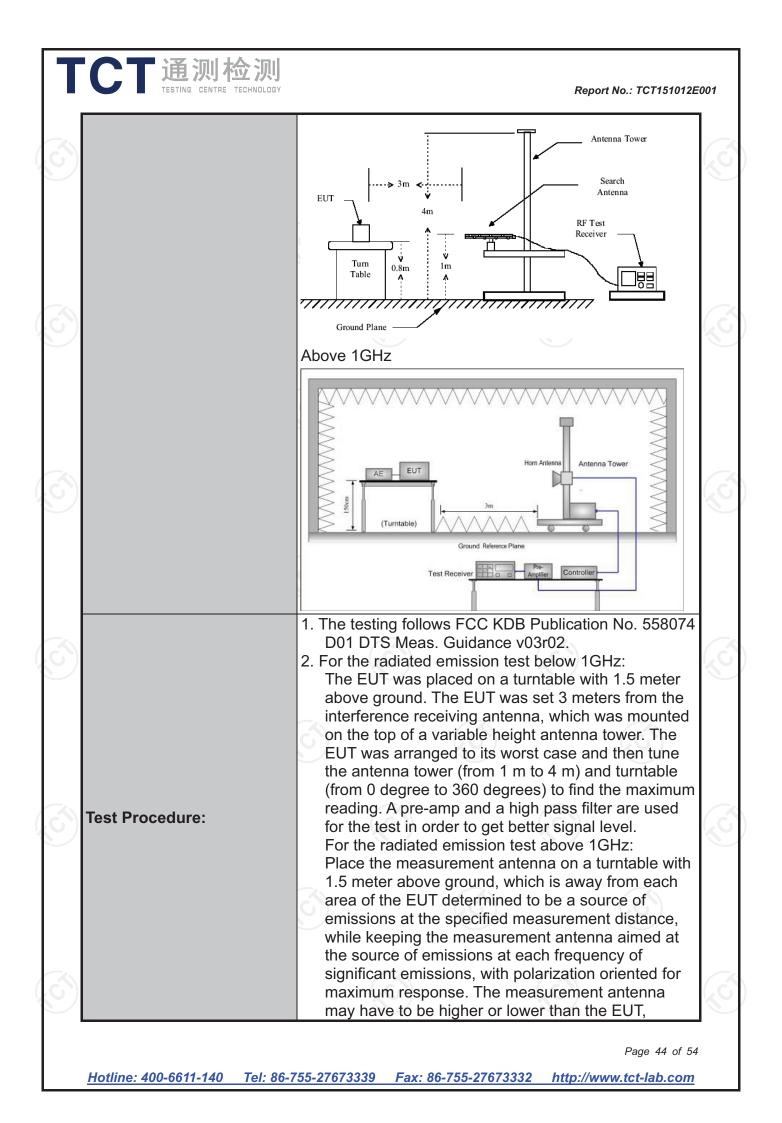


6.7. Radiated Spurious Emission Measurement

6.7.1. Test Specification

Test Requirement:	FCC Part15	C Section	15.209					
Test Method:	ANSI C63.4:	2014 and	ANSI C6	3.10: 20	13	$\langle \mathcal{O} \rangle$		
Frequency Range:	9 kHz to 25	GHz						
Measurement Distance:	3 m							
Antenna Polarization:	Horizontal &	Horizontal & Vertical						
Operation mode:	Transmitting	mode with	modulat	ion				
·	Frequency	Detector	RBW	VBW		Remark		
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quas	i-peak Value		
Receiver Setup:	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quas	i-peak Value		
·	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quas	i-peak Value		
	Above 1GHz	Peak	1MHz	3MHz	1	eak Value		
		Peak	1MHz	10Hz	Ave	erage Value		
			Field Stre	enath	Me	asurement		
	Frequer	ю	(microvolts		-	nce (meters)		
	0.009-0.4		2400/F(I			300		
	0.490-1.705		24000/F(KHz)		30			
	1.705-3	1.2	30 100		30			
imit:	30-88		100			3		
	216-96		200			3		
	Above 9		500			3		
				(\mathbf{G})				
	Frequency		Strength olts/meter)	Measure Distan (mete	ce	Detector		
		_	500		- /	Average		
	Above 1GH:	z (;	5000			Peak		
Test setup:	EUT	stance = 3m Turn table		Pre -A	Compute	r		
	30MHz to 10	אחכ						



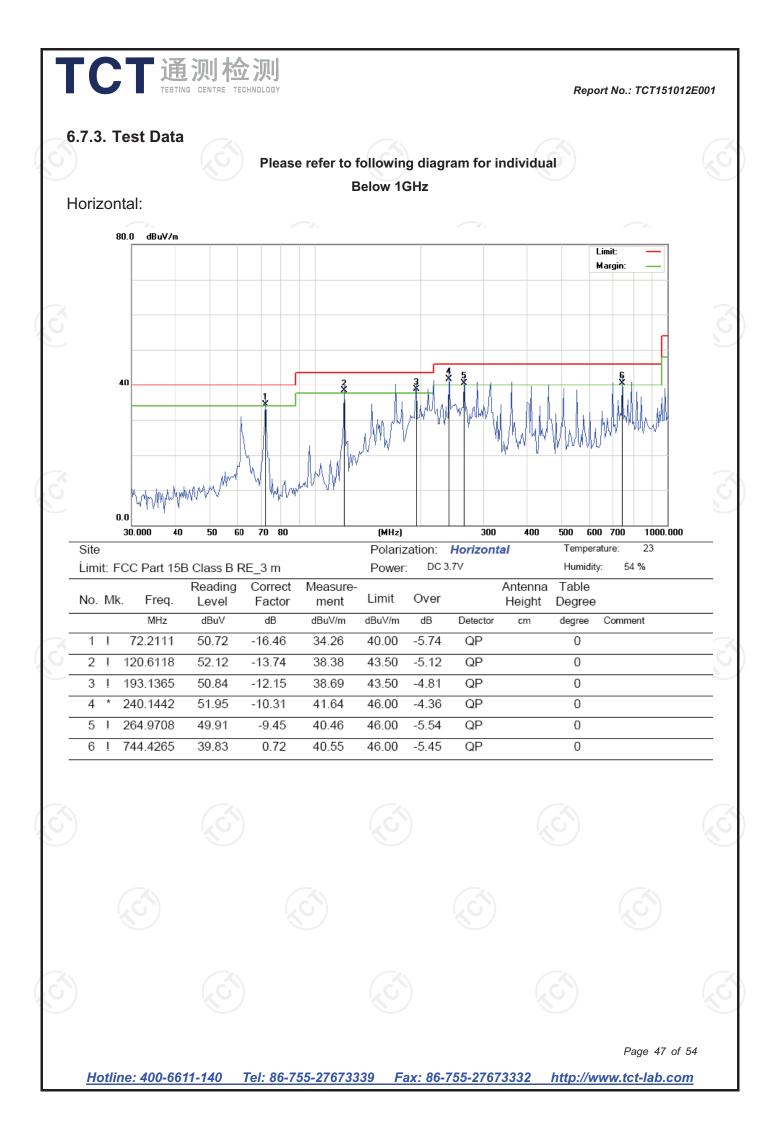
Report No.: TCT151012E001 depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 4. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 5. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold: (3) Set RBW = 1 MHz, VBW= 3MHz for f 1 GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. PASS Test results:

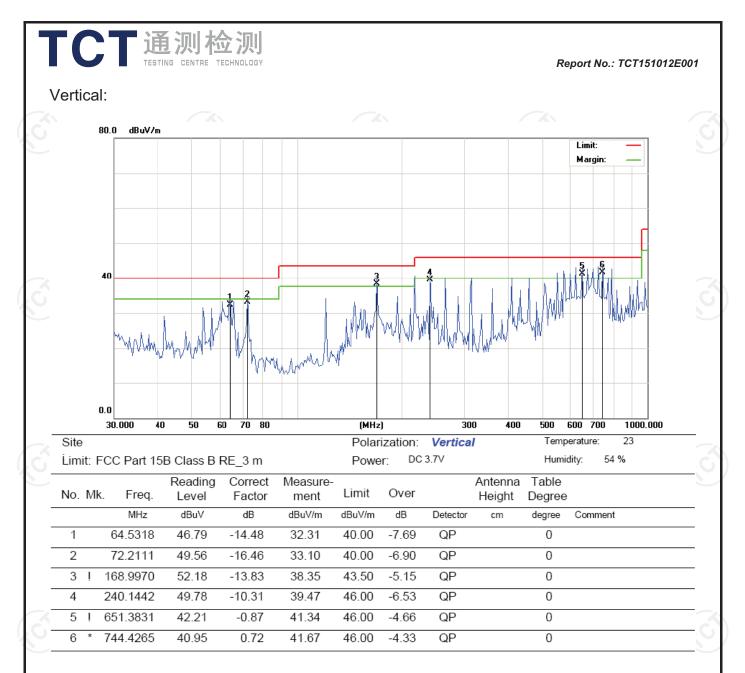
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6.7.2. Test Instruments

	Padiated Em	ission Test Sit	to (966)	/
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
ESPI Test Receiver	ROHDE&SCHW ARZ	ESVD	100008	Nov.16 , 2015
Spectrum Analyzer	ROHDE&SCHW ARZ	FSEM	848597/001	Nov.16 , 2015
Spectrum Analyzer	Agilent	N9020A	MY49100060	Dec. 21, 2015
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Nov.16 , 2015
Pre-amplifier	HP	8447D	2727A05017	Nov.16 , 2015
Loop antenna	ZHINAN	ZN30900A	12024	Dec.14 , 2015
Broadband Antenna	Schwarzbeck	VULB9163	340	Nov.16 , 2015
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Nov.16 , 2015
Horn Antenna	Schwarzbeck	BBHA 9170	373	Nov.16 , 2015
Coax cable	тст	RE-low-01	N/A	Nov.15 , 2015
Coax cable	ТСТ	RE-high-02	N/A	Nov.15 , 2015
Coax cable	тст	RE-low-03	N/A	Nov.15 , 2015
Coax cable	тст	RE-High-04	N/A	Nov.15 , 2015
Antenna Mast	CCS	CC-A-4M	N/A	Nov.15 , 2015
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).





Note: 1. The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported

2. Measurements were conducted in all three channels (high, middle, low) and all modulation(802.11b, 802.11g, 802.11n(HT20), 802.11n(HT40)), and the worst case Mode (Highest channel and 802.11b) was submitted only.

		Modu	lation Type: 80	2.11b		
			channel: 2412			
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBµV/m)	AV limit (dBµV/m)
2310	Н	47.22	-4.20	43.02	74.00	54.00
2377.38	Н	47.88	-4.10	43.78	74.00	54.00
2390	Н	53.64	-3.94	49.70	74.00	54.00
2310	V	44.38	-4.20	40.18	74.00	54.00
2377.38	V	52.96	-4.10	48.86	74.00	54.00
2390	V-	54.49	-3.94	50.55	74.00	54.00
	(G)	Modu	lation Type: 80	2.11b	(G)	•
		Low	channel: 2462	MHz		
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBµV/m)	AV limit (dBµV/m)
2483.5	Н	50.59	-3.60	46.99	74.00	54.00
2487.09	Н	47.14	-3.50	43.64	74.00	54.00
2500	Н	44.39	-3.34	41.05	74.00	54.00
2483.5	V	53.40	-3.60	49.80	74.00	54.00
2487.09	V	46.72	-3.50	43.22	74.00	54.00
2500	N	42.17	-3.34	38.83	74.00	54.00
	(\mathcal{O})		(\mathcal{G})	•	(\mathcal{O})	
		Modu	lation Type: 80	2.11a		
			channel: 2412			
requency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBµV/m)	AV limit (dBµV/m)
2310	H	42.40	-4.20	38.20	74.00	54.00
2388.96	Н	50.44	-4.12	46.32	74.00	54.00
2390	Н	52.44	-3.94	48.50	74.00	54.00
2310	V	44.89	-4.20	40.69	74.00	54.00
2388.96	V	49.00	-4.12	44.88	74.00	54.00
2390	V	53.21	-3.94	49.27	74.00	54.00
		Modu	lation Type: 80	2.11g		
		Low	channel: 2462	MHz		
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBµV/m)	AV limit (dBµV/m)
2483.5	Н	52.45	-3.60	48.85	74.00	54.00
2487.59	Н	50.74	-3.52	47.22	74.00	54.00
2500	Н	47.16	-3.34	43.82	74.00	54.00
2483.5	V	51.90	-3.60	48.30	74.00	54.00
2487.59	V	48.15	-3.52	44.63	74.00	54.00
	V		-3.34	44.49		54.00

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			n Type: 802.11 channel: 2412			
_			Correction	Peak Final		
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	Factor (dB/m)	Emission	Peak limit (dBµV/m)	AV limit (dBµV/m)
2310	Н	45.96	-4.20	41.76	74.00	54.00
2388.01	Н	51.24	-4.10	47.14	74.00	54.00
2390	Н	52.87	-3.94	48.93	74.00	54.00
2310	V	47.42	-4.20	43.22	74.00	54.00
2388.01	V	51.99	-4.10	47.89	74.00	54.00
2390	V	53.78	-3.94	49.84	74.00	54.00
			n Type: 802.11			
		Low	channel: 2462			
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBµV/m)	AV limit (dBµV/m)
2483.5	Н	51.84	-3.60	48.24	74.00	54.00
2392.55	H	50.21	-3.50	46.71	74.00	54.00
2500	<u> </u>	47.33	-3.34	43.99	74.00	54.00
2483.5	V	52.59	-3.60	48.99	74.00	54.00
2392.55	v	49.67	-3.50	46.17	74.00	54.00
2500	v	48.38	-3.34	45.04	74.00	54.00
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	Correction Factor	Peak Final Emission	Peak limit (dBµV/m)	AV limit (dBµV/m)
,		,	(dB/m)	Level	,	· · · /
2310	H	45.82	-4.20	41.62	74.00	54.00
2388.01	<u>H</u>	52.80	-4.10	48.70	74.00	54.00
2390	H	53.87	-3.94	49.93	74.00	54.00
2310	V	47.35	-4.20	43.15	74.00	54.00
2388.01	V	53.49	-4.10	49.39	74.00	54.00
2390	V	54.59	-3.94	50.65	74.00	54.00
		Modulatio	n Type: 802.11	n(40MHZ)		
		LOW	channel: 2452	Peak Final		1
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	Correction Factor (dB/m)	Emission	Peak limit (dBµV/m)	AV limit (dBµV/m)
2483.5	Н	51.75	-3.60	48.15	74.00	54.00
2392.55	Н	50.65	-3.50	47.15	74.00	54.00
2500	Н	46.81	-3.34	43.47	74.00	54.00
2483.5	V	52.34	-3.60	48.74	74.00	54.00
2392.55	V	49.85	-3.50	46.35	74.00	54.00
2500	V	47.85	-3.34	44.51	74.00	54.00

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			М	Above odulation T		1b			
			L	ow channe.	I: 2412 MH	Z			
Frequency (MHz)	Ant. Pol. H/V	reaulity	AV reading (dBuV)	Facior	Peak	on Level AV	Peak limit (dBµV/m)		Margin (dB)
4824	КН	(dBµV) 48.40		(dB/m) 0.75	(dBµV/m) 49.15	(dBµV/m)	74	54	-4.85
7236	СH	39.87	LO.	9.87	49.74		74	54	-4.26
	H					<u> </u>			
4824	V	47.90		0.75	48.65		74	54	-5.35
7236	V	40.24		9.87	50.11		74	54	-3.89
)	V			(, (· · · ·				(, (
				J.					

				Μ	iddle chanr	nel: 2437MF	lz			
	Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBµV)	Correction Factor (dB/m)	Emissic Peak (dBµV/m)	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)
	4874	Н	48.43	<u> </u>	0.97	49.40	\mathbb{S}^{+}	74	54	-4.60
	7311	Н	40.23		9.83	50.06		74	54	-3.94
		Н								
	4874	V	48.50		0.97	49.47		74	54	-4.53
2	7311	V	40.19		9.83	50.02		74	54	-3.98
		V								

			F	ligh channe	el: 2462 MH	Z			
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBµV)	Correction Factor (dB/m)	Emissio Peak (dBµV/m)	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)
4924	Н	48.58		1.18	49.76		74	54	-4.24
7386	Н	39.20		10.07	49.27		74	54	-4.73
	Н								
				(6					(6
4924	V	49.23		1.18	50.41		74	54	-3.59
7386	V	39.73		10.07	49.80		74	54	-4.20
	V								

Note:

5.

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss - Pre-amplifier

2. Margin (dB) = Emission Level (Peak) (dBµV/m)-Average limit (dBµV/m)

3. The emission levels of other frequencies are very lower than the limit and not show in test report.

4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 25GHz.

Data of measurement shown "----"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

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			М	odulation T	ype: 802.1	lg			
			L	.ow channe	I: 2412 MH	Z			
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Emissic Peak (dBµV/m)	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)
4824	Н	48.70		0.75	49.45		74	54	-4.55
7236	Н	40.03		9.87	49.90		74	54	-4.10
	Н					·			
	$\langle G^{*} \rangle$)	($\langle G \rangle$		(\mathcal{G})	
4824	V	47.73		0.75	48.48		74	54	-5.52
7236	V	40.39		9.87	50.26		74	54	-3.74
	V								
~					X \				
Middle channel: 2437MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBuV)	AV reading (dBµV)	Correction Factor (dB/m)		n Level AV (dBuV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)

Frequency	Ant. Pol.	Peak	AV reading	Correction	Emissic	on Level	Peak limit	AV limit	Margin
(MHz)	H/V	reading (dBµV)	(dBµV)	Factor (dB/m)	Peak (dBµV/m)	AV (dBµV/m)		(dBµV/m)	(dB)
4874	Н	48.40		0.97	49.37		74	54	-4.63
7311	н	39.81		9.83	49.64		74	54	-4.36
	СH		KO I					<u>k</u> O	
4874	V	47.81		0.97	48.78		74	54	-5.22
7311	V	40.36		9.83	50.19		74	54	-3.81
×	V								
			•			•			

		U	H	ligh channe	el: 2462 MH	Z			6
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBµV)	Correction Factor (dB/m)	Emissio Peak (dBµV/m)	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)
4924	H	48.19		1.18	49.37		74	54	-4.63
7386	Н	39.39		10.07	49.46	4	74	54	-4.54
	Н								
4924	V	47.33		1.18	48.51		74	54	-5.49
7386	V	39.59		10.07	49.66		74	54	-4.34
97 1	V			X	2/				&

Note:

3. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss - Pre-amplifier

4. Margin (dB) = Emission Level (Peak) (dBµV/m)-Average limit (dBµV/m)

5. The emission levels of other frequencies are very lower than the limit and not show in test report.

6. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 25GHz.

7. Data of measurement shown "----"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

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			Modu	lation Type	: 802.11n (ł	HT20)			
				.ow channe	```	/			
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Emissic Peak (dBµV/m)	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)
4824	Н	48.73		0.75	49.48		74	54	-4.52
7236	Н	40.31		9.87	50.18		74	54	-3.82
	H					×			
	\mathcal{G}		66)	()	\mathcal{G}		(\mathcal{G})	
4824	V	48.10		0.75	48.85		74	54	-5.15
7236	V	39.36		9.87	49.23		74	54	-4.77
	V								
-					2				
6)		(G)	M	iddle chanr	el: 2437MH	lz	(G)		
Frequency	Ant. Pol.	Peak reading	AV reading	Correction Factor	Emissic Peak	n Level	Peak limit	AV limit	Margin

Frequency	Ant Pol	Peak	AV reading		Emissic	on Level	Peak limit	Δ\/ limit	Margin
(MHz)	H/V	reading (dBµV)	(dBµV)	Factor (dB/m)	Peak (dBµV/m)	AV (dBµV/m)			(dB)
4874	Н	47.78		0.97	48.75		74	54	-5.25
7311	Н	39.72		9.83	49.55		74	54	-4.45
/	Ч		KO I	/	/			KO .	
							•		
4874	V	47.85		0.97	48.82		74	54	-5.18
7311	V	39.67		9.83	49.50		74	54	-4.50
×	V				X				
	4874 7311 4874 7311	(MHz) H/V 4874 H 7311 H H 4874 V 7311 V	Ann. Pol. reading (dBµV) 4874 H 47.78 7311 H 39.72 H 4874 V 47.85 7311 V 39.67	Frequency (MHz) Ant. Pol. H/V Peak reading (dBµV) AV reading (dBµV) 4874 H 47.78 7311 H 39.72 H 4874 V 47.85 7311 V 39.67	Frequency (MHz) Ant. Pol. H/V Peak reading (dBµV) AV reading (dBµV) Correction Factor (dB/m) 4874 H 47.78 0.97 7311 H 39.72 9.83 H 9.83 H 9.83 H 9.83 9.85 0.97 7311 V 39.67 9.83	Frequency (MHz) Ant. Pol. H/V Peak reading (dBµV) AV reading (dBµV) Correction Factor (dB/m) Emission Peak (dBµV/m) 4874 H 47.78 0.97 48.75 7311 H 39.72 9.83 49.55 H 4874 V 47.85 9.83 49.55 H 9.83 49.55 9.83 49.50	Heading (MHz) H/V reading (dBμV) Av reading (dBμV) Factor (dB/m) Peak (dBμV/m) AV (dBμV/m) 4874 H 47.78 0.97 48.75 7311 H 39.72 9.83 49.55 H 4874 V 47.85 H 7311 V 39.67 9.83 49.50	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $

High channel: 2462 MHz										
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBµV)	Correction Factor (dB/m)	Emissio Peak (dBµV/m)	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)	
4924	H	47.38	<u></u>	1.18	48.56		74	54	-5.44	
7386	Н	39.83	<u> </u>	10.07	49.90	-	74	54	-4.10	
	Н									
4924	V	47.11		1.18	48.29		74	54	-5.71	
7386	V	39.53		10.07	49.60		74	54	-4.40	
· · · · ·	V			🔨	//				🔨	

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

2. Margin (dB) = Emission Level (Peak) (dBµV/m)-Average limit (dBµV/m)

3. The emission levels of other frequencies are very lower than the limit and not show in test report.

4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 25GHz.

5. Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

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			Modu	lation Type	: 802.11n (ł	HT40)				
Low channel: 2422 MHz										
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Emissic Peak (dBµV/m)	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)	
4844.00	Н	46.77		0.75	47.52		74	54	-6.48	
7266.00	Н	39.35		9.87	49.22		74	54	-4.78	
/	H		-			×				
4844.00	V	47.20		0.75	47.95		74	54	-6.05	
7266.00	V	39.21		9.87	49.08		74	54	-4.92	
	V									
					X.					
G		(\mathbf{G})	Μ	iddle chanr	el: 2437MF	Ηz	(\mathbf{G})			
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBµV)	Correction Factor (dB/m)	Emissic Peak (dBµV/m)	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)	
4874.00	Н	47.00		0.97	47.97		74	54	-6.03	
7311.00	Н	39.42		9.83	49.25		74	54	-4.75	
	C H		KO.			<u>0</u>		K V		

	- 11		 		-7-			
4874.00	V	46.48	 0.97	47.45		74	54	-6.55
7311.00	V	39.44	 9.83	49.27		74	54	-4.73
	V		 					

High channel: 2452 MHz										
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBµV)	Correction Factor (dB/m)	Emissio Peak (dBµV/m)	n Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Margin (dB)	
4904.00	Ĥ	46.67		1.18	47.85		74	54	-6.15	
7356.00	Н	39.15	<u> </u>	10.07	49.22	+	74	54	-4.78	
	Н									
4904.00	V	47.29		1.18	48.47		74	54	-5.53	
7356.00	V	39.76		10.07	49.83		74	54	-4.17	
27	V			🔨	2 /				🔨	

Note:

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8. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

9. Margin (dB) = Emission Level (Peak) (dBµV/m)-Average limit (dBµV/m)

10. The emission levels of other frequencies are very lower than the limit and not show in test report.

11. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.

12. Data of measurement shown "----"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

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

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