

**TENDER FOR SITE SURVEY, DECOMMISSIONING, DESIGN, SUPPLY, DELIVERY, INSTALLATION, TESTING, INTEGRATION, COMMISSIONING AND MAINTENANCE OF THIRTEEN (13) REMOTE MONITORING SYSTEMS AND ONE (1) MOBILE MONITORING SYSTEM**

**Tender No: MCMC/QMD/IREN(01)/NASMOC2026/TC/03/2026(03)**

**1. Scope of Work**

No.	Question	Answer
1	<p>40.1.1. Successful Tenderer shall conduct site survey work for the existing eleven (11) RMS locations, which are FMS_KUL, FMS_SHA, FMS_SPG, FMS_SBN, RMS_SLY, RMS_KGJ, RMS_KLIA2, RMS_KLG, RMS_CBJ, RMS_BTU and RMS_SBJ. This survey is to ensure that the existing sites are suitable and optimal for the installation and placement of the new RMS.</p> <p>Will the original site survey report be shared, just to compare the previous surrounding conditions against current? Are these sites already with local authorities (OSC/PBT) approval?</p>	<p>MCMC will not be sharing any previous site survey reports. The purpose of the site survey is to ensure that the radio environment at each location meets the required protection levels for receiving equipment in accordance with Recommendation ITU-R SM.575-3. As different manufacturers' equipment may have varying characteristics, each Tenderer is required to independently assess site suitability based on their proposed solution.</p> <p>In addition, approvals from the relevant local authorities (OSC/PBT) are mandatory for all sites, regardless of whether they are existing, upgraded, or newly proposed.</p>
2	<p>40.1.3. If the current RMS locations are not suitable for installing the new RMS, the Successful Tenderer must conduct a site survey to identify an appropriate location within a 10 km radius of the existing RMS sites and/or in the designated areas specified by MCMC.</p> <p>Please specify how many candidates have to be proposed for each site survey. How many rounds of site survey are expected? This is to allow commercial calculation for the site survey cost. Unlimited site surveys will increase the cost tremendously.</p>	<p>The number of site survey iterations is not fixed and may be determined by the Tenderer as required to identify suitable locations. However, a minimum of six (6) candidate locations shall be proposed in accordance with Clause 40.3.1.</p> <p>Only locations that meet the technical requirements and obtain both landowner and MCMC approvals will be considered acceptable.</p>
3	<p>40.1.4. The newly proposed sites must also consider any locations MCMC recommends.</p>	<p>As stated under Clause 40.1.3, the radius for proposed sites shall be within 10 km from the existing RMS locations. MCMC may also propose candidate locations within this radius, subject to final evaluation and approval.</p>

No.	Question	Answer
	Is there a limit to the radius from original location?	
4	<p>40.2.4. Successful Tenderer shall then obtain approval from the relevant parties via documentation as specified in subparagraph 53.1. until subparagraph 53.4. under Section 5 of this Tender Document prior to any installation work.</p> <p>Please advise if the existing sites (11 of them) are with permits from PBT? If no, who will be responsible for the fines (if any) imposed by the respective PBT or other authorities for the building of sites without prior permit?</p>	<p>Any penalties imposed during the approval application process prior to installation shall be borne by MCMC.</p> <p>However, in the event that any penalty is incurred due to installation works being carried out before obtaining the necessary approvals from the relevant authorities, such penalties shall be borne by the Successful Tenderer.</p>
5	<p>40.3.1. Successful Tenderer shall submit a complete site acquisition proposal to MCMC including the site survey checklist for at least six (6) proposed sites for each area within 10km radius from the existing and decommissioned locations of RMS and for the two relocations of RMS at Chukai, Terengganu and Port Dickson, Negeri Sembilan.</p> <p>Upon furnishing of site acquisition proposal for MCMC's review and consideration, the project timeline will pause. This is to allow the time required for site acquisition and also permitting works including all other prerequisite documents required for the submission to PBT. Is this acceptable?</p>	<p>The project timeline shall not be considered paused during site acquisition or permitting processes, and such activities shall not, in themselves, constitute grounds for any extension of time.</p> <p>Any request for extension of time shall be subject to MCMC's prior written approval and shall only be considered under exceptional circumstances beyond the reasonable control of the Successful Tenderer, taking into consideration the Successful Tenderer's maximum effort to mitigate and overcome the delay.</p> <p>The Successful Tenderer is expected to carry out works in parallel where necessary and permitted, and shall take all necessary actions to ensure that the project is delivered within the required timeline.</p>
6	<p>40.3.2. MCMC shall inform the Successful Tenderer on the chosen site for each area upon approval from the building owner/building management. Successful Tenderer shall not compel MCMC in any manner to expedite the site acquisition approval process from the building owner/building management which is beyond MCMC's control. Successful Tenderer shall respect and understand the procedures, processes and timelines imposed by the building owner/building management for them to provide their decision on MCMC's site acquisition application. MCMC has the discretion to withhold site acquisition approval due to delays caused by the</p>	<p>Site acquisition activities shall only apply to new or relocated sites. For deployment at existing sites, MCMC has already established the necessary agreements with the respective premise owners.</p> <p>For new or relocated sites, upon submission of the site acquisition proposal by the Successful Tenderer, MCMC shall be responsible for finalising the site agreement with the respective premise owner prior to the permitting process.</p> <p>The Successful Tenderer shall be responsible for identifying suitable sites, preparing and submitting the required proposals, and coordinating with</p>

No.	Question	Answer
	<p>building owner or building management.</p> <p>As in 40.3.1, the proposal is to pause the project timeline at this stage until complete approvals have been obtained from PBT.</p>	<p>MCMC by providing all necessary documentation and support to facilitate the site agreement and subsequent permitting process.</p> <p>Notwithstanding the above, the Successful Tenderer shall take into account this dependency in its project planning and shall take all necessary actions to ensure that the overall project timeline is met. Any request for extension of time shall be subject to MCMC's prior written approval, taking into consideration the Successful Tenderer's maximum effort to mitigate any delay.</p>
7	<p>40.3.3.</p> <p>Successful Tenderer shall re-conduct the site survey work without any additional costs to MCMC if MCMC is not satisfied with the submitted site acquisition proposal or MCMC's site acquisition application is rejected by the building owner and/or building management. The site survey work shall be conducted as per subparagraph 40.1 and subparagraph 40.2 above.</p> <p>Please specify how many candidates have to be proposed for each site survey. How many rounds of site survey are expected? This is to allow commercial calculation for the site survey cost. Unlimited site surveys will increase the cost tremendously.</p>	<p>As specified in Clause 40.3.1., a minimum of six (6) candidate locations shall be proposed for each area in the case of new and relocated sites (if any).</p> <p>The number of site survey iterations is not fixed. However, the Successful Tenderer is expected to exercise due diligence in identifying suitable locations that meet the requirements to minimise the need for repeated submissions. The Successful Tenderer is also encouraged to engage with the site/land owner during the site survey stage to assess feasibility and likelihood of acceptance prior to formal submission.</p> <p>Any re-conduct of site surveys shall be in accordance with the requirements of this Tender Document and at no additional cost to MCMC.</p>
8	<p>41.3.</p> <p>Successful Tenderer shall identify the RMS system and non-system components to be decommissioned at the RMS based on the checklist of RMS Decommissioning in Appendix M of this tender document. The successful Tenderer shall provide MCMC with a duly filled checklist of RMS Decommissioning for MCMC's approval prior to the RMS decommissioning work.</p> <p>Can some of the current fixtures or structures at the site, for example antenna pole, be left in the same position and reused if found suitable during site survey? Would MCMC consider this?</p>	<p>Yes, this is allowed. As stated in Clause 41.14, the Successful Tenderer may propose the reutilisation of non-system components at the RMS and MMS, such as existing fixtures or structures, if found suitable during the site survey.</p> <p>Any such proposal shall be clearly identified in the RMS Decommissioning checklist and shall be subject to evaluation and prior written approval by MCMC before implementation.</p>
9	<p>41.4.</p> <p>Successful Tenderer shall execute the decommissioning of the</p>	<p>Yes, the decommissioning works shall be limited to components installed as part of the existing RMS system. Where the grounding cable is connected to</p>

No.	Question	Answer
	<p>existing RMS installed at the building rooftop, including slab (if applicable), cables and grounding cables. A minimum of two (2) Commission personnel shall verify the decommissioning work.</p> <p>If the grounding cable is currently tapped to the current building cable, only the one related to the later installation will be removed. Please confirm.</p>	<p>the building's existing grounding system, only the portion associated with the RMS installation shall be removed (if required or not re-used).</p> <p>Any existing building infrastructure shall not be altered or removed. The Successful Tenderer shall ensure that the integrity and functionality of the building's grounding system are maintained at all times.</p>
10	<p>41.5. Successful Tenderer shall follow the building rules and regulations as instructed by the respective building owner/building management.</p> <p>As in 41.3, if the building management does not allow for new structures to be build, especially the antenna pole to avoid any damages to the roof slab, can this be maintained as is?</p>	<p>The Successful Tenderer shall comply with the requirements and restrictions imposed by the building owner or building management.</p> <p>In the event that new structures (e.g. antenna pole) are not permitted, the Successful Tenderer may propose to maintain or reutilize the existing structure, subject to MCMC's evaluation and approval.</p> <p>Any proposed solution shall ensure that the system meets the required building owner requirements and technical performance, including DF accuracy.</p>
11	<p>42.2.2 Electromagnetic Compatibility i. Shall be at least IEC 61000-4-2,-3,-4 CISPR 11, group 1, class B as per recommendation under table 3.3-1 of the ITU Handbook Spectrum Monitoring (Edition 2011) or any latest version published by ITU.</p> <p>Can MCMC accept equivalent standard such as ETSI EN 301489-1, ETSI EN 301489-22 and EN 55032 class B?</p>	<p>The requirement shall be in accordance with the ITU Handbook on Spectrum Monitoring (Edition 2011) or the latest version published by ITU, as specified in the Tender Document.</p> <p>Equivalent standards may be considered only if it can be clearly demonstrated that they meet or exceed the requirements of the specified standards. Such equivalency shall be subject to evaluation and approval by MCMC. For instance, while EN 55032 Class B addresses electromagnetic emissions for multimedia equipment, it is not directly equivalent to CISPR 11 Class B, which is specifically intended for industrial, scientific and medical equipment, including spectrum monitoring systems.</p>
12	<p>42.2.2 Temperature, Humidity and Robustness iii. Shall meet the IP ratings of IP65 or better class of protection.</p> <p>If the equipment is installed in an enclosure, does the IP rating of the enclosure is sufficient for this requirement?</p>	<p>The requirement for IP65 (or better) shall apply to the enclosure in which the equipment is installed.</p> <p>The enclosure shall provide adequate protection to ensure that the equipment is able to withstand environmental conditions and operate reliably. Accordingly, compliance with the required IP rating may be achieved at the enclosure level.</p>

No.	Question	Answer
13	<p>42.2.3 Processor</p> <p>Does the processor have to be a separate device from the receiver? If it is integrated within one unit, is it acceptable by MCMC?</p>	<p>The processor does not need to be a separate device from the receiver. An integrated unit comprising both the receiver and processor is acceptable, provided that all specified requirements in the Tender Document are fully met.</p>
14	<p>42.2.3 Processor</p> <p>iv. Shall meet the IP ratings of IP65 or better class of protection.</p> <p>If the equipment is installed in an enclosure, does the IP rating of the enclosure is sufficient for this requirement?</p>	<p>The requirement for IP65 (or better) shall apply to the enclosure in which the equipment is installed.</p> <p>The enclosure shall provide adequate protection to ensure that the equipment is able to withstand environmental conditions and operate reliably. Accordingly, compliance with the required IP rating may be achieved at the enclosure level.</p>
15	<p>42.2.3 Processor</p> <p>vi. Shall have fast processing system to perform multiple schedule monitoring, direction finding or both tasks simultaneously.</p> <p>Please clarify if the simultaneous monitoring and DF tasks are within the Instantaneous Bandwidth (20 MHz or better).</p>	<p>The requirement for simultaneous monitoring and direction finding (DF) is not limited to operation within the instantaneous bandwidth (20 MHz or better).</p> <p>Simultaneous operation here refers to the system's capability to perform multiple functions concurrently. For example:</p> <ol style="list-style-type: none"> <li>1. Real-time spectrum monitoring and DF may be conducted simultaneously within the instantaneous bandwidth; and/or</li> <li>2. Spectrum occupancy measurements may be performed in parallel with other monitoring functions (e.g. DF or real-time monitoring), including across different frequency ranges.</li> </ol> <p>Accordingly, the system shall be capable of supporting concurrent operations across its functional capabilities and shall not be restricted to a single task or a single frequency segment.</p>
16	<p>42.4</p> <p>The System shall be designed, implemented, and maintained to achieve a minimum operational reliability of ninety-nine percent (99%) uptime, ensuring continuous service availability and minimizing failure incidents under normal operating conditions.</p> <p>Please clarify how the 99% uptime is evaluated. Is this applicable only for the system hardware?</p>	<p>Operational reliability refers to the ability of the system to consistently perform its intended functions without failure on a continuous 24/7 operational basis throughout the year.</p> <p>The Successful Tenderer shall demonstrate, with supporting evidence, that the proposed system is capable of achieving a minimum operational reliability of 99% uptime under normal operating conditions.</p>

No.	Question	Answer
		This requirement applies to the overall system performance, including hardware, software, and associated system components, and shall not be limited solely to hardware elements.
17	<p>43.2.1 Enclosure</p> <p>i. Shall have a maximum dimension of 2000 mm (height) x 700 mm (width) x 1000 mm (depth) or smaller at a fixed location.</p> <p>Is this enclosure expected to be pole or floor mounted?</p>	<p>MCMC does not impose specific requirements on whether the enclosure is pole-mounted or floor-mounted. The mounting method may be determined by the Successful Tenderer based on site suitability.</p> <p>However, the proposed mounting arrangement shall be subject to the approval of MCMC and the building owner or building management, and shall comply with all relevant structural, safety, and regulatory requirements, including those imposed by the relevant authorities.</p>
18	<p>43.2.1 Enclosure</p> <p>ii. Shall be made of stainless steel and have a maximum weight of 50 kg or lighter.</p> <p>Does the weight only for the enclosure or including all the components to be installed in the enclosure? For the total weight including the system, is there a limit set?</p>	<p>The specified maximum weight of 50 kg refers to the enclosure only and does not include the weight of system or non-system components installed within it.</p> <p>The Successful Tenderer shall ensure that the enclosure complies with the specified weight limit and that the overall weight of the installed system is suitable for the proposed mounting arrangement and installation environment.</p>
19	<p>43.2.2 Power and Electricity Sub-meter</p> <p>vi. The supplied digital electric sub-meter shall be approved by the Standard and Industrial Research Institute of Malaysia (SIRIM).</p> <p>If the suggested unit is approved by one of the origin country standards organization, will this be acceptable?</p>	<p>The proposed digital electric sub-meter shall be approved by the Standard and Industrial Research Institute of Malaysia (SIRIM), as specified in the Tender Document.</p> <p>Approval from other standards organizations in the country of origin shall not be considered a substitute for SIRIM approval.</p>
20	<p>43.2.2 Power and Electricity Sub-meter</p> <p>viii. Shall follow Tenaga Nasional Berhad/Sarawak Energy Berhad procedures for electricity meter registration, if required by the building owner/building management.</p> <p>What is MCMC's role in the situations new applications are to be made? Will MCMC be involved in the registration and the payment of fees for the power to be supplied to the location if a separate TNB supply is mandatory?</p>	<p>The Successful Tenderer shall be responsible for the registration of the electricity meter with Tenaga Nasional Berhad/Sarawak Energy Berhad, including compliance with all applicable procedures, for and on behalf of MCMC, and shall bear all associated fees and costs.</p> <p>MCMC will assist by providing the necessary supporting documentation, such as the Tenancy Agreement, where required.</p>
21	43.2.4 IPVPN Link	The existing RMS system is currently supported by an IPVPN link, and the

No.	Question	Answer
	<p>i. Shall provide an IPVPN link at the RMS to enable remote connection and data transfer from RMS to MCMC Office in Cyberjaya and relevant State Offices.</p> <p>Who shall initiate the registration for an IPVPN link? Who pays the monthly/yearly fees imposed by the service provider?</p>	<p>Successful Tenderer may propose to continue the subscription of the existing IPVPN service where feasible.</p> <p>In the event that a bandwidth upgrade or modification is required, the Successful Tenderer shall provide sufficient justification and supporting evidence for MCMC's evaluation and approval.</p> <p>MCMC will be responsible for the registration and any necessary upgrade of the IPVPN link, including coordination with the service provider. The recurring costs, including monthly or yearly subscription fees imposed by the service provider, shall be borne by MCMC.</p>
22	<p>43.2.4 IPVPN Link</p> <p>v. Shall coordinate with the existing Service Provider of MCMC's IPVPN link to enable the establishment of the IPVPN link.</p> <p>If the existing service provider of MCMC's IPVPN link has to adapt to new network interfaces, who will pay for the services?</p>	<p>The Successful Tenderer shall be responsible for ensuring that the proposed system is compatible with MCMC's existing IPVPN infrastructure.</p> <p>Any adaptation required to interface with the existing IPVPN link, including modifications to accommodate the network interface or configuration, shall be borne by the Successful Tenderer.</p>
23	<p>43.2.4 IPVPN Link</p> <p>vi. Shall supervise router installation performed by the Service Provider of MCMC's IPVPN link.</p> <p>This is only limited to supervision? The complete resolution of the link shall be under whose responsibility?</p>	<p>In this context, "resolution" refers to the completion, configuration, testing, and troubleshooting of the IPVPN link to ensure that it is fully operational.</p> <p>The scope of the Successful Tenderer is limited to supervising the router installation and coordinating with the Service Provider. The Service Provider shall be responsible for the installation, configuration, and commissioning of the IPVPN link.</p> <p>The Successful Tenderer shall ensure proper integration of the system with the IPVPN link and provide the necessary coordination support until the IPVPN link is fully operational.</p> <p>Where internal wiring is required for the connection from the Main Distribution Frame (MDF) or Telecom room (i.e. the Service Provider's point of entry to the building or premises for distribution) to the router installed within the enclosure, such works shall be the responsibility of the Successful Tenderer. This includes installation, testing, and compliance with applicable standards, site requirements, and the Service Provider's</p>

No.	Question	Answer
		specifications.
24	<p>43.2.6 Fixed ladder</p> <p>i. Shall install a fixed ladder to have access to the elevated rooftop platform of the installed RMS system and non- system components, if applicable or as instructed by MCMC.</p> <p>For confirmation, the installation shall also be subject to the building management's approval. Successful tenderer will only execute the installation once approval is official received, via MCMC.</p>	<p>Yes, the installation of a fixed ladder shall be subject to the approval of the building owner or building management.</p> <p>The Successful Tenderer shall be responsible for obtaining the necessary approvals. Installation shall only proceed upon receipt of the required approvals, with MCMC's endorsement where applicable.</p>
25	<p>43.2.7 Door Grill and Steel Fence</p> <p>ii. Shall install a steel fence surrounding the RMS system and non-system components, if applicable or as instructed by MCMC.</p> <p>How high steel fence is required?</p>	<p>The height of the steel fence shall be sufficient to provide adequate protection for the RMS system and non-system components against unauthorized access, intrusion, or vandalism.</p> <p>The proposed fence design and height shall also be subject to site conditions and approval by MCMC.</p>
26	<p>43.2.7 Door Grill and Steel Fence</p> <p>iii. The installed steel fence shall not affect the DF accuracy of 1 degree (°) r.m.s as recommended in ITU-R Recommendation SM.854.</p> <p>To achieve the DF accuracy according to the ITU-R Recommendation SM.854, there is a distance requirement to the nearest metallic structure. If the space is limited and it is found that the steel fence will cause operational issues, will the fence/door grill be excluded or the DF accuracy be compromised?</p>	<p>The requirement shall be assessed based on site conditions. Where space constraints exist and the installation of a steel fence or door grill may affect DF accuracy, MCMC may consider relaxing this requirement, provided that the site is deemed to be adequately secured against unauthorized access or vandalism.</p> <p>Such considerations shall be subject to MCMC's evaluation and approval.</p> <p>Where installation of the steel fence or door grill is still required, the Successful Tenderer shall ensure that DF and monitoring antennas are installed at a suitable height (e.g. mounted on a pole above the fence level) to mitigate any impact on DF performance.</p>
27	<p>43.3</p> <p>Successful Tenderer shall also supply and install any other non-system components other than in Table 6 above for each RMS site that may be required by MCMC from time to time and/or the requirement(s)/initiative(s) from the Successful Tenderer to ensure that the non-system components are fully comprehensive to be integrated with RMS system components.</p>	<p>As stated in Clause 43.3, the Successful Tenderer shall supply and install any additional non-system components as may be required by MCMC or the building owner/building management, even if such components are not explicitly stated in the final design document.</p> <p>Such requirements may arise from site-specific conditions, safety considerations, regulatory requirements, or to ensure proper functionality and integration of the RMS system.</p>

No.	Question	Answer
	<p>Final design document that is agreed and approved will be the reference for project implementation. Any additional components required after the final design must be mutually agreed by both parties and with the aim to improve the project. Please confirm that this is acceptable. Setting no limit will increase the total project costing.</p>	<p>All such requirements shall be subject to MCMC's evaluation and instruction, and the Successful Tenderer shall comply accordingly.</p>
28	<p>44.1 Successful Tenderer shall enable remote control connection via IPVPN link from the thirteen (13) installed RMS to MCMC Office in Cyberjaya with a proprietary spectrum monitoring software or centralised monitoring system.</p> <p>For the stability of the system, there is a minimum network throughput required. Will MCMC provide the network connectivity or the subscription is part of the successful tenderer's scope?</p>	<p>The Successful Tenderer shall provide the necessary network requirements, including supporting evidence on the minimum throughput and performance needed to ensure system stability.</p> <p>MCMC will assess the requirement and may upgrade the existing network connectivity where necessary, subject to justification and alignment with MCMC's existing network usage and capacity.</p>
29	<p>44.3 Successful Tenderer shall provide an interactive and user-friendly GUI software to enable MCMC officers to perform spectrum monitoring, measurements and DF tasks easily and effectively. The software must be constantly compatible with the latest Microsoft Operating System without using any virtual machine environment. If any update or upgrade is required, the cost shall be borne by the Successful Tenderer.</p> <p>The latest software will be installed during the project implementation period up to commissioning. For constant update of the software to the latest version, software SLA can be offered on yearly basis. Is this expected by MCMC?</p>	<p>As specified in the Tender Document, the software shall remain compatible with the latest Microsoft Operating System, and any required updates or upgrades shall be borne by the Successful Tenderer.</p> <p>Therefore, the provision of updates shall not be subject to a separate software SLA or additional cost to MCMC. The Successful Tenderer shall ensure continuous compatibility and necessary updates throughout the contract period as part of their obligations.</p>
30	<p>44.5 Successful Tenderer shall provide a software that enables sharing and transfer of data from the RMS to the spectrum monitoring software and vice versa securely with a high-throughput data transfer rate.</p>	<p>The Successful Tenderer shall provide the necessary network requirements, including supporting evidence on the minimum throughput and performance needed to ensure system stability and high-throughput data transfer.</p> <p>MCMC will assess the requirement and may upgrade the existing network</p>

No.	Question	Answer
	For the stability of the system, there is a minimum network throughput required. Will MCMC provide the network connectivity or the subscription is part of the successful tenderer's scope?	connectivity where necessary, subject to justification and alignment with MCMC's existing network usage and capacity.
31	<p>44.7 Successful Tenderer shall provide a software that is able to generate accumulated spectrum measurement data obtained from a particular RMS in graphical format(s) for reporting purposes.</p> <p>Specify the available spectrum measurement data here. Is a non-graphical format such as a PDF be acceptable?</p>	<p>Yes, non-graphical formats such as PDF are acceptable for reporting purposes.</p> <p>The software shall be capable of generating and displaying spectrum measurement results in both graphical and tabulated formats. At a minimum, the following outputs shall be supported for the entire measurement period:</p> <ul style="list-style-type: none"> <li>a. Graphical representation of total average and maximum occupancy versus frequency or channel</li> <li>b. Graphical representation of total average and maximum field strength versus channel</li> <li>c. Tabulated values of average and maximum occupancy for each channel, listed sequentially according to bandwidth spacing</li> <li>d. Tabulated values of average and maximum field strength for each channel, listed sequentially according to bandwidth spacing</li> </ul> <p>The above requirements shall apply for both frequency range measurements and measurements conducted on multiple single-frequency channels. In the case of multiple single-frequency channel measurements, the results shall be presented accordingly, including in separate graphs where applicable.</p> <p>In addition, the software shall provide an interactive graphical interface that allows users to view, scroll, and inspect measurement results, including displaying the corresponding values for each individual channel directly from the graph. The retrieval of such information shall be straightforward and user-friendly, without requiring multiple or complex steps.</p>

No.	Question	Answer
32	<p>44.9 Successful Tenderer shall provide software with security features to prevent any unauthorized access to the software and shall come with predefined user control to allow access for certain modules.</p> <p>Please specify the expectation of the security feature here. Does user-login function with password meet the requirement here?</p>	<p>User login with password protection is acceptable as part of the required security features.</p> <p>In addition, the software shall incorporate adequate security measures to prevent unauthorized access and shall not introduce any vulnerabilities that could compromise or expose MCMC's network to cybersecurity threats.</p>
33	<p>44.10 Successful Tenderer shall provide a software to be capable of performing spectrum monitoring, measurements &amp; DF tasks as recommended in ITU-R Recommendation SM.1050 and meet the specifications as per Table 7 below:</p> <p>Refer to attached SM.1050 with highlights. The SM.1050 defines also Spectrum management tasks and other EMC tasks (highlighted in yellow). Are they required here in totality?</p>	<p>The requirement to comply with ITU-R Recommendation SM.1050 applies specifically to spectrum monitoring and direction finding (DF) functionalities.</p> <p>Spectrum management tasks and other EMC-related functions referenced in ITU-R SM.1050 are not required under this scope.</p>
34	<p>44.10.1 Spectrum Monitoring Real-time Display v. Both video and audio recordings shall be stored in both separate and single combined file format.</p> <p>Please provide a sample of the separate and single combined file format. What is the file format expected here?</p>	<p>Separate file format refers to the ability to store spectrum (video/visual display) and audio (demodulated signal) recordings as individual files.</p> <p>Combined file format refers to the integration of both spectrum (video) and audio recordings into a single file (e.g. video file with embedded audio).</p> <p>No specific file format is mandated. Standard audio and/or video formats are acceptable, provided they are compatible with and can be played using standard Windows operating system media players.</p>
35	<p>44.10.1 Spectrum Monitoring Real-time Display vi. Equipped with technical measurement units such as dBm, dB<math>\mu</math>V and etc. The panoramic display mode shall default to displaying the spectrum waveform in dBm measurement units.</p> <p>Please specify the unit expected here. Is dBm and dBuV enough? Please provide the exhaustive list of the measurement units required.</p>	<p>The software shall support measurement units in dBm and dB<math>\mu</math>V as a minimum requirement.</p> <p>Tenderers with spectrum monitoring software that supports additional measurement units beyond these minimum requirements will have added advantage.</p>
36	<p>44.10.1 Spectrum Monitoring Real-time Display viii. Equipped with selectable pan bandwidth and IF bandwidth options as per RMS system component specifications.</p>	<p>Pan bandwidth refers to the frequency span or range displayed in the real-time spectrum view at any given instance.</p>

No.	Question	Answer
	Please explain pan bandwidth.	<p>It defines how wide a portion of the spectrum is observed simultaneously on the display.</p> <p>The system shall allow selectable pan bandwidth options in accordance with the RMS system component specifications.</p>
37	<p>44.10.1 Spectrum Monitoring Real-time Display ix. Equipped with selectable antenna polarizations whether vertical or horizontal polarization.</p> <p>Please specify the frequency ranges for vertical and horizontal polarization.</p>	Both vertical and horizontal polarization shall be supported across the full operating frequency range of the antenna, as specified in Clause 42.2.1, i.e. from 20 MHz to 8 GHz.
38	<p>44.10.1 Spectrum Monitoring Real-time Display x. Equipped with selectable detection modes as per RMS system component specifications.</p> <p>Please specify the detection modes required. How many detection modes required? When possible, provide the exhaustive list of the complete detection modes required.</p>	<p>The software shall support, at a minimum, the following detection modes: Active trace, Average, Peak hold and RMS.</p> <p>Tenderers offering additional detection modes beyond these minimum requirements will have added advantage.</p>
39	<p>44.10.1 Spectrum Monitoring Real-time Display xi. Equipped with the capability to demodulate any digital signal captured if not encrypted.</p> <p>Please explain on the digital signal. What type of digital signals required? When possible, provide the exhaustive list of type of signal that has to be demodulated? Will MCMC accept the list of demodulators provided within the datasheet as the total digital signals that can be demodulated?</p>	<p>Digital signals refer to non-analog modulated signals that can be demodulated and interpreted by the system, including conversion to audio output where applicable, provided that such signals are not encrypted.</p> <p>An exhaustive list of digital signal types is not prescribed. However, the system shall be capable of demodulating commonly used digital communication signals relevant to applications such as amateur radio, aeronautical, maritime, and other communication services.</p> <p>Tenderers may provide the list of supported demodulators as stated in their system datasheet. This list will be evaluated by MCMC to determine the extent and capability of digital signal demodulation offered.</p>
40	<p>44.10.2 Spectrum Occupancy Measurement a. Frequency channel field strength in dB<math>\mu</math>V/m with direction of transmission and recorded time.</p> <p>Is this measurement within instantaneous bandwidth?</p>	<p>The measurement is not limited to the instantaneous bandwidth.</p> <p>Spectrum occupancy measurement may be conducted on multiple single-frequency channels, multiple frequency ranges or combination of multiple single-frequency channels and frequency ranges and is not restricted to</p>

No.	Question	Answer
		operation within the instantaneous bandwidth.
41	<p>44.10.2 Spectrum Occupancy Measurement  b. Specific frequency band(s) or single or list of frequencies occupancy by average and maximum field strength in dB<math>\mu</math>V/m of usage from one (1) minute up to three (3) months measurement duration over user-defined intervals.</p> <p>Please specify if multiple measurements are expected with combination of frequency band(s) and single or list of frequencies will be run concurrently, in a single measurement or in multiple measurements.  For the user-defined intervals, please confirm that interval between 1 min to 100 mins is acceptable.  Do you expect this functionality in real-time or this measurement can be carried out on recorded measurement file.  Please explain the flow of measurement and calculation for the occupancy by average and maximum field strength.</p>	<p>Multiple measurements may be conducted concurrently. This includes measurements over frequency band(s) and multiple single-frequency channels. However, single-frequency channel measurements and frequency-range measurements may be treated as separate measurement types and not combined within the same measurement task.</p> <p>User-defined intervals are acceptable, and intervals in the range of 1 minute to 100 minutes are considered acceptable.</p> <p>The measurement shall be capable of being performed based on recorded measurement data. Support for real-time measurement capability will be considered an added advantage, provided that the required outputs and accuracy are maintained.</p> <p>In terms of measurement flow, the system shall:</p> <ol style="list-style-type: none"> <li>1. Measure field strength values (in dB<math>\mu</math>V/m) for each channel or frequency over the defined duration;</li> <li>2. Apply the defined threshold method (e.g. noise riding threshold); Determine occupancy based on whether the measured signal exceeds the threshold;</li> <li>3. Compute average and maximum field strength values for each channel over the entire measurement period;</li> <li>4. Compute occupancy percentage based on the proportion of time the signal exceeds the threshold within the measurement duration.</li> </ol> <p>The results shall be presented in a structured format, including both graphical and tabulated outputs, showing average and maximum field strength and occupancy per channel, consistent with the measurement outputs specified in this Tender Document.</p>
42	<p>44.10.2 Spectrum Occupancy Measurement  c. Specific frequency band or single or list of frequencies occupancy by average and maximum percentage of usage from one (1) minute up to three (3) months measurement duration over user-</p>	<p>The workflow for spectrum occupancy by average and maximum percentage of usage shall follow a structured measurement and analysis process.</p>

No.	Question	Answer
	<p>defined intervals, bandwidth, noise floor level, etc.</p> <p>Please explain the workflow for spectrum occupancy by average and maximum percentage of usage. Please provide the exhaustive list of parameters that the occupancy measurement has to be based on. Wherever possible, please provide concept of operation for clarity. Please confirm if the bandwidth is measured occupied bandwidth or does it mean the span/step size.</p>	<p>The system shall:</p> <ol style="list-style-type: none"> <li>1. Perform measurements over the defined frequency band(s), single frequency, or list of frequencies based on the configured bandwidth (i.e. channel bandwidth/step size);</li> <li>2. Measure field strength values (in dB<math>\mu</math>V/m) at defined time intervals over the measurement duration;</li> <li>3. Apply a defined threshold method (e.g. noise riding threshold) based on the noise floor level (selected by user);</li> <li>4. Determine channel occupancy by identifying instances where the measured signal exceeds the defined threshold;</li> <li>5. Calculate occupancy percentage as the ratio of time the signal exceeds the threshold to the total observation time;</li> <li>6. Compute average and maximum occupancy percentage for each channel over the entire measurement period.</li> </ol> <p>The parameters that the occupancy measurement shall be based on include, but are not limited to:</p> <ol style="list-style-type: none"> <li>1. Frequency range or list of frequencies;</li> <li>2. Channel bandwidth or step size;</li> <li>3. Measurement duration;</li> <li>4. Time interval (sampling/storage interval);</li> <li>5. Threshold method (e.g. noise riding);</li> <li>6. Noise floor level;</li> <li>7. Antenna configuration (e.g. polarization);</li> <li>8. Detection mode (e.g. Root Mean Square (RMS), Peak, Average).</li> </ol> <p>This workflow and parameter set are consistent with the spectrum occupancy measurement outputs, where occupancy is derived from threshold-based detection and presented as average and maximum percentage values per channel over the measurement duration.</p> <p>For clarity, the “bandwidth” in this context refers to the measurement channel bandwidth or step size, and not the occupied bandwidth of a signal.</p>

No.	Question	Answer
43	<p>44.10.2 Spectrum Occupancy Measurement d. Chart and statistic results of Frequency channel field strength and occupancy of usage against time of day.</p> <p>Please provide a sample of the chart and statistic results expected. Two separate charts are required as the y-axis require different scaling (dB<math>\mu</math>V/m and %): One chart for frequency channel field strength vs time. Another chart for occupancy vs time.</p>	<p>The system shall generate chart and statistical results showing frequency channel field strength and occupancy of usage against time of day.</p> <p>At a minimum, two (2) separate charts shall be provided due to differing measurement scales:</p> <ol style="list-style-type: none"> <li>1. Field strength (dB<math>\mu</math>V/m) versus time of day; and</li> <li>2. Occupancy (%) versus time of day.</li> </ol> <p>Each chart shall present both average and maximum values over the measurement period.</p> <p>The statistical results shall also include tabulated data showing time-stamped occupancy percentage and corresponding field strength values for each channel across the defined measurement duration, consistent with typical time-of-day measurement outputs.</p> <p>Tenderers may propose their own format and presentation of the charts and statistical results, provided that the required information is clearly presented and remains subject to evaluation and approval by MCMC.</p>
44	<p>44.10.2 Spectrum Occupancy Measurement e. Chart of average and maximum Occupancy vs Frequency channel for the whole measurement period.</p> <p>Please provide a sample of the chart expected. Please confirm that the chart should have both average and maximum occupancy in one chart.</p>	<p>Yes, the chart shall present both average and maximum occupancy within a single chart.</p> <p>The chart shall illustrate occupancy (%) on the y-axis against frequency channel on the x-axis, based on the aggregated results over the entire measurement period.</p> <p>Both average and maximum occupancy values shall be clearly distinguishable (e.g. via different colors or markers) within the same chart.</p> <p>The presentation shall be consistent with typical spectrum occupancy outputs, where each channel is represented sequentially according to the defined bandwidth/step size, and both average and maximum occupancy values are displayed for comparison across all channels for the full measurement duration.</p>

No.	Question	Answer
		Tenderers may propose their own chart format, provided that the required information is clearly presented and subject to evaluation and approval by MCMC.
45	<p>44.10.2 Spectrum Occupancy Measurement f. Chart of average and maximum Field strength vs Frequency channel for the whole measurement period.</p> <p>Please provide a sample of the chart expected. Please confirm that the chart should have both average and maximum occupancy in one chart.</p>	<p>Yes, the chart shall present both average and maximum field strength within a single chart.</p> <p>The chart shall illustrate field strength (dB<math>\mu</math>V/m) on the y-axis against frequency channel on the x-axis, based on the aggregated results over the entire measurement period.</p> <p>Both average and maximum field strength values shall be clearly distinguishable (e.g. via different colors or markers) within the same chart.</p> <p>The presentation shall be consistent with typical spectrum measurement outputs, where each channel is represented sequentially according to the defined bandwidth/step size, and both average and maximum field strength values are displayed for comparison across all channels for the full measurement duration.</p> <p>Tenderers may propose their own chart format, provided that the required information is clearly presented and subject to evaluation and approval by MCMC.</p>
46	<p>44.10.2 Spectrum Occupancy Measurement g. The chart generated at subparagraph d.,e. and f. of 45.10.2. shall be selectable for each frequency stepwidth and able to display the parameter measured for each step width.</p> <p>Please provide the stepwidth expected (minimum, maximum). As the occupancy measurement could be real-time or post-processed. For the post processing measurement, the stepwidth is limited to the setting during measurement phase. Is this acceptable?</p>	<p>The supported frequency stepwidth shall be configurable in accordance with the system capabilities, with a typical minimum of 5 kHz and up to 20 MHz. Tenderers offering a wider range (i.e. lower minimum or higher maximum stepwidth) will have added advantage.</p> <p>For post-processed measurements, it is acceptable that the stepwidth is limited to the configuration set during the measurement phase. Accordingly, the generated charts shall be selectable for each frequency channel and displayed based on the stepwidth defined during the measurement configuration.</p>
47	44.10.2 Spectrum Occupancy Measurement ii. Shall able to automatically download selected spectrum	"Download" in this context refers to the transfer of selected spectrum occupancy data files or results from the software to the officer's workstation.

No.	Question	Answer
	<p>occupancy data files or results in PDF, CSV or any readable format over IPVPN link.</p> <p>Does download mean transfer from remote RMS to HQ?</p>	<p>The data shall be accessible and downloadable in formats such as PDF, CSV, or other readable formats.</p>
48	<p>44.10.2 Spectrum Occupancy Measurement</p> <p>iv. Shall come with user-defined threshold for noise riding settings.</p> <p>i.e.x dB above noise floor?</p>	<p>Yes, the user-defined threshold for noise riding refers to a configurable threshold level set relative to the noise floor (e.g. a specified value in dB above the noise floor).</p> <p>The system shall allow the user to input or select the desired threshold level for occupancy determination based on the noise riding method.</p>
49	<p>44.10.2 Spectrum Occupancy Measurement</p> <p>v. Shall come with user-defined storage interval and message length settings.</p> <p>What is the maximum storage interval expected? Please explain storage interval and message length settings with example.</p>	<p>The system shall support user-defined storage interval and message length settings.</p> <p>Storage interval refers to the time interval at which measurement data is recorded or stored. For example, a storage interval of 15 minutes means that the system records and stores measurement results (e.g. occupancy and field strength) every 15 minutes over the measurement duration.</p> <p>Message length refers to the duration of signal observation or sampling time used for each measurement instance. For example, a message length of 60 seconds means that the system observes and measures the signal for 60 seconds before determining the corresponding measurement values.</p> <p>The maximum storage interval is not strictly defined; however, it shall be sufficient to support long-duration measurements (e.g. up to three (3) months) while maintaining meaningful temporal resolution. The selected storage interval and message length shall be configurable by the user based on the measurement requirements.</p>
50	<p>44.10.2 Spectrum Occupancy Measurement</p> <p>vi. Shall be capable to perform spectrum occupancy measurements for Time Division Duplex (TDD) signals, with the ability to detect, differentiate, and analyse uplink and downlink transmission slots separately or collectively. The system shall accurately measure occupancy statistics, field strength, and percentage of usage corresponding to TDD time slots, in compliance</p>	<p>The system shall support user-defined measurement parameters for TDD signal analysis. These parameters shall include, but are not limited to:</p> <ol style="list-style-type: none"> <li>1. Frequency band or specific frequency/channel selection;</li> <li>2. Channel bandwidth or step size;</li> <li>3. Measurement duration;</li> <li>4. Storage interval and message length;</li> </ol>

No.	Question	Answer
	<p>with ITU-R Recommendation SM.1880 and user-defined measurement parameters.</p> <p>Please provide the exhaustive list of user-defined measurement parameters.</p>	<p>5. Threshold settings (e.g. noise riding threshold);  6. Detection mode (e.g. Root Mean Square (RMS), Peak, Average);  7. TDD frame structure configuration (e.g. uplink and downlink slot definition);  8. Time synchronization parameters for slot identification;  9. Antenna configuration (e.g. polarization);  10. Measurement mode (e.g. real-time or post-processed).</p> <p>The parameters shall be configurable by the user to support accurate detection, differentiation, and analysis of uplink and downlink transmission slots in accordance with the measurement requirements.</p>
51	<p>44.10.3 DF  v. Shall able to record and store the DF and/or triangulation results based on real-time monitoring for the entire frequency range being set with information of azimuth, line of bearing and/or triangulation results and coordinates on the map, RMS site name, signal and confidence level.</p> <p>Please clarify the difference for azimuth and line of bearing.</p>	<p>Azimuth refers to the directional angle value (in degrees) indicating the direction of the signal source relative to the RMS location.</p> <p>Line of bearing refers to the graphical representation of the azimuth on a map, typically shown as a directional line extending from the RMS site towards the estimated signal source.</p> <p>Both parameters are related, where the azimuth provides the numerical value and the line of bearing provides the visual representation for analysis and triangulation.</p>
52	<p>44.10.3 DF  vi. Shall able to display and playback the DF and/or triangulation results based on the past occurrence for the entire frequency range, single frequency or frequency list being set with information of azimuth, line of bearing and/or triangulation results and coordinates on the map, RMS site name, signal and confidence level.</p> <p>One frequency can be displayed at a time to avoid the map being overcrowded by bearing lines. Is this acceptable?</p>	<p>No, this is not acceptable. The system shall allow users to display multiple frequencies simultaneously, including their corresponding azimuth values and lines of bearings on the map.</p> <p>The user shall have the flexibility to select and display any number of frequencies as required for analysis, including for triangulation purposes.</p>
53	<p>44.10.4 Automatic Technical Parameter Violation Detection (ATPVD)  vii. Shall have the ability to mask wanted signal based on user-defined threshold for both signal level and bandwidth. The mask shall be able to automatically record audio, video and/or perform DF/triangulation according to schedule during active transmission.</p>	<p>The user-defined bandwidth mask refers to the ability of the system to define a specific frequency range (bandwidth) around a target signal for monitoring and analysis.</p> <p>Within this defined bandwidth, the system shall:</p>

No.	Question	Answer
	<p>Please explain the expectation for mask in user-defined bandwidth.</p>	<ol style="list-style-type: none"> <li>1. Focus on the wanted signal and ignore signals outside the specified bandwidth;</li> <li>2. Apply user-defined thresholds (e.g. signal level) to determine when the signal is considered active;</li> <li>3. Trigger actions such as recording (audio/video) and/or performing DF/triangulation when the signal within the defined bandwidth exceeds the set threshold.</li> </ol> <p>This enables selective monitoring of specific signals of interest.</p>
54	<p>44.10.4 Automatic Technical Parameter Violation Detection (ATPVD) i. Shall be able to integrate and ensure automated data exchange of the provided software with the existing MCMC's spectrum management database as recommended in ITU-R Recommendation SM.1537 for real-time comparison against licensed stations.</p> <p>Please provide the exhaustive list of parameters in the MCMC's spectrum management database that are required for comparison.</p>	<p>The parameters required for comparison shall include, but are not limited to, the following:</p> <ol style="list-style-type: none"> <li>1. Assignment Number</li> <li>2. Service Type</li> <li>3. Assigned Frequency</li> <li>4. Assigned Bandwidth</li> <li>5. Station Name</li> <li>6. Licensee Name</li> <li>7. Station Coordinates</li> </ol> <p>Additional parameters may be provided by MCMC as required to support the comparison and verification process.</p>
55	<p>44.10.4 Automatic Technical Parameter Violation Detection (ATPVD) iii. Shall be able to display transmission, receive signal locations and signal direction (DF) through the imported data on maps with relevant data fields from MCMC's spectrum management database.</p> <p>Please provide the exhaustive list of data fields from the MCMC's spectrum management database that are required to be displayed on the maps.</p>	<p>The data fields required for display on the map shall include, but are not limited to, the following:</p> <ol style="list-style-type: none"> <li>1. Assignment Number</li> <li>2. Service Type</li> <li>3. Assigned Frequency</li> <li>4. Assigned Bandwidth</li> <li>5. Station Name</li> <li>6. Licensee Name</li> <li>7. Station Coordinates</li> </ol> <p>Additional parameters may be provided by MCMC as required to support</p>

No.	Question	Answer
		<p>the display and analysis functions.</p> <p>To ensure clarity of the map display, information of licensed stations may be hidden by default and displayed upon user interaction (e.g. when the cursor is moved over or selects the respective station).</p> <p>However, transmission locations, received signal locations (for triangulation), and signal direction (DF), including both the line of bearing and azimuth (bearing value), shall be clearly displayed on the map at all times.</p>
56	<p>44.10.4 Automatic Technical Parameter Violation Detection (ATPVD) iv. Shall be able to automatically determine the measured frequency to be licensed or unlicensed or/and having technical parameters value such as frequency, bandwidth, signal level or any other parameters different from the declared value recorded in MCMC's spectrum management database.</p> <p>Please provide the exhaustive list of data fields from the MCMC's spectrum management database that are required to be compared.</p>	<p>The data fields required for comparison shall include, but are not limited to, the following:</p> <ol style="list-style-type: none"> <li>1. Assignment Number</li> <li>2. Service Type</li> <li>3. Assigned Frequency</li> <li>4. Assigned Bandwidth</li> <li>5. Station Name</li> <li>6. Licensee Name</li> <li>7. Station Coordinates</li> </ol> <p>Additional parameters recorded in the spectrum management database may be provided by MCMC as required to support the comparison and violation detection process.</p>
57	<p>44.10.4 Automatic Technical Parameter Violation Detection (ATPVD) vi. Shall be able to generate and save the ATPVD report that contains details of measured frequency with its technical parameter compliance categories in PDF and Excel format.</p> <p>Is there a specific template required here? If yes, please share the template.</p>	<p>No specific template is mandated. Tenderers may propose their own report template.</p> <p>However, the report shall include, at a minimum, the following information:</p> <ol style="list-style-type: none"> <li>1. Location of the licensed transmitter (if applicable), including coordinates;</li> <li>2. Licensee name;</li> <li>3. Assigned frequency and bandwidth;</li> <li>4. Measured frequency and bandwidth;</li> <li>5. DF results, including line of bearing and azimuth (bearing value) for detected signals;</li> </ol>

No.	Question	Answer
		<p>6. Triangulation results, including estimated location coordinates of the signal source.</p> <p>Additional information may be required by MCMC to support analysis and verification.</p>
58	<p>44.10.5 Real-Time Spectrum Monitoring Alarm (RTSMA)            Shall have the capability to highlight any transmitted frequency on certain frequency range selected with visual recording function via standard video format. The feature shall include information on licensed or unlicensed or/and having technical parameters value such as frequency, bandwidth, signal level or any other parameters different from declared value recorded in MCMC's spectrum management database. The feature shall have DF results of any transmitted frequency on certain frequency range selected.</p> <p>Please explain expectation on the video recording.</p>	<p>The video recording shall capture the real-time operation of the spectrum monitoring software interface.</p> <p>This shall include, at a minimum:</p> <ol style="list-style-type: none"> <li>1. Real-time spectrum plot for the selected frequency range;</li> <li>2. Waterfall display with color representation corresponding to different bearings (i.e. each color indicating a different direction of arrival);</li> <li>3. Signal traces (Peak, average, and active) and Markers (Center, maximum and selectable);</li> <li>4. Audio recording of the demodulated signal (if applicable);</li> <li>5. DF information, including azimuth (bearing value) and line of bearing for each detected transmission;</li> <li>6. Display of licensed station information (e.g. licensee details) when the user interacts with the respective signal or station on the interface.</li> </ol> <p>The recording shall reflect the actual user interface view during operation, allowing playback of events as they occurred in real time for analysis and verification purposes.</p>
59	<p>44.12            The successful tenderer shall ensure that the proposed software is capable of concurrently executing multiple missions or tasks as specified in Table 7: Software Specifications for Spectrum Monitoring, Measurements and DF Tasks under subparagraph 45.10 of this tender document, without any degradation in measurement accuracy, impairment of task outcomes or results, or interruption to any ongoing task.</p> <p>Please confirm that the spectrum monitoring, measurements and DF tasks are as listed in the sub.para 44.10 and not 45.10.</p>	<p>Yes, the tasks referred to are as specified under subparagraph 44.10 of this Tender Document.</p> <p>The software is expected to support concurrent execution of tasks. Scheduling tasks to run sequentially (one after another) without the capability for concurrent operation is not sufficient.</p> <p>The expectation is that multiple spectrum monitoring, measurement, and DF tasks may be carried out within the same specified period, including scenarios where additional tasks are initiated while existing measurements are ongoing.</p>

No.	Question	Answer
	<p>If the software is able to schedule the task one after another, is this acceptable? How many concurrent tasks are expected here?</p>	<p>The system shall therefore be capable of handling multiple concurrent tasks without degradation in measurement accuracy, impairment of results, or interruption to ongoing operations and measurements.</p>
60	<p>44.15 The successful Tenderer shall ensure the software is able to perform a comprehensive self-diagnostic test of the system components status with server workload information.  What are the parameters required to be monitored for the server workload information?</p>	<p>The specific parameters for server workload monitoring are not prescribed and may be proposed by the Tenderer.  However, the software shall be capable of performing comprehensive self-diagnostic tests covering all system components, including relevant server workload information, to ensure proper system performance and operational status.</p>
61	<p>44.16 Spectrum monitoring software with the capability to detect fake base stations shall be considered an added advantage to the tenderer.  If this functionality is running on a separate software, can this be accepted?</p>	<p>Yes, this is acceptable. As this functionality is not a mandatory requirement, it may be provided as a separate software.  However, tenderers offering this capability will be considered to have an added advantage.</p>
62	<p>46.1 Successful Tenderer shall utilize the existing MMS vehicle Ford Everest 3.2L Titanium 4 x 4 to house the new spectrum monitoring system and non-system components for MMS.  A visit to do health check of the vehicle is required. Can MCMC coordinate for this site visit? Can the vehicle be sent to an appointed mechanic for evaluation? If the vehicle is deemed not suitable, can a replacement vehicle be proposed?</p>	<p>A site visit is not mandatory. However, relevant information on the vehicle condition and specifications will be provided by MCMC as the vehicle has already undergone assessment and evaluation by PUSPAKOM.  Any further requirements regarding the suitability of the vehicle shall be subject to MCMC's evaluation and instruction.</p>
63	<p>48.4 Successful Tenderer shall perform the DF calibration test for MMS at an open area within Klang Valley without obstacles in the vicinity, which may cause reflections by trees, buildings and any metals. All space areas rental and other related costs to perform the DF calibration test shall be borne by the Successful Tenderer. The DF calibration test shall be witnessed and approved by at least three (3) Commission officers. Details of the on-site DF calibration test shall follow recommendations as per ITU-R SM.2060: Test Procedure for</p>	<p>The DF calibration test shall be conducted within Klang Valley to ensure consistency of test conditions, availability of suitable open areas, and proximity for verification by MCMC. Conducting the calibration outside of Klang Valley is not acceptable, as it may require additional travel time for both MCMC and the Successful Tenderer, which could impact the project timeline.  The Successful Tenderer shall bear the cost of the venue and any related charges imposed by the venue owner for conducting the DF calibration test.</p>

No.	Question	Answer
	<p>Measuring Direction Finder Accuracy document.</p> <p>For the DF calibration, will MCMC also accept area outside Klang Valley? Does the cost of the commission officers to witness and approve the DF calibration test to be borne by the successful tenderer?</p>	<p>Costs associated with MCMC officers' participation shall not be borne by the Successful Tenderer as it is not practise by MCMC.</p>
64	<p>51.1</p> <p>Successful Tenderer shall ensure the installed thirteen (13) RMS and one (1) new MMS are integrated via a suitable solution with the existing twenty-two (22) RMS and five (5) MMS from TCI International, Inc. and Rohde &amp; Schwarz GmbH &amp; Co KG as per Table 8 below:</p> <p>As the MMS B is functioning in a different frequency band, is there a need for integration?</p> <p>Please specify the expectation on the level of integration. What kind of data exchange is expected? If possible, please describe the operational concept for the integrated system comprises of all assets. Detailed description will help in the design of the solution that will match the expectation completely.</p>	<p>Integration is still required regardless of differences in frequency bands.</p> <p>The level of integration is expected to support coordinated operation and centralized management across all systems. At a minimum, the integration shall include:</p> <ol style="list-style-type: none"> <li>1. Display of real-time location of all existing twenty-two (22) RMS and five (5) MMS within the system interface;</li> <li>2. Capability to control and manage the existing RMS and MMS through the integrated platform;</li> <li>3. Support for triangulation using data from all integrated RMS and MMS assets.</li> </ol> <p>The integrated system shall enable coordinated monitoring, analysis, and operational decision-making across all deployed assets.</p>
65	<p>52.2</p> <p>Successful Tenderer shall obtain approval(s) or certification(s) from the Civil Aviation Authority of Malaysia (CAAM) on the erection of the structure for permitting approval and RMS system and non-system components prior to installation. The Successful Tenderer shall submit any final approval documentation or certifications from the Civil Aviation Authority of Malaysia (CAAM) to MCMC.</p> <p>There will be pause in the project timeline as the approval process is beyond the tenderer's control.</p>	<p>The project timeline shall not be considered paused due to pending CAAM approval, and such activities shall not, in themselves, constitute grounds for any extension of time.</p> <p>Any request for extension of time shall be subject to MCMC's prior written approval and shall only be considered under exceptional circumstances beyond the reasonable control of the Successful Tenderer, taking into consideration the Successful Tenderer's maximum effort to mitigate and overcome the delay.</p> <p>The Successful Tenderer is expected to carry out works in parallel where necessary and permitted, and shall take all necessary actions to ensure that the project is delivered within the required timeline.</p>
66	52.3	Yes, this is acceptable. The assessment may be conducted in a controlled

No.	Question	Answer
	<p>Successful Tenderer shall obtain documentation or certifications from the Malaysian Nuclear Agency for RMS system and non-system components prior to installation for radiation level assessments of one (1) RMS in order to verify that the RMS is not hazardous to health. The Successful Tenderer shall submit endorsed documentation or certifications from the Malaysia Nuclear Agency to MCMC.</p> <p>This will be under controlled environment, either in tenderer's premise or at MNA facilities. Please confirm that this is acceptable.</p>	<p>environment, either at the Successful Tenderer's premises or at the Malaysian Nuclear Agency (MNA) facilities.</p> <p>Assessment at the Successful Tenderer's premises is acceptable provided that the laboratory is certified or recognized by MNA.</p> <p>However, MCMC prefers that the assessment be conducted at MNA facilities, which are equipped with appropriate controlled environment capabilities.</p>
67	<p>52.4 Successful Tenderer shall obtain approvals or certifications on the erection of structure from Local Authorities prior to installation of RMS system and non-system components. The successful Tenderer shall submit an acknowledgement receipt of the application submission from the Local Authorities for the erection of structure to MCMC. The Successful Tenderer shall submit any final approval documentation or certifications from the Local Authorities to MCMC upon approval from the Local Authorities.</p> <p>Upon availability of the approvals for 50.1-50.2 and also tenancy agreement papers, then only can the application to the related OSC or PBT could be initiated. At this time, the proposal is a pause in the timeline.</p>	<p>Time may be required to obtain the necessary approvals and supporting documents, including those related to subparagraphs 50.1–50.2 and tenancy agreements, prior to submission to the relevant OSC or PBT.</p> <p>However, this shall not result in any pause or extension of the overall project timeline. The Successful Tenderer is expected to manage the approval process diligently and proceed with other project activities in parallel to ensure that project progress remains on schedule.</p>
68	<p>59.1 The Work (as a whole) shall be completed within 72 months, unless the timeline is further extended by MCMC accordingly. It is advantageous for the Tenderer to provide a detailed project timeline, including a delivery schedule and implementation plan.</p> <p>Site acquisition &amp; authorities approvals: Pre-requisite to implementation - This is in separate timeline. To only start after PBT approval. Is this acceptable</p>	<p>This is not acceptable. Site acquisition and authorities' approvals are part of the scope of work and shall be considered as deliverables to be completed within the overall project implementation period.</p> <p>Accordingly, the project timeline shall commence as stipulated. The Successful Tenderer shall plan and manage all activities, including site acquisition and authorities' approvals, within the overall project schedule and proceed with other implementation activities in parallel where feasible.</p> <p>Any request for extension of time shall be subject to MCMC's evaluation, taking into consideration the Successful Tenderer's efforts to mitigate</p>

No.	Question	Answer
		delays.
69	<p>59.2 The Successful Tenderer is required to provide a detailed plan, including a Program Evaluation and Review Technique (PERT) diagram and Gantt Chart, with allocated time for each individual activity within 5 days after the execution of the Agreement or prior to the project kick-off meeting (whichever is earlier) for MCMC to review and approve.</p> <p>As in 59.1, the PERT and Gantt Chart would indicate the condition to the start the activity upon completing the survey and also the approvals from PBT. Therefore, there will be a gap in terms of durations for these approvals. The PERT will be based on duration for the activity and not the targeted completion date.</p>	<p>As stated in Clause 59.1, site survey and authorities' approvals, including PBT approvals, are part of the scope of work and shall be incorporated within the overall project implementation timeline.</p> <p>Therefore, the PERT diagram and Gantt Chart shall reflect a complete and continuous project schedule, including all activities and dependencies, without introducing gaps or conditional start points based on approvals.</p> <p>The Successful Tenderer is expected to plan and manage these activities accordingly, including parallel execution where feasible, to ensure timely completion of the project.</p>
70	<p>42.2.5 Storage</p> <p>i. Shall provide sufficient storage with a buffer to support operation and storage of localise data for at least 1 year.</p> <p>Who is responsible for cleaning the storage of localized data that is older than one year?</p>	<p>The Successful Tenderer shall be responsible for managing and maintaining the storage, including the cleanup of localized data older than one (1) year.</p> <p>Any data deletion or cleanup activities shall be subject to MCMC's approval and shall be carried out during scheduled maintenance activities.</p>
71	<p>43.2.5 Alarm Monitoring System</p> <p>i. Shall install an alarm monitoring system for the building's mains power and UPS status, enclosure temperature level, IPVPN router link connection status, enclosure door alarm and heat detector for fire detection.</p> <p>Is smoke alarm required?</p>	<p>Smoke alarm is not mandatory. The requirement specifies the use of a heat detector for fire detection, which shall be complied with.</p> <p>The heat detector shall also function to monitor abnormal temperature conditions and trigger alerts when the temperature exceeds defined thresholds, enabling timely response and site inspection by the Successful Tenderer.</p>
72	<p>43.2.5 Alarm Monitoring System</p> <p>ii. The alarm monitoring system through its software shall be able to view alarm status with continuous monitoring capability of all thirteen (13) RMS at MCMC office in Cyberjaya and relevant State Offices.</p> <p>Is it possible to use the same type of Alarm Monitoring System currently employed in the 22x RMS (NASMOC) to achieve better</p>	<p>Yes, this is acceptable, provided that the Tenderer can demonstrate that the proposed Alarm Monitoring System is capable of seamless integration with the existing RMS (NASMOC) system in its proposal.</p> <p>The Tenderer shall provide sufficient supporting evidence of relevant experience and capability in implementing such integration, particularly with systems based on Rohde &amp; Schwarz alarm monitoring solutions or equivalent.</p>

No.	Question	Answer
	integration?	All proposals shall be subject to MCMC's evaluation and approval.
73	<p>43.2.9 Aircraft Warning Light</p> <p>i. Shall install aircraft warning lights for all RMS sites.</p> <p>Is the installation of aircraft warning lights mandatory, or it is subject to PBT requirement? Any additional installation could affect the DF performance and the quality of monitoring, depending on the installation material and location.</p>	<p>The installation of aircraft warning lights is subject to the requirements of the relevant authorities, including PBT and/or CAAM.</p> <p>In the event that such installation is required, the Successful Tenderer shall ensure that the installation does not affect DF accuracy and antenna sensitivity.</p>
Appendix O		
74	<p>1. The antenna system shall come with a single vertically polarized broadband antenna from 9 kHz to 8000 MHz for spectrum monitoring and direction finding (DF) with Angle-Of-Arrival (AOA) DF technique.</p> <p>Is the frequency range from 9 kHz to 8000 MHz for both monitoring and DF? Or will DF be from 20 MHz to 8000 MHz?</p>	<p>The frequency range of 9 kHz to 8000 MHz applies to spectrum monitoring.</p> <p>For direction finding (DF) using the Angle-of-Arrival (AOA) technique, the applicable frequency range shall be from 20 MHz to 8000 MHz.</p>
75	<p>2. The spectrum monitoring receiver shall be as portable as possible that can be installed and secured safely in any of MCMC's vehicles without compromising its monitoring performance.</p> <p>Does portability mean handheld? What is the limit in weight that is allowed?</p>	<p>Portability does not refer to a handheld device. It refers to the capability of the receiver to be uninstalled, transported, and reinstalled as required without compromising its performance.</p> <p>The receiver shall be suitable for installation within MCMC's vehicles, taking into consideration the available space and allowable load capacity.</p>
76	<p>3. The system shall be able to conduct real-time spectrum monitoring, signal analysis and direction finding for frequency signals or carriers with sweep time of at least 1 ms.</p> <p>What is required as part of the signal analysis? Do you mean demodulation and decoding up to the content of the message? What are the parameters required in the signal analysis? Please clarify the meaning of sweep time.</p>	<p>Signal analysis refers to the capability to perform demodulation and identification of signal characteristics, including but not limited to the type of modulation, frequency, signal level/field strength, and audio output where applicable.</p> <p>Decoding of signal content shall be supported for non-encrypted signals where the modulation scheme and protocol are supported by the system.</p> <p>The system shall also provide the capability to place markers and perform measurements to identify and analyze relevant signal parameters.</p> <p>Sweep time refers to the time taken by the measuring system to scan across a specified frequency range once.</p>


No.	Question	Answer
77	<p>7. The system shall come with an audio recording function with voice triggered and variable threshold adjustment features. This function allows a recording to be made when there is communication. Every recording shall be saved according to time and date occurrence.</p> <p>Please explain the voice trigger function. Do you mean when the audio level exceeds certain threshold or do you mean commanding the software to start recording using voice?</p>	<p>The voice trigger function refers to the automatic initiation of audio recording when the signal level exceeds a user-defined threshold. It does not refer to voice command or speech-based activation.</p> <p>When the threshold is exceeded, the system shall demodulate the signal and trigger the recording of the corresponding audio. Recording shall continue based on predefined conditions and be saved with the corresponding time and date of occurrence.</p>
78	<p>11. The system shall include a Centralised Spectrum Monitoring (CSM) software platform that is vendor-agnostic and capable of directly controlling MCMC's other RMS and MMS systems. The platform shall meet the following specifications:</p> <p>If the software is able to control all (22+13) RMS and MMS, is it qualified as vendor-agnostic?</p>	<p>No, the ability to control all existing and new RMS and MMS systems alone does not fully define a vendor-agnostic platform.</p> <p>Vendor-agnostic refers to a centralized software platform that is capable of integrating, interfacing, and operating with systems from different vendors through standardized and interoperable mechanisms, providing a unified interface for all operations. This includes, but is not limited to:</p> <ol style="list-style-type: none"> <li>1. Controlling and managing RMS and MMS systems from multiple vendors;</li> <li>2. Visualizing all RMS and MMS locations on a map;</li> <li>3. Displaying and analyzing direction finding (DF) and triangulation results on the map;</li> <li>4. Performing monitoring, measurement, and analysis tasks through a single platform;</li> <li>5. Configuring and scheduling measurement tasks across integrated systems;</li> <li>6. Generating, processing, and presenting results and reports in a consistent and standardized format.</li> </ol> <p>The platform shall also support future expansion, including the integration of additional systems from different vendors without requiring significant redesign or dependency on proprietary interfaces.</p> <p>The platform shall therefore support centralized operation, scalability, and interoperability across different vendor systems.</p>
Appendix P		
79	2. Shall provide and install high-power inverter system without major	Tenderers may request to arrange a visit to the vehicle through the Tender


No.	Question	Answer
	<p>modifications. The successful Tenderer shall provide documentation of the minimum power required to MCMC within 5 days upon the execution of the Agreement and invite at least three (3) Commission personnel for a demonstration session on the alternator output using the existing MMS Ford Everest.</p> <p>A visit to the vehicle is required to conduct the load test on existing MMS Ford Everest alternator. Can MCMC coordinate for this site visit? Can the vehicle be sent to an appointed mechanic for evaluation?</p>	<p>Secretariat for inspection purposes.</p> <p>The vehicle will not be sent to an appointed mechanic. The Successful Tenderer may carry out any necessary evaluation, including load testing, during the inspection.</p>
80	<p>3. Shall supply and install a high-quality infotainment system with at least Android 15 or better, 32 gigabyte internal storage, 8 gigabyte RAM, WiFi capability, Bluetooth, USB port, GPS, reverse and 360° camera, FHD display, SD card port, wireless Android Auto, and Apple CarPlay.</p> <p>Could you confirm whether the existing 360° camera system is available?</p>	<p>There is no existing 360° camera system available in the Ford Everest 3.2L Titanium 4x4.</p>
81	<p>56.1 The Successful Tenderer shall maintain the thirteen (13) RMS and one (1) MMS system and non-system components, including all other deliverables with a minimum one (1) year warranty period upon signature of Certificate of Final Acceptance by MCMC followed by three (3) years of contractual maintenance services upon expiry of the warranty period.</p> <p>According to Tender Document para 10.5, page 14, the initial prescribed maintenance services period is 6 years. Please confirm this is incorrect and the initial prescribed maintenance service period is 3 years as reflected in Tender Document para 56.1, page 78.</p>	<p>The prescribed maintenance period under the scope of work is as stated in Clause 56.1, namely a minimum one (1) year warranty period upon the issuance of the Certificate of Final Acceptance, followed by three (3) years of contractual maintenance services.</p> <p>For clarification, Clause 10.5 requires the Tenderer to submit:</p> <ol style="list-style-type: none"> <li>1. The schedule of prices for the applicable warranty and contractual maintenance period under the Tender; and</li> <li>2. A separate schedule of prices for an additional extended maintenance period of six (6) years beyond the prescribed warranty and maintenance period. This separate schedule is required as a reference for MCMC in the event of future maintenance contract renewal.</li> </ol> <p>It is acknowledged that the reference to a “six (6)-year maintenance period” in Clause 10.5 is an inadvertent error. The prescribed contractual maintenance service period shall remain as three (3) years, in accordance</p>

No.	Question	Answer
		<p>with Clause 56.1.</p> <p>Accordingly, the initial prescribed contractual maintenance service period is three (3) years, while the separate six (6)-year pricing is for an optional extended maintenance period, to be considered at MCMC's discretion.</p>
82	<p>56.10 Successful Tenderer shall provide a list of critical parts and components required with the quantity for the RMS and MMS to be made available during the Warranty and Maintenance period within 30 days after execution of the Agreement for MCMC review and approval. The Successful Tenderer shall ensure sufficient spare parts of the critical parts and component for the RMS and MMS are available at all times during the Warranty and Maintenance period. MCMC shall have the rights to inspect and audit the spare parts as and when requested or required.</p> <p>As the MMS vehicle is already 10 years, supportability for another 6 years cannot be guaranteed. Can the tenderer opt out from the vehicle maintenance scope if a new vehicle cannot be offered?</p>	<p>This is not acceptable. The Tenderer is required to comply with the full scope of work under the Tender, and partial submission or exclusion of any component, including the MMS vehicle, is not permitted.</p> <p>The maintenance scope shall cover the entire MMS, including the vehicle, system, and non-system components, to ensure full operational readiness.</p> <p>The existing MMS vehicle is currently in serviceable condition. However, the Successful Tenderer shall be responsible for ensuring the continued supportability and reliability of the MMS throughout the Warranty and Maintenance period.</p> <p>The Successful Tenderer may propose any necessary refurbishment works as part of the maintenance proposal to ensure the vehicle remains operational and fit for purpose throughout the contract period, subject to MCMC's evaluation and approval.</p>
83	<p>56.12 MCMC reserves the right to withhold payments of quarterly maintenance service at any time if the maintenance work performance of the Successful Tenderer is not satisfactory.</p> <p>Please clarify what would be considered as non-satisfactory performance (i.e., extend of deviation from SLAs)</p>	<p>Non-satisfactory performance shall include, but is not limited to, the following:</p> <ol style="list-style-type: none"> <li>1. Failure to meet the response time for any issues or enquiries raised by MCMC;</li> <li>2. Failure to meet the resolution time for corrective maintenance activities;</li> <li>3. Repeated or prolonged system downtime beyond the agreed service levels;</li> <li>4. Failure to carry out preventive maintenance as scheduled;</li> <li>5. Inadequate reporting, documentation, or submission of maintenance records;</li> <li>6. Failure to maintain sufficient spare parts availability;</li> <li>7. Recurring faults due to ineffective or incomplete rectification;</li> <li>8. Failure to comply with instructions or requirements issued by MCMC.</li> </ol>

No.	Question	Answer
84	<p>52.13 The Successful Tenderer shall submit any other documentation needed by MCMC from time to time and/or initiative(s) from the Successful Tenderer to provide additional relevant documentation for MCMC's record.</p> <p>Please provide a detailed list of documents that might be required.</p>	<p>The list of documentation is not exhaustive and may vary depending on project requirements.</p> <p>The Successful Tenderer shall submit any additional documentation as required by MCMC from time to time. Such documentation may include, but is not limited to, DF calibration test results, any testing reports, as-built drawings, system or non-system operation and maintenance manuals, and any other relevant records required for project implementation and maintenance.</p> <p>MCMC will inform the Successful Tenderer of any additional documentation requirements during the course of the project.</p>
85	<p>57.1 Tenderer shall comprise at least eight (8) competent personnel to carry out the Work on a full-time basis.</p> <p>Please confirm if these at least eight (8) personnels have to be maintained throughout the contract or only during implementation phase. The personnels are the main cost driver for the project.</p>	<p>The requirement to maintain a minimum of eight (8) competent personnel on a full-time basis applies to the implementation phase of the project.</p> <p>For the post-implementation phase, including the Warranty and Maintenance period, the Successful Tenderer shall ensure adequate staffing to support operational and maintenance requirements, including responding to corrective maintenance and support requests, in accordance with the service level requirements under the Tender.</p>
86	<p>44.10.2 Spectrum Occupancy Measurement vi. Shall be capable to perform spectrum occupancy measurements for Time Division Duplex (TDD) signals, with the ability to detect, differentiate, and analyze uplink and downlink transmission slots separately or collectively. The system shall accurately measure occupancy statistics, field strength, and percentage of usage corresponding to TDD time slots, in compliance with ITU-R Recommendation SM.1880 and user-defined measurement parameters.</p> <p>For the TDD signals, do you intend to analyze the uplink and downlink sequentially or concurrently? Can you accept the measurement for each type, sequentially? In the normal spectrum scan approach, time-gated function will set a gate for a specific time when the spectrum is measured. A time-gated spectrum scan is a</p>	<p>The system shall be capable of detecting, differentiating, and analyzing uplink and downlink transmission slots for TDD signals.</p> <p>Measurement may be performed either sequentially (e.g. using time-gated measurement) or through other suitable methods, provided that the system is able to accurately identify, separate and analyze uplink and downlink transmissions separately or collectively.</p> <p>The proposed approach shall be capable of producing reliable and representative occupancy statistics, field strength, and percentage of usage corresponding to TDD time slots.</p> <p>The requirement to analyze both uplink and downlink signals is applicable to all thirteen (13) RMS. However, the actual detectability of uplink signals is dependent on signal conditions, including proximity, transmission power,</p>

No.	Question	Answer
	<p>power spectrum scan which applies a time gate on uplink or downlink slots/symbols and/or the guard period. This allows the measurement to focus on the uplink/downlink or the guard period power spectrum in 5G NR TDD networks. So when the time is gated to the uplink, only the uplink signal is measured. Then when the time is gated to downlink, only the downlink signal is measured.</p> <p>Uplink signals are generally weaker and might not be detected by the RMS unless the device is near. Is this requirement for RMS mandatory?</p>	<p>and environment. The system shall be capable of performing such measurements where the uplink signal is present and within detectable limits.</p>
87	<p>44.10.3 DF</p> <p>i. Shall be capable of executing single DF and also continuous DF using activation buttons to provide a direction of desired frequency using one (1) installed RMS and triangulation between two (2) or more installed RMS, including the capability to execute DF on Time Division Duplex (TDD) signals. The DF functionality shall not affect the spectrum monitoring real-time display and its audio.</p> <p>For the DF of TDD signals, do you need the system to DF uplink or downlink separately? Or any TDD signals without differentiating the uplink or downlink?</p> <p>Uplink signal generally in micro seconds. Typical DF needs signal with duration of milliseconds to be able to DF accurately. Is DF-ing of uplink a requirement?</p>	<p>The system shall be capable of differentiating between uplink and downlink signals in TDD operation and shall indicate the respective transmission type during direction finding.</p> <p>Direction finding shall be supported for both uplink and downlink signals in terms of system capability. However, the ability to perform DF on uplink signals is subject to signal characteristics, including signal strength, duration, and transmission conditions. The system shall be capable of performing DF where such signals are sufficiently detectable and meet the conditions required to achieve the specified DF accuracy.</p>
88	<p>42.2.1. Antenna</p> <p>v. Shall have single monitoring &amp; DF antenna in order to cover 20 MHz to 8 GHz or better. It shall have switching mechanism to select relevant antenna element for certain frequency band or polarization. Shall have DF antenna aperture size <math>(D/\lambda) &gt; 1</math> with more antenna elements as per Paragraph</p> <p>1. Understand the single monitoring &amp; DF Antenna for the MMS, there is some space limitation on the roof of the vehicle. but the RMS has enough place to put the separate antennas, possible for us to</p>	<p>1. The requirement for a single monitoring and DF antenna is primarily intended for applications with space constraints, such as the MMS. For RMS sites, where space permits, Tenderers may propose separate antennas for monitoring and DF, subject to MCMC's evaluation and approval. Any proposed configuration shall meet the required technical performance, including DF accuracy and monitoring capability.</p> <p>2. The requirement for DF antenna aperture size <math>(D/\lambda &gt; 1)</math> shall not be interpreted as a strict physical dimension based on the lowest operating frequency (e.g. 20 MHz), and does not imply a fixed antenna size (e.g. 15</p>

No.	Question	Answer
	<p>propose it for the RMS sites? according to our understanding, in the same condition of the antenna, the separate antenna should be better performance than the compact one because of the less interference, antenna size, etc.</p> <p>2.if the aperture size requirement of the direction-finding antenna <math>(D/\lambda) &gt; 1</math>, we use the Lowest DF frequency 20MHz, the wavelength should be 15 meters. That is, the diameter of the direction-finding antenna needs to be 15 meters to meet the requirements. The antenna size is huge, and this kind of antenna is not popular in this application scenario. Please correct me if it is a mistake. Also could I propose a smaller antenna if my understanding is correct.</p>	<p>meters). The intent of this requirement is to ensure sufficient effective antenna aperture relative to the operating frequency to achieve the required DF accuracy.</p> <p>Tenderers may propose antenna designs with smaller physical dimensions, provided that the proposed solution can demonstrate compliance with the required DF performance and accuracy specifications.</p>
89	<p>46.1 Successful Tenderer shall utilize the existing MMS vehicle Ford Everest 3.2L Titanium 4 x 4 to house the new spectrum monitoring system and non-system components for MMS.</p> <p>1. Is this Ford Everest 5 seats or 7 seats vehicle? 2. Could you please share some internal picture for us to design the vehicle using for our technical proposal?</p>	<p>1. The Ford Everest is a 5-seater vehicle. 2. Internal picture of the Ford Everest as shown below</p> 

No.	Question	Answer
		
90	<p>42.2.3 processor iv. Shall meet the IP ratings of IP65 or better class of protection.</p> <p>1. For RMS sites, we want to propose the processor to put in the "Cabinet Enclosure", normally this kind of processor is "industrial PC" which can be put inside the cabinet and running under the higher temperature. But should we meet the IP65 if we put the processor like that?</p> <p>2. For MMS, if we put the processor on the roof of the vehicle, we will meet the IP65. but if we design to put it inside the vehicle, then no need to meet the IP65 for the processor?</p>	<p>1. For RMS sites, if the processor is installed inside the cabinet enclosure, the IP65 (or better) protection requirement shall apply to the enclosure. The enclosure shall provide adequate protection against environmental conditions, including Malaysia's tropical climate, such as high ambient temperature, high humidity, heavy rainfall, and prolonged exposure to sunlight. The processor installed within shall be suitable for operation under the internal environmental conditions (e.g. temperature and humidity) of the enclosure.</p> <p>2. For MMS, if the processor is installed inside the vehicle, the IP65 requirement shall not apply. However, the processor shall be suitable for operation under the environmental and temperature conditions within the vehicle, taking into consideration Malaysia's tropical climate, to ensure reliable performance.</p>
91	<p>With reference to the requirement to interconnect and interface with the existing monitoring sites operated by MCMC, we respectfully request that the contracting authority provide the relevant technical interface specifications and integration parameters of the monitoring systems currently deployed within the MCMC network.</p> <p>The availability of this information (including, where applicable,</p>	<p>The expectation is that the proposed Central Monitoring Software (CMS) shall be capable of interfacing and integrating with MCMC's existing Spectrum Monitoring Systems supplied by Rohde &amp; Schwarz (R&amp;S).</p> <p>The CMS shall also be designed to support interoperability with other spectrum monitoring systems, in the event of future expansion or integration of additional RMS from different vendors.</p>

No.	Question	Answer						
	<p>interface architectures, data formats, communication protocols, APIs, security requirements, and operational constraints) is necessary to allow bidders to accurately define the technical scope, implementation approach, and associated costs, including any potential development or customization of software required to achieve full interoperability.</p>	<p>Tenderers are expected to propose suitable integration approaches, subject to MCMC's evaluation and approval.</p>						
92	<p>Regarding the requirements for the offered Antenna in Table 5: "iii. Shall have vertical and horizontal antenna polarizations for spectrum monitoring and DF from 20 MHz to 8 GHz"; we ask:</p> <p>Is the requirement for 20 MHz to 8 GHz Vertical Monitoring and DF as well as 20 MHz to 8 GHz Horizontal Monitoring and DF?</p>	<p>Yes, the requirement applies to both vertical and horizontal polarizations. The antenna shall support spectrum monitoring and direction finding (DF) for both vertical and horizontal polarizations across the frequency range of 20 MHz to 8 GHz.</p>						
93	<p>Regarding the requirements for the offered Antenna in Table 5: "vii. Shall meet the IP ratings of IP65 or better class of protection":</p> <p>Question:</p> <p>According to this paragraph as an antenna, we respectfully request to change the IP factor from IP65 to IP55. An antenna is not subject to submersion in water but should be protected from rain.</p>	<p>The requirement for IP65 (or better) will be retained.</p> <p>This is due to Malaysia's tropical climate, which is characterized by high humidity, heavy rainfall, thunderstorms, and other harsh environmental conditions. The specified IP65 rating is necessary to ensure adequate protection and long-term reliability of the antenna under such operating conditions.</p> <p>Similarly, for components such as the antenna that are installed within an enclosure, the enclosure shall meet the IP65 (or better) rating to ensure protection against environmental exposure.</p>						
94	<p>The sub-item 44.10.1 under 44.10 from item 44 states: "Successful Tenderer shall provide a software to be capable of performing spectrum monitoring, measurements &amp; DF tasks as recommended in ITU-R Recommendation SM.1050 and meet the specifications as per Table 7 (pages 53-55):</p> <table border="1" data-bbox="255 1165 1173 1390"> <thead> <tr> <th data-bbox="255 1165 403 1212">No.</th> <th data-bbox="403 1165 851 1212">Module</th> <th data-bbox="851 1165 1173 1212">Specification</th> </tr> </thead> <tbody> <tr> <td data-bbox="255 1212 403 1390">44.10.1</td> <td data-bbox="403 1212 851 1390">Spectrum Monitoring Realtime Display</td> <td data-bbox="851 1212 1173 1390">xi. Equipped with the capability to demodulate any digital signal captured if not encrypted.</td> </tr> </tbody> </table>	No.	Module	Specification	44.10.1	Spectrum Monitoring Realtime Display	xi. Equipped with the capability to demodulate any digital signal captured if not encrypted.	<p>Demodulation refers to the capability of the system to process received signals and convert them into interpretable outputs, including audio (where applicable).</p> <p>Tenderers shall provide the list of signal types that their proposed system is capable of demodulating, as part of their submission for MCMC's evaluation.</p>
No.	Module	Specification						
44.10.1	Spectrum Monitoring Realtime Display	xi. Equipped with the capability to demodulate any digital signal captured if not encrypted.						

No.	Question	Answer						
	<p>Question:</p> <p>Demodulation algorithms are specific to the type of signal and are specialized.</p> <p>Please clarify what is meant by demodulation? Is it meant that a digital signal can be classified as what type of signal it is?</p> <p>If so, please list which signal types are required to be classified.</p>							
95	<p>The sub-items 44.10.2 and 44.10.3 under 44.10 from item 44 states respectively: “Successful Tenderer shall provide a software to be capable of performing spectrum monitoring, measurements &amp; DF tasks as recommended in ITU-R Recommendation SM.1050 and meet the specifications as per Table 7 (pages 53-55):</p> <table border="0" data-bbox="280 691 1131 1208"> <thead> <tr> <th data-bbox="280 691 353 715">No.</th> <th data-bbox="465 691 808 715">Module</th> <th data-bbox="864 691 1131 1208"></th> </tr> </thead> <tbody> <tr> <td data-bbox="280 743 353 767">44.10.2</td> <td data-bbox="465 743 808 767">Spectrum Occupancy Measurement</td> <td data-bbox="864 691 1131 1208">           vi. Shall be capable to perform spectrum occupancy measurements for Time Division Duplex (TDD) signals, with the ability to detect, differentiate, and analyze uplink and downlink transmission slots separately or collectively. The system shall accurately measure occupancy statistics, field strength, and percentage of usage corresponding to TDD time slots, in compliance with ITU-R Recommendation SM.1880 and user-defined measurement parameters         </td> </tr> </tbody> </table>	No.	Module		44.10.2	Spectrum Occupancy Measurement	vi. Shall be capable to perform spectrum occupancy measurements for Time Division Duplex (TDD) signals, with the ability to detect, differentiate, and analyze uplink and downlink transmission slots separately or collectively. The system shall accurately measure occupancy statistics, field strength, and percentage of usage corresponding to TDD time slots, in compliance with ITU-R Recommendation SM.1880 and user-defined measurement parameters	<p>1. MCMC acknowledges that ITU-R Recommendation SM.1880 does not explicitly define spectrum occupancy measurement for TDD time slots.</p> <p>However, the requirement shall be retained. The system is expected to have the capability to perform spectrum occupancy measurements for TDD signals, including the ability to detect, differentiate, and analyze uplink and downlink transmission slots. This requirement is based on MCMC operational needs and extends beyond the scope of ITU-R SM.1880.</p> <p>2. Regarding the DF capability for TDD signals, it is acceptable for the frequency of interest to be identified and manually input by MCMC.</p> <p>However, the system shall be capable of performing direction finding (DF) on both uplink and downlink signals of TDD transmissions. The system shall also be able to differentiate between uplink and downlink signals during the DF operation.</p>
No.	Module							
44.10.2	Spectrum Occupancy Measurement	vi. Shall be capable to perform spectrum occupancy measurements for Time Division Duplex (TDD) signals, with the ability to detect, differentiate, and analyze uplink and downlink transmission slots separately or collectively. The system shall accurately measure occupancy statistics, field strength, and percentage of usage corresponding to TDD time slots, in compliance with ITU-R Recommendation SM.1880 and user-defined measurement parameters						

No.	Question	Answer						
	<table border="1"> <thead> <tr> <th data-bbox="271 213 577 252">No.</th> <th data-bbox="577 213 808 252">Module</th> <th data-bbox="808 213 1167 252">Specification</th> </tr> </thead> <tbody> <tr> <td data-bbox="271 268 577 306">44.10.3</td> <td data-bbox="577 268 808 306">DF</td> <td data-bbox="808 268 1167 625">i. Shall be capable of executing single DF and also continuous DF using activation buttons to provide a direction of desired frequency using one (1) installed RMS and triangulation between two (2) or more installed RMS, including the capability to execute DF on Time Division Duplex (TDD) signals. The DF functionality shall not affect the spectrum monitoring real-time display and its audio.</td> </tr> </tbody> </table> <p data-bbox="271 635 398 667">Question:</p> <p data-bbox="271 705 1144 801">ITU-R Recommendation SM.1880 defines measurement parameters for performing spectrum occupancy on signals. However, it does not define spectrum occupancy on TDD timeslots.</p> <p data-bbox="271 839 1151 871">With we kindly suggest a change to the requirement text, as follows:</p> <p data-bbox="271 909 1122 1005">“Shall be capable to perform spectrum occupancy measurements including occupancy statistics, field strength, and percentage of usage, in compliance with ITU-R Recommendation SM. 1880”</p> <p data-bbox="271 1043 1144 1139">Regarding the capability of executing single and continuous DF by using activation buttons and the capability of executing DF on Time Division Duplex (TDD) signals; our question is:</p> <p data-bbox="271 1177 1160 1241">“Can you please confirm it is acceptable for this to be done manually based on a known frequency corresponding to a TDD signal?”</p>	No.	Module	Specification	44.10.3	DF	i. Shall be capable of executing single DF and also continuous DF using activation buttons to provide a direction of desired frequency using one (1) installed RMS and triangulation between two (2) or more installed RMS, including the capability to execute DF on Time Division Duplex (TDD) signals. The DF functionality shall not affect the spectrum monitoring real-time display and its audio.	
No.	Module	Specification						
44.10.3	DF	i. Shall be capable of executing single DF and also continuous DF using activation buttons to provide a direction of desired frequency using one (1) installed RMS and triangulation between two (2) or more installed RMS, including the capability to execute DF on Time Division Duplex (TDD) signals. The DF functionality shall not affect the spectrum monitoring real-time display and its audio.						
96	<p data-bbox="271 1251 1160 1414">The sub-items 44.10.5 under 44.10 from item 44 states: “Successful Tenderer shall provide a software to be capable of performing spectrum monitoring, measurements &amp; DF tasks as recommended in ITU-R Recommendation SM.1050 and meet the specifications as per Table 7 (pages 58):</p>	<p data-bbox="1189 1251 2040 1315">MCMC’s spectrum management database refers to the Spectrum Management System (SpMS) implemented under LS Telcom.</p> <p data-bbox="1189 1353 2163 1417">The Successful Tenderer shall coordinate and work with LS Telcom for the purpose of integration with the relevant databases, including Apparatus</p>						

No.	Question	Answer						
	<table border="1"> <thead> <tr> <th data-bbox="262 209 398 256">No.</th> <th data-bbox="398 209 869 256">Module</th> <th data-bbox="869 209 1169 256">Specification</th> </tr> </thead> <tbody> <tr> <td data-bbox="262 256 398 667">44.10.5</td> <td data-bbox="398 256 869 667">Real-Time Spectrum Monitoring Alarm (RTSMA)</td> <td data-bbox="869 256 1169 667">i . Shall have the capability to highlight any transmitted frequency on certain frequency range selected with visual recording function via standard video format. The feature shall include information on licensed or unlicensed or/and having technical parameters value such as frequency, bandwidth, signal level or any other parameters different from declared value recorded in MCMC's spectrum management database</td> </tr> </tbody> </table> <p data-bbox="262 671 398 703">Question:</p> <p data-bbox="262 740 1070 804">“Can you please clarify what MCMC’s spectrum management database is?”</p> <p data-bbox="262 841 1151 904">Can MCMC’s create and provide a database ‘View’ that we can use to get license information?”</p>	No.	Module	Specification	44.10.5	Real-Time Spectrum Monitoring Alarm (RTSMA)	i . Shall have the capability to highlight any transmitted frequency on certain frequency range selected with visual recording function via standard video format. The feature shall include information on licensed or unlicensed or/and having technical parameters value such as frequency, bandwidth, signal level or any other parameters different from declared value recorded in MCMC's spectrum management database	<p data-bbox="1182 209 1839 240">Assignment (AA) and Spectrum Assignment (SA).</p> <p data-bbox="1182 277 2085 373">Any required data access or interface for license information shall be facilitated through this integration, subject to MCMC’s approval and coordination.</p>
No.	Module	Specification						
44.10.5	Real-Time Spectrum Monitoring Alarm (RTSMA)	i . Shall have the capability to highlight any transmitted frequency on certain frequency range selected with visual recording function via standard video format. The feature shall include information on licensed or unlicensed or/and having technical parameters value such as frequency, bandwidth, signal level or any other parameters different from declared value recorded in MCMC's spectrum management database						

**2. General**

No.	Question	Answer
1	<p data-bbox="262 1233 651 1265">Refer page 5/160, Clause 2.5</p> <p data-bbox="262 1302 1167 1398">Question : Is cash in-hand (with bank) considered as Capital Asset equivalent of paid-up capital ???</p>	<p data-bbox="1182 1233 2159 1265">No. Paid-up capital shall be as declared in the company audited statement.</p>

No.	Question	Answer
2	<p>Refer page 26/160, Clause 30.4 – <b>item 1</b></p> <p>“Completion of technical site survey for existing and new RMS placement proposal”</p> <p>“new site acquisition dependency is beyond MCMC’s control and beyond tenderer’s control” (as per Clause 40.3.2 page 36/160)</p> <p>Question : The Payment Schedule under item (1) should be without dependency beyond tenderer’s control</p>	<p>The requirement for completion of the technical site survey for both existing and new RMS placement proposals remains an integral component of the milestone under Item (1). While it is acknowledged that certain elements, such as site acquisition approvals, may involve dependencies beyond the direct control of the tenderer, these factors are considered part of the overall project risks to be managed by the tenderer.</p> <p>Accordingly, the payment milestone and its associated conditions shall remain unchanged as specified in the tender document.</p>
3	<p>Section 4 is missing from the tender document. Is this intentionally left out?</p>	<p>Section 4: Post-Tender Award Terms and Conditions Paragraph 28 (Performance Bond) until paragraph 39 (Time)</p>
4	<p>There are 2 section 5: a) Page 25 - 34 : Post-Tender Award Terms and Conditions. B) Page 35-85: Scope of Work. Is this intentional?</p>	<p>Section 4: Post-Tender Award Terms and Conditions Paragraph 28 (Performance Bond) until paragraph 39 (Time)</p> <p>Section 5: Scope of Work Paragraph 40 (Site Survey) until paragraph 61 (Additional Requirements)</p>
5	<p>Clause 28.1 The Successful Tenderer shall be required to submit a performance bond in the form of a bank draft or bank guarantee issued by a local licensed financial institution under the Financial Services Act 2013 [Act 758] or Islamic Financial Services Act [Act 759] within one (1) month after the Tender has been awarded. This performance bond shall be equivalent in value to ten per cent (10%) of the Contract Sum.</p> <p>According to Tender Document Section 5 para 28.1, page 25 the performance bond is to be for 5% of the Contract Sum. Please amend this provision to reflect 5% and not 10%.</p>	<p>The performance bond shall be equivalent in value to five per cent (5%) of the Contract Sum</p>
6	<p>Clause 37.3 Upon suspension of the whole (or any part thereof) of the Work by the Successful Tenderer under subparagraph 37.1 above, MCMC shall take immediate steps to bring to an end the Work (or any part</p>	<p>Upon suspension of the whole (or any part thereof) of the Work by the Successful Tenderer under subparagraph 37.1 above, <b>the Successful Tenderer</b> shall take immediate steps to bring to an end the Work (or any part thereof) in an orderly manner but with all reasonable speed and</p>

No.	Question	Answer
	<p>thereof) in an orderly manner but with all reasonable speed and economy and shall discontinue making commitments in so far as practicable, and shall cause to be delivered to MCMC the deliverables specified to be owned by MCMC that have been prepared by the Successful Tenderer at the date of such suspension.</p> <p>Shouldn't the phrase "MCMC shall take immediate steps to bring to an end the work" rather refer to "the Successful Tenderer"?</p>	<p>economy and shall discontinue making commitments in so far as practicable, and shall cause to be delivered to MCMC the deliverables specified to be owned by MCMC that have been prepared by the Successful Tenderer at the date of such suspension.</p>
7	<p>Clause 37.6 In the event that MCMC instructs the Successful Tenderer to resume the Work after suspension in whole or in part as a result of some default by the Successful Tenderer, then the Successful Tenderer shall not be entitled to payments whatsoever in respect of the period of suspension, save in respect of any part of the Work not so suspended nor to any costs of demobilising or re-mobilising such Work.</p> <p>The "nor" in the phrase "save in respect of any part of the Work not so suspended nor to any costs of demobilising or re-mobilising such Work" should be amended to "or"</p>	<p>In the event that MCMC instructs the Successful Tenderer to resume the Work after suspension in whole or in part as a result of some default by the Successful Tenderer, then the Successful Tenderer shall not be entitled to payments whatsoever in respect of the period of suspension, save in respect of any part of the Work not so suspended <b>or</b> to any costs of demobilising or re-mobilising such Work.</p>
8	<p>Item 11 in Page 14 of Tender Document states: "The Successful Tenderer need not necessarily be appointed based on the LOWEST quoted price. Apart from the price quoted, the evaluation of each Tenderer's proposal shall be based on other matters such as the adherence to the scope of the Work, deliverables and timelines, financial, administrative and procedural requirements of the Tender, the Tenderer's prior experience and record of accomplishment, and other important related information"</p> <p>Question:</p> <p>According to this paragraph; we respectfully request that the customer could provide an effective, practical, and measurable explanation (using formulas, assigning points for compliance, etc.; by establishing a maximum score for the winning bidder) so that the</p>	<p>The detailed evaluation methodology, including scoring mechanisms and criteria, is part of MCMC's internal processes and will not be disclosed. All submissions will be assessed in accordance with these established procedures.</p>

No.	Question	Answer
	<p>tenderer can objectively estimate the actual percentage of compliance with the tender requirements.</p> <p>Currently, the evaluation is subjective, as there is no quantifiable method for assessing applicants' responses.</p>	