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FCC Certification Information
For
The Globalstar Fixed Access Unit (FAU)
FCC ID: OHL FAU200 SAT

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1 APPLICANT DETAILS

1.1 APPLICANT

Ericsson Mobile Communications (UK) Limited
The Keytech Centre
Ashwood Way,
Basingstoke, Hants.
United Kingdom. RG23 8BG,
Tel: +44 1256 843468

Contact Person: Subhash Chander (Approvals Consultant)
e-mail: subhash.chander@eml.ericsson.se
Tel: +44 1256 864224

1.2 MANUFACTURER DETAILS

Ericsson Mobile Communications AB
Linköping Factory
Box 1996
SE-581 19 LINKÖPING
Sweden

User Terminal Class III (Fixed)

1.2.1 Modes of operation

The FAU is a "**Single mode**" device and will only operate on the Globalstar network.

1.2.2 Voltage requirements

Nominal:-	+48.0 VDC
Higher Extreme:-	+54.0 VDC
Lower Extreme:-	+44.0 VDC

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2 CFR47 REFERENCE INFORMATION

2.1 CFR47 SECTION 2.1033(C) 6 (POWER LEVELS)

2.1.1 Means Provided for Variation of Operating Power

Power control is instigated at the Intermediate Frequency (I.F) using an AGC (automatic gain control) amplifier. When the User Terminal is under closed loop control to the Gateway, via the sateillite, it is the Gateway which controls the transmitter output power level of the U.T.

To stop the transmitter PA (power amplifier) saturating when the sateillite is constantly requesting more power, there is an additional power detector at the output of the PA. This is fed back to the CDMA Baseband Analogue ASIC (IC 45 Part Ref: CD90-21884-5), via the BB2's auxialiary ADC (analogue to digital converter).

2.1.2 Range of Operating Power Levels

Under closed loop power control conditions the User Terminal supports an output power control range of 25dB, from the maximum EIRP. as defined in section 3.2.3 (CFR47 Section 2.1033(c) 7).

2.2 CFR47 SECTION 2.1033(C) 7(MAXIMUM POWER RATING)

	G/T (dB/K)		**EIRP (dBm)**			
	Spatial Average	Minimum	Lower limit	Spatial Average	Upper limit	Control range (down from max.) (dB)
FAU	>-21	-24	+32	>+33	+35	25

The transmit chain includes a power detector at the PA output and a temperature sensor. The power indication by the power detected is provided as a numerical value which is used to calibrate both the temperature and frequency of operation by the Baseband Sub-System.

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2.3 CFR47 SECTION 2.1033(C) 8 (DC POWER SUPPLY TO TX STAGES)

Power supply to the various RF transmitter stages are indicated in the table below.

Voltage Name	**Subassembly**	**Voltage Tolerance**	**Nominal Voltage DC**	**Nominal Current**	**Maximum Current**	**Maximum Ripple**
P9V_PA (input)	PA	+/- 5%	+9V	1.8A	2A	100mV p-p
P5V5_RF (input)	General	+/- 5%	+5.5V	470mA	500mA	100mV p-p
M5V_RF (input)	PA	+/- 5%	-5V	40mA	50mA	100mV p-p
P9V5 (input)	General	+/- 5%	+9.5V	50mA	65mA	50mV p-p
P5V_RF (input)	PA	+/- 5%	+5V	370mA	400mA	100mV p-p
PLNA_V (output) (Derived from P9V5_RF)	LNA	+/- 5%	+8.5V	45mA	60mA	50mV p-p

2.4 CFR47 SECTION 2.1033(C) 10 (METHOD OF FREQUENCY STABILISATION)

Both receive and transmit RF and IF local oscillator (frequency synthesiser) designs reference a temperature controlled crystal oscillator, TCXO. Frequency lock detection circuitry is embedded into these local oscillator designs. Should any one of these fault detection monitors flag a fail condition, the GUM IC will be notified and correspondingly inhibit RF transmit capability.

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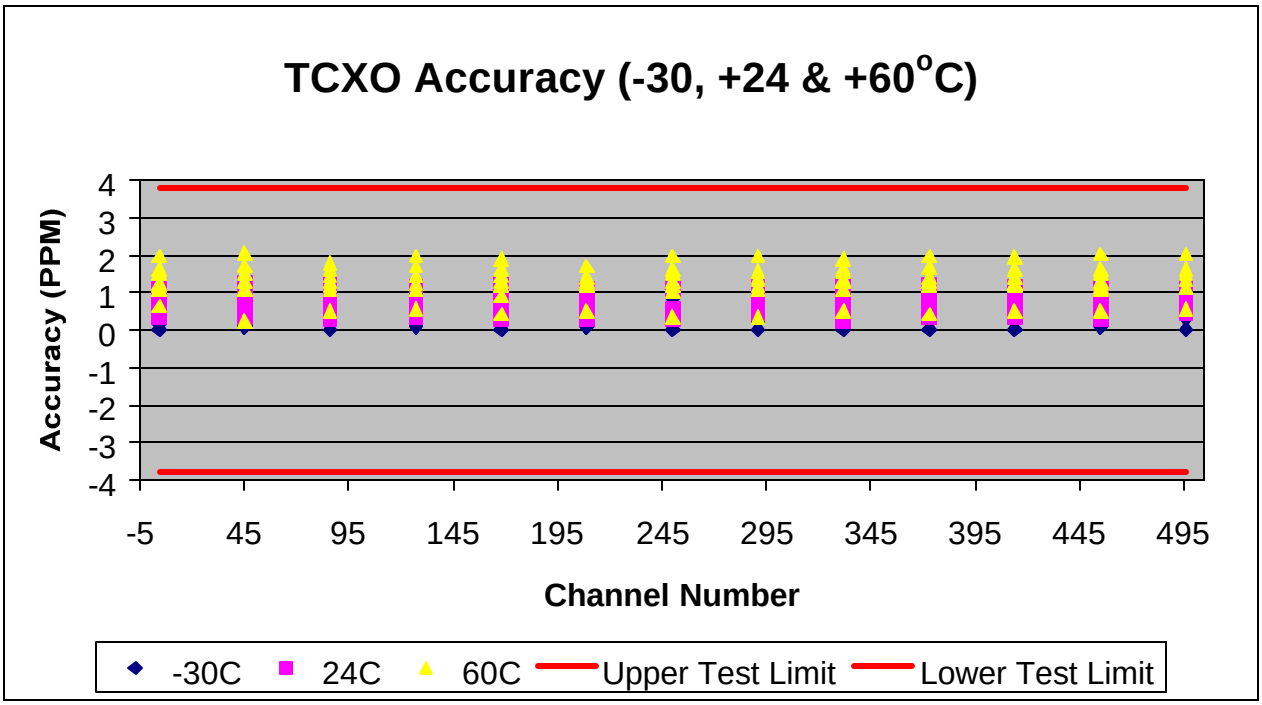
TCXO Frequency stability Results.

The above plot shows the measured performance of 8off FAU EP2 units over temperature.



2.5 CFR47 SECTION 2.1033(C) 10 (OPERATIONAL DESCRIPTION OF TRANSMITTER COMPONENTS)

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Circuitry & Device description:

Item	IC Ident	Part Reference	Description
1	X385	Temperature controlled crystal oscillator (TCXO)	Frequency may be adjusted manually via a tuning pot (this is factory pre-set to a given tolerance) and also adjusted via a control voltage. This voltage is fixed via a potential divider resistor network
2	IC351	LM2330A	Dual Frequency Synthesiser (PLL) IC Chip Contains dual modulus prescalers (32/33 or 64/65 prescaler in the 2.5GHz band) for both RF and IF loops and digital loop detector.
3	IC300	QVC801488RT-2	Globalstar Transmit voltage controlled oscillator (VCO)
4	IC304	QVC802267RT-2	Globalstar Receive VCO
5	IC45	CD90-21884-5	Baseband Analogue IC (BB2). Onboard Receive IF VCO and divide by 2 counter

2.5.1 CDMA In band Channel Filtering

2.5.1.1 Baseband

Digital baseband I and Q data enters into the BB2 IC (IC Ident IC45 part CD90_21884-5). After digital to analogue conversion this signal is low pass filtered. Baseband signals between 1KHz and 630KHz are passed, while frequency components above 750KHz (i.e out of band CDMA operation) are filtered. This signal is modulated to an IF frequency of 130.38MHz.

2.5.1.2 Intermediate Frequency (IF) Filtering

A surface acoustic wave filter (part ref: F200), or SAW, is used in the IF section to further define the in band spectral response of the CDMA signal.

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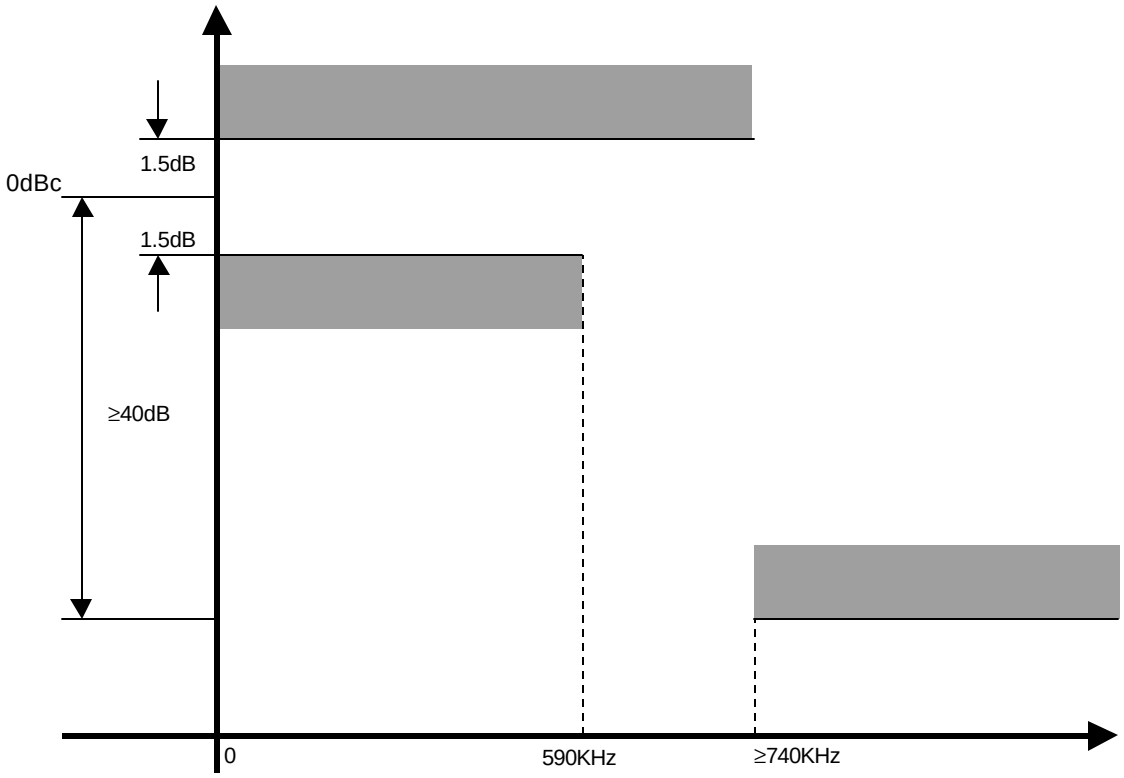
2.5.1.3 Response Characteristics of Baseband Low Pass Filters



2.5.2 Power Control

Final transmitter output power is controlled by varying the gain of part IC222, an automatic gain control integrated circuit.

All other amplifiers at IF and RF stages have fixed gain.

2.5.3 Suppression of Spurious Radiation

Radio Frequency (RF) Filtering

Bandpass filters, part references XR202 and XR205 serve to filter out local oscillator breakthrough from the IF to RF mixer and also spectrally define the transmit out of band emissions mask.

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A microstrip low pass filter (created in copper artwork on the printed circuit board) at the end of the transmitter section provides additional rejection to harmonics of the operational CDMA channel.

2.6 CFR47 SECTION 2.1033(C) 13 (DESCRIPTION OF MODULATION TECHNIQUE USED)

2.6.1 Transmitter Architecture

The transmitter for the Globalstar Fixed Access Unit (FAU) uses the frequencies 1610 to 1626.5MHz. A total of 509 channels are contained within this bandwidth, which uses OQPSK as the modulation scheme. Each channel is spectrally spread using a unique code to create a CDMA system. This PN Chip Rate is 1.2288Mcps. Each RF channel has a 1.23MHz bandwidth.

2.6.2 Receiver Architecture

The FAU receives QPSK CDMA signals over the frequency band 2483.5 to 2500MHz. Each channel is spectrally spread, by the Gateway via the satellite, using a unique code to create a CDMA system. Again this PN Chip Rate is 1.2288Mcps.

2.7 CFR47 SECTION 25.213 (HOW PROTECTION OF RADIO SERVICES IS IMPLEMENTED)

The Globalstar Satellite system has the capability to determine position of a MES when in a call. This information is used by the network to check against the restricted Zone areas and instruct the MES (using the Network Control Function (NCF) commands) and or Satellite to reduce its TX power or shut down completely. It is the responsibility of the network operator (Globalstar) to control the channel frequencies and TX power of the MES in accordance with the licensing requirments such that other radio services are protected.

Supply voltages and crystal frequencies are constantly monitored together with temperature by the MES hardware and the Software and when out of rage is detected a shutdown mechanism is initiated to prevent any out of range frequency transmission and prevent wastage of permitted RF spectrum and other radio services.