



Automotive

# REPORT No. 70035683-1 TÜV-TIRE-QUALITY-MARK APPROVAL TEST - 2004 FULDA CARAT EXELERO, 225/45 ZR17

## TESTED CRITERIA: WET

- BRAKING
- HANDLING
- AQUAPLANING  
(STRAIGHT AND CURVED)
- LATERAL WET GRIP

## DRY

- BRAKING
- HANDLING

## SAFETY & ENVIRONMENT

- HIGH SPEED ENDURANCE
- ROLLING RESISTANCE
- ROLLING NOISE



## 1 OBJECTIVE

Implementation of a voluntary performance test in order to gain the TÜV-Tire-Quality-Mark for the following product (passenger car tire):

### *“Fulda Carat Exelero”*

## 2 TEST SCOPE

The following properties in terms of driving safety, road performance, environmental aspects and reliability of the above mentioned product were tested and approved:

<u>Dry performance:</u>	<u>Wet performance:</u>	<u>Environmental aspects:</u>	<u>Durability:</u>
▪ Braking (12)	▪ Braking (15)	▪ Tire rolling noise (8)	▪ High speed endurance
▪ Handling (12)	▪ Aquaplaning straight (10)	▪ Rolling resistance (8)	
	▪ Lateral wet grip (10)		
	▪ Handling (15)		
	▪ Aquaplaning curved (10)		

The values in brackets are representing the percentage weighting of each individual performance test for the total result. The durability (high speed endurance test) does not enter the total result; however, the minimum legal requirement must be fulfilled to get approval for the TÜV-Quality mark. Only the applicant tire is tested in the high speed endurance test.

## 3 TEST DETAILS

### 3.1 TEST TIRES

The test tire population consists of the following test tires:

BRAND (MANUFACTURER)	COMMERCIAL NAME	TIRE SIZE	RIM SIZE	RIM OFFSET	RIM MATERIAL
Fulda	Carat Exelero	225/45 ZR 17 (91Y)	7J x 17 H2	54	alloy
BF Goodrich	Profler G-Force	225/45 ZR 17 (91Y)			
Uniroyal	Rainsport 1	225/45 ZR 17 (91W)			
Kleber	Dynaxer DR	225/45 ZR 17 (91Y)			
Firestone	Firehawk SZ 80	225/45 ZR 17 (91W)			

The test tires brands were chosen by TÜV Automotive as they form a tire population of which the performance represents the medium to good overall performance of tires in this segment.

As far as available, all test tires were purchased from the free tire market.

### 3.2 TEST VEHICLE

The following vehicles were used for the test of the road performance:

#### VOLKSWAGEN GOLF MK V 2.0 FSI

Body:	5-door salon
Engine type:	2.0 liter, direct petrol inj.
Engine power:	110 kW
Wheelbase:	2578 mm
Drive concept:	Front wheel drive



#### VOLKSWAGEN GOLF Mk V 2.0 TDI PD

Body:	5-door salon
Engine type:	2.0 l turbo-diesel, dir. inj.
Engine power:	103 kW
Wheelbase:	2578 mm
Drive concept::	Front wheel drive



### 3.3 TEST LOCATIONS

The tests of the road performance were carried out on the proving ground in Miréval (France). The rolling noise tests were carried out on the tracks of the TÜV Automotive Acoustics Engineering Center, the rig testing was done on the facilities of the TÜV Automotive Tire-/Wheel-Test-Center in Munich. All tests were executed by TÜV personnel only.

### 3.4 TEST PROCEDURES

#### 3.4.1 TIRE PREPARATIONS

All tires for the road testing were conditioned before the tests were performed. For this, all test tires were run-in over 100 km in order to remove mould agent residues and other production deposits. Prior to each test, the correct inflation pressure was checked and adjusted if required. For all dynamic road tests, the inflation pressure was set to the values recommended by the car manufacturer for the relevant test vehicle and tire.

### 3.4.2 DRY BRAKING

The test was performed on dry asphalt, braking the test vehicle from 100 km/h to standstill with ABS activated. Speed and distance were measured by a GPS-based sensor device. For the results, only the distance between 90 and 10 km/h was recorded, in order to exclude falsifying influence by the build-up time of the brake pressure and the nodding of the car when reaching standstill. The first measured tire set served as control tire and was re-tested at the end of the test in order to allow for possible changes of the test conditions during the test.

The deceleration of each tire compared to the average of all tires (expressed in %) is considered for the overall result.

### 3.4.3 DRY HANDLING

The test is performed on an appropriate high speed asphalt circuit (track length: 3,3 km), driving the test vehicle at the stability limits. The subjective assessment of the performance criteria is done by two different drivers. The lap times are recorded automatically by a timing device mounted to the test vehicle.

The mean value of the average speed and the rating score of each tire compared to the average of all tires (both expressed in %) is considered for the overall result.

### 3.4.4 WET BRAKING

The test is performed on artificially wetted asphalt, braking the test vehicle from 90 km/h to standstill with ABS activated. Speed and distance are measured by a GPS-based sensor device. For the results, only the distance between 80 and 10 km/h is recorded, in order to exclude falsifying influence by the build-up time of the brake pressure and the nodding of the car when reaching standstill. The first measured tire set serves as control tire and is re-tested at the end of the test in order to allow for possible changes of the test conditions during the test.

The deceleration of each tire compared to the average of all tires (expressed in %) is considered for the overall result.

### 3.4.5 WET HANDLING

The test is performed on an appropriate, artificially wetted asphalt circuit (track length: 1,7 km), driving the test vehicle at the stability limits. The subjective assessment of the performance criteria is done by two different drivers. The lap times are recorded automatically by a timing device mounted to the test vehicle.

The mean value of the average speed and the rating score of each tire compared to the average of all tires (both expressed in %) is considered for the overall result.

### 3.4.6 AQUAPLANING STRAIGHT

The test is performed on special test track, which has a water basin on one side of the track, around 50 m long and 8mm deep. The car is driven at a constant speed into the water basin with the left-hand side of the vehicle, the other side running in the dry. Once the basin is reached, the vehicle is fully accelerated. At a certain speed the front wheel running in the water basin will begin to float and, by the applied engine torque, to spin. At a slip difference between the two front wheels of 15%, the corresponding speed is recorded. The wheel rotation speeds are measured by rotation sensors, the vehicle speed is measured by a radar-speed sensor.

The aquaplaning speed of each tire compared to the average of all tires (expressed in %) is considered for the overall result.

### 3.4.7 AQUAPLANING CURVED

The test is performed on special circular asphalt test track (diameter 100 m), of which a 20 m long segment is flooded with water, 8mm deep. The car is driven at a constant speed and constant steering angle into the watered segment. The entrance speed is gradually increased for each run. While driving through the watered segment, the lateral acceleration and the corresponding speed are recorded. The test is stopped when no more lateral acceleration is occurring anymore in the watered segment (the test vehicle leaves the circular path in tangential direction). The lateral acceleration is measured by a special acceleration sensor; the speed is measured by a GPS-based sensor device.

The maximal lateral acceleration of each tire compared to the average of all tires (expressed in %) is considered for the overall result.

### 3.4.8 LATERAL WET GRIP

The test is performed on special, artificially wetted circular asphalt test track (radius 30 m). The car is accelerated on a circular path up to steady state at which the grip limit of the tires is reached and at which no larger steering corrections are required to maintain a constant speed. The lap times are recorded automatically by a timing device mounted to the test vehicle. The first tested tire set serves as control tire and is re-tested at the end of the test in order to allow for possible changes of the test conditions during the test.

The mean lateral acceleration of each tire compared to the average of all tires (expressed in %) is considered for the overall result.

### 3.4.9 ROLLING NOISE

The noise measurements are carried out on the noise test track of TÜV Automotive, which satisfies the requirements of ISO 10844. The microphones are arranged at a distance of 7.5 m to the centerline at a height of 1.20 m above the measurement surface and calibrated prior to commencement of measurement.

For the measurements, the vehicle is rolled across the test course in neutral gear with the engine switched off. The maximum sound pressure levels in dB (A) right and left of the vehicle are recorded together with the speed. This measurement is carried out 8 times at different speeds between 70 and 90 km/h; the different speeds are distributed as evenly as possible across the defined speed range. Regression analysis is used to establish the relationship between the results and the reference speed of 80 km/h.

For the compliance with the noise limits laid down in Directive 92/23 /EEC, each tire gets 95 %. Noise levels quieter than the legal requirement are assessed as follows and considered for the overall result:

- 1 dB(A) quieter results in an increase by 1%
- 2 dB(A) quieter results in an increase by 2%
- 3 dB(A) quieter results in an increase by 5%
- 4 dB(A) quieter results in an increase by 10%
- 5 or more dB(A) quieter results in an increase by 20%

### 3.4.10 ROLLING RESISTANCE

The rolling resistance of the tires is measured in accordance with DIN ISO standard 8767, using the described power method.

Before the measurements, one sample of each test tire set is run-in for three hours under test conditions on the test drum with 80 km/h. After this the tires are stored for three hours under test lab conditions. Immediately before the actual measurements, the tire is run-in again for 30 minutes. Hereafter, the rolling resistance is measured at 50, 90 and 120 km/h and the rolling resistance coefficient calculated. The mean value of the rolling resistance coefficients at 50, 90 and 120 km/h forms the result for each tire.

The mean rolling resistance coefficient  $c_R$  of each tire compared to the average of all tires (expressed in %) is considered for the overall result. The percentage is calculated as follows:

$$P_{TireN} = \left(2 - \frac{c_{r,TireN}}{c_{r,Average}}\right) \times 100\%$$

### 3.4.11 HIGH SPEED ENDURANCE

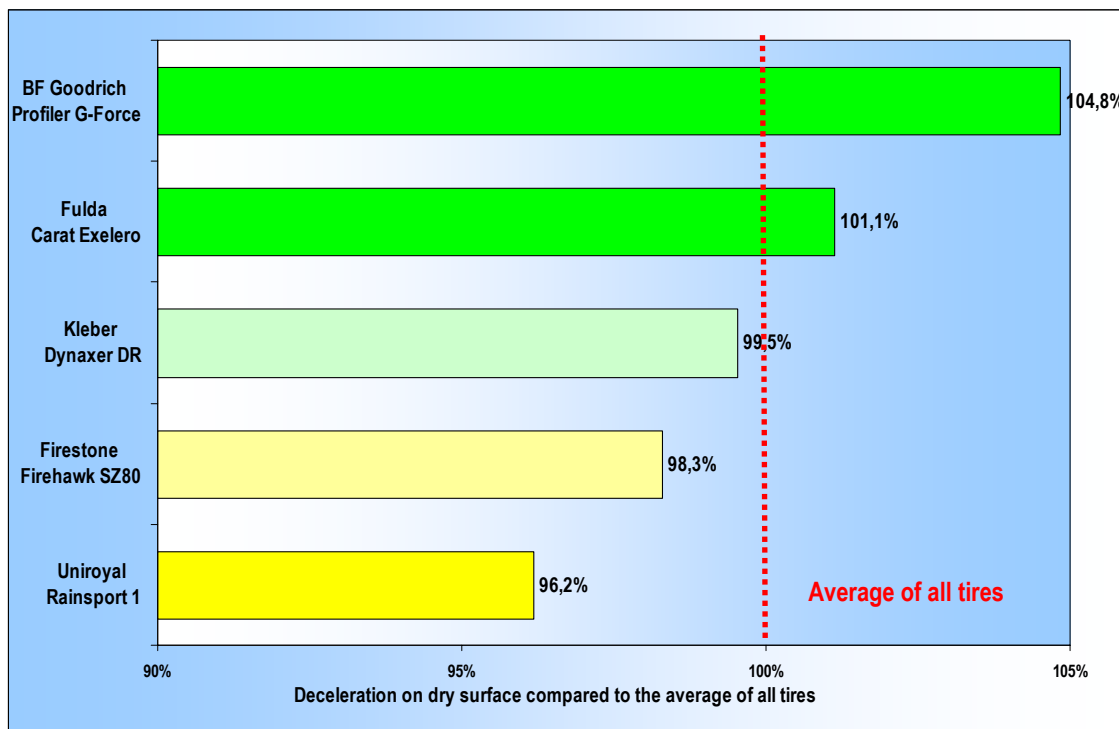
Only the applicant tire is measured in this test.

First, the tire is tested on a drum test rig according to the speed and load test described in Regulation ECE R30 (at 80% of the load given by the tire's load index, the speed gradually increased every 10 minutes up to the speed given by the tire's speed index, running a defined period in this speed). After the ECE test, the tire continues to run at the highest allowed speed and 80% of the load but with 2° camber until the tire is obviously damaged (automatic switch-off of the test rig).

## 4 TEST RESULTS

### 4.1 BRAKING ON DRY SURFACE WITH ABS (90 TO 10 KM/H)

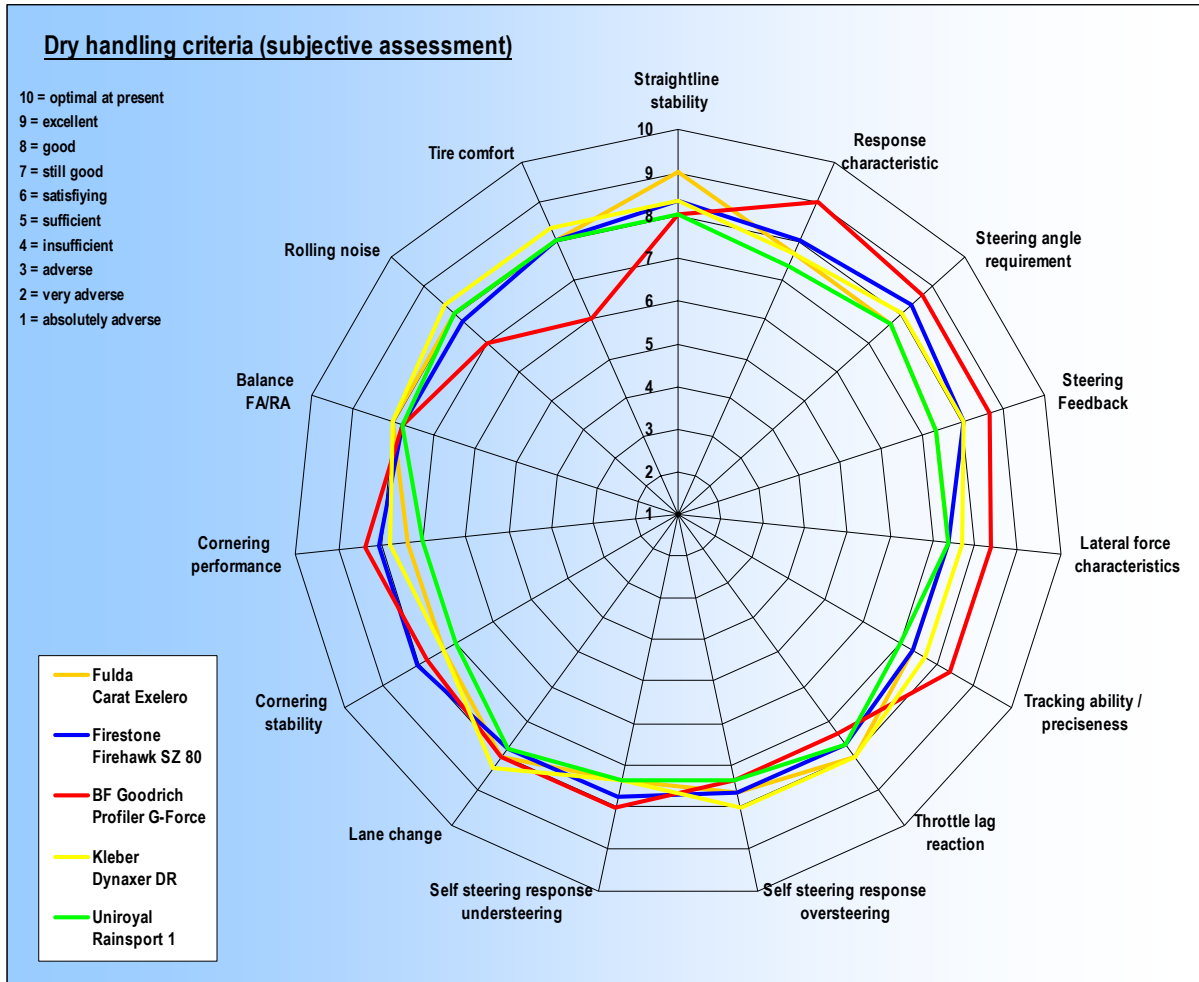
The results of this test enter the total result with a weighting factor of 0,12.



TIRE	MEAN VALUE BRAKING DISTANCE [m]	MEAN VALUE (DECCELERATION) [m/s <sup>2</sup> ]	PERFORMANCE RELATED TO THE AVERAGE OF ALL TIRES
Fulda Carat Exelero	30,3 / 29,6	10,18 / 10,43	101,1%
BF Goodrich Profiler G-Force	29,1	10,61	104,8%
Uniroyal Rainsport 1	31,6	9,78	96,2%
Kleber Dynaxer DR	30,4	10,17	99,5%
Firestone Firehawk SZ 80	30,6	10,09	98,3%

## 4.2 DRY HANDLING

The results of this test enter the total result with a weighting factor of 0,12.



TIRE	OVERALL SUBJECTIVE RATING	MEAN SPEED ON HANDLING TRACK [KM/H]	PERFORMANCE RELATED TO THE AVERAGE OF ALL TIRES (SUMMARY OF SUBJECTIVE ASSESSMENT AND SPEED)
Fulda Carat Exelero	7,73	110,6	99,4%
BF Goodrich Profiler G-Force	7,90	112,4	101,3
Uniroyal Rainsport 1	7,50	109,8	97,6 %
Kleber Dynaxer DR	7,92	111,0	100,8 %
Firestone Firehawk SZ 80	7,85	112,0	100,8 %

Additional comments on subjective dry handling:

**Fulda Carat Exelero**

Convincing overall performance with reasonable lateral guidance at the front axle and good balance; relatively large steering angles are required; tendency of understeering.

**Firestone Firehawk SZ80**

Front axle is stable; however the vehicle tends to veer in a bit progressively at the limits.

**BF Goodrich Profiler G-Force**

Slight instability is noticed on the rear axle, tending to oversteer in fast corners; precise on the front axle, optimal cornering predictability is interfered by the rear axle.

**Kleber Dynaxer DR**

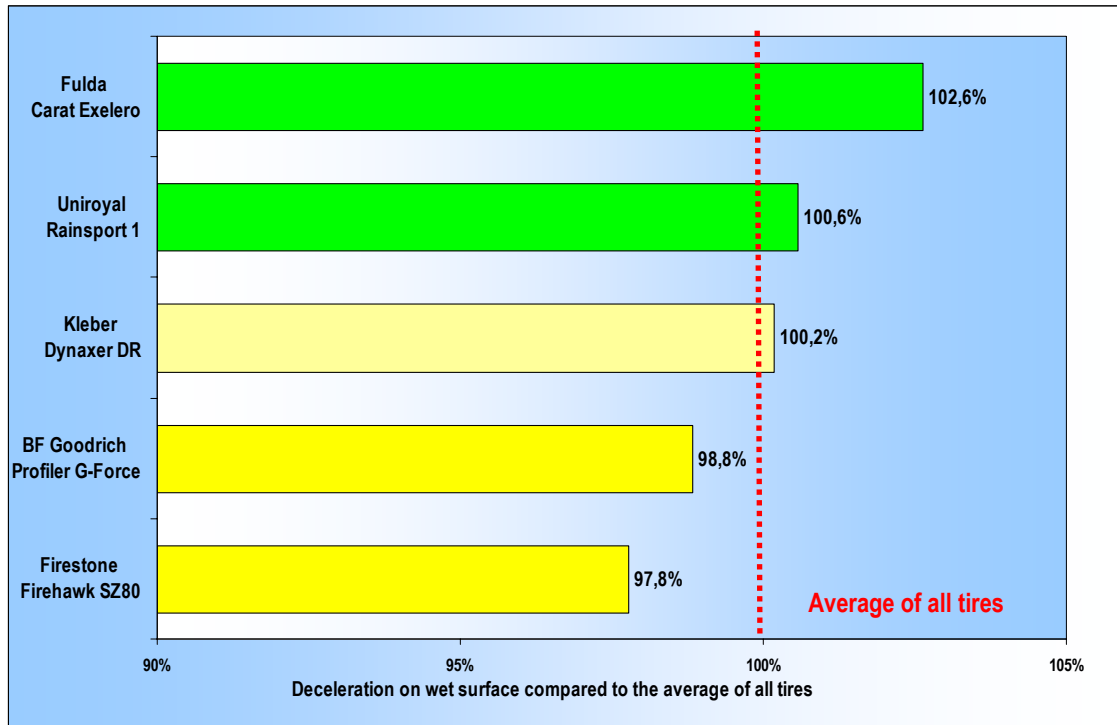
Very balanced and unproblematic tire with a wide stability threshold; rather neutral throttle lag reactions with slight veering-in.

**Uniroyal Rainsport 1**

Very balanced (similar to the other tires), however with less directional control; slightly instable on the RA, too, but cornering performance is limited by the front axle.

#### 4.3 BRAKING ON WET SURFACE WITH ABS (80 TO 10 KM/H)

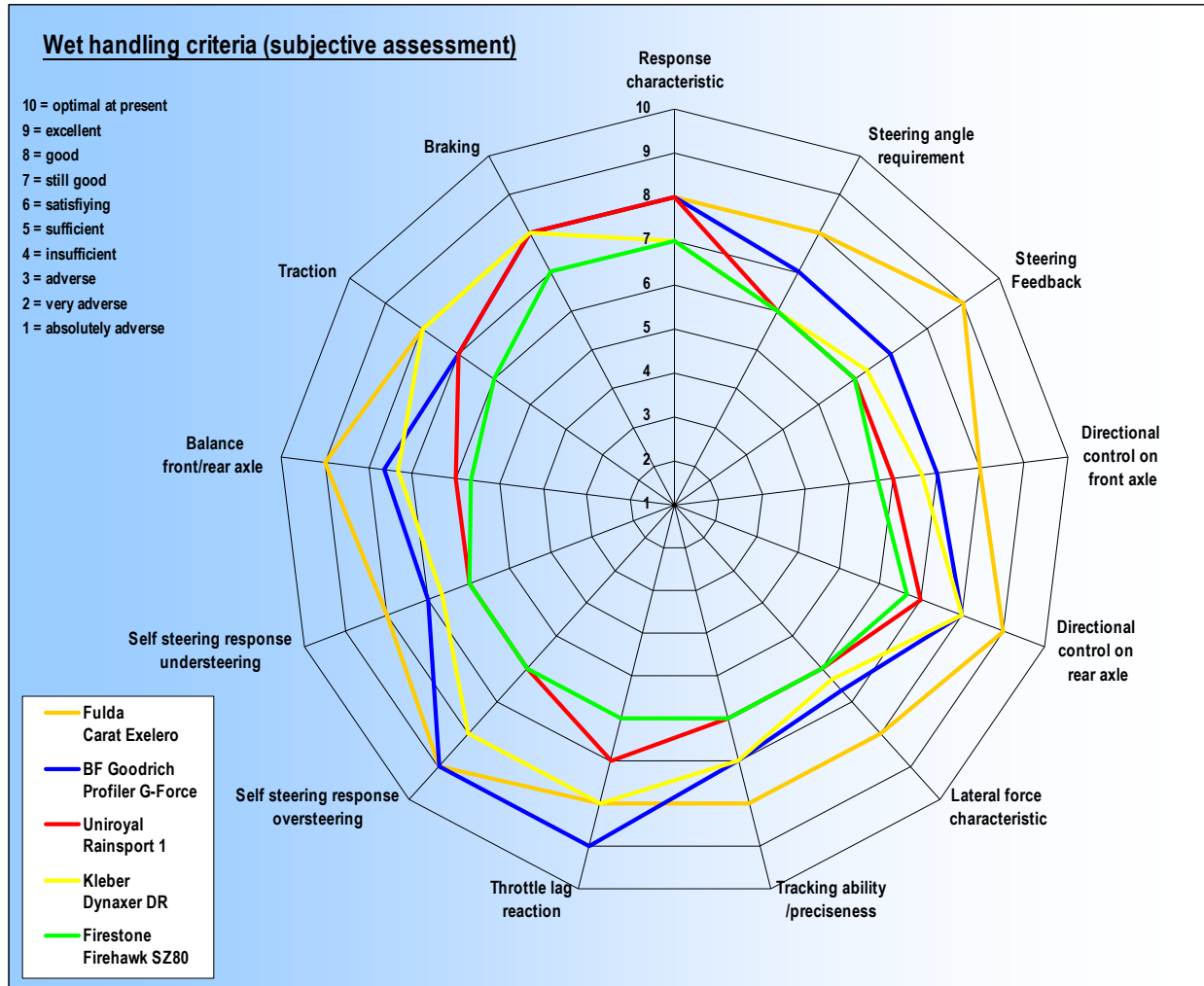
The results of this test enter the total result with a weighting factor of 0,15.



TIRE	MEAN VALUE BRAKING DISTANCE [m]	MEAN VALUE (DECELERATION) [m/s <sup>2</sup> ]	PERFORMANCE RELATED TO THE AVERAGE OF ALL TIRES
Fulda Carat Exelero	29,7/29,8	8,20 / 8,16	102,6 %
BF Goodrich Profiler G-Force	30,8	7,89	98,8 %
Uniroyal Rainsport 1	30,3	8,02	100,6 %
Kleber Dynaxer DR	30,5	7,98	100,2 %
Firestone Firehawk SZ 80	31,3	7,78	97,8 %

#### 4.4 WET HANDLING

The results of this test enter the total result with a weighting factor of 0,15.



TIRE	OVERALL SUBEJECTIVE RATING	MEAN SPEED ON HANDLING TRACK [KM/H]	PERFORMANCE RELATED TO THE AVERAGE OF ALL TIRES (SUMMARY OF SUBJECTIVE ASSESSMENT AND SPEED)
Fulda Carat Exelero	8,31	81,7	108,4 %
BF Goodrich Profiler G-Force	7,56	81,4	102,9 %
Uniroyal Rainsport 1	6,54	81,0	95,6 %
Kleber Dynaxer DR	7,18	81,5	100,3 %
Firestone Firehawk SZ 80	6,15	80,9	92,8 %

Additional comments on subjective wet handling:

**Fulda Carat Exelero**

Minimal throttle lag reactions, a bit more veering-in would be desirable; very good self-steering response and wide stability threshold; very good balance, excellent overall impression.

**BF Goodrich Profiler G-Force**

The front axle gets lateral grip through larger steering angle, the rear axle is relatively stable; direct response characteristics but the comfort is not satisfying (very noisy); good overall impression but little precision.

**Uniroyal Rainsport 1**

Quite reasonable in the lower speed range, but rather inconstant performance at the stability limit. Front and rear axle are alternately losing lateral grip; attentiveness of the driver is required (in particular at oversteering), rear axle is a bit unstable

**Kleber Dynaxer DR**

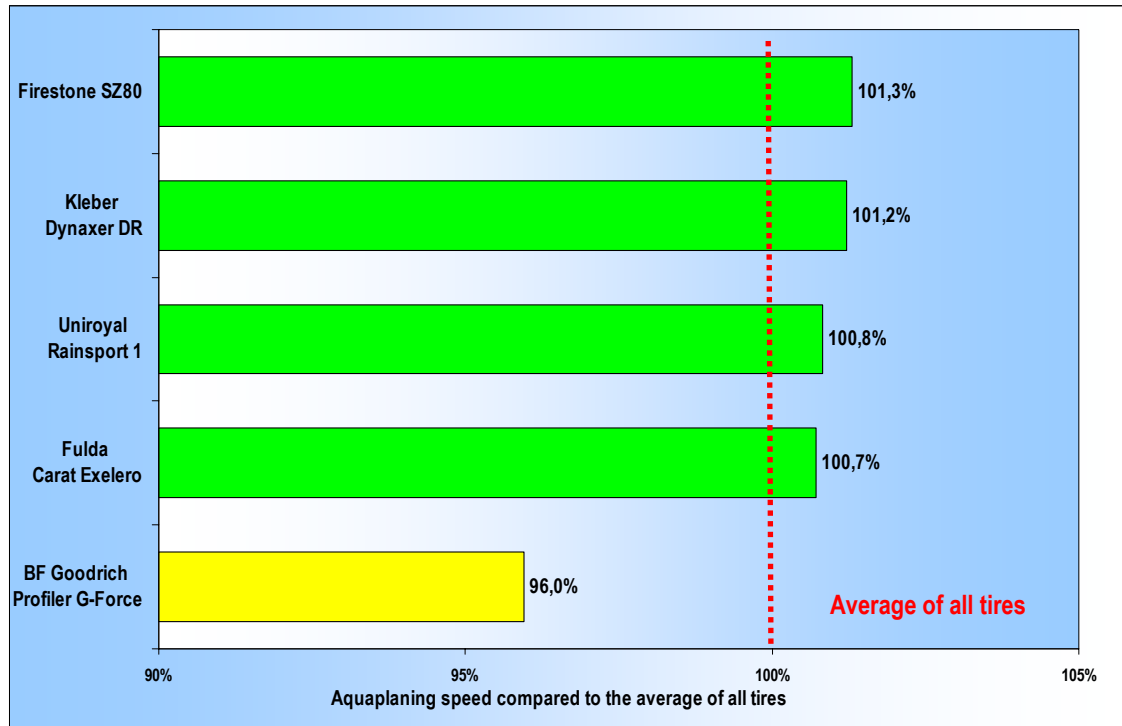
Rather distinct understeering behavior (low lateral grip on the front axle), but tracking behavior on the rear axle is excellent → good balance

**Firestone Firehawk SZ 80**

Tire shows distinct oversteering at throttle lag; otherwise distinct understeering and relatively large steer angles requirement; permanent change between over- and understeering behavior (similar to the Uniroyal)

#### 4.5 AQUAPLANING STRAIGHT

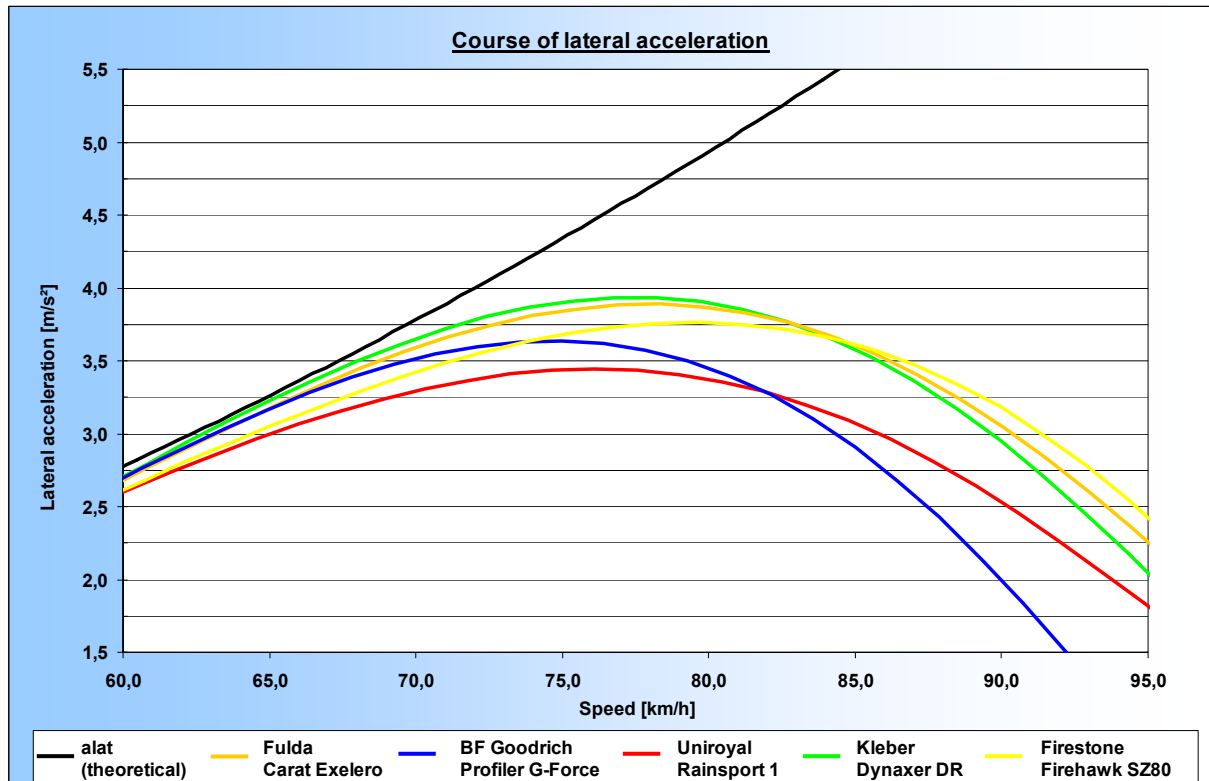
The results of this test enter the total result with a weighting factor of 0.1.



TIRE	MEAN VALUE AQUAPLANING SPEED [km/h]	PERFORMANCE RELATED TO THE AVERAGE OF ALL TIRES
Fulda Carat Exelero	92,0	100,7 %
BF Goodrich Profiler G-Force	87,7	96,0 %
Uniroyal Rainsport 1	92,1	100,8 %
Kleber Dynaxer DR	92,5	101,2 %
Firestone Firehawk SZ 80	92,6	101,3 %

#### 4.6 AQUAPLANING CURVED

The results of this test enter the total result with a weighting factor of 0.1.

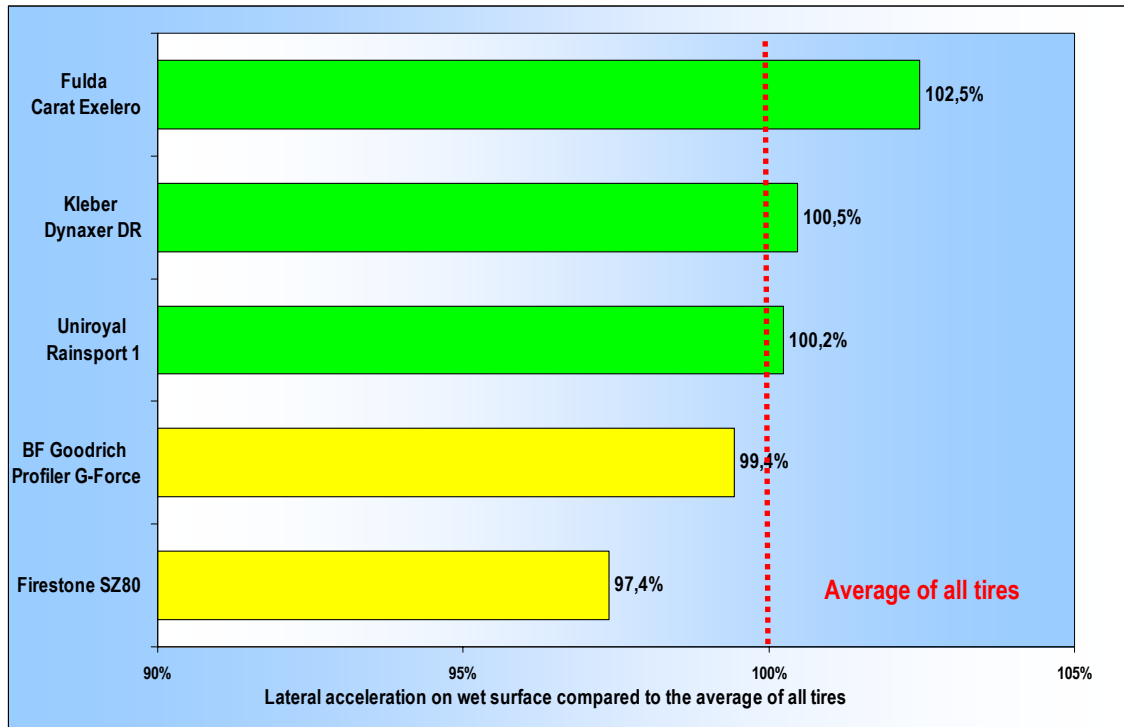


TIRE	MAX. TRANSMITTED LATERAL ACCELERATION [m/s <sup>2</sup> ]	CORRESPONDING SPEED [km/h]	PERFORMANCE RELATED TO THE AVERAGE OF ALL TIRES
Fulda Carat Exelero	3,90	78,0	104,3%
BF Goodrich Profiler G-Force	3,65	75,0	97,6%
Uniroyal Rainsport 1	3,45	76,0	92,2%
Kleber Dynaxer DR	3,95	77,5	105,6%
Firestone Firehawk SZ 80	3,75	79,5	100,3%

The ideal course of lateral acceleration during aquaplaning in curves shows a decrease as flat as possible after reaching its maximum. The steeper the lateral acceleration decreases, the more abrupt the grip and with it the control gets lost.

#### 4.7 LATERAL WET GRIP

The results of this test enter the total result with a weighting factor of 0.1.



TIRE	MEAN LATERAL ACCELERATION [m/s <sup>2</sup> ]	PERFORMANCE RELATED TO THE AVERAGE OF ALL TIRES
<b>Fulda Carat Exelero</b>	<b>5,07/ 5,01</b>	<b>102,5 %</b>
<b>BF Goodrich Profiler G-Force</b>	<b>4,91</b>	<b>99,4 %</b>
<b>Uniroyal Rainsport 1</b>	<b>4,93</b>	<b>100,2 %</b>
<b>Kleber Dynaxer DR</b>	<b>4,93</b>	<b>100,5 %</b>
<b>Firestone Firehawk SZ 80</b>	<b>4,77</b>	<b>97,4 %</b>

#### 4.8 NOISE MEASUREMENTS

The results of this test enter the total result with a weighting factor of 0,08.

TIRE	TEST ACCORD. TO EEC/92/23	ACTUAL NOISE LEVEL [dB(A)]	% COMPARED TO THE LEGAL NOISE LIMIT
Fulda Carat Exelero	passed	73	100%
BF Goodrich Profiler G-Force	passed	72	105%
Uniroyal Rainsport 1	passed	72	105%
Kleber Dynaxer DR	passed	72	105%
Firestone Firehawk SZ 80	passed	74	97%

#### 4.9 ROLLING RESISTANCE

The results of this test enter the total result with a weighting factor of 0,08.

TIRE	ROLLING RESISTANCE COEFFICIENT [C <sub>R</sub> ]	PERFORMANCE RELATED TO THE AVERAGE OF ALL TIRES
Fulda Carat Exelero	1,12	101,5 %
BF Goodrich Profiler G-Force	1,17	95,8%
Uniroyal Rainsport 1	0,99	112,4 %
Kleber Dynaxer DR	1,15	98,5 %
Firestone Firehawk SZ 80	1,24	90,9 %

Please note: The relative performance of rolling resistance is calculated as follows:

#### 4.10 HIGH SPEED ENDURANCE

TIRE	TEST ACCORD. TO ECE R30	RUNNING TIME UNDER MORE STRINGENT CONDITIONS (2° CAMBER, TOP SPEED, MAX. 1 HOUR)
Fulda Carat Exelero	passed	60 min

## 5 FINAL RESULTS

For the determination of the overall result, the relative results of the approval test tire in the individual tests are summarized, under consideration of the relevant weighting factor.

### 5.1 SUMMARY TABLE:

TEST	WEIGHTING FACTOR	Fulda Carat Exelero	BF Goodrich Profiler G-Force	Uniroyal Rainsport 1	Kleber Dynaxer DR	Firestone Firehawk SZ 80
BRAKING DRY	0,12	101,1 %	104,8 %	96,2 %	99,5 %	98,3 %
HANDLING DRY	0,12	99,4 %	101,3 %	97,6 %	99,9 %	100,7 %
BRAKING WET	0,15	102,6 %	98,8 %	100,6 %	100,2 %	97,8 %
HANDLING WET	0,15	108,4 %	102,9 %	95,6 %	100,3 %	92,8 %
AQUAPLANING (STRAIGHT)	0,1	100,7 %	96,0 %	100,8 %	101,2 %	101,3 %
AQUAPLANING (CURVED)	0,1	104,3 %	97,6 %	92,2 %	105,6 %	100,3 %
LATERAL WET GRIP	0,1	102,5 %	99,4 %	100,2 %	100,5 %	97,4 %
ROLLING NOISE	0,08	100 %	105 %	105 %	105 %	97 %
ROLLING RESISTANCE	0,08	101,5%	96,8%	112,4%	98,5%	90,9%
<b>WEIGHTED TOTAL RESULT</b>		<b>102,9%</b>	<b>99,9%</b>	<b>98,8%</b>	<b>101,0%</b>	<b>98,4%</b>

## 5.2 CONCLUSION

Basing on the results of the performance tests laid down in the present report, the applicant tire

***Fulda Carat Exelero, (tested size 225/45 ZR17)***

has passed all required criteria and is awarded the TÜV-Tire-Quality-Mark for above-average performance in relation to comparable competitive products.

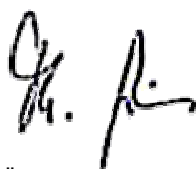
The TÜV-Mark as depicted below may be used by the applicant in connection with sales and advertisement of the above mentioned tire type in order to demonstrate and verify the quality of the tested product.



**TÜV Automotive Tire Test 2004**  
**Fulda Carat Exelero**

This test report consists of 18 pages plus 21 pages of annex.

Munich, November 2004



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## TIRE IDENTIFICATION TABLES

TIRES FOR: BRAKING WET, LATERAL WET GRIP, BRAKING DRY

TIRE CODE	POSITION	DOT-CODE	BRAND (MANUFACTURER)	COMMERCIAL NAME	PRODUCTION COUNTRY	SIZE DESIGNATION	SIDEWALL AND TREAD INFORMATION	UTQG-MARKING	UNI-DIRECTIONAL	TREAD PROFILE
I-1	FL	4104	Fulda	Carat Exelero	Luxembourg	225/45 ZR17 91 Y	-	Treadwear 280 Traction AA Temp A	yes	
	FR	4104								
	RL	4104								
	RR	4104								
I-2	FL	F3A70X2204	BF Goodrich	G-Force Profiler	France	225/45 ZR17 91 Y	Tread: 1x Polyamide 1 x Rayon 2x Steel Sidewall: 1 Rayon	Temp A	yes	
	FR	F3A70X2204								
	RL	F3A70X2204								
	RR	F3A70X2204								
I-3	FL	LLB7P22N2604	Uniroyal	Rainsport 1	France	225/45 ZR17 91 W	Tread: 1x Polyester 2x Steel 2x Nylon Sidewall: 1 Polyester	Treadwear 280 Traction A Temp A	yes	
	FR	LLB7P22N2604								
	RL	LLB7P22N2604								
	RR	LLB7P22N2604								
I-4	FL	F3B50X0404	Kleber	Dynaxer DR	France	225/45 ZR17 91 Y	Tread: 1 x Rayon 2x Steel 1x Nylon Sidewall: 1 Rayon	-	yes	
	FR	F3B50X0404								
	RL	F3B50X0404								
	RR	F3B50X0404								
I-5	FL	3Y7RK9TT0804	Firestone	Firehawk SZ 80	Poland	225/45 ZR17 91 W	Tread: 2x Polyester 2x Steel 1x Nylon Sidewall: 2x Polyester	-	yes	
	FR	3Y7RK9TT0804								
	RL	3Y7RK9TT0804								
	RR	3Y7RK9TT0904								

TIRES FOR: AQUAPLANING STRAIGHT, AQUAPLANING CURVED, WET AND DRY HANDLING

TIRES FOR: ROLLING NOISE, ROLLING RESISTANCE, HIGH SPEED ENDURANCE

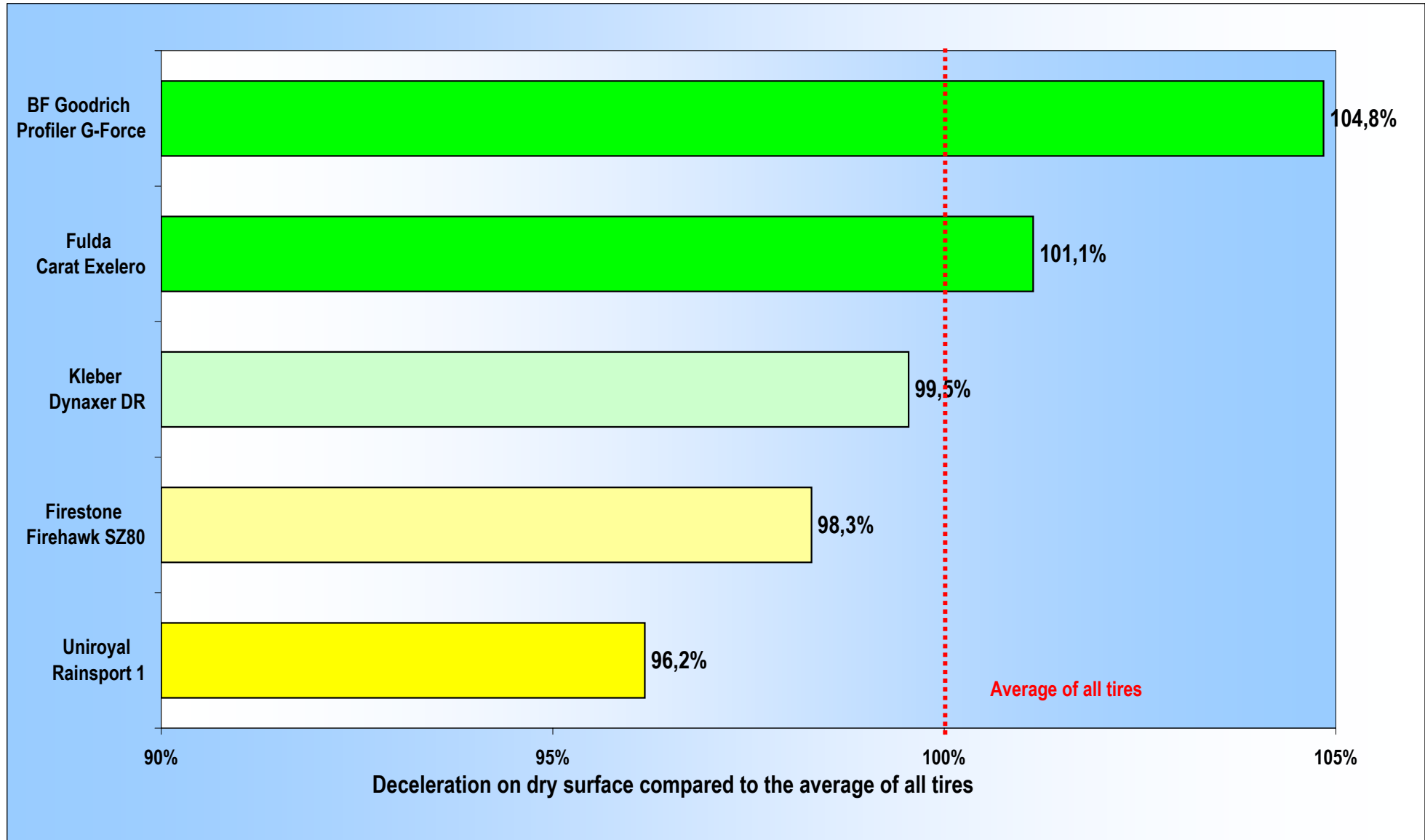
TIRE CODE	POSITION	DOT-CODE	BRAND (MANUFACTURER)	COMMERCIAL NAME	PRODUCTION COUNTRY
II-1	FL	4104	Fulda	Carat Exelero	Luxembourg
	FR	4104			
	RL	4104			
	RR	4104			
II-2	FL	F3A70X2104	BF Goodrich	G-Force Profiler	France
	FR	F3A70X2104			
	RL	F3A70X0604			
	RR	F3A70X0604			
II-3	FL	LLB7P22N2604	Uniroyal	Rainsport 1	France
	FR	LLB7P22N2604			
	RL	LLB7P22N2604			
	RR	LLB7P22N2604			
II-4	FL	F3B50X0404	Kleber	Dynaxer DR	France
	FR	F3B50X0404			
	RL	F3B50X0404			
	RR	F3B50X0404			
II-5	FL	3Y7RK9TT0904	Firestone	Firehawk SZ 80	Poland
	FR	3Y7RK9TT0804			
	RL	3Y7RK9TT0804			
	RR	3Y7RK9TT0804			

TIRE CODE	POSITION	DOT-CODE	BRAND (MANUFACTURER)	COMMERCIAL NAME	PRODUCTION COUNTRY
III-1	FL	4104	Fulda	Carat Exelero	Luxembourg
	FR	4104			
	RL	4104			
	RR	4104			
III-2	FL	F3A70X2104	BF Goodrich	G-Force Profiler	France
	FR	F3A70X2104			
	RL	F3A70X2104			
	RR	F3A70X2104			
III-3	FL	LLB7P22N2604	Uniroyal	Rainsport 1	France
	FR	LLB7P22N2604			
	RL	LLB7P22N2604			
	RR	LLB7P22N2604			
III-4	FL	F3B50X0404	Kleber	Dynaxer DR	France
	FR	F3B50X4703			
	RL	F3B50X0404			
	RR	F3B50X0404			
III-5	FL	3Y7RK9TT0804	Firestone	Firehawk SZ 80	Poland
	FR	3Y7RK9TT0804			
	RL	3Y7RK9TT0804			
	RR	3Y7RK9TT0804			

## DATASHEET: DRY BRAKING (WITH ABS)

DRY BRAKING (WITH ABS)						
<b>Customer:</b>	FULDA Reifen GmbH & Co. KG				<b>Test Track:</b>	Mireval (France)
<b>Date:</b>	27.10.2004				<b>Order No.:</b>	70035683
<b>Air Temperature:</b>	min: 20,5°C	max: 22,0°C			<b>Vehicle:</b>	Golf
<b>Surface Temperature:</b>	min: 20,4°C	max: 20,8°C			<b>Model:</b>	2.0 FSI
<b>ABS:</b>	on				<b>Type:</b>	Mk V
<b>Tire Size:</b>	225/45 ZR17				<b>v<sub>1</sub> [km/h]:</b>	90
<b>Total vehicle weight:</b>	1540 kg				<b>v<sub>2</sub> [km/h]:</b>	10
<b>Stopping distance</b>	<b>Fulda Carat Exelero</b>	<b>BF Goodrich Profiler G-Force</b>	<b>Uniroyal Rainsport 1</b>	<b>Kleber Dynaxer DR</b>	<b>Firestone Firehawk SZ80</b>	<b>Fulda Carat Exelero</b>
Value x <sub>1</sub> [m]	30,2	29,3	31,7	30,8	30,9	30,0
Value x <sub>2</sub> [m]	30,6	29,6	32,2	30,4	30,9	29,5
Value x <sub>3</sub> [m]	30,4	28,6	31,4	30,2	30,6	29,4
Value x <sub>4</sub> [m]	30,2	29,5	31,5	30,3	30,2	29,6
Value x <sub>5</sub> [m]	30,0	28,6	31,6	30,1	30,5	29,7
Value x <sub>6</sub> [m]	30,5	29,0	31,0	30,3	30,4	29,3
<b>Mean Value [m]</b>	<b>30,3</b>	<b>29,1</b>	<b>31,6</b>	<b>30,4</b>	<b>30,6</b>	<b>29,6</b>
Standard Variation [σ n-1]	0,203	0,400	0,359	0,222	0,254	0,227
Coefficient of Variation [%]	0,67%	1,37%	1,14%	0,73%	0,83%	0,77%
<b>Mean Deceleration [m/s<sup>2</sup>]</b>	<b>10,18</b>	<b>10,61</b>	<b>9,78</b>	<b>10,17</b>	<b>10,09</b>	<b>10,43</b>
Reference Value [m/s <sup>2</sup> ]	10,181	10,231	10,282	10,332	10,382	10,433
<b>Percentage Value [%]</b>	<b>100,0%</b>	<b>103,7%</b>	<b>95,1%</b>	<b>98,4%</b>	<b>97,2%</b>	<b>100,0%</b>
<b>Difference to reference [%]</b>	<b>0,0%</b>	<b>3,7%</b>	<b>-4,9%</b>	<b>-1,6%</b>	<b>-2,8%</b>	<b>0,0%</b>
<b>Compared to average of all tires [%]</b>	<b>101,1%</b>	<b>104,8%</b>	<b>96,2%</b>	<b>99,5%</b>	<b>98,3%</b>	

DIAGRAM: DRY BRAKING PERFORMANCE (WITH ABS)

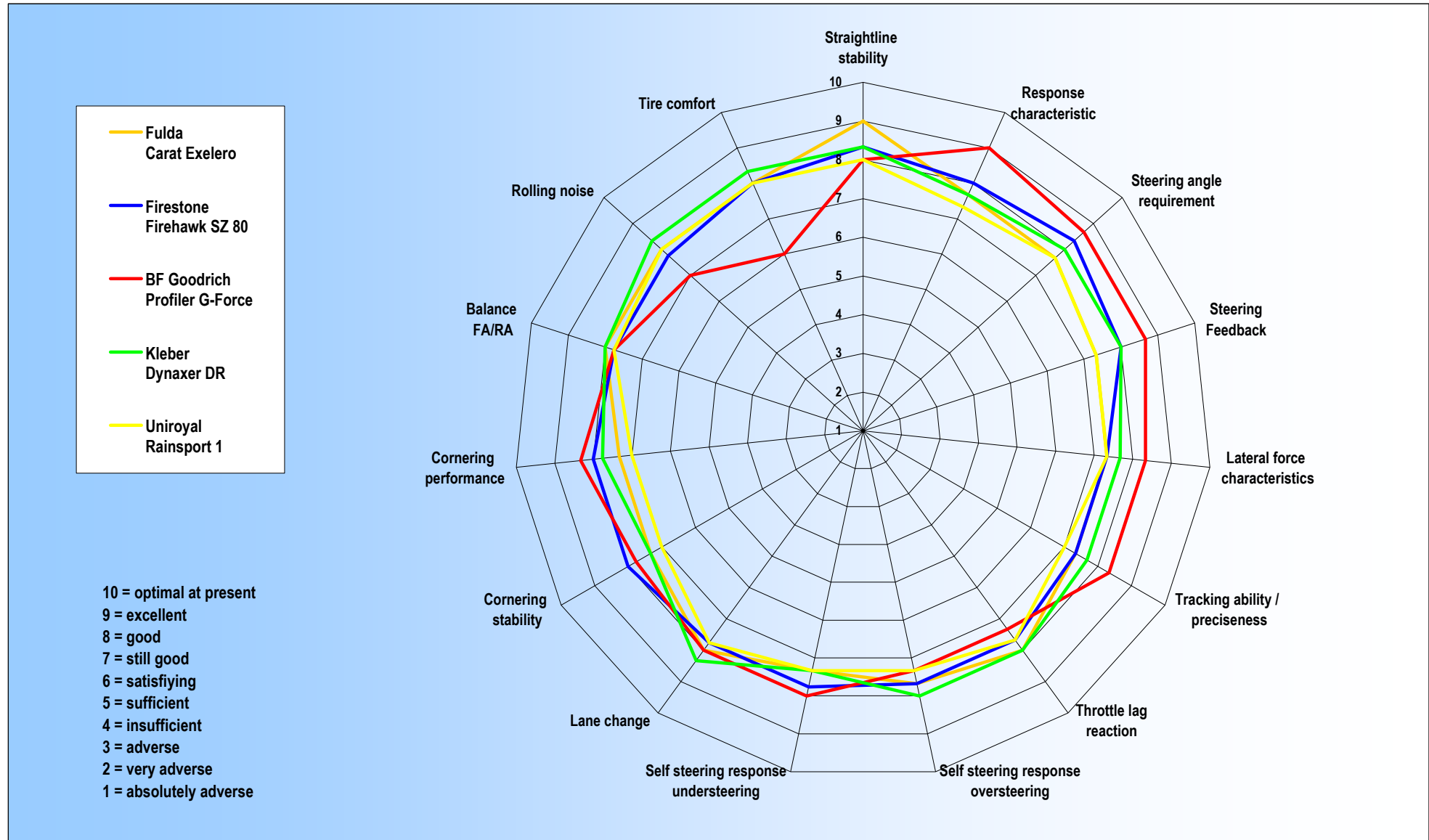


## ANNEX 3

## DATA SHEET: DRY HANDLING

											DRY HANDLING							
Datum Date	29.10.2004		Lufttemperatur Air temperature		min.: 20,0°C max.: 21,5°C		Fahrbahnzustand Surface condition		dry asphalt		Versuchsort Test location		Mireval (France)		Reifenluftdruck Tire inflation		FA: 2,4 bar RA 2,2 bar	
Fahrzeug Vehicle	VW Golf 2.0I FSI		Fahrbahntemperatur Surface temperature		min.: 22,1°C max.: 26,5°C		Witterung Weather condition		cloudy		Fahrer Drivers		Reithmaier, Staudé		Beladungszustand Load condition		2 persons	
10 = derzeit optimal 9 = sehr gut 8 = gut 7 = noch gut 6 = befriedigend 5 = ausreichend 4 = mangelhaft 3 = ungenügend 2 = schlecht 1 = sehr schlecht 10 = optimal at present 9 = excellent 8 = good 7 = still good 6 = satisfying 5 = sufficient 4 = insufficient 3 = adverse 2 = very adverse 1 = absolutely adverse																		
Fulda Carat Exelero			Firestone Firehawk SZ 80			BF Goodrich Profler G-Force			Kleber Dynaxer DR			Uniroyal Rainsport 1			Average of all tires			
<b>Lenkverhalten Steering performance</b>																		
Geradauslauf Straightline Stability																		
Anspruchverhalten Response characteristic																		
Lenkwinkelbedarf Steering angle requirement																		
Rückmeldung Feedback																		
Verlauf Seitenkraftaufbau Lateral force characteristic																		
Zielgenauigkeit / Spurhaltung Preciseness / Tracking ability																		
<b>Fahrstabilität Driving stability</b>																		
Fahrspurwechsel Lane change																		
Kurvenstabilität (vmax) Cornering stability (vmax)																		
Kurvenfestigkeit (Grip) Cornering performance (grip)																		
Balance VA/HA Balance FA/RA																		
Lastwechsel Throttle lag reaction																		
Eigenlenkverh. übersteuernd Self steering response overst.																		
Eigenlenkverh. untersteuernd Self steering response underst.																		
<b>Komfort Comfort</b>																		
Abrollgeräusch Rolling noise																		
Abrollkomfort Tire comfort																		
Ø Bewertung Average rating																		
Relative zu allen Reifen Compared to the average of all tires																		
<b>Rundenzeiten Laptimes</b>																		
Runde 1 Lap 1																		
Runde 2 Lap 2																		
Runde 3 Lap 3																		
Mittelwert Rundenzeit Average lap time																		
Resultierende Geschwindigkeit Resulting speed																		
Relative zu allen Reifen Compared to the average of all tires																		
Gesamtergebnis (Zeit und Bewertung) Overall result (Lap times and rating)																		

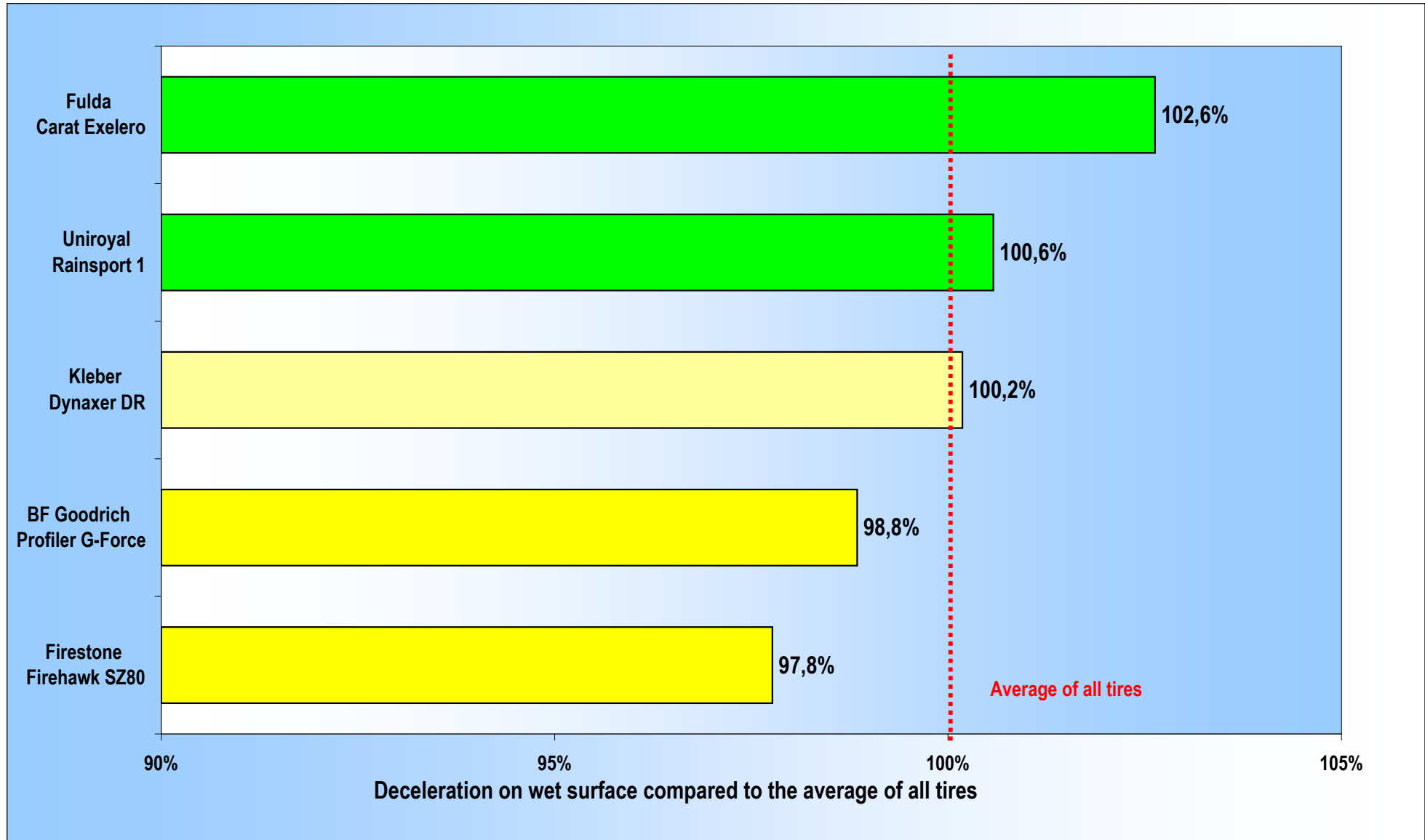
DIAGRAM: ASSESSMENT OF DRY HANDLING CRITERIA



## DATASHEET: WET BRAKING (WITH ABS)

WET BRAKING (WITH ABS)						
<b>Customer:</b>	FULDA Reifen GmbH & Co. KG				<b>Test Track:</b>	Mireval (France)
<b>Date:</b>	29.10.2004				<b>Order No.:</b>	70035683
<b>Air Temperature:</b>	min: 15,0°C	max: 20,5°C			<b>Vehicle:</b>	Golf
<b>Surface Temperature:</b>	min: 16,2°C	max: 19,1°C			<b>Model:</b>	2.0 FSI
<b>ABS:</b>	on				<b>Type:</b>	Mk V
<b>Tire Size:</b>	225/45 ZR17				<b>v<sub>1</sub> [km/h]:</b>	80
<b>Total vehicle weight:</b>	1540 kg				<b>v<sub>2</sub> [km/h]:</b>	10
<b>Stopping distance</b>	<b>Fulda Carat Exelero</b>	<b>BF Goodrich Profiler G-Force</b>	<b>Uniroyal Rainsport 1</b>	<b>Kleber Dynaxer DR</b>	<b>Firestone Firehawk SZ80</b>	<b>Fulda Carat Exelero</b>
Value x <sub>1</sub> [m]	29,5	31,5	30,1	30,9	30,9	29,8
Value x <sub>2</sub> [m]	29,0	30,0	30,1	30,8	30,9	30,0
Value x <sub>3</sub> [m]	29,2	30,6	30,8	30,2	31,2	30,5
Value x <sub>4</sub> [m]	30,2	30,6	30,6	30,0	31,3	29,2
Value x <sub>5</sub> [m]	29,9	31,0	30,1	30,8	31,6	30,1
Value x <sub>6</sub> [m]	30,1	31,2	30,2	30,1	31,6	29,2
<b>Mean Value [m]</b>	<b>29,7</b>	<b>30,8</b>	<b>30,3</b>	<b>30,5</b>	<b>31,3</b>	<b>29,8</b>
Standard Variation [σ n-1]	0,450	0,484	0,279	0,373	0,287	0,473
Coefficient of Variation [%]	1,52%	1,57%	0,92%	1,22%	0,92%	1,59%
<b>Mean Deceleration [m/s<sup>2</sup>]</b>	<b>8,20</b>	<b>7,89</b>	<b>8,02</b>	<b>7,98</b>	<b>7,78</b>	<b>8,16</b>
Reference Value [m/s <sup>2</sup> ]	8,197	8,189	8,181	8,173	8,164	8,156
<b>Percentage Value [%]</b>	<b>100,0%</b>	<b>96,3%</b>	<b>98,0%</b>	<b>97,6%</b>	<b>95,3%</b>	<b>100,0%</b>
<b>Difference [%]</b>	<b>0,0%</b>	<b>-3,7%</b>	<b>-2,0%</b>	<b>-2,4%</b>	<b>-4,7%</b>	<b>0,0%</b>
<b>Compared to average of all tires [%]</b>	<b>102,6%</b>	<b>98,8%</b>	<b>100,6%</b>	<b>100,2%</b>	<b>97,8%</b>	

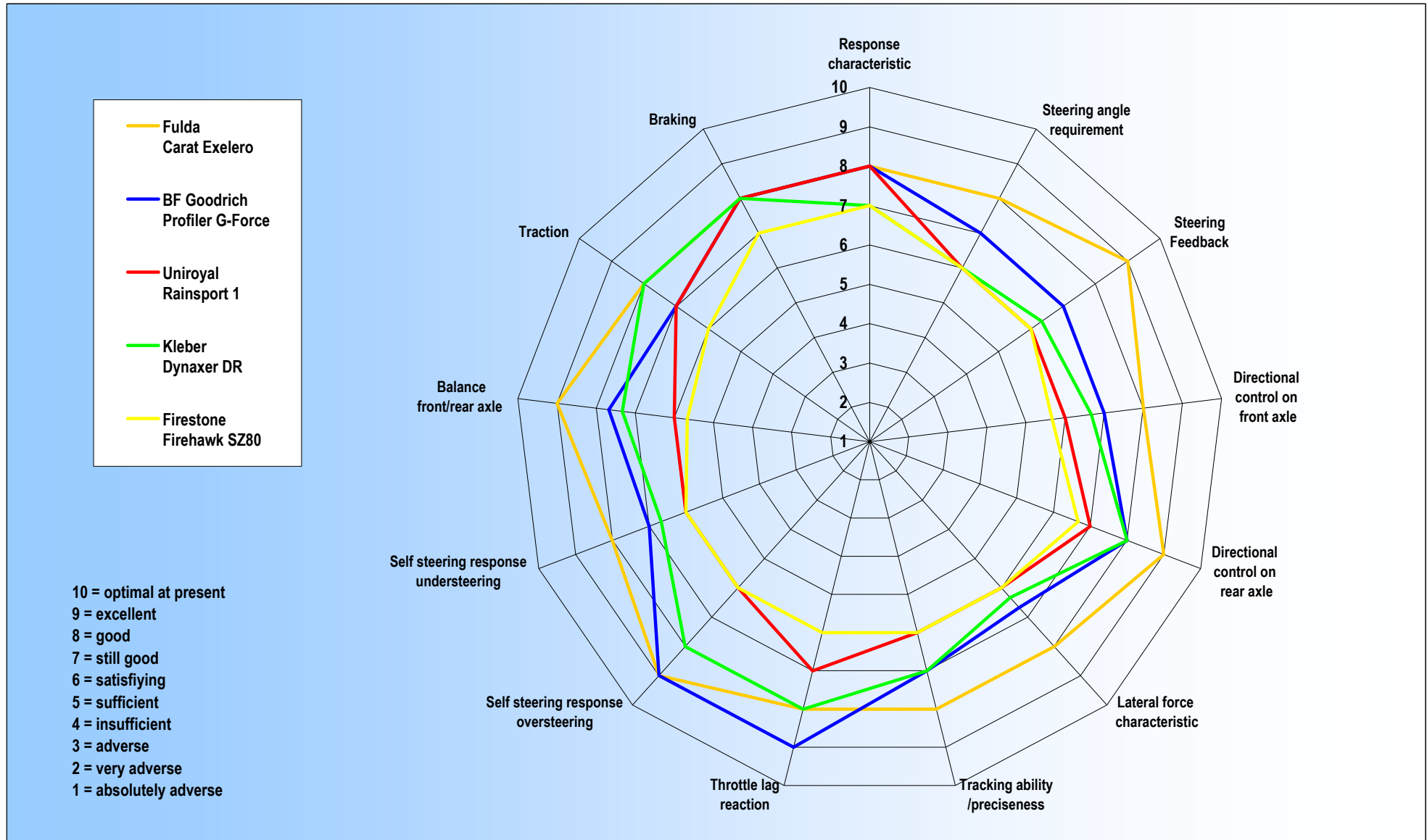
DIAGRAM: WET BRAKING PERFORMANCE (WITH ABS)



DATA SHEET: WET HANDLING

WET HANDLING																									
Datum Date	28.10.2004	Lufttemperatur Air temperature	min.: 17,0°C max.: 19,5°C	Fahrbahnzustand Surface condition	wet asphalt	Versuchsort Test location	Mireval (France)	Reifenluftdruck Tire inflation	FA: 2,4 bar RA 2,2 bar																
Fahrzeug Vehicle	VW Golf 2.0 I FSI	Fahrbahntemperatur Surface temperature	min.: 18,5°C max.: 19,0°C	Witterung Weather condition	cloudy	Fahrer Drivers	Reithmaier, Staude	Beladungszustand Load condition	2 persons																
10 = derzeit optimal 9 = sehr gut 8 = gut 7 = noch gut 6 = befriedigend 5 = ausreichend 4 = mangelhaft 3 = ungenügend 2 = schlecht 1 = sehr schlecht 10 = optimal at present 9 = excellent 8 = good 7 = still good 6 = satisfying 5 = sufficient 4 = insufficient 3 = adverse 2 = very adverse 1 = absolutely adverse																									
Fulda Carat Exelero		BF Goodrich Profler G-Force			Uniroyal Rainsport 1			Kleber Dynaxer DR			Firestone Firehawk SZ 80			Average of all tires											
<b>Lenkverhalten Steering performance</b>																									
Ansprechverhalten Response characteristic	8	träge slow	mittel med.	direkt direct	scharf sharp	8	träge slow	mittel med.	direkt direct	scharf sharp	8	träge slow	mittel med.	direkt direct	scharf sharp	7	träge slow	mittel med.	direkt direct	scharf sharp	7	träge slow	mittel med.	direkt direct	scharf sharp
Lenkwinkelbedarf Steering angle requirement	8			7			6			6			6												
Rückmeldung Feedback	9			7			6			6+			6												
<b>Querstabilität Lateral stability</b>																									
Seitenführung Vorderachse Directional control front axle	8			7			6			7-			6-												
Seitenführung Hinterachse Directional control rear axle	9			8			7			8			7-												
Verlauf Seitenkraftaufbau Lateral force characteristic	8			7-			6			6+			6												
Zielgenauigkeit/ Spurhaltung Preciseness/Tracking ability	8			7			6			7			6												
Lastwechsel Throttle lag reaction	8	kein none	leicht slight	mittel med.	stark strong	9	kein none	leicht slight	mittel med.	stark strong	7	kein none	leicht slight	mittel med.	stark strong	8	kein none	leicht slight	mittel med.	stark strong	6	kein none	leicht slight	mittel med.	stark strong
Eigenlenkverh. übersteuern Self steering response overst.	9	kein none	leicht slight	mittel med.	stark strong	9	kein none	leicht slight	mittel med.	stark strong	6	kein none	leicht slight	mittel med.	stark strong	8	kein none	leicht slight	mittel med.	stark strong	6	kein none	leicht slight	mittel med.	stark strong
Eigenlenkverh. untersteuern Self steering response underst.	8	kein none	leicht slight	mittel med.	stark strong	7	kein none	leicht slight	mittel med.	stark strong	6	kein none	leicht slight	mittel med.	stark strong	7-	kein none	leicht slight	mittel med.	stark strong	6	kein none	leicht slight	mittel med.	stark strong
Balance VA/HA Balance FA/RA	9			8-			6			7+			6-												
<b>Längsdynamik Longitudinal dynamics</b>																									
Traktion Traction	8			7			7			8			6												
Bremsen Braking	8			8			8			8			7												
Ø Bewertung Average rating	8,31			7,56			6,54			7,18			6,15			7,15									
Relative zu allen Reifen Compared to the average of all tires	116,3%			105,8%			91,5%			100,4%			86,0%			100%									
<b>Rundenzeiten Laptimes</b>																									
Runde 1 Lap 1	01:14,80			01:15,19			01:15,44			01:15,11			01:15,78												
Runde 2 Lap 2	01:14,89			01:15,23			01:15,27			01:15,16			01:15,58												
Runde 3 Lap 3	01:14,95			01:15,11			01:15,91			01:15,04			01:15,59												
Mittelwert Rundenzeit Average lap time	01:14,88			01:15,18			01:15,54			01:15,10			01:15,65			01:15,27									
Resultierende Geschwindigkeit Resulting speed	81,7			81,4			81,0			81,5			80,9			81,3									
Relative zu allen Reifen Compared to the average of all tires	100,5%			100,1%			99,6%			100,2%			99,5%			100%									
Gesamtergebnis (Zeit und Bewertung) Overall result (Lap times and rating)	108,4%			102,9%			95,6%			100,3%			92,8%												

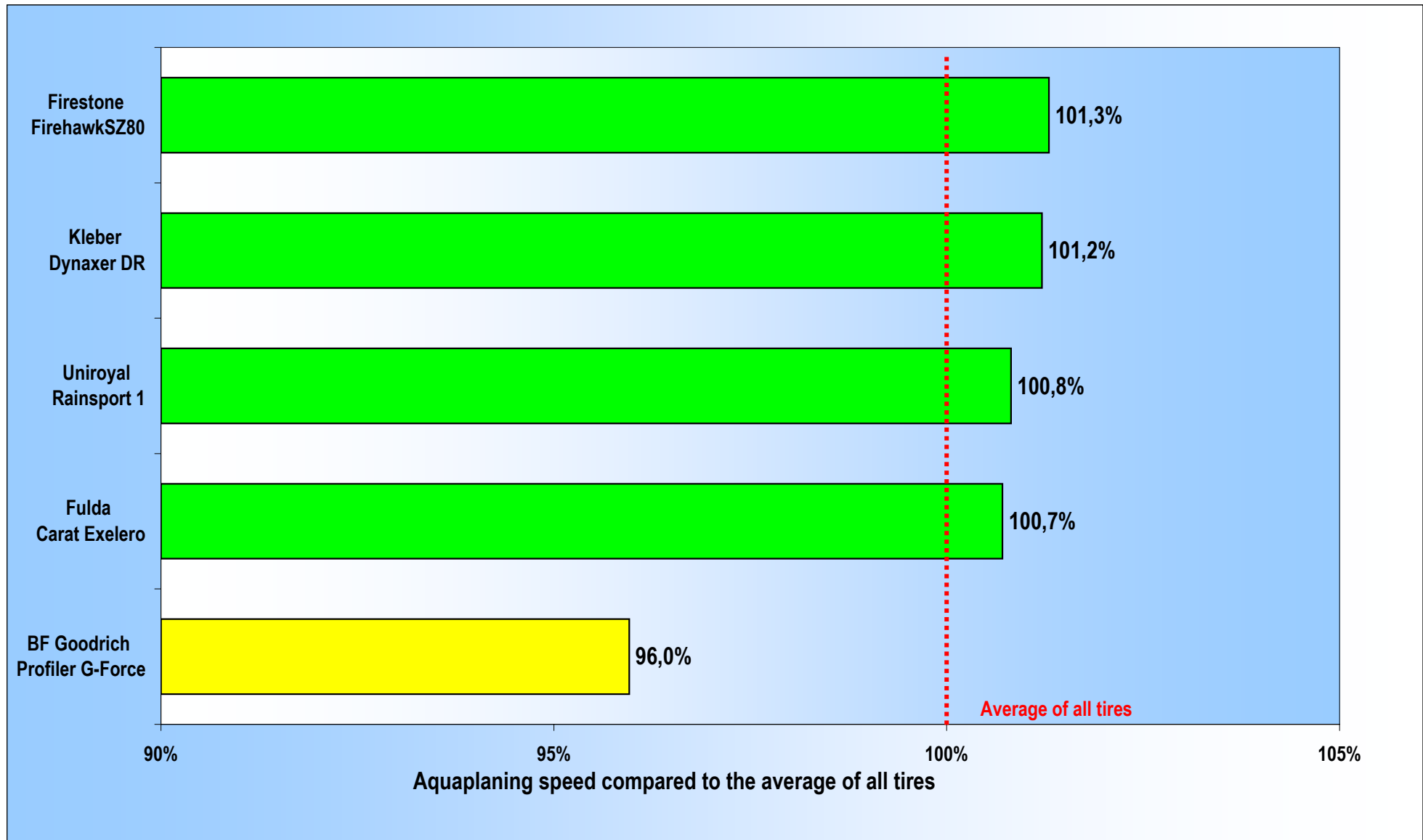
DIAGRAM: ASSESSMENT OF WET HANDLING CRITERIA



## DATASHEET: AQUAPLANING LONGITUDINAL

AQUAPLANING LONGITUDINAL					
<b>Customer:</b>	FULDA Reifen GmbH & Co. KG			<b>Test Track:</b>	Mireval (France)
<b>Date:</b>	25.10.2004			<b>Order No.:</b>	70035683
<b>Air Temperature:</b>	min: 20,5°C	max: 22,0°C		<b>Vehicle:</b>	Golf
<b>Surface Temperature:</b>	min: 20,4°C	max: 20,8°C		<b>Model:</b>	2.0   TDI
<b>Water depth:</b>	8 mm			<b>Type:</b>	Mk V
<b>Tire Size:</b>	225/45 ZR17				
<b>Total vehicle weight:</b>	1610 kg				
<b>Aquaplaning speed</b>	<b>Fulda Carat Exelero</b>	<b>BF Goodrich Profler G-Force</b>	<b>Uniroyal Rainsport 1</b>	<b>Kleber Dynaxer DR</b>	<b>Firestone Firehawk SZ80</b>
Value $x_1$ [km/h]	92,2	87,5	92,3	92,7	92,4
Value $x_2$ [km/h]	92,6	87,5	91,8	92,7	92,6
Value $x_3$ [km/h]	91,6	87,3	92,4	92,8	92,5
Value $x_4$ [km/h]	92,2	88,0	92,6	92,1	92,4
Value $x_5$ [km/h]	91,6	88,2	91,6	92,2	93,0
<b>Mean Value [km/h]</b>	<b>92,0</b>	<b>87,7</b>	<b>92,1</b>	<b>92,5</b>	<b>92,6</b>
Standard Variation [ $\sigma$ n-1]	0,388	0,341	0,377	0,290	0,223
Coefficient of Variation [%]	0,42%	0,39%	0,41%	0,31%	0,24%
<b>Percentage Value [%]</b>	<b>100,0%</b>	<b>95,3%</b>	<b>100,1%</b>	<b>100,5%</b>	<b>100,6%</b>
<b>Difference [%]</b>	<b>0,0%</b>	<b>-4,7%</b>	<b>0,1%</b>	<b>0,5%</b>	<b>0,6%</b>
<b>Compared to average of all tires [%]</b>	<b>100,7%</b>	<b>96,0%</b>	<b>100,8%</b>	<b>101,2%</b>	<b>101,3%</b>

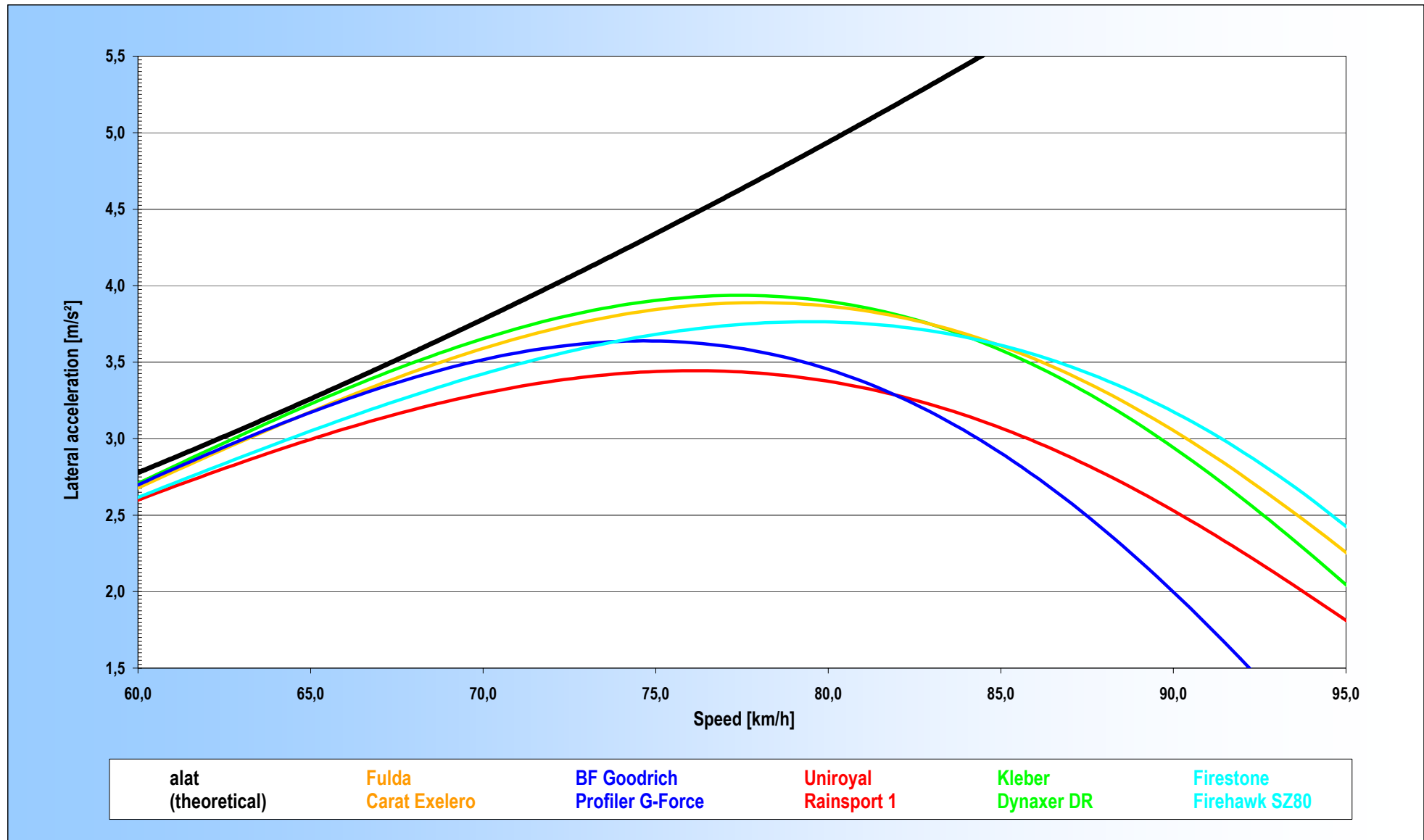
DIAGRAM: AQUAPLANING LONGITUDINAL



## DATASHEET: AQUAPLANING LATERAL

AQUAPLANING LATERAL						
<b>Customer:</b>	FULDA Reifen GmbH & Co. KG					<b>Test Track:</b> Mireval (France)
<b>Date:</b>	26.10.2004					<b>Order No.:</b> 70035683
<b>Air Temperature:</b>	min: 19,7°C	max: 26,1°C				<b>Vehicle:</b> Golf
<b>Water Temperature:</b>	min: 16,8°C	max: 18,5°C				<b>Model:</b> 2.0 I TDI
<b>Tire Size:</b>	225/45 ZR17					<b>Type:</b> Mk V
<b>Total vehicle weight:</b>	1610 kg					<b>Radius:</b> 100 m
						<b>Water depth:</b> ~ 8 mm
Entrance speed [km/h]	$a_{lat}$ (theoretical) [m/s <sup>2</sup> ]	Fulda Carat Exelero	BF Goodrich Profler G-Force	Uniroyal Rainsport 1	Kleber Dynaxer DR	Firestone Firehawk SZ80
65	3,26	3,18	3,18	3,00	3,25	3,05
70	3,78	3,60	3,53	3,30	3,68	3,43
75	4,34	3,83	3,65	3,44	3,90	3,68
80	4,94	3,88	3,48	3,40	3,93	3,75
85	5,57	3,68	2,90	3,08	3,65	3,63
90	6,25	3,03	1,98	2,53	2,95	3,18
95	6,96	2,43	0,70	1,88	2,23	2,60
<b><math>a_{lat}</math> max. / corresponding speed:</b>		<b>3,90 / 78,0</b>	<b>3,65 / 75,0</b>	<b>3,45 / 76,0</b>	<b>3,95 / 77,5</b>	<b>3,75 / 79,5</b>
<b>Performance compared to the average of all tires:</b>		<b>104,3%</b>	<b>97,6%</b>	<b>92,2%</b>	<b>105,6%</b>	<b>100,3%</b>

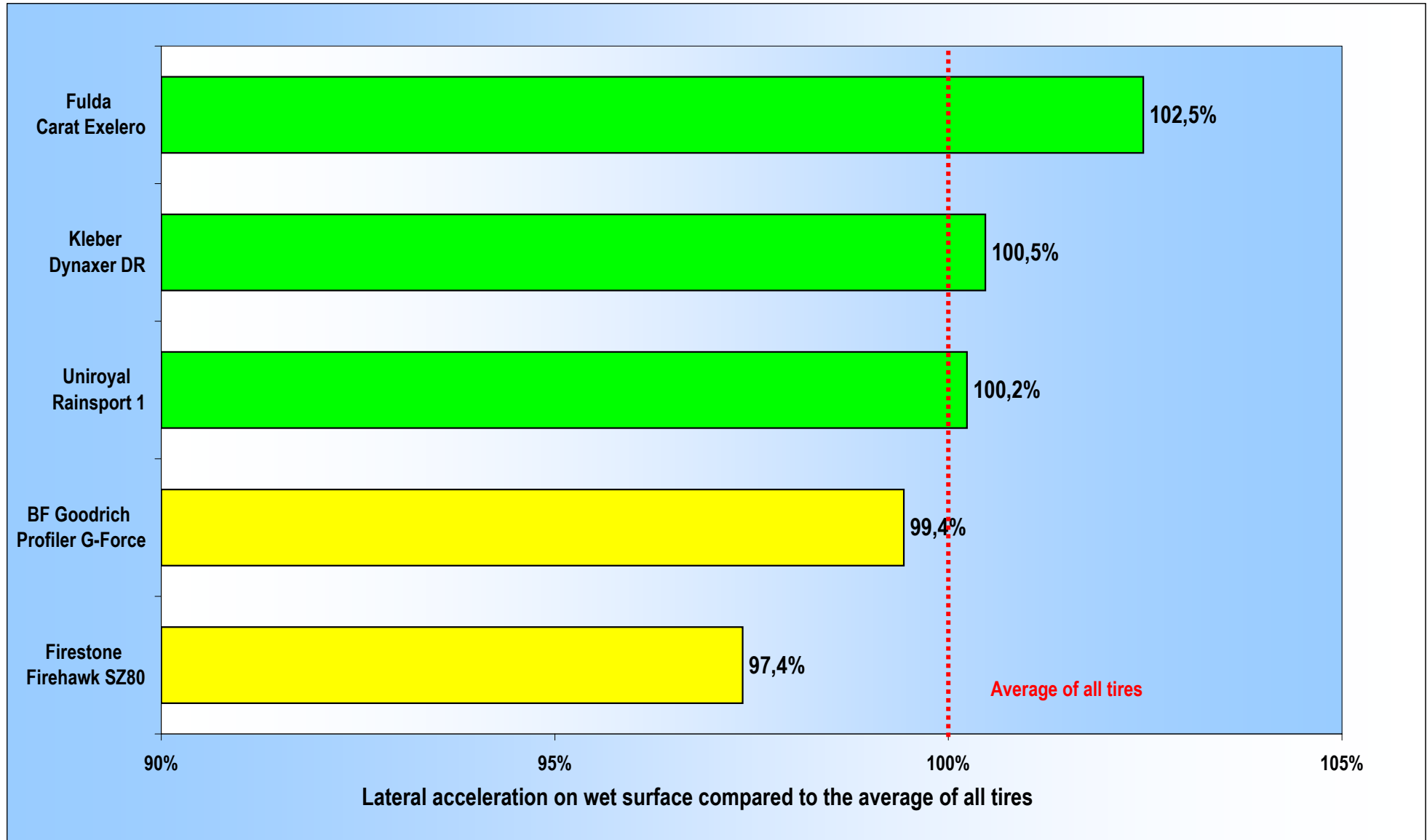
DIAGRAM: COURSE OF LATERAL ACCELERATION



## DATASHEET: LATERAL WET GRIP

LATERAL WET GRIP												
<b>Customer:</b>	FULDA Reifen GmbH & Co. KG						<b>Test Track:</b>	Mireval (France)				
<b>Date:</b>	26.10.2004						<b>Order No.:</b>	70035683				
<b>Air Temperature:</b>	min: 11,5°C		max: 13,5°C		<b>Vehicle:</b>	Golf						
<b>Surface Temperature:</b>	min: 15,4°C		max: 16,0°C		<b>Model:</b>	2.0 I FSI						
<b>Tire Size:</b>	225/45 R17 91 W						<b>Type:</b>	Mk V				
<b>ESP:</b>	off						<b>Skid pad radius [m]:</b>	30				
<b>Total Vehicle Weight:</b>	1540 kg											
	Fulda Carat Exelero		BF Goodrich Profler G-Force		Uniroyal Rainsport 1		Kleber Dynaxer DR		Firestone Firehawk SZ80		Fulda Carat Exelero	
	Lap time [s]	alat [m/s <sup>2</sup> ]	Lap time [s]	alat [m/s <sup>2</sup> ]	Lap time [s]	alat [m/s <sup>2</sup> ]	Lap time [s]	alat [m/s <sup>2</sup> ]	Lap time [s]	alat [m/s <sup>2</sup> ]	Lap time [s]	alat [m/s <sup>2</sup> ]
<b>Lap 1</b>	15,34	5,03	15,53	4,91	15,49	4,94	15,48	4,94	15,78	4,76	15,39	5,00
<b>Lap 2</b>	15,24	5,10	15,54	4,90	15,48	4,94	15,49	4,94	15,75	4,77	15,38	5,01
<b>Lap 3</b>	15,29	5,07	15,54	4,90	15,52	4,92	15,52	4,92	15,76	4,77	15,40	4,99
<b>Lap 4</b>	15,25	5,09	15,52	4,92	15,50	4,93	15,50	4,93	15,72	4,79	15,37	5,01
<b>Lap 5</b>	15,32	5,05	15,56	4,89	15,48	4,94	15,48	4,94	15,77	4,76	15,35	5,03
<b>Mean lap time</b>	15,29		15,54		15,49		15,49		15,76		15,38	
<b>Mean lat. acceleration:</b>	5,07		4,91		4,93		4,93		4,77		5,01	
<b>Reference value:</b>	5,067		5,056		5,044		5,032		5,020		5,008	
<b>Percentage value [%]:</b>	100,0%		97,0%		97,8%		98,0%		95,0%		100,0%	
<b>Difference [%]:</b>	0,0%		-3,0%		-2,2%		-2,0%		-5,0%		0,0%	
<b>Compared to average of all tires [%]</b>	102,5%		99,4%		100,2%		100,5%		97,4%			

DIAGRAM: LATERAL WET GRIP



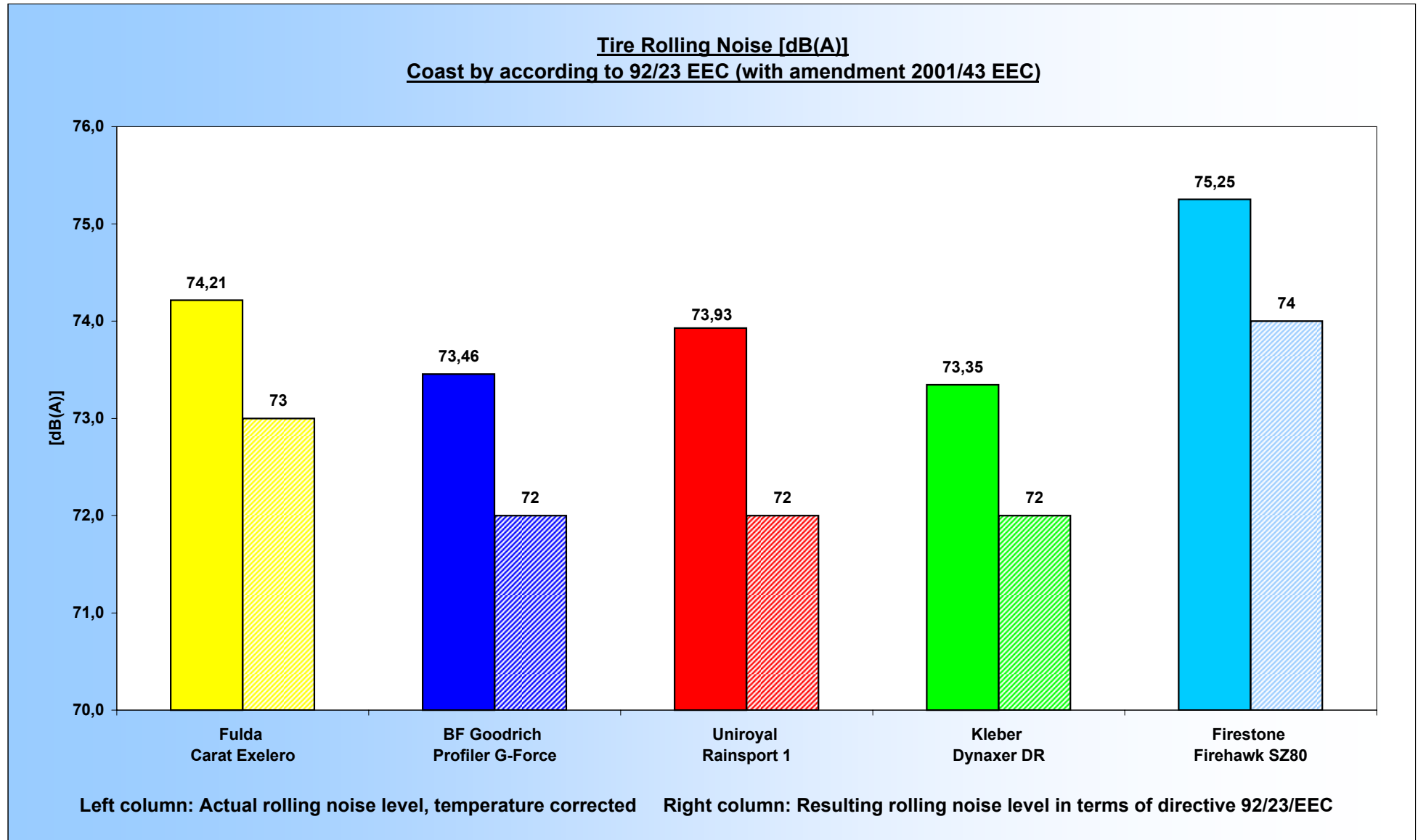
## DATASHEET: NOISE MEASUREMENTS

## NOISE MEASUREMENTS

<b>Test standard:</b>	Coast by according to 92/23/EEC (with amendment 2001/43/EC)		
<b>Proving ground:</b>	TÜV Allach	<b>Test vehicle:</b>	Skoda
<b>Customer:</b>	FULDA Reifen GmbH & Co. KG	<b>Model:</b>	Oktavia
<b>Tire size:</b>	225/45 ZR17	<b>Type:</b>	2,0 TDI
<b>Load FA:</b>	950	<b>Date:</b>	24.11.2004
<b>Load RA:</b>	890	<b>Tire inflation FA:</b>	1,8
<b>Reference temperature:</b>	20	<b>Tire inflation RA:</b>	1,8
<b>Gradient: <math>T_{\text{surface}} &lt; T_{\text{ref}}</math></b>	0,06	<b>Reference speed:</b>	80
<b>Gradient: <math>T_{\text{surface}} &gt; T_{\text{ref}}</math></b>	0,03	<b>Noise limit acc. to Directive 92/23/EEC:</b>	76 dB(A)

	Air temperature [°C]	Surface temperature [°C]	Noise [dB(A)]	Correction [dB(A)]	Result [dB(A)]	Result in terms of Directive 92/23/EEC [dB(A)]
Fulda Carat Exelero	7,2	11,6	74,719	-0,504	74,21	73
BF Goodrich Profilor G-Force	6,3	12,5	73,906	-0,450	73,46	72
Uniroyal Rainsport 1	5,0	5,9	74,775	-0,846	73,93	72
Kleber Dynaxer DR	6,8	11,6	73,850	-0,504	73,35	72
Firestone Firehawk SZ80	5,9	6,8	76,044	-0,792	75,25	74

DIAGRAM: NOISE LEVELS



DATASHEET: ROLLING RESISTANCE MEASUREMENTS

ROLLING RESISTANCE												
<b>Customer:</b>	FULDA Reifen GmbH & Co. KG					<b>Test location:</b>	TÜV Automotive, Munich					
<b>Order-No.:</b>	70035683					<b>Test rig:</b>	H8					
<b>Test standard:</b>	ISO 8767					<b>Drum-Ø:</b>	2000 mm					
<b>Test method:</b>	Electrical power method					<b>Tire size:</b>	225/45 ZR17					
<b>Test rim:</b>	alloy, 7,5 x 17					<b>Test load:</b>	492 kg					
	<b>Fulda Carat Exelero</b>		<b>BF Goodrich Profler G-Force</b>		<b>Uniroyal Rainsport 1</b>		<b>Kleber Dynaxer DR</b>		<b>Firestone Firehawk SZ80</b>		<b>Average of all tires</b>	
Ambient temperature min.:	25,5		27,7		25,5		25,3		25,4			
Ambient temperature max.:	25,6		28,5		25,6		25,4		25,8			
Tire weight:	20,95		21,75		20,95		21,6		22,85			
	<b>C<sub>R</sub></b>	<b>F<sub>R</sub> [N]</b>	<b>C<sub>R</sub></b>	<b>F<sub>R</sub> [N]</b>	<b>C<sub>R</sub></b>	<b>F<sub>R</sub> [N]</b>	<b>C<sub>R</sub></b>	<b>F<sub>R</sub> [N]</b>	<b>C<sub>R</sub></b>	<b>F<sub>R</sub> [N]</b>	<b>C<sub>R</sub></b>	<b>F<sub>R</sub> [N]</b>
Run 1 (50 km/h):	1,08	52,27	1,15	55,55	0,95	46,07	1,13	54,51	1,21	58,32	<b>1,10</b>	<b>53,34</b>
Run 2 (90 km/h):	1,12	54,02	1,17	56,37	1,00	48,06	1,15	55,48	1,24	59,75	<b>1,14</b>	<b>54,74</b>
Run 3 (120 km/h):	1,15	55,32	1,19	57,39	1,03	49,58	1,17	56,46	1,26	60,85	<b>1,16</b>	<b>55,92</b>
<b>Mean Value</b>	<b>1,12</b>	<b>53,87</b>	<b>1,17</b>	<b>56,44</b>	<b>0,99</b>	<b>47,90</b>	<b>1,15</b>	<b>55,48</b>	<b>1,24</b>	<b>59,64</b>	<b>1,13</b>	<b>54,67</b>
<b>Compared to average of all tires [%]</b>	<b>101,5%</b>		<b>96,8%</b>		<b>112,4%</b>		<b>98,5%</b>		<b>90,9%</b>		<b>100,0%</b>	

DATASHEET: HIGH SPEED TEST

HIGH SPEED DURABILITY											
<b>Customer:</b>	FULDA Reifen GmbH & Co. KG					<b>Test location:</b>	TÜV Automotive, Munich				
<b>Order-No.:</b>	70035683					<b>Test rig:</b>	K1				
<b>Test standard:</b>	ECE R30 + Extension					<b>Drum-Ø:</b>	2000 mm				
<b>Test inflation:</b>	3,2 bar					<b>Tire size:</b>	225/45 ZR17				
<b>Test rim:</b>	alloy, 7,5 x 17					<b>Test load:</b>	418 kg				
	<b>Fulda Carat Exelero</b>										
<b>ECE R30</b>	Stage	Time	Speed								
	1	20 min	0 - 270 km/h								
	2	10 min	270 km/h								
	3	10 min	280 km/h								
	4	10 min	290 km/h								
	5	10 min	300 km/h								
<b>Result</b>	<b>no defect</b>										
<b>Extension (2° camber, top speed, max. 1 h)</b>	1	60	300 km/h								
<b>Result</b>	<b>no defect</b>										