYER

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Introduction

Electromagnetic Fields, referred to as EMF, are a naturally occurring phenomena that is generated as a result of the operation of radiocommunication equipment. Though normally safe, exposure to very high levels of EMF can be dangerous to health. In March 2021, Ofcom announced that all license holders of a radiocommunications license would need to hold records of EMF compliance in relation to the operation of radiocommunication equipment near members of public. These records are to prove that a license holder is not subjecting any members of the public to dangerous levels of EMF.

Ofcom has decided that EMF exposure level limits to be used are those set by International Commission for Non-Ionizing Radiation Protection (ICNIRP) on advice of Public Health England.

If certain conditions are met, then a radiocommunications license holder does not need to hold records of EMF compliance, however it has been identified that the station of M7CBR does need to keep a record of EMF compliance due to the equipment used.

An EMF Compliance record (such as this document) can contain information provided by the radio manufacturer in relation to EMF, calculations from Ofcom's EMF Calculator and controls that are used to minimise the risk of EMF on members of the public.

Full information regarding EMF, and Ofcom's Guidance on EMF Compliance and Enforcement can be found on the Ofcom website at <https://www.ofcom.org.uk/manage-your-licence/emf/>

Calculations provided in this document have been found using the Ofcom EMF calculator V0.1.2

The last revision of this document was prepared on 31/05/2021

License Details

Licensee Name	Cameron Wycliffe Boyer
Station Address	[REDACTED FOR WEB PUBLICATION] Locator: IO83tr
License class	Amateur Radio Foundation License
Callsign	M7CBR
License Number	[REDACTED FOR WEB PUBLICATION]

Document Revisions

25/05/2021 – Initial document

31/05/2021 – Added UV-3R

Web Release

Radiocommunications Equipment (Transmitters)

Handheld Radio Transmitters

Baofeng UV-5RE

Serial Number: 1030415846

RF (TX) Specifications

Maximum Output Power	4W
Modulation Modes	16K ϕ F3E 11K ϕ F3E

Ofcom EMF Calculator Results

Band	Separation Distance (m)
VHF (145.5 MHz)	0.82
UHF (433.5 MHz)	0.79

VHF:

Calculation of the compliance distance as per reference levels in the 1998 ICNIRP Guidelines for general public exposure to EMF from 10 MHz to 300 GHz (Version 0.1.2)			
Input parameters			
Transmitter power (EIRP)	=	6.56 Watts	← Enter EIRP (Watts) in cell D5. EIRP (Watts) = ERP (Watts) x 1.64
Operating frequency	=	145.5 MHz	← Enter frequency (MHz) in cell D6. Valid frequency range is from 10 MHz to 300,000 MHz.
Reference levels from ICNIRP 1998 Guidelines			
Reactive near-field zone	=	0.33 m	Intermediate parameter used in calculation. For information only
Reference level for power den	=	2 W/m ²	Intermediate parameter used in calculation. For information only
Calculated result			
Separation distance R	=	0.82 m	→ The value of R outside the boundary of the reactive near-field zone will be displayed in cell D14 given valid input parameters

UHF:

Calculation of the compliance distance as per reference levels in the 1998 ICNIRP Guidelines for general public exposure to EMF from 10 MHz to 300 GHz (Version 0.1.2)			
Input parameters			
Transmitter power (EIRP)	=	6.56 Watts	← Enter EIRP (Watts) in cell D5. EIRP (Watts) = ERP (Watts) x 1.64
Operating frequency	=	433.5 MHz	← Enter frequency (MHz) in cell D6. Valid frequency range is from 10 MHz to 300,000 MHz.
Reference levels from ICNIRP 1998 Guidelines			
Reactive near-field zone	=	0.11 m	Intermediate parameter used in calculation. For information only
Reference level for power den	=	2.1675 W/m ²	Intermediate parameter used in calculation. For information only
Calculated result			
Separation distance R	=	0.79 m	→ The value of R outside the boundary of the reactive near-field zone will be displayed in cell D14 given valid input parameters

Baofeng BF-T1

Serial Number: 9100A40147

RF (TX) Specifications

Maximum Output Power	1W
Modulation Modes	16K ϕ F3E 11K ϕ F3E

Ofcom EMF Calculator Results

Band	Separation Distance (m)
VHF (145.5 MHz)	0.41
UHF (433.5 MHz)	0.39

VHF:

Calculation of the compliance distance as per reference levels in the 1998 ICNIRP Guidelines for general public exposure to EMF from 10 MHz to 300 GHz (Version 0.1.2)			
Input parameters			
Transmitter power (EIRP)	=	1.64 Watts	← Enter EIRP (Watts) in cell D5. EIRP (Watts) = ERP (Watts) x 1.64
Operating frequency	=	145.5 MHz	← Enter frequency (MHz) in cell D6. Valid frequency range is from 10 MHz to 300,000 MHz.
Reference levels from ICNIRP 1998 Guidelines			
Reactive near-field zone	=	0.33 m	Intermediate parameter used in calculation. For information only
Reference level for power den	=	2 W/m ²	Intermediate parameter used in calculation. For information only
Calculated result			
Separation distance R	=	0.41 m	→ The value of R outside the boundary of the reactive near-field zone will be displayed in cell D14 given valid input parameters

UHF:

Calculation of the compliance distance as per reference levels in the 1998 ICNIRP Guidelines for general public exposure to EMF from 10 MHz to 300 GHz (Version 0.1.2)			
Input parameters			
Transmitter power (EIRP)	=	1.64 Watts	← Enter EIRP (Watts) in cell D5. EIRP (Watts) = ERP (Watts) x 1.64
Operating frequency	=	433.5 MHz	← Enter frequency (MHz) in cell D6. Valid frequency range is from 10 MHz to 300,000 MHz.
Reference levels from ICNIRP 1998 Guidelines			
Reactive near-field zone	=	0.11 m	Intermediate parameter used in calculation. For information only
Reference level for power den	=	2.1675 W/m ²	Intermediate parameter used in calculation. For information only
Calculated result			
Separation distance R	=	0.39 m	→ The value of R outside the boundary of the reactive near-field zone will be displayed in cell D14 given valid input parameters

Baofeng BF-X3Plus

Serial Number: 20BFS501177

RF (TX) Specifications

Maximum Output Power	5W
Modulation Modes	16K ϕ F3E 11K ϕ F3E

Ofcom EMF Calculator Results

Band	Separation Distance (m)
VHF (145.5 MHz)	0.91
UHF (433.5 MHz)	0.88

VHF:

Calculation of the compliance distance as per reference levels in the 1998 ICNIRP Guidelines for general public exposure to EMF from 10 MHz to 300 GHz (Version 0.1.2)			
Input parameters			
Transmitter power (EIRP)	=	8.2 Watts	← Enter EIRP (Watts) in cell D5. EIRP (Watts) = ERP (Watts) x 1.64
Operating frequency	=	145.5 MHz	← Enter frequency (MHz) in cell D6. Valid frequency range is from 10 MHz to 300,000 MHz.
Reference levels from ICNIRP 1998 Guidelines			
Reactive near-field zone	=	0.33 m	Intermediate parameter used in calculation. For information only
Reference level for power den	=	2 W/m ²	Intermediate parameter used in calculation. For information only
Calculated result			
Separation distance R	=	0.91 m	→ The value of R outside the boundary of the reactive near-field zone will be displayed in cell D14 given valid input parameters

UHF:

Calculation of the compliance distance as per reference levels in the 1998 ICNIRP Guidelines for general public exposure to EMF from 10 MHz to 300 GHz (Version 0.1.2)			
Input parameters			
Transmitter power (EIRP)	=	8.2 Watts	← Enter EIRP (Watts) in cell D5. EIRP (Watts) = ERP (Watts) x 1.64
Operating frequency	=	433.5 MHz	← Enter frequency (MHz) in cell D6. Valid frequency range is from 10 MHz to 300,000 MHz.
Reference levels from ICNIRP 1998 Guidelines			
Reactive near-field zone	=	0.11 m	Intermediate parameter used in calculation. For information only
Reference level for power den	=	2.1675 W/m ²	Intermediate parameter used in calculation. For information only
Calculated result			
Separation distance R	=	0.88 m	→ The value of R outside the boundary of the reactive near-field zone will be displayed in cell D14 given valid input parameters

Baofeng UV-3R

Serial Number: 3120612991

RF (TX) Specifications

Maximum Output Power	2W
Modulation Modes	16K ϕ F3E 11K ϕ F3E

Ofcom EMF Calculator Results

Band	Separation Distance (m)
VHF (145.5 MHz)	0.58
UHF (433.5 MHz)	0.56

VHF:

Calculation of the compliance distance as per reference levels in the 1998 ICNIRP Guidelines for general public exposure to EMF from 10 MHz to 300 GHz (Version 0.1.2)

Input parameters			
Transmitter power (EIRP)	=	3.28 Watts	← Enter EIRP (Watts) in cell D5. EIRP (Watts) = ERP (Watts) x 1.64
Operating frequency	=	145.5 MHz	← Enter frequency (MHz) in cell D6. Valid frequency range is from 10 MHz to 300,000 MHz.
Reference levels from ICNIRP 1998 Guidelines			
Reactive near-field zone	=	0.33 m	Intermediate parameter used in calculation. For information only
Reference level for power den	=	2 W/m ²	Intermediate parameter used in calculation. For information only
Calculated result			
Separation distance R	=	0.58 m	→ The value of R outside the boundary of the reactive near-field zone will be displayed in cell D14 given valid input parameters

UHF:

Calculation of the compliance distance as per reference levels in the 1998 ICNIRP Guidelines for general public exposure to EMF from 10 MHz to 300 GHz (Version 0.1.2)									
Input parameters									
Transmitter power (EIRP)		=	3.28 Watts	← Enter EIRP (Watts) in cell D5. EIRP (Watts) = ERP (Watts) x 1.64					
Operating frequency		=	433.5 MHz	← Enter frequency (MHz) in cell D6. Valid frequency range is from 10 MHz to 300,000 MHz.					
Reference levels from ICNIRP 1998 Guidelines									
Reactive near-field zone		=	0.11 m	Intermediate parameter used in calculation. For information only					
Reference level for power den		=	2.1675 W/m ²	Intermediate parameter used in calculation. For information only					
Calculated result									
Separation distance R		=	0.56 m	→ The value of R outside the boundary of the reactive near-field zone will be displayed in cell D14 given valid input parameters					

Base Station Transmitters

Retevis RT95

Awaiting Receipt of Radio

Web Release

Controls to manage EMF emissions

In order to manage the EMF emissions from members of the public, the following hierarchy of controls will be followed:

- Where practicable, move to a location where the separation distance can be maintained between the transmitter and members of the public. For example, with a Handheld walk to an area separation distance away from the nearest member of public. For example, with a Mobile vehicular mounted radio, move the vehicle to separation distance between the antenna and the nearest member of the public.
- Where practicable, reduce transmission time. For example, avoid transmitting longer than 2 minutes in any 5-minute window.
- Where reasonably practicable, reduce the transmitter power and/or change band.
- If a separation distance cannot be maintained, signage shall be used to inform members of the public that RF equipment is in use within the identified area (radial from transmitter outwards to separation distance), and that members of the public should avoid “loitering” within the identified area. If the separation distance is infringed by more than 50%, transmission of RF shall stop immediately.
- If a separation distance cannot be maintained and no signage is available, no transmission shall be made.

If any enquires are made by members of the public relating to EMF emissions resulting from RF operations, they will be given details for the EMF page on the station website where additional information will be given. This will also include links to Ofcom’s EMF pages and a copy of this document.

If you have any comments regarding information contained within this document, please contact the station via email at emf@m7cbr.ml

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