SPEED TECHNOLOGY

SPEED Communication Technology Limited

Approval Sheet of

MF25D

Internal Antenna

Customer/Project	MF25D	Band	G850/P900/DCS/PCS/W1//W2 /W4/W5/W8/ LTE 1 /LTE2/LTE4/LTE5/LTE7/LTE8/LTE12/LTE 38
SCT P/N		Version	A
Check		Design	
Date		Confirm by	
Speed Communication Technology			

Report Name	Wf721	Customer	ZTE
Date	2015.04.08	Version	A
Owner	Jixiangsheng	Reviewed by	Jixiangsheng

CONTENT

1. General information

This report indicates the RF report of MF25D, this project is EUFI ,covers G850/P900/DCS/PCS/W1//W2/W4/W5/W8/
LTE 1 /LTE2/LTE4/LTE5/LTE7/LTE8/LTE12/LTE 38 concept is External antenna.

2. Test information

2.1 Test picture

The antennas were evaluated using the customer provided prototype phone. Figure 1 shows the antenna mounted on the test fixture. Figure 2 shows the diversity antenna mounted on the test fixture.

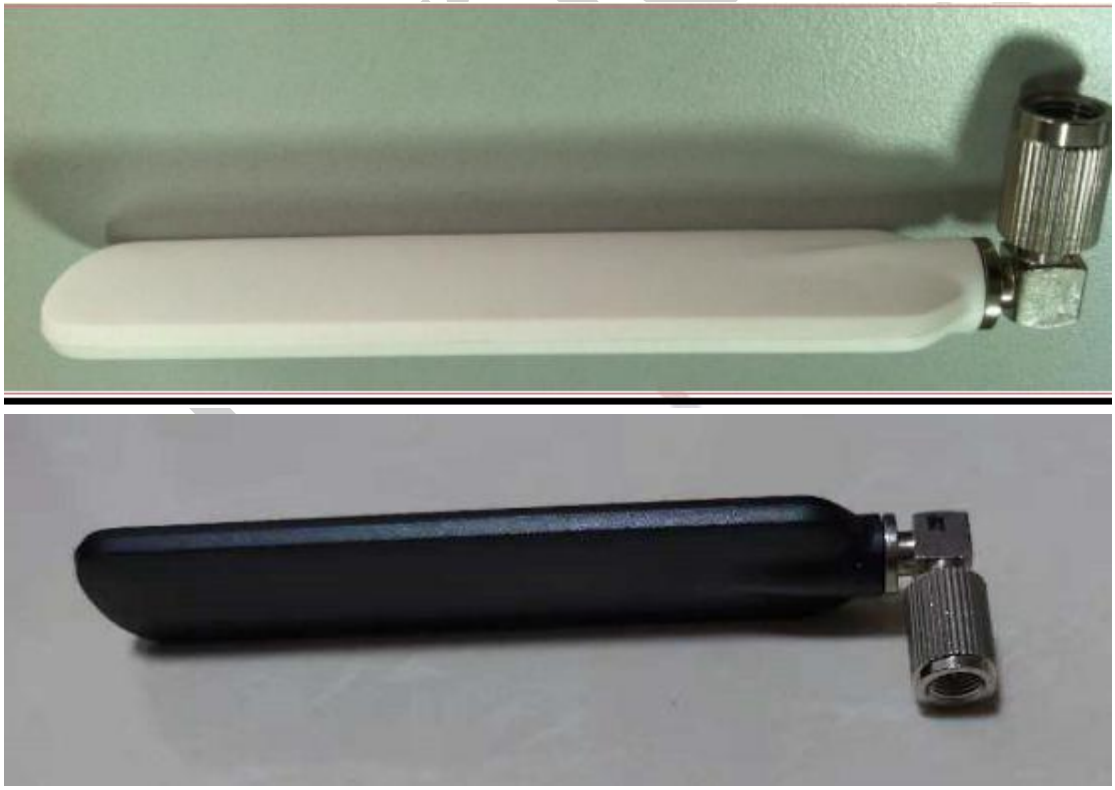


Figure.1 antenna

Figure.2 The machine picture

3. Set up

3.1 Return Loss, VSWR

Return Loss, VSWR were performed using Agilent E5071C Network Analyzer and the previously described test fixture. A ferrite-loaded coaxial cable was used to mitigate surface currents on the outside of the cabling. The testing was performed in free space.

Figure3 Network Analyzer

3.2 Efficiency

The efficiency of the antenna was measured in the Speed Communication Technology anechoic chamber. The chamber provides less than –40 dB reflectivity from 700MHz through 67GHz . The measurement results are calibrated using both dipole and leaky wave horn standards.

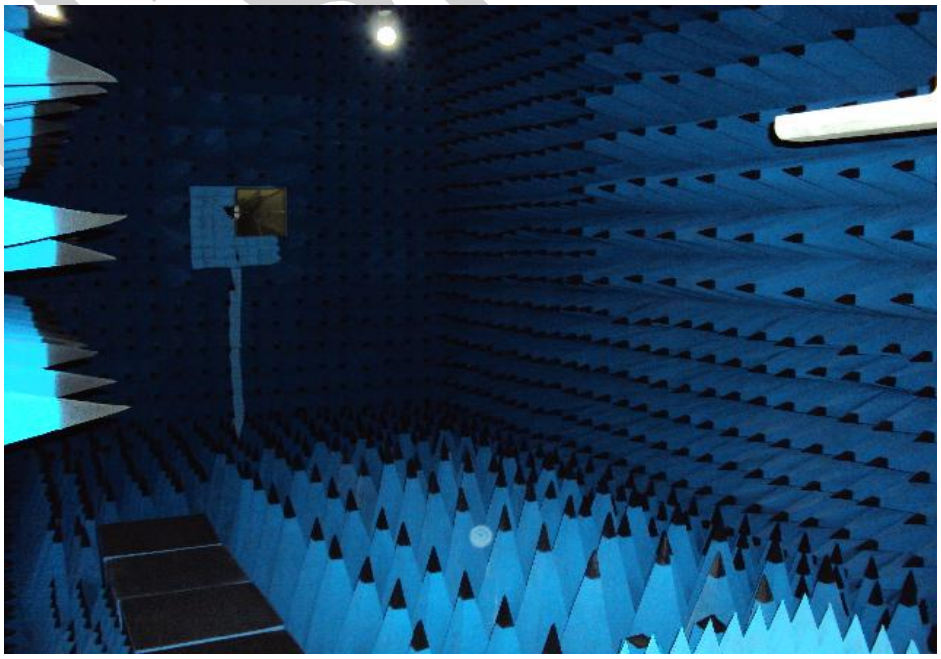


Figure.4 XI'AN speed chamber system

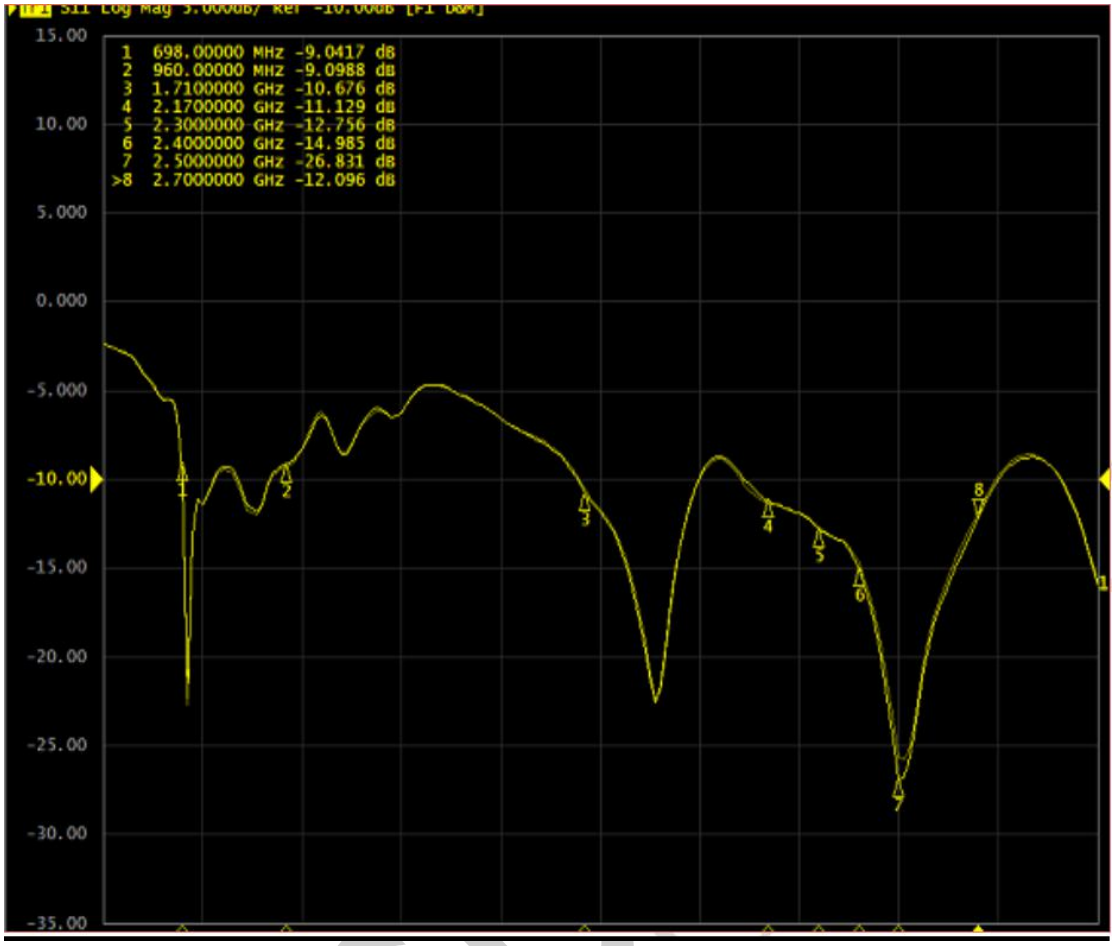
3.3 TRP Measurement Procedure and Settings

The following procedure shall be applied:
• Establish a call to the mobile, set maximum RF output power.
• Execute a full three dimensional (3D) measurement as described and Using:
Δφ ≤ 22.5°
ΔΘ ≤ 15°
And at three TX frequencies according to: low, mid and high.
(Note: CTIA asks for: 15° and 15°)
• Measure both vertical and horizontal polarization's.
• Calculate one TRP value for the appropriate band as described in 2.

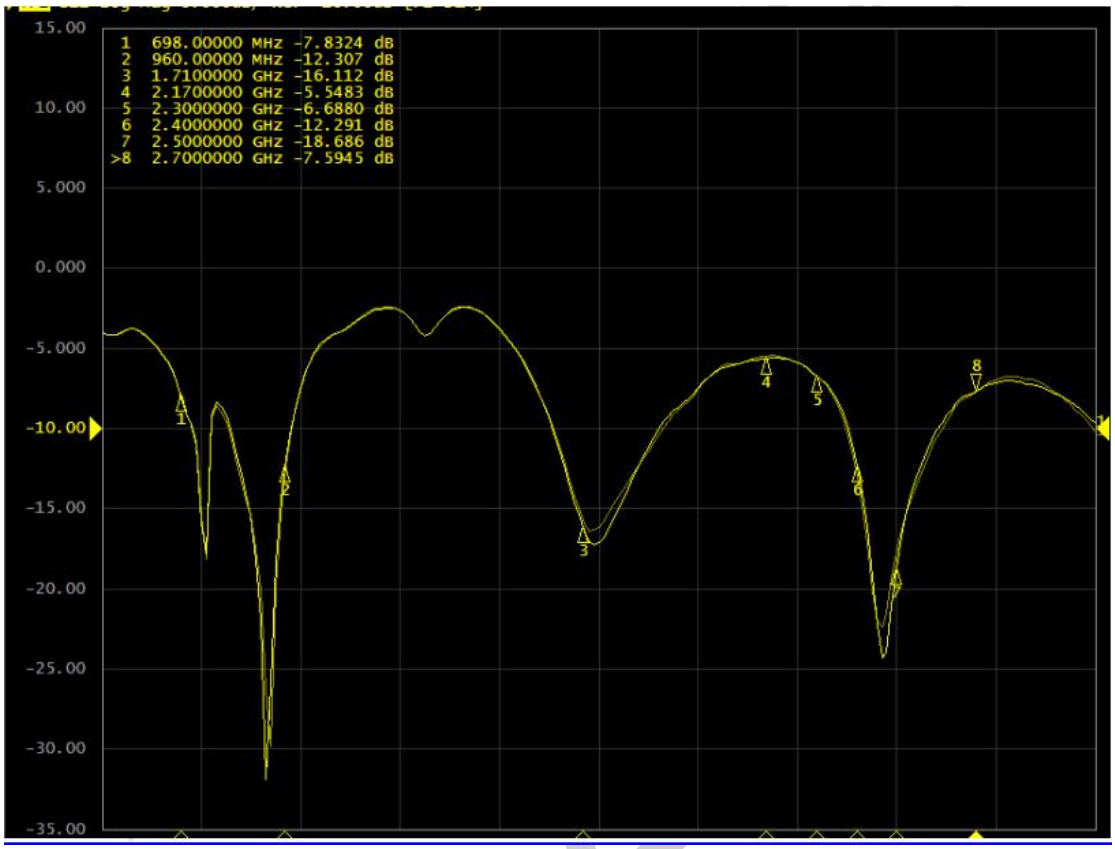
3.4 TIS Measurement Procedure and Settings

The following procedure shall be applied:
• Establish a call to the mobile, set maximum RF output power.
• Execute a full three dimensional (3D) measurement as described Using:
Δφ ≤ 30°
ΔΘ ≤ 30°
• Measure both vertical and horizontal polarizations.
• An estimation of the additional uncertainty caused by the "pattern is equal" assumption shall be provided

4. Measurement Data



4.1 S11 of Main antenna



4.2 S11 of Aux antenna

Frequency(MHz)	Efficiency (%)	Efficiency (dB)	Peak Gain (dBi)
690	35%	-4.50	-0.48
700	36%	-4.38	0.22
710	38%	-4.25	0.95
720	40%	-3.95	1.57
730	44%	-3.54	1.25
740	48%	-3.16	1.28
750	48%	-3.14	1.20
760	57%	-2.48	1.34
770	62%	-2.06	1.90
780	65%	-1.90	2.23
790	63%	-1.98	2.18
800	64%	-1.97	2.02
810	59%	-2.29	1.40
820	57%	-2.45	0.91
830	55%	-2.57	0.64
840	55%	-2.62	0.62
850	54%	-2.69	0.47
860	53%	-2.73	0.33
870	53%	-2.77	0.26
880	51%	-2.90	0.03
890	50%	-3.02	-0.15
900	49%	-3.08	-0.25
910	46%	-3.36	-0.62
920	43%	-3.62	-0.88
930	41%	-3.85	-1.14
940	38%	-4.26	-1.71
950	35%	-4.50	-2.09
960	43%	-3.70	-2.34

Frequency(MHz)	Efficiency (%)	Efficiency (dB)	Peak Gain (dBi)
1710	54%	-2.66	2.80
1730	60%	-2.25	2.95
1750	69%	-1.63	3.12
1770	69%	-1.61	3.10
1790	56%	-2.51	2.67
1810	55%	-2.57	2.33
1830	68%	-1.69	2.12
1850	68%	-1.70	1.87
1870	69%	-1.62	1.85
1890	71%	-1.51	1.71
1910	73%	-1.36	1.63
1930	60%	-2.19	1.92
1950	67%	-1.77	2.02
1970	67%	-1.75	2.12
1990	65%	-1.90	2.17
2010	58%	-2.37	2.02
2030	53%	-2.77	1.79
2050	51%	-2.95	1.44
2070	62%	-2.11	1.25
2090	60%	-2.19	1.21
2110	55%	-2.57	0.87
2130	53%	-2.78	0.54
2150	57%	-2.48	1.14
2170	56%	-2.55	1.69
2190	49%	-3.08	1.83
2210	49%	-3.06	1.70
2230	57%	-2.48	2.04
2250	67%	-1.76	2.58

Frequency(MHz)	Efficiency (%)	Efficiency (dB)	Peak Gain (dBi)
2270	66%	-1.79	3.26
2290	65%	-1.84	3.63
2310	64%	-1.96	3.52
2330	57%	-2.48	3.32
2350	54%	-2.71	3.32
2370	56%	-2.48	3.47
2390	56%	-2.55	3.37
2410	55%	-2.60	3.36
2430	56%	-2.48	3.51
2450	62%	-2.06	3.62
2470	63%	-2.00	3.56
2490	58%	-2.39	3.20
2510	55%	-2.59	2.90
2530	48%	-3.23	2.55
2550	53%	-2.79	2.10
2570	53%	-2.76	1.64
2590	52%	-2.85	1.21
2610	52%	-2.80	1.15
2630	52%	-2.83	1.23
2650	51%	-2.89	1.25
2670	50%	-2.97	1.13
2690	50%	-3.03	1.13
2700	50%	-3.02	1.06

4.3 Efficiency of Main antenna

Frequency(MHz)	Efficiency (%)	Efficiency (dB)	Peak Gain (dBi)
690	34%	-4.67	-1.46
700	32%	-4.99	-1.76
710	31%	-5.09	-1.98
720	34%	-4.75	-0.79
730	38%	-4.24	0.34
740	43%	-3.68	1.65
750	53%	-2.74	2.59
760	62%	-2.08	2.81
770	63%	-2.00	2.44
780	59%	-2.27	1.82
790	52%	-2.83	1.00
800	46%	-3.40	0.09
810	41%	-3.82	-0.14
820	39%	-4.05	-0.29
830	38%	-4.18	-0.30
840	40%	-4.01	-0.10
850	40%	-3.95	0.02
860	41%	-3.92	0.03
870	40%	-4.03	-1.00
880	39%	-4.09	-0.20
890	36%	-4.42	-0.60
900	34%	-4.68	-0.86
910	33%	-4.86	-0.96
920	32%	-5.00	-0.99
930	32%	-4.89	-0.79
940	33%	-4.81	-0.62
950	33%	-4.85	-0.58
960	31%	-5.05	-0.73

Frequency(MHz)	Efficiency (%)	Efficiency (dB)	Peak Gain (dBi)
1710	50%	-3.03	3.49
1730	55%	-2.58	3.36
1750	61%	-2.15	3.04
1770	62%	-2.06	3.04
1790	58%	-2.36	2.68
1810	53%	-2.73	2.32
1830	49%	-3.06	1.90
1850	45%	-3.43	1.36
1870	48%	-3.21	1.25
1890	51%	-2.97	1.21
1910	52%	-2.87	1.59
1930	55%	-2.57	2.16
1950	60%	-2.23	2.76
1970	63%	-1.99	3.33
1990	61%	-2.16	3.65
2010	57%	-2.41	3.62
2030	57%	-2.42	3.48
2050	55%	-2.60	3.20
2070	53%	-2.78	3.11
2090	50%	-3.02	2.96
2110	44%	-3.53	2.66
2130	42%	-3.75	2.72
2150	43%	-3.62	2.98
2170	46%	-3.35	3.27
2190	47%	-3.26	3.27
2210	45%	-3.47	3.01
2230	49%	-3.09	3.06
2250	57%	-2.46	3.24

Frequency(MHz)	Efficiency (%)	Efficiency (dB)	Peak Gain (dBi)
2270	61%	-2.13	3.43
2290	61%	-2.15	3.43
2310	54%	-2.67	3.11
2330	49%	-3.11	3.01
2350	48%	-3.23	3.20
2370	51%	-2.89	3.64
2390	49%	-3.12	3.63
2410	45%	-3.51	3.39
2430	42%	-3.75	3.20
2450	51%	-2.94	2.84
2470	47%	-3.24	2.48
2490	45%	-3.45	1.63
2510	46%	-3.34	1.20
2530	47%	-3.28	1.15
2550	49%	-3.05	1.55
2570	48%	-3.21	1.50
2590	46%	-3.36	1.23
2610	46%	-3.38	1.14
2630	45%	-3.51	0.98
2650	43%	-3.63	0.94
2670	43%	-3.68	1.02
2690	43%	-3.65	1.16
2700	44%	-3.56	1.29

4.4 Efficiency of Aux antenna

—	Chn	线缆功率	TRP	Chn	主线缆灵敏度	主 TIS	分集线缆灵敏度	分集 TIS
W900	2712	23.20	19.62	2937	-110.0	—	-110.0	—
	2788	23.00	19.67	3012	-110.0	—	-110.5	—
	2863	22.60	18.76	3088	-110.0	-105.2	-110.0	—
—	—	—	—	—	—	—	—	—
AWS	1312	23.10	21.66	1537	-109.5	—	-109.0	—
	1413	23.30	21.27	1637	-109.0	—	-108.5	—
	1513	23.20	21.35	1738	-109.0	-105.2	-109.0	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
W1900	9262	22.90	20.37	9662	-109.0	—	-109.5	—
	9400	22.80	20.82	9800	-108.5	—	-109.5	—
	9538	22.80	20.96	9938	-108.0	-105.7	-109.5	—
—	—	—	—	—	—	—	—	—
LTE band 8	21500	23.10	19.00	3500	-98.9	—	-98.1	—
	21625	22.90	19.09	3625	-98.8	—	-97.7	—
	21750	23.00	18.68	3750	-98.3	-93.9	-97.3	-93.5
—	—	—	—	—	—	—	—	—
LTE band 38	37800	22.50	20.21	37800	-95.6	—	-94.8	—
	38000	21.40	19.28	38000	-95.6	—	-93.1	—
	38200	21.60	19.69	38200	-95.8	-93.5	-94.8	-94.2

—	—	—	—	—	—	—	—	—
LTE band 2	18650	22.10	20.91	650	-96.7	—	-97.7	—
	18900	21.80	20.26	900	-96.7	—	-98.4	—
	19150	21.60	20.08	1150	-96.0	-94.5	-98.0	-95.6
—	—	—	—	—	—	—	—	—
LTE band 4	20000	22.20	20.53	2000	-96.5	—	97.9	—
	20175	22.30	20.98	2175	-96.5	—	-97.8	—
	20350	22.20	20.42	2350	-96.2	-93.4	-98.0	-97.2
—	—	—	—	—	—	—	—	—
LTE band 12	23050	23.00	20.56	5050	-99.6	—	-100.2	—
	23090	22.60	20.45	5090	-99.6	—	-100.1	—
	23130	22.40	20.14	5130	-99.5	-95.4	-100.1	-93.7
W850	4132	23.60	21.02	4357	-110.5	—	-110.5	—
	4175	23.50	21.27	4407	-111.0	—	-110.5	—
	4233	23.50	20.42	4457	-111.0	-108.6	-110.0	—
—	—	—	—	—	—	—	—	—

W2100	9612	23.60	21.33	10562	-109.0	__	-107.0	__
	9750	23.40	21.38	10700	-109.0	__	-107.5	__
	9888	23.60	21.65	10838	-108.5	-106.3	-107.5	__
__	__	__	__	__	__	__	__	__
GSM 850	128	33.30	29.97	128	-109.5	__	__	__
	190	32.90	29.65	190	-109.5	__	__	__
	251	32.80	29.65	251	-109.5	-105.5	__	__
__	__	__	__	__	__	__	__	__
GSM 900	1	32.50	28.35	1	-108.5	__	__	__
	62	32.70	27.95	62	-108.5	__	__	__
	124	28.90	27.94	124	-107.5	-104.0	__	__
__	__	__	__	__	__	__	__	__
DCS 1800	512	29.20	27.10	512	-108.0	__	__	__
	698	29.00	27.01	698	-108.5	__	__	__
	885	28.90	27.05	885	-107.5	-104.6	__	__
__	__	__	__	__	__	__	__	__
PCS 1900	512	29.30	27.81	512	-107.5	__	__	__
	661	29.20	27.84	661	-107.5	__	__	__
	810	29.20	27.93	810	-107.5	-104.5	__	__
__	__	__	__	__	__	__	__	__

__	__	__	__	__	__	__	__	__
LTE band 1	18050	22.40	20.14	50	-96.6	__	-98.6	__
	18300	21.90	20.68	300	-96.8	__	-98.6	__
	18550	21.90	20.09	550	-96.5	-94.1	-98.7	-97.0
__	__	__	__	__	__	__	__	__
LTE band 7	20800	22.70	20.95	2800	-94.5	__	-95.1	__
	21100	22.50	20.45	3100	-94.8	__	-94.1	__
	21400	22.50	20.35	3400	-92.8	-90.3	-93.3	-91.5
__	__	__	__	__	__	__	__	__
LTE band 5	20450	23.40	19.82	2450	-99.5	__	-99.8	__
	20525	23.30	19.70	2525	-99.6	__	-99.4	__
	20600	23.10	19.42	2600	-99.3	-94.4	-99.6	-94.5

4.5 antenna OTA test result