

Republic of the Philippines Department of Budget and Management PROCUREMENT SERVICE PHILIPPINE GOVERNMENT ELECTRONIC PROCUREMENT SYSTEM



Supplemental/Bid Bulletin No. 5 January 18, 2021

PUBLIC BIDDING No. 20-058-10

Supply, Delivery, Design, Installation, Programming, Testing, Training and Commissioning of Digital Radio System for the Philippine National Police

Issued pursuant to Sec. 22.5 of the IRR of R.A. 9184 to clarify and/or amend certain provisions in the Bidding Documents issued for this project, considering the issues raised and clarifications made by prospective bidders during the Pre-Bid Conference held on December 21, 2020.

A. AMENDMENTS/INCLUSIONS

	BASIS FOR AMENDME INCLUSIONS	REFERENCE			
			ON VII. TECHNICAL SPECIFICATIONS		
			Lot No. 1		
		DIDDED/C CTATEMENT	XXX ITEM DESCRIPTION		
		BIDDER'S STATEMENT OF COMPLIANCE	TIEM DESCRIPTION		
equire	To amend the requ	Brand:	RADIO COMMUNICATION SYSTEM		
	form.		conforms to Terms of Reference		
		Model:	and NAPOLCOM Resolution.		
revise	Please refer to the rev		*please see attached Annex F for the		
Anne	form attached as An		complete sets of Terms of Reference		
	"A"	Brand:	HANDHELD RADIO TRANSCEIVER		
		L	conforms to NAPOLCOM Resolution		
		Model:	No. 2015-424 & 2016-815. See		
		Duran di	Attached Annex A		
		Brand:	BASE RADIO TRANSCEIVER conforms to NAPOLCOM Resolution		
		Model:	No. 2015-425, 2016-813 & 2018-		
		inodei.	588. See Attached Annex B		
		Brand:	MOBILE RADIO TRANSCEIVER		
			conforms to NAPOLCOM Resolution		
		Model:	No. 2015-426 & 2016-814. See		
			Attached Annex C		
		Brand:	DIGITAL TRUNKED RADIO SYSTEM		
		L	conforms to NAPOLCOM Resolution		
		Model:	No. 2015-425 & 2016-803. See		
		Brand:	Attached Annex D DIGITAL CONVENTIONAL RADIO		
		branu:	REPEATER conforms to NAPOLCOM		
		Model:	Resolution No. 2016-806. See		
		- roden	Attached Annex E		
			Accord Annox E		
			Attached Annex E		

SECTIO	N VIII. F	INANCIAL DOCU	JMENTS			
	Bid Forr	n				
	Lot No.	Item No.	Qty/	/Unit	ITEM/DESCRIPTION	To amend the required
					Supply, Delivery, Design, installation, programming, testing, Training and commissioning of Digital Radio System	form. Please refer to the revised form attached as Annex "B".
2.		Item 1	5,507	<u>units</u>	HANDHELD RADIO TRANSCEIVER	
2.		Item 2	200	<u>units</u>	BASE RADIO TRANSCEIVER	
		Item 3	1,500	<u>units</u>	MOBILE RADIO TRANSCEIVER	
		Item 4	41	<u>units</u>	DIGITAL TRUNKED RADIO SYSTEM	
		Item 5	8	units	DIGITAL CONVENTIONAL RADIO REPEATER—conforms to NAPOLCOM—Resolution—No. 2016-806. See Attached Annex E	
	xxx					
	Terms o	of Reference				
3.	procedu				Revised Adverse Condition Test le Communications Equipment and	To provide additional requirements. Please refer to the additional requirements
		ires for PNP Mul			1: Test and Evaluation (T & E) ystem (MTRS) and other Similar	additional requirements attached as Annex "C".

B. Clarification

	Reference	CONCERN	CLARIFICATION/RESOLUTION
1.	Conduct of Post- Qualification	Who will conduct the post-qualification. The conduct of post-qualification is one of the functions of the Bids and Awards Committee. In the 2018 procurement of DMR equipment the BAC TWG of the Philippine National Police (PNP), Triton Communications Corporation (TCC) emerged as the bidder with the lowest calculated bid. During the post-qualification, the BAC TWG "allowed" Chinese looking employees of Hytera, the other bidder. The BAC TWG "justified" their participation because they do not know how operate the system. Naturally, with the participation of the other bidder, TCC was post disqualified.	The conduct of the post-qualification will be done by the Bids and Awards Committee with the assistance of its Technical Working Group and End-User Agency. In this procurement, post-qualification of bidders offer will be based only on the submitted brochure, un-amended sales literature, unconditional statements or specification and compliance issued by the manufacturer or distributor, samples, independent test data, etc., as appropriate. Functional Testing of samples (offered item) will be done to the
		While we reserved action on the propriety of the BAC TWG, we would like to be clarified whether the PS DBM would allow the participation of bidder interested in the result of the procurement process.	winning bidder prior to acceptance of the items subject to conditions stated in the Terms of Reference.
2.		On the requirement of inter-operability, we would like to be clarified whether this will be required considering that: (a) that PNP-Hytera system has not yet been accepted by the PNP; and (b) the	There is a need for interoperability for the DMR procured in 2018 was already accepted by the PNP.
		Hytera system is not operating per the DMR standard (Tier III), nor operating in compliance to the DMR IOP Certification.	As there is a need for interoperability bidders are required to submit an interoperability solution during Post-Qualification to prove that the offered system is interoperable/compatible with the existing system of the End-User Agency.
3.		We would like to be clarified in case of conflict between the requirements of technical specifications approved by the National Police Commission (NAPOLCOM), which exercises administrative control and operational supervision over the PNP, and the Term of Reference (TOR) prepared by the Communications and Electronics Service (PNP CES), which will govern?	It is the Terms of Reference that will govern which was also based on the approved NAPOLCOM Specifications.
4.	Terms of Reference (TOR)	Under all Napolcom Resolution, the Paragraph "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not	The original requirement is retained. End-User Agency cannot compromise
	C. Concept of Implementation	tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturers/suppliers in the market".	the interoperability of the radios it uses especially on the same geographical location nor can set
	Item No. 1	How will the existing system allow participation of all interested manufacturers/suppliers when the DMR standard only defines the air interface between subscriber and base station? DMR	aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system

¹ Email letter dated December 23, 2020

		standard does not define any standard for interoperability between different vendors at system infrastructure or console level. Moreover, the mandatory IOP features of requirements stated in DMR standard are very limited with vendors creating their own proprietary features. Hence the range of compliance can vary depending on actual implementation and use of the existing.	interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
		Hence Motorola only complies to standalone DMR TIER III and TIER II systems. The new Motorola DMR repeaters cannot work with existing DMR MSO provided by different vendors and vice versa.	
5.	Terms of Reference (TOR) C. Concept of Implementation Item No. 2.a.	Under all Napolcom Resolution, The Paragraph, "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system allow participation of all interested manufacturers/suppliers when the System Infrastructure Interoperability is not defined in DMR standard? Motorola Solutions has Interoperability certificates with other vendors as defined by DMR standard and hence our radios shall operate on other vendor infrastructure as long as it is DMR standard compliant and for the features stated under Interoperability as per DMR standard. In 2018, our team of DMR experts already conducted a test and found evidence that the existing PNP DMR system at that time did not operate in compliance to the DMR standard, Tier 3 mode of operation, nor comply with DMR IOP certification. Motorola can only upgrade Motorola repeater. The new Motorola DMR repeaters cannot work with DMR MSO provided by different vendors.	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
6.	Terms of Reference (TOR) C. Concept of Implementation Item No. 2.b	Under all Napolcom Resolution, The Paragraph, "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system allow participation of all interested manufacturers/suppliers when the System Infrastructure Interoperability is not defined in DMR standard? Motorola Solutions has Interoperability certificates with other vendors as defined by DMR standard and hence our radios shall operate on other vendor infrastructure as long as it is DMR standard compliant and for the features stated under Interoperability as per DMR standard. In 2018, our team of DMR experts already conducted a test and found evidence that the existing PNP DMR system at that time did not operate in compliance to the DMR standard, Tier 3 mode of operation, nor comply with DMR IOP certification. Motorola can only upgrade Motorola	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.

	<u> </u>	repeater. The new Motorola DMR repeaters cannot	
		work with DMR MSO provided by different vendors.	
7.	Terms of Reference (TOR) C. Concept of Implementation Item No. 2.c	Under all Napolcom Resolution, The Paragraph, "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system allow participation of all interested manufacturers/suppliers when the System Infrastructure Interoperability is not defined in DMR standard? Motorola Solutions has Interoperability certificates with other vendors as defined by DMR standard and hence our radios shall operate on other vendor infrastructure as long as it is DMR standard compliant and for the features stated under Interoperability as per DMR standard. In 2018, our team of DMR experts already conducted a test and found evidence that the existing PNP DMR system at that time did not operate in compliance to the DMR standard, Tier 3 mode of operation, nor comply with DMR IOP certification. Motorola can only upgrade Motorola repeater. The new Motorola DMR repeaters cannot work with DMR MSO provided by different vendors.	The original requirement is retained. According to the End-user Agency the existing PNP DMR TIER III system passed the Functional Test and Evaluation and complies with the approved NAPOLCOM Specifications for Digital Radio System.
8.	Terms of Reference (TOR) C. Concept of Implementation Item No. 2.d	32 carrier capacity means 63 traffic channels which are logically very high. Based on existing operational traffic in PNP, we recommend maximum 10-15 carriers should suffice PNP requirement as per site loading. Motorola supports 15BR for traffic and additional 6 BR for data channels per site. This clause contradicts with NAPOLCOM 2018-803 clause E.4.	As per the End-user Agency that the requirement is hereby fixed to 15 carrier.
9.	Terms of Reference (TOR) C. Concept of Implementation Item No. 3	Motorola DMR base station can be configured to support both Tier 2 and Tier 3. Under all Napolcom Resolution, The Paragraph, "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system allow participation of all interested manufacturers/suppliers when the System Infrastructure Interoperability is not defined in DMR standard? Motorola Solutions has Interoperability certificates with other vendors as defined by DMR standard and hence our radios shall operate on other vendor infrastructure as long as it is DMR standard compliant and for the features stated under Interoperability as per DMR standard. In 2018, our team of DMR experts already conducted a test and found evidence that the existing PNP DMR system at that time did not operate in compliance to the DMR standard, Tier 3 mode of operation, nor comply with DMR IOP certification. Motorola can only upgrade Motorola repeater. The new Motorola DMR repeaters cannot work with DMR MSO provided by different vendors.	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.

10.	Terms of Reference (TOR) C. Concept of Implementation Item No. 4	Under all Napolcom Resolution, The Paragraph, "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system allow participation of all interested manufacturers/suppliers when the System Infrastructure Interoperability is not defined in DMR standard? System Infrastructure Interoperability is not defined in DMR standard. Motorola DMR Tier III System cannot operate with non DMR standard system such as PDT.	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
11.	Terms of Reference (TOR) C. Concept of Implementation Item No. 8	Motorola radios complies to DMR Tier 3 trunking and roaming as per the DMR standard. Motorola radios can interoperate and roam with existing repeater sites as long as they are fully complying to DMR Tier 3 standard. Motorola DMR Tier III System cannot operate with non DMR standard system such as PDT. Will the existing system allow to connect other brands which complies to DMR standard?	The original requirement is retained. According to the End-user Agency the existing PNP SMR TIER III system passed the Functional Test and Evaluation and complies with the approved NAPOLCOM Specifications for Digital Radio System.
12.	Terms of Reference (TOR) C. Concept of Implementation Item No. 9.a	There is no proven AVLS system over a single DMR Tier 2/Conventional system of 41 site. Due to load handling for such large system, Can Motorola recommend to consider DMR Tier 3 trunking system with controllers for implementing such large system of 41 sites to enable all the required trunking capability?	To clarify that an AVLS is required for every repeater that would make a total of 41 AVLS as there are 41 conventional repeaters.
13.	Terms of Reference (TOR) C. Concept of Implementation Item No. 9.b	Motorola only complies to standalone DMR TIER III system for Phase 3 tender only. Motorola DMR Tier III System cannot operate with non DMR standard systems such as PDT. As per DMR standard, there is no defined standard to interface DMR Tier 2 conventional to DMR Tier 3 trunking. However, Can Motorola recommend TG patching be done via Dispatch solution.	The original requirement is retained. According to End-user Agency, IP Interconnection enables conventional repeaters from other PROs/PPOs to be connected to the NHQ via available IP connectivity while TG Patching is only available within radio transmit/receive limits and requires a dedicated radio for every talkgroup. Considering the number of conventional repeaters proposed, TG patching is illogical.
14.	Terms of Reference (TOR) C. Concept of Implementation Item No. 9.c	Motorola only complies to standalone DMR TIER III system for Phase 3 tender only. Motorola DMR Tier III System cannot operate with non DMR standard systems such as PDT. Motorola repeaters can be configured both analog and digital modes. However, as analog mode, it cannot connect to digital network directly. Can Motorola recommend to use Dispatch solution using TG patching?	To clarify that the required feature will no longer be required as enduser will be migrating to full digital.
15.	Terms of Reference (TOR) C. Concept of Implementation	DMR standard doesn't define any standard for such data application. However, Motorola can provide solution for data query on its own DMR Tier 3 system. Can PNP provide more information on interfacing with PNP's SMS Query system? Please explain further.	Client-Server configuration where the radio terminal can send SMS query and server-side software will send a reply based on available data on the database.

	Item No. 11		This is a process where the radio terminal can send as SMS query to the data server and the server can automatically reply based on its available data.
16.	Terms of Reference (TOR) D. DMR Communication System Requirements	Under all Napolcom Resolution, The Paragraph, "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system allow participation of all interested manufacturers/suppliers when the DMR standard does not define any standard for interoperability between different vendor at system infrastructure or console level? Hence Motorola only complies to standalone DMR TIER III and TIER II systems. The new Motorola DMR repeaters cannot work with existing DMR MSO provided by different vendors and vice versa.	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
17.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.a.4	Separate Site Controller is a vulnerable component creating a point of failure. Hence, in case of Motorola, the site controller is embedded into the individual repeaters itself to provide more than 2 level of controller redundancy (we can program 4 repeaters for controllers)	At least with site redundancy as the minimum. Site Controller embedded into individual repeaters is acceptable provided it has site redundancy.
18.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.a.10	We support AES 256 E2E Encryption. This is applicable for radios operating on our own repeaters as well as Dispatcher. We provide End to End Encryption in system at Radio and Dispatcher level.	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
19.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.a.12	Under all Napolcom Resolution, The Paragraph, "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system allow participation of all interested manufacturers/suppliers when the DMR standard only defines the air interface between subscriber and base station? DMR standard does not define any standard for interoperability between different vendors at system infrastructure or console level. Moreover, the mandatory IOP features or	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit

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20.	Terms of Reference	requirements stated in DMR standard are very limited with vendors creating their own proprietary features. Hence the range of compliance can vary depending on actual implementation and use of the existing. Hence Motorola only complies to standalone DMR TIER III and TIER II systems. The new Motorola DMR repeaters cannot work with existing DMR MSO provided by different vendors and vice versa. Under all Napolcom Resolution, The Paragraph,	an integration solution during post- qualification. The original requirement is retained.
]	TOR) D. DMR Communication System Requirements Item No. 1.a.13	"WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system allow participation of all interested manufacturers/suppliers when the DMR standard only defines the air interface between subscriber and base station? DMR standard does not define any standard for interoperability between different vendors at system infrastructure or console level. Moreover, the mandatory IOP features or requirements stated in DMR standard are very limited with vendors creating their own proprietary features. Hence the range of compliance can vary depending on actual implementation and use of the existing. Hence Motorola only complies to standalone DMR TIER III and TIER II systems. The new Motorola DMR repeaters cannot work with existing DMR MSO provided by different vendors and vice versa.	End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
]	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.a.14	Under all Napolcom Resolution, The Paragraph, "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system allow participation of all interested manufacturers/suppliers when the DMR standard only defines the air interface between subscriber and base station? DMR standard does not define any standard for interoperability between different vendors at system infrastructure or console level. Moreover, the mandatory IOP features or requirements stated in DMR standard are very limited with vendors creating their own proprietary features. Hence the range of compliance can vary depending on actual implementation and use of the existing. Hence Motorola only complies to standalone DMR TIER III and TIER II systems. The new Motorola DMR repeaters cannot work with existing DMR MSO provided by different vendors and vice versa.	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
	Terms of Reference (TOR)	Under all Napolcom Resolution, The Paragraph, "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same

	Communication System Requirements Item No. 1.a.15; 1.a.15.1.1; 1.a.15.1.2; 1.a.15.1.3; 1.a.15.1.5; 1.a.15.1.5; 1.a.15.1.6; 1.a.15.2.1 1.a.15.2.2 1.a.15.3.4	of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system allow participation of all interested manufacturers/suppliers when the DMR standard only defines the air interface between subscriber and base station? DMR standard does not define any standard for interoperability between different vendors at system infrastructure or console level. Moreover, the mandatory IOP features or requirements stated in DMR standard are very limited with vendors creating their own proprietary features. Hence the range of compliance can vary depending on actual implementation and use of the existing. Hence Motorola only complies to standalone DMR TIER III and TIER II systems. The new Motorola DMR repeaters cannot work with existing DMR MSO provided by different vendors and vice versa.	geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
23.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.a.15.1.4;	Same with Item No. 1.a.15; Moreover, DMR does not define any standard for this and I based on vendor implementation.	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
24.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.a.15.1.7;	Same with Item No. 1.a.15; Motorola can provide voice recording within our Dispatcher solution rather than external voice logger solution offered by other vendor. WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturer/suppliers in the market". How will the existing system can comply to the Napolcom Resolution of allowing other brand to participate?	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
25.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.a.15.3.2	Same with Item No. 1.a.15; Motorola can do it within our own repeaters for new Ph3 requirement using our Dispatcher solution. Moreover, we can control and define the update frequency for GPS pooling remotely from control room.	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the

	Item No. 1.a.15.3.3		need for inter-system
			interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
26.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.c.1	What is the existing system? The term Upgrading is using the same system or using the same brand. Motorola cannot upgrade the existing repeater channel because the existing system is of other brand. Motorola cannot upgrade the existing repeater channel because the existing system is of other brand. "WHEREAS, the specifications for Digital Trunked Radio System (DTRS) for DMR Standard are not tailored-fit specifications to any commercial brand of product and will enable participation by all interested manufacturers/suppliers in the market." How will the existing system comply to the NAPOLCOM Resolution of allowing other brand to participate?	As clarified, UPGRADING as used in the Terms of Reference means increasing the number of available channels provided integrated and manage by its original Management Station
27.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.c.2	DMR standard does not define any standard for interoperability between different vendors at system infrastructure or console level. Motorola only complies to standalone DMR TIER III system for Phase 3 tender only. Motorola proposes 7 new sets of Dispatch system for Phase 3 tender. How will the existing system comply to the Napolcom Resolution of allowing other brand to participate?	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
28.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.d.1.5	Interoperability is not defined in DMR standard at system infrastructure level. Motorola only complies to standalone DMR TIER III system for Phase 3 tender only. How will the existing system comply to the Napolcom Resolution of allowing other brand to participate?	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.

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29.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.d.2	Interoperability is not defined in DMR standard at system infrastructure level. Motorola only complies to standalone DMR TIER III system for Phase 3 tender only. How will the existing system comply to the Napolcom Resolution of allowing other brand to participate?	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
30.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.d.3	As per DMR standard, there is no such Console Subsystem Interface to define interconnection between two different systems. The only possible interconnection is via TG patch using input/output/PPT pins of radio/repeater. This is proprietary feature that can be done only by existing vendors and eliminates the open tender.	The original requirement is retained. According to the End-user Agency, TG Patching is not feasible for inter- PRO communication due to distance limitation.
31.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.d.4	Motorola can do it in our own new DMR Tier 3 system for Ph3 but not with existing system. This is also not defined in existing DMR standard mandatory interoperability guidelines. This is again vendor specific requirements unduly favouring existing vendor.	The original requirement is retained. End-User Agency cannot compromise the interoperability of the radios it uses especially on the same geographical location nor can set aside existing DMR equipment where the government already invested huge amounts of money - thus the need for inter-system interoperability. Interested bidders should find ways and solutions to integrate their offered item with the existing DMR equipment of the enduser. Bidders are required to submit an integration solution during post-qualification.
32.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.d.6.3	Clarification on how will this be group together.	Terminology may vary for every vendor. To clarify that every dispatch console for the conventional repeaters shall support at least 500 radio users.
33.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.e.1.6 Item No. 1.e.2.5 Item No. 1.e.3.5 Item No. 1.e.4.5	Need clarification: track the transmitting radios directly or via application?	To clarify that these portion of the contract will be omitted for it belong to the feature of dispatching software

	Reference	CONCERN	CLARIFICATION/RESOLUTION
34.	Bid Data Sheet ITB Clause 20.2 Item No. 3	Requires the Certificate of Satisfactory Completion. PNP issues a different standard for a certificate of completion, should be acceptable since the "satisfactory" is not reflected on the certificate.	ITB Clause 20.2 – 3 (d) To clarify that: "Certification of Completion" can be accepted as proof of completion of the single largest contract as identified in the Statement of Single Largest Contract.
35.	Bid Data Sheet ITB Clause 20.2 Item No. 7, 8, 9	For items 7,8,9 Post Qualification Documents If Joint Venture, Is it acceptable that at least one member of the JV will submit the required documents?	At least one (1) member of the JV will submit the required documents.
36.	Bid Data Sheet ITB Clause 21.1 Item No. 1	Since this is still in the Procurement Stage, we suggest that this requirement be provided by the winning bidder before the training	To clarify that the Twenty (20) sets of Service Manuals for the procured DTRS will be provided by the winning bidder before the training.
37.	Bid Data Sheet ITB Clause 21.1 Item No. 2	We suggest that this requirement will be issued by the winning bidder after the NTP.	To clarify that the Certification of Non Disclosure for the Implementation of the project shall be issued after the NTP.
38.	Special Conditions of the Contract GCC Clause 2.2	The Payment condition is commercially strict to prospective bidders. We suggest the following payment conditions: 15% after NTP 50% after preliminary acceptance test 35% after the final acceptance	The original requirement is retained. To clarify that the winning bidder is not precluded from requesting to PS-DBM a request for partial payment subject to approval by the Head of Procuring Entity.
39.	Mayor's Permit	Since the Bid Submission falls on the first working day of 2021 which is also the first day to file Business Permit Renewal, please allow submission of the 2020 business permit, subject to submission of the 2021 business permit during Post Qualification, Other LGU will only process business permit renewals starting January 4, 2021.	Three (3) bid bulletin were already issued extending the submission and opening of bids.
40.	Section VII. Technical Specifications Annex E. Resolution No. 2016- 803 Terms of Reference H. Requirements for Bidders Item No. 9	There is a conflicting instruction in the TOR and the BDS. In the TOR it mentioned that if JV, at least one has the PCAB license but on the BDS it did not mention that at least one member of the JV has the PCAB License with SCF.	To clarify that at least one (1) member of the JV has PCAB-License with SCF.

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² Email letter dated December 29, 2020

	Reference	CONCERN	CLARIFICATION/RESOLUTION
41.	Terms of Reference (TOR)	Only Hytera can work with existing MSO	The End-user Agency clarified that the interested bidders should find ways to interoperate with the
	C. Concept of Implementation		existing DMR of the end-user, PNP DMR.
	Item No. 4		Bidders are required to submit an integration solution during post-qualification.
42.	Terms of Reference (TOR)	Only Hytera can do Seamless HO to existing T3 sites.	To clarify that the word "seamless" will be omitted on the TOR. However, terminals should be
	C. Concept of Implementation		compatible with all trunking sites
	Item No. 6		
43.	Terms of Reference (TOR)	Unified communication system is only for Hytera system.	The End-user Agency clarified that the DMR standard only defines the air interface between subscriber and
	C. Concept of Implementation	Unified communication system must be standard based using AIS or CSI interface	base station. Interested bidders should find ways to interoperate with the existing DMR of the end-
	Item No. 9		user. PNP DMR.
			Bidders are required to submit an integration solution during post-qualification.
44.	Terms of Reference (TOR)	Only Hytera can support up to 500 characters	The End-user Agency clarified that the Reply to queries shall support the standard SMS length of 160
	C. Concept of Implementation Item No. 11		characters per message
45.	Terms of Reference (TOR)	Only Hytera requires site controller. Can we propose system that does not require site controller but with redundancy.	The End-end User Agency clarified that it must support as stand-alone trunking site if the link to the MSO
	D. DMR Communication System Requirements	controller but with redundancy.	becomes unavailable.
	Item No. 1.a.4		
46.	Terms of Reference (TOR)	Hytera hardware features	Uphold 3-way diversity due to limited number of sites available
	D. DMR		
	Communication		
	System Requirements		
	Item No. 1.a.8		

³ Email letter dated January 07, 2021

	T=	T	
47.	Terms of Reference	Only compatible with Hytera	The End-user Agency clarified that
	(TOR)		the requirement must be at least integrated with the following
	D. DMR		features: voice, data and GPS
	Communication		tracking.
	System Requirements		_
	Thoma No. 1 a 12		
48.	Item No. 1.a.12 Terms of Reference	Hytera feature	Uphold interconnection via IP
10.	(TOR)	Trytera reacure	connectivity because interregional
	(1213)		connectivity via radio terminal is not
	D. DMR		feasible
	Communication		
	System Requirements		
	Item No. 1.a.13		
49.	Terms of Reference	Requesting to do actual test using Tier III	End-user Agency can accommodate
	(TOR)	compatible subscriber units.	interested bidders willing to conduct
	D. DMR		testing with proper coordination.
	Communication		
	System Requirements		
	' '		
	Item No. 1.a.4		
50.	Terms of Reference	Only Hytera can interoperate with existing Dispatch	The End-user Agency clarified that
	(TOR)	system. System is not open and not interoperable as previously tested.	the interested bidders should find ways to interoperate with the
	D. DMR	as previously tested.	existing DMR of the end-user. PNP
	Communication		DMR.
	System Requirements		
	Thomas No. 4 o 45		Bidders are required to submit an
	Item No. 1.a.15 Item No. 1.a.15.1		integration solution during post- qualification.
	Item No. 1.a.15.1		qualification.
	Item No. 1.a.16.3		
51.	Terms of Reference	Only Hytera channel units can be used for upgrade	Increase/expand the number of
	(TOR)		channel at the required sites
	D. DMR		
	Communication		
	System Requirements		
	TI N 4 4		
52.	Item No. 1.c.1 Terms of Reference	Only Hytora dispatch consolor can be supported by	Provide dispatch conver if evicting
52.	(TOR)	Only Hytera dispatch consoles can be supported by Hytera dispatch server.	Provide dispatch server if existing server could not accommodate the
	(101.7)	, to a dispatch soft for	required licenses
	D. DMR		
	Communication		
	System Requirements		
	Item No. 1.c.2		
53.	Terms of Reference	Hytera repeater with display	Required on the NAPOLCOM
	(TOR)		Specification.
	D. DMR		
	Communication		
	System Requirements		
	Item No. 1.d.1.3		
	Item No. 1.d.1.4		

54.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.d.2	Only Hytera can interoperate with existing Dispatch system. System is not open and not interoperable as previously tested.	The End-user Agency clarified that the interested bidders should find ways to interoperate with the existing DMR of the end-user. PNP DMR. Bidders are required to submit an integration solution during post-
55.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.d.4	Requesting to do actual test using Tier III compatible subscriber units	qualification. End-user Agency can accommodate interested bidders willing to conduct testing with proper coordination
56.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. 1.d.6 Item No. 1.d.6.8	Hytera feature	The End-user Agency clarified that the GPS tracking by time and/or distance is a common feature.
57.	Terms of Reference (TOR) D. DMR Communication System Requirements Item No. e Item No. e.1 Item No. e.1.6 Item No. e.2 Item No. e.2.5 Item No. e.3 Item No. e.3	Hytera feature	As per End-user Agency that this requirement will be disregard this part because it is a feature of the GPS Tracking software.
58.	Terms of Reference (TOR) G. Terms and Conditions Item No. 10	Can we test our subscriber unit with DMR Tier 3 IOP certification to work on existing PNP Tier 3 system.	End-user Agency can accommodate interested bidders willing to conduct testing with proper coordination.

By Rule, all other related provisions in the Bidding Documents correspondingly affected by these amendments are likewise deemed amended to conform to this Bid Bulletin.

Amendments made herein shall be considered an integral part of the Bidding Documents.

(SGD) ENGR. JAIME M. NAVARRETE JR. Chairperson, PS BAC X

ANNEX "A"

Date

LOT NO. 1	SUPPLY, DELIVERY, DESIGN, INSTALLATION, PROGRAMMING, TESTING, TRAINING AND COMMISSIONING OF DIGITAL RADIO SYSTEM	
QUANTITY	:	1 Lot
APPROVED BUDGET PER UNIT	:	
APPROVED BUDGET FOR THE CONTRACT	:	P 439,642,186.00
ITEM DESCRIPTION		BIDDER'S STATEMENT OF COMPLIANCE
RADIO COMMUNICATION SYSTEM conforms Terms of Reference and NAPOLCOM Resolution. *please see attached Annex F for the complete sets of Terms Reference	to	
HANDHELD RADIO TRANSCEIVER conforms NAPOLCOM Resolution No. 2015-424 & 2016-815. S Attached Annex A	to See	
BASE RADIO TRANSCEIVER conforms to NAPOLCO Resolution No. 2015-425, 2016-813 & 2018-588. SAttached Annex B		
MOBILE RADIO TRANSCEIVER conforms NAPOLCOM Resolution No. 2015-426 & 2016-814. S Attached Annex C	to See	
DIGITAL TRUNKED RADIO SYSTEM conforms NAPOLCOM Resolution No. 2015-425 & 2016-803. SAttached Annex D		
DIGITAL CONVENTIONAL RADIO REPEATER confor to NAPOLCOM Resolution No. 2016-806. See Attack Annex E		
I hereby certify that the statement of compliance to the correct, otherwise, if found to be false either during be shall give rise to automatic disqualification of our bid.		

Name of Company

Signature Over Printed Name of Authorized

Representative

Bid Form

D .	
Date:	
Invitation to Bid No:	PB No. 20-058-10
myttation to Bia 110.	<u>1 B 1 (0) 20 000 10</u>

To: PS-DBM BAC X Chairperson

Procurement Service PS Complex, RR Road Cristobal St., Paco, Manila

Gentlemen and/or Ladies:

Having examined the Bidding Documents including Bid Bulletin Numbers [_____], the receipt of which is hereby duly acknowledged, we, the undersigned, offer to SUPPLY, DELIVERY, DESIGN, INSTALLATION, PROGRAMMING, TESTING, TRAINING AND COMMISSIONING OF DIGITAL RADIO SYSTEM for Philippine National Police in conformity with the said Bidding Documents.

Lot	Item	Qty/Unit		Items/Description	Unit Price	Total Price
No.	No.					
				Supply, Delivery, Design, installation, programming, testing, Training and commissioning of Digital Radio System		
1	1	5,507	unit/s	HANDHELD RADIO TRANSCEIVER		
	2	200	unit/s	BASE RADIO TRANSCEIVER		
	3	1,500	unit/s	MOBILE RADIO TRANSCEIVER		
	4	41	unit/s	DIGITAL TRUNKED RADIO SYSTEM		
	5	8	unit/s	DIGITAL CONVENTIONAL RADIO REPEATER		
TOTAL LOT BID PRICE:						

TOTAL LOT BID PRICE IN WORDS:	
Lot 1:	

We undertake, if our Bid is accepted, to deliver the goods in accordance with the delivery schedule specified in the Section VI. Schedule of Requirements.

If our Bid is accepted, we undertake to provide a performance security in the form, amounts, and within the times specified in the Bidding Documents.

We agree to abide by this Bid for the Bid Validity Period specified in <u>BDS</u> provision for **ITB** Clause 18.2 and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof and your Notice of Award, shall be binding upon us.

We understand that you are not bound to accept the Lowest Calculated Bid or any Bid you may receive.

We certify/confirm that we comply with the eligibility requirements as per **ITB** Clause 5 of the Bidding Documents.

I/We likewise certify/confirm that the undersigned, [for sole proprietorships, insert]: as the owner and sole proprietor or authorized representative of [Name of Bidder], has the full power and authority to participate, submit the bid, and to sign and execute the ensuing contract, on the latter's behalf for the [Name/Title of the Project.]

Or;

I/We likewise certify/confirm that the undersigned, [for partnerships, corporations, cooperatives, or joint ventures, insert]: is granted full power and authority by the [Name of Bidder], to participate, submit the bid and to sign and execute the ensuing contract on the latter's behalf for [Name/Title of the Project.]

We acknowledge that failure to sign each and every page of this Bid Form, including the attached Schedule of Prices, shall be a ground for the rejection of our bid.

Dated this	day of	20
[signature]		[in the capacity of]
Duly authorized to sign B	id for and on beh	nalf of



Republic of the Philippines Department of the Interior and Local Government

NATIONAL POLICE COMMISSION

NATIONAL HEADQUARTERS PHILIPPINE NATIONAL POLICE OFFICE OF THE CHIEF, PNP

Camp Crame, Quezon City

MEMORANDUM CIRCULAR Number DRD-2004-01

SUBJECT: TEST and EVALUATION (T&E) PROCEDURES for PNP MULTI-TRUNKED RADIO SYSTEM (MTRS) and OTHER SIMILAR EQUIPMENT

I. REFERENCES:

a. Memo from TADRD dtd July 07, 2004 (Tab "B");

b. Memo from D, CES and TADL dtd July 21 & 22, 2004, respectively (Tab "C");

 c. Memo from DC- Management and D, LSS dtd July 12 & 14, 2004 respectively (Tab "D");

 d. NAPOLCOM Resolution No. 95-069 - Approving the Standard Specifications for PNP Anti - Terrorist Equipment dtd August 17, 1995 (Tab "E");

 NAPOLCOM Resolution No. 2002-120 - Approving the Standard Specifications for Multi-Trunked Radio System (MTRS) dtd December 27, 2002 (Tab "F"); and

 NTC Memo Circular No 2-05-88- Subject: Rules and Regulations Governing the Manufacture, Acquisition, Sale and Service of Radio Communications Equipment series of 1988 (Tab "G").

I. OBJECTIVE:

To ensure compliance to UESB/NAPOLCOM-Approved specifications of the MTRS and other similar equipment (including its accessories) subject for procurement, evaluation, and or acceptance by the Philippine National Police (PNP).

II. ORGANIZATION:

The technical evaluations will be conducted by a committee headed by the Chief, Communications Section of the Weapons, Transportations and Communications Division, Directorate for Research and Development or a representative designated by the Director, DRD. The members will come from other Directorates, the user, and other selected units of the PNP provided for in the existing rules and regulations governing the conduct of T&E for PNP- Equipment. Supplier's/Proponent's representative's shall witness all test procedures or parameters and is/are authorized to operate the subjected equipment.

IV. SAMPLING PLAN:

Samples to be tested will be picked-up at random from the delivered products/ manufacturing line's lot number. At least ten percent (10%) of the total delivery of each item is needed.

V. TEST PARAMETERS:

The following test parameters are designed to determine whether the equipment/ products have complied the requirement and satisfied the needs of the organization:

- A. General Examination and Sampling (Physical Configuration and Accounting of the delivered Equipment);
- B. Programming and Instrumentation Test (Programming of the equipment and Technical characteristics verification by use of test instruments);
- C. Optional Adverse Condition Test:
- D. Operating Range Test (Range Capability); and
- E. System's Commissioning and Acceptance.

VI. SCHEDULE OF ACTIVITY

A. PHASE I: Location: Supplier's/Manufacturer's compound or the designated delivery area/place stated in the P.O./Contract wherein the required equipment for programming and Test Instruments and other needed accessories are available. Inclosure 1 matrix will be used on the results of General Examination and Sampling.

Accounting of all delivered and or installed equipment and its accessories as provided for in the approved P.O/Contract through the Delivery Receipt (DR) from the supplier.

1. General Examination:

- Accounting of all delivered and or installed equipment and its accessories as provided for in the approved P.O./Contract through the Delivery Receipt (DR) from the supplier;
- b. Checking/Verification on the configuration of all delivered equipment/ installed system's project;
- c. Checking/verification on the commonality of accessories including microphone, antenna, battery pack, and others;
- d. Functional and Physical interchangeability of the sub-assembly/cases:
- e. Weight (Optional); and
- f. Dimension (Optional).
- 2. Random Sampling—ten percent (10%) from each delivered major items
- B. PHASE II: Location: Same as Phase I. All transceiver shall be pre-factory programmed. If not, the supplier and a representative from the user will do the programming.
- 1. Programming and Instrumentation Test. <u>Inclosures 2A matrix</u> will be used for the result of the Instrumentation Tests.
 - a. Repeater/s (Trunked/Conventional)
 - a.1 RF power output
 - a.2 Transmit Frequency Measurement
 - a.3 Transmit Max Deviation Measurement

- a.4 Transmit Frequency Stability
- a.5 Receiver Sensitivity

b. Handheld (Analog/Digital)

- b.1 RF power output
- **b.2 Transmit Frequency Measurement**
- **b.3 Transmit Max Deviation Measurement**
- b.4 Transmit Frequency Stability
- b.5 Receiver Sensitivity

c. Mobile and Base (Trunked/Conventional)

- c.1 RF power output
- c.2 Transmit Frequency Measure
- c.3 Transmit Max Deviation Measurement
- c.4 Transmit Frequency Stability
- c.5 Receiver Sensitivity

2. System's Trunked Controller and Monitoring Equipment Tests.

Sub-components of the system should be tested in accordance with the supplier's/manufacturer's test procedure to check their respective operations and features using *Inclosure 2B matrix for the following:*

- a. Central Controller
- b. LED Indicator
- c. Fail soft
- d. Control Channel
- e. Voice Channel Access
- f. Configuration Manager Screen
- g. Selective Radio Inhibit
- h. Dynamic Regrouping
- i. SMT Access
- j. Snapshoot

Adverse Condition Test. Only indicated test procedures in the equipment shall be performed.

Following test parameters are <u>optional</u> unless the equipment to be tested <u>claimed compliance</u> to any of the following Military Standards. <u>Inclosure 2C matrix</u> will be used to record the results of the <u>Adverse Condition Test</u>.

- a. Dust Test- by placing dust in all surfaces of the equipment, the user will be assured that the terminal are ready on any dust environments for a longer use.
- b. Vibration Test- at the rate from 35 to 350 Hz per minute, for the duration of 30 minutes, user can be assured on the durability of the equipment.
- c. Wet Operation Test- with set completely wet by using a water sprayer the equipment is said to be wet protected after passing the test for RF power output, receiver sensitivity, and frequency accuracy.
- d. Water Proofing Test- one (1) meter immersion for ten (10) minutes is an assurance that the equipment is waterproof after passing the usual instrumentation test.
- e. Drop Test- to ensure that the equipment is ruggedly designed, the set must pass this kind of test.

- f. Operational Capability in High Temperature Test- Operating While the set has been placed from a High Temperature over (fifty degrees Celsius) thereafter, the RF power output, receiver sensitivity and frequency accuracy must be conducted to check if the set has been affected by the heat applied.
- g. Antenna Durability Test (Optional)- Flexible antenna must not be broken after being bent from the midpoint up to so many times.
- h. Casing/Knobs Durability Test (Optional)- the case must not be deformed When the weight of heavy but soft materials are placed on top of its widest face. The subjected equipment should withstand rough handlings.
- C. PHASE III: Location: Any designated stationary point of reference such as: Repeater Station; Base Station; and/or System-Infrastructure shall be considered in testing the efficiency of the moving/mobile stations on certain designated distance. Audio signal received must be readable. *Inclosure 3 matrix* will be used to record the results of the Operating Range Test.

Operating Range Test of different transceiver terminals:

1. Handheld (Conventional Operation Test)

There must be a pre-determined range between the two (2) contact points from one (1) kilometer to five (5) kilometers without any barrier, depending on the power output and type of antenna used. Ideally, one (1) watt can effectively cover one (1) km, or two (2) watts for 2km, and etc. without barrier.

2. Hand Held (Repeater/Trunking Operations Test)

The determined distances will be based from the repeater location or trunking repeater's site with increasing distances mentioned-above. The area coverage from the repeater station must increase from a distance of one (1) kilometer to a minimum of fifty (50) kilometers without any barrier.

3. Mobile and Base Terminals (Conventional and Trunked Repeater Operations)

The determined distances will be based from a mobile transceiver station or a base/repeater station to other stationary station.

An increasing distance of ten (10), up to fifty (50) kilometers, without any barrier must result into a clear voice signal.

A mobile, base, and repeater terminals should have clear voice contact with a minimum distance of fifty (50) kilometers without any barrier,

4. Repeater (Conventional and Trunked Operations)

With the use of any available operational transceiver such as handheld, mobile and base, the repeater through its receiver must be triggered to activate the transmitter side. From the input signal, the repeater must transmit the required RF power output with clear audio signal reception from the other end at the minimum distance of fifty (50) kilometers without any barrier and depending upon the weather condition.

VII. FIELD TEST PLAN

- A. General examination: Conduct of accounting, ocular and technical inspection of the equipment/system such as repeaters, combiner, radio transceiver (handheld, mobile, base), power supply, and alike to include accessories has to be done in order to determine compliance by the supplier in accordance with the approved P.O./Contract:
 - 1. Validation on the content of the delivery/project:
 - Ocular inspection on the configuration of the system/equipment and accessories;
 - 3. Weight (optional);
 - 4. Dimension (optional):
 - 5. Commonality of the handset with the other universal tactical radios;
 - 6. Provision for data communication mode;
 - 7. Antenna base position flexibility;
 - 8. Accessibility of controls/ease of operation:
 - Functional and physical interchangeability of modules, sub-assemblies, cabinets or casing; and
 - 10. Other features

B. Instrumentation test:

1. RF Power Output:

- 1.1 Set the regulated power supply to the operating voltage of the equipment.
- 1.2 Set the radio on transmit operation.
- 1.3 Note the reading on the RF wattmeter.
- 1.4 Repeat the procedure for all programmed channels (from the lowest to the highest).
- 1.5 Measure current drain

2. Receiver Sensitivity:

- 2.1 Set the volume and gain control for the maximum output.
- 2.2 Note down the noise level indicated in the radio power meter with the FM Signal Generator disconnected from the antenna socket.
- 2.3 Reconnect the FM Signal Generator to the receiver antenna. Set the generator to approximately one hundred kilohertz (100 kHz) of the operating frequency of the receiver to obtain a beat noise.
- 2.4 Adjust the generator signal strength to obtained a reading in the audio Power meter which is ten (10) times that of the noise level previously taken.

3. Frequency Stability Test (Optional)

This test performs frequency reading for determining stability of the Program center operating frequency of the equipment after undergoing the adverse test.

- 4. Instrument / Equipment to be used:
 - 1. RF Power meter with reflect signal reading covering VHF to HF bands
 - 2. Frequency Counter, VHF to UHF Bands
 - 3. Signal Generator, RF and AF Signal capable of emitting, 0.1 microvolt to 0.5 volt, across all frequency range.
 - 4. Power Supply (230VAC/12.3 VDC), at least 3 Amp.
 - Dummy loads with range across encountered transmitter power output -RF carrier deviation meter/RF modulation meter.
 - 6. VTVM or Digital Multi-meter.
- C. Optional Adverse Condition Test: Determine the reliability of the communication set under adverse conditions such as: Dust test, Vibration test, Water Proofing test, Operating while the set is wet, Drop test, Operating while the set has been placed in temperature, Antenna durability test, and Casing/knobs durability test. Sets will be inspected after each test for any physical damage followed by instrumentation or functional test
 - Dust Test— Saw dust or its equivalent should be placed in all surfaces of the
 equipment after which, the subject equipment will be placed one (1) meter
 away from a blowing air fan on its lowest speed for a span of one (1) minute.
 Power output, receiver sensitivity, and frequency accuracy test will be
 measured to determine if the equipment was affected by the dust
 - 2. Vibration Test— The transceiver will be accurately and securely placed in a vibrating flat form, which will then be made to vibrate at the rate of approximately 35 to 350 kHz per minute for the duration of 30 minutes. Power output, receiver sensitivity, and frequency accuracy test will be measured to determine if the equipment was affected by the vibration.
 - 3. Wet Operation Test— The transceiver will be wet by the use of a water sprayer at a distance of one (1) foot, enough to spray all surfaces with water. After which, the RF power output, receiver sensitivity, and frequency accuracy shall be measured.
 - 4. Water Proofing Test— The subjected equipment will be immersed with the attached accessories (antenna, battery, and etc.) in afresh water for a period of ten (10) minutes with the depth of at least one (1) meter. A used steel or plastic up-gas drum may be used to contain the body of the water. After the immersion, the unit may be wiped with dry cloth for at least five (5) minutes to remove the water outside its surfaces. After which the equipment will be subjected to test its RF power output, sensitivity of the receiver, and frequency accuracy.
 - 5. Drop Test— The set shall be dropped from a height of one half (½) meters to a one fourth (½) inches thick plywood, resting on a concrete surface. This will be performed in all its six (6) surfaces/angles. After which, the set will be subjected for RF power output, receiver sensitivity, and frequency accuracy.
 - 6. Operational Capability in high Temperature Test— Operating While the set has been placed from a high Temperature over (fifty Degrees Celsius) thereafter; the RF power output; receiver sensitivity and frequency accuracy must be conducted to check if the set has been affected by the heat applied.

- thereafter; the RF power output; receiver sensitivity and frequency accuracy must be conducted to check if the set has been affected by the heat applied.
- 7. Antenna Durability Test— This is applicable to handheld\$ rubber-ducky/flexible antenna only. It should not be broken after being bent at 180° on the mid point up to fifty (50) times.
- 8. Casing/Knobs Durability Test— A sack of rice or its equivalent soft materials with a weight of not more than 50 kg should be placed on the top of the equipment widest face. The case must not be deform. Knob and switches should withstand the rough handling. The usual test should be performed.
- D. Operational Range/Compatibility Test: To determine the operating range of every terminal and their compatibility. Two (2) stations will be established. One stationary and the other moving to designated contact points of pre determined increasing distances. Upon reaching a contact point, the moving station will establish radio contact with the fixed station. This procedure shall be repeated at all contact points until communication cannot be made.
- E. System's Commissioning/Acceptance: After all test have been performed, the commissioning/acceptance of the system will follow, which means that the system is completely installed operational by the supplier. System's Acceptance Commissioning Certification (Inclosure 4) will be used as accomplished form.

VIII. RESCISSION:

All other Test Procedures, Guidelines or SOPs contrary to or inconsistent with the provisions of this Test Procedure are hereby rescinded, modified or amended accordingly.

IX. EFFECTIVITY:

This Test and Evaluation (T&E) Procedures for PNP Multi– Trunked Radio System (MTRS) and Other Similar Equipment shall take effect upon approval.

EDGAR B AGLIPAY
Police Deputy Director General

Chief, PNP 9 4 64

Inclosure "1" - Inspection/T&E Multi- Trunked Radio System (MTRS) and Other Similar Equipment General Examination

Inclosure "2A" - Inspection/T&E Multi- Trunked Radio System (MTRS) Programming and Instrumentation (T & E) Acceptance Result

Inclosure "2B" - Trunked Central Controller (T&E) Acceptance Result

Inclosure "2C" - Inspection/T&E for Multi- Trunked Radio System (MTRS) Adverse Condition Test

Inclosure "3" - Inspection/T&E Multi- Trunked Radio System (MTRS) Operating Range



Republic of the Philippines NATIONAL POLICE COMMISSION NATIONAL HEADQUARTERS, PHILIPPINE NATIONAL POLICE OFFICE OF THE CHIEF, PNP Camp Crame, Quezon City

PNP MEMORANDUM CIRCULAR

NO.: 2014-

REVISED ADVERSE CONDITION TEST PROCEDURES and GUIDELINES for FIXED and MOBILE COMMUNICATIONS EQUIPMENT and OTHER SIMILAR EQUIPMENT

1 REFERENCES:

a. Memorandum Circular Number 2013-007 - Adverse Condition Test Procedures and Guidelines for Fixed and Mobile Radio Equipment and other Similar Equipment dated May 31, 2013:

b. Memorandum Circular Number 2013-011 - Test and Evaluation (T&E) Procedures and Guidelines for Very High Frequency (VHF) Fixed and Mobile Radio Equipment dated August 23, 2013;

c. Memorandum Circular Number 2013-016 - Test and Evaluation (T&E) Procedures and Guidelines for High Frequency (HF) Fixed and Mobile Radio Equipment dated November 13, 2013; and

d. MIL-STD-810G - Environmental Engineering Considerations and Laboratory Tests dated October 31, 2008.

2. RATIONALE:

- a. To establish test and evaluation procedures for the conduct of adverse condition test during the post qualification and acceptance tests of fixed and mobile communications equipment and other similar equipment;
- b. To ensure the durability of the fixed and mobile communications equipment and other similar equipment (including its accessories) subject for procurement, evaluation, and/or acceptance by the Philippine National Police (PNP).

3. PURPOSE:

This PNP Memorandum Circular (PNPMC) revises PNP Memorandum Circular Number 2013-007 entitled: "Adverse Condition Test Procedures and Guidelines for Fixed and Mobile Radio Equipment and other Similar Equipment."

4. SCOPE:

This document applies to all fixed and land mobile voice communications equipment and other similar equipment that will be procured or used by the PNP.

5 DEFINITION OF TERMS:

For purposes of this PNP MC, the following terms shall mean:

- Base Station a station at a specified site authorized to communicate with mobile stations.
- b. Carrier Frequency the frequency of an unmodulated electromagnetic wave.
- c. High Frequency (HF) Band band of frequencies between 3 and 30 MHz with wavelengths ranging from one to ten decameters (ten to one hundred meters).
- d. Mobile Radio System a regularly interacting group of base, mobile, and associated control and fixed relay stations intended to provide land mobile radio communications service over a single area of operation. It denotes a wireless communications system intended for use by terrestrial users in vehicles (mobiles) or on foot (portables).
- Mobile Repeater Station a mobile station authorized to retransmit automatically on a mobile service frequency, communications to or from hand-carried transmitters.
- Mobile Service a service of radio communication between mobile and base stations, or between mobile stations.
- g. Mobile Station a station in the mobile service intended to be used while in motion or during halts at unspecified points. This includes hand carried transceivers.

h. Modulation Types.

- 1) Amplitude Modulation (AM) modulation in which the amplitude of a wave is the characteristic subject of variation.
- 2) Continuous Wave (CW) an electromagnetic wave that varies sinusoidally in amplitude and remains constant in frequency.
- Frequency Modulation (FM) modulation in which the instantaneous frequency of a wave differs from its carrier frequency by an amount proportional to the instantaneous amplitude of the modulating signal.

- Single Sideband (SSB) amplitude modulation with the carrier and one sideband suppressed.
- Nominal Value the numerical value of a device characteristic as specified by the manufacturer.
- Other similar equipment communications equipment other than radio transceiver such as but not limited to Global Positioning System (GPS) device, Communication System Integrator, Megaphone, Satellite Phone, and Cellular Phone.
- k. Post-qualification the stage where the bidder with the Lowest Calculated Bid, in the case of Goods and Infrastructure Projects, or the Highest Rated Bid, in the case of Consulting Services, undergoes verification and validation whether he has passed all the requirements and conditions as specified in the Bidding Documents.
- RF Power Output the actual amount of power (in watts) of radio frequency (RF) energy that a transmitter produces at its output.
- m. Receiver part of communications equipment designed to respond to electromagnetic energy and intended for the reception of signals, messages or intelligence.
- n. Sensitivity the smallest input signal which gives a specified output or signal-to-noise ratio. In a radio receiver, it is the smallest RF input which gives a specified signal-to-noise ratio at the output, the modulation frequency and depth of modulation being specified.
- o. SINAD Ratio SINAD stands for signal-to-noise and distortion ratio. The ratio, expressed in decibels, of (1) signal plus noise plus distortion to (2) noise plus distortion produced at the output of a receiver; from Signal Noise And Distortion Ratio. It is a measure of the quality of a signal from a communications device. Unlike Signal to Noise Ratio (SNR), a SINAD reading can never be less than one.
- p. SINAD Sensitivity the minimum modulated RF signal input level required to produce a specified SINAD ratio at a specified audio output power level.
- q. Transceiver an inherent combination of a radio transmitter and receiver.
- r. Transmitter part of communications equipment capable of emitting radio frequency waves or energy intended for the transmission of signals, messages or intelligence.
- s. Technical Specifications it refers to the physical description of the goods or services, as well as the Procuring Entity's requirements in terms of the functional, performance, environmental interface, and

design standard requirements to be met by the goods to be manufactured or supplied, or the services to be rendered.

- Very High Frequency (VHF) Band band of frequencies between 30 to 300 MHz with wavelengths ranging from one to ten meters.
- u. Ultra High Frequency band of frequencies between 300 MHz to 3000 MHz (3 GHz) with wavelengths ranging from 100 millimeters to 1

6. GUIDELINES:

a. Organization

1) Post Qualification of Items

- a) Head, Bids and Awards Committee Technical Working Group (BAC TWG);
- b) Technical Working Group (TWG) on Communication;
- c) End-user Representative;
- d) NAPOLCOM Representative; and
- e) COA Representative.

2) Acceptance Test

- a) DRD Technical Team;
- b) DL Representative:
- c) DC Representative;
- d) LSS Representative:
- e) CES Representative (if end-user is not CES);
- f) End-user Representative:
- g) NAPOLCOM Representative; and
- h) COA Representative.
- Post Qualification and Acceptance Test. This organization is applicable only to procurement delegated to Bids and Awards Committee (BAC) other than NHQ-BAC.
 - a) BAC TWG and Acceptance Committee of the procuring unit; and
 - b) DRD and CES representative for technical support.

b. General

 Prior to the conduct of an adverse condition test, perform an initial test on the different functional parameters stated in the NAPOLCOM Approved Standard Specifications applicable to the communications equipment to be tested. The values obtained in the initial test should serve as the baseline;

- Use functional parameters and operational limits specified in the NAPOLCOM Approved Standard Specifications applicable to the equipment under test;
- 3) If the operational limit stated in NAPOLCOM Approved Standard Specifications has to be based on manufacturer's standard, the international standard applicable to the item under test shall apply. In the absence of said international standard, the standard stated in the existing PNPMC applicable to the item under test shall apply;
- 4) The standard values and operational limits used in the initial test must also be the basis in the conduct of the main test:
- If the item under test make use of battery as the power source, the battery must be fully charged before the conduct of this test;
- 6) Item under test that draws its power from a car battery must have sufficient supply of power during the conduct of the test;
- 7) If a single item will be exposed to different adverse conditions to determine its cumulative effects, the following tests shall be applied in sequential order:
 - a) Vibration test
 - b) Drop test, if applicable;
 - c) Humidity test:
 - d) Dust test;
 - e) Smoke test; and
 - f) Other tests (as applicable)
 - f.1) Immersion test;
 - f.2) Water Spray Test:
 - f.3) High Temperature test;
 - f.4) Antenna Durability test; and
 - f.5) Push-to-talk (PTT) Switch Durability test.
- Initial test/Functional test must be conducted a day before the conduct of the Adverse Condition Test.

Standard Test Conditions

Allow all equipment to warm up until the system has achieved sufficient stability to perform the measurement. Unless otherwise specified, perform all measurements under standard test conditions.

- Power Source. Sufficient power shall be available to operate the equipment under test at its rated voltage, current, power, and frequency;
- Standard Temperature. Standard ambient temperature shall be between 20 and 30 °C (68 and 86 °F); and

 Standard Relative Humidity. Standard ambient relative humidity shall be between 10 and 85 percent.

d. Test Equipment

1) Environmental Chamber. The environmental chamber shall produce temperature from -30 to 60 °C and relative humidity in the range of 10 to 95 percent. The item under test shall be shielded from air currents blowing directly from heating or cooling elements in the chamber. In the absence of the environmental chamber, the item under test shall be subjected to actual uncontrolled environmental conditions;

2) Digital Communications Analyzer,

- Signal Generator, RF and AF signal capable of emitting 0.1 microvolt to 0.5 volt across all frequency range;
- Regulated Power Supply of the item under test;
 Dummy Load, 50 ohms, 125 Watts (minimum); and

6) Analog or Digital Multimeter/Multitester (VOM).

e. Test Methods

1) Initial Test

 a) <u>Purpose</u>. This test is used to ensure that the item under test is operating properly and to obtain baseline performance data.

b) Procedures.

- b.1) Before the conduct of the initial test, document the following information pertaining to the background data of each item:
 - b.1.1) Nomenclature/Type:
 - b.1.2) Model:
 - b.1.3) Serial Number,
 - b.1.4) Manufacturer;
 - b.1.5) Brand;
 - b.1.6) General appearance/condition;
 - b.1.7) Specific physical anomalies/abnormalities; and
 - b.1.8) Environmental test history (if applicable).
- b.2) Operate the item under test at standard ambient conditions as specified in paragraph 6.c and obtain baseline performance data.

2) Adverse Condition Test

Determine the reliability of the communications equipment when subjected to different adverse condition tests such as: Vibration test, Drop test, Humidity test,

Dust test, Smoke test, Immersion test, Water Spray test, High Temperature test, Antenna Durability test, and PTT Switch Durability test. Equipment will be inspected after each test for any physical damage. Instrumentation or functional test follows provided that said equipment does not have physical damage.

a) Vibration Test

- a.1) Purpose. To determine if the item will operate according to the required parameters despite exposures to vibration.
- a.2) Equipment and Materials Needed.
 - a.2.1) Digital Communications Analyzer, if applicable;
 - a.2.2) Analog or Digital Multimeter/Multitester (VOM): and
 - a.2.3) Timer.
- a.3) Test Duration. One hour minimum.

a.4) Procedure:

- a.4.1) With the power turned off, place the item under test on the floor at the rear of a moving vehicle from point of origin to destination;
- a.4.2) Check the item from any defects resulting from the vibration test. If no defects noted, proceed to the next step:
- a.4.3) Turn the power of the item on and perform an operational check.
 - a.4.3.1) If the item under test is a two-way radio/transceiver, measure the RF power output, receiver sensitivity, and frequency error:
 - a.4.3.2) If the item under test is a cellular phone or a satellite phone, establish communication with other telephone units;
 - a.4.3.3) If the item under test is a communication system integrator, establish a link or connection between the communications equipment connected to the integrator;
 - a.4.3.4) If the item under test is a GPS, measure the acquisition time (cold); and
 - a.4.3.5) If the item under test is a megaphone, measure the audio output power.
- a.4.4) Document the results.

a.5) Standard.

a.5.1) No fixed part of the item under test shall come loose; and a.5.2) The item must function properly based on NAPOLCOM Approved Standard Specifications.

b) Drop Test

b.1) <u>Purpose</u>. To determine if the item under test will operate according to the required parameters and can withstand the relatively infrequent non-repetitive drops encountered during handling.

b.2) Scope.

b.2.1) This test is applicable only to handheld two-way radios, tactical manpack radios, and other communication equipment designed to withstand rough environment or whose intended usage would expose the item to accidental drop; and

b.2.2) This test is not applicable to megaphone, cellular phone, and other communication equipment with

fragile enclosure.

b.3) Location

b.3.1) For testing of item during handling while on foot - area with asphalt ground; and

b.3.2) For testing of item during handling while in a moving vehicle - area with concrete or cemented ground.

b.4) Equipment and Materials Needed.

b.4.1) Digital Communications Analyzer, if applicable; and

b.4.2) Tape measure.

b.5) Procedures:

b.5.1) Drop Test During Handling While on Foot.

b.5.1.1) Drop the item under test at a height of 60 inches (5 ft.) from the ground:



Note: Above picture is for presentation purposes only to reflect the estimated height of drop.

b.5.1.2) Drop each face and edge of the item for a total of 10 drops;

b.5.1.2.1) front;

b.5.1.2.2) back;

b.5.1.2.3) left side;

b.5.1.2.4) right side;

b.5.1.2.5) top;

b.5.1.2.6) front:

b.5.1.2.7) left top edge:

b.5.1.2.8) right top edge;

b.5.1.2.9) left bottom edge; and

b.5.1.2.10) right bottom edge.

b.5.1.3) Check the item after each drop and document any visible damage. If none, proceed to the next step:

b.5.1.4) Perform operational check on the item.

b.5.1.4.1) If the item under test is a two-way radio/transceiver, measure the RF power output, receiver sensitivity, and frequency error;

b.5.1.4.2) If the item under test is a cellular phone or a satellite phone, establish communication with other telephone units:

b.5.1.4.3) If the item under test is a communication system integrator, establish a link or connection between the communications equipment connected to the integrator; and

b.5.1.4.4) If the item under test is a GPS measure the acquisition time (cold)

b.5.1.5) Document the results.

b.5.2) Drop Test During Handling While in a Moving Vehicle.

- b.5.2.1) Drop the item from a height of 30 inches (2.5 ft.) to the ground while the personnel handling the item under test is riding on a moving vehicle running at a minimum speed of 20 kilometers per hour (kph):
- b.5.2.2) Drop the item twice;
- b.5.2.3) Check the item after each drop and document any visible damage. If none, proceed to the next step;
- b.5.2.4) Perform operational check on the item.
 - b.5.2.4.1) If the item under test is a two-way radio/transceiver, measure the RF power output, receiver sensitivity, and frequency error;
 - b.5.2.4.2) If the item under test is a cellular phone or a satellite phone, establish communication with other telephone units:
 - b.5.2.4.3) If the item under test is a communication system integrator, establish a link or connection between the communications equipment connected to the integrator; and
 - b.5.2.4.4) If the item under test is a GPS measure the acquisition time (cold).

b.5.2.5) Document the results.

b.6) Standard

- b.6.1) The item must be free from physical damage and no fixed part of it shall come loose; and
- b.6.2) The item must function properly based on NAPOLCOM Approved Standard Specifications.

c) Humidity Test

- c.1) <u>Purpose</u>. To determine the resistance of the item from the effects of a humid atmosphere.
- c.2) Test Duration. One hour.

c.3) Location. Any area wherein the relative humidity ranges from 80 to 95%. This condition is applicable only if there is no available test chamber or if the test chamber is not capable of maintaining the relative humidity inside it within the said range.

c.4) Equipment and Materials Needed.

- c.4.1) Digital Communications Analyzer, if applicable;
- c.4.2) Analog or Digital Multimeter/Multitester (VOM), if applicable:
- c.4.3) Thermometer;
- c.4.4) Test Chamber;
- c.4.5) Hygrometer; and
- c.4.6) Timer.

c.5) Procedures:

- c.5.1) Expose the item under test to an open humid area with its power turned OFF;
- c.5.2) Record the temperature, relative humidity, and the time:
- c.5.3) Turn the power ON after 45 minutes of exposure;
- c.5.4) After 15 minutes, perform operational check on the
 - c.5.4.1) Measure the RF power output, receiver sensitivity, and frequency error, if the item under test is a two-way radio/transceiver:
 - c.5.4.2) If the item under test is a cellular phone or a satellite phone, establish communication with other telephone units;
 - c.5.4.3) If the item under test is a communication system integrator, establish a link or connection between the communications equipment connected to the integrator;
 - c.5.4.4) If the item under test is a GPS, measure the acquisition time (warm); and
 - c.5.4.5) If the item under test is a megaphone, measure the audio output power.
- c.5.5) Document the results. Record also the temperature, relative humidity, and the time the measurements are taken.
- c.6) Standard. The item must function properly based on NAPOLCOM Approved Standard Specifications.

d) Dust Test

- d.1) <u>Purpose</u>. To determine the ability of the item to resist the effects of dust that may obstruct openings, penetrate into cracks, crevices, electrical components, wires, cables, and PCB layout of the item.
- d.2) Test Duration. One hour.

d.3) Equipment and Materials Needed.

- d.3.1) Digital Communications Analyzer, if applicable;
- d.3.2) Analog or Digital Multimeter/Multitester (VOM), if applicable;
- d.3.3) Timer:
- d.3.4) Test Chamber, and
- d.3.5) Dust materials

d.4) Procedures:

- d.4.1) Hang the item under test inside the test chamber containing dust materials such as talcum powder with a concentration of 10 g/m³;
- d.4.2) Turn on the fan so that the dust materials will circulate inside the chamber;
- d.4.3) Turn off the fan after exposing the item to blowing dust for an hour;
- d.4.4) Remove accumulated dust by brushing, wiping, or shaking, avoiding the introduction of additional dust into the item. Do not remove dust by air blast or vacuum cleaning;
- d.4.5) Perform operational check on the item.
 - d.4.5.1) If the item under test is a two-way radio/transceiver, measure the RF power output, receiver sensitivity, and frequency error.
 - d.4.5.2) If the item under test is a cellular phone or a satellite phone, establish communication with other telephone units;
 - d.4.5.3) If the item under test is a communication system integrator, establish a link or connection between the communications equipment connected to the integrator;
 - d.4.5.4) If the item under test is a GPS, measure the acquisition time (cold); and
 - d.4.5.5) If the item under test is a megaphone, measure the audio output power.

d.4.6) Document the results.

d.5) Standard. The item must function properly based on NAPOLCOM Approved Standard Specifications.

e) Smoke Test

- e.1) Purpose. To determine the ability of the item to resist the effects of accumulated car fumes on the electrical components, electrical/electronic contacts, wires and PCB layout of the item.
- e.2) Test Duration. 30 minutes.
- e.3) Equipment and Materials Needed.
 - e.3.1) Digital Communications Analyzer, if applicable;
 - e.3.2) Analog or Digital Multimeter/Multitester (VOM), if applicable;
 - e.3.3) Vehicle; and
 - e.3.4) Timer.

e 4) Procedures:

- e.4.1) Place the item under test to a distance of four meters from the exhaust;
- e.4.2) Turn on the engine of the vehicle:
- e.4.3) Expose the item to exhaust fumes for a period of 30 minutes and let the item rest for another 30 minutes before proceeding to the next step;
- e.4.4) Perform operational check on the item.
 - e.4.4.1) If the item under test is a two-way radio/transceiver, measure the RF power output, receiver sensitivity, and frequency error:
 - e.4.4.2) If the item under test is a cellular phone or a satellite phone, establish communication with other telephone units:
 - e.4.4.3) If the item under test is a communication system integrator, establish a link or connection between the communications equipment connected to the integrator:
 - e.4.4.4) If the item under test is a GPS, measure the acquisition time (cold); and
 - e.4.4.5) If the item under test is a megaphone, measure the audio output power.
- e.4.5) Document the results.
- e.5) <u>Standard</u>. The item must function properly based on the NAPOLCOM Approved Standard Specifications.

f) Water Spray Test

f.1) Purposes.

f.1.1) To determine the effectiveness of protective covers, cases, and seals in preventing the penetration of water into the item when subjected to water spray or dripping water; and

f.1.2) To determine if the item under test will operate according to the required parameters after spraying

it with water.

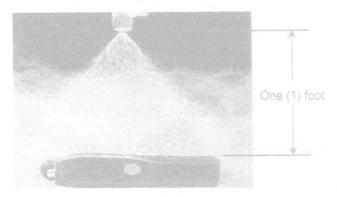
- f.2) Scope. This test is not applicable to cellular phone, megaphone, and other similar equipment without water resistant feature.
- f.3) Test Duration, 15 minutes.

f.4) Equipment and Materials Needed:

- f.4.1) Digital Communications Analyzer, if applicable;
- f.4.2) Analog or Digital Multimeter/Multitester (VOM), if applicable;
- f.4.3) Test Chamber;
- f.4.4) Water sprayer/hose/faucet;
- f.4.5) Water,
- f.4.6) Timer:
- f.4.7) Thermometer; and
- f.4.8) Dry cloth.

f 5) Procedures

f.5.1) Spray the item under test with water for at least 15 minutes with the water source located at a distance of one foot from it. Rotate the item to expose all sides to the water source;



Note: Above picture is for presentation purposes only.

f.5.2) Inspect the item for water penetration giving special attention to the entry points. Wipe the item to remove excess water;

f.5.3) Perform operational check on the item.

- f.5.3.1) If the item under test is a two-way radio/transceiver, measure the RF power output, receiver sensitivity, and frequency error:
- f.5.3.2) If the item under test is a cellular phone or a satellite phone, establish communication with other telephone units;
- f.5.3.3) If the item under test is a communication system integrator, establish a link or connection between the communications equipment connected to the integrator; and
- f.5.3.4) If the item under test is a GPS, measure the acquisition time (cold).

f.5.4) Document the results.

f.6) Standard. The item must function properly based on NAPOLCOM Approved Standard Specifications.

g) Immersion Test

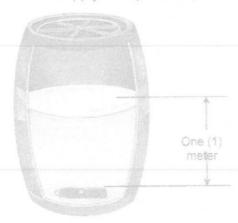
- g.1) <u>Purpose</u>. To determine if the item under test will operate according to the required parameters after immersing it into the water.
- g.2) <u>Scope</u>. Water immersion test has to be performed only on items with the following degree of protection:

A. IEC 60529 Ingress Protection (IP) Standard

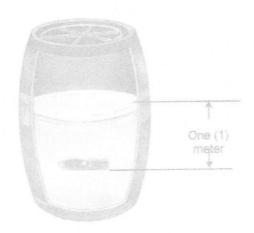
Protection	Protected against	Testing for	Details
IP_7	Immersion up to 1 m	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion)	Test duration: 30 minutes Immersion at depth of 1 m
IP_8	Immersion beyond 1 m	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer. Normally, this will mean that the equipment is hermetically sealed. However, with certain types of equipment, it can mean that water can enter but only in such a manner that it	Test duration: continuous immersion in water Depth specified by manufacturer

produces no harmful effects.

- g.3) Conditions. Conduct this test under standard temperature and pressure.
- g.4) Test Duration. 30 minutes minimum.
- g.5) Equipment and Materials Needed:
 - g.5.1) Digital Communications Analyzer, if applicable;
 - g.5.2) Analog or Digital Multimeter/Multitester (VOM), if applicable;
 - g.5.3) Plastic or steel drum filled with water:
 - q.5.4) Steel tape;
 - g.5.5) Timer; and
 - g.5.6) Dry cloth.
- g.6) Depth of Immersion.
 - g.6.1) Complete Immersion. For testing the integrity of a test item, either use a one meter representative covering depth (measured from the uppermost surface of the test item to the surface of the water) or apply an equivalent pressure.



g.6.2) Partial Immersion. Where materiel is unlikely to be completely immersed either due to anticipated water depths or its ability to float, and being unlikely to be restrained, a partial immersion test may be appropriate. In this case, specify depths as being measured from the base of the materiel rather than from the top.



g.7) Procedures:

g.7.1) Fill a steel drum or plastic drum with 1 ± 0.1 m. fresh water:

Note: This step is not applicable when conducting salt water immersion test.

- g.7.2) Immerse the item under test in water so that the uppermost point is 1 ± 0.1 m. below the water surface. Minimum immersion time is 30 minutes or longer depending on the IP code of the item;
- g.7.3) After the immersion period, remove the item from the water. Wipe it dry with cloth to remove the water on the surface and let it stand for five minutes;
- g.7.4) Perform operational check on the item.
 - g.7.4.1) If the item under test is a two-way radio/transceiver, measure the RF power output, receiver sensitivity, and frequency error:
 - g.7.4.2) If the item under test is a cellular phone or a satellite phone, establish communication with other telephone units;
 - g.7.4.3) If the item under test is a communication system integrator, establish a link or connection between the communications equipment connected to the integrator; and
 - g.7.4.4) If the item under test is a GPS, measure the acquisition time (cold).
- g.7.5) Document the results.
- g.8) Standard. The item must function properly based on NAPOLCOM Approved Standard Specifications.

h) High Temperature Test

- h.1) <u>Purpose</u>. To determine if the item under test will operate according to the required parameters after exposing it to high temperature.
- h.2) Test Duration. One hour minimum.
- h.3) Equipment and Materials Needed
 - h.3.1) Digital Communications Analyzer, if applicable;
 - h.3.2) Analog or Digital Multimeter/Multitester (VOM), if applicable:
 - h.3.3) Test chamber;
 - h.3.4) Thermometer, and
 - h.3.5) Timer.

h.4) Procedures:

- h.4.1) Place the equipment inside the test chamber;
- h.4.2) Turn on the heater of the test chamber and set the temperature to 55°C;
- h.4.3) Turn the power on after exposing the item for 45 minutes at this temperature;
- h.4.4) Remove the item from the test chamber 15 minutes after turning it on;
- h.4.5) Perform an operational check on the item.
 - h.4.5.1) If the item under test is a two-way radio/transceiver, measure the RF power output, receiver sensitivity, and frequency error;
 - h.4.5.2) If the item under test is a cellular phone or a satellite phone, establish communication with other telephone units:
 - h.4.5.3) If the item under test is a communication system integrator, establish a link or connection between the communications equipment connected to the integrator;
 - h.4.5.4) If the item under test is a GPS, measure the acquisition time (warm); and
 - h.4.5.5) If the item under test is a megaphone, measure the audio amplifier output.
- h.4.6) Document the results.
- h.5) <u>Standard</u>. The item must function properly based on NAPOLCOM Approved Standard Specifications.

i) Antenna Durability Test

- i.1) Purpose. To determine if the antenna of handheld radios can withstand accidental bending or twisting during its life span.
- i.2) Scope. This test is applicable only to handheld radios with rubber ducky/flexible antenna.
- i.3) Procedure. Bend the antenna to an angle of 45° on both sides from the midpoint for 100 times.
- i.4) Standard. The antenna should not be broken after being bent for 100 times.

Push-to-Talk (PTT) Switch Durability Test

j.1) Purpose. To determine if the PTT switch of the item under test can handle recurrent press and release cycles.

j.2) Procedure:

- j.2.1) Press and release the PTT switch 500 times; and
- i.2.2) Document the test result.
- j.3) Standard. PTT switch should not wear out after the test was conducted.

7. RESCISSION:

All other Test Procedures, Guidelines or SOPs contrary to or inconsistent with the provisions of this test procedure are hereby rescinded, modified or amended accordingly.

8. EFFECTIVITY:

This MC shall take effect after 15 days from filing a copy thereof at the UP Law Center in consonance with Section 3, Chapter 2, Book VII of Executive Order 292 otherwise known as the "Revised Administrative Code of 1987," as amended.

ALAN LA MADRID PURISIMA Police Director General Chief, PNP

CPNP Ltm 14 S061592