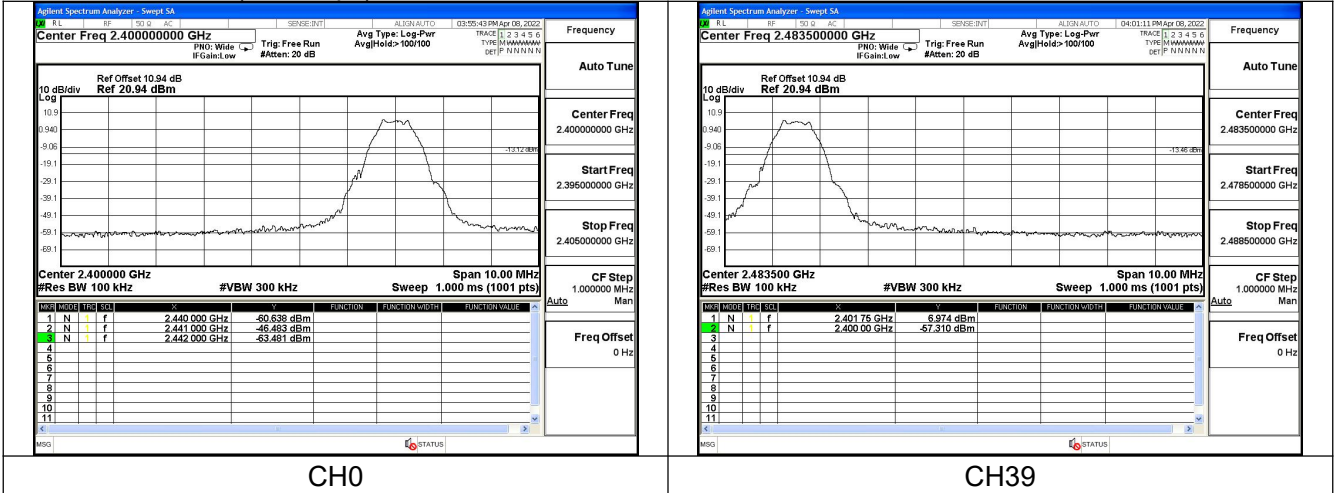
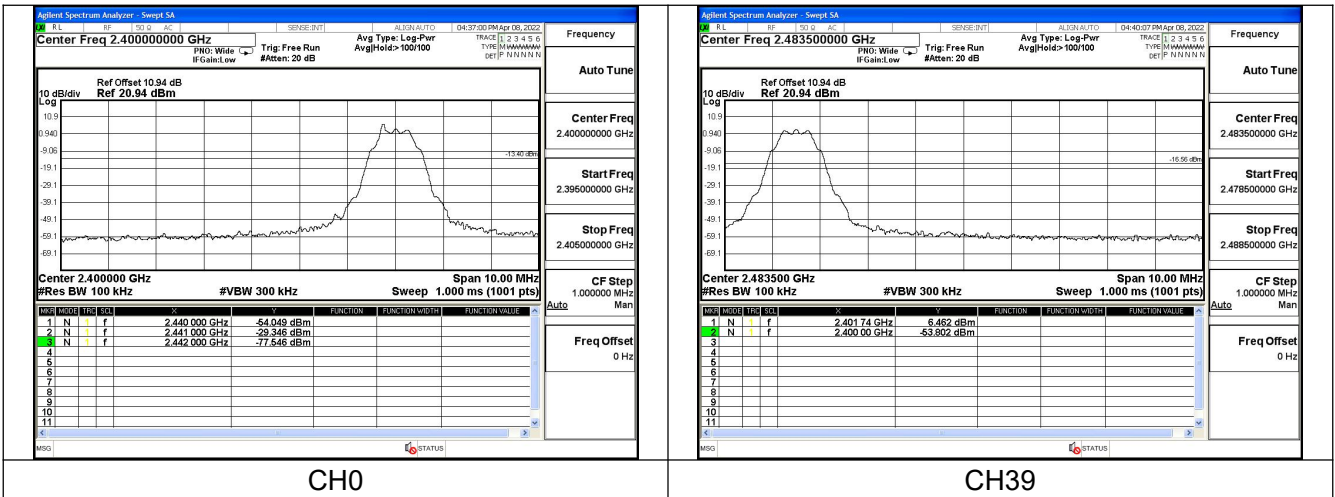


## 6 Band Edge measurement

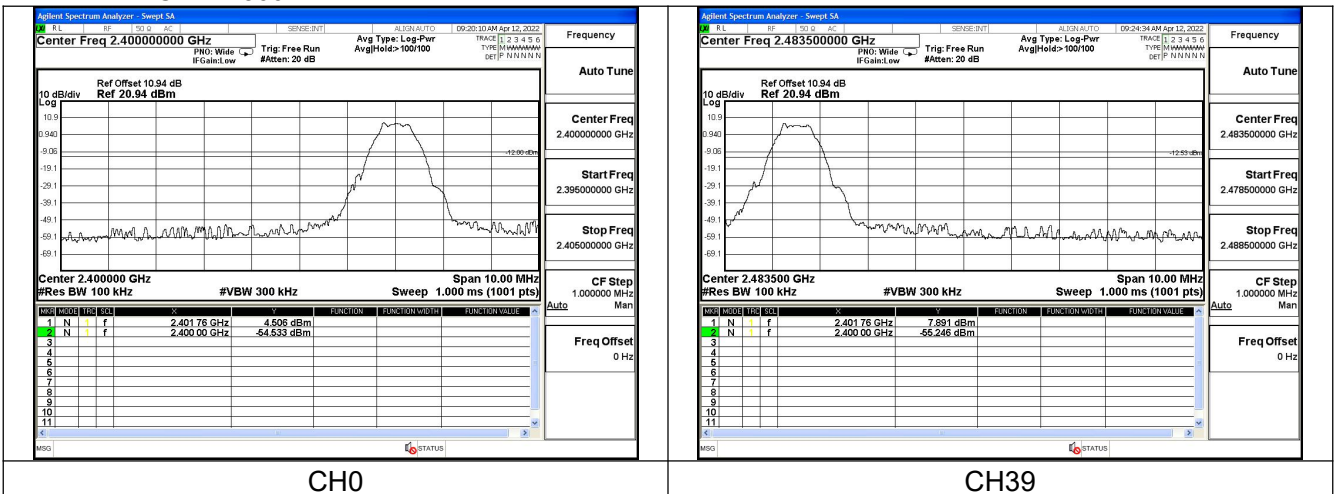
Test Mode: GFSK (LE 1Mbps)



## Test Mode: Coded 125K



## Test Mode: Coded 500K



## APPENDIX B – TEST DATA OF RADIATED EMISSION

### Radiated Emissions Band Edge-BLE

The measurement results are obtained as described below:

Measure Level = Reading Level + Cable loss + Antenna factor Sample calculation:  
(90.20 dBuV/m) = (56.20 dB $\mu$ V) + (8.90 dB) + (25.10 dB), the corresponding frequency is 2402MHz.

#### ● LE-1Mbps

Carrier Frequency (MHz): 2402

Channel No.: 0

Test Mode: GFSK (LE-1Mbps)

Detector: Peak

Frequency (MHz)	Reading Level (dBuV)	Measure Level (dBuV/m)	Over Limit (dB)	Limit (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB)
2402.0	56.20	90.20	N/A	N/A	8.90	25.10
2390.0	10.70	44.70	-29.30	74.00	8.90	25.10

Detector: Average

Frequency (MHz)	Reading Level (dBuV)	Measure Level (dBuV/m)	Over Limit (dB)	Limit (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB)
2402.0	42.40	76.40	N/A	N/A	8.90	25.10
2390.0	-0.50	33.50	-20.50	54.00	8.90	25.10

Carrier Frequency (MHz): 2480

Channel No.: 39

Test Mode: GFSK (LE-1Mbps)

Detector: Peak

Frequency (MHz)	Reading Level (dBuV)	Measure Level (dBuV/m)	Over Limit (dB)	Limit (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB)
2480.0	67.70	101.70	N/A	N/A	8.90	25.10
2483.5	17.70	51.70	-22.30	74.00	8.90	25.10

Detector: Average

Frequency (MHz)	Reading Level (dBuV)	Measure Level (dBuV/m)	Over Limit (dB)	Limit (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB)
2480.0	40.30	74.30	N/A	N/A	8.90	25.10
2483.5	-8.10	25.90	-28.10	54.00	8.90	25.10

● **LE-2Mbps**

**Carrier Frequency (MHz): 2402**

**Channel No.: 0**

**Test Mode: GFSK (LE-2Mbps)**

**Detector: Peak**

Frequency (MHz)	Reading Level (dBuV)	Measure Level (dBuV/m)	Over Limit (dB)	Limit (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB)
2402.0	58.50	92.50	N/A	N/A	8.90	25.10
2390.0	19.20	53.20	-20.80	74.00	8.90	25.10

**Detector: Average**

Frequency (MHz)	Reading Level (dBuV)	Measure Level (dBuV/m)	Over Limit (dB)	Limit (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB)
2402.0	43.30	77.30	N/A	N/A	8.90	25.10
2390.0	-9.20	24.80	-29.20	54.00	8.90	25.10

**Carrier Frequency (MHz): 2480**

**Channel No.: 39**

**Test Mode: GFSK (LE-2Mbps)**

**Detector: Peak**

Frequency (MHz)	Reading Level (dBuV)	Measure Level (dBuV/m)	Over Limit (dB)	Limit (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB)
2480.0	60.80	94.80	N/A	N/A	8.90	25.10
2483.5	19.70	53.70	-20.30	74.00	8.90	25.10

**Detector: Average**

Frequency (MHz)	Reading Level (dBuV)	Measure Level (dBuV/m)	Over Limit (dB)	Limit (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB)
2480.0	43.80	77.80	N/A	N/A	8.90	25.10
2483.5	-1.50	32.50	-21.50	54.00	8.90	25.10

## Radiated Emissions Data-BLE

### Sample Calculations:

#### Determining Spurious Emissions Levels

A “reference path loss” is established and the  $A_{Rpl}$  is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss. The measurement results are obtained as described below:

**Below 1GHz:**

$$\text{QuasiPeak} = \text{Reading Value} + A_{Rpl}$$

**Above 1GHz:**

**MaxPeak=Reading MaxPeak + A<sub>Rpl</sub>**

**OR**

**Average=Reading Average + A<sub>Rpl</sub>**

**Sample calculation: (0.60 dB $\mu$ V/m) = (24.50 dB $\mu$ V) + (-23.90 dB/m), the corresponding frequency is 141.65MHz.**

**The worst case attitude: The mobile lay down.**

**Spurious Radiated Emissions below 30MHz:**

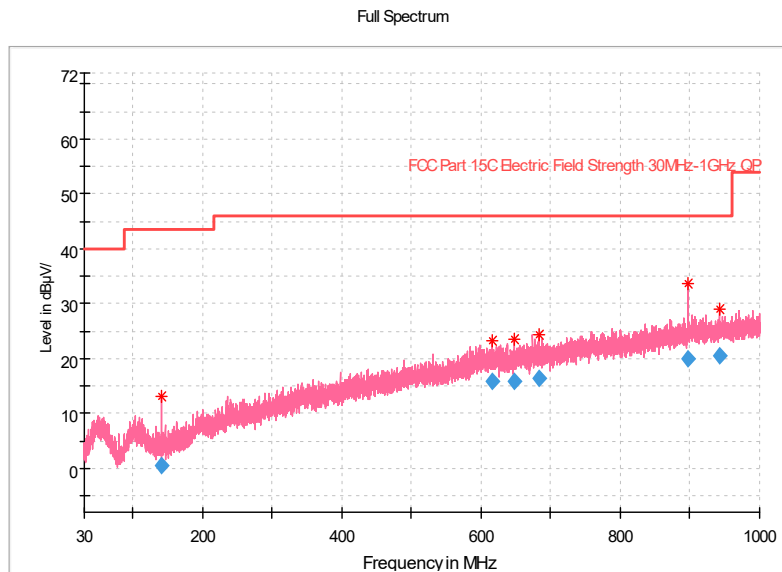
**There were no emissions from 9kHz to 30MHz found within 20dB of the limit. Thus, the test result was not reported according to §15.31 (o).**

**● LE-1Mbps**

**Spurious Radiated Emissions from 30MHz to 1GHz:**

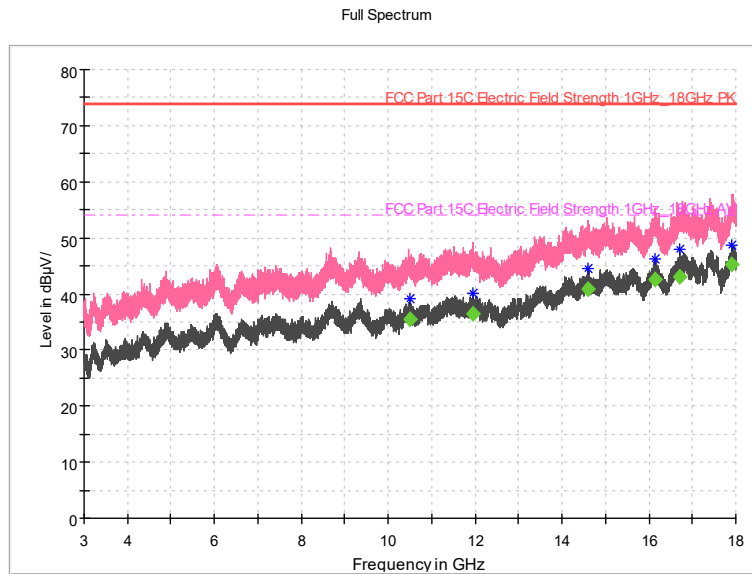
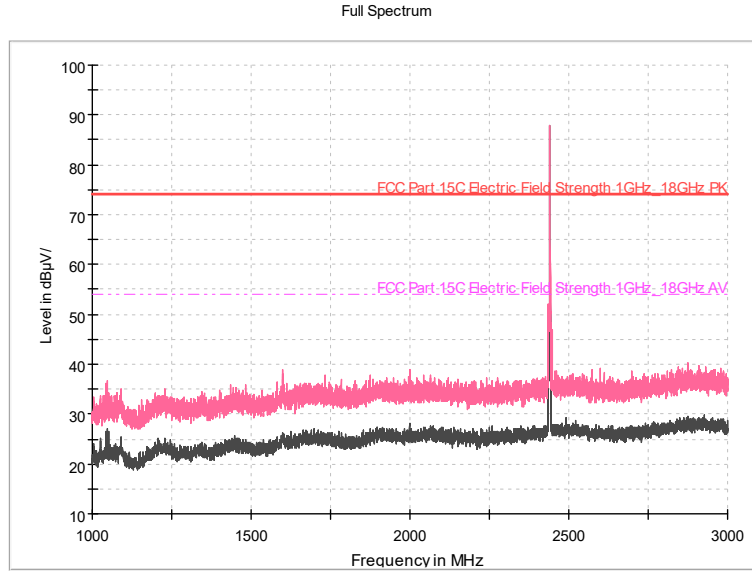
**GFSK:**

**CH Middle (No.19)**

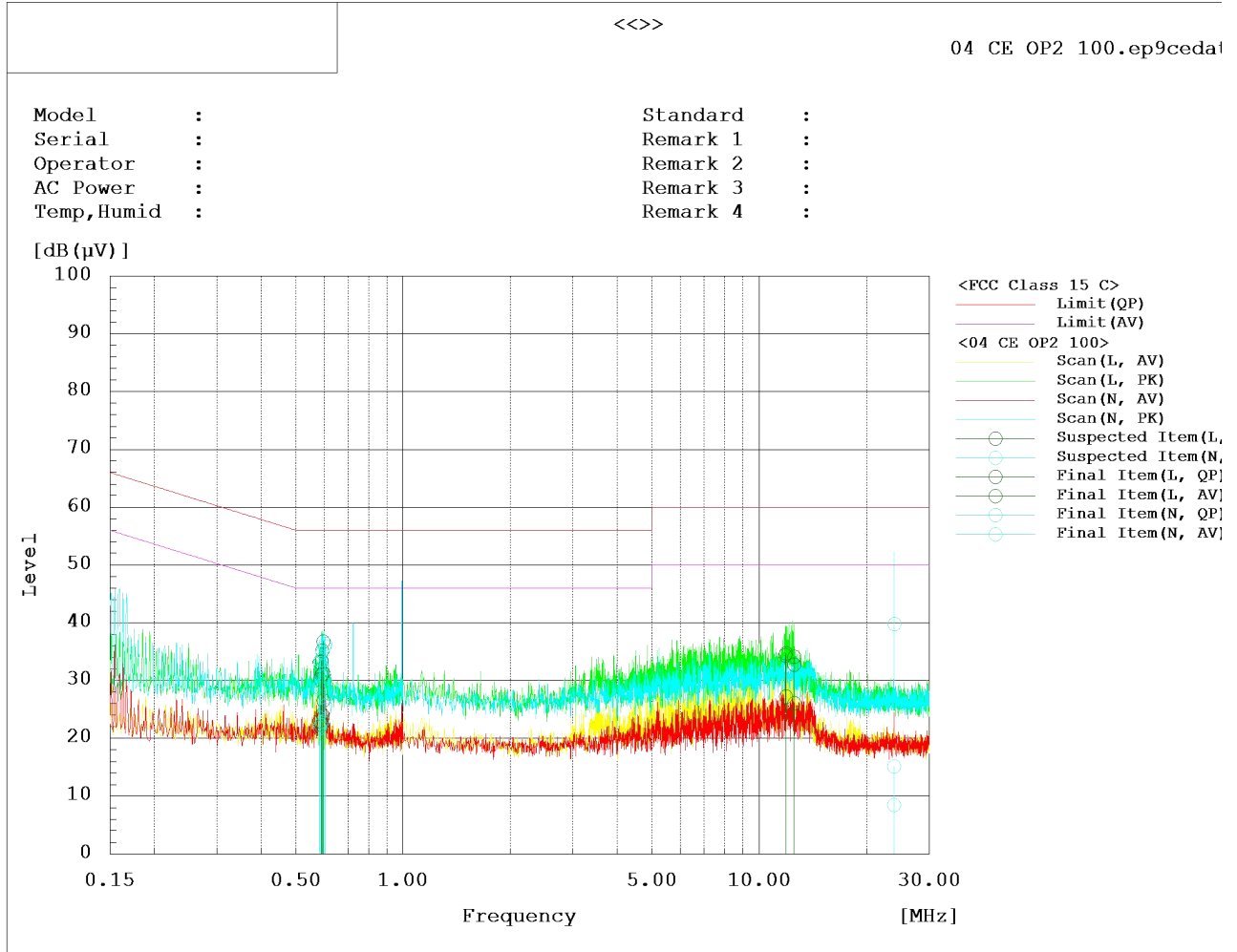


Frequency (MHz)	Reading (dBuV)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	A <sub>Rpl</sub> (dB)	Polarity
141.65	24.50	0.60	43.50	42.90	-23.90	Vertical
615.01	23.70	15.80	46.00	30.20	-7.90	Vertical
647.60	23.54	15.74	46.00	30.26	-7.80	Vertical
683.59	23.56	16.36	46.00	29.64	-7.20	Vertical
896.79	22.92	19.92	46.00	26.08	-3.00	Vertical
941.70	22.99	20.49	46.00	25.51	-2.50	Vertical

● LE-1Mbps  
Spurious Radiated Emissions from 1GHz to 18GHz:  
GFSK:  
CH Middle (No.19)



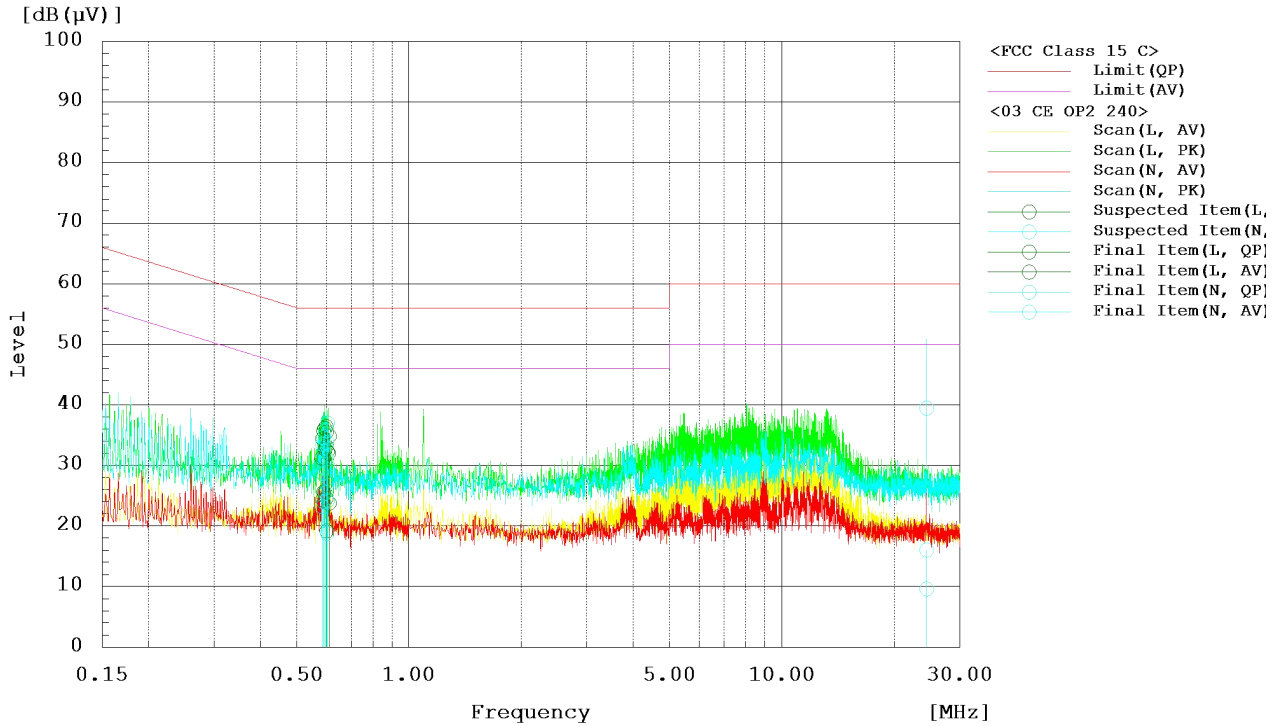
Frequency (MHz)	Reading MaxPeak (dBuV)	Reading Average (dBuV)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	A <sub>RPI</sub> (dB)	Polarity
10496.50	---	54.19	---	35.39	54.00	18.61	-18.80	Vertical
11937.50	---	53.03	---	36.53	54.00	17.47	-16.50	Vertical
14607.50	---	54.38	---	40.88	54.00	13.12	-13.50	Vertical
16155.00	---	56.70	---	42.60	54.00	11.40	-14.10	Vertical
16693.00	---	55.84	---	43.04	54.00	10.96	-12.80	Vertical
17919.50	---	55.16	---	45.36	54.00	8.64	-9.80	Vertical



Range	Frequency MHz	Line	Reading			Factor	Level			Limit			Margin			Pass /Fail	Remark	
			dB(μV)				dB	dB(μV)			dB(μV)			dB				
			QP	AV	PK			QP	AV	PK	QP	AV	PK	QP	AV			PK
Band1	0.58	N	13.1	2		19.9	33	21.9			56	46		23	24.1	Pass		
Band1	0.59	N	13.6	2.4		19.9	33.5	22.3			56	46		22.5	23.7	Pass		
Band1	0.59	N	15	3		19.9	34.9	22.9			56	46		21.1	23.1	Pass		
Band1	0.6	N	16.1	5.1		19.9	36	25			56	46		20	21	Pass		
Band1	0.6	N	16.5	5.8		19.9	36.4	25.7			56	46		19.6	20.3	Pass		
Band1	23.9	N	-4.8	-12		20	15.2	8.5			60	50		44.8	41.5	Pass		
Band1	0.58	L	13.3	3.2		19.9	33.2	23.1			56	46		22.8	22.9	Pass		
Band1	0.59	L	15.3	4.3		19.9	35.2	24.2			56	46		20.8	21.8	Pass		
Band1	0.59	L	13.5	2.5		19.9	33.4	22.4			56	46		22.6	23.6	Pass		
Band1	0.6	L	16.9	6.6		19.9	36.8	26.5			56	46		19.2	19.5	Pass		
Band1	11.9	L	14.7	7.2		20	34.7	27.2			60	50		25.3	22.8	Pass		
Band1	12.5	L	14.3	6.2		19.9	34.2	26.1			60	50		25.8	23.9	Pass		

03 CE OP2 240.ep9cedat

Model : Standard :  
Serial : Remark 1 :  
Operator : Remark 2 :  
AC Power : Remark 3 :  
Temp, Humid : Remark 4 :



Range	Frequency MHz	Line	Reading			Factor	Level			Limit			Margin			Pass /Fail	Remark	
			dB(μV)				dB	dB(μV)			dB(μV)			dB				
			QP	AV	PK			QP	AV	PK	QP	AV	PK	QP	AV			PK
Band1	0.59	L	14.5	4.5		19.9	34.4	24.4			56	46		21.6	21.6		Pass	
Band1	0.59	L	15.9	5.7		19.9	35.8	25.6			56	46		20.2	20.4		Pass	
Band1	0.59	L	16.3	5.7		19.9	36.2	25.6			56	46		19.8	20.4		Pass	
Band1	0.6	L	16.5	4.7		19.9	36.4	24.6			56	46		19.6	21.4		Pass	
Band1	0.6	L	15.7	-0.7		19.9	35.6	19.2			56	46		20.4	26.8		Pass	
Band1	0.61	L	15	3.9		19.9	34.9	23.8			56	46		21.1	22.2		Pass	
Band1	0.59	N	13.6	3.3		19.9	33.5	23.2			56	46		22.5	22.8		Pass	
Band1	0.59	N	14.7	4.1		19.9	34.6	24			56	46		21.4	22		Pass	
Band1	0.6	N	15.8	5.6		19.9	35.7	25.5			56	46		20.3	20.5		Pass	
Band1	0.6	N	17.1	4.3		19.9	37	24.2			56	46		19	21.8		Pass	
Band1	0.6	N	14	-1.1		19.9	33.9	18.8			56	46		22.1	27.2		Pass	
Band1	24.4	N	-3.9	-10		20	16.1	9.6			60	50		43.9	40.4		Pass	

---End of Test Report---