Administration view and lessons learned from the ADCO market surveillance campaign on RPAS

Introduction

- ADCO RED is the administrative cooperation group of under the EU Radio Equipment Directive (RED; 2014/53/EU);

- Membership is open to market surveillance authorities (MSA), EU Commission and ECO;

- It stimulates:
  - the exchange of information between MSA;
  - the best practices in the field of market surveillance;
  - A harmonised common approach in the market surveillance;

- It liaises with other relevant bodies (TCAM, ECO, REDCA, EMC ADCO, ETSI, …)

- 3 plenary meetings a year

7th Cross border market surveillance campaign

- ADCO R&TTE its 7th cross border market surveillance campaign on :

    Remotely piloted aircraft system (RPAS)

- Target: products that works in the 2.4GHz ISM frequency band and may include the onboard video and telemetry links that work on other frequency bands (e.g. video transmission in the 5.8 GHz frequency band).

- 79 products checked by 16 MSA

- Timing : January to June 2015

- Report is available on the ADCO's webpage

Block diagram
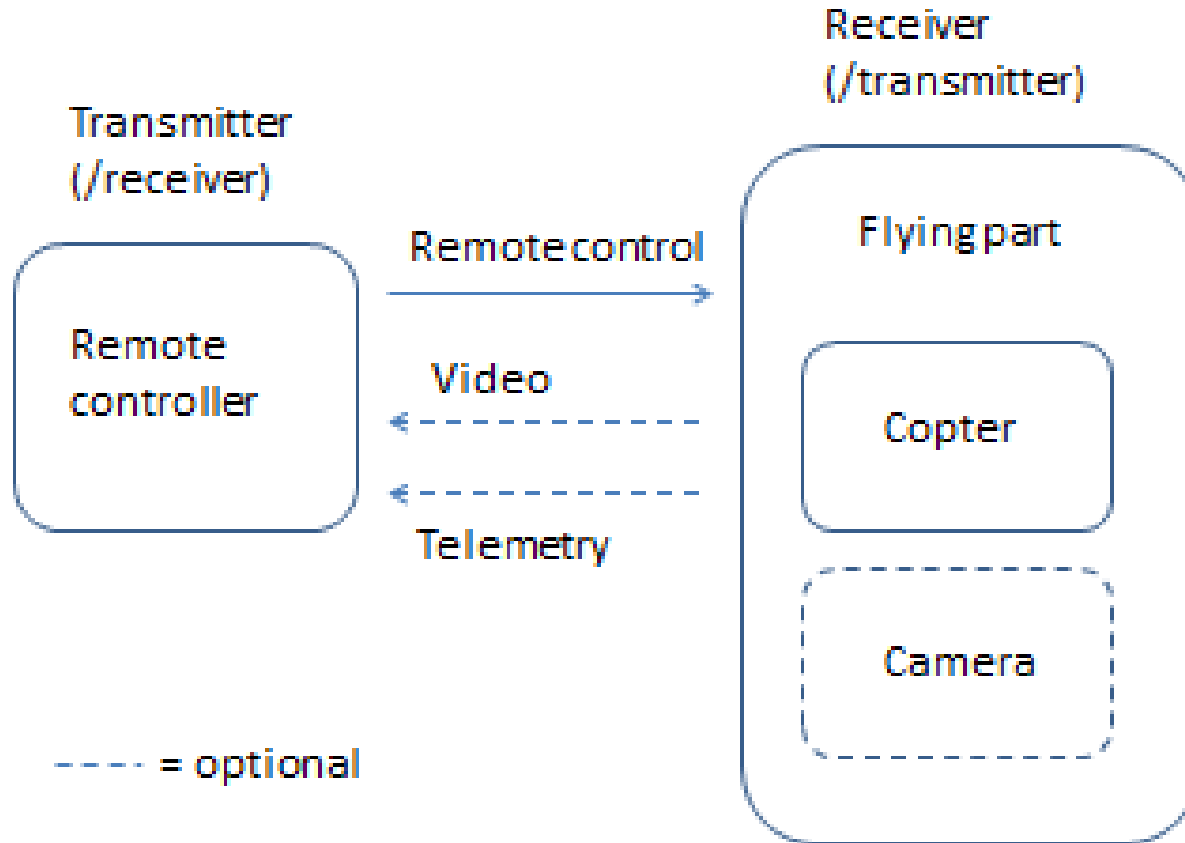
RPAS characteristics (1)

The tested RPAS:

- were manufactured in countries of the Far East (92%),

- were remotely controlled on 2,4 GHz (84%),

- had a mean price was between 100 and 200 euro,

- one of four sample was a toy
(according to manufacturer's declaration),

- one of two (44%) had a video transmission down to the ground receiver,

- one of three (30%) have implemented auto landing function or other feature which prevents radio device from uncontrollably falling down in case of low battery state

RPAS characteristics (2)

Table 1: RPAS' information										
Price range [EUR]	Quantity	Toy	Auto landing function	Remote control freq. [GHz]		Video & audio link freq. [GHz]		Telemetry link freq. [GHz]	
				2,4	5,8	2,4	5,8	2,4	5,8
0-50	10	2	2	10					
50-100	15	4	1	15		1			
100-200	18	6	3	18		5	4	5	
200-500	13	5	3	12	1	2	5	1	
500-1000	11	1	7	8	3	3	6	6	
1000+	12	1	8	9	3	5	5	3	
Overall	**79**	**19**	**24**	**72**	**7**	**16**	**20**	**15**	**0**

CE marking

The level of compliance of remotely piloted aircraft systems with marking requirements is approximately 37%.

Table 2 : Reasons of markings non-compliance			
Detailed requirement	on product	on packaging	on documents
Missing name of the manufacturer	11		
Incorrect type designation	12		
Missing batch and/or serial number	23		
Missing, incorrect CE mark layout or height	19	4	25
Not compliant class identifier, it's layout or height	13	12	14

EU Declaration of Conformity (DoC)

Sixty two (62) products had complete or short forms of the DoC. From those, thirty four (34) were found compliant. The overall level of compliance is about 55%.

Table 3 : Compliance with DoC requirements				
DoC form	DoC available	DoC available [%]	DoC compliant	Compliance level of available DoC [%]
Short form	25	32%	12	48%
Complete form	37	47%	22	59%
Overall	**62**	**78%**	**34**	**55%**

Technical documentation (TD)

Forty eight (48) RPAS have been assessed against some TD requirements. In thirty two (32) cases, the requested elements of the TD were made available. In ten (10) cases the requested elements of the TD have been found compliant. Overall level of compliance of the checked elements of the TD is approximately 21%.

Table 4 : Compliance with assessed TD requirements				
Number assessed	TD available	TD available [%]	TD compliant	TD compliance level [%]
48	32	67%	10	21%

Technical compliance of the whole product

Forty (40) products were found with technical non-compliances in relation to the effective use of the spectrum requirement (article 3.2 R&TTED).

Table 5: Compliance with art. 3.2 essential requirements			
Price range [EUR]	Quantity	Not compliant	Non compliance level [%]
0-50	10	4	40%
50-100	15	5	33%
100-200	18	10	56%
200-500	13	6	46%
500-1000	11	8	73%
1000+	12	7	58%
Overall	**79**	**40**	**51%**

Technical compliance of the remote control

Technical assessment has proved that thirty (30) remote controllers (38%) are not compliant with the essential requirement of effectively using the spectrum.

Table 6 : Remote control non-compliances against art. 3.2						
Frequency band	Quantity	Non-compliant	Spurious emissions	Radiated power / Power density	Used frequency range	Other
2,4GHz	72	25	20	12	1	1
5,8GHz	7	5	3	2	1	1
Overall	**79**	**30**	**23**	**14**	**2**	**1**

Technical compliance of the flying part

Eighteen (18) devices (23%) were found to be not compliant against the applied harmonised standard.

Table 7 : Flying part non-compliances against art. 3.2						
Frequency band	Quantity	Non-compliant	Spurious emissions	Radiated power / Power density	Used frequency range	Other
Tx 2,4GHz	19	3	3	1	1	
Tx 5,8GHz	14	6	2	3	2	1
Tx 2,4 & 5,8GHz	6	4	2	2		
Receiver only	40	5	5			
Overall	**79**	**18**	**12**	**6**	**3**	**1**

Overall non-compliance (1)

Table 8a: Overall non-compliance				
Price range [EUR]	Quantity	Administratively non-compliant	Art. 3.2 non-compliant	Overall non-compliant	Overall non - compliance [%]
0-50	10	7	4	9	**90%**
50-100	15	13	5	14	**93%**
100-200	18	14	10	18	**100%**
200-500	13	11	6	11	**85%**
500-1000	11	11	8	11	**100%**
1000+	12	9	7	10	**83%**
Overall	**79**	**65**	**40**	**73**	**92%**

Overall non-compliance (2)

Table 8b: Overall non-compliance					
Frequency band	Quantity	Administratively non-compliant	Art. 3.2 non-compliant	Overall non-compliant	Overall non - compliance [%]
2,4GHz	53	42	25	48	**91%**
5,8GHz	3	3	3	3	**100%**
2,4 & 5,8GHz	23	20	12	22	**96%**
Overall	**79**	**65**	**40**	**73**	**92%**

Other observations

- Several checked RPAS were not intended for the European market even were marked with a CE marking (FCC approved versions of a product with a declared radiated power of the remote control of 100 mW whereas the applicable EU Decision on Short range devices only allows 10 mW).

- In some cases, the firmware in the RPAS was not for the Europe.

- The mutual influence due to the combination of different radio devices (sometimes from different subcontractors) in the RPAS is not always indeed taken in account by manufacturers.

Main conclusions

- Overall non-compliance is about 92% (due to the low compliance with administrative requirements – 82%)

- One of two (51%) products were found to be non-compliant in relation to the effective use of spectrum.

- Spurious emissions (70%) and radiated power/power density (23%) are the main reasons for non-compliance.

- Remote controllers are more often (about 15 %) not compliant than flying part of RPAS

- The more expensive devices had a higher technical non compliance rate than the cheaper ones.

Main recommendations

- MSA to continue to check at national level RPAS including remote controls and take all appropriate measures to ban non-compliant products from the market.

- The results of the campaign should be publicized widely throughout Europe and to other countries of origin of the products.

- Information to authorities (TCAM WG, civil aviation, customs, …).

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