



Telecom Equipment & Services Export Promotion Council
 Gate No. 5, Khurshid Lal Bhavan, Janpath, New Delhi-110 001
 Website: telecomepc.in

Counter Comments on Consultation Paper of TRAI Dated February 11, 2022 Titled ‘Promoting Networking & Telecom Equipment Manufacturing’.

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
1	COAI, BIF, MAIT and other Stakeholder who have submitted similar comments	Aligning Preference to Make in India (PMI) with PLI:	<p>The Production Linked Incentive (PLI) Scheme and the Public Procurement (Preference to Make in India) policy (PPP-MII policy) are two policies with different intents and objectives. For telecom equipment, PLI, in its present form, promotes ‘assembly-led’ manufacturing whereas the objective of the PPP-MII policy is ‘indigenous design-led manufacturing’ of Indian products. The suggestions of COAI, BIF, MAIT and other stakeholders shall not be conceded due to the reasons as under:</p> <ol style="list-style-type: none"> 1. The proposal of COAI that “<i>However, an alignment between PLI and PMI policy will ensure a very enthusiastic response from global companies to invest in India. This can be achieved with the government providing PMI points equivalent to 75% of the commitment of goods to be exported from India. The OEM could utilize these PMI points to qualify as a ‘Deemed Class 1 Local Supplier’ for products not manufactured in India, from the date of approval of the application.</i>” is an attempt to defeat the very objective of the PPP-MII policy as it will open the flood gate for using the products not manufactured in India, in government funded (fully/ partially) projects. <p>On the contrary, the emphasis shall be increasing the value of Local Content even in the product is incentivised through PLI rather than promoting the products not manufactured in India in PPP-MII policy.</p> <ol style="list-style-type: none"> 2. As per the present PLI scheme for telecom products, a company only has to make a future commitment over next four years to make a capital investment of minimum ₹ 100 Crores and the incentives are given based on incremental sales; further, there is no mandatory requirement of minimum value addition. Under PLI scheme, any company can backout of their future commitment(s) without any penalty. The PLI scheme has only one criterion to

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
			<p>qualify the company i.e. investment made in India. Any Global company which has a turnover of ₹ 10,000 Crores can get qualified under PLI scheme by committing an investment of only ₹ 100 Crores. If the benefit of PPP-MII scheme is extended, it is possible that such global company can accrue ₹ 1000 crores worth of benefits as class-I local supplier, which will deprive the domestic companies, who would have invested several ₹ 100 crores (much larger amount than the MNC) in R&D and creating high-value domestic products.</p> <p>3. On the issue of points for exports and qualify it as Deemed Class-I Local supplier for products not manufactured in India, it is submitted that this defeats the fundamental purpose of PPP MII, as explained above. Exports can also be achieved by importing fully built-in product and reexporting the same. Exports can also be achieved by extending services/ repair etc. There are specific separate incentives for exports. The specific purpose of exports is to earn foreign exchange, even though we may also be paying equivalent or slightly less or more in foreign exchange. By accruing points, as suggested by COAI, against exports and treating ‘products not manufactured in India’ as domestic, does not help in promotion of domestic manufacturing as well as becoming आत्म-निर्भर भारत; further, it also doesn’t help India to become manufacturing hub. It defeats the very purpose of supporting domestic 4G manufacturing in India as also announced plans of India for 5G/ 6G domestic production.</p> <p>4. Hence linking PLI export credit for getting preference in domestic telecom procurement (often for strategic/security projects) is not justified.</p> <p>5. PMI support shall be extended only to companies which are truly domestic with substantial Local Value Addition in India. Qualifying a foreign company under PMI as class-I or Class-II Local Suppliers on the basis of adding value of 5 – 10 % under PLI scheme, out of which 4 – 7 % will be taken back as incentive under PLI scheme, would be a major step back against domestic industry.</p> <p>6. As per independent studies by E&Y, domestic telecom equipment manufacturers face a fiscal disability of up to 29% for high-value added equipment in India. In addition, with</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
			<p>tariff barriers reduction after ITA-1, the domestic industry never had an opportunity to scale-up and get global economies-of-scale that the PPP-MIII offers. Hence COAI contention of only 6-8% handicap of manufacturing in India, cannot be used to deprive the domestic industry of procurement preference as per PPP-MII policy. In fact, using COAI logic, domestic Class-I supplier adding a VA > 50% shall be given price preference of 20% rather than purchase preference.</p> <p>7. The gazette notification, dated August 29, 2018 issued by Department of Telecommunications, on Preference to Make in India policy for telecom products, stipulates that:</p> <ul style="list-style-type: none"> a. the Intellectual Property Right (IPR) resides in India for Hardware Design and the Copyright is in India for the software Design & Development. b. In case a system or its subsystem is merely assembled/ integrated/ tested, then actual Local Content shall be taken as up to 10% only of the cost of system/ subsystem. c. The product-wise applicable Local Content (LC) and the extent of Preference to Make in India (PMI) have also been given in the notification <p>Further, it may also be noted that all manufacturing companies in India, whether 100% foreign equity holding or 100% Indian equity holding, are eligible to avail the benefits of PPP-MII by value addition in telecom product in India which is $\geq 20\%$ to qualify as Class-II and $\geq 50\%$ as Class-I Local suppliers.</p> <p>Therefore, for any telecom product, to qualify for PPP-MII policy, shall satisfy the conditions stipulated in the aforesaid gazette notification of DoT.</p> <p>8. In view of above, linking PLI export credit for getting preference in domestic procurement is not justified.</p> <p>9. Rather, as suggested in the submission made by TEPC on April 1, 2022, the existing PLI scheme for telecom and networking products may be strengthened. The recommended amendments are reiterated as under:</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
			<ul style="list-style-type: none"> <li data-bbox="913 196 2074 475">i. The Government of India is now focused on ‘Design led manufacturing’, there shall be additional benefits for the companies involved in design led manufacturing, who are engaged in design & development of target products in their DSIR/ DoT recognised R&D centre. In order to be more focused on creation of domestic designs, it is important that Capital expenditure on R&D Manpower shall be dealt in accordance with Indian Accounting standards. Non-tangible capital expenditure should be considered as part of R&D expenditure. <li data-bbox="913 496 2074 651">ii. Further, no capping on R&D expenditure shall be imposed. There shall be no distinction or cap between capital investments in R&D versus that in plant and machinery as design led manufacturing needs more research & development and the expenditure on manpower will be much higher compared to mere assembly-based manufacturing. <li data-bbox="913 671 2074 874">iii. The PLI scheme is expected to reduce large import of telecom equipment and substitute it with made-in-India products. However, the scheme is silent on local content value addition. Technically, the beneficiary can import 100% of the contents, assemble the same and qualify for PLI. It is suggested that condition about the local content shall be appropriately stipulated in the PLI Scheme. <li data-bbox="913 895 2074 1129">iv. Therefore, additional incentives 1%, 2%, 3% & 4% may be given to the companies who achieve higher local content of more than 40%, 50%, 55% and 60% respectively which shall be paid from R&D cess proposed in answer to Q 12 (@ 5% of AGR). The scheme shall provide higher incentives of 9% if the entire design as well as manufacturing, for that product, is being done in India and the IPR is owned by the Indian company. The stipulation will ensure gradual reduction in import burden and reduce the trade deficit. <li data-bbox="913 1150 2074 1273">v. The initiative recommended by TRAI, vide Para-2.13 of the Consultation Paper, will certainly pave the way for indigenously designed, developed and manufactured telecom equipment. <li data-bbox="913 1294 2074 1364">vi. There is need for MSME financing without linkage to production which shall be included in the proposed design led PLI or R&D incentives scheme. Further, the policy

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
			needs to be designed to take care of the needs of small start-ups looking for seed funding, companies who are in the expansion stage and also companies in R&D space.
	COAI	Para-4e, f, g, & h on MTCTE	<p>1. In India, the telecom products, used in Indian network, have never been checked, which many countries already had in place since many years. MTCTE is the first initiative which has proven to be very effective in keeping checks & balances on any telecom products being deployed in India.</p> <p>2. India being a price sensitive market, there was mass illegal imports in India from the bordering countries in the form of substandard or e-waste or second-hand products. MTCTE has already proven to be a very effective in curtailing such malpractices.</p> <p>3. It is very pertinent to mention that unlike other commodity/ services/ works, telecom sector deals with sensitive information not only w.r.t. individuals but more importantly for the nation. The technology used for communication networks provides the features such as routing or redirecting user data traffic, permitting visibility into user data or packets, causing network traffic to be disrupted remotely, which poses an ‘unacceptable risk’ to national security/ the security and safety of persons. It becomes a matter of extreme concern about potential security threats posed by widespread use of imported equipment in Indian telephone networks, for ensuring cyber security of the nation.</p> <p>The only step to be taken is the enforcement of the MTCTE policy. TSP/ ISP shall be mandated to submit the report of products deployed in their networks, during last 1-2 years with the certificate regarding compliance to MTCTE.</p>
1	Broadband India Forum	Adopt MeitY norms for value addition for telecom products	<p>The quantum of Local Content, in any product, is utilised to avail the benefits of the policy such as Public Procurement (Preference to Make in India) policy (PPP-MII policy). The consequences of the provisions suggested by Broadband India Forum are as under:</p> <p>a. It will promote import of telecom products in Completely Knock Down (CKD) basis, which will be soldered in India and then sold as finished product that will enjoy all the preference under PPP-MII as indigenously Designed, Developed and Manufactured products.</p> <p>b. The Multi-National Companies (MNC) will be encouraged to inflate the prices of the imported parts/ components to achieve the requisite level of ‘local contents’ of their telecom</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
			<p>products which will not only result in falsely capturing the public procurement purchase orders by the MNCs but also inflate the imports that will adversely affect the balance of trade.</p> <p>c. The cost of SMT process is only 5-10% of the total cost of any product (Maximum 10% as per Notification dated August 29, 2018). Spending 5-10% of the cost, in SMT process, will convert the cost of imported part/ components to local content which will tantamount to lowering the minimum 'local content' requirement to categorise a supplier as 'Class-I local supplier' and 'Class-II local supplier'. This would mean net requirement of 'Local Content' for 'Class-I Local Supplier' and 'Class-II Local Supplier' will drastically reduce from what has been specified by Department for Promotion of Industry & Internal Trade (DPIIT) i.e., 50% and 20% respectively.</p> <p>d. It may be noted the clause-5 of the PPP-MII Order dated September 16, 2020, issued by the Department for Promotion of Industry & Internal Trade (DPIIT) confers the powers to Nodal Ministry/ Department to prescribe only a higher percentage of minimum local content requirement to categorize a supplier as 'Class-I local supplier' / 'Class-II local supplier', which is applicable across all the sectors including telecom sector. The telecom products are R&D-driven and have strategic/security concerns, therefore, stricter enforcement of guidelines is needed rather than diluting the DPIIT prescribed thresholds.</p> <p>e. Diluting the requirement of Local Content addition in the country is against the esprit of the PPP-MII policy and in-turn contrary to the vision of Hon'ble Prime Minister to create 'आत्म-निर्भर भारत' and 'Local for Global'. Further, it is very pertinent to mention that unlike other commodity/ services/ works covered under PPP-MII policy of DPIIT, telecom sector deals with sensitive information not only w.r.t. individuals but more importantly for the nation. The technology used for communication networks provide features such as transmission, routing or redirecting user data traffic, permitting visibility into user data or packets, causing network traffic to be disrupted remotely, which poses an 'unacceptable risk' to national security/ the security and safety of persons. It becomes a matter of extreme concern about potential security threats posed by widespread use of</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
			<p>imported equipment in Indian telephone networks, thus compromising cyber security of the nation.</p> <p>f. India just faced a cyberattack by Chinese intruders in Leh-Ladakh region in Power Grid network. Hence by no means, the telecom products, including the devices like OTN, DWDM, IP-MPLS Routers which carry lot of sensitive data country wide cannot be compared with the hand-held consumer devices like Mobile phones, Desktops or Tablets.</p> <p>g. Therefore, the definition of ‘Local Supplier shall be at par with the Public Procurement (Preference to Make in India) Order 2019 for Cyber Security Products of Ministry of Electronics and Information Technology (Copy of the relevant extract is enclosed herewith as Annexure-1).</p> <p>h.</p>
1	Broadband India Forum	view vide para-4 that “Apart from economic reasons, the security considerations also suggest that India should aim at achieving self-sufficiency in telecom equipment production”	The comments are appreciable.
1	MAIT	Build the component ecosystem:	The manufacturers are facing international supply chain problems in respect of the electronic components. Further, trade deficit exists as far as telecom sector is concerned which is due to not only import of the finished telecom products supplied by MNCs to the telecom service providers but also due to import of electronic components required for manufacture of the telecom products. To achieve zero import, in telecom sector, it is imperative to develop self-sufficiency in manufacture of the electronic components within the country.
2	Consort India Private Limited	We also request that Proof of Concept (PoC) must be invited for solutions that are based on global telecom standards so that	Various Indian MSME/ Large companies are working on indigenous design and developing various products/ systems such as 4G, 5G etc. Apart from the testing their products in simulated environment, ecosystem is needed to conduct validation/ Proof of Concept testing/ field trials. The same is also required so as to gain the self-confidence/ confidence of the Telecom Service Providers else the commercialisation of the developed products may not be possible. It is

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
		all manufacturers working on such technologies may be able to demonstrate their solutions to various stakeholders, policy makers and potential users.	<p>recommended that Department of Telecom shall facilitate the validation/ Proof of Concept testing of the developed telecom products/ systems; Telecom Engineering Centre (TEC) shall conduct the validation/ Proof of Concept testing of the developed products/ system as & when the request is received from the manufacturer/ developer of the telecom product/ system. Apart from the above, following may also be needed for conducting validation/ Proof of Concept testing:</p> <p>a. Requisite Frequency Spectrum may be allocated for testing purpose.</p> <p>b. The field trial may be supported by the TSPs else the company may be allowed to offer the field trial in uncovered area with the support of any TSP by providing connectivity of the equipment under test to their network. TSP may be compensated for such support from the R&D fund from USOF.</p>
2	Tejas Networks Limited & ITU-APT Forum (against Qn. No. 15)	<p>Tejas Networks Limited: Adequate funds should be made available for participation in global standard bodies such as ITU, 3GPP, IEEE etc. so that we can drive future standards. Travel grants to the tune of 50% may be given to cover such costs.</p> <p>ITU APT Forum Views against Qn. No.15</p> <p>“Funding to support and promote participation of Indian non-government delegates in ITU and APT meetings.”</p>	<p>The standards in SSO, ETSI, 3GPP, IEEE are driven by private industries, whereas in ITU, the same are driven by Government along with industries. Primarily, the MNCs developing standards are major stakeholders in SSOs. In ITU, the view of Government is also taken into account.</p> <p>In the absence of basic Research in India, the industry participation is minimal. As discussed elsewhere huge investment required in R&D and absence of assured access to market are key factors adversely affecting the participation. Continuous participation for longer durations extending to 2-3 years is another factor attributable to the same. Change of concerned officers in Government, handling the subject, yields to low participation and absence of continuity in participation by same officer.</p> <p>In view of above the suggestion made by Tejas are strongly supported. It is also suggested that within Government, an appropriate policy be framed whereby same officer continues participation in the ITU standard making process irrespective of his/ her transfers, especially for projects that are considered important for National security or driven by National Priorities.</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
3	Tejas Networks Limited	A specialised telecom R&D corpus may be carved out of EDF to promote NATEM in India. Besides supporting R&D activities, there should also be a set-aside for a Sovereign Patent Fund (SPF) similar to countries like South Korea, France, Japan and China that will be used to negotiate licenses for essential/ background patents/ IPOR from global players for 5G and 6G technologies on FRANDS terms. SPF can also be used to reimburse 50% of patent filing costs by Indian NATEM companies	<p>A few countries have come out with their own initiatives of aggregating patents through the establishment of Sovereign Patent Funds (SPFs). In the last few years, each of Japan, South Korea, China, Taiwan, and France have launched SPFs</p> <p>India shall consider to establish a National Level Sovereign Patent Fund (SPF) that shall be used to negotiate licenses for essential/ background patents/ IPR from global players for 5G and 6G technologies on FRAND terms, perhaps under the office of Principle Scientific Adviser or if it is to be a sector specific, then DoT in consultation with MeitY may come out with an ICT Patent Fund</p> <p>The objectives of the SPF may be as under:</p> <ul style="list-style-type: none"> a. IPR lifecycle management for the SMEs and Startups. b. Pooling of IPRs from Indian indigenous companies to build a better value as a bouquet for overseas market. c. Procure IPR licensing for the country in key technologies such as 5G, 6G to enable a fearless technology development with certainty in the country. Negotiate for a country level license fee and offer it in turn to Indian industry. d. Full time experts, expert agencies may be roped in for day-to-day management through an SPV with a broad overall overseeing by the government. e. Create with an initial funding to procure IPR licensing from patent owners for national level licensing to indigenous industry. (Reference: Draft IPR Strategy paper).
3	ITU-APT Forum	1. The EDF does not have exclusive focus for the Telecom Sector and therefore, is not sufficient to take care of the need for venture funding that is required for promoting NATEM in India. Therefore, a	It is strongly suggested that suitable policy amendments need to be put in place to extend 4G domestic procurement to all TSPs and a scheme for Startups on the lines of support extended to C-DoT for BSNL 4G as the biggest difficulty is getting orders and access to market. It needs to be appreciated that marketing is issue even with C-DoT for their various technologies and with 4G, their products have got success in BSNL only when the government Insisted for local procurement without worrying for price, sufficient competition or sufficient capacity.

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
		<p>separate TRDF needs to be set up, as indicated under Q.4.</p> <p>2. As 5G and its evolution into futuristic 6G technology is going to be largely software driven, a separate fund for development of telecom related software should be conceptualized for the overall growth of the telecom & networking product ecosystem. For such innovations, delicensing of wireless spectrum is critical.</p> <p>3. We strongly suggest that suitable policy amendments need to be put in place to extend 4G domestic procurement to all TSPs and a scheme for Startups on the lines of support extended to C-DoT for BSNL 4G. This is because, biggest difficulty is getting orders and access to</p>	

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
		<p>market. It needs to be appreciated that marketing is issue even with C-DoT for their various technologies and with 4G, they have got success in BSNL only when the Govt. Insisted for local procurement without worrying for price, sufficient competition or sufficient capacity.</p>	
5	Consort Digital Private Ltd.		<p>The stakeholder has nicely articulated the additional measures for promoting and supporting Startups ecosystem in the telecom sector, however, following modifications are suggested:</p> <p>DoT shall create a list of depository of companies working on Indian/ global telecom standards and it shall be made mandatory for potential customers to deploy these products in their projects. Support shall be provided by way of trial orders, Proof of Concepts, observer demonstrations among others.</p> <p>There is a big vacuum now to know the existing telecom equipment manufacturers, their products, technologies developed indigenously and respective production data. Likewise, no information is available at any centralised place of new manufacturers/ Startups/ Innovators coming up. The manufacturers are not required to register with any authority or portal as well as it is not required to submit data about their production to any organisation or authority.</p> <p>It is recommended that the depository be made for Companies working on Indian/ global standards, undertaking design & R&D for Indian telecom products, Indian and domestic telecom manufacturing companies with information as assembly or manufacturing and domestic value-added contents.</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
			This will also serve as a guide to procurement officers to identify the sources. It is further suggested that if for some reasons, it is not feasible for Govt to make such depository, the industry associations/ councils be supported to develop such depository or Domestic Telecom Manufacturers.
10	ITU-APT Forum	<p>Para-ii of Comments:</p> <p>For promotion of domestic manufacturing, one of successful example is in Automobile sector, where almost every known global Company is in India for manufacturing and localisation is about 70%. The key reason for this is that even today import of automobiles attract Custom duty of 100% for cars costing above Rs 30.00 lacs and 60% for less than that. Localisation policy is ensured by Custom duty.</p>	<p>For promotion of domestic manufacturing, one of successful example is automobile sector, all global manufacturers have established their manufacturing plants in India for manufacturing as even today import duty on Cars CBUs whose CIF value is more than \$ 40,000 or Petrol Engine > 3000 CC or Diesel engine > 2500 CC is 100% whereas import duty on Cars CBUs whose CIF value is less than \$ 40,000 and Petrol Engine < 3000 CC and Diesel engine < 2500 CC is 60%.</p> <p>As regards import duty on auto parts/ components (HSS 87.08) is 15% (BCD) + 28% (IGST) + 10% (Social welfare surcharge) i.e. 53%. The Union Budget for 2021-22 has proposed 15% increase in import duty on automotive components such as drive transmissions, chassis, brakes and steering to curb imports from China and boost local manufacturing. Hon'ble Finance Minister explained that these parts are not critical for an automobile and are also available locally.</p> <p>The above supportive steps taken by the government resulted into achievement of 70% localisation in automobile sector and government is now targeting for 100%.</p> <p>The automobile model may also be adopted for the telecom sector which is also a highly technology driven sector and the telecom technology is perpetually fast-changing.</p>
11	COAI & MAIT	<p>COAI Response: Point 1 to 8.</p> <p>Comments and Solution:</p> <p>1. An independent study must be conducted to assess the capacity and competition of ICT products and only products with adequate manufacturing capacity,</p>	<p>The analysis and the solutions proposed are lopsided and shall not be conceded. The whole objective of 'Make in India' policy is to revive domestic manufacturing in India and as on date this policy is applicable to only procurement under Central Government fully/ partially funded projects which is not even 5-7 % of the overall telecom procurement in India. The Indian telecom equipment industry sector has all capabilities to make world class products and only missing link is market access. Under the umbrella of the DPIIT/ DoT PPP-MII policy, domestic products are getting a good support in terms of market access at L-1 price which can even be a price of any global OEM. The current PPP-MII policy only safeguards the domestic</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments		
		<p>required value addition, and adequate competition (More than 3)</p> <p>2. Focus of PMA must start with building capacity and an ecosystem around low-tech, high-volume products, which will not only give India a competitive edge but also result in mass-scale employment</p> <p>3. In hi-tech, low volume, Indian players must be allowed to support global OEMs, allowing them to build their capacities, test their solutions, and prepare themselves for global competition.</p> <p>4. Definition of Local Content under the DoT PMI scheme should be aligned with the definition of Local Content in the MEITY PMI scheme where the non-availability of component eco-system in India at present is considered and SMT manufacturing should</p>	<p>manufacturers from restrictive condition, however, doesn't provide price preference as it only provides them purchase preference. It may be noted that DoT/ DPIIT PPP-MII policy nowhere stipulates the procuring agency to buy inferior products. The detailed comments on the challenges and solutions encompassed by the COAI are as under:</p>		
			<p>Challenge Stipulated by COAI & MAIT</p> <p>A wide range of products mandated under PPP-MII norms limit competition in public procurement. ICT equipment varies extensively with respect to its functionality (hi-tech, low-tech) and demand (low-volume, high volume). Given this variance, it is not feasible for companies to invest extensively in hi-tech, low-volume products. Further, the demand for such products is low, so several companies fail in manufacturing.</p>	<p>Solution Proposed by COAI & MAIT</p> <p>1. An independent study must be conducted to assess the capacity and competition of ICT products and only products with adequate manufacturing capacity, required value addition, and adequate competition (More than 3).</p>	<p>TEPC Comments</p> <p>a. It is not correct that there is no capacity of manufacturing telecom product in India. World-wide the manufacturing of telecom products is done by specialised EMS partners. In India there exists large number EMS companies already which are capable enough to meet all Indian telecom equipment requirements. Regarding competition for the products listed in DoT notification on PMI dated August 29, 2018, for each of the telecom products, there are three or even more OEM in India, however, such manufacturers might not have participated in some of the projects in last few years due to various reasons such as technical specification restricting their entry, not meeting the eligibility criteria</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments		
		<p>be encouraged at a large scale.</p> <p>5. R&D and associated Job creation, export generation should be measured as key criteria for assessing Local Content for a particular company. Job creation in R&D activities is not accounted for as a parameter currently in the PMI scheme which is not reflecting the true picture of investment and efforts made by companies in India.</p>			<p>or turnkey requirement, tender stipulating foreign OEM to participate in the tender or may also be because of lack of clarity.</p> <p>b. It is also to mention that that C-DoT, an extended R&D arm of Department of Telecommunications, is instrumental for development of state-of-the-art technologies in the country and has achieved a high rate of success in the technology dissemination process.</p> <p>C-DOT's diverse product portfolio spanning a wide array of technologies that include switching & routing, optical communication, wireless communication, mobile technologies, network security, advanced encryption techniques and Post-Quantum Cryptography based solutions, network management, M2M/IOT, Artificial intelligence/machine learning and a host of other telecom software</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments		
					<p>applications is a manifestation of its unrelenting desire to capture the unexplored dimensions of the vast Telecom firmament.</p> <p>C-DoT technologies have been successfully deployed in many flagship programmes of Govt of India including Bharatnet. C-DoT has tried to create a domestic manufacturing ecosystem in the country by transferring its technologies to more than 100 partners, both in private and public sector to enable them to manufacture and deploy these technologies in India. The ToT process involves complete transfer of Knowhow of the technology, capital and components required, manufacturing requirements etc. C-DoT also gets its technologies validated by TEC if the GR is available for the concerned product.</p> <p>C-DoTs licensees (ToT partners) can manufacture the respective telecom product, in a short span of time, whenever</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments		
					<p>any public procurement agency notifies the Expression of Interest (EoI) or floats the tender for the same. It is also important to note that in the absence of any requirement, as a business decision, no manufacturer is able to keep the production line idle and keep waiting for the purchase order indefinitely. Therefore, the licensees of C-DoT products need to be considered as manufacturer of the same. Considering the above fact, the licensees (ToT Partners) of C-DoT technologies needs to be considered as manufacturers of the concerned products.</p> <p>c. In a country, globally, there exists only one or two OEMs in every telecom technology product. As such, it absolutely wrong to ask for minimum three OEMs to prove sufficient competition. Even if there is one or two domestic OEMS complying with the PPP-MII Order in letter & spirit, the same shall be promoted. Therefore, the concept of having at least three</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments		
					<p>manufacturers for a telecom product is against the world-wide phenomena as nowhere across the globe, there exists three or more domestic manufacturers in a country yet the preferential market access has been introduced in large number of countries. To mention the names, there are typically only one or two global sized companies in every country such as Huawei & ZTE in China, Cisco & Ciena in USA, Nokia & Ericsson in whole Europe, Samsung & LG in Korea Notwithstanding that while submitting recommendations, on PMI notification, to DoT, a study was conducted by the TEPC about the number of Indian manufacturers in respect of the telecom products. The product-wise manufacturers are enclosed as Annexure-2 for reference. It may be seen that sufficient competition exists for each of the products.</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments	
				<p>2. Focus of PMA must start with building capacity and an ecosystem around low-tech, high-volume products, which will not only give India a competitive edge but will also result in mass-scale employment.</p> <p>It is not correct to say that there is no capacity of manufacturing telecom product in India. The Country has shown its capabilities by developing 5Gi, 4G, Optical products, CDOT technologies, wireless products, access products etc. The suggestion given by COAI is well applicable on mobile handset type of products and not on the technology products and will result in mere assembly based low value-addition manufacturing rather the focus shall be on R&D and design capability enhancement.</p> <p>Thus suggestion given by COAI & MAIT is not fact based, rather, India has best talent and capacity to develop world class products. Indigenous BSNL 4G has set one such example. The ecosystem must have faith in Indian companies and give them fair chance as the same have full capability to succeed. The ecosystem must come out from orthodox school of thought & aura of only low-cost and mass-scale employment. Along with that, brain drain shall also needs to be protected and shall strive for value</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments	
				<p>creation in India rather than foreign dependence.</p> <p>3. In hi-tech, low volume, Indian players must be allowed to support global OEMs, allowing them to build their capacities, test their solutions, and prepare themselves for global competition.</p> <p>The prime objective of the Government to notify PPP-MII Order was to building domestic competence in design based high-tech, low volume products. The suggestion made by COAI & MAIT seems to be in contravention with the Government policy.</p> <p>Rather than supporting Global OEMs which was being done since ages, the country shall look forward to create more and more national champions among within the country who can compete with Global players.</p> <p>4. Definition of Local Content under the DoT PMI scheme should be aligned with the definition of Local Content in the MEITY PMI scheme where the non-availability of component eco-system in India at present is considered and SMT manufacturing should be encouraged at a large scale.</p> <p>The comparison shall be from apple to apple as the products identified by MeitY, under the referred policy dated 07.09.2020, are consumer products, whereas DoT is dealing with telecom products to be utilised to telecom networks involving security concerns.</p> <p>For the strategically and security sensitive telecom products mentioned in DoT policy dated</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments	
				<p>August 29, 2018, MeitY has different PMI policy for Cyber Security devices dated 6th Dec 2019. As per definition of this policy clause 3, communication devices must be covered under this policy.</p> <p>The products covered under DoT PMI policy are very security sensitive products and by no means can be compared with MeitY policy dated 07.09.2020. The country has just faced a cyberattack by Chinese intruders in Leh-Ladakh region in Power Grid network. Hence by no means, the telecom products including OTN, DWDM, IP-MPLS Routers, in DoT policy, can be compared with the hand-held consumer devices like Mobile phones, Desktops or Tablets.</p> <p>The policy dated 6th Dec, 2019, vide Clause-4, very clearly defines the 'local supplier' and 'local product'. The important points to be noted as per this policy are as under:</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments	
				<p data-bbox="1615 196 2069 448"> a. The definition of Indian company b. IPR ownership in India c. The revenue from products and IPR must accrue in India d. The local content must be at least 60% . </p> <p data-bbox="1615 456 2069 1385"> 5. R&D and associated Job creation, export generation should be measured as key criteria for assessing Local Content for a particular company. Job creation in R&D activities is not accounted for as a parameter currently in the PMI scheme which is not reflecting the true picture of investment and efforts made by companies in India. </p> <p data-bbox="1615 456 2069 1385"> Under PLI for the value addition of 6 – 10 % in India which is only assembly work, the incentive is 4-6%. In addition to low-cost mass job creation, employing quality mass engineers in India, who can create value for India, is important rather than doing job work for a foreign company. The PLI shall be design led and must create value for our nation. By exporting a product which has only a 5% VA in India, the country is going to achieve nothing in comparison to exporting a product with VA of 60 – 80%. More and more VA in India shall be promoted and therefore, linking incentive of PLI with VA is indispensable. The companies who do more than 50% VA in India shall get more PLI incentive rather than those who are doing the assembly work in India. </p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments		
					As highlighted above, the government intention is to build domestic competence in high technology products and promote R&D driven design, development manufacturing with IPR residing in India and thereby its commercial benefits accruing in India.
			Access to quality and secure components	Similar schemes like PLI must be introduced for building the component ecosystem, which will enthuse manufacturers to shift manufacturing to India.	The solution recommended is appreciable and may be conceded for including in recommendations.
			India has a cost disability of 6-10% compared to several other Asian countries. Despite the prevalence of the PPP-MII scheme over the last 10 years, there have not been significant shifts in manufacturing. The game-changer is the PLI scheme which has resulted in investments in the country.	To further augment these investments propelled by the PLI scheme, it is essential an alignment between PLI, and PMI policy is introduced. As highlighted earlier, this can be achieved with the government providing PMI points equivalent to 75% of the commitment of goods to be exported from India. The OEM could utilize these PMI points to qualify as a 'Deemed Class 1 Local Supplier' for products not	Kindly refer our comments against question No. 1. Both PLI and PMI schemes are different and have different objectives.

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments	
			<p>manufactured in India, from the date of approval of the application.</p> <p>PPP-PMI guidelines limit innovation in ICT solutions, therefore impacting the deployment of advanced and futuristic products. Given the evolving nature of technology, not all companies invest in R&D.</p>	<p>The focus should be on building an R&D ecosystem to develop domestic futuristic solutions. For projects concerning critical infrastructure, financial services, etc. implementation of PPP-MII guidelines should not be stringent.</p> <p>For the critical and security sensitive infrastructure more domestically manufactured products shall be promoted. It may be noted that domestically designed, developed and manufactured telecom product are already installed in financial sector and are giving satisfactory service.</p> <p>Already several cyberattacks have happened in various institutions linked to Power, Finance, Telecom networks, Govt departments., hence there is a need to promptly come out with a plan and policy with a support of Government to only deploy products whose IPR, Source Code reside in India.</p>
11	USISPF	<p>‘In contrast to manufacturing other commodities, telecom products are unique to manufacture as thousands of product IDs are custom made in accordance with a</p>	<p>The contention of stakeholder is appreciable; however, the domestic manufacturers are capable of meeting the customer's specific requirements.</p>	

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
		customer's specific requirements.	
11 & 12	Vodafone Idea	Para-3: “With digital growth across the globe, countries are witnessing enhanced telecom roleplay in Governance, public utilities delivery, defence, financial sector, healthcare etc. and thus, security and scalability of the telecom networks plays a vital role like never before. Also, India has its own peculiar security needs, which put lot more focus and responsibility on the telecom sector to ensure no compromise on the secured networks.”	The security and scalability concerns have been nicely articulated by the stakeholder.
12	COAI	While flexibility for procurement of networking and telecom equipment should remain with the TSPs, the government may consider an incentive-based approach to encourage procurement of indigenous networking and telecom equipment by TSPs. In such procurement cases, an exemption of GST on the procurement of networking and telecom	<p>As per license agreement for Unified License clause 24.3 “Preferential Market Access for procurement of indigenous manufactured products”, DOT can enforce all private ISPs/ TSPs licensee to buy domestically manufactured products. This is the right time when Government is looking towards making our nation आत्मनिर्भर.</p> <p>Reducing imports bills is equally important than increasing exports. Indian domestic telecom equipment manufacturers are capable enough to deliver world class, state of the art products, only handholding needed today is in terms of support for promoting R&D and market access. PMI with all private and Govt TSPs/ ISPs will open a big market for the domestic manufacturers and TRAI must continue to recommend the same.</p> <p>Last year lot of relaxations have been given to TSPs/ ISPs in terms of redefining AGR, PBG etc.; it would have been very prudent for the design led domestic telecom equipment industry if this relaxation would have been linked with domestic procurement. There are more than 1,100 TSPs/ ISPs in India and if domestic manufacturing is supported, country’s own domestic</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
		equipment may be provided as an incentive.	telecom equipment industry will establish itself shortly making our nation self-reliant for all demands of telecom products. we must mandate domestic active equipment procurement for all TSPs/ ISPs. However, they may be incentivized as relaxation in AGR etc. against the same as recommended by TEPC in the submission dated April 1, 2022.
12	Broadband India Forum ITU-APT Foundation of India		BIF as well ITU-APT Foundation of India have nicely articulated the requirement of the PPP-MII policy. However, under the PPP-MII policy, only Active design led domestically manufactured products, having $\geq 50\%$ Value addition in India needs to be promoted.
12	MAIT & USISPF	the domestic demand only stands at 3-5% of the total global demand. The focus of the government must shift from catering solely to domestic market to export to global market, the remaining 95%. Therefore, policies that are restricted to capturing the domestic market will neither help global investments nor catapult domestic players to the global supply chain. The comments of USISPF are also almost similar.	It's important for Indian domestic manufacturers to explore global market, however, India has second largest telecom network and so also the market in the world. It is prudent to tap the domestic market first and side by side make efforts to make the industry capable enough to compete, with established global OEMs, by supporting the same using various financial/ non-financial incentives and support. The same will enable domestic industry in achieving economies-of scale and be competitive in international market too.
12	Jio	Para-5: We suggest that under the incentive-based PMA scheme, focus should be to encourage design-based manufacturing in the country instead of low value addition components like tower erection, civil	The stakeholder has articulated the comment well. The domestically manufactured products shall be designed, developed and manufactured with all the IPR & patents residing in India and not components like tower erection, civil work, etc. The mandate, incentive for purchasing the domestic telecom products have been articulated in submission of TEPC dated April 1, 2022.

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
		work, etc. Incentivizing design-based manufacturing will drive development of manufacturing technology by domestic companies.	
12	BIF	An incentive-based approach deploying a combination of rewards and penalty might be instrumental in ensuring local procurement in the private sector as well. Similar views for incentivising TSPs for domestic procurement have also been given by COAI, Vodafone Idea, Airtel and Reliance Jio etc. except that in some cases penalty clause has been opposed	The comments have been nicely articulated by the stakeholder.
14	Applicable to comments made by almost all companies and associations.		<p>Misdeclaration of HS Codes under head 8517 is a bigger issue as existing HS Codes are obsolete/ insufficient as a result majority of the imports are happening under ‘Others’. This issue must be immediately addressed. TEPC had submitted the proposal for creation of twenty-one new tariff lines during December 2021 and mid-January 2022 to the concerned authorities. It is needed to create the proposed new tariff lines for sorting out the issue as recommended in our submission dated April 1, 2022.</p> <p>The Basic Custom Duty (BCD), on the components, shall be zero to make the domestic telecom products competitive vis-à-vis finished imported products of MNCs who enjoys economies-of-scale due to their worldwide presence. The same will extend a great support to both domestic manufactures and other Global players who have already started manufacturing in India. 20% BCD on import of components against 4-5 % PLI incentive is making the scheme less lucrative</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
			for many PLI applicants. Inverted duty in telecom manufacturing is important topic and must be addressed.
15	Tejas Networks Limited	Government should create National Champions in the telecom sector by identifying Companies that have the potential to reach global size/scale and help nurture the domestic telecom eco-system.	<p>As stated in TEPC's earlier submissions and also by Tejas, due to the CAPEX intensive nature of the ESDM sector and the need for economies of scale, there are typically only one or two global sized company in each country.</p> <p>In developing phase other countries promoted & established their Champions and incentivised, protected, provided market access to the same. The examples of Champions in various countries are Japan-Sony, Sanyo: Korea-Samsung, LG: USA AT&T, CISCO, Goggle, Qualcomm, Intel etc; China-Huawei, ZTE, Hikvision, Datang; Sweden- Ericsson; Finland-Nokia etc.</p> <p>India shall also learn from the experiences of the other major countries in NATEM.</p>
Para-6 of Opening Comments	Reliance-Jio Infocomm Limited	We agree with the authority that beyond the development of a domestic manufacturing industry in the country, the manufacturers also need a sustainable market to remain relevant.	The comments of the stakeholder are well articulated.
Para-4 & other Paras of Opening Remarks	Reliance Jio Infocomm	We agree that robust NATEM sector is a prerequisite in view of growing security concerns regarding data privacy and overarching geopolitical concerns surrounding personal data protection and national security. Accordingly, DoT had issued amendments in licenses in March 2021 for procurement of NATE from	<p>The stakeholder has nicely articulated that the same <i>shall be extended to all data related network hardware and software procurement by relevant stakeholders in the data ecosystem in the country, as data is the prevalent mode of communication and information exchange in current digital times and pose similar threat to individual and national security as that by telecommunication. Although such mandates, as have already been done for telecom equipment by DoT should allow required relaxation for stakeholders for the Covid times as the on-ground supply chains were severely impacted during such times.</i></p> <p>It is also suggested that the access device in the hands of customers, even though not procured by TSPs, be subject to trusted products policy, as they area biggest source of National security risks, data theft, cyber risks. There are several examples of such risks. One of classical example is that of Pegasus spyware which is a Trojan horse computer virus that can be sent 'flying through the air' to infect cell phones. Pegasus is able to exploit cell phones without any need for customer to click any code/site.</p>

Qn. No.	Name of Stakeholder	Comments of Stakeholder	Counter Comments
		trusted sources for ensuring security of telecom networks.	<p>The stakeholder has further nicely articulated, vide Para-6, that <i>“We agree with the Authority that beyond the development of a domestic manufacturing industry in the country, the manufacturers also need a sustainable market to remain relevant.”</i></p> <p><i>We submit that Government should support development of demand for products that are made in India through provisions of incentivizing players in domestic market and extending credit lines to support cash flows of domestic and global buyers, in line with global practices.</i></p>

Relevant Extract (Clause-4) of Public Procurement (Preference to Make in India) Order 2019 for Cyber Security Products of Ministry of Electronics and Information Technology

4. Definition of ‘local supplier’ of domestically manufactured/ produced Cyber Security Products

4.1 For the purpose of this Notification, the ‘local supplier’ is defined as follows:

- (A) A company incorporated and registered in India as governed by the applicable Act (Companies Act, LLP Act, Partnership Act etc.) or Startup that meet the definition as prescribed by DPIIT, Ministry of Commerce and Industry Government of India under the notification G.S.R. 364 (E) dated 11th April 2018 and recognized under Startup India initiative of DPIIT. DPIIT has since revised the definition of Startup vide G.S.R 127(E) dated 19th February 2019 which is applicable in this notification.

AND

Revenue from the product(s) in the India and revenue from Intellectual Property (IP) licensing shall accrue to the aforesaid company/Startup in India. The entity claiming benefits under the Public Procurement Order 2017 in addition to being an Indian registered/ incorporated entity, and supplying products should satisfy the conditions of IP ownership as under:

- (B)(i) Domestically manufactured/produced Cyber Security product means a product, whose intellectual property is owned by the Indian Company/Startup (as defined above) such that it has rights to:
- (a) Use and commercialize without third party consents; and
 - (b) Distribute; and
 - (c) Modify
- (B)(ii) Products with multiple sub-components can be covered under this notification. The minimum local content of cyber security product shall ordinarily be 60% of total cost of the product. Total licensing/royalty fee paid by the manufacturer to third party for such product shall not exceed 20% of the total cost of the product.
- (B)(iii) The Indian Company/Startup shall demonstrate ownership of intellectual property associated with the product, in addition to trademarks applicable, if any. IP ownership rights would need to be substantiated by adequate proof, such as (a) adequate documentation evidencing ownership OR (b) IP registrations.

4.2 Exclusion:

- (a) Resellers, Dealers, Distributors, implementation/ support services agencies of products, who have limited rights to IP to enable transfer of rights to use, distribute and modify.
- (b) Digital content is not considered a product e.g. audio, videos, e—books, computer based training platforms etc.

List of Product-Wise Domestic Manufacturers

Sl. No.	Description of Item	Manufacturers
1.	Encryption/ UTM platforms (TDM and IP) (Unified threat management)	<ol style="list-style-type: none"> 1. BEL 2. ECIL 3. CDOT 4. ITI 5. Quickheal (Seqrite) 6. Tejas Networks 7. Nivetti 8. Coral Telecom Ltd.
2.	2.1 Carrier Grade IP MPLS Backbone Routers (60G~4.8 TB)	<ol style="list-style-type: none"> 1. Tejas 2. Nivetti 3. CDoT ToT: BEL 4. CDoT ToT: ECIL 5. HFCL
	2.2 Cell Site Router (CSR)	<ol style="list-style-type: none"> 1. Tejas, 2. Nivetti, 3. CDoT ToT: BEL 4. CDoT ToT: ECIL 5. HFCL
	2.3 Enterprise IP Edge Routers	<ol style="list-style-type: none"> 1. Nivetti, 2. CDoT ToT: BEL 3. CDoT ToT: ECIL 4. Inventum 5. HFCL 6. Tejas Networks Ltd 7. Lavelle Networks 8. MRO Tek
	2.4 Internet backbone Routers (>1million routes) and Backbone Super Core Router (>4.8TB)	None
	2.5 BRAS Routers	<ol style="list-style-type: none"> 1. Inventum 2. CDoT ToT: BEL 3. CDoT ToT: ECIL
	2.6 SDWAN Routers	<ol style="list-style-type: none"> 1. Lavelle 2. Nubewell 3. Arakya 4. Tejas 5. HFCL
3.	Managed Leased line Network equipment	<ol style="list-style-type: none"> 1. Priamatel 2. Tejas Networks 3. ITI 4. CDoT
4.	4.1 L2/L3 Ethernet Switches (Metro and Enterprise) 1-100 GbE Stackable/ Standalone/ Modular Switches	<ol style="list-style-type: none"> 1. Tejas 2. Nivetti 3. C-DoT ToT: BEL 4. Primatel 5. MRO Tek 6. Infonet 7. HFCL

Sl. No.	Description of Item	Manufacturers
	4.2 Modular Layer 3 Core Switches 200 GbE+	<ol style="list-style-type: none"> 1. Tejas 2. Nivetti 3. C-DoT ToT: BEL 4. Primatel 5. HFCL
	4.3 Industrial Grade PoE/Non-PoE Switches 10 GbE PoE/ PoE+/ Non PoE	<ol style="list-style-type: none"> 1. Tejas 2. Nivetti 3. C-DoT ToT: BEL 4. SandsIndia 5. Primatel 6. MRO Tek 7. Infonet 8. HFCL
5.	5.1 IP based Soft Switches, IMS, Unified Communication Systems Enterprise Class	<ol style="list-style-type: none"> 1. Coral Telecom Ltd. 2. Accord Communications Ltd. 3. NXG (Nexge Technologies(P) Ltd.) 4. Elcom Innovations Ltd. 5. Matrix Comsec Pvt. Ltd. 6. AstTech Bangalore 7. C-DoT ToT: BEL
	5.2 IP based Soft Switches, IMS, Unified Communication Systems Carrier Class	<ol style="list-style-type: none"> 1. Sterlite Technologies Limited 2. NXG (Nexge Technologies(P) Ltd.) 3. CDOT
6.	6.1 Wireline/Wireless PABXs / IP PBX	<ol style="list-style-type: none"> 1. Coral Telecom 2. Asttech. Bangalore 3. Accord Communications 4. Matrix Comsec Pvt Ltd 5. Deepija
	6.2 Media Gateways Enterprise	<ol style="list-style-type: none"> 1. Coral Telecom Ltd 2. Dialtronics Systems pvt. Ltd. 3. Matrix Comsec pvt. Ltd 4. Sangoma 5. AstTech Bangalore 6. Vihaas Design Technologies 7. Elcom Innovation Ltd.
	6.3 Media Gateways Carrier Class	None
7.	7.1 CPE (including Wi-Fi Access points and Routers, Media Converters),	<ol style="list-style-type: none"> 1. C-DoT ToT: KAYNES 2. C-DoT ToT: CYIENT 3. Frog Cellsat 4. Tejas Networks 5. HFCL 6. SandsIndia 7. Digisol 8. C-DoT ToT: BEL 9. C-DoT ToT: ITI 10. C-DoT ToT: UTL Technologies 11. C-DoT ToT: System Control 12. C-DoT ToT: RCV
	7.2 2G/ 3G/ 4G/ LTE Modems	None

Sl. No.	Description of Item	Manufacturers
	7.3 Leased-line Modems	<ol style="list-style-type: none"> 1. Primatel 2. Tejas Networks Ltd 3. MRO Tek 4. CDOT 5. SandsIndia
	7.4 NFV/ SDN CPE	<ol style="list-style-type: none"> 1. Nubewell 2. Lavelle Networks 3. Tejas Networks Ltd. 4. MRO Tech 5. MYBOX
8.	Set-Top Boxes (Standard Definition & High Definition)	<ol style="list-style-type: none"> 1. C-DoT ToT: Surabhi 2. MYBOX 3. Trend Electronics 4. Logic Eastern 5. Dixon 6. Catvision Ltd 7. STB Technologies Pvt. Ltd
9.	9.1 SDH/ NG SDH	<ol style="list-style-type: none"> 1. C-DoT 2. FIBCOM 3. Primatel 4. TEJAS Networks Ltd 5. ITI
	9.2 Carrier-Ethernet/ CARRIER ETHERNET/MPLS-TP/ Packet Optical Transport equipment/ PTN (with or without OTN interfaces)/ OTN systems	<ol style="list-style-type: none"> 1. C-DoT 2. FIBCOM 3. Primatel 4. TEJAS Networks Ltd 5. UTL
10.	10.1 DWDM/ CWDM (Nx100G,Nx10G)	<ol style="list-style-type: none"> 1. Tejas 2. UTL 3. C-DoT 4. Fibcom
	10.2 DWDM (Nx200G Channels)	<ol style="list-style-type: none"> 1. Tejas 2. C-DoT 3. Fibcom 4. UTL
	10.3 DWDM (Nx400G Channels & beyond)	<ol style="list-style-type: none"> 1. Tejas 2. Fibcom 3. C-DoT 4. UTL
11.	11.1 GPON/XGPON equipment (including ONT and OLT)	<ol style="list-style-type: none"> 1. C-DoT ToT: BEL 2. C-DoT ToT: KAYNES 3. C-DoT ToT: CYIENT 4. C-DoT ToT: ITI Ltd 5. C-DoT ToT: UTL Technologies Ltd. 6. C-DoT ToT: HFCL 7. TEJAS Networks Ltd 8. Alphion 9. Current Optronics 10. MRO TEK
	11.2 XGS-PON, NG-PON2	<ol style="list-style-type: none"> 1. C-DoT ToT: BEL 2. C-DoT ToT: KAYNES 3. C-DoT ToT: CYIENT

Sl. No.	Description of Item	Manufacturers
		<ol style="list-style-type: none"> 4. C-DoT ToT: ITI Ltd 5. C-DoT ToT: UTL Technologies Ltd. 6. TEJAS Networks Ltd 7. Alphion
12.	12.1 Optical/ SDH/ PDH Cross Connects	<ol style="list-style-type: none"> 1. C-DoT 2. FIBCOM 3. Primatel 4. TEJAS Networks Ltd 5. UTL
	12.2 OTN Cross-connects and optical MUX, ROADM	<ol style="list-style-type: none"> 1. C-DoT 2. FIBCOM 3. Primatel 4. TEJAS Networks Ltd 5. UTL
13.	Small size 2 G GSM based Base Station Systems, with its various derivatives including rural & disaster response, Macro & Micro BTS, Small Cells, NIB, C-RAN BBU and RRH	<ol style="list-style-type: none"> 1. VNL Ltd. 2. HFCL 3. C-DoT ToT: ITI 4. Vanu ToT: Fibcom 5. Vanu ToT: Toshniwal
	Small size 3 G GSM based Base Station Systems, with its various derivatives including rural & disaster response, Macro & Micro BTS, Small Cells, NIB, C-RAN BBU and RRH	<ol style="list-style-type: none"> 1. VNL Ltd. 2. HFCL
14.	2 G GSM based Base Station Systems, with its various derivatives including rural & disaster response, Macro & Micro BTS, Small Cells, NIB, C-RAN BBU and RRH	<ol style="list-style-type: none"> 1. VNL Ltd 2. HFCL 3. C-DoT ToT: ITI
	3 G GSM based Base Station Systems, with its various derivatives including rural & disaster response, Macro & Micro BTS, Small Cells, NIB, C-RAN BBU and RRH	<ol style="list-style-type: none"> 1. VNL Ltd 2. HFCL
15.	Small Size LTE/ LTE-R Based Mobile Systems, with its various derivatives including rural & disaster communications, Macro & Micro eNodeB, Small Cells, EPC, NIB C-RAN BBU and RRH , LTE/ LTE-R/ 4.5 G/ 5 G based broadband wireless access systems (eNodeB, gNB, EPC, etc.)	<p style="text-align: center;">Its covered in Sl. No.16</p>
16.	16.1 Macro eNode B (TDD/FDD)	<ol style="list-style-type: none"> 1. C-DoT 2. Tejas Networks Ltd 3. Lekha Wireless 4. Resonous Technologies Pvt. Ltd. 5. VNL
	16.2 Micro eNodeB (TDD/FDD)	<ol style="list-style-type: none"> 1. C-DoT 2. Tejas Networks Ltd 3. Lekha Wireless 4. Resonous Technologies Pvt. Ltd 5. VNL 6. Sooktha

Sl. No.	Description of Item	Manufacturers
	16.3 Small Cell (TDD/FDD)	<ol style="list-style-type: none"> 1. C-DoT 2. Tejas Networks Ltd 3. Lekha Wireless 4. Resonous Technologies Pvt. Ltd 5. VNL
	16.4 Pico Cell (TDD/FDD)	<ol style="list-style-type: none"> 1. C-DoT 2. Lekha Wireless 3. Resonous Technologies Pvt. Ltd. 4. Sooktha 5. JIO 6. VNL
	16.5 Femto cell (TDD/FDD)	<ol style="list-style-type: none"> 1. C-DoT 2. Lekha Wireless 3. Resonous Technologies Pvt. Ltd 4. Sooktha 5. JIO 6. VNL
	16.6 EPC	<ol style="list-style-type: none"> 1. TCS 2. TechMahindra 3. Tejas Networks 4. VNL 5. HCL
	16.7 5G Systems (gNodeB)	<ol style="list-style-type: none"> 1. C-DoT 2. Tejas Networks Ltd 3. Sterlite 4. JIO 5. Wisig 6. VNL
	16.8 5G Systems (Packet Core) Carrier & Enterprise Class	<ol style="list-style-type: none"> 1. TCS 2. TechMahindra 3. HCL 4. JIO
17.	Wi-Fi based broadband wireless access systems indoor & Outdoor (Including Access Point, Aggregation Block, Core Block), Integrated Broadband system	<ol style="list-style-type: none"> 1. MAKSAT Technologies Pvt. Ltd 2. TEJAS Networks Ltd 3. Inventum Technologies Pvt. Ltd. 4. Frog Cellsat 5. HFCL 6. Kenstel 7. Kirat Communications 8. SandsIndia 9. UTL Technologies 10. Digisol 11. VNL 12. C-DoT ToT: BEL 13. C-DoT ToT: ITI 14. C-DoT ToT: System Control 15. C-DoT ToT: RCV 16. VVDN 17. C-DoT ToT: KAYNES 18. C-DoT ToT: CYIENT

Sl. No.	Description of Item	Manufacturers
	Microwave Radio systems (IP/ Hybrid), Mobile Front haul BBU and RRH (CPRI, eCPRI, FlexE, RoE, NGFI) (<24 GHz)	<ol style="list-style-type: none"> 1. HFCL 2. Shyam Telecom 3. BEL 4. ECIL 5. Frog Cellcast 6. VNL
18.	Microwave Radio systems (IP/ Hybrid), Mobile Front haul BBU and RRH (CPRI, eCPRI, FlexE, RoE, NGFI) (24-52 GHz)	None; as this band has not yet allotted in India. As & when the frequency will be allocated the manufacturers will build the capability.
	Microwave Radio systems (IP/ Hybrid), Mobile Front haul BBU and RRH (CPRI, eCPRI, FlexE, RoE, NGFI) (52-90 GHz)	None; as this band has not yet allotted in India. As & when the frequency will be allocated the manufacturers will build the capability.
19.	Software Defined Radio, Cognitive Radio systems	<ol style="list-style-type: none"> 1. BEL 2. Saankhya Labs 3. Rolta 4. HFCL 5. Sanctum 6. VNL
20.	Repeaters (RF/RF-over-Optical), IBS and Distributed Antenna system	<ol style="list-style-type: none"> 1. Kavveri Telecom 2. Vensurwaves 3. Mymo Wireless 4. BEL 5. Shyam Telecom 6. Commscope 7. VNL
21.	Satellite based systems – Hubs, VSAT Disaster Communication Systems etc.	<ol style="list-style-type: none"> 1. Hughes India 2. Decibel 3. BEL 4. HFCL (only modems) 5. VNL
22.	Copper access systems (DSL/ DSLAM), high-speed xDSL (G.fast)	<ol style="list-style-type: none"> 1. C-DoT 2. Nomus 3. MRO tek
23.	Network Management systems (NMS) with its various derivatives (Enterprise & Carrier Class)	<ol style="list-style-type: none"> 1. C-DoT 2. CYIENT DLM 3. Nivetti Systems Pvt. Ltd. 4. NMS Works 5. TEJAS Networks Ltd 6. Sterlite 7. Coral 8. Redisys 9. Subex 10. VNL
24.	Security and Surveillance Communication Systems (video and sensors based) including Perimeter Security Systems	<ol style="list-style-type: none"> 1. VNL (Perimeter sensors) 2. HFCL ((Perimeter sensors) 3. BEL (Thermal cameras) 4. Samriddhi Automations Pvt limited 5. CP Plus 6. Matrix Comsec Pvt. Ltd. 7. Videonetics 8. Sparsh Technologies

Sl. No.	Description of Item	Manufacturers
	Li-ion Batteries	<ol style="list-style-type: none"> 12. Artheon Electronics Ltd 13. Star Battery Limited 14. Amtek <ol style="list-style-type: none"> 1. ISRO ToT: BHEL 2. Exide Industries Ltd 3. Amara Raja Batteries Ltd 4. HBL Power Systems Ltd 5. EON Electric Company Ltd.
29.	IP audio phones / IP video Phones / Analog adaptor	<ol style="list-style-type: none"> 1. Coral Telecom 2. Kenstel Communications Pvt. Ltd. 3. Matrix Comsec 4. Elcom Innovation ltd.
30.	SDN Software Controllers, NVF and CNF software	<ol style="list-style-type: none"> 1. Inventum Technologies Pvt. Ltd 2. Nivetti Systems Pvt. Ltd. 3. IIT Chennai 4. DRDO CARE 5. TEJAS Networks Ltd 6. Lavelle Networks Pvt. Ltd. 7. Cosgrid 8. Nubewell 9. Sanctum
31.	Telecom Cloud infrastructure, Telecom Data centers	<ol style="list-style-type: none"> 1. Yotta 2. CtrlS 3. NetMagic 4. Bharti Airtel 5. ESDS 6. NxtGen 7. Sify 8. TCL 9. RailTel 10. Jio 11. NIC 12. Neosoft 13. Sterling Wilson
32.	2-way Analog/ Digital radio including Walkie-Talkie & Mobile Radio	<ol style="list-style-type: none"> 1. TalkPro 2. Trucom 3. BEL 4. Sanchar Communications System 5. VNL
33.	Batteries of 2-way Analog/ Digital radio including Walkie-Talkie	<ol style="list-style-type: none"> 1. Eon Electric Ltd 2. Future Hi-Tech Batteries 3. Sanchar Communications Systems
34.	Fibre Monitoring System	<ol style="list-style-type: none"> 1. Sterlite Technologies Limited 2. Birla Furukawa Fiber Optics Limited 3. Finolex cables limited 4. Himachal Futuristic Communications Limited 5. Inventum Technologies Pvt. Ltd 6. Nivetti Systems Pvt. Ltd. 7. CDOT 8. BITCOM TECH

Sl. No.	Description of Item	Manufacturers
35.	M2M/ IOT Subsystems including NB IoT, IoT Modules & Sensors including Smart Homes, Industrial Automation, 2G / Long Range Wide Area Sensor Networks (LoRAWAN) Systems, Lighting	<ol style="list-style-type: none"> 1. Pixel Cryon 2. Coeey (Healthcare) 3. Car IQ (Automobile Analytics) 4. Altiux (Smart Homes) 5. Enterox (Cloud and Big Data) 6. Uncanny Vision (Embedded System) 7. Light Metrics (Connected Trucks) 8. Things Cloud (Smart Energy) 9. Yuktix 10. Knowledge Lense (Big Data) 11. RHL Vision (Robotics) 12. Algo Engines (Smart Electricity) 13. Machine Pulse (Big Data and Analytics) 14. Inventrom-Bolt (Cloud Platform) 15. Altizon (Smart Manufacturing) 16. Entrib-Shopwork (Industrial IoT) 17. Maven System (Smart Metering) 18. UBER Diagnostics (Medical) 19. WiSIG 20. DSP works 21. Sensorize 22. VNL 23. Green IP Core (water sensors) 24. Life9 systems 25. Asimov Robotics Pvt Ltd 26. Brain Wired (livestock monitoring) 27. Cavalier Wireless (Cellular IOT modules) 28. Enspark Systems (Home automation) 29. Fayette innovation (wearable devices) 30. Nyokas Technologies (intelligent textile systems) 31. wioo pikings Pvt Ltd (hardware IoT modules) 32. Neosoft
36.	Telecom Services/ Works	More than 100 Companies
37.	Gateways: GSM VOIP, signalling, Broadband	<ol style="list-style-type: none"> 1. Dialtronics 2. Matrix Comsec 3. Inventum Technologies Pvt. Ltd 4. TEJAS Networks Ltd 5. Nivetti Systems Pvt. Ltd. 6. Frog Cellsat
38.	Camera including long range camera, IP/Analog camera & Recorders	<ol style="list-style-type: none"> 1. VNL 2. Sparsh 3. VVDN 4. Samriddhi Automations Pvt Ltd 5. Sansap Technology Pvt Ltd 6. Matrix Comsec
39.	Intelligent Jammers	<ol style="list-style-type: none"> 1. VNL 2. Radio Product companies
40.	Video Conferencing	<ol style="list-style-type: none"> 1. Coral telecom 2. C-DoT 3. IIT Rurki 4. MeitY companies under hackathon

