



**MOTOROLA**

European Cellular Subscriber Division

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Revision 0.2 (Draft)  
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## NEW PRODUCT JUSTIFICATION REPORT

Product Variant : StarTAC 200 (Alex)

Product Description : Dual Slot StarTAC

PR No. : A28-32

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### Summary

- ◆ StarTAC 200 (Alex) hardware build standard is very close to 85R (COSMO)
  - ◆ Sales of 400-600K expected 1999. No ASP yet
  - ◆ Ship acceptance Week 51 98
  - ◆ Cost of EI NPI Project \$787,426
  - ◆ 5 Pilots planned
  - ◆ 2 Major Risks Identified (Mitigation & Contingent Actions Identified)
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## 1. Introduction

The aim of this report is to provide an executive summary and justification why StarTAC 200 (Alex) should be introduced to Easter Inch. This draft report has been to give an overview of the projected costs of the project and will be reviewed after the kick off meeting planned between EI and LV planned for week 30/31.

## 2. Background

### 2.1. Product Strategy

Market research has identified that end users are looking for easier ways to do financial transactions by "getting rid of the coins" and "reducing the number of cards".

Dual Slot StarTAC will be marketed as the first Smart Card handset allowing financial transactions. As an example, the Smart Card terminal will allow an "electronic purse" card to be reloaded over the air. This will offer a new relation between the phone and the consumer. Future stages will allow the end user to do direct financial transactions, ticketing and loyalty schemes over the air. In addition, the dual slot StarTAC will offer secure access to remote services, authentication. The Dual Slot StarTAC is to gain the business and consumer markets where state of the art technology influences decision purchase.

This is a unique product, the first of a new category of product that Motorola intends to dominate. This category is all about allowing Smart Cards to work in MOBILE environments (e.g. Smart Card ticked - Mobile Ticketing).

### 2.2. Product description

#### 2.2.1. Physical Characteristics

The StarTAC 200 housing will be based on the existing StarTAC 85R. The opening flip will need to be modified with the top part of the flip being thicker to accommodate the small card reader. Maintaining the overall flip design therefore will enable the use of standard StarTAC batteries.

Most of the StarTAC 85R features are external identical i.e. lens, display, antenna, butt plug, side buttons, LED status indicator however the back housing although being identical to the StarTAC 85R with the exception of the circled M which will be in gold as per the StarTAC 130.

The keypad will be specific. The MR key will be replaced by a circled M key and the colour of the marking changed to white or gold.

The interior escutcheon below the speaker will differentiate StarTAC 200 from other StarTAC platforms. The name or number is under elaboration: StarTAC Smart, like what was done for StarTAC voice. If this was the chosen name, then the circled M key could be replaced by a key with "Smart" written on it. The number could also be a possibility to remind the dual slot capability (StarTAC 200).

## 2.3. Performance Characteristics

StarTAC 200 will be the worlds first mobile phone to simultaneously accept two SIM cards. One small SIM format below the battery and one large SIM (ISO) like the StarTAC 85R. This is achieved by using the small sim card reader design presently realised on ZAP and updating the StarTAC 85R PCB to accommodate the new devices.

The circuitry on the flip flex has to be updated to interface the electronics to the card reader.

Most of the other functional feature and improvements required for realising financial transactions will be achieved through software.

General overall StarTAC 85R performance is expected.

## 2.4. New Technologies

None.

## 2.5. Expected Volumes & ASP

Volumes are expected to be anywhere between 400-600k through 1999. Barclay card (UK) have shown most interest and it is believed that the ramp will start off slow in Q1 picking up Q2 with the majority of product being shipped in Q3, Q4.

	Q1	Q2	Q3	Q4
Volume	50K	100K	150K	150K

The first target markets are in the process of being identified. UK, Belgium, Portugal and Hong Kong are for the moment the most active countries liable of supporting Smartcard infrastructure.

This handset will be tiered above the existing StarTAC 85R. The premium price will be justified by the world's first Smartcard compatible handset. At first, this product will be bundled with airtime, thus giving a subsidized package price. The tiering will therefore be high although thought is being given to a low tier product for pre-pay applications.

No ASP available at the present time.

### 3. EI Proposal

#### 3.1. Approach to New Product Introduction

In technology terms, we do not foresee a problem with the introduction of this new product to EI. The product is primarily a StarTAC 85RR with minimal hardware modifications :

The following assumptions/strategies have been made :

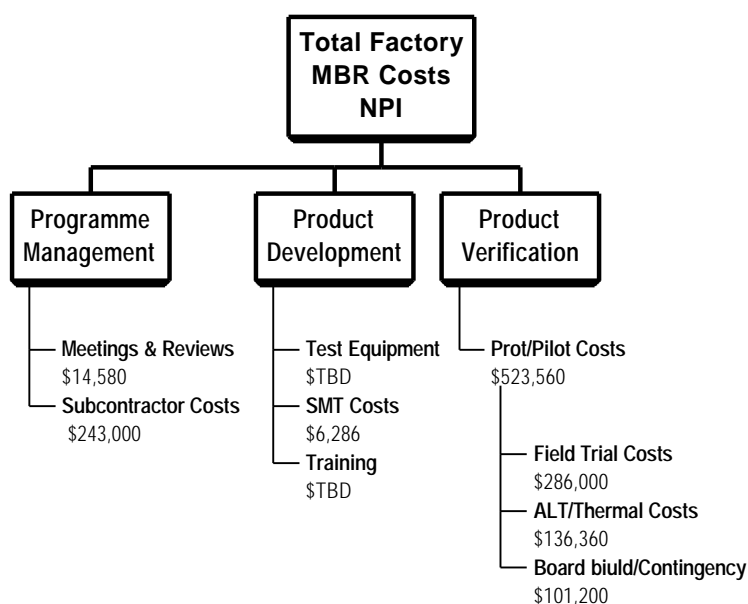
- No additional test equipment will be procured. It is perceived at this moment in time that we do not have to procure additional test heads/fixtures and will be able to modify (if required) existing StarTAC 85RR test fixtures with a minimum of effort. However the proposed functionality needs to be confirmed before a full assessment can be made.
- Tooling will be secured locally for the production ramp with material being supplied on allocation from Libertyville during the pilot phase of the project.
- Hardware can be produced independent of the final software version being available. We must ensure that base functionality software is generated that will allow the pilot runs to be board/final tested to confirm the hardware is operational. Final versions software can then be flexed in LV if it is not available at the time of the pilot.

#### 3.2. Estimated Project costs (to end of year)

The estimated spend to the end of financial year 1998 will be \$787,426.

##### 3.2.1. Breakdown

StarTAC 200 (Alex) MBR Breakdown



### **3.2.1.1. Meetings & Reviews**

A limited amount of meetings & reviews have been planned. However, with the product knowledge which EI already has on StarTAC 85R this has been kept to a minimum.

### **3.2.1.2. Subcontractor Costs**

The majority of the costs are for flip and flex tooling. The biggest field issue presently with StarTAC is related to the display assy. This part is presently manufactured by a subcontractor but StarTAC 200 may have to invest additional funds to resolve the current issue.

### **3.2.1.3. Test Equipment Costs**

This cost is assumed to be nil. However, the test strategy should be discussed and the cost for test equipment reviewed at the kick off meeting.

### **3.2.1.4. SMT Costs**

This cost is associated with SMT support costs for new stencils and vac blocks. It includes any risk mitigation/contingency costs which have been identified.

### **3.2.1.5. Training Costs**

This cost is assumed to be nil (EI have a wealth of StarTAC 85RR knowledge).

### **3.2.1.6. Proto/Pilot Costs**

The majority of the NPI spend. An assumption made is that the yield expected from the earlier pilots will produce material scrap (which has been accounted for in the estimate). The expected yield improves the closer the programme moves towards the ship acceptance milestone and therefore the scrap estimate reduces.

### 3.2.2. Detailed Estimate & Spend

Task description	Aug	Sep	Oct	Nov	Dec	Total
<b>Proto/Pilot/Field Trial/ALT/Thermal Costs</b>						
Proto I build - 100 pieces @ yield 60%	\$33,200					\$33,200
Proto II build @ 250 pieces @ yield 70%		\$72,360				\$72,360
Proto III build - 1000 Units (field trial) @ 75% yield		\$143,000	\$143,000			\$286,000
Contingency build 250 pcs @ 75% yield			\$68,000			\$68,000
Final Proto Build @ 250 Pieces @ 80% Yield				\$64,000		\$64,000
Total (US \$)	\$33,200	\$215,360	\$211,000	\$64,000		\$523,560
<b>Subcontractor Costs</b>						
Tooling Charge for flip			£130,000			£130,000
Tooling Charge for flex			£20,000			£20,000
Total (UK £)	£	£	£150,000	£	£	£150,000
Total (US \$)	\$	\$	\$243,000	\$	\$	\$243,000
<b>SMT Costs</b>						
Stencils	£960		£960	£960		£2,880
Vac Blocks	£500		£500			£1,000
Total (UK £)	£1,460	£	£1,460	£960	£	£3,880
Total (US \$)	\$2,365	\$	\$2,365	\$1,555	\$	\$6,286
<b>Meetings &amp; Reviews</b>						
Programme Review @ LV	£6,000		£3,000			£9,000
Total (UK £)	£6,000	£	£3,000	£		£9,000
Total (US \$)	\$9,720	\$	\$4,860	\$		\$14,580
Grand Total (US \$)	\$288,285	\$215,360	\$461,225	\$65,555	\$	\$787,426
Grand Total (UK £)	£178,737	£133,523	£285,960	£40,644	£	£488,204

### 3.3. Proposed Programme Plan

The top level gantt chart is identified in section 3.3.3.

The plan shows that we have planned 2 ALT Submissions in an attempt to mitigate programme risk in delaying the date for Product ship acceptance which is planned for week 51, 98.

#### 3.3.1. Pilot Plans

Total number of pilots planned : 1 board pilot and 4 phone pilots.  
Total number of phones generated : 1750 Phones (100 boards)

All pilots have been planned to run on the EI factory proto line A1.1, however additional activities will be planned to run from an existing GSM production line should the risk highlighted in section 3.4 be realised.

#### 3.3.2. Proposed Production Ramp

The production ramp will initially be from one of the smaller StarTAC production lines (B2.3). The factory (by Q1) should have migrated to a 4<sup>th</sup> shift pattern making the line (B2.3) capable of producing the quantities identified for Q1.

Depending on the full StarTAC mix in Q2 going forward and number of options are open, however the most cost effective solution will be reviewed after the initial kick-off meeting to maximise profitability.

Production lines available for StarTAC

Line Configuration	SAR
B3.2	1152
B2.3	1152
B2.2	1152
B1.2/3.3	1517

### 3.3.3. Detailed Programme Plan



### 3.4. Programme Risk

An initial risk assessment has been conducted and 2 major programme risk identified

- PREVIOUS STARTAC PROGRAMMES (COSMO & KRUNCH) HAVE NOT BEEN FREE FROM DESIGN ISSUES WHEN UNITS HAVE BEEN SUBMITTED TO ALT. ALTHOUGH BASED ON COSMO, PROBLEMS COULD BE INTRODUCED CAUSING THE ALT SUBMISSION TO FAIL OR FQA THERMAL GATE ISSUES TO BE IDENTIFIED.
- EI LEAD SITE ROLE HAS DRAMATICALLY INCREASE IN THE LAST 2/3 WEEKS. NEW PRODUCTS WHICH HAVE TO SHARE THE PROTO LINE ARE LEAP, KRAMER AND ALEX. THE PRIORITY ON BOTH LEAP & KRAMER COULD BE HIGHER THAN ALEX AND ANY DELAYS/NEW REQUIREMENTS FROM OTHER PROJECTS MAY 'STEAL' ALREADY BOOKED ALEX TIME ON THE PROTO LINE

2 risk mitigation activities have been identified and planned to contain the risk identified above :

- An additional ALT Pilot has been included in the programme plan ensuring that problems identified in the first submission are corrected satisfactorily for Ship Acceptance.
- One of the production GSM lines will be configured 'dual set' to ensure that a pilot run could be performed if the Proto Line were not available

1 contingent activity has also been included in the programme plan to contain some of the other risks identified

- A additional pilot has been scheduled so if any design iteration issues occur we can run another pilot to confirm the changes

#### 3.4.1. Initial Risk Assessment

No.	RISK INFORMATION		MILESTONE AFFECTED	DATE RAISED	RMF EXISTS Y/N	PROB 1 ... 9	IMPACT STATUS		
	TYPE	NAME					H	M	L
1	P	DESIGN ISSUES CAUSING ALT FAILURES/FQA T GATE ISSUES	2.2.4	10/07/98	Y	6	✓		
2	T	SOFTWARE PROGRAMMING DELAYS IMPACT PILOT PRODUCTION DELAYS	2.1.4/2.1.6	10/07/98	Y	7		✓	
3	P	OTHER NEW PRODUCTS (KRAMER, LEAP) DELAYS IMPACT PILOT PROGRAMME	2.1.1/2.1.2/2.1.4 2.1.5/2.1.6	10/07/98	Y	7	✓		
4	P	TOOL PROCUREMENT PROCESS IMPACTS JANUARY RAMP	2.3.5	10/07/98	N	5		✓	
5	T	FIELD TRAILS FEEDBACK/DESIGN ISSUES REQUIRES ANOTHER DESIGN ITERRATION	2.1.5	10/07/98	Y	7		✓	
6	C	PROJECT BUDGET IS EXCEEDED	N/A	10/07/98	N	6		✓	
7	P	ROLLED YIELD FOR SHIP ACCEPTANCE IS TO LOW	2.3.1	10/07/98	N	4		✓	
8									
9									