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TIMCO ENGINEERING, Inc.

An IIA Company

TECHNICAL JUSTIFICATION

APPLICANT	STANDARD COMMUNICATIONS PTY.LTD.
ADDRESS	17 GIBBON ROAD WINSTON HILLS 2153 AUSTRALIA
FCC ID	TXJCM60U25
MODEL NUMBER	CM60-U25B, CM60-U25D, CM60-U25L, CM60-U25P, CM60-U25R, CM60-U25S
PRODUCT DESCRIPTION	UHF MOBILE TRANSCEIVER
DATE SAMPLE RECEIVED	4/9/2018
FINAL TEST DATE	4/16/2018
TESTED BY	Franklin Rose
JUSTIFICATION BY	Franklin Rose
APPROVED BY	Tim Royer
TEST RESULTS	☒ PASS ☐ FAIL

Report Number	Report Version	Description	Issue Date
1909UT18 Technical_Justification_letter	Rev1	Initial Issue	10/25/2018
1909UT18 Technical_Justification_letter	Rev2	Updated address	12/28/2018

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GENERAL REMARKS

Summary

The device under test does:

☒ Fulfill the general approval requirements as identified in this test report and was selected by the customer.

☐ Not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669
Designation #: US1070

Tested by:

Name and Title	Franklin Rose, Project Manager / EMC Testing Technician
Date	10/25/2018

Reviewed and Approved by:

Name and Title	Tim Royer, Project Manager / EMC Testing Engineer
Date	10/25/2018

GENERAL INFORMATION

EUT Specification

EUT Description	UHF MOBILE TRANSCEIVER
FCC ID	TXJCM60U25
Model Number	CM60-U25B, CM60-U25D, CM60-U25L, CM60-U25P, CM60-U25R, CM60-U25S
PT 90 Operating Frequency	Band 1: 450 – 454 MHz Band 2: 456 – 462.5375 MHz Band 3: 462.7375 – 467.5375 MHz Band 4: 467.7375 - 512 MHz
PT 22 Operating Frequency	Band 1: 454 – 455 MHz Band 2: 456 – 460 MHz Band 3: 470 – 512 MHz
PT 74 Operating Frequency	Band 1: 450 – 454 MHz
Type of Emission	11K2F3E (Narrowband Analog FM Voice), 8K10F1E (P25 Phase I C4FM Voice), 8K10F1D (P25 Phase I C4FM Data)
Modulation	FM
EUT Power Source	☐ 110–120Vac/50– 60Hz
	☒ DC Power (13.8 V)
	☐ Battery Operated Exclusively
Test Item	☐ Prototype
	☒ Pre-Production
	☐ Production
Type of Equipment	☐ Fixed
	☒ Mobile
	☐ Portable
Antenna Connector	BNC
Test Conditions	The temperature was 26ºC Relative humidity of 50%.
Modification to the EUT	No Modification to EUT.
Test Exercise	The EUT was placed in continuous transmit and was operated in “Test Mode” for digital emissions tests.
Test Facility	Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA. Designation #: US1070

SUMMARY OF JUSTIFICATION

The scope of this technical justification is limited to the emission designators applied to the device during original testing and certification.

The manufacturer of the device has requested a specific emission designator be applied to the device.

The device's 99% Occupied Bandwidth was used to ascertain the product's emission designator for each emission type.

The 99% Occupied Bandwidth emission designator is incompatible with the intended use of the device, as a Project 25 Public Safety radio.

Timco Engineering, Inc., on behalf of the manufacturer of the device, wish to re-assign the manufacturer-requested emission designator to the device after the fact.

TECHNICAL JUSTIFICATION

The allowed channel bandwidth for FCC CFR Part 90 devices such as these is 11.25 kHz.

Both FCC CFR 47 Part 22 E and Part 74 D do not specify an allowed channel bandwidth for devices such as these.

We have supplied the appropriate calculation for the requested Emission Designator, below:

$Bn = (R/\log_2 S) + 2DK$
$Bn = (9600/\log_2(4)) + 2(1800)(0.916)$
$Bn = 4800 + 3298$
$Bn = 8.10$ kHz

Where:

R (data rate) = 9600 bps
D (peak deviation) = 1800 Hz
S (symbols) = 4
K (constant) = 0.916

Necessary Bandwidth for 8K10F1E/F1D = **8.10 kHz**

The manufacturer wishes for the emission designators be updated as follows:

8K61F1E (C4FM Voice) corrected to **8K10F1E (C4FM Voice)**

8K61F1D (C4FM Data) corrected to **8K10F1D (C4FM Data)**

Note: 11K2F3E (FM Narrowband Analog Voice) shall remain unchanged.