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Prüfbericht - Nr.: *Test Report No.:*	**19660237 001**		**Seite 1 von 15** *Page 1 of 15*
Auftraggeber: *Client:*	**Blaze Automation Inc.** **2050, Brunswick Plaza-1** **State Highway 27, Suite #201,** **North Brunswick,** **New Jersey - 08902**		
Gegenstand der Prüfung: *Test item:*	**B.One**		
Bezeichnung: *Identification:*	**B.One Hub**	**Serien-Nr.:** *Serial No.*	**Engineering Sample**
Wareneingangs-Nr.: *Receipt No.:*	**1803129254**	**Eingangsdatum:** *Date of receipt:*	**05.10.2017**
Prüfort: *Testing location:*	**Refer Page 4 of 15 for test facilities**		
Prüfgrundlage: *Test specification:*	**FCC Part 15 Subpart C 15.249** **RSS 210 Issue 9** **RSS Gen Issue 4** **ANSI C63.10-2013**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test items passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (India) Pvt. Ltd.** 82/A, 3rd Main, West Wing, Electronic City Phase 1 Hosur Road, Bangalore – 560 100. India **FCC Test site Registration No.: 496599 and IC Registration: 3466E**		

geprüft / *tested by:*

01.11.2017	Girish Kumar G Engineer	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

kontrolliert / *reviewed by:*

10.11.2017	Saibaba Siddapur Assistant Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges / *Other Aspects:* **FCC ID:2AHV7-B-ONEHUB**
IC:21793-B1HUB

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*N/T*	=	*not tested*

Test Result Summary

FCC Clause	IC Clause	Test Item	Result
FCC 15.209 / FCC 15.249(a), 15.249(d)	RSS 210 B.10(a)(b)	Fundamental Field strength, Spurious Radiated Emissions and Restricted Bands of Operation	Pass
FCC 15.215	RSS Gen 4.6	20dB Bandwidth and Occupied Bandwidth	Pass
FCC 15.207	RSS Gen 7.2.4	Conducted emission test on a.c Power line	Pass

Content

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List of Test and Measurement Instruments

TUV Rheinland (India) Pvt. Ltd. , Bangalore

Equipment	Manufacturer	Model Name	Serial Number	Calibration Due Date	Periodicity	Used for Test Items
EMI Test Receiver	Rohde & Schwarz	ESU 40	100288	24.10.2018	Yearly	Spurious Radiated Emissions
Broadband Antenna	Frankonia	ALX-4000	ALX-4000-806	10.06.2018	Yearly	
Active Loop Antenna	Frankonia	LAX-10	LAX-10-800	22.12.2017	Yearly	
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	16.03.2018	Yearly	
Anechoic Chamber	Frankonia	-	-		-	
LISN	Rohde & Schwarz	ENV216	100022	07.09.2018	Yearly	Conducted Emission on AC power lines
EMI Receiver	Rohde & Schwarz	ESR7	101133	10.12.2017	Yearly	

Testing Facilities:

TUV Rheinland (India) Private Limited
No. 108, West Wing
Electronic city Phase I
Bangalore – 560100

Measurement Uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power	±1,5 dB
Power Spectral Density	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB

General Product Information

Product Function and Intended Use

B.One is the most advanced, powerful and intuitive smart home system that gives the user complete control over his household's security, ambience, entertainment and much more from a single hub and a single app. The hub also sports a Universal IR Remote control along with learning capabilities. With several processors working in tandem, B.One ensures that no alarm or notification is missed, the proprietary self-learning algorithm adapts to the needs of the user making it versatile, smart and unbelievably easy to use.

Ratings and System Details

Operating Frequency Range	902 - 928MHz
Number of Channels	3
Transmitter power	93.19dBuV/m @3m distance
Modulation Type	2FSK (9.6kbps) for 908.42MHz 2FSK (40kbps) for 908.40MHz 2GFSK (100kbps) for 916MHz
Antenna Type	Helical Antenna with 1dBi gain
Supply Voltage	5V DC from Power Adaptor
Environmental	Operational Temperature: -30ºC to 70º C

Test Conditions:

Supply Voltage: 5V DC from Power Adaptor

Environmental conditions:

Temperature: +24.8 º C RH: 62%

Test Set-up and Operation Mode

Principle of Configuration Selection

Transmission was enabled with continuous transmission on low, mid and high channel.

Test Operation and Test Software

HyperTerminal and BG Script code was used to enable the continuous transmission, changing channels (low/mid/high) and data rates on the EUT.

Special Accessories and Auxiliary Equipment

- None

Countermeasures to achieve EMC Compliance

- None

Test Modes – Data Rates and Modulations

For Radiated spurious emissions, the tests were performed in both simultaneous and independent operating mode and worst case test results are mentioned in this report.

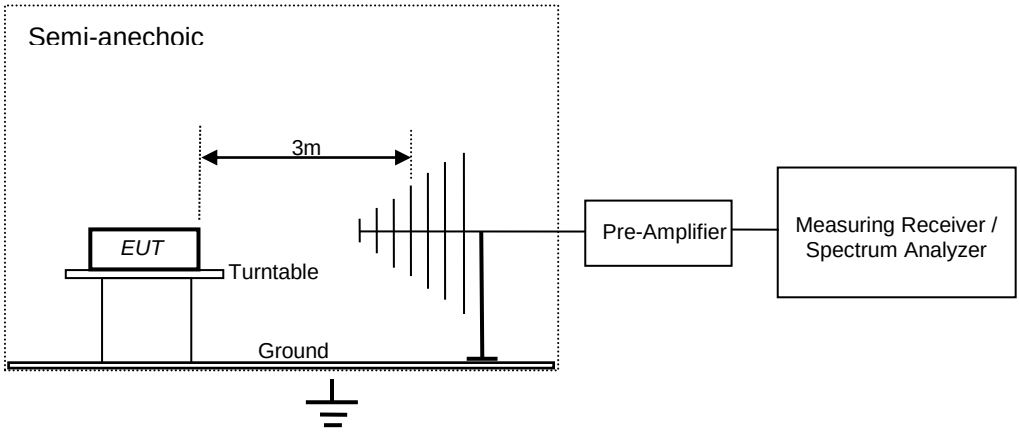
For Conducted emission, the tests were performed in both simultaneous and independent operating mode and worst case test results are mentioned in this report.

Test Methodology

Radiated Emission Test

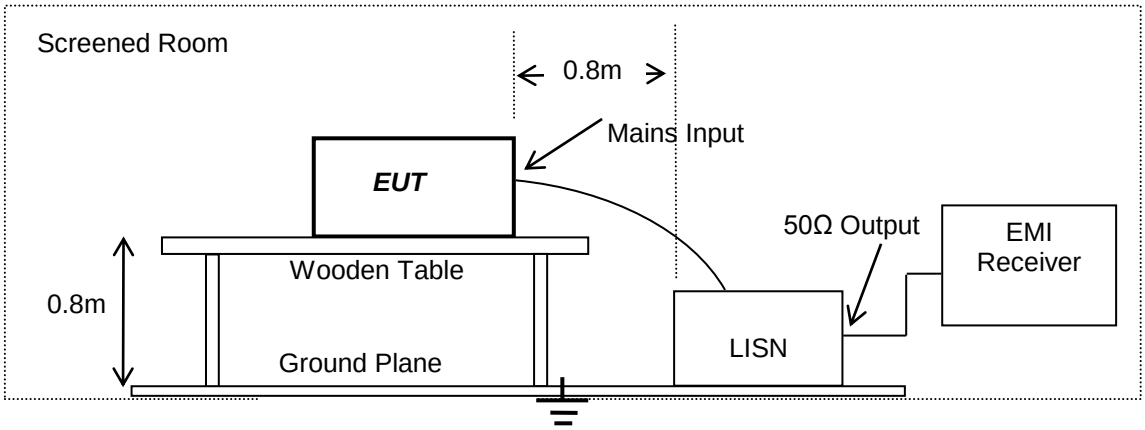
The radiated emission measurement was performed according to the procedures in ANSI C63.10-2013. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable for below 1GHz & 1.5m height for above 1GHz measurement, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000MHz was performed by horn antenna. The measurement below 30MHz was performed by loop antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.



Conducted Emission Test on A.C. mains line

The equipment under test (EUT) was placed on a wooden table 80cm above the ground plane, the LISN was place 80cm away from the EUT. The test was performed in accordance with ANSI C63.10 - 2013, with the following: an initial measurement was performed in peak and average detection mode on the live and neutral lines. The pre-scan was performed by peak detection on both live and neutral conductors. Any emissions recorded within 20dB of the relevant limit line were re-measured using quasi-peak and average detections, the 6 worst cases was recorded in the table of results.



Fundamental Field Strength, Spurious Radiated Emissions and Restricted Bands of Operation

Result **Pass**

Test Specification	FCC Part 15 Section 15.209 & 15.249
Test Method	ANSI C63.10-2013
Measurement Location	Semi Anechoic Chamber
Measuring Distance	3m
Detection	QP for frequency below 1GHz, Peak/Average for frequency above 1GHz
Requirement	As per the limits mentioned in the bellow table

Limit for Radiated Emission of Section 15.209:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

Test Results:

Channel	Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	902.00(QP)	37.89	46.00	-08.11
		908.40 (QP)	92.98	94.00	-01.02
		1816.8 (Pk)	37.06	74.00	-36.94
		1816.8 (Av)	24.16	54.00	-29.84
		2725.2 (Pk)	40.75	74.00	-33.25
		2725.2 (Av)	28.83	54.00	-25.17
	H	902.00(QP)	37.95	46.00	-08.05
		908.40 (QP)	93.19	94.00	-00.81
		1816.8 (Pk)	36.59	74.00	-37.41
		1816.8 (Av)	24.20	54.00	-29.80
		2725.2 (Pk)	40.32	74.00	-33.68
		2725.2 (Av)	29.29	54.00	-24.71
Mid	V	908.42 (QP)	90.55	94.00	-03.45
		1816.84 (Pk)	36.94	74.00	-37.06
		1816.84 (Av)	24.18	54.00	-29.82
		2725.26 (Pk)	40.50	74.00	-33.50
		2725.26 (Av)	29.22	54.00	-24.78
	H	908.42 (QP)	91.86	94.00	-02.14
		1816.84 (Pk)	36.38	74.00	-37.62
		1816.84 (Av)	24.19	54.00	-29.81

		2725.26 (Pk)	40.79	74.00	-33.21
		2725.26 (Av)	29.53	54.00	-24.47
High	V	928.00 (QP)	34.10	46.00	-11.90
		916.00 (QP)	91.03	94.00	-02.97
		1832.00 (Pk)	37.86	74.00	-36.14
		1832.00 (Av)	23.90	54.00	-30.10
		2748.00 (Pk)	41.00	74.00	-33.00
		2748.00 (Av)	28.09	54.00	-25.91
	H	928.00 (QP)	34.45	46.00	-11.55
		916.00 (QP)	92.31	94.00	-01.69
		1832.00 (Pk)	37.17	74.00	-36.83
		1832.00 (Av)	23.82	54.00	-30.18
		2748.00 (Pk)	40.26	74.00	-33.74
		2748.00 (Av)	28.04	54.00	-25.96

- Indicates fundamental frequency

Simultaneous Transmission Enabled:

All radio modules operating at channel low.

Note: Only the worst test case has been updated

Channel	Polarization	Frequency (MHz)	Protocol	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	902.00(QP)	Z-Wave	37.75	46.00	-08.25
		908.40(QP)		92.85	94.00	-01.15
		2390 (Pk)	-	55.29	74.00	-18.71
		2390 (Av)		47.88	54.00	-06.12
		2402 (Pk)	BLE	95.34	-	*
		2402 (Av)		90.89	-	*
		2405 (Pk)	ZigBee	102.37	-	*
		2405 (Av)		96.2	-	*
		2412 (Pk)	Wi-Fi	85.76	-	*
		2412 (Av)		66.81	-	*
		1816.80(Pk)	Z-Wave	36.98	74.00	-37.02
		1816.80(Av)		24.09	54.00	-29.91
		4804 (Pk)	BLE	50.49	74.00	-23.51
		4804 (Pk)		38.6	54.00	-15.4
		4810 (Pk)	ZigBee	57.25	74.00	-16.75
		4810 (Pk)		40.49	54.00	-13.51
		4824 (Pk)	Wi-Fi	56.32	74.00	-17.68
		4824 (Pk)		36.79	54.00	-17.21
	H	902.00(QP)	Z-Wave	37.88	46.00	-08.12
		908.40(QP)		93.15	94.00	-00.85
		2390 (Pk)	-	56.78	74.00	-17.22
		2390 (Av)		50.33	54.00	-03.67
		2402 (Pk)	BLE	98.87	-	*
		2402 (Av)		95.63	-	*
		2405 (Pk)	ZigBee	101.65	-	*
		2405 (Av)		96.77	-	*
		2412 (Pk)	Wi-Fi	88.74	-	*
		2412 (Av)		70.32	-	*
		1816.80(Pk)	Z-Wave	36.55	74.00	-37.45
		1816.80(Av)		24.16	54.00	-29.84
		4804 (Pk)	BLE	50.51	74.00	-23.49
		4804 (Pk)		39.66	54.00	-14.34
		4810 (Pk)	ZigBee	55.36	74.00	-18.64
		4810 (Pk)		39.67	54.00	-14.33
		4824 (Pk)	Wi-Fi	56.23	74.00	-17.77
		4824 (Pk)		36.69	54.00	-17.31

All radio modules operating at channel high.

Note: Only the worst test case has been updated.

Channel	Polarization	Frequency (MHz)	Protocol	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
High	V	928.00 (QP)	Z-Wave	33.89	46.00	-12.11
		916.00 (QP)		90.95	94.00	-03.05
		2480 (Pk)	BLE	94.77	-	*
		2480 (Av)		89.99	-	*
		2480(Pk)	ZigBee	82.81	-	*
		2480(Av)		73.53	-	*
		2462 (Pk)	Wi-Fi	82.67	-	*
		2462 (Av)		63.56	-	*
		1832.00 (Pk)	Z-Wave	37.69	74.00	-36.31
		1832.00 (Av)		23.69	54.00	-30.31
		4960 (Pk)	BLE	51.85	74.00	-22.15
		4960 (Av)		40.23	54.00	-13.77
		4960 (Pk)	ZigBee	55.97	74.00	-18.03
		4960 (Av)		40.02	54.00	-13.98
		4924 (Pk)	Wi-Fi	50.87	74.00	-23.13
		4924 (Pk)		36.53	54.00	-17.47
		2483.5 (Pk)	-	49.41	74.00	-24.59
		2483.5 (Av)		35.86	54.00	-18.14
	H	928.00 (QP)	Z-Wave	34.41	46.00	-11.59
		916.00 (QP)		92.25	94.00	-01.75
		2480 (Pk)	BLE	95.87	-	*
		2480 (Av)		91.97	-	*
		2480(Pk)	ZigBee	86.57	-	*
		2480(Av)		76.9	-	*
		2462 (Pk)	Wi-Fi	87.65	-	*
		2462 (Av)		67.78	-	*
		1832.00 (Pk)	Z-Wave	37.05	74.00	-36.95
		1832.00 (Av)		23.77	54.00	-30.23
		4960 (Pk)	BLE	52.07	74.00	-21.93
		4960 (Av)		38.88	54.00	-15.12
		4960 (Pk)	ZigBee	55.72	74.00	-18.28
		4960 (Av)		40.12	54.00	-13.88
		4924 (Pk)	Wi-Fi	49.51	74.00	-24.49
		4924 (Pk)		36.75	54.00	-17.25
		2483.5 (Pk)	-	52.13	74.00	-21.87
		2483.5 (Av)		37.32	54.00	-16.68

20dB Bandwidth and Occupied Bandwidth

Result **Pass**

Test Results:

Frequency (MHz)	20dB Bandwidth	Frequency FL (MHz)	Frequency FH (MHz)	OBW (MHz)
908.40	0.36	908.220	908.580	0.26
916.00	0.345	915.827	916.172	0.27

Conducted Emission Test on A.C. Power Line

Result **Pass**

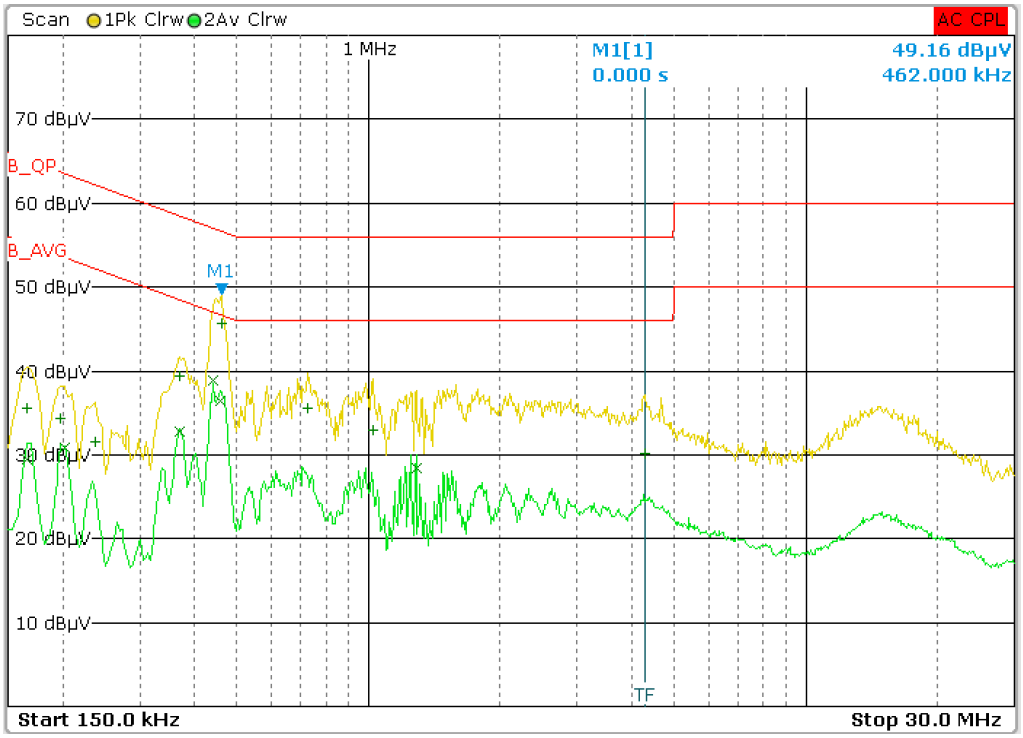
Test Specification	:	FCC Part 15 Section 15.207
Test Method	:	ANSI C63.10-2013
Testing Location	:	Screened room
Measurement Bandwidth	:	9kHz
Frequency Range	:	150kHz – 30MHz
Supply Voltage	:	120VAC,60Hz

Limit of section 15.207

Frequency of emission (MHz)	QP Limit (dBµV)	AV Limit (dBµV/m)
0.15 – 0.5	66 – 56*	56 – 46*
0.5 – 5	56	46
5 – 30	60	50

* Decreases with the logarithm of the frequency

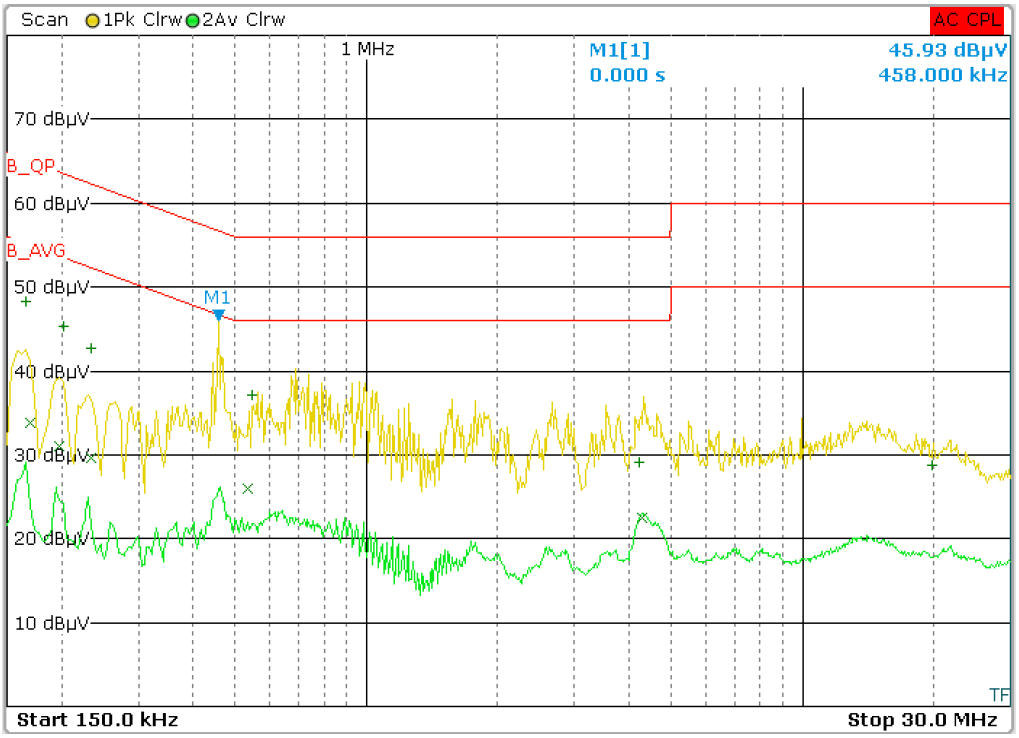
Test Result:



Line Graph

Frequency [MHz]	Emission Level [dBµV]	Limit [dBµV]	Detector
0.462	45.65	56.66	Quasi Peak
0.370	39.45	58.50	Quasi Peak
0.726	35.48	56.00	Quasi Peak
0.198	34.40	63.69	Quasi Peak
1.02	33.01	56.00	Quasi Peak
4.28	30.18	56.00	Quasi Peak
0.442	38.93	47.02	Average
0.458	36.34	46.73	Average
0.370	32.77	48.50	Average
1.28	28.47	46.00	Average
0.202	30.79	53.53	Average
0.166	29.44	55.16	Average

Line: Table



Neutral Graph

Frequency [MHz]	Emission Level [dBµV]	Limit [dBµV]	Detector
0.166	48.20	65.16	Quasi Peak
0.202	45.39	63.53	Quasi Peak
0.546	37.16	56.00	Quasi Peak
0.234	42.62	62.31	Quasi Peak
4.222	29.04	56.00	Quasi Peak
19.85	28.79	60.00	Quasi Peak
0.534	26.02	46.00	Average
0.170	33.87	54.96	Average
0.198	31.09	53.69	Average
0.234	29.58	52.31	Average
4.286	22.52	46.00	Average

Neutral: Table

**********END of Test Report**********