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Mechanical Engineering Division
June 22, 2017

SUMMARY OF TESTS PERFORMED

Project Number: 18.04481.37

Company: Panasonic System Communications Company
Two Riverfront Plaza
Newark, NJ 07102
Attn: Pala Vachirabanjong

Equipment Tested: Panasonic CF-33 Tablet with Premium & Lite Keyboards

Test Dates: April 17, 2017 – June 2, 2017

Notes: *The CF-33 was evaluated for ability to boot into the Windows[®] operating system following each of the tests described within this summary report or for the ability to play an audio/visual file during the test parameter application. A listing of summarized tests and results appear in the accompanying table.*

For each test, the Panasonic CF-33 tablet was tested attached to the Premium keyboard as well as the Lite keyboard. In addition, where noted, certain tests were also performed on the tablet by itself without any keyboard attached.

Full details are provided in Report No. 18.04481.37.100.FR1.

Report Written By: 
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Principal Engineer
Structural Dynamics and Product Assurance Section

Summary of Tests Performed on the Panasonic CF-33

Test Description	Test Parameters	Test Results
Altitude: Storage/Air Transport	MIL-STD-810G, Method 500.5, Procedure I <ul style="list-style-type: none"> 50,000ft Non-Operating 	PASS
Altitude: Operation/Air Carriage	MIL-STD-810G, Method 500.5, Procedure II <ul style="list-style-type: none"> 50,000ft Operating 	PASS
High Temperature: Storage	MIL-STD-810G, Method 501.5, Procedure I <ul style="list-style-type: none"> 160°F Non-Operating, 7 days 	PASS
High Temperature: Operation	MIL-STD-810G, Method 501.5, Procedure II (constant) <ul style="list-style-type: none"> 145°F Operating 	PASS
High Temperature: Tactical – Standby to Operational	MIL-STD-810G, Method 501.5, Procedure III <ul style="list-style-type: none"> 160°F Non-Operating to 145°F Operating 	PASS
Low Temperature: Storage	MIL-STD-810G, Method 502.5, Procedure I <ul style="list-style-type: none"> -60°F Non-Operating 	PASS
Low Temperature: Operation	MIL-STD-810G, Method 502.5, Procedure II <ul style="list-style-type: none"> -20°F Operating on Batteries -25°F Operating with AC Adapter 	PASS
Temperature Shock	MIL-STD-810G, Method 503.5, Procedure I <ul style="list-style-type: none"> From 200°F to -60°F, three cycles 	PASS
Contamination by Fluids	MIL-STD-810G, Method 504.1, Procedure II <ul style="list-style-type: none"> Testing performed on CF-33 with both types of keyboards as well as tablet portion only 	PASS
Solar Radiation	MIL-STD-810G, Method 505.5, Procedure I <ul style="list-style-type: none"> Cyclic heat, 7 days 	PASS
Rain: Blowing	MIL-STD-810G, Method 506.5, Procedure I <ul style="list-style-type: none"> 70MPH, 30 minutes per applicable side 	PASS
Rain: Drip	MIL-STD-810G, Method 506.5, Procedure III	PASS
Humidity	MIL-STD-810G, Method 507.5, Procedure I <ul style="list-style-type: none"> Cycle B3 for normal test duration of natural or induced cycles (15 days) 	PASS
Humidity	MIL-STD-810G, Method 507.5, Procedure II (Aggravated) <ul style="list-style-type: none"> Temp. cycles 86°F to 140°F; 95%RH 	PASS
Salt Fog	MIL-STD-810G, Method 509.5, Procedure I <ul style="list-style-type: none"> Testing performed on CF-33 with both types of keyboards as well as tablet portion only 	PASS
Sand and Dust: Dust	MIL-STD-810G, Method 510.5, Procedure I <ul style="list-style-type: none"> Blowing dust concentration of $0.3 \pm 0.2 \text{g/ft}^3$ ($10.6 \pm 7 \text{g/m}^3$) Operating temperature of 140°F Testing performed on CF-33 with both types of keyboards as well as tablet portion only 	PASS
Sand and Dust: Sand	MIL-STD-810G, Method 510.5, Procedure II <ul style="list-style-type: none"> Blowing sand concentration of $0.06 \pm 0.015 \text{g/ft}^3$ ($2.2 \pm 0.5 \text{g/m}^3$) Operating temperature of 140°F Testing performed on CF-33 with both types of keyboards as well as tablet portion only 	PASS
Explosive Atmosphere	MIL-STD-810G, Method 511.5 Procedure I	PASS

Test Description	Test Parameters	Test Results
Vibration: General Vibration – operating	MIL-STD-810G, Method 514.6, Procedure I (Transportation) <ul style="list-style-type: none"> • Category 4, Typical mission/field transportation scenario, Figure 514.6C-1, 2hr/axis • Category 20, Ground vehicles – Ground mobile, Composite wheeled vehicles, Figure 514.6C-3, 2hr/axis 	PASS
Vibration: General Vibration – non-operating	MIL-STD-810G, Method 514.6, Procedure II (Transportation) <ul style="list-style-type: none"> • Category 5, Loose cargo 	PASS
Shock: Functional	MIL-STD-810G, Method 516.6, Procedure I <ul style="list-style-type: none"> • 40g, 11ms - Operating 	PASS
Shock: Transit-Drop, 36-inch	MIL-STD-810G, Method 516.6, Procedure IV <ul style="list-style-type: none"> • 26 drops – 36in height on to 2in plywood – operating laptop mode (tablet with Lite keyboard) <ul style="list-style-type: none"> ○ All drops performed on the same tablet 	PASS
Shock: Transit-Drop, 48-inch	MIL-STD-810G, Method 516.6, Procedure IV <ul style="list-style-type: none"> • 26 drops – 48in height on to 2in plywood – operating laptop mode (tablet with Premium keyboard) <ul style="list-style-type: none"> ○ All drops performed on the same tablet • 26 drops – 48in height on to 2in plywood – operating tablet mode (tablet only) <ul style="list-style-type: none"> ○ All drops performed on the same tablet 	PASS
Shock: Transit-Drop, 60-inch	MIL-STD-810G, Method 516.6, Procedure IV <ul style="list-style-type: none"> • 26 drops – 60in height on to 2in plywood – operating laptop mode (tablet with Premium keyboard) <ul style="list-style-type: none"> ○ All drops performed on the same tablet ○ The drop heights of 48in and 60in laptop mode were performed on the same tablet • 26 drops – 60in height on to 2in plywood – operating tablet mode (tablet only) <ul style="list-style-type: none"> ○ All drops performed on the same tablet ○ The drop heights of 48in and 60in tablet mode were performed on the same tablet 	PASS
Shock: Bench Handling	MIL-STD-810G, Method 516.6, Procedure VI	PASS
Freeze/Thaw	MIL-STD-810G, Method 524, Procedure III	PASS