

8. RADIATED SPURIOUS EMISSIONS, FCC 15.247

8.1 Operating environment

Temperature: 23 °C (15 - 35 °C)
 Relative Humidity: 49 % (20 - 75 %)

8.2 Measurement uncertainty

Radiated disturbance electric field intensity, 30 – 1000 MHz: $\pm 4,6$ dB
 Radiated disturbance electric field intensity, 1000 – 26000 MHz: $\pm 6,0$ dB

The measurement uncertainty describes the overall uncertainty of the given measured value during operation of the EUT.

Measurement uncertainty is calculated in accordance with EA-4/02-1997.
 The measurement uncertainty is given with a confidence of 95%.

8.3 Test equipment

Equipment	Manufacturer	Type	SEMKO No.
<i>Test site: Semi-anechoic shielded chamber, 10 x 20 x 8,5 m (W x L x H)</i>			30300
Software:	R&S	ES-K1, V1.60	
Measurement receiver:	R&S	ESAI	2973/2974
Antenna amplifier:	SEMKO		7992/7993
Antenna, bilog:	Chase	CBL6111B	971
<i>Test site: Bluetooth anechoic shielded chamber, 3,7 x 7,0 x 2,4 m (W x L x H)</i>			12285
Software:	R&S	ES-K1, V1.60	
Signal analyser:	R&S	FSIQ 40	9192
Preamplifier:	MITEQ	AFS6/AFS44	12335
Antenna:			
Double Ridge Guide Horn:	EMCO	3115	4936
Horn antenna:	EMCO	3160-08	30099
Horn antenna:	EMCO	3160-09	30101

R&S = Rohde & Schwarz



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8.4 Measurement set-up

Test site: Semi-anechoic shielded chamber (30 – 1000 MHz)

The radiated disturbance electric field intensity was measured in a semi-anechoic chamber at a distance of 10 m and the EUT was placed on a non-metallic table, 0,8 m above the reference ground plane. The specified test mode was enabled. Test set-up photo is given below.

An overview sweep with peak detection of the electric field intensity was performed with the measurement receiver in max-hold and with the antenna placed 1,5 m, 2,5 m and 3,5 m above the floor. The polarisation was horizontal and vertical. The measurements were repeated with the EUT rotated in 90-degree steps.

At the frequencies where high disturbance levels were found a search for max disturbance level was performed. With the EUT and antenna in the worst-case configuration new measurements were carried out.

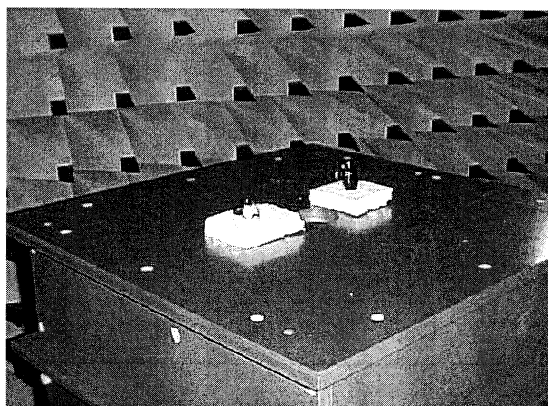


Test set-up photo

Test site: Bluetooth anechoic shielded chamber (1 – 26 GHz)

In the Bluetooth anechoic chamber the EUT was placed on a non-metallic table, 1,4 m above the floor. The radiated disturbance electric field intensity was measured at a distance of 3 m. The specified test mode was enabled.

An overview sweep with peak detection of the electric field intensity was performed with the spectrum analyser in max-hold and with the antenna placed 1,4 m above the floor. The polarisation was horizontal and vertical. The measurements were repeated with the EUT rotated in 90-degree steps. If necessary, the sweep was repeated with average detection. Test set-up photo is shown below.



Test set-up Digital (to the left) and Chameleon



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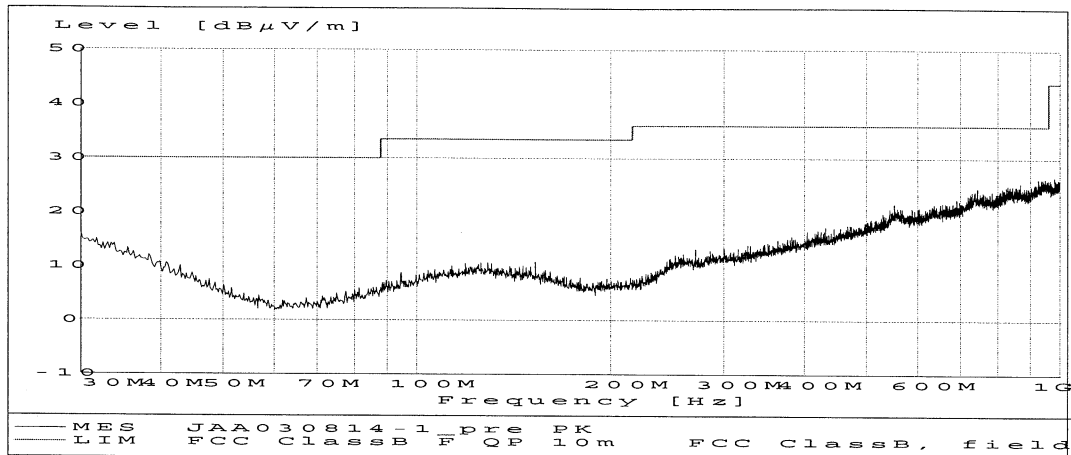
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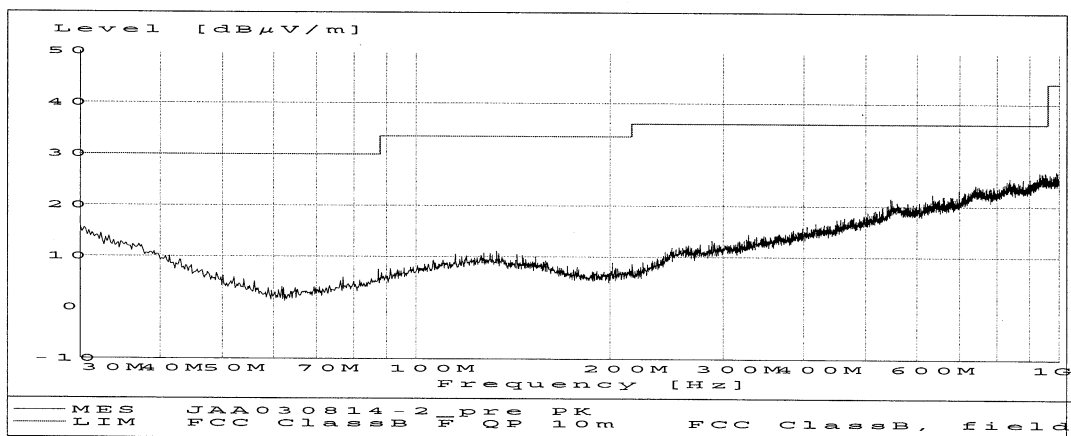
8.5 Test protocol

8.5.1 Semi-anechoic shielded chamber

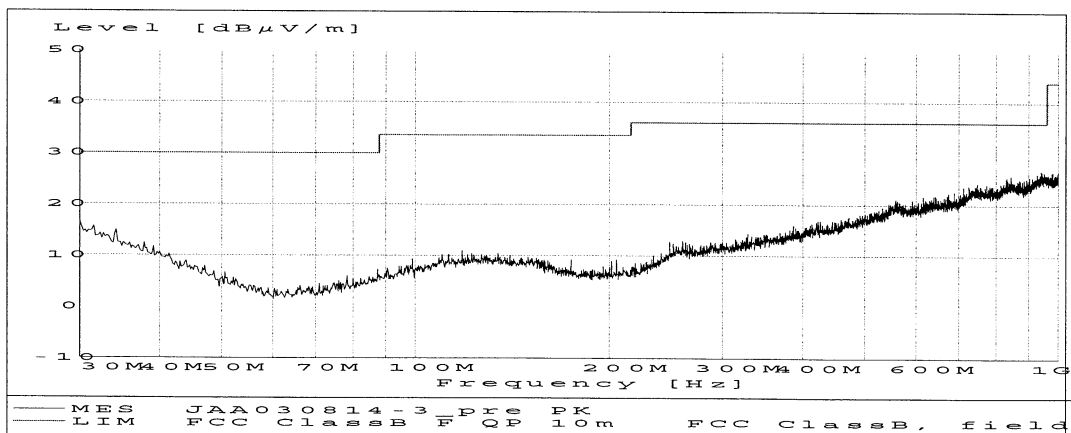
Date of test: August 14, 2003



30 – 1000 MHz, max peak at a distance of 10 m, lower TX channel



30 – 1000 MHz, max peak at a distance of 10 m, middle TX channel



30 – 1000 MHz, max peak at a distance of 10 m, upper TX channel



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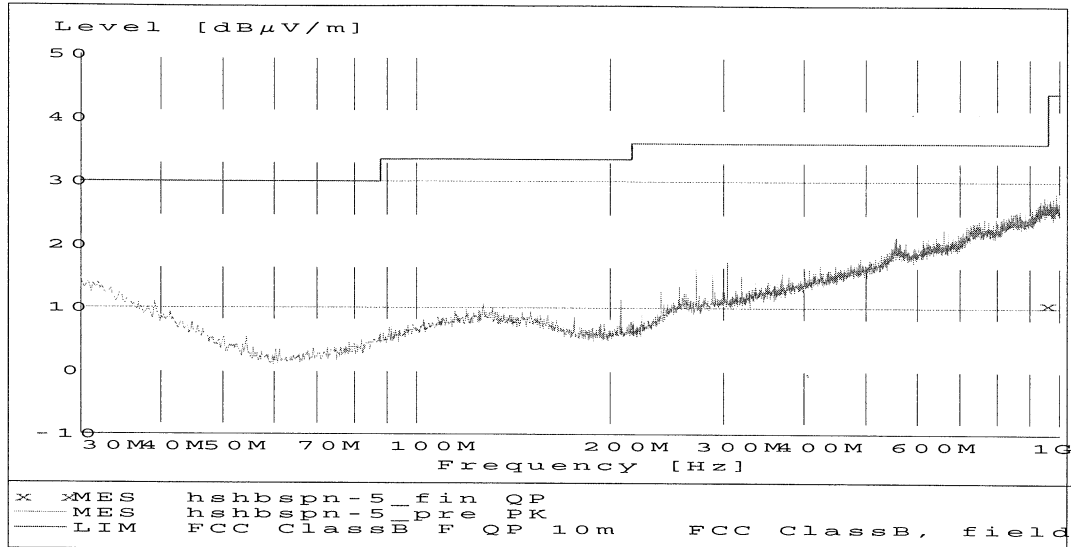
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Semi-anechoic shielded chamber

Date of test: September 24, 2003



30 – 1000 MHz, max peak at a distance of 10 m, stand by mode, EUT placed in the charging cradle.



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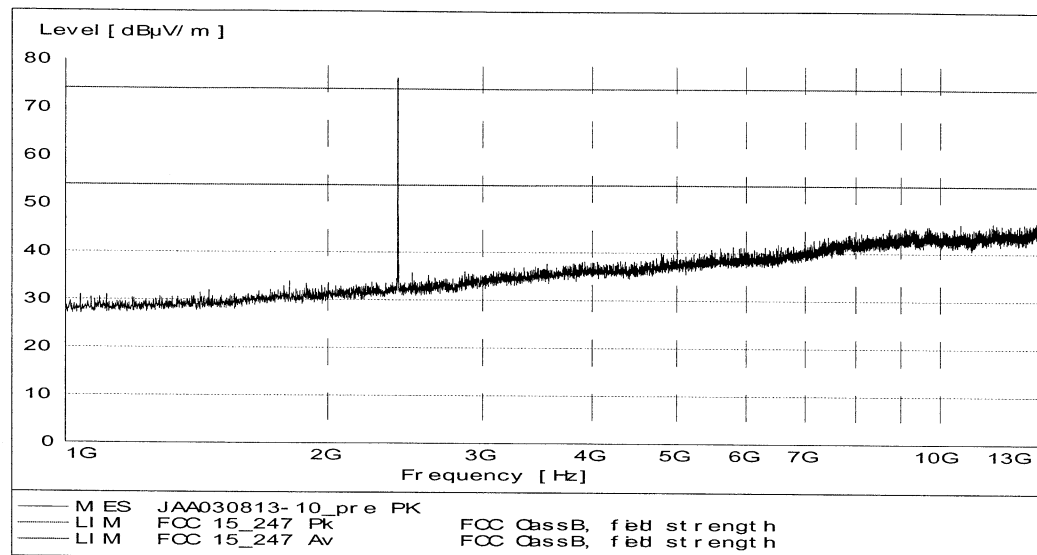
Torshamnsgatan 43, Box 1103, SE-164 22 Kista, Sweden

Telephone +46 8 750 00 00, Fax +46 8 750 60 30, www.sweden.intertek-etlsemko.com

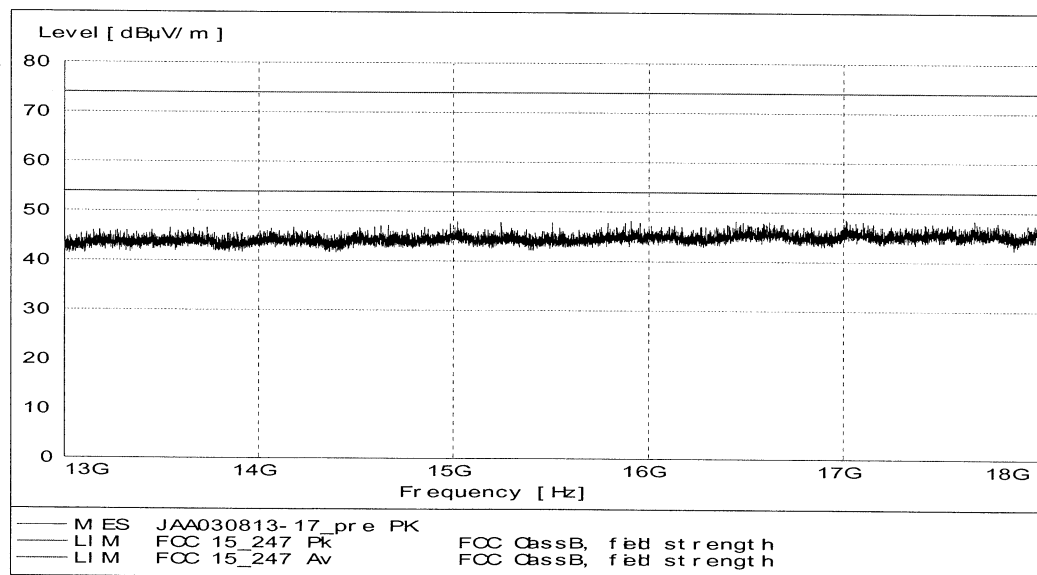
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8.5.2 Bluetooth anechoic shielded chamber

Date of test: August 13, 2003



1000 – 13000 MHz, max peak at a distance of 3 m, lower TX channel
 10 dB have to be added to the peak values.



13000 – 18000 MHz, max peak at a distance of 3 m, lower TX channel



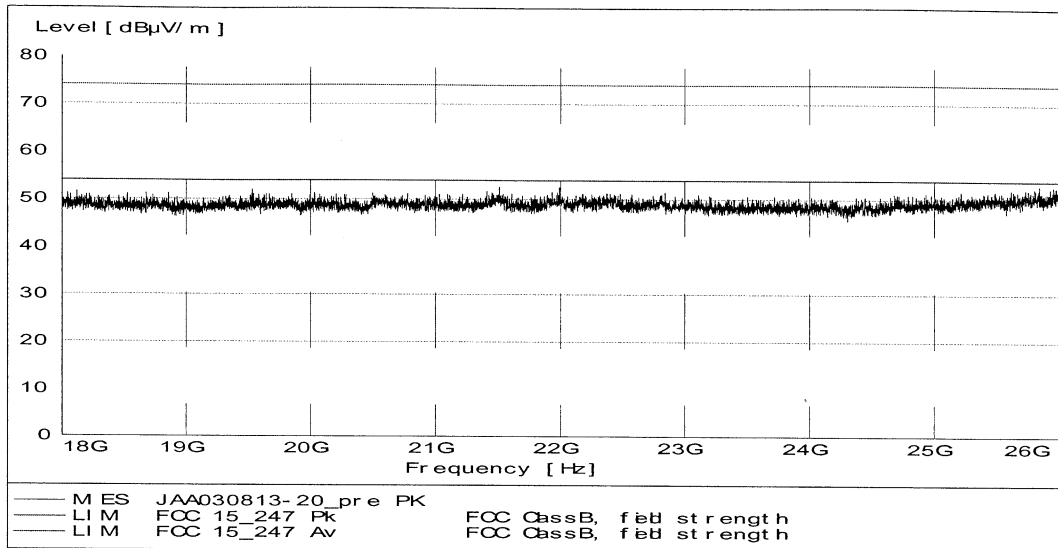
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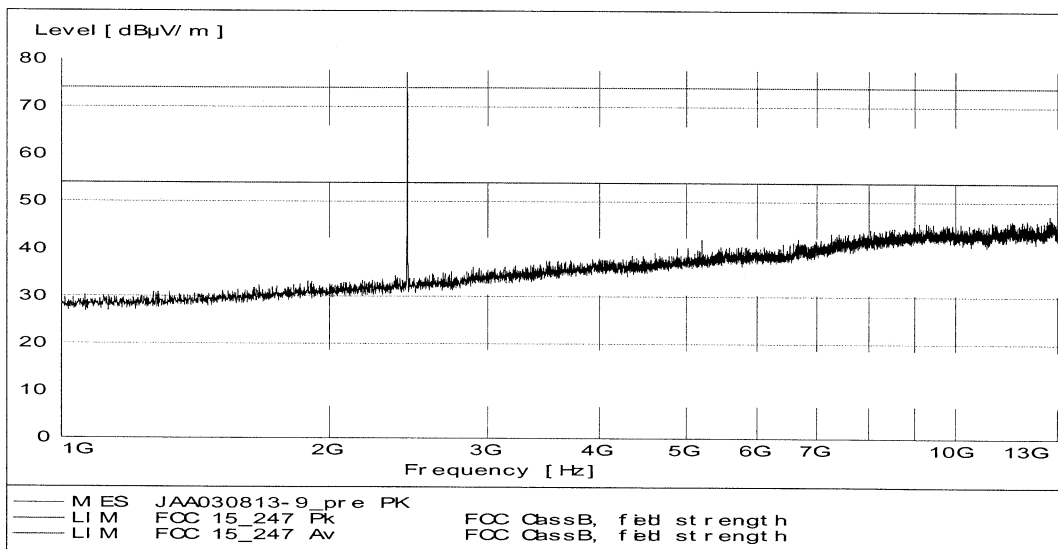
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Bluetooth anechoic shielded chamber



18000 – 26000 MHz, max peak at a distance of 3 m, lower TX channel



1000 – 13000 MHz, max peak at a distance of 3 m, middle TX channel

10 dB have to be added to the peak values.



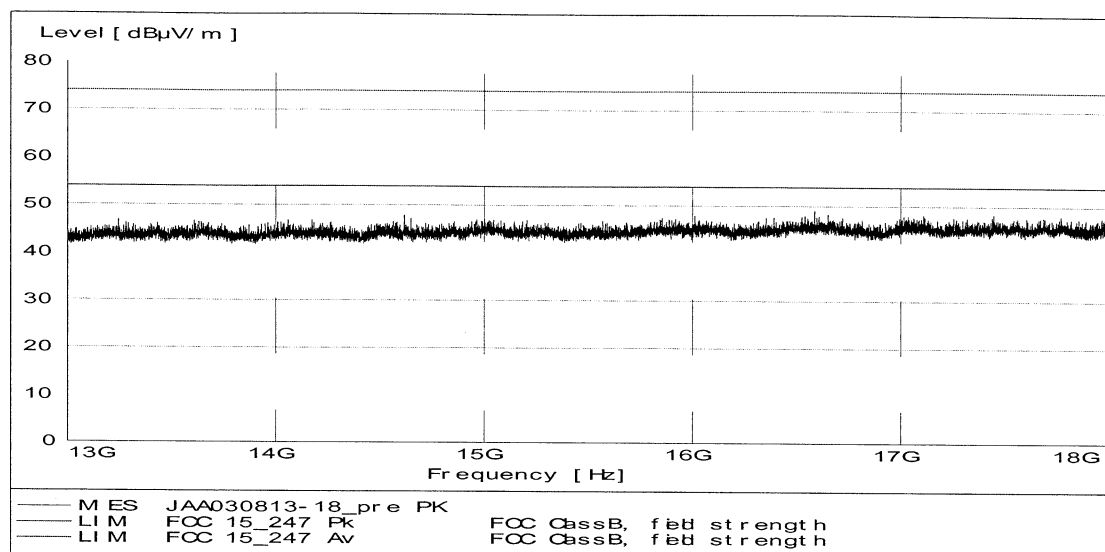
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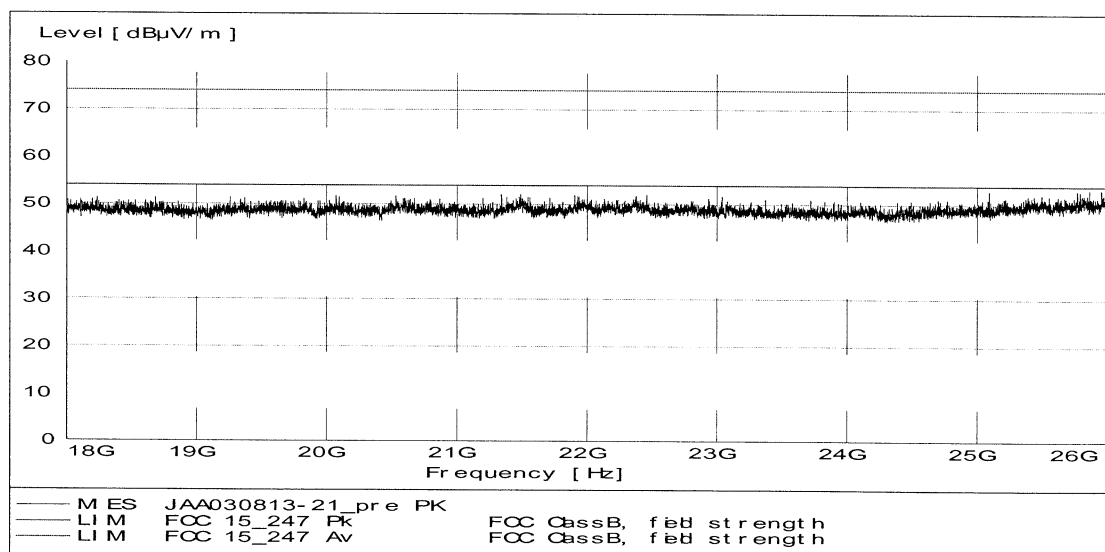
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Bluetooth anechoic shielded chamber



13000 – 18000 MHz, max peak at a distance of 3 m, middle TX channel



18000 – 26000 MHz, max peak detection at a distance of 3 m, lower TX channel



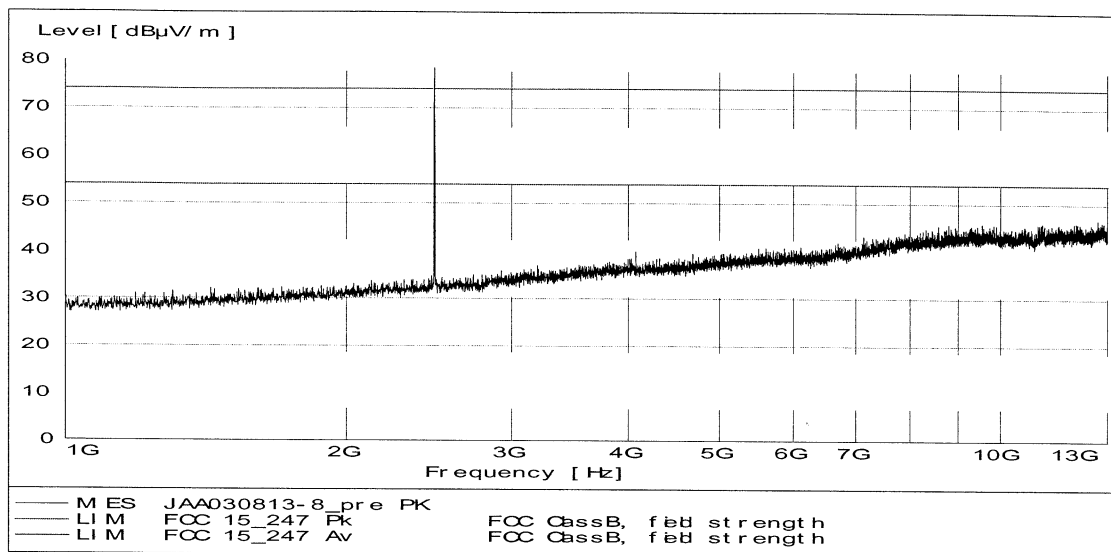
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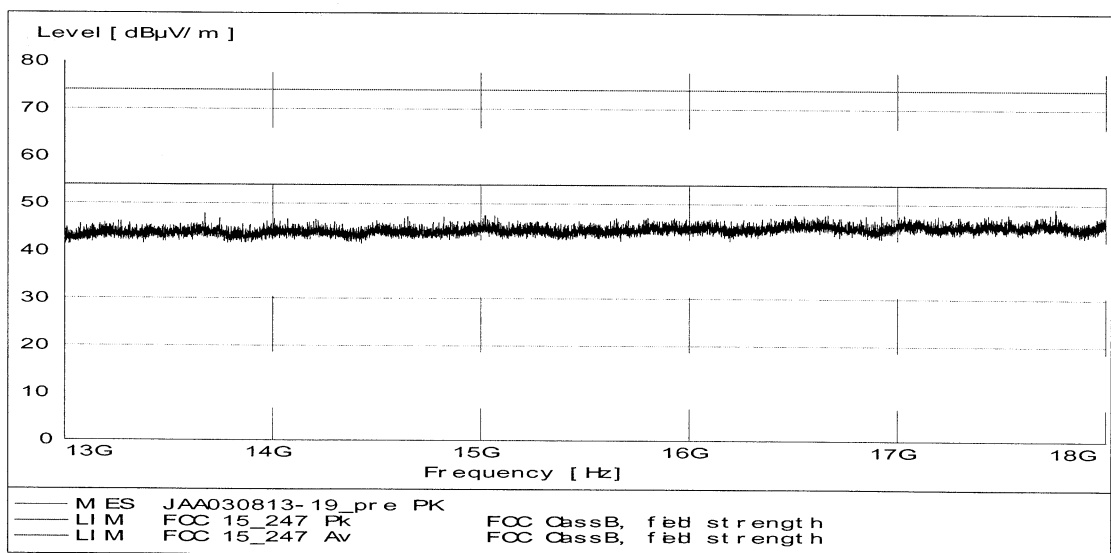
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Bluetooth anechoic shielded chamber



1000 – 13000 MHz, max peak at a distance of 3 m, upper TX channel
 10 dB have to be added to the peak values.



13000 – 18000 MHz, max peak at a distance of 3 m on the upper TX channel



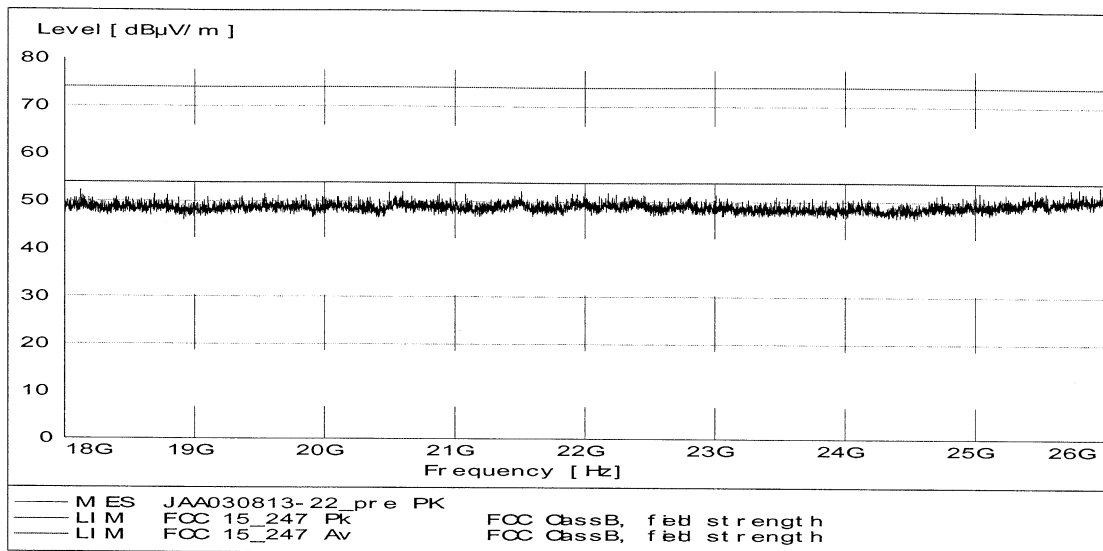
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Bluetooth anechoic shielded chamber



18000 – 26000 MHz, max peak at a distance of 3 m, upper TX channel



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8.5.3 Data summary

Field strength of spurious emissions						
Frequency [MHz]	RBW [kHz]	Measured level		Limit		Note
		Peak [dB(μV/m)]	QP/AV [dB(μV/m)]	Peak [dB(μV/m)]	QP/AV [dB(μV/m)]	
30 – 88	120		--	-	29,5	
88 – 216	120		--	-	33,0	
216 – 960	120		--	-	35,5	
1000 – 13000	1000	--	--	74	54	
13000 – 18000	1000	--	--	74	54	
18000 – 26000	1000	--	--	74	54	

No spurious emission were found in the frequency range 30 MHz to 26 GHz



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APPENDIX – PHOTOS OF THE EUT



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