# ANNUAL REPORT FOR YEAR 2017 IEEE AES SOCIETY

# **Chapter Name:**

# AP03/AES10/MTT17 Joint Chapter, IEEE Poland Section

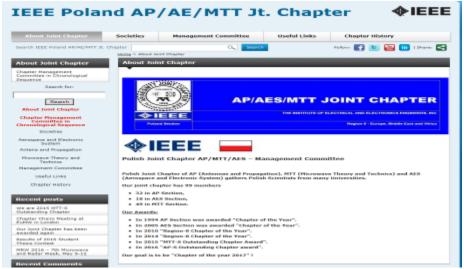
### 1. BASIC INFORMATION

A. Section Name: IEEE Poland Section

B. IEEE Region Number: 8

C. Societies that your chapter is joint with, if any: MTT and AP

D. Chapter Web address, if any: <a href="http://sites.ieee.org/poland-apaemtt/?page\_id=2">http://sites.ieee.org/poland-apaemtt/?page\_id=2</a>:



What is interesting to see on new Chapter web page?

- Chapter history in chronological sequence,
- Chapter activities,
- Chapter & professional news

### E. Officers for 2017 (please fill in the table below):

	Chair	Vice Chair	Secretary
Name	Prof. Wojciech Krzysztofik	Prof. Jacek Misiurewicz	Jerzy Julian Michalski, PhD, D.Sc.
Address	Wroclaw University of Science and Technology, Faculty of Electronics Telecommunication and Teleinformatics Department Wybrzeze Wyspianskiego 27 50-370 Wroclaw, POLAND	Warsaw University of Technology Institute of Electronics Systems Nowowiejska 15/19 00-665 Warsaw, Poland	TeleMobile Electronics Ltd., Pomeranian Science and Technology Park Av. Zwyciestwa 96/98 Gdynia, Poland
Phone	+48(71)3202201	48 22 2345441	+48 (58)6982186
Fax	(+4871)3223473		+48 (58)6982188
Email	wojciech.krzysztofik@pwr.edu.pl	imisiur@elka.pw.edu.pl	jerzy.michalski@telemobile.net.pl

### F. Officers for 2018:

	Chair	Vice Chair	Secretary
Name	Prof. Wojciech Krzysztofik	Prof. Jacek Misiurewicz	Jerzy Julian Michalski, PhD, D.Sc.
Address	Wroclaw University of Science and Technology, Faculty of Electronics Telecommunication and Teleinformatics Department Wybrzeze Wyspianskiego 27 50-370 Wroclaw, POLAND	Warsaw University of Technology Institute of Electronics Systems Nowowiejska 15/19 00-665 Warsaw, Poland	TeleMobile Electronics Ltd., Pomeranian Science and Technology Park Av. Zwyciestwa 96/98 Gdynia, Poland
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Email	wojciech.krzysztofik@pwr.edu.pl	imisiur@elka.pw.edu.pl	jerzy.michalski@telemobile.net.pl

### 2. FINANCIAL INFORMATION

Δ	Chapter funds	(US \$) on 1 January 2017:	10 050.00
А.	Chaptel fullus	(US 5) On 1 January 2017.	10 030.00

B. Income (US \$) during **2017**:

1.	Support from MTT-S:	0.00???

**2.** Support from AP-S: **0.00 ???** 

**3.** Support from other IEEE Societies AES-S: 300.00

4. IEEE Section support: 275.00

**5.** Other support (specify):

TOTAL INCOME 10 625.00

C. Expenditures (US \$) during 2017

Expanses covering visit IEEE AESS DL 56.60
Cost of Chapter Poster printing 14.607

D. End of year balance (US \$) as of 31 December 2017: 10 553.8

<sup>\*</sup> Include annual support, special-project support, travel grant support, Best Chapter Award support, and any other support from AP-S.

### 3. CHAPTER ACITVITIES DESCRIPTION

(This information is used in the selection of the Best Chapter Award).

### 3.1 Summary Information for 2017

### A. Number of technical meetings (in which a technical presentation is made)

1. Presentations from student members of your chapter:	0	
2. Presentations from non-student members of your chapter: (A member of your chapter is one who belongs to the AES Society and who lives within your Section. Do not include IEEE Distinguished Lecturers)	3	
3. <b>Presentations from outside speakers:</b> (This includes speakers from outside your chapter. Do not include IEEE Distinguished Lecturers.)	7	
4. Presentations from IEEE Distinguished Lecturers:	2	
5. TOTAL numbers of technical meetings:	12	
<b>B.</b> Average total attendance at the technical meetings: (Average over all of the technical meetings held during the year.)	38.4	
C. Number of non-technical (organizational) meetings held:	2	

D. Number of workshops, short courses, or conferences organized or co-organized by your chapter: 3

# 3.2 Technical Meeting Information for 2017 (use additional pages if necessary)

Note: For "Category", please use the following:

S: speaker is a student member of the chapter

M: speaker is a non-student member of the chapter (but do not include IEEE Distinguished Lecturers)

O: speaker is from outside the chapter (but do not include IEEE Distinguished Lecturers)

D: speaker is an IEEE Distinguished Lecturer.

		Attendance		Category	
	Title of Presentation/Name of Speaker	MTT-S	Other	Total	
1	"Polonez", Presenter: Prof. Sławomir Sujecki, Wroclaw University of Science and Technology, Wrocław, Poland, Location: room 105, build. C-5, WUoST, FoE, Wyspianskiego 27, 50-370 Wroclaw, Poland, Date: 17 January 2017, Time: 10:15 to 12:30	6	28	34	0
2	"The Outline of Higher Mathematics and Physics Education on Department of Telecommunication and Teleinformatics of WUoST", Prof. M.Wodecki, Wroclaw University of Science and Technology, Wrocław, Poland, Location: room 105, build. C-5, WUoST, FoE, Wyspianskiego 27, 50-370 Wroclaw, Poland, Date: 17 January 2017, Time: 10:15 to 1:30 PM	4	22	26	0
3	"Cognitive Radars", Presenter: Prof. Krzysztof Kulpa of Warsaw University of Technology, Institute of Electronic Systems, Location: room 103 FETI, WUT, Nowowiejska 15/19, 00-665 Warsaw, Poland, Date: 11 January 2017, Time: 12:15 to 2PM	4	14	18	0
4	"Detection of Unknown Radar Signals in Dense Signal Environments", Presenter: Rafał Hibner, MSc, of SeCom sp. z o.o., Sernicka 21, 50-001 Wroclaw, Poland, Location: room 105, build. C-5, WUoST, FoE, Wyspianskiego 27, 50-370 Wroclaw, Poland, Date: 8 February 2017, Time: 10:15 to 12:30	7	18	25	0
5	"Navigation Sensors and Systems in GNSS Degraded and Denied Environments (Or How I Learned to Stop Worrying About GPS)  ", Presenter: Prof. George T Schmidt, Massachusetts Institute of Technology, Instrumentation Laboratory, Cambridge, MA, USA Location: room 105, build. C-5, WUoST, FoE, Wyspianskiego 27, 50-370 Wroclaw, Poland, Date: 07 November 2017, Time: 11:15	7	21	28	D
6	"Navigation Sensors and Systems in GNSS Degraded and Denied Environments (Or How I Learned to Stop Worrying About GPS)", Presenter: Prof. George T Schmidt, Massachusetts Institute of Technology, Instrumentation Laboratory, Cambridge, MA, USA Location: room 103 FETI, WUT, Nowowiejska 15/19, 00-665 Warsaw, Poland, Date: 09 November 2017, Time: 12:15- 2 PM	6	24	30	D
7	"A Single Frequency Network Using DAB+ Broadcasting Platform for the Needs of Local Broadcasters in Poland (LokalDAB)", Presenter: prof. Kamil Staniec, Wroclaw University of Science & Technology, Faculty of Electronics, Location: room 105 WUoST, FoE, Wyspianskiego 27, 50-370 Wroclaw, Poland, Date: 15 November 2017, Time: 11:15 to 2:15PM	4	16	20	M
8	"EMC Laboratory - the Short Pulses Interference Investigation", Presenter: dr. Zbigniew Joskiewicz, Wroclaw University of Science & Technology, Faculty of Electronics, Location: room 105 WUoST, FoE, Wyspianskiego 27, 50-370 Wroclaw, Poland, Date: 22 November 2017, Time: 11:15 to 1:30PM	6	22	28	0

9	"HEMP and/or HMP - the Investigation of Disturbances and	6	28	34	M
	Interaction with Intelligent Electronic Devises", Presenter: Prof.				
	Piotr Slobodzian, Wroclaw University of Science & Technology,				
	Faculty of Electronics, Location: room 105, WUoST, FoE,				
	Wyspianskiego 27, 50-370 Wroclaw, Poland, <b>Date</b> : 22 November				
	2017, <b>Time:</b> 11:15 to 1:30PM				
10	"Gyrotron - Development and Theoretical Modeling", Presenter:	5	23	28	M
	<b>Prof. Piotr Slobodzian</b> , Wroclaw University of Science &				
	Technology, Faculty of Electronics, Location: room 105, WUoST,				
	FoE, Wyspianskiego 27, 50-370 Wroclaw, Poland, <b>Date</b> : 6				
	December 2017, <b>Time</b> : 11:15 to 1:30PM				
11	"SPSympo-2017", IX Signal Processing Symposium	8	112	120	O/M/S
	Date: 2017-06-14 to 16, City: Debe, Province: Mazowieckie,				
	Country: Poland				
12	"Future of Wireless Systems", Chairmen: Prof. Ryszard Zieliński,	6	64	70	O/M
	Wroclaw University of Science & Technology, Faculty of				
	Electronics, Location: Building D-20 WUoST, FoE, Wyspianskiego				
	27, 50-370 Wroclaw, Poland, <b>Date</b> : 1 – 2, December 2017, <b>Time</b> :				
	9:15 to 4:15PM				

### 3.3 Summary of Workshops, Short Courses, and Conferences for 2017

Include below a list of each workshop, short course, or conference that was organized or co-organized by your chapter. Include the title of the event, the dates of the event, a description of the event, and an indication of the level of involvement of your chapter. Please be specific about the role of your chapter in the event.

### SPSympo-2017, IX Signal Processing Symposium

2017-06-14 to 16, City: Debe, Province: Mazowieckie, Country: Poland

Key Words: signal processing, radar, student, young scientists, Symposium

**Description:** The main goal of the symposium is to provide a **forum for students, researchers and scientists** to present their latest findings, new trends in science and technology, and to **exchange ideas** during technical and evening sessions. In 2017 we turned our attention particularly to the space technologies as a domain of the almost limitless possibilities.

The idea of Signal Processing Symposium was conceived in 2003 during 12th IEEE-SPIE Symposium on Advanced Electronics. Two years later, upon a decision of the Radiolocation and Digital Signal Processing Students' Research Group of Warsaw University of Technology and myself, the first Signal Processing Symposium was organized independently of the SPIE Symposium.

Every second year thereafter, SPS – renamed to SPSympo in 2015 – gathers at each edition **over 100 participants** from around the world.



Fig. Photos of SPSymp-2017 participants (a), and session room (b).

By bringing together senior and young scientists and researchers, SPSympo creates unique learning and networking opportunities, which make the symposium an extremely interesting event.

The SPSympo-2017, an event technically co-sponsored by IEEE SPS and AES Societies, gathered 109 participants from 18 countries. 79 papers were accepted for presentation and passed a thorough review process with min. 3 reviews per paper.

A Young Scientist Contest was traditionally organized, with prizes funded by National Instruments company, MIKON Foundation and "Foundation for Promoting the Development of Radio Communication and Multimedia Techniques".

In addition to regular papers, we had the opportunity to attend seven keynote speaches:

- The Main Areas of Activity of the Polish Space Agency; Michał Marchewka
- Innovative Defence Technologies for the Modernization of Polish Armed Forces The Role of I3TO; Sławomir Augustyn
- Digital Radar Recent Developments at Fraunhofer FHR; Peter Knott
- Progressive Classification and Learning: From Analytics for Deep Neural Networks to Cortex-on-a-Chip; John S. Baras
- HF-Radar Signal Processing: From Ocean Remote Sensing to Real-Time Tsunami Alerting; Anna Dzvonkovskaya
- Efficient Management of Radio Networks with Dynamic Spectrum Access; Jerzy Lopatka
- 'Quantum Radar' Concept Implemented by Means of Classical Radar Technologies: Comparison with Noise Radar Concept; Konstantin Alexandrovich Lukin

**Awards:** Young Scientists Contest, the 29 papers eligible for the contest, and the **6 prizes founded by: IEEE AP/AES/MTT Poland Chapter** 

Cosponsor Name: prof. Jacek Misiurewicz, V-ce Chapter Chair



# **Future of Wireless Systems 2017**

Date: December 1 to 2, 2017, Location: Congress Center, Build. D-20, Wroclaw, Poland Participants: 52 Students, 12 Academia & Research & Systems Operators . Program: Firms Presentation, Lectures, Student Papers



This is the next edition of the Conference Future of Wireless Systems. Once again we invite representatives of leading telecommunications companies at our University. The Conference is divided into two parts: presentations of companies and organizations and student panel. This year we want to go one step further and connect the second part of the TeleCreativa, to make part of the student even more interesting and attractive!





# 3.4 Special Projects

Give a description of any special projects that your chapter participated in during the year, and indicate any funding that was obtained from AES-S or other sources. If possible, indicate how your chapter was improved as a result of the special project.

# Projects and activities at SpaceForest in 2017





SpaceForest manufactured MW couplers for European Spallation Source





SpaceForest successfully accomplished the next phase of project for European Spallation Source by manufacturing 61 state of the art microwave couplers. Warsaw University of Technology, the main designer of the radio frequency subsystem, had chosen our company to develop the microwave couplers. The devices had to meet stringent requirements at 352.21 MHz and 704.42 MHz for synchronization path of the ESS linear accelerator. The couplers were designed to work with high continuous power of radio signals, radiation resistance and tightness.

The ESS is expected to go into operation in 2019. It will become the world's largest spallation source of neutrons. Controlled beam of neutrons will be used in research on new materials, i.e., for medicine or aerospace.

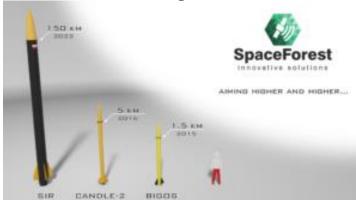
### **Master Signal Source for Telecommunication Satellites**





On 19th January SpaceForest started the next project for the European Space Agency. Once again our partner in the project is Swedish company RUAG Space AB. The kick-off meeting was held at SpaceForest. For that reason technical officer representing ESA and technical supervisor representing RUAG Space AB came to SpaceForest to Gdynia. As part of this project SpaceForest's engineers will design medium power dual redundant master signal source for telecommunication satellites. The project will take 24 months and is supposed to be finished with a full space qualified device. This is the third SpaceForest's project realized for ESA within the "Polish Industry Incentive Scheme" programme.

### SIR – Suborbital Inexpensive Rocket





SpaceForest has applied for funding for the Suborbital Inexpensive Rocket (SIR), under the "Fast Track" program by National Centre for Research and Development. In October's competition SF was ranked at the 1st place (along with 4 other companies) gaining 21 out of 23 points. The project is planned to start in April 2018, thus we are rearranging the research offices and workshop space to be ready for the kick-off of the project. In the upcoming couple of years SpaceForest will be building the first Polish suborbital rocket able to carry up to 50 kg of commercial payload to altitudes up to 150 km. The 10 meters rocket will be able to provide cost effective platform for micro-g environment researches. Considering the "design to cost" factor, SIR will be attractive for Polish and foreign market as well. It will offer the lowest prices for such services in the world. Our goal is to develop a fully reusable rocket with minimal preparation time between flights. The rocket will also be equipped with a controlled recovery system allowing safe landing in a predefined area minimizing the recovery costs and operations.

### **DEWI final review**

International DEWI (Dependable Embedded Wireless Infrastructure) project has ended. In the last week of April in Graz took place an evaluation meeting summarizing third and last year of project.

The Meeting took place in renewed interiors of former soap factory and was prepared by Virtual Vehicle Austria- responsible for managing the project. Participants of the meeting were leaders of tasks packages and five domains: automation, automotive, railways, construction and binding the whole interoperability. Domain leaders presented teams' achievements answering the European commission reviewers' questions. European Commission reviewers have also attended the presentations of 18 technology demonstrators. SpaceForest has presented practical operation of 36 nodes WSN network (WSN – Wireless Sensor Network ) which had been integrated with research rocket CANDLE 2. Rocket had been equipped with satellite recorder/transponder module (MTL – Multilink Telemetry Logger) developed by the Spanish branch of Thales Alenia Space and telemetry module (RFTM – Radio

Frequency Trajectory Measurement) developed by Gdansk University of Technology. Apart from the presentation of reliable WSN system, SpaceForest presented multimedia showing successful test flights, which had taken place in October 2016 in Drawsko Pomorskie. Materials made a great impression on attendees and met with the approval of reviewers.

### SpaceForest as a member of consortium implementing project for Polish Space Agency



The consortium is preparing a feasibility study of promising space technics and technologies. It will prepare a set of recommendations for development of space technologies in following areas: communication and satellite navigation; Earth and space observation; autonomous systems and space robotics; space exploration by the manned and unmanned flights; space engines and fuels; satellite launching systems, space biotechnology and microbiology; SpaceForest will be responsible for the "space engines and fuels" topics.

The consortium members, beside SpaceForest, are: Astri Polska Ltd, Space Research Centre of the Polish Academy of Sciences, Nicolaus Copernicus Astronomical Center, Creotech Instruments S.A. and Hertz Systems Ltd.

#### 4. DESCRIPTION OF OTHER ACTIVITIES

(This information is used in the selection of the Best Chapter Award) List of innovative membership development programs/activities / results of the Chapter

- 1. The glass-cases are situated in our Institutions, where IEEE news are published.
- 2. Chapter has regularly organized "Regional Seminary on Antennas, Microwave & Mobile Communications", together with Sections of Microwaves & Radar, the Polish Academy of Science, in three of our main academy cites, namely: Warsaw, Wroclaw and Gdansk.





The KEiT PAN / IEEE PL Chapter Wroclaw Regional Meeting of

ANTENNAS, MICROWAVES and WIRELESS COMMUNICATION

- 3. The Chapter activities are regularly (twice a year) presented to the larger audience during the Polish Academy of Science, at the Committee of Microwave and Radiolocation Meetings,
  - a. The Chapter co-organized the MTT-S Eastern Europe Chapter Chairs Meeting, during the Microwave Radar Week: MRW 2018, May 14-17, 2018 Poznan, Poland.



http://mrw2018.org/

- 4. Many Technical Meeting organized by the Chapter collected people from different areas of technical activities: the Academia, the Industry as well as many young researchers and students.
- 5. Collaboration with other IEEE societies and chapters. We are the JOINT Chapter of three Societies, namely: Antennas and Propagation Society, Aerospace Electronic Systems Society and Microwave Theory and Techniques Society, our activities are spreads all over these communities. It takes different forms, staring from yearly attention of Chapters Chairs Meeting, throughout permanent invitation of speakers as well as the guest of our Seminary Meeting from different areas of our specializations.
- 6. Chapter members were active participants in Technical Committees and TPC of International Conferences, in Europe as well as worldwide
  - a. **Prof. J. Modelski** (former AP/MTT/AES Joint Chapter Chair)

- i. 2008 President of the IEEE Microwave Theory and Techniques Society (MTT-S),
- ii. 2012-2014 IEEE Division IV Director.
- iii. 2013, MTT Society "2013 Distinguished Service Award".

### b. Prof. Wojciech Gwarek

- i. 2011 IEEE MTT-S Pioneer Award / Past MTT-S Distinguish Lecturer
- c. Prof. W.J. Krzysztofik
  - i. 2012 .... IEEE MTT-S R-8 Ambassador.
- d. J. Modelski, M. Mrozowski, M. Celuch, W. Gwarek TPC **IEEE International Microwave Symposium** IMS-2017
- e. T. Wieckowski General Chair, A. Karwowski TPC Chairman, J. Modelski, A. Kucharski, TPC of **EMC EUROPE** 2017
- f. J. Modelski General Chair, S.Gruszczynski Co-Chair, K. Wincz, M. Mrozowski, A. Karwowski, A. Jeleński, T. Wieckowski, A. Kucharski, W. Krzysztofik and others TPC Members of, **MRW**-2016
- g. J. Modelski, M. Mrozowski TPC Members EuMW-2017
- h. A. Karwowski, A. Kucharski, W.J. Krzysztofik, J. Modelski, P. Slobodzian, Reviewers of the **EuCAP-**2017
- 4. Participating in Regional and/or Societies' Technical Programs

### 4.1 Are there any ways in which your chapter has improved over last year?

Possibilities include increased attendance, number of meetings, level of activity, special activities, etc.

- We organized 12 technical Chapter Meetings
- Meetings have fixed terms, usually Wednesday each month at 11 AM, what is accepted by the community as a habit.
- During each Meeting we introduce to the audience IEEE and Chapter itself, saying about our activity, future topics, and prospective Conferences, Symposia, Visitors, etc.
- For as the Chapter Chairs, to have better support for advertising the IEEE <u>it will be useful to obtain some</u> FRESH advertising materials, from time to time.
- You could say yes, they are available on IEEE WEB! O.K. but let you inform us where they are and what is especially important bring.
- As you probably know, in general, access to IEEE information through the WEB is not easy and not available for all of us.
- I mean if it will be better if the basic information for Chapters should be available in the simplest possible way.
- But more advanced like now, sometime deeply tucked away and very difficult to found, let it be used by "professionals!

# 4.2. Were there any unique or innovative activities within your chapter?

Some possibilities that you might want to include are:

- Collaboration with other IEEE societies and chapters
- Student involvement and new member recruitment
- Interaction with industry or the community
- Educational activities
- We have current collaboration(common technical meetings, exchange the visitors) with IEEE Poland Section Chapters:

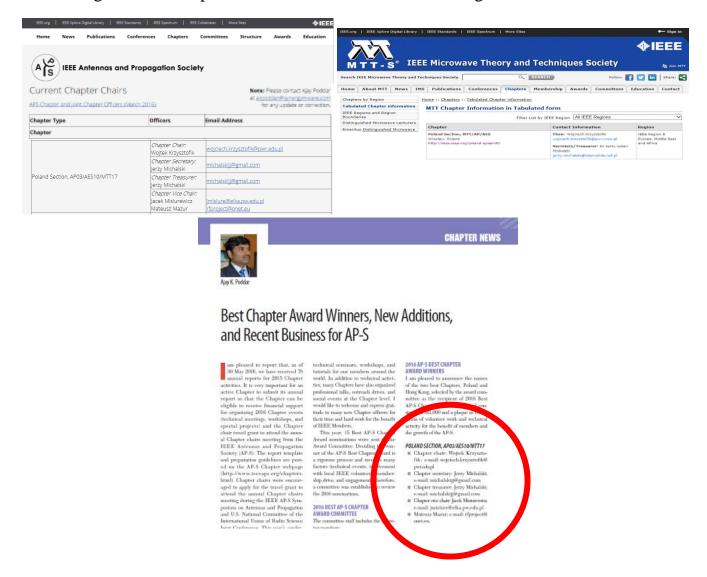




 We have a group of active students called "Wireless Group", who collaborate with IEEE Student Branch affiliated to our Chapter.

# 4.3. Miscellaneous information, elaboration on any of the above topics, or special factors to be considered.

1. Messages about Chapter on the IEEE WEB Sites and Magazines:



# 4.4 Chapter achivements:

In 2016, the AP/MTT/AES Joint Chapter, IEEE Poland Section has been awarded by **two prestigious awards:** 

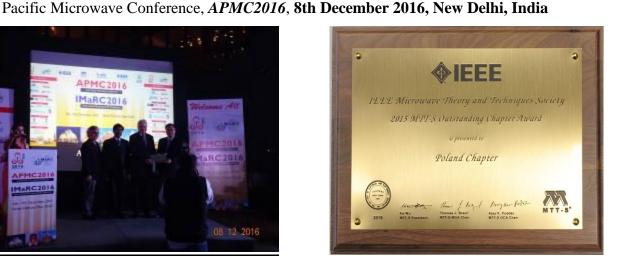
1. The IEEE Antenna and Propagation Society, AP-S, 2016 Best Chapter Award – Best Chapter among the 149 in the world. Mention the President received during *IEEE International Symposium on Antennas* and Propagation, USNC/URSI National Radio Science Meeting, 28th June 2016, Fajardo, Puerto





2. IEEE Microwave Theory and Techniques Society, MTT-S, 2015 Outstanding Chapter **Award** - The best out of 150 Chapters in the world). Mention the President received during Asia





### **Congratulations:**

"Dear MTT Outstanding Chapter Chair:

First, I would like to thank-you again for your efforts as a volunteer MTT chapter officer. Your work on behalf of the MTT Society membership is critical to the Society's success.

Second, I congratulate you for being recognized by the 2015 Outstanding Chapter Award Committee and by the MTT Society for leading your chapter and serving your members in an exemplary fashion. The Outstanding Chapter Award is given to no more than 5% of the MTT Society chapters making you in a very elite group. Again, thank-you and congratulations. Regards, Mike Golio, PhD, MTT Administrator "

Our Chapter Member wins the IEEE AESSS prestigious Fred Nathanson Memorial Radar Award for "Oudstanding Contribution to the Field of Passive Radar Imaging":





# 5. SUGGESTIONS FOR Society

Please use this space to describe any suggestions you have regarding how the Society can better serve your Chapter (or all Chapters).

- Be so kind and publish <u>regularly</u> in the <u>IEEE Society Newsletter the Chapter News</u> all data about our Chapter activities, are registered on IEEE WEB as L31 reports!
- If you don't use them, let us know WHY, and inform us HOW you wish to be informed about our Meetings?
- **6.** May this report be posted on the Chapters web page or disseminated by other means (Yes/No)? (By placing the report on the web page, you are allowing other chapters to have access to your chapter's new ideas and sponsored events. The sharing of your report is intended to promote a healthy interchange of information among chapters. A "yes" answer will be assumed if the question is left unanswered.) **YES**

To acok Fuyo Xofic

### 7. Verification

I verify the correctness of all data of this completed Form.

Name / Sign of Chapter Chair:

Date of Submitting: March 9, 2018