Prüfbericht - Nr.: *Test Report No.:*	**ULR-TC568819300000030F 001**	**Seite 1 von 27** *Page 1 of 27*

Auftraggeber: *Client:*	**Hill-rom Services Private Limited** **1 Yishun Avenue 7, Singapore 768923**
Gegenstand der Prüfung: *Test item:*	**Airway clearance device**
Bezeichnung: *Identification:*	**POPT1** **Serien-Nr.:** *Serial No.* **U044OP0050**
Wareneingangs-Nr.: *Receipt No.:*	**166120073** **Eingangsdatum:** *Date of receipt:* **01-04-2019**
Prüfort: *Testing location:*	**Refer** Page 5 of 27 **for Test site details**
Prüfgrundlage: *Test specification:*	**FCC Part 15: Subpart C** **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.** 27/B, 2nd corss, Electronic City Phase 1 Bangalore – 560 100. India FCC Test Site Registration no.: **496599**

geprüft / *tested by:*			**kontrolliert** / *reviewed by:*		
03.04.2019	Pramod Sharma R Engineer		25.06.2019	Mahammadgouse Kaladagi Senior Engineer	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges / *Other Aspects:* **FCC ID: 2AJKO-OPTIMUS**

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***

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

Test Summary

Section	Test item	Result
15.247 (b) (3)	Maximum Conducted Output Power	Pass
15.247 (a) (2)	6 dB / DTS Bandwidth	NA
15.247 (e)	Maximum Power Spectral Density	NA
15.247 (d)	Emissions in non – restricted band	NA
15.247 (a)(1)	Conducted Spurious Emissions	NA
15.247 (d) / (15.209 & 15.205)	Radiated spurious emissions and emissions in Restricted bands of operation	Pass
15.207	Conducted emission on A.C power lines	Pass

NA-Not applicable

Product Variants:

Variant	Model Number	Modes available
1	POPT1	Maximus™System
2	PSC1	Synclara™ Cough System
3	PVL1	Volara™ Cough System

Note:

1. Model POPT1 is the highest configuartion where it has both synclara and volara modes available , hence the testing is carried out on this model.
2. This product contains approved WiFi and Bluetooth module. Only radiated spurious emission tests will be performed for both Wi-Fi and Bluetooth . For other Wi-Fi and Bluetooth test results, please refer FCC ID XF6-RS9113DB and SQGBT900 respectively.
3. This Product also contains Unapproved RFID Module with frequency 13.56MHz, for test results refer test report number ULR-TC568819300000029F 001.

Table of Contents

1 GENERAL REMARKS

1.1 Complimentary Materials

All attachments are integral part of this test report. This applies especially to the following appendix:

1. TEST SETUP PHOTOS

2: EUT EXTERNAL PHOTOS

3: EUT INTERNAL PHOTOS

4: FCC LABEL AND LABEL LOCATION

5: BLOCK DIAGRAM

6: SPECIFICATION OF EUT

7: SCHEMATIC DIAGRAM

8: BILL OF MATERIAL

9: USER MANUAL

2 TEST SITES

2.1 Testing Facilities

1) TUV Rheinland (India) Private Limited
108 , Beside ISBR Business School,
Electronic city Phase I
Bangalore - 560 100.

2) TUV Rheinland (India) Private Limited
27/B, 2nd Cross,
Electronic City Phase 1, Bangalore- 560100

2.2 List of Test and Measurement Instruments

Table 1: List of test and measurement instruments

Equipment	Manufacturer	Model Name	Serial Number	Calibration Due Date	Periodicity	Used for Test Items
USB Peak power sensor	AIMIL Ltd	55006	10231	22-12-2019	Yearly	Antenna-Port conducted Measurements
EMI Test Receiver	Rohde & Schwarz	ESU 40	100288	11/10/2019	Yearly	Radiated Spurious Emission
Active loop antenna	Frankonia	LAX-10	LAX-10-800	15-01-2020	Yearly	
Biconical Antenna	ETS	3142D	81354	09/07/2019	Yearly	
Log-Periodic Antenna	Schwarzbeck mess-elektronik	VUSLP-9111B	9111B-111	17-01-2020	Yearly	
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	17-05-2019	Yearly	
Semi Anechoic Chamber	Frankonia	-	-	-	-	

3 GENERAL PRODUCT INFORMATION

3.1 Product Function and Intended Use

The **Synclara™ Cough System** is intended for use on patients who are unable to cough or clear secretions effectively due to reduced peak cough expiratory flow, as a result of high spinal cord injuries, neuromuscular deficits, or severe fatigue associated with intrinsic lung disease.

The **Volara™ System** is intended for the mobilization of secretions, lung expansion therapy, the treatment and prevention of pulmonary atelectasis, and has the ability to provide supplemental oxygen when used with oxygen supply.

The **Maximus™ System, when used as a Synclara™ Cough System** is indicated for, but is not limited to patients with these conditions:
• Muscular dystrophy
• Spinal muscular atrophy
• Amyotrophic lateral sclerosis
• Spinal cord injuries
• Myasthenia gravis
• Post-polio
• COPD patient with a weak and ineffective cough

The **Maximus™ System, when used as a Volara™ System** is indicated for, but is not limited to patients with these conditions:
• Difficulty in clearance of secretions
• Pulmonary atelectasis

Model differences:
The model POPT1 (Maximus™ System) provides features of both the Synclara™ System and the Volara™ System. The model PSC1 (Synclara™ System) only provides feature of Synclara™ System. It doesn't have the OLE-module. And it's identical to model POPT1 (Maximus™ System) with same rated voltage and rated power, same power supply unit, same output character, except for the circuit diagram, PCB layout and construction.
The model PVL1 (Volara™ System) only provides feature of Volara™ System. And it's identical to model POPT1 (Maximus™ System) with same rated voltage and rated power, same power supply unit, same output character, same the circuit diagram, same PCB layout and same construction.

3.2 Ratings and System Details

Table 2: Ratings and System Details

Operating frequency range	Wi-Fi_2.4GHz:2400 MHz to 2483.5 MHz		
	Wi-Fi_5GHz U-NII-1 : 5150MHz to 5250MHz U-NII-3 : 5725MHz to 5850MHz		
	Bluetooth:2400 MHz to 2483.5 MHz		
Radio Protocol	**Wi-Fi_2.4GHz**	**Wi-Fi_5GHz**	**Bluetooth**
Bandwidth	20 MHz	20 MHz	1 MHz
Modulation	802.11b: DSSS 802.11g: OFDM 802.11n: OFDM	802.11a: OFDM 802.11n: OFDM	GFSK π/4 DQPSK 8DPSK
Number of antennas	1		1
Antenna type	Ceramic		
Antenna gain	Wi-Fi_2.4GHz		0.99dBi
	Wi-Fi_5GHz		4.42dBi
	Bluetooth		0.5dBi
Supply Voltage to Product	100-240VAC/50-60Hz		
Dimensions	22.3cm x 23.3cm x 27cm		
Environmental conditions	Operating: +5 °C to +35 °C		

3.3 Measurement Uncertainty:

Table 3: Measurement Uncertainty

Parameter	**Uncertainty**
RF output power, conducted	±1.5 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB
Temperature	±3 ℃
Supply Voltages	±3 %
Time	±5 %

4 TEST SET-UP AND OPERATION MODE

4.1 Principle of Configuration Selection

Transmission was enabled with highest possible duty cycle transmission on low, mid and high channel.

4.2 Test Operation and Test Software

- Hardware version 1
- Software version MCB 0.0.21.0
- Software version DCB 0.0.21.0

4.3 Special Accessories and Auxiliary Equipment

- Test Laptop was used to confgure the device in transmission mode and module was tested with following accessories.

1. Stand Mount
2. Foot switch

4.4 Countermeasures to achieve EMC Compliance

- None

4.5 Test modes – data rates and modulations

For Radiated spurious emissions only the worst case results and are reported in this report.

4.6 List of frequencies

Frequency Band (MHz)	Channel No.	Channel Frequency (MHz)
2400 – 2483.5	1	2412
	2	2417
	3	2422
	4	2427
	5	2432
	6	2437
	7	2437
	8	2447
	9	2452
	10	2457
	11	2462

Table 4: List of Wi-Fi_2.4GHz center Frequencies

Frequency Band (MHz)	Channel Number	Channel Frequency
U-NII-1 5.15 – 5.25 GHz	36	5180
	48	5240
U-NII-1 5.725 – 5.850 GHz	149	5745
	165	5825

Table 5:: List of Wi-Fi_5GHz center Frequencie

Frequency Band	Channel No.	Frequency (MHz)
Bluetooth (2.4-2.4835 GHz)	0	2402
	1	2404
	2	2406
	3	2408
	:	:
	:	:
	18	2438
	19	2440
	20	2437
	:	:
	:	:
	36	2474
	37	2476
	38	2478
	39	2480

Table 6:: List of Bluetooth center Frequencie

Note:

EUT serial number:

Conducted measurement sample: U044OP0052
Radiated measurement sample : U044OP0050

5 TEST METHODOLOGY

5.1 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 1 GHz & 1.5 m height for above 1 GHz 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 1 m and 4 m, 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 1000 MHz was performed by horn antenna, The measurement below 30 MHz was performed by loop antenna, Measurement from 30 MHz to 200 MHz was performed by Baloon and Biconical Antenna, and mesurement from 200 MHz to 1 GHz was performed by Log-Periodic Antenna.
The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.

5.1.1 Test Setup Configuration

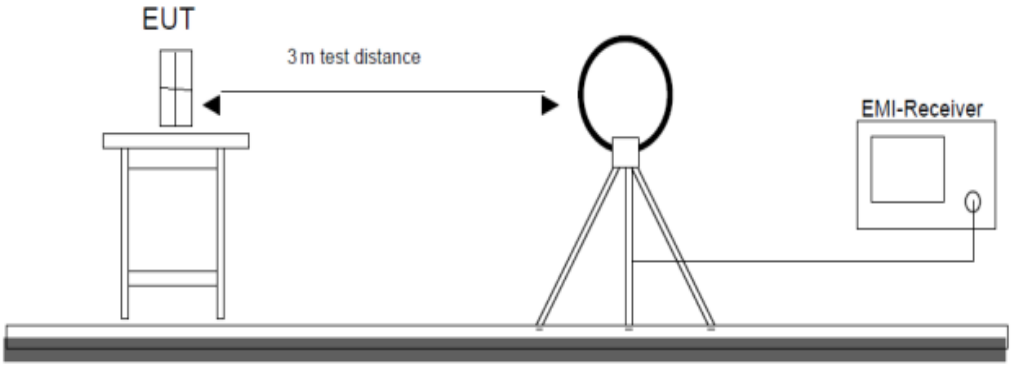


Figure 1: Frequency Range 9 kHz- 30 MHz

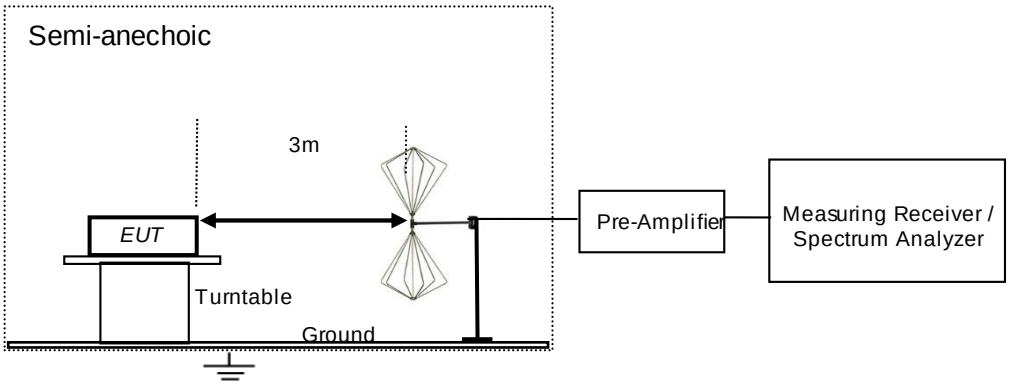


Figure 2: Frequency Range 30 MHz – 200 MHz

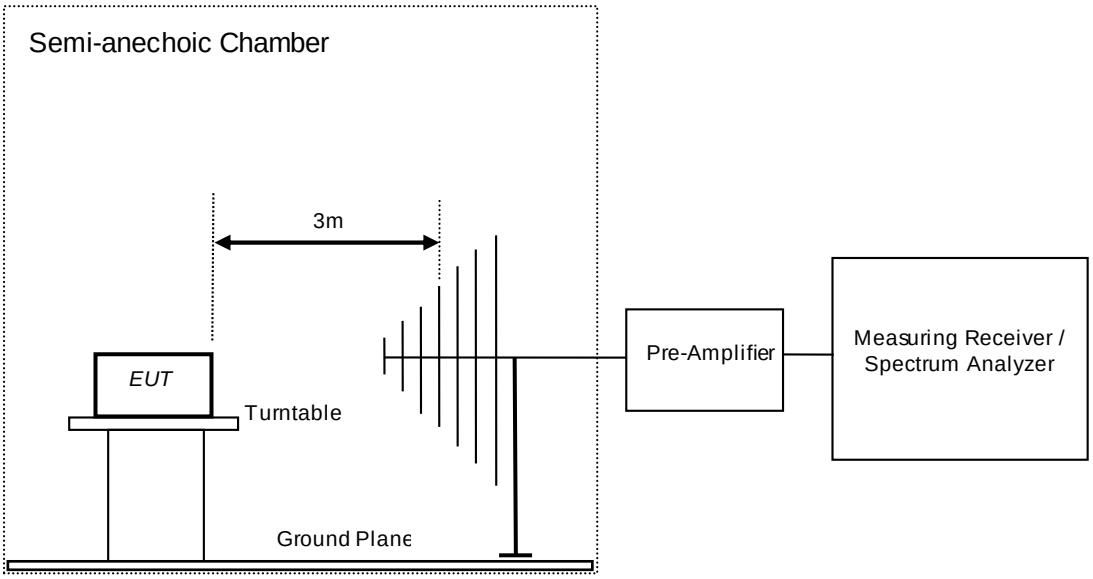


Figure 3: Frequency Range 200 MHz - 1GHz

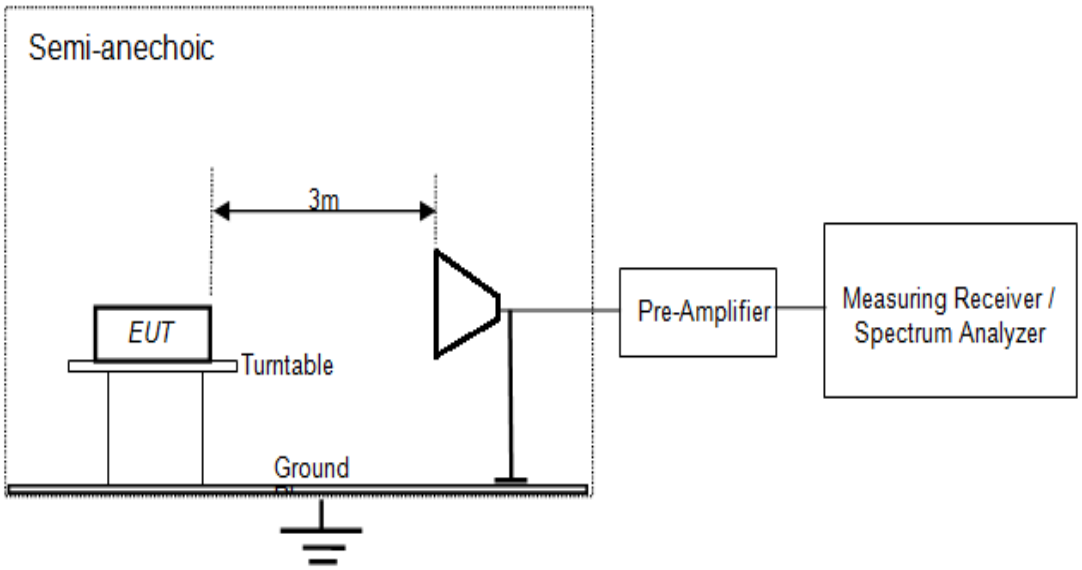


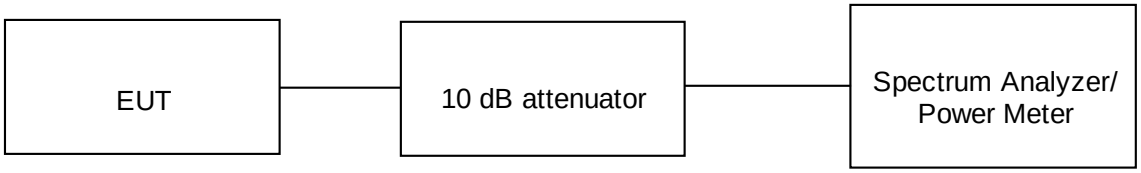
Figure 4: Frequency Range above 1 GHz

6 TEST RESULTS

6.1 Maximum Peak Conducted Output Power

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (b)(3)
Measurement Bandwidth	1 MHz
Detector	Peak
Requirement	≤ 1 W (30 dBm)



Cable Loss & attenuation loss are considered in the test results

Normal Test Condition:

Temperature (Norm) = + 25 °C Voltage (Vnorm) = 230 VAC RH= 62 %

Test results:

Note:

Measurements were made as per section 9.1.1 in KDB 558074 D01 DTS Measurement Guidance v04.

11 dB attenuator + 0.4 dB Cable loss = 11.4 dB offset is considered in below results

Table 7: Maximum peak conducted output power verified Test Results

Wi-Fi-2.4GHz

Mode	Data rate (Mbps)	Channel Frequency (MHz)	Power (dBm)
b	11	2437	17.31
g	54	2437	17.79
n	MCS7	2437	17.3

Wi-Fi-5GHz

Mode	Data rate (Mbps)	Channel Frequency (MHz)	Power (dBm)
a	6	5180	-1.48
		5240	-3.2
		5745	-4.39
		5825	-1.85
n	MCS0	5180	-1.01
		5240	-2.29
		5745	-6.94
		5825	-4.01

BT

Data rate (Mbps)	Channel Frequency (MHz)	Power (dBm)
1	2402	-4.28
	2440	-1.92
	2480	-0.19
2	2402	-7.46
	2440	-1.92
	2480	-0.19
3	2402	-7.38
	2440	-1.93
	2480	-0.15

6.2 Radiated spurious emissions and emissions in restricted bands of operation

Result ***Pass***

Test Specification	FCC part 15 Subpart C Section 15.247 (d) / (15.209 & 15.205)
Test Method	ANSI C 63.10 - 2013
Measurement Location	Semi Anechoic Chamber
Measuring Distance	3 m
Detector	QP for frequency below 1 GHz, average for frequency above 1 GHz
Requirement	As per the limits mentioned in the below table

Table 8: Transmitter limits for Radiated emission

Frequency (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * The limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 128.51 – 93.80, 73.80 – 62.96 and 69.54 dBµV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Conditions:

Supply Voltage: 230V AC

Environmental conditions:

Temperature: +25°C RH: 54.6 %

Test results:

No emissions found in frequency range 9 kHz to 30MHz.

Table 9: Test results for frequencies in the range 30MHz – 1GHz

Table Top:

Volara Mode:

Polarization	Frequency (MHz)	Measured value(dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	40.676	33.67	40	-6.33
	46.88	34.09	40	-5.91
	83.992	33.55	40	-6.45
	221.36	40.12	46	-5.88
	336.02	36.73	46	-9.27
Horizontal	89.98	31.9	43.5	-11.6
	193.9	35.19	43.5	-8.31
	335.95	39.33	46	-6.67

Syncara Mode:

Polarization	Frequency (MHz)	Measured value(dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	42.24	21.75	40	-18.25
	81.87	22.92	40	-17.08
	163.35	16.87	43.5	-26.63
	503.9	22.64	46	-23.36
	672.11	28.46	46	-17.54
Horizontal	42.36	21.83	40	-18.17
	45.27	21.12	40	-18.88
	73.68	17.19	40	-22.81
	504.02	25.92	46	-20.08
	672.14	26.14	46	-19.86

Stand Mount:

Polarization	Frequency (MHz)	Measured value(dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	89.96	34.83	40	-5.17
	149.95	34.8	40	-5.2
	233.68	37.13	40	-2.87
	755.78	37.15	46	-8.85
Horizontal	89.98	32.05	43.5	-11.45
	191.55	33.81	43.5	-9.69
	238.85	44.02	46	-1.98
	335.94	38.8	46	-7.2

Test results for frequencies in the range 1 GHz - 26.5 GHz

Table 10: Radiated spurious emissions and emissions in restricted bands of operation Test Results

Data rate:11Mbps

Channel Frequency (MHz)	Polarization	Measured Frequency (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2412	Vertical	2390(Pk)	47.83	74	-26.17
		2390(Av)	29.79	54	-24.21
		2412(Pk)	83.34	*	-
		2412(Av)	75.2	*	-
		4824(Pk)	No Harmonics found		
		4824(Av)			
	Horizontal	2390(Pk)	47.97	74	-26.03
		2390(Av)	29.35	54	-24.65
		2412(Pk)	83.69	*	-
		2412(Av)	75.07	*	-
		4824(Pk)	No Harmonics found		
		4824(Av)			
2437	Vertical	2437(Pk)	90.8	*	-
		2437(Av)	82.99	*	-
		4874(Pk)	No Harmonics found		
		4874(Av)			
	Horizontal	2437(Pk)	92.09	*	-
		2437(Av)	84.28	*	-
		4874(Pk)	No Harmonics found		
		4874(Av)			
2462	Vertical	2462(Pk)	90.24	*	-
		2462(Av)	82.34	*	-
		4924(Pk)	No Harmonics found		
		4924(Av)			
		2483.5(Pk)	34.58	74	-39.42
		2483.5(Av)	24.37	54	-29.63
	Horizontal	2462(Pk)	92.11	*	-
		2462(Av)	84.23	*	-
		4924(Pk)	No Harmonics found		
		4924(Av)			
		2483.5(Pk)	35.51	74	-38.49
		2483.5(Av)	24.71	54	-29.29

Note:

Pk: Peak Detector
Av. Average Detector

Data rate:54Mbps

Channel Frequency (MHz)	Polarization	Measured Frequency (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2412	Vertical	2390(Pk)	47.22	74	-26.78
		2390(Av)	29.97	54	-24.03
		2412(Pk)	85.28	*	-
		2412(Av)	74.95	*	-
		4824(Pk)	No Harmonics found		
		4824(Av)			
	Horizontal	2390(Pk)	49.53	74	-24.47
		2390(Av)	32.24	54	-21.76
		2412(Pk)	87.24	*	-
		2412(Av)	76.96	*	-
		4824(Pk)	No Harmonics found		
		4824(Av)			
2437	Vertical	2437(Pk)	87.37	*	-
		2437(Av)	77.76	*	-
		4874(Pk)	No Harmonics found		
		4874(Av)			
	Horizontal	2437(Pk)	89.6	*	-
		2437(Av)	79.72	*	-
		4874(Pk)	No Harmonics found		
		4874(Av)			
2462	Vertical	2462(Pk)	84.28	*	-
		2462(Av)	73.8	*	-
		4924(Pk)	No Harmonics found		
		4924(Av)			
		2483.5(Pk)	47.01	74	-26.99
		2483.5(Av)	29.91	54	-24.09
	Horizontal	2462(Pk)	84.26	*	-
		2462(Av)	74.35	*	-
		4924(Pk)	No Harmonics found		
		4924(Av)			
		2483.5(Pk)	48.7	74	-25.3
		2483.5(Av)	30.98	54	-23.02

Note:

Pk: Peak Detector
Av: Average Detector

Data rate:MCS7

Channel Frequency (MHz)	Polarization	Measured Frequency (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2412	Vertical	2390(Pk)	49.15	74	-24.85
		2390(Av)	30.55	54	-23.45
		2412(Pk)	84.47	*	-
		2412(Av)	75.9	*	-
		4824(Pk)	No Harmonics found		
		4824(Av)			
	Horizontal	2390(Pk)	49.69	74	-24.31
		2390(Av)	31.22	54	-22.78
		2412(Pk)	84.41	*	-
		2412(Av)	75.98	*	-
		4824(Pk)	No Harmonics found		
		4824(Av)			
2437	Vertical	2437(Pk)	87.44	*	-
		2437(Av)	77.22	*	-
		4874(Pk)	No Harmonics found		
		4874(Av)			
	Horizontal	2437(Pk)	88.46	*	-
		2437(Av)	77.97	*	-
		4874(Pk)	No Harmonics found		
		4874(Av)			
2462	Vertical	2462(Pk)	81.76	*	-
		2462(Av)	71.7	*	-
		4924(Pk)	No Harmonics found		
		4924(Av)			
		2483.5(Pk)	47.51	74	-26.49
		2483.5(Av)	29.77	54	-24.23
	Horizontal	2462(Pk)	83.1	*	-
		2462(Av)	72.67	*	-
		4924(Pk)	No Harmonics found		
		4924(Av)			
		2483.5(Pk)	47.92	74	-26.08
		2483.5(Av)	30.84	54	-23.16

Note:

Pk: Peak Detector
Av: Average Detector

Wi-Fi-5GHz

Data rate:6Mbps

Band	Channel	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	Low	5150(Pk)	Vertical	31.29	68.23	-36.94
		5150(Av)		17.83	54	-36.17
		5180 (Pk)		72.99	*	-
		5180 (Av)		64.28	*	-
		10360 (Pk)		No Harmonics found		
		10360 (Av)				
		5150(Pk)	Horizontal	35.47	68.23	-32.76
		5150(Av)		18.58	54	-35.42
		5180 (Pk)		79.65	*	-
		5180 (Av)		70.85	*	-
		10360 (Pk)		No Harmonics found		
		10360 (Av)				
	High	5350(Pk)	Vertical	28.87	68.23	-39.36
		5350(Av)		17.21	54	-36.79
		5240 (Pk)		76.12	*	-
		5240 (Av)		67.55	*	-
		10480 (Pk)		No Harmonics found		
		10480 (Av)				
		5350(Pk)	Horizontal	28.56	68.23	-39.67
		5350(Av)		17.13	54	-36.87
		5240 (Pk)		77.17	*	-
		5240 (Av)		69.13	*	-
		10480 (Pk)		No Harmonics found		
		10480 (Av)				
3	Low	5745 (Pk)	Vertical	73.84	*	-
		5745(Av)		64.98	*	-
		11490 (Pk)		No Harmonics found		
		11490 (Av)				
		5745 (Pk)	Horizontal	79.73	*	-
		5745(Av)		70.82	*	-
		11490 (Pk)		No Harmonics found		
		11490 (Av)				
	High	5825 (Pk)	Vertical	73.89	*	-
		5825(Av)		64.99	*	-
		11650 (Pk)		No Harmonics found		
		11650 (Pk)				
		5825 (Pk)	Horizontal	79.44	*	-
		5825(Av)		70.8	*	-
		11650 (Pk)		No Harmonics found		
		11650 (Pk)				

Note:

Pk: Peak Detector
Av: Average Detector

Data rate:MCS0

Band	Channel	Frequency (MHz)	Polarization	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	Low	5150(Pk)	Vertical	32.57	68.23	-35.66
		5150(Av)		18	54	-36
		5180 (Pk)		75.22	*	
		5180 (Av)		66.57	*	
		10360 (Pk)		No Harmonics found		
		10360 (Av)				
		5150(Pk)	Horizontal	37.86	68.23	-30.37
		5150(Av)		19.13	54	-34.87
		5180 (Pk)		80.44	*	
		5180 (Av)		72.16	*	
		10360 (Pk)		No Harmonics found		
		10360 (Av)				
	High	5350(Pk)	Vertical	28.77	68.23	-39.46
		5350(Av)		17.22	54	-36.78
		5240 (Pk)		75.41	*	
		5240 (Av)		66.35	*	
		10480 (Pk)		No Harmonics found		
		10480 (Av)				
		5350(Pk)	Horizontal	29.71	68.23	-38.52
		5350(Av)		17.22	54	-36.78
		5240 (Pk)		78.05	*	
		5240 (Av)		68.43	*	
		10480 (Pk)		No Harmonics found		
		10480 (Av)				
3	Low	5745 (Pk)	Vertical	73.45	*	
		5745(Av)		63.73	*	
		11490 (Pk)		No Harmonics found		
		11490 (Av)				
		5745 (Pk)	Horizontal	79.1	*	
		5745(Av)		69.37	*	
		11490 (Pk)		No Harmonics found		
		11490 (Av)				
	High	5825 (Pk)	Vertical	76	*	
		5825(Av)		66.2	*	
		11650 (Pk)		No Harmonics found		
		11650 (Pk)				
		5825 (Pk)	Horizontal	79.45	*	
		5825(Av)		69.74	*	
		11650 (Pk)		No Harmonics found		
		11650 (Pk)				

Note:

Pk: Peak Detector
Av: Average Detector

Bluetooth

Data rate:1Mbps

Channel Frequency (MHz)	Polarization	Measured Frequency (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	Vertical	2390(Pk)	38.64	74	-35.36
		2390(Av)	22.15	54	-31.85
		2402(Pk)	93.42	*	
		2402(Av)	88.21	*	
		4804(Pk)	53.89	74	-20.11
		4804(Av)	46.2	54	-7.8
	Horizontal	2390(Pk)	34.09	74	-39.91
		2390(Av)	22.2	54	-31.8
		2402(Pk)	95.13	*	
		2402(Av)	89.91	*	
		4804(Pk)	49.57	74	-24.43
		4804(Av)	41.07	54	-12.93
2440	Vertical	2441(Pk)	96.51	*	
		2441(Av)	85.91	*	
		4882(Pk)	55.24	74	-18.76
		4882(Av)	43.94	54	-10.06
	Horizontal	2441(Pk)	99.19	*	
		2441(Av)	88.59	*	
		4882(Pk)	51.3	74	-22.7
		4882(Av)	40	54	-14
2480	Vertical	2480(Pk)	97.68	*	
		2480(Av)	87.1	*	
		4960(Pk)	56.15	74	-17.85
		4960(Av)	44.85	54	-9.15
		2483.5(Pk)	49.29	74	-24.71
		2483.5(Av)	32.55	54	-21.45
	Horizontal	2480(Pk)	97.67	*	
		2480(Av)	87.07	*	
		4960(Pk)	53.31	74	-20.69
		4960(Av)	42.05	54	-11.95
		2483.5(Pk)	49.86	74	-24.14
		2483.5(Av)	32.43	54	-21.57

Note:

Pk: Peak Detector
Av: Average Detector

Data rate:2Mbps

Channel Frequency (MHz)	Polarization	Measured Frequency (MHz)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2402	Vertical	2376(Pk)	39.02	74	-34.98
		2376(Av)	29.63	54	-24.37
		2402(Pk)	93.09	*	
		2402(Av)	84.72	*	
		4804(Pk)	49.38	74	-24.62
		4804(Av)	37.69	54	-16.31
	Horizontal	2390(Pk)	34.71	74	-39.29
		2390(Av)	23.01	54	-30.99
		2402(Pk)	90.88	*	
		2402(Av)	81.98	*	
		4804(Pk)	46.04	74	-27.96
		4804(Av)	33.95	54	-20.05
2440	Vertical	2441(Pk)	93.94	*	
		2441(Av)	86.27	*	
		4882(Pk)	53.13	74	-20.87
		4882(Av)	43.31	54	-10.69
	Horizontal	2441(Pk)	94.2	*	
		2441(Av)	86.06	*	
		4882(Pk)	48.87	74	-25.13
		4882(Av)	37.13	54	-16.87
2480	Vertical	2480(Pk)	97.75	*	
		2480(Av)	87.16	*	
		4960(Pk)	56.42	74	-17.58
		4960(Av)	44.97	54	-9.03
		2483.5(Pk)	48.92	74	-25.08
		2483.5(Av)	32.59	54	-21.41
	Horizontal	2480(Pk)	97	*	
		2480(Av)	86.4	*	
		4960(Pk)	55.36	74	-18.64
		4960(Av)	44.07	54	-9.93
		2483.5(Pk)	47.88	74	-26.12
		2483.5(Av)	31.48	54	-22.52

Note:

Pk: Peak Detector
Av: Average Detector

Data rate:3Mbps

Channel Frequency (MHz)	Polarization	Measured Frequency (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	Vertical	2390(Pk)	38.65	74	-35.35
		2390(Av)	22.46	54	-31.54
		2402(Pk)	94.1	*	
		2402(Av)	85.97	*	
		4804(Pk)	54.35	74	-19.65
		4804(Av)	42.35	54	-11.65
	Horizontal	2387(Pk)	40.63	74	-33.37
		2387(Av)	28.06	54	-25.94
		2402(Pk)	96.45	*	
		2402(Av)	87.01	*	
		4804(Pk)	49.77	74	-24.23
		4804(Av)	38.15	54	-15.85
2440	Vertical	2441(Pk)	94.91	*	
		2441(Av)	87.17	*	
		4882(Pk)	55.1	74	-18.9
		4882(Av)	43.73	54	-10.27
	Horizontal	2441(Pk)	95.52	*	
		2441(Av)	84.12	*	
		4882(Pk)	51.7	74	-22.3
		4882(Av)	40	54	-14
2480	Vertical	2480(Pk)	94.91	*	
		2480(Av)	87.17	*	
		4960(Pk)	54.01	74	-19.99
		4960(Av)	45.27	54	-8.73
		2483.5(Pk)	42.93	74	-31.07
		2483.5(Av)	29.05	54	-24.95
	Horizontal	2480(Pk)	95.52	*	
		2480(Av)	84.12	*	
		4960(Pk)	54.03	74	-19.97
		4960(Av)	40.86	54	-13.14
		2483.5(Pk)	42.4	74	-31.6
		2483.5(Av)	28.09	54	-25.91

Note:

Pk: Peak Detector
Av: Average Detector

Simultaneous transmission of Wi-Fi and Bluetooth Modules

All the radio modules operating in Low channel

Channel	Polarization	Frequency (MHz)	Field strength (dBµV/m)	Limit (dBµV/m)	Margin(dB)
Low	Vertical	2390(Pk)	47.73	74	-26.27
		2390(Av)	32.83	54	-21.17
		2402(Pk)	87.64	-	*
		2402(Av)	79.29	-	*
		2412(Pk)	81.98	-	*
		2412(Av)	72.49	-	*
		4804(Pk)	39.12	74	-34.88
		4804(Av)	31.43	54	-22.57
		4824(Pk)	No Harmonics found		
		4824(Av)			
	Horizontal	2390(Pk)	50.14	74	-23.86
		2390(Av)	33.09	54	-20.91
		2402(Av)	86.72	-	*
		2402(Pk)	80.88	-	*
		2412(Av)	85.55	-	*
		2412(Av)	77.19	-	*
		4804(Pk)	36.55	74	-37.45
		4804(Av)	26.68	54	-27.32
		4824(Pk)	No Harmonics found		
		4824(Av)			

Note:

Pk: Peak Detector
Av: Average Detector

All the radio modules operating in High channel

Channel	Polarization	Frequency (MHz)	Field strength (dBµV/m)	Limit (dBµV/m)	Margin(dB)
High	Vertical	2462(Pk)	86.24	-	*
		2462(Av)	78.99	-	*
		2480(Pk)	90.48	-	*
		2480(Av)	79.88	-	*
		2483.5(Pk)	41.62	74	-32.38
		2483.5(Av)	25.22	54	-28.78
		4924(Pk)	No Harmonics found		
		4924(Av)			
		4960(Pk)	43.3	74	-30.7
		4960(Av)	31.77	54	-22.23
	Horizontal	2462(Pk)	92.28	-	
		2462(Av)	84.37	-	
		2480(Pk)	89.94	-	
		2480(Av)	79.05	-	
		2483.5(Pk)	47.25	74	-26.75
		2483.5(Av)	29.67	54	-24.33
		4924(Pk)	No Harmonics found		
		4924(Av)			
		4960(Pk)	41.35	74	-32.65
		4960(Av)	29.56	54	-24.44

Note:

Pk: Peak Detector
Av: Average Detector

7 LIST OF TABLES

*****END OF TEST REPORT*****