

## LIST OF ABBREVIATIONS

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AUT	Antenna Under Test
BSG	Borosilicate glass
BW	Bandwidth
CBS	CaO–B <sub>2</sub> O <sub>3</sub> –SiO <sub>2</sub>
CDR	Cylindrical Dielectric Resonator
CDRA	Cylindrical Dielectric Resonator Antenna
CTE	Coefficient of Thermal Expansion
CZN	Cu <sub>2</sub> ZnNb <sub>2</sub> O <sub>8</sub>
DR	Dielectric Resonator
DRA	Dielectric Resonator Antenna
DS–CDRA	Dual Segment Cylindrical Dielectric Resonator Antenna
DS–RDRA	Dual Segment Rectangular Dielectric Resonator Antenna
DTA	Differential Thermal Analysis
EDX	Energy Dispersive X–ray
ETDRA	Equilateral Triangular Dielectric Resonator Antenna
FDTD	Finite Difference Time Domain
FEM	Finite Element Method
FR–4	Flame Retardant (fiberglass reinforced epoxy laminates)
GPS	Global Positioning System
HEM	Hybrid Electric and Magnetic
HFSS	High Frequency Structure Simulator
IoT	Internet of Things
IEEE	Institute of Electrical and Electronics Engineers
JCPDS	Joint Committee on Powder Diffraction Standards
LBS	Lithium Boro–Silicate
LMAP	Li <sub>2</sub> O–(2–3x)MgO–(x)Al <sub>2</sub> O <sub>3</sub> –P <sub>2</sub> O <sub>5</sub> (Chapter 3 and Chapter 4)
LMAP	Li <sub>2</sub> O–1.94MgO–0.02Al <sub>2</sub> O <sub>3</sub> –P <sub>2</sub> O <sub>5</sub> (Chapter 5 and Chapter 6)
LMZBS	Lithium Magnesium Zinc Borosilicate
LTCC	Low Temperature Co–fired Ceramic
LTE	Long Term Evolution (standard for high speed wireless communication)
MBS	MgO–B <sub>2</sub> O <sub>3</sub> –SiO <sub>2</sub>

MCT	MgTiO <sub>3</sub> –CaTiO <sub>3</sub>
MIMO	Multi–Input Multi Output
MLMP	Multi–Layer Multi–Permittivity
MPA	Microstrip Patch Antenna
PCB	Printed Circuit Board
PVA	Polyvinyl Alcohol
Q×f	Quality Factor multiplied by frequency
RDRA	Rectangular Dielectric Resonator Antenna
SCS	SrCuSi <sub>4</sub> O <sub>10</sub>
SEM	Scanning Electron Microscopy
SMA	Sub-miniature version A
TA	Thermal Analyser
TC	Thermal Conductivity
TDRA	Triangular Dielectric Resonator Antenna
TE	Transverse Electric
TEM	Transverse Electromagnetic
TM	Transverse Magnetic
WiMAX	Worldwide Interoperability for Microwave Access
WLAN	Wireless Local Area Network
XRD	X–Ray Diffraction
3D	Three dimensional
4–CTDRA	4– element Composite Triangular Dielectric Resonator Antenna