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ASSESSMENT REPORT

Report No.: 30751IDT.003

REPORT ON: RF EXPOSURE ASSESSMENT OF THE F3307 ERICSSON MOBILE BROADBAND MODULE INSTALLED IN GENERIC HOST PLATFORMS COVERING 7 DIFFERENT COLLOCATION SCENARIOS.

Product	:	Ericsson Mobile Broadband Module
Trade Mark	:	Ericsson
Model	:	F3307
FCC ID / IC:	:	VV7-MBMF33071 / 287AG-MBMF33071
Manufacturer	:	Ericsson AB
Requested by	:	Ericsson AB
Host Platform	:	Generic host platforms covering 7 different collocation scenarios
Standard(s)	:	OET Bulletin 65 Edition 97-01 August 1997 FCC 47 CFR § 1.1307 FCC 47 CFR § 1.1310 RSS-102 Issue 3 - June 2009 1999/519/EC Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003 ARPANSA RPS No. 3 AS 2772.2-1998:Radiofrequency radiation – Part 2 Vodafone requirements [1999/519/EC]

This test report includes 2 annexes and therefore, the total number of pages is 36.

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1. COMPETENCE AND GUARANTEES

AT4 wireless is a testing laboratory competent to carry out the evaluation described in this report.

AT4 wireless guarantees the reliability of the data presented in this report, which is based on the information available at AT4 wireless at the time of performance of the evaluation.

AT4 wireless is liable to the client for the maintenance of the confidentiality of all information related to the item under review and the results of such evaluation

2. GENERAL CONDITIONS

1. This report refers only to the item that has undergone the evaluation as described in Annex A of this report according to the information provided by the applicant.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of AT4 wireless.
4. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of AT4 wireless and the Accreditation Bodies.

3. CHARACTERISTICS OF THE EVALUATION

3.1. SERVICES REQUESTED

RF exposure assessment of the F3307 Ericsson Mobile Broadband Module installed in generic host platforms covering 7 different collocation scenarios according to:

Requirements	Frequency bands
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared. FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits. RSS-102 Issue 3 - June 2009	GSM 850, FDD V, PCS 1900, FDD II

1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)	E-GSM 900, DCS 1800
Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003 ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz) AS 2772.2-1998: Radiofrequency radiation - Part 2: Principles and methods of measurement - 300 kHz to 100 GHz	FDD V, E-GSM 900, DCS 1800
Vodafone requirements [1999/519/EC]	GSM 850, FDD V, E-GSM 900, DCS 1800, PCS 1900, FDD II

3.2. REQUIREMENTS AND METHOD

The evaluation has been carried out according to the following documents and standards:

Requirements	Frequency bands
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared. FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits. RSS-102 Issue 3 - June 2009	GSM 850, FDD V, PCS 1900, FDD II
1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)	E-GSM 900, DCS 1800
Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003 ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz) AS 2772.2-1998: Radiofrequency radiation - Part 2: Principles and methods of measurement - 300 kHz to 100 GHz	FDD V, E-GSM 900, DCS 1800
Vodafone requirements [1999/519/EC]	GSM 850, FDD V, E-GSM 900, DCS 1800, PCS 1900, FDD II

4. IDENTIFICATION DATA SUPPLIED BY THE APPLICANT

Identification data included in this section has been supplied by the client.

4.1. APPLICANT

Name / Company: Ericsson AB

V.A.T. Registration number: 556056-625801

Address: Lindholmspiren 11, SE-417 56 Goteborg

Country: Sweden

Telephone: +46 10 712 0000 **Fax:** +46 10 712 6033

4.2. REPRESENTATIVE

Name: Pelle Hellberg

Address: Lindholmspiren 11, SE-417 56 Goteborg

Country: Sweden

Telephone: +46 10 712 6001 **Fax:** +46 10 712 6033

4.3. IDENTIFICATION OF ITEM/ITEMS EVALUATED

Product: Ericsson Mobile Broadband Module

Trade mark: Ericsson **Model:** F3307

FCC ID: VV7-MBMF33071 **IC:** 287AG-MBMF33071

Manufacturer: Ericsson AB

Country of manufacture: China

Host platform: Generic host platforms covering 7 different collocation scenarios

Description: 2G (GSM/GPRS/EDGE Class 10: 850/900/1800/1900 MHz) and 3G (HSDPA/HSUPA/WCDMA Release 6: FDD II, FDD V) module installed in generic host platforms covering 7 different collocation scenarios.

5. EVALUATION RESULTS

Abbreviations used in the VERDICT column of the following tables are:

C Compliant with requirements

NC Not Compliant with requirements

NA Not Applicable

NE Not Evaluated

5.1. RESULTS FOR ITEM EVALUATED TRANSMITTING ALONE

DOCUMENT/STANDARD	VERDICT			
	NA	C	NC	NE
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared. FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits. RSS-102 Issue 3 - June 2009		C		
1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)		C		
Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003 ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz) AS 2772.2-1998: Radiofrequency radiation - Part 2: Principles and methods of measurement - 300 kHz to 100 GHz		C		
Vodafone requirements [1999/519/EC]		C		

5.2. RESULTS FOR ITEM EVALUATED TRANSMITTING SIMULTANEOUSLY WITH OTHER COLLOCATED TRANSMITTERS

DOCUMENT/STANDARD	VERDICT			
	NA	C	NC	NE
OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared. FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits.		C		
1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)		C		
Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003 ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz) AS 2772.2-1998: Radiofrequency radiation - Part 2: Principles and methods of measurement - 300 kHz to 100 GHz		C		
Vodafone requirements [1999/519/EC]		C		

6. REMARKS AND COMMENTS

GSM and GPRS modes have been evaluated together because both modes share the same power class and modulation scheme in the uplink.

WCDMA and HSDPA modes have been evaluated together because HSDPA is an improved mode of operation only for Downlink (equipment reception), but using the normal WCDMA mode for the Uplink (equipment transmission).

The equipment is also commercialised under other FCC ID with the following structure:

FCC ID: VV7-MBMF33071-**X**

Where **X** is a letter identifying variants of the product.

Providing the changes in these variants do not affect to certified parameters, this report will be also applicable to them.

7. SUMMARY

Considering the results of the performed analysis and evaluation, stated in annexes A and B, the item under evaluation is **IN COMPLIANCE** with the specifications listed in section 3.1 "SERVICES REQUESTED".

NOTE: The results presented in this report apply only to the particular item under evaluation established in section "4.3. IDENTIFICATION OF ITEM/ITEMS EVALUATED" of this document, as presented for evaluation by the applicant.

ANNEX A

HOST PLATFORMS ANALYSIS

Report No: 30751IDT.003

A.1. SCENARIO 1

Scenario 1 covers a host device where the F3307 Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a Bluetooth transmitter (F3307 antenna-to-Bluetooth antenna distance < 20 cm) which is also in mobile exposure conditions. Other transmitters may be installed in the same host platform but they are not collocated with F3307 Ericsson Mobile Broadband Module.

MAIN/PRIMARY TRANSMITTER:

WWAN transmitter:

Type of equipment : Ericsson Mobile Broadband Module
Trade mark : Ericsson
Model : F3307
FCC ID / IC : VV7-MBMF33071 / 287AG-MBMF33071
Maximum antenna gain : Low bands: 2.10 dBi // High bands: 4.98 dBi
Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824.2 - 848.8	32.91	1954.34	25%	488.58	2.10	1.62	792.39
	EDGE	824.2 - 848.8	31.02	1264.74	25%	316.18	2.10	1.62	512.79
FDD V	WCDMA/HSDPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
	HSUPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
E-GSM 900	GSM/GPRS	880.2 - 914.8	32.60	1819.70	25%	454.93	2.10	1.62	737.80
	EDGE	880.2 - 914.8	27.90	616.60	25%	154.15	2.10	1.62	250.00
DCS 1800	GSM/GPRS	1710.2 - 1784.8	29.80	954.99	25%	238.75	4.98	3.15	751.52
	EDGE	1710.2 - 1784.8	27.10	512.86	25%	128.22	4.98	3.15	403.59
PCS 1900	GSM/GPRS	1850.2 - 1909.8	29.12	816.58	25%	204.15	4.98	3.15	642.60
	EDGE	1850.2 - 1909.8	29.18	827.94	25%	206.99	4.98	3.15	651.54
FDD II	WCDMA/HSDPA	1852.4 - 1907.6	27.75	595.66	100%	595.66	4.98	3.15	1874.99
	HSUPA	1852.4 - 1907.6	28.03	635.33	100%	635.33	4.98	3.15	1999.86

ADDITIONAL/SECONDARY TRANSMITTERS:

Bluetooth transmitter:

Type of equipment : Bluetooth[1]
Trade mark : Any
Model : Any
FCC ID / IC : Any
Output power : See table below

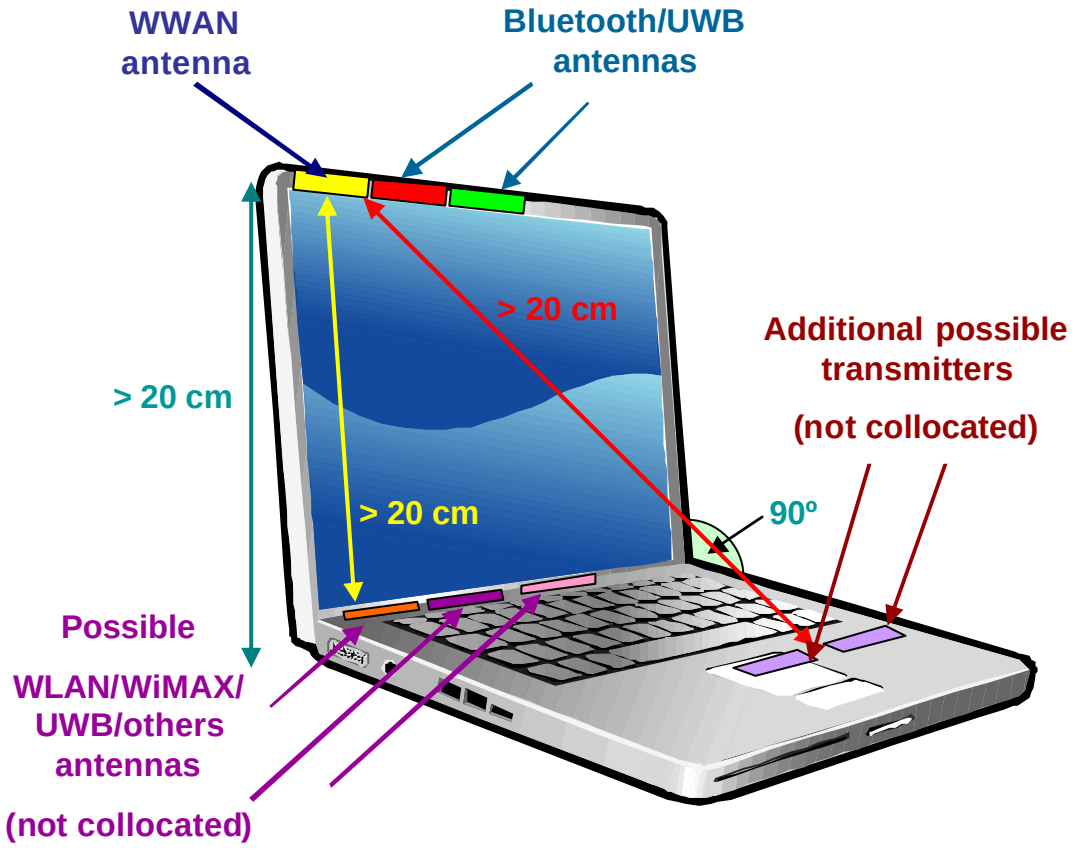
Scenario 1			
Type of transmitter	**Maximum EIRP (mW)**	**Duty Cycle**	**EIRP (mW)**
Bluetooth	100	76%	76,43

[1] It could be also Bluetooth + UWB transmitter)
UWB contribution does not need to be considered.

WORST CASE CONSIDERATIONS:

- Antenna-to-user distance: 20 cm.
    - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- F3307 antenna gains: Low bands: 2.10 dBi // High bands: 4.98 dBi
    - Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Bluetooth EIRP: 100 mW
    - Any Bluetooth (or Bluetooth + UWB) transmitter with EIRP below 100 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
    - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

SAMPLE CONFIGURATION:



A.2. SCENARIO 2

Scenario 2 covers a host device where the F3307 Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WLAN transmitter (F3307 antenna-to-WLAN antenna distance < 20 cm) which is also in mobile exposure conditions.

WLAN transmitter may have other antennas in portable exposure conditions but they are not collocated with F3307 Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with F3307 Ericsson Mobile Broadband Module.

MAIN/PRIMARY TRANSMITTER:

WWAN transmitter:

Type of equipment : Ericsson Mobile Broadband Module
Trade mark : Ericsson
Model : F3307
FCC ID / IC : VV7-MBMF33071 / 287AG-MBMF33071
Maximum antenna gain : Low bands: 2.10 dBi // High bands: 4.98 dBi
Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824.2 - 848.8	32.91	1954.34	25%	488.58	2.10	1.62	792.39
	EDGE	824.2 - 848.8	31.02	1264.74	25%	316.18	2.10	1.62	512.79
FDD V	WCDMA/HSDPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
	HSUPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
E-GSM 900	GSM/GPRS	880.2 - 914.8	32.60	1819.70	25%	454.93	2.10	1.62	737.80
	EDGE	880.2 - 914.8	27.90	616.60	25%	154.15	2.10	1.62	250.00
DCS 1800	GSM/GPRS	1710.2 - 1784.8	29.80	954.99	25%	238.75	4.98	3.15	751.52
	EDGE	1710.2 - 1784.8	27.10	512.86	25%	128.22	4.98	3.15	403.59
PCS 1900	GSM/GPRS	1850.2 - 1909.8	29.12	816.58	25%	204.15	4.98	3.15	642.60
	EDGE	1850.2 - 1909.8	29.18	827.94	25%	206.99	4.98	3.15	651.54
FDD II	WCDMA/HSDPA	1852.4 - 1907.6	27.75	595.66	100%	595.66	4.98	3.15	1874.99
	HSUPA	1852.4 - 1907.6	28.03	635.33	100%	635.33	4.98	3.15	1999.86

ADDITIONAL/SECONDARY TRANSMITTERS:

WLAN transmitter:

Type of equipment : WLAN [2]
Trade mark : Any
Model : Any
FCC ID / IC : Any
Output power : See table below

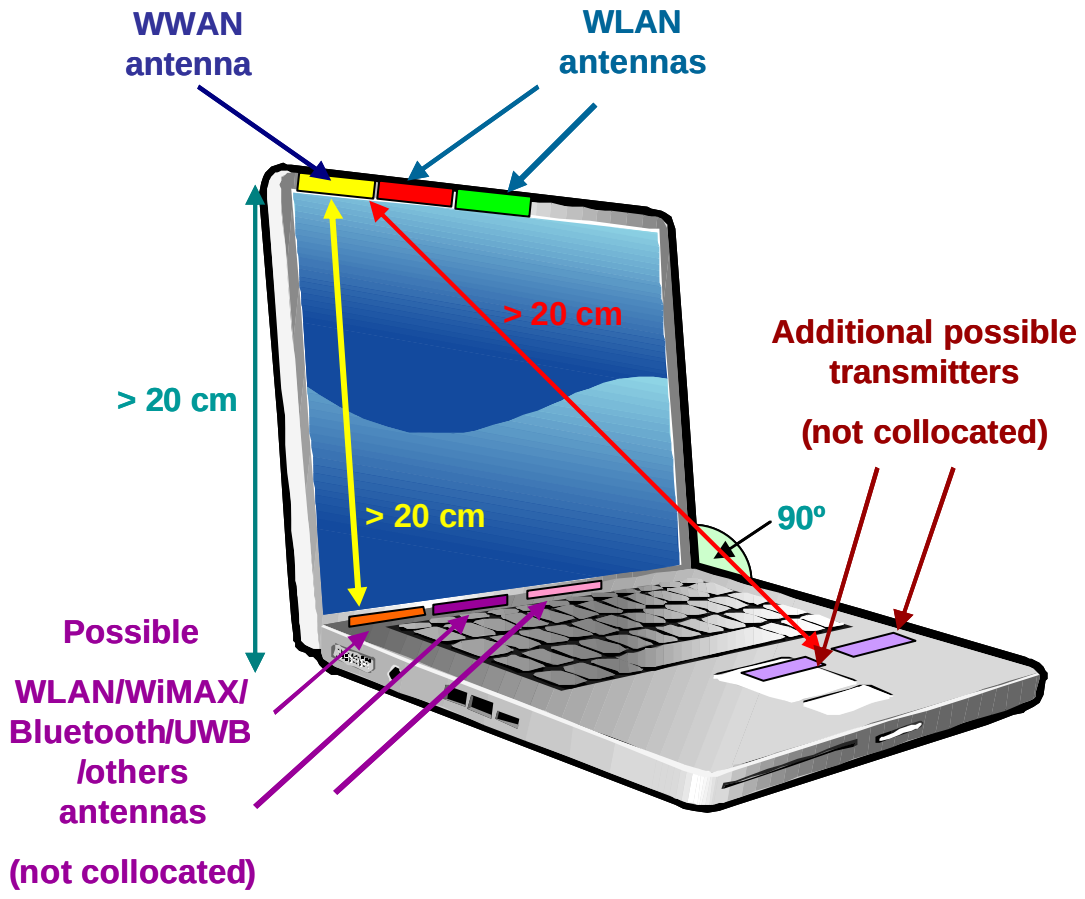
Scenario 3			
Type of transmitter	**Maximum EIRP (mW)**	**Duty Cycle**	**EIRP (mW)**
WLAN	2000	100%	2000,00

[2] It could be also WLAN/WiMAX combo transmitter where WLAN and WiMAX transmitters do not transmit simultaneously.

WORST CASE CONSIDERATIONS:

- Antenna-to-user distance: 20 cm.
    - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- F3307 antenna gains: Low bands: 2.10 dBi // High bands: 4.98 dBi
    - Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WLAN EIRP: 2000 mW
    - Any WLAN transmitter with EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
    - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

SAMPLE CONFIGURATION:



A.3. SCENARIO 3

Scenario 3 covers a host device where the F3307 Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WLAN transmitter and a Bluetooth transmitter (F3307 antenna-to-WLAN/Bluetooth antenna distance < 20 cm) which are also in mobile exposure conditions.

WLAN transmitter may have other antennas in portable exposure conditions but they are not collocated with F3307 Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with F3307 Ericsson Mobile Broadband Module.

MAIN/PRIMARY TRANSMITTER:

WWAN transmitter:

Type of equipment : Ericsson Mobile Broadband Module
Trade mark : Ericsson
Model : F3307
FCC ID / IC : VV7-MBMF33071 / 287AG-MBMF33071
Maximum antenna gain : Low bands: 2.10 dBi // High bands: 4.98 dBi
Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824.2 - 848.8	32.91	1954.34	25%	488.58	2.10	1.62	792.39
	EDGE	824.2 - 848.8	31.02	1264.74	25%	316.18	2.10	1.62	512.79
FDD V	WCDMA/HSDPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
	HSUPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
E-GSM 900	GSM/GPRS	880.2 - 914.8	32.60	1819.70	25%	454.93	2.10	1.62	737.80
	EDGE	880.2 - 914.8	27.90	616.60	25%	154.15	2.10	1.62	250.00
DCS 1800	GSM/GPRS	1710.2 - 1784.8	29.80	954.99	25%	238.75	4.98	3.15	751.52
	EDGE	1710.2 - 1784.8	27.10	512.86	25%	128.22	4.98	3.15	403.59
PCS 1900	GSM/GPRS	1850.2 - 1909.8	29.12	816.58	25%	204.15	4.98	3.15	642.60
	EDGE	1850.2 - 1909.8	29.18	827.94	25%	206.99	4.98	3.15	651.54
FDD II	WCDMA/HSDPA	1852.4 - 1907.6	27.75	595.66	100%	595.66	4.98	3.15	1874.99
	HSUPA	1852.4 - 1907.6	28.03	635.33	100%	635.33	4.98	3.15	1999.86

ADDITIONAL/SECONDARY TRANSMITTERS:

WLAN transmitter:

Type of equipment : WLAN [3]
Trade mark : Any
Model : Any
FCC ID / IC : Any
Output power : See table below

Scenario 3			
Type of transmitter	**Maximum EIRP (mW)**	**Duty Cycle**	**EIRP (mW)**
WLAN	2000	100%	2000,00

[3] It could be also WLAN/WiMAX combo transmitter where WLAN and WiMAX transmitters do not transmit simultaneously.

Bluetooth transmitter:

Type of equipment : Bluetooth[4]
Trade mark : Any
Model : Any
FCC ID / IC : Any
Output power : See table below

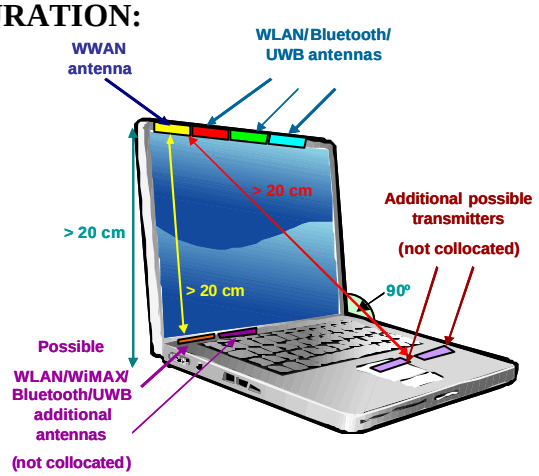
Scenario 3			
Type of transmitter	**Maximum EIRP (mW)**	**Duty Cycle**	**EIRP (mW)**
Bluetooth	100	76%	76,43

[4] It could be also Bluetooth + UWB transmitter)
UWB contribution does not need to be considered.

WORST CASE CONSIDERATIONS:

- Antenna-to-user distance: 20 cm.
  - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- F3307 antenna gains: Low bands: 2.10 dBi // High bands: 4.98 dBi
  - Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WLAN EIRP: 2000 mW
  - Any WLAN transmitter with EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Bluetooth EIRP: 100 mW
  - Any Bluetooth (or Bluetooth + UWB) transmitter with EIRP below 100 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

SAMPLE CONFIGURATION:



A.4. SCENARIO 4

Scenario 4 covers a host device where the F3307 Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WiMAX transmitter (F3307 antenna-to-WiMAX antenna distance < 20 cm) which is also in mobile exposure conditions.

WiMAX transmitter may have other antennas in portable exposure conditions but they are not collocated with F3307 Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with F3307 Ericsson Mobile Broadband Module.

MAIN/PRIMARY TRANSMITTER:

WWAN transmitter:

Type of equipment : Ericsson Mobile Broadband Module
Trade mark : Ericsson
Model : F3307
FCC ID / IC : VV7-MBMF33071 / 287AG-MBMF33071
Maximum antenna gain : Low bands: 2.10 dBi // High bands: 4.98 dBi
Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824.2 - 848.8	32.91	1954.34	25%	488.58	2.10	1.62	792.39
	EDGE	824.2 - 848.8	31.02	1264.74	25%	316.18	2.10	1.62	512.79
FDD V	WCDMA/HSDPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
	HSUPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
E-GSM 900	GSM/GPRS	880.2 - 914.8	32.60	1819.70	25%	454.93	2.10	1.62	737.80
	EDGE	880.2 - 914.8	27.90	616.60	25%	154.15	2.10	1.62	250.00
DCS 1800	GSM/GPRS	1710.2 - 1784.8	29.80	954.99	25%	238.75	4.98	3.15	751.52
	EDGE	1710.2 - 1784.8	27.10	512.86	25%	128.22	4.98	3.15	403.59
PCS 1900	GSM/GPRS	1850.2 - 1909.8	29.12	816.58	25%	204.15	4.98	3.15	642.60
	EDGE	1850.2 - 1909.8	29.18	827.94	25%	206.99	4.98	3.15	651.54
FDD II	WCDMA/HSDPA	1852.4 - 1907.6	27.75	595.66	100%	595.66	4.98	3.15	1874.99
	HSUPA	1852.4 - 1907.6	28.03	635.33	100%	635.33	4.98	3.15	1999.86

ADDITIONAL/SECONDARY TRANSMITTERS:

WiMAX transmitter:

Type of equipment : WiMAX[5]
Trade mark : Any
Model : Any
FCC ID / IC : Any
Output power : See table below

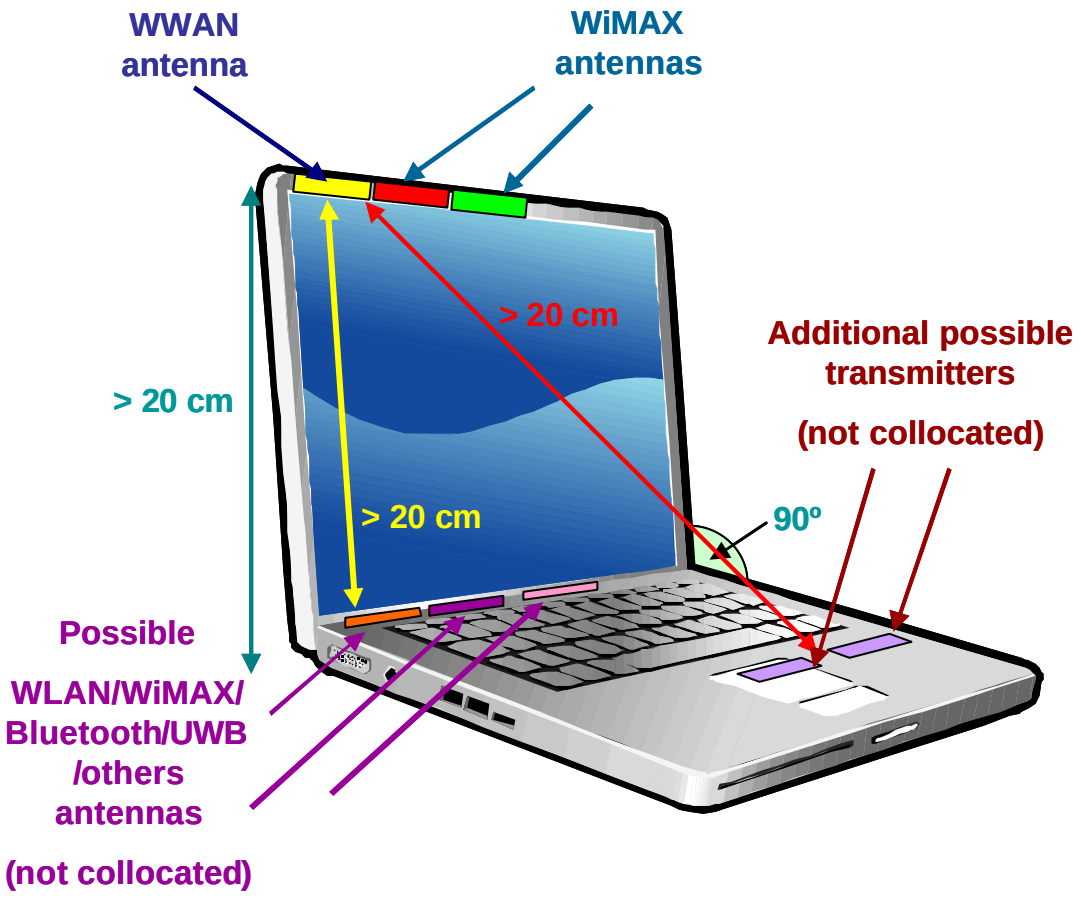
Scenario 4			
Type of transmitter	**Maximum EIRP (mW)**	**Duty Cycle**	**EIRP (mW)**
WiMAX	2000	100%	2000,00

[5] It could be also WLAN/WiMAX combo transmitter where WLAN and WiMAX transmitters do not transmit simultaneously.

WORST CASE CONSIDERATIONS:

- Antenna-to-user distance: 20 cm.
  - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- F3307 antenna gains: Low bands: 2.10 dBi // High bands: 4.98 dBi
  - Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WiMAX EIRP: 2000 mW
  - Any WiMAX transmitter with EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

SAMPLE CONFIGURATION:



A.5. SCENARIO 5

Scenario 5 covers a host device where the F3307 Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WiMAX transmitter and a Bluetooth transmitter (F3307 antenna-to-WiMAX/Bluetooth antenna distance < 20 cm) which are also in mobile exposure conditions.

WiMAX transmitter may have other antennas in portable exposure conditions but they are not collocated with F3307 Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with F3307 Ericsson Mobile Broadband Module.

MAIN/PRIMARY TRANSMITTER:

WWAN transmitter:

Type of equipment : Ericsson Mobile Broadband Module
Trade mark : Ericsson
Model : F3307
FCC ID / IC : VV7-MBMF33071 / 287AG-MBMF33071
Maximum antenna gain : Low bands: 2.10 dBi // High bands: 4.98 dBi
Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824.2 - 848.8	32.91	1954.34	25%	488.58	2.10	1.62	792.39
	EDGE	824.2 - 848.8	31.02	1264.74	25%	316.18	2.10	1.62	512.79
FDD V	WCDMA/HSDPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
	HSUPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
E-GSM 900	GSM/GPRS	880.2 - 914.8	32.60	1819.70	25%	454.93	2.10	1.62	737.80
	EDGE	880.2 - 914.8	27.90	616.60	25%	154.15	2.10	1.62	250.00
DCS 1800	GSM/GPRS	1710.2 - 1784.8	29.80	954.99	25%	238.75	4.98	3.15	751.52
	EDGE	1710.2 - 1784.8	27.10	512.86	25%	128.22	4.98	3.15	403.59
PCS 1900	GSM/GPRS	1850.2 - 1909.8	29.12	816.58	25%	204.15	4.98	3.15	642.60
	EDGE	1850.2 - 1909.8	29.18	827.94	25%	206.99	4.98	3.15	651.54
FDD II	WCDMA/HSDPA	1852.4 - 1907.6	27.75	595.66	100%	595.66	4.98	3.15	1874.99
	HSUPA	1852.4 - 1907.6	28.03	635.33	100%	635.33	4.98	3.15	1999.86

ADDITIONAL/SECONDARY TRANSMITTERS:

WiMAX transmitter:

Type of equipment : WiMAX[6]
Trade mark : Any
Model : Any
FCC ID / IC : Any
Output power : See table below

Scenario 5			
Type of transmitter	**Maximum EIRP (mW)**	**Duty Cycle**	**EIRP (mW)**
WiMAX	2000	100%	2000,00

[6] It could be also WLAN/WiMAX combo transmitter where WLAN and WiMAX transmitters do not transmit simultaneously.

Bluetooth transmitter:

Type of equipment : Bluetooth[7]
Trade mark : Any
Model : Any
FCC ID / IC : Any
Output power : See table below

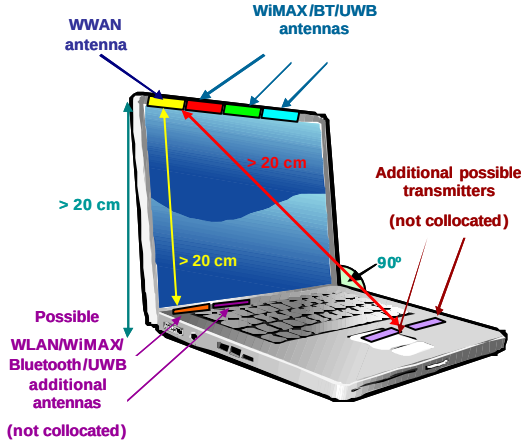
Scenario 5			
Type of transmitter	**Maximum EIRP (mW)**	**Duty Cycle**	**EIRP (mW)**
Bluetooth	100	76%	76,43

[7] It could be also Bluetooth + UWB transmitter)
UWB contribution does not need to be considered.

WORST CASE CONSIDERATIONS:

- Antenna-to-user distance: 20 cm.
  - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- F3307 antenna gains: Low bands: 2.10 dBi // High bands: 4.98 dBi
  - Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WiMAX EIRP: 2000 mW
  - Any WiMAX transmitter with EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Bluetooth EIRP: 100 mW
  - Any Bluetooth (or Bluetooth + UWB) transmitter with EIRP below 100 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

SAMPLE CONFIGURATION:



A.6. SCENARIO 6

Scenario 6 covers a host device where the F3307 Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WLAN transmitter and a WiMAX transmitter (F3307 antenna-to-WLAN/WiMAX antenna distance < 20 cm) which are also in mobile exposure conditions.

WLAN/WiMAX transmitters may have other antennas in portable exposure conditions but they are not collocated with F3307 Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with F3307 Ericsson Mobile Broadband Module.

MAIN/PRIMARY TRANSMITTER:

WWAN transmitter:

Type of equipment : Ericsson Mobile Broadband Module
Trade mark : Ericsson
Model : F3307
FCC ID / IC : VV7-MBMF33071 / 287AG-MBMF33071
Maximum antenna gain : Low bands: 2.10 dBi // High bands: 4.98 dBi
Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824.2 - 848.8	32.91	1954.34	25%	488.58	2.10	1.62	792.39
	EDGE	824.2 - 848.8	31.02	1264.74	25%	316.18	2.10	1.62	512.79
FDD V	WCDMA/HSDPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
	HSUPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
E-GSM 900	GSM/GPRS	880.2 - 914.8	32.60	1819.70	25%	454.93	2.10	1.62	737.80
	EDGE	880.2 - 914.8	27.90	616.60	25%	154.15	2.10	1.62	250.00
DCS 1800	GSM/GPRS	1710.2 - 1784.8	29.80	954.99	25%	238.75	4.98	3.15	751.52
	EDGE	1710.2 - 1784.8	27.10	512.86	25%	128.22	4.98	3.15	403.59
PCS 1900	GSM/GPRS	1850.2 - 1909.8	29.12	816.58	25%	204.15	4.98	3.15	642.60
	EDGE	1850.2 - 1909.8	29.18	827.94	25%	206.99	4.98	3.15	651.54
FDD II	WCDMA/HSDPA	1852.4 - 1907.6	27.75	595.66	100%	595.66	4.98	3.15	1874.99
	HSUPA	1852.4 - 1907.6	28.03	635.33	100%	635.33	4.98	3.15	1999.86

ADDITIONAL/SECONDARY TRANSMITTERS:

WLAN/WiMAX transmitter:

Type of equipment : WLAN / WiMAX
Trade mark : Any
Model : Any
FCC ID / IC : Any
Output power : See table below

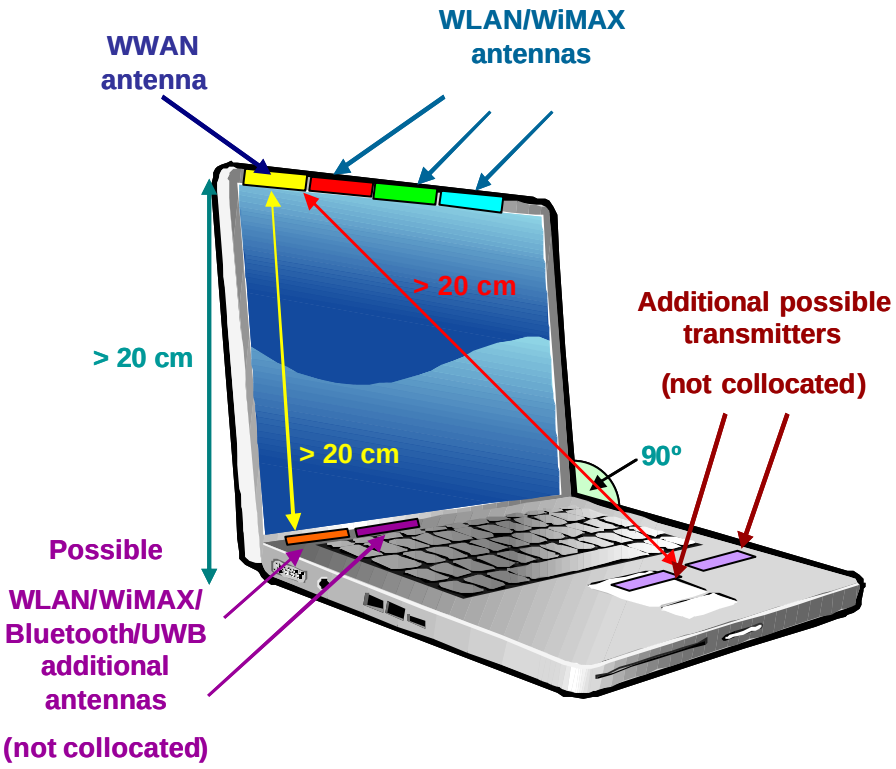
Scenario 6			
Type of transmitter	**Maximum EIRP (mW)**	**Duty Cycle**	**EIRP (mW)**
WLAN / WiMAX	2000 [8]	100%	2000,00

[8] Aggregated EIRP of WLAN and WiMAX transmitters

WORST CASE CONSIDERATIONS:

- Antenna-to-user distance: 20 cm.
    - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- F3307 antenna gains: Low bands: 2.10 dBi // High bands: 4.98 dBi
    - Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WLAN EIRP + WiMAX EIRP: 2000 mW
    - Any WLAN transmitter and WiMAX transmitters with aggregated EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
    - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

SAMPLE CONFIGURATION:



A.7. SCENARIO 7

Scenario 6 covers a host device where the F3307 Ericsson Mobile Broadband Module is in mobile exposure conditions (antenna-to-user distance > 20 cm) and it is collocated with a WLAN transmitter a WiMAX transmitter and a Bluetooth transmitter (F3307 antenna-to-WLAN/WiMAX/Bluetooth antenna distance < 20 cm) which are also in mobile exposure conditions.

WLAN/WiMAX transmitters may have other antennas in portable exposure conditions but they are not collocated with F3307 Ericsson Mobile Broadband Module antenna.

Other transmitters may be installed in the same host platform but they are not collocated with F3307 Ericsson Mobile Broadband Module.

MAIN/PRIMARY TRANSMITTER:

WWAN transmitter:

Type of equipment : Ericsson Mobile Broadband Module
Trade mark : Ericsson
Model : F3307
FCC ID / IC : VV7-MBMF33071 / 287AG-MBMF33071
Maximum antenna gain : Low bands: 2.10 dBi // High bands: 4.98 dBi
Output power : See table below

Frequency Band	Mode	Frequency range (MHz)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty Cycle	Equivalent conducted output power (mW)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	EIRP (mW)
GSM 850	GSM/GPRS	824.2 - 848.8	32.91	1954.34	25%	488.58	2.10	1.62	792.39
	EDGE	824.2 - 848.8	31.02	1264.74	25%	316.18	2.10	1.62	512.79
FDD V	WCDMA/HSDPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
	HSUPA	826.4 - 846.6	28.76	751.62	100%	751.62	2.10	1.62	1218.99
E-GSM 900	GSM/GPRS	880.2 - 914.8	32.60	1819.70	25%	454.93	2.10	1.62	737.80
	EDGE	880.2 - 914.8	27.90	616.60	25%	154.15	2.10	1.62	250.00
DCS 1800	GSM/GPRS	1710.2 - 1784.8	29.80	954.99	25%	238.75	4.98	3.15	751.52
	EDGE	1710.2 - 1784.8	27.10	512.86	25%	128.22	4.98	3.15	403.59
PCS 1900	GSM/GPRS	1850.2 - 1909.8	29.12	816.58	25%	204.15	4.98	3.15	642.60
	EDGE	1850.2 - 1909.8	29.18	827.94	25%	206.99	4.98	3.15	651.54
FDD II	WCDMA/HSDPA	1852.4 - 1907.6	27.75	595.66	100%	595.66	4.98	3.15	1874.99
	HSUPA	1852.4 - 1907.6	28.03	635.33	100%	635.33	4.98	3.15	1999.86

ADDITIONAL/SECONDARY TRANSMITTERS:

WLAN/WiMAX transmitter:

Type of equipment : WLAN / WiMAX
Trade mark : Any
Model : Any
FCC ID / IC : Any
Output power : See table below

Scenario 6			
Type of transmitter	**Maximum EIRP (mW)**	**Duty Cycle**	**EIRP (mW)**
WLAN / WiMAX	2000 [9]	100%	2000,00

[9] Aggregated EIRP of WLAN and WiMAX transmitters

Bluetooth transmitter:

Type of equipment : Bluetooth[10]
Trade mark : Any
Model : Any
FCC ID / IC : Any
Output power : See table below

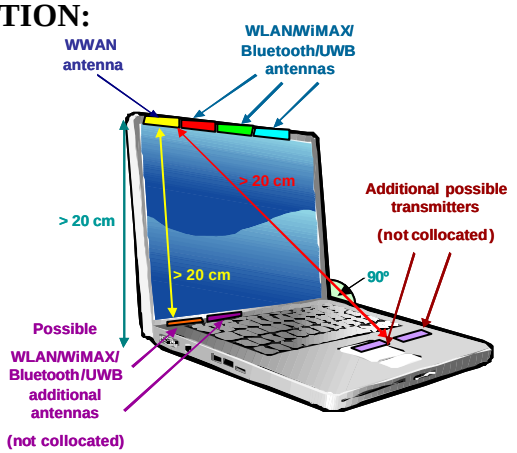
Scenario 5			
Type of transmitter	**Maximum EIRP (mW)**	**Duty Cycle**	**EIRP (mW)**
Bluetooth	100	76%	76,43

[10] It could be also Bluetooth + UWB transmitter)
UWB contribution does not need to be considered.

WORST CASE CONSIDERATIONS:

- Antenna-to-user distance: 20 cm.
  - Any antenna-to-user distance > 20 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- F3307 antenna gains: Low bands: 2.10 dBi // High bands: 4.98 dBi
  - Any antenna gains below the specified would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- WLAN EIRP + WiMAX EIRP: 2000 mW
  - Any WLAN transmitter and WiMAX transmitters with aggregated EIRP below 2000 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Bluetooth EIRP: 100 mW
  - Any Bluetooth (or Bluetooth + UWB) transmitter with EIRP below 100 mW would be covered by the analysis included in this report as far as it would provide better exposure conditions.
- Antenna-to-antenna distances: 0 cm
  - Any antenna-to-antenna distance > 0 cm would be covered by the analysis included in this report as far as it would provide better exposure conditions.

SAMPLE CONFIGURATION:



ANNEX B

RF EXPOSURE ASSESSMENT

Report No: 30751IDT.003

B.1. MAXIMUM PERMISSIBLE EXPOSURE (MPE) LIMITS

B.1.1. FCC / IC LIMITS

Normative documents:

- OET Bulletin 65 Edition 97-01 August 1997 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
- FCC 47 CFR § 1.1307 - Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.
- FCC 47 CFR § 1.1310 - Radiofrequency radiation exposure limits.1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)
- RSS-102 Issue 3 - June 2009

Reference levels:

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Power density ($\frac{mW}{cm^2}$)	Averaging time (minutes)
300 – 1500	$\frac{f\,(MHz)}{1500}$	30
1500 – 100.000	1.0	30

The table below is excerpted from item 4.2 of RSS-102 Issue 3, titled RF Field Strength Limits for Devices Used by the General Public:

Frequency Range (MHz)	Power density ($\frac{W}{m^2}$)	Averaging time (minutes)
300 – 1500	*f (MHz) /150*	6
1500 – 100.000	10	6

MPE limits:

- Main/Primary transmitter (F3307 Ericsson Mobile Broadband Module):

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	MPE limit (S_{eq}) ($\frac{mW}{cm^2}$)
GSM 850	GSM/GPRS	824,2 - 848,8	824,20	0,5495
	EDGE	824,2 - 848,8	824,20	0,5495
FDD V	WCDMA/HSDPA	826,4 - 846,6	826,40	0,5509
	HSUPA	826,4 - 846,6	826,40	0,5509
PCS 1900	GSM/GPRS	1850,2 - 1909,8	1850,20	1,0000
	EDGE	1850,2 - 1909,8	1850,20	1,0000
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	1852,40	1,0000
	HSUPA	1852,4 - 1907,6	1852,40	1,0000

- Additional/Secondary transmitters: All the transmission frequencies for collocated transmitter modules are above 1.5 GHz, so that the MPE limit is $1\,mW/cm^2$.

B.1.2. EUROPEAN UNION MPE LIMITS

Normative document:

- 1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)

Reference levels:

The table below is excerpted from Table 2 of 1999/519/EC, titled "Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)":

Frequency range	E-field strength $(\frac{V}{m})$	H-field strength $(\frac{A}{m})$	B-field (µT)	Equivalent plane wave power density S_{eq} $(\frac{W}{m^2})$
400 - 2000 MHz	$1{,}375 \cdot f(MHz)^{1/2}$	$0{,}0037 \cdot f(MHz)^{1/2}$	$0{,}0046 \cdot f(MHz)^{1/2}$	$\frac{f(MHz)}{200}$
2 - 300 GHz	61	0,16	0,2	10

MPE limits:

- Main/Primary transmitter (F3307 Ericsson Mobile Broadband Module):

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	MPE limit (S_{eq}) $(\frac{mW}{cm^2})$
E-GSM 900	GSM/GPRS	880,2 - 914,8	880,20	0,4401
	EDGE	880,2 - 914,8	880,20	0,4401
DCS 1800	GSM/GPRS	1710,2 - 1784,8	1710,20	0,8551
	EDGE	1710,2 - 1784,8	1710,20	0,8551

- Additional/Secondary transmitters: All the transmission frequencies for collocated transmitter modules are above 2 GHz, so that the MPE limit is $1\,mW/cm^2$.

B.1.3. AUSTRALIA MPE LIMITS

Normative documents:

- Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003
- ARPANSA RPS No. 3 – Maximum Exposure Levels to Radiofrequency Fields (3 kHz to 300 GHz)
- AS 2772.2-1998: Radiofrequency radiation - Part 2: Principles and methods of measurement - 300 kHz to 100 GHz

Reference levels:

The table below is excerpted from Table 7 of ARPANSA RPS No. 3, titled "Reference levels for time averaged exposure to RMS electric and magnetic fields (unperturbed rms values)":

Exposure category	Frequency range	E-field strength ($\frac{V}{m}$ rms)	H-field strength ($\frac{A}{m}$ rms)	Equivalent plane wave power density S_{eq} ($\frac{W}{m^2}$)	Equivalent plane wave power density S_{eq} ($\frac{mW}{cm^2}$)
General public	400 MHz - 2 GHz	$1{,}37 \cdot f(MHz)^{1/2}$	$0{,}00364 \cdot f(MHz)^{1/2}$	$\frac{f(MHz)}{200}$	$\frac{f(MHz)}{2000}$
General public	2 - 300 GHz	61	0,16	10	1

MPE limits:

- Main/Primary transmitter (F3307 Ericsson Mobile Broadband Module):

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	MPE limit (S_{eq}) ($\frac{mW}{cm^2}$)
FDD V	WCDMA/HSDPA	826,4 - 846,6	826,40	0,4132
	HSUPA	826,4 - 846,6	826,40	0,4132
E-GSM 900	GSM/GPRS	880,2 - 914,8	880,20	0,4401
	EDGE	880,2 - 914,8	880,20	0,4401
DCS 1800	GSM/GPRS	1710,2 - 1784,8	1710,20	0,8551
	EDGE	1710,2 - 1784,8	1710,20	0,8551

- Additional/Secondary transmitters: All the transmission frequencies for collocated transmitter modules are above 2 GHz, so that the MPE limit is $1\,mW/cm^2$.

B.1.4. VODAFONE MPE LIMITS

Normative document:

- 1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)

Reference levels:

The table below is excerpted from Table 2 of 1999/519/EC, titled "Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)":

Exposure category	Frequency range	E-field strength ($\frac{V}{m}$ rms)	H-field strength ($\frac{A}{m}$ rms)	Equivalent plane wave power density S_{eq} ($\frac{W}{m^2}$)	Equivalent plane wave power density S_{eq} ($\frac{mW}{cm^2}$)
General public	400 MHz - 2 GHz	$1{,}37 \cdot f(MHz)^{1/2}$	$0{,}00364 \cdot f(MHz)^{1/2}$	$\frac{f(MHz)}{200}$	$\frac{f(MHz)}{2000}$
General public	2 - 300 GHz	61	0,16	10	1

MPE limits:

- Main/Primary transmitter (F3307 Ericsson Mobile Broadband Module):

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (MHz)	MPE limit (S_{Lim}) ($\frac{mW}{cm^2}$)
GSM 850	GSM/GPRS	824,2 - 848,8	824,20	0,4121
	EDGE	824,2 - 848,8	824,20	0,4121
FDD V	WCDMA/HSDPA	826,4 - 846,6	826,40	0,4132
	HSUPA	826,4 - 846,6	826,40	0,4132
E-GSM 900	GSM/GPRS	880,2 - 914,8	880,20	0,4401
	EDGE	880,2 - 914,8	880,20	0,4401
DCS 1800	GSM/GPRS	1710,2 - 1784,8	1710,20	0,8551
	EDGE	1710,2 - 1784,8	1710,20	0,8551
PCS 1900	GSM/GPRS	1850,2 - 1909,8	1850,20	0,9251
	EDGE	1850,2 - 1909,8	1850,20	0,9251
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	1852,40	0,9262
	HSUPA	1852,4 - 1907,6	1852,40	0,9262

- Additional/Secondary transmitters: All the transmission frequencies for WLAN and Bluetooth modules are above 2 GHz, so that the MPE limit is $1\,mW/cm^2$.

B.2. RF EXPOSURE ASSESSMENT – INDIVIDUAL TRANSMITTERS

B.2.1. INTRODUCTION

Calculations to predict power density levels in the far-field of the antenna are made by use of the following equation:

$$S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

B.2.2. RF EXPOSURE ASSESSMENT FOR F3307 ERICSSON MOBILE BROADBAND MODULE INSTALLED IN GENERIC HOST PLATFORMS

FCC / IC REQUIREMENTS

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density (S_{eq}) $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{mW}{cm^2}\right)$	MPE limit (S_{Lim}) $(\frac{mW}{cm^2})$	COMPLIANCE ($S_{eq} < S_{Lim}$) $(\frac{mW}{cm^2})$
GSM 850	GSM/GPRS	824,2 - 848,8	792,39	20,00	0,1576	0,5495	**COMPLIANT**
	EDGE	824,2 - 848,8	512,79	20,00	0,1020	0,5495	**COMPLIANT**
FDD V	WCDMA/HSDPA	826,4 - 846,6	1218,99	20,00	0,2425	0,5509	**COMPLIANT**
	HSUPA	826,4 - 846,6	1218,99	20,00	0,2425	0,5509	**COMPLIANT**
PCS 1900	GSM/GPRS	1850,2 - 1909,8	642,60	20,00	0,1278	1,0000	**COMPLIANT**
	EDGE	1850,2 - 1909,8	651,54	20,00	0,1296	1,0000	**COMPLIANT**
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	1874,99	20,00	0,3730	1,0000	**COMPLIANT**
	HSUPA	1852,4 - 1907,6	1999,86	20,00	0,3979	1,0000	**COMPLIANT**

EUROPEAN UNION REQUIREMENTS

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density (S_{eq}) $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{mW}{cm^2}\right)$	MPE limit (S_{Lim}) $(\frac{mW}{cm^2})$	COMPLIANCE ($S_{eq} < S_{Lim}$) $(\frac{mW}{cm^2})$
E-GSM 900	GSM/GPRS	880,2 - 914,8	737,80	20,00	0,1468	0,4401	**COMPLIANT**
	EDGE	880,2 - 914,8	250,00	20,00	0,0497	0,4401	**COMPLIANT**
DCS 1800	GSM/GPRS	1710,2 - 1784,8	751,52	20,00	0,1495	0,8551	**COMPLIANT**
	EDGE	1710,2 - 1784,8	403,59	20,00	0,0803	0,8551	**COMPLIANT**

AUSTRALIA REQUIREMENTS

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density (S_{eq}) $S = \frac{P \cdot G}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$ $\left(\frac{mW}{cm^2}\right)$	MPE limit (S_{Lim}) $(\frac{mW}{cm^2})$	COMPLIANCE ($S_{eq} < S_{Lim}$) $(\frac{mW}{cm^2})$
FDD V	WCDMA/HSDPA	826,4 - 846,6	1218,99	20,00	0,2425	0,4132	**COMPLIANT**
	HSUPA	826,4 - 846,6	1218,99	20,00	0,2425	0,4132	**COMPLIANT**
E-GSM 900	GSM/GPRS	880,2 - 914,8	737,80	20,00	0,1468	0,4401	**COMPLIANT**
	EDGE	880,2 - 914,8	250,00	20,00	0,0497	0,4401	**COMPLIANT**
DCS 1800	GSM/GPRS	1710,2 - 1784,8	751,52	20,00	0,1495	0,8551	**COMPLIANT**
	EDGE	1710,2 - 1784,8	403,59	20,00	0,0803	0,8551	**COMPLIANT**

VODAFONE REQUIREMENTS

Frequency Band	Mode	Frequency Range (MHz)	EIRP (mW)	Evaluation distance (R) (cm)	Power Density (S_{eq}) $S = \frac{P \cdot G}{4pR^2} = \frac{EIRP}{4pR^2}$ $\left(\frac{mW}{cm^2}\right)$	MPE limit (S_{Lim}) $(\frac{mW}{cm^2})$	COMPLIANCE ($S_{eq} < S_{Lim}$) $(\frac{mW}{cm^2})$
GSM 850	GSM/GPRS	824,2 - 848,8	792,39	20	0,1576	0,4121	**COMPLIANT**
	EDGE	824,2 - 848,8	512,79	20	0,1020	0,4121	**COMPLIANT**
FDD V	WCDMA/HSDPA	826,4 - 846,6	1218,99	20	0,2425	0,4132	**COMPLIANT**
	HSUPA	826,4 - 846,6	1218,99	20	0,2425	0,4132	**COMPLIANT**
E-GSM 900	GSM/GPRS	880,2 - 914,8	737,80	20	0,1468	0,4401	**COMPLIANT**
	EDGE	880,2 - 914,8	250,00	20	0,0497	0,4401	**COMPLIANT**
DCS 1800	GSM/GPRS	1710,2 - 1784,8	751,52	20	0,1495	0,8551	**COMPLIANT**
	EDGE	1710,2 - 1784,8	403,59	20	0,0803	0,8551	**COMPLIANT**
PCS 1900	GSM/GPRS	1850,2 - 1909,8	642,60	20	0,1278	0,9251	**COMPLIANT**
	EDGE	1850,2 - 1909,8	651,54	20	0,1296	0,9251	**COMPLIANT**
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	1874,99	20	0,3730	0,9262	**COMPLIANT**
	HSUPA	1852,4 - 1907,6	1999,86	20	0,3979	0,9262	**COMPLIANT**

B.2.3. RF EXPOSURE ASSESSMENT FOR SECONDARY TRANSMITTERS INSTALLED IN GENERIC HOST PLATFORMS

Model name	FCC ID	EIRP (mW)	Evaluation distance (cm)	Power Density (S_{eq}) $S = \frac{P \cdot G}{4pR^2} = \frac{EIRP}{4pR^2}$ $\left(\frac{mW}{cm^2}\right)$	MPE limit (S_{Lim}) $(\frac{mW}{cm^2})$	COMPLIANCE ($S_{eq} < S_{Lim}$)
Scenario 1	Bluetooth	76,43	20,00	0,0152	1,0000	**COMPLIANT**
Scenario 2	WLAN	2000,00	20,00	0,3979	1,0000	**COMPLIANT**
Scenario 3	WLAN	2000,00	20,00	0,3979	1,0000	**COMPLIANT**
	Bluetooth	76,43	20,00	0,0152	1,0000	**COMPLIANT**
Scenario 4	WiMAX	2000,00	20,00	0,3979	1,0000	**COMPLIANT**
Scenario 5	WiMAX	2000,00	20,00	0,3979	1,0000	**COMPLIANT**
	Bluetooth	76,43	20,00	0,0152	1,0000	**COMPLIANT**
Scenario 6	WLAN	2000,00	20,00	0,3979	1,0000	**COMPLIANT**
	WiMAX				1,0000	**COMPLIANT**
Scenario 7	WLAN	2000,00	20,00	0,3979	1,0000	**COMPLIANT**
	WiMAX				1,0000	**COMPLIANT**
	Bluetooth	76,43	20,00	0,0152	1,0000	**COMPLIANT**

B.3. RF EXPOSURE ASSESSMENT – COLLOCATION CONSIDERATIONS

B.3.1. INTRODUCTION

In situations where simultaneous exposure to fields of different equipment and frequencies occurs, the possibility that these exposures will be additive in their effects must be considered. Calculations based on this additivity are performed by the sum of relative exposure for each equipment according to the following compliance criteria:

$$\sum_{1}^{N} \frac{S_{eqn}}{S_{Limn}} = \frac{S_{eq1}}{S_{Lim1}} + \frac{S_{eq2}}{S_{Lim2}} + \ldots + \frac{S_{eqN}}{S_{LimN}} \leq 1$$

where:

S_{eq} is the power density of the electromagnetic field caused, at a given distance (evaluation distance), by a specific equipment transmitting at a defined frequency.

S_{Lim} is the MPE limit for the evaluated transmission frequency.

B.3.2. FCC / IC REQUIREMENTS

RELATIVE EXPOSURE FOR F3307 ERICSSON BROADBAND MODULE

Frequency Band	Mode	Frequency Range (MHz)	S_{eq}	S_{Lim}	$\frac{S_{eq}}{S_{Lim}}$
GSM 850	GSM/GPRS	824,2 - 848,8	0,1576	0,5495	0,2869
	EDGE	824,2 - 848,8	0,1020	0,5495	0,1857
FDD V	WCDMA/HSDPA	826,4 - 846,6	0,2425	0,5509	0,4402
	HSUPA	826,4 - 846,6	0,2425	0,5509	0,4402
PCS 1900	GSM/GPRS	1850,2 - 1909,8	0,1278	1,0000	0,1278
	EDGE	1850,2 - 1909,8	0,1296	1,0000	0,1296
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	0,3730	1,0000	0,3730
	HSUPA	1852,4 - 1907,6	0,3979	1,0000	**0,3979**

RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

SCENARIO	Type of transmitter	S_{eq}	S_{Lim}	$\frac{S_{eq}}{S_{Lim}}$
Scenario 1	Bluetooth	0,0152	1,0000	0,0152
Scenario 2	WLAN	0,3979	1,0000	0,3979
Scenario 3	WLAN	0,3979	1,0000	0,3979
	Bluetooth	0,0152	1,0000	0,0152
Scenario 4	WiMAX	0,3979	1,0000	0,3979
Scenario 5	WiMAX	0,3979	1,0000	0,3979
	Bluetooth	0,0152	1,0000	0,0152

Scenario 6	WLAN	0,3979	1,0000	0,3979
	WiMAX			
Scenario 7	WLAN	0,3979	1,0000	0,3979
	WiMAX			
	Bluetooth	0,0152	1,0000	0,0152

SIMULTANEOUS EXPOSURE

SCENARIO	Equipment		Maximum $\frac{S_{eq}}{S_{Lim}}$	Maximum $\frac{S_{Pri}}{S_{Lim\_Pri}} + \sum \frac{S_{Sec}}{S_{Lim\_Sec}}$	COMPLIANCE $\frac{S_{Pri}}{S_{Lim\_Pri}} + \sum \frac{S_{Sec}}{S_{Lim\_Sec}} < 1$
Scenario 1	Primary transmitter	Ericsson F3307	0,4402	0,4553854	**COMPLIANT**
	Secundary transmitter	Bluetooth	0,0152		
Scenario 2	Primary transmitter	Ericsson F3307	0,4402	0,8380682	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
Scenario 3	Primary transmitter	Ericsson F3307	0,4402	**0,8532728**	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	Bluetooth	0,0152		
Scenario 4	Primary transmitter	Ericsson F3307	0,4402	0,8380682	**COMPLIANT**
	Secundary transmitter	WiMAX	0,3979		
Scenario 5	Primary transmitter	Ericsson F3307	0,4402	**0,8532728**	**COMPLIANT**
	Secundary transmitter	WiMAX	0,3979		
	Secundary transmitter	Bluetooth	0,0152		
Scenario 6	Primary transmitter	Ericsson F3307	0,4402	0,8380682	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	WiMAX			
Scenario 7	Primary transmitter	Ericsson F3307	0,4402	**0,8532728**	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	WiMAX			
	Secundary transmitter	Bluetooth	0,0152		

B.3.3. EUROPEAN UNION REQUIREMENTS

RELATIVE EXPOSURE FOR F3307 ERICSSON BROADBAND MODULE

Frequency Band	Mode	Frequency Range (MHz)	S_{eq}	S_{Lim}	$\frac{S_{eq}}{S_{Lim}}$
E-GSM 900	GSM/GPRS	880,2 - 914,8	0,1468	0,4401	**0,3335**
	EDGE	880,2 - 914,8	0,0497	0,4401	0,1130
DCS 1800	GSM/GPRS	1710,2 - 1784,8	0,1495	0,8551	0,1748
	EDGE	1710,2 - 1784,8	0,0803	0,8551	0,0939

RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

SCENARIO	Type of transmitter	S_{eq}	S_{Lim}	$\frac{S_{eq}}{S_{Lim}}$
Scenario 1	Bluetooth	0,0152	1,0000	0,0152
Scenario 2	WLAN	0,3979	1,0000	0,3979
Scenario 3	WLAN	0,3979	1,0000	0,3979
	Bluetooth	0,0152	1,0000	0,0152
Scenario 4	WiMAX	0,3979	1,0000	0,3979
Scenario 5	WiMAX	0,3979	1,0000	0,3979
	Bluetooth	0,0152	1,0000	0,0152
Scenario 6	WLAN	0,3979	1,0000	0,3979
	WiMAX			
Scenario 7	WLAN	0,3979	1,0000	0,3979
	WiMAX			
	Bluetooth	0,0152	1,0000	0,0152

SIMULTANEOUS EXPOSURE

SCENARIO	Equipment		Maximum $\frac{S_{eq}}{S_{Lim}}$	Maximum $\frac{S_{Pri}}{S_{Lim\_Pri}} + \sum \frac{S_{Sec}}{S_{Lim\_Sec}}$	COMPLIANCE $\frac{S_{Pri}}{S_{Lim\_Pri}} + \sum \frac{S_{Sec}}{S_{Lim\_Sec}} < 1$
Scenario 1	Primary transmitter	Ericsson F3307	0,3335	0,3487222	**COMPLIANT**
	Secundary transmitter	Bluetooth	0,0152		
Scenario 2	Primary transmitter	Ericsson F3307	0,3335	0,7314050	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		

Scenario 3	Primary transmitter	Ericsson F3307	0,3335	**0,7466096**	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	Bluetooth	0,0152		
Scenario 4	Primary transmitter	Ericsson F3307	0,3335	0,7314050	**COMPLIANT**
	Secundary transmitter	WiMAX	0,3979		
Scenario 5	Primary transmitter	Ericsson F3307	0,3335	**0,7466096**	**COMPLIANT**
	Secundary transmitter	WiMAX	0,3979		
	Secundary transmitter	Bluetooth	0,0152		
Scenario 6	Primary transmitter	Ericsson F3307	0,3335	0,7314050	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	WiMAX			
Scenario 7	Primary transmitter	Ericsson F3307	0,3335	**0,7466096**	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	WiMAX			
	Secundary transmitter	Bluetooth	0,0152		

B.3.4. AUSTRALIA REQUIREMENTS

RELATIVE EXPOSURE FOR F3307 ERICSSON BROADBAND MODULE

Manufacturer	Model name	Frequency range (MHz)	S_{eq}	S_{Lim}	$\frac{S_{eq}}{S_{Lim}}$
FDD V	WCDMA/HSDPA	826,4 - 846,6	0,2425	0,4132	**0,5869**
	HSUPA	826,4 - 846,6	0,2425	0,4132	**0,5869**
E-GSM 900	GSM/GPRS	880,2 - 914,8	0,1468	0,4401	0,3335
	EDGE	880,2 - 914,8	0,0497	0,4401	0,1130
DCS 1800	GSM/GPRS	1710,2 - 1784,8	0,1495	0,8551	0,1748
	EDGE	1710,2 - 1784,8	0,0803	0,8551	0,0939

RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

SCENARIO	Type of transmitter	S_{eq}	S_{Lim}	$\frac{S_{eq}}{S_{Lim}}$
Scenario 1	Bluetooth	0,0152	1,0000	0,0152
Scenario 2	WLAN	0,3979	1,0000	0,3979
Scenario 3	WLAN	0,3979	1,0000	0,3979
	Bluetooth	0,0152	1,0000	0,0152
Scenario 4	WiMAX	0,3979	1,0000	0,3979

Scenario 5	WiMAX	0,3979	1,0000	0,3979
	Bluetooth	0,0152	1,0000	0,0152
Scenario 6	WLAN	0,3979	1,0000	0,3979
	WiMAX			
Scenario 7	WLAN	0,3979	1,0000	0,3979
	WiMAX			
	Bluetooth	0,0152	1,0000	0,0152

SIMULTANEOUS EXPOSURE

SCENARIO	**Equipment**		**Maximum** $\frac{S_{eq}}{S_{Lim}}$	**Maximum** $\frac{S_{Pri}}{S_{Lim\_Pri}} + \sum \frac{S_{Sec}}{S_{Lim\_Sec}}$	**COMPLIANCE** $\frac{S_{Pri}}{S_{Lim\_Pri}} + \sum \frac{S_{Sec}}{S_{Lim\_Sec}} < 1$
Scenario 1	Primary transmitter	Ericsson F3307	0,5869	0,6021123	**COMPLIANT**
	Secundary transmitter	Bluetooth	0,0152		
Scenario 2	Primary transmitter	Ericsson F3307	0,5869	0,9847951	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
Scenario 3	Primary transmitter	Ericsson F3307	0,5869	**0,9999997**	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	Bluetooth	0,0152		
Scenario 4	Primary transmitter	Ericsson F3307	0,5869	0,9847951	**COMPLIANT**
	Secundary transmitter	WiMAX	0,3979		
Scenario 5	Primary transmitter	Ericsson F3307	0,5869	**0,9999997**	**COMPLIANT**
	Secundary transmitter	WiMAX	0,3979		
	Secundary transmitter	Bluetooth	0,0152		
Scenario 6	Primary transmitter	Ericsson F3307	0,5869	0,9847951	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	WiMAX			
Scenario 7	Primary transmitter	Ericsson F3307	0,5869	**0,9999997**	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	WiMAX			
	Secundary transmitter	Bluetooth	0,0152		

B.3.5. VODAFONE REQUIREMENTS

RELATIVE EXPOSURE FOR F3307 ERICSSON BROADBAND MODULE

Manufacturer	Model name	Frequency range (MHz)	S_{eq}	S_{Lim}	$\frac{S_{eq}}{S_{Lim}}$
GSM 850	GSM/GPRS	824,2 - 848,8	0,1576	0,4121	0,3825
	EDGE	824,2 - 848,8	0,1020	0,4121	0,2476
FDD V	WCDMA/HSDPA	826,4 - 846,6	0,2425	0,4132	**0,5869**
	HSUPA	826,4 - 846,6	0,2425	0,4132	**0,5869**
E-GSM 900	GSM/GPRS	880,2 - 914,8	0,1468	0,4401	0,3335
	EDGE	880,2 - 914,8	0,0497	0,4401	0,1130
DCS 1800	GSM/GPRS	1710,2 - 1784,8	0,1495	0,8551	0,1748
	EDGE	1710,2 - 1784,8	0,0803	0,8551	0,0939
PCS 1900	GSM/GPRS	1850,2 - 1909,8	0,1278	0,9251	0,1382
	EDGE	1850,2 - 1909,8	0,1296	0,9251	0,1401
FDD II	WCDMA/HSDPA	1852,4 - 1907,6	0,3730	0,9262	0,4027
	HSUPA	1852,4 - 1907,6	0,3979	0,9262	0,4296

RELATIVE EXPOSURE FOR SECONDARY TRANSMITTERS

SCENARIO	Type of transmitter	S_{eq}	S_{Lim}	$\frac{S_{eq}}{S_{Lim}}$
Scenario 1	Bluetooth	0,0152	1,0000	0,0152
Scenario 2	WLAN	0,3979	1,0000	0,3979
Scenario 3	WLAN	0,3979	1,0000	0,3979
	Bluetooth	0,0152	1,0000	0,0152
Scenario 4	WiMAX	0,3979	1,0000	0,3979
Scenario 5	WiMAX	0,3979	1,0000	0,3979
	Bluetooth	0,0152	1,0000	0,0152
Scenario 6	WLAN	0,3979	1,0000	0,3979
	WiMAX			
Scenario 7	WLAN	0,3979	1,0000	0,3979
	WiMAX			
	Bluetooth	0,0152	1,0000	0,0152

SIMULTANEOUS EXPOSURE

SCENARIO	Equipment		Maximum $\frac{S_{eq}}{S_{Lim}}$	Maximum $\frac{S_{Pri}}{S_{Lim\_Pri}} + \sum \frac{S_{Sec}}{S_{Lim\_Sec}}$	COMPLIANCE $\frac{S_{Pri}}{S_{Lim\_Pri}} + \sum \frac{S_{Sec}}{S_{Lim\_Sec}} < 1$
Scenario 1	Primary transmitter	Ericsson F3307	0,5869	0,6021123	**COMPLIANT**
	Secundary transmitter	Bluetooth	0,0152		
Scenario 2	Primary transmitter	Ericsson F3307	0,5869	0,9847951	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
Scenario 3	Primary transmitter	Ericsson F3307	0,5869	**0,9999997**	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	Bluetooth	0,0152		
Scenario 4	Primary transmitter	Ericsson F3307	0,5869	0,9847951	**COMPLIANT**
	Secundary transmitter	WiMAX	0,3979		
Scenario 5	Primary transmitter	Ericsson F3307	0,5869	**0,9999997**	**COMPLIANT**
	Secundary transmitter	WiMAX	0,3979		
	Secundary transmitter	Bluetooth	0,0152		
Scenario 6	Primary transmitter	Ericsson F3307	0,5869	0,9847951	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	WiMAX			
Scenario 7	Primary transmitter	Ericsson F3307	0,5869	**0,9999997**	**COMPLIANT**
	Secundary transmitter	WLAN	0,3979		
	Secundary transmitter	WiMAX			
	Secundary transmitter	Bluetooth	0,0152		