

Wireless Pressure Sensor

Model No.: WPS1B121AGP1A1N

Date: 09/06/2014

Report Prepared By: Gulshan Kumar. B

Report

Report Number	EMC -0055-3				
EUT Nomenclature	Wireless Pressure Sensor				
Sample Identification	EMC-0055-1				
Number of Samples	1				
Date of receipt of Sample	20/10/2013				
Condition of Sample on receipt	Good				
Client name	Kelly Geiseman				
Client Address	Honeywell International Inc 315 E Stephenson St, Plant 1 A2-148, Freeport, IL, USA Zip code 61032-4353				
Testing Laboratory					
Address	RMZ ECOWORLD INFRASTRUCTURE PVT. LTD., Survey # 19/2, Devarabisanahalli Village, Varthur Hobli, Bangalore East Taluk, Bangalore – 560103				
Test Dates	20/03/2014 - 21/04/2014				
Applicable Standard	RSS210 Issue 6, RSS-Gen Issue 3				
Test Results	PASS				
	4				
Prepared By: Technical Lead Name: Gulshan Kumar. B		Reviewed By: Deputy Technical Manager Name: Gulshan Kumar. B			
Signature: 16-03-14		Signature: Julian Date: 15-07-14			
Authorized By: Quality Manager Name: Prasanna Kumar BT		Authorized By: Lab Manager Name : Ananth Krishna			
Signature: Is frasame Junyar Date: 16/7/14		Signature: 17/07/2014			

This Report relates to the above mentioned test sample only. Without the approval of Lab manager, this report shall not be reproduced except in full.



	TEST SUMMARY								
#	Name	Specification	Test Method	Pass	Fail	NA			
		Transmitter Tes	ts						
1	*Occupied Bandwidth (OBW)	RSS Gen Issue 3 RSS-210, Issue 6	RSS Gen Issue 3						
2	Duty cycle	RSS Gen Issue 3 FCC Part 15.247	DA 00-705	\boxtimes					
3	Transmitter Output Power	RSS Gen Issue 3 RSS-210, Issue 6	RSS Gen Issue 3	\boxtimes					
4	Transmitter Frequency Stability	RSS Gen Issue 3 RSS-210, Issue 6	RSS Gen Issue 3						
5	+AC Power line Conducted Emissions	RSS Gen Issue 3 RSS-210, Issue 6	RSS Gen Issue 3						
6	Transmitter Spurious Emissions	RSS Gen Issue 3 RSS-210, Issue 6	RSS Gen Issue 3	\boxtimes					
7	*Band Edge Measurements	RSS Gen Issue 3 RSS-210, Issue 6	RSS Gen Issue 3						
*No	ote: Occupied Bandwidth and Band Edge N	leasurements are not perforr	med as these are covered in R	adio Modu	ıle Testing	j			
+ Si	nce EUT is Battery powered, AC power line	e Conducted Emission Test is	Not applicable						
		Receiver Tests							
EUT	Γ is only a Transmitter. Receiver Tests are r	not applicable.							

MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels has been estimated for tests performed on the EUT as specified in CISPR 16-4

The Expanded measurement uncertainty (K=2) is provided below

#	Name	Value
1	AC Power line Conducted Emission	3.5 dB
2	Radiated Spurious Emission < 1GHz	4.9dB
3	Radiated Spurious Emission > 1GHz	6.3dB
4	Transmitter Output Power	6.3dB



1 PRODUCT DETAILS

PRODUCT OPERATION AND INTENDED USE

Wireless pressure sensor used for industrial purpose, operates in ISM band with operating frequency 2.4GHz.

RATINGS AND SYSTEM DETA	RATINGS AND SYSTEM DETAILS			
Operating Frequency	2405MHz to 2475MHz			
Number of Channels	15			
Channel Bandwidth (20dB)	3MHz			
Transmitted Power	15dBm			
Modulation Type	DTS			
Data Rate	250kbps			
Antenna Type	Omni directional			
No. of Antenna	One			
Antenna Gain	2.0dBi peak			
Supply Voltage	7.2VDC (Battery operated)			
Dimensions	L x W x H = 256 x 99 x 95 (all dimensions in mm)			
Environmental Conditions	-40°C to +85°C			



TEST CONFIG	TEST CONFIGURATION					
Config #	Description					
1	Configured in continuous transmission mode with transmission power level of 15dBm					

OPERATING MODES					
Mode #	Description				
1	Product will be operating in Low Channel with 2405Mhz operating frequency(channel 1)				
2	Product will be operating in Mid Channel with 2440Mhz operating frequency (channel 7)				
3	Product will be operating in High Channel with 2475Mhz operating frequency(channel 15)				

INPUT	INPUT AND OUTPUT CABLES								
Port #		Name	Port Type	Cable Length	Cable type Shielded/ Unshielded	Comments			
	No	t applicable							
*Note:	AC	= AC Power Po				Power Port			
	TP	= Telecommuni	cation Ports (E.	g. Ethernet)		tal Input / Output			
	N/E	= Non Electrical			AI / AO = Ana	llog Input / Output			

SUF	SUPPORT EQUIPMENTS AND ACCESSORIES USED								
#	Item Description	Make	Model	Part No. / SI. No	Cal Due Date				
	Not applicable								



CONNECTION DIAGRAM AND SETUP DIAGRAM WPS TEST SETUP FOR EMC TESTING Semi-Anechoic Control Room Ant Height (1m to 4m) 3m Pre-EMI-Amplifier Receiver 0 to 360degC EUT rotation Ground Note: WPS tested in Standalone mode. Absrobers are placed on the floor for Freq > 1GHz



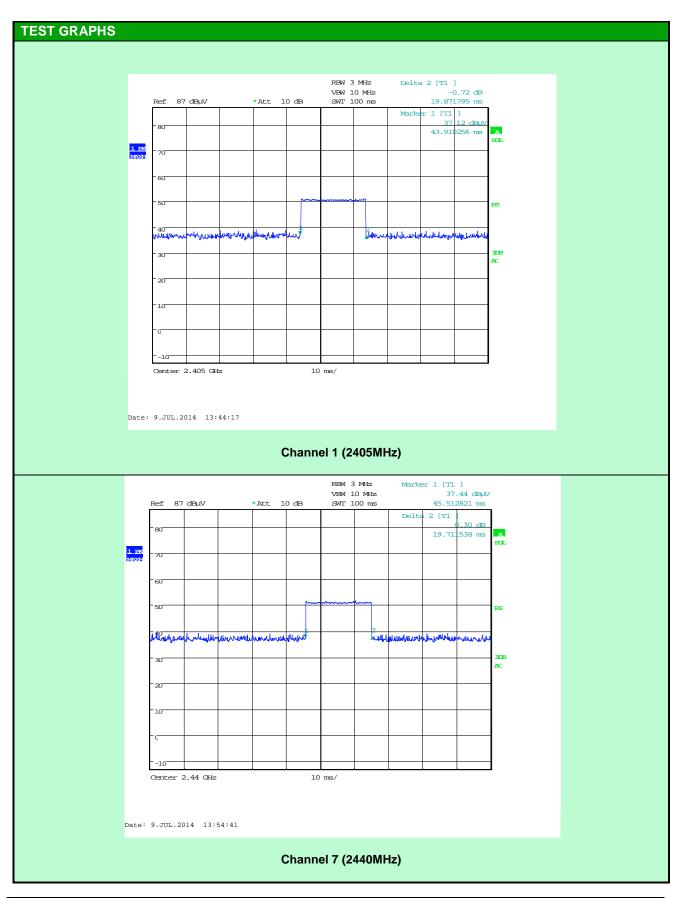
2 Transmitter Tests

2.1 Duty Cycle						
EUT Nomenclature	Wireless Pressure Senso	r	Test Report No.	EMC -0055-3		
Model No.	WPS1B121AGP1A1N		Serial No.	EMC-55-1		
Test Start Date	21/04/2014		Temperature (°C)	22°C		
Test End Date	21/04/2014		Humidity RH (%)	52%		
Tested By	Gulshan Kumar		Pressure (mbar)	NR		
Input Voltage / Freq	24 Vdc					
Operating Mode	Refer Page 5 for Operating	Mode Table	,			
Test configuration	Refer Page 5 for Test Configuration Table					
Deviation from Std	NA					
Applicable standard	FCC Part 15.247 & RSS Ge	en Issue 3				
Test Method	DA 00-705					
Comment						
TEST DETAILS						
Method	☐ Conducted	□ Radiated	d			
'						
TEST PARAMETE	RS					
Antenna Height	1m to 4m		Turntable Rotation	0 to 360°C		
Equipment Class	NA	_	Measurement Distance	NA		

	TEST EQUIPMENT							
Y/N	Equipment	Make	Model	SI. No.	Cal Due Date			
Υ	EMI Test Receiver	R&S	ESU26	100525	7-Oct-14			
Υ	3m Semi Anechoic Chamber	ETS Lindgren	DKE 6X7 DBL.DR	1625	31-Dec-2015			
Υ	Double Ridge Guide Horn Antenna	ETS Lindgren	3117	00064055	14-Nov-2014			
N	Bilog Antenna	ETS Lindgren	HLP3003C	130525	16-Nov-2014			
N	Loop Antenna	ETS Lindgren	6507	00154266	23-Sep-14			
N	RF cable (9KHz to 1GHz)	COLEMAN	RG214	RE-1A	09-May-2014			
N	RF cable (9KHz to 1GHz)	COLEMAN	RG214	RE-1B	09-May-2014			
Υ	RF cable (1GHz to 18GHz)	AH Systems	SAC-18G-06	RE-2A	09-May-2014			
Υ	RF cable (1GHz to 18GHz)	AH Systems	SAC-18G-06	RE-2B	09-May-2014			
N	Signal Conditioning unit	R&S	SCU-18	10178	13-June-2014			
N	High Pass Filter	Micro tronics	BRM50702-01	1	NA			
Υ	EMC32 Software	R&S	8.30.0	820-OT101248	NA			

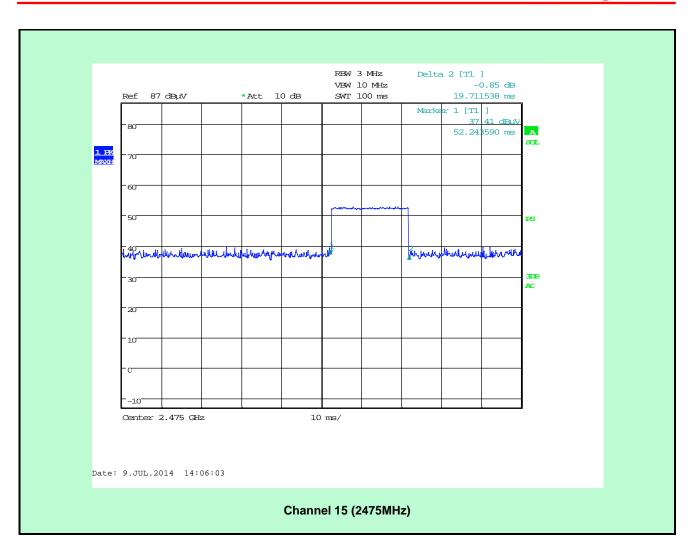
Note: Switch ON /OFF the Internal Preamplifier based on carrier level and or noise floor without overloading the receiver



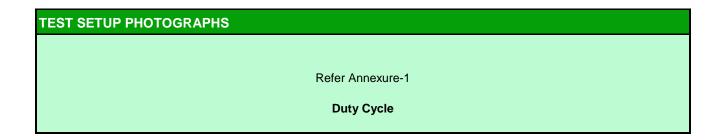


Version: 1.2





TEST RESULT							
Channel	Channel Frequency	Measured Duty Cycle	No. of bursts	Total Duty cycle for 100ms			
#	MHz	ms	#	ms			
1	2405	19.87	1	19.87			
7	2440	19.71	1	19.71			
15	2475	19.71	1	19.71			





2.2 SPURIOUS RADIATED EMISSIONS					
EUT Nomenclature	Wireless Pressure Sensor Test Report No. EMC -0055-3				
Model No.	WPS1B121AGP1A1N	Serial No.	EMC-55-1		
Test Start Date	20/03/14	22°C			
Test End Date	4/04/14 Humidity RH (%) 52'		52%		
Tested By	Nishanth Pressure (mbar) 91				
Input Voltage / Freq	7.2VDC (battery operated)				
Operating Mode	Refer Page 5 Operating Modes Table				
Test configuration	Refer Page 5 Test Configuration Table				
Deviation from Std	NA				
Comment	Nil				

TEST FREQUENCY RANGE

Start Frequency9KHzStop Frequency18GHz

MAXIMUM OPERATING FREQUENCY

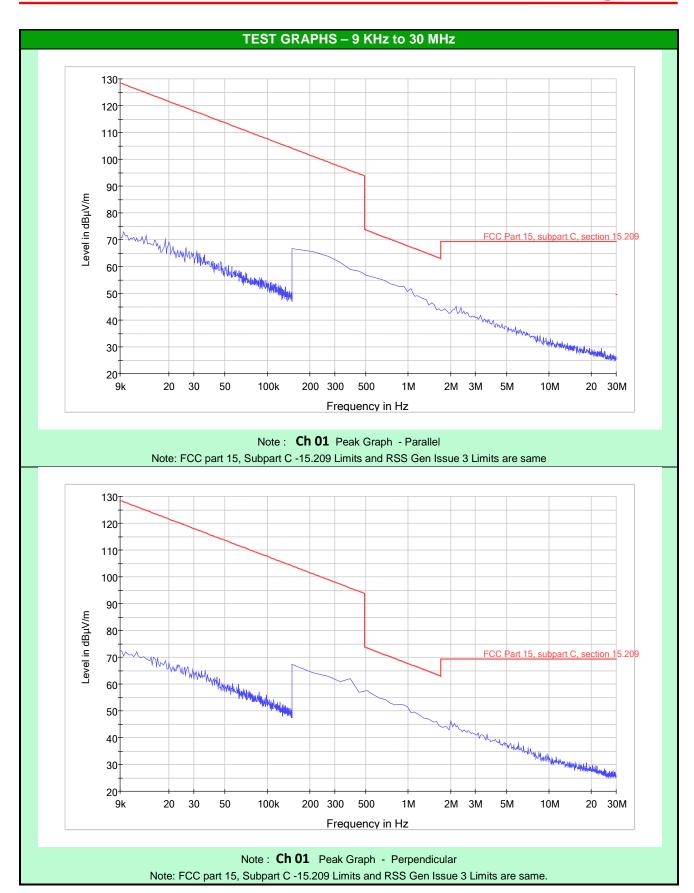
2.4GHz

TEST PARAMETERS						
Antenna Height	1m to 4m	Turntable Rotation	0° to 360°			
Applicable standard	FCC Part 15.209	Test Method	KDB 558074			
Equipment Class	NA	Measurement Distance	3m			

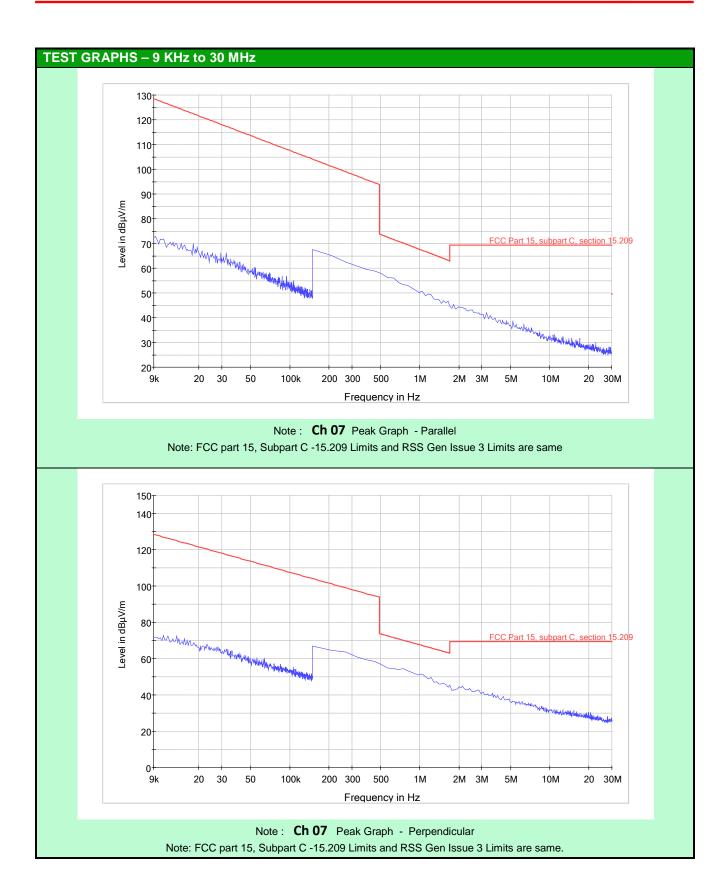
	TEST EQUIPMENT								
Y/N	Equipment	Make	Model	SI. No.	Cal Due Date				
Υ	EMI Test Receiver	R&S	ESU26	100525	7-Oct-14				
Υ	3m Semi Anechoic Chamber	ETS Lindgren	DKE 6X7 DBL.DR	1625	31-Dec-2015				
Υ	Double Ridge Guide Horn Antenna	ETS Lindgren	3117	00064055	14-Nov-2014				
Υ	Bilog Antenna	ETS Lindgren	HLP3003C	130525	16-Nov-2014				
Υ	Loop Antenna	ETS Lindgren	6507	00154266	23-Sep-14				
Υ	RF cable (9KHz to 1GHz)	COLEMAN	RG214	RE-1A	09-May-2014				
Υ	RF cable (9KHz to 1GHz)	COLEMAN	RG214	RE-1B	09-May-2014				
Υ	RF cable (1GHz to 18GHz)	AH Systems	SAC-18G-06	RE-2A	09-May-2014				
Υ	RF cable (1GHz to 18GHz)	AH Systems	SAC-18G-06	RE-2B	09-May-2014				
Υ	Signal Conditioning unit	R&S	SCU-18	10178	13-June-2014				
Υ	High Pass Filter	Micro tronics	BRM50702-01	1	NA				
Υ	EMC32 Software	R&S	8.30.0	820-OT101248	NA				

Note: Switch ON /OFF the Internal Preamplifier based on carrier level and or noise floor without overloading the receiver

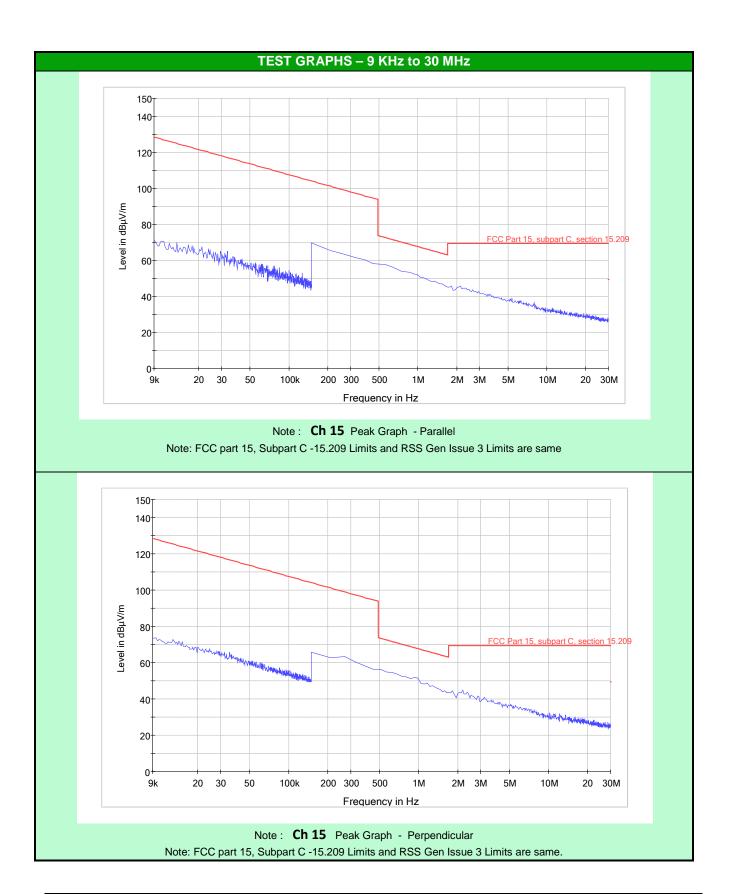












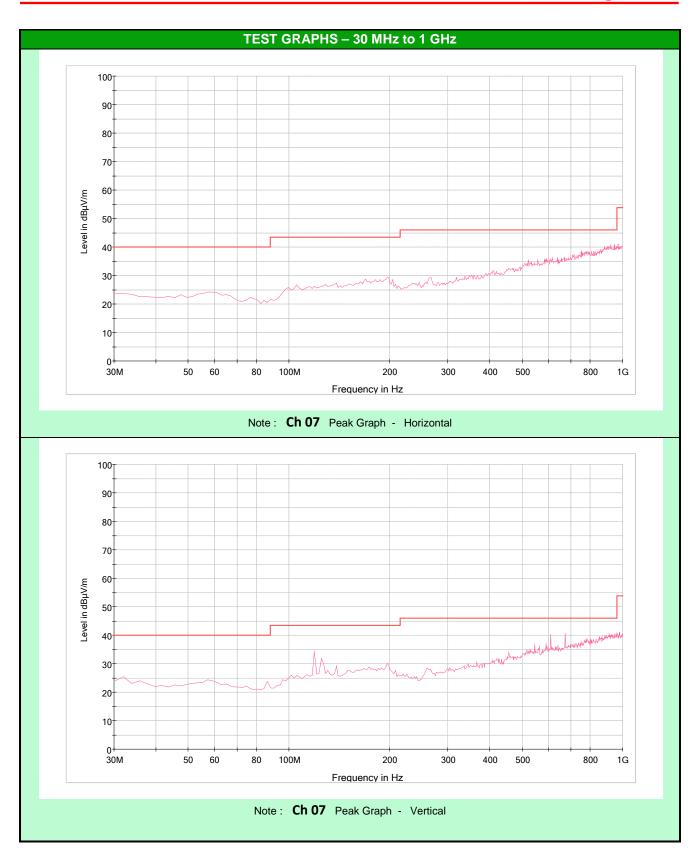


TEST	TEST RESULT – 9 KHz to 30 MHz									
Chan nel	Channel Frequency	Measured Spurious	Quasi Peak	Height	Ant Pol	Azimuth	Margin	Limit @ 3m Distance	Results	
#	MHz	MHz	dBµV/ m	cm	Parallel / Perpendicular	deg	dB	dBµV/m		
1										
7	No Emissions for	No Emissions found								
15										











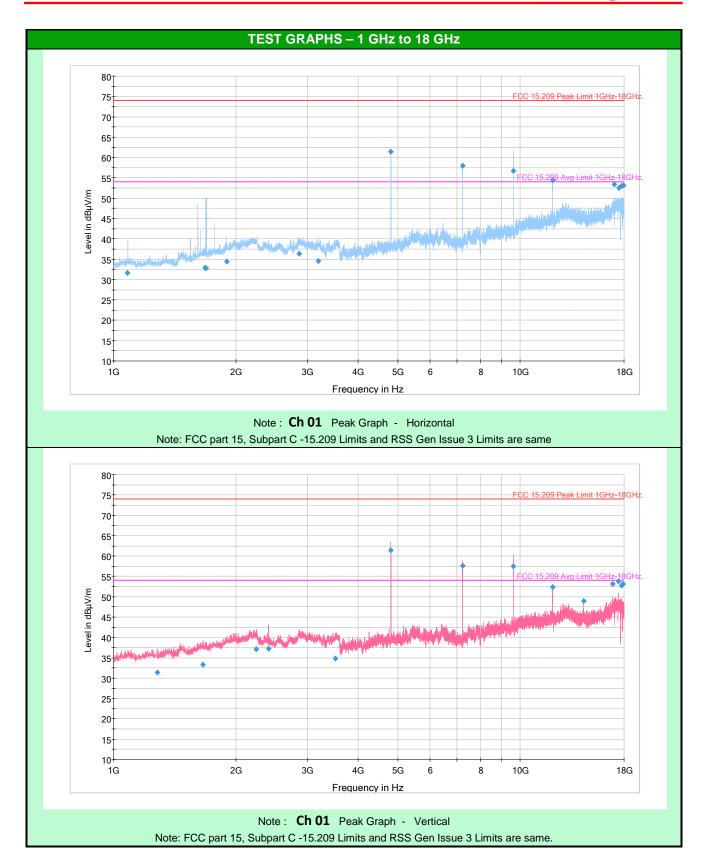




Channel Frequency Measured dBμy/m or mean mode of the pole At invalidation of the pole At invalidation of the pole Limit @ 3m of the pole Learning and the pole # MHz dBμy/m or mean mode pole rm / V deg dB Limit @ 3m of the pole 185.39 21.92 150 H 90 21.58 43.5 Pass 701.09 30.30 98 H 0 21.42 43.5 Pass 778.16 31.88 99 H 270 14.12 46 Pass 904.93 33.81 98 H 0 12.19 46 Pass 928.36 33.81 99 H 90 12.19 46 Pass 119.08 23.81 100 V 120 20.08 54 Pass 119.08 23.81 100 V 240 19.69 43.5 Pass 997.21 34.04 100 V 240 19.84 54 Pass <tr< th=""><th>TEST RE</th><th>SULT - 30</th><th>0 MHz to 1 GHz</th><th></th><th></th><th></th><th></th><th></th><th></th></tr<>	TEST RE	SULT - 30	0 MHz to 1 GHz						
Habitan Barata		_	Quasi Peak		Pol		<u> </u>	Distance	Results
Here Fig. 191.76	#		-		H/V	_		•	
CH1 Total									
CH1 778.16 31.88 99 H 270 14.12 46 Pass 904.93 33.81 98 H 0 12.19 46 Pass 928.36 33.81 99 H 90 12.19 46 Pass 119.08 23.81 100 V 120 19.69 43.5 Pass 897.11 33.83 100 V 240 12.17 46 Pass 897.11 33.83 100 V 240 12.17 46 Pass 957.21 34.04 100 V 240 19.84 54 Pass 962.78 34.17 100 V 240 19.84 54 Pass 999.98 34.44 100 V 30 19.56 54 Pass 615.49 29.39 100 H 300 16.61 46 Pass 638.53 29.12 100 H									
CH1 904.93 33.81 98 H 0 12.19 46 Pass 928.36 33.81 99 H 90 12.19 46 Pass 974.84 33.92 150 H 120 20.08 54 Pass 119.08 23.81 100 V 120 19.69 43.5 Pass 897.11 33.83 100 V 240 12.17 46 Pass 957.21 34.04 100 V 240 19.84 54 Pass 962.78 34.17 100 V 240 19.84 54 Pass 999.98 34.44 100 V 30 19.56 54 Pass 615.49 29.39 100 H 300 16.61 46 Pass 671.23 29.59 100 H 240 16.41 46 Pass 672.23 29.59 100 H <td< td=""><td></td><td>30.30</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>			30.30						
CH1 928.36 33.81 99 H 90 12.19 46 Pass 974.84 33.92 150 H 120 20.08 54 Pass 119.08 23.81 100 V 120 19.69 43.5 Pass 897.11 33.83 100 V 240 12.17 46 Pass 957.21 34.04 100 V 180 11.96 46 Pass 957.21 34.04 100 V 240 19.84 54 Pass 999.98 34.44 100 V 30 19.56 54 Pass 615.49 29.39 100 H 300 16.61 46 Pass 638.53 29.12 100 H 240 16.41 46 Pass 671.23 29.59 100 H 240 16.41 46 Pass 696.39 30.26 100 H		778.16		99	Н	270	14.12	46	Pass
CH1 974.84 33.92 150 H 120 20.08 54 Pass 119.08 23.81 100 V 120 19.69 43.5 Pass 897.11 33.83 100 V 240 12.17 46 Pass 957.21 34.04 100 V 240 12.17 46 Pass 962.78 34.17 100 V 240 19.84 54 Pass 999.98 34.44 100 V 240 19.84 54 Pass 197.23 22.95 79 H 180 20.55 43.5 Pass 615.49 29.39 100 H 300 16.61 46 Pass 638.53 29.12 100 H 240 16.41 46 Pass 671.23 29.59 100 H 240 15.74 46 Pass 696.39 30.26 100 H		904.93	33.81	98	Н	0	12.19	46	Pass
H 120 20.08 54 Pass 119.08 23.81 100 V 120 19.69 43.5 Pass 897.11 33.83 100 V 240 12.17 46 Pass 957.21 34.04 100 V 180 11.96 46 Pass 957.21 34.04 100 V 240 19.84 54 Pass 999.98 34.44 100 V 30 19.56 54 Pass 615.49 29.39 100 H 300 16.61 46 Pass 638.53 29.12 100 H 330 16.88 46 Pass 671.23 29.59 100 H 240 16.41 46 Pass 672.13 33.56 150 H 270 12.44 46 Pass 947.51 33.56 150 H 270 12.44 46 Pass	CH1	928.36	33.81	99	Н	90	12.19	46	Pass
Reference	0111	974.84	33.92	150	Н	120	20.08	54	Pass
P57.21 34.04 100 V 180 11.96 46 Pass 962.78 34.17 100 V 240 19.84 54 Pass 999.98 34.44 100 V 30 19.56 54 Pass 615.49 29.39 100 H 300 16.61 46 Pass 638.53 29.12 100 H 330 16.88 46 Pass 666.39 30.26 100 H 240 15.74 46 Pass 125.66 27.53 100 V 30 15.74 46 Pass 608.98 29.33 100 V 30 16.67 46 Pass 672.94 29.60 100 V 270 14.08 46 Pass 949.51 33.64 150 V 30 12.16 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 770.89 32.26 150 H 0 13.74 46 Pass 819.28 32.56 100 H 0 13.74 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 823.51 32.52 150 H 0 13.74 46 Pass 832.54 31.92 100 V 30 15.42 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 832.54 31.92 100 H 60 15.42 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 833.51 32.52 150 H 0 13.74 46 Pass 835.51 32.52 150 H 0 13.74 46 Pass 835.51 32.52 150 H 0 13.44 46 Pass 836.99 32.75 100 H 0 13.44 46 Pass 836.99 32.75 100 H 0 13.34 46 Pass 836.99 32.75 100 H 0 13.34 46 Pass 836.99 32.75 100 H 0 13.34 46 Pass 836.99 32.75 100 H 0 13.35 46 Pass 836.99 32.75 100 H 0 13.40 46 Pass 836.99 32.75 100 H 0 13.40 46 Pass 836.99 32.75 100 H 0 13.44 46 Pass 836.99 32.75 100 H 0 14.02 46 Pass 836.99 32.78 100 H 0 14.02 46 Pass 836.99 32.18 100 V 0 14.32 46 Pass 836.99 32.18 100 V 0 14.32 46 Pass 836.99 32.18 100 V 0 14.32 4		119.08	23.81	100	V	120	19.69	43.5	Pass
962.78 34.17 100 V 240 19.84 54 Pass 999.98 34.44 100 V 30 19.56 54 Pass 197.23 22.95 79 H 180 20.55 43.5 Pass 615.49 29.39 100 H 300 16.61 46 Pass 638.53 29.12 100 H 330 16.88 46 Pass 671.23 29.59 100 H 240 16.41 46 Pass 696.39 30.26 100 H 240 15.74 46 Pass 947.51 33.56 150 H 270 12.44 46 Pass 668.98 29.33 100 V 0 15.97 43.5 Pass 672.94 29.60 100 V 120 16.41 46 Pass 832.54 31.92 100 V 270		897.11	33.83	100	V	240	12.17	46	Pass
P99.98		957.21	34.04	100	V	180	11.96	46	Pass
Here to the content of the content o		962.78	34.17	100	V	240	19.84	54	Pass
CH7 615.49		999.98	34.44	100	V	30	19.56	54	Pass
CH7 638.53		197.23	22.95	79	Н	180	20.55	43.5	Pass
CH7 ECH7 E		615.49	29.39	100	Н	300	16.61	46	Pass
CH7 696.39 30.26 100 H 240 15.74 46 Pass 947.51 33.56 150 H 270 12.44 46 Pass 125.66 27.53 100 V 0 15.97 43.5 Pass 608.98 29.33 100 V 30 16.67 46 Pass 832.54 31.92 100 V 270 14.08 46 Pass 949.51 33.64 150 V 30 12.16 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 702.92 30.58 100 H 60 15.42 46 Pass 702.92 30.58 100 H 60 15.42 46 Pass 819.28 32.56 100 H 0 13.74 46 Pass 819.28 32.56 100 H 0 13.74 46 Pass 823.51 32.52 150 H 120 13.48 46 Pass 823.51 32.52 150 H 120 13.48 46 Pass 830.39 32.67 150 H 0 13.33 46 Pass 830.39 32.67 150 H 0 13.33 46 Pass 836.99 32.75 100 H 0 13.25 46 Pass 836.99 32.75 100 H 0 13.25 46 Pass 836.99 32.75 150 V 150 14.43 46 Pass 778.35 31.94 150 V 210 14.06 46 Pass 778.29 31.98 150 V 210 14.06 46 Pass 807.94 31.68 100 V 0 14.32 46 Pass 807.94 31.68 100 V 0 14.32 46 Pass 838.31 32.18 100 V 300 13.82 46 Pass		638.53	29.12	100	Н	330	16.88	46	Pass
CH7 947.51 33.56 150 H 270 12.44 46 Pass 125.66 27.53 100 V 0 15.97 43.5 Pass 608.98 29.33 100 V 30 16.67 46 Pass 672.94 29.60 100 V 120 16.41 46 Pass 832.54 31.92 100 V 270 14.08 46 Pass 949.51 33.64 150 V 30 12.16 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 702.92 30.58 100 H 60 15.42 46 Pass 770.89 32.26 150 H 0 13.74 46 Pass 819.28 32.56 100 H 0 13.44 46 Pass 823.51 32.52 150 H 120 13.48 46 Pass 830.39 32.67 150 H 0 13.33 46 Pass 836.99 32.75 100 H 0 13.25 46 Pass 762.89 31.57 150 V 150 14.43 46 Pass 778.35 31.94 150 V 210 14.06 46 Pass 782.29 31.98 150 V 210 14.02 46 Pass 807.94 31.68 100 V 0 14.32 46 Pass 838.31 32.18 100 V 300 13.82 46 Pass 838.31 32.18 30		671.23	29.59	100	Н	240	16.41	46	Pass
CH/ 125.66 27.53 100 V 0 15.97 43.5 Pass 608.98 29.33 100 V 30 16.67 46 Pass 672.94 29.60 100 V 120 16.41 46 Pass 832.54 31.92 100 V 270 14.08 46 Pass 912.61 33.84 150 V 30 12.16 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 702.92 30.58 100 H 60 15.42 46 Pass 819.28 32.26 150 H 0 13.74 46 Pass 819.28 32.56 100 H 0 13.44 46 Pass 830.39 32.67 150 H 120 13.48 46 Pass 836.99 32.75 100 H 0 </td <td></td> <td>696.39</td> <td>30.26</td> <td>100</td> <td>Н</td> <td>240</td> <td>15.74</td> <td>46</td> <td>Pass</td>		696.39	30.26	100	Н	240	15.74	46	Pass
125.66	CH7	947.51	33.56	150	Н	270	12.44	46	Pass
672.94 29.60 100 V 120 16.41 46 Pass 832.54 31.92 100 V 270 14.08 46 Pass 912.61 33.84 150 V 30 12.16 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 702.92 30.58 100 H 60 15.42 46 Pass 770.89 32.26 150 H 0 13.74 46 Pass 819.28 32.56 100 H 0 13.44 46 Pass 823.51 32.52 150 H 120 13.48 46 Pass 830.39 32.67 150 H 0 13.33 46 Pass 836.99 32.75 100 H 0 13.25 46 Pass 762.89 31.57 150 V 150 14.43<		125.66	27.53	100	V	0	15.97	43.5	Pass
832.54 31.92 100 V 270 14.08 46 Pass 912.61 33.84 150 V 30 12.16 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 702.92 30.58 100 H 60 15.42 46 Pass 770.89 32.26 150 H 0 13.74 46 Pass 819.28 32.56 100 H 0 13.44 46 Pass 823.51 32.52 150 H 120 13.48 46 Pass 830.39 32.67 150 H 0 13.33 46 Pass 836.99 32.75 100 H 0 13.25 46 Pass 762.89 31.57 150 V 150 14.43 46 Pass 782.29 31.98 150 V 210 14.06 46 Pass 807.94 31.68 100 V 210		608.98	29.33	100	V	30	16.67	46	Pass
912.61 33.84 150 V 30 12.16 46 Pass 949.51 33.64 150 V 60 12.36 46 Pass 702.92 30.58 100 H 60 15.42 46 Pass 770.89 32.26 150 H 0 13.74 46 Pass 819.28 32.56 100 H 0 13.44 46 Pass 823.51 32.52 150 H 120 13.48 46 Pass 830.39 32.67 150 H 0 13.33 46 Pass 836.99 32.75 100 H 0 13.25 46 Pass 762.89 31.57 150 V 150 14.43 46 Pass 778.35 31.94 150 V 210 14.06 46 Pass 807.94 31.68 100 V 210 14.02<		672.94	29.60	100	V	120	16.41	46	Pass
949.51 33.64 150 V 60 12.36 46 Pass 702.92 30.58 100 H 60 15.42 46 Pass 770.89 32.26 150 H 0 13.74 46 Pass 819.28 32.56 100 H 0 13.44 46 Pass 823.51 32.52 150 H 120 13.48 46 Pass 830.39 32.67 150 H 0 13.33 46 Pass 836.99 32.75 100 H 0 13.25 46 Pass 762.89 31.57 150 V 150 14.43 46 Pass 778.35 31.94 150 V 210 14.06 46 Pass 807.94 31.68 100 V 210 14.02 46 Pass 838.31 32.18 100 V 300 13.82		832.54	31.92	100	V	270	14.08	46	Pass
CH15 702.92 30.58 100 H 60 15.42 46 Pass 88 19.28 32.26 150 H 0 13.74 46 Pass 819.28 32.56 100 H 0 13.44 46 Pass 823.51 32.52 150 H 120 13.48 46 Pass 830.39 32.67 150 H 0 13.33 46 Pass 836.99 32.75 100 H 0 13.25 46 Pass 762.89 31.57 150 V 150 14.43 46 Pass 778.35 31.94 150 V 210 14.06 46 Pass 807.94 31.68 100 V 210 14.02 46 Pass 838.31 32.18 100 V 300 13.82 46 Pass		912.61	33.84	150	V	30	12.16	46	Pass
CH15 T70.89 32.26 150 H 0 13.74 46 Pass 819.28 32.56 100 H 0 13.44 46 Pass 823.51 32.52 150 H 120 13.48 46 Pass 830.39 32.67 150 H 0 13.33 46 Pass 836.99 32.75 100 H 0 13.25 46 Pass 762.89 31.57 150 V 150 14.43 46 Pass 778.35 31.94 150 V 210 14.06 46 Pass 807.94 31.68 100 V 0 14.32 46 Pass 838.31 32.18 100 V 300 13.82 46 Pass		949.51	33.64	150	V	60	12.36	46	Pass
CH15 819.28 32.56 100 H 0 13.44 46 Pass		702.92	30.58	100	Н	60	15.42	46	Pass
CH15 Record Rec		770.89	32.26	150	Н	0	13.74	46	Pass
CH15 830.39 32.67 150 H 0 13.33 46 Pass 836.99 32.75 100 H 0 13.25 46 Pass 762.89 31.57 150 V 150 14.43 46 Pass 778.35 31.94 150 V 210 14.06 46 Pass 782.29 31.98 150 V 210 14.02 46 Pass 807.94 31.68 100 V 0 14.32 46 Pass 838.31 32.18 100 V 300 13.82 46 Pass		819.28	32.56	100	Н	0	13.44	46	Pass
CH15 836.99 32.75 100 H 0 13.25 46 Pass		823.51	32.52	150	Н	120	13.48	46	Pass
CH15 762.89 31.57 150 V 150 14.43 46 Pass 778.35 31.94 150 V 210 14.06 46 Pass 782.29 31.98 150 V 210 14.02 46 Pass 807.94 31.68 100 V 0 14.32 46 Pass 838.31 32.18 100 V 300 13.82 46 Pass		830.39	32.67	150	Н	0	13.33	46	Pass
762.89 31.57 150 V 150 14.43 46 Pass 778.35 31.94 150 V 210 14.06 46 Pass 782.29 31.98 150 V 210 14.02 46 Pass 807.94 31.68 100 V 0 14.32 46 Pass 838.31 32.18 100 V 300 13.82 46 Pass	CLIAE	836.99	32.75	100	Н	0	13.25	46	Pass
782.29 31.98 150 V 210 14.02 46 Pass 807.94 31.68 100 V 0 14.32 46 Pass 838.31 32.18 100 V 300 13.82 46 Pass	CH15	762.89	31.57	150	V	150	14.43	46	Pass
782.29 31.98 150 V 210 14.02 46 Pass 807.94 31.68 100 V 0 14.32 46 Pass 838.31 32.18 100 V 300 13.82 46 Pass		778.35	31.94	150	V	210	14.06	46	Pass
807.94 31.68 100 V 0 14.32 46 Pass 838.31 32.18 100 V 300 13.82 46 Pass		782.29			V		14.02	46	
838.31 32.18 100 V 300 13.82 46 Pass					V			46	
			32.18		V	300	13.82	46	
924.00 33.99 100 V 90 12.01 46 Pass		924.00		100	V	90	12.01	46	

NOTE: Measured Field Strength –dBuV/m (30 MHz to 1 GHz) = Receiver Readings (dBuV) + Antenna Factor (dB/m) + Cable loss (dB)

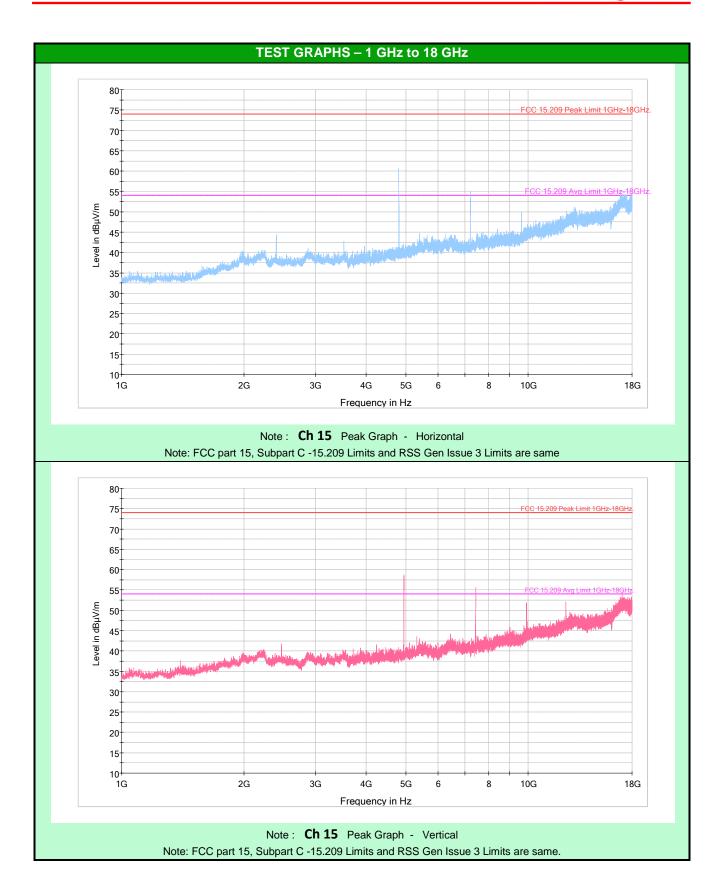














TEST R	TEST RESULT – 1 GHz to 18 GHz								& Averag	е
Channel	Frequency	Measured Max Peak	Calculated Average	Heigh t	Ant Pol	Azimuth	Peak limit	Avg Limit	Peak Margin	Avg Margin
#	(MHz)	(dBµV/m)	(dBµV/m)	(cm)	H/V	(deg)	(dBµV/m)	(dBµV/m	(dB)	(dB)
CH1	3187.54	34.6	14.6	300	Н	286	74	54	39.4	39.4
	4811.02	61.4	41.4	200	Н	88	74	54	12.6	12.6
	7213.31	58	38	100	Н	132	74	54	16	16
	9617.67	56.7	36.7	100	Н	132	74	54	17.3	17.3
	12027.78	54.4	34.4	100	Н	66	74	54	19.6	19.6
	3509.32	34.8	14.8	100	V	176	74	54	39.2	39.2
	4808.96	61.4	41.4	100	V	220	74	54	12.6	12.6
	7213.45	57.6	37.6	100	V	286	74	54	16.4	16.4
	9617.67	57.5	37.5	100	V	44	74	54	16.5	16.5
	12027.7	52.4	32.4	100	V	132	74	54	21.6	21.6
	14330.84	49	29	100	V	132	74	54	25	25
	16854.63	53.1	33.1	200	V	220	74	54	20.9	20.9
	2178.25	36.4	16.4	300	Н	242	74	54	37.6	37.6
	4880.98	62.1	42.1	200	Н	88	74	54	11.9	11.9
	6566.99	41.3	21.3	300	Н	0	74	54	32.7	32.7
	7318.52	61.4	41.4	100	Н	132	74	54	12.6	12.6
CH7	9761.86	58.2	38.2	100	Н	132	74	54	15.8	15.8
СП	12202.24	57.4	37.4	100	Н	66	74	54	16.6	16.6
	16898.29	52.9	32.9	200	Н	220	74	54	21.1	21.1
	4879.04	61	41	100	V	220	74	54	13	13
	6923.81	40.5	20.5	100	V	44	74	54	33.5	33.5
	7321.18	56.5	36.5	100	V	286	74	54	17.5	17.5
	9761.72	58	38	100	V	132	74	54	16	16
	12202.05	55.7	35.7	200	V	110	74	54	18.3	18.3
	4949.1	63.4	43.4	100	Н	198	74	54	10.6	10.6
	4951.37	60.7	40.7	100	Н	154	74	54	13.3	13.3
	7423.73	55.7	35.7	100	Н	66	74	54	18.3	18.3
	7426.57	56	36	100	Н	66	74	54	18	18
	9897.8	54	34	100	Н	88	74	54	20	20
	9902.33	53.2	33.2	100	Н	88	74	54	20.8	20.8
CH15	4949.1	57.3	37.3	100	V	66	74	54	16.7	16.7
	4950.8	57	37	100	V	66	74	54	17	17
-	7424.3	52.4	32.4	100	V	242	74	54	21.6	21.6
	7426.57	55.9	35.9	100	V	242	74	54	18.1	18.1
	9898.93	48.6	28.6	100	V	132	74	54	25.4	25.4
	9901.77	51.8	31.8	100	V	176	74	54	22.2	22.2
	17024.2	54.5	34.5	400	V	132	74	54	19.5	19.5
				l						



Note: Peak Measured Field Strength –dBuV/m = Receiver Readings (dBuV) + Antenna Factor (dB/m) + Cable loss (dB)+ Notch Filter Insertion loss (dB) – Pre amplifier Gain (dB)

Considering worst case duty cycle = 20msec

Calculated Average readings = Peak readings in dBuV/m - Duty cycle Correction Factor (dB)

Duty Cycle Correction Factor = 20 log (20 /100) = -13.98 (Duty Cycle Correction Factor)

Where, 20ms= Max. Pulse ON Time during 100msec

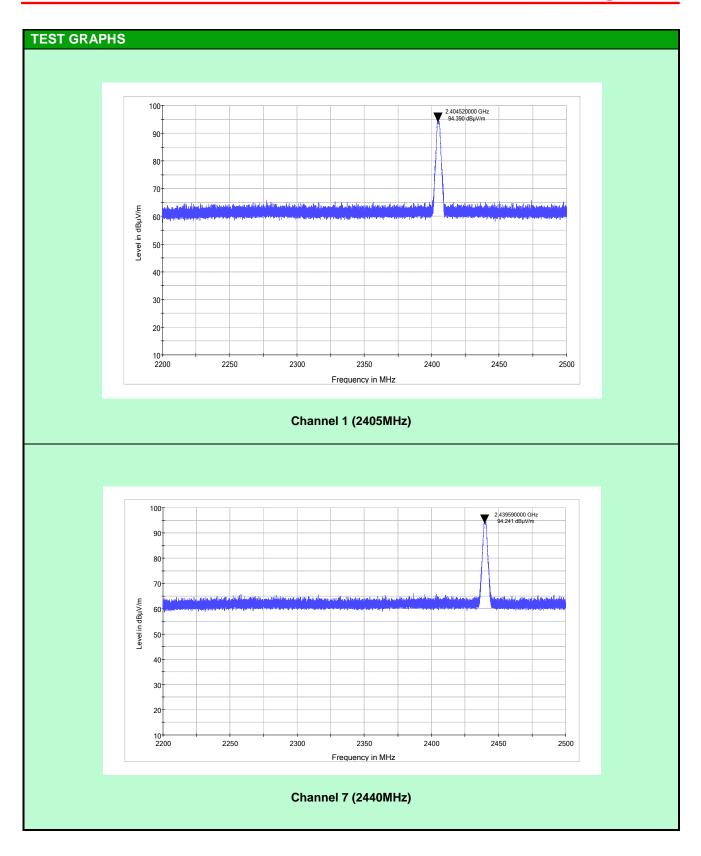


	2.3 TRANSMITT	ER OUTPUT POW	ER
EUT Nomenclature	Wireless Pressure Sensor	Test Request No.	EMC -0055-3
Model No.	WPS1B121AGP1A1N	Serial No.	EMC-55-1
Test Start Date	21/04/2014	Temperature (°C)	22°
Test End Date	21/04/2014	Humidity RH (%)	52%
Tested By	Gulshan Kumar	Pressure (mbar)	NR
Input Voltage / Freq	24 Vdc		
Operating Mode	Refer Page 5 for Operating Mode Table)	
Test configuration	Refer Page 5 for Test Configuration Tal	ble	
Deviation from Std	NA		
Applicable standard	RSS Gen Issue 3 RSS-210, Issue 6		
Test Method	RSS Gen Issue3		
Comment			
TEST DETAILS			
Method	☐ Conducted ☐ Radiated	d	
TEST PARAMETE	RS		
Antenna Height	1m to 4m	Turntable Rotation	0 to 360°C
Equipment Class	NA	Measurement Distance	NA

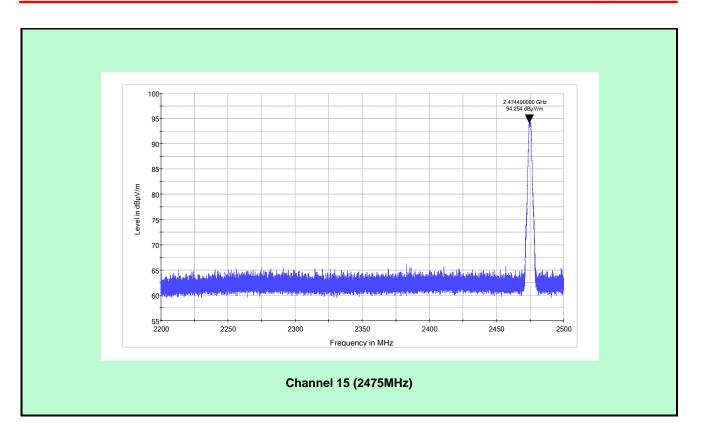
	TEST EQUIPMENT								
Y/N	Equipment	Make	Model	SI. No.	Cal Due Date				
Υ	EMI Test Receiver	R&S	ESU26	100525	7-Oct-14				
Υ	3m Semi Anechoic Chamber	ETS Lindgren	DKE 6X7 DBL.DR	1625	31-Dec-2015				
Υ	Double Ridge Guide Horn Antenna	ETS Lindgren	3117	00064055	14-Nov-2014				
Υ	RF cable (1GHz to 18GHz)	AH Systems	SAC-18G-06	RE-2A	09-May-2014				
Υ	RF cable (1GHz to 18GHz)	AH Systems	SAC-18G-06	RE-2B	09-May-2014				
N	Signal Conditioning unit	R&S	SCU-18	10178	13-June-2014				
Υ	EMC32 Software	R&S	8.30.0	820-OT101248	NA				
Υ	20dB Attenuator	EM TEST	09 015 200 S11	CS-ATT-1	06-May-2014				

Note: Switch ON /OFF the Internal Preamplifier based on carrier level and or noise floor without overloading the receiver









TEST RESULT										
Channel	Channel Frequency	Measured Field Strength	External Attenuator	*Calculated Field Strength	Measurement distance	Transmitter Output Power in Watts				
#	MHz	dBμV/m	dB	V/m	m	mW				
1	2405	94.39	20	0.524	3	50.26				
7	2440	94.24	20	0.515	3	48.56				
15	2475	94.25	20	0.515	3	48.67				

STEP 1: Convert the measured field strength (dBuV/m) to V/m using below formula

$$V/m = 10$$
 (((dB μ V/m) -120) / 20)

STEP 2: use below formula for Transmitter Output Power in watts

$$TP = (FS \times D)^2 / (30 \times G)$$

where:

TP = transmitter output power in watts,

G = numeric gain of the transmitting antenna in Numeric

FS = electric field strength in V/m,

D = measurement distance in meters (m).



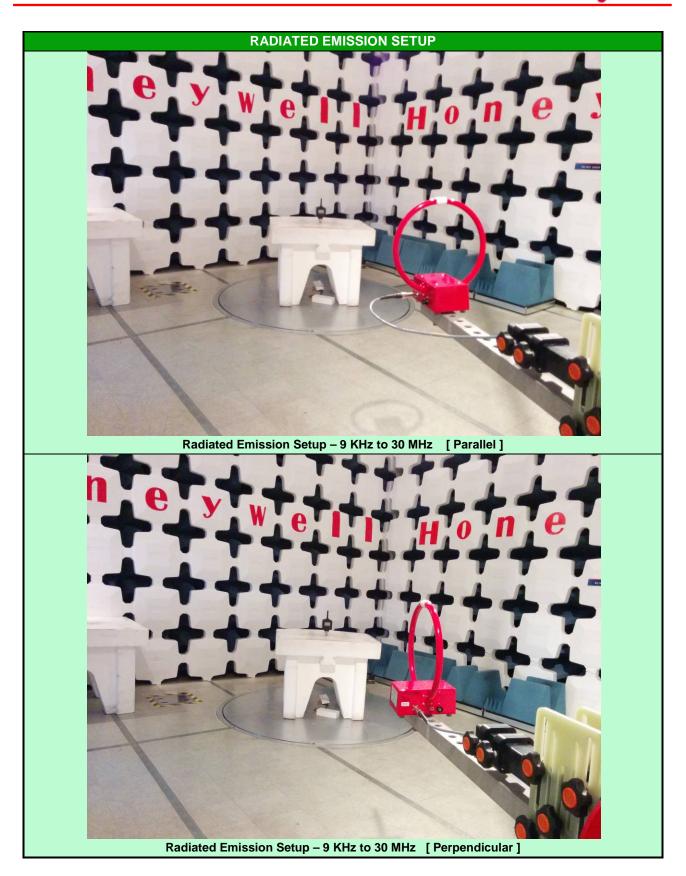
TEST SETUP PHOTOGRAPHS

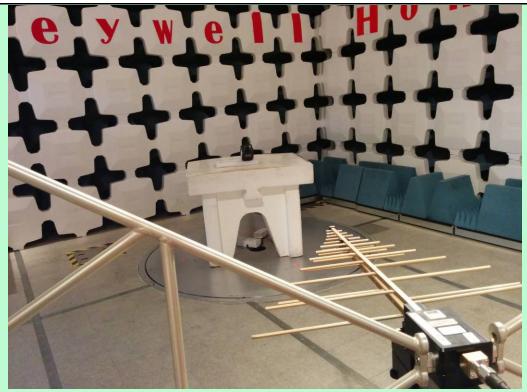
Refer Annexure-1

Transmitter Output Power



Annexure - 1





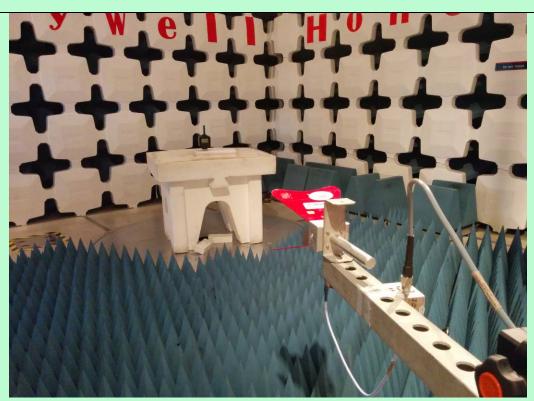
Radiated Emission Setup -30 MHz to 1GHz [Horizontal Polarization]



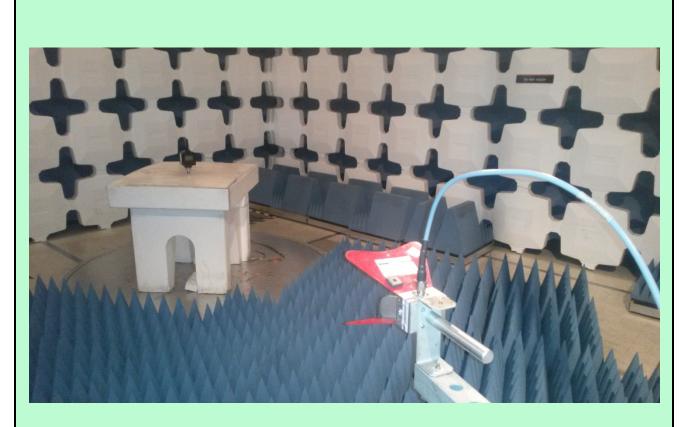
Radiated Emission Setup -30 MHz to 1GHz [Vertical Polarization]



Radiated Emission Setup –1 GHz to 18GHz [Horizontal Polarization]



Radiated Emission Setup -1 GHz to 18GHz [Vertical Polarization]



Test Setup: Transmitter Output Power and Dwell Time