

A possible parameter configuration for LCGT 10-30kg TM payload (EM130411)

Flexibility & Constraints

- 1) PAY total mass =300 kg (F4+IM+IMR+TM+RM)
- 2) Similar slopes for pitch/roll/yaw TFs passing from TM10 to TM30
- 3) Only one more series of 4 holes in IM (for TM wires)
- 4) IMR slightly heavier by adding (small as 5 kg) weights
- 5) IM slightly heavier by adding (small as 5 kg) weights
- 6) Change of RM and of TM with their wires (other wires OK)

General aim = smallest impact in transition TM10->TM30

Provided that the values implemented in the model might be slightly approximated, here I list the basic shapes of the bodies involved in the transition 10->30 Kg (MKS):

TM10	=>	RM90	=>	IMR36	=>	IM80
d = 0.1		d = 0.2		d=T.B.D.		d=T.B.D.
r = 0.25/2		rext = 0.283		r= T.B.D.		r= T.B.D.
		rint =25/2+0.02*2				
Ixx= 0.051		Ixx= 0.93		Ixx=1.6		Ixx=1.2
Iyy= Ixx		Iyy= Ixx		Iyy=3.2		Iyy=1.4
Izz= 0.084		Izz= 1.86		Izz=1.6		Izz=1.2
TM30	=>	RM60	=>	IMR41	=>	IM85
d=0.14		d = 0.2		d=T.B.D.		d=T.B.D.
r = 0.35/2		rext = 0.283		r= T.B.D.		r= T.B.D.
		rint =35/2+0.02*2				
Ixx= 0.275		Ixx= 0.96		Ixx=2.24		Ixx=1.272
Iyy= Ixx		Iyy= Ixx		Iyy=4.48		Iyy=2.544
Izz= 0.14		Izz= 1.92		Izz=2.24		Izz=1.272

Mechanical design feasibility to be checked.

Common params

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mc0=0;
m1=106.24;
m2=89.37;
m3=86.51;
mpf=83.65;
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```
gap=0.01;
gapPF=0.001;
gapMB=0.001;
gapIM=0.005;
gapRM=0.001;
gapTM=0.001;
```

TM10

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```

      F1      F2      F3      PF      MB      IM      RM      TM
m=[  m1      m2      m3      mpf      36      80      90.3      10.7];
Ix=[  4      4      4      8      1.6  1.2  0.93  0.051];
Iy=[ 6.44  6.44  6.44  12  3.2  2.4  0.93  0.051];
Iz=[  4      4      4      8      1.6  1.2  1.86  0.084];
mcre=[mc0 mc0 mc0 mc0 mc0 mc0 0 0];
frv=[0.33 0.33 0.33 0.33 0 0.33 0 0];

mat={'MA' 'MA' 'MA' 'MA' 'C70' 'MA' 'C70' 'W' };
l=[  2.1  2.1  2.35  2.085  2.084  2.084  2.084  2.084 ];
d=[  3.2  3.0  2.8  2.5  0.5  2.1  0.7  0.15 ]*1E-3;
sux=[  0      0      0      0      0.35  0      0.27  0.125];
suz=[  0      0      0      0      0.35  0      0.03  0.015];
suy=[  0      0      0      0      0      0      0      0 ];
sdy=[-gap -gap -gap -gapPF -gapMB gapIM -gapRM -gapTM ];
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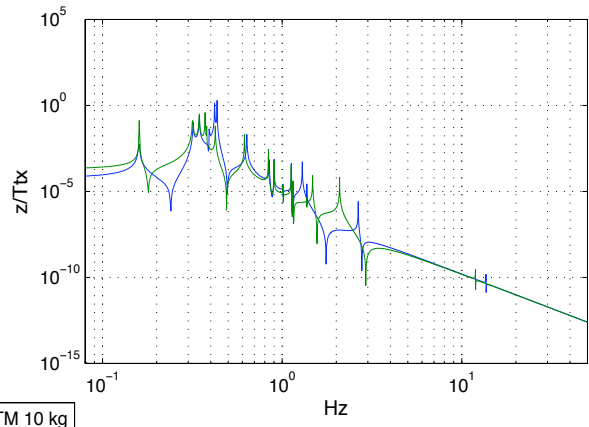
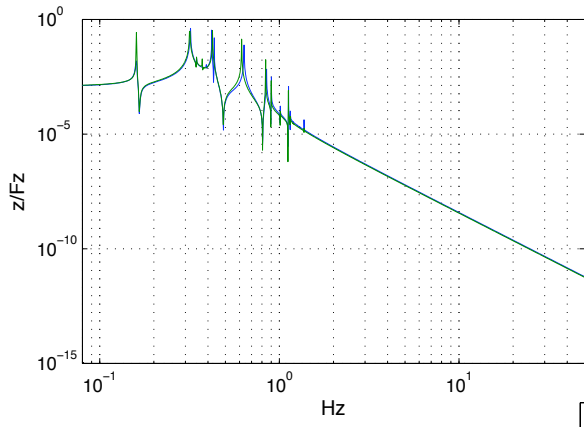
TM30

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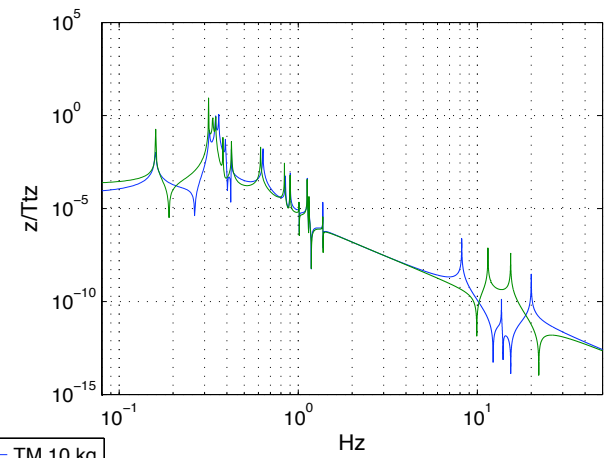
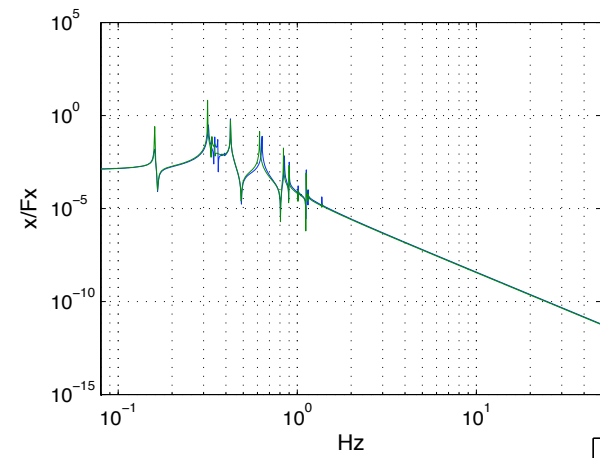
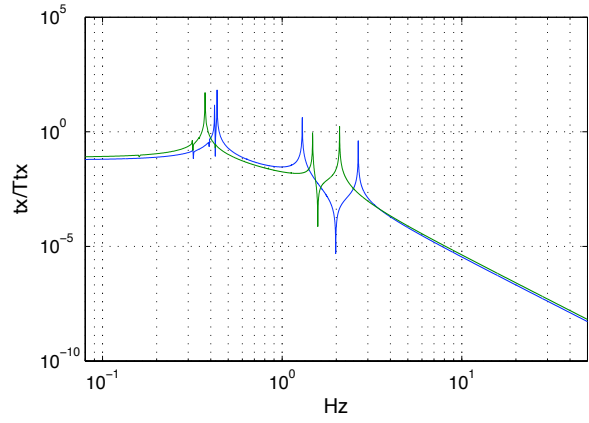
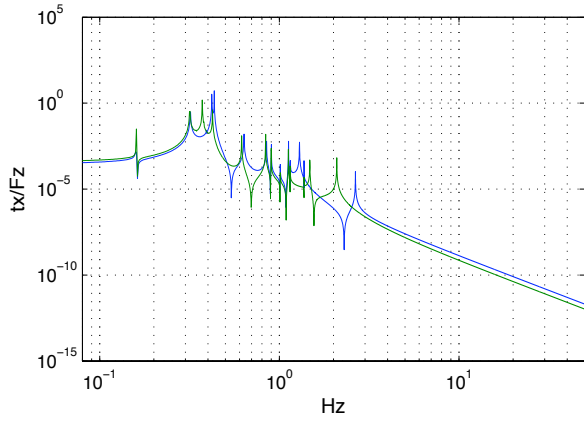
```

      F1      F2      F3      PF      MB      IM      RM      TM
m=[  m1      m2      m3      mpf      36+5  80+5  90-30  20+10.7];
Ix=[  4      4      4      8      1.6*1.4  1.2*1.06  0.75  0.275];
Iy=[ 6.44  6.44  6.44  12  3.2*1.4  2.4*1.06  0.75  0.275];
Iz=[  4      4      4      8      1.6*1.4  1.2*1.06  1.5  0.14];
mcre=[mc0 mc0 mc0 mc0 mc0 mc0 0 0];
frv=[0.33 0.33 0.33 0.33 0 0.33 0 0];

mat={'MA' 'MA' 'MA' 'MA' 'C70' 'MA' 'C70' 'W' };
l=[  2.1  2.1  2.35  2.085  2.084  2.084  2.084  2.084 ];
d=[  3.2  3.0  2.8  2.5  0.5  2.1  0.5  0.2 ]*1E-3;
sux=[  0      0      0      0      0.35  0      0.27  0.35/2];
suz=[  0      0      0      0      0.35  0      0.03  0.03 ];
suy=[  0      0      0      0      0      0      0      0 ];
sdy=[-gap -gap -gap -gapPF -gapMB gapIM -gapRM -gapTM ];
```



— TM 10 kg
— TM 30 kg



— TM 10 kg
— TM 30 kg

