

Date: October 11, 2022

Office of Engineering and Technology
 Laboratory Division
 Equipment Authorization Branch
 Federal Communications Commission Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046

Subject: Application for Class 2 Permissive Change to FCC Authorized Transceiver with FCC ID: AZ489FT7151

Dear Sir/Madam,

A permissive change is requested for the subject transceiver which is marketed in the United States and elsewhere.

A. DESCRIPTION OF PRODUCT CHANGES:

1. LMR Hardware changes:

Varactor Diode changed from Toshiba Corp to Skyworks Solutions Inc due to part supply shortage. The new component is a drop in Part.

Old Part Number	New Part Number	Description	Where Used
CR000600A01	48012225001	Varactor Diode	VCO

VCO components values are changed to meet Modulation Balance and Phase Noise performance shift due to new Skyworks Varactor Diodes. All new components are a drop in Parts.

Old Part Number	New Part Number	Description	Where Used
21012084019	21012084018	Capacitor	VCO
21012084026	21012084023	Capacitor	
0613952X87	0613952X90	Resistor	
21012084021	21012084020	Capacitor	
21012084019	21012084020	Capacitor	
21012084039	21012084042	Capacitor	
21012084034	21012084029	Capacitor	
0613952X43	0613952X44	Resistor	
0613952X91	0613952X92	Resistor	
21012084014	21012084011	Capacitor	
21012084019	21012084021	Capacitor	
0613952X44	0613952X45	Resistor	
2113944F15	CA001169T74	Capacitor	
CA002652A01	CA002827A01	Capacitor	

Changes in Transmitter power control component values to improve power variation over extreme conditions.

Old Part Number	New Part Number	Description	Where Used
0613952Q81	0613952Q76	Resistor	Transmitter
0613952M61	0613952M47	Resistor	
CA000608A01	CA000348A01	Capacitor	

Components removed due to being unused, for schematic clean up.

Reference Designator	Old Part Number	New Part Number	Description	Where Used
R0991	0613952X81	Not Placed	-	Transmitter
R0992	0613952X81			
C0850	21667012162			
C0851	21667012162			
Q0711	CR001924A01			
Q0712	CR001924A01			

Transmitter Enable switches changed from Rohm Corp to Toshiba Corp. New part will be Dual source. The new component is a drop in Part.

Old Part Number (Dual Source from Rohm supplier)	New Part Number (Dual Source from Toshiba supplier)	Description	Where Used
4816134H01	CR002599A01	BIPOLAR TRANSISTOR	Transmitter
CR000498A01	CR002598A01	DUAL TRANSISTOR NPN/PNP	

LMR Antenna Matching components cleanup and also downsizing the capacitor.

Reference Designator	Old Part Number	New Part Number	Description	Where Used
C0834	21012043004	CA002686A05	Capacitor	Transmitter
L0813	IN000722A96	24009314046	Chip Inductor	
C0833	Not Placed	Removed Pin Pad	NA	

Supply Switches at VCO was changed from Rohm Corp to Nexperia B.V. due to part supply shortage. Part has different pad stack, changed from EMT-6 to SOT-666-6.

Old Part Number	New Part Number	Description	Where Used
4815272H01	CR001847A01	TRANSISTOR	VCO

Reference designator C0001, C0002 RFIC Mixer IQ capacitor changed to tighter tolerance from 5% to 1% for better balance of IQ.

Parts location on PCB is also moved for better Mixer IQ Balance.

Old Part Number	New Part Number	Description	Where Used
2113944C55	CA002798A01	Capacitor	RFIC

The Two Channel MOSFET changed due to part supply shortage from Vishay to Nexperia B.V. The new component is a drop in Part.

Old Part Number	New Part Number	Description	Where Used
CR000594A01	CR000211A01	Transistor	PMIC

2. LMR Software Changes:
Frequency tuning points added for Modulation Balance due to change in VCO varactor diodes.

3. AP Hardware Changes:
HWID components changed for the hardware identification..

Old Part Number	New Part Number	Description	Where Used
0613952W01	Not Placed	-	AP Board
0613952W01	Not Placed	-	
Not Placed	0613952W01	Resistor	
Not Placed	0613952Y66	Resistor	
Not Placed	0613952Y66	Resistor	
0613952Y66	Not Placed	-	

EMMC Flash Memory changed but with the same vendor Kioxia America Inc. The part is currently dual sourced with the existing part and will replace the existing part once it is depleted due to End of Life.

Old Part Number	New Part Number	Description	Where Used
MM000514A01	MM000553A01	Flash Memory	AP Board

4. LTE Hardware Changes:

LTE Low Band Antenna Matching changed to improve LMR800MHz – LTE B5 coexistence. All parts are drop in with only value change.

Old Part Number	New Part Number	Description	Where Used
CA000865A01	CA002686A11	Capacitor	LTE Main Antenna
21012084004	CA000884A01	Capacitor	
21667013301	CA002686B02	Capacitor	
21012084014	CA002686A18	Capacitor	
21012043023	Not Placed	-	
IN000722B05	IN000722B08	Chip Inductor	

Bypass Capacitors changed due to NRND (Not Recommended for New Design)

Old Part Number	New Part Number	Description	Where Used
CA000795A01	CA002766A01	Capacitor	LTE RFPA
CA000795A01	CA002766A01	Capacitor	CBRS/B48 PRX

LTE ID Resistor changed for hardware identification.

Old Part Number	New Part Number	Description	Where Used
0613952N31	0613952N53	Resistor	LTE Board

5. LTE Power Changes:

Power reduction in LTE B48 of 0.5dB compared to the previous submission in order to get a better margin for the Radiated Emissions.

Band 48/ CBRS	Rated Power (W)	Low Power (W)	Max Power (W)
Old	0.112	0.063	0.126
New	0.100	0.056	0.112

6. Mechanical Changes:

EMI film added to Top Display metal bracket. To improve Assisted GNSS/Assisted GPS signal.

7. For Exhibit 10, the changes are as follows:

- a) In Main PCB (LMR), corrected from previous filing by adding second vendor part number for Q0700. Previous filing only stated one vendor part number.
- b) In Main PCB (LMR), Reference Designator Q0720 vendor part number updated as per latest in system (Agile).
- c) In Main PCB (LTE), corrected MSI part number for Reference Designator U5800 as previous filing listed MSI part number same as vendor part number.
- d) In Main PCB (LMR), added Dual Source part number for Reference Designator Q0900.
- e) In Main PCB (LMR), changed vendor part number for reference Designator Q0204, Q0233 and Q0263.

B. PERFORMANCE DIFFERENCES:

EMC has been assessed and no degradation was found, however EME observed degradation as compared to the previous filing but the data continues to be compliant to the FCC limits.

C. CONCLUSION:

This radio continues to meet all FCC emissions requirements for which authorization was granted.

Sincerely,



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