I'INVALIDITY CONTENTIONS FOR U.S. PATENT NO. 8,456,365 B2 BASED ON THE SONY ERICSSON T600 ("T600")

Based upon Plaintiff's Complaint, Infringement Contentions, and apparent claim constructions and application of the claims to Defendants' accused products, as best as they can be deciphered, the reference charted below anticipates or at least renders obvious some or all of claims 1, 2, 4, 5, 6, 7, 8, 12, 13, 31, 32, 35, 36, 37, and 41 (the "'365 Asserted Claims")[1]. These invalidity contentions are not an admission by the Defendants that the accused products are covered by or infringe the asserted claims, particularly when these claims are properly construed and applied.

Pre-AIA law applies because the '365 Patent was filed on August 13, 2008, before March 16, 2013.

Sony Ericsson Mobile Communications' ("Sony Ericsson"), as publicly demonstrated, known, offered for sale, sold, and/or used by Sony Ericsson and/or customers of Sony Ericsson, or otherwise available to the public, including in this country ("T600") was approved by the FCC on July 29, 2002[2] and released in October 2002[3]. Thus, the T600 is available as prior art at least under pre-AIA 35 U.S.C. § 102(a)-(b), (g)(2) and 103(a). At least the following documents provide evidence as to the date the T600 was "offered for sale or publicly used or known," "the date the offer or use of the item took place or the information became known", and the "identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known" [4]:

- Phonescoop.com, "*Sony EricssonT600*" https://www.phonescoop.com/phones/phone.php?p=167 (last accessed June 18, 2025)
- GSMArena.com, "*Sony Ericsson T600*" https://www.gsmarena.com/sony_ericsson_t600-341.php (last accessed June 18, 2025)

[1] Defendants understand that, by not charting claims 3, 9-11, 14-30, 33-34, 38-40, and 42-45 in its Infringement Contentions, Plaintiff does not assert these claims against Defendants.

[2] *See* Phonescoop.com, "Sony EricssonT600" https://www.phonescoop.com/phones/phone.php?p=167 (last accessed June 18, 2025)

[3] *See* GSMArena.com, "Sony Ericsson T600" https://www.gsmarena.com/sony_ericsson_t600-341.php (last accessed June 18, 2025)

[4] Defendants do not yet have complete information regarding the dates by which this product was publicly disclosed, made, used, sold, or offered for sale, the circumstances under which the research, design, and development activities were conducted, and the identities of the particular individuals involved in such activities. Defendants anticipate that the actual dates, circumstances, and identities of individuals will be the subject of third party discovery during this lawsuit. Defendants therefore reserve the right to amend and/or supplement its Invalidity Contentions and this chart if additional information becomes available during the course of discovery. The date the T600 was "offered for sale or publicly used or known," as well as "the date the offer or use of the item took place or the information became known" is at least as early as the dates identified in the published documents. The "identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known" includes at least those persons associated with the publication(s), press releases, and conference attendees, or other documents associated with each version on the T600. Defendants also reserve the right to rely on the public use, offer for sale, sale, or installation of the devices described in the publications identified herein once Defendants have had a fair opportunity to take discovery on these subjects.

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- PhoneArena.com, “Sony Ericsson T600” https://www.phonearena.com/phones/Sony-Ericsson-T600_id394 (last accessed June 18, 2025)
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: “PY7”; Product Code: “1130402”; Record Option: 1/1 “Detail”; Attachment: “External Photos” (last accessed June 11, 2025) (“FCC External Photos”)
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: “PY7”; Product Code: “1130402”; Record Option: 1/1 “Detail”; Attachment: “Internal Photos” (last accessed June 11, 2025) (“FCC Internal Photos”)
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: “PY7”; Product Code: “1130402”; Record Option: 1/1 “Detail”; Attachment: “User Manual” (last accessed June 11, 2025) (“FCC User Photos”)

As described in the following claim chart, the asserted claims of U.S. Patent No. 8,456,365 (the “’365 Patent”), are invalid as anticipated by T600. To the extent that T600 is found not to anticipate one or more of the asserted claims of the ’365 Patent, these claims are invalid as obvious in view of T600 alone or as modified in view of or in combination with other prior art references disclosed in Defendant’s Invalidity Contentions and accompanying charts, including without limitation as set forth below.

- U.S. Pat. 6,239,765 to Johnson et al. (“Johnson”)

One of ordinary skill in the art, as of the priority date of the ’458 Patent, would have known to combine or modify the prior art elements disclosed by the foregoing references using known methods, and to use these elements according to their established functions in order to achieve a known and predictable result.

These invalidity contentions are not an admission that the Defendants concede or acquiesces to any claim construction implied or suggested by Plaintiff’s Complaint or Infringement Contentions. Nor are Defendants asserting any claim construction positions through these charts, including whether the preamble is a limitation. The portions of the prior art reference cited below are not exhaustive but are exemplary in nature. Defendants retain the right to update their constructions and contentions in view of this Court’s claim construction order.[5]

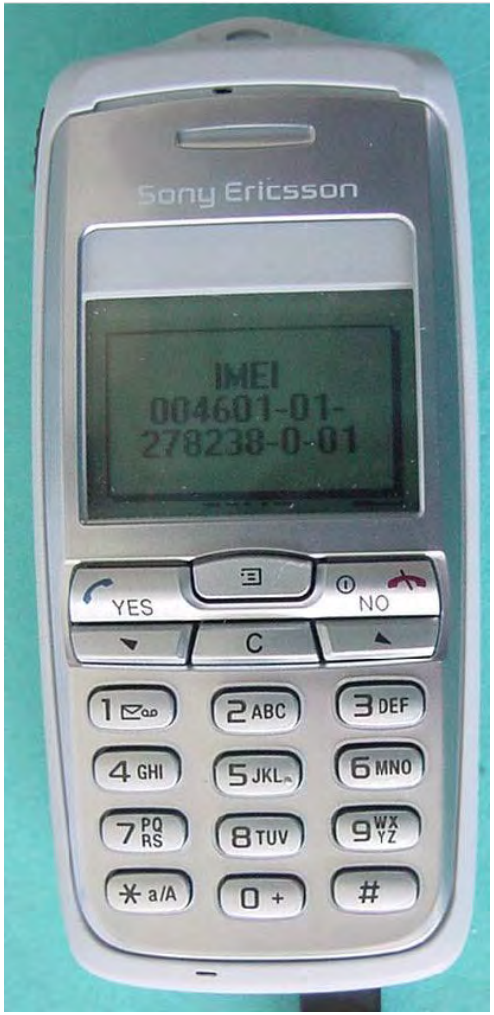
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
Claim 1		

[5] Defendants reserve the right to supplement and/or alter this chart based on further investigation and ongoing discovery.

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
1[pre]	A mobile communication device, comprising:	To the extent the preamble is limiting, T600 expressly or inherently discloses this claim element. *See, e.g.*, The T600 is a mobile communication device.

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		See FCC External Photos at 1.
1[a]	a device housing;	T600 expressly or inherently discloses this claim element. *See, e.g.,* The T600 has a device housing.

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Device Housing
HW
3302
8428

Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		See FCC Internal Photos at 3.
1[b]	a printed circuit board, the printed circuit board comprising:	T600 expressly or inherently discloses this claim element. *See, e.g.*, The T600 has a printed circuit board.

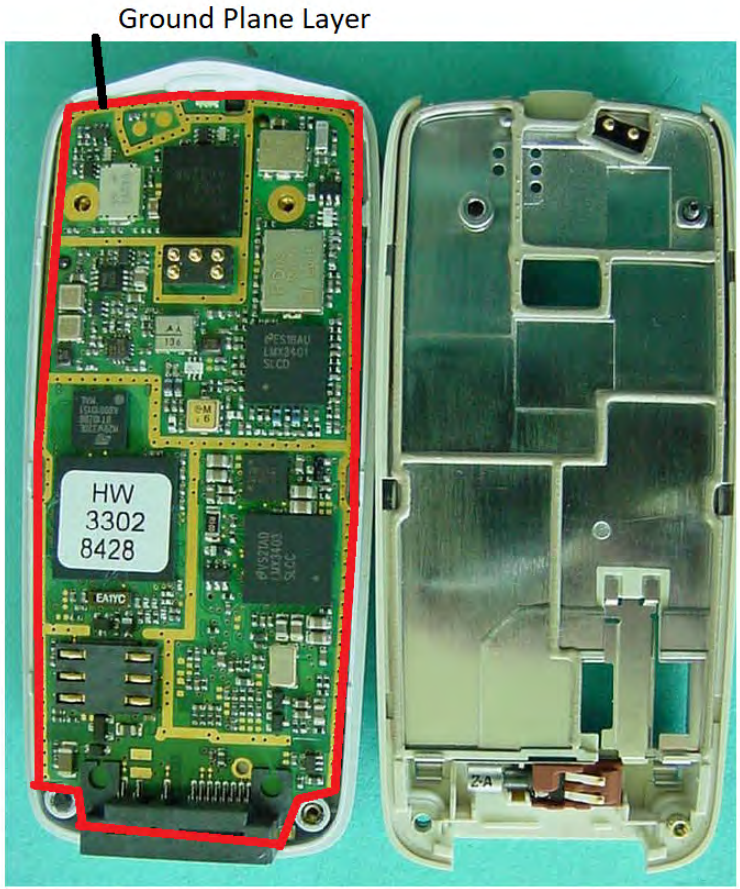
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 *See* FCC Internal Photos at 3 (annotated).

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
1[c]	[*the printed circuit board comprising*] a ground plane layer;	T600 expressly or inherently discloses this claim element. *See, e.g.*, The T600 has a ground plane later.

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 *See* FCC Internal Photos at 3 (annotated).

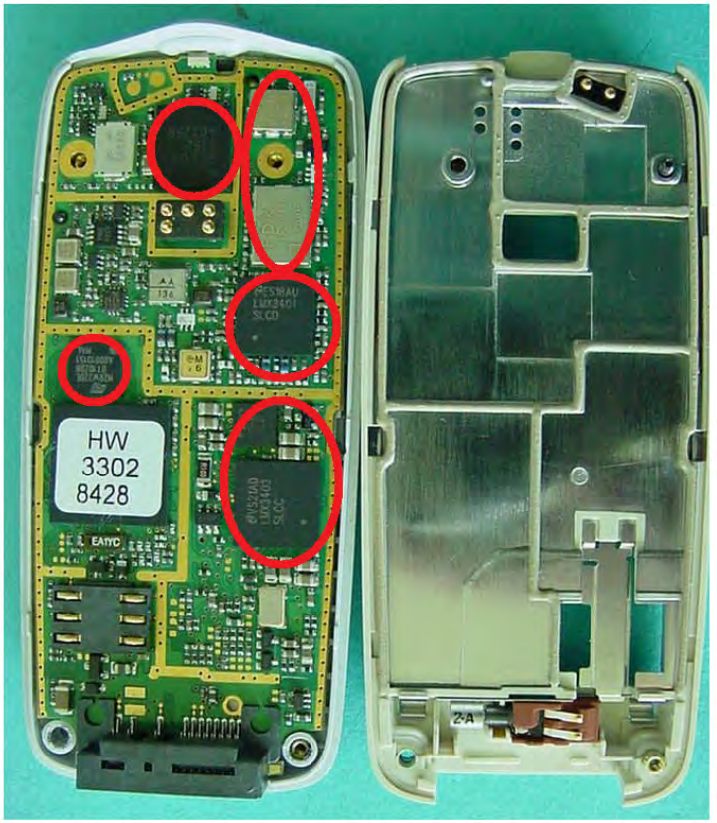
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
1[d]	[*the printed circuit board comprising*] a feeding point;	T600 expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board of the T600 includes a feeding point.  *See* FCC Internal Photos at 3 (annotated).

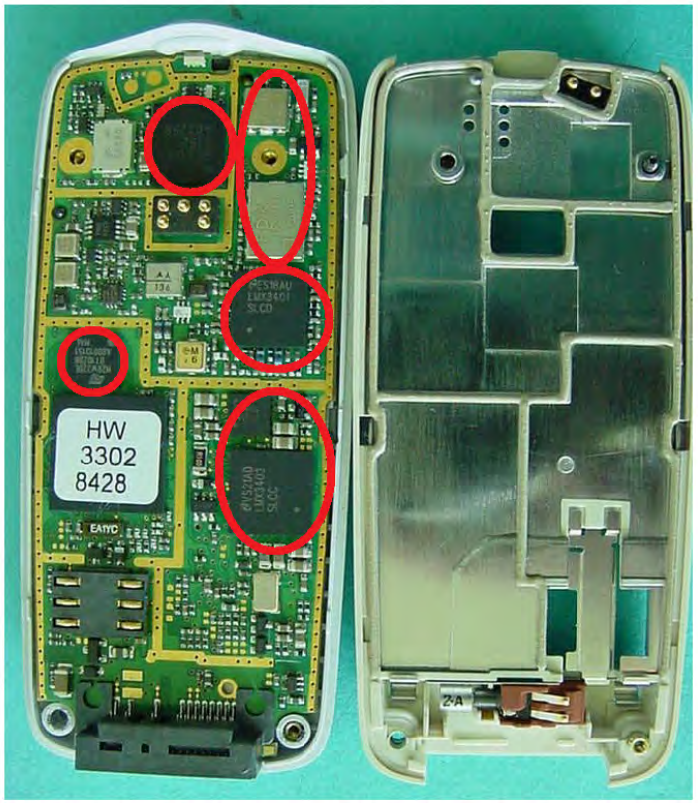
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
1[e]	a communication circuitry,	T600 expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board of the T600 includes a communication circuitry, the communication circuitry being mounted on the printed circuit board.

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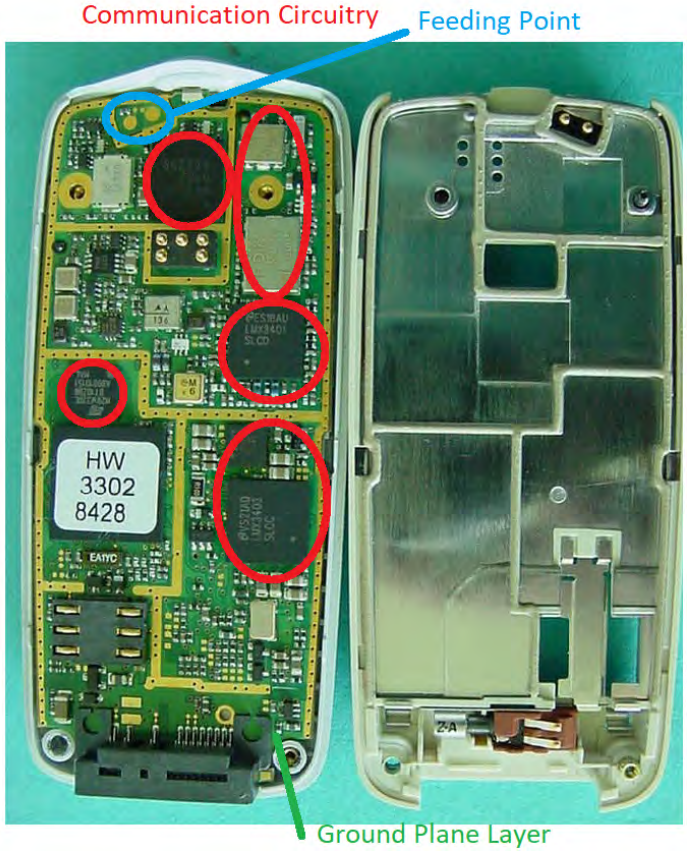
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		Communication Circuitry  *See* FCC Internal Photos at 3 (annotated).

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
1[f]	the communication circuitry being mounted on the printed circuit board;	T600 expressly or inherently discloses this claim element. *See, e.g.,* The T600's communication circuitry is mounted on its printed circuit board. Communication Circuitry 

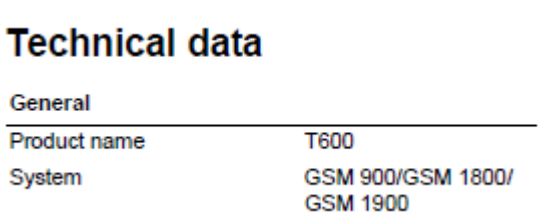
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		See FCC Internal Photos at 3 (annotated).
1[g]	wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;	T600 expressly or inherently discloses this claim element. *See, e.g.*, The communication circuitry of the T600 is coupled to the feeding point and to the ground plane layer.

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 See FCC Internal Photos at 3 (annotated).

Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
1[h]	a multi-band antenna capable of operating at multiple frequency bands,	T600 expressly or inherently discloses this claim element. *See, e.g.*, The T600 includes a multi-band antenna capable of operating at multiple frequency bands, the multi-band antenna including an antenna element.  *See* FCC Internal Photos at 1 (annotated).

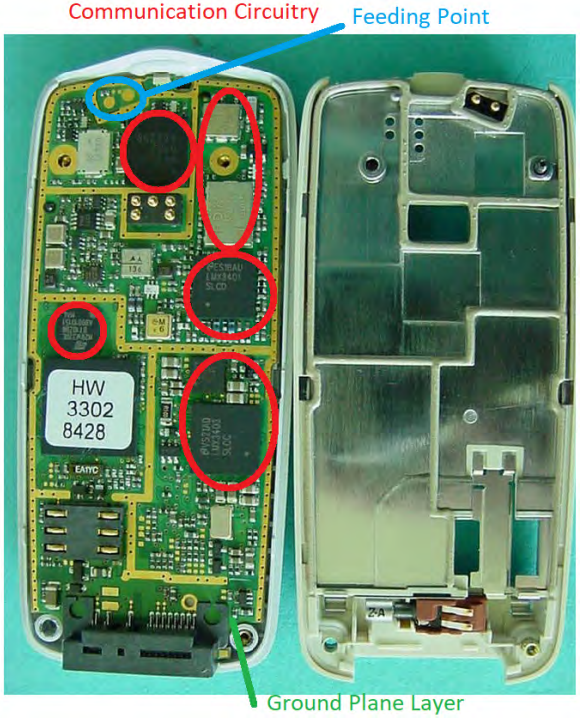
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 *See* FCC User Manual at 67.
1[i]	the multi-band antenna including an antenna element;	T600 expressly or inherently discloses this claim element. *See, e.g.*, The T600's multi-band antenna includes an antenna element.

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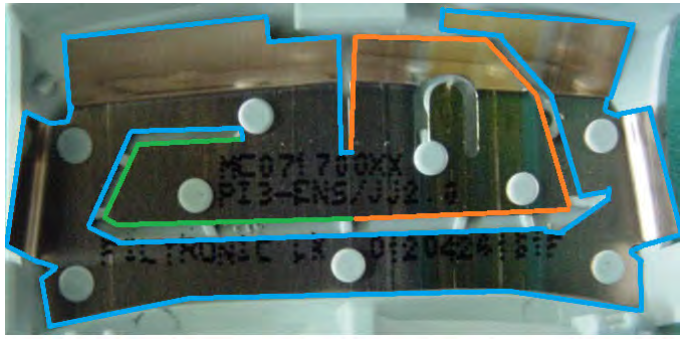
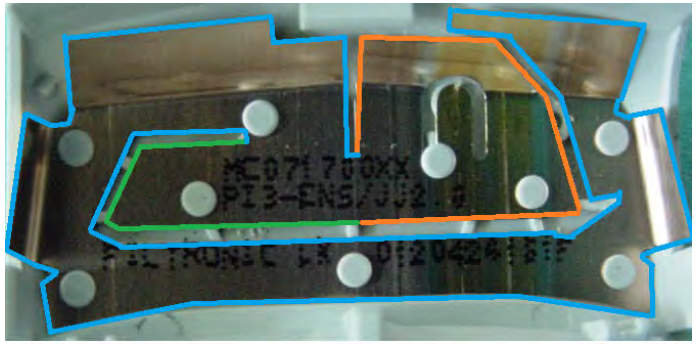
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 *See* FCC Internal Photos at 1 (annotated).
1[j]	wherein the antenna element operates in cooperation with the ground plane layer;	T600 expressly or inherently discloses this claim element. *See, e.g.*, The antenna element of the T600 operates in cooperation with the ground plane layer.

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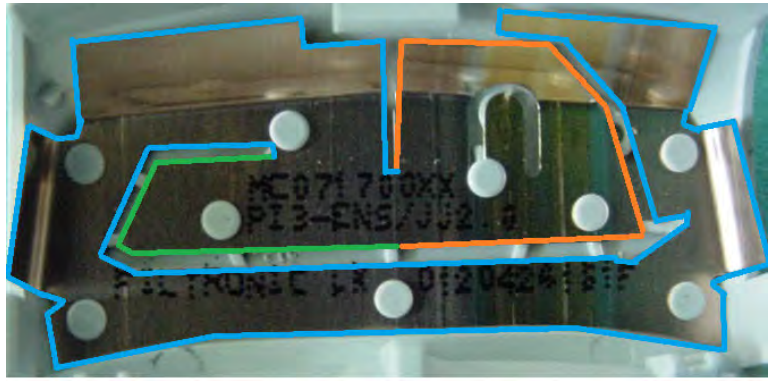
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 *See* FCC Internal Photos at 3 (annotated).

Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 *See* FCC Internal Photos at 1 (annotated).
1[k]	the antenna element comprising:	T600 expressly or inherently discloses this claim element. *See* Claim 1[h], [j]. *See also*:

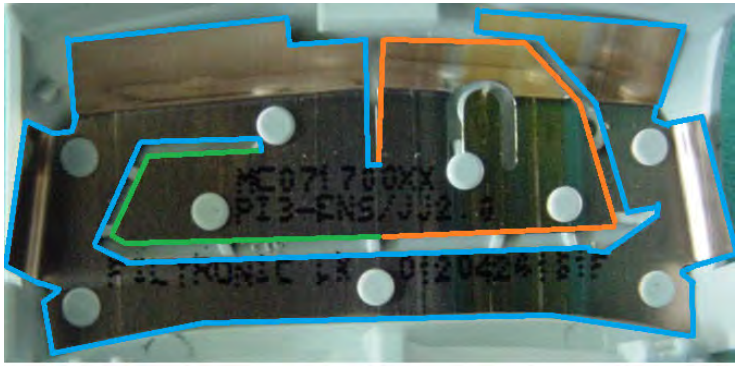
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
1[l]	[*the antenna element comprising*] a common conductor;	T600 expressly or inherently discloses this claim element. *See, e.g.*, The T600's antenna element includes a common conductor (orange below): 
1[m]	[*the antenna element comprising*] a first radiating	T600 expressly or inherently discloses this claim element.

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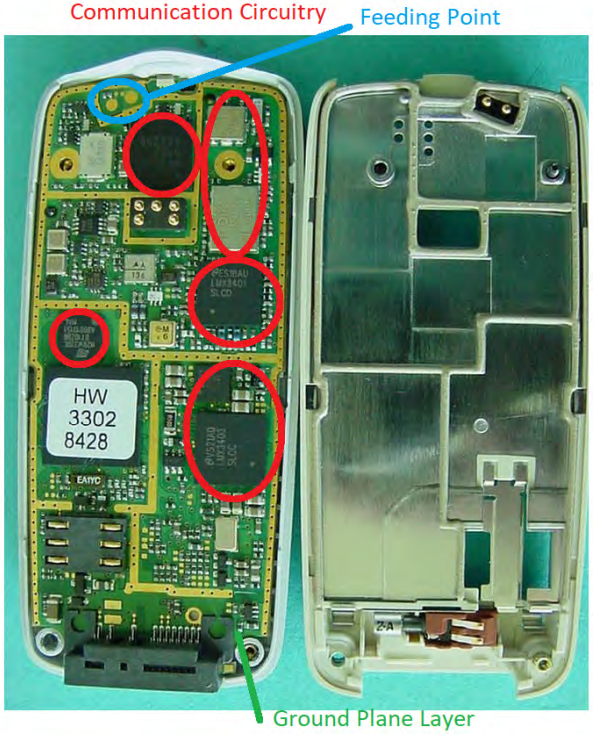
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
	arm connected to the common conductor;	*See, e.g.*, The T600's antenna element includes a first radiating arm connected to the common conductor (blue below): 
1[n]	[*the antenna element comprising*] a second radiating arm connected to the common conductor;	T600 expressly or inherently discloses this claim element. *See, e.g.*, The T600's antenna element includes a second radiating arm connected to the common conductor (green below):

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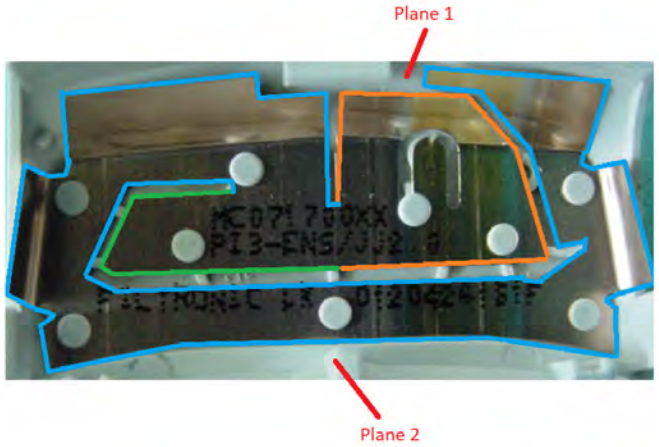
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
1[o]	wherein the common conductor includes a feeding port, the feeding port being coupled to the feeding point;	T600 expressly or inherently discloses this claim element. *See, e.g.*, The common conductor (below) of the antenna element of the T600 includes a feeding port, the feeding port being coupled to the feeding point (below).

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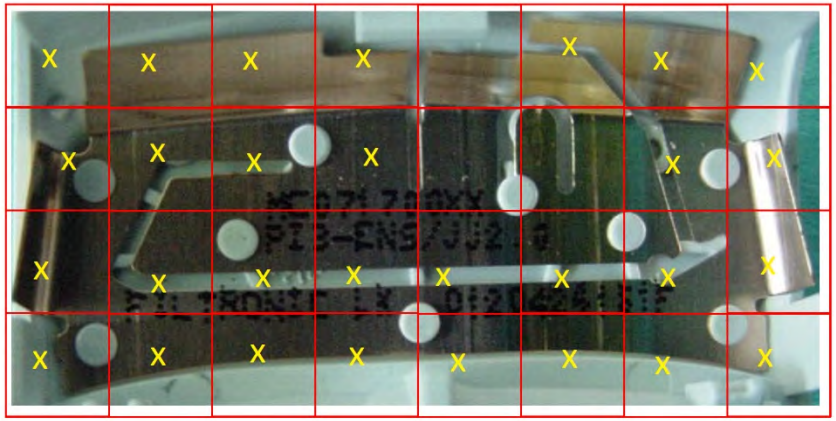
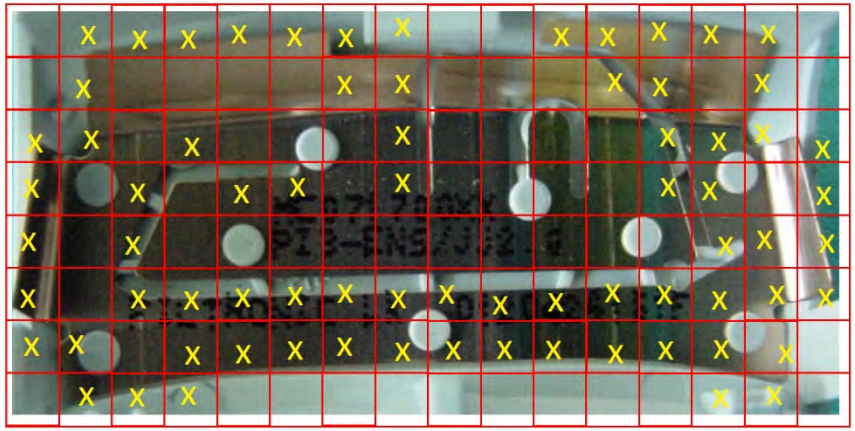
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 See FCC Internal Photos at 1 (annotated).

Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 See FCC Internal Photos at 3 (annotated).
1[p]	wherein at least a portion of the first radiating arm and at least a portion of the second radiating arm are arranged on different planes;	T600 expressly or inherently discloses this claim element. *See, e.g.,* In the antenna element of the T600, at least a portion of the first radiating arm (below) and at least a portion of the second radiating arm (below) are arranged on different planes.

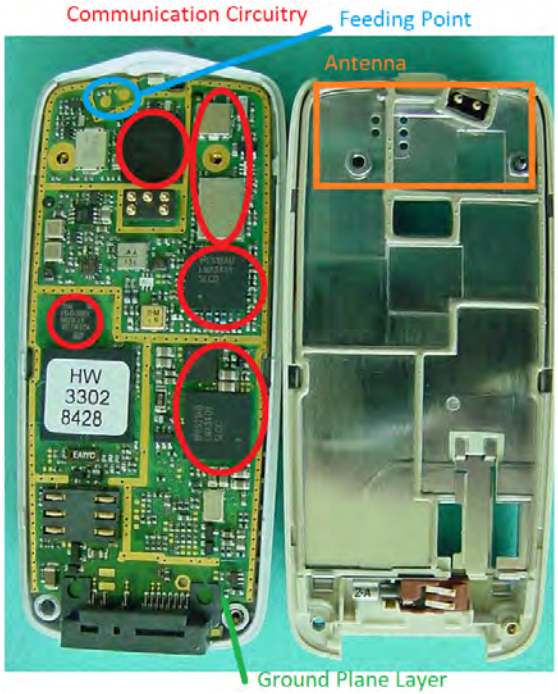
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
1[q]	wherein the first radiating arm is at least partially shaped according to a grid dimension curve; and	T600 expressly or inherently discloses this claim element. *See, e.g.*, The complexity factor calculation is performed according to the method in the patent. N1=29

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 N2=73  Dg=log(73/29)/log(2)=1.33>1

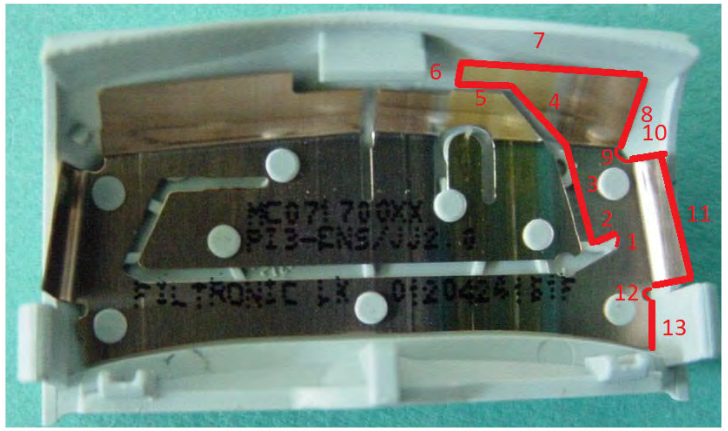
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
1[r]	wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.	T600 expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board, the communication circuitry, and the multi-band antenna of the T600 are arranged inside the device housing.  *See* FCC Internal Photos at 3 (annotated).

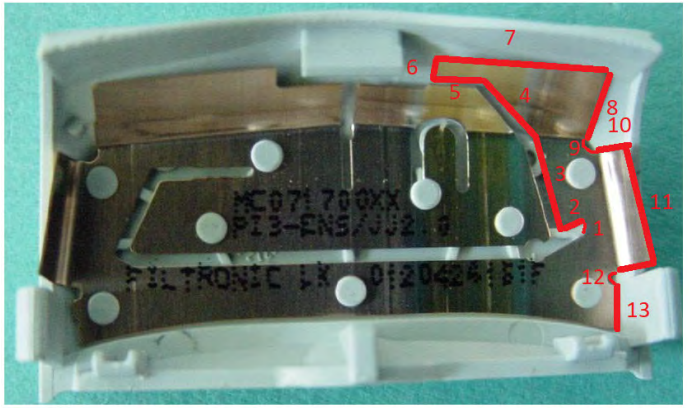
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 *See* FCC Internal Photos at 1 (annotated).
	Claim 2	
2[a]	The mobile communication device according to claim 1, wherein the first radiating arm	T600 expressly or inherently discloses this claim element. *See, e.g.,*

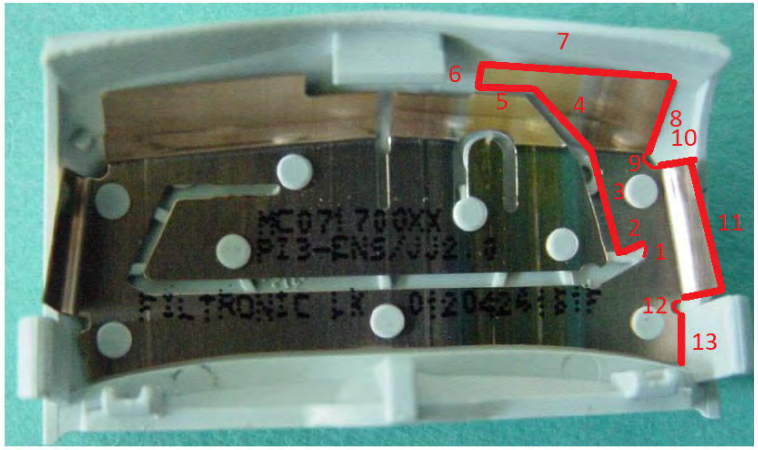
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
	comprises a first plurality of segments;	The first radiating arm of the antenna element of the T600 includes a first plurality of segments. 
2[b]	wherein each segment of the first plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna;	T600 expressly or inherently discloses this claim element. *See, e.g.,* Each segment of the first plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna.

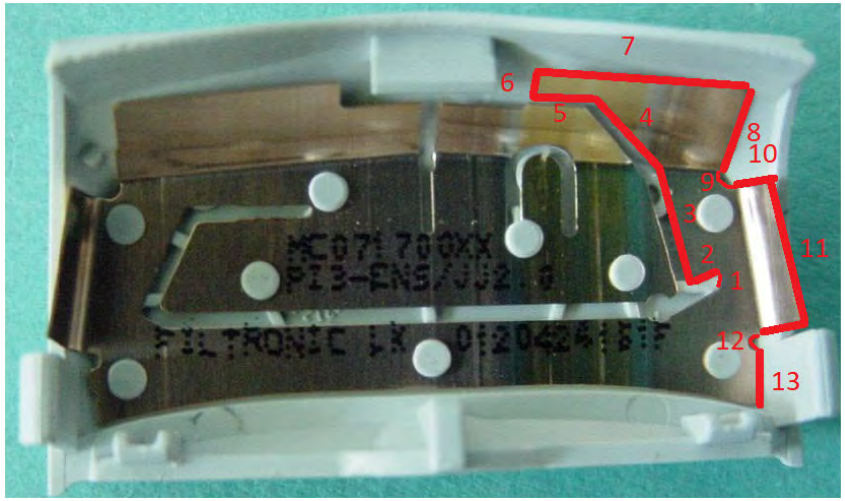
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
2[c]	wherein the segments are spatially arranged such that each pair of adjacent segments forms a corner; and	T600 expressly or inherently discloses this claim element. *See, e.g.*, The segments are spatially arranged such that each pair of adjacent segments forms a corner.

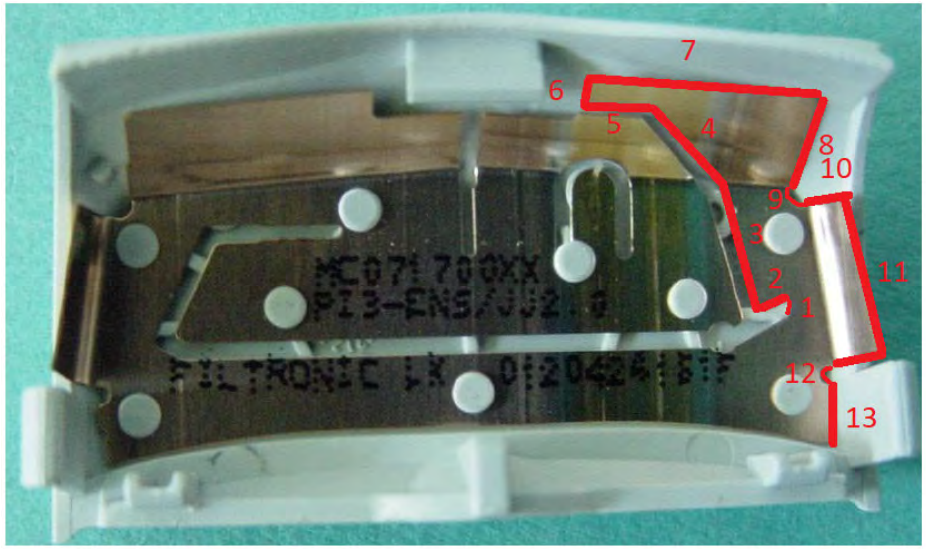
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
2[d]	wherein no two adjacent and connected segments form another longer straight segment; and	T600 expressly or inherently discloses this claim element. *See, e.g.*, No two adjacent and connected segments form another longer straight segment.

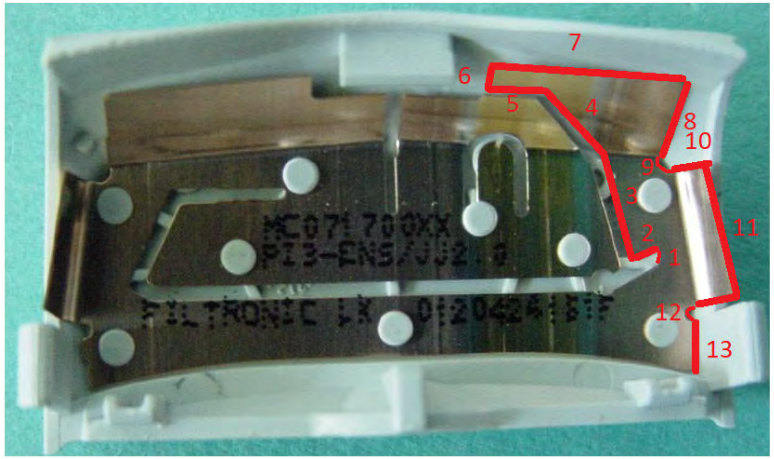
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
2[e]	wherein none of said segments intersect with another segment other than to form a closed loop.	T600 expressly or inherently discloses this claim element. *See, e.g.*, None of said segments intersect with another segment other than to form a closed loop.

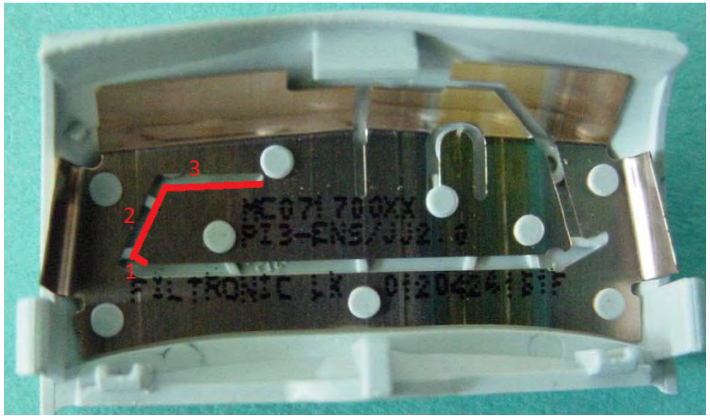
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
	Claim 4	
4	The mobile communication device according to claim 2, wherein the first plurality of segments comprises at least ten segments.	T600 expressly or inherently discloses this claim element. *See, e.g.*, The T600's first plurality of segments comprises at least ten segments

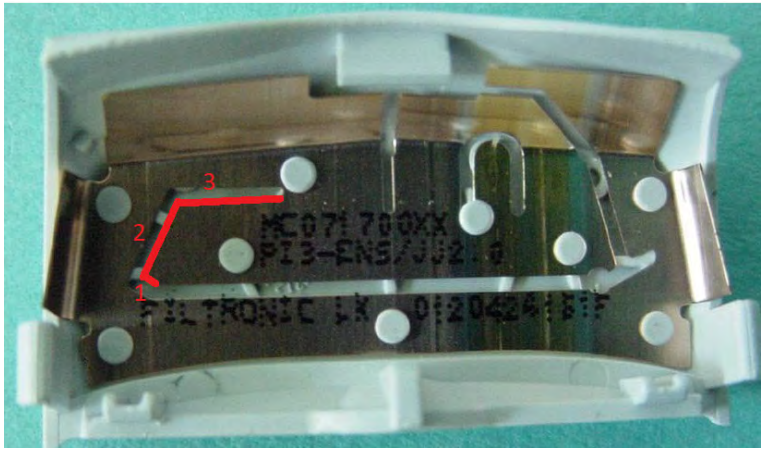
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
	Claim 5	
5[a]	The mobile communication device according to claim 2, wherein the second radiating arm comprises a second plurality of segments;	T600 expressly or inherently discloses this claim element. *See, e.g.,* The T600's second radiating arm comprises a second plurality of segments.

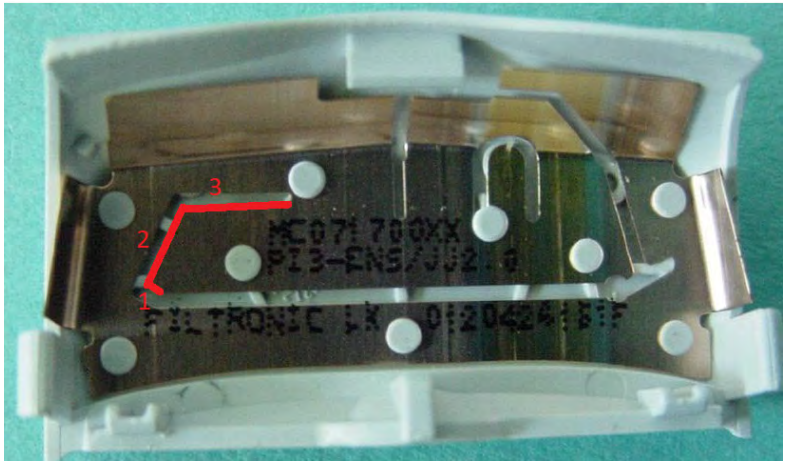
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
5[b]	wherein each segment of the second plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna;	T600 expressly or inherently discloses this claim element. *See, e.g.,* Each segment of the T600's second plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna.

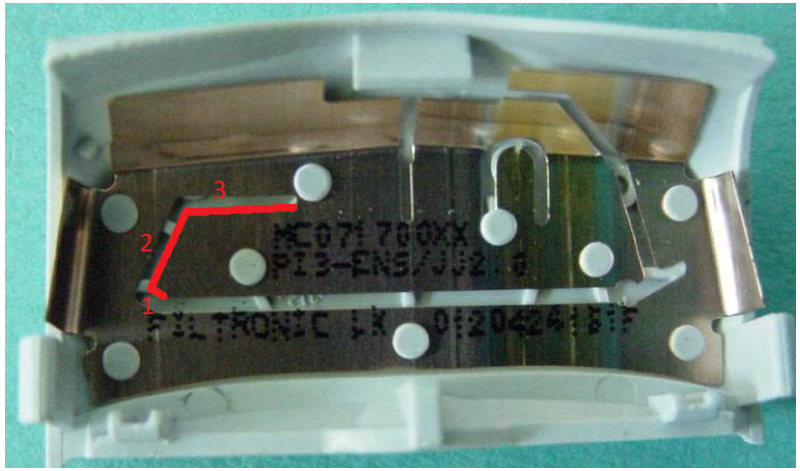
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
5[c]	wherein the segments are spatially arranged such that each pair of adjacent segments forms a corner; and	T600 expressly or inherently discloses this claim element. *See, e.g.,* The T600's antenna segments are spatially arranged such that each pair of adjacent segments forms a corner

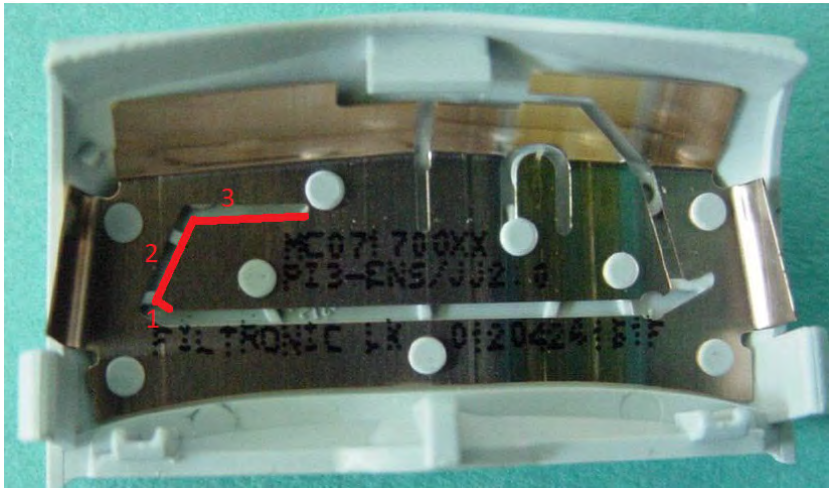
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
5[d]	wherein no two adjacent and connected segments form another longer straight segment; and	T600 expressly or inherently discloses this claim element. *See, e.g.*, The T600's antenna has no two adjacent and connected segments form another longer straight segment.

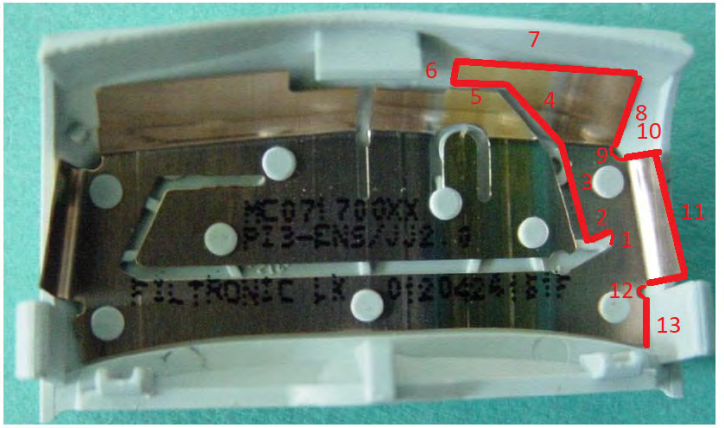
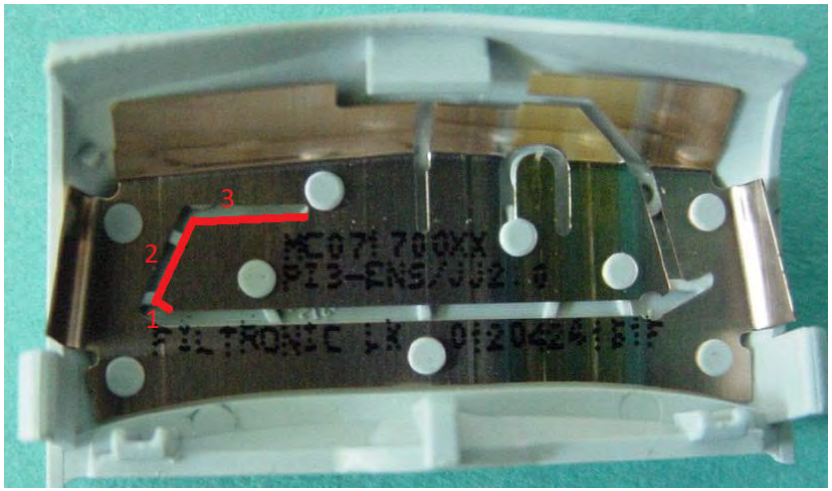
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
5[e]	wherein none of said segments intersect with another segment other than to form a closed loop.	T600 expressly or inherently discloses this claim element. *See, e.g.*, None of said segments in the T600 intersect with another segment other than to form a closed loop.

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
	Claim 6	
6	The mobile communication device according to claim 5, wherein the first plurality of segments comprises more segments than the second plurality of segments.	T600 expressly or inherently discloses this claim element. *See, e.g.,* In the antenna element of the T600, the first plurality of segments comprises more segments than the second plurality of segments.

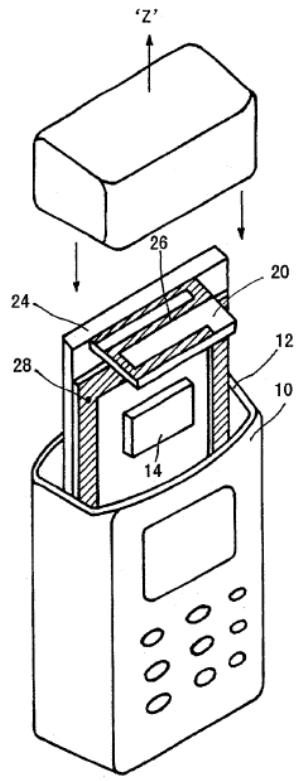
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 
Claim 7		

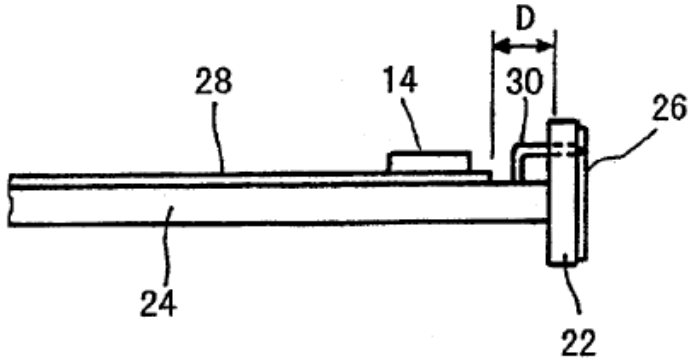
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
7	The mobile communication device according to claim 1, wherein the grid-dimension curve has a grid dimension larger than 1.3.	T600 expressly or inherently discloses this claim element. *See* Claim 1[q]. The grid-dimension curve has a grid dimension larger than 1.3.
Claim 12		
12	The mobile communication device according to claim 1, wherein an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the ground plane layer in less than 50% of an area of said footprint.	T600 expressly or inherently discloses this claim element. To the extent T600 does not expressly or inherently disclose this claim element, it would have been obvious for the T600 to satisfy this claim element in view of U.S. Pat. 6,239,765 to Johnson et al. ***See, e.g.*, Johnson:** Johnson (FIG. 1) discloses an antenna assembly 20 that "may [be] implemented within single or multiple frequency wireless communication devices, for instance devices operating over…cellular telephone (824-890 MHz and 860-890 MHz), PCS device (1710-1880 MHz, 1750-1870 MHz, and 1850-1990 MHz)…frequency ranges…In alternative embodiments, the dimensions of the antenna assembly 20 may be scaled to provide operation at other frequencies, including frequencies in the 800 MHz to 3,000 MHz range." (3:48-62).

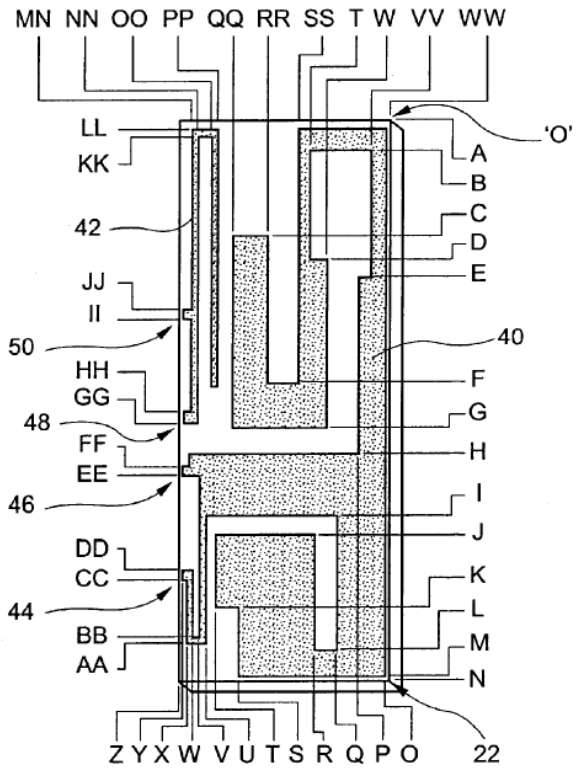
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 *FIG. 1* Johnson (FIG. 2) illustrates an embodiment "of the antenna assembly wherein the first planar element 22 is substantially perpendicular to the second planar element 24," the latter having the ground plane (4:35-37). While Johnson illustrates the first planar element 22 in FIG. 2 as flat,

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		Johnson states "the first planar element 22…may be configured to conform to a portion of the housing 12, for example to assume a convex or more complex form…the design and selection of either the first or second planar elements 22,24 with reference to a particular wireless communication device may result in such complex shapes." (4:29-35).  *FIG. 2* Johnson (FIG. 9) illustrates the antenna assembly 20 as a tri-band antenna assembly 20 functioning across a cellular band (880-960 MHz), a PCS band (1710-1880 MHz) and the BLUETOOTH™ band (2.4-2.5 GHz.). Cellular and PCS band operation is effected through the first conductor trace 40," which is coupled to ground of the second planar element at point 44 and to the signal generating circuitry 14 via feedpoint 46." (5:35-44).

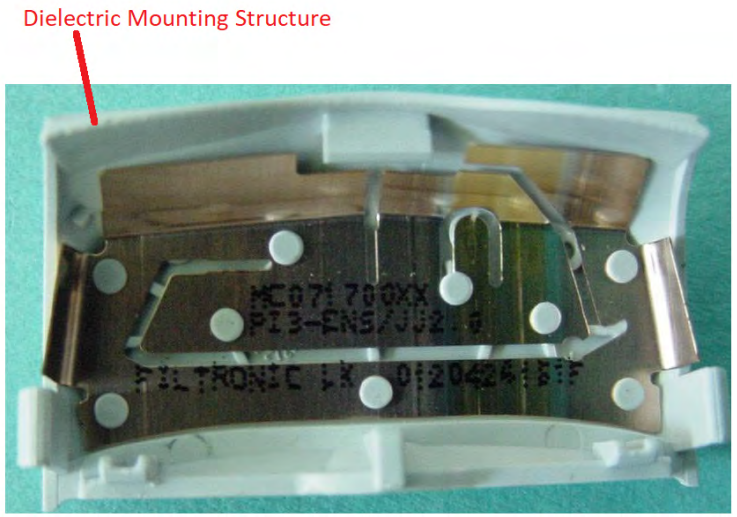
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		FIG. 9  When the tri-band antenna assembly 20 as shown in FIG. 9 is used in the configuration of FIG. 2, an orthogonal projection of a footprint of the antenna assembly 20 on a plane of the second planar element 24 overlaps the ground plane layer in less than 50% of an area of said footprint. The

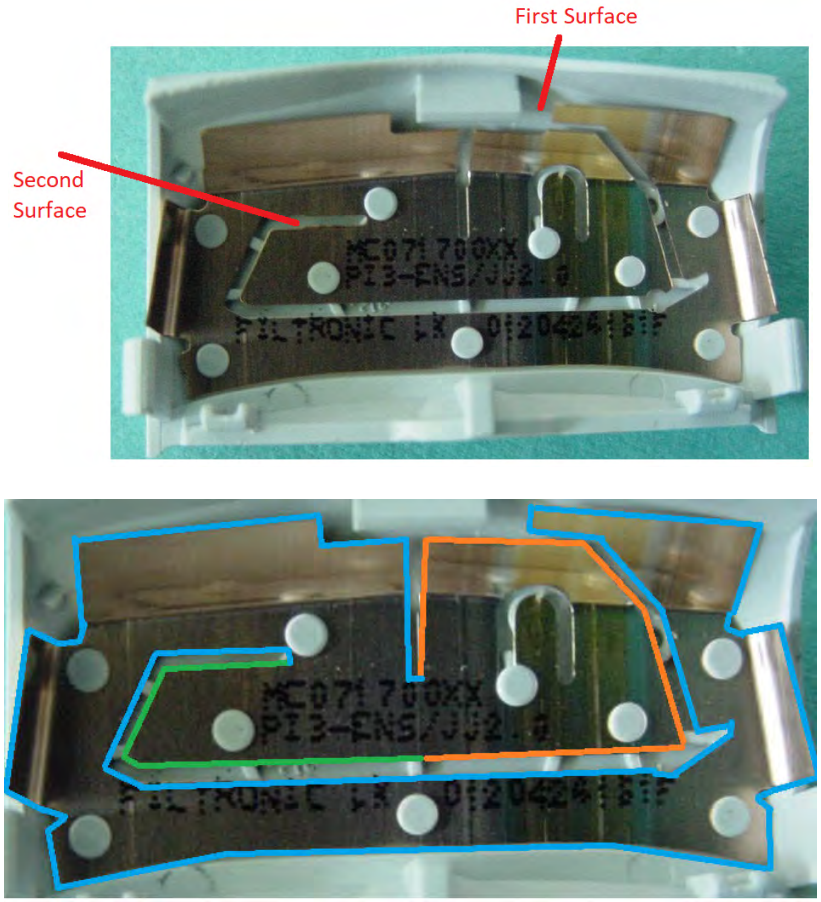
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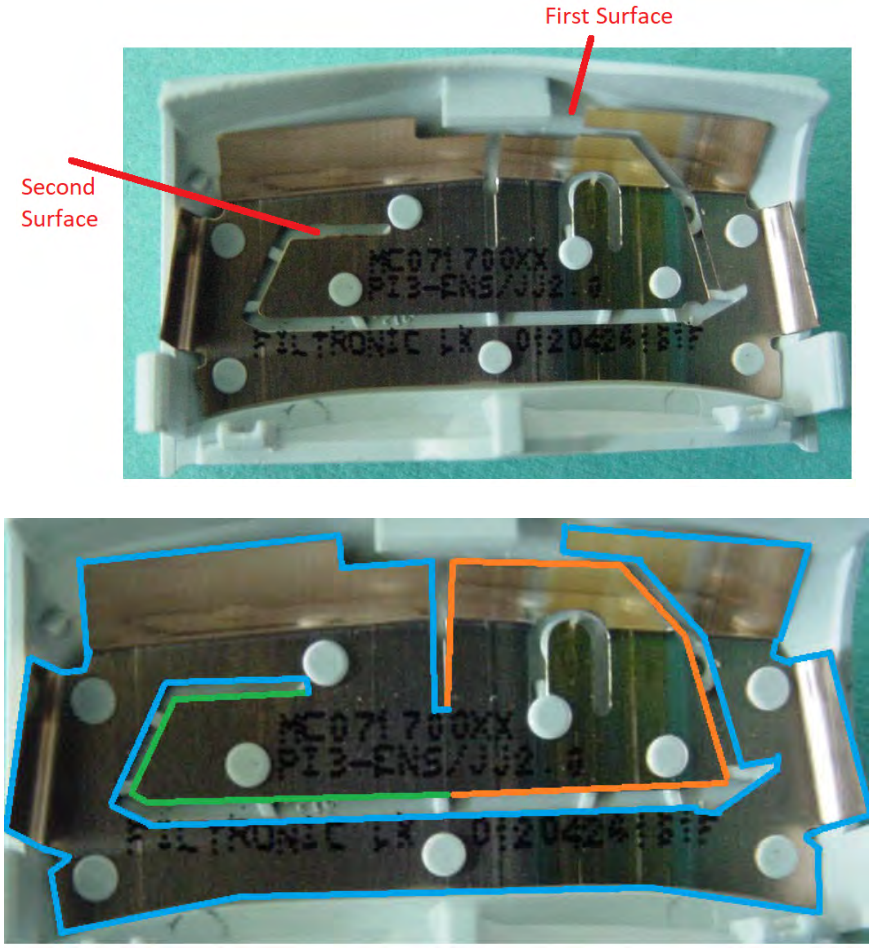
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		configuration of FIG. 2, like the configuration of FIG. 1, is disclosed in Johnson as "away from the user's hand during operation" (3:66-67), which reduces blockage by the user's hand. In view of Johnson, one of ordinary skill in the art would have been motivated to re-orient the cellular antenna of the T600 to face the top end of the housing in order to reduce the likelihood of blockage by the user's hand. There would have been a reasonable expectation of success in doing so because Johnson's antenna operates in substantially the same frequency ranges as the T600 antenna, and has an inverted-F configuration like the T600 antenna. Moreover, Johnson contemplates that the disclosed antenna will have a non-planar (e.g., convex) form, like the T600 antenna, to accommodate available space within a device housing. Moreover, re-orienting the T600 antenna as disclosed in Johnson would have been a mere design choice among configurations that were known in the art (see, e.g., the T600 antenna configuration shown in FIG. 4 of Johnson as a known alternative). Thus, it would have been obvious for the T600 to satisfy this claim element.
Claim 13		
13[a]	The mobile communication device according to claim 1, comprising: a dielectric mounting structure having a plurality of surfaces;	T600 expressly or inherently discloses this claim element. *See, e.g.,* The T600 includes a dielectric mounting structure having a plurality of surfaces. At least a portion of the first radiating arm is arranged on a first surface of said plurality of surfaces; and at least a portion of the second radiating arm is arranged on a second surface of said plurality of surfaces, the second surface being different from the first surface.

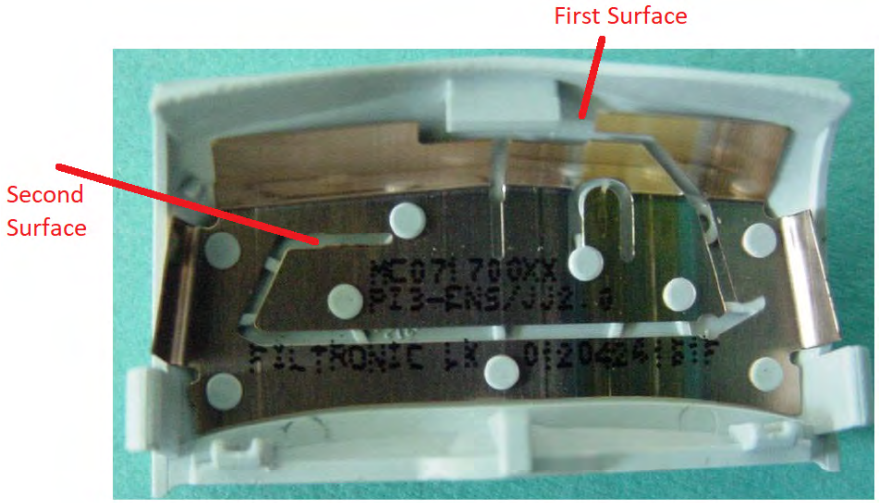
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
13[b]	wherein at least a portion of the first radiating arm is arranged on a first surface of said plurality of surfaces; and	T600 expressly or inherently discloses this claim element. *See* Claim 13[a]. *See also*:

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
13[c]	wherein at least a portion of the second radiating arm is	T600 expressly or inherently discloses this claim element. *See* Claim 13[a].

Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
	arranged on a second surface of said plurality of surfaces,	*See also*: 

Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
13[d]	the second surface being different from the first surface.	T600 expressly or inherently discloses this claim element. *See* Claim 13[a]. *See also*: 
		Claim 31
31[pre]	A mobile communication device, comprising:	To the extent the preamble is limiting, T600 expressly or inherently discloses this claim element. *See* Claim 1[pre].

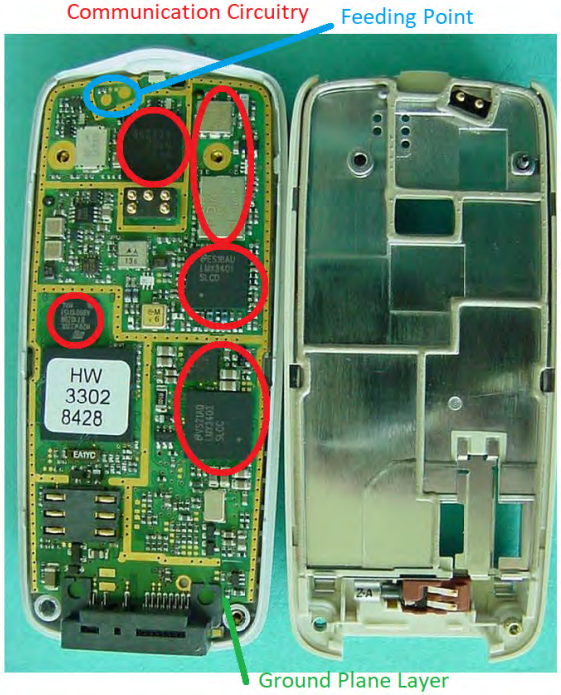
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
31[a]	a device housing;	T600 expressly or inherently discloses this claim element. *See* Claim 1[a].
31[b]	a printed circuit board, the printed circuit board comprising:	T600 expressly or inherently discloses this claim element. *See* Claim 1[b].
31[c]	[*the printed circuit board comprising*] a ground plane layer;	T600 expressly or inherently discloses this claim element. *See* Claim 1[c].
31[d]	[*the printed circuit board comprising*] a feeding point;	T600 expressly or inherently discloses this claim element. *See* Claim 1[d].
31[e]	a communication circuitry,	T600 expressly or inherently discloses this claim element. *See* Claim 1[e].

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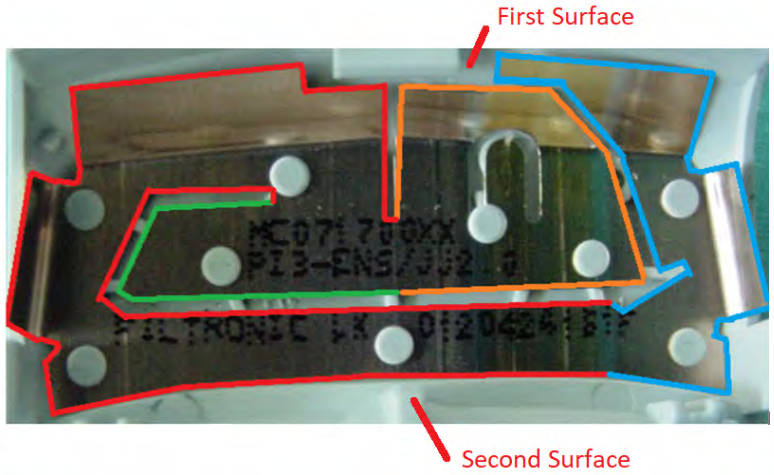
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
31[f]	the communication circuitry being mounted on the printed circuit board;	T600 expressly or inherently discloses this claim element. *See* Claim 1[f].
31[g]	wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;	T600 expressly or inherently discloses this claim element. *See* Claim 1[g].
31[h]	a multi-band antenna capable of operating at multiple frequency bands, the multi-band antenna including:	T600 expressly or inherently discloses this claim element. *See* Claim 1[h].
31[i]	[*the multi-band antenna including*] a dielectric mounting structure having a plurality of surfaces;	T600 expressly or inherently discloses this claim element. *See* Claim 13[a].
31[j]	[*the multi-band antenna including*] an antenna element,	T600 expressly or inherently discloses this claim element. *See* Claim 1[i].

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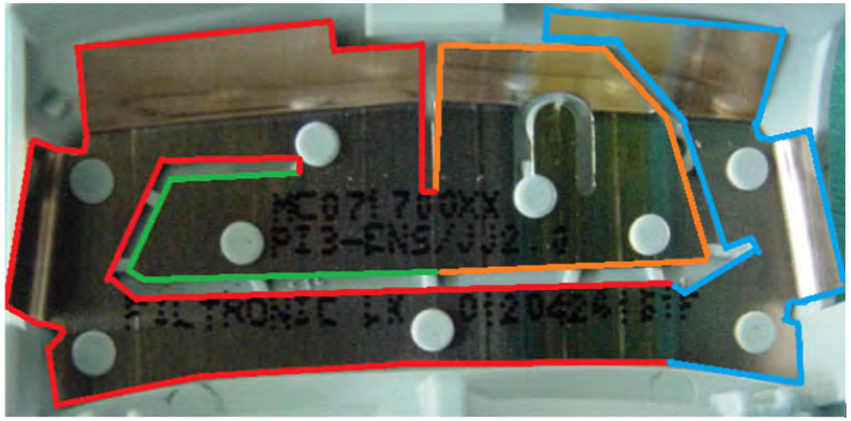
Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
31[k]	the antenna element being coupled to the feeding point and	T600 expressly or inherently discloses this claim element. *See* Claim 31[j]. *See also*: 

Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
31[l]	[*the antenna element* …] operating in cooperation with the ground plane layer;	T600 expressly or inherently discloses this claim element. *See* Claim 1[j].

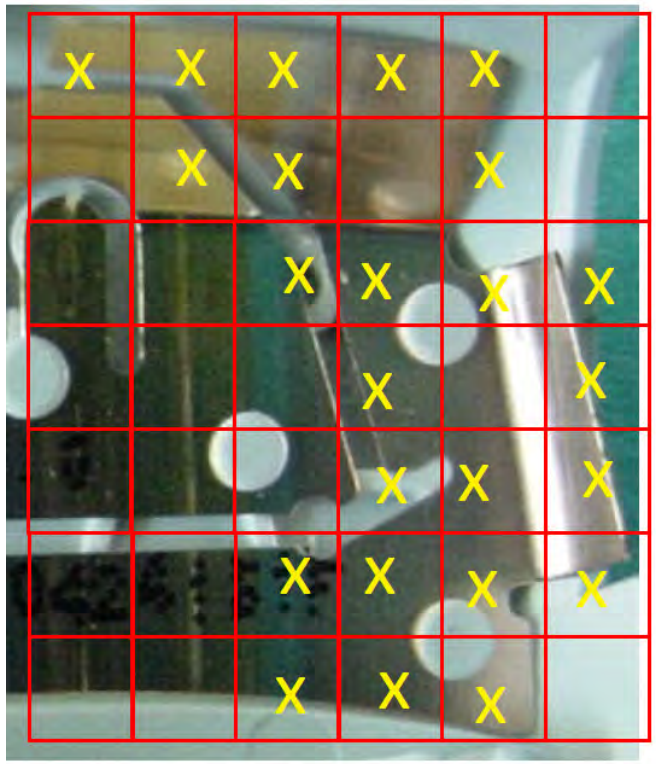
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
31[m]	wherein the antenna element comprises a first radiating arm arranged on two or more surfaces of the plurality of surfaces of the dielectric mounting structure;	T600 expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the multi-band antenna of the T600 includes a first radiating arm (blue and red below) arranged on two or more surfaces of the plurality of surfaces of the dielectric mounting structure. 
31[n]	the first radiating arm comprising: a first section shaped according to a grid dimension curve;	T600 expressly or inherently discloses this claim element. *See, e.g.,*

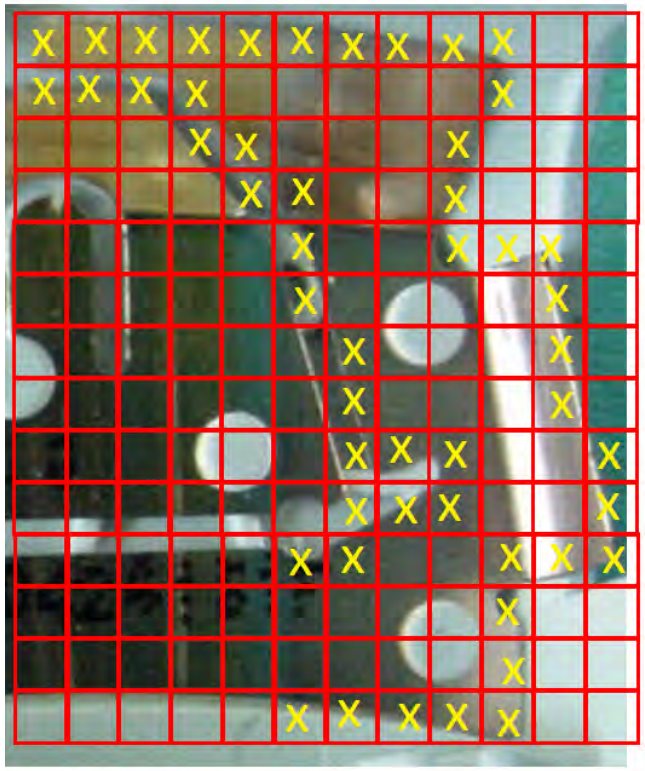
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		The first radiating arm comprises a first section (blue below) shaped according to a grid-dimension curve.  N1=24

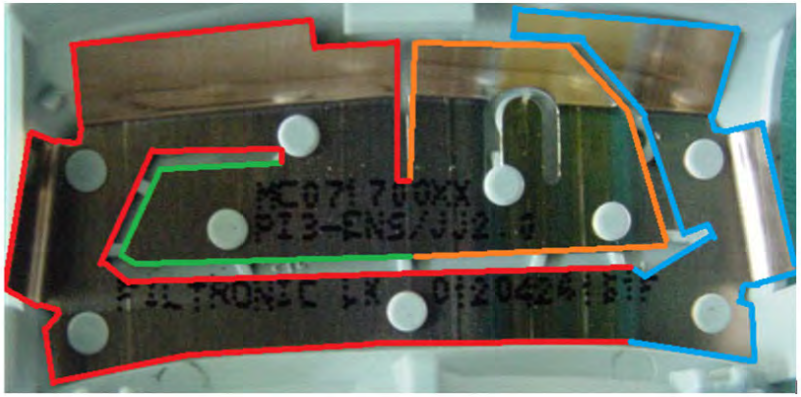
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 N2=51

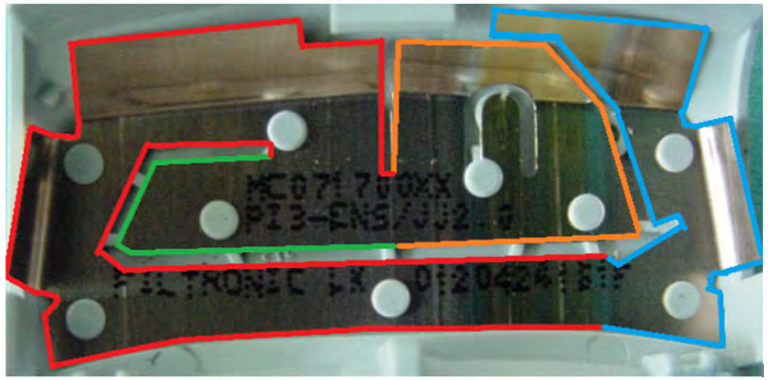
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		 Dg=log(51/24)/log(2)=1.08>1.
31[o]	[*the first radiating arm comprising* …] a second	T600 expressly or inherently discloses this claim element. *See, e.g.*,

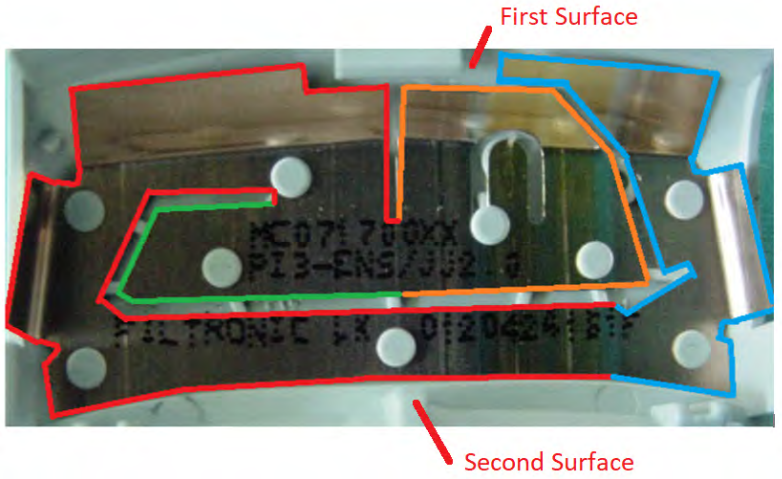
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
	section connected to the grid-dimension section,	The first radiating arm includes a second section (red below) connected to the grid-dimension section, the second section having a width different from a width of the first section. 
31[p]	the second section having a width different from a width of the first section; and	T600 expressly or inherently discloses this claim element. *See* Claim 31[o]. *See also:*

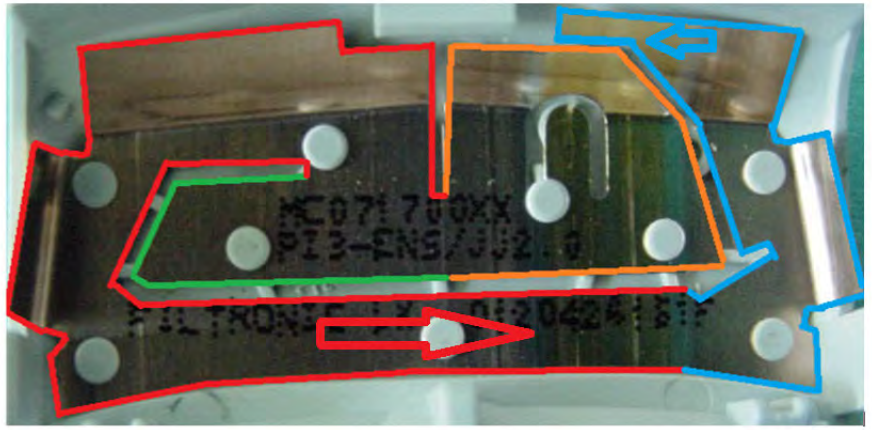
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
31[q]	wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.	T600 expressly or inherently discloses this claim element. *See* Claim 1[r].
Claim 32		
32[a]	The mobile communication device according to claim 31, wherein the first section is arranged on a first surface of said plurality of surfaces; and	T600 expressly or inherently discloses this claim element. *See, e.g.*, In the T600, the first section of the first radiating arm is arranged on a first surface of said plurality of surfaces and the second section is arranged on a second surface of said plurality of surfaces, the second surface being different from the first surface.

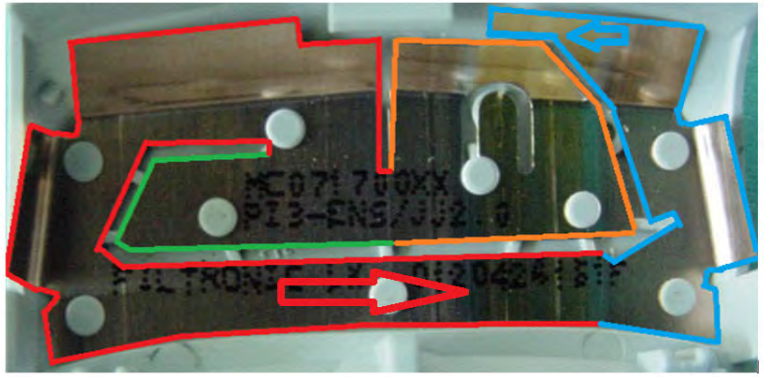
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
32[b]	wherein the second section is arranged on a second surface of said plurality of surfaces,	T600 expressly or inherently discloses this claim element. *See* Claim 32[a].
32[c]	the second surface being different from the first surface.	T600 expressly or inherently discloses this claim element. *See* Claim 32[a].
	Claim 35	
35[a]	The mobile communication device according to claim 31, wherein the first section extends along a first direction	T600 expressly or inherently discloses this claim element. *See, e.g.*,

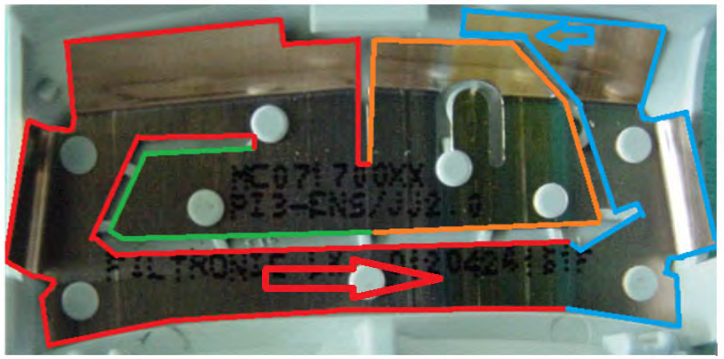
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
	and the second section extends along a second direction,	In the T600, the first section (blue below) extends along a first direction (blue arrow below) and the second section (red below) extends along a second direction (red arrow below). 
35[b]	the second direction being different from the first direction.	T600 expressly or inherently discloses this claim element. *See* Claim 35[a]. *See also*:

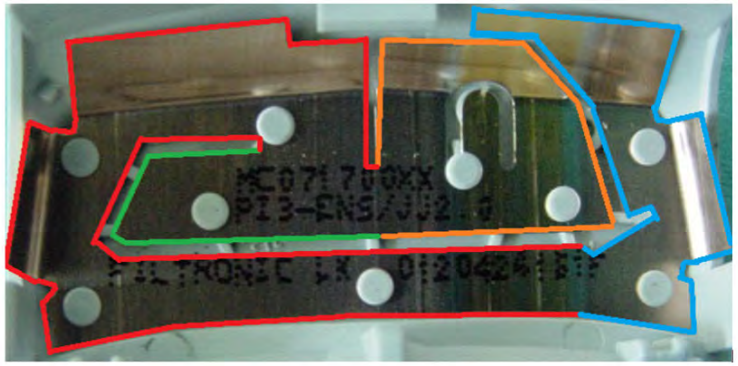
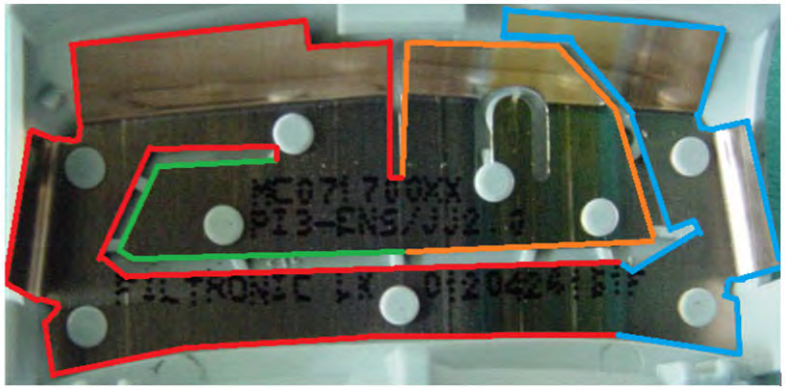
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
	Claim 36	
36	The mobile communication device according to claim 35, wherein the second direction is substantially opposite to the first direction.	T600 expressly or inherently discloses this claim element. *See, e.g.*, In the T600, the second direction is substantially opposite to the first direction.

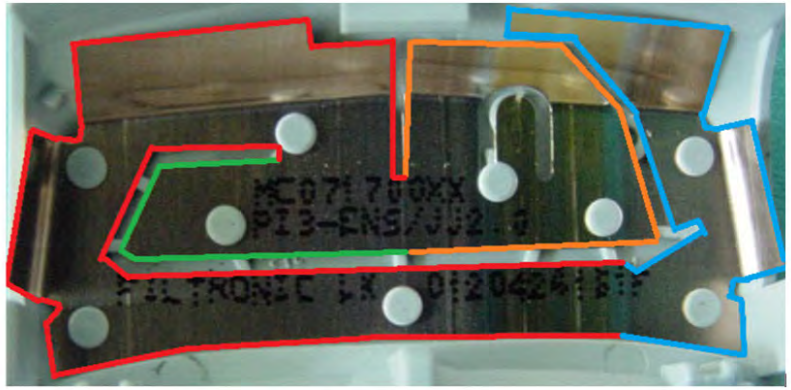
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
	Claim 37	
37[a]	The mobile communication device according to claim 31, wherein the antenna element further comprises: a common conductor;	T600 expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the multi-band antenna of the T600 further includes a common conductor (orange below).

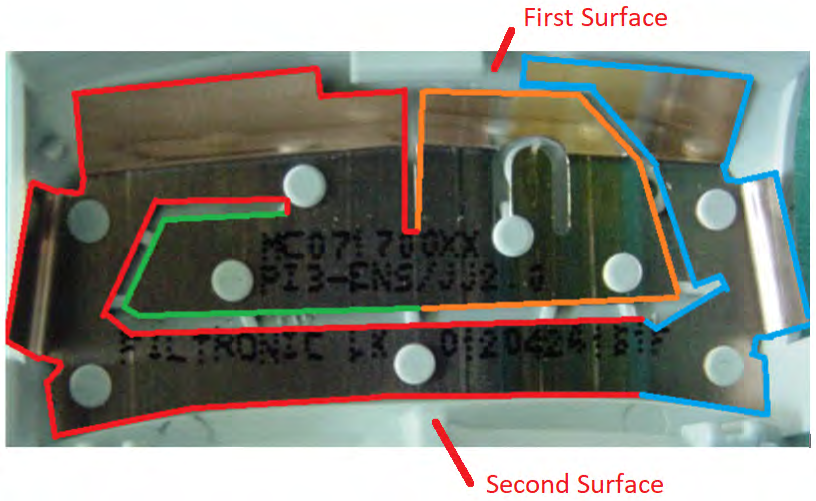
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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
37[b]	a second radiating arm;	T600 expressly or inherently discloses this claim element. *See, e.g.*, The antenna element of the multi-band antenna of the T600 further includes a second radiating arm (green below). 

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
37[c]	wherein each of the first radiating arm and the second radiating arm is connected to the common conductor; and	T600 expressly or inherently discloses this claim element. *See, e.g.*, Each of the first radiating arm (blue below) and the second radiating arm (green below) is connected to the common conductor (orange below). 
37[d]	wherein the second radiating arm is arranged on at least one surface of the plurality of surfaces of the dielectric mounting structure.	T600 expressly or inherently discloses this claim element. *See, e.g.*, In the T600, the second radiating arm (green below) is arranged on at least one surface of the plurality of surfaces of the dielectric mounting structure.

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		
	Claim 41	
41	The mobile communication device according to claim 31, wherein an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the ground plane layer in less than 50% of an area of said footprint.	T600 expressly or inherently discloses this claim element. To the extent T600 does not expressly or inherently disclose this claim element, it would have been obvious for the T600 to satisfy this claim element in view of U.S. Pat. 6,239,765 to Johnson et al. ***See, e.g.*, Johnson:** Johnson (FIG. 1) discloses an antenna assembly 20 that "may [be] implemented within single or multiple frequency wireless communication devices, for instance devices operating over…cellular telephone (824-890 MHz and 860-890 MHz), PCS device (1710-1880 MHz, 1750-1870 MHz, and 1850-1990 MHz)…frequency ranges…In alternative embodiments, the dimensions of the antenna assembly 20 may be scaled to provide operation at other frequencies, including frequencies in the 800 MHz to 3,000 MHz range." (3:48-62).

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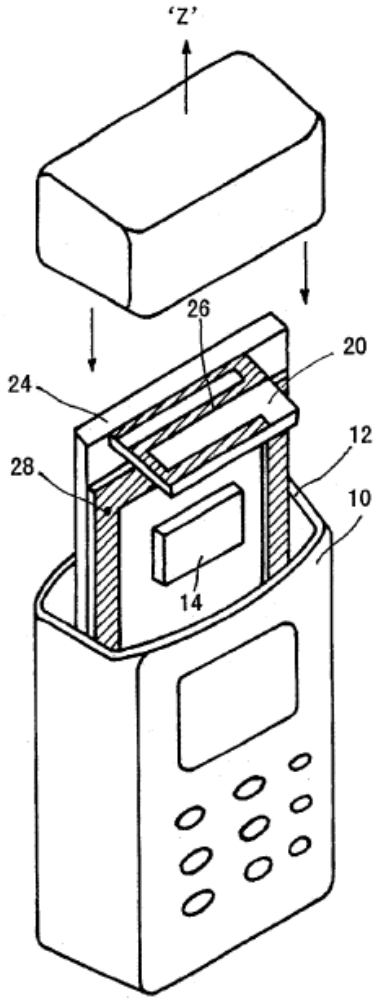
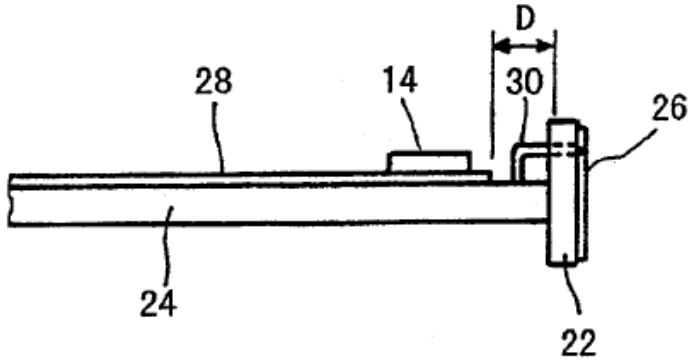
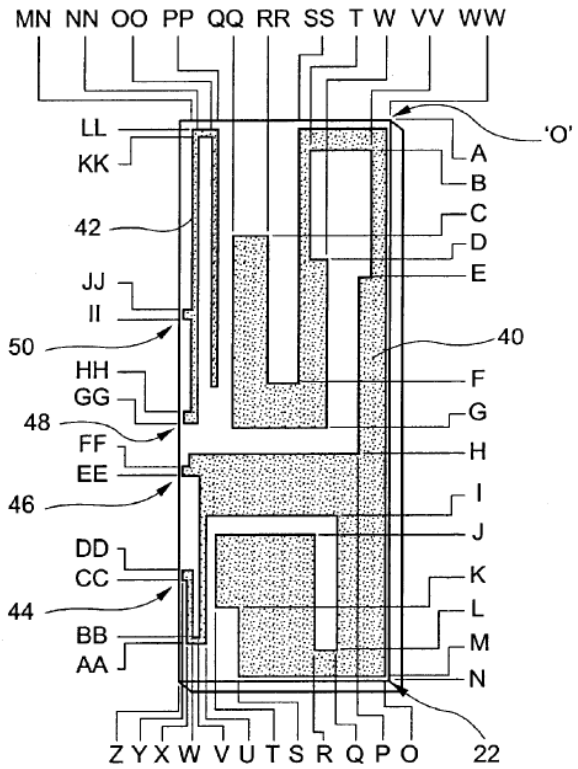


FIG. 1

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		Johnson (FIG. 2) illustrates an embodiment "of the antenna assembly wherein the first planar element 22 is substantially perpendicular to the second planar element 24," the latter having the ground plane (4:35-37). While Johnson illustrates the first planar element 22 in FIG. 2 as flat, Johnson states "the first planar element 22…may be configured to conform to a portion of the housing 12, for example to assume a convex or more complex form…the design and selection of either the first or second planar elements 22,24 with reference to a particular wireless communication device may result in such complex shapes." (4:29-35).  *FIG. 2* Johnson (FIG. 9) illustrates the antenna assembly 20 as a tri-band antenna assembly 20 functioning across a cellular band (880-960 MHz), a PCS band (1710-1880 MHz) and the BLUETOOTH™ band (2.4-2.5 GHz.). Cellular and PCS band operation is effected through the first conductor trace 40," which is coupled to ground of the second planar element at point 44 and to the signal generating circuitry 14 via feedpoint 46." (5:35-44).

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		FIG. 9  When the tri-band antenna assembly 20 as shown in FIG. 9 is used in the configuration of FIG. 2, an orthogonal projection of a footprint of the antenna assembly 20 on a plane of the second planar element 24 overlaps the ground plane layer in less than 50% of an area of said footprint. The

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Claim No.	U.S. Patent No. 8,456,365 B2	Sony Ericsson T600
		configuration of FIG. 2, like the configuration of FIG. 1, is disclosed in Johnson as "away from the user's hand during operation" (3:66-67), which reduces blockage by the user's hand. In view of Johnson, one of ordinary skill in the art would have been motivated to re-orient the cellular antenna of the T600 to face the top end of the housing in order to reduce the likelihood of blockage by the user's hand. There would have been a reasonable expectation of success in doing so because Johnson's antenna operates in substantially the same frequency ranges as the T600 antenna, and has an inverted-F configuration like the T600 antenna. Moreover, Johnson contemplates that the disclosed antenna will have a non-planar (e.g., convex) form, like the T600 antenna, to accommodate available space within a device housing. Moreover, re-orienting the T600 antenna as disclosed in Johnson would have been a mere design choice among configurations that were known in the art (see, e.g., the T600 antenna configuration shown in FIG. 4 of Johnson as a known alternative). Thus, it would have been obvious for the T600 to satisfy this claim element.

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INVALIDITY CONTENTIONS FOR U.S. PATENT NO. 8,456,365 B2
BASED ON THE NOKIA 6100 ("NOKIA 6100")

Based upon Plaintiff's Complaint, Infringement Contentions, and apparent claim constructions and application of the claims to Defendants' accused products, as best as they can be deciphered, the reference charted below anticipates or at least renders obvious some or all of claims 1, 2, 4, 5, 6, 7, 8, 12, 13, 31, 32, 35, 36, 37, and 41 (the "'365 Asserted Claims")[1]. These invalidity contentions are not an admission by the Defendants that the accused products are covered by or infringe the asserted claims, particularly when these claims are properly construed and applied.

Pre-AIA law applies because the '365 Patent was filed on August 13, 2008, before March 16, 2013.

Nokia Corporation's ("Nokia") Nokia 6100, as publicly demonstrated, known, offered for sale, sold, and/or used by Nokia and/or customers of Nokia or otherwise available to the public, including in this country, (the "Nokia 6100") was available for purchase no later than June 21, 2003.[2] Thus, the Nokia 6100 is available as prior art at least under pre-AIA 35 U.S.C. § 102(a)-(b), (g)(2) and 103(a). At least the following documents provide evidence as to the date the Nokia 6100 was "offered for sale or publicly used or known," "the date the offer or use of the item took place or the information became known", and the "identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known"[3]:

- Cingular.com Website Homepage; archived June 21, 2003 at: https://web.archive.org/web/20030621162712/http://www.cingular.com:80/customer_service/brochures (last accessed June 11, 2025)

[1] Defendants understand that, by not charting claims 3, 9-11, 14-30, 33-34, 38-40, and 42-45 in its Infringement Contentions, Plaintiff does not assert these claims against Defendants.

[2] Cingular.com Website Homepage; archived June 21, 2003 at: https://web.archive.org/web/20030621162712/http://www.cingular.com:80/customer_service/brochures (last accessed June 11, 2025)

[3] Defendants do not yet have complete information regarding the dates by which this product was publicly disclosed, made, used, sold, or offered for sale, the circumstances under which the research, design, and development activities were conducted, and the identities of the particular individuals involved in such activities. Defendants anticipate that the actual dates, circumstances, and identities of individuals will be the subject of third party discovery during this lawsuit. Defendants therefore reserve the right to amend and/or supplement its Invalidity Contentions and this chart if additional information becomes available during the course of discovery. The date the Nokia 6100 was "offered for sale or publicly used or known," as well as "the date the offer or use of the item took place or the information became known" is at least as early as the dates identified in the published documents. The "identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known" includes at least those persons associated with the publication(s), press releases, and conference attendees, or other documents associated with each version on the Nokia 6100. Defendants also reserve the right to rely on the public use, offer for sale, sale, or installation of the devices described in the publications identified herein once Defendants have had a fair opportunity to take discovery on these subjects.

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- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: "PPI"; Product Code: "NPL-2"; Record Option: 1/3 "Detail"; Attachment: "External Photos" (last accessed June 11, 2025) ("FCC External Photos")
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: "PPI"; Product Code: "NPL-2"; Record Option: 1/3 "Detail"; Attachment: "Internal Photos" (last accessed June 11, 2025) ("FCC Internal Photos")
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: "PPI"; Product Code: "NPL-2"; Record Option: 1/3 "Detail"; Attachment: "Test Report" (last accessed June 11, 2025) ("FCC Test Report")
- Phonescoop.com, *Nokia 6100*, https://www.phonescoop.com/phones/phone.php?p=206 (last accessed June 13, 2025)
- GSMArena.com, *Nokia 6100*, https://www.gsmarena.com/nokia_6100-368.php (last accessed June 13, 2025)
- PhoneArena.com, *Nokia 6100*, https://www.phonearena.com/phones/Nokia-6100_id638 (last accessed June 13, 2025)
- Wikipedia, *Nokia 6100*, https://en.wikipedia.org/wiki/Nokia_6100 (last accessed June 13, 2025)

As described in the following claim chart, the asserted claims of U.S. Patent No. 8,456,365 (the "'365 Patent"), are invalid as anticipated by Nokia 6100. To the extent that Nokia 6100 is found not to anticipate one or more of the asserted claims of the '365 Patent, these claims are invalid as obvious in view of Nokia 6100 alone or as modified in view of or in combination with other prior art references disclosed in Defendants' Invalidity Contentions and accompanying charts, including without limitation as set forth below.

- U.S. Pat. 6,239,765 to Johnson et al. ("Johnson")

One of ordinary skill in the art, as of the priority date of the '365 Patent, would have known to combine or modify the prior art elements disclosed by the foregoing references using known methods, and to use these elements according to their established functions in order to achieve a known and predictable result.

These invalidity contentions are not an admission that the Defendants concede or acquiesce to any claim construction implied or suggested by Plaintiff's Complaint or Infringement Contentions. Nor are Defendants asserting any claim construction positions through these charts, including whether the preamble is a limitation. The portions of the prior art reference cited below are not exhaustive but are exemplary in nature. Defendants retain the right to update their constructions and contentions in view of this Court's claim construction order.[4]

[4] Defendants reserve the right to supplement and/or alter this chart based on further investigation and ongoing discovery.

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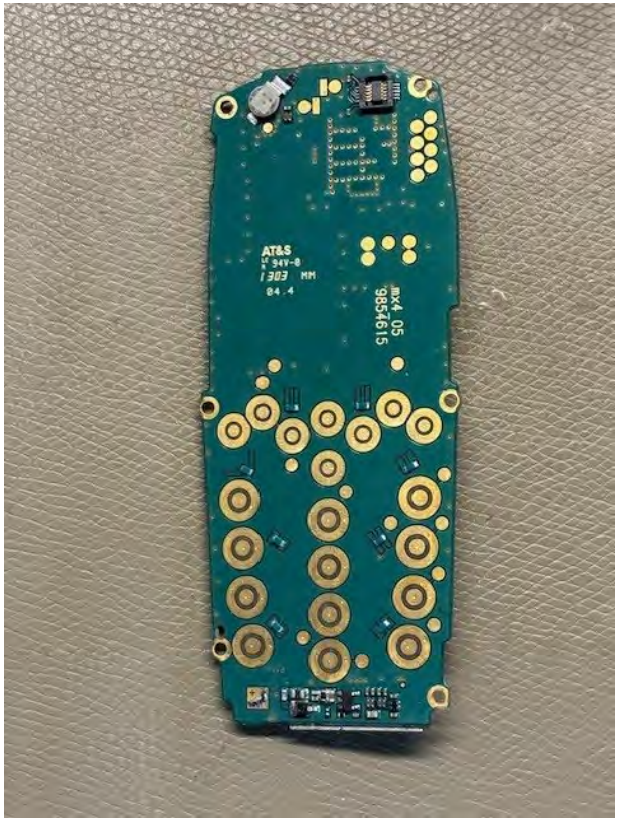
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
Claim 1		
1[pre]	A mobile communication device, comprising:	To the extent the preamble is limiting, Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The Nokia 6100 is a mobile communication device.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 *See* FCC External Photos at 1.
1[a]	a device housing;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*,

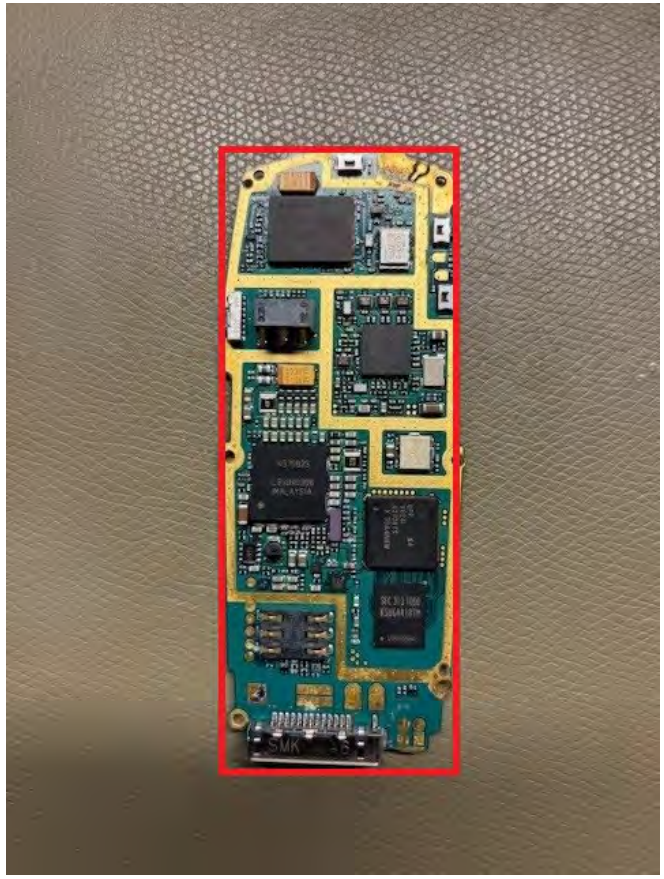
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		The Nokia 6100 has a device housing.  *See* FCC External Photos at 1.

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
1[b]	a printed circuit board, the printed circuit board comprising:	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The Nokia 6100 has a printed circuit board. 

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
1[c]	[*the printed circuit board comprising*] a ground plane layer;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The printed circuit board of the Nokia 6100 includes a ground plane layer.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
1[d]	[*the printed circuit board comprising*] a feeding point;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*,

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		The printed circuit board of the Nokia 6100 includes a feeding point. 

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
1[e]	a communication circuitry,	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The printed circuit board of the Nokia 6100 includes a communication circuitry, the communication circuitry being mounted on the printed circuit board. 

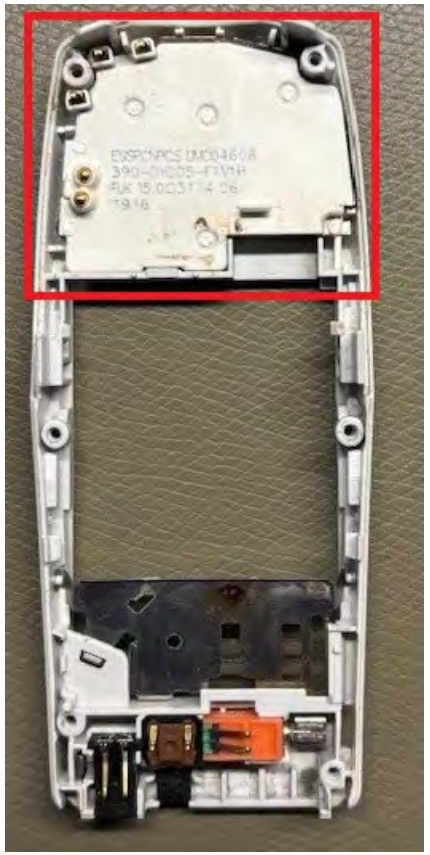
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
1[f]	the communication circuitry being mounted on the printed circuit board;	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[e].
1[g]	wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The communication circuitry of the Nokia 6100 is coupled to the feeding point and to the ground plane layer.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
1[h]	a multi-band antenna capable of operating at multiple frequency bands,	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,*

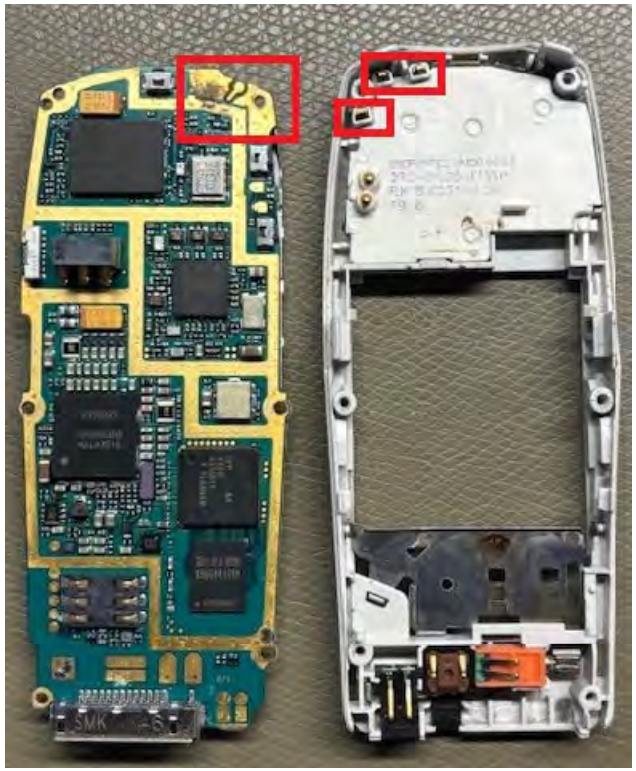
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		The Nokia 6100 includes a multi-band antenna capable of operating at multiple frequency bands, the multi-band antenna including an antenna element. 

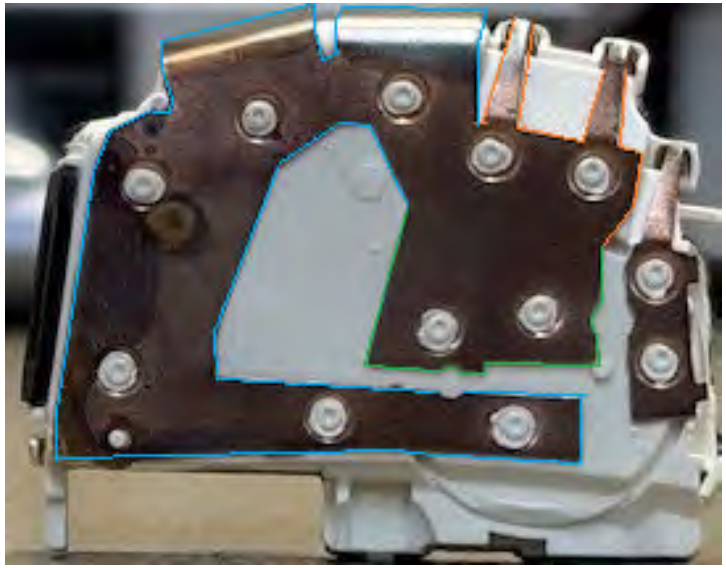
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 *See* FCC Test Report at 5: The EUT is a triple band (900MHz/1800MHz/1900MHz) GSM mobile phone.
1[i]	the multi-band antenna including an antenna element;	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[h].
1[j]	wherein the antenna element operates in cooperation with the ground plane layer;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the Nokia 6100 operates in cooperation with the ground plane layer.

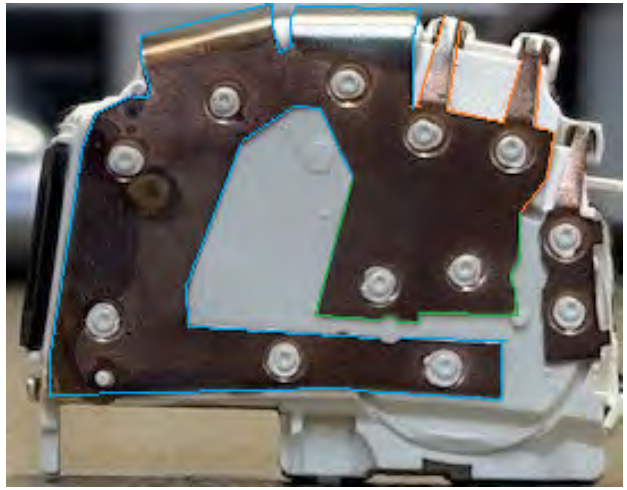
Fractus Exhibit 2003
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
1[k]	the antenna element comprising:	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the Nokia 6100 includes a common conductor (orange below).

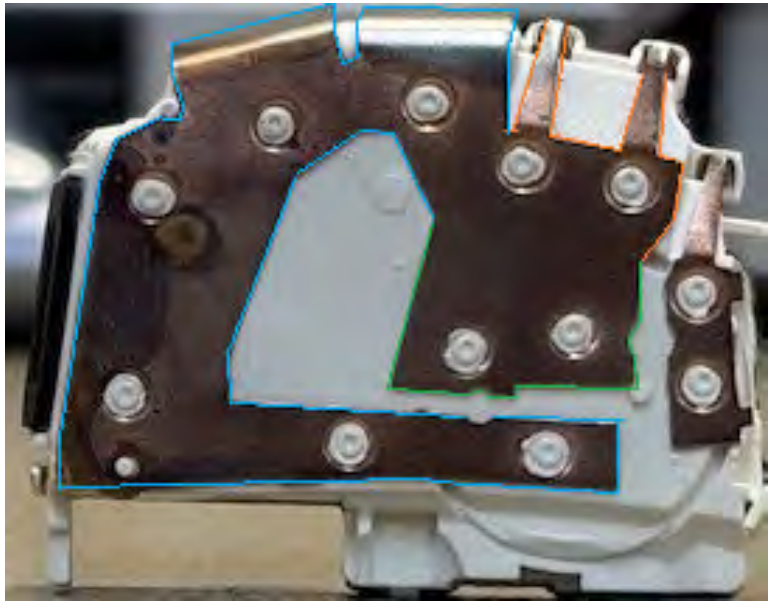
Fractus Exhibit 2003
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
1[l]	[*the antenna element comprising*] a common conductor;	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[k].
1[m]	[*the antenna element comprising*] a first radiating arm connected to the common conductor;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The antenna element of the Nokia 6100 includes a first radiating arm (blue below) connected to the common conductor (orange below).

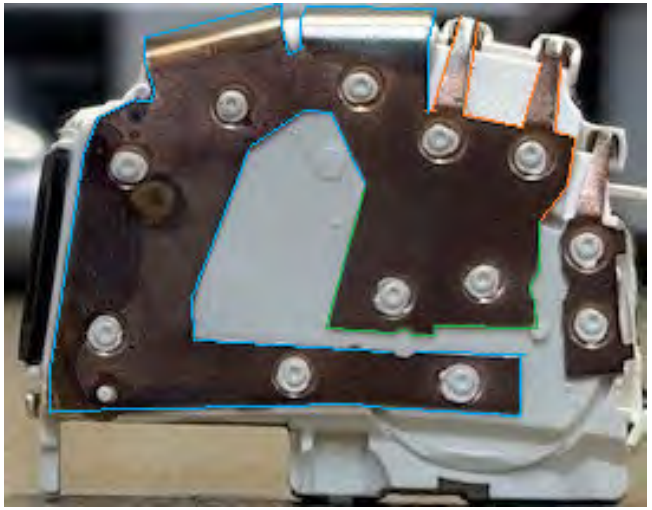
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
1[n]	[*the antenna element comprising*] a second radiating arm connected to the common conductor;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the Nokia 6100 includes a second radiating arm (green below) connected to the common conductor (orange below).

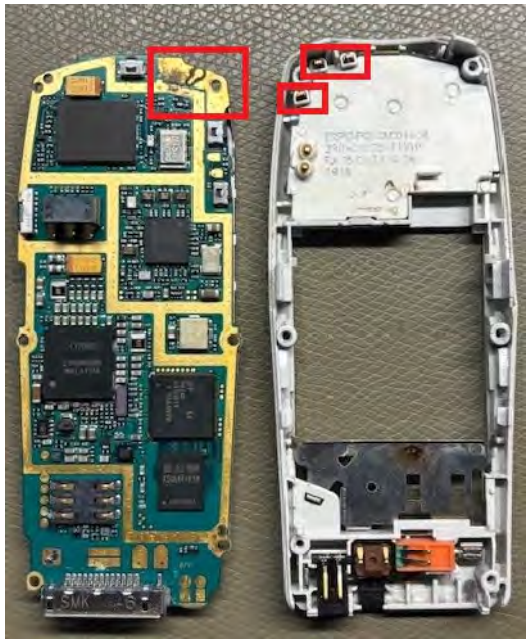
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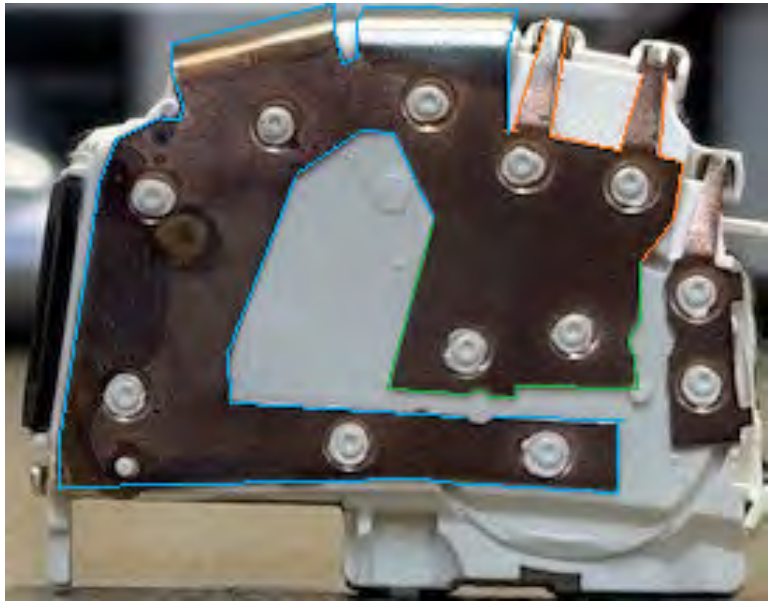
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
1[o]	wherein the common conductor includes a feeding port, the feeding port being coupled to the feeding point;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The common conductor (orange below) of the antenna element of the Nokia 6100 includes a feeding port, the feeding port being coupled to the feeding point. *See* Claims 1[d], 1[g].

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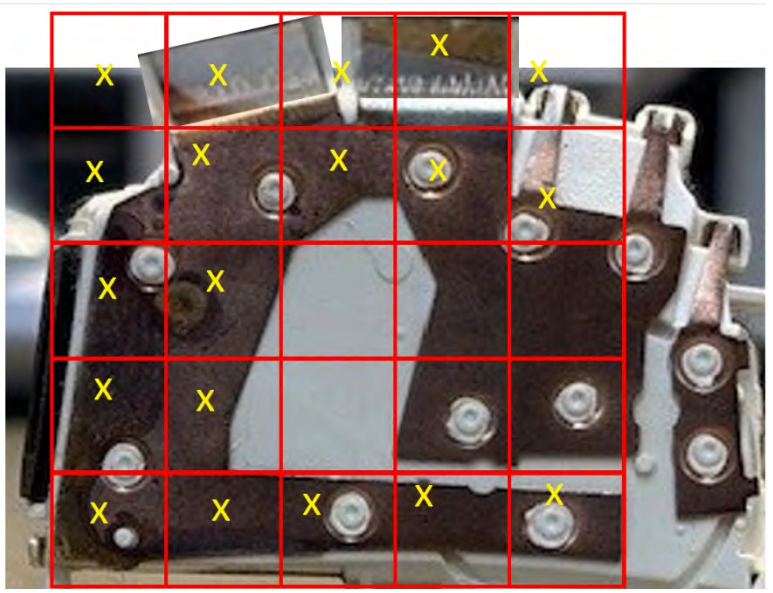
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
1[p]	wherein at least a portion of the first radiating arm and at least a portion of the second radiating arm are arranged on different planes;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, In the antenna element of the Nokia 6100, at least a portion of the first radiating arm (blue below) and at least a portion of the second radiating arm (green below) are arranged on different planes. As shown below, the portions of the first radiating arm at the top of the picture are arranged on a different plane than the second radiating arm.

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
1[q]	wherein the first radiating arm is at least partially shaped according to a grid dimension curve; and	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The first radiating arm of the antenna element of the Nokia 6100 is at least partially shaped according to a grid-dimension curve, as calculated using the method(s) disclosed in the patent's specification N1=19

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 N2=49

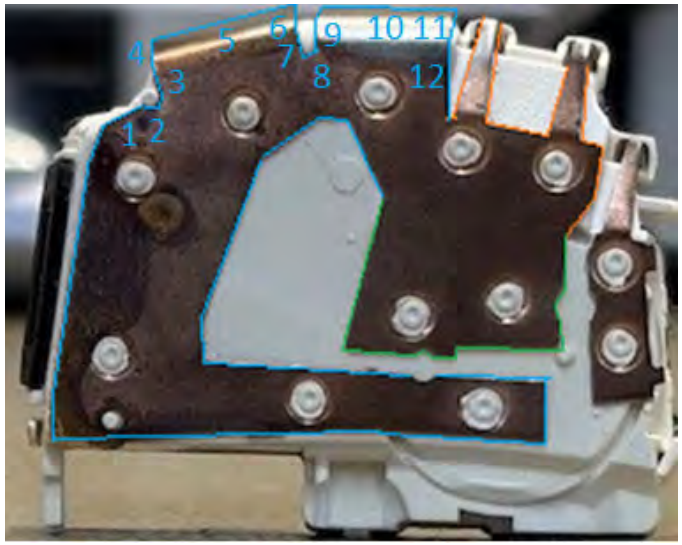
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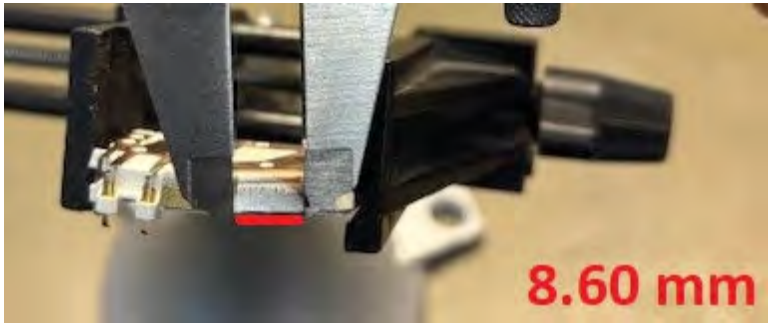
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 Dg=log(49/19)/log(2)=1.37 "For purposes of this application, the term grid dimension curve is used to describe a curve geometry having a grid dimension that is greater than one (1)" [cite].
1[r]	wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board, the communication circuitry, and the multi-band antenna of the Nokia 6100 are arranged inside the device housing.

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		

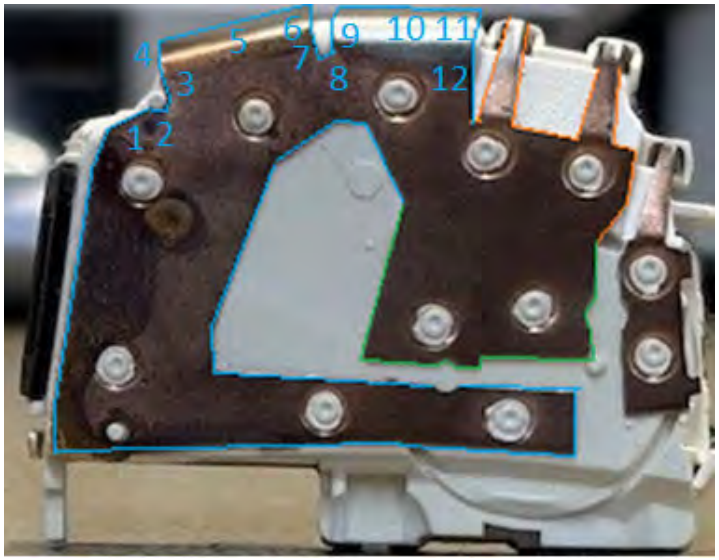
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 *See* FCC Internal Photos at 1.
	Claim 2	
2[a]	The mobile communication device according to claim 1, wherein the first radiating arm comprises a first plurality of segments;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The first radiating arm of the antenna element of the Nokia 6100 includes a first plurality of segments, numbered below.

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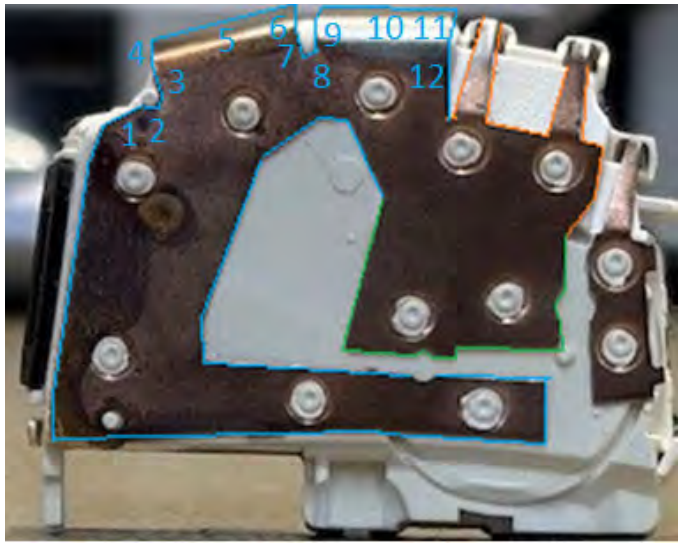
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
2[b]	wherein each segment of the first plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* FCC Test Report at 5: The EUT is a triple band (900MHz/1800MHz/1900MHz) GSM mobile phone. The shortest operating free-space wavelength of the multi-band antenna is 150 millimeters (corresponding to 1990 MHz). 1/10 of the shortest operating free-space wavelength of the multi-band antenna is 15 millimeters. The longest segment is 8.6 mm.

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
2[c]	wherein the segments are spatially arranged such that each pair of adjacent segments forms a corner; and	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The segments are spatially arranged such that each pair of adjacent segments forms a corner.

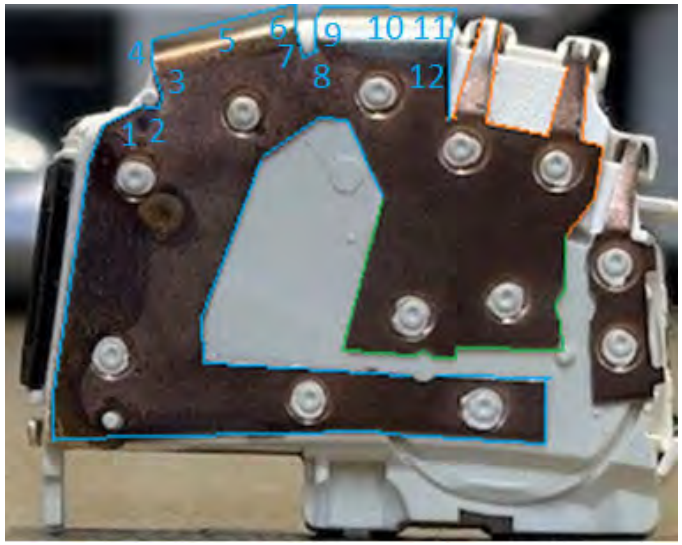
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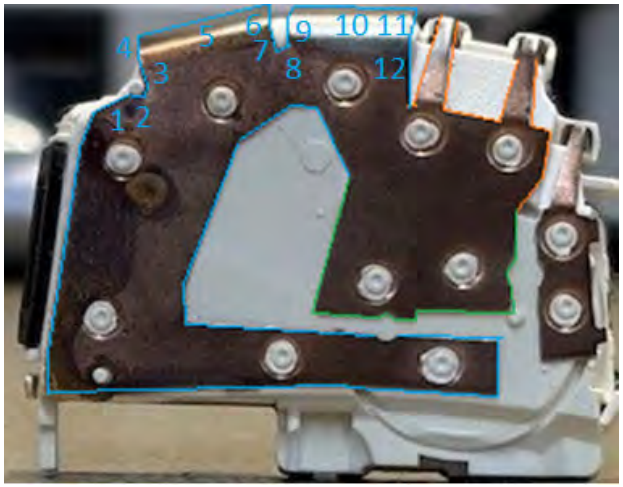
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
2[d]	wherein no two adjacent and connected segments form another longer straight segment; and	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* No two adjacent and connected segments form another longer straight segment.

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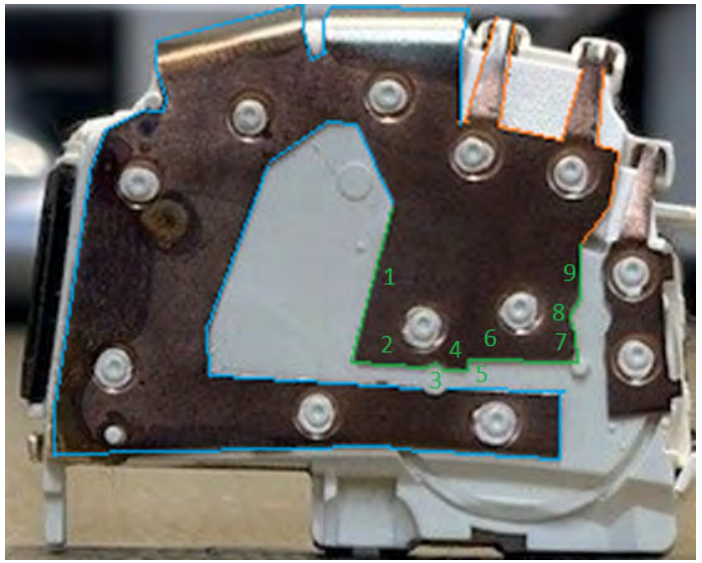
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
2[e]	wherein none of said segments intersect with another segment other than to form a closed loop.	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* None of said segments intersect with another segment other than to form a closed loop.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
	Claim 4	
4	The mobile communication device according to claim 2, wherein the first plurality of segments comprises at least ten segments.	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, In the Nokia 6100, the first plurality of segments of the first radiating arm comprises at least ten segments.

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
		Claim 5
5[a]	The mobile communication device according to claim 2, wherein the second radiating arm comprises a second plurality of segments;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, In the Nokia 6100, the second radiating arm comprises a second plurality of segments (numbered below).

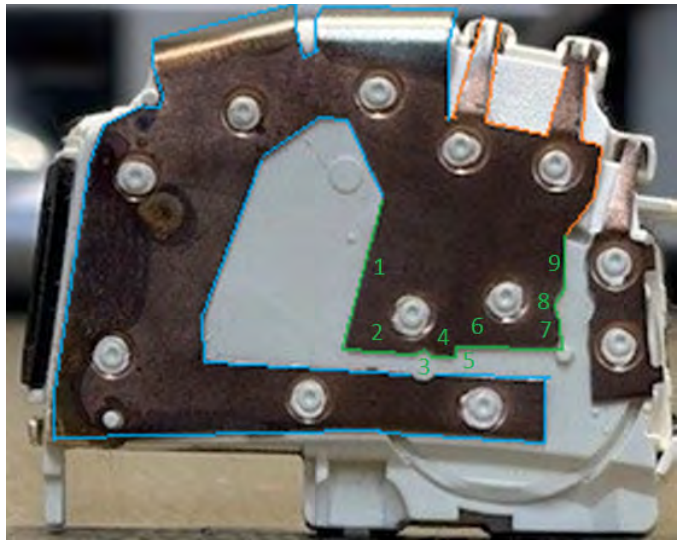
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
5[b]	wherein each segment of the second plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* Each segment of the second plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna. *See* FCC Test Report at 5: The EUT is a triple band (900MHz/1800MHz/1900MHz) GSM mobile phone. The shortest operating free-space wavelength of the multi-band antenna is 150 millimeters (corresponding to 1990 MHz). 1/10 of the shortest operating free-space wavelength of the multi-band antenna is 15 millimeters.

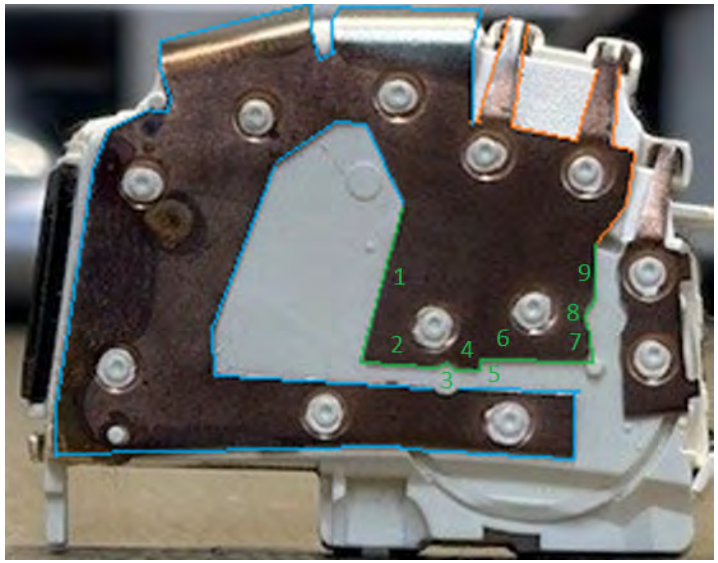
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		Longest segment is shorter than 12.38mm. 
5[c]	wherein the segments are spatially arranged such that each pair of adjacent segments forms a corner; and	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The segments are spatially arranged such that each pair of adjacent segments forms a corner.

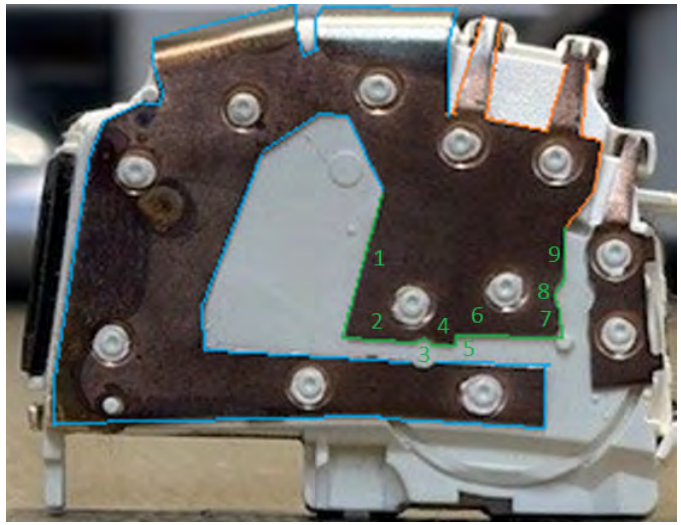
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
5[d]	wherein no two adjacent and connected segments form another longer straight segment; and	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, No two adjacent and connected segments form another longer straight segment.

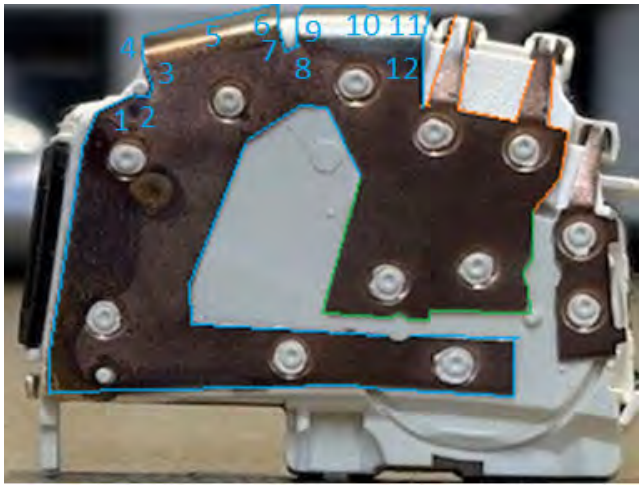
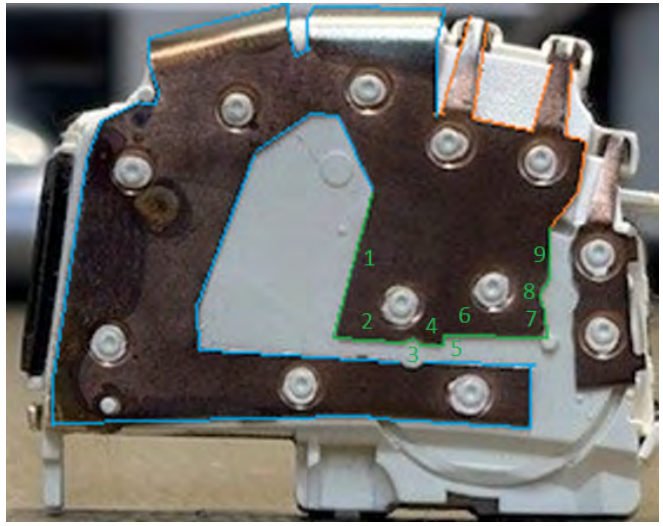
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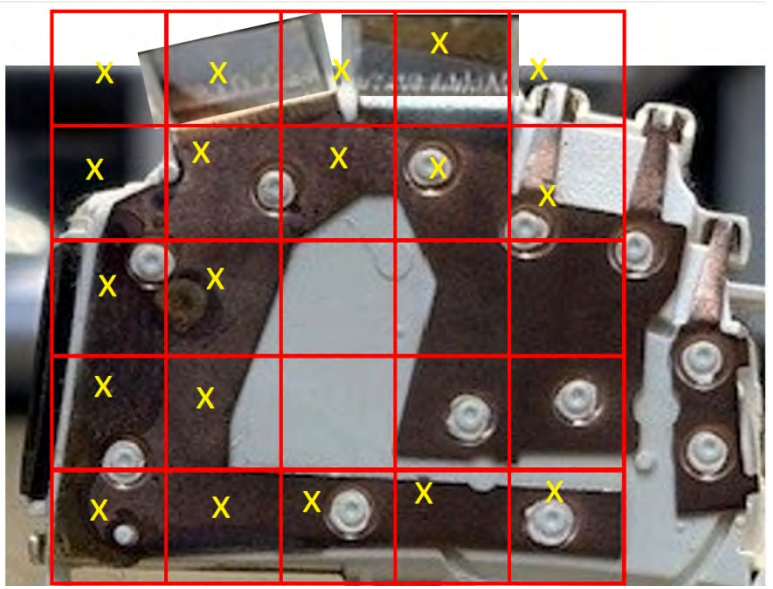
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
5[e]	wherein none of said segments intersect with another segment other than to form a closed loop.	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* None of said segments intersect with another segment other than to form a closed loop.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
Claim 6		
6	The mobile communication device according to claim 5, wherein the first plurality of segments comprises more segments than the second plurality of segments.	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, In the antenna element of the Nokia 6100, the first plurality of segments comprises more segments than the second plurality of segments.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		Claim 7
7	The mobile communication device according to claim 1, wherein the grid-dimension curve has a grid dimension larger than 1.3.	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* In the Nokia 6100, the grid-dimension curve has a grid dimension larger than 1.3. N1=19  N2=49

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 Dg=log(49/19)/log(2)=1.37
		Claim 12
12	The mobile communication device according to claim 1, wherein an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the	Nokia 6100 expressly or inherently discloses this claim element. To the extent Nokia 6100 does not expressly or inherently disclose this claim element, it would have been obvious for the Nokia 6100 to satisfy this claim element in view of U.S. Pat. 6,239,765 to Johnson et al. ***See, e.g.*, Johnson:** Johnson (FIG. 1) discloses an antenna assembly 20 that "may [be] implemented within single or multiple frequency wireless communication devices, for instance devices operating over…cellular telephone (824-890 MHz and 860-890 MHz), PCS device (1710-1880 MHz, 1750-1870 MHz, and

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
	ground plane layer in less than 50% of an area of said footprint.	1850-1990 MHz)…frequency ranges…In alternative embodiments, the dimensions of the antenna assembly 20 may be scaled to provide operation at other frequencies, including frequencies in the 800 MHz to 3,000 MHz range." (3:48-62).

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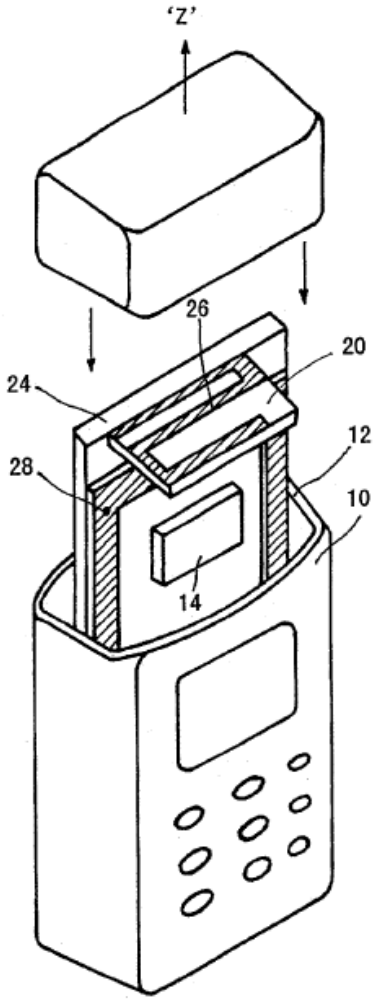
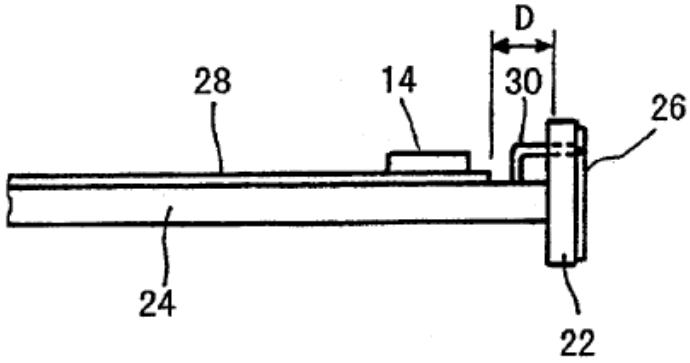
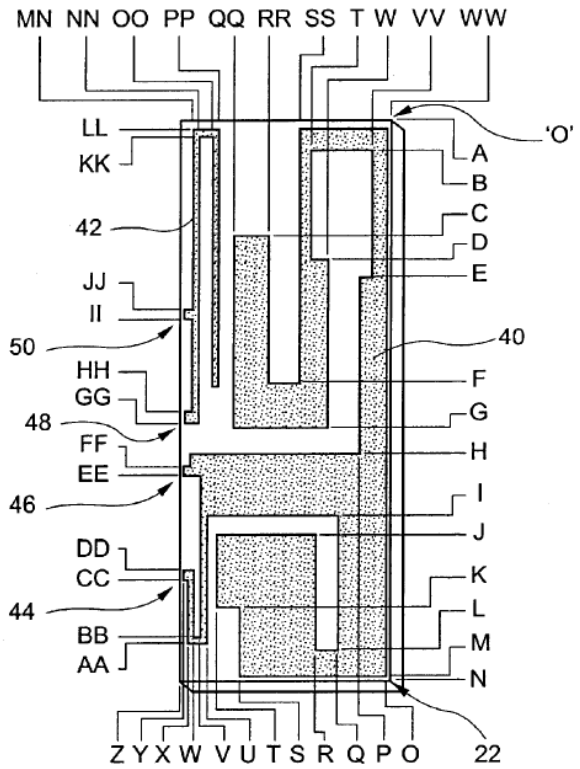


FIG. 1

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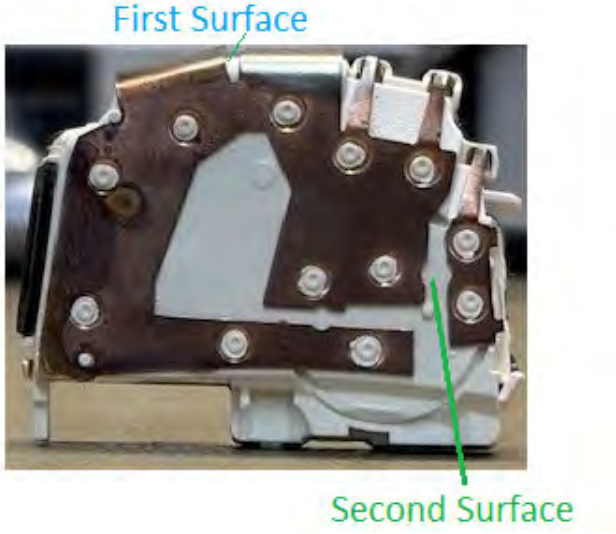
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		Johnson (FIG. 2) illustrates an embodiment "of the antenna assembly wherein the first planar element 22 is substantially perpendicular to the second planar element 24," the latter having the ground plane (4:35-37). While Johnson illustrates the first planar element 22 in FIG. 2 as flat, Johnson states "the first planar element 22…may be configured to conform to a portion of the housing 12, for example to assume a convex or more complex form…the design and selection of either the first or second planar elements 22,24 with reference to a particular wireless communication device may result in such complex shapes." (4:29-35).  *FIG. 2* Johnson (FIG. 9) illustrates the antenna assembly 20 as a tri-band antenna assembly 20 functioning across a cellular band (880-960 MHz), a PCS band (1710-1880 MHz) and the BLUETOOTH™ band (2.4-2.5 GHz.). Cellular and PCS band operation is effected through the first conductor trace 40," which is coupled to ground of the second planar element at point 44 and to the signal generating circuitry 14 via feedpoint 46." (5:35-44).

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		FIG. 9  When the tri-band antenna assembly 20 as shown in FIG. 9 is used in the configuration of FIG. 2, an orthogonal projection of a footprint of the antenna assembly 20 on a plane of the second planar element 24 overlaps the ground plane layer in less than 50% of an area of said footprint. The configuration of

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		FIG. 2, like the configuration of FIG. 1, is disclosed in Johnson as "away from the user's hand during operation" (3:66-67), which reduces blockage by the user's hand. In view of Johnson, one of ordinary skill in the art would have been motivated to re-orient the cellular antenna of the Nokia 6100 to face the top end of the housing in order to reduce the likelihood of blockage by the user's hand. There would have been a reasonable expectation of success in doing so because Johnson's antenna operates in substantially the same frequency ranges as the Nokia 6100 antenna, and has an inverted-F configuration like the Nokia 6100 antenna. Moreover, Johnson contemplates that the disclosed antenna will have a non-planar (e.g., convex) form, like the Nokia 6100 antenna, to accommodate available space within a device housing. Moreover, re-orienting the Nokia 6100 antenna as disclosed in Johnson would have been a mere design choice among configurations that were known in the art (see, e.g., the Nokia 6100 antenna configuration shown in FIG. 4 of Johnson as a known alternative). Thus, it would have been obvious for the Nokia 6100 to satisfy this claim element.
Claim 13		
13[a]	The mobile communication device according to claim 1, comprising: a dielectric mounting structure having a plurality of surfaces;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The Nokia 6100 includes a dielectric mounting structure having a plurality of surfaces. At least a portion of the first radiating arm is arranged on a first surface of said plurality of surfaces; and at least a portion of the second radiating arm is arranged on a second surface of said plurality of surfaces, the second surface being different from the first surface.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
13[b]	wherein at least a portion of the first radiating arm is arranged on a first surface of said plurality of surfaces; and	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 13[a].
13[c]	wherein at least a portion of the second radiating arm is arranged on a second surface of said plurality of surfaces,	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 13[a].

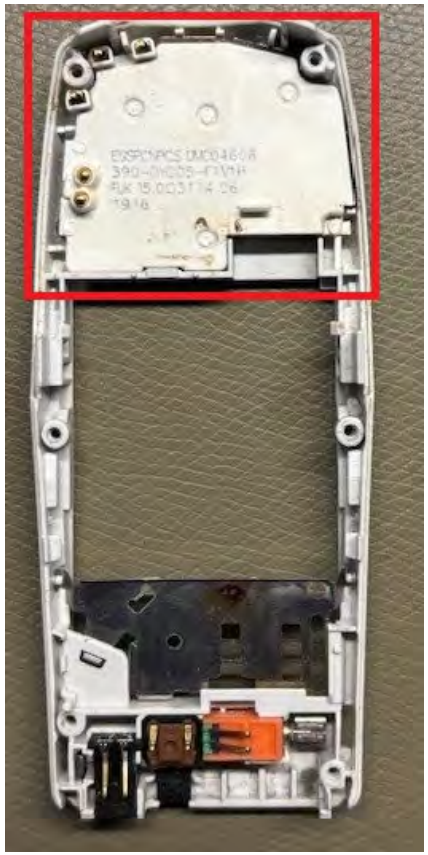
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
13[d]	the second surface being different from the first surface.	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 13[a].
Claim 31		
31[pre]	A mobile communication device, comprising:	To the extent the preamble is limiting, Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[pre].
31[a]	a device housing;	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[a].
31[b]	a printed circuit board, the printed circuit board comprising:	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[b].
31[c]	[*the printed circuit board comprising*] a ground plane layer;	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[c].

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
31[d]	[*the printed circuit board comprising*] a feeding point;	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[d].
31[e]	a communication circuitry,	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[e].
31[f]	the communication circuitry being mounted on the printed circuit board;	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[e].
31[g]	wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 1[f].
31[h]	a multi-band antenna capable of operating at multiple frequency bands,	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,*

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
	the multi-band antenna including:	The Nokia 6100 includes a multi-band antenna capable of operating at multiple frequency bands. 

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 *See* FCC Test Report at 5: The EUT is a triple band (900MHz/1800MHz/1900MHz) GSM mobile phone.
31[i]	[*the multi-band antenna including*] a dielectric mounting structure having a plurality of surfaces;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The multi-band antenna of the Nokia 6100 includes a dielectric mounting structure having a plurality of surfaces. *See* Claim 13.

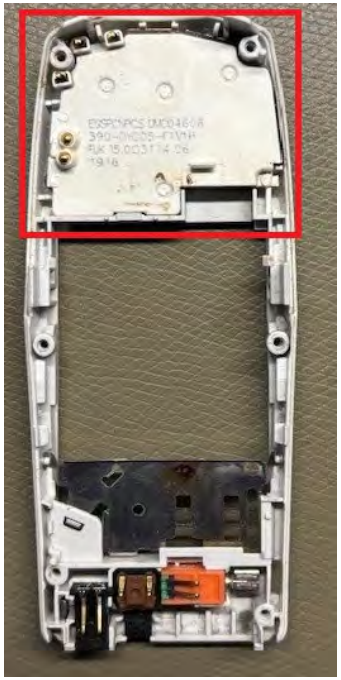
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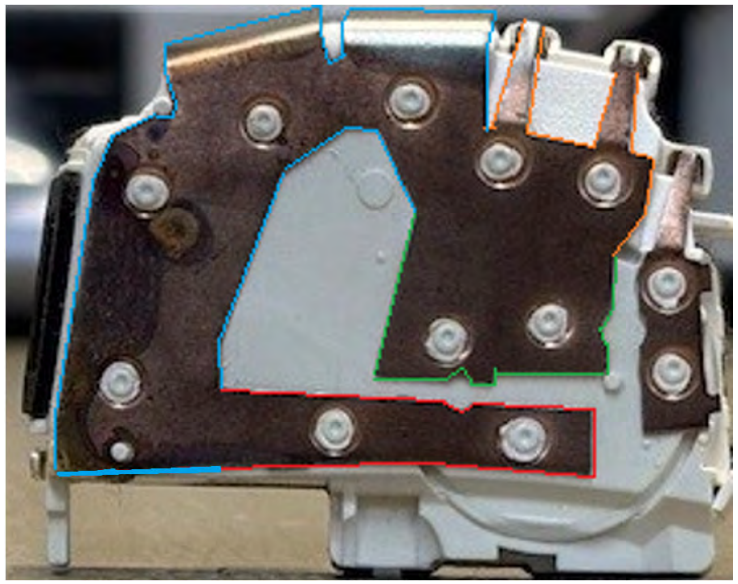
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
31[j]	[*the multi-band antenna including*] an antenna element,	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The multi-band antenna of the Nokia 6100 includes an antenna element, the antenna element coupled to the feeding point and operating in cooperation with the ground plane layer. *See* Claim 1[d], 1[g], 1[o].

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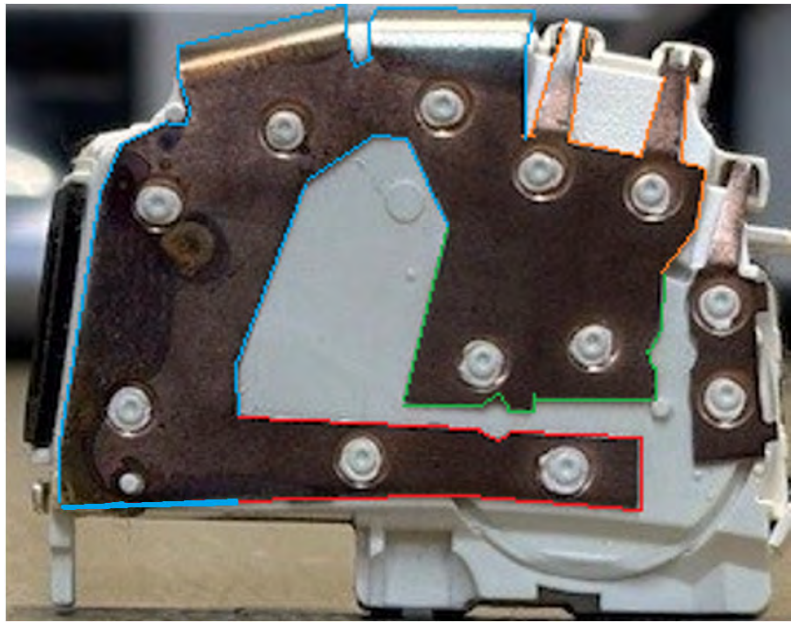
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		

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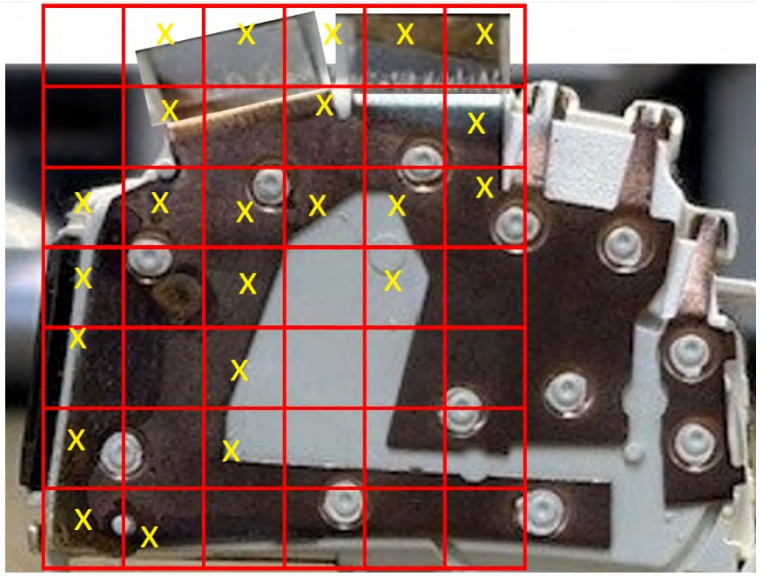
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
31[k]	the antenna element being coupled to the feeding point and	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 31[j].
31[l]	[*the antenna element* …] operating in cooperation	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 31[j].

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
	with the ground plane layer;	
31[m]	wherein the antenna element comprises a first radiating arm arranged on two or more surfaces of the plurality of surfaces of the dielectric mounting structure;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the multi-band antenna of the Nokia 6100 includes a first radiating arm (blue and red below) arranged on two or more surfaces of the plurality of surfaces of the dielectric mounting structure. 
31[n]	the first radiating arm comprising: a first section	Nokia 6100 expressly or inherently discloses this claim element.

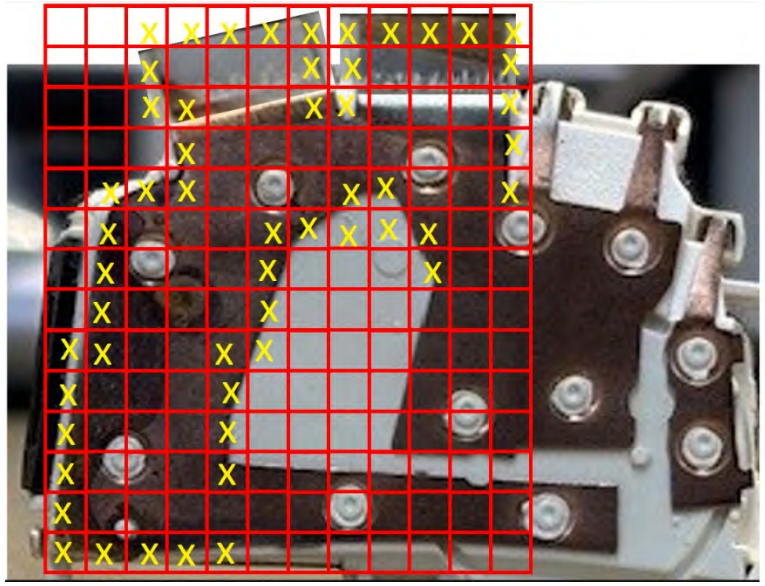
Fractus Exhibit 2003
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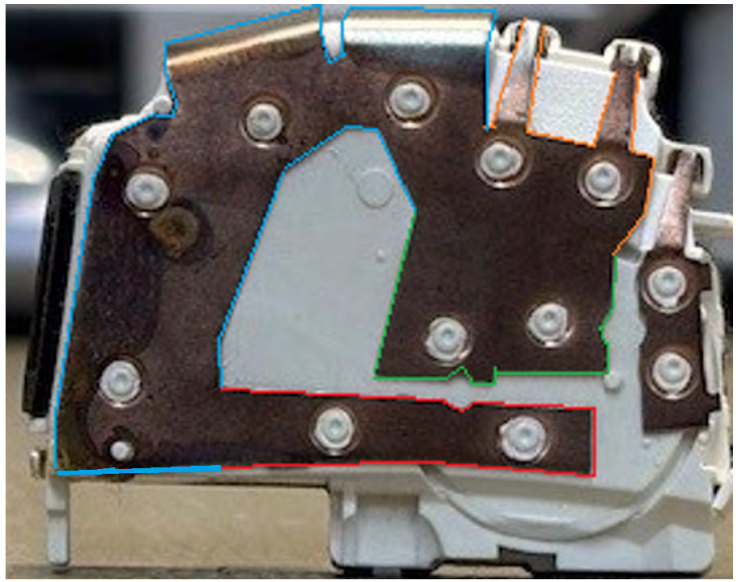
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
	shaped according to a grid dimension curve;	*See, e.g.*, The first radiating arm comprises a first section (blue below) shaped according to a grid-dimension curve.  N1=23

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 N2=54

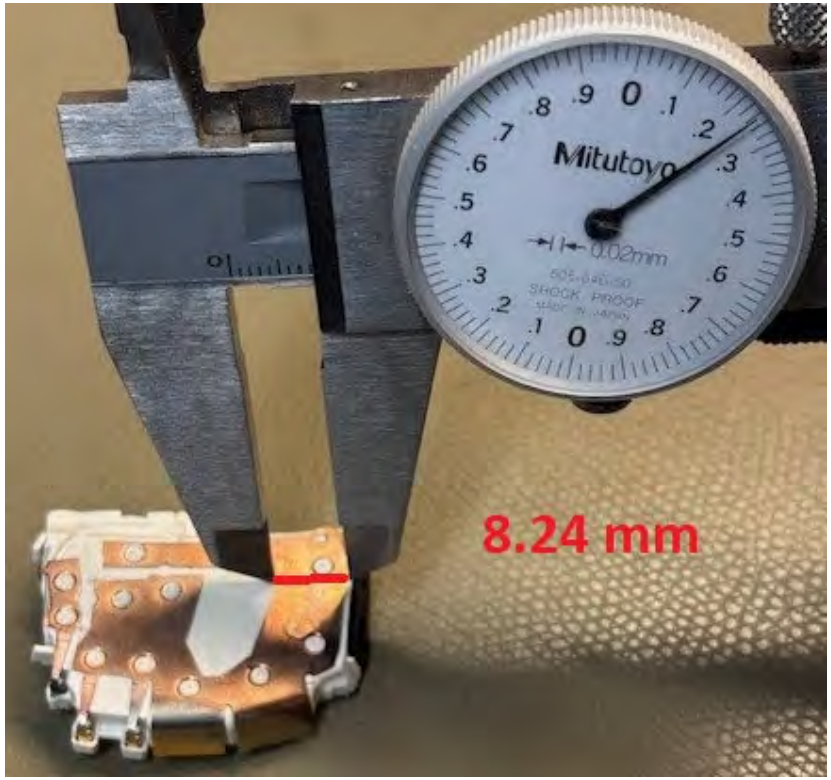
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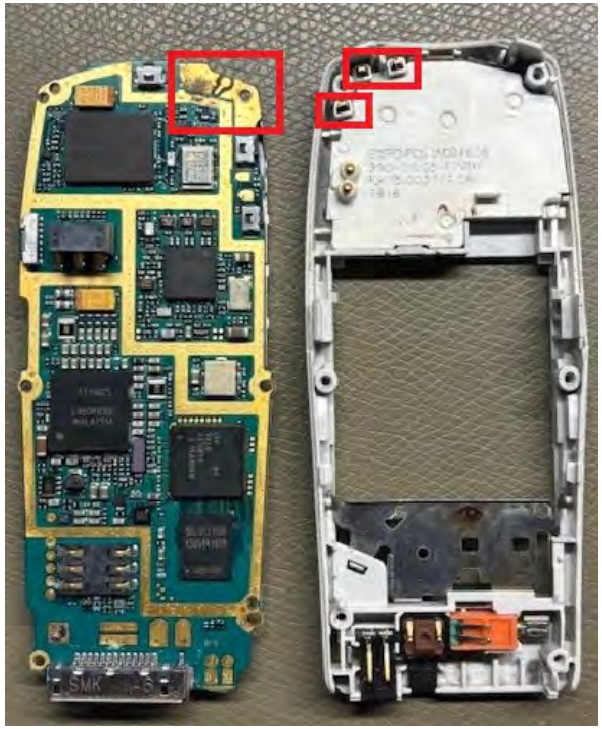
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 Dg=log(54/23)/log(2)=1.23
31[o]	[*the first radiating arm comprising* …] a second section connected to the grid-dimension section,	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The first radiating arm includes a second section (red below) connected to the grid-dimension section, the second section having a width different from a width of the first section.

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
31[p]	the second section having a width different from a width of the first section; and	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 31[o].

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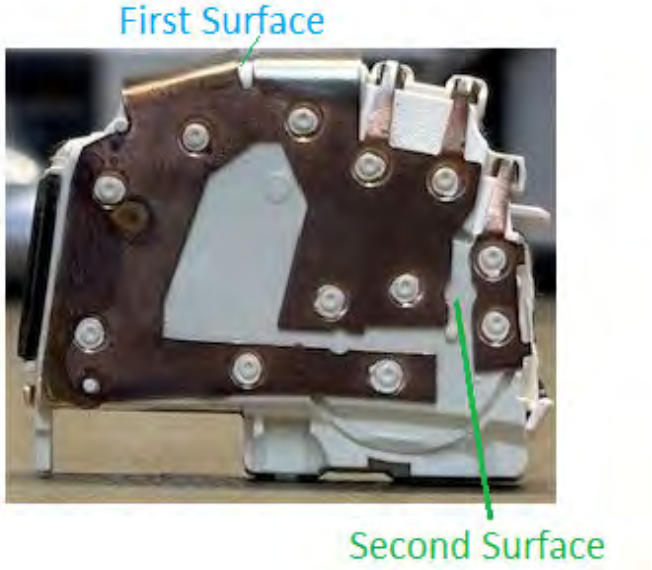
		 4.18 mm

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		

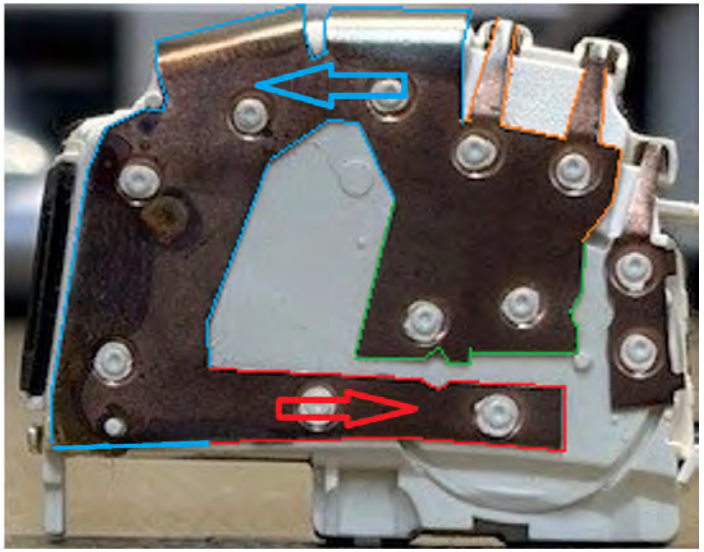
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
31[q]	wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing. 

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		 *See* FCC Internal Photos at 1.
	Claim 32	
32[a]	The mobile communication device according to claim 31, wherein the first section is arranged on a first surface of said plurality of surfaces; and	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* In the Nokia 6100, the first section of the first radiating arm is arranged on a first surface of said plurality of surfaces and the second section is arranged on a second surface of said plurality of surfaces, the second surface being different from the first surface.

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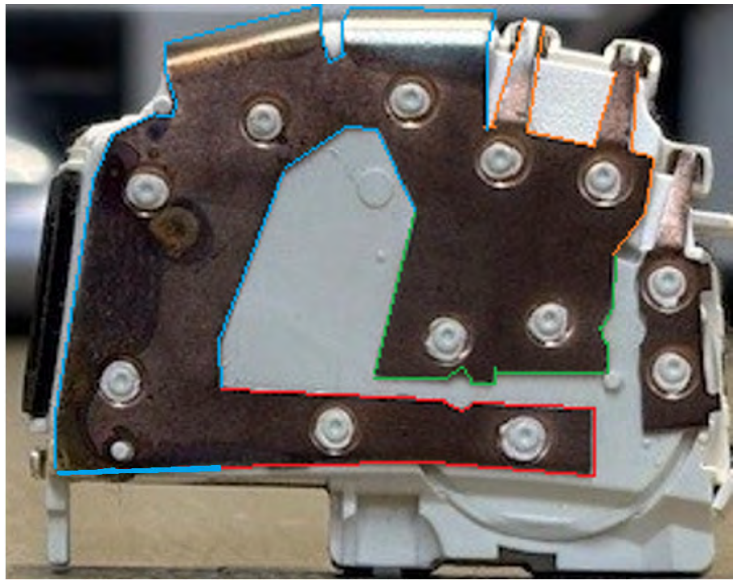
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
32[b]	wherein the second section is arranged on a second surface of said plurality of surfaces,	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 32[a].
32[c]	the second surface being different from the first surface.	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 32[a].

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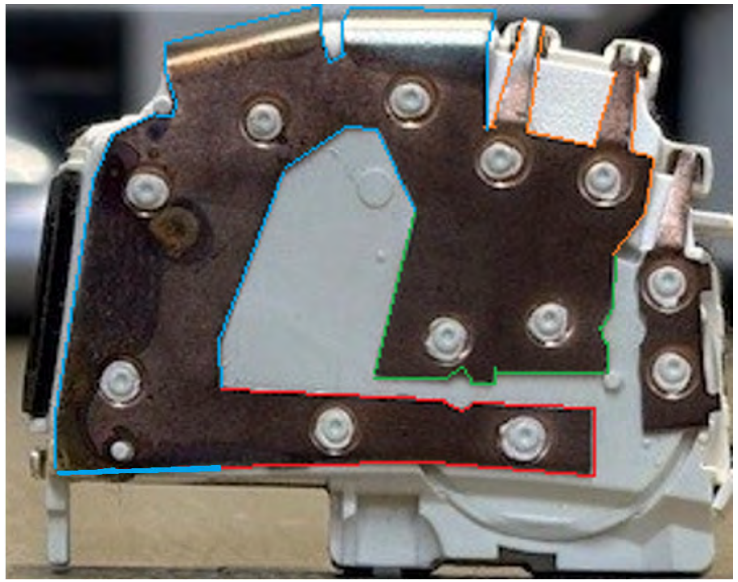
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
	Claim 35	
35[a]	The mobile communication device according to claim 31, wherein the first section extends along a first direction and the second section extends along a second direction,	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.,* In the Nokia 6100, the first section of the first radiating arm extends along a first direction and the second section of the first radiating arm extends along a second direction, the second direction being different from the first direction. 

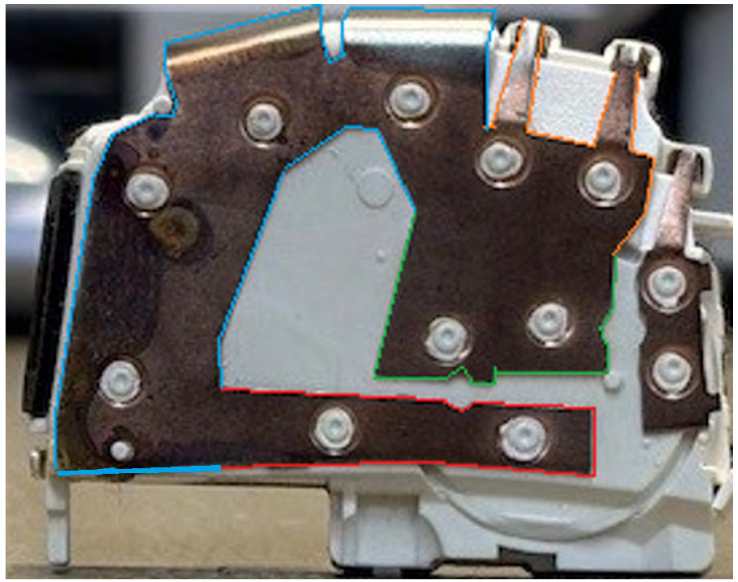
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
35[b]	the second direction being different from the first direction.	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 35[a].
Claim 36		
36	The mobile communication device according to claim 35, wherein the second direction is substantially opposite to the first direction.	Nokia 6100 expressly or inherently discloses this claim element. *See* Claim 35.
Claim 37		
37[a]	The mobile communication device according to claim 31, wherein the antenna element further comprises: a common conductor;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The antenna element of the multi-band antenna of the Nokia 6100 further includes a common conductor (orange below).

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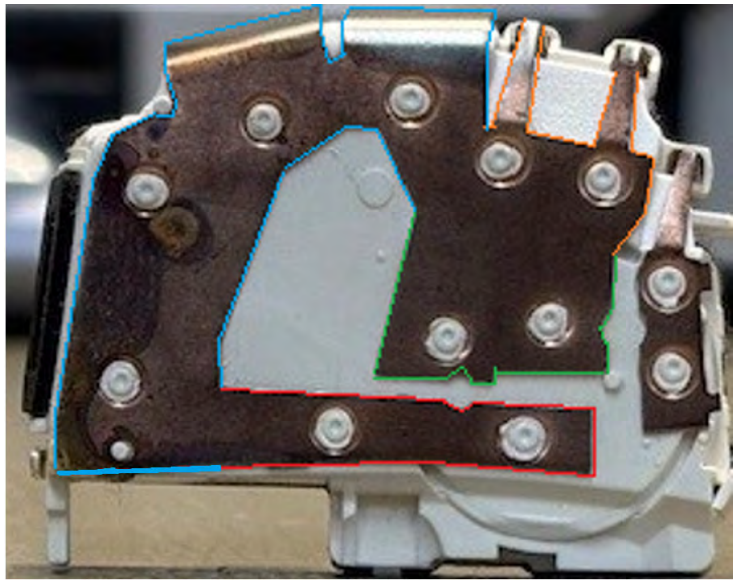
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
37[b]	a second radiating arm;	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, The antenna element of the multi-band antenna of the Nokia 6100 further includes a second radiating arm (green below).

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
37[c]	wherein each of the first radiating arm and the second radiating arm is connected to the common conductor; and	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, Each of the first radiating arm (blue below) and the second radiating arm (green below) is connected to the common conductor (orange below).

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
37[d]	wherein the second radiating arm is arranged on at least one surface of the plurality of surfaces of the dielectric mounting structure.	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, In the Nokia 6100, the second radiating arm (green below) is arranged on at least one surface of the plurality of surfaces of the dielectric mounting structure.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
		
	Claim 41	
41	The mobile communication device according to claim 31, wherein an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the ground plane layer in less	Nokia 6100 expressly or inherently discloses this claim element. *See, e.g.*, Claim 12.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 6100
	than 50% of an area of said footprint.	

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INVALIDITY CONTENTIONS FOR U.S. PATENT NO. 8,456,365 B2
BASED ON THE NOKIA 3650 ("NOKIA 3650")

Based upon Plaintiff's Complaint, Infringement Contentions, and apparent claim constructions and application of the claims to Defendants' accused products, as best as they can be deciphered, the reference charted below anticipates or at least renders obvious some or all of claims 1, 2, 4, 5, 6, 7, 8, 12, 13, 31, 32, 35, 36, 37, and 41 (the "'365 Asserted Claims")[1]. These invalidity contentions are not an admission by the Defendants that the accused products are covered by or infringe the asserted claims, particularly when these claims are properly construed and applied.

Pre-AIA law applies because the '365 Patent was filed on August 13, 2008, before March 16, 2013.

Nokia Corporation's ("Nokia") Nokia 3650, as publicly demonstrated, known, offered for sale, sold, and/or used by Nokia and/or customers of Nokia, or otherwise available to the public, including in this country, ("Nokia 3650") was available for purchase in the United States no later than July 7, 2003[2], which is prior to the critical date of the '365 patent. Thus, the Nokia 3650 is available as prior art at least under pre-AIA 35 U.S.C. § 102(a)-(b), (g)(2) and 103(a). At least the following documents provide evidence as to the date the Nokia 3650 was "offered for sale or publicly used or known," "the date the offer or use of the item took place or the information became known", and the "identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known" [3]:

[1] Defendants understand that, by not charting claims 3, 9-11, 14-30, 33-34, 38-40, and 42-45 in its Infringement Contentions, Plaintiff does not assert these claims against Defendants.

[2] *See* AT&T Wireless Website, Archived October 14, 2003 at: https://web.archive.org/web/20031014234657/http://www.attwireless.com/personal/products/ (last accessed June 11, 2025); AT&T Wireless Website, Archived July 7, 2003 at: https://web.archive.org/web/20030707121821/http://attwireless.com/buy/consumer/phone_tour/nokia3650_specs.htm (last accessed June 11, 2025).

[3] Defendants do not yet have complete information regarding the dates by which this product was publicly disclosed, made, used, sold, or offered for sale, the circumstances under which the research, design, and development activities were conducted, and the identities of the particular individuals involved in such activities. Defendants anticipate that the actual dates, circumstances, and identities of individuals will be the subject of third party discovery during this lawsuit. Defendants therefore reserve the right to amend and/or supplement its Invalidity Contentions and this chart if additional information becomes available during the course of discovery. The date the Nokia 3650 was "offered for sale or publicly used or known," as well as "the date the offer or use of the item took place or the information became known" is at least as early as the dates identified in the published documents. The "identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known" includes at least those persons associated with the publication(s), press releases, and conference attendees, or other documents associated with each version on the Nokia 3650. Defendants also reserve the right to rely on the public use, offer for sale, sale, or installation of the devices described in the publications identified herein once Defendants have had a fair opportunity to take discovery on these subjects.

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- AT&T Wireless Website, Archived October 14, 2003 at: https://web.archive.org/web/20031014234657/http://www.attwireless.com/personal/products/ (last accessed June 11, 2025)
- AT&T Wireless Website, Archived July 7, 2003 at: https://web.archive.org/web/20030707121821/http://attwireless.com/buy/consumer/phone_tour/nokia3650_specs.htm (last accessed June 11, 2025)
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: "QFX"; Product Code: NHL-8"; Record Option: 1/4 "Detail"; Attachment: "Internal Photos" (last accessed June 11, 2025) ("FCC Internal Photos")
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: "QFX"; Product Code: NHL-8"; Record Option: 1/4 "Detail"; Attachment: "FCC Internal Photos 1" (last accessed June 11, 2025) ("FCC Internal Photos 1")
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: "QFX"; Product Code: NHL-8"; Record Option: 1/4 "Detail"; Attachment: "FCC Internal Photos 2" (last accessed June 11, 2025) ("FCC Internal Photos 2")
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: "QFX"; Product Code: NHL-8"; Record Option: 1/4 "Detail"; Attachment: "FCC Test Report" (last accessed June 11, 2025) ("FCC Test Report")
- Phonescoop.com, *Nokia 3650*, https://www.phonescoop.com/phones/phone.php?p=199 (last accessed June 13, 2025)
- GSMArena.com, *Nokia 3650*, https://www.gsmarena.com/nokia_3650-345.php (last accessed June 13, 2025)
- PhoneArena.com, *Nokia 3650*, https://www.phonearena.com/phones/Nokia-3650_id439 (last accessed June 13, 2025)
- Phonedb.com, *Nokia 3650*, https://phonedb.net/index.php?m=device&id=896&c=nokia_3650__nokia_cameron (last accessed June 13, 2025)
- Wikipedia, *Nokia 3650*, https://en.wikipedia.org/wiki/Nokia_3650 (last accessed June 13, 2025)

As described in the following claim chart, the asserted claims of U.S. Patent No. 8,456,365 (the "'365 Patent"), are invalid as anticipated by Nokia 3650. To the extent that Nokia 3650 is found not to anticipate one or more of the asserted claims of the '365 Patent, these claims are invalid as obvious in view of Nokia 3650 alone or as modified in view of or in combination with other prior art references disclosed in Defendants' Invalidity Contentions and accompanying charts, including without limitation as set forth below.

- U.S. Pat. 6,239,765 to Johnson et al. ("Johnson")

One of ordinary skill in the art, as of the priority date of the '458 Patent, would have known to combine or modify the prior art elements disclosed by the foregoing references using known methods, and to use these elements according to their established functions in order to achieve a known and predictable result.

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These invalidity contentions are not an admission that the Defendants concede or acquiesces to any claim construction implied or suggested by Plaintiff's Complaint or Infringement Contentions. Nor are Defendants asserting any claim construction positions through these charts, including whether the preamble is a limitation. The portions of the prior art reference cited below are not exhaustive but are exemplary in nature. Defendants retain the right to update their constructions and contentions in view of this Court's claim construction order.[4]

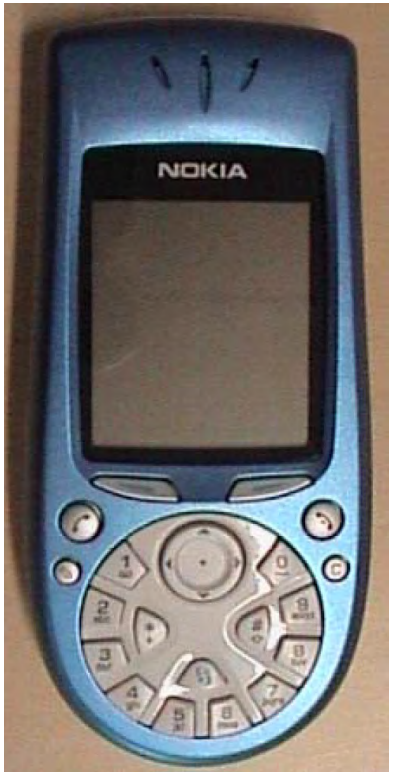
Claim No.	**U.S. Patent No. 8,456,365 B2**	**Nokia 3650**
	Claim 1	
1[pre]	A mobile communication device, comprising:	To the extent the preamble is limiting, Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The Nokia 3650 is a mobile communication device.

[4] Defendants reserve the right to supplement and/or alter this chart based on further investigation and ongoing discovery.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC External Photos at 1.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
1[a]	a device housing;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The Nokia 3650 has a device housing.   *See* FCC External Photos at 1, 2.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
1[b]	a printed circuit board, the printed circuit board comprising:	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The Nokia 3650 has a printed circuit board.

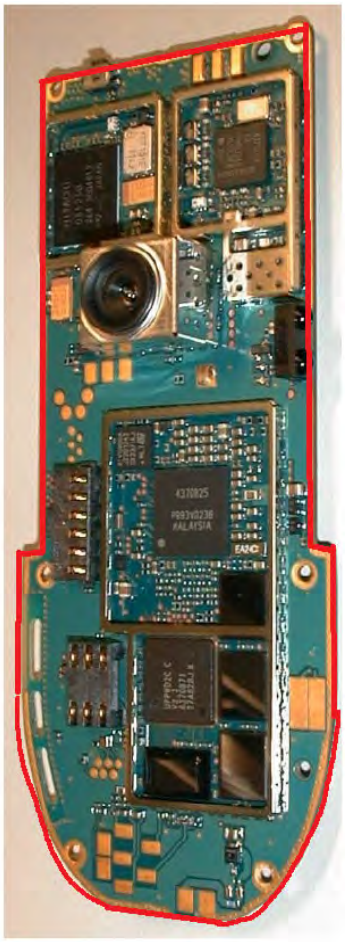
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 1 at 6.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
1[c]	[*the printed circuit board comprising*] a ground plane layer;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board of the Nokia 3650 includes a ground plane layer.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 1 at 6 (annotated).

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
1[d]	[*the printed circuit board comprising*] a feeding point;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The printed circuit board of the Nokia 3650 includes a feeding point.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		
1[e]	a communication circuitry,	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,*

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		The printed circuit board of the Nokia 3650 includes a communication circuitry, the communication circuitry being mounted on the printed circuit board.  *See* FCC Internal Photos 1 at 6.

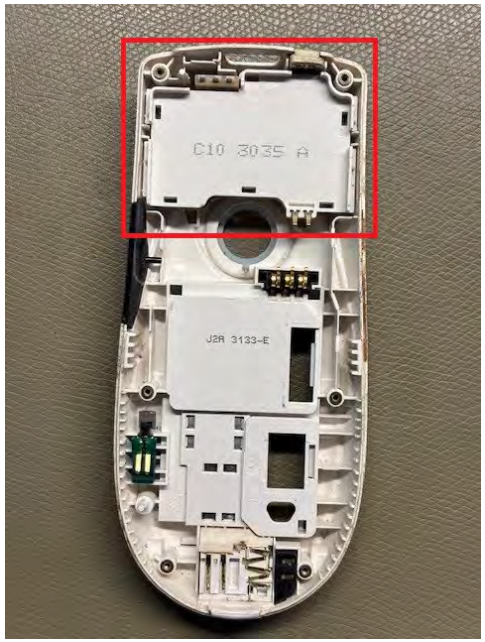
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
1[f]	the communication circuitry being mounted on the printed circuit board;	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[e].
1[g]	wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.*, The communication circuitry of the Nokia 3650 is coupled to the feeding point and to the ground plane layer.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 1 at 6.
1[h]	a multi-band antenna capable of operating at multiple frequency bands,	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.*,

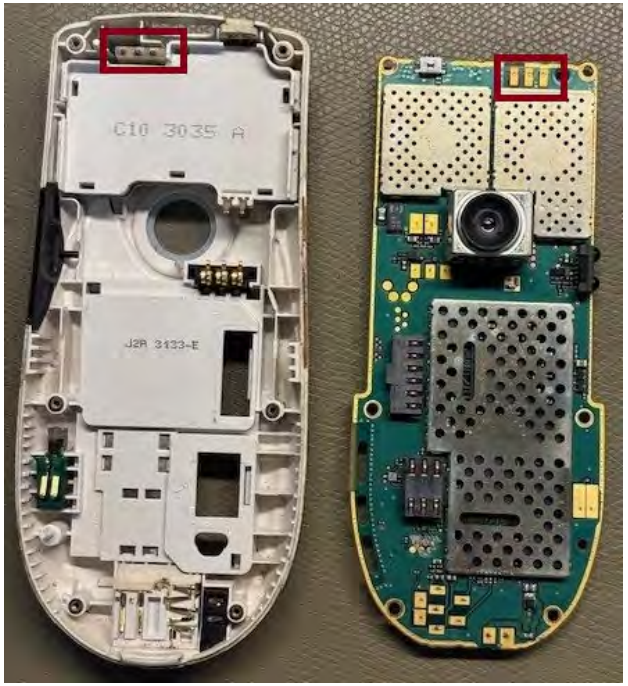
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		The Nokia 3650 includes a multi-band antenna capable of operating at multiple frequency bands, the multi-band antenna including an antenna element. 

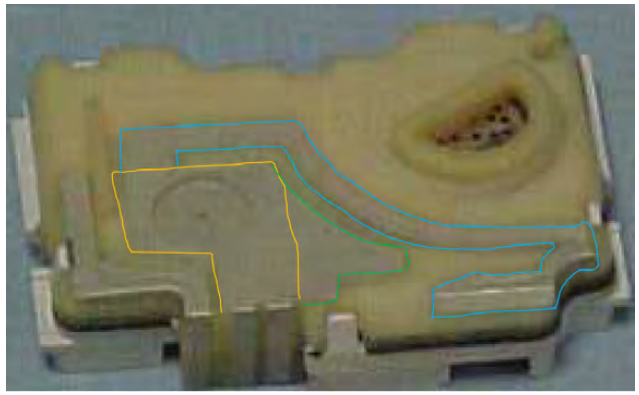
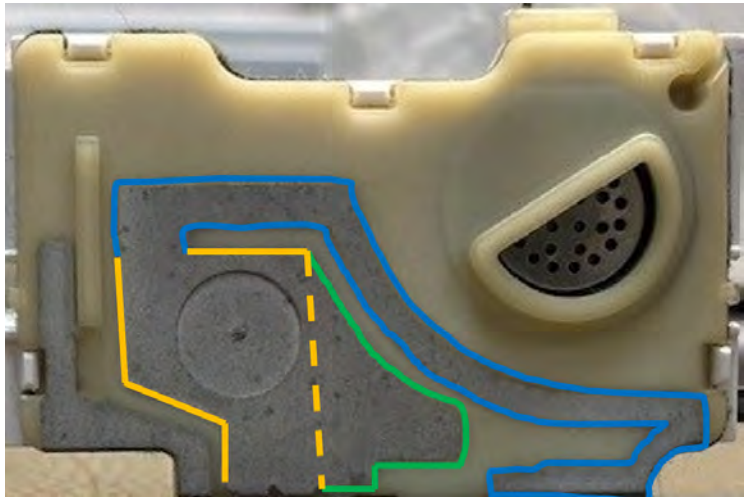
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 2 at 13. *See* FCC Test Report at 6: **2.2. Description Of EUT** The equipment under test is a tri-band (900, 1800 & 1900) camera mobile handset, which also supports IR and Bluetooth. (The 900 and 1800 Bands are not available in the USA)
1[i]	the multi-band antenna including an antenna element;	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[h].

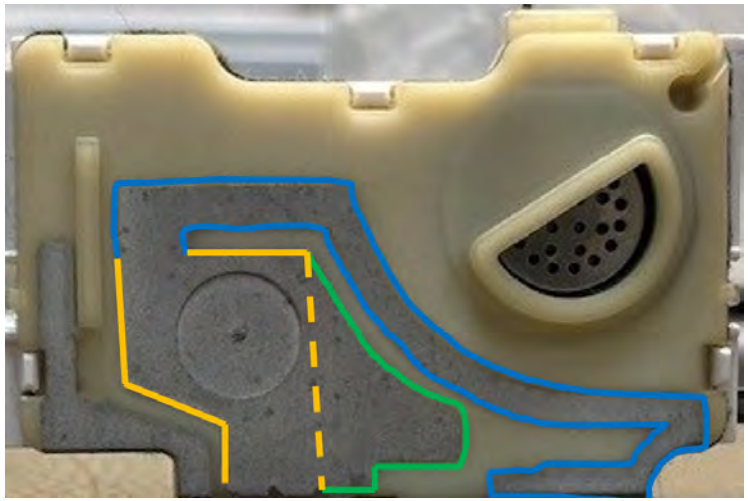
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
1[j]	wherein the antenna element operates in cooperation with the ground plane layer;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the Nokia 3650 operates in cooperation with the ground plane layer. 
1[k]	the antenna element comprising:	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,*

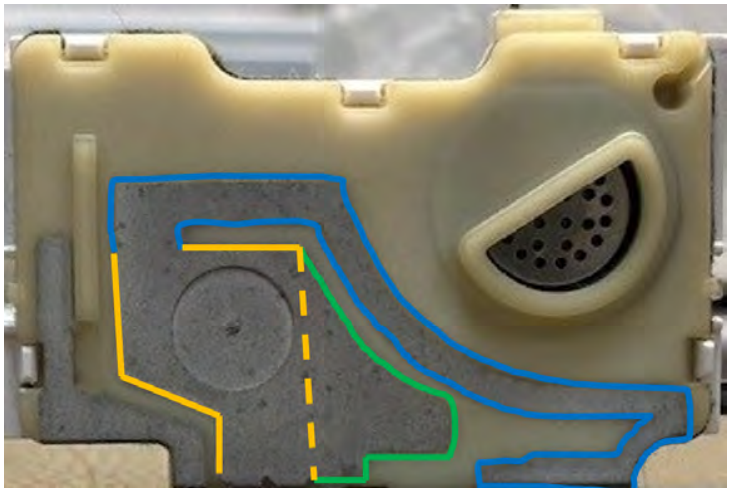
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		The antenna element of the Nokia 3650 includes a common conductor (orange below).  See FCC Internal Photos 2 at 13 (annotated). 

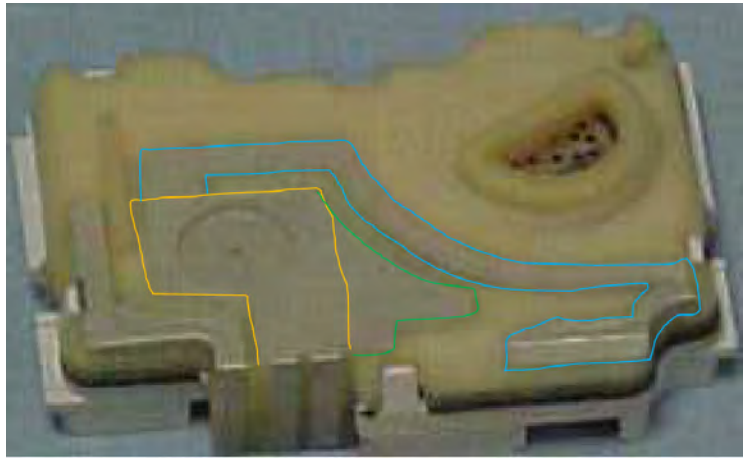
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
1[l]	[*the antenna element comprising*] a common conductor;	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[k].
1[m]	[*the antenna element comprising*] a first radiating arm connected to the common conductor;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the Nokia 3650 includes a first radiating arm (blue below) connected to the common conductor (orange below). 
1[n]	[*the antenna element comprising*] a second radiating	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,*

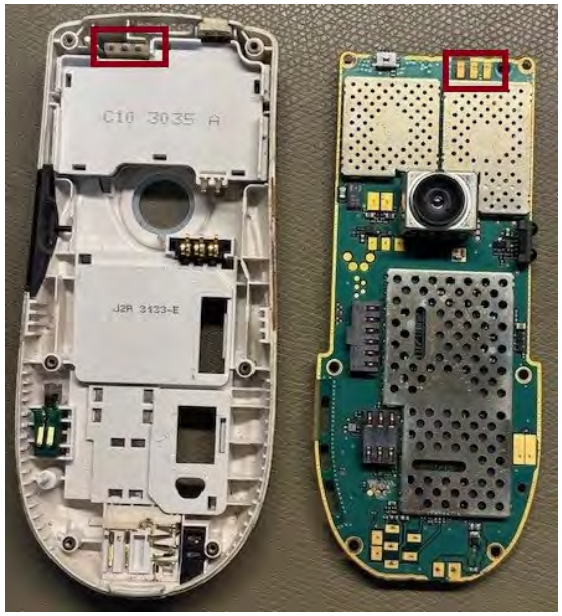
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
	arm connected to the common conductor;	The antenna element of the Nokia 3650 includes a second radiating arm (green below) connected to the common conductor. 
1[o]	wherein the common conductor includes a feeding port, the feeding port being coupled to the feeding point;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The common conductor (orange below) of the antenna element of the Nokia 3650 includes a feeding port, the feeding port being coupled to the feeding point.

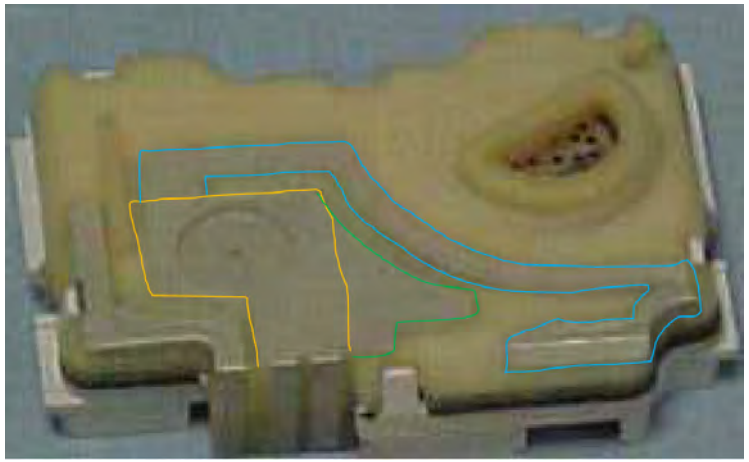
Fractus Exhibit 2003
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 2 at 13 (annotated).

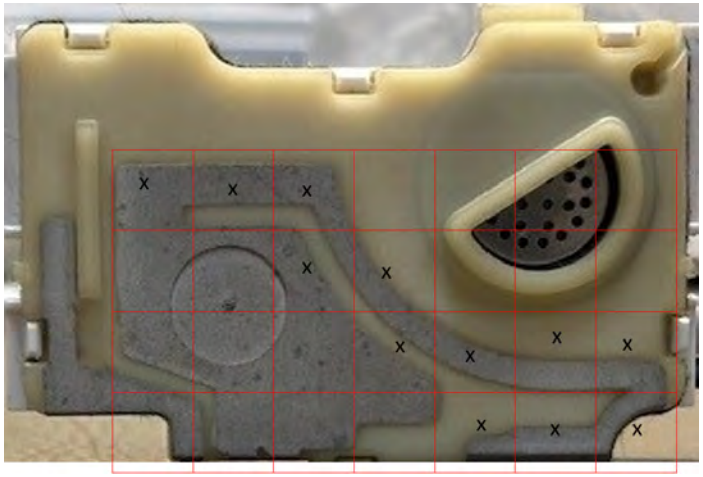
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		
1[p]	wherein at least a portion of the first radiating arm and at least a portion of the second radiating arm are arranged on different planes;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* In the antenna element of the Nokia 3650, at least a portion of the first radiating arm (blue below) and at least a portion of the second radiating arm (green below) are arranged on different planes.

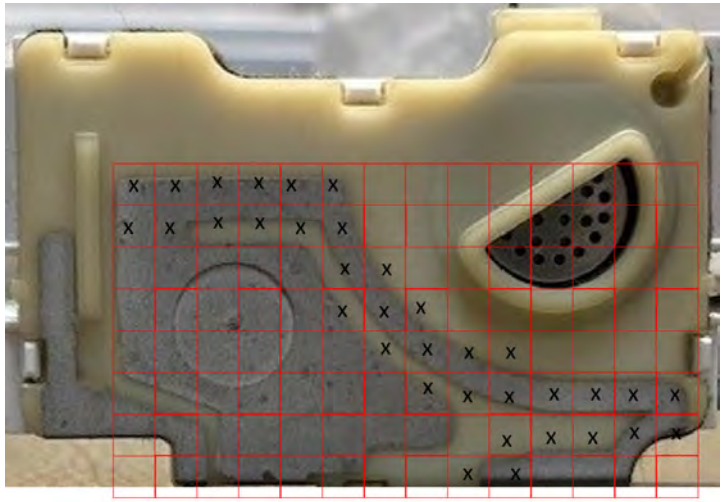
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 2 at 13 (annotated).
1[q]	wherein the first radiating arm is at least partially shaped according to a grid dimension curve; and	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The first radiating arm of the antenna element of the Nokia 3650 is at least partially shaped according to a grid-dimension curve. N1=12

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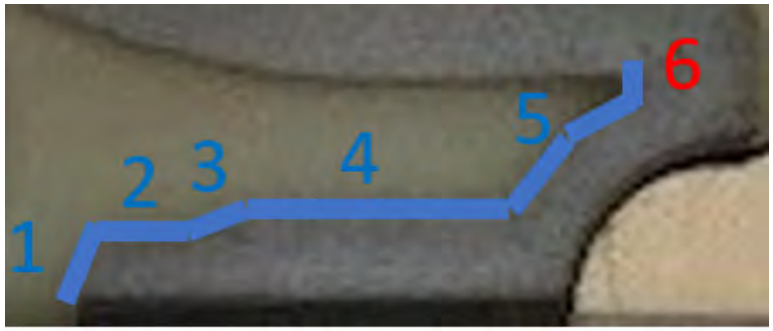
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 N2=35

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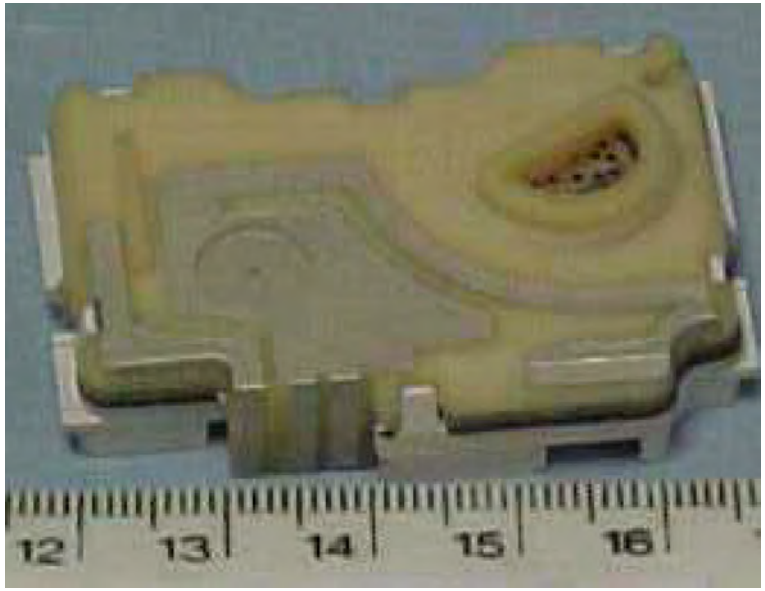
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 Dg=log(35/12)/log(2)=1.54
1[r]	wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The printed circuit board, the communication circuitry, and the multi-band antenna of the Nokia 3650 are arranged inside the device housing.

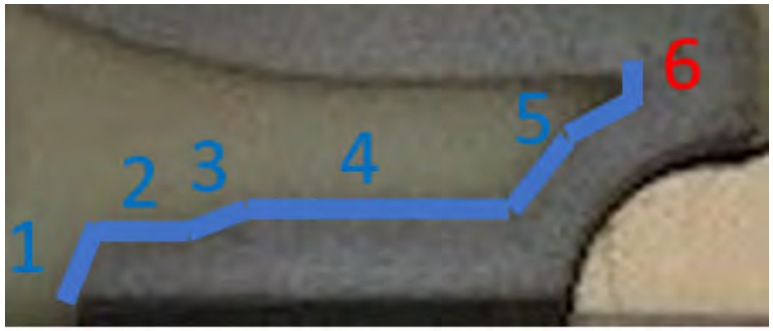
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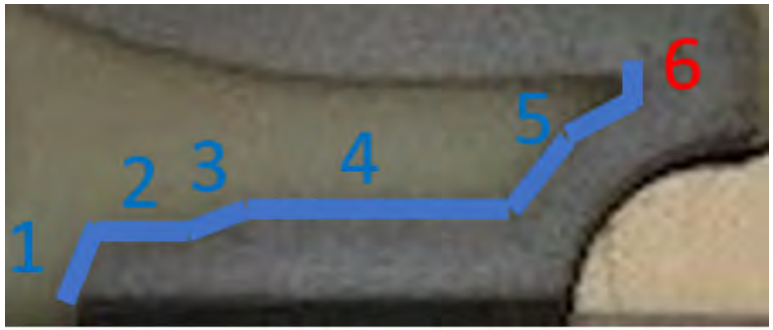
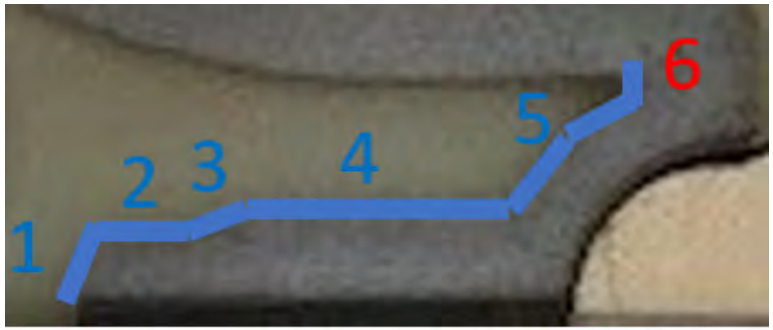
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		See FCC Internal Photos at 1.
Claim 2		
2[a]	The mobile communication device according to claim 1, wherein the first radiating arm comprises a first plurality of segments;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The first radiating arm of the antenna element of the Nokia 3650 includes a first plurality of segments. 
2[b]	wherein each segment of the first plurality of segments is smaller than 1/10 of a lowest operating free-space	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* Each segment of the first plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna.

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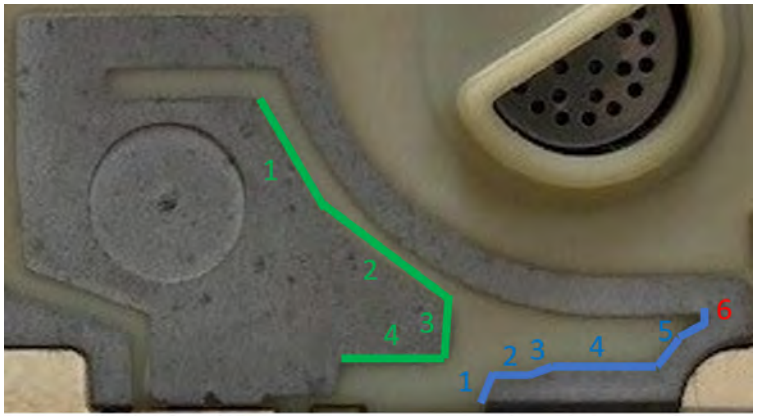
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
	wavelength of the multi-band antenna;	*See* FCC Test Report: **2.2. Description Of EUT** The equipment under test is a tri-band (900, 1800 & 1900) camera mobile handset, which also supports IR and Bluetooth. (The 900 and 1800 Bands are not available in the USA) The shortest operating free-space wavelength of the multi-band antenna is 150 millimeters (corresponding to 1990 MHz). 1/10 of the shortest operating free-space wavelength of the multi-band antenna is 15 millimeters. Each segment is shorter than 10 millimeters: 

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		See FCC Internal Photos 2 at 13.
2[c]	wherein the segments are spatially arranged such that each pair of adjacent segments forms a corner; and	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The segments are spatially arranged such that each pair of adjacent segments forms a corner. 
2[d]	wherein no two adjacent and connected segments form another longer straight segment; and	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* No two adjacent and connected segments form another longer straight segment.

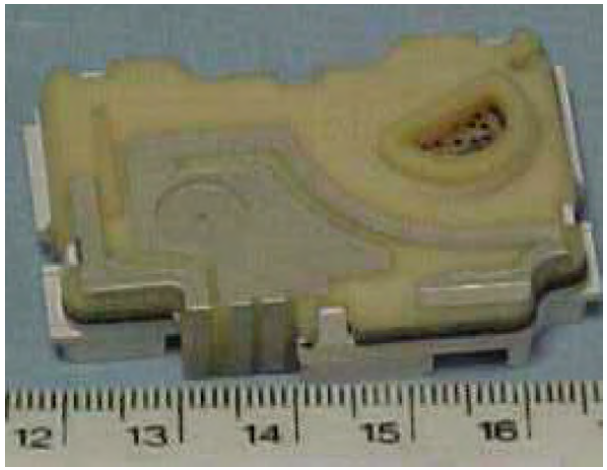
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		
2[e]	wherein none of said segments intersect with another segment other than to form a closed loop.	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* None of said segments intersect with another segment other than to form a closed loop. 

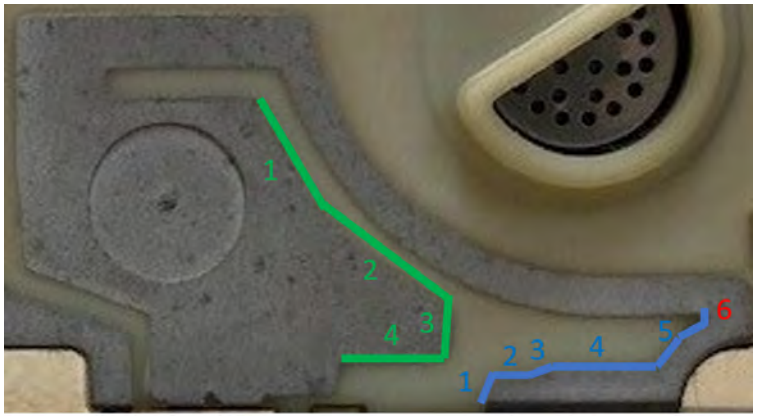
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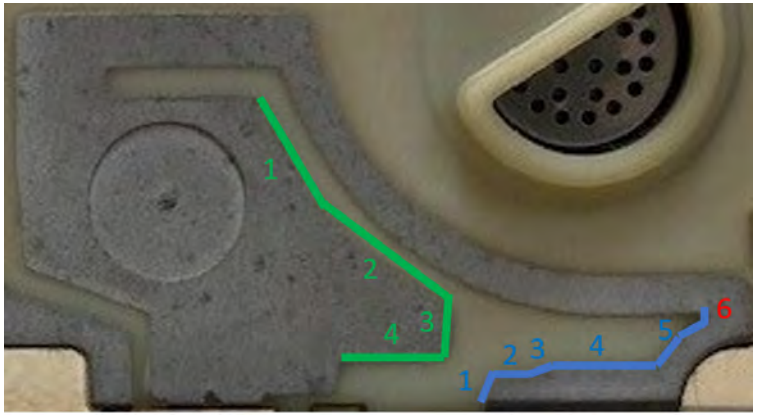
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
	Claim 5	
5[a]	The mobile communication device according to claim 2, wherein the second radiating arm comprises a second plurality of segments;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* In the Nokia 3650, the second radiating arm comprises a second plurality of segments. 
5[b]	wherein each segment of the second plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* Each segment of the second plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna. *See* FCC Test Report at 6:

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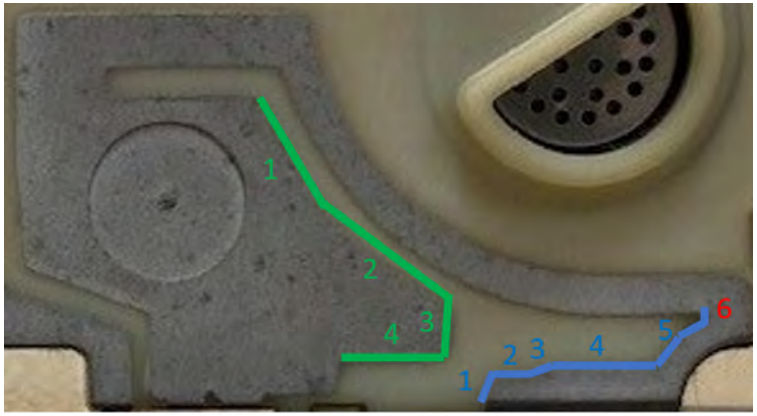
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		2.2. Description Of EUT The equipment under test is a tri-band (900, 1800 & 1900) camera mobile handset, which also supports IR and Bluetooth. (The 900 and 1800 Bands are not available in the USA) The shortest operating free-space wavelength of the multi-band antenna is 150 millimeters (corresponding to 1990 MHz). 1/10 of the shortest operating free-space wavelength of the multi-band antenna is 15 millimeters. Longest segment is shorter than 15 millimeters:  *See* FCC Internal Photos 2 at 13.
5[c]	wherein the segments are spatially arranged such that	Nokia 3650 expressly or inherently discloses this claim element.

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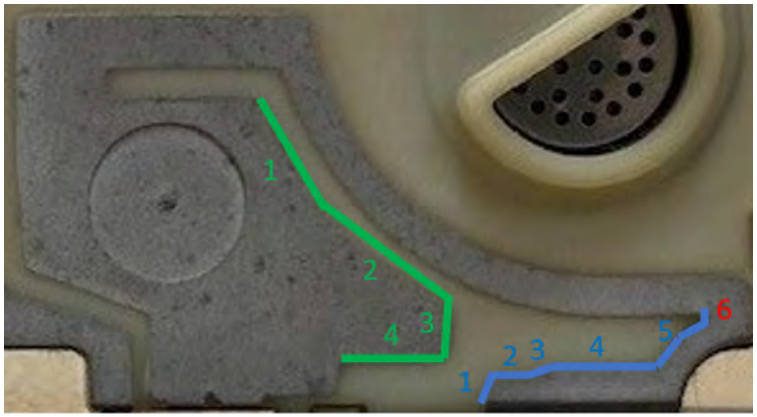
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
	each pair of adjacent segments forms a corner; and	*See, e.g.*, The segments are spatially arranged such that each pair of adjacent segments forms a corner. 
5[d]	wherein no two adjacent and connected segments form another longer straight segment; and	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.*, No two adjacent and connected segments form another longer straight segment.

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		
5[e]	wherein none of said segments intersect with another segment other than to form a closed loop.	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* None of said segments intersect with another segment other than to form a closed loop.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		
	Claim 6	
6	The mobile communication device according to claim 5, wherein the first plurality of segments comprises more segments than the second plurality of segments.	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* In the antenna element of the Nokia 3650, the first plurality of segments comprises more segments than the second plurality of segments.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		
	Claim 7	
7	The mobile communication device according to claim 1, wherein the grid-dimension curve has a grid dimension larger than 1.3.	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* In the Nokia 3650, the grid-dimension curve has a grid dimension larger than 1.3. *See* Claim 1[q].
	Claim 8	
8	The mobile communication device according to claim 1, wherein the grid-dimension curve has a grid dimension larger than 1.5.	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* In the Nokia 3650, the grid-dimension curve has a grid dimension larger than 1.5. *See* Claim 1[q].

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
	Claim 12	
12	The mobile communication device according to claim 1, wherein an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the ground plane layer in less than 50% of an area of said footprint.	Nokia 3650 expressly or inherently discloses this claim element. To the extent Nokia 3650 does not expressly or inherently disclose this claim element, it would have been obvious for the Nokia 3650 to satisfy this claim element in view of U.S. Pat. 6,239,765 to Johnson et al. ***See, e.g.*, Johnson:** Johnson (FIG. 1) discloses an antenna assembly 20 that "may [be] implemented within single or multiple frequency wireless communication devices, for instance devices operating over…cellular telephone (824-890 MHz. and 860-890 MHz), PCS device (1710-1880 MHz, 1750-1870 MHz, and 1850-1990 MHz)…frequency ranges…In alternative embodiments, the dimensions of the antenna assembly 20 may be scaled to provide operation at other frequencies, including frequencies in the 800 MHz. to 3,000 MHz. range." (3:48-62).

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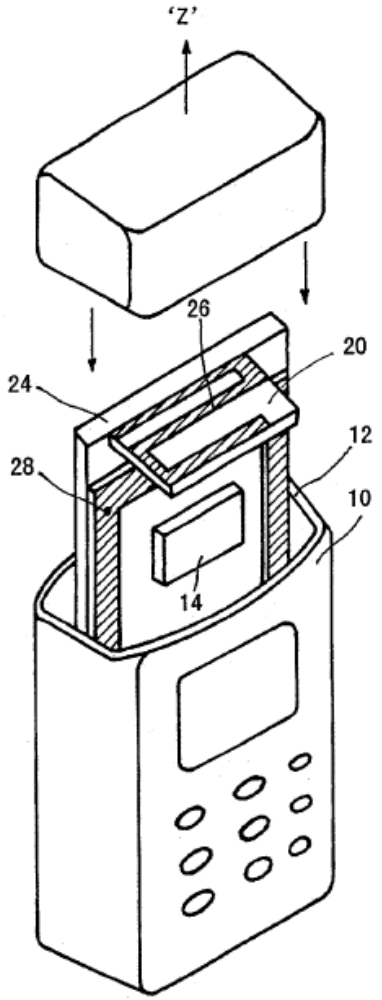
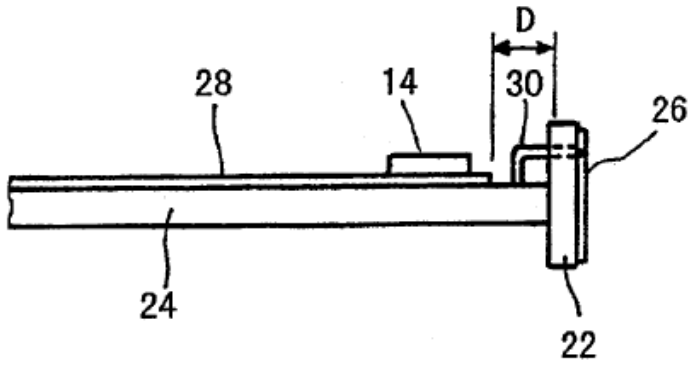
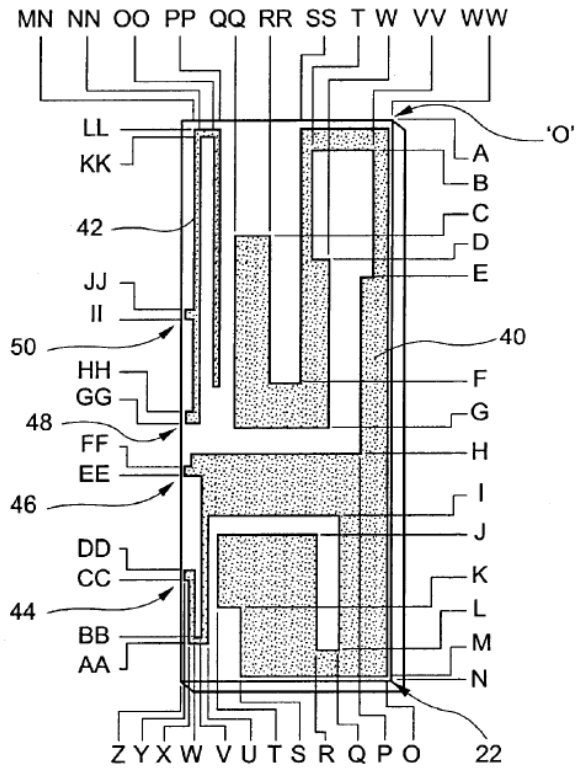


FIG. 1

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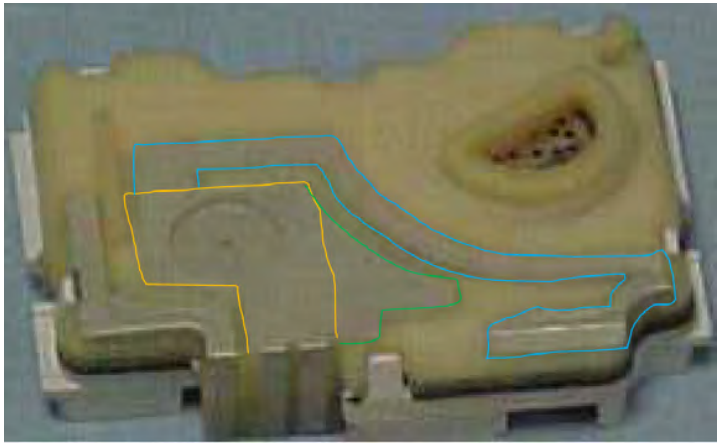
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		Johnson (FIG. 2) illustrates an embodiment "of the antenna assembly wherein the first planar element 22 is substantially perpendicular to the second planar element 24," the latter having the ground plane (4:35-37). While Johnson illustrates the first planar element 22 in FIG. 2 as flat, Johnson states "the first planar element 22…may be configured to conform to a portion of the housing 12, for example to assume a convex or more complex form…the design and selection of either the first or second planar elements 22,24 with reference to a particular wireless communication device may result in such complex shapes." (4:29-35).  ***FIG. 2*** Johnson (FIG. 9) illustrates the antenna assembly 20 as a tri-band antenna assembly 20 functioning across a cellular band (880-960 MHz.), a PCS band (1710-1880 MHz.) and the BLUETOOTH™ band (2.4-2.5 GHz.). Cellular and PCS band operation is effected through the first conductor trace 40," which is coupled to ground of the second planar element at point 44 and to the signal generating circuitry 14 via feedpoint 46." (5:35-44).

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		FIG. 9  When the tri-band antenna assembly 20 as shown in FIG. 9 is used in the configuration of FIG. 2, an orthogonal projection of a footprint of the antenna assembly 20 on a plane of the second planar element 24 overlaps the ground plane layer in less than 50% of an area of said footprint. The

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		configuration of FIG. 2, like the configuration of FIG. 1, is disclosed in Johnson as "away from the user's hand during operation" (3:66-67), which reduces blockage by the user's hand. In view of Johnson, one of ordinary skill in the art would have been motivated to re-orient the cellular antenna of the Nokia 3650 to face the top end of the housing in order to reduce the likelihood of blockage by the user's hand. There would have been a reasonable expectation of success in doing so because Johnson's antenna operates in substantially the same frequency ranges as the Nokia 3650 antenna, and has an inverted-F configuration like the Nokia 3650 antenna. Moreover, Johnson contemplates that the disclosed antenna will have a non-planar (e.g., convex) form, like the Nokia 3650 antenna, to accommodate available space within a device housing. Moreover, re-orienting the Nokia 3650 antenna as disclosed in Johnson would have been a mere design choice among configurations that were known in the art (see, e.g., the Nokia 3650 antenna configuration shown in FIG. 4 of Johnson as a known alternative). Thus, it would have been obvious for the Nokia 3650 to satisfy this claim element.
Claim 13		
13[a]	The mobile communication device according to claim 1, comprising: a dielectric mounting structure having a plurality of surfaces;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The Nokia 3650 includes a dielectric mounting structure having a plurality of surfaces. At least a portion of the first radiating arm is arranged on a first surface of said plurality of surfaces; and at least a portion of the second radiating arm is arranged on a second surface of said plurality of surfaces, the second surface being different from the first surface.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 2 at 13 (annotated).
13[b]	wherein at least a portion of the first radiating arm is arranged on a first surface of said plurality of surfaces; and	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 13[a].
13[c]	wherein at least a portion of the second radiating arm is arranged on a second surface of said plurality of surfaces,	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 13[a].

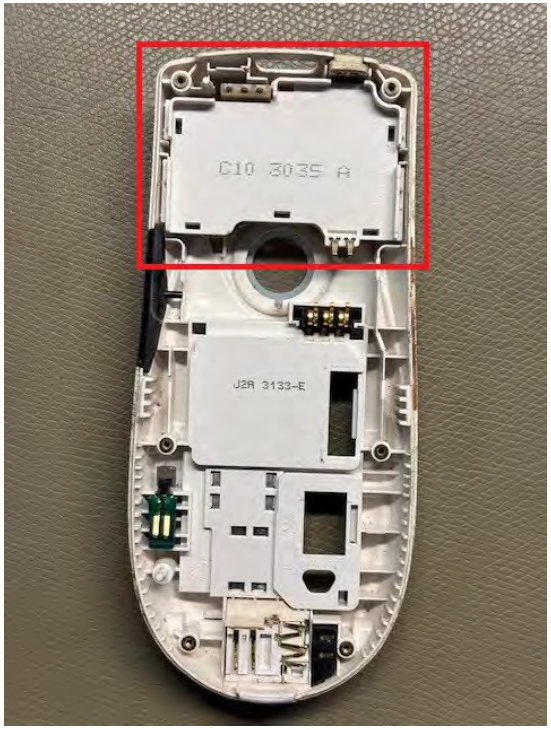
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
13[d]	the second surface being different from the first surface.	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 13[a].
Claim 31		
31[pre]	A mobile communication device, comprising:	To the extent the preamble is limiting, Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[pre].
31[a]	a device housing;	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[a].
31[b]	a printed circuit board, the printed circuit board comprising:	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[b].
31[c]	[*the printed circuit board comprising*] a ground plane layer;	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[c].

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
31[d]	[*the printed circuit board comprising*] a feeding point;	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[d].
31[e]	a communication circuitry,	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[e].
31[f]	the communication circuitry being mounted on the printed circuit board;	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[e].
31[g]	wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 1[f].
31[h]	a multi-band antenna capable of operating at multiple	Nokia 3650 expressly or inherently discloses this claim element.

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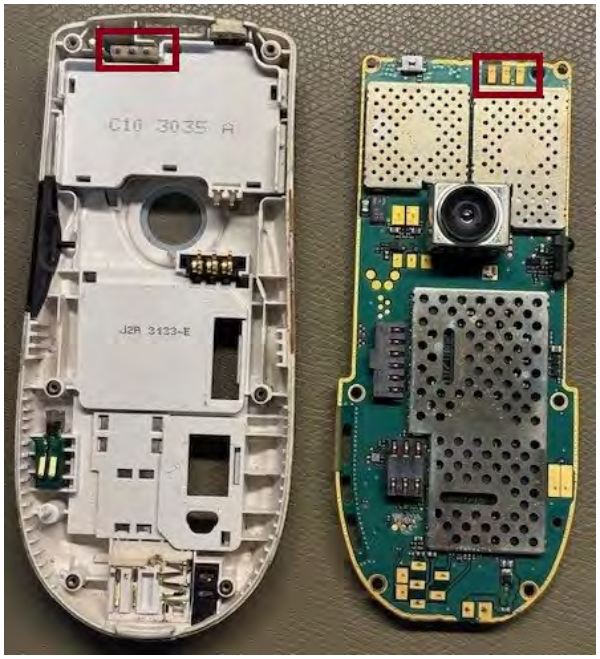
Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
	frequency bands, the multi-band antenna including:	*See, e.g.*, The Nokia 3650 includes a multi-band antenna capable of operating at multiple frequency bands. 

Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 2 at 13. *See* FCC Test Report at 6: **2.2. Description Of EUT** The equipment under test is a tri-band (900, 1800 & 1900) camera mobile handset, which also supports IR and Bluetooth. (The 900 and 1800 Bands are not available in the USA)
31[i]	[*the multi-band antenna including*] a dielectric mounting structure having a plurality of surfaces;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The multi-band antenna of the Nokia 3650 includes a dielectric mounting structure having a plurality of surfaces.

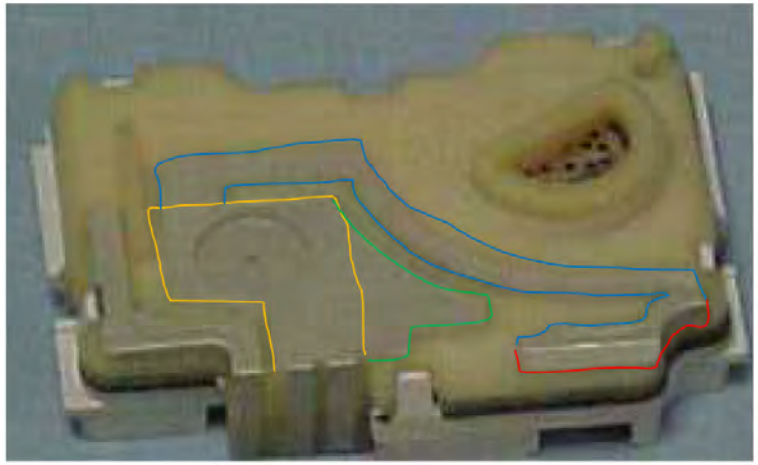
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 2 at 13.
31[j]	[*the multi-band antenna including*] an antenna element,	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The multi-band antenna of the Nokia 3650 includes an antenna element, the antenna element coupled to the feeding point and operating in cooperation with the ground plane layer.

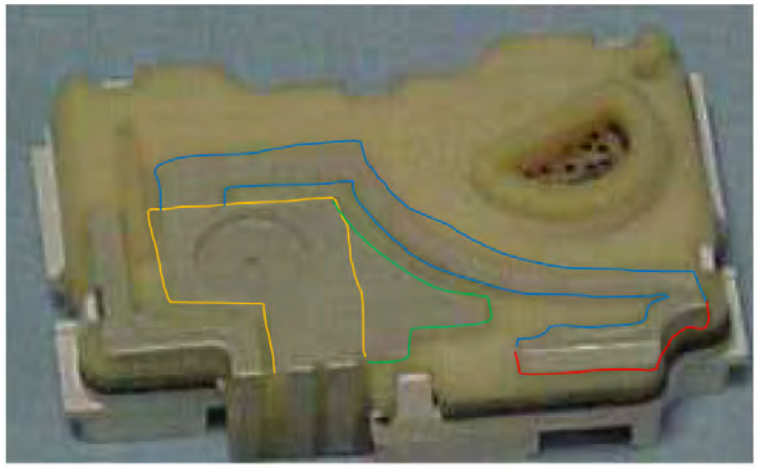
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		
31[k]	the antenna element being coupled to the feeding point and	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 31[j].
31[l]	[*the antenna element* …] operating in cooperation with the ground plane layer;	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 31[j].

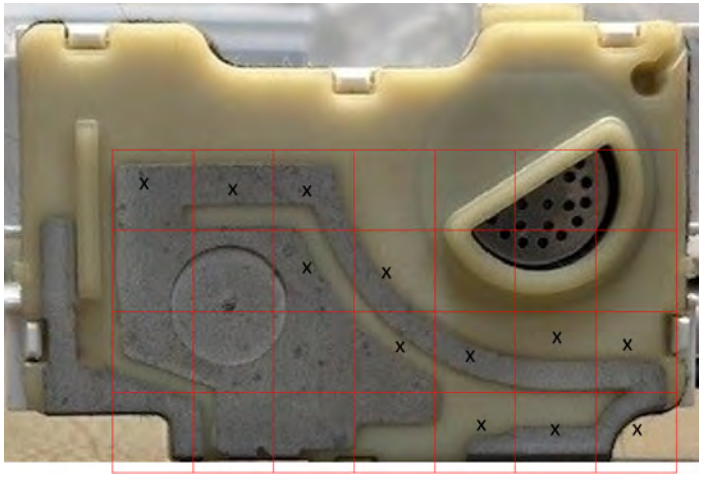
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
31[m]	wherein the antenna element comprises a first radiating arm arranged on two or more surfaces of the plurality of surfaces of the dielectric mounting structure;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the multi-band antenna of the Nokia 3650 includes a first radiating arm (blue and red below) arranged on two or more surfaces of the plurality of surfaces of the dielectric mounting structure.  *See* FCC Internal Photos 2 at 13 (annotated).
31[n]	the first radiating arm comprising: a first section	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,*

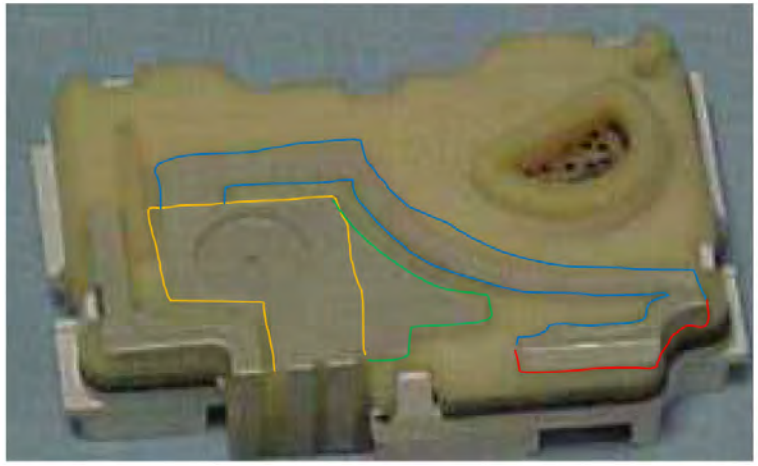
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
	shaped according to a grid dimension curve;	The first radiating arm comprises a first section (blue below) shaped according to a grid-dimension curve.  *See* FCC Internal Photos 2 at 13 (annotated). N1=12

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 N2=35 

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		Dg=log(35/12)/log(2)=1.54
31[o]	[*the first radiating arm comprising* …] a second section connected to the grid-dimension section,	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.*, The first radiating arm includes a second section (red below) connected to the grid-dimension section, the second section having a width different from a width of the first section.  *See* FCC Internal Photos 2 at 13 (annotated).
31[p]	the second section having a width different from a width of the first section; and	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 31[o].

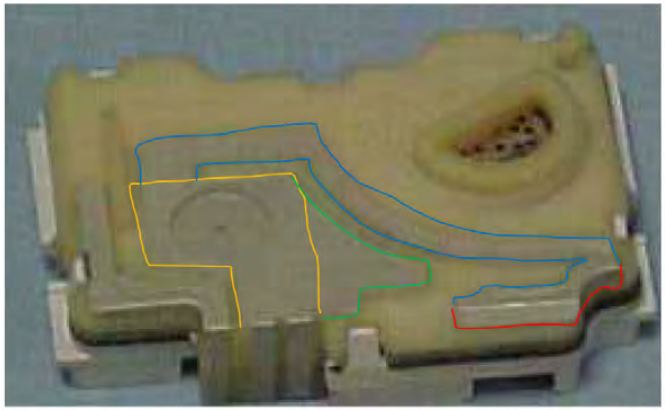
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
31[q]	wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.

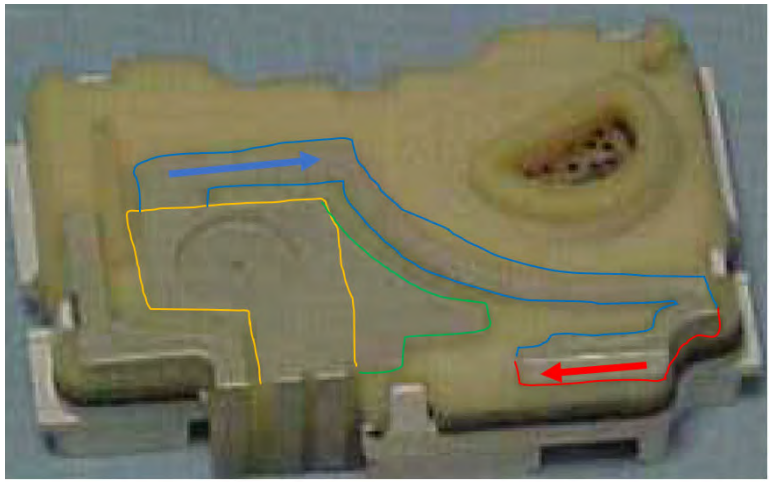
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos at 1.
	Claim 32	
32[a]	The mobile communication device according to claim 31,	Nokia 3650 expressly or inherently discloses this claim element.

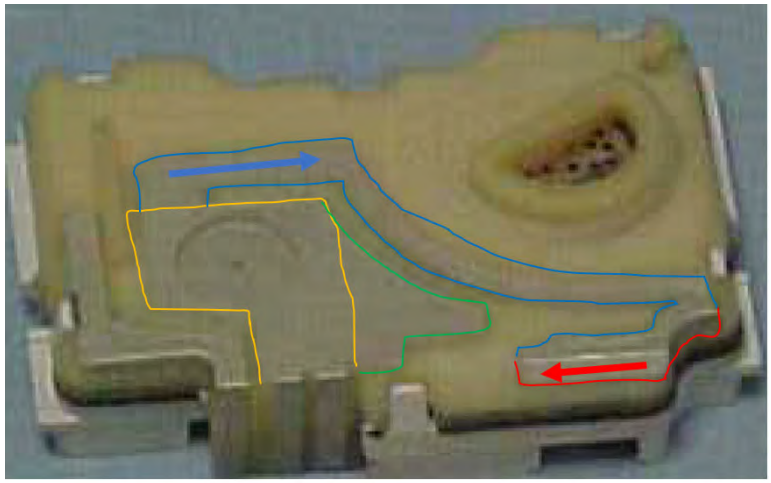
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
	wherein the first section is arranged on a first surface of said plurality of surfaces; and	*See, e.g.*, In the Nokia 3650, the first section of the first radiating arm is arranged on a first surface of said plurality of surfaces and the second section is arranged on a second surface of said plurality of surfaces, the second surface being different from the first surface.  *See* FCC Internal Photos 2 at 13 (annotated).
32[b]	wherein the second section is arranged on a second surface of said plurality of surfaces,	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 32[a].
32[c]	the second surface being different from the first surface.	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 32[a].

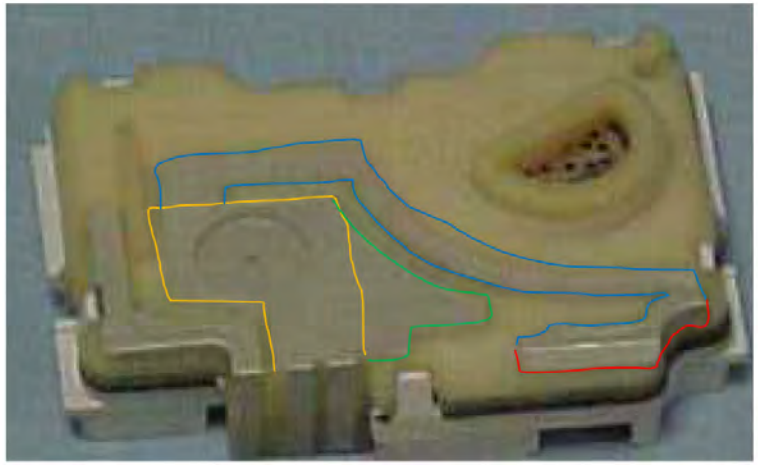
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
	Claim 35	
35[a]	The mobile communication device according to claim 31, wherein the first section extends along a first direction and the second section extends along a second direction,	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.*, In the Nokia 3650, the first section of the first radiating arm extends along a first direction and the second section of the first radiating arm extends along a second direction, the second direction being different from the first direction.  *See* FCC Internal Photos 2 at 13 (annotated).

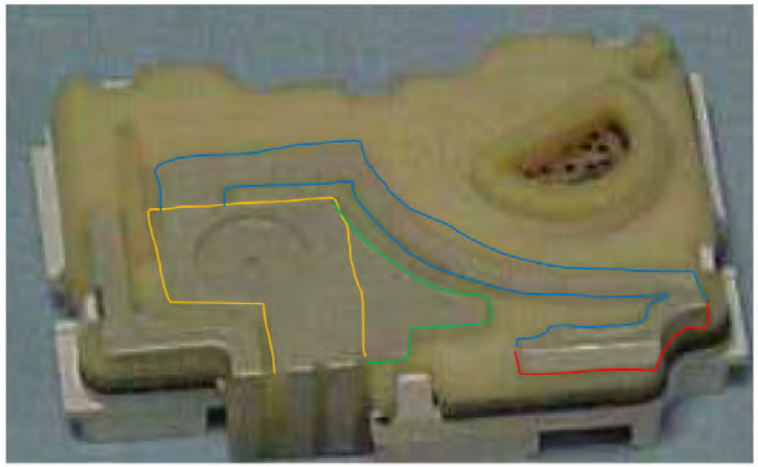
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
35[b]	the second direction being different from the first direction.	Nokia 3650 expressly or inherently discloses this claim element. *See* Claim 35[a].
	Claim 36	
36	The mobile communication device according to claim 35, wherein the second direction is substantially opposite to the first direction.	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* In the Nokia 3650, the second direction is substantially opposite to the first direction.  *See* FCC Internal Photos 2 at 13 (annotated).

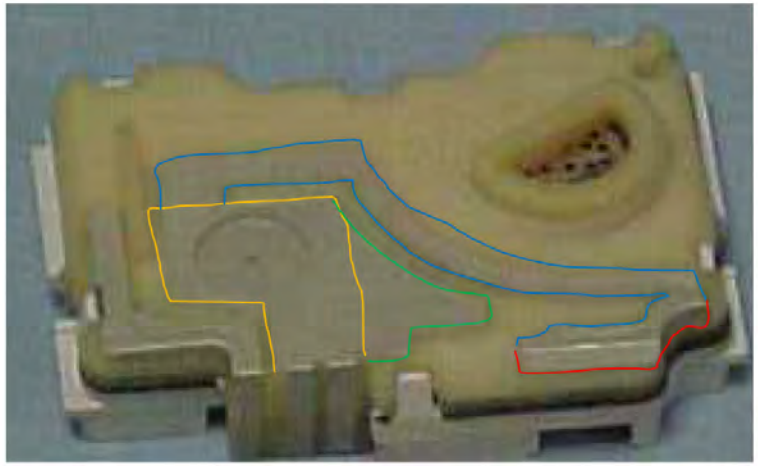
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
	Claim 37	
37[a]	The mobile communication device according to claim 31, wherein the antenna element further comprises: a common conductor;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the multi-band antenna of the Nokia 3650 further includes a common conductor (orange below).  *See* FCC Internal Photos 2 at 13 (annotated).
37[b]	a second radiating arm;	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,*

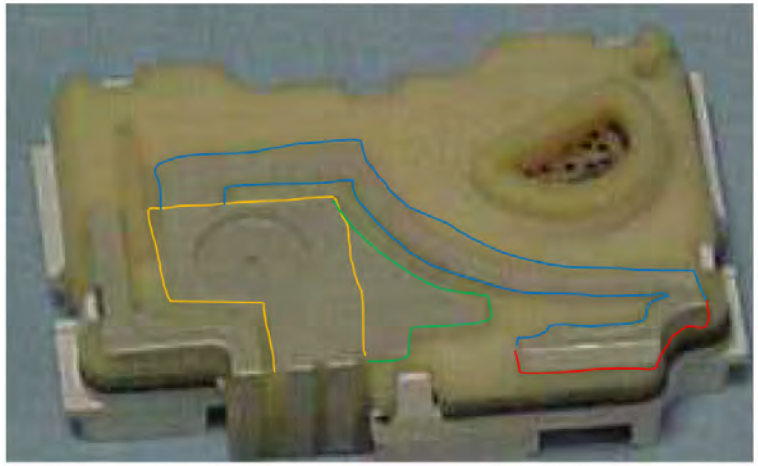
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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		The antenna element of the multi-band antenna of the Nokia 3650 further includes a second radiating arm (green below).  *See* FCC Internal Photos 2 at 13 (annotated).
37[c]	wherein each of the first radiating arm and the second radiating arm is connected to the common conductor; and	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.*, Each of the first radiating arm (blue below) and the second radiating arm (green below) is connected to the common conductor (orange below).

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 2 at 13 (annotated).
37[d]	wherein the second radiating arm is arranged on at least one surface of the plurality of surfaces of the dielectric mounting structure.	Nokia 3650 expressly or inherently discloses this claim element. *See, e.g.,* In the Nokia 3650, the second radiating arm (green below) is arranged on at least one surface of the plurality of surfaces of the dielectric mounting structure.

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		 *See* FCC Internal Photos 2 at 13 (annotated).
	Claim 41	
41	The mobile communication device according to claim 31, wherein an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the ground plane layer in less than 50% of an area of said footprint.	Nokia 3650 expressly or inherently discloses this claim element. To the extent Nokia 3650 does not expressly or inherently disclose this claim element, it would have been obvious for the Nokia 3650 to satisfy this claim element in view of U.S. Pat. 6,239,765 to Johnson et al. ***See, e.g.*, Johnson:** Johnson (FIG. 1) discloses an antenna assembly 20 that "may [be] implemented within single or multiple frequency wireless communication devices, for instance devices operating over…cellular telephone (824-890 MHz. and 860-890 MHz), PCS device (1710-1880 MHz, 1750-1870 MHz, and 1850-1990 MHz)…frequency ranges…In alternative embodiments, the dimensions of the

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		antenna assembly 20 may be scaled to provide operation at other frequencies, including frequencies in the 800 MHz. to 3,000 MHz. range." (3:48-62).

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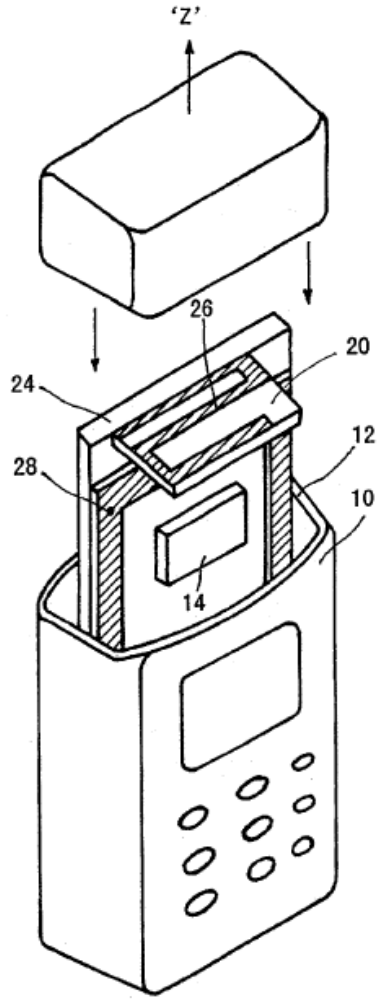
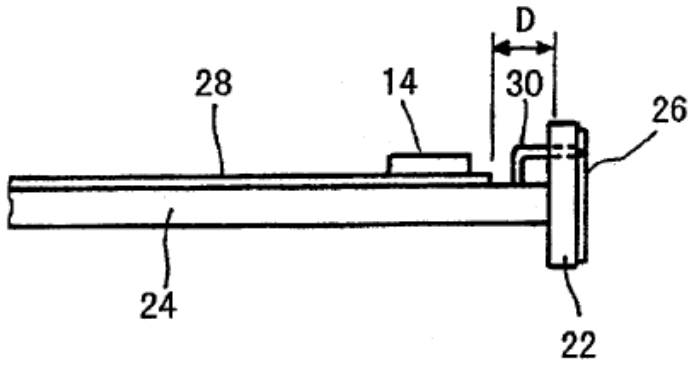
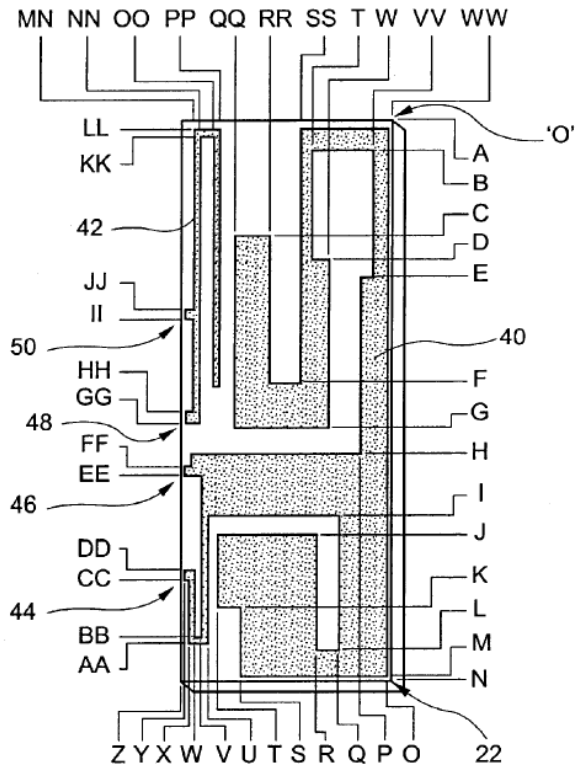


FIG. 1

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		Johnson (FIG. 2) illustrates an embodiment "of the antenna assembly wherein the first planar element 22 is substantially perpendicular to the second planar element 24," the latter having the ground plane (4:35-37). While Johnson illustrates the first planar element 22 in FIG. 2 as flat, Johnson states "the first planar element 22…may be configured to conform to a portion of the housing 12, for example to assume a convex or more complex form…the design and selection of either the first or second planar elements 22,24 with reference to a particular wireless communication device may result in such complex shapes." (4:29-35).  *FIG. 2* Johnson (FIG. 9) illustrates the antenna assembly 20 as a tri-band antenna assembly 20 functioning across a cellular band (880-960 MHz.), a PCS band (1710-1880 MHz.) and the BLUETOOTH™ band (2.4-2.5 GHz.). Cellular and PCS band operation is effected through the first conductor trace 40," which is coupled to ground of the second planar element at point 44 and to the signal generating circuitry 14 via feedpoint 46." (5:35-44).

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		FIG. 9  When the tri-band antenna assembly 20 as shown in FIG. 9 is used in the configuration of FIG. 2, an orthogonal projection of a footprint of the antenna assembly 20 on a plane of the second planar element 24 overlaps the ground plane layer in less than 50% of an area of said footprint. The

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Claim No.	U.S. Patent No. 8,456,365 B2	Nokia 3650
		configuration of FIG. 2, like the configuration of FIG. 1, is disclosed in Johnson as "away from the user's hand during operation" (3:66-67), which reduces blockage by the user's hand. In view of Johnson, one of ordinary skill in the art would have been motivated to re-orient the cellular antenna of the Nokia 3650 to face the top end of the housing in order to reduce the likelihood of blockage by the user's hand. There would have been a reasonable expectation of success in doing so because Johnson's antenna operates in substantially the same frequency ranges as the Nokia 3650 antenna, and has an inverted-F configuration like the Nokia 3650 antenna. Moreover, Johnson contemplates that the disclosed antenna will have a non-planar (e.g., convex) form, like the Nokia 3650 antenna, to accommodate available space within a device housing. Moreover, re-orienting the Nokia 3650 antenna as disclosed in Johnson would have been a mere design choice among configurations that were known in the art (see, e.g., the Nokia 3650 antenna configuration shown in FIG. 4 of Johnson as a known alternative). Thus, it would have been obvious for the Nokia 3650 to satisfy this claim element.

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INVALIDITY CONTENTIONS FOR U.S. PATENT NO. 8,456,365 B2
BASED ON THE SONY ERICSSON T61LX ("T61LX")

Based upon Plaintiff's Complaint, Infringement Contentions, and apparent claim constructions and application of the claims to Defendants' accused products, as best as they can be deciphered, the reference charted below anticipates or at least renders obvious some or all of claims 1, 2, 4, 5, 6, 7, 8, 12, 13, 31, 32, 35, 36, 37, and 41 (the "'365 Asserted Claims")[1]. These invalidity contentions are not an admission by the Defendants that the accused products are covered by or infringe the asserted claims, particularly when these claims are properly construed and applied.

Pre-AIA law applies because the '365 Patent was filed on August 13, 2008, before March 16, 2013.

Sony Ericsson's ("Sony Ericsson") Sony Ericsson T61LX as publicly demonstrated, known, offered for sale, sold, and/or used by Sony Ericsson and/or customers of Sony Ericsson or otherwise available to the public, including in this country, the ("T61LX") was on sale in the United States no later than November 5, 2002,[2] which is more than one year prior to the effective filing date of the '365 patent. Thus, the T61LX is available as prior art at least under pre-AIA 35 U.S.C. § 102(a)-(b), or (g)(2) and 103(a). At least the following documents provide evidence as to the date the T61LX was "offered for sale or publicly used or known," "the date the offer or use of the item took place or the information became known", and the "identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known" [3]:

[1] Defendants understand that, by not charting claims 3, 9-11, 14-30, 33-34, 38-40, and 42-45 in its Infringement Contentions, Plaintiff does not assert these claims against Defendants.

[2] *See* AT&T Wireless Website, Archived November 5, 2002 at: https://web.archive.org/web/20021105112134/http://www.attws.com:80/ (last accessed June 11, 2025)

[3] Defendants do not yet have complete information regarding the dates by which this product was publicly disclosed, made, used, sold, or offered for sale, the circumstances under which the research, design, and development activities were conducted, and the identities of the particular individuals involved in such activities. Defendants anticipate that the actual dates, circumstances, and identities of individuals will be the subject of third party discovery during this lawsuit. Defendants therefore reserve the right to amend and/or supplement its Invalidity Contentions and this chart if additional information becomes available during the course of discovery. The date the T61LX was "offered for sale or publicly used or known," as well as "the date the offer or use of the item took place or the information became known" is at least as early as the dates identified in the published documents. The "identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known" includes at least those persons associated with the publication(s), press releases, and conference attendees, or other documents associated with each version on the T61LX. Defendants also reserve the right to rely on the public use, offer for sale, sale, or installation of the devices described in the publications identified herein once Defendants have had a fair opportunity to take discovery on these subjects.

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- AT&T Wireless Website, Archived November 5, 2002 at: https://web.archive.org/web/20021105112134/http://www.attws.com:80/ (last accessed June 11, 2025)
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: "AXA"; Product Code: TR-417-A2"; Record Option: 1/2 "Detail"; Attachment: "Exhibit 13" (last accessed June 11, 2025) ("FCC Cover Letter")
- Phonescoop.com, *Ericsson T61LX*, https://www.phonescoop.com/phones/phone.php?p=172 (last accessed June 13, 2025)

As described in the following claim chart, the asserted claims of U.S. Patent No. 8,456,365 (the "'365 Patent"), are invalid as anticipated by T61LX. To the extent that T61LX is found not to anticipate one or more of the asserted claims of the '365 Patent, these claims are invalid as obvious in view of T61LX alone or as modified in view of or in combination with other prior art references disclosed in Defendants' Invalidity Contentions and accompanying charts, including without limitation as set forth below.

- U.S. Pat. 6,239,765 to Johnson et al. ("Johnson")

One of ordinary skill in the art, as of the priority date of the '458 Patent, would have known to combine or modify the prior art elements disclosed by the foregoing references using known methods, and to use these elements according to their established functions in order to achieve a known and predictable result.

These invalidity contentions are not an admission that the Defendants concede or acquiesces to any claim construction implied or suggested by Plaintiff's Complaint or Infringement Contentions. Nor are Defendants asserting any claim construction positions through these charts, including whether the preamble is a limitation. The portions of the prior art reference cited below are not exhaustive but are exemplary in nature. Defendants retain the right to update their constructions and contentions in view of this Court's claim construction order.[4]

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
Claim 1		
1[pre]	A mobile communication device, comprising:	To the extent the preamble is limiting, T61LX expressly or inherently discloses this claim element.

[4] Defendants reserve the right to supplement and/or alter this chart based on further investigation and ongoing discovery.

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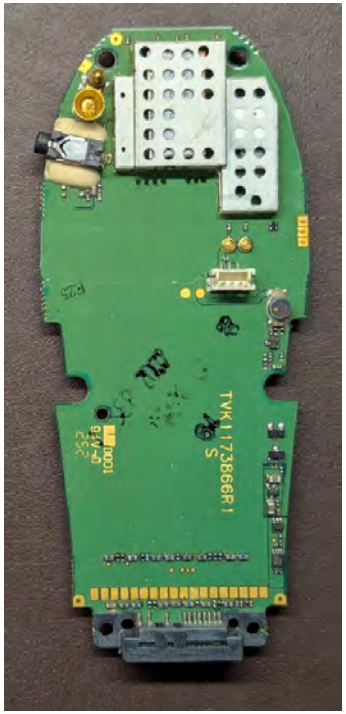
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		See, e.g., The Sony Ericsson T61LX is a mobile communication device.  *See* YouTube Website, https://www.youtube.com/watch?v=eUzudStjM6w at 0:01 (last accessed June 16, 2025).[5]

[5] This image depicts a Sony Ericsson model T60d. The T60d/LX and T61d/LX share the same FCC ID.

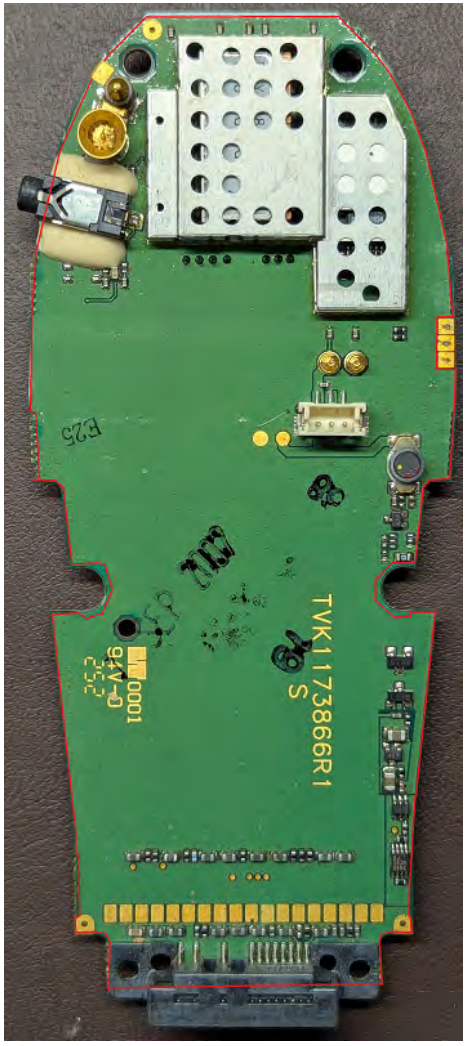
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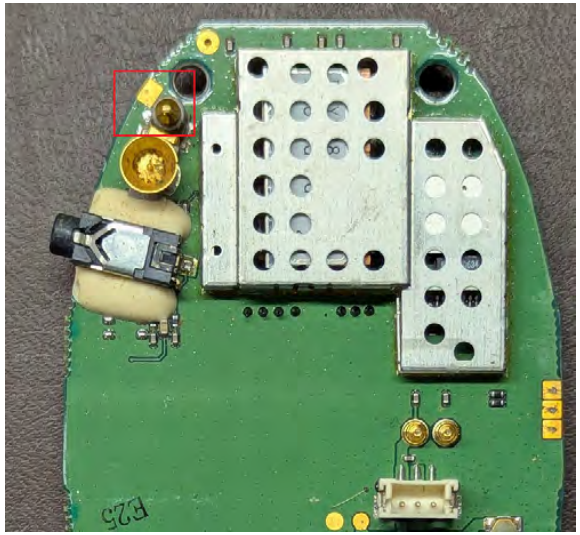
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
1[a]	a device housing;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* The Sony Ericsson T61LX has a device housing. 
1[b]	a printed circuit board, the printed circuit board comprising:	T61LX expressly or inherently discloses this claim element. *See, e.g.,*

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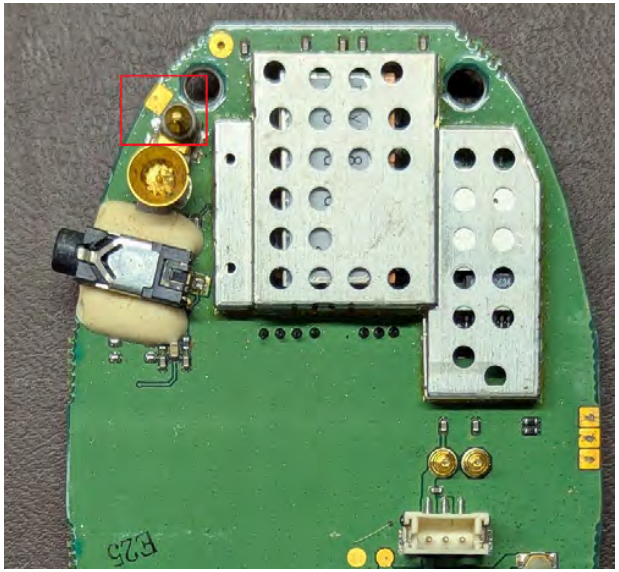
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		The Sony Ericsson T61LX has a printed circuit board. 
1[c]	[*the printed circuit board comprising*] a ground plane layer;	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board of the Sony Ericsson T61LX includes a ground plane layer.

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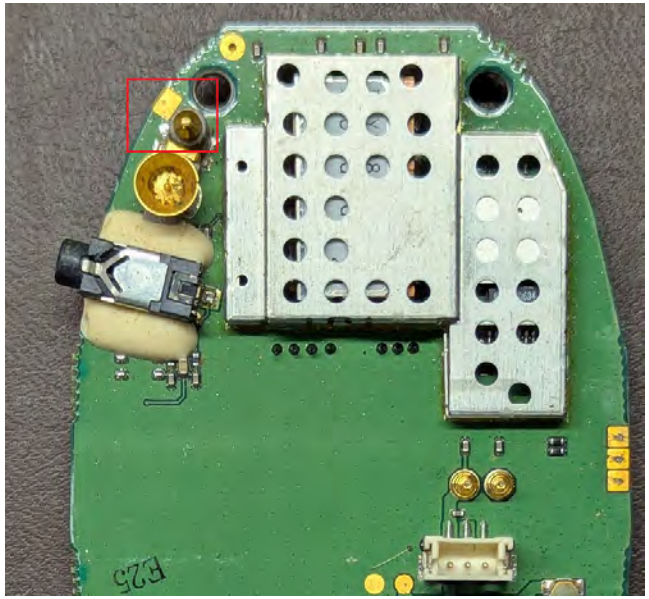
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
1[d]	[*the printed circuit board comprising*] a feeding point;	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board of the Sony Ericsson T61LX includes a feeding point. 
1[e]	a communication circuitry,	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board of the Sony Ericsson T61LX includes a communication circuitry, the communication circuitry being mounted on the printed circuit board.

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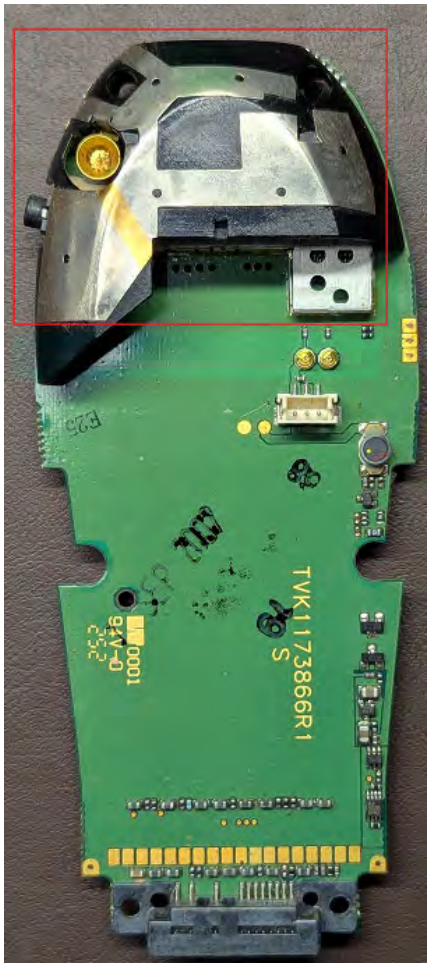
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
1[f]	the communication circuitry being mounted on the printed circuit board;	T61LX expressly or inherently discloses this claim element. *See* Claim 1[e].
1[g]	wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* The communication circuitry of the Sony Ericsson T61LX is coupled to the feeding point and to the ground plane layer.

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
1[h]	a multi-band antenna capable of operating at multiple frequency bands,	T61LX expressly or inherently discloses this claim element. *See, e.g.,*

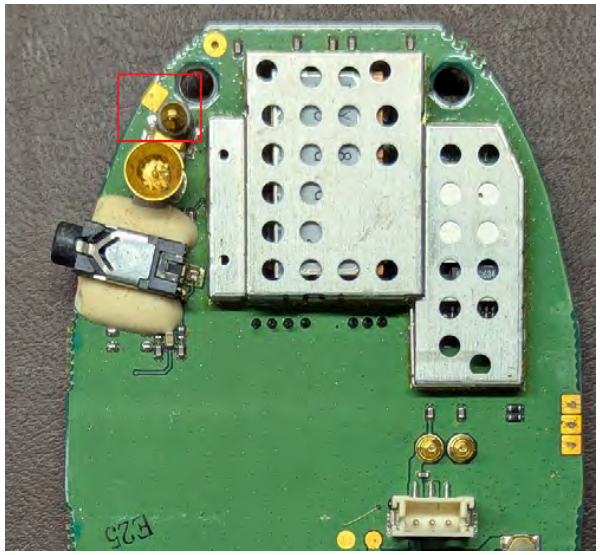
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		The Sony Ericsson T61LX includes a multi-band antenna capable of operating at multiple frequency bands, the multi-band antenna including an antenna element. 

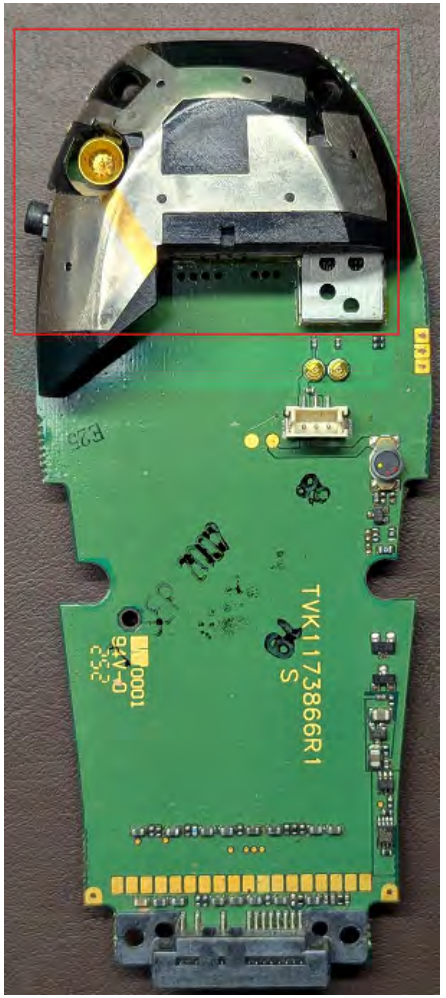
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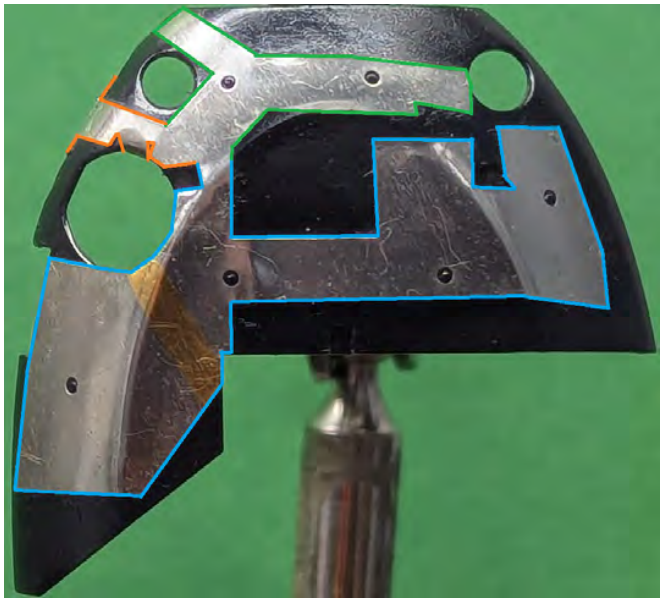
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		FCC Cover Letter at 1 (annotated): ERICSSON May 1, 2001 Federal Communications Commission Authorization & Evaluation Division 7435 Oakland Mills Road Columbia, Maryland 21046 Attention: Equipment Authorization Branch Subject: Type Acceptance for FCC ID: AXATR-417-A2 Model: T60d Gentlemen, Ericsson Inc. requests a grant of Type Acceptance for the above mentioned FCC Identifier. This portable transceiver is designed for use in the AMPS/DAMPS cellular telephone system. The mobile operates in the 800 MHz Domestic Public Cellular Radiotelephone Communications Services per Subpart H of Part 22 and operating in the 1900 MHz Domestic Public Cellular Radiotelephone Communications Services, as per Part 24. When operating in the 1900 MHz range, DAMPS technology will be employed. It meets the requirements of IS-137A for operation in cellular systems. Documents governing DAMPS were used as a guide.
1[i]	the multi-band antenna including an antenna element;	T61LX expressly or inherently discloses this claim element. *See* Claim 1[h].
1[j]	wherein the antenna element operates in cooperation with the ground plane layer;	T61LX expressly or inherently discloses this claim element. *See, e.g.*,

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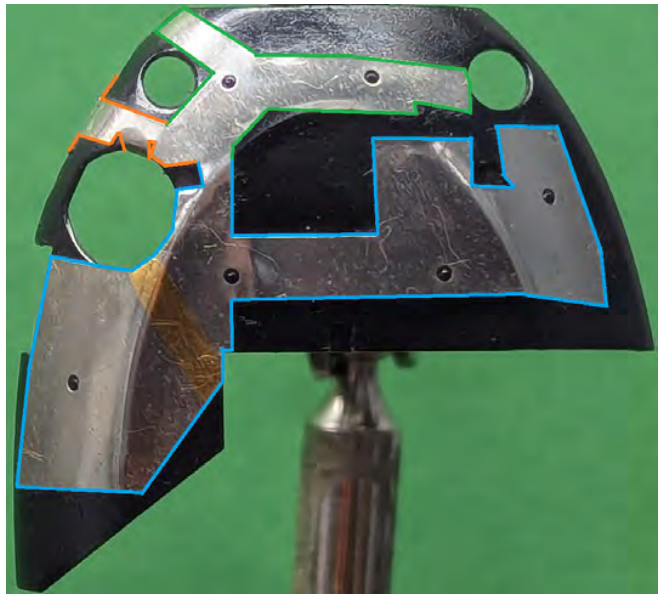
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		The antenna element of the Sony Ericsson T61LX operates in cooperation with the ground plane layer. 

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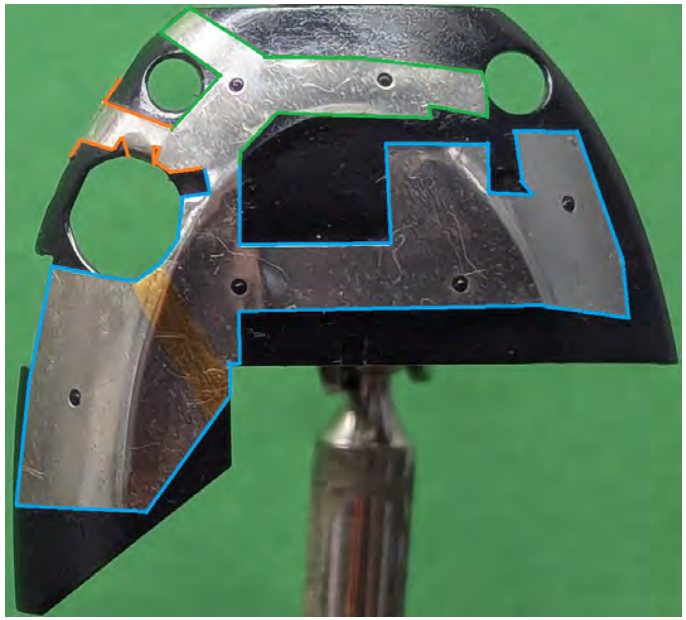
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
1[k]	the antenna element comprising:	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The antenna element of the Sony Ericsson T61LX includes a common conductor (orange below). 
1[l]	[*the antenna element comprising*] a common conductor;	T61LX expressly or inherently discloses this claim element. *See* Claim 1[k].

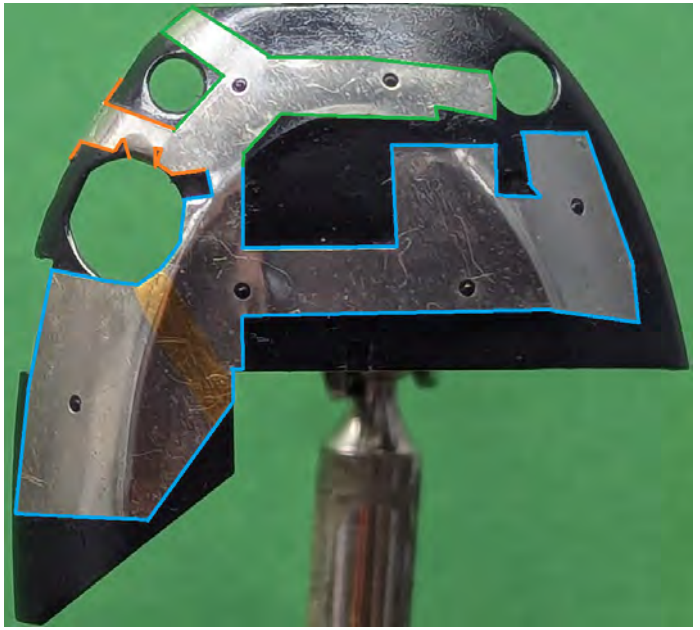
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
1[m]	[*the antenna element comprising*] a first radiating arm connected to the common conductor;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the Sony Ericsson T61LX includes a first radiating arm (blue below) connected to the common conductor. 
1[n]	[*the antenna element comprising*] a second radiating arm connected to the common conductor;	T61LX expressly or inherently discloses this claim element. *See, e.g.,*

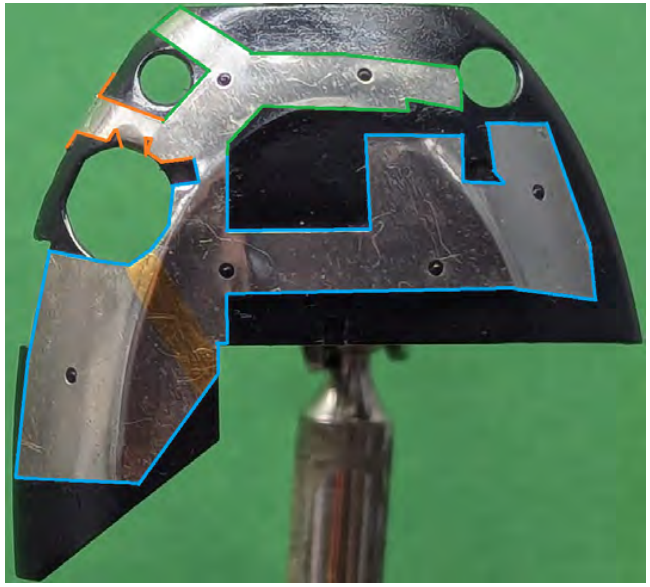
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		The antenna element of the Sony Ericsson T61LX includes a second radiating arm (green below) connected to the common conductor. 
1[o]	wherein the common conductor includes a feeding port, the feeding port being coupled to the feeding point;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* The common conductor (orange below) of the antenna element of the Sony Ericsson T61LX includes a feeding port, the feeding port being coupled to the feeding point.

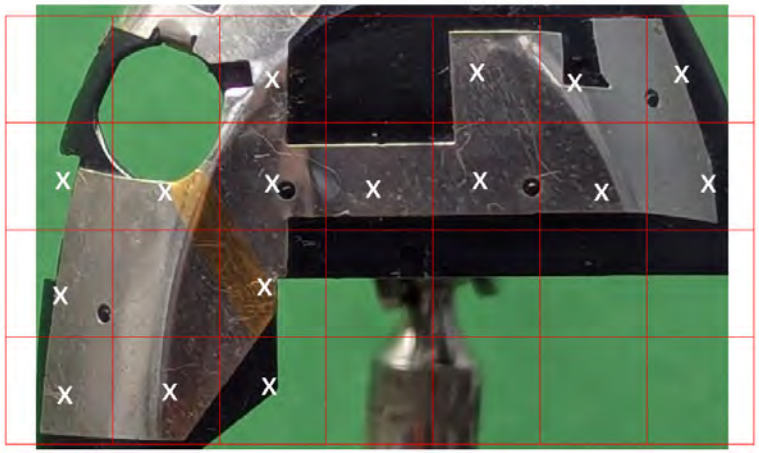
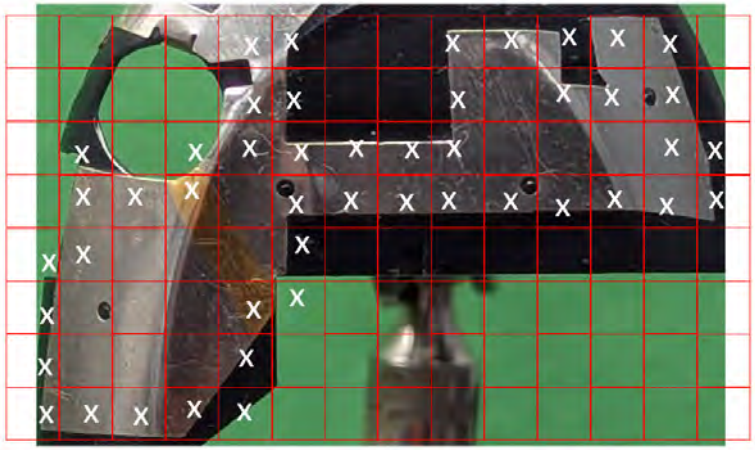
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
1[p]	wherein at least a portion of the first radiating arm and at least a portion of the second radiating arm are arranged on different planes;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* In the antenna element of the Sony Ericsson T61LX, at least a portion of the first radiating arm (blue below) and at least a portion of the second radiating arm (green below) are arranged on different planes.

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
1[q]	wherein the first radiating arm is at least partially shaped according to a grid dimension curve; and	T61LX expressly or inherently discloses this claim element. *See, e.g.,* The first radiating arm of the antenna element of the Sony Ericsson T61LX is at least partially shaped according to a grid-dimension curve. N1=16

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		 N2=47  Dg=log(47/16)/log(2)=1.55

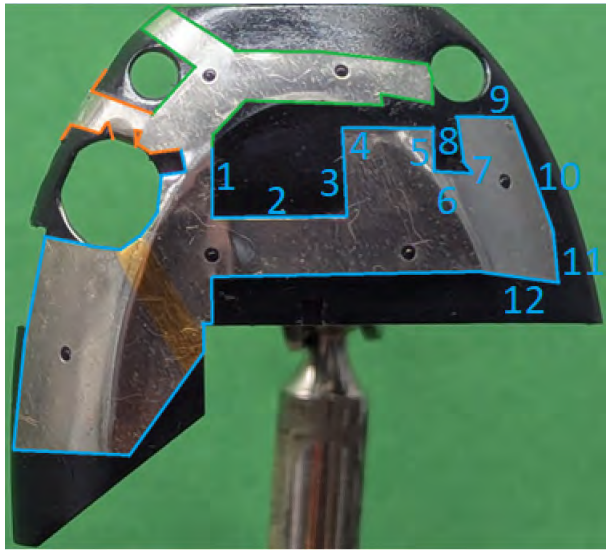
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
1[r]	wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board, the communication circuitry, and the multi-band antenna of the Sony Ericsson T61LX are arranged inside the device housing. 

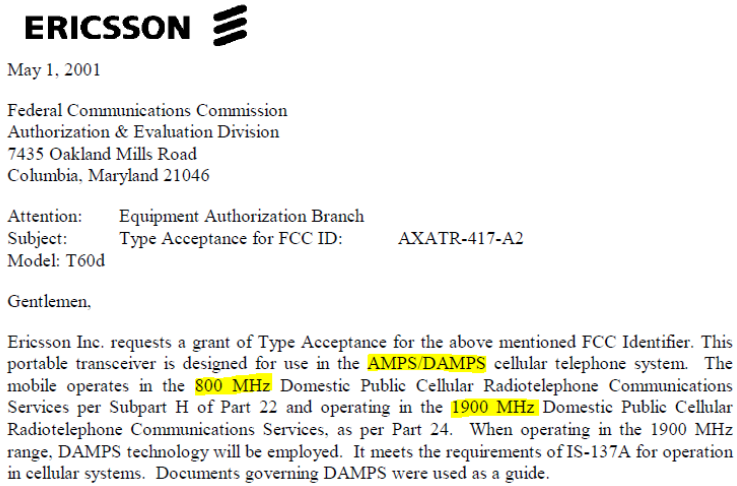
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
	Claim 2	
2[a]	The mobile communication device according to claim 1, wherein the first radiating arm comprises a first plurality of segments;	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The first radiating arm of the antenna element of the Sony Ericsson T61LX includes a first plurality of segments.

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
2[b]	wherein each segment of the first plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* Each segment of the first plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna. FCC Cover Letter at 1 (annotated):

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Fractus v. Geotab

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		

ERICSSON

May 1, 2001

Federal Communications Commission
Authorization & Evaluation Division
7435 Oakland Mills Road
Columbia, Maryland 21046

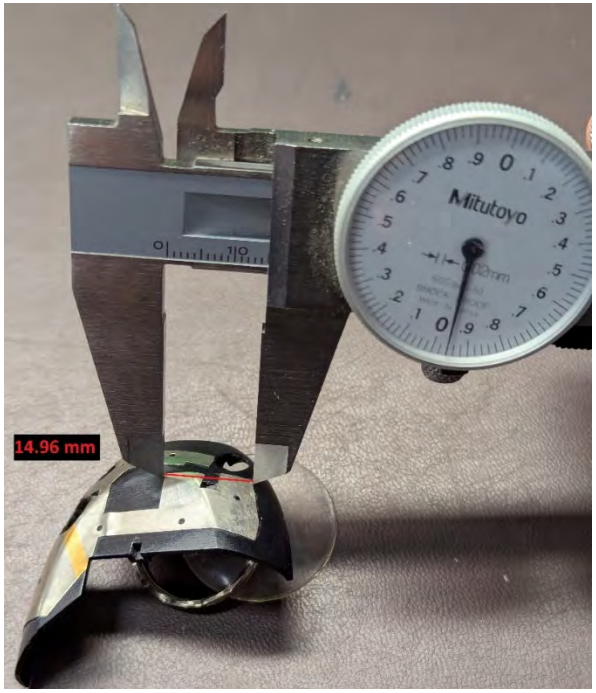
Attention: Equipment Authorization Branch
Subject: Type Acceptance for FCC ID: AXATR-417-A2
Model: T60d

Gentlemen,

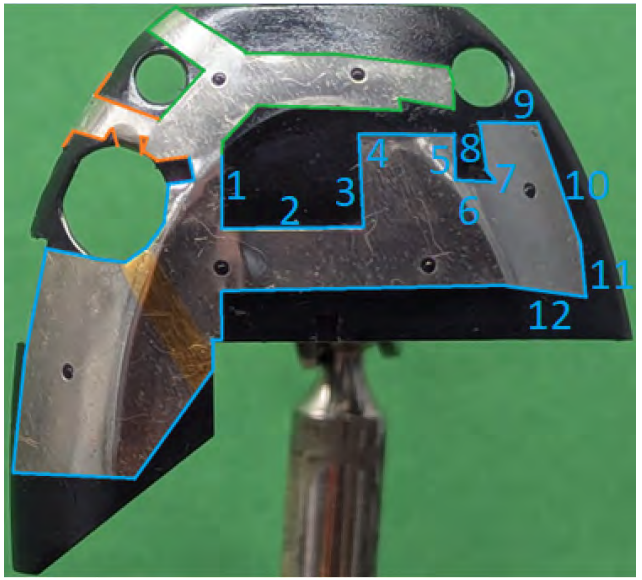
Ericsson Inc. requests a grant of Type Acceptance for the above mentioned FCC Identifier. This portable transceiver is designed for use in the AMPS/DAMPS cellular telephone system. The mobile operates in the 800 MHz Domestic Public Cellular Radiotelephone Communications Services per Subpart H of Part 22 and operating in the 1900 MHz Domestic Public Cellular Radiotelephone Communications Services, as per Part 24. When operating in the 1900 MHz range, DAMPS technology will be employed. It meets the requirements of IS-137A for operation in cellular systems. Documents governing DAMPS were used as a guide.

The shortest operating free-space wavelength of the multi-band antenna is 150 millimeters (corresponding to 1990 MHz). 1/10 of the shortest operating free-space wavelength of the multi-band antenna is 15 millimeters.

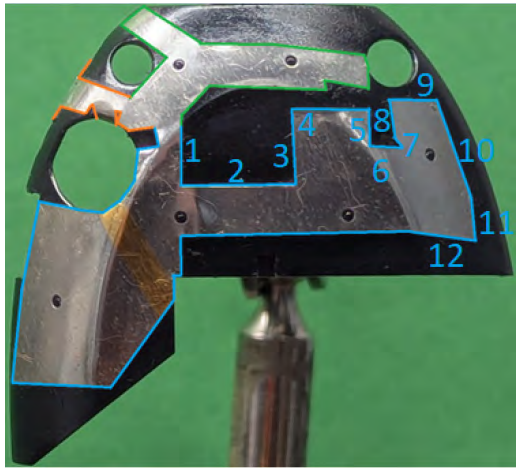
The longest segment of the plurality of segments is less than 15 mm.

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
2[c]	wherein the segments are spatially arranged such that each pair of adjacent segments forms a corner; and	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The segments are spatially arranged such that each pair of adjacent segments forms a corner.

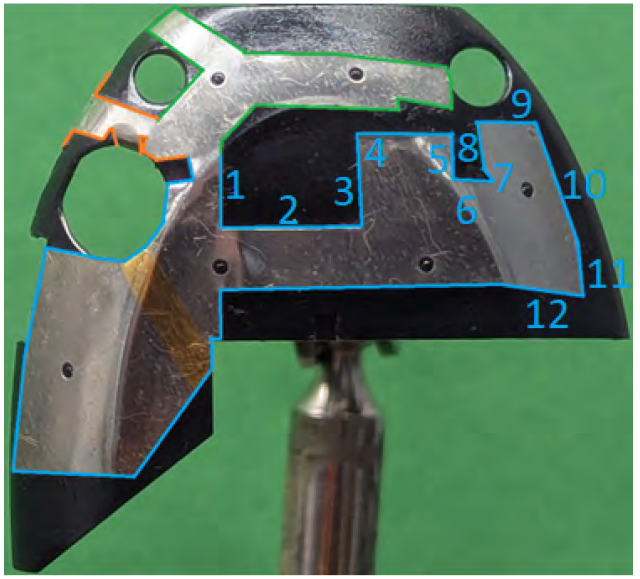
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
2[d]	wherein no two adjacent and connected segments form another longer straight segment; and	T61LX expressly or inherently discloses this claim element. *See, e.g.,* No two adjacent and connected segments form another longer straight segment.

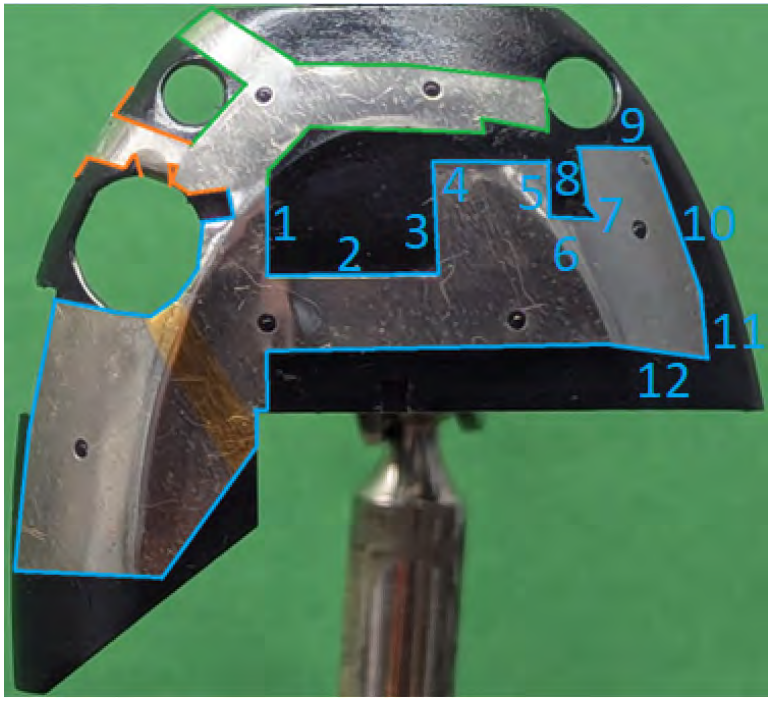
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
2[e]	wherein none of said segments intersect with another segment other than to form a closed loop.	T61LX expressly or inherently discloses this claim element. *See, e.g.*, None of said segments intersect with another segment other than to form a closed loop.

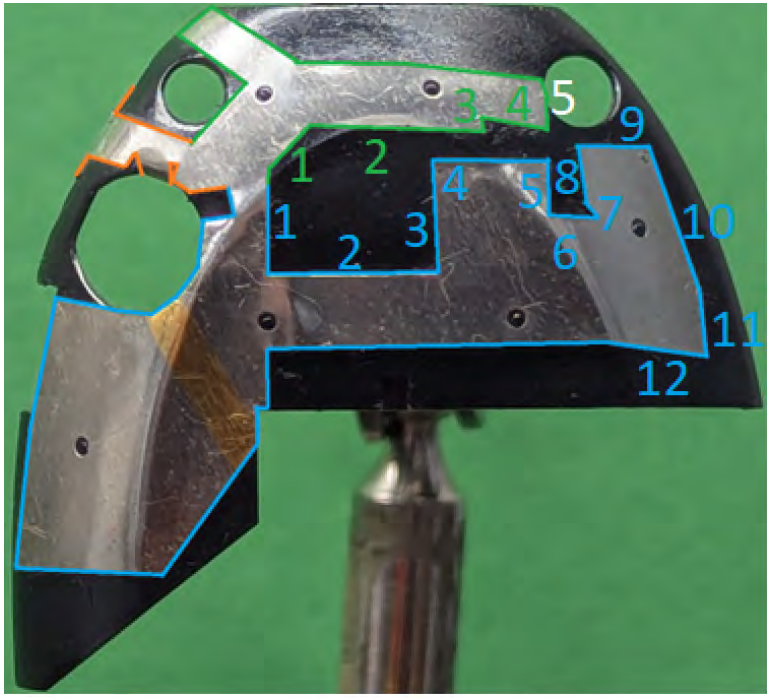
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
		Claim 4
4	The mobile communication device according to claim 2, wherein the first plurality of segments comprises at least ten segments.	T61LX expressly or inherently discloses this claim element. *See, e.g.*, In the Sony Ericsson T61LX, the first plurality of segments of the first radiating arm comprises at least ten segments.

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
	Claim 5	
5[a]	The mobile communication device according to claim 2, wherein the second radiating arm comprises a second plurality of segments;	T61LX expressly or inherently discloses this claim element. *See, e.g.*, In the Sony Ericsson T61LX, the second radiating arm comprises a second plurality of segments.

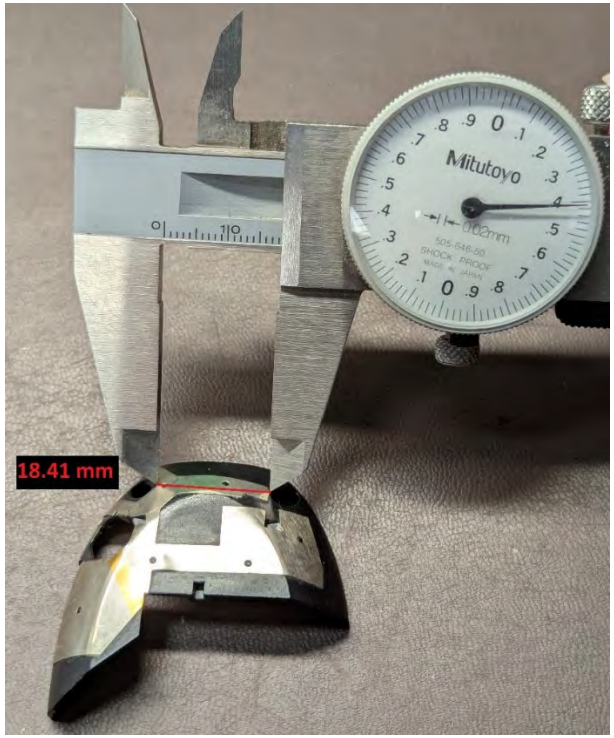
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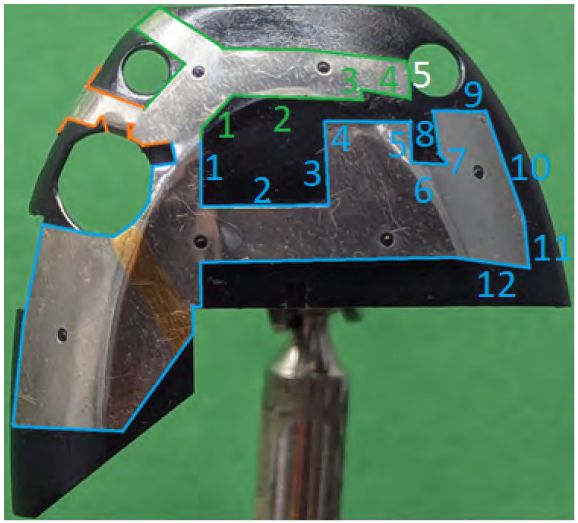
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
5[b]	wherein each segment of the second plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* Each segment of the second plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna. FCC Cover Letter at 1 (annotated):

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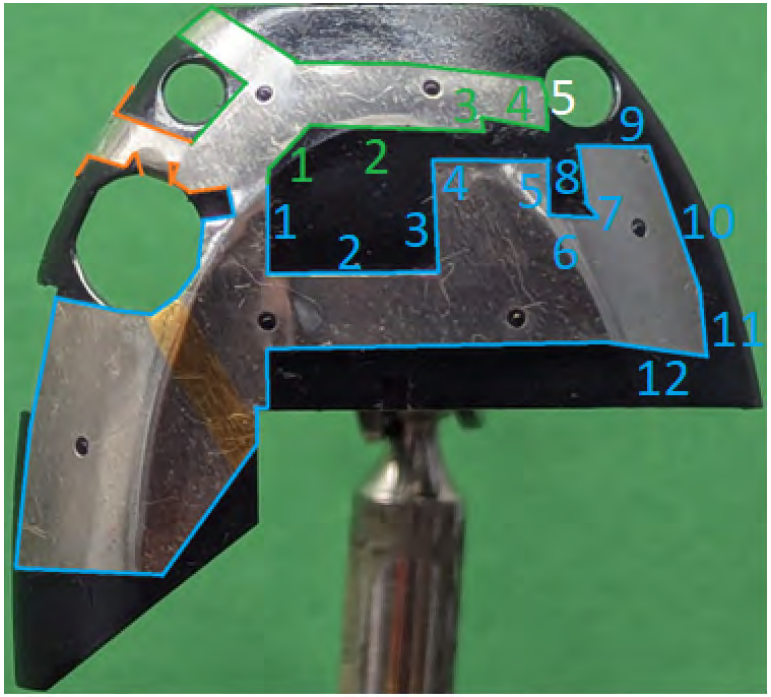
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		ERICSSON May 1, 2001 Federal Communications Commission Authorization & Evaluation Division 7435 Oakland Mills Road Columbia, Maryland 21046 Attention: Equipment Authorization Branch Subject: Type Acceptance for FCC ID: AXATR-417-A2 Model: T60d Gentlemen, Ericsson Inc. requests a grant of Type Acceptance for the above mentioned FCC Identifier. This portable transceiver is designed for use in the AMPS/DAMPS cellular telephone system. The mobile operates in the 800 MHz Domestic Public Cellular Radiotelephone Communications Services per Subpart H of Part 22 and operating in the 1900 MHz Domestic Public Cellular Radiotelephone Communications Services, as per Part 24. When operating in the 1900 MHz range, DAMPS technology will be employed. It meets the requirements of IS-137A for operation in cellular systems. Documents governing DAMPS were used as a guide. The shortest operating free-space wavelength of the multi-band antenna is 150 millimeters (corresponding to 1990 MHz). 1/10 of the shortest operating free-space wavelength of the multi-band antenna is 15 millimeters. The longest segment of the second plurality of segments is shorter than 15 mm.

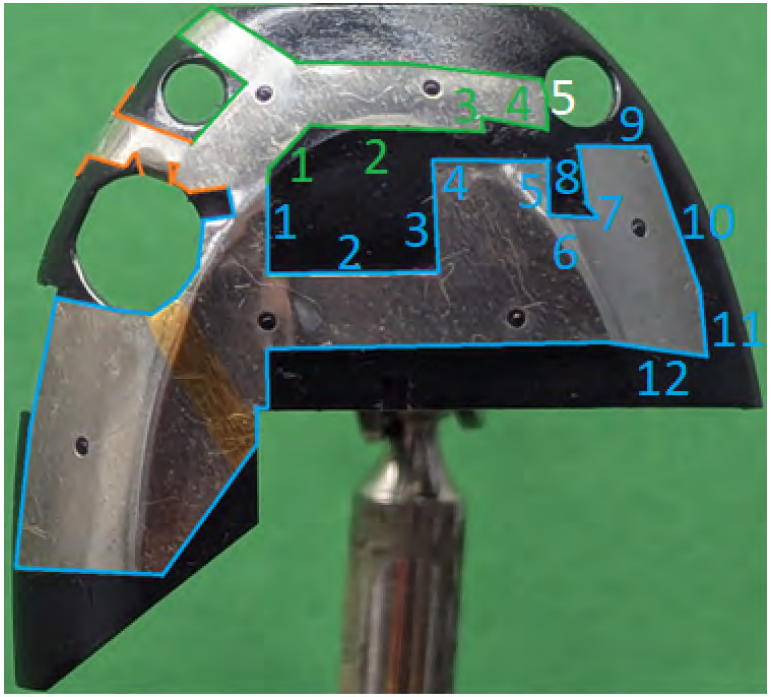
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		

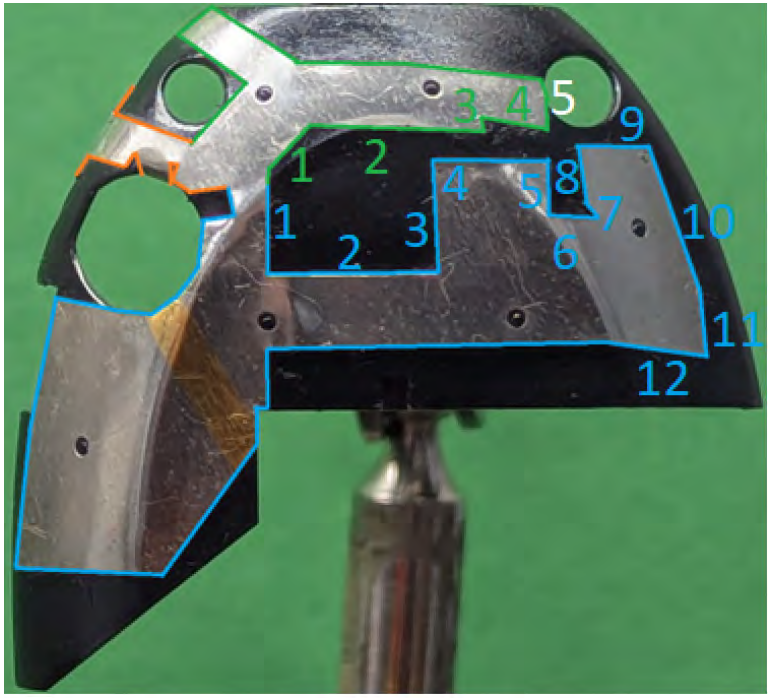
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
5[c]	wherein the segments are spatially arranged such that each pair of adjacent segments forms a corner; and	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The segments are spatially arranged such that each pair of adjacent segments forms a corner.

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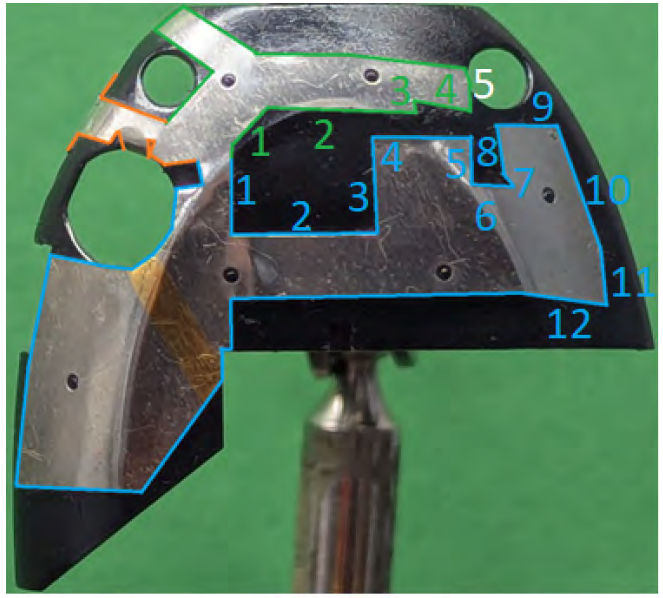
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
5[d]	wherein no two adjacent and connected segments form another longer straight segment; and	T61LX expressly or inherently discloses this claim element. *See, e.g.*, No two adjacent and connected segments form another longer straight segment.

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
5[e]	wherein none of said segments intersect with another segment other than to form a closed loop.	T61LX expressly or inherently discloses this claim element. *See, e.g.,* None of said segments intersect with another segment other than to form a closed loop.

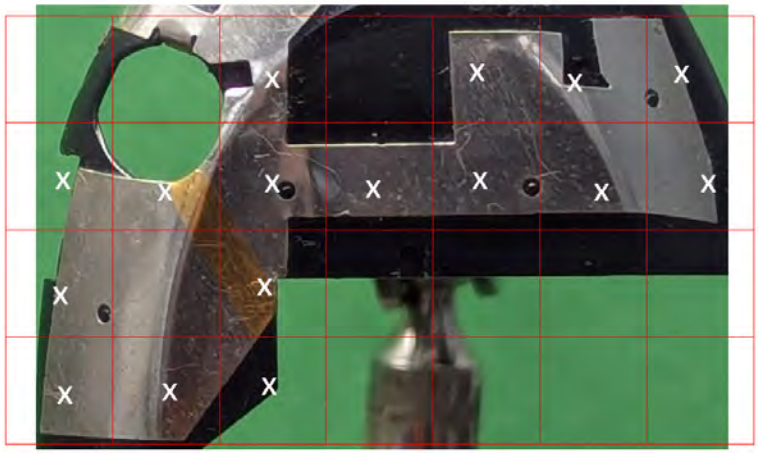
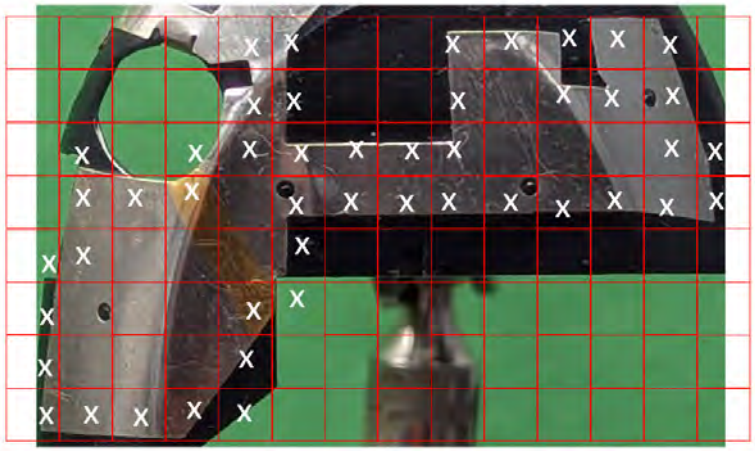
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
Claim 6		
6	The mobile communication device according to claim 5, wherein the first plurality of segments comprises more segments than the second plurality of segments.	T61LX expressly or inherently discloses this claim element. *See, e.g.*, In the antenna element of the Sony Ericsson T61LX, the first plurality of segments comprises more segments than the second plurality of segments.

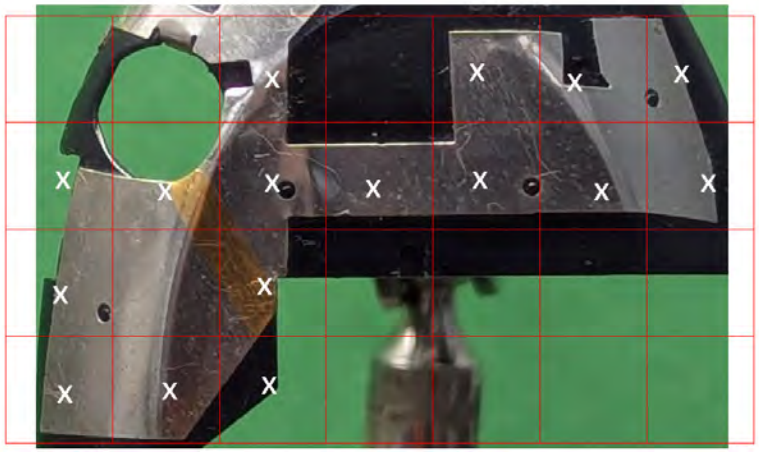
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
Claim 7		
7	The mobile communication device according to claim 1, wherein the grid-dimension curve has a grid dimension larger than 1.3.	T61LX expressly or inherently discloses this claim element. *See, e.g.*, In the Sony Ericsson T61LX, the grid-dimension curve has a grid dimension larger than 1.3. N1=16

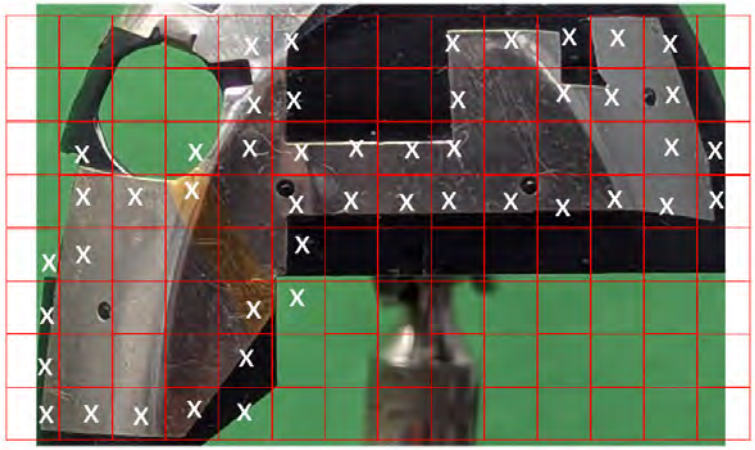
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		 N2=47  Dg=log(47/16)/log(2)=1.55

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
	Claim 8	
8	The mobile communication device according to claim 1, wherein the grid-dimension curve has a grid dimension larger than 1.5.	T61LX expressly or inherently discloses this claim element. *See, e.g.,* In the Sony Ericsson T61LX, the grid-dimension curve has a grid dimension larger than 1.5. N1=16  N2=47

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		 Dg=log(47/16)/log(2)=1.55
	Claim 12	
12	The mobile communication device according to claim 1, wherein an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the ground plane layer in less than 50% of an area of said footprint.	T61LX expressly or inherently discloses this claim element. To the extent T61LX does not expressly or inherently disclose this claim element, it would have been obvious for the T61LX to satisfy this claim element in view of U.S. Pat. 6,239,765 to Johnson et al. ***See, e.g.*, Johnson:** Johnson (FIG. 1) discloses an antenna assembly 20 that "may [be] implemented within single or multiple frequency wireless communication devices, for instance devices operating over…cellular telephone (824-890 MHz and 860-890 MHz), PCS device (1710-1880 MHz, 1750-1870 MHz, and 1850-1990 MHz)…frequency ranges…In alternative embodiments, the

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		dimensions of the antenna assembly 20 may be scaled to provide operation at other frequencies, including frequencies in the 800 MHz to 3,000 MHz range." (3:48-62).

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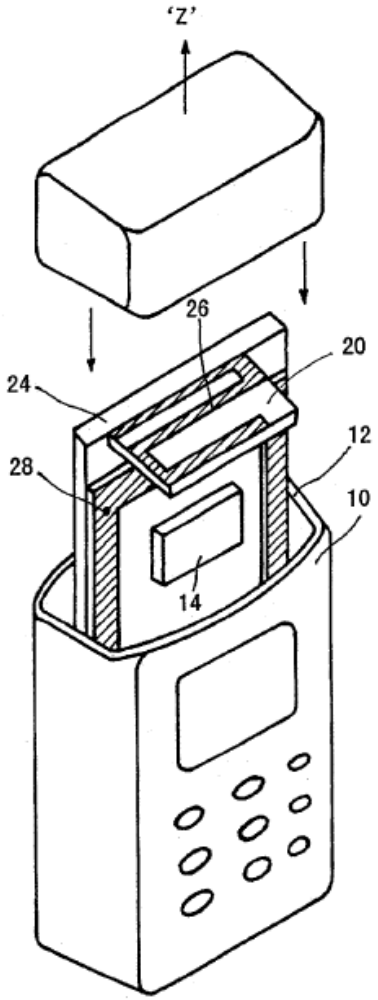
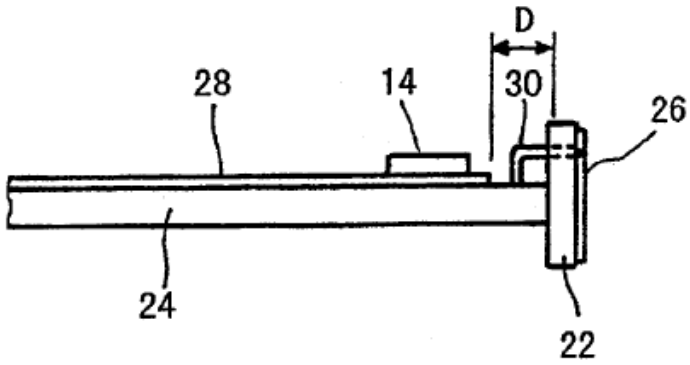
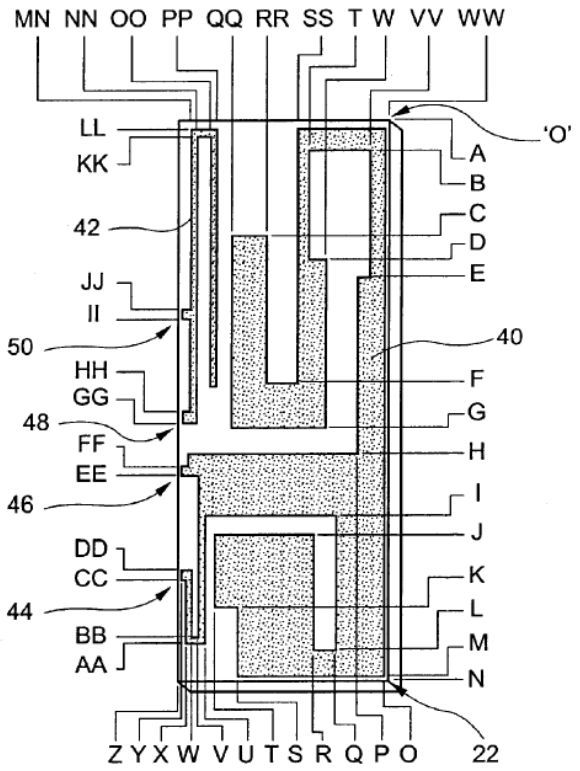


FIG. 1

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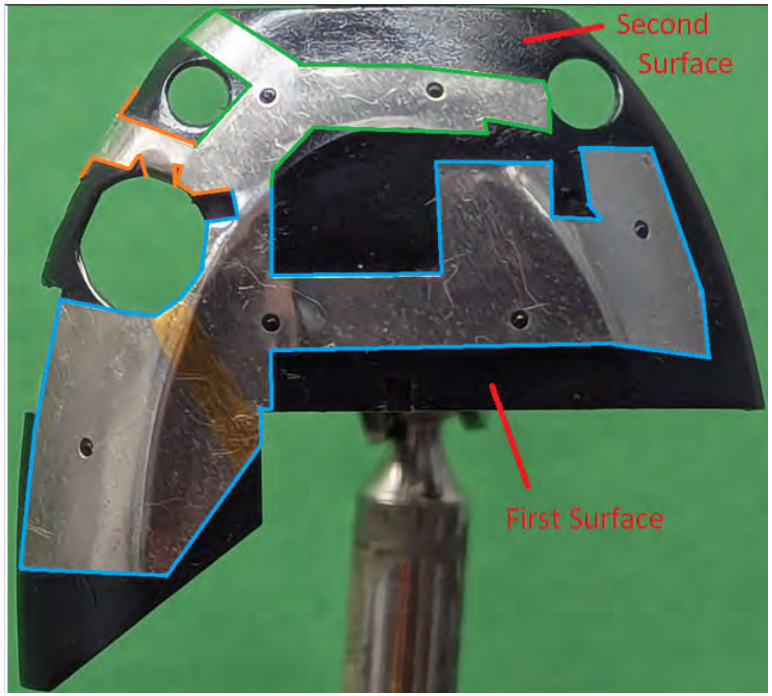
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		Johnson (FIG. 2) illustrates an embodiment "of the antenna assembly wherein the first planar element 22 is substantially perpendicular to the second planar element 24," the latter having the ground plane (4:35-37). While Johnson illustrates the first planar element 22 in FIG. 2 as flat, Johnson states "the first planar element 22…may be configured to conform to a portion of the housing 12, for example to assume a convex or more complex form…the design and selection of either the first or second planar elements 22,24 with reference to a particular wireless communication device may result in such complex shapes." (4:29-35).  ***FIG. 2*** Johnson (FIG. 9) illustrates the antenna assembly 20 as a tri-band antenna assembly 20 functioning across a cellular band (880-960 MHz), a PCS band (1710-1880 MHz) and the BLUETOOTH™ band (2.4-2.5 GHz.). Cellular and PCS band operation is effected through the first conductor trace 40," which is coupled to ground of the second planar element at point 44 and to the signal generating circuitry 14 via feedpoint 46." (5:35-44).

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		FIG. 9  When the tri-band antenna assembly 20 as shown in FIG. 9 is used in the configuration of FIG. 2, an orthogonal projection of a footprint of the antenna assembly 20 on a plane of the second planar element 24 overlaps the ground plane layer in less than 50% of an area of said footprint.

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		The configuration of FIG. 2, like the configuration of FIG. 1, is disclosed in Johnson as "away from the user's hand during operation" (3:66-67), which reduces blockage by the user's hand. In view of Johnson, one of ordinary skill in the art would have been motivated to re-orient the cellular antenna of the T61LX to face the top end of the housing in order to reduce the likelihood of blockage by the user's hand. There would have been a reasonable expectation of success in doing so because Johnson's antenna operates in substantially the same frequency ranges as the T61LX antenna, and has an inverted-F configuration like the T61LX antenna. Moreover, Johnson contemplates that the disclosed antenna will have a non-planar (e.g., convex) form, like the T61LX antenna, to accommodate available space within a device housing. Moreover, re-orienting the T61LX antenna as disclosed in Johnson would have been a mere design choice among configurations that were known in the art (see, e.g., the T61LX antenna configuration shown in FIG. 4 of Johnson as a known alternative). Thus, it would have been obvious for the T61LX to satisfy this claim element.
Claim 13		
13[a]	The mobile communication device according to claim 1, comprising: a dielectric mounting structure having a plurality of surfaces;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* The Sony Ericsson T61LX includes a dielectric mounting structure having a plurality of surfaces. At least a portion of the first radiating arm is arranged on a first surface of said plurality of surfaces; and at least a portion of the second radiating arm is arranged on a second surface of said plurality of surfaces, the second surface being different from the first surface.

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
13[b]	wherein at least a portion of the first radiating arm is arranged on a first surface of said plurality of surfaces; and	T61LX expressly or inherently discloses this claim element. *See* Claim 13[a].
13[c]	wherein at least a portion of the second radiating arm is arranged	T61LX expressly or inherently discloses this claim element. *See* Claim 13[a].

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
	on a second surface of said plurality of surfaces,	
13[d]	the second surface being different from the first surface.	T61LX expressly or inherently discloses this claim element. *See* Claim 13[a].
Claim 31		
31[pre]	A mobile communication device, comprising:	To the extent the preamble is limiting, T61LX expressly or inherently discloses this claim element. *See* Claim 1[pre].
31[a]	a device housing;	T61LX expressly or inherently discloses this claim element. *See* Claim 1[a].
31[b]	a printed circuit board, the printed circuit board comprising:	T61LX expressly or inherently discloses this claim element. *See* Claim 1[b].

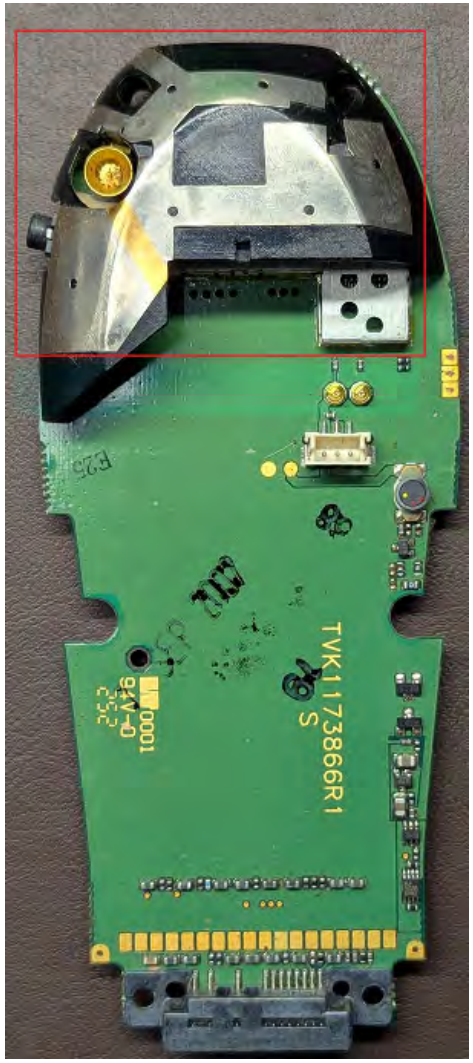
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
31[c]	[*the printed circuit board comprising*] a ground plane layer;	T61LX expressly or inherently discloses this claim element. *See* Claim 1[c].
31[d]	[*the printed circuit board comprising*] a feeding point;	T61LX expressly or inherently discloses this claim element. *See* Claim 1[d].
31[e]	a communication circuitry,	T61LX expressly or inherently discloses this claim element. *See* Claim 1[e].
31[f]	the communication circuitry being mounted on the printed circuit board;	T61LX expressly or inherently discloses this claim element. *See* Claim 1[e].
31[g]	wherein the communication circuitry is coupled to the	T61LX expressly or inherently discloses this claim element.

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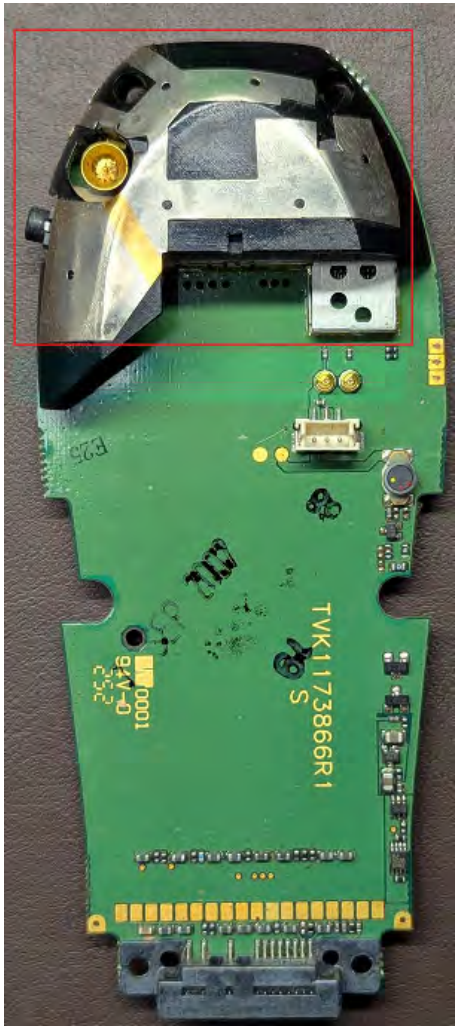
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
	feeding point and to the ground plane layer;	*See* Claim 1[f].
31[h]	a multi-band antenna capable of operating at multiple frequency bands, the multi-band antenna including:	T61LX expressly or inherently discloses this claim element. *See, e.g.,* The Sony Ericsson T61LX includes a multi-band antenna capable of operating at multiple frequency bands.

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		

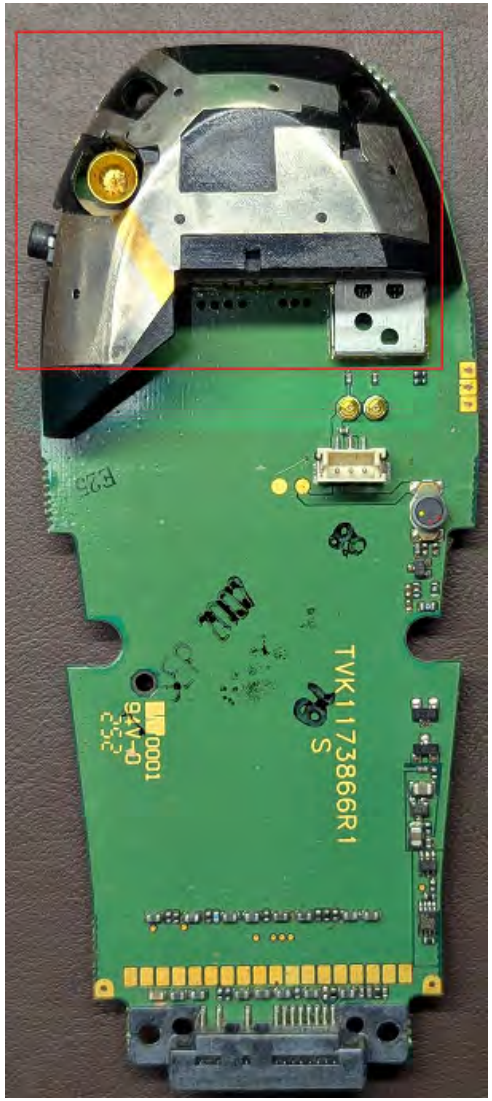
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		FCC Cover Letter at 1 (annotated): ERICSSON May 1, 2001 Federal Communications Commission Authorization & Evaluation Division 7435 Oakland Mills Road Columbia, Maryland 21046 Attention: Equipment Authorization Branch Subject: Type Acceptance for FCC ID: AXATR-417-A2 Model: T60d Gentlemen, Ericsson Inc. requests a grant of Type Acceptance for the above mentioned FCC Identifier. This portable transceiver is designed for use in the AMPS/DAMPS cellular telephone system. The mobile operates in the 800 MHz Domestic Public Cellular Radiotelephone Communications Services per Subpart H of Part 22 and operating in the 1900 MHz Domestic Public Cellular Radiotelephone Communications Services, as per Part 24. When operating in the 1900 MHz range, DAMPS technology will be employed. It meets the requirements of IS-137A for operation in cellular systems. Documents governing DAMPS were used as a guide.
31[i]	[*the multi-band antenna including*] a dielectric mounting structure having a plurality of surfaces;	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The multi-band antenna of the Sony Ericsson T61LX includes a dielectric mounting structure having a plurality of surfaces.

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		

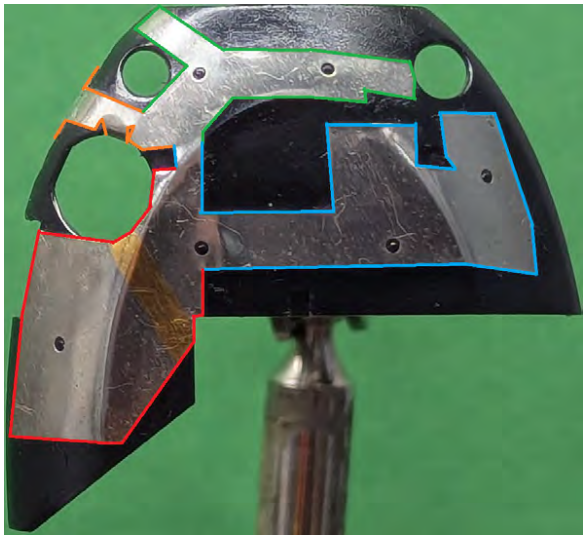
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
31[j]	[*the multi-band antenna including*] an antenna element,	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The multi-band antenna of the Sony Ericsson T61LX includes an antenna element, the antenna element coupled to the feeding point and operating in cooperation with the ground plane layer.

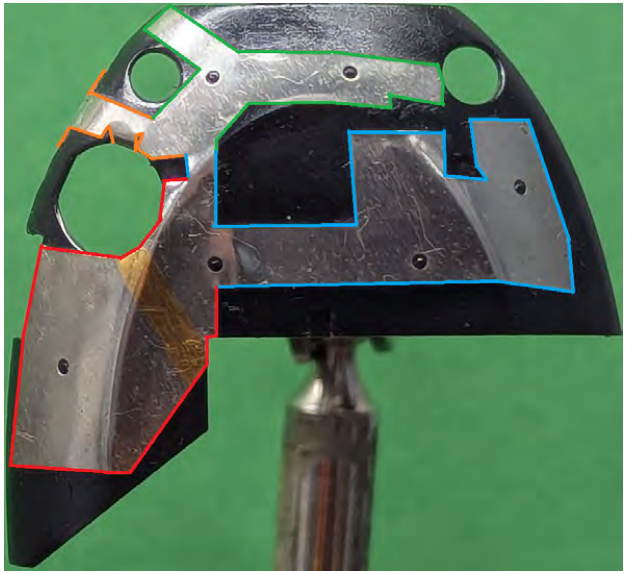
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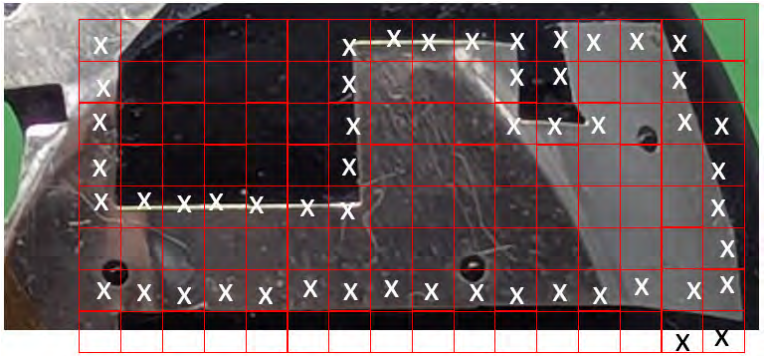
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
31[k]	the antenna element being coupled to the feeding point and	T61LX expressly or inherently discloses this claim element. *See* Clim 31[j].
31[l]	[*the antenna element* …] operating in cooperation with the ground plane layer;	T61LX expressly or inherently discloses this claim element. *See* Claim 31[j].
31[m]	wherein the antenna element comprises a first radiating arm arranged on two or more surfaces of the plurality of surfaces of the dielectric mounting structure;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the multi-band antenna of the Sony Ericsson T61LX includes a first radiating arm (blue and red below) arranged on two or more surfaces of the plurality of surfaces of the dielectric mounting structure.

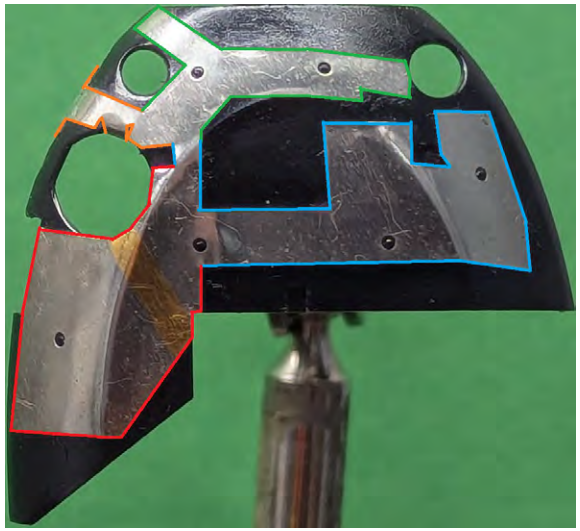
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
31[n]	the first radiating arm comprising: a first section shaped according to a grid dimension curve;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* The first radiating arm comprises a first section (blue below) shaped according to a grid-dimension curve.

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		 N1=24  N2=52

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		 Dg=log(52/24)/log(2)=1.11
31[o]	[*the first radiating arm comprising* …] a second section connected to the grid-dimension section,	T61LX expressly or inherently discloses this claim element. *See, e.g.*, The first radiating arm includes a second section (red below) connected to the grid-dimension section, the second section having a width different from a width of the first section.

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
31[p]	the second section having a width different from a width of the first section; and	T61LX expressly or inherently discloses this claim element. *See* Claim 31[o].
31[q]	wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.	T61LX expressly or inherently discloses this claim element. See, e.g., The printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.

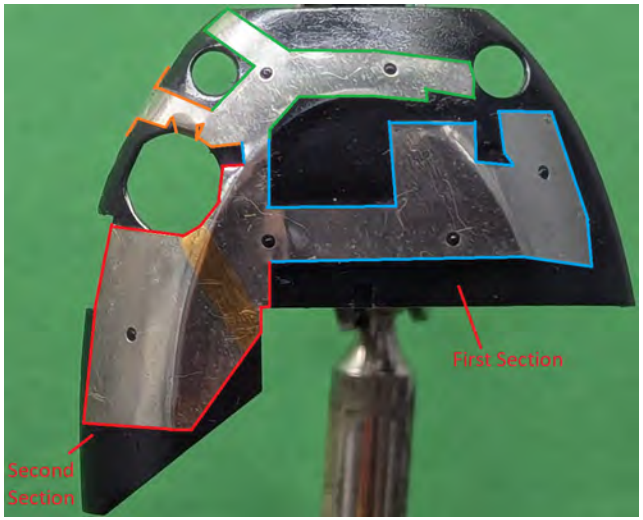
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		

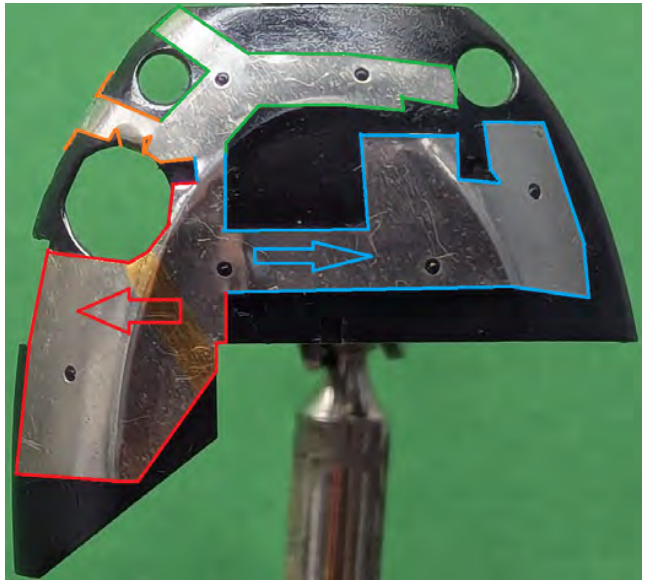
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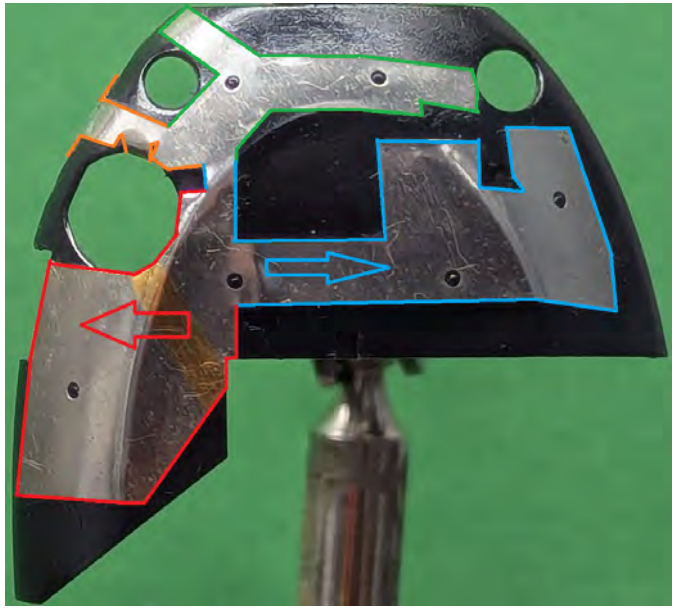
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
	Claim 32	
32[a]	The mobile communication device according to claim 31, wherein the first section is arranged on a first surface of said plurality of surfaces; and	T61LX expressly or inherently discloses this claim element. *See, e.g.*, In the Sony Ericsson T61LX, the first section (blue below) of the first radiating arm is arranged on a first surface of said plurality of surfaces and the second section (red below) is arranged on a

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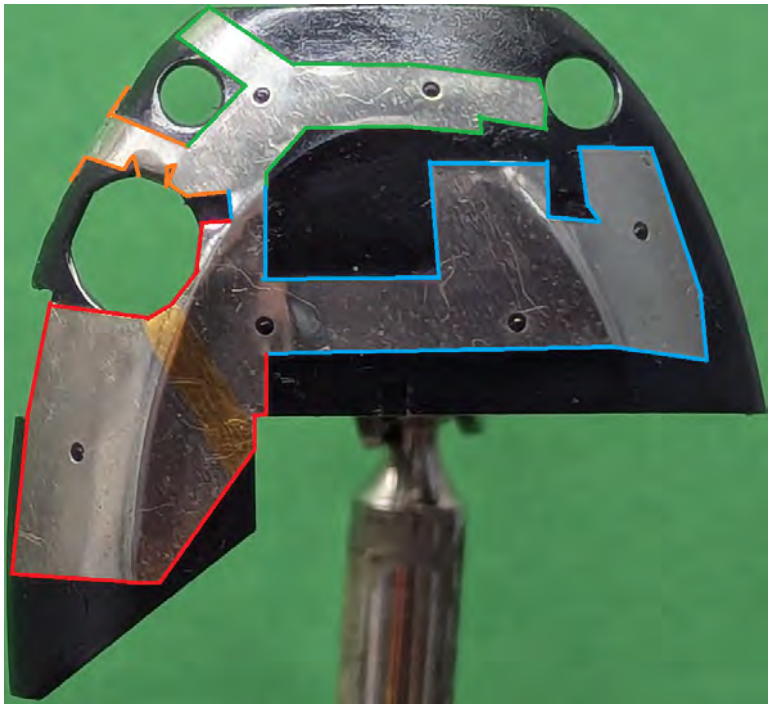
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		second surface of said plurality of surfaces, the second surface being different from the first surface. 
32[b]	wherein the second section is arranged on a second surface of said plurality of surfaces,	T61LX expressly or inherently discloses this claim element. *See* Claim 32[a].
32[c]	the second surface being different from the first surface.	T61LX expressly or inherently discloses this claim element. *See* Claim 32[a].

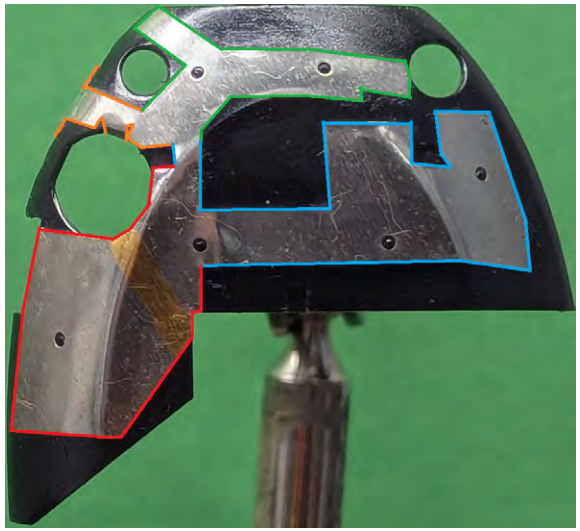
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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
	Claim 35	
35[a]	The mobile communication device according to claim 31, wherein the first section extends along a first direction and the second section extends along a second direction,	T61LX expressly or inherently discloses this claim element. *See, e.g.,* In the Sony Ericsson T61LX, the first section (blue below) of the first radiating arm extends along a first direction and the second section (red below) of the first radiating arm extends along a second direction, the second direction being different from the first direction. 
35[b]	the second direction being different from the first direction.	T61LX expressly or inherently discloses this claim element.

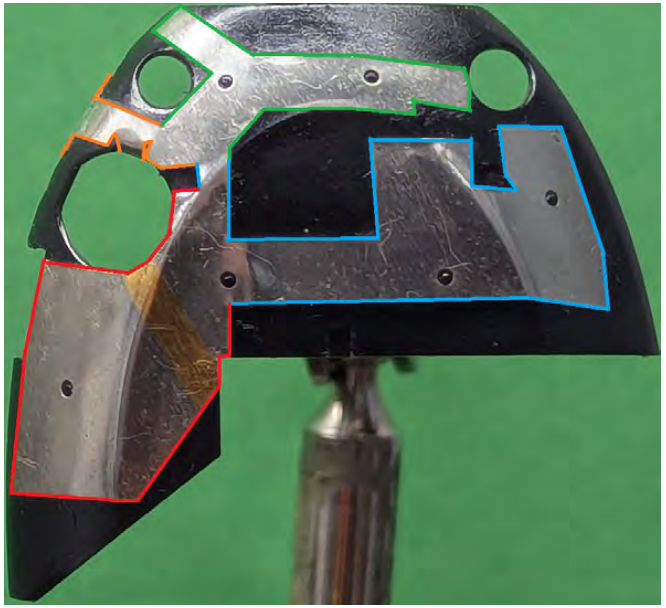
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		See Claim 35[a].
Claim 36		
36	The mobile communication device according to claim 35, wherein the second direction is substantially opposite to the first direction.	T61LX expressly or inherently discloses this claim element. *See, e.g.*, In the Sony Ericsson T61LX, the second direction is substantially opposite to the first direction. 

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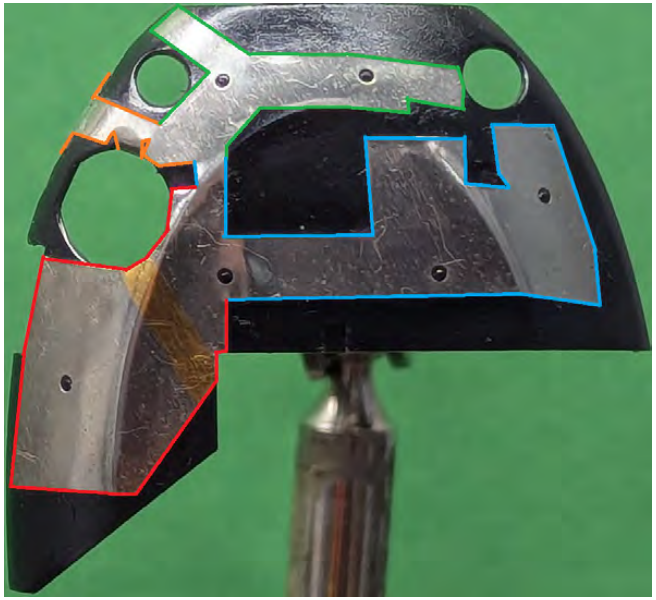
Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
	Claim 37	
37[a]	The mobile communication device according to claim 31, wherein the antenna element further comprises: a common conductor;	T61LX expressly or inherently discloses this claim element. *See, e.g.,* The antenna element of the multi-band antenna of the Sony Ericsson T61LX further includes a common conductor (orange below). 

Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
37[b]	a second radiating arm;	The antenna element of the multi-band antenna of the Sony Ericsson T61LX further includes a second radiating arm (green below). 
37[c]	wherein each of the first radiating arm and the second radiating arm is connected to the common conductor; and	T61LX expressly or inherently discloses this claim element. *See, e.g.,* Each of the first radiating arm (blue below) and the second radiating arm (green below) is connected to the common conductor (orange below).

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
37[d]	wherein the second radiating arm is arranged on at least one surface of the plurality of surfaces of the dielectric mounting structure.	T61LX expressly or inherently discloses this claim element. *See, e.g.,* In the Sony Ericsson T61LX, the second radiating arm (green below) is arranged on at least one surface of the plurality of surfaces of the dielectric mounting structure.

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		
	Claim 41	
41	The mobile communication device according to claim 31, wherein an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the ground plane layer in less than 50% of an area of said footprint.	T61LX expressly or inherently discloses this claim element. To the extent T61LX does not expressly or inherently disclose this claim element, it would have been obvious for the T61LX to satisfy this claim element in view of U.S. Pat. 6,239,765 to Johnson et al. ***See, e.g.*, Johnson:** Johnson (FIG. 1) discloses an antenna assembly 20 that "may [be] implemented within single or multiple frequency wireless communication devices, for instance devices operating over…cellular telephone (824-890 MHz and 860-890 MHz), PCS device (1710-1880 MHz, 1750-1870 MHz, and 1850-1990 MHz)…frequency ranges…In alternative embodiments, the

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		dimensions of the antenna assembly 20 may be scaled to provide operation at other frequencies, including frequencies in the 800 MHz to 3,000 MHz range." (3:48-62).

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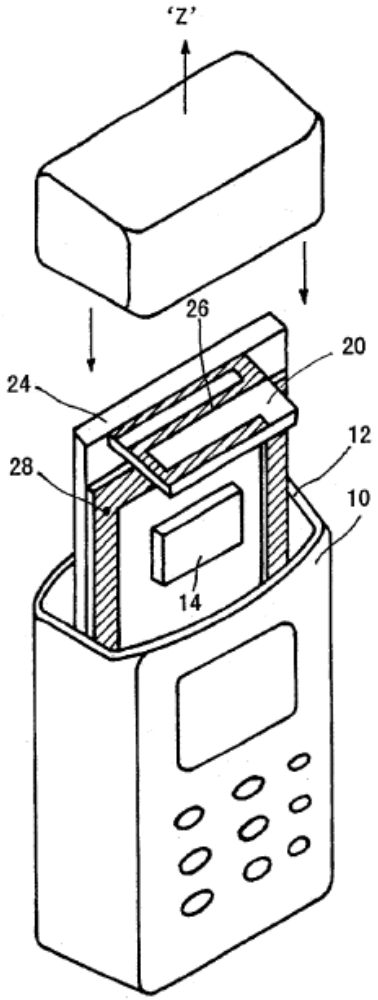
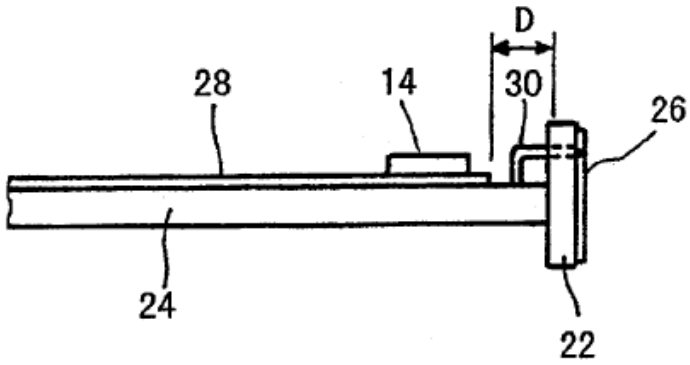
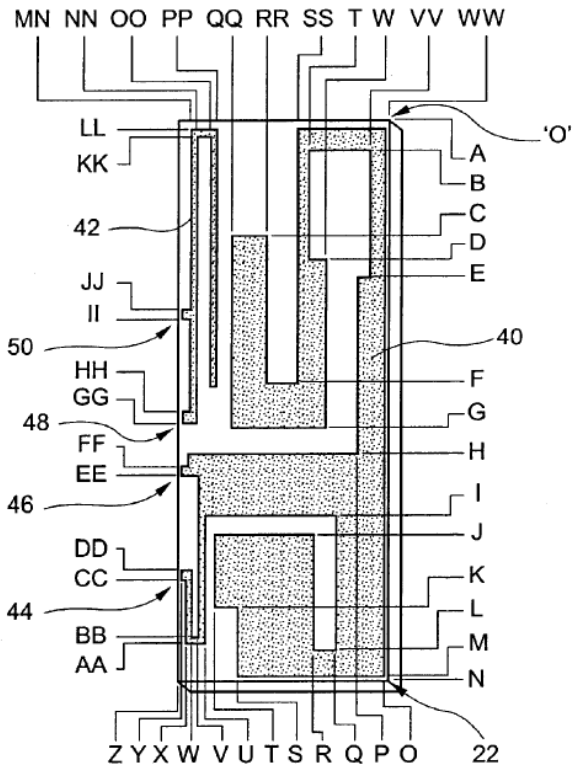


FIG. 1

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		Johnson (FIG. 2) illustrates an embodiment "of the antenna assembly wherein the first planar element 22 is substantially perpendicular to the second planar element 24," the latter having the ground plane (4:35-37). While Johnson illustrates the first planar element 22 in FIG. 2 as flat, Johnson states "the first planar element 22…may be configured to conform to a portion of the housing 12, for example to assume a convex or more complex form…the design and selection of either the first or second planar elements 22,24 with reference to a particular wireless communication device may result in such complex shapes." (4:29-35).  ***FIG. 2*** Johnson (FIG. 9) illustrates the antenna assembly 20 as a tri-band antenna assembly 20 functioning across a cellular band (880-960 MHz), a PCS band (1710-1880 MHz) and the BLUETOOTH™ band (2.4-2.5 GHz.). Cellular and PCS band operation is effected through the first conductor trace 40," which is coupled to ground of the second planar element at point 44 and to the signal generating circuitry 14 via feedpoint 46." (5:35-44).

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		FIG. 9  When the tri-band antenna assembly 20 as shown in FIG. 9 is used in the configuration of FIG. 2, an orthogonal projection of a footprint of the antenna assembly 20 on a plane of the second planar element 24 overlaps the ground plane layer in less than 50% of an area of said footprint.

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Claim No.	U.S. Patent No. 8,456,365 B2	T61LX
		The configuration of FIG. 2, like the configuration of FIG. 1, is disclosed in Johnson as "away from the user's hand during operation" (3:66-67), which reduces blockage by the user's hand. In view of Johnson, one of ordinary skill in the art would have been motivated to re-orient the cellular antenna of the T61LX to face the top end of the housing in order to reduce the likelihood of blockage by the user's hand. There would have been a reasonable expectation of success in doing so because Johnson's antenna operates in substantially the same frequency ranges as the T61LX antenna, and has an inverted-F configuration like the T61LX antenna. Moreover, Johnson contemplates that the disclosed antenna will have a non-planar (e.g., convex) form, like the T61LX antenna, to accommodate available space within a device housing. Moreover, re-orienting the T61LX antenna as disclosed in Johnson would have been a mere design choice among configurations that were known in the art (see, e.g., the T61LX antenna configuration shown in FIG. 4 of Johnson as a known alternative). Thus, it would have been obvious for the T61LX to satisfy this claim element.

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INVALIDITY CONTENTIONS FOR U.S. PATENT NO. 8,456,365 B2
BASED ON THE BLACKBERRY 6750 ("BLACKBERRY 6750")

Based upon Plaintiff's Complaint, Infringement Contentions, and apparent claim constructions and application of the claims to Defendants' accused products, as best as they can be deciphered, the reference charted below anticipates or at least renders obvious some or all of claims 1, 2, 4, 5, 6, 7, 8, 12, 13, 31, 32, 35, 36, 37, and 41 (the "'365 Asserted Claims")[1]. These invalidity contentions are not an admission by the Defendants that the accused products are covered by or infringe the asserted claims, particularly when these claims are properly construed and applied.

Pre-AIA law applies because the '365 Patent was filed on August 13, 2008, before March 16, 2013.

Research in Motion's ("RIM") Blackberry 6750, as publicly demonstrated, known, offered for sale, sold, and/or used by RIM and/or customers of RIM, or otherwise available to the public, including in this country, ("Blackberry 6750") was approved by the FCC on August 19, 2002[2] and released by at least December 2002.[3] Thus, the Blackberry 6750 is available as prior art at least under pre-AIA 35 U.S.C. § 102(a)-(b), or (g)(2) and 103(a). At least the following documents provide evidence as to the date the Blackberry 6750 was "offered for sale or publicly used or known," "the date the offer or use of the item took place or the information became known", and the "identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known"[4]:

[1] Defendants understand that, by not charting claims 3, 9-11, 14-30, 33-34, 38-40, and 42-45 in its Infringement Contentions, Plaintiff does not assert these claims against Defendants.

[2] *See* PhoneScoop.com, Blackberry 6750, https://www.phonescoop.com/phones/phone.php?p=190 (last accessed June 18, 2025); PhoneArena.com, Blackberry 6750, https://www.phonearena.com/phones/BlackBerry-6750_id490 (last accessed June 18, 2025).

[3] *See* PhoneDB.com, Blackberry 6750, https://phonedb.net/index.php?m=device&id=1465&c=rim_blackberry_6750 (last accessed June 18, 2025)

[4] Defendants do not yet have complete information regarding the dates by which this product was publicly disclosed, made, used, sold, or offered for sale, the circumstances under which the research, design, and development activities were conducted, and the identities of the particular individuals involved in such activities. Defendants anticipate that the actual dates, circumstances, and identities of individuals will be the subject of third party discovery during this lawsuit. Defendants therefore reserve the right to amend and/or supplement its Invalidity Contentions and this chart if additional information becomes available during the course of discovery. The date the Blackberry 6750 was "offered for sale or publicly used or known," as well as "the date the offer or use of the item took place or the information became known" is at least as early as the dates identified in the published documents. The "identity of the person or entity which made the use or which made and received the offer, or the person or entity which made the information known or to whom it was made known" includes at least those persons associated with the publication(s), press releases, and conference attendees, or other documents associated with each version on the Blackberry 6750. Defendants also reserve the right to rely on the public use, offer for sale, sale, or installation of the devices described in the publications identified herein once Defendants have had a fair opportunity to take discovery on these subjects.

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- PhoneScoop.com, *Blackberry 6750*, https://www.phonescoop.com/phones/phone.php?p=190 (last accessed June 18, 2025)
- PhoneDB.com, *Blackberry 6750*, https://phonedb.net/index.php?m=device&id=1465&c=rim_blackberry_6750 (last accessed June 18, 2025)
- PhoneArena.com, *Blackberry 6750*, https://www.phonearena.com/phones/BlackBerry-6750_id490 (last accessed June 18, 2025)
- Wikipedia, "List of BlackBerry products" at: https://en.wikipedia.org/wiki/List_of_BlackBerry_products (last accessed June 18, 2025)
- PocketLint, "The history of Blackberry: The best BlackBerry phones that changed the world" at https://www.pocket-lint.com/farewell-blackberry-os-here-are-the-23-best-blackberry-phones-that-changed-the-world/ (last accessed June 18, 2025)
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: "L6A"; Product Code: "R6120CN"; Record Option: 1/2 "Detail"; Attachment: "int photos" (last accessed June 11, 2025) ("FCC Internal Photos")
- FCC ID Search, https://www.fcc.gov/oet/ea/fccid (Grantee Code: "L6A"; Product Code: "R6120CN"; Record Option: 1/2 "Detail"; Attachment: "user manual" (last accessed June 11, 2025) ("FCC User Manual")

As described in the following claim chart, the asserted claims of U.S. Patent No. 8,456,365 (the "'365 Patent"), are invalid as anticipated by Blackberry 6750. To the extent that Blackberry 6750 is found not to anticipate one or more of the asserted claims of the '365 Patent, these claims are invalid as obvious in view of Blackberry 6750 alone or as modified in view of or in combination with other prior art references disclosed in Defendants' Invalidity Contentions and accompanying charts, including without limitation as set forth below.

One of ordinary skill in the art, as of the priority date of the '365 Patent, would have known to combine or modify the prior art elements disclosed by the foregoing references using known methods, and to use these elements according to their established functions in order to achieve a known and predictable result.

These invalidity contentions are not an admission that the Defendants concede or acquiesces to any claim construction implied or suggested by Plaintiff's Complaint or Infringement Contentions. Nor are Defendants asserting any claim construction positions through these charts, including whether the preamble is a limitation. The portions of the prior art reference cited below are not exhaustive but are exemplary in nature. Defendants retain the right to update their constructions and contentions in view of this Court's claim construction order.[5]

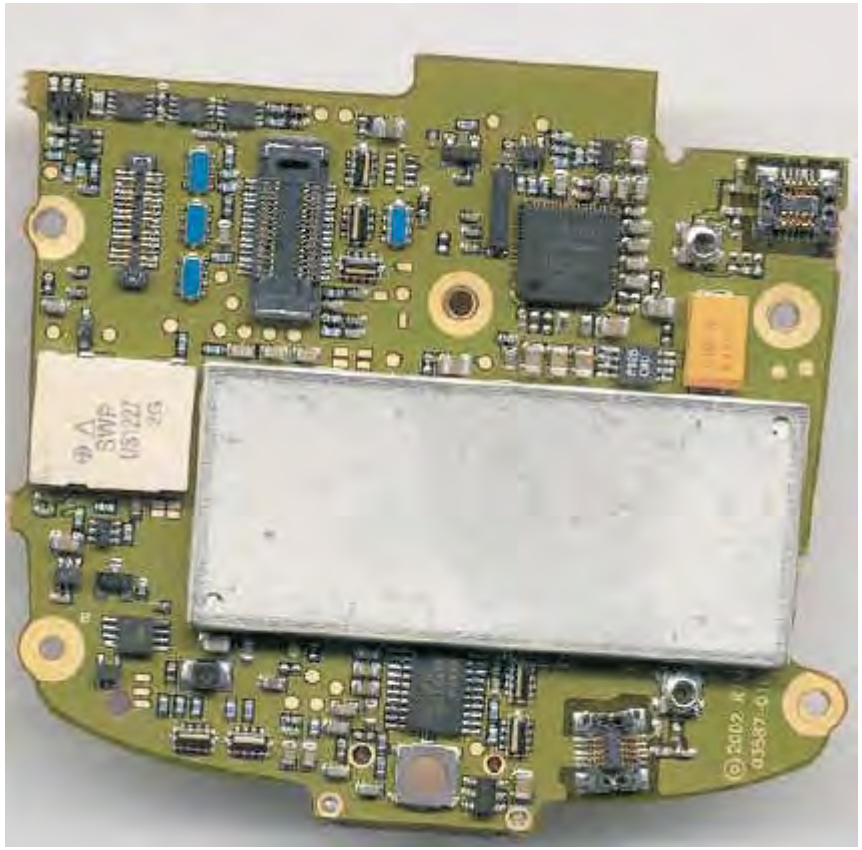
[5] Defendants reserve the right to supplement and/or alter this chart based on further investigation and ongoing discovery.

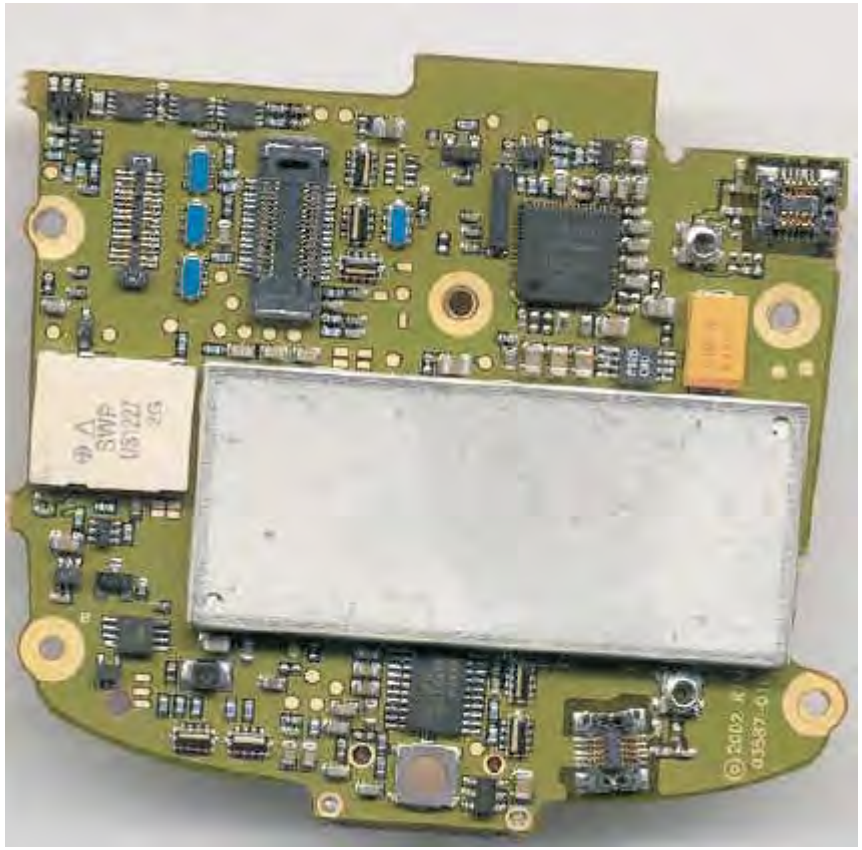
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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
	Claim 1	
1[pre]	A mobile communication device, comprising:	To the extent the preamble is limiting, Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750 is a mobile communication device.  *See* PhoneScoop.com, *Blackberry 6750*, https://www.phonescoop.com/phones/phone.php?p=190 (last accessed June 18, 2025).
1[a]	a device housing;	Blackberry 6750 expressly or inherently discloses this claim element.

Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
		See, e.g., The Blackberry 6750 has a device housing.
1[b]	a printed circuit board, the printed circuit board comprising:	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750 has a printed circuit board.

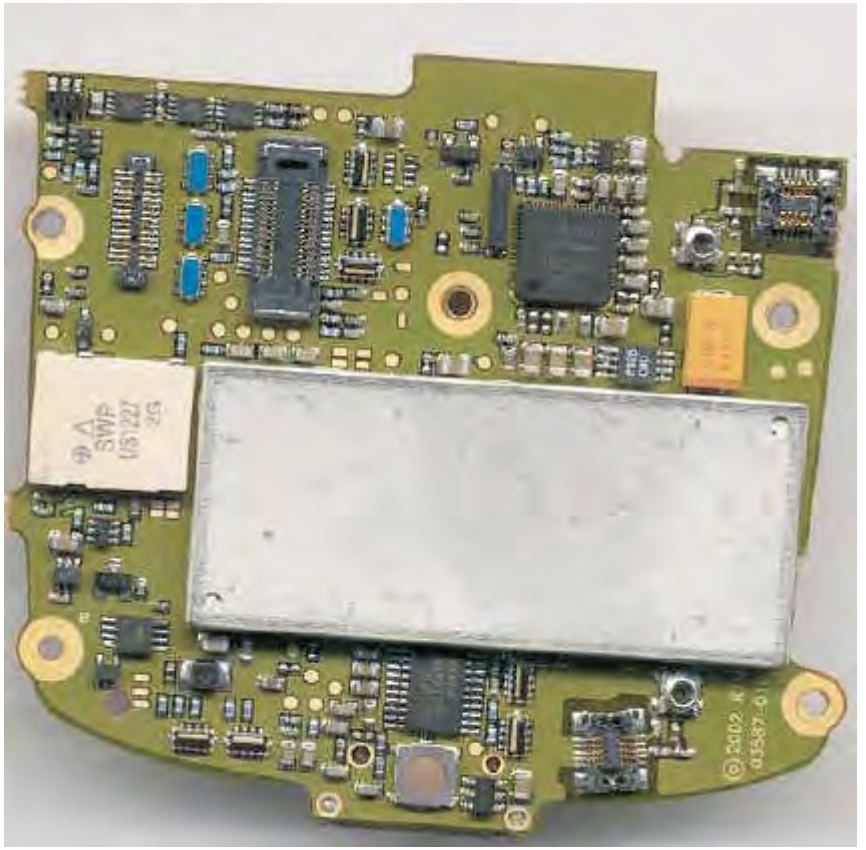
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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
		 *See* FCC Internal Photos at 2.

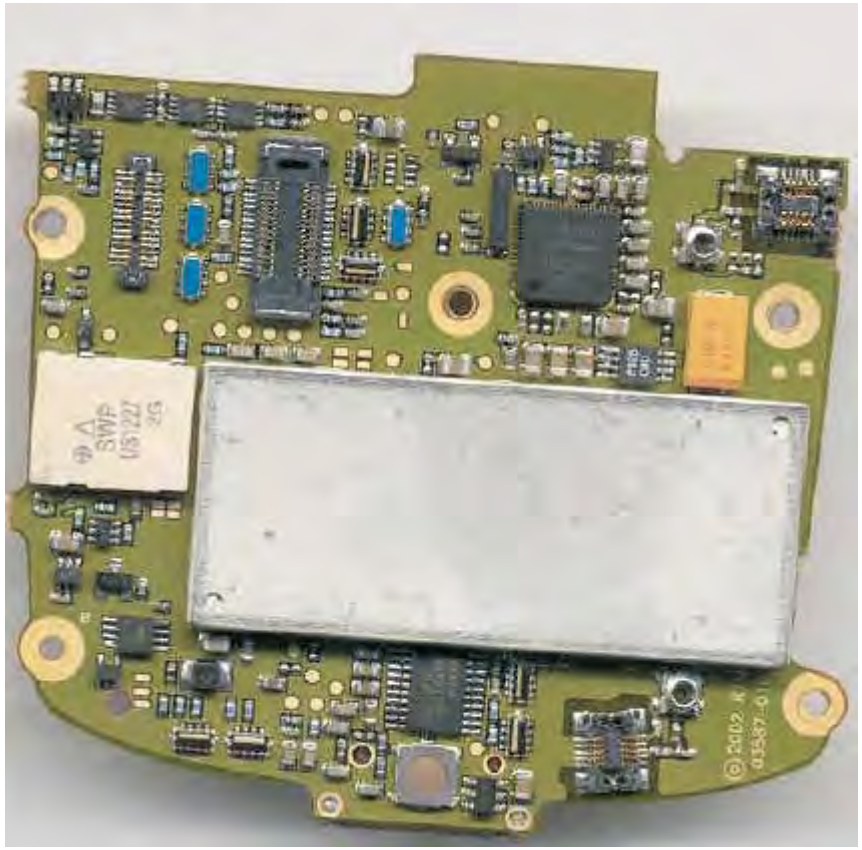
Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
1[c]	[*the printed circuit board comprising*] a ground plane layer;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board of the Blackberry 6750 has a ground plane layer. 

Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
		See FCC Internal Photos at 2.
1[d]	[*the printed circuit board comprising*] a feeding point;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board of the Blackberry 6750 has a feeding point.

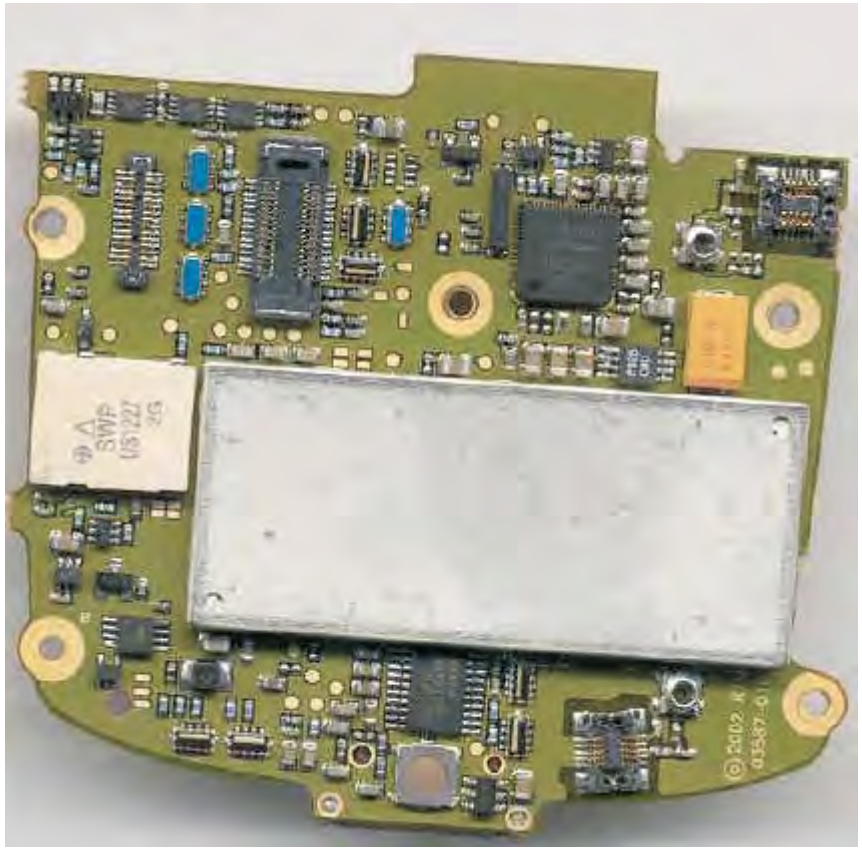
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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
		
1[e]	a communication circuitry,	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The printed circuit board of the Blackberry 6750 has communication circuitry.

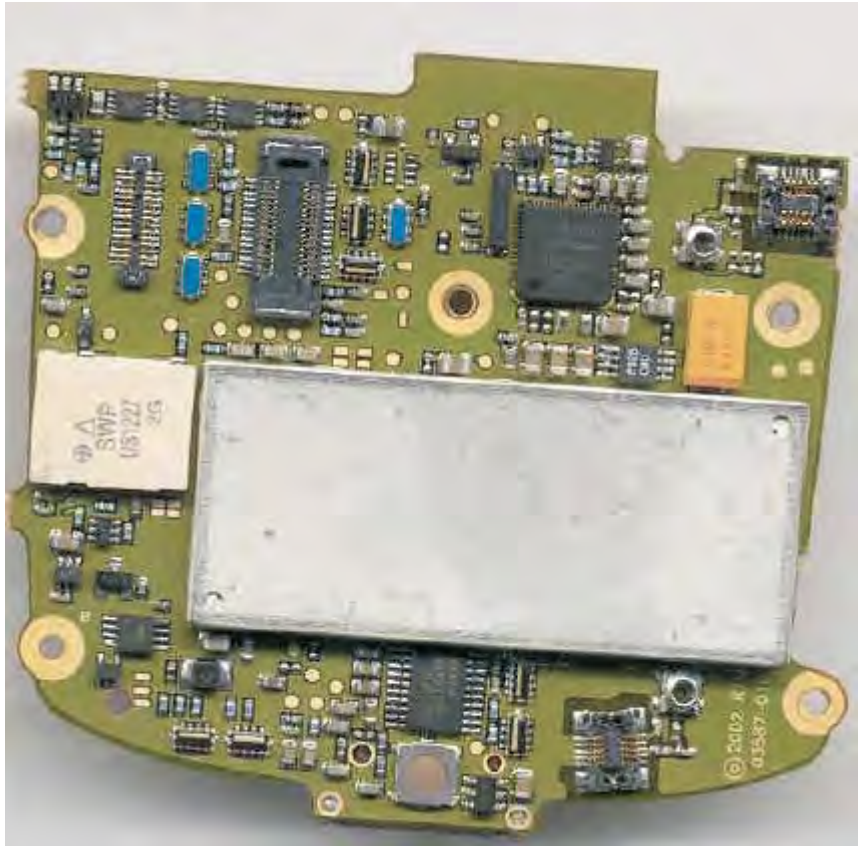
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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
		
1[f]	the communication circuitry being mounted on the printed circuit board;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750's communication circuitry is mounted on the printed circuit board.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
		
1[g]	wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*,

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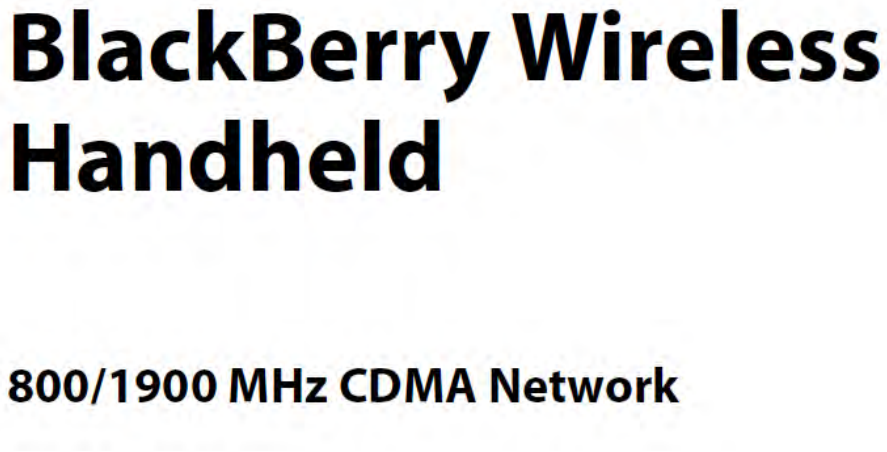
Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
		The Blackberry 6750's communication circuitry is coupled to the feeding point and to the ground plane layer. 

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
1[h]	a multi-band antenna capable of operating at multiple frequency bands,	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750 has a multi-band antenna capable of operating at multiple frequency bands.

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		 PIN:30000803 ESN:0760000712 LT.E. US LISTED 89MN PCB-0300 PIC – 2 03955

Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
		See FCC Internal Photos at 2.  *See* FCC User Manual at 1.
1[i]	the multi-band antenna including an antenna element;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750's multi-band antenna includes an antenna element.

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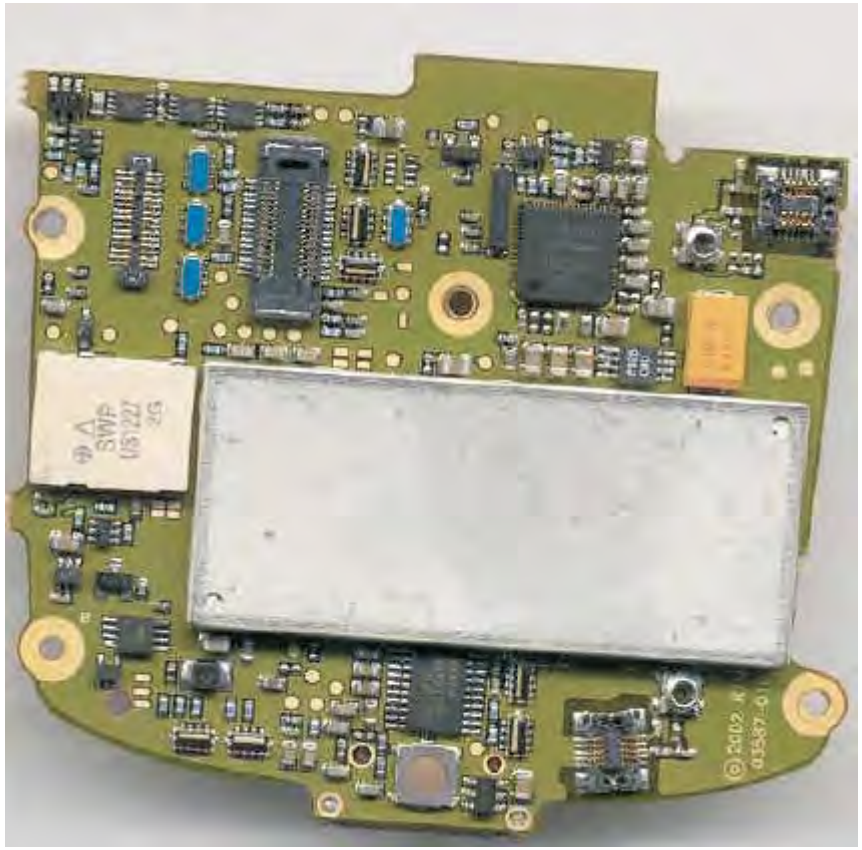

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
1[j]	wherein the antenna element operates in cooperation with the ground plane layer;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750's multi-band antenna includes an antenna element which operates in cooperation with the ground plane layer.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
		
1[k]	the antenna element comprising:	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[h]-[j].

Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
1[l]	[*the antenna element comprising*] a common conductor;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750's antenna element has a common conductor.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
1[m]	[*the antenna element comprising*] a first radiating arm connected to the common conductor;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750's antenna element has a first radiating arm connected to the common conductor.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
1[n]	[*the antenna element comprising*] a second radiating arm connected to the common conductor;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750's antenna element has a second radiating arm connected to the common conductor.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
1[o]	wherein the common conductor includes a feeding port, the feeding port being coupled to the feeding point;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750's antenna element has a second radiating arm connected to the common conductor wherein the common conductor includes a feeding port, the feeding port being coupled to the feeding point.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
1[p]	wherein at least a portion of the first radiating arm and at least a portion of the second radiating arm are arranged on different planes;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750's antenna element has a second radiating arm connected to the common conductor wherein at least a portion of the first radiating arm and at least a portion of the second radiating arm are arranged on different planes.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
1[q]	wherein the first radiating arm is at least partially shaped according to a grid dimension curve; and	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750's antenna element has a second radiating arm connected to the common conductor wherein the first radiating arm is at least partially shaped according to a grid dimension curve.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
1[r]	wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750's antenna element has a second radiating arm connected to the common conductor wherein the communication circuitry, and the multi-band antenna are arranged inside the device housing.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
		See FCC Internal Photos at 2.
Claim 2		
2[a]	The mobile communication device according to claim 1, wherein the first radiating arm comprises a first plurality of segments;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750's antenna element's first radiating arm comprises a first plurality of segments.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
2[b]	wherein each segment of the first plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* Each segment of the first plurality of segments in the Blackberry 6750's antenna element's first radiating arm is smaller than 1/10 of a lowest operating free-space wavelength.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
2[c]	wherein the segments are spatially arranged such that each pair of adjacent segments forms a corner; and	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The segments in the Blackberry 6750 are spatially arranged such that each pair of adjacent segments forms a corner.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
2[d]	wherein no two adjacent and connected segments form another longer straight segment; and	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* No two adjacent and connected segments form another longer straight segment.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
2[e]	wherein none of said segments intersect with another segment other than to form a closed loop.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* In the Blackberry 6750, none of said segments intersect with another segment other than to form a closed loop.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
Claim 4		
4	The mobile communication device according to claim 2, wherein the first plurality of segments comprises at least ten segments.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750's first plurality of segments comprises at least ten segments.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
	Claim 5	
5[a]	The mobile communication device according to claim 2, wherein the second radiating arm comprises a second plurality of segments;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750's antenna element's second radiating arm comprises a second plurality of segments.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
5[b]	wherein each segment of the second plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750's second plurality of segments is smaller than 1/10 of a lowest operating free-space wavelength of the multi-band antenna.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
5[c]	wherein the segments are spatially arranged such that each pair of adjacent segments forms a corner; and	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750's segments are spatially arranged such that each pair of adjacent segments forms a corner.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
5[d]	wherein no two adjacent and connected segments form another longer straight segment; and	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* No two adjacent and connected segments form another longer straight segment.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
5[e]	wherein none of said segments intersect with another segment other than to form a closed loop.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, None of these segments intersect with another segment other than to form a closed loop.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
Claim 6		
6	The mobile communication device according to claim 5, wherein the first plurality of segments comprises more segments than the second plurality of segments.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* In the Blackberry 6750, the first plurality of segments comprises more segments than the second plurality of segments.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
Claim 7		
7	The mobile communication device according to claim 1, wherein the grid-dimension curve has a grid dimension larger than 1.3.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750's grid-dimension curve has a grid dimension larger than 1.3. *See* Claim 1[q].
Claim 8		
8	The mobile communication device according to claim 1, wherein the grid-dimension curve has a grid dimension larger than 1.5.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750's grid-dimension curve has a grid dimension larger than 1.5. *See* Claim 1[q].
Claim 12		
12	The mobile communication device according to claim 1, wherein an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the ground plane layer in less than 50% of an area of said footprint.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* In the Blackberry 6750, an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the ground plane layer in less than 50% of an area of said footprint.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
	Claim 13	
13[a]	The mobile communication device according to claim 1, comprising: a dielectric mounting structure having a plurality of surfaces;	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[pre]. The Blackberry 6750 includes a dielectric mounting structure having a plurality of surfaces.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
13[b]	wherein at least a portion of the first radiating arm is arranged on a first surface of said plurality of surfaces; and	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750 has at least a portion of the first radiating arm is arranged on a first surface of said plurality of surfaces.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
13[c]	wherein at least a portion of the second radiating arm is arranged on a second surface of said plurality of surfaces,	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750 has at least a portion of the second radiating arm is arranged on a second surface of said plurality of surfaces.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
13[d]	the second surface being different from the first surface.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750's second surface being different from the first surface.

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PIN:30000803
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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
Claim 31		
31[pre]	A mobile communication device, comprising:	To the extent the preamble is limiting, Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[pre].
31[a]	a device housing;	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[a].
31[b]	a printed circuit board, the printed circuit board comprising:	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[b].
31[c]	[*the printed circuit board comprising*] a ground plane layer;	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[c].
31[d]	[*the printed circuit board comprising*] a feeding point;	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[d].

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
31[e]	a communication circuitry,	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[e].
31[f]	the communication circuitry being mounted on the printed circuit board;	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[f].
31[g]	wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[g].
31[h]	a multi-band antenna capable of operating at multiple frequency bands, the multi-band antenna including:	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[h].
31[i]	[*the multi-band antenna including*] a dielectric	Blackberry 6750 expressly or inherently discloses this claim element.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
	mounting structure having a plurality of surfaces;	*See* Claim 13[a].
31[j]	[*the multi-band antenna including*] an antenna element,	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[k].
31[k]	the antenna element being coupled to the feeding point and	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, *See* Claims 1[d]-[k].
31[l]	[*the antenna element* …] operating in cooperation with the ground plane layer;	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, *See* Claim 1[j].
31[m]	wherein the antenna element comprises a first radiating arm arranged on two or more surfaces of the plurality of surfaces of the dielectric mounting structure;	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 13. The Blackberry 6750 includes the antenna element comprising a first radiating arm arranged on two or more surfaces of the plurality of surfaces of the dielectric mounting structure.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
31[n]	the first radiating arm comprising: a first section shaped according to a grid dimension curve;	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[q]. The Blackberry 6750's first radiating arm comprises a first section shaped according to a grid dimension curve.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
31[o]	[*the first radiating arm comprising* …] a second section connected to the grid-dimension section,	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*, The Blackberry 6750 includes a first radiating arm comprising a second section connected to the grid-dimension section.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
31[p]	the second section having a width different from a width of the first section; and	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* The Blackberry 6750's second section has a width different from a width of the first section.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
31[q]	wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claim 1[r].
Claim 32		
32[a]	The mobile communication device according to claim 31, wherein the first section is arranged on a first surface of said plurality of surfaces; and	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claims 13, 31[i]-[m].
32[b]	wherein the second section is arranged on a second surface of said plurality of surfaces,	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claims 13, 31[i]-[m].
32[c]	the second surface being different from the first surface.	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claims 13, 31[i]-[m].
Claim 35		
35[a]	The mobile communication device according to claim 31, wherein the first section extends along a first direction	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.*,

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
	and the second section extends along a second direction,	In the Blackberry 6750, the first section extends along a first direction and the second section extends along a second direction.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
35[b]	the second direction being different from the first direction.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* In the Blackberry 6750, the second direction is different from the first direction.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
	Claim 36	
36	The mobile communication device according to claim 35, wherein the second direction is substantially opposite to the first direction.	Blackberry 6750 expressly or inherently discloses this claim element. *See, e.g.,* In the Blackberry 6750, the second direction is substantially opposite to the first direction.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
Claim 37		
37[a]	The mobile communication device according to claim 31, wherein the antenna element further comprises: a common conductor;	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claims 1[l]-[p], 13, 32.
37[b]	a second radiating arm;	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claims 1[l]-[p], 13, 32.
37[c]	wherein each of the first radiating arm and the second radiating arm is connected to the common conductor; and	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claims 1[l]-[p], 13, 32.
37[d]	wherein the second radiating arm is arranged on at least one surface of the plurality of surfaces of the dielectric mounting structure.	Blackberry 6750 expressly or inherently discloses this claim element. *See* Claims 1[l]-[p], 13, 32.
Claim 41		
41	The mobile communication device according to claim 31,	Blackberry 6750 expressly or inherently discloses this claim element.

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Claim No.	U.S. Patent No. 8,456,365 B2	Blackberry 6750
	wherein an orthogonal projection of a footprint of the antenna element on a plane of the printed circuit board overlaps the ground plane layer in less than 50% of an area of said footprint.	*See* Claim 12.

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