

Monday 13 November 2017

Poster Session 1

Room 1	Room 2	Room 3	Room: AVON
Antennas and Propagation Best Paper	Antennas and Propagation Best Student Paper	Array Antennas 1	Advanced Materials 2
<p>P1 A low-cost vector network analyzer: design and realization J Verhaevert, P Van Torre, <i>Ghent University, Belgium</i></p>	<p>P8 A low-loss reconfigurable frequency selective surface based antenna for direct antenna modulation S Henthorn, K Ford, T O'Farrell, <i>The University of Sheffield, United Kingdom</i></p>	<p>P15 Ka-band SIW-fed slot array antenna H Sarbandi Farahani, B Rezaee, R Sadeghzadeh, <i>K. N. Toosi University of Technology, Islamic Republic Of Iran</i></p>	<p>P21 3D printed periodic structures in a horn antenna for side-lobe reduction using direct metal laser sintering D Shamvedi, P O'Leary, <i>Waterford Institute of Technology, Ireland</i>, C Danilenkoff, S Karam, R Raghavendra, <i>SEAM Research Centre, Ireland/Waterford Institute of Technology, Ireland</i></p>
<p>P2 Portable and low cost channel sounding platform for VHF / UHF IoT propagation research E Ball, <i>The University of Sheffield, United Kingdom</i></p>	<p>P9 Specific absorption rate and efficiency of a wideband wearable monopole antenna near the human body P Rayner, W Whittow, <i>Loughborough University, United Kingdom</i></p>	<p>P16 SatCom on-the-move antenna with mechanically switchable circular polarization M Ferrando-Rocher, J I Herranz-Herruzo, A Valero-Nogueira, B Bernardo-Clemente, <i>Universitat Politècnica de València, Spain</i></p>	<p>P22 Vanadium dioxide switches for bandwidth reconfigurable antenna D Anagnostou, <i>Heriot Watt University, United Kingdom</i>, David Torres, N Sepulveda, <i>Michigan State University, USA</i></p>
<p>P3 Metal lens for collimation of orbital angular momentum radio modes T Drysdale, <i>The Open University, United Kingdom</i>, B Allen, <i>The University of Oxford, United Kingdom</i></p>	<p>P10 Radiation efficiency analysis of balanced-impedance hexaferrite substrate for antenna miniaturisation O James, G Hilton, M Beach, <i>University of Bristol, United Kingdom</i></p>	<p>P17 Comparative study on the diversity performance between different microstrip antenna arrays A Radhi, R Nilavalan, H Al-Raweshidy, N AbAziz, <i>Brunel University, United Kingdom</i></p>	<p>P23 A 2.4 GHz to 27 MHz non-linear RFID topology in flexible electronics G Gentile, <i>NXP Semiconductors Germany GmbH, Germany</i>, R Ishihara, <i>Quantum Engineering Department, TU Delft, Netherlands</i></p>
<p>P4 Reliable EM-driven size reduction of antennas using feasible region boundary search D Johannesson, <i>Reykjavik University, Iceland</i>, S Koziel, <i>Reykjavik University, Iceland/Gdansk University of Technology, Poland</i></p>	<p>P11 Ka-band vivaldi antenna with novel core element for high-gain H Hoang, K Yang, M John, P McEvoy, M J Ammann, <i>Dublin Institute of Technology, Ireland</i></p>	<p>P18 Beam steering antenna arrays for 28-GHz applications M Nassar, <i>Port Said University, Egypt/ Sinai University, Egypt</i>, H Soliman, S Abuelenin, <i>Port Said University, Egypt</i>, A Ghoniem, <i>Ismailia University, Egypt</i></p>	<p>P24 Analytical formulation for the capacitance of 3D square split ring resonators A Vallecchi, C Stevens, E Shamonina, <i>The University of Oxford, United Kingdom</i></p>
<p>P5 Concepts for a radar target simulation A Diewald, <i>IFARUS, Luxembourg</i></p>	<p>P12 Studying of coupled periodic and aperiodic planar antenna arrays with mutual coupling A Chriaz, H Bilel, A Taoufik, <i>El Manar</i></p>	<p>P19 Compact and planar slot antenna array for x-band applications S Alkaraki, Y Gao, <i>Queen Mary University of London, United Kingdom</i></p>	<p>P25 Equivalent circuit analysis for 3D metamaterials with fringing field correction factor T Whittaker, W Whittow, J</p>

	<i>University, Tunisia</i>		Vardaxoglou, <i>Loughborough University, United Kingdom</i>
P6 Laboratory testing of a SVD-based approach to recover the nonredundant bi-polar NF data from the positioning error affected ones F D'Agostino, F Ferrara, C Gennarelli, R Guerriero, M Migliozi, <i>University of Salerno, Italy</i>	P13 An inkjet-printed MMW frequency-reconfigurable antenna on a flexible PET substrate for 5G wireless systems S Fizzah Jilani, A Alomainy, <i>Queen Mary university of London, United Kingdom</i>	P20 Dual-band compact-size antenna array for angle of arrival estimation M A G Al-Sadoon, F Abdussalam, R Abd-Alhameed, S M R Jones, I M Danjuma, <i>University of Bradford, United Kingdom</i> , I Elfergani, J Rodriguez, <i>Instituto de Telecomunicações – Aveiro, Portugal</i>	P26 High gain flat antennas for Ka band SATCOM F. Caminita, G Minatti, E Martini, Wave Up Srl, Siena, Italy S Maci, University of Siena, Italy
P7 Multiband hybrid loop-notch antennas B Collins, <i>QMUL/BSC Associates Ltd, United Kingdom</i>	P14 Validation of a volume integral equation method for indoor propagation modelling I Kavanagh, C Brennan, <i>Dublin City University, Ireland</i>		P27 A reconfigurable capacitive impedance surface for 1.5T magnetic resonance imaging applications I M Issa, L Ford, M Rama, J Wild, <i>The University of Sheffield, United Kingdom</i>
P7a Wireless power transfer in the presence of a conducting interface: An analytical solution A Vallecchi, C Stevens, E Shamonina, <i>University of Oxford, United Kingdom</i>			P28 Fully 3D printed GPS antenna using a low-cost open-source 3D printer A Elibiary, S Yun Jun, W Oakey, B Sanz,, <i>University of Kent, United Kingdom</i> D Bird, A Mc Clelland, The Centre for Process Innovation, United Kingdom
Poster Session 2			
Room 1	Room 2	Room 3	Room: AVON
Biomedical Applications and Wearable Antennas	Communication and Sensing	Antennas and RF Circuits	Propagation 1
P29 Miniature on skin passive UHF RFID antenna sticker V Makarovaite, A Hillier, S J Holder, C W Gourlay, J Batchelor, <i>University of Kent, United Kingdom</i>	P35 Tilt and tamper sensing UHF RFID security tag A Ziai, <i>University of Kent, United Kingdom</i> , J Batchelor, <i>The University of Sheffield, United Kingdom</i>	P43 Improved dipole antenna equivalent circuit A S Sokpor, A-C Tarot, A Kabalan, A Sharaiha, <i>IETR, France</i>	P51 Implementation of a quasioptical system for free-space measurements: applications to radio astronomy O Garcia-Perez, F Tercero, S Lopez-Ruiz, B Vaquero, J Manuel Serna, <i>Spanish National Geographic Institute (IGN), Spain</i>
P30 Design and characterization of a three material	P36 Antenna characterisation and channel effects on	P44 Antennas that support multi-mode excitation C Min, N Howland, N	P52 HF urban noise level in variable channels of 3-24 kHz: a preliminary

<p>anatomical bone phantom for implanted antenna applications S Symeonidis, C Panagamuwa, W Whittow, <i>Loughborough University, United Kingdom</i></p>	<p>digital systems M Almotery, M Sobhy, J Batchelor, <i>University of Kent, United Kingdom</i></p>	<p>Potts, <i>Printech Circuit Laboratories, United Kingdom</i></p>	<p>experimental approach P Bechet, S Miclaus, <i>Land Forces Academy, Romania</i>, A Bechet, <i>Technical University of Cluj-Napoca, Romania</i></p>
<p>P31 Application of the MOM-GEC method to modulate the interaction phenomena between human head model and a dipole antenna inside a cavity at 1.8GHz H Messaoudi, T Aguil, M Aidi, <i>SYSCOM ENIT, Tunisia</i></p>	<p>P37 Operating principle of an LTE handset antenna with multiple closely-located radiators K Rasilainen, A Lehtovuori, V Viikari, <i>Aalto University, Finland</i></p>	<p>P45 MATLAB-based multi-objective optimization of broadband circularly polarized antennas D Warmowska, M Marek, Z Raida, <i>Brno University of Technology, The Czech Republic</i></p>	<p>P53 Testing of low-power wide-area technologies in controlled propagation environments I Rodriguez, M Lauridsen, P Mogensen, <i>Aalborg University, Denmark</i>, K Arvidsson, J Kvarnstrand, M Andersson, <i>Bluetest AB, Sweden</i></p>
<p>P32 Design of a miniaturized bone implantable antenna for a wireless implant monitoring device R Khokle, K Esselle, M Heimlich, D Bokor, <i>Macquarie University, Australia</i></p>	<p>P38 Recognising people using smart phone antennas a fuzzy biometric S Heyes, R Edwards, <i>Loughborough University, United Kingdom</i></p>	<p>P46 Combined energy harvester integrated into car seat M Kokolia, J Lacik, Z Raida, <i>Brno University of Technology, The Czech Republic</i></p>	<p>P54 High dynamic range frequency converters for HF and VHF propagation measurements S Feeney, <i>SMF Designs Ltd, United Kingdom</i></p>
<p>P33 Effect of small wearable device antenna location on its impedance, bandwidth potential and radiation efficiency J Chen, M Berg, H Amin, A Pärssinen, <i>University of Oulu, Finland</i></p>	<p>P39 A passive UHF RFID pH sensor (smart polymers for wireless medical sensing devices) A Hillier, V Makarovaite, J Batchelor, S J Holder, C W Gourlay, <i>University of Kent, United Kingdom</i></p>	<p>P47 A CAD-oriented technique to design an optimum load impedance with multi-coupler network for class-F power amplifier B. Mohammed, R Abd-Alhameed, N Abduljabbar, I Danjuma, <i>University of Bradford, United Kingdom</i> I Elfergani, A S Hussaini, J Rodriguez, <i>Instituto de Telecomunicacoes, Aveiro, Portugal</i></p>	<p>P55 Channel characterisation for wearable LoRaWAN monitors P Catherwood, S McComb, J McLaughlin, <i>Ulster University, Belfast, United Kingdom</i>, M Little, <i>RFproximity, United Kingdom</i></p>
<p>P34 Robustness of 7T-MRI flexible array coil behaviour A Melis, S Casu, A Fanti, G Mazzarella, <i>University of Cagliari, Italy</i>, C Puddu, <i>INFN-Genova, Italy</i>, N Djuric, <i>University of Novi Sad, Serbia</i>, F Maggiorelli, A Retico, G Tiberi, <i>5INFN-PI, Italy</i></p>	<p>P40 Printed yagi-helix antennas Wasim Alshrafi, Cosme Culotta-Lopez, Dirk Heberling, <i>RWTH Aachen University, Germany</i>, Amar Al-Bassam, <i>RWTH Aachen, Germany</i></p>	<p>P48 Engineered group delay transmission lines based on novel negative group delay networks T Thatapudi, P Gardner, A Feresidis, <i>University of Birmingham, United Kingdom</i></p>	<p>P56 Artificial neural network model characterization for path loss predictions in the VHF band S Popoola, <i>Covenant University, Nigeria</i>, M Salman, S Bakinde, <i>University of Ilorin, Nigeria</i>, O Ogunmodimu, <i>Manchester Metropolitan University, United Kingdom</i></p>

	<p>P41 Evaluation of carbon-fiber-reinforced plastics for automotive radar applications <i>P Hoerner, University of Applied Sciences Esslingen, Germany, N Koch, Audi AG, Germany</i></p>	<p>P49 An investigation on frequency selective antenna interface based on optimization approach <i>H Amin, J Chen, M Berg, A Pärssinen University of Oulu, Finland</i></p>	<p>P57 An empirical study of link quality assessment in wireless sensor networks applicable to transmission power control protocols <i>J Hughes, Smart Component Technologies Ltd, United Kingdom/University of Huddersfield, United Kingdom, P Lazaridis, I Glover, A Ball, University of Huddersfield, United Kingdom</i></p>
			<p>P58 Millimetre-wave propagation in urban clutter for 5G systems <i>R Rudd, Plum Consulting LLP, United Kingdom, M Nekovee, University of Sussex, United Kingdom</i></p>

Tuesday 14 November 2017			
Poster Session 3			
Room 1	Room 2	Room 3	Room: AVON
Antenna Measurements and Antenna Measurements	Millimetre and Sub-millimetre Antennas	Array Antennas 2	Advanced Materials 2
<p>P59 PCB-side matching networks for coaxial connectors <i>A Diewald, S Müller, IFARUS, Luxembourg</i></p>	<p>P67 Study of mm-wave microstrip patch array on curved substrate <i>Z Ahmed, K Yang, P McEvoy, M J Ammann, Dublin Institute of Technology, Ireland</i></p>	<p>P76 A cost-effective technique for concurrent IQ stream capture for prototyping phased arrays <i>A Vasileiadis, E Ball, The University of Sheffield, United Kingdom</i></p>	<p>P82 The ultrathin reconfigurable meta-surface <i>X Liu, A Chen, Beihang University, China</i></p>
<p>P60 Examination of the effect of common CATR quiet zone specifications on antenna pattern measurement uncertainties <i>S Gregson, NSI-MI, USA, C Parini, QMUL, United Kingdom</i></p>	<p>P68 Millimetre wave reflect array antenna unit cell measurements <i>G Ahmad, T Brown, C Underwood, University of Surrey, United Kingdom, T Loh, National Physical Laboratory (NPL), United Kingdom</i></p>	<p>P77 Single shot DoA estimation for large-array base station systems in multi-user environments <i>T Bressner, U Johannsen, B Smolders, Eindhoven University of Technology, The Netherlands</i></p>	<p>P83 High gain circularly polarized meta-surface antenna <i>A Chen, X Liu, Beihang University, China</i></p>
<p>P61 Wideband measurement of liquid dielectric</p>	<p>P69 A new THz corrugated-ground antenna</p>	<p>P78 Radiation pattern shaping for</p>	<p>P84 Optimisation of the Q factor of a</p>

<p>properties from 1 to18 GHz using coaxial probe cylindrical cavity junction: effects of milk concentration and protein content on microwave dielectric properties H Krraoui, F Mejri, T Aguille, SYSCOM ENIT, Tunisia</p>	<p>D Kampaouridou, A Feresidis, <i>University of Birmingham, United Kingdom</i></p>	<p>broadcasting collinear antenna array using invasive weed optimization E Tziris, J Cosmas, <i>Brunel University, United Kingdom</i>, P Lazaridis, I Glover, <i>University of Huddersfield, United Kingdom</i>, Z Zaharis, <i>Aristotle University of Thessaloniki, Greece</i></p>	<p>complementary frequency selective surface C-K Lee, S Bukhari, J Vardaxoglou, W Whittow, <i>Loughborough University, United Kingdom</i></p>
<p>P62 Nonredundant spiral NFF transformation for a long antenna mounted with an offset with respect to the scan sphere F D'Agostino, F Ferrara, C Gennarelli, R Guerriero, M Migliozi, <i>University of Salerno, Italy</i></p>	<p>P70 Towards millimetre-wave antenna design for future mobile broadband networks M Rabbani, J Churm, A Feresidis, <i>University of Birmingham, United Kingdom</i></p>	<p>P79 Dual-element antenna system for hexa-band smartphone MIMO applications S Alja'afreh, <i>Mutah University, Jordan</i>, Y Huang, <i>Liverpool University, United Kingdom</i>, Q Xu, L Xing, <i>Nanjing University of Aeronautics and Astronautics, China</i>, O Saraereh, <i>Hashemite University, Jordan</i></p>	<p>P85 Comparative study of "Phoenix" reflectarray phase-shifting cells T Makdissy, <i>Antonine University, Lebanon</i>, R Gillard, <i>INSA of Rennes, France</i></p>
<p>P63 Cost/performance trade-off of domain segmentation for EM-driven surrogate-assisted multi-objective antenna design A Bekasiewicz, S Koziel, <i>Reykjavik University, Iceland/Gdansk University of Technology, Poland</i></p>	<p>P71 Superdirective meta-arrays at telecommunication wavelengths A Vallecchi, C Stevens, E Shamonina, <i>The University of Oxford, United Kingdom</i></p>	<p>P80 Image transmission using OSTBC-encoded 16-QAM over MIMO time-selective fading channels M Lodro, S Greedy, A Vukovic, C Smart, D W P Thomas, <i>The University of Nottingham, United Kingdom</i></p>	<p>P86 Artificially anisotropic cylinder to convert omnidirectional linear polarization into circular polarization E Kaivanto, E Salonen, M Berg, <i>University of Oulu, Finland</i></p>
<p>P64 Antenna design explorer: A GUI software tool for efficient antenna design optimization M Akinsolu, O Arabi, B Liu, <i>Wrexham Glyndwr University, United Kingdom</i>, F Abdussalam, R Abd-Alhameed, <i>University of Bradford, United Kingdom</i>, N Ali, <i>Khalifa University, UAE</i>, G Ibrahim, <i>SUE, Iraq</i>, T A Rashid, <i>UKH, Iraq</i></p>	<p>P72 Characterisation of a quasi-optical transmissometer for precise measurement of a Sub-THz multenna A Sarker Andy, P Alizadeh, M Munoz Torrico, T Kreouzis, R Donnan, C Parini, R Dubrovka, <i>Queen Mary University of London, United Kingdom</i>, O Sushko, <i>Igor Sikorsky Kyiv Polytechnic Institute, Ukraine</i></p>		<p>P87 Demonstrating a low temperature organic dense dielectric patch antenna R Espley-Jones, <i>Leonardo MW Ltd, United Kingdom/University College London, United Kingdom</i>, J Langley, J Dalley, <i>Leonardo MW Ltd, United Kingdom</i>, K Tong, <i>University College London, United Kingdom</i></p>
<p>P65 Fractal modeling in finite and infinite scales using MoM-GEC method based on a new iterative approach</p>	<p>P73 Role of surface waves in the reflection properties of a millimetre wave reflectarray unit cell G Ahmad, T Brown, C</p>		<p>P88 Metasurface synthesis using susceptibility tensors and holographic technique M Cerveny, L Ford, A</p>

C Larbi Aguilu, M Hajji, T Aguilu, <i>University of Elmanar, Tunisia</i>	Underwood, <i>University of Surrey, United Kingdom</i> , T Loh, <i>National Physical Laboratory (NPL), United Kingdom</i>		Tennant, <i>University of Sheffield, United Kingdom</i>
P66 Parametric analysis and bandwidth optimisation of hybrid linear-exponential tapered slot vivaldi antennas I Ukaegbu, K Gamage, <i>Lancaster University, United Kingdom</i>	P74 LTCC-based millimetre-wave microstrip grid array antennas Y Zhang, <i>Nanyang Technological University, Singapore</i>		P89 Analysis and design of metasurface antennas E Martini, G Minatti, F Caminita, <i>Wave Up, Italy</i> , Stefano Maci, <i>University of Siena, Italy</i>
	P75 Design of ultra wideband vivaldi nanoantenna for solar energy collection A Yahyaoui, T Aguilu, H Rmili, <i>University of Tunis El Manar</i> , N Eltresy <i>Electronic Research Institute, Egypt</i> , J Floch <i>IETR, INSA, France</i>		P91 Properties of antennas made with sprayed selective silver metallization A Jammes, M Petisme, K Staelens, <i>Jet Metal Technologies, France</i>
			P92 On the Introduction of Lumped Inductors for Optimizing UHF Band AMCs in Terms of Size and Angular Stability H Fernández Álvarez, M de Cos, F Las-Heras <i>Universidad de Oviedo, Gijon, Spain</i>
Poster Session 4			
Room 1	Room 2	Room 3	Room: AVON
Biomedical Applications and Electrically Small Antennas	Propagation 2	Multiband and Wideband Antennas	Reconfigurable Antennas
P93 Assembly conformal antenna array for wearable microwave breast imaging application F Wang, <i>University of Edingburgh, United Kingdom</i>	P100 Modelling of propagation loss for single trees using simulated coppice at microwave frequencies A Adegoke, D Siddle, <i>Lagos State Polytechnic, Nigeria</i>	P107 A printed monopole UWB antenna design with single and dual band-suppression characteristics I Elfergani, J Rodriguez, Ar Sadiq Hussaini, <i>Instituto de Telecomunicações, Portugal</i> , P Lopes, <i>Universidade de Aveiro, Portugal</i> , Raed Abd-Alhameed, <i>University of Bradford, United Kingdom</i>	P114 Design of a novel pattern reconfigurable array antenna with beam scanning characteristic Y Ding, N Zhang, <i>Institute of China Electronic Technology Group Corporation, China</i>
P94 Microwave apparatus	P101 A wideband circularly	P108 High aperture efficient	P116 Multi-directional

<p>for testing breast integrity based on Huygens Principle: clinical validation on 16 subjects L Sani, M Paoli, G Raspa, A Vispa, <i>Spinoff of Università di Perugia, Italy</i>, N Ghavami, <i>London South Bank University, United Kingdom</i>, G Tiberi, <i>Imago7 Foundation, Italy</i>, A Saracini, S Ercolani, E Vannini, M Duranti, <i>Perugia Hospital, Italy</i></p>	<p>polarised cross-slot antenna with an L-shaped feed-line M Aly, Y Wang, <i>The University of Greenwich, United Kingdom</i></p>	<p>corrugated plate antenna at X- band S Alkaraki, Y Gao, <i>Queen Mary University of London, United Kingdom</i></p>	<p>switched beam antenna at 2.45 GHz for WSN application A Ramachandran, S Morris, N Timmons, J Morrison, <i>Letterkenny Institute of Technology, Ireland</i>, R Raj, <i>Government college Mananthavady, India</i></p>
<p>P95 Multistatic holographic imaging for breast cancer detection I Asghar, A A Khan, <i>Comsats Institute of Information Technology, Pakistan</i>, A K Brown, <i>The University of Manchester, United Kingdom</i></p>	<p>P102 Data processing techniques for satellite propagation measurements B Adjei-Frimpong, L Csurgai-Horváth, <i>Budapest University of Technology and Economics, Hungary</i></p>	<p>P109 Optimization of log-periodic dipole antenna with LTE band- rejection K Mistry, P Lazaridis, I Glover, <i>University of Huddersfield, United Kingdom</i>, Z Zaharis, T Xenos, <i>Aristotle University of Thessaloniki, Greece</i></p>	<p>P117 Realisation of mainbeam steerable antennas by transmission line models and its evidence W Kuhirun, P Boonek, <i>Kasetsart University, Thailand</i>, W Silabut, <i>Rajamangala University of Technology Isan, Thailand</i></p>
<p>P97 Miniaturization of a broadband monopole antenna using low loss magneto-dielectric materials in VHF band A Kabalan, A-C Tarot, A Sharaiha, <i>Institut d'Electronique et de Télécommunications de Rennes (IETR), France</i></p>	<p>P103 High-accuracy Gaussian process modelling of missile RCS with cost-based preferential training data selection J Jacobs, W du Plessis, <i>University of Pretoria, South Africa</i></p>	<p>P110 Size reduction of multi-band antennas using feature-based optimization S Koziel, A Bekasiewicz, <i>Reykjavik University, Iceland</i>/Gdansk University of Technology, <i>Poland</i></p>	<p>P118 Reconfigurable wideband antenna array for hybrid wireless communication systems and IoT applications A Mansour, B Mokhtar, M Rizk, N Shehata, <i>Alexandria University, Egypt</i></p>
<p>P98 Topology considerations for compact UWB antenna design S Koziel, M ul Haq, <i>Reykjavik University, Iceland</i></p>	<p>P104 A feasibility study on the extension of the point scatterer formulation to include wind induced dynamics N Leonor, M Sánchez, <i>Universidade de Vigo, Spain</i>, R Caldeirinha, T Fernandes, S Rebelo, <i>Polytechnic Institute of Leiria, Portugal</i>/University of South Wales, <i>United Kingdom</i></p>	<p>P111 A compact multiband antenna for mobile handset using characteristic modes optimization H Jaafar, S Collardey, A Sharaiha, <i>IETR-Université de Rennes, France</i></p>	<p>P119 Design of mechanically reconfigurable meander antenna using the Galinstan liquid metal J M Floch, <i>IETR - INSA of Rennes, France</i>, I B Trad, <i>IETR, France</i></p>
<p>P99 Distributive reactive nearfield parasitic element based compact CPW fed antenna for nearfield sensor applications</p>	<p>P105 A channel model for the propagation of X-band radio waves through the solar corona A Stocker, D Siddle, M Warrington, <i>University of</i></p>	<p>P112 Characterisation of flexible, thermal transfer printed UWB antenna under static bending M Kgwadi, <i>University of Glasgow, United</i></p>	<p>P120 Development of a reconfigurable modular GPS beamformer for design and test E Lloyd, R Watson, <i>University of Bath, United</i></p>

<p>S Raman, <i>Bharathiar University, India</i>, A Ramachandran, S Morris, N Timmons, J Morrison, <i>Letterkenny Institute of Technology, Ireland</i></p>	<p><i>Leicester, United Kingdom</i>, G Mariotti, D Silvestri, A Zeqai, P Tortora, <i>University of Bologna, Italy</i>, A Argyriou, <i>University of Thessaly, Greece</i>, J De Vicente, R Abello, M Mercolino, <i>ESA, Germany</i></p>	<p><i>Kingdom</i>, T Drysdale, <i>The Open University, United Kingdom</i></p>	<p><i>Kingdom</i></p>
	<p>P106 Effect of climate change on communication link as derived from long term rain rate measurement in Nigeria A Adekunle, F Semire, OAdegbola, <i>Ladoke Akintola University of Technology, Nigeria</i></p>		